IMPORTANT NOTICE

You must read the following disclaimer before continuing. The following disclaimer applies to the attached offering memorandum (the "Offering Memorandum"). You are therefore advised to read this disclaimer carefully before reading, accessing or making any other use of the attached. In accessing the attached, you agree to be bound by the following terms and conditions, including any modifications to them from time to time, each time you receive any information from us as a result of such access.

THE SECURITIES HAVE NOT BEEN, AND WILL NOT BE, REGISTERED UNDER THE U.S. SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), OR THE SECURITIES LAWS OF ANY OTHER JURISDICTION, AND MAY NOT BE OFFERED OR SOLD WITHIN THE UNITED STATES, EXCEPT PURSUANT TO AN EXEMPTION FROM, OR IN A TRANSACTION NOT SUBJECT TO, THE REGISTRATION REQUIREMENTS OF THE SECURITIES ACT AND ANY APPLICABLE STATE OR LOCAL SECURITIES LAWS.

Restrictions: The attached Offering Memorandum is being furnished in connection with an offering exempt from registration under the Securities Act solely for the purpose of enabling a prospective investor to consider the purchase of the securities described in the Offering Memorandum. The materials relating to the offering do not constitute, and may not be used in connection with, an offer or solicitation in any place where offers or solicitations are not permitted by law.

Except with respect to eligible investors in jurisdictions where such offer is permitted by law, nothing in this electronic transmission constitutes an offer or an invitation by or on behalf of either the Issuer of the securities or the Joint Bookrunners and Joint Lead Managers, the Trustee and the Agents to subscribe for or purchase any of the securities described therein, and access has been limited so that it shall not constitute a general advertisement or general solicitation (as those terms are used in Regulation D under the Securities Act) or directed selling efforts (within the meaning of Regulation S under the Securities Act) in the United States or elsewhere. If a jurisdiction requires that the offering be made by a licensed broker or dealer and the underwriters or any affiliate of the underwriters is a licensed broker or dealer in that jurisdiction, the offering shall be deemed to be made by the underwriters or such affiliate on behalf of the Issuer in such jurisdiction.

You are reminded that you have accessed the attached Offering Memorandum on the basis that you are a person into whose possession this Offering Memorandum may be lawfully delivered in accordance with the laws of the jurisdiction in which you are located and you may not nor are you authorized to deliver or forward this document, electronically or otherwise, to any other person. If you have gained access to this transmission contrary to the foregoing restrictions, you will be unable to purchase any of the securities described therein.

If you receive this document by e-mail, you should not reply by e-mail to this announcement, and you may not purchase any securities by doing so. Any reply e-mail communications, including those you generate by using the "Reply" function on your e-mail software, will be ignored or rejected. If you receive this document by e-mail, your use of this e-mail is at your own risk and it is your responsibility to take precautions to ensure that it is free from viruses and other items of a destructive nature.

THE ATTACHED OFFERING MEMORANDUM MAY NOT BE FORWARDED OR DISTRIBUTED TO ANY OTHER PERSON AND MAY NOT BE REPRODUCED IN ANY MANNER WHATSOEVER. ANY FORWARDING, DISTRIBUTION OR REPRODUCTION OF THIS DOCUMENT IN WHOLE OR IN PART IS UNAUTHORIZED.

The attached document has been made available to you in electronic form. You are reminded that documents transmitted via this medium may be altered or changed during the process of transmission and consequently neither the Issuer of the securities, Joint Bookrunners and Joint Lead Managers, the Trustee and the Agents nor any of their employees, representatives or affiliates accepts any liability or responsibility whatsoever in respect of any discrepancies between the document distributed to you in electronic format and the hard copy version.

Confirmation of Your Representation: You have accessed the attached document on the basis that you have confirmed your representation that (1) you and any customers you represent are (i) qualified institutional buyers (as defined under Rule 144A under the Securities Act), or (ii) that you are outside the United States (as defined under Regulation S under the Securities Act) and that the electronic mail address that you gave us and to which this e-mail has been delivered is not located in the United States, (2) that you consent to delivery of the attached Offering Memorandum and any amendments or supplements thereto by electronic transmission and (3) you agree to the foregoing terms and conditions.

STRICTLY CONFIDENTIAL

PT INDONESIA ASAHAN ALUMINIUM (PERSERO)

(a state-owned company incorporated in the Republic of Indonesia with limited liability)

US$1,000,000,000 5.230% Notes due 2021
US$1,250,000,000 5.710% Notes due 2023
US$1,000,000,000 6.530% Notes due 2028
US$750,000,000 6.757% Notes due 2048
Issue price for the 2021 Notes: 99.263%
Issue price for the 2023 Notes: 98.763%
Issue price for the 2028 Notes: 97.534%
Issue price for the 2048 Notes: 92.575%

PT Indonesia Asahan Aluminium (Persero) (the "Issuer"), a state-owned company established with limited liability under the laws of the Republic of Indonesia, is issuing (i) US$1,000,000,000 5.230% Notes due 2021 (the "2021 Notes"), (ii) US$1,250,000,000 5.710% Notes due 2023 (the "2023 Notes"), (iii) US$1,000,000,000 6.530% Notes due 2028 (the "2028 Notes"), and (iv) US$750,000,000 6.757% Notes due 2048 (the "2048 Notes", and collectively with the 2021 Notes, 2023 Notes and the 2028 Notes, the "Notes").

The 2021 Notes will bear interest at the rate of 5.230% per annum payable semi-annually in arrears on May 15 and November 15 of each year, commencing on May 15, 2019, and will mature on November 15, 2021. The 2023 Notes will bear interest at the rate of 5.710% per annum payable semi-annually in arrears on May 15 and November 15 of each year, commencing on May 15, 2019, and will mature on November 15, 2023. The 2028 Notes will bear interest at the rate of 6.530% per annum payable semi-annually in arrears on May 15 and November 15 of each year, commencing on May 15, 2019, and will mature on November 15, 2028. The 2048 Notes will bear interest at the rate of 6.757% per annum payable semi-annually in arrears on May 15 and November 15 of each year, commencing on May 15, 2019 and will mature on November 15, 2048.

Each series of the Notes will constitute senior, unsecured obligations of the Issuer. For a more detailed description of the Notes, see "Description of the 2021 Notes", "Description of the 2023 Notes, "Description of the 2028 Notes" and "Description of the 2048 Notes". In this Offering Memorandum, references to the section "Description of the Notes" are to the section "Description of the 2021 Notes", the section "Description of the 2023 Notes", the section "Description of the 2028 Notes" and the section "Description of the 2048 Notes", as the case may be.

Approval in-principle has been received for the listing of the 2021 Notes on the Singapore Exchange Securities Trading Limited (the "SGX-ST"). Application will be made to the SGX-ST for the listing and quotation of the 2023 Notes, the 2028 Notes and the 2048 Notes on the SGX-ST. The SGX-ST assumes no responsibility for the correctness of any of the statements made, opinions expressed or reports contained in this Offering Memorandum. Approval in-principle from, admission to the Official List of, and listing and quotation of the Notes on, the SGX-ST are not to be taken as an indication of the merits of the Issuer or the Notes.

The Notes are expected to be rated "Baa2" by Moody's Investors Service, Inc. ("Moody's") and "BBB-" by Fitch Ratings Ltd. ("Fitch"). A security rating is not a recommendation to buy, sell or hold securities and may be subject to suspension, reduction or withdrawal at any time by the assigning rating agency.

Investing in the Notes involves risks. See "Risk Factors" beginning on page 19 for a discussion of risks relevant to an investment in the Notes.

The Notes have not been and will not be registered under the U.S. Securities Act of 1933, as amended (the "Securities Act"), or the securities laws of any other jurisdiction and may not be offered or sold within the United States, except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the Securities Act. Accordingly, the Notes are being offered and sold in the United States only to qualified institutional buyers (as defined in Rule 144A under the Securities Act ("Rule 144A")) in accordance with Rule 144A and outside the United States in offshore transactions in accordance with Regulation S under the Securities Act ("Regulation S"). For a description of these and other restrictions on offers, resales and transfers of the Notes, see "Plan of Distribution" and "Transfer Restrictions." The Notes do not constitute a public offering in Indonesia under Law No. 8 of 1995 on Capital Market ("Indonesian Capital Markets Law"). The Notes may not be offered or sold in Indonesia, to Indonesian citizens, whether domiciled in Indonesia or elsewhere, or to Indonesian residents, in a manner which constitutes a public offering under the laws and regulations in Indonesia.

It is expected that the Notes will be ready for delivery in book-entry form only through The Depository Trust Company, and its participants, on or about November 15, 2018 (the "Closing Date"). See "Plan of Distribution."

Joint Global Coordinators

BNP PARIBAS **Citigroup** **MUFG**

Joint Bookrunners and Joint Lead Managers

BNP PARIBAS **CIMB** **Citigroup** **Maybank** **MUFG** **SMBC Nikko** **Standard Chartered Bank**

The date of this Offering Memorandum is November 7, 2018

TABLE OF CONTENTS

	Page
NOTICE TO INVESTORS	ii
SUMMARY	1
SUMMARY OF THE OFFERING	9
SUMMARY CONSOLIDATED FINANCIAL AND OTHER DATA	14
RISK FACTORS	19
USE OF PROCEEDS	47
EXCHANGE RATES AND EXCHANGE CONTROLS	48
CAPITALIZATION	52
SELECTED CONSOLIDATED FINANCIAL AND OTHER DATA	53
MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS	59
INDUSTRY OVERVIEW	100
INDONESIAN REGULATORY FRAMEWORK	143
BUSINESS	161
PLANNED ACQUISITION OF MAJORITY BENEFICIAL STAKE IN PT FREEPORT INDONESIA	242
SUMMARY CONSOLIDATED FINANCIAL DATA OF PT FREEPORT INDONESIA	258
UNAUDITED PRO FORMA CONSOLIDATED FINANCIAL INFORMATION	260
DESCRIPTION OF MATERIAL INDEBTEDNESS	264
MANAGEMENT	280
RELATIONSHIP WITH THE GOVERNMENT	290
CORPORATE STRUCTURE	292
RELATED-PARTY TRANSACTIONS	293
DESCRIPTION OF THE 2021 NOTES	297
DESCRIPTION OF THE 2023 NOTES	321
DESCRIPTION OF THE 2028 NOTES	345
DESCRIPTION OF THE 2048 NOTES	369
TAXATION	393
PLAN OF DISTRIBUTION	403
TRANSFER RESTRICTIONS	409
SUMMARY OF CERTAIN DIFFERENCES BETWEEN INDONESIAN FINANCIAL ACCOUNTING STANDARDS AND U.S. GAAP	411
LEGAL MATTERS	427
INDEPENDENT PUBLIC ACCOUNTANTS	428
INDEPENDENT MINING CONSULTANTS	429
MINING AND ALUMINUM SMELTING INDUSTRY CONSULTANT	430
RATINGS	431
GLOSSARY	432
INDEX TO THE CONSOLIDATED FINANCIAL STATEMENTS AND PRO FORMA CONSOLIDATED FINANCIAL INFORMATION	F-1
INDEX TO PT FREEPORT INDONESIA'S CONSOLIDATED FINANCIAL STATEMENTS	F-2
APPENDIX A — 2017 COAL RESERVES STATEMENT	A-1
APPENDIX B — 2017 NICKEL, GOLD, SILVER AND BAUXITE RESERVES STATEMENT	B-1
APPENDIX C — 2017 TIN RESERVES STATEMENT	C-1
APPENDIX D — 2017 GRASBERG COPPER, GOLD AND SILVER RESERVES STATEMENT	D-1

NOTICE TO INVESTORS

This Offering Memorandum is being furnished by us on a confidential basis in connection with an offering exempt from the registration requirements under the Securities Act, solely for the purpose of enabling a prospective investor to consider the purchase of the Notes. The offering is being made in reliance upon the exemptions from registration under the Securities Act. Prospective investors are hereby notified that sellers of the Notes may be relying on the exemption from the provisions of Section 5 of the Securities Act provided by Rule 144A. Each purchaser of the Notes will be deemed to have made certain acknowledgments, representations and agreements regarding the Notes and the offer, sale, reoffer, pledge or other transfer of the Notes. See "Transfer Restrictions."

Distribution of this Offering Memorandum to any other person other than the prospective investor and any person retained to advise such prospective investor with respect to its purchase is unauthorized, and any disclosure of any of its contents, without our prior written consent, is prohibited. Each prospective investor, by accepting delivery of this Offering Memorandum, agrees to the foregoing and to make no photocopies of this Offering Memorandum or any part hereof.

This Offering Memorandum does not constitute an offer to, and may not be used for the purpose of an offer to or a solicitation by, anyone in any jurisdiction or in any circumstances in which such an offer or solicitation is not authorized or is unlawful. No action has been or will be taken to permit a public offering of the Notes in any jurisdiction where action would be required for that purpose. The Notes may not be offered or sold, directly or indirectly, and this Offering Memorandum may not be distributed in any jurisdiction, except in accordance with the legal requirements applicable in such jurisdiction.

No person has been authorized to give any information or to make any representation other than those contained in this Offering Memorandum in connection with the offering of the Notes, and any information or representation not contained in this Offering Memorandum must not be relied upon as having been authorized by us or BNP Paribas, Citigroup Global Markets Singapore Pte. Ltd. ("Citigroup"), MUFG Securities Asia (Singapore) Limited ("MUFG") as the joint global coordinators of this offering (the "Joint Global Coordinators") and BNP Paribas, CIMB Bank Berhad, Labuan Offshore Branch ("CIMB"), Citigroup, Malayan Banking Berhad ("Maybank"), MUFG, SMBC Nikko Capital Markets Limited ("SMBC Nikko") and Standard Chartered Bank ("SCB") as the joint bookrunners and joint lead managers of this offering (the "Joint Bookrunners and Joint Lead Managers"). Neither the delivery of this Offering Memorandum nor any sale of the Notes pursuant to this offering shall, under any circumstances, constitute a representation or create any implication that the information contained herein is correct as of any time subsequent to the date hereof or that there has been no change in the affairs of any party mentioned herein since that date.

No representation, warranty or undertaking, express or implied, is made by any of the Joint Bookrunners and Joint Lead Managers, the Trustee or the Agents (in such capacity) (as defined herein), and no responsibility or liability is accepted by any thereof to the accuracy, adequacy, reasonableness or completeness of the information contained in this Offering Memorandum or any other information provided by us in connection with the Notes, their distribution or their future performance.

Neither this Offering Memorandum nor any other information supplied in connection with the Notes should be considered as a recommendation by us, the Joint Bookrunners and Joint Lead Managers, the Trustee or the Agents that any recipient of this Offering Memorandum should purchase any of the Notes. Each investor contemplating purchasing any Notes should make its own independent investigation of our business, results of operations, financial condition and affairs and its own appraisal of our creditworthiness.

Each person receiving this Offering Memorandum acknowledges that: (i) such person has been afforded an opportunity to request from us and to review, and has received, all additional information considered by it to be necessary to verify the accuracy of, or to supplement, the information contained herein; (ii) such person has not relied on the Joint Bookrunners and Joint Lead Managers, the Trustee, the Agents or any person affiliated with the Joint Bookrunners and Joint Lead Managers, the Trustee, or the Agents in connection with any investigation of the accuracy of such information or its investment decision; and (iii) no person has been authorized to give

any information or to make any representation concerning us or the Notes (other than as contained herein and information given by our duly authorized officers and employees in connection with investors' examination of our Company and the terms of the offering of the Notes) and, if given or made, any such other information or representation should not be relied upon as having been authorized by us, the Joint Bookrunners and Joint Lead Managers, the Trustee or the Agents.

The Notes have not been approved or disapproved by the United States Securities and Exchange Commission ("SEC"), any state securities commission in the United States or any other U.S. regulatory authority, nor have any of the foregoing authorities passed upon or endorsed the merits of the offering of the Notes or the accuracy or adequacy of this Offering Memorandum. Any representation to the contrary is a criminal offense in the United States.

Notification under Section 309B(1)(c) of the Securities and Futures Act, Chapter 289 of Singapore (the "SFA") — the Issuer has determined, and hereby notifies all relevant persons (as defined in Section 309A(1) of the SFA), that the Notes are prescribed capital markets products (as defined in the Securities and Futures (Capital Markets Products) Regulations 2018 of Singapore) and Excluded Investment Products (as defined in MAS Notice SFA 04-N12: Notice on the Sale of Investment Products and MAS Notice FAA-N16: Notice on Recommendations on Investment Products).

In connection with this offering, Citigroup, as stabilizing manager on behalf of the Joint Bookrunners and Joint Lead Managers, or any person acting for them (the "Stabilizing Manager") may over-allot Notes or effect transactions with a view to supporting the market price of the Notes at a level higher than that which might otherwise prevail. However, there is no assurance that the Stabilizing Manager will undertake stabilization action. Any stabilization action may begin on or after the date on which adequate disclosure of the terms of the offer of the Notes is made and, if begun, may be discontinued at any time, and must be brought to an end after a limited period. Any stabilization action or over-allotment must be conducted by the relevant Stabilizing Manager in accordance with all applicable laws, regulations and rules.

If a jurisdiction requires that the offering be made by a licensed broker or dealer and any of the Joint Bookrunners and Joint Lead Managers, or any affiliate of the Joint Bookrunners and Joint Lead Managers, is a licensed broker or dealer in that jurisdiction, the offering shall be deemed to be made by that Joint Bookrunner, Joint Lead Manager, or its affiliate on our behalf in such jurisdiction.

NOTICE TO PROSPECTIVE INDONESIAN INVESTORS

The Notes have not been offered or sold and will not be offered or sold in Indonesia or to any Indonesian nationals, corporations or residents, including by way of invitation, offering or advertisement, and this Offering Memorandum and any other offering material relating to the Notes has not been distributed, and will not be distributed, in Indonesia or to any Indonesian nationals, corporations or residents in a manner which would constitute a public offering in Indonesia under the Indonesian Capital Markets Law and its implementing regulation. The Indonesian Financial Services Authority (*Otoritas Jasa Keuangan* or "OJK") does not review or declare its approval or disapproval of the issue of the Notes, nor does it make any determination as to the accuracy or adequacy of this Offering Memorandum. Any statement to the contrary is a violation of Indonesian law.

ENFORCEABILITY OF FOREIGN JUDGMENTS IN INDONESIA

We are a state-owned limited liability company incorporated in Indonesia. All of our commissioners, directors and executive officers reside in Indonesia. Substantially all of the assets of the Issuer and these other persons are located outside the United States. As a result, it may be difficult for investors to effect service of process upon such persons within the United States, or to enforce against us in court, judgments obtained in U.S. courts, including judgments predicated upon the civil liability provisions of the federal securities laws of the United States.

We have been advised by our Indonesian legal advisor, Assegaf Hamzah & Partners, that judgments of courts outside Indonesia are not enforceable in Indonesian courts. A foreign court judgment could be offered and

accepted into evidence in a proceeding on the underlying claim in an Indonesian court and may be given such evidentiary weight as the Indonesian court may deem appropriate in its sole discretion. A claimant may be required to pursue claims in Indonesian courts on the basis of Indonesian law. A purchaser of the Notes may not be able to enforce judgments against us obtained in the United States based upon certain of the civil liability provisions of the securities laws of the United States or any states thereof in Indonesian courts, and Indonesian courts may not enter judgments in original actions brought in Indonesian courts based solely upon the civil liability provision of the securities laws of the United States or any state thereof. Re-examination of the underlying claim would be required before the Indonesian court. We cannot assure you that the claims or remedies available under Indonesian law will be the same, or as extensive as those available in other jurisdictions. We cannot assure you that the claims or remedies available under Indonesian law will be the same, or as extensive as those available in other jurisdictions. For more details, see "Risk Factors — Risks Relating to Indonesia — It may not be possible for investors to effect service of process or to enforce certain judgments against us or our management" and "Risk Factors — Risks Relating to Indonesia — Holders of the Notes will be exposed to a legal system subject to considerable discretion and uncertainty and may have difficulty pursuing claims under the Notes."

INDONESIAN REGULATION OF OFFSHORE BORROWINGS

Pursuant to Presidential Decree No. 39/1991 on Coordination of the Management Commercial Offshore Loan dated September 4, 1991, we are required to obtain prior approval from the Offshore Commercial Borrowing Team (the "PKLN Team") to receive offshore borrowings and must submit periodic reports to the PKLN Team. However, the decree does not stipulate either the time frame or the format and the content of the periodic report that must be submitted. Under Presidential Decree No. 59/1972 dated October 12, 1972 ("PD 59/1972"), we are required to obtain approval from the Minister of Finance of Indonesia and report the particulars of our offshore commercial borrowings to the Minister of Finance of Indonesia and Bank Indonesia, on the acceptance, implementation, and repayment of principal and interest. In practice, this approval from the Minister of Finance under PD 59/1972 is deemed to have been obtained when approval from the PKLN Team is received because the Minister of Finance of Indonesia, together with the Coordinating Minister for Economic Affairs and the Governor of Bank Indonesia, is a member of the PKLN Team. Ministry of Finance Decree No. KEP-261/MK/IV/5/1973 dated May 3, 1973, as amended by the Ministry of Finance Decree No. 417/KMK.013/1989 dated May 1, 1989 and the Ministry of Finance Decree No. 279/KMK.01/1991 dated March 18, 1991, is the implementing regulation for PD 59/1972 and sets forth the requirement to submit periodic reports to the Minister of Finance of Indonesia and Bank Indonesia on the effective date of the contract and each subsequent three-month period. Pursuant to the PKLN Team Letter No. S-136/D.I.M.EKON/05/2018 dated May 8, 2018 and No. S-248/D.I.M.EKON/09/2018 dated September 25, 2018, the Notes do not require the approval of the PKLN Team.

On December 31, 2014, Bank Indonesia issued Bank Indonesia Regulation No. 16/22/PBI/2014 regarding the Reporting on Foreign Exchange Activities and Reporting on the Implementation of Prudential Principles in the Management of Non-Bank Corporation's Offshore Debt ("PBI 16/22"). This regulation supersedes the Bank Indonesia Regulation No. 14/21/PBI/2012 regarding the Reporting on Foreign Exchange Activities ("PBI 14/21") which took effect on January 1, 2015. However, Bank Indonesia Circular Letter No. 15/16/DInt dated April 29, 2013 on the Reporting of Foreign Exchange Activities in the form of Offshore Debt Realization and Position ("SEBI 15/16/DInt"), which implemented PBI 16/22, will remain valid to the extent that it does not contravene PBI 16/22. Bank Indonesia has issued implementing regulations for PBI 16/22, namely (i) the Bank Indonesia Circular Letter No. 17/4/DSta dated March 6, 2015 on the Reporting of Foreign Exchange Activities in the form of Offshore Debt Plan and the Amendment thereto ("SEBI 17/4/DSta") which supersedes Bank Indonesia Circular Letter No. 15/17/Dint dated April 29, 2013; (ii) Bank Indonesia Circular No. 17/3/DSta dated March 6, 2015 on the Reporting of the Implementation of Prudential Principles in the Management of Non-Bank Corporation's Offshore Debt as amended by Bank Indonesia Circular No. 17/24/DSta dated October 12, 2015 ("SEBI 17/3/DSta"); and (iii) Bank Indonesia Circular Letter No. 17/26/DSta dated October 15, 2015 on the Reporting on Foreign Exchange Activities other than Offshore Debt ("SEBI 17/26/DSta"), which supersedes Bank Indonesia Circular Letter No. 15/5/DSM dated March 7, 2013.

PBI 16/22 requires all Indonesian residents who engage in foreign exchange activities, whether individual or entities, to report (i) any trading of goods, services and other transaction between an Indonesian resident and a non-resident; (ii) any position and changes to offshore financial assets and/or offshore financial liabilities; and/or (iii) any offshore debt plan and/or its realization to Bank Indonesia. The report on foreign exchange activities must be submitted using an online system in accordance with each implementing regulations of PBI 16/22 as applicable, namely SEBI 17/26/DSta, SEBI 15/16/Dint and SEBI 17/4/DSta.

Pursuant to SEBI 17/26/DSta, the following reports must be submitted to Bank Indonesia: (i) a report on trading transactions of goods, services, and other transactions between Indonesian residents and non-residents, (ii) a report on positions held and changes to offshore financial assets, (iii) a report on positions held and changes to equity of non-residents and other related obligations, (iv) a report on positions held and changes to offshore derivative obligations, (v) a report on positions held in offshore contingencies and commitments and (vi) a report on positions held in securities owned by custodian customers. The report specified in (v) covers corporate guarantees and any corporate guarantee given to a foreign lender that must be reported to Bank Indonesia. Such reports and/or corrections of such reports (if any) are to be submitted through Bank Indonesia's website in a format that is specified under SEBI 17/26/DSta.

According to SEBI 15/16/DInt, any individual or entity that obtains offshore debt in a foreign currency and/or Rupiah pursuant to loan agreements, debt securities, trade credits or other loans, except two-step loans incurred by the Government of Indonesia (the "Government") (which refer to loans made by international financial institutions that are distributed to Indonesian commercial and rural banks through Bank Indonesia to support the Government's programs), clearing accounts, savings and deposits, must submit reports to Bank Indonesia. There is no minimum amount requirement to trigger the reporting obligation with regard to offshore debt obtained by an entity (whether a financial or non-financial institution). In contrast, an individual's offshore debt is only required to be reported if such debt exceeds an amount of US$200,000 or its equivalent in any other currency. The reports consist of the main data report and/or amendments and the monthly recapitulation data report. The main data report must be submitted to Bank Indonesia by no later than the 15th day of the following month at 14:00 Western Indonesia time after the signing of the loan agreement or the issuance of the debt securities and/or the debt acknowledgment over the trade credits and/or other loans, and a monthly recapitulation data report must be submitted to Bank Indonesia by no later than the 15th day of the following month at 24:00 Western Indonesia time, until the offshore debt has been repaid in full. According to SEBI 17/4/DSta, a company that intends to obtain a long-term offshore debt, namely a debt with a term of more than one year, is required to submit reports on offshore debt plans to Bank Indonesia, through an online system by no later than March 15th of the respective year, while any changes thereto must be submitted through an online system at the latest by July 1st of the respective year. The procedure to submit such reports is stipulated in SEBI 17/4/DSta.

In addition to reporting on foreign exchange activities, for the purpose of PBI 16/21 (as defined below), PBI 16/22 also requires reporting on the implementation of the prudential principles. Under the SEBI 17/3/DSta, non-bank corporations must submit:

(1) the prudential principle implementation activity report ("KPPK report") including (i) a non-attested KPPK Report, which is to be submitted on quarterly basis, no later than the end of the third month after the end of the relevant quarter; and (ii) an attested KPPK report (attested by a public accountant), which is to be submitted no later than the end of June of the following year;

(2) information on the fulfillment of credit ratings, which is to be submitted at the latest at the end of the month following the execution or issuance of the offshore debt; and

(3) the financial statements of the company, consisting of: (i) unaudited financial statements, to be submitted on a quarterly basis, by no later than the end of the third month after the end of the relevant quarter; and (ii) annual audited financial statements, which must be submitted by no later than end of June of the following year.

Bank Indonesia examines the accuracy of the foreign exchange activities report and the prudential principle implementation activity report. It can also request clarifications, evidence, records or other supporting documents

from the relevant party or institutions, including direct inspection to the company or appoint a third-party to do so.

As of January 1, 2016, submissions of and corrections to the prudential principle implementation activity report shall be made online. The requirement to submit credit ratings fulfillment only applies to offshore debt executed or issued as of January 1, 2016.

On December 23, 2015, Bank Indonesia issued Bank Indonesia Regulation No. 17/23/PBI/2015 to amend Bank Indonesia Regulation No. 16/10/PBI/2014 on Foreign Exchange Export Revenue and Drawdown of Offshore Debt which was issued on May 14, 2014 ("PBI 16/10/2014"). PBI 16/10/2014 revokes and replaces Bank Indonesia Regulation No. 13/22/PBI/2011 and Bank Indonesia Regulation No. 14/25/PBI/2012. On April 6, 2015, Bank Indonesia issued Bank Indonesia Circular Letter No. 18/5/DSta on the Receipt of Offshore Debt to revoke and replace Bank Indonesia Circular Letter No. 16/10/DSta dated May 26, 2014 on Drawdown of Offshore Debt, as the implementing regulation of PBI 16/10/2014. Based on PBI 16/10/2014, any drawdown from offshore debt (in foreign currencies) originating from (i) a non-revolving loan agreement (including offshore debt originating from a difference between the refinanced debt and the previous debt) or (ii) offshore debt securities (including acknowledgments of debt which is tradable in domestic or international financial and capital markets, among others, in the form of bonds, medium term notes, floating rate notes, promissory notes and commercial paper) must be withdrawn through foreign exchange banks (which include offshore bank branches in Indonesia) and must be reported to Bank Indonesia with the relevant supporting documents. The aggregate face amount of the offshore debt should be equal to the local commitments provided under such debt and every receipt of offshore debt through a foreign exchange bank should be equal to each offshore debt withdrawal. In the event that the aggregate face amount of the offshore debt is less than the local commitments in excess of Rp.50.0 million (or its equivalent in foreign currencies), the borrower must submit a written explanation and sufficient supporting documentation to Bank Indonesia before the expiration of the term of such debt. In the event that each receipt amount of offshore debt received through foreign exchange banks is less the amount of each offshore debt withdrawal, such receipt amount of offshore debt received through foreign exchange banks will be deemed equal to the amount of each offshore debt withdrawal if the borrower submits sufficient supporting documents to Bank Indonesia. Withdrawals of the above offshore debt must be reported to Bank Indonesia monthly using the recapitulation data report as regulated under SEBI 15/16/DInt. These reports shall include supporting documents detailing that the receipt of offshore debt was withdrawn from the foreign exchange bank. Administrative sanctions will be imposed on companies that fail to comply with such reporting obligations.

With respect to the foregoing reporting obligations to Bank Indonesia, the sanction that may be imposed by Bank Indonesia is as follows:

(1) any delay and failure to submit a foreign exchange report on an offshore debt plan is an administrative sanction in the form of warning letter and/or notification to the relevant authority or institution which will be issued by Bank Indonesia;

(2) any incompleteness and/or inaccuracy of information on a foreign exchange report (except for an offshore debt plan) which is not corrected is an administrative sanction in the form of penalty at the amount of Rp.50,000.0 per incomplete and/or inaccuracy record, provided that the maximum amount of penalty imposed will not exceed Rp.10.0 million;

(3) any incompleteness and/or inaccuracy of information on the KPPK Report, is an administrative sanction in the form of a penalty of Rp.500,000.0 per incompleteness and/or inaccuracy;

(4) any delay to submit the foreign exchange report (except for offshore debt plan) and the KPPK Report (whether non-attested or attested), including its supporting documents and financial statements (except for information on credit rating), is an administrative sanction in the form of a penalty of Rp.500,000.0 per day of delay, provided that the maximum amount of any penalty imposed will not exceed Rp.5.0 million;

(5) any failure to submit the foreign exchange report (except for offshore debt plan) and the KPPK Report (whether non-attested or attested), including its supporting documents and financial statements (except

for information on credit rating), is an administrative sanction in the form of a penalty of Rp.10.0 million;

(6) in addition to a penalty, an administrative sanction in the form of a warning letter and/or notification to the relevant authority or institution will be issued by Bank Indonesia for any delay and failure to submit the KPPK Report (whether non-attested or attested), including its supporting documents and financial statement (except for information on credit rating);

(7) any delay and failure to submit information on credit rating is administrative sanction in form of warning letter and/or notification to the relevant authority or institution which will be issued by Bank Indonesia; and

(8) any failure to comply with the obligation to withdraw the offshore debt through a foreign exchange bank in Indonesia is an administrative sanction in the form of a penalty of 0.25% (zero point two five percent) of the withdrawal amount which does not pass through a foreign exchange bank in Indonesia, provided that the maximum amount of the penalty imposed will not exceed Rp.50.0 million.

The sanction imposed by Bank Indonesia in connection with the report on prudential principle implementation activity, including the supporting documents (except for information on credit rating) has been effective since the delivery of third quarter data reports of 2015, while the sanction in connection with the report on prudential principles implementation with respect to credit rating has been effective since January 1, 2016.

Details on the report on prudential principles implementation is regulated by Bank Indonesia Regulation No. 16/21/PBI/2014 on the Implementation of Prudential Principles in the Management of Non-Bank Corporation's Offshore Debt as amended by Bank Indonesia Regulation No. 18/4/PBI/2016 dated April 22, 2016 ("PBI 16/21"), which is applicable to non-bank corporations that obtain offshore debt in a foreign currency (non-Indonesian Rupiah). PBI 16/21 effectively replaces PBI 16/20/PBI/2014, which was issued on October 28, 2014. With respect to the implementation of PBI 16/21, Bank Indonesia also issued (i) Bank Indonesia Circular Letter No. 16/24/DKEM dated December 30, 2014, as initially amended by Bank Indonesia Circular Letter No. 17/18/DKEM dated June 30, 2015 ("SEBI 16/24/DKEM") and lastly amended by Bank Indonesia Circular Letter No. 18/6/DKEM dated April 22, 2016 ("SEBI 18/6/DKEM") and (ii) SEBI 17/3/DSta.

PBI 16/21 requires non-bank corporations that have offshore debt in a foreign currency (non-Indonesian Rupiah) to maintain the following prudential principles, namely: (i) minimum hedging requirement, (ii) minimum liquidity requirement and (iii) minimum credit ratings. The hedging requirement does not apply to non-bank corporations whose financial statements are presented in U.S. dollars and who fulfill the following criteria: (i) having an export revenue to business revenue ratio of more than 50.0% in the previous calendar year, and (ii) having obtained approval from the Ministry of Finance to use U.S. dollars in their financial statement, which approval shall be evidenced by submitting supporting documents to Bank Indonesia.

Prior to December 31, 2015, the minimum hedging ratio was set at 20.0% of (i) the negative difference between the foreign exchange assets and the foreign exchange liabilities that will become due within three months from the end of the relevant quarter and (ii) the negative difference between the foreign exchange assets and the foreign exchange liabilities that will become due in the period of more than three months up to six months after the end of the relevant quarter. After December 31, 2015, the minimum hedging ratio is set at 25.0% of (i) the negative difference between the foreign exchange assets and the foreign exchange liabilities that will become due within three months from the end of the relevant quarter and (ii) the negative difference between the foreign exchange assets and the foreign exchange liabilities that will become due in the period of more than three months up to six months after the end of the relevant quarter. Foreign currency assets comprise of cash, demand deposits, regular deposits, term deposits, account receivables, inventories, marketable securities and receivables from forwards, swaps and/or options transactions in a foreign currency (non-Indonesian Rupiah) calculated based on position at the end of the relevant quarter. The account receivables which may be calculated as foreign currency assets are account receivables to resident and non-resident which will be due (a) within three months from the end of the relevant quarter and/or (b) in the period of more than three months up to six months after the end of the relevant quarter, which are true-sale in nature or non-refundable and after deducted with

amortization. Accounts receivable may be calculated as foreign currency assets if such underlying agreement was executed prior to July 1, 2015. Account receivables with underlying agreements executed on or after July 1, 2015 may be counted as foreign exchange assets if (a) they are related to strategic infrastructure projects and have obtained Bank Indonesia approval or (b) the transaction which underlies the foreign currency assets is permitted to be in foreign currency pursuant to Bank Indonesia Regulation No. 17/3/PBI/2015 on the Mandatory Use of Rupiah in the territory of the Republic of Indonesia ("PBI 17/3"). Inventory which may be calculated as a foreign currency asset is inventory from exporters with export income to business revenue ratio of more than 50.0% in the previous calendar year.

SEBI 16/24/DKEM defines foreign currency liabilities as liabilities in foreign currency to residents and non-residents, including liability deriving from forwards, swaps and/or options transactions maturing (a) within three months from the end of the relevant quarter; and (b) between three and six months from the end of the relevant quarter. Foreign currency liability which will be due may not be calculated as foreign currency liability if (a) it is in the process of roll over, revolving, or refinancing, to the extent the transaction which underlies it is in accordance with PBI 17/3; and/or (b) it constitutes foreign currency liability with respect to project financing which will be due within the next 6 months to the extent secured by offshore debt drawdown in foreign currency where the schedule of such drawdown is adjusted to the payable foreign currency liabilities and the transaction activities are in accordance with PBI 17/3. These two points must be proven by sufficient supporting documentation. SEBI 16/24/DKEM determines that only corporations that have negative difference of more than US$100,000.0 are obliged to fulfill the minimum hedging requirement. In addition, PBI 16/21 also regulates that hedging transactions for the fulfillment of the minimum hedging requirement shall be conducted with banks in Indonesia and became effective in 2017.

On the minimum liquidity requirement, non-bank corporations that have offshore debt in foreign currency are also required to comply with the minimum liquidity ratio of at least 70.0% by providing sufficient foreign exchange assets against foreign exchange liabilities that will become due within three months from the end of the relevant quarter. The minimum liquidity ratio of 70.0% was effective on January 1, 2016, while the applicable minimum liquidity ratio in 2015 was 50.0%.

The minimum credit rating requirement is BB- (BB minus) or an equivalent rating from a rating agency recognized by Bank Indonesia. Such credit rating will be in the form of the applicable rating over the relevant corporation (issuer rating) and/or bonds (issue rating) in accordance with the type and period of such foreign currency offshore debt. Such rating shall be valid for two years as of the rating issuance. PBI 16/21 sets additional provisions where corporation may use their parent company credit rating if (i) such corporation enters into an offshore debt in foreign currency with its parent company, or if the offshore debt is guaranteed by the parent company, or (ii) such corporation is a newly established corporation with a maximum three years since the corporation begins its commercial operation. The requirement to fulfill the minimum credit rating requirement is exempted for (i) the refinancing of offshore debt in foreign currency (such exemption is limited to refinancing which does not increase the outstanding amount of the previous debt or if it increases, such increase shall not exceed (a) US.$2,000,000.0 or its equivalent or (b) 5.0% of the outstanding of such refinanced debt if such 5.0% figure is higher than US.$2,000,000 or its equivalent); (ii) offshore debt in foreign currency for infrastructure project financing derived (a) all from an international bilateral/multilateral lending agency or (b) from syndications loan where more than 50.0% of the contribution comes from international bilateral/multilateral institutions; (iii) offshore debt in foreign currency for central or regional government infrastructure project financing; (iv) offshore debt in foreign currency which is secured by international bilateral/multilateral institutions; (v) offshore debt in foreign currency in form of trade credits; (vi) offshore debt in foreign currency in form of other loans; (vii) offshore debt in foreign currency by a finance company (a business entity which conducts financing activities for the procurement of goods and services) to the extent (a) such finance company has minimum financial soundness of "healthy" as lastly issued by OJK; (b) such finance company fulfills the maximum gearing ratio as regulated by OJK); or (viii) offshore debt in foreign currency by Lembaga Pembiayaan Ekspor Indonesia (Indonesia Eximbank). Non-bank corporations that have offshore debt in foreign currency are obliged to submit report to Bank Indonesia on the implementation of prudential principles and the exemptions, together with the relevant supporting documents. Non-compliance of the requirements will be

subject to administrative sanction in the form of warning letter. PBI 16/21 does not specify any other sanction in the event the non-bank corporations ignore such warning letter, however Bank Indonesia may inform related-parties, such as relevant offshore creditors, the Ministry of State-Owned Companies (for state-owned non-bank corporation), the Ministry of Finance on behalf of Directorate General of Tax, OJK and the Indonesian Stock Exchange (the "IDX") (for publicly listed non-bank corporation) on the implementation of administrative sanctions. PBI 16/21 became effective as of January 1, 2015, with exceptions for the implementation of (i) the administrative sanction requirement, which became effective starting from the delivery of the fourth quarter report of 2015, and (ii) the minimum credit rating requirement, which applies to offshore debt that is signed or issued on or after January 1, 2016.

LANGUAGE OF TRANSACTION DOCUMENTS

Pursuant to Law No. 24 of 2009, regarding Flag, Language, Coat of Arms and National Anthem enacted on July 9, 2009 ("Law No. 24"), agreements to which Indonesian entities are a party are required to be executed in Bahasa Indonesia, although dual language documents are permitted when a foreign entity is a party. We will execute dual English and Bahasa Indonesia versions of all transaction agreements to which the Issuer is a party. All of these documents will provide that in the event of a discrepancy or inconsistency, the parties intend that the English version would prevail. There exists substantial uncertainty regarding how Law No. 24 will be interpreted and applied in general, and to date, the Government has only issued one implementing regulation on the use of Bahasa Indonesia in the formal speech of the President and/or Vice President and other state officers. In addition to this implementing regulation, the Minister of State-Owned Enterprises has also issued a Circular Letter No. SE-12/MBU/2009 dated November 3, 2009, which recommends that any state-owned enterprise must use Bahasa Indonesia in every memorandum of understanding or agreement to which such state-owned enterprise is a party. The Indonesian Ministry of Law and Human Rights has issued a clarification letter dated December 28, 2009 regarding Clarification for Implication and Implementation of Law No. 24 to clarify that the implementation of Law No. 24 is contingent upon the enactment of a Presidential Regulation and until such a Presidential Regulation is enacted, any agreement that is executed prior to the enactment of the Presidential Regulation in English without a Bahasa Indonesia version, is still legal and valid, and shall not violate Law No. 24. However, we cannot be certain that an Indonesian court would permit the English version to prevail or even consider the English version. See "Risk Factors — Risks Relating to the Notes — The Indentures and certain other documents entered into in connection with the issue of the Notes thereunder will also be prepared in Bahasa Indonesia as required under Indonesian law. However, we cannot assure you that, in the event of inconsistencies between the Bahasa Indonesia and English language versions of these documents, an Indonesian court would hold that the English language versions of such documents would prevail."

RESERVES STATEMENTS

We report our coal reserves for our principal coal mining concessions, which are situated in our Tanjung Enim Coal Mine (as defined herein) located in South Sumatra, in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, 2012 Edition (the "2012 JORC Code"), prepared by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia ("JORC"). We report our nickel, gold, silver and bauxite reserves in accordance with the 2012 JORC Code. We report our tin reserves in accordance with Kode Komite Cadangan Mineral Indonesia (the "2011 KCMI Code"), which is largely based on translations of the 2012 JORC Code and substantially adopts the 2012 JORC Code's definition of "mineral resource," "inferred mineral resource," "indicated mineral resource," "measured mineral resource," "ore reserve," "probable ore reserve" and "proved ore reserve," discussed below. PT Freeport Indonesia ("PTFI") reports its copper, gold and silver reserves in accordance with the specific disclosure requirements of Industry Guide 7 under the Securities Act.

Pursuant to the 2012 JORC Code:

- a "mineral resource" is a concentration or occurrence of material of intrinsic economic interest in or on the earth's crust in such form, quality and quantity that there are reasonable prospects for eventual

economic extraction. The location, quantity, grade, geological characteristics and continuity of a mineral resource are known, estimated or interpreted from specific geological evidence and knowledge. The term mineral resource covers mineralization, including dumps and tailings, which has been identified and estimated through exploration and sampling and within which ore reserves may be defined by the consideration and application of mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. Mineral resources are sub-divided, in order of increasing geological confidence, into inferred, indicated and measured categories;

- an "inferred mineral resource" is that part of a mineral resource for which tonnage, grade and mineral content can be estimated with a low level of confidence. The estimate is inferred from geological evidence and assumed but not verified geological and/or grade continuity. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes which may be limited or of uncertain quality and reliability. An inferred mineral resource indicates a lower level of confidence than that applying to an indicated mineral resource;
- an "indicated mineral resource" is that part of a mineral resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a reasonable level of confidence. The estimate is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are too widely or inappropriately spaced to confirm geological and/or grade continuity but are spaced closely enough for continuity to be assumed. An indicated mineral resource indicates a lower level of confidence than that applying to a measured mineral resource, but has a higher level of confidence than that applying to an inferred mineral resource;
- a "measured mineral resource" is that part of a mineral resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a high level of confidence. The estimate is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. The locations are spaced closely enough to confirm geological and/or grade continuity;
- an "ore reserve" is the economically mineable part of a measured and/or indicated mineral resource. Ore reserves are those portions of mineral resources which, after the application of all mining factors, result in an estimated tonnage and grade which, in the opinion of the Competent Person (as defined in the 2012 JORC Code) making the estimates, can be the basis of a viable project after taking account of all relevant mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. Ore reserve includes diluting materials and allowances for losses which may occur when the material is mined. Appropriate assessments and studies have been carried out, and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction could reasonably be justified. Ore reserves are sub-divided in order of increasing confidence into probable ore reserves and proved ore reserves;
- a "probable ore reserve" is the economically mineable part of an indicated, and in some circumstances, a measured mineral resource. It includes diluting materials and allowances for losses which may occur when the material is mined. Appropriate assessments and studies have been carried out, and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction could reasonably be justified. A probable ore reserve indicates a lower level of confidence than a proved ore reserve but is of sufficient quality to serve as the basis for a decision on the development of the deposit; and
- a "proved ore reserve" is the economically mineable part of a measured mineral resource. It includes diluting materials and allowances for losses which may occur when the material is mined. Appropriate assessments and studies have been carried out, and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and

governmental factors. These assessments demonstrate at the time of reporting that extraction could reasonably be justified. A proved ore reserve represents the highest confidence category of reserve estimate.

Reserves/Resources Statements

In this Offering Memorandum, we have derived the information relating to our estimates of:

- coal reserves and resources from (i) for our Tanjung Enim coal mining concessions, the Statement of Open-Cut Coal Reserves Estimation — Tanjung Enim Mining Unit, South Sumatra, Indonesia, as of November 30, 2015 (the "2015 Tanjung Enim Coal Reserves Statement"), which was prepared by PT Britmindo, an independent mining consultant, see "Independent Mining Consultants," in accordance with the 2012 JORC Code and (ii) for all our other mining concessions, other pre-existing reserves reports, which were prepared by third-party mining consultants or our own in-house Competent Persons. The 2015 Tanjung Enim Reserves Statement and such other pre-existing reserves reports are included in this Offering Memorandum as Annexes to the Coal Resources and Reserves Balance of PT Bukit Asam Tbk as of December 31, 2017, attached as Appendix A to this Offering Memorandum (the "2017 Coal Reserves Statement"), which was prepared by our in-house Competent Persons based on our internal estimates of coal mined from each concession since the date of the relevant pre-existing reserves report;
- nickel, gold, silver and bauxite reserves and resources from the Statement of Mineral Resources and Ore Reserves of PT Aneka Tambang Tbk, as of December 31, 2017, for our nickel, gold and bauxite mining concessions, attached as Appendix C to this Offering Memorandum (the "2017 Nickel, Gold, Silver and Bauxite Reserves Statement"), which was prepared by our in-house Competent Person, in accordance with the 2012 JORC Code;
- tin reserves and resources from the Statement of Tin Resources and Reserves of PT Timah Tbk, as of December 31, 2017, for our tin mining concessions, attached as Appendix D to this Offering Memorandum (the "2017 Tin Reserves Statement"), which was prepared by our in-house Competent Persons, in accordance with the 2011 KCMI Code; and
- PTFI's copper, gold and silver reserves and resources at its Grasberg Mine from the Review and Verification of Reserves dated December 31, 2017, attached as Appendix D to this Offering Memorandum (the "2017 Grasberg Copper, Gold and Silver Reserves Statement"), which was prepared by Independent Mining Consultants, Inc., an independent mining consultant, see "Independent Mining Consultants," in accordance with the specific disclosure requirements of Industry Guide 7 under the Securities Act.

Estimates of mineral reserves, resources, recoveries and operating costs are largely dependent on the interpretation of geological data obtained from drill holes and other sampling techniques, and feasibility studies which derive estimates of operating costs based on anticipated tonnage, expected recovery rates, equipment operating costs and other factors. We cannot assure you that the reserves and resources presented in this Offering Memorandum will be recovered at the quality or yield presented. In addition, investors should not assume that the resource estimates are capable of being directly reclassified as reserves under the 2012 JORC Code or the 2011 KCMI Code. The inclusion of resource estimates should not be regarded as a representation that these amounts can be economically exploited, particularly, inferred resources, and you are cautioned not to place undue reliance on those estimates.

Our and our mining contractors' ability to achieve forward-looking production and economic targets is dependent on numerous factors that are beyond the control of and cannot be fully anticipated by our independent mining consultants or in-house Competent Persons. These factors include the site-specific mining and geological conditions, the capabilities of management and employees, availability of funding to properly operate and capitalize the operation, variations in cost elements and market conditions, development and operation of the mine in an efficient manner and others. Any unforeseen changes in the legislation and new industry developments could also substantially alter the performance of any mining operation.

Assumptions Underlying Mineral Reserves Estimates

We estimate our mineral reserves using various assumptions regarding loss and dilution, drilling depth and other geotechnical constraints. Our reserves are sensitive to the cost and revenue assumptions used due to the geological structure of our deposits, which means that, all other factors being the same, if the cost assumption is higher or the price assumption is lower, we estimate lower reserves, and if the cost assumption is lower or the price assumption is higher, we estimate more reserves. Some of our deposits are more sensitive to the cost and revenue assumptions used than others due to the characteristics and geological structure of those deposits. For more information regarding the factors used to estimate our mineral reserves presented in this Offering Memorandum, see the Reserves Statements attached as Appendix A, Appendix B, Appendix C and Appendix D to this Offering Memorandum.

Cautionary Note to United States Investors Concerning Estimates of Measured, Indicated and Inferred Resources

There are differences between reporting regimes for reserve estimates in the United States, Australia and Indonesia. The principal difference between the reporting regimes in (i) Australia under the 2012 JORC Code and Indonesia under the 2011 KCMI Code and in (ii) the United States under the requirements as adopted by the SEC in its Industry Guide 7 — Description of Property by Issuers Engaged or to be Engaged in Significant Mining Operations ("Industry Guide 7") is the absence in the United States of any provision for the reporting of estimates other than proved (measured) or probable (indicated) reserves. There is, therefore, no equivalent for "resources" under the SEC's Industry Guide 7. The SEC has applied the following reporting definitions to reserves under Industry Guide 7:

- a "reserve" is "that part of a mineral deposit which could be economically and legally extracted or produced at the time of the reserve determination. Reserves are customarily stated in terms of "ore" when dealing with metalliferous minerals; when other materials such as coal, oil, shale, tar, sands, limestone, etc. are involved, an appropriate term such as "recoverable coal" may be substituted";
- "proven (measured) reserves" are "reserves for which:
  - (a) quantity is computed from dimensions revealed in outcrops, trenches, workings or drill holes; grade and/or quality are computed from the results of detailed sampling; and
  - (b) the sites for inspection, sampling and measurement are spaced so closely and the geologic character is so well defined that size, shape, depth and mineral content of reserves are well established"; and
- "probable (indicated) reserves" are "reserves for which quantity and grade and/or quality are computed from information similar to that used for proven (measured) reserves, but the sites for inspection, sampling, and measurement are farther apart or are otherwise less adequately spaced. The degree of assurance, although lower than that for proven (measured) reserves, is high enough to assume continuity between points of observation."

This Offering Memorandum, including Appendix A, Appendix B, Appendix C and Appendix D uses the terms "measured," "indicated" and "inferred" resources. United States investors are advised that while such terms are recognized by some investors, the SEC does not recognize them. "Inferred resources" have a great amount of uncertainty as to their existence and great uncertainty as to their economic and legal feasibility. It cannot be assumed that all or any part of an inferred resource will ever be upgraded to a higher category. Under SEC rules, estimates of inferred mineral resources may not form the basis of feasibility or other economic studies. **You should not assume that all or any part of measured or indicated resources will ever be converted into reserves. You are also cautioned not to assume that all or any part of an inferred resource exists or is economically or legally mineable.**

CERTAIN DEFINED TERMS AND CONVENTIONS

As used in this Offering Memorandum, unless the context otherwise requires, the terms "we," "us," "our," "our Company" and "our Group" refer to PT Indonesia Asahan Aluminium (Persero) and its subsidiaries, including PT Bukit Asam Tbk ("Bukit Asam"), PT Timah Tbk ("Timah") and PT Aneka Tambang Tbk ("Antam") taken as a whole as of the date of this Offering Memorandum; and the terms "Issuer" and "Inalum" refer only to PT Indonesia Asahan Aluminium (Persero).

In this Offering Memorandum, references to "US$," "$" and "U.S. dollars" are to United States dollars, the legal currency of the United States, and references to "Rupiah" and "Rp." are to Indonesian Rupiah, the legal currency of Indonesia. Unless otherwise specified or the context otherwise requires, all references to "Indonesia" are references to the Republic of Indonesia, all references to the "Government" herein are references to the Government of the Republic of Indonesia and all references to "United States" or "U.S." herein are references to the United States of America. Certain terms used herein are defined in the "Glossary" contained elsewhere in this Offering Memorandum.

INDUSTRY AND MARKET DATA

This Offering Memorandum includes certain industry and market data (including forecasts and other forward-looking information) obtained from, among others, AME Consulting Limited ("AME"), reports of governmental agencies, industry publications and surveys, and internal company surveys. Such industry publications and surveys and forecasts generally state that the data contained therein has been obtained from sources believed to be reliable, but except for any data we have provided to AME, we cannot assure you that such data is complete or accurate. Such data has not been independently verified, and neither we, except with respect to any data we have provided to AME, nor the Joint Bookrunners and Joint Lead Managers, make any representation as to the accuracy or completeness of such data or any assumptions relied upon therein.

Financial data with respect to Indonesia provided in this Offering Memorandum may be subsequently revised in accordance with Indonesia's ongoing maintenance of its economic data, and such revised data will not be distributed by us to any holder of the Notes.

PRESENTATION OF FINANCIAL AND OTHER DATA

Presentation of Our Group's Financial Information

This Offering Memorandum contains our: (i) audited consolidated financial statements as of and for the years ended December 31, 2015, 2016, and 2017, prepared in accordance with Indonesian Financial Accounting Standards ("IFAS") and presented in Rupiah, (the "Audited Consolidated Financial Statements"), and (ii) unaudited interim consolidated financial statements as of June 30, 2018 and for the six months ended June 30, 2017 and 2018, prepared in accordance with IFAS and presented in Rupiah (the "Interim Consolidated Financial Statements"). The Audited Consolidated Financial Statements and Interim Consolidated Financial Statements and, unless otherwise indicated, other financial information included in this Offering Memorandum have been prepared in accordance with IFAS, which differ in certain respects from generally accepted accounting principles in the United States ("U.S. GAAP"). For a summary of certain differences between IFAS and U.S. GAAP, see "Summary of Certain Differences Between Indonesian Financial Accounting Standards and U.S. GAAP." Except as otherwise indicated or the context otherwise requires, financial information in this Offering Memorandum is presented on a consolidated basis.

In 2017, the Government transferred its 65.0% equity interests in each of Antam, Bukit Asam and Timah to our Company. As our Company, Antam, Bukit Asam and Timah were entities under common control of the Government at the time of such equity transfers, we accounted for the receipt of such equity interests using the pooling-of-interests method, as required under SFAS 38 — "Business combination of Entities Under Common Control" and have restated our Audited Consolidated Financial Statements as if Antam, Bukit Asam and Timah had been combined with our Company since January 1, 2015. See Note 4 to our Audited Consolidated Financial Statements included elsewhere in this Offering Memorandum.

Presentation of PT Freeport Indonesia's Financial Information

In November 2017, the Government transferred its 9.36% equity interests in PTFI to our company. We plan to acquire a majority beneficial stake in PTFI. To effect the planned acquisition, we have entered into a series of agreements, including the PTFI Divestment Agreement, the PTFI Share Subscription Agreement, the PTRTI Buyout Agreement and the Agreement between the Government of Indonesia, Provincial Government of Papua and the Regency of Mimika. See "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia — Transaction agreements relating to the PTFI Share Acquisition." Following the completion of the planned PTFI Share Acquisition, we expect to own a 51.2% beneficial equity interest in PTFI, with an economic interest of 18.7% during the Initial Period (as defined herein) and an economic interest of 41.2% after the Initial Period (assuming the participation of the Papua Provincial Government and the Mimika Regency in the ownership of PTFI). See "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia." However, we intend for Freeport-McMoran Inc. ("FCX") to continue managing PTFI and, accordingly, the results of operations of PTFI are expected to be accounted for in our consolidated financial statements using the equity method.

PTFI's audited financial statements as of and for the years ended December 31, 2015, 2016 and 2017 and the unaudited interim condensed consolidated financial statements as of and for the six months ended June 30, 2018, which have been prepared in accordance with IFAS, and unaudited pro forma consolidated financial information relating to the PTFI Share Acquisition are included elsewhere in this Offering Memorandum. The unaudited pro forma consolidated financial information relating to the PTFI Share Acquisition is presented for illustrative purposes only and does not purport to represent what our actual income statement and balance sheet would have been, had the events which were the subject of the adjustments occurred on the relevant dates, nor does it purport to project our results of operations or financial position for any future period or date. The unaudited pro forma consolidated financial information relating to the PTFI Share Acquisition does not include all of the information required for consolidated financial statements under IFAS and should be read in conjunction with our consolidated financial statements included elsewhere in this Offering Memorandum. Further, the unaudited pro forma consolidated financial information relating to the PTFI Share Acquisition was not prepared in connection with an offering registered with the SEC under the Securities Act and consequently does not comply with SEC's rules on presentation of pro forma consolidated financial information.

Exchange Rate Information

We publish our consolidated financial statements in Rupiah. Solely for convenience, this Offering Memorandum contains translations of certain Rupiah amounts into U.S. dollars at the exchange rate of Rp.14,404 = US$1.00, which was the middle exchange rate announced by Bank Indonesia as of June 30, 2018. These translations should not be construed as representations that the Rupiah amounts represent such U.S. dollar amounts or could be, or could have been, converted into U.S. dollars at the rates indicated or at all. See "Exchange Rates and Exchange Controls" for further information regarding the rates of exchange between the Rupiah and the U.S. dollar.

Rounding

Rounding adjustments have been made in calculating some of the financial information included in this Offering Memorandum. As a result, numerical figures shown as totals in some tables may not be exact arithmetic aggregations of the figures that precede them.

Non-GAAP Financial Measures

This Offering Memorandum includes certain non-GAAP financial measures for our Group, including earnings before interest, taxes, depreciation and amortization ("EBITDA") and adjusted EBITDA. EBITDA and adjusted EBITDA, as well as the related ratios presented in this Offering Memorandum, are supplemental measures of our performance and liquidity that are not required by, or presented in accordance with, IFAS or U.S. GAAP. EBITDA and adjusted EBITDA are not measurements of financial performance or liquidity under IFAS or U.S. GAAP and should not be considered as alternatives to net income, operating income or any other

performance measures derived in accordance with IFAS or U.S. GAAP or as alternatives to cash flow from operating activities or as measures of liquidity. In addition, EBITDA and adjusted EBITDA are not standardized terms, hence a direct comparison between companies using such terms may not be possible.

We believe that EBITDA and adjusted EBITDA serve as useful indicators of our operating performance and are measures commonly used by analysts, investors and peers in our industry. Accordingly, we have disclosed this information to permit a more complete analysis of our operating performance. EBITDA and adjusted EBITDA, as calculated by us, may not be comparable to similarly titled measures reported by other companies. See "Summary Consolidated Financial and Other Data" and "Selected Consolidated Financial and Other Data" for a reconciliation of our net income under IFAS to our definitions of EBITDA and adjusted EBITDA.

AVAILABLE INFORMATION

While any Notes remains outstanding and is "restricted securities" within the meaning of Rule 144(a)(3) of the Securities Act, we shall, during any period in which we are not subject to Section 13 or 15(d) of the U.S. Securities Exchange Act of 1934, as amended (the "Exchange Act"), or exempt from reporting pursuant to Rule 12g3-2(b) under the Exchange Act, make available to any qualified institutional buyer (as defined in Rule 144A) who is a holder and any prospective purchaser of a Note who is a qualified institutional buyer (as so defined) designated by such holder, upon the request of such holder or prospective purchasers, the information concerning us required to be provided to such holder or prospective purchaser by Rule 144A(d)(4) under the Securities Act.

FORWARD-LOOKING STATEMENTS

This Offering Memorandum includes, and any amendment or supplement, may include forward-looking statements. All statements other than statements of historical facts included in this Offering Memorandum and any amendment or supplement regarding, among other things, our future financial position and results of operations, business, strategy, plans, developments and prospects, the condition and prospects of the mining and aluminum smelting industries, and Indonesia's economy, fiscal condition, debt or prospects may constitute forward-looking statements. Forward-looking statements can generally be identified by the use of forward-looking terminology such as "may," "will," "expect," "intend," "estimate," "anticipate," "believe," "continue" or similar terminology. Specifically, statements under the captions "Summary," "Industry Overview," "Risk Factors," "Management's Discussion and Analysis of Financial Condition and Results of Operations," "Business," "Indonesian Regulatory Framework" and "Relationship with the Government" relating to the following matters may include forward-looking statements relating to:

- the expected increases in capacity and revenue from our expansion plans and related capital expenditures and investments;
- our strategic, business and financial plans and objectives, including budgeted and future capital expenditures, acquisitions and investments, in respect of future construction, expansion, production capacity and utilization of certain of our facilities;
- the anticipated demand and fees chargeable for cargo services, ship services and other services;
- sales to existing and potential customers, whether under offtake or long-term contract or not, and generation of future receivables;
- our ability to be and remain competitive;
- our financial position, business strategy and budget, including projected financial and operating data;
- existing and future regulatory requirements applicable to us and our businesses; and
- existing and future obligations in respect of environmental compliance and remediation.

These forward-looking statements involve a number of risks and uncertainties that could cause actual results to differ materially from those suggested by the forward-looking statements. Forward-looking statements should

therefore be considered in light of various important factors, including those set out in this Offering Memorandum. Factors that could cause actual results to differ include, but are not limited to, the following:

- economic, social and political conditions in Indonesia and other countries in which our customers operate;
- increases or other changes in regulatory burdens and obligations in Indonesia and other countries, dividend obligations, and environmental regulations and compliance costs;
- accidents, natural disasters, and other catastrophes;
- changes and volatility in market prices of or demand for key commodities produced or consumed by us, as a result of competitive actions, economic factors such as inflation or exchange rate fluctuations, or otherwise;
- changes in our relationship with the Ministry of State-Owned Enterprises, the Government, the Ministry of Energy and Mineral Resources, other government authorities in Indonesia and other countries in which our customers operate, our joint venture partners, our shareholders, our co-investors and other counterparties, in Indonesia and other countries in which our customers operate;
- changes in terms and conditions of the agreements under which we operate our businesses and the ability of third parties to perform in accordance with contractual terms and specifications;
- changes in import or export controls, duties, levies or taxes, either in international markets or in Indonesia;
- changes in laws and regulations and their interpretation, applicable taxes and tax rates, accounting standards or practices, and reserve reporting guidelines; and
- our ability to manage the risks described above and in the section captioned "Risk Factors."

Although we believe that the expectations of our management as reflected by such forward-looking statements are reasonable based on information currently available to us, no assurances can be given that such expectations will prove to be correct.

Our ability to grow our revenues, net income and cash flows depends upon continued capital expenditure. In addition, our capital expenditure and investment plans are subject to a number of risks, contingencies and other factors, such as fluctuations in the price of, or demand for, the commodities we sell, unexpected or prolonged disruptions at our production or other facilities, and our inability to obtain, maintain or renew necessary government permits for our operations, some of which are beyond our control. Our ability to obtain adequate financing to satisfy our capital expenditure and investment budget and debt service requirements may be limited by our financial condition, results of operations, legal and regulatory issues and the liquidity of international and domestic financial markets. We may make additional capital expenditures and investments as opportunities or needs arise, and may increase, reduce or suspend our planned capital expenditures or investments or change the timing and use of our capital expenditures from what is currently planned in response to market conditions, feasibility studies, changes in government policies, or for other reasons.

Should one or more of these uncertainties or risks, among others, materialize, our actual results may vary materially from those estimated, anticipated or projected. Specifically, but without limitation, capital costs could increase, expansion projects could be delayed, and anticipated improvements in capacity or performance might not be fully realized or realized at all.

Accordingly, prospective purchasers are cautioned not to place undue reliance on forward-looking statements. In any event, these statements speak only as of their dates, and we undertake no obligation to update or revise any of them, whether as a result of new information, future events or otherwise.

SUMMARY

This summary highlights information contained elsewhere in this Offering Memorandum. This summary is qualified by, and must be read in conjunction with, the more detailed information and the consolidated financial statements appearing elsewhere in this Offering Memorandum. We urge you to read this entire Offering Memorandum carefully, including our consolidated financial statements and related notes and "Risk Factors."

Overview

We are the state-owned national mining company appointed by the Government as the holding company for Indonesia's mining operators. We engage in the mining and processing of coal, gold, tin, nickel and bauxite, and aluminum smelting and production. According to AME, as of June 30, 2018, we are the (i) second largest tin producer in the world, in terms of refined tin production volume, (ii) largest holder of coal reserves in Indonesia and the sixth largest coal producer in Southeast Asia in terms of coal production volume, (iii) sixth largest gold producer in Southeast Asia, in terms of gold production volume and (iv) only primary aluminum producer in Indonesia and second largest aluminum smelting company in Southeast Asia, in terms of production capacity.

We commenced business operations in 1979 as an aluminum smelter and have, over the course of almost 40 years, acquired in-depth expertise in managing and operating downstream production plants and supporting faculties for the refining of minerals and production of downstream mineral products. As the holding company for Antam, Bukit Asam and Timah, following the Government's transfer of its 65.0% equity interests in each of these entities to us in 2017, we oversee the management and exploitation of the coal and mineral resources held by these entities and aim to leverage our expertise to develop the various downstream businesses of these entities so as to achieve stronger financial performance and growth of our Group. Concurrent with the Government's transfer of its equity interests in Antam, Bukit Asam and Timah, the Government also transferred its 9.36% equity interests in PTFI to our Company. We plan to acquire a direct and indirect majority beneficial stake in PTFI. See "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia."

Our business operations are divided into six main segments, namely (i) coal, (ii) gold, (iii) tin, (iv) nickel, (v) bauxite, and (vi) aluminum smelting.

- ***Coal***. We are the largest holder of coal reserves in Indonesia and the sixth largest coal producer in Southeast Asia in terms of coal production volume, as of June 30, 2018, according to AME. Our coal business is vertically integrated and we undertake all stages of the mining and processing process, starting from exploration, mining and processing of coal to marketing of our coal products. We own and operate five coal mines located on the islands of Sumatra and Kalimantan, which, together, span a total area of approximately 69,211 hectares. Our coal products benefit from having a relatively low ash and low sulfur content, and high HGI and AFT. We sell a large proportion of our coal domestically to PLN, the state-owned electricity generation and distribution company, and internationally to commodity traders and coal-fired power producers. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 19.3 million tonnes, 19.6 million tonnes, 24.3 million tonnes and 11.2 million tonnes of coal, respectively, and sold 19.1 million tonnes, 20.8 million tonnes, 23.6 million tonnes and 12.2 million tonnes of coal, respectively. For the same periods, our revenue from sale of coal was Rp.13,801.0 billion, Rp.13,785.4 billion, Rp.19,133.5 billion (US$1,328.3 million) and Rp.10,289.5 billion (US$714.4 million), respectively.
- ***Gold***. We are the sixth largest gold producer in Southeast Asia in terms of gold production volume, as of June 30, 2018, according to AME. Following the completion of our planned PTFI Share Acquisition, see "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia," we expect to be the largest gold producer in the world, in terms of gold production volume, taking into account 100% of the production of PTFI. We own and operate two gold mines located in Pongkor and Cibaliung, which, together, span a total area of approximately 7,387 hectares. Our gold and precious metals business is vertically integrated and we undertake all stages of mining and processing of

precious metals. We produce and sell fine gold, mainly in the form of gold bars, as well as other precious metal products such as platinum and fine silver. Our fine gold is produced at the Logam Mulia Precious Metals Refinery, the only precious metals refinery in Indonesia that is accredited by the London Bullion Market Association ("LBMA"), from gold doré bullion, which we purchase from third-party precious metals trading companies, and gold doré, which we produce at our gold mines. In addition to producing and selling fine gold and other precious metal products, we provide precious metals refining services to other third-party mining companies. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 71,053 oz t, 70,988 oz t, 63,240 oz t and 33,468 oz t of gold, respectively, and sold 455,865 oz t, 328,805 oz t, 424,454 oz t and 442,394 oz t of gold, respectively. For the same periods, our revenue from sale of gold was Rp.7,314.7 billion, Rp.5,543.6 billion, Rp.7,375.5 billion (US$512.0 million) and Rp.8,203.9 billion (US$569.6 million), respectively.

- ***Tin***. We are the second largest refined tin producer in the world, in terms of refined tin production volume, as of June 30, 2018, according to AME. Our tin business is vertically integrated and we undertake all stages of the mining and processing process, starting from exploration, mining and processing of tin to marketing of our tin products. We own and operate tin mines in the Bangka Belitung Islands, the Riau Islands and Riau, which, together, span a total area of approximately 473,402 hectares. We produce refined tin products as well as other downstream tin products, including tin chemical and solder, which we primarily sell internationally, in countries including Japan, South Korea, Netherlands, the United States and Taiwan, mainly to the trading arms of automobile manufacturers and customers in the manufacturing industry. Our Banka tin and Kundur tin are registered and traded on the London Metal Exchange, which requires our refined tin products to be at least of "Grade A" quality. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 27,431 tonnes, 23,756 tonnes, 30,249 tonnes and 12,366 tonnes of refined tin, respectively, and sold 30,087 tonnes, 26,677 tonnes, 29,914 tonnes and 12,359 tonnes of refined tin, respectively. For the same periods, our revenue from sale of tin metal and other downstream tin products was Rp.6,548.4 billion, Rp.6,629.8 billion, Rp.8,481.7 billion (US$588.8 million) and Rp.3,912.4 billion (US$271.6 million), respectively.

- ***Nickel***. We are a vertically integrated nickel ore mining company and undertake all stages of the mining and processing of nickel ore. We also produce ferronickel from the nickel ore we mine and process. We own and operate five nickel ore mines located in Kolaka, Southeast Sulawesi, which, together, span a total area of approximately 81,437 hectares. We operate three ferronickel plants, FeNi II, FeNi III and FeNi IV, at our Pomalaa Ferronickel Facilities. Together, these plants have a combined production capacity of approximately 27,000TNi to 30,000TNi per year. Our ferronickel products generally consist of approximately 20.0% nickel content and 80.0% iron content and are sold in the form of shots or pellets, either with high or low carbon content. We sell the majority of our nickel ore and ferronickel in the international market, including India, South Korea, Taiwan, China and Ukraine. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 1.7 million wmt, 1.6 million wmt, 5.5 million wmt and 3.8 million tonnes of nickel ore, respectively, and sold 0.05 million wmt, 0.7 million wmt, 2.9 million wmt and 1.9 million wmt of nickel ore, respectively. For the same periods, we produced 17,211TNi, 20,293TNi, 21,762TNi and 12,811TNi of ferronickel, respectively, and sold 18,643TNi, 20,887TNi, 21,878TNi and 12,578TNi of ferronickel, respectively. For the same periods, our revenue from the sale of nickel ore and ferronickel was Rp.2,729.0 billion, Rp.3,077.6 billion, Rp.4,592.4 billion (US$318.8 million) and Rp.3,355.9 billion (US$232.9 million), respectively.

- ***Bauxite***. We are a vertically integrated bauxite mining company and undertake all stages of the mining and processing of bauxite. We own and operate a bauxite mine located in Tayan, West Kalimantan, spanning a total area of approximately 34,360 hectares. We sell bauxite of varying

alumina content based on our customers' requirements, although we typically sell bauxite with a minimum alumina content of 42.0%. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 201,517 wmt, 241,202 wmt, 648,431 wmt and 416,733 wmt of bauxite ore, respectively, and sold 182,624 wmt, 290,581 wmt, 838,069 wmt and 256,500 wmt of bauxite ore, respectively. For the same periods, our revenue from sale of bauxite was Rp.66.1 billion, Rp.104.2 billion, Rp.398.0 billion (US$27.6 million) and Rp.125.8 billion (US$8.7 million), respectively.

- ***Aluminum smelting***. We produce, smelt and sell aluminum products such as aluminum ingots, aluminum billets and aluminum alloys. As of June 30, 2018, we were the second largest aluminum producer in Southeast Asia, in terms of aluminum production volume, according to AME. Our aluminum production plants and facilities, comprising our aluminum smelter, casting plant, power plants, regulating dams and ports are located at Kuala Tanjung, North Sumatra. We are able to produce our aluminum products more cost effectively as compared to other aluminum producers as we have access to hydroelectric power that we generate at our Siguragura and Tangga Power Plants. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 257,149 tonnes, 245,483 tonnes, 218,816 tonnes and 119,455 tonnes of aluminum, respectively, and sold 256,622 tonnes, 247,994 tonnes, 207,276 tonnes and 97,507 tonnes of aluminum, respectively. For the same periods, our revenue from sale of aluminum products was Rp.6,238.0 billion, Rp.5,576.4 billion, Rp.5,744.3 billion (US$398.8 million) and Rp.3,127.5 billion (US$217.1 million), respectively.

For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, our total revenue was Rp.37,821.4 billion, Rp.35,904.5 billion, Rp.47,184.3 billion (US$3,275.8 million) and Rp.29,855.6 billion (US$2,072.7 million), respectively, and our gross profit was Rp.6,925.5 billion, Rp.8,211.2 billion, Rp.13,907.8 billion (US$965.6 million) and Rp.7,954.0 billion (US$552.2 million), respectively. For the same periods, our EBITDA was Rp.5,623.3 billion, Rp.6,639.4 billion, Rp.12,567.7 billion (US$872.5 million) and Rp.9,451.0 billion (US$656.1 million), respectively, and our adjusted EBITDA was Rp.4,660.0 billion, Rp.6,058.5 billion, Rp.11,199.0 billion (US$777.5 million) and Rp.6,759.7 billion (US$469.3 million), respectively.

Strengths

We believe that we have the following key competitive strengths:

Leading state-owned national mining company with a mandate to manage and develop domestic reserves

We are the state-owned national mining company with a mandate from the Government to productively and sustainably utilize and develop value-added downstream businesses for Indonesia's domestic reserves. We own and control a significant proportion of Indonesia's coal and mineral reserves, and own and operate mining assets and production facilities that are strategically distributed across Indonesia. As of June 30, 2018, we hold approximately 99.0%, 12.0%, 11.0% and 4.0% of Indonesia's tin, nickel, coal and bauxite reserves, and, upon the completion of the planned PTFI Share Acquisition, are expected to hold 74% and 25% of Indonesia's copper and gold reserves. In addition to having ownership and control over a significant proportion of Indonesia's coal and mineral reserves, we are also a leading commodities producer and a significant contributor to Indonesia's commodity exports. According to AME, in 2017, we accounted for all of Indonesia's aluminum production and exports and, 44.0% and 37.7%, 23.5% and 51.0%, 18.3% and 52.5%, and 5.3% and 2.5% of Indonesia's production and exports of refined tin, nickel ore, ferronickel and coal, respectively. Following the completion of the planned PTFI Share Acquisition, we expect to account for over 75.0% and 57.0% of Indonesia's copper and gold production, and over 58% and 13% of Indonesia's copper and gold exports, taking into account 100% of the production volumes of PTFI.

Diversified and integrated business to minimize cash flow volatility from commodity cycles

We believe that our diversified and integrated business structure, which provides us with exposure to six major commodities, namely coal, gold, tin, nickel, bauxite and aluminum products, allows us to maintain steady cash flows across commodity cycles. Further, stemming from the vertically integrated nature of our business, we produce multiple commodities across the value chain of the minerals that we mine, allowing us to capture increasing margins as we move downstream, minimize our exposure to cyclicality in demand for commodities generally, and reduce our customer concentration risk. For example, we mine and sell processed nickel ore, which our customers use to produce ferronickel, and we also produce higher margin downstream nickel products, such as ferronickel, which is used as feed material for stainless steel production and the manufacture of batteries. Our ability to manufacture a combination of products processed from the same underlying mineral allows us to not only benefit from the sale of downstream products from which we derive higher margins, but also adapt to shifting demand and supply cycles so as to maintain steady cash flows for our business operations.

Through our broad range of upstream and downstream commodity products, we benefit from having a geographically diverse customer base, with customers from Indonesia, Singapore, China, India, South Korea and Japan accounting for 46.3%, 11.4%, 10.3%, 7.8%, 7.0% and 6.9% of our total revenue for the year ended December 31, 2017, respectively. For the same period, our top three customers, namely PLN, ICBC Standard Bank PLC and Adani Global Pte. Ltd., accounted for 20.4%, 6.0% and 3.2% of our total revenue, respectively. Substantially all of our remaining customers each accounted for less than 2.0% of our total revenue for the period. We believe that our diverse customer base also provides us with steady cash flows across commodity cycles.

Competitively positioned in the global commodity market

We believe that our fast growing production volumes and large range of commodity products well-positions us to be competitive in the global commodity market. In 2017, we were the third largest producer of nickel ore and ferronickel in Southeast Asia, ninth largest producer of thermal coal in the world and second largest producer of refined tin in the world. Between 2015 and 2017:

- our nickel ore production grew at a CAGR of 79.9% from 1.7 million wmt to 5.5 million wmt;
- our ferronickel production grew at a CAGR of 12.4% from 17,211 TNi to 21,762 TNi;
- our coal production grew at a CAGR of 12.0% from 19.3 million tonnes to 24.3 million tonnes; and
- our refined tin production grew at a CAGR of 5.0% from 27,431 tonnes to 30,249 tonnes.

Over the same period, PTFI's copper production grew at a CAGR of 14.4% from 752 million pounds to 984 million pounds and its gold production grew at a CAGR of 15.5% from 1.2 million ozs to 1.6 million ozs, making PTFI the largest producer of copper and gold in Southeast Asia in 2017.

Low cost structure

We benefit from a low cost structure for most of our commodity products, which we believe allows us to enjoy stronger margins as compared to other commodity producers and provides us with a buffer against individual commodity price cycles. According to AME, our coal production cost is within the second quartile of the global coal cost curve. Unlike most of the other Indonesian coal producers who rely on barging as part of the transportation chain to export coal, we utilize rail and port facilities similar to those used by our international peers for the export of coal. Further, according to AME, our Pomalaa smelter makes us one of the lowest cost ferronickel producers in the world, which is mainly attributable to the higher grade of nickel ore feedstock used and captive nickel ore supply, along with a low cost captive power supply. Also, benefiting from low cost of power provided by our hydroelectric power plants, the Siguragura and Tangga Power Plants, we are able to produce our aluminum products more cost effectively as compared to other aluminum producers.

Additional equity investment in the world class Grasberg Mine

PTFI, in which we currently hold a 9.36% equity interest, owns the Grasberg Mine situated in the remote highlands of West Papua, Indonesia. We plan to acquire a direct and indirect majority beneficial stake in PTFI, see "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia."

The Grasberg Mine is the largest gold mine and the second largest copper mine in the world, in terms of production volume of gold and copper ore, respectively. According to AME, as of June 30, 2018, the Grasberg Mine is one of the lowest cost gold mines in the world, and sits in the first quartile of the gold cash cost curve, due to its low mining costs and high credits from its copper and silver production. It is estimated that its cash cost in 2018 is approximately US$(-300)/oz. The Grasberg Mine's low costs and high gold and silver credits also place it in the first quartile of the 2018 copper mine cash cost curve, as one of the lowest cost copper mines in the world with cash costs of US$(-0.70)/lb of copper after credits, according to AME.

The Grasberg Mine is operated by FCX, which currently holds a 90.64% equity interest in PTFI. Following the completion of our planned PTFI Share Acquisition, we expect FCX to continue to manage the mining operations of the Grasberg Mine through PTFI. Operations at the Grasberg Mine require strong technical expertise, especially in light of current plans to develop the underground, more complex, phase of the mine. We expect the Grasberg Mine's substantial amount of ore reserves to, following PTFI's targeted completion of its planned infrastructure projects in 2020, support production at current levels through 2041 and we believe that continued control of operations at the Grasberg Mine by FCX, an experienced operator of the Grasberg Mine, will ensure that the high technical requirements of the Grasberg Mine will be met and will optimize production during the remainder of its mine life.

Led by a highly-experienced management team and have high standards of corporate governance

Our management team has extensive experience in the mining and metals industry, geology and engineering, as well as accounting, law, economics, and business and financial management. We believe that the extensive experience of our management team gives us the ability to manage our operations efficiently, maintain profitability through commodity price cycles and develop new downstream projects strategically. We also believe that our management team was instrumental in transitioning our Company into a fully integrated diversified coal and metals mining company in 2017, when we became the holding company of Antam, Bukit Asam and Timah.

Our management team is committed to actively monitoring, evaluating and refining the corporate governance practices throughout our corporate structure. Stemming from our high standards in corporate governance, we were granted Gold status for the Indonesia Good Corporate Governance Award-III-2017, in the non-listed state-owned enterprise category, from the Indonesia Economic Review. Antam, Bukit Asam and Timah also maintain high corporate governance standards in compliance with the Listing Rules of the IDX and the Indonesian Capital Markets Law. In the past three years, Antam, Bukit Asam and Timah have each achieved recognition as The Most Trusted Company by the Indonesia Institute of Corporate Governance. In addition, as part of the corporate governance processes of our Group, business decisions made by Antam, Bukit Asam and Timah relating to certain matters must be approved by (i) the respective company's Board of Commissioners, (ii) both the respective company's Board of Commissioners and the Government, by virtue of the Series A Dwiwarna share it holds in each of Antam, Bukit Asam and Timah, or (iii) us, as their majority shareholder, as the case may be, depending on the nature and commercial significance for our Group. See "Management — Good Corporate Governance and Risk Management Committee." We believe that such processes allow us to maintain our operational excellence and safeguard the interests of all our stakeholders.

Strategies

The main elements of our business strategy include the following:

Continued consolidation of domestic mining reserves and resources

In line with our mandate from the Government to productively and sustainably utilize and develop value-added downstream businesses for Indonesia's coal and mineral reserves, we plan to undertake targeted exploration activities in our mining concession areas and to increase our holdings of key minerals and resources. We plan to own between approximately 15.0% and 20.0% of the domestic reserves and resources for coal and the minerals that we currently mine, and plan to acquire additional mining concessions for nickel, coal and bauxite, and increase our copper and gold reserves through the planned PTFI Share Acquisition.

We believe that our continued consolidation and increasing control over domestic mining reserves and resources will solidify our position as the leading state-owned national mining company and allow us to become an impactful Fortune 500 global mining company by 2028.

Development of production facilities to increase production capacity and expand into new capabilities

We plan to expand our existing and construct new production facilities to grow our production capacity and develop new downstream capabilities. Our expansion plans for increasing the production capacity of our midstream and downstream products include upgrading works at our aluminum reduction plant at Kuala Tanjung, North Sumatra, to increase the aluminum production capacity from 260ktpa to 300ktpa, as well as construction of the new East Halmahera Ferronickel Plant which is expected to increase our ferronickel production capacity by 50.0% after completion of the first phase of construction.

We intend to construct new facilities for the purpose of developing downstream value chains of relevant industries and increasing our production of high-value added products. For example, we are exploring the construction of a new stainless steel plant with a planned production capacity of 500,000 tonnes of stainless steel per year. In addition, we are in the process of acquiring an idle primary aluminum billet plant located next to our existing aluminum smelter in Kuala Tanjung in order to convert it into a secondary aluminum billet plant that will have a production capacity of 50,000 tonnes of secondary aluminum billets per year.

We also aim to develop our integrated capabilities with respect to our aluminum business by producing our own alumina as raw material for our aluminum products. We are planning the construction of the Mempawah Smelter Grade Alumina Refinery, which we expect will allow us to process 3,000ktpa of bauxite ore into smelter grade alumina. We believe that the new alumina refinery will significantly facilitate our growth into a fully integrated aluminum smelter, allowing us to exercise better control of our supply chain and reduce our aluminum production costs.

Facilitate higher coal production by increasing transportation capacity and expanding our coal downstream business

We are undertaking several infrastructure projects with the goal of substantially increasing our coal transportation capacity. In order to support higher levels of coal production, we are upgrading two of our existing railways and building two new railway tracks to serve transportation of coal from our Tanjung Enim Coal Mine. Our railway expansion projects are expected to allow us to transport, and thereby increase coal production to, 60 million mtpa of coal by 2023 as compared to our current transportation capacity of 23 million mtpa.

Further, given our substantial coal reserves and strong potential to increase production capacity, we believe that we are well placed to exploit opportunities for downstream growth. We are currently constructing the Sumsel 8 CFPP, a coal-fired power plant with a planned output capacity of 2x620 MW that is expected to consume coal at a rate of 5.4 million mtpa and is intended to be fueled by coal from our Tanjung Enim Coal Mine. Upon commencing commercial operations, the Sumsel 8 CFPP is expected to be the biggest coal-fired power plant in Indonesia, in

terms of output capacity. We are also exploring coal to chemical business opportunities and have commenced studies in relation to the development of a coal gasification plant, which would use gasification technology to convert our coal into syngas, a raw material for further processing into products such as fuel, fertilizer and plastic raw material. We believe that growing our coal downstream business will allow us to further optimize coal production and extract maximum value from our coal reserves.

Leverage our position as the state-owned holding company for Indonesia's mining operators and selectively collaborate and grow our business with experienced world-class partners

We believe that our status as a state-owned entity gives us an advantage when acquiring domestic mining concessions and also makes us as an attractive domestic partner for experienced world-class mining and commodity producing companies.

As the owner of Indonesia's mineral reserves and resources, the Government, through the MEMR, in accordance with MEMR Ministerial Decree No. 11 of 2018, conducts a priority bidding process for mining concessions among state-owned entities and regional government-owned entities, before opening the opportunity to bid for such mining concessions to the public. We have in the past leveraged and intend to continue capitalizing on our priority access to domestic mining concessions to continue to grow our business. For example, when the Matarape and North Bahodopi nickel mining concession areas (formerly part of PT Vale Indonesia's nickel mining concession) were recently returned to the Government, we collaborated with a reputable domestic mining company to acquire these mining concessions, where we would leverage our state-owned entity status to participate in the priority bidding process and our domestic partner would fully fund the acquisition, development and operation of the mining concessions.

Further, we also intend to leverage our state-owned entity status and selectively collaborate and grow our business with experienced world-class partners. For example, we have entered into a heads of agreement with Chalco Hong Kong, a subsidiary of the Aluminum Corporation of China Limited, the largest alumina producer in the world, according to AME, to establish a joint venture for the purpose of constructing the Mempawah Smelter Grade Alumina Refinery Plant. See "Business — Our Bauxite Business — Production facility under development — The Mempawah Smelter Grade Alumina Refinery Plant." We believe that collaborating with such experienced partners would allow us develop our technical know-how and grow our downstream businesses.

Corporate Information

Our full legal name is PT Indonesia Asahan Aluminium (Persero). We are a state-owned limited liability company incorporated in Indonesia under the Deed of Limited Liability Company of PT Indonesia Asahan Aluminium No. 2 dated January 6, 1976, made before Juliaan Nimrod Siregar, S.H., Notary in Jakarta, and ratified by the Minister of Law and Human Rights under Decree No. Y.A.5/12/20 dated January 10, 1976.

Recent Developments

To effect our planned acquisition of a majority beneficial stake in PTFI, on September 27, 2018, we entered into an agreement relating to our acquisition of an increased equity stake in PTFI with PTFI, Freeport-McMoran Inc. ("FCX"), International Support LLC ("International Support") and PT Indocopper Investama ("PTII"). On the same day, we entered into the PTFI Share Subscription Agreement with PTFI and PTII, pursuant to which, our Company and PTII will subscribe for, and PTFI will issue to our Company and PTII, shares in PTFI. On September 28, 2018, we entered into a share purchase agreement with Rio Tinto International Holdings Limited ("Rio Tinto International"), Rio Tinto Nominees Limited ("Rio Tinto Nominees") and Rio Tinto Indonesian Holdings Limited ("Rio Tinto Indonesian Holding"), pursuant to which we have agreed to purchase and the PTRTI sellers have agreed to sell to us or our nominee all the outstanding shares of PTRTI. See "Planned

Acquisition of Majority Beneficial Stake in PT Freeport Indonesia." Following the completion of the planned PTFI Share Acquisition, we expect to own a 51.2% beneficial equity interest in PTFI, with an economic interest of 18.72% for the Initial Period (as defined herein) and an economic interest of 41.2% after the expiration of the Initial Period. We intend for FCX to continue managing the mining operations of PTFI. See "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia."

SUMMARY OF THE OFFERING

The following is a brief summary of the terms of the offering and is qualified in its entirety by the remainder of this Offering Memorandum. The terms under the "Description of the 2021 Notes", "Description of the 2023 Notes", "Description of the 2028 Notes" and "Description of the 2048 Notes" will prevail to the extent of any inconsistencies with the following summary. For a more complete description of the terms of the Notes, see "Description of the 2021 Notes", "Description of the 2023 Notes", "Description of the 2028 Notes" and "Description of the 2048 Notes" included elsewhere in this Offering Memorandum. Terms used in this summary and not otherwise defined shall have the meanings given to them in "Description of the 2021 Notes", "Description of the 2023 Notes", "Description of the 2028 Notes" and "Description of the 2048 Notes."

Issuer	PT Indonesia Asahan Aluminium (Persero), a state-owned company established with limited liability under the laws of the Republic of Indonesia.
Notes Offered	US$1,000,000,000 5.230% Notes due 2021 US$1,250,000,000 5.710% Notes due 2023 US$1,000,000,000 6.530% Notes due 2028 US$750,000,000 6.757% Notes due 2048
Issue Price	2021 Notes: 99.263% 2023 Notes: 98.763% 2028 Notes: 97.534% 2048 Notes: 92.575%
Maturity Date	Unless previously repurchased, canceled or redeemed in accordance with their terms, the Notes will mature as follows: 2021 Notes: November 15, 2021 2023 Notes: November 15, 2023 2028 Notes: November 15, 2028 2048 Notes: November 15, 2048
Interest	The 2021 Notes will bear interest from November 15, 2018 at the rate of 5.230% per annum payable semi-annually in arrears. The 2023 Notes will bear interest from November 15, 2018 at the rate of 5.710% per annum payable semi-annually in arrears. The 2028 Notes will bear interest from November 15, 2018 at the rate of 6.530% per annum payable semi-annually in arrears. The 2048 Notes will bear interest from November 15, 2018 at the rate of 6.757% per annum payable semi-annually in arrears. Interest will be calculated on the basis of a 360-day year, consisting of twelve 30-day months.
Interest Payment Dates	May 15 and November 15 of each year, commencing May 15, 2019.
Record Dates	Each April 30 and October 30, immediately preceding an Interest Payment Date.
Ranking	Each series of Notes will be direct, unsecured and unsubordinated obligations of the Issuer, be senior in right of payment to any existing and future obligations of the Issuer expressly subordinated in right of payment to the Notes, rank *pari passu* among themselves and rank at least *pari passu* in right of payment with all other unsecured and

	unsubordinated indebtedness of the Issuer (subject to any priority rights of such unsubordinated debt pursuant to applicable law) and will be effectively subordinated to secured obligations of the Issuer and the obligations of its subsidiaries.
Further Issues	Subject to certain conditions, the Issuer may, from time to time, without notice to or the consent of the holders of the Notes, issue additional notes having the same terms and conditions under the relevant indenture relating to the Notes as the Notes of the relevant series in all respects (or in all respects except for the issue date, issue price and the first Interest Payment Date and, to the extent necessary, certain temporary securities law transfer restrictions) so that such additional notes may be consolidated and form a single class with the previously outstanding Notes of the relevant series and vote together as one class on all matters with respect to the Notes of the relevant series provided that, in order for additional notes to have the same CUSIP, ISIN, or other identifying number as the outstanding Notes, the additional notes must be fungible with the outstanding Notes for U.S. federal income tax purposes.
Certain Covenants	The Issuer will agree to observe certain covenants, including, among other things, a negative pledge, and limitations on its ability to consolidate, merge or sell its assets substantially as an entirety. See "Description of the Notes — Certain Covenants." The Notes and the related Indentures do not otherwise restrict or limit the Issuer's ability to incur additional indebtedness by itself or through its subsidiaries or its ability to enter into transactions with, or to pay dividends or make other payments to, affiliates.
Change of Control	The occurrence of any event resulting in the Government ceasing to directly own and control at least 75.0% of the issued and paid-up shares of the Issuer.
Repurchase of Notes upon a Change of Control	No later than 30 days following a Change of Control, the Issuer will be required to make an offer to purchase all outstanding Notes of the relevant series at a purchase price equal to 101.0% of the principal amount thereof, plus accrued and unpaid interest, if any, to the date of such purchase. See "Description of the Notes — Repurchase of Notes Upon a Change of Control."
Additional Amounts	Subject to certain exceptions, the Issuer will pay such Additional Amounts as will result in receipt by the holder of the Notes of such amounts as would have been received by such holder had no deduction or withholding of Indonesian (and certain other) taxes been required. See "Description of the Notes — Additional Amounts."
Redemption for Taxation Reasons	Subject to certain conditions and exceptions, the Notes may be redeemed at the option of the Issuer, as a whole but not in part, at a redemption price equal to 100% of the principal amount thereof, together with accrued and unpaid interest (including any Additional Amounts), if any, to the date fixed for such redemption, in the event

	that as a result of certain changes in tax laws the Issuer becomes obligated to pay Additional Amounts in respect of certain withholding tax (including Indonesian withholding tax imposed at a rate in excess of 20%). See "Description of the Notes — Redemption for Taxation Reasons."
Special Mandatory Redemption	If the planned PTFI Share Acquisition has not been completed by June 30, 2019, the Issuer will redeem the Notes, in whole and not in part, upon giving notice to the holders of the Notes, at a redemption price equal to 101.0% of the principal amount thereof, together with accrued and unpaid interest (including any Additional Amounts), if any, up to but not including the date fixed for redemption. See "Description of Notes — Redemption Upon Special Mandatory Redemption Event."
Transfer Restrictions	The Notes have not been registered under the Securities Act, or the securities laws of any other jurisdiction, and may not be offered or sold within the United States, except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the Securities Act. Accordingly, the Notes are being offered and sold in the United States only to qualified institutional buyers (as defined in Rule 144A) in accordance with Rule 144A and outside the United States in offshore transactions in accordance with Regulation S. For a description of these and other restrictions on offers, resales and transfers of the Notes, see "Plan of Distribution" and "Transfer Restrictions."
Use of Proceeds	The net proceeds from the offering of the Notes, after deduction of fees and commissions and estimated expenses incurred in connection with this offering, are expected to be approximately US$3,880.41 million. We intend to use the net proceeds from this offering to fund the PTFI Share Acquisition, see "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia," and/or to refinance acquisition debt, or to fund the Special Mandatory Redemption.
Escrow of Proceeds	The Issuer will enter into an escrow agreement dated as of the date on which the Notes are originally issued under the Indentures with the Trustee and PT Bank Mandiri (Persero) Tbk as escrow agent (the "Escrow Agent"), pursuant to which the Issuer will deposit or will instruct the Initial Purchasers to deposit with the Escrow Banks an amount in cash equal to the net proceeds of the offering of the Notes into one or more escrow accounts held by the Issuer in Indonesia with three Indonesian state-owned banks. The funds in the escrow accounts will be released from the escrow accounts only in whole and not in part, upon delivery by the Issuer of certain documents and either (i) to fund the completion of the planned PTFI Share Acquisition or (ii) if the planned PTFI Share Acquisition has not been completed by June 30, 2019, to fund the Special Mandatory Redemption. See "— Redemption upon Special

	Mandatory Redemption Event" below and "Description of Notes — Escrow of Proceeds".
Governing Law	The Notes and the Indentures are governed by, and will be construed in accordance with, the laws of the State of New York.
Denomination, Form and Registration	The Notes will be issued in minimum denominations of US$200,000 and integral multiples of US$1,000 in excess thereof. Each series of Notes offered in the United States to qualified institutional buyers in reliance on Rule 144A will be represented by one or more permanent global notes in fully registered form without interest coupons deposited with The Bank of New York Mellon as custodian for, and registered in the name of, Cede & Co., as nominee of The Depository Trust Company, or DTC. Each series of Notes offered outside the United States in offshore transactions in reliance on Regulation S will be represented by one or more permanent global notes in fully registered form without interest coupons deposited with The Bank of New York Mellon as custodian for, and registered in the name of, Cede & Co., as nominee of DTC for the respective accounts of Euroclear Bank S.A./N.V., or Euroclear, and Clearstream Banking, société anonyme, or Clearstream, Luxembourg, each of which is a participant in DTC. DTC will credit the account of each of its participants, including Euroclear and Clearstream, Luxembourg, with the principal amount of Notes being purchased by or through such participant. Beneficial interests in the global notes will be shown on, and transfers thereof will be effected only through, records maintained by DTC and its direct and indirect participants, including Euroclear and Clearstream, Luxembourg.
Delivery of the Notes	We expect that delivery of the Notes will be made on or about the closing date specified on the cover page of this Offering Memorandum, which we expect will be the fifth business day following the date of this Offering Memorandum, which we refer to as "T+5." You should note that initial trading of the Notes may be affected by the T+5 settlement. See "Plan of Distribution."
Ratings	The Notes are expected to be rated "Baa2" by Moody's and "BBB-" by Fitch. A security rating is not a recommendation to buy, sell or hold securities and may be subject to suspension, reduction or withdrawal at any time by the assigning rating agency.
Risk Factors	See "Risk Factors" and the other information in this Offering Memorandum for a discussion of factors that should be carefully considered before deciding to invest in the Notes.
Listing	Approval in-principle has been received for the listing of the 2021 Notes on the SGX-ST. Application will be made to the SGX-ST for the listing and quotation of the 2023 Notes, the 2028 Notes and the 2048 Notes on the SGX-ST. The SGX-ST assumes no responsibility for the correctness of any of the statements made, opinions expressed or reports contained in this Offering Memorandum. Approval-in-principle from, admission to the Official List of, and

	listing and quotation of the Notes on, the SGX-ST are not to be taken as an indication of the merits of the Issuer or the Notes. For so long as the Notes are listed on the SGX-ST and the rules of the SGX-ST so require, the Notes, if traded on the SGX-ST, will be traded in a minimum board lot size of S$200,000 (or its equivalent in foreign currencies). Accordingly, the Notes, if traded on the SGX-ST, will be traded in a minimum board lot size of US$200,000. For so long as the Notes are listed on the SGX-ST and the rules of the SGX-ST so require, in the event that a Global Note is exchanged for definitive notes, the Issuer will appoint and maintain a paying agent in Singapore, where the definitive notes may be presented or surrendered for payment or redemption. In addition, in the event that a Global Note is exchanged for definitive notes, an announcement of such exchange will be made by or on behalf of the Issuer through the SGX-ST and such announcement will include all material information with respect to the delivery of the definitive notes, including details of the paying agent in Singapore.
Trustee, Paying Agent, Transfer Agent and Registrar	The Bank of New York Mellon.
CUSIP	2021 Notes: 74445P AA0 (Rule 144A) / Y7140W AA6 (Reg S) 2023 Notes: 74445P AB8 (Rule 144A) / Y7140W AB4 (Reg S) 2028 Notes: 74445P AC6 (Rule 144A) / Y7140W AC2 (Reg S) 2048 Notes: 74445P AD4 (Rule 144A) / Y7140W AD0 (Reg S)
ISIN	2021 Notes: US74445PAA03 (Rule 144A) / USY7140WAA63 (Reg S) 2023 Notes: US74445PAB85 (Rule 144A) / USY7140WAB47 (Reg S) 2028 Notes: US74445PAC68 (Rule 144A) / USY7140WAC20 (Reg S) 2048 Notes: US74445PAD42 (Rule 144A) / USY7140WAD03 (Reg S)

SUMMARY CONSOLIDATED FINANCIAL AND OTHER DATA

You should read the following summary consolidated financial information in conjunction with our consolidated financial statements and related notes, "Presentation of Financial and Other Data," "Selected Consolidated Financial and Other Data" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" included elsewhere in this Offering Memorandum. Our consolidated financial statements have been prepared and presented in accordance with IFAS, which differs in certain respects from U.S. GAAP. See "Summary of Certain Differences between Indonesian Financial Accounting Standards and U.S. GAAP."

Consolidated Statements of Profit or Loss and Other Comprehensive Income Data

	For the year ended December 31,				For the six months ended June 30,		
	2015	2016	2017		2017	2018	
	Rp.	Rp.	Rp.	US$	Rp.	Rp.	US$
			(Rp. in billion and US$ in million)				
Revenue	37,821.4	35,904.5	47,184.3	3,275.8	18,832.8	29,855.6	2,072.7
Cost of revenue	(30,895.9)	(27,693.3)	(33,276.5)	(2,310.2)	(13,637.0)	(21,901.6)	(1,520.5)
Gross profit	**6,925.5**	**8,211.2**	**13,907.8**	**965.6**	**5,195.8**	**7,954.0**	**552.2**
General and administrative expenses	(2,739.3)	(2,820.9)	(3,339.0)	(231.8)	(1,336.9)	(1,608.9)	(111.7)
Selling and marketing expenses	(1,003.5)	(1,008.1)	(1,322.5)	(91.9)	(572.8)	(709.5)	(49.2)
Operating profit	**3,182.7**	**4,382.2**	**9,246.3**	**641.9**	**3,286.1**	**5,635.6**	**391.3**
Financial income	503.9	635.9	629.9	43.7	285.6	343.3	23.8
Finance costs	(1,237.5)	(365.7)	(974.2)	(67.6)	(421.6)	(965.9)	(67.1)
Share in net (loss)/profit of associates	(249.3)	88.1	(196.8)	(13.6)	(55.7)	(64.3)	(4.5)
Share in net loss of joint ventures	(106.6)	(216.3)	(158.0)	(11.0)	(35.2)	(49.1)	(3.4)
Other income/(expenses), net	459.4	(55.0)	738.8	51.3	(206.6)	2,348.0	163.1
Profit before income tax	**2,552.6**	**4,469.2**	**9,286.0**	**644.7**	**2,852.6**	**7,247.6**	**503.2**
Income tax (expenses)/benefit	(796.2)	1.2	(2,474.3)	(171.8)	(840.6)	(1,820.3)	(126.4)
Profit for the period from continuing operations	**1,756.4**	**4,470.4**	**6,811.7**	**472.9**	**2,012.0**	**5,427.3**	**376.8**
Loss for the period from discontinued operations	—	(31.1)	(6.5)	(0.4)	(3.7)	(4.4)	(0.3)
Profit for the period	**1,756.4**	**4,439.3**	**6,805.2**	**472.5**	**2,008.3**	**5,422.9**	**376.5**
Other comprehensive income/ (loss) for the period, net of tax	**2,423.4**	**(334.0)**	**(538.5)**	**(37.4)**	**(773.8)**	**2,118.5**	**147.1**
Total comprehensive income for the period	**4,179.8**	**4,105.3**	**6,266.7**	**435.1**	**1,234.5**	**7,541.4**	**523.6**

Consolidated Statements of Financial Position Data

	As of December 31,				As of June 30,	
	2015	2016	2017		2018	
	Rp.	Rp.	Rp.	US$	Rp.	US$
	(Rp. in billion and US$ in million)					
Total current assets	34,218.1	33,415.3	37,463.1	2,600.9	43,116.7	2,993.4
Total non-current assets	35,624.2	39,686.4	55,781.6	3,872.6	56,853.3	3,947.0
Total assets	**69,842.3**	**73,101.7**	**93,244.7**	**6,473.5**	**99,970.0**	**6,940.4**
Total current liabilities	13,041.1	13,600.8	15,125.8	1,050.1	17,256.5	1,198.0
Total non-current liabilities	11,547.1	11,109.8	12,111.7	840.9	12,337.3	856.6
Total liabilities	**24,588.2**	**24,710.6**	**27,237.5**	**1,891.0**	**29,593.8**	**2,054.6**
Equity attributable to owner of the parent	**34,456.9**	**37,008.4**	**53,277.7**	**3,698.8**	**57,570.5**	**3,996.8**
Non-controlling interest	10,797.2	11,382.7	12,729.5	883.7	12,805.7	889.0
Total equity	**45,254.1**	**48,391.1**	**66,007.2**	**4,582.5**	**70,376.2**	**4,885.8**
Total liabilities and equity	**69,842.3**	**73,101.7**	**93,244.7**	**6,473.5**	**99,970.0**	**6,940.4**

Consolidated Statements of Cash Flows Data

	For the year ended December 31,				For the six months ended June 30,		
	2015	2016	2017		2017	2018	
	Rp.	Rp.	Rp.	US$	Rp.	Rp.	US$
	(Rp. in billion and US$ in million)						
Net cash received from operating activities	4,614.0	4,256.3	5,750.5	399.2	1,722.0	4,562.5	316.8
Net cash generated from/(used in) investing activities	(4,280.3)	(3,252.1)	(4,652.4)	(323.0)	(1,933.9)	(23.1)	(1.6)
Net cash (used in)/generated from financing activities	4,546.2	(1,744.9)	(965.2)	(67.0)	(1,821.7)	(519.4)	(36.1)
Net increase (decrease) in cash and cash equivalents	**4,879.9**	**(740.7)**	**132.9**	**9.2**	**(2,033.6)**	**4,020.0**	**279.1**
Cash and cash equivalents at the beginning of the period	11,590.9	16,928.1	15,966.8	1,108.5	15,966.8	16,143.1	1,120.7
Cash and cash equivalents at the end of the period	**16,928.1**	**15,966.8**	**16,143.1**	**1,120.7**	**13,881.3**	**20,874.8**	**1,449.2**

Non-GAAP Measures and Other Financial Data

	As of and for the year ended December 31,				As of and for the six months ended June 30,			Last twelve months	
	2015	2016	2017		2017	2018		LTM[5]	
	Rp.	Rp.	Rp.	US$	Rp.	Rp.	US$	Rp.	US$
	(Rp. in billion and US$ in million)								
Capital expenditure	4,722.0	3,835.7	10,521.3	730.4	2,238.1	2,162.0	150.1	10,445.2	725.2
Finance costs	1,237.5	365.7	974.2	67.6	421.6	965.9	67.1	1,518.5	105.4
EBITDA[1]	5,623.3	6,639.4	12,567.7	872.5	4,296.5	9,451.0	656.1	17,722.2	1,230.4
Dividend income	—	—	427.6	29.7	—	2,028.2	140.8	2,455.8	170.5
Adjusted EBITDA[1]	4,660.0	6,058.5	11,199.0	777.5	4,217.5	6,759.7	469.3	13,741.2	954.0
Total debt[2]	14,246.9	14,006.5	14,064.3	976.6	—	15,266.8	1,059.9	—	—
EBITDA margin (%)[3]	14.9%	18.5%	26.6%	26.6%	22.8%	31.7%	31.7%	30.4%	30.4%
Total debt / Adjusted EBITDA	3.1x	2.3x	1.3x	1.3x	—	2.3x	2.3x	—	—
Net debt / Adjusted EBITDA[4]	(0.6)x	(0.3)x	(0.2)x	(0.2)x	—	(0.8)x	(0.8)x	—	—
Total debt / total equity	0.3x	0.3x	0.2x	0.2x	—	0.2x	0.2x	—	—
Adjusted EBITDA / Finance costs	3.8x	16.6x	11.5x	11.5x	10.0x	7.0x	7.0x	9.0x	9.1x

Notes:

(1) EBITDA is calculated beginning with profit for the year or period, and adjusting for (i) income tax expense/(benefit), (ii) finance costs, and (iii) depreciation and amortization. Adjusted EBITDA is calculated beginning with EBITDA, and deducting (i) dividend income, (ii) gain from sale of investment, and (iii) finance income, and adding (i) loss/(gain) on foreign exchange, net and (ii) other (income) expenses, net. EBITDA and adjusted EBITDA are supplemental measures of our performance that are not required by, or presented in accordance with, IFAS or U.S. GAAP. EBITDA and adjusted EBITDA are not measurements of financial performance or liquidity under IFAS or U.S. GAAP and should not be considered as alternatives to net profit, operating income or any other performance measures derived in accordance with IFAS or U.S. GAAP or an alternative to cash flows from operating activities as measures of liquidity. Our presentations of EBITDA and adjusted EBITDA may not be comparable to similarly titled measures presented by other companies. You should not compare our EBITDA and adjusted EBITDA with EBITDA and adjusted EBITDA presented by other companies because not all companies use the same definition. We have included EBITDA and adjusted EBITDA because we believe these are indicative measures of our operating performance and are used by investors and analysts to evaluate companies in the industries we operate.

The following table reconciles our profit for the period under IFAS to our definition of EBITDA and adjusted EBITDA for the periods indicated.

	For the year ended December 31,				For the six months ended June 30,			Last twelve months	
	2015	2016	2017		2017	2018		LTM[5]	
	Rp.	Rp.	Rp.	US$	Rp.	Rp.	US$	Rp.	US$
	(Rp. in billion and US$ in million)								
Profit for the period	1,756.4	4,439.3	6,805.2	472.5	2,008.3	5,422.9	376.5	10,219.8	709.5
Add/(subtract):									
Income tax expenses/(benefit)	796.2	(1.2)	2,474.3	171.8	840.6	1,820.3	126.4	3,454.0	239.9
Finance costs	1,237.5	365.7	974.2	67.6	421.6	965.9	67.1	1,518.5	105.4
Depreciation and amortization	1,833.2	1,835.6	2,314.0	160.6	1,026.0	1,241.9	86.1	2,529.9	175.6
EBITDA	**5,623.3**	**6,639.4**	**12,567.7**	**872.5**	**4,296.5**	**9,451.0**	**656.1**	**17,722.2**	**1,230.4**
Add/(subtract):									
Dividend income	—	—	(427.6)	(29.7)	—	(2,028.2)	(140.8)	(2,455.8)	(170.5)
Gain from sale of investment	—	—	(776.4)	(53.9)	—	—	—	(776.4)	(53.9)
Finance income	(503.9)	(635.9)	(629.9)	(43.7)	(285.6)	(343.3)	(23.8)	(687.6)	(47.7)
(Gain)/loss on foreign exchange, net	(382.7)	143.6	24.4	1.7	59.2	(167.7)	(11.6)	(202.5)	(14.1)
Other (income)/expenses, net	(76.7)	(88.6)	440.8	30.6	147.4	(152.1)	(10.6)	141.3	9.8
Adjusted EBITDA	**4,660.0**	**6,058.5**	**11,199.0**	**777.5**	**4,217.5**	**6,759.7**	**469.3**	**13,741.2**	**954.0**

(2) Total debt is calculated as the sum of short-term and long-term bank borrowings, finance lease liabilities and bonds payable.

(3) EBITDA margin is calculated as EBITDA divided by total net revenue.

(4) Net debt / Adjusted EBITDA is calculated as total debt less cash and cash equivalents, divided by adjusted EBITDA for the prevailing 12-month period.

(5) LTM is derived by subtracting the relevant financial information for the six months ended June 30, 2017 from the year ended December 31, 2017, and adding the same relevant financial information for the six months ended June 30, 2018.

Reserves and Resources Data

The following table sets forth our net working interest aggregate reserves and resources, as of December 31, 2017.

	Reserves			
	Proved	**Probable**	**Total**	**Resources**
Coal (tonnes in million)[1]	1,470	1,826	3,296	5,753
Gold (koz)[2]	413	92	505	1,242
Silver (koz)[2]	3,130	910	4,040	12,377
Tin ore (tonnes)[3]	136,722	240,872	377,594	796,343
Nickel (wmt in million)[2]	203	180	383	1,222
Bauxite (wmt in million)[2]	29	17	46	568

Notes:

(1) According to the 2017 Coal Reserves Statement, see Appendix A.

(2) According to the 2017 Nickel, Gold, Silver and Bauxite Reserves Statement, see Appendix B.

(3) According to the 2017 Tin Reserves Statement, see Appendix C.

The following table sets forth PTFI's aggregate gross reserves and resources at its Grasberg Mine, as of December 31, 2017.

	Reserves			
	Proven	**Probable**	**Total**	**Resources**
Ore (tonnes in million)[1]	627	1,329	1,956	1,969
Copper (kilo tonnes)	7,401	13,156	20,557	14,321
Gold (koz)	19,963	32,470	52,433	40,501
Silver (koz)	97,393	183,287	280,680	233,275

Note:

(1) According to the 2017 Grasberg Reserves Statement, see Appendix D.

See "Risk Factors — Risks Common to All Our Mining Businesses — Our estimates of reserves and resources may be inaccurate and materially different from mineral quantities we actually recover."

Selected Production and Operating Data

	As of and for the year ended December 31,			As of and for the six months ended June 30,	
	2015	**2016**	**2017**	**2017**	**2018**
Production volume					
Coal (tonnes in million)	19.3	19.6	24.3	9.4	11.2
Refined tin (tonnes)	27,431	23,756	30,249	14,905	12,366
Gold (oz t)	71,053	70,988	63,240	32,568	33,468
Silver (oz t)	556,818	508,399	456,251	209,976	245,567
Nickel ore (wmt)	1,654,796	1,635,024	5,572,056	1,576,836	3,768,173
Ferronickel (TNi)	17,211	20,293	21,762	9,327	12,811
Bauxite ore (wmt)	201,517	241,202	648,431	206,509	416,733
Aluminum (tonnes)	257,149	245,483	218,816	106,156	119,455

	As of and for the year ended December 31,			As of and for the six months ended June 30,	
	2015	2016	2017	2017	2018
Sales volume					
Coal (tonnes in million)	19.1	20.8	23.6	11.4	12.2
Refined tin (tonnes)	30,087	26,677	29,914	14,749	12,359
Gold (oz t)	455,865	328,805	424,454	106,033	442,394
Silver (oz t)	423,521	587,940	533,284	176,218	257,077
Nickel (wmt)	46,751	734,886	2,935,666	326,013	1,921,800
Ferronickel (TNi)	18,643	20,887	21,878	6,634	12,578
Bauxite (wmt)	182,624	290,581	838,069	128,232	256,500
Aluminum (tonnes)	256,622	247,994	207,276	91,264	97,507
Average selling price					
Coal (Rp. in million per tonne)	0.7	0.7	0.8	0.8	0.8
Refined tin (Rp. in million per tonne)	223.3	247.3	276.8	272.1	308.1
Gold (Rp. in million per oz t)	17.0	16.9	17.4	17.0	18.5
Silver (Rp. in million per oz t)	0.2	0.2	0.2	0.25	0.2
Nickel ore (Rp. in million per wmt)	0.2	0.4	0.5	0.5	0.4
Ferronickel (Rp. in million per TNi)	142.6	133.5	146.8	133.4	194.0
Bauxite ore (Rp. in million per wmt)	0.4	0.4	0.5	0.4	0.5
Aluminum (Rp. in million per tonne)	24.3	22.5	27.7	26.4	32.1
Cash cost					
Coal (Rp. in million per tonne)[(1)]	0.5	0.5	0.6	0.7	0.6
Refined tin (Rp. in million per tonne)[(2)]	157.7	179.7	201.0	203.1	213.9
Gold (Rp. in million per oz t)[(3)]	14.3	14.9	15.7	7.3	8.2
Silver (Rp. in million per oz t)[(4)]	0.2	0.2	0.2	0.1	0.1
Nickel ore (Rp. in million per wmt)[(5)]	0.3	0.2	0.2	0.2	0.2
Ferronickel (Rp. per TNi)[(6)]	126.6	99.8	103.8	109.1	112.0
Bauxite ore (Rp. in million per wmt)[(7)]	0.3	0.2	0.3	0.2	0.3
Aluminum (Rp. in million per tonne)[(8)]	17.5	14.8	16.6	16.2	18.9

Notes:

(1) Cash cost per tonne of coal is calculated as the sum of (a) mining costs, transportation, freight and handling costs, royalties paid to the Government, coal processing and other cash production costs, restoration costs and increases or decreases in coal inventories, divided by (b) coal sales volumes for the relevant periods.

(2) Cash cost per tonne of refined tin is calculated as the sum of (a) costs of raw materials, royalties paid to the Government, tin processing and other cash production costs and increases or decreases in tin inventories, divided by (b) refined tin production volumes for the relevant periods.

(3) Cash cost per oz t of gold is calculated as the sum of (a) mining costs, gold doré processing and other cash production costs, restoration costs and increases or decreases in gold doré inventories, divided by (b) gold production volumes for the relevant periods.

(4) Cash cost per oz t of silver is calculated as the sum of (a) mining costs, silver ore processing and other cash production costs, restoration costs and increases or decreases in silver ore inventories, divided by (b) silver production volumes for the relevant periods.

(5) Cash cost per wmt of nickel ore is calculated as the sum of (a) mining costs, nickel ore processing and other cash production costs, restoration costs and increases or decreases in nickel ore inventories, divided by (b) nickel production volume for the relevant periods.

(6) Cash cost per TNi of ferronickel is calculated as the sum of (a) mining costs, ferronickel processing and other cash production costs, restoration costs and increases or decreases in ferronickel inventories, divided by (b) ferronickel production volume for the relevant periods.

(7) Cash cost per wmt of bauxite is calculated as the sum of (a) mining costs, bauxite processing and other cash production costs, restoration costs and increases or decreases in bauxite inventories, divided by (b) bauxite production volumes for the relevant periods.

(8) Cash cost per tonne of aluminum is calculated as (a) production costs less (b) depreciation related to the production of aluminum, divided by (c) aluminum production volumes for the relevant periods.

RISK FACTORS

An investment in the Notes is subject to significant risks. You should carefully consider all of the information in this Offering Memorandum and, in particular, the risks described below before deciding to invest in the Notes. The following describes some of the significant risks that could affect us and the value of the Notes as well as our ability to pay interest on, and repay the principal of, the Notes. Additionally, some risks may be unknown to us and other risks, currently believed to be immaterial, could turn out to be material. All of these could materially and adversely affect our business, financial condition and results of operations. The market price of the Notes could decline due to any of these risks and you may lose all or part of your investment. This Offering Memorandum also contains forward-looking statements that involve risks and uncertainties including those described under "Forward-Looking Statements" elsewhere in this Offering Memorandum. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the risks faced by us described below and elsewhere in this Offering Memorandum.

Risks Common to All Our Mining Businesses

The prices of the products we sell are cyclical in nature and subject to fluctuations

Our results of operations are highly dependent upon the prices we receive for the sale of our products, which are affected by numerous factors beyond our control. These factors include, but are not limited to, forward selling by producers, production cost levels in major mining regions, weather conditions, distribution problems, labor disputes, the price and availability of alternatives, actions taken by governments and international cartels, and government regulations such as those relating to taxation, royalties, allowable production, importing and exporting and environmental protection. The price of our products are also affected by macro-economic factors such as expectations regarding inflation, interest rates, global and regional supply and demand as well as general global economic and political conditions. We do not currently hedge our cash flows against the risks of price fluctuations. An extended or substantial decline in global prices of our products may adversely affect our business, financial condition and results of operations.

In addition, an increase in the global supply and/or a decrease in world consumption levels of any of the products we sell may result in an oversupply of and downward selling pressure on such products. For example, according to AME, the price of coal has experienced significant fluctuations over the past 20 years as a result of a growing global coal market and corresponding increase in demand and supply for coal worldwide. In 2008, the price for FOB Newcastle coal with calorific values of 6,322 kcal/kg (gross-as-received), was as high as US$180/tonne, before declining to US$80/tonne. In 2011, the price for such specification of coal rose to as high as US$130/tonne, before experiencing five consecutive years of declining prices until falling as low as US$50/tonne in 2016. The price for such specification of coal then rose to as high as US$116/tonne. Similarly, in the past 10 years, although the price of tin has matched the price cycle of other metal, the price for tin peaked at over US$33,000/tonne in 2011. This was as a result of strong demand for tin from China, combined with a decline in world production, which exacerbated a market that had regularly been in undersupply, according to AME. Over the past five years, the price of tin has averaged just under US$20,000/tonne. Similarly, according to AME, the price of nickel reached a record high of US$54,000/tonne in 2007, before going as low as US$29,000/tonne in 2011 as a result of a strong increase in supply of nickel from Southeast Asia, in particular from Indonesia. An oversupply in the global markets in any of the products we sell could, in turn, reduce global prices of such products and the prices we receive under new supply agreements, which may adversely affect our business, financial condition and results of operations.

Changes in the demand for our products may adversely affect our sales volume and revenues

Our revenues depend on the volume of the products we sell, which in turn depends on the level of demand for these products. Demand for coal is mostly driven by its use as fuel in power and electricity generation, which in turn depends on the prices of alternative energy sources, including nuclear energy, natural gas, oil and renewable energy sources, such as solar and hydroelectric power. In the case of tin, demand is mostly driven by its use in the electronic industry and would be reduced as a result of a slowdown in the electronic industry and if

manufacturers continue the trend towards miniaturization of electronic products. In the case of gold, demand is mostly driven by its general perception as a store of value as well as its use by direct consumers, such as for jewelry and coins. In the case of nickel, demand is mostly driven by its use in the stainless steel industry and other industries for nickel-based products, such as non-ferrous alloys, plating and batteries. In the case of bauxite, demand is mostly driven by growth forecasts in demand for aluminum. A decrease in demand for our products as a result of economic slowdowns or recessions or other factors could decrease the demand for and the volume of products we sell. Any significant decrease in the demand of the products we sell may adversely affect our business, financial condition and results of operations.

We depend on a small number of mines for a substantial portion of our production volume

Substantially all of our coal and tin is produced at our Tanjung Enim Coal mine and Bangka Tin Mines, respectively. See "Business — Our Coal Business — Tanjung Enim coal mining concessions" and "Business — Our Tin Business — Bangka tin mining concessions." These mines are subject to the typical hazards of operating mining facilities, including accidents and natural disasters. See "— Our mines are subject to inclement weather and natural disasters" and "Risks Common to All Our Businesses — We may experience unexpected disruptions to our mining and smelting operations as a result of operational and infrastructure risks." It is expected that these mines will continue to provide a substantial portion of our operating revenues and cash flows in at least the short to medium-term. Consequently, to the extent that our operations at these mines are subject to a temporary or prolonged disruption as a result of suspension or termination of mining licenses, major equipment failure, failure to receive required supplies in a timely manner or at all, or catastrophic events, such as fires, floods or adverse weather conditions, our business, results of operations and financial condition may be adversely affected. In addition, if we were to experience production difficulties at our Tanjung Enim Coal Mine or Bangka Tin Mine, we may encounter difficulties in meeting our commitments to our customers in a sufficient or timely manner. In such event, we may be contractually required to compensate or pay other penalties to our customers. As a result, our customers may terminate or suspend their respective agreements with us, which may adversely affect our business, financial condition and results of operations.

Our estimates of reserves and resources may be inaccurate and materially different from mineral quantities we actually recover

There is a significant degree of uncertainty attributable to the estimation of reserves and resources. The process of estimating reserves and resources is complex and requires us to make significant assumptions in the evaluation of available geological, metallurgical and other data. In addition, for reserve estimates we must make assumptions as to commodity prices, drilling, operating expenses and royalty taxes as well as legal, environmental and social factors, among other things. Many of these assumptions are inherently subjective, and the accuracy of our estimates relies in part on our ability to make accurate assumptions. Actual future commodity prices, production, operating expenses, royalty taxes and quantities of recoverable minerals may vary substantially from our assumptions. As a result, our estimates of reserves and resources may be materially inaccurate. The reserves and resources disclosed by us are not necessarily indicative of future results of operations and should not be interpreted as assurances of mining life or the profitability of our future operations. Until minerals are actually mined and processed, the quantity of ore and grades must be considered as estimates only. We cannot assure you that our reserves and resources conform to geological, metallurgical or other expectations or that the estimated volume or grade of ore will be recovered.

Our mining operations and expansion programs depend on our ability to obtain, maintain and renew necessary permits and approvals from the Government

We are required to obtain, maintain and renew various permits and approvals from the Government for our mining operations. The licenses from the Government or regional governments required for operations of a mining business include general corporate, mining, capital investment, labor, environmental, land utilization and other licenses. Most of these permits have various expiration dates and we must renew all of our permits and approvals before they expire, as well as obtain new permits and approvals when required.

We cannot assure you that the relevant government authorities (whether at the Government or regional government level) will not revoke or renew our existing permits, refuse to issue new permits, issue permits that conflict with our mining concessions for the approvals which we require to operate our business and implement any expansion programs or that they will not impose unfavorable terms and conditions in connection with an issuance or renewal of such permits or approvals. This uncertainty partly arises as a result of the regulatory regime within which we operate. See "— Our mining operations may be affected by mining and other permits issued by local governments that conflict with our concessions" and "— Risks Relating to Indonesia — The interpretation and implementation of legislation on regional governance in Indonesia is uncertain and may adversely affect our business, financial condition, results of operations and prospects." For example, in 2004, our mining license for our coal mining concession area in Lahat, South Sumatra, was revoked by the local South Sumatra government as a result of a political dispute with the local Lahat regency government. Following the revocation, a third-party was granted rights to commence production operations at the Lahat coal mining concession area. As we believe our Lahat coal mining concession was unrightfully revoked, we have submitted a report to the Corruption Eradication Commission (*Komisi Pemberantasan Korupsi* or "KPK") and the issue is currently still under investigation. A loss of, or failure to obtain or renew, any permits, agreements and approvals necessary for mining business operations may adversely affect our business, financial condition and results of operations.

We rely on third-party contractors to conduct certain of our mining operations, and such contractors may be constrained by labor disputes, face operational difficulties or perform unsatisfactory work

We engage third-party contractors to provide the equipment, facilities, services, materials, supplies, labor and management required for the operation and maintenance of certain of our mines. Any significant failure by such third-party contractors in the performance of their obligations to a satisfactory level, or at all, under our operating agreements, whether as a result of financial or operational difficulties or otherwise, may adversely affect our business, financial condition and results of operations. Any delay or failure by our third-party contractors to perform under our operating agreements for any reason, including factors beyond our control, may result in delays in delivery to customers and/or shortfalls in planned production. If such delays and/or production shortfalls were to occur, we may have to purchase products from the market to meet our delivery obligations to our customers or we may be contractually required to compensate our customers for these delays. In such event, we may not be able to recover these penalties or additional costs from the relevant third-party contractor.

In addition, if any of our third-party contractors are unable to deliver their services according to the negotiated terms and timetable for any reason, we may be required to engage alternative third-party mining contractors. Should any operating agreements with any of our third-party contractors be terminated, mining operations at the affected mine, and potentially all of our mines, will be disrupted for a substantial period while such third-party contractor removes its equipment and a new contractor delivers and installs its equipment. Any of the foregoing may adversely affect our business, financial condition and results of operations.

Our mines are subject to inclement weather and natural disasters

All of our mines are located in Indonesia, which is subject to inclement weather, particularly during the rainy season, as well as natural disasters such as earthquakes and landslides. See "— Risks Relating to Indonesia — Indonesia is located in an earthquake zone and is subject to significant geological risks and other natural disasters that could lead to property damage, loss of life, social unrest and economic loss." A prolonged rainy season can have a significant impact on mining operations, equipment utilization rates and overburden removal rates. In addition, actual rainfall and rain hours can vary significantly in the regions where we operate from year to year and can result in our utilization and production volumes for a period or a particular year being significantly lower than anticipated and targeted, even after we build in allowances for typical rainfall and rain hours due to seasonal weather conditions. We are also subject to the risks of natural disasters such as earthquakes and landslides, which could significantly damage our mining and production facilities and general infrastructure. For example, a rainstorm and flash flood occurred on Bangka Island in 2016, requiring us to cease operations at our Bangka Tin Mines for a week. Further, extensive damage to our facilities and employee casualties whether as a result of earthquakes, landslides or other natural disasters may adversely affect our ability to conduct our

operations and, as a result, reduce our future operating results. Our insurance policies may not be adequate to cover any losses or liabilities resulting from the occurrence of these events, and such events may adversely affect our business, financial condition and results of operations. See "— Risks Common to All Our Businesses — Our insurance may not be adequate to cover our losses or liabilities."

Our mining operations may be disrupted by opposition from local communities

We face the risk that our mining operations will be disrupted by local community opposition or unrest. Due to the adverse environmental impact associated with mining activities, local communities surrounding the areas in which we conduct mining operations may oppose, at times violently, the carrying out of further mining activities. For example, on December 3, 1998, following the arrests of several illegal miners operating at our gold mining concession areas, we faced riots from small-scale gold miners and local communities at our gold mines and processing plants. As a result, we shut down all our gold mining operations for 10 days. More recently, in July 2017, we faced strong opposition from local fisherman with respect to damage to the coral reef as a result of our offshore tin mining operations at our Bangka Tin Mines. After holding meetings with local residents, we resolved the situation with an agreement to conduct coral reef rehabilitation by setting up fish shelters in the affected offshore mining areas. Local communities may also cause disruptions arising out of, but not limited to, disputes relating to compensation claims for land acquisitions and land use rights, and contractor or employee death or serious injury. We cannot assure you that we will be able to successfully resolve or overcome opposition from local communities that we may encounter in the future. In the event that our mining operations are disrupted by local community opposition or unrest and we are unable to resolve such disruption in an amicable or timely manner or at all, we may not be able to meet production targets, and our business, financial condition and results of operations may be adversely affected.

Our operations are subject to environmental regulations which may cause us to incur significant costs, liabilities or interrupt or cease mining operations, any of which may adversely affect our results of operations

Due to the significant impact of mining operations on the environment, our mining operations are generally subject to extensive Indonesian regulation governing operational activities such as exploration, development, production, health and safety, toxic substances, waste disposal, protection and remediation of the environment, land rehabilitation and abandonment and other related matters. See "Indonesian Regulatory Framework — Environmental Regulation." These regulations require various governmental permits and licenses to be granted to us prior to the commencement of mining operations on a particular site. While appeals are available should the Government or local government deny a certain level of production, we cannot assure you that such appeal will be successful or that we will be able to mine at our desired levels or amounts that meets the minimums stated in our sales agreements. Our third-party contractors are required to review and comply with our environmental and health and safety standards and under the terms of our concession licenses, we are responsible for ensuring compliance with applicable Indonesian laws and regulations and applying for such certifications, permits and licenses.

The Indonesian environmental regulations also set forth our obligations to conduct reclamation and rehabilitation of all areas being mined within our concession areas. Our mine reclamation and rehabilitation liabilities can, however, change significantly if our actual costs incurred in connection with mine reclamation and rehabilitation vary from our assumptions or if governmental regulations change either while we hold the current license or upon the renewal of our licenses. See "— We may be adversely affected by changes to Indonesian laws and regulations relating to the mining industry." Any significant unanticipated increase in our reclamation and rehabilitation costs may adversely affect our business, financial condition and results of operations. If we or any of our third-party contractors fail to comply with applicable environmental regulations, or if an incident were to occur on a mining site owned by us, we may be liable for any damages or expenses arising out of or in connection with such incident, and our business, financial condition and our results of operations may be adversely affected.

We may be adversely affected by changes to Indonesian laws and regulations relating to the mining industry

The Indonesian mining industry is subject to extensive regulation within Indonesia, and there have been major developments in laws and regulations applicable to mining concession holders and mining service operators. In particular, the enactment of the Mining Law replaced the previous regulatory framework. The Mining Law, which sets out the regulatory framework for the mining industry in Indonesia, only contains substantive principles and leaves many specific issues to be addressed in implementing regulations, such as the appointment of mining services providers and domestic processing. See "Indonesian Regulatory Framework — Mining Regulation." We cannot assure you that future regulatory changes affecting the mining industry in Indonesia will not be introduced or unexpectedly repealed, or that new interpretations of existing laws and regulations will not be issued, which might have a significant impact upon our business, financial condition and results of operations. If we fail to comply with the Mining Law and its implementing regulations, we may be subject to administrative sanctions in the form of written warnings, temporary suspensions or the revocation of our mine licenses. A court or an administrative or regulatory body may in the future render interpretations of these laws and regulations, or issue new or modified regulations that differ from our interpretation, which may adversely affect our business, financial condition and results of operations.

Our mining operations may be affected by mining and other permits issued by local governments that conflict with our concessions

Under the Indonesian constitution, all mineral resources are deemed to be national assets and are therefore controlled by the Government. Under previous mining laws and regulations, concession holders were able to conduct mining activities in Indonesia under either a contract of work (*Kontrak Karya* or "CoW") or a mining authorization (*Kuasa Pertambangan* or a "KP"). See "Indonesian Regulatory Framework — Mining Regulation — Mining licensing system." These contracts and authorizations were typically granted for a period of 20 to 30 years, with extensions permitted. The enactment of Law No. 4 of 2009 on Coal and Mineral Mining on January 12, 2009 (the "Mining Law") stipulates that previously granted mining rights (either through a CoW or a KP) will continue to be valid until expiry, subject to certain adjustments. Under current mining laws, a new mine license will be granted through the issue of either a mining license (*Izin Usaha Pertambangan* or "IUP") or a special mining license (*Izin Usaha Pertambangan Khusus* or "IUPK") for areas which have been designated as being of national strategic interest or state reserve areas. While an IUPK can only be issued by the Government, through the Ministry of Energy and Mineral Resources (*Menteri Energi dan Sumber Daya Mineral* or "MEMR"), IUPs may be issued by the MEMR or the relevant provincial government, municipal government or district government, based on the geographical coverage of the mine and its infrastructure requirements. In 2014, based on Law No. 23 of 2014, which was further amended by the Law No. 2 of 2015 and Law No. 9 of 2015 on Regional Government, the authority of a regent or mayor in relation to issuance of mining licenses has been revoked and transferred to provincial government or central government.

Under both the previous and current regulatory regimes, the delegation and transfer of authority to issue concession or mining license rights gives rise to the possibility of overlap between licenses or concessions issued by different authorities. There have been instances in the past where a party was granted an IUP (previously, a KP) for mining of resources by a regional government that overlapped with a concession granted by the MEMR. As Indonesia does not have a centralized system for issuance of licenses, it is possible that the provincial government and the Government issue different licenses to different entities over the same areas of lands. Therefore, it is also possible that the concessions we have been awarded overlap with the holder of plantation rights, oil and gas rights or forestry rights. Overlaps have also occurred in relation to plantation and forest permits. We cannot assure you that local miners will not receive permits to mine, or obtain logging or plantation permits within the concession areas of our concessions from local or regional governments which conflict with our mining rights under the terms of our coal concessions. We have in the past been unsuccessful in legal disputes relating to overlap between our mining concessions and land owned by third parties. If any future overlap were to occur or is alleged to have occurred, our mining operations on such sites may be disrupted, and in the event that such third-party claims are successful, we may be required to cease our mining operations on such sites which may adversely affect our business, financial condition and results of operations. See "— Risks

Relating to Indonesia — The interpretation and implementation of legislation on regional governance in Indonesia is uncertain and may adversely affect our business, financial condition, results of operations and prospects."

We may be affected by issues relating to small-scale and illegal mining

Small-scale and illegal mining is a common issue for mine operators in Indonesia and has increased since the late 1990s as a result of the difficult economic conditions in Indonesia caused by the Asian financial crisis, the decentralization of the Indonesian government's authority and weakened control over regional activities under the Regional Autonomy Law, and increased black-market demand for mineral products. Illegal mining in and around our concession areas, particularly in relation to our coal, tin and gold mining operations, could result in depletion of our reserves or alleged incompliance with environmental regulations when illegal mining is conducted within our concession areas, where we are obligated to conduct reclamation activities. We have implemented security measures at our concession areas to protect against illegal mining, including our internal security guards as well as protection supplied by the Indonesian national police and national armed forces. We have also made efforts to recruit small-scale miners who would otherwise be operating, unauthorized, in our tin concession areas. See "Business — Our Tin Business — Mine operations and logistics — Security." However, we cannot assure you that our efforts will be successful in reducing the level of small-scale and illegal mining that occur at our mining concession areas. In the event that we incur reserve losses or rehabilitation costs for illegally mined areas if we are alleged to have been undertaking illegal mining activities, our business, financial condition and results of operations may be adversely affected.

The mining industry is capital intensive and we may experience limited availability of funds

Our exploration, mining and processing operations are very capital intensive and rely on the availability of sizeable amounts of funds for working capital and capital expenditure. We are undertaking various development and expansion plans that we will have to allocate additional capital towards. See "— Risks Common to All Our Businesses — Our expansion projects are subject to operational risks that may result in increased costs or delays that prevent their successful implementation." While we have unutilized banking facilities and available funds, we cannot assure you that we will be able to refinance borrowings as and when such borrowings become due on commercially reasonable terms or at all. We may be required to meet our funding needs by procuring financing on restrictive terms. Further, our level of borrowings would mean that an increased portion of our expected cash flow may have to be set aside for the payment of interest and principal repayment on our borrowings, thereby reducing the funds available to us for use in our general business operations.

Our level of borrowings, coupled with the current global economic climate, may also result in accelerated demands for payment or calls by lenders during events of default. This may restrict our ability to obtain additional financing for capital expenditure, acquisitions or general corporate purposes and may cause us to be particularly vulnerable in the current or any future general economic downturn. In addition, in the event we are required to restructure our borrowings or provide funding to any of our subsidiaries, associated companies or joint ventures to optimize our capital management structure, we may have to incur additional borrowings and may decide to reduce our planned capital expenditures. We cannot assure you that we will be able to obtain additional financing for our needs either on a short-term or long-term basis on terms favorable to us or at all. The factors that could affect our ability to procure financing include the cyclicality of our businesses and market disruption risks which could adversely affect the liquidity, interest rates and the availability of funding sources. In the event that we are unable to obtain adequate funding to support our existing operations and/or development and expansion plans, our business, results of operations and financial condition may be adversely affected.

Our exploration efforts are highly speculative in nature and we may be unable to locate additional reserves in our concession areas or secure new concessions with reserves that are economically recoverable

Our reserves will decline as mining continues and we depend on our ability to replenish our reserves and resources for our long-term viability. This, in turn, depends on our ability to acquire additional mining concessions and/or locate additional resources that are economically recoverable within our concession areas or

in such other areas where we have permission to carry out exploration activities. See "— Our mining operations and expansion programs depend on our ability to obtain, maintain and renew necessary permits and approvals from the Government." Mining exploration is highly speculative in nature, involves many risks, including the risk that we will encounter no commercially mineable reserves, and is frequently unsuccessful. Moreover, once mineable reserves are discovered, it may take a number of years from the initial phases of drilling before production is possible, during which time the economic feasibility of production may change. Substantial expenditures are required to establish reserves and resources through drilling, to determine processes to extract the metals and, if required, to construct mining and processing facilities and obtain the rights on the land and resources required to develop the mining activities. Although we devote efforts to undertake exploration activities at our existing mines and areas where we have exploration permits, we cannot assure you that our exploration programs will result in the expansion or replacement of current production with new proven and probable reserves. Our inability to acquire additional mining concessions or locate economically viable reserves could lead to a decrease in our production levels, which may adversely affect our business, financial condition and results of operations.

In addition, as reserves are gradually depleted in the ordinary course of a given mining operation, the average mining depth and operating distance from processing infrastructure increases. As our more easily accessible reserves are depleted, we will need to mine deeper and implement more complex and labor intensive extraction procedures. These rising extraction costs affect the estimated life of the mine, which is determined on the basis of the feasibility of continued extraction in the context of rising costs, and may adversely affect our business, financial condition and results of operation.

Risks Relating to Our Aluminum Smelting Business

The demand for and price of our aluminum products are cyclical and volatile

The aluminum industry is cyclical, and we are subject to cyclical fluctuations in global economic conditions and aluminum end-use markets. The demand for aluminum is sensitive to, and quickly impacted by, the demand for finished goods manufactured by our customers in industries that are cyclical, such as the commercial construction and transportation, automotive and aerospace industries, which, in turn, may be affected by changes in the global economy, currency exchange rates, energy prices or other factors beyond our control. The demand for aluminum is also highly correlated to global economic growth, particularly China's economic growth and demand for aluminum, as the Chinese market is a significant source of global demand for and supply of commodities, including aluminum. A sustained slowdown in China's economic growth and aluminum demand, or a significant slowdown in other markets, that is not offset by decreases in supply for or increased aluminum demand in emerging economies, such as India, Brazil and other Southeast Asian countries, would negatively impact the global supply and demand for aluminum and aluminum prices. We are unable to predict the future course of industry variables or the strength of the global economy and the effects of government intervention. Negative economic conditions, such as a major economic downturn, a prolonged recovery period, a downturn in the commodity sector, or disruptions in the financial markets, may adversely affect our business, financial condition and results of operations.

We price our primary aluminum products by reference to international market prices. As the international market price for these products is an important consideration in the pricing of our products, volatility of international market prices of primary aluminum products can significantly affect our results of operations. International aluminum prices consists of several components including: the underlying base metal component, which is typically based on quoted prices from the London Metal Exchange (the "LME"); the regional premium, which comprises the incremental price over the base LME component that is associated with the physical delivery of metal to a particular region (e.g., the premiums for supply of aluminum to main Japanese ports, also known as the "MJP" premium); and the product premium, which represents the incremental price for receiving physical metal in a particular shape (e.g., cod, billet, slab, rod) or alloy. Each of the above three components has its own drivers of volatility.

The LME price is typically driven by macroeconomic factors, global supply and demand of aluminum (including expectations for growth and contraction and the level of global inventories), and trading activity of

financial investors. Changes in aluminum-based industries can also have a significant impact on the LME price and the overall aluminum industry. In addition, since 2013, the LME has been engaged in a program aimed at reforming the rules under which registered warehouses in its global network operate. The invisible rule changes took effect on February 1, 2015, and the LME has announced additional changes that will be implemented in 2016. These LME warehouse rule changes, and any subsequent changes the LME chooses to make, could impact the supply/demand balance in the primary aluminum physical market and may impact regional delivery premiums and LME aluminum prices. Decreases in regional delivery premiums and/or decreases in LME aluminum prices could have a material adverse effect on our business, financial condition, and results of operations. Regional premiums tend to vary based on the supply of and demand for metal in a particular region and associated transportation costs. Decreases in regional premiums that participants in the physical metal market pay for immediate delivery of aluminum would have a negative impact on our business. LME warehousing rules and surpluses have also caused regional premiums to decrease. Product premiums are generally a function of supply and demand for a given primary aluminum shape and alloy combination in a particular region. A sustained weak LME aluminum pricing environment, deterioration in LME aluminum prices, or a decrease in regional premiums or product premiums may adversely affect our business, financial condition, and results of operations.

Market-driven balancing of global aluminum supply and demand may be disrupted by non-market forces and result in an oversupply of aluminum

The existence of non-market forces on global aluminum capacity, such as political pressures in certain countries to keep jobs or to maintain or further develop industry self-sufficiency, may prevent or delay the closure or curtailment of aluminum smelters of certain producers including us, respective of their or our position on the industry cost curve. For example, continued Chinese excess capacity overhanging the market and increased exports from China of heavily subsidized aluminum products may continue to materially disrupt world aluminum markets causing continued pricing deterioration. In addition, reductions in production may be delayed or impaired by the terms of long-term contracts to buy power or raw materials. If industry overcapacity persists due to the disruption by such non-market forces on the market-driven balancing of the global supply and demand of aluminum, the resulting weak pricing environment and margin compression may adversely affect our business, financial condition and results of operations.

Our aluminum smelting business may be adversely affected by increases in the cost of raw materials

Our aluminum smelting business is affected by changes in the cost of raw materials, including alumina, coke, coal tar pitch, aluminum fluoride and other key inputs, as well as freight costs associated with transportation of raw materials to our smelters. We may not be able to fully offset the effects of higher raw material costs through price increases, productivity improvements or cost reduction programs. Similarly, our operating results are affected by significant lag effects of declines in key costs of production that are commodity or LME-linked. For example, declines in the costs of alumina during a particular period may not be adequate to offset sharp declines in metal prices in that period. We could also be adversely affected by large or sudden shifts in the global inventory of aluminum and the resulting market price impacts. Increases in the cost of raw materials, or decreases in input costs that are disproportionate to concurrent sharper decreases in the price of aluminum may adversely affect our business, financial condition and results of operations.

Our aluminum smelting business may be adversely affected by interruptions in our supply of electricity

We consume a substantial amount of electricity as the smelting of primary aluminum employs an electrolytic reduction process that requires a continuous supply of electricity in large quantities. Our aluminum production plants are completely reliant on the energy generated by our two hydroelectric power plants, the Siguragura Power Plant and Tangga Power Plant, which are, in turn, dependent on the water levels of Lake Toba. See “Business — Our Aluminum Smelting Business — Aluminum production plants and supporting facilities — Hydroelectric power plants.” As a result, low water levels at Lake Toba could result in disruptions to our supply of electricity from our Siguragura Power Plant and Tangga Power Plant and require us to hold, re-organize, or

partially or completely shut down our smelting operations. In addition, any unplanned outages at our Siguragura Power Plant and Tangga Power Plant due to equipment failure or other causes may also negatively affect our aluminum smelting operations. Since we began our aluminum smelting operations over 30 years ago, we have experienced an interruption of electricity supply from our power plants only once, for four hours, in September 2010. The interruption was a result of a power outage in the Kuala Tanjung area where our smelter is located. We responded to the outage by reducing the amperage of, and number of pot cells in operation at, our smelter. By managing the amperage and pots properly, we were able to ensure no solidification of the aluminum molten in the pots during the power outage and to resume operations after the four-hour blackout period without difficulty. We cannot assure you that we will be able to effectively manage, if at all, any future interruptions of electricity supply from our power plants. Prolonged interruptions of electricity supply can result in production shutdowns, increased costs associated with restarting production and the waste of production in progress as well as damage to or destruction of the equipment and facilities. If any of the foregoing were to occur or we experienced a major suspension or termination of electricity and power supply to our smelters as a result of some other event, our business, financial condition and results of operations may be adversely affected.

Risks Relating to PT Freeport Indonesia

We may not successfully complete our planned acquisition of a majority beneficial stake in PTFI

We currently own 9.36% of PTFI and plan to acquire a majority beneficial stake in PTFI through the proceeds from this offering and/or bank-financing. To effect the planned acquisition, we have entered into a series of agreements, including the PTFI Divestment Agreement, the PTFI Share Subscription Agreement, the PTRTI Buyout Agreement and the Agreement between the Government of Indonesia, Provincial Government of Papua, the Regency of Mimika and Inalum, see "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia."

The completion of the PTFI Share Acquisition, as contemplated under the aforementioned agreements, is subject to various conditions precedent, including, among others, the MEMR issuing an IUPK to PTFI relating to its Grasberg Mine, the Ministry of Environment and Forestry issuing a decree approving the environmental compliance road map proposed by PTFI in relation to its prospective mining operations, our receiving acceptable taxation determinations relating to the share acquisition from the relevant tax authorities, and the successful execution of other ancillary transaction documents, the satisfaction of which depends on various factors, many of which are beyond our control.

We cannot assure you that we will be able to successfully complete the planned PTFI Share Acquisition on the terms or within the timeline expected, or at all. Our failure to complete the planned PTFI Share Acquisition on terms and within a time frame acceptable to us may have an adverse effect on our business, financial condition, results of operations and prospects. In addition, the parties to the planned PTFI Share Acquisition may waive or amend any of the conditions precedent, either temporarily or permanently. In such an event, the proceeds from the offering of the Notes that have been deposited into the Escrow Accounts, see "Description of the Notes — Escrow of Proceeds," may be used to fund the acquisition notwithstanding the fact that certain of the original conditions precedent, including the condition that the MEMR issue an IUPK to PTFI relating to the Grasberg Mine, may not have been fulfilled. There is no assurance that all such conditions precedent, if amended or waived, will be fulfilled, in a timely manner or at all, or that PTFI will not incur material additional costs to fulfil such obligations.

PTFI's mining operations are subject to operational risks that could adversely affect its business

PTFI's mining operations are subject to risks commonly faced by mining operators, including, among others, operational risks resulting from (i) inclement weather and natural disasters, (ii) reliance on third-party contactor risks, (iii) labor disputes, (iv) opposition from local communities and (v) insufficient insurance coverage to cover losses or liabilities. See "— Risks Common to All Our Mining Businesses" and "— Risks Common to All Our Businesses."

PTFI's Grasberg Mine is very large in scale and is located in steep mountainous terrain in a remote area of Indonesia. Such conditions pose significant operational risks and have required PTFI to overcome special

engineering difficulties and develop extensive infrastructure facilities. In addition, the area receives considerable rainfall, which has led to periodic floods and mudslides. The waste rock (including overburden) and tailings produced due to PTFI's mining operations represent a significant volume of waste material. Managing the volume of waste rock and tailings presents significant environmental, safety and engineering challenges and risks. The mine site is also in an active seismic area and has experienced earth tremors from time to time. PTFI's insurance may not sufficiently cover an unexpected natural or operating disaster.

Underground mining operations can be particularly dangerous, and in May 2013, an accident, which resulted in 28 fatalities and 10 injuries, occurred at PTFI's Grasberg Mine when the rock structure above the underground ceiling of a training facility collapsed. PTFI temporarily suspended mining and processing activities at the Grasberg complex to conduct inspections and resumed open-pit mining and concentrating activities in June 2013, and underground operations in July 2013. PTFI is currently mining the final phase of the Grasberg open pit, which contains high copper and gold ore grades, and expects to transition to the Grasberg Block Cave underground mine in the first half of 2019. No assurance can be given that similar events will not occur in the future.

We cannot assure you that PTFI and/or FCX, who currently manages and is expected to continue managing the mining operations at the Grasberg Mine following the completion of the planned PTFI Share Acquisition, will be able to manage all the operational risks at the Grasberg Mine and prevent such risks from materializing. Any significant disruption to the mining operations at the Grasberg Mine may adversely affect PTFI's business and our financial condition and results of operations.

PTFI has not obtained a permanent IUPK, which it requires for its long-term mining operations, and is currently operating under a temporary IUPK

PTFI is currently operating under a temporary IUPK and is engaged with the relevant Indonesian government authorities to document an extended and/or permanent IUPK. See "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia — PTFI's Mining License." There is no assurance that relevant government authorities will renew PTFI's current temporary IUPK that is expiring on November 30, 2018, or that an extended and/or permanent IUPK will be granted to PTFI, in a timely manner or at all. In particular, there is no assurance that the extended and/or permanent IUPK will be granted in a timely manner in relation to the planned PTFI Share Acquisition or that the relevant government authorities will not impose unfavorable terms and conditions in connection with the issuance of the extended or permanent IUPK. PTFI may also incur significant costs and expenses in order to obtain the IUPK or as a result of any delays or failure to obtain the extended and/or permanent IUPK, which may decrease the value of our share in profit from PTFI. Additionally, in the event that the extended and/or permanent IUPK is not granted, PTFI may have to shut down its operations at the Grasberg Mine which would have a material adverse effect on its business, financial condition and results of operations.

PTFI's mining operations may create difficult and costly environmental challenges, and future changes in environmental laws could require PTFI to incur increased costs and/or result in its temporary IUPK not being extended

Mining operations on the scale of PTFI's Indonesia operations involve significant environmental risks and challenges. PTFI's primary challenge is to dispose of the large amount of crushed and ground rock material, called tailings, that results from the process by which PTFI physically separates the copper-, gold- and silver-bearing materials from the ore that it mines. PTFI's tailings management plan, which has been approved by the Government, uses the unnavigable river system in the highlands near the Grasberg Mine to transport the tailings to an engineered area in the lowlands where the tailings and natural sediments are managed in a deposition area. Lateral levees have been constructed to help contain the footprint of the tailings and to limit their impact in the lowlands.

Another major environmental challenge is managing overburden, which is the rock that must be moved aside in the mining process to reach the ore. In the presence of air, water and naturally occurring bacteria, some overburden can generate acid rock drainage, or acidic water containing dissolved metals that, if not properly

managed, can adversely affect the environment. In addition, overburden stockpiles are subject to erosion caused by the large amounts of rainfall, with the eroded stockpile material eventually being deposited in the lowlands tailings management area; this additional material, while predicted in our environmental studies, influences the deposition of finer tailings material in the estuary.

In October 2017, Indonesia's Ministry of Environment and Forestry (the "Ministry") notified PTFI of administrative sanctions related to certain activities the Ministry indicated were not reflected in PTFI's environmental permit. The Ministry also notified PTFI that certain operational activities were inconsistent with factors set forth in PTFI's environmental permitting studies and that additional monitoring and improvements need to be undertaken related to air quality, water drainage, treatment and handling of certain wastes, and tailings management. PTFI has been engaged in a process to update its permits through submissions and dialogue with the Ministry that began in late 2014, and PTFI believes that it has submitted the required documentation to update such permits. In April 2018, the Ministry issued decrees imposing certain environmental standards related to PTFI's controlled riverine tailings management system which were required to be complied with by early October 2018. PTFI has not fully complied with such decrees and is currently engaged in discussions with the Ministry to work towards a resolution of these issues and an extension of the deadline to comply with the decrees. There is no assurance that PTFI and the Ministry will be able achieve a satisfactory resolution, if at all, or that the Ministry will not impose any penalties or sanctions on PTFI for the non-compliance of the decrees. The decrees also conflict with PTFI's approved environmental management programs and existing environmental permits. If these environmental standards are not modified or delayed, PTFI could be adversely affected as it may not be able to renew its current temporary IUPK that is valid until November 30, 2018 or convert it into a permanent one, such conversion being a condition precedent for the completion of the planned PTFI Share Acquisition, and it may have to shutdown its operations at the Grasberg Mine. See "— We may not successfully complete our planned acquisition of a majority beneficial stake in PTFI" and "— PTFI has not obtained a permanent IUPK, which it requires for its mining operations, and is currently operating under a temporary IUPK."

In addition, PTFI could be forced to incur significant and unforeseen expenses in seeking to comply with applicable environmental laws and standards or in rectifying any environmental accidents or incidents of non-compliance.

Risks Common to All Our Businesses

Shortages of electricity or water supply may adversely affect our operations

We require significant amounts of electricity for our operations and obtain substantially all of the necessary electric power for the operation of our equipment and facilities from our own coal-fired power plants, diesel power plants and hydroelectric power plants. We also have some small thermoelectric generators at certain of our tin smelting and refinery facilities, gold mining and precious metal processing and refining facilities, nickel mining facilities and gas cleaning facilities that serve only as a backup in case of interruptions. Prolonged interruptions of electricity supply can result in lengthy production shutdowns, increased costs associated with restarting production and the waste of production in progress. Further, our backup generators may malfunction or be insufficient to support our production facilities in the event of an interruption in our main electricity sources. In extreme cases, interruptions of electricity supply can also cause damage to or destruction of the equipment and facilities. In addition, the prices for energy resources may be subject to volatility or curtailment, respectively, due to, among other factors, new laws or regulations, imposition of new taxes or tariffs, supply interruptions and equipment damage. In the event of any disruptions in our electricity plants, we cannot assure you that we will have access to other sufficient electricity sources at favorable prices and conditions, which could have a material adverse effect on our business, financial condition and results of operations.

We also require significant quantities of water for our operations and obtain the majority of the water we use for our operations from our own water facilities. Although each operation currently has access to sufficient water resources to cover its operational demands, the extinction of some or all water resources, failure in the water supply infrastructure, or the loss of some or all water supply contracts or relevant rights in relation to any of our mines or operations, in whole or in part, or shortages of water, could require us to curtail or shut down operations and could prevent us from pursuing expansion opportunities. We cannot assure you that water will be available in

sufficient quantities to meet our future production needs or will prove sufficient to meet our water supply needs particularly if other conflicting uses of water, such as human consumption, are prioritized over industrial uses. A reduction of our water supply may adversely affect our business, financial condition and results of operation.

Our expansion projects are subject to operational risks that may result in increased costs or delays that prevent their successful implementation

An integral part of our business strategy is to invest in expanding our production capacity. We are currently developing new tin processing technology, new ferronickel plants, an alumina refinery plant as well as a new calcined petroleum coke plant. See "Business — Our Tin Business — Our tin development projects," "Business — Our Nickel Business — Our ferronickel production facilities," "Business — Our Bauxite Business — Production facility under development — The Mempawah Smelter Grade Alumina Refinery Plant" and "Business — Our Aluminum Smelting Business — Other development projects." As we have surplus coal production capacity and inventory, our expansion projects for our coal business are focused on increasing transportation capacity to extract coal from our Tanjung Enim Coal Mine and the expansion of our downstream coal businesses through the development of a new coal-fired power plant and a coal gasification plant. See "Business — Our Coal Business — Infrastructure development projects" and "Business — Our Coal Business — Downstream coal businesses." Most of our expansion projects are in early stages of development and are subject to a number of risks that may adversely affect our expansion prospects and profitability, including the following:

- unfavorable results from our feasibility studies;
- we may fail to obtain, or experience delays or higher than expected costs in obtaining, the required agreements, authorizations, licenses and permits to develop a project, including the prior consultation procedure and agreements with local communities;
- permits, authorizations, or rights granted to third parties that could conflict with, and require us to alter, our expansion plans;
- we may encounter delays or higher than expected costs in obtaining the necessary equipment, machinery, materials, supplies, labor or services and in implementing new technologies to develop and operate a project;
- our efforts to develop projects according to schedule may be hampered by a lack of infrastructure, including a reliable power supply;
- adverse mining conditions may delay and hamper our ability to produce the expected quantities and qualities of minerals;
- conflicts with local communities and/or strikes or other labor disputes may delay the implementation or the development of projects;
- accidents, natural disasters and equipment failures could result in delays or cost overruns; and
- changes in market conditions or regulations may make a project less profitable than expected at the time we initiated work on it.

In addition, some of our development projects have no operating history upon which to base estimates of production and operating costs. As a result, actual economic returns may differ significantly from our expectations and our feasibility studies.

We may experience unexpected disruptions to our mining and smelting operations as a result of operational and infrastructure risks

Our mining and smelting operations and transportation activities are subject to a number of risks that could disrupt production for varying lengths of time. These risks and changing conditions include operating and infrastructure risks such as fires, explosions, embargoes, injuries and casualties arising from industrial accidents, labor disputes, unexpected geological conditions, mine collapses and environmental hazards; failure by us or any of our contractors to obtain key machinery, equipment and spare parts; unexpected failures and maintenance problems of machinery, equipment, and power plants; changes in geological conditions and geotechnical

instability of our mining pits; delays or disruptions in drilling, excavating and other third-party delays; barging delays due to river congestion and limited rainfall causing shallow conditions along the key rivers we use in our barging operations; inability to access haulage roads, jetties, ports and other infrastructure, which we do not currently own; and issues relating to illegal mining. See "— Risks Common to All Our Mining Businesses — We may be affected by issues relating to small-scale and illegal mining." For example, in January 2017, a fire occurred at our Logam Mulia Precious Metals Refinery. The fire was quickly extinguished and the equipment damage and business interruption as a result of the fire was covered by insurance. However, we were required to partially cease operations at our Logam Mulia Precious Metals Refinery for a month, which resulted in a delay in satisfying certain of our contractual obligations. Future occurrences of such operational and infrastructure risks could cause us to incur substantial losses that may involve serious personal injury or loss of life, severe damage to or destruction of property and equipment, pollution, destruction of natural resources or other environmental damage, environmental remediation responsibilities, regulatory investigation and penalties and suspension of operations. If any of the foregoing were to occur, our business, financial condition and results of operations may be adversely affected.

Our joint ventures and other strategic cooperations may not be successful

We have established several joint ventures including in relation to our coal-fired power plants, ferronickel and nickel processing plants and our chemical grade alumina plant. See "Business — Our Coal Business — Downstream coal businesses," "Business — Our Tin Business — Our tin development projects" and "Business — Our Bauxite Business — Tayan Chemical Grade Alumina Plant." We have also formed strategic cooperations with certain competitors, such as Yunnan Tin Group, our primary competitor for our tin business, and business partners in industries related to our businesses, such as Indonesia's state-owned port operator, public rail operator, electricity supplier and postal service provider. We may enter into other similar arrangements in the future and, although we have sought to protect our interests in these joint ventures and strategic cooperations, such arrangements inherently involve special risks. Whether or not we hold majority interests or maintain operational control in such arrangements, our partners may have economic or business interests or goals that are inconsistent with or opposed to us, exercise veto rights so as to block actions that we believe to be in our or the joint venture's or strategic cooperation's best interest, take action contrary to our policies for objectives with respect to our investments, or as a result of financial or other difficulties, be unable or unwilling to fulfill their obligations under the joint venture, strategic cooperations or other agreements, such as contributing capital to expansion or maintenance projects. If our joint ventures or other strategic cooperations are not successful, our investments in these ventures may be impaired or written down. We cannot assure you that our joint ventures or strategic cooperations will be beneficial to us, whether due to the above-described risks, unfavorable global economic conditions, increases in construction costs, currency fluctuations, political risks, or other factors.

We may be adversely affected by labor disputes and may not be able to renew our arrangements with trade unions on favorable terms

We operate in labor intensive industries and depend on more than 28,000 workers to carry out our operations, of which 38.2% was under direct payroll and 61.8% was from third-party contractors as of June 30, 2018. We engage in collective agreement negotiations with the unions annually. These generally relate to salaries, working conditions and welfare. Although we consider that our relations with employees and contractors are currently positive, we cannot assure you that we will not experience work slowdowns, work stoppages, strikes or other labor disputes in the future, particularly in the context of the annual renegotiation of our collective agreements. For example, we experienced a labor strike in 1999, when some of our employees protested due to dissatisfaction with the outcome of salary negotiations between us and the union representatives. The dispute arose in the background of the 1998 financial crisis and lasted for a period of two months. We eventually reached an agreement with the union to provide reasonable salary increases and to review our employee benefits.

As of June 30, 2018, approximately 97.0% of our employees were represented by trade unions. Although we consider our relations with our employees to be good, large union representation subjects our businesses to the risk of interruptions through strikes, lockouts or delays in renegotiating collective agreements. An inability to

renew our existing arrangements with trade unions on favorable terms or at all may adversely affect our business, results of operations and financial condition.

We depend on our ability to retain and hire key skilled personnel

Our success depends in significant part upon the contributions of a number of our key senior management and personnel, in particular our highly skilled team of engineers, geologists and metallurgists. There can be no certainty that the services of our key personnel will continue to be available. Factors critical to retaining present staff and attracting additional highly qualified personnel include our ability to provide competitive compensation arrangements. Difficulties in retaining or attracting highly qualified individuals in key management positions and highly skilled engineers, geologists and metallurgists could adversely affect our business, financial condition and results of operations. In addition, members of our senior management teams have established relationships with certain of our third-party contractors and key customers. As a result, the loss of any member of our management team could adversely affect our ability to retain these contractors and customers. Changes in our senior management team may also result in a changes in the implementation of our existing strategies and expansion plans.

We require a significant amount of working capital and may be adversely affected if we fail to maintain sufficient levels of working capital

We expend a significant amount of cash in our operations, principally on the purchase of raw materials and transportation and ore mining fees. Moreover, we are currently undertaking several expansion projects in relation to our various business lines, which will require a substantial amount of capital expenditures in the following years. See "— Risks Common to All Our Mining Businesses — The mining industry is capital intensive and we may experience limited availability of funds" and "— Risks Common to All Our Mining Businesses — Our expansion projects are subject to operational risks that may result in increased costs or delays that prevent their successful implementation." We may also require significant capital expenditures to maintain, upgrade and expand our processing and storage facilities, logistics services and other facilities to keep pace with competitive developments, technological advances and changing safety and environmental standards in our industry. We fund our operations principally through cash flow from our operations and short-term or long-term bank loans. As of June 30, 2018, we had cash and cash equivalents of Rp.20,874.8 billion (US$1,449.2 million). We cannot assure you that we will not experience negative cash and cash equivalents in the future. In the event that we are unable to obtain or secure sufficient borrowings or generate sufficient revenue from our operations, or if we fail to maintain sufficient cash to meet our operating requirements, we may not have sufficient cash flow to fund our operations and our business and results of operations will be adversely affected.

Our insurance may not be adequate to cover our losses or liabilities

Our operations entail significant risks. In particular, the industries in which we operate are subject to significant risks that could result in damage to, or destruction of machinery and equipment, and production facilities, as well as accidents leading to personal injuries or death, environmental damage, operational delays and disruptions, monetary losses and potential legal liabilities. We maintain insurance against risks incurred in the operation of our business, in the types and amounts which our management believes to be consistent with industry practice. We maintain insurance against some, but not all, operational and infrastructure risks and natural disasters. In addition, third-party contractors we engage may not carry adequate liability coverage. We cannot assure you that our insurance will be adequate to cover losses or liabilities that may arise or the continued availability of insurance at acceptable premium levels or at all.

Failure to comply with the restrictions and covenants in our debt agreements may adversely affect our businesses, financial condition and results of operations

If we or any of our subsidiaries are unable to comply with the restrictions and covenants in our current or future debt obligations and other agreements, there could be a default under the terms of such obligations or agreements. In the event of a default under these agreements, the holders of the debt could terminate their commitments to lend to us or our subsidiaries, accelerate repayment of the debt and declare all outstanding

amounts due and payable or terminate the agreements. Furthermore, some of the debt agreements which we or our subsidiaries have entered into may contain cross-acceleration or cross-default provisions. As a result, default by us or our subsidiaries under any of such agreements may cause the acceleration of repayment of not only such debt but also other debt, including the Notes, or result in a default under other debt agreements. If any of these events occurs, we cannot assure you that the assets and our cash flows would be sufficient to repay in full all of the debts as they become due, or that we would be able to find alternative financing on terms that are favorable or acceptable to us. In addition, in the course of securing bank loans, we may pledge the shares of our entities to third-party lenders. In the event of a default under such agreements, the relevant third-party lenders may enforce such share pledges and this may result in a change in ownership of certain of our subsidiaries to the relevant third-party lenders, which may adversely affect our business, financial condition and results of operations.

We engage in transactions with certain related-parties that could result in conflicts of interest

We are involved, directly or indirectly, in sale-purchase and service transactions with certain of our related-parties, which primarily consist of other Government-related entities. In accordance with Indonesian law, all transactions with related-parties must be made on terms no more favorable to such parties than those offered to third parties. In addition, with respect to public companies, affiliated party transactions must be appraised by an independent appraiser and disclosed to the public. Our main transactions with related-parties include the sale of our coal products to PT Perusahaan Listrik Negara (Persero) and its subsidiaries ("PLN"), as well as PT Bukit Pembangkit Innovative ("BPI"), PT Semen Baturaja (Persero) Tbk and PT Huadian Bukit Asam Power; the sale of our gold products to PT Pegadaian (Persero) ("Pegadaian"); cooperations with PT Pertamina (Persero) ("Pertamina") with respect to gas utilization, the purchase of fuel and the development of certain of our metal processing plants; and our coal transportation agreement with PT Kereta Api Indonesia (Persero) ("KAI"). See "Related-Party Transactions." We also have existing financing agreements with Government-related banks including PT Bank Mandiri (Persero) Tbk ("Mandiri"), PT Bank Rakyat Indonesia (Persero) Tbk ("BRI") and PT Bank Negara Indonesia (Persero) Tbk ("BNI"). We believe that we are in full compliance with all related-party transaction requirements imposed by Indonesian law. Although we intend to continue entering into transactions with related-parties on terms similar to those that would be offered by or to an unaffiliated third-party, such transactions create the potential for, or could result in, conflicts of interest.

The industries that we operate in are highly competitive and such competition may be exacerbated by the fact that we generally do not enter into offtake or exclusive contracts with our customers

We face competition from other mining and aluminum smelting companies in Indonesia and globally. Factors affecting competition in our industries include prices of our products, supply and price of labor, contractual terms and conditions, our ability to attract and retain qualified personnel and secure the services and supplies needed for our operations. For example, lower cost producers of our products could be better positioned to manage future volatility through commodity price cycles. See "Business — Competition." We cannot assure you that competition will not adversely affect us in the future. With respect to our mining businesses, significant competition exists to acquire mining concessions, land and related assets with potential mineralization. Some other mining companies may have greater financial resources than us, and we may be unable to acquire attractive new mining properties on terms that we consider acceptable. See "— Risks Common to All Our Mining Businesses — Our mining operations and expansion programs depend on our ability to obtain, maintain and renew necessary permits and approvals from the Government." In addition, our mines have limited lives and, as a result, we must periodically seek to replace and expand our reserves by acquiring new properties and by developing projects in order to maintain our competitiveness. See "— Risks Common to All Our Mining Businesses — Our exploration efforts are highly speculative in nature and we may be unable to locate additional reserves in our concession areas or secure new concessions with reserves that are economically recoverable." With respect to our aluminum smelting business, technological advancements or other developments by or affecting our competitors or customers may also affect our competitive position. Failure to improve our refining and smelting technologies or implement our technological improvements may impede our efforts to reduce unit production costs and correspondingly harm our efforts to strengthen our competitiveness against major international aluminum producers. In addition, the risk of customer churn associated with high levels of

competition is exacerbated by the fact that we generally do not enter into offtake or exclusive contracts with our customers, with the exception of our agreements with PLN, the primary offtaker of our coal. See "Business — Customers — Coal — Coal offtake agreements with PLN." Thus, customers could, depending on overall supply available on the market, opt for the products of our competitors, which may adversely affect our business, financial condition and results of operations.

We are subject to foreign exchange rate risk

Our sales are predominantly denominated in U.S. dollars or benchmarked against U.S. dollar equivalent prices. While our cost of revenue is denominated in a combination of U.S. dollars and Rupiah, the proportion of cost of revenue denominated in U.S. dollars varies across each of our businesses. For example, our gold business typically has a higher proportion of cost of revenue denominated in U.S. dollars. Conversely, as our coal sales are largely conducted domestically, a lower proportion of cost of revenue for our coal business is denominated in U.S. dollars. Accordingly, while a depreciation in the value of U.S. dollars will have a negative impact on our overall results of operations, the extent of the impact on the margins for each of our businesses will be commensurate with the proportion of cost of revenue denominated in U.S. dollars, for the respective businesses. See "— Risks Relating to Indonesia — Fluctuations in the value of the Rupiah may materially and adversely affect our financial conditions and results of operations." The price of our products are linked to fluctuations in prices on the international markets, which acts as a hedge against fluctuations in currency exchange rates. We also manage our exposure to foreign currency risk by minimizing the mismatch between our assets and liabilities denominated in foreign currencies. In addition, we enter into foreign exchange transaction agreements to hedge our foreign exchange risk. However, we cannot assure you that such hedging activities will sufficiently mitigate, if at all, our foreign exchange rate risk. As a result, fluctuating foreign exchange rates, in particular fluctuations in the U.S. dollar/Rupiah exchange rates, may adversely affect our business, financial condition and results of operations.

We are subject to interest rate risk

We are exposed to interest rate risk resulting from fluctuations in interest rates in our short-term and long-term indebtedness. As at June 30, 2018, we have an aggregate of Rp.10,180.1 billion (US$706.8 million) in short-term and long-term bank loans with interest rates ranging from 0.1% to 10.0% per year depending on the currency on which the loans are denominated. While the majority of our financing agreements are on fixed interest rates or have been hedged through interest rate swaps, certain of our financing agreements are on floating interest rates and we may from time to time, enter into new financing agreements with floating interest rates. In addition, we cannot assure you that difficult conditions in the global credit markets will not negatively impact the cost or other terms of our existing financing as well as our ability to obtain new credit facilities or access the capital markets on favorable terms. Upward fluctuations in interest rates may increase our borrowing costs, which could impair our ability to compete effectively in our business relative to competitors with lower levels of indebtedness. As a result, our business, financial condition and results of operation may be adversely affected.

Deterioration in our credit profile could increase our costs of borrowing money and limit our access to the capital markets and commercial credit

We expect to request that the major credit rating agencies evaluate our creditworthiness and give us specified credit ratings. These ratings would be based on a number of factors, including our financial strength and financial policies as well as our strategies, operations and execution. These credit ratings are limited in scope, and do not address all material risks related to investment in us, but rather reflect only the view of each rating agency at the time the rating is issued. Nonetheless, the credit ratings we receive will impact our cost of borrowings as well as our ability to access sources of capital on terms that will be advantageous to our business. Failure to obtain sufficiently high credit ratings could adversely affect the interest rate in future financings, our liquidity or our competitive position and could also restrict our access to capital markets. In addition, our credit ratings could be lowered or withdrawn entirely by a rating agency if, in its judgment, the circumstances warrant. If a rating agency were to downgrade our credit rating, our borrowing costs would increase and our funding

sources could decrease. As a result of these factors, a downgrade of our credit ratings may adversely affect our business, financial condition and results of operation.

The nature of our businesses includes risks related to litigation and administrative proceedings that may adversely affect our business and financial performance in the event of an unfavorable ruling

The nature of our businesses exposes us to litigation relating to labor, environmental, health and safety matters, regulatory, tax and administrative proceedings, governmental investigations, tort claims and contract disputes, and criminal prosecution, among other matters. We currently have ongoing legal proceedings. See "Business — Legal Proceedings." In the context of these and any future proceedings, we may not only be required to pay fines or money damages but also be subject to complementary sanctions or injunctions affecting our ability to continue our operations. While we may contest these matters vigorously and make insurance claims when appropriate, litigation and other proceedings are inherently costly and unpredictable, making it difficult to accurately estimate the outcome of actual or potential litigation or proceedings. Although we may establish provisions as we deem necessary, the amounts that we reserve could vary significantly from any amounts we actually pay due to the inherent uncertainties in the estimation and judicial processes. We cannot assure you that administrative or other legal proceedings will not have a material adverse effect on our ability to conduct our business, financial condition and results of operations in the event of an unfavorable ruling.

We may not be able to detect and prevent fraud or other misconduct committed by our employees, representatives, agents, customers or other third parties

We may be exposed to fraud or other misconduct committed by our employees, representatives, agents, customers or other third parties that could subject us to litigation, financial losses and sanctions imposed by governmental authorities, as well as affect our reputation. This misconduct could include:

- hiding unauthorized or unsuccessful activities, resulting in unknown and unmanaged risks or losses;
- intentionally concealing material facts, or failure to perform necessary due diligence to identify potential risks which are material to us in deciding whether to make investments or dispose of assets;
- improperly using or disclosing confidential information;
- engaging in improper activities such as accepting or offering bribes;
- misappropriation of funds;
- conducting transactions that exceed authorized limits;
- engaging in misrepresentation or fraudulent, deceptive or otherwise improper activities;
- engaging in unauthorized or excessive transactions to the detriment of our customers; or
- otherwise not complying with applicable laws or our internal policies and procedures.

Our internal control procedures are designed to monitor our operations and ensure overall compliance. However, such internal control procedures may be unable to identify all incidents of non-compliance or suspicious transactions in a timely manner, if at all. Furthermore, it is not always possible to detect and prevent fraud and other misconduct, and the precautions we take to prevent and detect such activities may not be effective. We cannot assure you that fraud or other misconduct will not occur in the future. If such fraud or other misconduct does occur, it may cause negative publicity as a result, and may adversely affect our reputation, businesses, financial condition and results of operations.

Forward-looking statements in this Offering Memorandum may not be accurate and are subject to uncertainties and contingencies

This Offering Memorandum contains forward-looking statements. All statements other than statements of historical facts included in this Offering Memorandum, including, without limitation, those regarding our financial position, business strategies, prospects, plans and objectives of our Company for future operations, are forward-looking statements. Such forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause our actual results, performance or achievements, or industry results, to be

materially different from any future result, performance or achievements expressed or implied by such forward-looking statements. Such forward-looking statements reflect our current views with respect to future events and are not a guarantee of future performance. Forward-looking statements can be identified by the use of forward-looking terminologies such as the words "may," "will," "would," "could," "believe," "expect," "anticipate," "intend," "estimate," "aim," "plan," "forecast" or similar expressions and include all statements that are not historical facts.

Such forward-looking statements are based on numerous assumptions regarding our present and future business strategies and the environment in which we will operate in the future. Such factors include, among others, general economic and business conditions, competitive environment of the industries in which we operate, the impact of future regulatory or government policy changes affecting us or the industries in which we operate, the continued availability of capital and financing and other factors beyond our control.

In light of these uncertainties, the inclusion of such forward-looking statements in this Offering Memorandum should not be regarded as a representation or warranty by us or our advisors that such plans and objectives will be achieved and we expressly disclaim any obligation or undertaking to release publicly any updates or revisions to any forward-looking statement contained in this Offering Memorandum to reflect any changes in our expectations with regard thereto or any change in events, conditions or circumstances on which any such statement is based.

Our actual results may vary significantly from the industry forecasts, projections and estimates set forth herein

This Offering Memorandum includes certain industry forecasts, projections and estimates. This industry information is based on both assumptions and estimates made by an independent third-party, AME. These forecasts, projections and estimates are based on a number of assumptions, which are inherently subject to uncertainty. Many of these factors are not within our control and some of the assumptions with respect to industry growth are subject to change and actual results may vary materially from those estimated, anticipated or projected and such differences may be material.

Specifically, but without limitation, future realized prices of our products may differ from forecasts, capital costs could increase, projects could be delayed and anticipated improvements in production, capacity or performance might not be fully realized. The underlying assumptions, calculations and methodologies of the industry forecasts, projections and estimates provided by AME and included in this Offering Memorandum have not been verified or ascertained by us or the Initial Purchasers. Accordingly, prospective purchasers are cautioned not to place undue reliance on such information.

Risks Relating to Indonesia

We are incorporated in Indonesia and substantially all of our assets and operations are located in Indonesia. As a result, future political, economic, legal and social conditions in Indonesia, as well as certain actions and policies that the Government may, or may not, take or adopt could materially and adversely affect our business, financial condition, results of operations and prospects and our ability to make payments under the Notes.

Domestic, regional or global economic changes may materially and adversely affect the Indonesian economy and our business

Indonesia's economy was significantly affected by the Asian financial crisis of 1997. The crisis was characterized in Indonesia by, among other effects, currency depreciation, a significant decline in real gross domestic product ("GDP"), high interest rates, social unrest and extraordinary political developments. Indonesia's economy was also significantly affected by the global economic crisis that began in late 2008. The resulting adverse financial developments were characterized by, among other things, a shortage in the availability of credit, a reduction in foreign direct investment, the failure of global financial institutions, a drop in global stock markets, a slowdown in global economic growth and a drop in demand for certain commodities. Further, while the global economy has grown in recent years, the downturn in the China's economy and decline in global

commodity prices have created additional economic uncertainty worldwide. These extremely negative economic developments have adversely affected both developed economies and developing markets, including Indonesia and other Association of Southeast Asian Nations ("ASEAN") countries.

Indonesia and other ASEAN countries have been negatively affected, along with developing market countries globally, by the unprecedented financial and economic conditions in developed markets. Although the Government has taken many steps to improve these conditions, with the aim of maintaining economic stability and public confidence in the Indonesian economy, continuation of these unprecedented conditions may negatively impact economic growth, the Government's fiscal position, the Rupiah's exchange rate and other facets of the Indonesian economy. In addition, the Government continues to have a large fiscal deficit and a high level of sovereign debt, its foreign currency reserves are modest, the Rupiah continues to be volatile with poor liquidity, and the banking sector suffers from high levels of non-performing loans. If the economy continues to be volatile or declines, Indonesia's economic growth, its fiscal position, the Rupiah's exchange rate and other facets of its economy may be negatively affected.

We cannot assure you that the recent improvement in Indonesia's economic condition will be maintained. In particular, any changes in the regional or global economic environment that result in a loss of investor confidence in the financial systems of emerging and other markets, or other factors, may cause increased volatility in the Indonesian financial markets and inhibit or reverse the growth of the Indonesian economy. Any such increased volatility, slowdown or negative growth could materially and adversely affect our business, financial condition and results of operations.

Political and social instability in Indonesia may materially and adversely affect us

Indonesia continues to face various socio-political issues and has, from time to time, experienced political instability and social and civil unrest. Such instances of unrest have highlighted the unpredictable nature of Indonesia's changing political landscape. Indonesia also has many political parties, with no political party winning a clear electoral majority to date. These events have resulted in political instability, as well as general social and civil unrest on certain occasions in recent years.

For example, since 2000, thousands of Indonesians have participated in demonstrations in Jakarta and other Indonesian cities both for and against former President Abdurrahman Wahid, former President Megawati Sukarnoputri, former President Susilo Bambang Yudhoyono, and current President Joko Widodo as well as in response to specific issues, including fuel subsidy reductions, electricity subsidy reductions, privatization of state assets, anti-corruption measures, decentralization and provincial autonomy and the American-led military campaigns in Afghanistan and Iraq. In and shortly after October 2016, thousands of Indonesians marched in a series of demonstrations in Jakarta and other cities either in support of or in opposition to the then Governor of Jakarta, Basuki Tjahja Purnama in connection with blasphemy allegations against him, in the period preceding a Jakarta Gubernatorial election in early 2017. Mr. Purnama was convicted of the blasphemy charges in May 2017. Anies Baswedan (of the same party as the losing candidate of the 2014 Presidential election) had been elected as Governor of Jakarta in April 2017. Although demonstrations in Indonesia since 2000 have been generally peaceful, some have turned violent, including one on November 4, 2016, in which thousands of Indonesians marched in Jakarta demanding legal action against Governor Basuki in connection with the blasphemy allegations against him. Clashes with police injured hundreds and left one dead. Political and related social developments in Indonesia, including the upcoming 2019 presidential election, could result in civil disturbances that could directly or indirectly, materially and adversely affect our businesses, financial condition and results of operations.

Political and social unrest may occur if the results of future elections are disputed or unpopular. Political and social developments in Indonesia have been unpredictable in the past and, as a result, confidence in the Indonesian economy has remained low. Any resurgence of political instability could lead to extended disruptions in our operations and/or adversely affect the Indonesian economy, which may adversely affect our business. We cannot assure you that social and civil disturbances will not occur in the future and on a wider scale, or that any such disturbances will not, directly or indirectly, materially and adversely, affect our business, financial condition, results of operations and prospects, and our ability to make payments under the Notes.

It may not be possible for investors to effect service of process or to enforce certain judgments against us or our management

We are a state-owned company established with limited liability in Indonesia. All of our commissioners, directors and executive officers, as applicable, reside outside the United States. Substantially all of our assets and the assets of these other persons are located outside the United States. As a result, it may be difficult for investors to effect service of process upon our Company or such persons within the United States or other jurisdictions, or to enforce against our Company or such persons in such jurisdiction, judgments obtained in courts of that jurisdiction, including judgments predicated upon the civil liability provisions of the federal securities laws of the United States or any state thereof.

We have been advised by our Indonesian legal advisors, Assegaf Hamzah & Partners, that judgments of non-Indonesian courts are not enforceable in Indonesian courts, although such judgments could be admissible as non-conclusive evidence in a proceeding on the underlying claim in an Indonesian court. There is doubt as to whether Indonesian courts will enter judgments in original actions brought in Indonesian courts predicated solely upon the civil liability provisions of jurisdictions other than Indonesia. As a result, holders of the Notes, as claimants, would be required to pursue claims against us or our commissioners and directors in Indonesian courts on the basis of Indonesian law, which would require re-examination of the underlying claim. We cannot assure you that the claims or remedies available under Indonesian law will be the same, or as extensive, as those available in other jurisdictions.

Holders of the Notes will be exposed to a legal system subject to considerable discretion and uncertainty and may have difficulty pursuing claims under the Notes

Indonesian legal principles relating to the rights of debtors and creditors, or their practical implementation by Indonesian courts, may differ materially from those that would apply within the jurisdiction of the United States or European Union member states. Neither the rights of debtors nor the rights of creditors under Indonesian law are as clearly established or recognized as under legislation or judicial precedent in the United States and most European Union member states. In addition, under Indonesian law, debtors may have rights and defenses to actions filed by creditors that such debtors would not have in jurisdictions with more established legal regimes such as those in the United States and European Union member states.

Indonesia's legal system is a civil law system based on written statutes in which judicial and administrative decisions do not constitute binding precedent and are not systematically published. Indonesia's commercial and civil laws, as well as rules on judicial process, were historically based on pre-independence Dutch law in effect prior to Indonesia's independence in 1945 and some have not been revised to reflect the complexities of modern financial transactions and instruments.

Indonesian courts are often unfamiliar with sophisticated commercial or financial transactions, leading in practice to uncertainty in the interpretation and application of Indonesian legal principles. The application of Indonesian laws depends, in large part, upon subjective criteria such as the good faith of the parties to the transaction and principles of public policy, the practical effect of which is difficult or impossible to predict. Indonesian judges operate in an inquisitorial legal system and have very broad fact-finding powers and a high level of discretion in relation to the manner in which those powers are exercised. In practice Indonesian court decisions may omit, or may not be decided upon, a legal and factual analysis of the issues presented in a case. As a result, the administration and enforcement of laws and regulations by Indonesian courts and governmental agencies may be subject to considerable discretion and uncertainty. Furthermore, corruption in the court system in Indonesia has been widely reported in publicly available sources. See, for example, World Bank, Raising Investment in Indonesia: A Second Generation of Reforms (2005); U.S. Department of State, Indonesia: Country Reports on Human Rights Practices (2009); and Transparency International, International Corruption Perceptions Index (2009).

We cannot assure you that Indonesian courts would enforce, or even consent to adjudicating agreements that are governed by non-Indonesian law. On September 2, 2013, holders of notes issued by BLD Investments Pte. Ltd. and guaranteed by PT Bakrieland Development Tbk ("Bakrieland") under a trust deed governed under

English law, filed a suspension of debt payment petition with the Jakarta Commercial Court on grounds that, among other things, Bakrieland had failed to comply with its obligation to repay the outstanding amount of the notes when noteholders exercised their put option under the terms of the notes. In its decision dated September 23, 2013, the Jakarta Commercial Court ruled, among other things, that as the trust deed relating to the notes is governed by English law, all disputes arising out of or in connection with the trust deed must be settled by English courts and the Jakarta Commercial Court did not therefore have authority to examine and adjudicate the case.

In early 2016, an Indonesian company, PT Trikomsel Oke Tbk. ("Trikomsel"), entered into a court suspension of payment of debt (*penundaan kewajiban pembayaran utang* or "PKPU") process. The PKPU administrators were reported to reject claims that arose from their two Singaporean dollar bonds and have taken the stance that the trustees do not have any standing to make claims on behalf of the bondholders. Further, they asserted that only individual noteholders that had filed claims on their own would be able to participate in the PKPU proceedings and to vote on the restructuring plan. However, such proceedings were settled on September 28, 2016, through the ratification of a composition plan (*rencana perdamaian*) by the Jakarta Commercial Court. Under the approved composition plan, Trikomsel's indebtedness under two Singapore dollar bonds is included as recognized claims and will be fully converted into equity in accordance with all applicable laws. Notwithstanding such settlement, the fact remains that during the PKPU process, the PKPU administrators rejected the trustees' claims, stating that the trustees do not have any legal standing to make claims on behalf of the bondholders and therefore do not have any voting rights in the creditors meeting.

As a result, it may be difficult for holders of the Notes to pursue a claim against our Company in Indonesia, which may adversely affect or eliminate entirely the holders' ability to obtain and enforce a judgment against our Company in Indonesia or increase the holders of the Notes' costs of pursuing, and the time required to pursue, claims against our Company.

Indonesia is located in an earthquake zone and is subject to significant geological risk and other natural disasters that could lead to property damage, loss of life, social unrest and economic loss

The Indonesian archipelago is one of the most seismically active regions in the world. As it is located in the convergence zone of three major lithospheric plates, it is subject to significant seismic activity that can lead to destructive volcanoes, earthquakes and tsunamis, or tidal waves. Examples include the 2004 Indian Ocean Tsunami that devastated the province of Aceh as well as the volcanic eruptions of Mount Rinjani and Mount Raung in 2015 and Mount Agung in 2017, which resulted in the closures of both domestic and international airports in the vicinity. Recently, two 6.9-magnitude earthquakes and several aftershock earthquakes struck the island of Lombok, Indonesia in August 2018. The August 2018 earthquakes were the strongest earthquakes to have hit Lombok to date and together resulted in the deaths of more than 500 people and the displacement of more than 431,000 people. There have also been several other recent major earthquakes in Indonesia, including in Sumatra, Java, Sulawesi, Manokwari and Padang. For example, on September 28, 2018, a 7.5-magnitude earthquake struck just off the central island of Sulawesi, setting off a tsunami that engulfed the coastal city of Palu. The known number of fatalities as a result of the tsunami has risen to over 2,100.

While these events did not have a significant economic impact on the Indonesian capital markets, the Government has had to expend significant amounts of resources on emergency aid and resettlement efforts. A significant portion of these costs has been underwritten by foreign governments and international aid agencies. However, we cannot assure you that such aid will continue to be forthcoming, or that it will be delivered to recipients on a timely basis. If the Government is unable to timely deliver foreign aid to affected communities, political and social unrest could result. Additionally, recovery and relief efforts are likely to continue to strain the Government's finances and may affect its ability to meet its obligations on its sovereign debt. Any such failure on the part of the Government, or declaration by it of a moratorium on its sovereign debt, could potentially trigger an event of default under numerous private-sector borrowings including ours, thereby materially and adversely affecting our business, financial condition, results of operations and prospects, and our ability to make payments under the Notes.

In addition, we cannot assure you that future geological occurrences or other natural disasters will not significantly impact the Indonesian economy. A significant earthquake or other geological disturbance or other natural disasters in any of Indonesia's more populated cities and financial centers could severely disrupt the Indonesian economy and undermine investor confidence, thereby materially and adversely affecting our business, financial condition, results of operations and prospects, and our ability to make payments under the Notes.

Terrorist attacks, terrorist activities and certain destabilizing events have led to substantial and continuing economic and social volatility in Indonesia, which may materially and adversely affect our business

Terrorist attacks and associated military responses have resulted in substantial and continuing economic volatility and social unrest in the world. In Indonesia during the last several years, there have been various terrorist attacks directed towards the Government, foreign governments and public and commercial buildings frequented by foreigners, which have killed and injured a number of people. For example, on January 14, 2016, two suicide bombers and two gunmen exchanged gunfire with police before bombing a police post and café in Sarinah, Central Jakarta, resulting in the deaths of at least four people and injuries to more than 20 people. More recently, on May 13, 2018, terrorist bombings at three churches in Surabaya resulted in the death of at least 13 people and injuries to more than 40 people.

We cannot assure you that further terrorist acts will not occur in the future. Any of the foregoing events, including damage to our infrastructure or that of our suppliers and customers, could materially and adversely affect international financial markets and the Indonesian economy, interrupt parts of our business and materially and adversely affect our financial condition, results of operations and prospects.

Labor activism and unrest may materially and adversely affect us

In March 2003, the Government enacted Law No. 13/2003 and has further issued implementing regulations allowing employees to form unions and preventing interference from employers. The liberalization of regulations permitting the formation of labor unions combined with weak economic conditions has resulted, and will likely continue to result in, labor unrest and activism in Indonesia. Labor unrest and activism in Indonesia could disrupt our operations and the operations of our suppliers, customers and contractors and could affect the financial condition of Indonesian companies in general, depressing the prices of Indonesian securities on the Indonesian or other stock exchanges and the value of the Rupiah relative to other currencies. Such events could materially and adversely affect our business, financial condition, results of operations, and our ability to make payments under the Notes.

Indonesian accounting standards differ from those in the United States

We prepare our consolidated financial statements in accordance with IFAS, which differs from U.S. GAAP. As a result, our consolidated financial statements and reported earnings could be significantly different from those that would be reported under U.S. GAAP. This Offering Memorandum does not contain a reconciliation of our consolidated financial statements to U.S. GAAP, and we cannot assure you that such reconciliation would not reveal material differences. See "Summary of Certain Differences Between Indonesian Financial Accounting Standards and U.S. GAAP" for a summary of certain differences that may be applicable to us.

Fluctuations in the value of the Rupiah may materially and adversely affect our financial conditions and results of operations

One of the most important immediate causes of the economic crisis which began in Indonesia in mid-1997 was the depreciation and volatility of the value of the Rupiah as measured against other currencies, such as the U.S. dollar. Although the Rupiah has appreciated considerably from the low point of approximately Rp.17.000 per U.S. dollar in January 1998, the Rupiah continues to experience significant volatility. More recently, the Rupiah depreciated from approximately Rp.9,670 per U.S. dollar as of December 31, 2012 to approximately Rp.13,548 per U.S. dollar as of December 31, 2017 and Rp. 15,221 per U.S. dollar as of October 19, 2018. See "Exchange Rates and Exchange Controls." We cannot assure you that the Rupiah will not be subject to

depreciation and continued volatility, that the current exchange rate policy will remain the same, or that the Government will, or will be able to, act when necessary to stabilize, maintain or increase the value of the Rupiah, and will not act to devalue the Rupiah, or that any such action, if taken, will be successful.

The Rupiah has generally been freely convertible and transferable (except that Indonesian banks may not transfer Rupiah to persons outside of Indonesia and may not conduct certain transactions with non-residents). However, from time to time, Bank Indonesia has intervened in the currency exchange markets in furtherance of its policies, either by selling Rupiah or by using its foreign currency reserves to purchase Rupiah. We cannot assure you that the Rupiah will not be subject to further depreciation and continued volatility, that the current floating exchange rate policy of Bank Indonesia will not be modified, that additional depreciation of the Rupiah against other currencies, including the U.S. dollar, will not occur, or that the Government will take additional action to stabilize, maintain or increase the value of the Rupiah, or that any of these actions, if taken, will be successful. Modification of the current floating exchange rate policy could result in significantly higher domestic interest rates, liquidity shortages, capital or exchange controls or the withholding of additional financial assistance by multinational lenders. This could result in a reduction of economic activity, an economic recession, loan defaults or declining interest by our customers, and as a result, we may also face difficulties in funding our capital expenditure and in implementing our business strategy. Any of the foregoing consequences could have a material adverse effect on our business, financial conditions, results of operations and prospects.

Downgrades of credit ratings of Indonesia and Indonesian companies could materially and adversely affect us and the market price of the Notes

In 1997, certain internationally recognized statistical rating organizations, including Moody's, Standard & Poor's and Fitch, downgraded Indonesia's sovereign rating, the credit ratings of various credit instruments of the Government, and the credit ratings of a large number of Indonesian banks and other companies. Currently, Indonesia's sovereign foreign currency long-term debt is rated (i) "Baa2 (stable)" by Moody's, (ii) "BBB- (stable)" by Standard & Poor's and (iii) "BBB (stable)" by Fitch. These ratings reflect an assessment of the Government's overall financial capacity to pay its obligations and its ability or willingness to meet its financial commitments as they become due.

We cannot assure you that Moody's, Standard & Poor's, Fitch or any other statistical rating organization will not downgrade the credit ratings of Indonesia or Indonesian companies. Any such downgrade could have an adverse impact on liquidity in the Indonesian financial markets, the ability of the Government and Indonesian companies, including us, to raise additional financing and the interest rates and other commercial terms at which such additional financing is available and could have a material adverse effect on our business, financial condition, results of operations and prospects.

The interpretation and implementation of legislation on regional governance in Indonesia is uncertain and may adversely affect our business, financial condition, results of operations and prospects

Indonesia is a large and diverse nation covering a multitude of ethnicities, religions, languages, traditions and customs. Prior to 1999, the Government controlled almost all aspects of national and regional administration. The period following the end of the administration of former President Soeharto was marked by widespread demand for greater regional autonomy. In response to such demand, in 1999, the Indonesian Parliament passed Law No. 22 of 1999 on Regional Government, which was later replaced by Law No. 23 of 2014 on the same subject matter (as lastly amended by Law No. 9 of 2015), and Law No. 25 of 1999 on Financial Balances Between the Central and Regional Governments, which was later replaced by Law No. 33 of 2004 on the same subject matter. Under these laws, regional autonomy was expected to give regional governments greater powers and responsibilities over the use of national assets and to create a balanced and equitable financial relationship between the central and regional governments.

Regional autonomy laws and regulations have changed the regulatory environment for companies in Indonesia by decentralizing certain regulatory, taxing and other power from the Government to regional governments, and this creates uncertainty. These uncertainties include a lack of implementing regulations on

areas of regional autonomy and a lack of government personnel with relevant sector experience at some regional government levels. Moreover, limited precedent or other guidance exists on the interpretation and implementation of the regional autonomy laws and regulations. In addition, pursuant to the regional autonomy laws, regional governments are given the authority to adopt their own regulations and under the pretext of regional autonomy, certain regional governments have put in place various restrictions, taxes and levies which may differ from restrictions, taxes and levies put in place by other regional governments and/or are in addition to restrictions, taxes and levies stipulated by the central Government. Currently, there is uncertainty in respect of the balance between regional governments and the central Government. Our business and operations are located throughout Indonesia and may be adversely affected by conflicting or additional restrictions, taxes and levies that may be imposed by the applicable regional authorities.

Risks Relating to the Notes

The Notes will be unsecured obligations of our Company and will be structurally subordinated to the claims of creditors of our subsidiaries

The claims of all existing and future third-party creditors of our subsidiaries as to the cash flows and assets of such companies will have priority over the claims of the shareholders of such subsidiaries, including our Company, and the creditors of such shareholders (such as holders of the Notes).

As of June 30, 2018, our total debt amounted to Rp.15,266.8 billion (US$1,059.9 million). The indentures constituting the Notes (the "Indentures") do not contain any restrictions on the ability of our Company or our respective subsidiaries to incur additional indebtedness.

We may not have the ability to raise the funds necessary to finance an offer to repurchase the Notes upon the occurrence of certain events constituting a change of control or otherwise as required by the Indentures governing the Notes

Upon the occurrence of certain events constituting a change of control, we are required to offer to repurchase all outstanding Notes at a purchase price in cash equal to 101% of their principal amount plus accrued and unpaid interest to the date of purchase. If any such event triggering our repurchase obligations were to occur, we cannot assure you that we would have sufficient funds available at such time to pay the purchase price of the outstanding Notes.

The change of control provisions contained in the Indentures may not necessarily afford you protection in the event of certain important corporate events, including a reorganization, restructuring, merger or other similar transaction involving our Company that may adversely affect you, because such corporate events may not involve a change in ownership or control in accordance with the terms of the Indentures, and even if they do, may not constitute a "Change of Control" as defined in the Indentures. Except as described under "Description of the Notes — Repurchase of Notes Upon a Change of Control," the Indentures do not contain provisions that require our Company to offer to repurchase or redeem the Notes in the event of a reorganization, restructuring, merger, recapitalization or similar transaction.

We may not have the ability to raise the funds necessary to finance the redemption of the Notes upon the occurrence of a Special Mandatory Redemption Event

If the planned PTFI Share Acquisition is not completed by June 30, 2019, we are required to redeem the Notes at a redemption price equal to 101.0% of the principal amount thereof, together with accrued and unpaid interest. See "Description of the Notes — Redemption Upon Special Mandatory Redemption Event." We are required to deposit the net proceeds of this offering into the Escrow Accounts (see "Description of the Notes — Escrow of Proceeds") pending the completion of the PTFI Share Acquisition, and the initial amount in the Escrow Accounts will be less than the amount required to fund the Special Mandatory Redemption. We cannot assure you that we will have sufficient funds to pay the redemption price for such a special redemption, and we may require external financing to do so. There is no assurance that we will be able to secure such external

financing, on satisfactory terms or at all, prior to the redemption date, and we may be unable to make the special redemption payment when the obligation arises.

In addition, the Escrow Accounts are not secured and may not be bankruptcy-remote. The terms of the Escrow Agreement also permit us to release the escrowed funds to the Company, before using them to fund the PTFI Share Acquisition. There can be no assurance that the funds will not become subject to an insolvency, bankruptcy or similar proceeding before being used as described in "Use of Proceeds."

The Notes do not contain restrictive financial or operating covenants

The Indentures governing the Notes will contain covenants intended to benefit the interests of the holders of the Notes that limit our ability to, among other things, incur liens under certain circumstances or consolidate or merge with or into, or sell substantially all of our assets to, another person. These covenants are subject to a number of important exceptions and qualifications. See "Description of the 2021 Notes", "Description of the 2023 Notes", "Description of the 2028 Notes" and "Description of the 2048 Notes."

The Indentures governing the Notes, however, do not contain restrictive financial or operating covenants or restrictions on the payment of dividends, the incurrence of indebtedness, the issuance or repurchase of securities by us, and the entry into sale and leaseback transactions. In addition, the Indentures do not contain any other covenants or provisions designed to afford holders of the Notes protection in the event of a highly leveraged transaction involving us or in the event of a decline in our credit rating or the rating of the Notes as the result of a takeover, recapitalization, highly leveraged transaction or similar restructuring involving us that could adversely affect such holders. Subject to the terms of our existing corporate debt and other credit facilities, we may incur substantial additional indebtedness in the future.

There has been no prior market for the Notes; the absence of a prior market for the Notes may contribute to a lack of liquidity and the market price of the Notes following this offering may be volatile

The Notes may have no established trading market when issued, and one may never develop. We cannot assure you as to the liquidity of any market that may develop for the Notes, the ability of holders of the Notes to sell their Notes or the prices at which holders of the Notes would be able to sell their Notes. The Notes could trade at prices that may be lower than their initial offering price depending on many factors, including prevailing interest rates, our financial condition and operating results and the market for similar securities. This is particularly the case for Notes that are especially sensitive to interest rate, currency, credit or market risks, and/or are designed for specific investment objectives or strategies or have been structured to meet the investment requirements of limited categories of investors. Our Company and the Joint Bookrunners and Joint Lead Managers have no obligation to make a market in the Notes. In addition, the market for debt securities in emerging markets has been subject to disruptions that have caused substantial volatility in the prices of securities similar to the Notes. We cannot assure you that the markets for the Notes, if any, will not be subject to similar disruptions. Any disruptions in these markets may have a material adverse effect on the holders of the Notes.

Developments in other markets may adversely affect the market price of the Notes

The market price of the Notes may be adversely affected by declines in the international financial markets and world economic conditions. The market for securities of Indonesian issuers is, to varying degrees, influenced by economic and market conditions in other markets, especially those in Asia. Although economic conditions are different in each country, investors' reactions to developments in one country can affect the securities markets and the securities of issuers in other countries, including Indonesia. Since the global financial crisis of 2008 and 2009, the international financial markets have experienced significant volatility. If similar developments occur in the international financial markets in the future, the market price of the Notes could be adversely affected.

The ratings assigned to the Notes may be lowered or withdrawn entirely in the future

The Notes are expected to be rated "Baa2" by Moody's and "BBB-" by Fitch. These ratings may be lowered or withdrawn entirely in the future. The ratings address the ability to perform obligations under the terms of the Notes and the credit risks in determining the likelihood that payments will be made when due. Additionally, one

or more independent credit rating agencies may assign credit ratings to an issue of Notes. A rating is not a recommendation to buy, sell or hold securities and may be subject to revision, suspension or withdrawal at any time. No assurances can be given that a rating will remain for any given period of time or that a rating will not be lowered or withdrawn entirely by the relevant rating agency if in its judgment circumstances in the future so warrant. We have no obligation to inform holders of the Notes of any such revision, downgrade or withdrawal. A suspension, reduction or withdrawal at any time of the rating assigned to the Notes may adversely affect the market price of the Notes.

Holders of the Notes may be excluded from receiving compensation in respect of a consent, waiver or amendment to the Indentures or the Notes

We are generally excluded from paying any consideration, directly or indirectly, to any holder of the Notes for or as an inducement to any consent, waiver or amendment of any of the terms or provisions of the Indentures or the Notes unless such consideration is offered to be paid or is paid to all holders that consent, waive or agree to amend such term or provision. However, we will be permitted to exclude holders of the Notes in any jurisdiction where such consent, waiver or amendment or payment of consideration for such consent, waiver or amendment, in either case in the manner we deem appropriate, would not be permitted under applicable law in such jurisdiction or would require us to (i) file a registration statement subjecting us or any of our subsidiaries to ongoing periodic reporting or similar requirements, (ii) qualify as a foreign corporation or other entity or as a dealer in securities in such jurisdiction if we are not otherwise required to so qualify, (iii) generally consent to service of process in any such jurisdiction or (iv) subject us or any of our subsidiaries to taxation in any such jurisdiction if we are not otherwise so subject. We intend to evaluate at the time of any consent, waiver or amendment the costs, potential liabilities and any other factors we consider appropriate at the time associated with extending such consent, waiver or amendment into the relevant jurisdictions. On the basis of this evaluation, we will then make a decision as to how to proceed and whether to extend such consent, waiver or amendment. We cannot assure you that we will include holders of the Notes in jurisdictions where the above exclusions are permitted.

There are restrictions on the resale and the transfer of Notes, which may adversely affect their liquidity and the price at which they may be sold

The Notes have not been registered under, and we are not obligated to register the Notes under, the Securities Act or the securities laws of any other jurisdiction and, unless so registered, may not be offered or sold except pursuant to an exemption from or a transaction not subject to, the registration requirements of the Securities Act and any other applicable laws. See "Transfer Restrictions." We have not agreed to, or otherwise undertaken, to register the Notes (including by way of an exchange offer), and we have no intention to do so. Accordingly, the Notes are being offered pursuant to exemptions from registration under the Securities Act and, as a result, you will only be able to resell your Notes in transactions that are exempt from, or not subject to, the registration requirements of the Securities Act, which could affect the liquidity of the Notes and their selling prices. See "Transfer Restrictions."

We may be subject to future bankruptcy, insolvency and similar proceedings in Indonesia or other jurisdictions, which may delay or prevent payment on the Notes

Under Indonesian bankruptcy law, a creditor that foresees its debtor would not be able to continue to pay its debts when they become due and payable, or a debtor which is unable, or predicts that it would be unable, to pay its debts when they become due and payable, may file for a PKPU with the Commercial Court. In addition, a debtor who has two or more creditors and who is unable to pay any of its debt may be declared bankrupt by virtue of a Commercial Court decision. Under the Indonesian bankruptcy law, a PKPU proceeding takes priority over a bankruptcy proceeding and must be decided first. As such, the PKPU proceeding will effectively postpone the bankruptcy proceeding. As a result, creditors are unlikely to receive any payment during the course of the PKPU proceeding (with the exception of secured creditors subject to certain conditions) and the bankruptcy estate is likely to be insufficient to fully settle their claims.

In addition, during the PKPU proceeding, the debtor may propose a composition plan to its creditors. Such composition, if approved at a creditors' meeting and ratified by the Commercial Court, will be binding on all unsecured creditors and on secured creditors that voted for the composition plan, and the PKPU proceeding ends. The debtor can then continue its business and service its debt in accordance with the composition plan proposed by the debtor and approved at the creditors' meeting and ratified by the court. The secured creditors that did not attend the creditors' meeting or vote on the plan are not bound by the plan and are entitled to enforce their security interests. As a composition plan, if approved, is approved by a majority of the creditors on a collective basis, it may not be in the best interest of any particular creditor. If we become a debtor in a bankruptcy proceeding or a PKPU proceeding in Indonesia, we may file for suspension of debt payment with a proposed composition plan which may not be satisfactory to you. If such composition plan is approved, it will be binding on the holders of the Notes.

The holders of the Notes may not be considered creditors and thus may not be given standing to vote in any bankruptcy or restructuring proceeding to enforce the Notes in Indonesia. See "— Risks Relating to Indonesia — Holders of the Notes will be exposed to a legal system subject to considerable discretion and uncertainty and may have difficulty pursuing claims under the Notes."

The insolvency laws of Indonesia may differ from those of any other jurisdiction with which holders of the Notes are familiar

As the Issuer is incorporated under the laws of Indonesia, an insolvency proceeding relating to the Issuer, even if brought in another jurisdiction, would likely involve insolvency laws in Indonesia, the procedural and substantive provisions of which may differ from comparable provisions of insolvency law in other jurisdictions with which the holders of the Notes are familiar. The application of these laws, or any conflict among them, could call into question whether any particular jurisdiction's laws should apply, adversely affect an investor's ability to enforce such rights under the Notes in the relevant jurisdictions or limit any amounts that the investor may receive. Investors should analyze the risks and uncertainties carefully before investing in the Notes.

The Indentures and certain other documents entered into in connection with the issue of the Notes thereunder will also be prepared in Bahasa Indonesia as required under Indonesian law. However, we cannot assure you that, in the event of inconsistencies between the Bahasa Indonesia and English language versions of these documents, an Indonesian court would hold that the English language versions of such documents would prevail

Pursuant to Law No. 24, agreements between Indonesian entities and other parties must be set out in Bahasa Indonesia, which is the national language of Indonesia, save that where such party is a foreign entity or individual, the agreement may also be prepared in the language of such foreign party or in the English language. Law No. 24 does not specify any consequences in the event that applicable agreements are not prepared in the Bahasa Indonesia language, and to date, no implementing regulations have been issued with the exception of one implementing regulation on the use of Bahasa Indonesia in the formal speech of the President and/or Vice President and other state officers.

In addition to this implementing regulation, the Minister of State-Owned Enterprises has also issued a Circular Letter No. SE-12/MBU/2009 dated November 3, 2009, which recommends that any state-owned enterprise must use Bahasa Indonesia in every memorandum of understanding or agreement to which such state-owned enterprise is a party. While the Indonesian Ministry of Law and Human Rights had issued the MOLHR Clarification Letter to clarify that the implementation of Law No. 24 is contingent upon the enactment of a Presidential Regulation and until such a Presidential Regulation is enacted, any agreement that is executed prior to the enactment of the Presidential Regulation in English without a Bahasa Indonesia version is still legal and valid, and shall not violate Law No. 24. However, it is unclear whether the Ministry of Law and Human Rights has the capacity or authority to provide such clarification.

On June 20, 2013, the District Court of West Jakarta released Decision No. 451/Pdt.G/2012/PN.Jkt.Bar (the "June 2013 Decision"), which annulled a loan agreement between an Indonesian borrower, namely PT Bangun

Karya Pratama Lestari as plaintiff, and a non-Indonesian lender, Nine AM Ltd as defendant. The loan agreement was governed by Indonesian law and was drafted only in the English language. The court ruled that the agreement contravened Article 31(1) of Law No. 24/2009 and declared it to be invalid. In arriving at this conclusion, the court relied on Articles 1320, 1335 and 1337 of the Indonesian Civil Code, which taken together render an agreement void if, among other things, it is tainted by illegality. The court held that as the agreement had not been drafted in the Indonesian language, as required by Article 31(1), it therefore failed to satisfy the "lawful cause" requirement and was void from the outset, meaning that a valid and binding agreement had never existed. Then, the defendant appealed to the Jakarta High Court. On December 4, 2014, the Jakarta High Court released Decision No. 662/Pdt/2014/PT.DKI which rejected the appeal submitted by Nine AM Ltd. and affirmed the June 2013 Decision in its entirety. In its judgment, the Jakarta High Court believed the District Court of West Jakarta's judgment was correct and accurate.

Further, on October 23, 2015, the Indonesia Supreme Court, through its decision No. 1572 K/Pdt/2015, again affirmed the two lower court decisions reached by the Jakarta High Court and West Jakarta District Court, which stated the loan agreement between Nine AM Ltd and PT Bangun Karya Pratama Lestari was annulled (null and void). The Supreme Court found that an agreement made only in the English language is null and void since its violates Article 31 (1) of Law No. 24/2009 and clauses stipulated in Articles of 1335 and 1337 of the Indonesian Civil Code. The annulment of the loan agreement resulted in the annulment of the fiduciary agreement, which was an accessory agreement, as well. Indonesian court decisions are generally not binding precedents and do not constitute a source of law at any level of the judicial hierarchy, as would typically be the case in common law jurisdictions such as the United States and the United Kingdom. However, we cannot assure you that a court will not, in the future, issue a similar decision to the June 2013 Decision in relation to the validity and enforceability of agreements that are made only in the English language.

The Indentures and certain other documents entered into in connection with the issue of the Notes thereunder will be prepared in dual English and Bahasa Indonesia forms as required under Law No. 24 and, pursuant to Law No. 24, each version will be considered equally original. While these documents will expressly state that the English versions will prevail, we cannot assure you that, in light of the ongoing uncertainty surrounding Law No. 24 and the West Jakarta District Court Decision, that in the event of inconsistencies between the Bahasa Indonesia and English language versions of these documents, an Indonesian court will hold that the English language versions of such documents would prevail, or even consider the English language version.

Some concepts in the English language may not have a corresponding term in Bahasa Indonesia, or may not be fully captured by the Bahasa Indonesia version. If this occurs, we cannot assure you that the Notes will be as described in this Offering Memorandum, or will be interpreted and enforced by the Indonesian courts as intended.

USE OF PROCEEDS

The net proceeds of the offering of the Notes, after deduction of fees and commissions and estimated expenses in connection with the offering of the Notes, are expected to be approximately US$3,880.41 million. We intend to use the net proceeds of the offering of the Notes to fund the purchase of shares in PTFI pursuant to the planned PTFI Share Acquisition, see "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia," and/or to refinance acquisition debt. If we do not complete the planned PTFI Share Acquisition by June 30, 2019, we will use the proceeds to redeem the Notes pursuant to the Special Mandatory Redemption provision. See "Description of the Notes — Redemption Upon Special Mandatory Redemption Event."

EXCHANGE RATES AND EXCHANGE CONTROLS

Exchange Rates

Bank Indonesia is the sole issuer of the Rupiah and is responsible for maintaining the stability of the Rupiah. Since 1970, Indonesia has implemented three exchange rate systems: (i) a fixed rate between 1970 and 1978, (ii) a managed floating exchange rate system between 1978 and 1997 and (iii) a free-floating exchange rate system since August 14, 1997. Under the second system, Bank Indonesia maintained the stability of the Rupiah through a trading band policy, pursuant to which Bank Indonesia would enter the foreign currency market and buy or sell Rupiah, as required, when trading in the Rupiah exceeded bid and offer prices announced by Bank Indonesia on a daily basis. On August 14, 1997, Bank Indonesia terminated the trading band policy and permitted the exchange rate for the Rupiah to float without an announced level at which it would intervene, which resulted in a substantial decrease in the value of the Rupiah relative to the U.S. dollar. Under the current system, the exchange rate of the Rupiah is determined solely by the market, reflecting the interaction of supply and demand in the market. Bank Indonesia may take measures, however, to maintain a stable exchange rate.

The following table shows the exchange rate of Rupiah to U.S. dollars based on the middle exchange rates at the end of each month or day, as the case may be, during the periods indicated. The Rupiah middle exchange rate is calculated based on Bank Indonesia's buying and selling rates. We make no representation that the U.S. dollar amounts referred to in this Offering Memorandum could have been or could be converted into Rupiah at the rate indicated or any other rate, or at all.

	Exchange Rates			
	Low[(1)]	High[(1)]	Average[(1)]	Period End
	(Rp. per US$)			
2013	12,270	9,634	10,451	12,189
2014	11,271	12,900	11,878	12,440
2015	12,515	14,728	13,392	13,795
2016	12,926	13,946	13,307	13,436
2017	13,154	13,630	13,384	13,548
2018				
January 2018	13,318	13,542	13,380	13,413
February 2018	13,402	13,707	13,590	13,707
March 2018	13,708	13,794	13,758	13,756
April 2018	13,747	13,930	13,802	13,877
May 2018	13,936	14,205	14,060	13,951
June 2018	13,868	14,404	14,036	14,404
July 2018	14,326	14,541	14,414	14,413
August 2018	14,422	14,711	14,560	14,711
September 2018	14,767	14,938	14,869	14,929
October 2018 (through October 19, 2018)	14,905	15,253	15,161	15,221

Source: Statistik Ekonomi dan Keuangan Indonesia (Indonesian Financial Statistics) published monthly by Bank Indonesia. Internet website of Bank Indonesia, available at: https://www.bi.go.id/en/moneter/informasi-kurs/transaksi-bi/Default.aspx

Note:

(1) For full years, the high and low amounts are determined, and the average shown is calculated, based upon the middle exchange rate announced by Bank Indonesia on the last day of each month during the year indicated. For each month, the high and low amounts are determined, and the average shown is calculated, based on the daily middle exchange rate announced by Bank Indonesia during the month indicated.

The Federal Reserve Bank of New York does not certify for customs purposes a noon buying rate for cable transfers in Rupiah.

Exchange Controls

Indonesia has limited foreign exchange controls. The Rupiah has been, and in general is, freely convertible within or from Indonesia. However, to maintain the stability of the Rupiah, and to prevent the utilization of the Rupiah for speculative purposes by non-residents, Bank Indonesia has introduced regulations to restrict the movement of Rupiah from banks within Indonesia to offshore banks, an offshore branch of an Indonesian bank, or any investment denominated in Rupiah with foreign parties and/or Indonesian parties domiciled or permanently residing outside Indonesia, thereby limiting offshore trading to existing sources of liquidity. In addition, Bank Indonesia has the authority to request information and data concerning the foreign exchange activities of all persons and legal entities that are domiciled, or who plan to be domiciled in Indonesia for at least one year. If requested, we must also provide Bank Indonesia with information and documents relating to our foreign exchange activities.

Purchasing of Foreign Currencies against Rupiah through Banks

On September 5, 2016, Bank Indonesia issued Regulation No. 18/18/PBI/2016 on Foreign Exchange Transaction to Rupiah between Banks and Domestic Parties ("PBI 18/18"), as implemented by Bank Indonesia Circular Letter No. 18/34/DPPK dated December 13, 2016. Under PBI 18/18, any conversion of Rupiah into foreign currency for spot and standard derivative (plain vanilla) transactions that exceeds a specific threshold is required to have an underlying transaction and supported by underlying transaction documents. These thresholds are: (i) the purchase of foreign currency against Rupiah of more than US$25,000.0 or its equivalent per month per customer for spot transactions; (ii) the purchase of foreign currency against Rupiah of more than US$100,000.0 or its equivalent per month per customer for derivative transactions; (iii) the sales of foreign currency against Rupiah of more than US$5,000,000.0 or its equivalent per transaction per customer for forward transactions; and (iv) the sales of foreign currency against Rupiah of more than US$1,000,000.0 or its equivalent per transaction per customer for option transactions. The underlying transaction and supporting transaction documents are also required for transactions of foreign exchange structured product in the form of a call spread option, in any amount. Further, the maximum amount of such foreign exchange conversion cannot exceed the value of the underlying transaction.

The underlying transaction may consist of: (i) domestic and international trade of goods and services; (ii) investment in the form of direct investment, portfolio investment, loans, capital and other investment inside and outside Indonesia; and/or (iii) the granting of facility or financing from a bank in foreign currencies and/or Rupiah for trade and investment activities. The underlying transaction may not include: (i) a placement of funds in banks in the form of, among others, saving account, demand deposit account, time deposit, or Negotiable Certificate Deposit ("NCD"); (ii) money transfers by a remittance company; (iii) undrawn credit facilities, including standby loans and undisbursed loans; or (iv) usage of Bank Indonesia securities in foreign currencies.

Indonesian parties (i) conducting foreign currency structured product against Rupiah in form of Call Spread Option in any amount and (ii) purchasing foreign currencies from banks by way of (a) spot transactions; and (b) standard derivative (plain vanilla) transactions in excess of US$25,000.0 and US$100,000.0, respectively, will be required to submit certain supporting documents to the selling bank, including, among other items, a duly stamped or authenticated written statement by the company confirming that the underlying transaction document is valid and correct, and the amount of foreign currency purchased is or will not exceed the amount stated in the underlying transaction document. For the purchase of foreign currencies not exceeding such thresholds, the company must declare in a duly stamped or authenticated written statement by the company that its aggregate foreign currency purchases do not exceed the thresholds in the Indonesian banking system.

Bank Indonesia also issued Bank Indonesia Regulation No. 18/19/PBI/2016 dated September 5, 2016 on Foreign Exchange Transaction to Rupiah between Banks and Foreign Parties ("PBI 18/19"), as implemented by Bank Indonesia Circular Letter No. 18/35/DPPK dated December 13, 2016. Similar to PBI 18/18, PBI 18/19 is intended to comprehensively govern foreign exchange transactions against Rupiah in Indonesia. However, unlike PBI 18/18, which targets Indonesian bank customers, PBI 18/19 governs foreign exchange transactions by banks and foreign parties.

PBI 18/19 also requires an underlying transaction if a foreign exchange transaction exceeds certain threshold amounts. The thresholds set forth by PBI 18/19, which are similar to the threshold amounts under PBI 18/18, are: (i) for spot transactions, a purchase of foreign exchange against the Rupiah equivalent of US$25,000.0 per month per foreign party, or its equivalent; (ii) for derivative transactions, the sale and purchase of foreign exchange against the Rupiah equivalent of US$1,000,000.0 per transaction per foreign party or per outstanding amount of each derivative transaction per bank, or its equivalent; (iii) for forward transaction, the sales of foreign currency against Rupiah of more than US$5,000,000.0 or its equivalent per transaction per customer; and (iv) for option transaction, the sales of foreign currency against Rupiah of more than US$1,000,000.0 or its equivalent per transaction per customer for option transaction.

The underlying transaction under PBI 18/19 may consist of: (i) domestic and international trade of goods and services; and/or (ii) investment in the form of direct investment, portfolio investment, loans, capital and other investment inside and outside Indonesia.

The following transactions are not considered as underlying transactions: (i) Bank Indonesia Certificates (or "SBI") for derivative transactions; (ii) a placement of funds in banks (vostro account) in the form of saving account, demand deposit account, time deposit, or NCD; (iii) the granting of facility which has not been withdrawn, such as standby loan and disbursed loan; and (iv) the usage of Bank Indonesia securities in foreign currencies.

Similar to PBI 18/18, PBI 18/19 also requires foreign parties that (i) conducting foreign currency structured product against Rupiah in form of a call spread option in any amount and (ii) purchasing foreign currencies from banks by way of (a) spot transactions; and (b) standard derivative (plain vanilla) transactions in excess of US$25,000.0 and US$100,000.0, respectively, to submit certain supporting documents to the selling bank, including, among other items, a duly stamped or authenticated written statement by the company confirming that the underlying transaction document is valid and correct, and the amount of foreign currency purchased is or will not exceed the amount stated in the underlying transaction document. For the purchase of foreign currencies not exceeding such thresholds, the company must declare in a duly stamped or authenticated written statement by the company that its aggregate foreign currency purchases do not exceed the thresholds in the Indonesian banking system.

As a state-owned company, we are also subject to Bank Indonesia requirements which restrict our ability to source U.S. dollars to three Indonesian banks, namely Mandiri, BNI and BRI.

Indonesian Law on Currency and Obligation to Use Rupiah in Indonesian Territory

On June 28, 2011, the House of Representatives (or the "Indonesian Parliament") passed Law No. 7 of 2011 (the "Currency Law") and on March 31, 2015, Bank Indonesia issued PBI 17/3 and enacted Bank Indonesia Circular Letter No. 17/11/DKSP on June 1, 2015 as the implementation guidelines ("SEBI 17/2015"). Under the Currency Law and PBI 17/3, all parties are required to use Rupiah for cash and non-cash transactions conducted within Indonesia, including (i) each transaction which has the purpose of payment; (ii) settlement of other obligations which must be satisfied with money; and/or (iii) other financial transactions (including deposits of Rupiah in various amounts and types of Rupiah denomination from customers to banks).

Subject to further requirements under PBI 17/3, the obligation to use Rupiah does not apply to (i) certain transactions relating to the implementation of state revenue and expenditures; (ii) the receipt or provision of grants either from or to overseas; (iii) international trade transactions, which include (a) export and/or import of goods to or from outside Indonesian territory and (b) activities relating to cross border trade in services; (iv) bank deposits denominated in foreign currencies; (v) international financing transactions; and (vi) transactions in foreign currency which are conducted in accordance with applicable laws and regulations, including, among others: (a) a bank's business activities in foreign currency which is conducted based on applicable laws regarding conventional and sharia banks, (b) securities in foreign currency issued by the Indonesian government in primary or secondary markets based on applicable laws, and (c) other transactions in foreign currency conducted based on applicable laws, including the law regarding Bank Indonesia, the law regarding investment and the law regarding Lembaga Pembiayaan Ekspor Indonesia (Indonesia Eximbank).

The Currency Law and PBI 17/3 prohibit the rejection of Rupiah when offered as a means of payment, to settle obligations and/or with respect to other financial transactions within Indonesia, unless there is uncertainty regarding the authenticity of the Rupiah bills offered, or the parties to the transaction have agreed in writing to the payment or settlement of obligations in a foreign currency. Article 10 of PBI 17/3 further explains that the exemption based on such a written agreement between the parties is only applicable to an agreement made with respect to one of the above exempted transactions or transactions related to a strategic infrastructure project.

PBI 17/3 took effect from March 31, 2015, and the requirement to use Rupiah for non-cash transactions was effective from July 1, 2015. Written agreements which were signed prior to July 1, 2015 that contain provisions for the payment or settlement of obligations in foreign currency for non-cash transactions will remain effective until the expiry of such agreements. However, any extension and/or certain amendments of such agreements must comply with PBI 17/3.

According to SEBI 17/2015, a business operator in Indonesia must quote the price of goods and/or services in Rupiah and is prohibited from conducting dual quotations where the price of goods and/or services is listed both in Rupiah and a foreign currency anywhere, including on electronic media. The restriction applies to, among others, (i) price tags, (ii) service fees, such as agent fees in the sale and purchase of property, tourism services fees or consultancy services fees, (iii) leasing fees, such as apartment leases, housing leases, office leases, building leases, land leases, warehouse leases or vehicle leases, (iv) tariffs, such as loading/unloading tariffs for cargo at the seaport or airplane ticket tariffs, (v) price lists, such as a restaurant menu price list, (vi) contracts, such as clauses for pricing or fees, (vii) documents of offer, order, or invoice, such as the price clause in an invoice, purchase order or delivery order, and/or (viii) payment evidence, such as the price listed in a receipt.

Further, SEBI 17/2015 stipulates that conditional exemptions may apply to certain infrastructure projects, including: (i) transportation infrastructure, including airport services, seaport procurement and/or services, railway infrastructure and facilities, (ii) road infrastructure, including toll roads and toll bridges, (iii) watering infrastructure, including standard water bearer channels, (iv) drinking water infrastructure, including standard water bearer building, transmission channels, distribution channels, and drinking water treatment installation, (v) sanitation infrastructure, including waste water treatment installations, collector channels and main channels, and waste facility which includes transporter and waste storage, (vi) informatics and technology infrastructure, including telecommunication networks and e-government infrastructure, (vii) electricity infrastructure, including power plants, which include power development sourcing from geothermal, transmission or distribution of electricity, and (viii) natural oil and gas infrastructure, including transmission and/or distribution of natural oil and gas. These exemptions apply if (a) the project has been declared by the central or regional government as a strategic infrastructure project, as evidenced by a formal confirmation letter from the relevant ministry/institution with regards to the project owner; and (b) an exemption approval has been obtained from Bank Indonesia.

A failure to comply with the obligation to use Rupiah in cash transactions will result in criminal sanctions in the form of fines and confinement. While a failure to comply with the obligation to use Rupiah in non-cash transactions will be subjected to administrative sanctions in the form of (i) written warning, (ii) fines, and/or (iii) prohibition from undertaking payment activities. Bank Indonesia may also recommend that the relevant authorities and institutions conduct certain actions such as revoking the business license or stopping the business activities of the party which fails to comply with the obligation to use Rupiah in non-cash transactions.

CAPITALIZATION

The following table sets forth our consolidated capitalization and indebtedness as of June 30, 2018, and as adjusted to give effect to the issuance of the Notes.

This table should be read in conjunction with "Use of Proceeds," "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our Interim Consolidated Financial Statements and the related notes thereto included elsewhere in this Offering Memorandum.

	As of June 30, 2018			
	Actual		Adjusted	
	Rp.	US$	Rp.	US$
	(Rp. in billion and US$ in million)			
Indebtedness				
Short-term bank borrowings	5,616.3	389.9	5,616.3	389.9
Long-term bank borrowings	4,563.8	316.9	4,563.8	316.9
Finance lease liabilities	589.4	40.9	589.4	40.9
Bonds payable	4,497.3	312.2	4,497.3	312.2
Notes offered hereby[1]	—	—	57,616.0	4,000.0
Total debt	**15,266.8**	**1,059.9**	**72,882.8**	**5,059.9**
Equity				
Share capital (par value Rp. 415,000 per share):				
Authorized capital 522,197,024 shares				
Issued and fully paid capital — 130,549,256 shares	54,177.9	3,761.3	54,177.9	3,761.3
Additional paid-in capital[2]	(18,199.6)	(1,263.5)	(18,199.6)	(1,263.5)
Retained earnings:				
Appropriated	601.4	41.8	601.4	41.8
Unappropriated	6,667.4	462.9	6,667.4	462.9
Currency differences from translation of the Company's financial statements	14,323.4	994.4	14,323.4	994.4
Non-controlling interest	12,805.7	889.0	12,805.7	889.0
Total equity	**70,376.2**	**4,885.8**	**70,376.2**	**4,885.8**
Total capitalization[3]	**85,643.0**	**5,945.7**	**143,259.0**	**9,945.7**

Notes:

(1) Before deducting the issuance discount, the underwriting discount, bank fees and other estimated expenses payable in connection with this offering.

(2) Represents the difference between the purchase consideration and the carrying value of investments obtained from the transfer of the Government's equity interests in Antam, Bukit Asam and Timah to our Company in November 2017. For more details see Note 4 of our Interim consolidated financial statements included in this Offering Memorandum.

(3) Represents total debt plus total equity.

Except as disclosed above or in this Offering Memorandum, there has been no material change in our capitalization since June 30, 2018.

SELECTED CONSOLIDATED FINANCIAL AND OTHER DATA

You should read the following selected consolidated financial information in conjunction with our consolidated financial statements and related notes, "Presentation of Financial and Other Data" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" included elsewhere in this Offering Memorandum. Our consolidated financial statements have been prepared and presented in accordance with IFAS, which differs in certain respects from U.S. GAAP. See "Summary of Certain Differences between Indonesian Financial Accounting Standards and U.S. GAAP."

Consolidated Statements of Profit or Loss and Other Comprehensive Income Data

	For the year ended December 31,				For the six months ended June 30,		
	2015	2016	2017		2017	2018	
	Rp.	Rp.	Rp.	US$	Rp.	Rp.	US$
	(Rp. in billion and US$ in million)						
Revenue	37,821.4	35,904.5	47,184.3	3,275.8	18,832.8	29,855.6	2,072.7
Cost of revenue	(30,895.9)	(27,693.3)	(33,276.5)	(2,310.2)	(13,637.0)	(21,901.6)	(1,520.5)
Gross profit	**6,925.5**	**8,211.2**	**13,907.8**	**965.6**	**5,195.8**	**7,954.0**	**552.2**
General and administrative expenses	(2,739.3)	(2,820.9)	(3,339.0)	(231.8)	(1,336.9)	(1,608.9)	(111.7)
Selling and marketing expenses	(1,003.5)	(1,008.1)	(1,322.5)	(91.9)	(572.8)	(709.5)	(49.2)
Operating profit	**3,182.7**	**4,382.2**	**9,246.3**	**641.9**	**3,286.1**	**5,635.6**	**391.3**
Financial income	503.9	635.9	629.9	43.7	285.6	343.3	23.8
Finance costs	(1,237.5)	(365.7)	(974.2)	(67.6)	(421.6)	(965.9)	(67.1)
Share in net (loss)/profit of associates	(249.3)	88.1	(196.8)	(13.6)	(55.7)	(64.3)	(4.5)
Share in net loss of joint ventures	(106.6)	(216.3)	(158.0)	(11.0)	(35.2)	(49.1)	(3.4)
Other income/(expenses), net	459.4	(55.0)	738.8	51.3	(206.6)	2,348.0	163.1
Profit before income tax	**2,552.6**	**4,469.2**	**9,286.0**	**644.7**	**2,852.6**	**7,247.6**	**503.2**
Income tax (expenses)/benefit	(796.2)	1.2	(2,474.3)	(171.8)	(840.6)	(1,820.3)	(126.4)
Profit for the period from continuing operations	**1,756.4**	**4,470.4**	**6,811.7**	**472.9**	**2,012.0**	**5,427.3**	**376.8**
Loss for the period from discontinued operations	—	(31.1)	(6.5)	(0.4)	(3.7)	(4.4)	(0.3)
Profit for the period	**1,756.4**	**4,439.3**	**6,805.2**	**472.5**	**2,008.3**	**5,422.9**	**376.5**
Other comprehensive income/ (loss) for the period, net of tax	**2,423.4**	**(334.0)**	**(538.5)**	**(37.4)**	**(773.8)**	**2,118.5**	**147.1**
Total comprehensive income for the period	**4,179.8**	**4,105.3**	**6,266.7**	**435.1**	**1,234.5**	**7,541.4**	**523.6**

Consolidated Statements of Financial Position Data

	As of December 31,				As of June 30,	
	2015	2016	2017		2018	
	Rp.	Rp.	Rp.	US$	Rp.	US$
	(Rp. in billion and US$ in million)					
Total current assets	34,218.1	33,415.3	37,463.1	2,600.9	43,116.7	2,993.4
Total non-current assets	35,624.2	39,686.4	55,781.6	3,872.6	56,853.3	3,947.0
Total assets	**69,842.3**	**73,101.7**	**93,244.7**	**6,473.5**	**99,970.0**	**6,940.4**
Total current liabilities	13,041.1	13,600.8	15,125.8	1,050.1	17,256.5	1,198.0
Total non-current liabilities	11,547.1	11,109.8	12,111.7	840.9	12,337.3	856.6
Total liabilities	**24,588.2**	**24,710.6**	**27,237.5**	**1,891.0**	**29,593.8**	**2,054.6**
Equity attributable to owner of the parent	**34,456.9**	**37,008.4**	**53,277.7**	**3,698.8**	**57,570.5**	**3,996.8**
Non-controlling interest	10,797.2	11,382.7	12,729.5	883.7	12,805.7	889.0
Total equity	**45,254.1**	**48,391.1**	**66,007.2**	**4,582.5**	**70,376.2**	**4,885.8**
Total liabilities and equity	**69,842.3**	**73,101.7**	**93,244.7**	**6,473.5**	**99,970.0**	**6,940.4**

Consolidated Statements of Cash Flows Data

	For the year ended December 31,				For the six months ended June 30,		
	2015	2016	2017		2017	2018	
	Rp.	Rp.	Rp.	US$	Rp.	Rp.	US$
	(Rp. in billion and US$ in million)						
Net cash received from operating activities	4,614.0	4,256.3	5,750.5	399.2	1,722.0	4,562.5	316.8
Net cash generated from/(used in) investing activities	(4,280.3)	(3,252.1)	(4,652.4)	(323.0)	(1,933.9)	(23.1)	(1.6)
Net cash (used in)/generated from financing activities	4,546.2	(1,744.9)	(965.2)	(67.0)	(1,821.7)	(519.4)	(36.1)
Net increase (decrease) in cash and cash equivalents	**4,879.9**	**(740.7)**	**132.9**	**9.2**	**(2,033.6)**	**4,020.0**	**279.1**
Cash and cash equivalents at the beginning of the period	11,590.9	16,928.1	15,966.8	1,108.5	15,966.8	16,143.1	1,120.7
Cash and cash equivalents at the end of the period	**16,928.1**	**15,966.8**	**16,143.1**	**1,120.7**	**13,881.3**	**20,874.8**	**1,449.2**

Non-GAAP Measures and Other Financial Data

	As of and for the year ended December 31,				As of and for the six months ended June 30,			Last twelve months	
	2015	2016	2017		2017	2018		LTM[5]	
	Rp.	Rp.	Rp.	US$	Rp.	Rp.	US$	Rp.	US$
	(Rp. in billion and US$ in million)								
Capital expenditure	4,722.0	3,835.7	10,521.3	730.4	2,238.1	2,162.0	150.1	10,445.2	725.2
Finance costs	1,237.5	365.7	974.2	67.6	421.6	965.9	67.1	1,518.5	105.4
EBITDA[1]	5,623.3	6,639.4	12,567.7	872.5	4,296.5	9,451.0	656.1	17,722.2	1,230.4
Dividend income	—	—	427.6	29.7	—	2,028.2	140.8	2,455.8	170.5
Adjusted EBITDA[1]	4,660.0	6,058.5	11,199.0	777.5	4,217.5	6,759.7	469.3	13,741.2	954.0
Total debt[2]	14,246.9	14,006.5	14,064.3	976.6	—	15,266.8	1,059.9	—	—
EBITDA margin (%)[3]	14.9%	18.5%	26.6%	26.6%	22.8%	31.7%	31.7%	30.4%	30.4%
Total debt / Adjusted EBITDA	3.1x	2.3x	1.3x	1.3x	—	2.3x	2.3x	—	—
Net debt / Adjusted EBITDA[4]	(0.6)x	(0.3)x	(0.2)x	(0.2)x	—	(0.8)x	(0.8)x	—	—
Total debt / Total equity	0.3x	0.3x	0.2x	0.2x	—	0.2x	0.2x	—	—
Adjusted EBITDA / Finance costs	3.8x	16.6x	11.5x	11.5x	10.0x	7.0x	7.0x	9.0x	9.1x

Notes:

(1) EBITDA is calculated beginning with profit for the year or period, and adjusting for (i) income tax expense/(benefit), (ii) finance costs, and (iii) depreciation and amortization. Adjusted EBITDA is calculated beginning with EBITDA, and deducting (i) dividend income, (ii) gain from sale of investment, and (iii) finance income, and adding (i) loss/(gain) on foreign exchange, net and (ii) other (income) expenses, net. EBITDA and adjusted EBITDA are supplemental measures of our performance that are not required by, or presented in accordance with, IFAS or U.S. GAAP. EBITDA and adjusted EBITDA are not measurements of financial performance or liquidity under IFAS or U.S. GAAP and should not be considered as alternatives to net profit, operating income or any other performance measures derived in accordance with IFAS or U.S. GAAP or an alternative to cash flows from operating activities as measures of liquidity. Our presentations of EBITDA and adjusted EBITDA may not be comparable to similarly titled measures presented by other companies. You should not compare our EBITDA and adjusted EBITDA with EBITDA and adjusted EBITDA presented by other companies because not all companies use the same definition. We have included EBITDA and adjusted EBITDA because we believe these are indicative measures of our operating performance and are used by investors and analysts to evaluate companies in the industries we operate.

The following table reconciles our profit for the period under IFAS to our definition of EBITDA and adjusted EBITDA for the periods indicated.

	For the year ended December 31,				For the six months ended June 30,			Last twelve months	
	2015	2016	2017		2017	2018		LTM[5]	
	Rp.	Rp.	Rp.	US$	Rp.	Rp.	US$	Rp.	US$
	(Rp. in billion and US$ in million)								
Profit for the period	1,756.4	4,439.3	6,805.2	472.5	2,008.3	5,422.9	376.5	10,219.8	709.5
Add/(subtract):									
Income tax expenses/(benefit)	796.2	(1.2)	2,474.3	171.8	840.6	1,820.3	126.4	3,454.0	239.9
Finance costs	1,237.5	365.7	974.2	67.6	421.6	965.9	67.1	1,518.5	105.4
Depreciation and amortization	1,833.2	1,835.6	2,314.0	160.6	1,026.0	1,241.9	86.1	2,529.9	175.6
EBITDA	**5,623.3**	**6,639.4**	**12,567.7**	**872.5**	**4,296.5**	**9,451.0**	**656.1**	**17,722.2**	**1,230.4**
Add/(subtract):									
Dividend income	—	—	(427.6)	(29.7)	—	(2,028.2)	(140.8)	(2,455.8)	(170.5)
Gain from sale of investment	—	—	(776.4)	(53.9)	—	—	—	(776.4)	(53.9)
Finance income	(503.9)	(635.9)	(629.9)	(43.7)	(285.6)	(343.3)	(23.8)	(687.6)	(47.7)
(Gain)/loss on foreign exchange, net	(382.7)	143.6	24.4	1.7	59.2	(167.7)	(11.6)	(202.5)	(14.1)
Other (income)/expenses, net	(76.7)	(88.6)	440.8	30.6	147.4	(152.1)	(10.6)	141.3	9.8
Adjusted EBITDA	**4,660.0**	**6,058.5**	**11,199.0**	**777.5**	**4,217.5**	**6,759.7**	**469.3**	**13,741.2**	**954.0**

(2) Total debt is calculated as the sum of short-term and long-term bank borrowings, finance lease liabilities and bonds payable.

(3) EBITDA margin is calculated as EBITDA divided by total net revenue.

(4) Net debt / Adjusted EBITDA is calculated as total debt less cash and cash equivalents, divided by adjusted EBITDA for the prevailing 12-month period.

(5) LTM is derived by subtracting the relevant financial information for the six months ended June 30, 2017 from the year ended December 31, 2017, and adding the same relevant financial information for the six months ended June 30, 2018.

Reserves and Resources Data

The following table sets forth our aggregate net working interest reserves and resources, as of December 31, 2017.

	Reserves			
	Proved	**Probable**	**Total**	**Resources**
Coal (tonnes in million)[1]	1,470	1,826	3,296	5,753
Gold (koz)[2]	413	92	505	1,242
Silver (koz)[2]	3,130	910	4,040	12,377
Tin ore (tonnes)[3]	136,722	240,872	377,594	796,343
Nickel (wmt in million)[2]	203	180	383	1,222
Bauxite (wmt in million)[2]	29	17	46	568

Notes:

(1) According to the 2017 Coal Reserves Statement, see Appendix A.

(2) According to the 2017 Nickel, Gold, Silver and Bauxite Reserves Statement, see Appendix B.

(3) According to the 2017 Tin Reserves Statement, see Appendix C.

The following table sets forth PTFI's aggregate gross reserves and resources at its Grasberg Mine, as of December 31, 2017.

	Reserves			
	Proven	**Probable**	**Total**	**Resources**
Ore (tonnes in million)[1]	627	1,329	1,956	1,969
Copper (kilo tonnes)	7,401	13,156	20,557	14,321
Gold (koz)	19,963	32,470	52,433	40,501
Silver (koz)	97,393	183,287	280,680	233,275

Note:

(1) According to the 2017 Grasberg Reserves Statement, see Appendix D.

See "Risk Factors — Risks Common to All Our Mining Businesses — Our estimates of reserves and resources may be inaccurate and materially different from mineral quantities we actually recover."

Selected Production and Operating Data

	As of and for the year ended December 31,			As of and for the six months ended June 30,	
	2015	2016	2017	2017	2018
Production volume					
Coal (tonnes in million)	19.3	19.6	24.3	9.4	11.2
Refined tin (tonnes)	27,431	23,756	30,249	14,905	12,366
Gold (oz t)	71,053	70,988	63,240	32,568	33,468
Silver (oz t)	556,818	508,399	456,251	209,976	245,567
Nickel ore (wmt)	1,654,796	1,635,024	5,572,056	1,576,836	3,768,173
Ferronickel (TNi)	17,211	20,293	21,762	9,327	12,811
Bauxite ore (wmt)	201,517	241,202	648,431	206,509	416,733
Aluminum (tonnes)	257,149	245,483	218,816	106,156	119,455
Sales volume					
Coal (tonnes in million)	19.1	20.8	23.6	11.4	12.2
Refined tin (tonnes)	30,087	26,677	29,914	14,749	12,359
Gold (oz t)	455,865	328,805	424,454	106,033	442,394
Silver (oz t)	423,521	587,940	533,284	176,218	257,077
Nickel (wmt)	46,751	734,886	2,935,666	326,013	1,921,800
Ferronickel (TNi)	18,643	20,887	21,878	6,634	12,578
Bauxite (wmt)	182,624	290,581	838,069	128,232	256,500
Aluminum (tonnes)	256,622	247,994	207,276	91,264	97,507
Average selling price					
Coal (Rp. in million per tonne)	0.7	0.7	0.8	0.8	0.8
Refined tin (Rp. in million per tonne)	223.3	247.3	276.8	272.1	308.1
Gold (Rp. in million per oz t)	17.0	16.9	17.4	17.0	18.5
Silver (Rp. in million per oz t)	0.2	0.2	0.2	0.25	0.2
Nickel ore (Rp. in million per wmt)	0.2	0.4	0.5	0.5	0.4
Ferronickel (Rp. in million per TNi)	142.6	133.5	146.8	133.4	194.0
Bauxite ore (Rp. in million per wmt)	0.4	0.4	0.5	0.4	0.5
Aluminum (Rp. in million per tonne)	24.3	22.5	27.7	26.4	32.1
Cash cost					
Coal (Rp. in million per tonne)[1]	0.5	0.5	0.6	0.7	0.6
Refined tin (Rp. in million per tonne)[2]	157.7	179.7	201.0	203.1	213.9
Gold (Rp. in million per oz t)[3]	14.3	14.9	15.7	7.3	8.2
Silver (Rp. in million per oz t)[4]	0.2	0.2	0.2	0.1	0.1
Nickel ore (Rp. in million per wmt)[5]	0.3	0.2	0.2	0.2	0.2
Ferronickel (Rp. per TNi)[6]	126.6	99.8	103.8	109.1	112.0
Bauxite ore (Rp. in million per wmt)[7]	0.3	0.2	0.3	0.2	0.3
Aluminum (Rp. in million per tonne)[8]	17.5	14.8	16.6	16.2	18.9

Notes:

(1) Cash cost per tonne of coal is calculated as the sum of (a) mining costs, transportation, freight and handling costs, royalties paid to the Government, coal processing and other cash production costs, restoration costs and increases or decreases in coal inventories, divided by (b) coal sales volumes for the relevant periods.

(2) Cash cost per tonne of refined tin is calculated as the sum of (a) costs of raw materials, royalties paid to the Government, tin processing and other cash production costs and increases or decreases in tin inventories, divided by (b) refined tin production volumes for the relevant periods.

(3) Cash cost per oz t of gold is calculated as the sum of (a) mining costs, gold doré processing and other cash production costs, restoration costs and increases or decreases in gold doré inventories, divided by (b) gold production volumes for the relevant periods.

(4) Cash cost per oz t of silver is calculated as the sum of (a) mining costs, silver ore processing and other cash production costs, restoration costs and increases or decreases in silver ore inventories, divided by (b) silver production volumes for the relevant periods.

(5) Cash cost per wmt of nickel ore is calculated as the sum of (a) mining costs, nickel ore processing and other cash production costs, restoration costs and increases or decreases in nickel ore inventories, divided by (b) nickel production volume for the relevant periods.

(6) Cash cost per TNi of ferronickel is calculated as the sum of (a) mining costs, ferronickel processing and other cash production costs, restoration costs and increases or decreases in ferronickel inventories, divided by (b) ferronickel production volume for the relevant periods.

(7) Cash cost per wmt of bauxite is calculated as the sum of (a) mining costs, bauxite processing and other cash production costs, restoration costs and increases or decreases in bauxite inventories, divided by (b) bauxite production volumes for the relevant periods.

(8) Cash cost per tonne of aluminum is calculated as (a) production costs less (b) depreciation related to the production of aluminum, divided by (c) aluminum production volumes for the relevant periods.

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

You should read the following discussion and analysis of our financial condition and results of operations in conjunction with the section entitled "Selected Consolidated and Other Financial Data" and our consolidated financial statements and the related notes included elsewhere in this Offering Memorandum. This discussion contains forward-looking statements that are subject to numerous risks and uncertainties, including, but not limited to, those described in the "Risk Factors" section of this Offering Memorandum. Actual results could differ materially from those contained in any forward-looking statements.

Our consolidated financial statements have been prepared in accordance with Indonesian Financial Accounting Standards, which differ in certain material respects from U.S. GAAP. See "Summary of Certain Differences between Indonesian Financial Accounting Standards and U.S. GAAP" included elsewhere in this Offering Memorandum.

Overview

We are the state-owned national mining company appointed by the Government as the holding company for Indonesia's mining operators. We engage in the mining and processing of coal, gold, tin, nickel and bauxite, and aluminum smelting and production. According to AME, as of June 30, 2018, we are the (i) second largest tin producer in the world, in terms of refined tin production volume, (ii) largest holder of coal reserves in Indonesia and the sixth largest coal producer in Southeast Asia in terms of coal production volume, (iii) sixth largest gold producer in Southeast Asia, in terms of gold production volume and (iv) only primary aluminum producer in Indonesia and second largest aluminum smelting company in Southeast Asia, in terms of production capacity.

We commenced business operations in 1979 as an aluminum smelter and have, over the course of almost 40 years, acquired in-depth expertise in managing and operating downstream production plants and supporting faculties for the refining of minerals and production of downstream mineral products. As the holding company for Antam, Bukit Asam and Timah, following the Government's transfer of its 65.0% equity interests in each of these entities to us in 2017, we oversee the management and exploitation of the coal and mineral resources held by these entities and aim to leverage our expertise to develop the various downstream businesses of these entities so as to achieve stronger financial performance and growth of our Group. Concurrent with the Government's transfer of its equity interests in Antam, Bukit Asam and Timah, the Government also transferred its 9.36% equity interests in PTFI to our Company. We plan to acquire a majority beneficial stake in PTFI. See "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia."

Our business operations are divided into six main segments, namely (i) coal, (ii) gold, (iii) tin, (iv) nickel, (v) bauxite, and (vi) aluminum smelting.

- ***Coal***. We are the largest holder of coal reserves in Indonesia and the sixth largest coal producer in Southeast Asia in terms of coal production volume, as of June 30, 2018, according to AME. Our coal business is vertically integrated and we undertake all stages of the mining and processing process, starting from exploration, mining and processing of coal to marketing of our coal products. We own and operate five coal mines located on the islands of Sumatra and Kalimantan, which, together, span a total area of approximately 69,211 hectares. Our coal products benefit from having a relatively low ash and low sulfur content, and high HGI and AFT. We sell a large proportion of our coal domestically to PLN, the state-owned electricity generation and distribution company, and internationally to commodity traders and coal-fired power producers. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 19.3 million tonnes, 19.6 million tonnes, 24.3 million tonnes and 11.2 million tonnes of coal, respectively, and sold 19.1 million tonnes, 20.8 million tonnes, 23.6 million tonnes and 12.2 million tonnes of coal, respectively. For the same periods, our revenue from sale of coal was Rp.13,801.0 billion, Rp.13,785.4 billion, Rp.19,133.5 billion (US$1,328.3 million) and Rp.10,289.5 billion (US$714.4 million), respectively.
- ***Gold***. We are the sixth largest gold producer in Southeast Asia in terms of gold production volume, as of June 30, 2018, according to AME. Following the completion of our planned PTFI Share

Acquisition, see "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia," we expect to be the largest gold producer in the world, in terms of gold production volume, taking into account 100% of the production of PTFI. We own and operate two gold mines located in Pongkor and Cibaliung, which, together, span a total area of approximately 7,387 hectares. Our gold and precious metals business is vertically integrated and we undertake all stages of mining and processing of precious metals. We produce and sell fine gold, mainly in the form of gold bars, as well as other precious metal products such as platinum and fine silver. Our fine gold is produced at the Logam Mulia Precious Metals Refinery, the only precious metals refinery in Indonesia that is accredited by the London Bullion Market Association ("LBMA"), from gold doré bullion, which we purchase from third-party precious metals trading companies, and gold doré, which we produce at our gold mines. In addition to producing and selling fine gold and other precious metal products, we provide precious metals refining services to other third-party mining companies. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 71,053 oz t 70,988 oz t, 63,240 oz t and 33,468 oz t of gold, respectively, and sold 455,865 oz t, 328,805 oz t, 424,454 oz t and 442,394 oz t of gold, respectively. For the same periods, our revenue from sale of gold was Rp.7,314.7 billion, Rp.5,543.6 billion, Rp.7,375.5 billion (US$512.0 million) and Rp.8,203.9 billion (US$569.6 million), respectively.

- ***Tin***. We are the second largest refined tin producer in the world, in terms of refined tin production volume, as of June 30, 2018, according to AME. Our tin business is vertically integrated and we undertake all stages of the mining and processing process, starting from exploration, mining and processing of tin to marketing of our tin products. We own and operate tin mines in the Bangka Belitung Islands, the Riau Islands and Riau, which, together, span a total area of approximately 473,402 hectares. We produce refined tin products as well as other downstream tin products, including tin chemical and solder, which we primarily sell internationally, in countries including Japan, South Korea, Netherlands, the United States and Taiwan, mainly to the trading arms of automobile manufacturers and customers in the manufacturing industry. Our Banka tin and Kundur tin are registered and traded on the London Metal Exchange, which requires our refined tin products to be at least of "Grade A" quality. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 27,431 tonnes, 23,756 tonnes, 30,249 tonnes and 12,366 tonnes of refined tin, respectively, and sold 30,087 tonnes, 26,677 tonnes, 29,914 tonnes and 12,359 tonnes of refined tin, respectively. For the same periods, our revenue from sale of tin metal and other downstream tin products was Rp.6,548.4 billion, Rp.6,629.8 billion, Rp.8,481.7 billion (US$588.8 million) and Rp.3,912.4 billion (US$271.6 million), respectively.

- ***Nickel***. We are a vertically integrated nickel ore mining company and undertake all stages of the mining and processing of nickel ore. We also produce ferronickel from the nickel ore we mine and process. We own and operate five nickel ore mines located in Kolaka, Southeast Sulawesi, which, together, span a total area of approximately 81,437 hectares. We operate three ferronickel plants, FeNi II, FeNi III and FeNi IV, at our Pomalaa Ferronickel Facilities. Together, these plants have a combined production capacity of approximately 27,000TNi to 30,000TNi per year. Our ferronickel products generally consist of approximately 20.0% nickel content and 80.0% iron content and are sold in the form of shots or pellets, either with high or low carbon content. We sell the majority of our nickel ore and ferronickel in the international market, including India, South Korea, Taiwan, China and Ukraine. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 1.7 million wmt, 1.6 million wmt, 5.5 million wmt and 3.8 million tonnes of nickel ore, respectively, and sold 0.05 million wmt, 0.7 million wmt, 2.9 million wmt and 1.9 million wmt of nickel ore, respectively. For the same periods, we produced 17,211TNi, 20,293TNi, 21,762TNi and 12,811TNi of ferronickel, respectively, and sold 18,643TNi, 20,887TNi, 21,878TNi and 12,578TNi of ferronickel, respectively. For the same periods, our revenue from the sale of nickel ore and ferronickel was Rp.2,729.0 billion, Rp.3,077.6 billion, Rp.4,592.4 billion (US$318.8 million) and Rp.3,355.9 billion (US$232.9 million), respectively.

- ***Bauxite***. We are a vertically integrated bauxite mining company and undertake all stages of the mining and processing of bauxite. We own and operate a bauxite mine located in Tayan, West Kalimantan, spanning a total area of approximately 34,360 hectares. We sell bauxite of varying alumina content based on our customers' requirements, although we typically sell bauxite with a minimum alumina content of 42.0%. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 201,517 wmt, 241,202 wmt, 648,431 wmt and 416,733 wmt of bauxite ore, respectively, and sold 182,624 wmt, 290,581 wmt, 838,069 wmt and 256,500 wmt of bauxite ore, respectively. For the same periods, our revenue from sale of bauxite was Rp.66.1 billion, Rp.104.2 billion, Rp.398.0 billion (US$27.6 million) and Rp.125.8 billion (US$8.7 million), respectively.
- ***Aluminum smelting***. We produce, smelt and sell aluminum products such as aluminum ingots, aluminum billets and aluminum alloys. As of June 30, 2018, we were the second largest aluminum producer in Southeast Asia, in terms of aluminum production volume, according to AME. Our aluminum production plants and facilities, comprising our aluminum smelter, casting plant, power plants, regulating dams and ports are located at Kuala Tanjung, North Sumatra. We are able to produce our aluminum products more cost effectively as compared to other aluminum producers as we have access to hydroelectric power that we generate at our Siguragura and Tangga Power Plants. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 257,149 tonnes, 245,483 tonnes, 218,816 tonnes and 119,455 tonnes of aluminum, respectively, and sold 256,622 tonnes, 247,994 tonnes, 207,276 tonnes and 97,507 tonnes of aluminum, respectively. For the same periods, our revenue from sale of aluminum products was Rp.6,238.0 billion, Rp.5,576.4 billion, Rp.5,744.3 billion (US$398.8 million) and Rp.3,127.5 billion (US$217.1 million), respectively.

For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, our total revenue was Rp.37,821.4 billion, Rp.35,904.5 billion, Rp.47,184.3 billion (US$3,275.8 million) and Rp.29,855.6 billion (US$2,072.7 million), respectively, and our gross profit was Rp.6,925.5 billion, Rp.8,211.2 billion, Rp.13,907.8 billion (US$965.6 million) and Rp.7,954.0 billion (US$552.2 million), respectively. For the same periods, our EBITDA was Rp.5,623.3 billion, Rp.6,639.4 billion, Rp.12,567.7 billion (US$872.5 million) and Rp.9,451.0 billion (US$656.1 million), respectively, and our adjusted EBITDA was Rp.4,660.0 billion, Rp.6,058.5 billion, Rp.11,199.0 billion (US$777.5 million) and Rp.6,759.7 billion (US$469.3 million), respectively.

Factors Affecting Our Business and Results of Operations

Our business and results of operations are primarily affected by the following factors:

Fluctuations in global commodity prices and demand

Our revenue is predominantly derived from our sale of commodities, namely coal, gold, tin, aluminum, ferronickel and nickel ore. Accordingly, our results of operations are directly affected by the prices of our commodities which we produce and sell. Commodity prices have historically been cyclical and subject to significant fluctuations. Commodity prices depend principally on the supply and demand dynamics of the world commodities export markets. The commodity markets are highly competitive and are sensitive to numerous factors, including forward selling by producers, production cost levels in major mining regions, changes in mining output (including the opening and closing of mines, the discovery of new deposits and the expansion of operations at existing mines), disruptions in coal or mineral distribution (due to weather and other conditions) and global economic conditions. The commodity markets are also affected by demand from the end-user industries of the respective commodities. For example, the prices and demand for coal are generally affected by demand from power plants; the prices and demand for gold are generally affected by demand from the jewelry and electronics industries, as well as central bank purchases; the prices and demand for tin are generally affected by demand from the electronics industry; the prices and demand for aluminum are generally affected by demand from the commercial construction and transportation, automotive and aerospace industries; the prices and

demand for ferronickel and nickel ore are generally affected by demand from the stainless steel industry. See "Risk Factors — Risks Common to All Our Mining Businesses — The prices of the products we sell are cyclical in nature and subject to fluctuations." Increases in global commodity prices may encourage commodity producers to increase production through various measures, including changing their mine plans to maximize the production from their producing mines. Conversely, decreases in global prices may encourage producers to decrease production.

Historically, fluctuations in the demand for commodities have been reflected in fluctuations in the prices of commodities. For example, according to AME, the price of coal has experienced significant fluctuations over the past 20 years as a result of a growing global coal market and corresponding increase in demand and supply for coal worldwide. According to AME, in 2008, the price for FOB Newcastle 6,322 kcal/kg GAR was as high as US$180/tonne, before declining to US$80/tonne. In 2011, the price for such specification of coal rose to as high as US$130/tonne, before experiencing five consecutive years of declining prices, where the price of such coal in 2016 was as low as US$50/tonne. In November 2016, the price for such specification of coal rose to as high as US$116/tonne. Similarly, according to AME, although the price of tin has matched the price cycle of other metal in the past 10 years, the price for tin peaked at over US$33,000/tonne in 2011, when strong demand for tin from China and a decline in world production exacerbated a market that had regularly been in undersupply. Over the past five years, the price of tin has averaged just under US$20,000/tonne. Further, between 2013 and 2018, global finished nickel demand is estimated to have increased from approximately 1.8 million tonnes to 2.4 million tonnes, which was largely driven by a significant increase of nickel consumption in China, according to AME.

Production volumes, infrastructure and expansion of production capacities

In addition to demand for and price of the commodities which we produce and sell, our revenue is also a function of and directly correlated to the volume of commodities we are able to produce. Production volumes of our upstream products, namely coal, gold doré and nickel ore, are dependent upon a number of factors, including (i) the geological characteristics of our mines, such as amount and quality of ore reserves and mine location, (ii) mine plans, (iii) the performance of our mining services providers, whom we may engage from time to time, (iv) the production capacity and efficiency of our ore processing facilities, as well as our processing, smelting, refining and casting facilities, and (v) transportation infrastructure at our mines.

Production volumes of our midstream and downstream products, namely refined tin, gold bars and other precious metal products, aluminum ingots, billets and alloys, and ferronickel, are affected by the availability and quality of our raw material feedstock as well as the production capacity and efficiency of our processing, smelting, refining and casting facilities. For example, ferronickel is produced by smelting nickel ore and its production depends on the grade of nickel ore feed and the smelter load. Saprolite nickel ore typically with a grade of above 1.8% is used in our ferronickel production and the quality of the saprolite nickel ore used as raw material feedstock affects the nickel content in the slag produced as a by-product in the production of ferronickel. The slag is typically re-used for further nickel extraction to produce more ferronickel and, accordingly, the quality of the saprolite nickel ore used affects our aggregate production volumes of ferronickel. In addition, as the power supply to our aluminum smelters and casting plant is from our Siguragura Power Plant and Tangga Power Plant, which generate hydroelectricity from hydroelectric power provided by Lake Toba, the utilization rate of our aluminum smelters and casting plant is affected by the water level of Lake Toba. Accordingly, an increase in the water level of Lake Toba generally has a positive impact on the utilization rate of our aluminum smelters and casting plant, and our production volume for our aluminum products. Conversely, a decrease in the water level of Lake Toba will generally have a negative impact on the utilization rate of our aluminum smelters and casting plant, and our production volume for our aluminum products. See "Risk Factors — Risk Relating to Our Aluminum Smelting Business — Our aluminum business may be adversely affected by interruptions in our supply of electricity."

We currently depend on a small number of mines for our production volumes of coal and tin ore. See "Risk Factors — Risks Common to All Our Mining Businesses — We depend on a small number of mines for a substantial portion of our production volume." A substantial portion of our coal and tin ore is produced at our

Tanjung Enim Coal Mine and Bangka Tin Mines, respectively. In addition, we currently depend on a small number of smelting, refining and casting facilities for our production volumes of fine gold, ferronickel and aluminum products. We smelt and refine all of (i) the gold doré which we produce from our gold mines, (ii) gold bullion which we purchase from third-party precious metals trading companies, and (iii) gold bullion from other mining companies, at the Logam Mulia Precious Metals Refinery. Further, we produce all of our ferronickel at our Pomalaa Ferronickel Facilities, and smelt and cast all of our aluminum products at our aluminum smelter and casting plant at Kuala Tanjung, Sumatra. In the event of any unexpected disruptions experienced at any of these production facilities, our ability to efficiently utilize these production facilities may be adversely affected, thereby resulting in a decrease in our production volumes. See "Risk Factors — Risks Common to All Our Businesses — We may experience unexpected disruptions to our mining and smelting operations as a result of operational and infrastructure risks."

We plan to expand our production capacities for our upstream, midstream and downstream products in the coming years. Our expansion plans for our upstream products include our railway development projects to increase our coal transportation capacity to support the high levels of coal production at our Tanjung Enim coal mine, namely, the Tarahan Line Upgrade, the Kertapati Line Upgrade, the Tarahan Second Line and the Prajin Line. See "Business — Our Coal Business — Infrastructure development projects." The Tarahan Line Upgrade is schedule to be completed in 2020 and our planned capital expenditure for the Tarahan Line Upgrade is approximately Rp.81.0 billion and Rp.116.2 billion for the years ending December 31, 2018 and 2019. The Kertapati Line Upgrade is scheduled to be completed by July 2019 and our planned capital expenditure for the upgrade to the Kertapati Line is approximately Rp.200.0 billion and Rp.154.6 billion for the years ending December 31, 2018 and 2019. The Tarahan Second Line is scheduled to be operational by 2023 and our planned capital expenditure for the development of the Tarahan Second Line is approximately Rp.121.6 billion and Rp.425.6 billion for the years ending December 31, 2018 and 2019. The Prajin Line is scheduled to be operational by 2023 and our planned capital expenditure for the development of the Prajin Line is Rp.130.6 billion and Rp.457.2 billion for the years ending December 31, 2018 and 2019.

In addition, we (i) have procured a new equipment with tin fuming technology, to be installed at one of our tin smelting and refining plants, which will enable us to re-smelt tin slag with tin content of less than 2.0% and produce more refined tin from our tin ore, and (ii) plan to construct a new tin smelter equipped with a new smelting technology, which we expect will enable us to smelt tin concentrates with tin content ranging from 40.0% to 70.0%, thereby enabling us to increase our annual tin production capacity up to 45,000 tonnes of crude tin. See "Business — Our Tin Business — Our tin development projects." The new tin fuming equipment is scheduled to be delivered by October 2018 and is expected to be operational by November 2018. The total cost of the tin fuming equipment is Rp.62.0 billion, of which we have paid Rp.24.8 billion, with the remaining Rp.37.2 billion to be paid in 2019. We expect to complete construction of the new tin smelter equipped with the new tin smelting technology by August 2020 and to begin utilization of the technology by September 2020. Our planned capital expenditure for the new tin smelter is Rp.399.3 billion and Rp.384.7 billion for the years ending December 31, 2018 and 2019, respectively.

Our expansion plans for our midstream and downstream products include upgrading works at our aluminum reduction plant at Kuala Tanjung, North Sumatra, to increase the aluminum production capacity from 260 ktpa to 300 ktpa, as well as the construction of our new East Halmahera Ferronickel Plant, which is expected to increase our ferronickel production capacity by 50.0% after completion of the first phase of construction. See "Business — Our Aluminum Smelting Business — Other development projects" and "Business — Our Nickel Business — Our ferronickel production facilities — Production facility under development — East Halmahera Ferronickel Plant." Following the completion of our planned expansion projects, we expect our planned increase in production capacities to contribute to an increase in production volumes for future periods.

Production costs

As a producer and seller of commodities, we sell our products at market prices and our ability to manage costs and expenses has a significant impact on our results of operations. The major cost components for our various businesses primarily comprise:

- For coal — transportation costs, third-party mining services fees and rent expense for our mining equipment.
- For gold — the cost of gold bullion purchased from third-party precious metals trading companies, labor costs and costs of materials consumed at our mine sites.
- For tin — mining fees paid to small-scale miners, under existing agreements with them, and rent expense for our mining equipment.
- For aluminum — the raw material costs for the production of our aluminum products, such as alumina, coke, coal tar pitch and aluminum fluoride. While power supply cost is typically one of the main cost component for the aluminum smelting business, we currently enjoy low cost power supplied by our hydropower plants.
- For nickel ore and ferronickel — fuel expense and labor services.

We actively monitor our production costs and have implemented several cost saving initiatives in recent years. For example, as part of our expansion project for our Pomalaa Ferronickel Facilities, we completed construction of a coal-fired power plant at Pomalaa in 2016, to supplement our power supply requirements for our nickel business. As a result, we managed to fulfill part of our power supply requirements previously met by fuel bought from third-party suppliers, with the power supply from our coal-fired power plant at Pomalaa, thereby improving our fuel cost efficiency. See "Business — Our Nickel Business — Our ferronickel production facilities — Pomalaa Ferronickel Facilities." In addition, we began utilizing electric-powered heavy equipment for our coal mining operations, in 2016, which reduced our need for conventional heavy equipment and contributed to a decrease in our rent expense for heavy equipment and fuel cost.

We aim to continue monitoring our production costs for opportunities to further improve our costs efficiencies. For example, we currently use the borehole mining method at our onshore tin mines, through our use of borehole mining equipment which we developed in-house in 2012. We plan to further develop our in-house borehole mining equipment for use at our offshore tin mines, thereby improving our production efficiency as well as reducing rent expense for our tin mining equipment. See "Business — Our Tin Business — Our tin development projects — Borehole mining technology." We also periodically revise our mine plans to adapt to changes in demand for our products, selling prices and operating costs, thereby improving our profit margins. As a result of our cost saving initiatives, our cost of revenue as a percentage of total revenue saw a general decline in the recent years and we expect such trend to continue as we further improve our cost efficiencies. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2017 and 2018, our cost of revenue as a percentage of total revenue were 81.7%, 77.1%, 70.5%, 72.4% and 73.4%, respectively.

Government policies and changes in law

While the current policies of the Government toward the domestic coal and minerals mining industries are generally market-orientated, the Government may, from time to time, promulgate new policies or laws that affect our mining operations as well as the sale of our products. See "Risk Factors — Risks Common to All Our Mining Businesses — We may be adversely affected by changes to Indonesian laws and regulations relating to the mining industry." For example, the Government has enacted various regulations on the prohibition of export of minerals, such as the MEMR Regulation 7 of 2012, most recently amended by the MEMR Regulation 20 of 2013 and the Ministry of Trade Regulation No.29/M- DAG/PER/5/2012 on Export of Mining Products. On January 16, 2017, the Minister of Trade eased the export restrictions relating to nickel ore and bauxite, allowing the export of nickel ore and bauxite through the grant of mineral export licenses, subject to the minimum level of processing and/or purification stipulated in Ministry of Trade Regulation No. 01/M-DAG/PER/1/2017 ("MOTR 1/2017"), in relation to the processing and purifying of such nickel ore and bauxite before export. Pursuant to MOTR 1/2017,

such nickel ore and bauxite may only be exported up to January 11, 2022. See "Indonesian Regulatory Framework — Mining Regulation — Price controls and export licensing — Mineral export license." As a result, we were able to export our nickel ore and bauxite ore in the international market since 2017, which contributed to an improvement in our revenue from and profit margins for our nickel and ferronickel products. Following the end of the export period after January 11, 2022, or in the event we no longer hold such mineral export licenses, we may sell a larger proportion of our nickel ore and bauxite ore in the domestic markets and/or increase the proportion of nickel ore and bauxite ore used as raw material feed in the production of our midstream and downstream products. Accordingly, our product mix for future reporting periods may change, and, in the event that domestic market prices for nickel ore and bauxite ore remain lower than prices in the international market, our revenues and margins may decrease.

In addition, the Government has in the past imposed certain price control and export restriction regulations in relation to coal and other minerals in Indonesia. Pursuant to MEMR Decree No. 23 K/30/MEM/2018 on the Minimum Percentage of 2018's Domestic Market Obligations ("MEMR No. 23K/2018"), producers of coal and other minerals in Indonesia are obligated to sell a portion of their production to the domestic Indonesian market, with such portion having been set as 25% for 2018.. MEMR No. 23 K/2018 stipulates that coal producers may export their products by submitting a written request to the MEMR, provided that they meet the minimum domestic sale percentage applicable to it as determined by the MEMR. Currently, our domestic obligation under MEMR No. 23K/2018 is fulfilled by sales to PLN, with whom we have entered into long-term coal agreements. PLN is our primary offtaker for the coal produced from our Tanjung Enim coal mine and our total volume of coal sold to PLN was approximately 8.5 million tonnes, 11.2 million tonnes, 12.8 million tonnes, 6.4 million tonnes and 5.6 million tonnes for the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2017 and 2018, respectively. For the same periods, our sale of coal to PLN amounted to Rp.5,876.7 billion, Rp.6,751.2 billion, Rp.9,607.6 billion (US$667.0 million), Rp.4,482.9 billion and Rp.4,065.5 billion (US$282.2 million), respectively, representing 15.5%, 18.8%, 20.4%, 23.8% and 13.6% of our total revenue, respectively.

Further, pursuant to MEMR Decision No. 1395K/30/MEM/2018, as most recently amended by MEMR Decision No. 1925K/30/MEM/2018, dated August 7, 2018, regarding Coal Price for Electricity Supply for Public Interest ("MEMR 1395K (as amended)"), the Government will determine the selling price of coal to domestic electricity providers. The Government has determined that coal with specifications of 6,322 kcal/kg GAR, total moisture of 8.0%, total sulfur of 0.8% and ash content of 15.0%, would be sold at US$70 per tonne (Free On Board). For coal that does not meet these specifications, the coal sales price will be calculated based on the applicable calculation guidelines as stipulated in MEMR 1395K (as amended). Such special price determination (the "MEMR coal benchmark price") is effective up to December 31, 2019 and the maximum amount of coal for which domestic coal producers are required to sell at this price is 100.0 million tonnes of coal per annum. See "Indonesian Regulatory Framework — Mining Regulation — Price controls and export licensing — Coal sales price controls." While the average selling price for our coal for the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2017 and 2018 has been lower than the MEMR coal benchmark price, any changes to the MEMR coal benchmark price could result in lower or higher coal prices realized, and as a result, a decrease or increase in our revenue and margins. Following the implementation of the MEMR coal benchmark price, PLN has reimbursed us for certain costs, including transportation costs incurred for the delivery of our coal to PLN. As a result of which, our cost of revenue for our sale of coal to PLN is expected to be lower and have a positive impact on our margins.

Other government policies (including local government policies) that affect our business operations include policies relating to obtaining and maintaining permits and licenses required for coal and minerals mining, taxes and levies relating to coal and minerals mining and trading, and the environment. We are required to obtain, maintain and renew various permits and approvals from the Government for our mining operations. The licenses from the Government or regional governments required for operations of a mining business include general corporate, mining, capital investment, labor, environmental, land utilization and other licenses. Most of these permits have various expiration dates ranging from five years from the date of issue to the date on which the license-holding company ceases to exist. Any changes to Government policies that affect our obtaining and/or maintaining permits and licenses required to conduct our business operations could result in a temporary or

permanent suspension of certain of our business activities, which could result in a decrease in our revenue and margins. See "Risk Factors — Risks Common to All Our Mining Businesses — Our mining operations and expansion programs depend on our ability to obtain, maintain and renew necessary permits and approvals from the Government."

Acquisitions and divestments

Our results of operations and business are significantly affected by acquisitions and divestments.

Antam, Bukit Asam and Timah

In 2017, our Company was appointed as the holding company for the state's mining operators and, on November 27, 2017, the Government transferred its 65.0% equity interests in each of Antam, Bukit Asam and Timah to our Company. As our Company, Antam, Bukit Asam and Timah were entities under common control of the Government at the time of such equity transfers, we accounted for the receipt of such equity interests using the pooling-of-interests method, as required under SFAS 38 — "Business Combination of Entities Under Common Control" and have presented our consolidated financial statements included herein, as if Bukit Asam, Timah and Antam had been combined with our Company since January 1, 2015. See Note 4 to our Audited Consolidated Financial Statements included in this Offering Memorandum.

PT Freeport Indonesia

In November 2017, the Government also transferred its 9.36% equity interests in PTFI to our Company. We plan to acquire a majority beneficial stake in PTFI. To effect the planned acquisition, we have entered into a series of agreements, including the PTFI Divestment Agreement, the PTFI Share Subscription Agreement, the PTRTI Buyout Agreement and the Agreement between the Government of Indonesia, Provincial Government of Papua, the Regency of Mimika and Inalum, see "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia — Transaction agreements relating to the PTFI Share Acquisition." Following the completion of the planned PTFI Share Acquisition, we expect to own a 51.2% beneficial equity interest in PTFI, with an economic interest of 18.72% for the Initial Period (as defined herein) and an economic interest of 41.2% after the expiration of the Initial Period. However, we intend for FCX to continue managing PTFI, and accordingly, the results of operations of PTFI are expected to be accounted for in our consolidated financials statements using the equity method.

For the year ended December 31, 2017 and the six months ended June 30, 2018, dividend income from PTFI amounted to Rp.427.6 billion (US$29.7 million) and Rp.2,028.2 billion (US$140.8 million), respectively. Such amounts are recorded under other income in our consolidated statements of profit or loss and other comprehensive income. See "— Key Components of Our Income Statement — Other income/(expenses), net." Upon the completion of the planned PTFI Share Acquisition, we expect to enter into a shareholders agreement with PTII, PTFI and FCX, where it is contemplated that between the date of the completion of the PTFI Share Acquisition and the earlier of (i) December 31, 2022 or (ii) PTFI's cumulative production and sales of gold and copper exceeding predetermined amounts (the "Initial Period"), we and FCX will retain the economics of revenue and cost sharing arrangements in relation to PTFI in the same manner as in the prior periods, as though PTFI's joint venture with PTRTI was still in place. Following the Initial Period, it is intended that the economics of revenue and cost sharing arrangements in relation to PTFI will reflect our, FCX's and PTII's respective equity interest in PTFI.

PT Indonesia Chemical Alumina

On May 29, 2018, we entered into a conditional share purchase agreement (the "ICA CSPA") with Showa Denko to purchase its 20.0% interests in ICA. Pursuant to the terms of the ICA CSPA, both Antam and Showa Denko agreed to continue providing operational assistance in connection with the operations of ICA until completion of the share transfer, which has a long-stop date of March 31, 2019. As ICA requires consent from shareholders representing at least 84.0% of the total shareholding interests for significant financial and operating decisions, it has been accounted for in Antam's financials using the equity method for the years ended December 31, 2015, 2016 and 2017, and the six months ended June 30, 2018. In the event we complete the

acquisition of the remaining 20.0% interests in ICA, the results of operations of ICA will be consolidated into our accounts in accordance with SFAS 22 "Business Combination." See "Business — Our Bauxite Business —Tayan Chemical Grade Alumina Plant."

Acquisition of new mining concessions

We plan to acquire additional mining concessions so as to allow us to own approximately between 15.0% and 20.0% of the domestic reserves and resources for coal and the minerals which we currently mine. See "Business — Strategies — Continued consolidation of domestic mining reserves and resources." We expect that, subject to our ability to successfully expand our infrastructure and increase our production capacities, our acquisition of such new mining concessions would allow us to increase our production and sales volumes and, in turn, our revenue. See "— Production volumes, infrastructure and expansion of production capacities."

New products and services

We plan to expand our service offerings in the midstream and downstream businesses for the coal and minerals which we produce, and diversify our revenue base to increase the proportion of our revenue derived from these midstream and downstream businesses. For example, we plan to expand our aluminum smelting business through (i) upgrading our existing reduction plant to increase the production capacity from 260 ktpa to 300 ktpa and (ii) the acquisition of an idle primary aluminum billet plant located next to our existing aluminum smelter in Kuala Tanjung and converting it into a secondary aluminum billet plant. See "Business — Our Aluminum Smelting Business — Other development projects." In addition, we plan to enter into a joint venture agreement to construct a smelter grade refinery plant to process bauxite ore into smelter grade alumina. See "Business — Our Bauxite Business Production facility under development — The Mempawah Smelter Grade Alumina Refinery Plant." We expect revenues from these midstream and downstream businesses will contribute a larger proportion of our total revenues in future periods.

Foreign exchange fluctuations

Fluctuating foreign exchange rates, in particular fluctuations in the U.S. dollar/Rupiah exchange rate affect our results of operations. Our sales are predominantly denominated in U.S. dollars or benchmarked against U.S. dollar equivalent prices. While our cost of revenue is denominated in a combination of U.S. dollars and Rupiah, the proportion of cost of revenue denominated in U.S. dollars varies across each of our businesses. For example, our gold business typically has a higher proportion of cost of revenue denominated in U.S. dollars due to gold bullion which we purchase from third-parties for smelting and refining. Conversely, our coal business, sales of which are largely conducted domestically, typically has a lower proportion of cost of revenue denominated in U.S. dollars. Accordingly, while an appreciation in the value of U.S. dollars against Rupiah will have a positive impact on our overall results of operations, the extent of the impact on the margins for each of our businesses will be commensurate with the proportion of cost of revenue denominated in U.S. dollars, for the respective businesses.

Fluctuating foreign exchange rates, in particular fluctuations in the U.S. dollar/Rupiah exchange rates, also have an effect on our results of operations through foreign exchange gains or losses made on our working capital assets. Such gains or losses primarily arise (i) from the settlement of monetary items, mainly comprising receivables and payables that are not denominated in U.S. dollars, between us and third-parties and between entities within our Group (as gains and losses are not eliminated in consolidation due to the exchange rate for translation purposes being different from that for transaction purposes), and (ii) on re-translation of monetary items, such as cash, bank balances, receivables and payables that are held in currencies other than U.S. dollars, of our Company and upon consolidation of the financial statements of the entities within our Group.

Significant Accounting Policies, Critical Accounting Estimates and Judgments

Our consolidated financial statements have been prepared in accordance with Indonesian FAS, which comprise the Statements and Interpretations issued by the Financial Accounting Standards Board of the Indonesian Institute of Accountants ("PSAK"). The preparation of these consolidated financial statements

requires management to make estimates and judgments that affect the reported amounts of, among others, assets, such as inventories, goodwill and fixed assets. Management bases its estimates and judgments on historical experience and other factors that are believed to be reasonable under the circumstances. We continually evaluate such estimates and judgments. Actual results may differ from these estimates under different assumptions or actual conditions. In order to provide an understanding of how our management forms its judgment about future events, including the variables and assumptions underlying our estimates, and the sensitivity of judgments to different circumstances, we have identified the critical accounting policies discussed below. For more details, see Notes 2 and 3 to our consolidated financial statements included in this Offering Memorandum for the Summary of Significant Accounting Policies and Critical Accounting Estimates and Judgments.

Revenue and expenses

Revenue is recognized to the extent that it is probable that the economic benefits will flow to the Group and the revenue can be reliably measured. Revenue is measured at the fair value of the consideration received or receivable, excluding discounts, rebates and value added taxes ("VAT").

Revenue from sales of goods (coal, tin metal and tin solder, tin chemical, aluminum ingot, gold, ferronickel and crude palm oil) are recognized when all of the following conditions are met:

- we have transferred the significant risks and rewards of ownership of the goods to the buyer;
- we retain neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold;
- the amount of revenue can be reliably measured;
- it is probable that the economic benefits associated with the transaction will flow to the Group; and
- the costs incurred or to be incurred in relation to the sales transaction can be measured reliably.

The sale of a product arranged by a third-party is recognized as revenue when the product is received by the end-users. Revenue generated from sales of electricity is recognized when the electrical output is delivered to the customer. Certain of our ferronickel sale agreements provide for the provisional pricing of sales at the time of shipment. The final pricing is based on the LME nickel price and normally ranges from 30 to 180 days after shipping to customers. Such a provisional sale contains an embedded derivative which is closely related and not recorded separately from the host sales contract. At the reporting date, the provisionally priced ferronickel sales are adjusted to the nearest subsequent monthly average LME nickel price, with the adjustments recorded in sales.

For sales of services, such as our refinery, healthcare and port services, revenue is recognized in the accounting period in which the services are rendered, by reference to the stage of completion of the specific transaction and assessed on the basis of the actual service provided as a proportion of the total service to be provided.

Expenses are recognized as incurred.

Inventories

Finished goods inventory is measured at the lower of cost or net realizable value. Cost is determined using the weighted-average method. The cost of finished goods and work in progress comprises materials, labor and an appropriate proportion of directly attributable fixed and variable overheads. Net realizable value is the estimated selling price in the ordinary course of business less the estimated costs of completion and estimated cost necessary to make the sale. Materials, fuels, spare parts and consumable supplies are valued at cost, determined on a moving average basis, less provision for obsolete items. Provision for obsolete and slow-moving inventory is determined on the basis of estimated future usage of individual inventory items. Supplies of maintenance materials are charged to production costs in the period in which they are used.

Exploration and evaluation assets

Exploration and evaluation activity involves the search for mineral resources after the Group has obtained legal rights to explore in a specific area, determination of the technical feasibility and assessment of the

commercial viability of an identified resource. Exploration and evaluation expenditure comprises costs that are directly attributable to the following:

- acquisition of rights to explore;
- topographical, geological, geochemical and geophysical studies;
- exploratory drilling;
- trenching and sampling; and
- activities involved in evaluating the technical feasibility and commercial viability of extracting mineral resources.

Exploration and evaluation expenditure related to an area of interest is written off as incurred, unless it is capitalized and carried forward, on an area of interest basis, provided that one of the following conditions is met:

- the rights of tenure of an area are current and it is considered probable that the costs will be recouped through successful development and exploitation of the area of interest or, alternatively, by its sale; or
- exploration activities in the area of interest have not yet reached the stage which would permit a reasonable assessment of the existence or otherwise of economically recoverable reserves and active and significant operations in or in relation to the area of interest are continuing.

Capitalized costs include costs directly related to exploration and evaluation activities in the relevant area of interest and exclude physical assets, which are recorded in property, plant and equipment. General and administrative costs are allocated to an exploration or evaluation asset only to the extent that those costs can be related directly to operational activities in the relevant area of interest. Capitalized exploration and evaluation expenditure is written off where the above conditions are no longer satisfied.

Identifiable exploration and evaluation assets acquired in a business combination are recognized initially as assets at fair value on acquisition and subsequently at cost less impairment charges. Exploration and evaluation expenditure incurred subsequent to the acquisition of an exploration asset in a business combination is accounted for in accordance with the accounting policy outlined above. As exploration and evaluation assets are not available for use, they are not depreciated. Exploration and evaluation assets are assessed for impairment if facts and circumstances indicate that impairment may exist. Exploration and evaluation assets are also tested for impairment once commercial reserves are found, before the assets are transferred to "mining properties — mines under development." Expenditure incurred before the entity has obtained the legal right to explore a specific area is expensed as incurred.

Mining properties

Development expenditure incurred by us on our behalf is accumulated separately for each area of interest in which economically recoverable resources have been identified. Such expenditure comprises costs directly attributable to the construction of a mine and the related infrastructure and excludes physical assets and land rights, which are recorded as property, plant and equipment. Once a development decision has been taken, the carrying amount of the exploration and evaluation assets in respect of the area of interest is transferred to "mines under development" within mining properties and aggregated with the subsequent development expenditure.

"Mines under development" are reclassified as "mines in production" at the end of the commissioning phase, when the mine is capable of operating in the manner intended by management. No depreciation is recognized for "mines under development" until they are reclassified as "mines in production." When further development expenditure is incurred on a mining property after the commencement of production, the expenditure is carried forward as part of "mines in production" when it is probable that additional future economic benefits associated with the expenditure will flow to us. Otherwise, such expenditure is classified as a cost of production. "Mines in production" (including reclassified exploration, evaluation and development expenditure, and payments made to acquire mineral rights and leases) are amortized using the units-of-production method, with separate calculations being made for each area of interest. "Mines in

production" will be depleted using the units-of-production method. Identifiable mining properties acquired in a business combination are initially recognized as assets at their fair value. Development expenses incurred subsequent to the acquisition of the mining properties are accounted for in accordance with the policy outlined above.

"Mines under development" and "mines in production" are tested for impairment in accordance with the policy on impairment of non-financial assets. Assets that have an indefinite useful life — for example, goodwill or intangible assets not ready for use — are not subject to amortization but are tested annually for impairment, or more frequently if events or changes in circumstances indicate that they might be impaired. Assets that are subject to amortization are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss is recognized for the amount by which the asset's carrying amount exceeds its recoverable amount. The recoverable amount is the higher of an asset's fair value less costs to sell and value in use. For the purposes of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash inflows, which are largely independent of the cash inflows from other assets or groups of assets (cash generating units). Non-financial assets other than goodwill that suffer impairment are reviewed for possible reversal of the impairment at each reporting date.

Reversal on impairment loss for assets other than goodwill would be recognized if, and only if, there has been a change in the estimates used to determine the asset's recoverable amount since the last impairment test was carried out. Reversal on impairment losses will be immediately recognized in profit or loss, except for assets measured using the revaluation model as required by SFAS. Impairment losses relating to goodwill would not be reversed.

Fixed assets

Fixed assets are stated at cost less accumulated depreciation. Historical cost includes expenditure that is directly attributable to the acquisition of items. Depreciation of the main mining equipment used in mining operations is calculated using the unit-of-production method. Other fixed assets, except land, are depreciated using the straight-line method to their estimated residual value over the lesser of the estimated useful lives of the assets, the life of the mine or the IUP term as follows:

Type of fixed asset	Years
Structure, buildings and improvements	5 to 30 and 50[(1)]
Plant, machinery and mining equipment	4 to 34 and 50[(1)]
Office, hospital and housing equipment and furniture and fixtures	3 to 30 and 50[(1)]
Transportation equipment	4 to 8

Note:

(1) Useful life of 50 years applies only to fixed assets of the Issuer.

Subsequent costs are included in the asset's carrying amount or recognized as separate assets, as appropriate, only when it is probable that future economic benefits associated with the item will flow to us and the cost of the item can be measured reliably. The carrying amount of the replaced part is derecognized. All other repairs and maintenance are charged to profit or loss during the financial period in which they are incurred.

Initial legal costs incurred to obtain legal rights are recognized as part of the acquisition cost of the land, and these costs are not depreciated. Costs related to renewal of land rights are recognized as intangible assets and amortized during the period of the land rights.

Net gains or losses on disposals are determined by comparing the proceeds with the carrying amount and are recognized within "other income, net" in profit or loss. The assets' residual values, useful lives and depreciation method are reviewed and adjusted if appropriate, at the end of each reporting period. An asset's carrying amount is written down immediately to its recoverable amount if the asset's carrying amount is greater than its estimated recoverable amount.

The accumulated costs of the construction of the buildings and plant and the installation of machinery are capitalized as construction-in-progress. These costs are reclassified to fixed asset accounts when the construction

or installation is complete. Depreciation is charged from the date the assets are ready for use in the manner intended by management.

Estimated useful lives of fixed assets

We estimate the useful lives of our fixed assets based on expected asset utilization according to business plans and strategies that also consider expected future technological developments and market behavior. The estimation of the useful lives of fixed assets are based on our assessment of industry practice, internal technical evaluation and experience with similar assets. The estimated useful lives are reviewed at least once each financial year end and are updated if expectations differ from previous estimates due to physical wear and tear, technical or commercial obsolescence and legal or other limitations on the use of the assets. Changes in such factors may materially affect future results of operations. The amounts and timing of recorded expenses for any year will be affected by changes in these factors and circumstances. A reduction in the estimated useful lives of our fixed assets will increase the recorded operating expenses and decrease non-current assets.

Goodwill and impairment of non-financial assets

Our consolidated financial statements reflect acquired businesses after the completion of the respective acquisition. We account for the acquired businesses using the acquisition method, which requires extensive use of accounting estimates and judgments to allocate the purchase price to the fair market values of the acquiree's identifiable assets and liabilities at the acquisition date. Any excess in the purchase price over the estimated fair market values of the net assets acquired is recorded as goodwill in our consolidated statement of financial position. Thus, the numerous judgments made in estimating the fair market value to be assigned to the acquiree's assets and liabilities can materially affect our financial performance.

The determination of fair value less cost to sell and value in use requires us to make estimates and the assumptions about expected production and sales volumes, commodity prices (considering current and historical prices, price trends and related factors), mineral reserves and resources, operating costs, closure and rehabilitation costs and future capital expenditure. These estimates and assumptions are subject to risk and uncertainty; hence there is a possibility that changes in circumstances will alter these projections, which may have an impact on the recoverable amount of the assets. In such circumstances, some or all of the carrying value of the assets may be further impaired or the impairment charge reduced with the impact recorded in profit or loss.

Assets held for sale and discontinued operations

Significant judgement is required to determine the recoverable amount of asset held for sale and discontinued operations, in the absence of quoted market price. These values are typically based on the present value of future cash flows where the estimation is required for reserves, future mine plans and production profiles, operational and capital costs, discount rates and expected coal prices. Changes in circumstances may alter these projections, which may impact the recoverable amount of the assets. In such circumstances, some or all of the carrying value of the assets may be impaired and charged to profit or loss.

Mineral reserves estimates

Proven and probable reserves are estimates of the amount of output that can be economically and legally exploited from our mining properties. We determine and report our mineral reserves under the principles incorporated in the JORC Code. In order to estimate mineral reserves, assumptions are required about a range of geological, technical and economic factors, including quantities, production techniques, stripping ratio, production costs, transportation costs, commodity demand, commodity prices and exchange rates.

Estimating the quantity and/or mineral content of mineral reserves requires the size, shape and depth of mineral bodies or fields to be determined by analyzing geological data such as drilling samples. This process may require complex and difficult geological judgments to interpret the data.

Because the economic assumptions used to estimate reserves change from period to period and because additional geological data are generated during the course of operations, estimates of reserves may change from

period to period. Changes in the reported reserves may affect our financial results and financial position in a number of ways, including the following:

- Asset carrying values may be affected due to changes in estimated future cash flows.
- Depreciation, depletion and amortization charged in the consolidated statement of profit or loss and other comprehensive income may change where such charges are determined on a units-of-production basis, or where the useful economic lives of assets change.
- Decommissioning, site restoration and environmental provision may change where changes in estimated reserves affect expectations about the timing or cost of these activities.
- The carrying value of deferred tax assets/liabilities may change due to changes in estimates of the likely recovery of the tax benefits.

In relation to the acquisition of an additional 7.5% share ownership in PT Nusa Halmahera Mineral ("NHM") in December 2012, we also perform an estimation of potential gold resources held by NHM at each reporting date.

Provision for environmental reclamation and mine closure

Our accounting policy for the recognition of environmental reclamation and mine closure provision requires significant estimates and assumptions, such as requirements of the relevant legal and regulatory framework; the magnitude of possible contamination and the timing, extent and costs of required environmental reclamation and mine closure activity. These uncertainties may result in future actual expenditure differing from the amounts currently provided. If total current year expenditure related to past activity is higher than the existing balance, the differences will be charged to the periods where the excess arises. The provision recognized for each site is periodically reviewed and updated based on the facts and circumstances available at the time.

Post-employment benefits obligation

The present value of the pension obligation depends on a number of factors that are determined on an actuarial basis using a number of assumptions. The assumptions used in determining the net cost/(income) for pensions include the discount rate, future salary increase, future remuneration changes, employee attrition rates, life expectancy and expected remaining periods of service of employees. Any changes in these assumptions will have an impact on the carrying amount of the pension obligation.

We determine the appropriate discount rate at the end of each period. This is the interest rate that should be used to determine the present value of estimated future cash outflows expected to be required to settle the pension obligation. In determining the appropriate discount rate, we consider the interest rates of government bonds (considering there is no deep market for high quality corporate bonds) that are denominated in the currency in which the benefits will be paid and that have terms to maturity approximating the terms of the related pension obligation.

For the rate of future salary increases, we collect all historical data relating to changes in base salaries and adjusts it for future business plan. Other key assumptions for pension obligations are based in part on current market conditions.

Uncertain tax exposure

Judgments and assumptions are required to determine the capital allowances and deductibility of certain expenses during the estimation of the provision for income tax expense for each company within our Group. In particular, the calculation of our income tax expenses involves the interpretation of applicable tax laws and regulations. There are many transactions and calculations for which the ultimate tax determination is uncertain during the ordinary course of business.

All judgments and estimates taken by management as discussed above may be challenged by the Directorate General of Taxation ("DGT") or the Government Auditors. As a result, the ultimate tax determination

becomes uncertain. The resolution of tax positions taken by us, can take several years to complete and in some cases it is difficult to predict the ultimate outcome. Where the final outcome of these matters is different from the amounts initially recorded, such differences will have an impact on the income tax and deferred income tax provision in the period in which this determination is made.

Deferred tax assets, including those arising from tax losses carried forward, capital allowances and other temporary differences, are recognized only where it is considered more likely than not that they will be recovered, which is dependent on the generation of sufficient future taxable profits. Similar to "Goodwill and "Impairment of non-financial assets," assumptions regarding the generation of future taxable profits are heavily affected by our estimates and assumptions regarding, for example, expected production levels, sales volumes, commodity prices, which are subject to risk and uncertainty, and hence there is a possibility that changes in circumstances will alter the projected future taxable profits.

Determination of functional currency

In the process of applying our accounting policies, we have to make a judgement on the determination of the functional currency of each of our entities which have significant effects on the amounts recognized in our consolidated financial statements

The functional currency of each entity within our Group is the currency of the primary economic environment in which each of the entities operates. It is the currency, among other factors, that mainly influences the sales prices for goods and services, of the country whose competitive forces and regulations mainly determine the sales prices of its goods and services, the currency that mainly influences labor, material and other costs and the currency in which funds from financing activities are generated.

Assessment whether the Company has control over Antam, Timah and Bukit Asam

The existence of control encompasses the investor's power over the investee, its exposure, or rights, to variable returns from its involvement with the investee, and its ability to use its power over the investee to affect its returns. Our consolidated financial statements include the financial statements of Antam, Timah, and Bukit Asam in which the Company holds, through Series B shares, the majority of the ownership interest in those subsidiaries. In assessing whether it has power over those entities, management applies judgement and considers the rights attached to those ownership interests obtained by virtue of contractual agreement with other shareholders. Those rights have given the Company the ability to direct the activities of those subsidiaries that significantly affect their returns and as such, constitute control.

Key Components of Our Income Statement

Revenue

We derive substantially all of our revenue from our coal and mineral mining, and the related midstream and downstream businesses. Our revenue is categorized into revenue from sale of products, namely (i) coal, (ii) gold, (iii) tin metal and tin solder, (iv) aluminum, (v) ferronickel, (vi) nickel ore and (viii) others, as well as provision of services, namely (ix) provision of purification of precious metals and other services.

The following table sets forth the breakdown of our revenue and each item as a percentage of our total revenue for the periods indicated:

	Year ended December 31,							Six months ended June 30,				
	2015		2016		2017			2017		2018		
	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)
Products:												
Coal	13,801.0	36.5	13,785.4	38.4	19,133.5	40.6	1,328.3	8,830.2	46.9	10,289.5	34.5	714.4
Gold	7,314.7	19.3	5,543.6	15.4	7,375.5	15.6	512.0	1,799.0	9.6	8,203.9	27.5	569.6
Tin metal and tin solder	6,548.4	17.3	6,629.8	18.5	8,481.7	18.0	588.8	3,986.3	21.2	3,912.4	13.1	271.6
Aluminum	6,238.0	16.5	5,576.4	15.5	5,744.3	12.2	398.8	2,408.5	12.8	3,127.5	10.5	217.1
Ferronickel	2,718.1	7.2	2,782.4	7.7	3,222.6	6.8	223.7	887.2	4.7	2,469.4	8.3	171.4
Nickle ore	10.9	0.0	295.2	0.8	1,369.8	2.9	95.1	152.9	0.8	886.5	3.0	61.5
Others	696.7	1.8	817.9	2.3	1,381.6	2.9	95.9	484.3	2.6	772.4	2.6	53.6
Services:												
Purification of precious metals and other services	493.6	1.4	473.8	1.4	475.3	1.0	33.2	284.4	1.4	194.0	0.5	13.5
Total revenue	**37,821.4**	**100.0**	**35,904.5**	**100.0**	**47,184.3**	**100.0**	**3,275.8**	**18,832.8**	**100.0**	**29,855.6**	**100.0**	**2,072.7**

Coal

Our coal business is our largest business segment in terms of revenue. See "Business — Our Coal Business." Substantially all our coal products are produced and sold through Bukit Asam and its subsidiaries, with only 2.1%, 0.9%, 0.1%, 0.3% and 0.5% of our revenue from coal produced and sold through Antam, Timah and their subsidiaries, for the years ended December 31, 2015, 2016, 2017 and the six months ended June 30, 2017 and 2018, respectively. A substantial amount of the coal we produced at our coal mines is sold to PLN, Indonesia's state-owned supplier of electricity, and its subsidiary, IP, through long-term offtake agreements. See "Business — Customers — Coal — Coal offtake agreements with PLN."

In 2016, we classified our coal operations carried out by Timah's subsidiaries, PT Tanjung Alam Jaya ("TAJ") and PT Truba Bara Banyu Enim ("TBBE"), as discontinued operations, in line with our plans to divest the coal business of these subsidiaries. As a result of which, since 2016, we began recognizing the results of operations of TAJ and TBBE as gains or losses from discontinued operations. See "— Loss for the year/period from discontinued operations."

Gold

We produce and sell fine gold through Antam and its subsidiaries. Our fine gold products are predominantly fine gold in the form of gold bullion and include custom-made products such as jewelry and gold dinar coins. We smelt and refine (i) gold bullion which we purchase from third-party precious metals trading companies and (ii) gold doré which we produce from our Pongkor Gold Mine and Cibaliung Gold Mine. See "Business — Our Gold Business."

Tin metal and tin solder

We produce and sell refined tin, tin stabilizer and tin solder through Timah and its subsidiaries. Our revenue from our tin business is predominantly derived from sale of our Banka tin and Kundur tin. See "Business — Our Tin Business."

Aluminum

Revenue from our aluminum business is derived from our sale of aluminum ingots, billets and alloys through our Company. We require smelter grade alumina as the primary raw material in the production of our

aluminum products and currently purchase all our smelter grade alumina from third-party suppliers. See "Business — Our Aluminum Smelting and Production Business."

Ferronickel

We produce and sell all our ferronickel through Antam. The primary raw material used in our production of ferronickel is nickel ore which we produce from our nickel mines. See "Business — Our Nickel Business."

Nickel ore

We produce and sell substantially all our nickel ore through Antam and its subsidiaries. See "Business — Our Nickel Business." The majority of the nickel ore which we produce from our nickel mines is currently sold in the international market, and the rest of our nickel ore is used as raw material in our production of ferronickel and sold in the domestic market. See "Business — Our Nickel Business."

Others

Revenue from sale of other products primarily comprises revenue from sale of (i) tin chemical, (ii) bauxite ore, (iii) silver, (iv) other precious metals and (v) crude palm oil extracted from plantations at certain of our coal mining concession areas.

Purification of precious metals and other services

Revenue from purification of precious metals and other services primarily comprises revenue from our provision of (i) healthcare services, (ii) precious metals refining services provided to other mining companies, at the Logam Mulia Precious Metals Refinery, (iii) sale of hydroelectricity and coal-fired power, (iv) precious metals depository services and (v) other services. See "Business — Our Gold Business — Logam Mulia Precious Metals Refinery," "Business — Our Gold Business — Logam Mulia gold boutiques and depository services," and Business — Other Businesses."

For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2017 and 2018, revenue from related-parties represented 18.9%, 22.7%, 23.4%, 26.7% and 17.3% of our total revenue, respectively; export sales to third-parties represented 51.4%, 38.6%, 53.2%, 10.6% and 23.5% of our total revenue, respectively; and domestic sales to third-parties represented 29.7%, 38.7%, 23.4%, 62.6% and 59.2% of our total revenue, respectively.

Cost of revenue

Cost of revenue primarily comprises production costs, such as purchases of precious metals, transportation and ore mining fees and raw materials used. The following table sets forth the breakdown of our cost of goods sold and each item as a percentage of our total cost of revenue for the periods indicated:

	Year ended December 31,							Six months ended June 30,				
	2015		2016		2017			2017		2018		
	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)
Production costs:												
Purchases of precious metals	6,413.5	20.8	4,556.0	16.5	6,202.7	18.6	430.6	1,383.1	10.2	7,896.5	36.1	548.2
Raw material used	6,726.9	21.8	6,542.3	23.6	7,860.9	23.6	545.7	4,205.2	30.8	3,779.3	17.2	262.4
Transportation, barging and ore mining fees	6,695.6	21.7	6,605.6	23.9	6,806.1	20.5	472.5	3,283.4	24.1	3,896.0	17.8	270.5
Salaries, wages, and employee benefits	2,101.1	6.8	2,310.3	8.3	3,007.0	9.0	208.8	1,267.5	9.3	1,471.4	6.7	102.2
Usage of fuel	1,622.8	5.3	1,260.0	4.5	1,841.6	5.5	127.9	680.1	5.0	1,245.5	5.7	86.5
Depreciation and amortization	1,620.0	5.2	1,568.8	5.7	2,037.6	6.1	141.5	889.1	6.5	1,113.4	5.1	77.3
Royalties, tax and other government charges	1,451.9	4.7	1,375.8	5.0	2,150.3	6.5	149.3	989.0	7.3	1,021.9	4.7	70.9
Third-party services	423.9	1.4	307.1	1.1	514.1	1.6	35.7	168.6	1.2	506.5	2.3	35.2
Rent	672.9	2.2	364.2	1.3	698.5	2.1	48.5	288.1	2.1	427.5	1.9	29.7
Spare parts used	596.2	1.9	649.8	2.3	754.0	2.3	52.4	249.3	1.8	352.8	1.6	24.5
Repairs and maintenance	430.9	1.4	429.1	1.5	455.1	1.4	31.6	200.8	1.5	237.2	1.1	16.5
Environmental reclamation and mine closure	96.1	0.3	72.3	0.3	166.1	0.5	11.5	36.7	0.3	59.5	0.3	4.1
Insurance	97.6	0.3	114.8	0.4	129.7	0.4	9.0	60.6	0.4	54.4	0.3	3.8
Purchase of coal	—	—	—	—	—	—	—	169.1	1.2	—	—	—
Other (each below Rp. 100 billion)	675.7	2.1	589.8	2.2	817.0	2.4	56.6	389.2	2.9	476.7	2.1	33.0
	29,625.1	**95.9**	**26,745.9**	**96.6**	**33,440.7**	**100.5**	**2,321.6**	**14,259.8**	**104.6**	**22,538.6**	**102.9**	**1,564.8**
Work in progress:												
At beginning of period	2,103.4	6.8	1,997.9	7.2	1,962.7	5.9	136.3	1,960.4	14.3	2,307.5	10.6	160.2
Transferred to fixed assets	—	—	(88.0)	(0.3)	(80.0)	(0.3)	(5.6)	(32.7)	(0.2)	(36.1)	(0.2)	(2.5)
At end of period	(1,998.0)	(6.5)	(1,962.7)	(7.1)	(2,307.5)	(6.9)	(160.2)	(2,263.5)	(16.6)	(2,366.1)	(10.8)	(164.3)
	29,730.5	**96.2**	**26,693.1**	**96.4**	**33,015.9**	**99.2**	**2,292.1**	**13,924.0**	**102.1**	**22,443.9**	**102.5**	**1,558.2**
Finished goods:												
At beginning of period	4,026.9	13.0	3,706.5	13.4	3,180.7	9.6	220.8	3,184.6	23.3	3,252.8	14.9	225.8
Purchase of tin metals	775.9	2.5	381.9	1.4	342.5	1.0	23.8	257.4	1.9	568.7	2.6	39.5
Addition/(Recovery) of provision for impairment of inventories, net	69.1	0.2	(60.0)	(0.2)	(9.8)	(0.0)	(0.7)	11.4	0.1	5.3	0.0	0.4
Transfer of raw materials to finished goods	—	—	152.5	0.6	—	—	—	—	—	—	—	—
At end of period	(3,706.5)	(11.9)	(3,180.7)	(11.6)	(3,252.8)	(9.8)	(225.8)	(3,740.4)	(27.4)	(4,369.1)	(20.0)	(303.4)
Total cost of revenue	**30,895.9**	**100.0**	**27,693.3**	**100.0**	**33,276.5**	**100.0**	**2,310.2**	**13,637.0**	**100.0**	**21,901.6**	**100.0**	**1,520.5**

Purchases of precious metals

Purchases of precious metals primarily relate to the cost of gold bullion purchased from third-party precious metals trading companies, which are used in the production of our gold products.

Raw material used

Raw material used primarily comprise the cost of (i) raw materials used in the production of our aluminum products, including smelter grade alumina, coke, coal tar pitch and aluminum fluoride, as well as (ii) mining fees paid to small-scale miners under existing agreements with them.

Transportation, barging and ore mining fees

Transportation, barging and ore mining fees primarily comprise (i) transportation costs incurred in connection with the delivery of our products to our customers, including railway transportation costs, sea freight, terminal handling and warehousing charges and (ii) mining fees paid to our third-party mining contractors.

Salaries, wages, and employee benefits

Salaries, wages, and employee benefits relates to salaries, bonuses, allowances and employee benefits for our management, as well as both permanent and temporary employees at our mine sites, processing plants, smelters, refineries, casting plant and power plants.

Usage of fuel

Usage of fuel primarily comprises our fuel costs for operating our mining vehicles, vessels used in our offshore mining activities, as well as our machinery in processing plants, smelters and refineries.

Depreciation and amortization

Depreciation and amortization primarily arise from the depletion of the reserves at our mining concessions, measured on the basis of amount of ore sold from the respective mining concessions as well as from the depreciation of our fixed assets, including our processing plants, smelters, refineries, casting plant and mining equipment and vehicles, using the straight-line method over their estimated useful lives.

Royalties, tax and other government charges

Royalties, tax and other government charges relate to mining royalties, export taxes, and land and building taxes paid to the Government in relation to our mine sites.

Third-party services

Third-party services primarily comprise fees paid to our third-party contractors in connection with security services provided in relation to our mining operations, consultancy fees for feasibility studies and other outsourced services including catering services for our employees at our mine sites.

Rent

Rent primarily comprises rent paid in relation to land on which our mines are located and heavy equipment which we rent from our vendors.

Spare parts used

Spare parts used primarily relates to spare parts used in the maintenance of our processing plants, smelters, refineries, casting plant and power plants.

Repairs and maintenance

Repairs and maintenance primarily comprise repair and maintenance expenses incurred in connection with our mining equipment, machinery and vehicles as well as equipment and machinery at our processing plants, smelters, refineries, casting plant and power plants.

Environmental reclamation and mine closure

Environmental reclamation and mine closure relates to restoration and rehabilitation expenditure for our mines.

Insurance

Insurance relates to insurance premiums paid in connection with our insurance policies for our business operations. See "Business — Insurance."

Other (each below Rp.100 billion)

Other (each below Rp.100 billion) comprises other types of miscellaneous production costs, such as power supply expenses, costs incurred for operations relating to our healthcare services and expenses relating to the purchase of office supplies for our mine site offices, each of which amounts to not more than Rp.100 billion.

General and administrative expenses

General and administrative expenses comprise (i) salaries, wages, bonuses and employee benefits, (ii) business travel and education, (iii) third-party services, (iv) corporate social environmental responsibilities program, (v) depreciation and amortization, (vi) repairs and maintenance, (vii) rent, and (viii) others. The following table sets forth the breakdown of our general and administrative expenses and each item as a percentage of our total general and administrative expenses for the periods indicated:

	Year ended December 31,							Six months ended June 30,				
	2015		2016		2017			2017		2018		
	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)
Salaries, wages, bonuses and employee benefits	1,250.2	45.7	1,216.4	43.1	1,622.7	48.6	112.7	642.3	48.1	799.2	49.7	55.5
Business travel and education	181.5	6.6	182.8	6.5	230.9	6.9	16.0	79.1	5.9	151.3	9.4	10.5
Third-party services	195.5	7.1	200.5	7.1	240.7	7.2	16.7	88.9	6.7	137.0	8.5	9.5
Corporate social environmental responsibilities program	206.7	7.6	302.6	10.7	224.3	6.7	15.6	80.8	6.0	113.2	7.0	7.9
Depreciation and amortization	90.2	3.3	115.1	4.1	106.8	3.2	7.4	59.0	4.4	54.8	3.4	3.8
Repairs and maintenance	66.6	2.4	81.5	2.9	101.7	3.1	7.1	57.8	4.3	50.5	3.1	3.5
Rent	88.3	3.2	132.4	4.7	112.9	3.4	7.8	—	—	—	—	—
Others (each below Rp.100 billion)	660.3	24.1	589.6	20.9	699.0	20.9	48.5	329.0	24.6	302.9	18.9	21.0
Total general and administrative expenses	**2,739.3**	**100.0**	**2,820.9**	**100.0**	**3,339.0**	**100.0**	**231.8**	**1,336.9**	**100.0**	**1,608.9**	**100.0**	**111.7**

Salaries, wages, bonuses and employee benefits

We incur salaries, wages, bonuses and employee benefits expenses in relation to our management and our permanent and temporary employees in our offices, including our operating, accounting, logistics, finance, human resources and other administrative staff.

Business travel and education

Business travel and education primarily comprise (i) travel expenses relating to our business development activities and (ii) travel reimbursements to our employees, as well as (iii) expenses incurred in connection with internal and external training seminars for our employees.

Third-party services

Third-party services primarily relate to professional fees such as legal and audit fees, as well as expenses incurred in connection with maintenance and cleaning services for our offices.

Corporate social environmental responsibilities program

Corporate social environmental responsibilities program relates to expenses incurred in connection with our corporate, social and environmental responsibility activities. See "Business — Corporate and Social Responsibility."

Depreciation and amortization

Depreciation and amortization primarily comprise depreciation for our corporate vehicles, buildings and furniture and equipment, including our offices, hospitals and residential buildings, and computers, as well as amortization of our software, using the straight-line method over their estimated useful lives.

Repairs and maintenance

Repairs and maintenance primarily comprise expenses relating to the repair and maintenance of office machinery, equipment and corporate vehicles.

Rent

Rent primarily comprises rent for our corporate offices and corporate vehicles.

Others (each below Rp.100 billion)

Others (each below Rp.100 billion) comprise other types of miscellaneous general and administrative expenses, such as expenses relating to purchase of office supplies for our corporate offices, tax expenses relating to our corporate offices and vehicles, utilities expense for our corporate offices and expenses incurred in connection with catering services for our corporate offices, each of which amounts to not more than Rp.100 billion.

Selling and marketing expenses

Selling and marketing expenses comprise (i) freight and insurance expense incurred in connection with delivery of our products, (ii) salaries, wages, bonuses and employee benefits expenses incurred in connection with our sales and marketing employees, (iii) depreciation and amortization recorded on our sales and marketing offices and ports which we own and operate, (iv) third-party service fees incurred in connection with third-party sales and marketing agents and (v) other types of selling and marketing expenses, each of which amounts to less than Rp.100 billion, including port service fees, demurrage fees, fuel, costs of spare parts for our vessels and rental of our representative offices. The following table sets forth the breakdown of our selling and marketing expenses and each item as a percentage of our total selling and marketing expenses for the periods indicated:

	Year ended December 31,							Six months ended June 30,				
	2015		2016		2017			2017		2018		
	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)
Freight and insurance	402.2	40.1	393.4	39.0	466.4	35.3	32.4	235.1	41.0	259.7	36.6	18.0
Salaries, wages, bonuses and employee benefits	182.9	18.2	172.9	17.2	279.8	21.2	19.4	96.8	16.9	113.5	16.0	7.9
Depreciation and amortization	123.0	12.3	151.6	15.0	169.6	12.8	11.8	77.9	13.6	73.7	10.4	5.1
Third-party services	48.5	4.8	62.5	6.2	116.0	8.8	8.1	—	—	—	—	—
Others (each below Rp.100 billion)	246.9	24.6	227.7	22.6	290.7	21.9	20.2	163.0	28.5	262.6	37.0	18.2
Total selling and marketing expenses	**1,003.5**	**100.0**	**1,008.1**	**100.0**	**1,322.5**	**100.0**	**91.9**	**572.8**	**100.0**	**709.5**	**100.0**	**49.2**

Finance income

Finance income comprises (i) interest income from cash in banks and time deposits and (ii) interest income from available-for-sale financial assets such as government bonds, corporate shares and mutual funds. The following table sets forth the breakdown of our finance income and each item as a percentage of our total finance income for the periods indicated:

	Year ended December 31,							Six months ended June 30,				
	2015		2016		2017			2017		2018		
	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)
Interest income from cash in banks and time deposits	471.3	93.5	566.8	89.1	567.2	90.0	39.4	258.7	90.6	323.6	94.3	22.5
Interest income from available-for-sale financial assets	32.6	6.5	69.1	10.9	62.7	10.0	4.3	26.9	9.4	19.7	5.7	1.3
Total finance income	**503.9**	**100.0**	**635.9**	**100.0**	**629.9**	**100.0**	**43.7**	**285.6**	**100.0**	**343.3**	**100.0**	**23.8**

Finance costs

Finance costs primarily comprise (i) interest expense from bank borrowings and finance leases for heavy equipment, (ii) interest expense from bonds payable which relates to outstanding bonds issued by Antam and Timah, see "Description of Material Indebtedness — Material Indebtedness of Antam — Antam's Bonds" and "Description of Material Indebtedness — Material Indebtedness of Timah — Timah's bonds," (iii) interest expense on receivables-discounting impact, which primarily relates to expense recognized in connection with the discounting of a related-party loan extended to ICA, and (iv) bank charges, offset against finance costs capitalized on our ongoing construction. The following table sets forth the breakdown of our finance costs and each item as a percentage of our total finance costs for the periods indicated:

	Year ended December 31,							Six months ended June 30,				
	2015		2016		2017			2017		2018		
	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)
Interest expenses from bank borrowings and finance leases	1,231.8	99.5	287.6	78.6	574.4	59.0	39.9	235.0	55.7	751.3	77.8	52.2
Interest expenses from bonds payable	266.2	21.5	266.3	72.8	298.8	30.7	20.7	133.2	31.6	198.1	20.5	13.8
Interest expenses on receivables discounting impact	—	—	—	—	121.7	12.5	8.4	68.9	16.3	22.7	2.4	1.6
Bank charges	4.7	0.4	5.1	1.4	2.8	0.3	0.2	0.7	0.2	2.2	0.2	0.2
Less:												
Amount capitalized on qualifying assets	(265.3)	(21.4)	(193.3)	(52.8)	(23.5)	(2.5)	(1.6)	(16.2)	(3.8)	(8.4)	(0.9)	(0.7)
Total finance costs	**1,237.5**	**100.0**	**365.7**	**100.0**	**974.2**	**100.0**	**67.6**	**421.6**	**100.0**	**965.9**	**100.0**	**67.1**

Share in net (loss)/profit of associates

Share of net (loss)/profit of associates relates to our share of net loss/profit of our associate companies, which is typically proportionate to our share of ownership in the respective associate companies.

Share in net loss of joint ventures

Share of net loss of joint ventures relates to our share of net loss/profit of our joint venture companies, which is typically proportionate to our share of ownership in the respective joint venture companies.

Other income/(expenses), net

Other income/(expenses), net primarily comprises dividend income from our investments in PTFI, for the year ended December 31, 2017 and the six months ended June 30, 2018. For the same periods, dividend income from PTFI amounted to Rp.427.6 billion (US$29.7 million) and Rp.2,028.2 billion (US$140.8 million), respectively. Upon the completion of the planned PTFI Share Acquisition, we expect to enter into a shareholders agreement with PTII, PTFI and FCX, where it is contemplated that between the date of the completion of the PTFI Share Acquisition and the earlier of (i) December 31, 2022 or (ii) PTFI's cumulative production and sales of gold and copper exceeding predetermined amounts (the "Initial Period"), we and FCX will retain the economics of revenue and cost sharing arrangements in relation to PTFI in the same manner as in the prior periods, as though PTFI's joint venture with PTRTI was still in place. Following the Initial Period, it is intended that the economics of revenue and cost sharing arrangements in relation to PTFI will reflect our, FCX's and PTII's respective equity interest in PTFI. See "— Factors Affecting Our Business and Results of Operations — Acquisitions and divestments — PT Freeport Indonesia."

Other components of other income/(expenses), net include (i) (loss)/gain on foreign exchange, net, (ii) gain from revaluation of investment properties, (iii) income from liquidated damages compensation which mainly arose as a result of delayed performance by our vendors under certain contracts relating to the expansion of the Pomalaa Ferronickel Facilities, (iv) gain from sale of investment, (v) income from insurance claims, (vi) provision for impairment of other tax receivables, (vii) loss recorded on a precious metal refining service agreement with our customer as a result of a fire at the Logam Mulia Precious Metals Refinery in January 2017, which led to temporary cessation of operations at the Logam Mulia Precious Metals Refinery for approximately a month, and (viii) others, net, such as the tax impact on the gain or loss on revaluation of investment properties, and recovery of impairment recorded on our mining properties. The following table sets forth the breakdown of our other income/(expenses), net and each item as a percentage of our total other income/(expenses), net for the periods indicated:

	Year ended December 31,							Six months ended June 30,				
	2015		2016		2017			2017		2018		
	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)
Dividend income	—	—	—	—	427.6	57.9	29.7	—	—	2,028.2	86.4	140.8
Gain/(loss) on foreign exchange, net	382.7	83.3	(143.6)	261.1	(24.4)	(3.3)	(1.7)	(59.2)	28.7	167.7	7.1	11.6
Gain from revaluation of investment properties	183.4	39.9	60.7	(110.5)	105.1	14.2	7.3	—	—	48.6	2.1	3.4
Income from liquidated damages compensation	—	—	—	—	99.7	13.5	6.9	97.3	(47.1)	35.9	1.5	2.5
Gain from sale of investment	—	—	—	—	776.4	105.1	53.9	—	—	—	—	—
Income from insurance claims	69.0	15.0	111.9	(203.5)	57.7	7.8	4.0	47.2	(22.8)	—	—	—
Provision for impairment of other tax receivables	—	—	—	—	(135.1)	(18.3)	(9.4)	(95.9)	46.4	—	—	—
Loss from precious metal refinery contract	—	—	—	—	(111.6)	(15.1)	(7.7)	—	—	—	—	—
Others, net	(175.7)	(38.2)	(84.0)	152.9	(456.6)	(61.8)	(31.7)	(196.0)	94.8	67.6	2.9	4.8
Total other income/ (expenses), net	**459.4**	**100.0**	**(55.0)**	**100.0**	**738.8**	**100.0**	**51.3**	**(206.6)**	**100.0**	**2,348.0**	**100.0**	**163.1**

Income tax (expenses)/benefit

Our revenues from operations are subject to Indonesia income tax calculated at 25.0% of the estimated assessable income for the year. Related costs and expenses are considered non-deductible for income tax purposes.

Loss for the year from discontinued operations

Loss for the year from discontinued operations relates to re-measurement of the assets of TAJ and TBBE, which we have classified as discontinued operations since 2016, as a result of profit or loss recorded by these entities. The principal activities of both TAJ and TBBE are coal mining.

Results of Operations

The following table sets forth selected statement of profit or loss and other comprehensive income data of the Company expressed as a percentage of revenue for the periods indicated.

	Year ended December 31,							Six months ended June 30,				
	2015		2016		2017			2017		2018		
	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)
Revenue	37,821.4	100.0	35,904.5	100.0	47,184.3	100.0	3,275.8	18,832.8	100.0	29,855.6	100.0	2,072.7
Cost of revenue	(30,895.9)	(81.7)	(27,693.3)	(77.1)	(33,276.5)	(70.5)	(2,310.2)	(13,637.0)	(72.4)	(21,901.6)	(73.4)	(1,520.5)
Gross profit	**6,925.5**	**18.3**	**8,211.2**	**22.9**	**13,907.8**	**29.5**	**965.6**	**5,195.8**	**27.6**	**7,954.0**	**26.6**	**552.2**
General and administrative expenses	(2,739.3)	(7.2)	(2,820.9)	(7.9)	(3,339.0)	(7.1)	(231.8)	(1,336.9)	(7.1)	(1,608.9)	(5.4)	(111.7)
Selling and marketing expenses	(1,003.5)	(2.7)	(1,008.1)	(2.8)	(1,322.5)	(2.8)	(91.9)	(572.8)	(3.0)	(709.5)	(2.4)	(49.2)
Operating profit	**3,182.7**	**8.4**	**4,382.2**	**12.2**	**9,246.3**	**19.6**	**641.9**	**3,286.1**	**17.5**	**5,635.6**	**18.8**	**391.3**
Finance income	503.9	1.3	635.9	1.8	629.9	1.3	43.7	285.6	1.5	343.3	1.2	23.8
Finance costs	(1,237.5)	(3.3)	(365.7)	(1.0)	(974,2)	(2.1)	(67.6)	(421.6)	(2.2)	(965.9)	(3.2)	(67.1)
Share in net (loss)/profit of associates	(249.3)	(0.7)	88.1	0.2	(196.8)	(0.4)	(13.7)	(55.7)	(0.3)	(64.3)	(0.2)	(4.5)
Share in net loss of joint ventures	(106.6)	(0.3)	(216.4)	(0.6)	(158.0)	(0.3)	(11.0)	(35.2)	(0.2)	(49.1)	(0.2)	(3.4)
Other income/(expense), net	459.4	1.3	(55.0)	(0.1)	738.8	1.6	51.4	(206.6)	(1.1)	2,348.0	7.9	163.1
Profit before income tax	**2,552.6**	**6.7**	**4,469.2**	**12.5**	**9,286.0**	**19.7**	**644.7**	**2,852.6**	**15.2**	**7,247.6**	**24.3**	**503.2**
Income tax (expenses)/benefit	(796.2)	(2.1)	1.2	0.0	(2,474.3)	(5.3)	(171.8)	(840.6)	(4.5)	(1,820.3)	(6.1)	163.4
Profit for the year/period from continuing operations	**1,756.4**	**4.6**	**4,470.4**	**12.5**	**6,811.7**	**14.4**	**472.9**	**2,012.0**	**10.7**	**5,427.3**	**18.2**	**376.8**
Loss for the year/period from discontinued operations	—	—	(31.1)	(0.1)	(6.5)	(0.0)	(0.4)	(3.7)	0.0	(4.4)	(0.0)	(0.3)
Profit for the year/period	**1,756.4**	**4.6**	**4,439.3**	**12.4**	**6,805.2**	**14.4**	**472.5**	**2,008.3**	**10.7**	**5,422.9**	**18.2**	**376.5**
Other comprehensive income/(loss) for the year/period, net of tax	2,423.4	6.5	(334.0)	(1.0)	(538.5)	(1.1)	(37.4)	(773.8)	(4.1)	2,118.5	7.1	147.1
Total comprehensive income for the year/period	**4,179.8**	**11.1**	**4,105.3**	**11.4**	**6,266.7**	**13.3**	**435.1**	**1,234.5**	**6.6**	**7,541.4**	**25.3**	**523.6**

Six months ended June 30, 2018 compared to six months ended June 30, 2017

Revenue. Revenue increased by 58.5% to Rp.29,855.6 billion (US$2,072.7 million) in the six months ended June 30, 2018 from Rp.18,832.8 billion in the six months ended June 30, 2017, primarily as a result of an increase in revenue from sale of gold, ferronickel, coal and nickel ore, partially offset by a slight decrease in revenue from purification of precious metals and other services.

Gold. Revenue from sale of gold increased significantly to Rp.8,203.9 billion (US$569.6 million) in the six months ended June 30, 2018 from Rp.1,799.0 billion in the six months ended June 30, 2017, primarily as a result of a significant increase in sales volume of our gold products to 442,394 oz t of gold in the six months ended June 30, 2018 from 106,033 oz t of gold in the six months ended June 30, 2017, mainly due to our

expanding our customer base to include wholesalers for our gold products. The increase in revenue from sale of gold was also partially due to a 9.3% increase in the average selling price for gold to Rp.18,544,404/oz t (US$1,287/oz t) in the six months ended June 30, 2018 from Rp.16,967,317/oz t in the six months ended June 30, 2017, primarily as a result of an increase in demand for gold as a hedge against foreign currency fluctuations, mainly driven by the ongoing U.S.-China trade war.

Ferronickel. Revenue from sale of ferronickel increased significantly to Rp.2,469.4 billion (US$171.4 million) in the six months ended June 30, 2018 from Rp.887.2 billion in the six months ended June 30, 2017, primarily as a result of (i) a 45.4% increase in the average selling price for our ferronickel products to Rp.194.0 million per TNi (US$13,468/TNi) in the six months ended June 30, 2018 from Rp.133.4 million per TNi in the six months ended June 30, 2017, mainly due to a decrease in global supply of ferronickel; and (ii) a 89.6% increase in sale volume of our ferronickel products to 12,578TNi in the six months ended June 30, 2018 from 6,634TNi in the six months ended June 30, 2017, mainly due to an increase in our production volume, in line with the completion of our ferronickel plant, FeNi IV in 2017.

Coal. Revenue from sale of coal increased by 16.5% to Rp.10,289.5 billion (US$714.4 million) in the six months ended June 30, 2018 from Rp.8,830.2 billion in the six months ended June 30, 2017, as a result of both (i) a 8.7% increase in the average selling price for our coal products to Rp.838,288/tonne (US$58/tonne) in the six months ended June 30, 2018 from Rp.770,938/tonne in the six months ended June 30, 2017, primarily as a result of a general increase in demand for coal, mainly from China, which contributed to increases in both global and domestic coal benchmark prices such as the Newcastle Index and the Indonesia Coal Index, respectively; and (ii) a 7.6% increase in sales volume of our coal products to 12.2 million tonnes in the six months ended June 30, 2018 from 11.4 million tonnes in the six months ended June 30, 2017, mainly due to the general increase in demand for coal and our ability to cater to such increase in demand through our increase in production volume and coal transportation capacity for our railway tracks leading to the Tarahan Terminal and Kertapati Terminal.

Nickel ore. Revenue from sale of nickel ore increased significantly to Rp.886.5 billion (US$61.5 million) in the six months ended June 30, 2018 from Rp.152.9 billion in the six months ended June 30, 2017, primarily as a result of a significant increase in sales volume of our nickel ore to 1.9 million wmt in the six months ended June 30, 2018 from 0.3 million wmt in the six months ended June 30, 2017, mainly due to our export quota for nickel ore being effective for the whole of the first half of 2018 as compared to a portion of the first half of 2017. The average selling price for our nickel ore remained relatively constant in the six months ended June 30, 2018, as compared to the six months ended June 30, 2017.

Aluminum. Revenue from sale of aluminum increased by 29.9% to Rp.3,127.5 billion (US$217.1 million) in the six months ended June 30, 2018 from Rp.2,408.5 billion in the six months ended June 30, 2017, primarily as a result of (i) a 17.8% increase in the average selling price for our aluminum products to Rp32.1 million per tonne (US$2,229/tonne) in the six months ended June 30, 2018 from Rp.26.4 million per tonne in the six months ended June 30, 2017, mainly due to our diversification into the sale of aluminum billets and aluminum alloys during the year, which have higher average selling prices as compared to our aluminum ingots, as well as an increase in the London Metal Exchange reference price for aluminum; and (ii) a 6.8% increase in sales volume of our aluminum products to 97,507 tonnes in the six months ended June 30, 2018 from 91,264 tonnes in the six months ended June 30, 2017, mainly due to an increase in our production volume, in line with the increase in water level of Lake Toba, from which our hydroelectric power plants generate hydroelectricity, as well as a decrease in supply of aluminum from China.

Others. Revenue from the sale of other products increased by 59.5% to Rp.772.4 billion (US$53.6 million) in the six months ended June 30, 2018 from Rp.484.3 billion in the six months ended June 30, 2017, primarily as a result of:

- a significant increase in revenue from sale of bauxite ore to Rp.125.8 billion (US$8.7 million) in the six months ended June 30, 2018 from Rp.53.0 billion in the six months ended June 30, 2017, mainly due to (i) a significant increase sales volume of our bauxite ore to 0.3 million wmt in the six months ended 2018 from 0.1 million wmt in the six months ended June 30, 2017, primarily as a result of our export quota for bauxite ore being effective for the whole of the first half of 2018 as compared to a

portion of the first half of 2017; and (ii) a 18.3% increase in the average selling price for our bauxite ore to Rp.489,833/wmt (US$34,007/wmt) in the six months ended June 30, 2018 from Rp.414,185/wmt, primarily as a result of a higher content of alumina in our bauxite ore sold in the six months ended June 30, 2018; and

- a 43.1% increase in revenue from sale of tin chemical to Rp.275.1 billion (US$19.1 million) in the six months ended June 30, 2018 from Rp.192.3 billion in the six months ended June 30, 2017, due to (i) a 37.0% increase in the average selling price for our tin chemical to Rp.108.1 million per tonne (US$7,505/tonne) from Rp.78.9 million per tonne; and (ii) a 10.1% increase in the sales volume of tin chemical to 2,580 tonnes in the six months ended June 30, 2018 from 2,344 tonnes in the six months ended June 30, 2017. Both the increase in the average selling price and sales volume of our tin chemical were mainly driven by an increase in demand for tin chemical from Indonesia, in the United States, due to an import ban on tin chemical from China to the United States.

Purification of precious metals and other services. Revenue from purification of precious metals and other services decreased by 31.8% to Rp.194.0 billion (US$13.5 million) in the six months ended June 30, 2018 from Rp.284.4 billion in the six months ended June 30, 2017, due to a significant decrease in revenue from our sale of hydroelectricity to Rp.9.9 billion (US$0.7 million) in the six months ended June 30, 2018 from Rp.95.6 billion in the six months ended June 30, 2017, as a result of revenue recorded in 2016 relating to previous sales made to PLN from 2014 to 2016, upon finalization of the sale price.

Cost of revenue. Cost of revenue increased by 60.6% to Rp.21,901.6 billion (US$1,520.5 million) in the six months ended June 30, 2018 from Rp.13,637.0 billion in the six months ended June 30, 2017, primarily as a result of:

- a significant increase in purchases of precious metals to Rp.7,896.5 billion (US$548.2 million) in the six months ended June 30, 2018 from Rp.1,383.1 billion in the six months ended June 30, 2017, as a result of an increase in purchase of gold bullion for use in the production of our gold products, in line with the substantial increase in sales volume of our gold products;

- a 83.1% increase in usage of fuel to Rp.1,245.5 billion (US$86.5 million) in the six months ended June 30, 2018 from Rp.680.1 billion in the six months ended June 30, 2017, as a result of both an increase in the price of fuel and an increase in our total fuel consumption, in line with the overall increase in production volumes of substantially all our products; and

- a 18.7% increase in transportation, barging and ore mining fees to Rp.3,896.0 billion (US$270.5 million) in the six months ended June 30, 2018 from Rp.3,283.4 billion in the six months ended June 30, 2017, primarily as a result of an increase in transportation volume, in line with the increase in overall sales volume. For example, expenses incurred in connection with railway transportation services for our coal increased by 12.2% to Rp.2,183.9 billion (US$151.6 million) in the six months ended June 30, 2018 from Rp.1,947.1 billion in the six months ended June 30, 2017, mainly as a result of a 8.8% increase in coal transportation volume by KAI to 11.1 million tonnes in the six months ended June 30, 2018 from 10.2 million tonnes in the six months ended June 30, 2017.

Gross profit. As a result of the foregoing, gross profit increased by 53.1% to Rp.7,954.0 billion (US$552.2 million) in the six months ended June 30, 2018 from Rp.5,195.8 billion in the six months ended June 30, 2017.

General and administrative expenses. General and administrative expenses increased by 20.4% to Rp.1,608.9 billion (US$111.7 million) in the six months ended June 30, 2018 from Rp.1,336.9 billion in the six months ended June 30, 2017, primarily as a result of:

- a 91.3% increase in business travel and education expenses to Rp.151.3 billion (US$10.5 million) in the six months ended June 30, 2018 from Rp.79.1 billion in the six months ended June 30, 2017, due to an increase in business development activities and employee training, in line with the expansion in our scale of operations;

- a 54.1% increase in third-party services expense to Rp.137.0 billion (US$9.5 million) in the six months ended June 30, 2018 from Rp.88.9 billion in the six months ended June 30, 2017, primarily as a result of consultancy fees incurred in connection with the planned PTFI Share Acquisition and feasibility studies for our development projects; and
- a 24.4% increase in salaries, wages, bonuses and employee benefits by to Rp.799.2 billion (US$55.5 million) in the six months ended June 30, 2018 from Rp.642.3 billion in the six months ended June 30, 2017, primarily as a result of (i) an increase in bonus expenses, in line with improved performance of the Group, (ii) an increase in headcount, in line with the expansion in our scale of operations, as well as (iii) an increase in salaries as a result of inflation,

partially offset by:

- a 7.9% decrease in other general and administrative expenses to Rp.302.9 billion (US$21.0 million) in the six months ended June 30, 2018 from Rp.329.0 billion in the six months ended June 30, 2017, primarily as a result of a decrease in expenses incurred in connection with purchases of office supplies and a decrease in outsourcing expenses such as catering services.

Selling and marketing expenses. Selling and marketing expenses increased by 23.9% to Rp.709.5 billion (US$49.2 million) in the six months ended June 30, 2018 from Rp.572.8 billion in the six months ended June 30, 2017, primarily as a result of:

- a 61.1% increase in other miscellaneous selling and marketing expenses to Rp.262.6 billion (US$18.2 million) in the six months ended June 30, 2018 from Rp.163.0 billion in the six months ended June 30, 2017; and
- a 10.5% increase in freight and insurance expenses to Rp.259.7 billion (US$18.0 million) in the six months ended June 30, 2018 from Rp.235.1 billion in the six months ended June 30, 2017.

Both the increase in other miscellaneous selling and marketing expenses and the increase in freight and insurance expense were mainly due to a significant increase in export sales to Rp.7,026.3 billion (US$487.8 million) in the six months ended June 30, 2018 from Rp.2,003.8 billion in the six months ended June 30, 2017.

Operating profit. As a result of the foregoing, operating profit increased by 71.5% to Rp.5,635.6 billion (US$391.3 million) in the six months ended June 30, 2018 from Rp.3,286.1 billion in the six months ended June 30, 2017.

Finance income. Finance income increased by 20.2% to Rp.343.3 billion (US$23.8 million) in the six months ended June 30, 2018 from Rp.285.6 billion in the six months ended June 30, 2017, due to:

- a 25.1% increase in interest income from cash in banks and time deposits to Rp.323.6 billion (US$22.5 million) in the six months ended June 30, 2018 from Rp.258.7 billion in the six months ended June 30, 2017, primarily as a result of an increase in cash in banks and time deposits during the period,

partially offset by:

- a 26.8% decrease in interest income from available-for-sale financial assets to Rp.19.7 billion (US$1.3 million) in the six months ended June 30, 2018 from Rp.26.9 billion in the six months ended June 30, 2017, primarily as a result of a decrease in available-for-sale financial assets during the period, mainly due to part of our mutual fund investments maturing during the period.

Finance cost. Finance cost increased significantly to Rp.965.9 billion (US$67.1 million) in the six months ended June 30, 2018 from Rp.421.6 billion in the six months ended June 30, 2017, primarily as a result of a significant increase in interest expense from bank borrowings and finance lease to Rp.751.3 billion (US$52.2 million) in the six months ended June 30, 218 from Rp.235.0 billion in the six months ended June 30, 2017, mainly due to an increase in bank borrowings and finance lease during the period, which in turn, was mainly due to additional drawdowns, including our loan drawdown under the Antam's BCA-ICBC Facility during the period. See "Description of Material Indebtedness — Material Indebtedness of Antam — Antam's BCA-ICBC Facility."

Share in net (loss)/profit of associates. Share in net loss of associates increased by 15.4% to Rp.64.3 billion (US$4.5 million) in the six months ended June 30, 2018 from Rp.55.7 billion in the six months ended June 30, 2017, primarily as a result of a general decline in the performance of our associates in the six months ended June 30, 2018.

Share in net loss of joint ventures. Share in net loss of joint ventures increased by 39.5% to Rp.49.1 billion (US$3.4 million) in the six months ended June 30, 2018 from Rp.35.2 billion in the six months ended June 30, 2017, primarily as a result of temporary cessation of the operations of ICA since June 2017. See "Business — Our Bauxite Business — Tayan Chemical Grade Alumina Plant."

Other income, net. We recorded other income, net, which amounted to Rp.2,348.0 billion (US$163.1 million) in the six months ended June 30, 2018 as compared to other expense, net, which amounted to Rp.206.6 billion in the six months ended June 30, 2017, primarily as a result of a gain from dividend income which amounted to Rp.2,028.2 billion (US$140.8 million), recorded in the six months ended June 30, 2018, in connection with our equity interests in PTFI. No such gain from dividend income was recorded in the six months ended June 30, 2017 as the equity interests in PTFI was acquired in November 2017.

Profit before income tax. As a result of the foregoing, profit before income tax increased significantly to Rp.7,247.6 billion (US$503.2 million) in the six months ended June 30, 2018 from Rp.2,852.6 billion in the six months ended June 30, 2017.

Income tax expenses. Income tax expenses increased significantly to Rp.1,820.3 billion (US$126.4 million) in the six months ended June 30, 2018 from Rp.840.6 billion in the six months ended June 30, 2017, in line with the increase in profit before income tax for the period.

Profit for the period from continuing operations. As a result of the foregoing, profit for the period from continuing operations increased significantly to Rp.5,427.3 billion (US$376.8 million) in the six months ended June 30, 2018 from Rp.2,012.0 billion in the six months ended June 30, 2017.

Loss for the period from discontinued operations. Loss for the period from discontinued operations increased by 18.9% to Rp.4.4 billion (US$0.3 million) in the six months ended June 30, 2018 from Rp.3.7 billion in the six months ended June 30, 2017, primarily as a result of a decrease in sales volumes for coal recorded by TAJ and TBBE during the period.

Profit for the period. As a result of the foregoing, profit for the period increased significantly to Rp.5,422.9 billion (US$376.5 million) in the six months ended June 30, 2018 from Rp.2,008.3 billion in the six months ended June 30, 2017.

Other comprehensive income/(loss) for the period, net of tax. We recorded other comprehensive income for the period, net of tax, of Rp.2,118.5 billion (US$147.1 million) in the six months ended June 30, 2018, as compared to other comprehensive loss for the period, net of tax, of Rp.773.8 billion in the six months ended June 30, 2017, primarily as a result of (i) currency differences from translation of the Group entities' financial statements which amounted to a gain of Rp.1,519.9 billion (US$105.5 million) in the six months ended June 30, 2018 as compared to a loss of Rp.162.5 billion in the six months ended June 30, 2017, and (ii) re-measurement of post-employment benefits which amounted a gain of Rp.700.0 billion (US$48.6 million) in the six months ended June 30, 2018 as compared to a loss of Rp.735.0 billion in the six months ended June 30, 2017.

Total comprehensive income for the period. As a result of the foregoing, total comprehensive income for the year increased significantly to Rp.7,541.4 billion (US$523.6 million) in the six months ended June 30, 2018 from Rp.1,234.5 billion in the six months ended June 30, 2017.

Year ended December 31, 2017 compared to the year ended December 31, 2016

Revenue. Revenue increased by 31.4% to Rp.47,184.3 billion (US$3,275.8 million) in 2017 from Rp.35,904.5 billion in 2016, primarily as a result of an increase in revenue from sale of coal, tin metal and solder, gold and nickel ore.

Coal. Revenue from sale of coal increased by 38.8% to Rp.19,133.5 billion (US$1,328.3 million) in 2017 from Rp.13,785.4 billion in 2016, as a result of both (i) a 23.3% increase in the average selling price for our coal products to Rp.808,690/tonne (US$56/tonne) in 2017 from Rp.658,018/tonne in 2016, mainly due to appreciation of the U.S. dollar against Rupiah, which resulted in higher Rupiah equivalent selling prices, sale of coal with higher calorific values in 2017 as compared to 2016, as well as a general increase in demand for coal which contributed to increases in both global and domestic coal benchmark prices such as the Newcastle Index and the Indonesia Coal Index, respectively; and (ii) a 13.5% increase in sales volume of our coal products to 23.6 million tonnes in 2017 from 20.8 million tonnes in 2016, mainly due to the general increase in demand for coal and our ability to cater to such increase in demand through our increase in production volume and coal transportation capacity for our railway tracks leading to the Tarahan Terminal and Kertapati Terminal.

Tin metal and tin solder. Revenue from sale of tin metal and solder increased by 27.9% to Rp.8,481.7 billion (US$588.8 million) in 2017 from Rp.6,629.8 billion in 2016, primarily as a result of (i) a 12.1% increase in sales volume of our refined tin to 29,914 tonnes in 2017 from 26,677 tonnes in 2016, and (ii) a 11.9% increase in the average selling price for our refined tin to Rp.276.8 million per tonne (US$19,217/tonne) in 2017 from Rp.247.3 million per tonne in 2016, mainly due to an increase in demand for tin in 2017, supported by the growth in the electronics industry in China.

Gold. Revenue from sale of gold increased by 33.1% to Rp.7,375.5 billion (US$512.0 million) in 2017 from Rp.5,543.6 billion in 2016, primarily as a result of a 29.1% increase in sales volume of our gold products to 424,454 oz t of gold in 2017 from 328,805 oz t of gold in 2016, mainly due to a new sales agreement entered into with a trading company during the year. The average selling price for our gold remained relatively constant in 2017 as compared to 2016.

Nickel ore. Revenue from sale of nickel ore increased significantly to Rp.1,369.8 billion (US$95.1 million) in 2017 from Rp.295.2 billion in 2016, due to an increase in both the sales volume and average selling price for our nickel ore, primarily as a result of nickel ore export sales in 2017 which amounted to 2.7 million wmt, due to the easing of export restrictions relating to nickel ore by the Minister of Trade in 2017. See "— Factors Affecting Our Business and Results of Operations — Government policies and changes in law."

Ferronickel. Revenue from sale of ferronickel increased by 15.8% to Rp.3,222.6 billion (US$223.7 million) in 2017 from Rp.2,782.4 billion in 2016, primarily as a result of a 10.0% increase in the average selling price for our ferronickel to Rp.146.8 million per TNi (US$10,192/TNi) in 2017 from Rp.133.5 million per TNi in 2016, mainly due to an increase in global demand during the year, driven by a decrease in the ferronickel inventory levels of end customers. The sales volume of our ferronickel remained relatively constant in 2017 as compared to 2016.

Others. Revenue from sale of other products increased by 68.9% to Rp.1,381.6 billion (US$95.9 million) in 2017 from Rp.817.9 billion in 2016, primarily as a result of:

- a significant increase in revenue from sale of tin chemical to Rp.428.5 billion (US$29.8 million) in 2017 from Rp.151.5 billion in 2016, mainly due to both (i) a significant increase in sales volume of our tin chemical to 5,270 tonnes in 2017 from 2,015 tonnes in 2016, and (ii) a 12.2% increase in the average selling price for our tin chemical to Rp.82,142/tonne (US$5,706/tonne) in 2017 from Rp.77,364/tonne in 2016. The increase in sales volume and average selling price for our tin chemical were mainly due to an increase in the use of tin chemical in the PVC packaging industry and a result of our marketing efforts in collaboration with the Yunnan Tin Group; and
- a significant increase in revenue from sale of bauxite ore to Rp.398.0 billion (US$27.6 million) in 2017 from Rp.104.2 billion in 2016, due to an increase in both the sales volume and average selling price for our bauxite ore, primarily as a result of bauxite ore export sales in 2017, which amounted to 0.8 million wmt, due to the easing of export restrictions relating to bauxite ore by the Minister of Trade in 2017. See "— Factors Affecting Our Business and Results of Operations — Government policies and changes in law."

Cost of revenue. Cost of revenue increased by 20.2% to Rp.33,276.5 billion (US$2,310.2 million) in 2017 from Rp.27,693.3 billion in 2016, primarily as a result of:

- a 56.3% increase in royalties, tax and other government charges to Rp.2,150.3 billion (US$149.3 million) in 2017 from Rp.1,375.8 billion in 2016, in line with the general increase in sales volume of and revenue from sale of our coal and mineral products during the year;
- a 46.2% increase in usage of fuel by to Rp.1,841.6 billion (US$127.9 million) in 2017 from Rp.1,260.0 billion in 2016, as a result of both an increase in the price of fuel and an increase in our total fuel consumption, in line with the overall increase in production volumes of substantially all our products;
- a 36.1% increase in purchases of precious metals by to Rp.6,202.7 billion (US$430.6 million) in 2017 from Rp.4,556.0 billion in 2016, primarily as a result of an increase in purchase of gold bullion for use in the production of our gold products, in line with the increase in sales volume of our gold products during the year;
- a 30.2% increase in salaries, wages and employee benefits to Rp.3,007.0 billion (US$208.8 million) in 2017 from Rp.2,310.3 billion in 2016, primarily as a result of (i) an increase in bonus expenses, in line with improved performance of the Group, (ii) an increase in headcount, in line with the expansion in our scale of operations, as well as (iii) an increase in salaries as a result of inflation; and
- a 20.2% increase in raw material used by to Rp.7,860.9 billion (US$23.6 million) in 2017 from Rp.6,542.3 billion in 2016, primarily as a result of an increase in purchase of raw materials used in the production of tin metal and solder, in line with the increase in revenue from sale of our tin products during the year.

Gross profit. As a result of the foregoing, gross profit increased by 69.4% to Rp.13,907.8 billion (US$965.6 million) in 2017 from Rp.8,211.2 billion in 2016.

General and administrative expenses. General and administrative expenses increased by 18.4% to Rp.3,339.0 billion (US$231.8 million) in 2017 from Rp.2,820.9 billion in 2016, primarily as a result of a 33.4% increase in salaries, wages, bonuses and employee benefits to Rp.1,622.7 billion (US$112.7 million) in 2017 from Rp.1,216.4 billion in 2016, primarily as a result of (i) an increase in bonus expenses, in line with improved performance of the Group, (ii) an increase in headcount, in line with the expansion in our scale of operations, as well as (iii) an increase in salaries as a result of inflation.

Selling and marketing expenses. Selling and marketing expenses increased by 31.2% to Rp.1,322.5 billion (US$91.9 million) in 2017 from Rp.1,008.1 billion in 2016, primarily as a result of:

- a 61.8% increase in salaries, wages, bonuses and employee benefits to Rp.279.8 billion (US$19.4 million) in 2017 from Rp.172.9 billion in 2016, primarily as a result of (i) an increase in bonus expenses, in line with improved performance of the Group, (ii) an increase in headcount, in line with the expansion in our scale of operations, as well as (iii) an increase in salaries as a result of inflation; and
- a 18.6% increase in freight and insurance expense to Rp.466.4 billion (US$32.4 million) in 2017 from Rp.393.4 billion in 2016, primarily as a result of an increase in export sales to Rp.25,083.6 billion (US$1,741.4 million) in 2017 from Rp.13,848.7 billion in 2016.

Operating profit. As a result of the foregoing, operating profit increased significantly to Rp.9,246.3 billion (US$641.9 million) in 2017 from Rp.4,382.2 billion in 2016.

Finance cost. Finance cost increased significantly to Rp.974.2 billion (US$67.6 million) in 2017 from Rp.365.7 billion in 2016, primarily as a result of:

- a significant increase in interest expenses from bank borrowings and finance lease to Rp.574.4 billion (US$39.9 million) in 2017 from Rp.287.6 billion in 2016, mainly due to our outstanding borrowings denominated in U.S. dollars and U.S. dollars strengthening against Rupiah in 2017.

- a 87.8% decrease in amount capitalized on qualifying assets to Rp.23.5 billion (US$1.6 million) in 2016 from Rp.193.3 billion in 2016, primarily as a result of completion of our ferronickel plant, FeNi IV during the year, thereby reducing the balance for our construction-in-progress for the year; and
- expense primarily relating to the discounting of a related-party loan extended to ICA, which amounted to Rp.121.7 billion (US$8.4 million), due to ICA's inability to repay the related-party loan in accordance with the terms of the loan.

Share in net (loss)/profit of associates. We recorded share in net loss of associates, which amounted to Rp.196.8 billion (US$13.6 million) in 2017 as compared to share in net gain of associates, which amounted to Rp.88.1 billion in 2016, primarily as a result of a general decline in the performance of our associates in 2017.

Share in net loss of joint ventures. Share in net loss of joint ventures decreased by 27.0% to Rp.158.0 billion (US$11.0 million) in 2017 from Rp.216.3 billion in 2016, primarily as a result of a decrease in loss recorded by ICA in 2017 as compared to 2016, due to cost saving initiatives implemented at ICA during the year. See "Business — Our Bauxite Business — Tayan Chemical Grade Alumina Plant."

Other income/(expense), net. We recorded other income of Rp.738.8 billion (US$51.3 million) in 2017 as compared to other expense of Rp.55.0 billion in 2016, primarily as a result of:

- a gain on sale of investments recorded in 2017, in connection with the disposal of our minority interest in a mining company during the year, which amounted to Rp.776.4 billion (US$53.9 million). No such gain on sales of investment was recorded in 2016; and
- a gain from dividend income which amounted to Rp.427.6 billion (US$29.7 million) recorded in 2017, in connection with our equity interests in PTFI. No such gain from sales of investment was recorded in 2016 as the equity interests in PTFI was acquired in November 2017,

partially offset by:

- a significant increase in other expenses of Rp.456.6 billion (US$31.7 million) from Rp.84.0 billion, primarily as a result of other expenses recorded in connection with our coal business, including provision for doubtful debt, loss recorded on coal inventory due to a lower market value as compared to the carrying cost and exploration and evaluation expenses which were not capitalized due to our management's decision on the commercial non-viability of the mining asset.
- provision for impairment of other tax receivables, which amounted to Rp.135.1 billion (US$9.4 million) recorded in 2017, as a result of provision made for impairment of tax paid in connection with an ongoing surface water tax dispute with the tax authorities. See "Business — Legal Proceedings." No such provision for impairment of other tax receivables was recorded in 2016.

Profit before income tax. As a result of the foregoing, profit before income tax increased significantly to Rp.9,286.0 billion (US$644.7 million) in 2017 from Rp.4,469.2 billion in 2016.

Income tax (expenses)/benefit. We recorded income tax expense of Rp.2,474.3 billion (US$171.8 million) in 2017 as compared to income tax benefit of Rp.1.2 billion in 2016, primarily as a result of the increase in profit before income tax for the year and deferred tax recognized in 2016 in connection with revaluation of our fixed assets for tax purposes.

Profit for the year from continuing operations. As a result of the foregoing, profit for the year from continuing operations increased by 52.4% to Rp.6,811.7 billion (US$472.9 million) in 2017 from Rp.4,470.4 billion in 2016.

Loss for the year from discontinued operations. Loss for the year from discontinued operations decreased by 79.1% to Rp.6.5 billion (US$0.4 million) in 2017 from Rp.31.1 billion in 2016, primarily as a result of an increase in sales volume of coal recorded by TAJ and TBBE during the year.

Profit for the year. As a result of the foregoing, profit for the year increased by 53.3% to Rp.6,805.2 billion (US$472.5 million) in 2017 from Rp.4,439.3 billion in 2016.

Other comprehensive loss for the year, net of tax. Other comprehensive loss for the year, net of tax increased by 61.2% to Rp.538.5 billion (US$37.4 million) in 2017 from Rp.334.0 billion in 2016, primarily as a result of (i) a significant increase in loss recorded in connection with re-measurement of post-employment benefits, to Rp.1,005.3 billion (US$69.8 million) in 2017 from Rp.234.2 billion in 2016, partially offset by (ii) currency differences from translation of the Group entities' financial statements which amounted to a gain of Rp.239.8 billion (US$16.6 million) in 2017 as compared to a loss of Rp.268.5 billion in 2016,

Total comprehensive income for the year. As a result of the foregoing, total comprehensive income for the year increased by 52.7% to Rp.6,266.7 billion (US$435.1 million) in 2017 from Rp.4,105.3 billion in 2016.

Year ended December 31, 2016 compared to the year ended December 31, 2015

Revenue. Revenue decreased slightly by 5.1% to Rp.35,904.5 billion in 2016 from Rp.37,821.4 billion in 2015, primarily as a result of a decrease in revenue from sale of gold and aluminum, partially offset by an increase in revenue from sale of nickel ore and other precious metals.

Gold. Revenue from sale of gold decreased by 24.2% to Rp.5,543.6 billion in 2016 from Rp.7,314.7 billion in 2015, primarily as a result of a 39.2% decrease in sales volume of our gold products to 328,805 oz t in 2016 from 455,865 oz t in 2015, mainly due to a decrease in our export sales to India, which was mainly as a result of strict regulations imposed by India on gold import. The average selling price for our gold remained relatively constant in 2016 as compared to 2015.

Aluminum. Revenue from sale of aluminum decreased by 10.6% to Rp.5,576.4 billion in 2016 from Rp.6,238.0 billion in 2015, as a result of both (i) a 7.4% decrease in the average selling price for our aluminum products to Rp.22.5 million per tonne in 2016 from Rp.24.3 million per tonne in 2015, mainly due to an increase in global supply of aluminum, which led to a decrease in London Metal Exchange reference price for aluminum, and (ii) a 3.4% decrease in sales volume of our aluminum products to 247,994 tonnes in 2016 from 256,622 tonnes in 2015, mainly due to lower water levels experienced at Lake Toba during the year and scheduled maintenance works on the power turbines at our hydroelectric power plants, which resulted in lower production volumes.

Nickel ore. Revenue from nickel ore increased significantly to Rp.295.2 billion in 2016 from Rp.10.9 billion in 2015, primarily as a result of a significant increase in sales volume of our nickel ore to 734,886 wmt in 2016 from 46,751 wmt in 2015. The increase in revenue from nickel ore was also partially due to a 78.6% increase in the average selling price for our nickel ore to Rp.393,351/wmt in 2016 from Rp.220,227/wmt in 2015. Both the increase in sales volume and average selling price of our nickel ore were mainly due to an increase in domestic demand for nickel ore, which primarily arose from new nickel pig iron refining plants in Indonesia.

Others. Revenue from sale of other products increased by 17.4% to Rp.817.9 billion in 2016 from Rp.696.7 billion in 2015, primarily as a result of:

- a 44.5% increase in revenue from sale of silver to Rp.133.8 billion in 2016 from Rp.92.6 billion in 2015, mainly due to a 38.8% increase in sales volume of silver to 587,94 oz t in 2016 to 423,503 oz t from 2015, primarily due to our opportunistic trading in silver bought from third-parties to leverage the volatility in the selling price for silver during the year. The average selling price for our silver remained relatively constant in 2016 as compared to 2015; and
- a 18.6% increase in revenue from other businesses conducted by Bukit Asam and its subsidiaries, to Rp.402.9 billion in 2016 from Rp.339.6 billion in 2015, mainly due to revenue recorded in relation to logistics services provided by a newly incorporated subsidiary in 2016.

Cost of revenue. Cost of revenue decreased by 10.4% to Rp.27,693.3 billion in 2016 from Rp.30,895.9 billion in 2015, primarily as a result of:

- a 45.9% decrease in rent to Rp.364.2 billion in 2016 from Rp.672.9 billion in 2015, primarily as a result of rental of less heavy equipment due to efficiency enjoyed through our use of electric-powered heavy equipment;

- a 29.0% decrease in purchases of precious metals to Rp.4,556.0 billion in 2016 from Rp.6,413.5 billion in 2015, primarily as a result of a decrease in purchase of gold bullion for use in the production of our gold products, in line with the decrease in sales volume of our gold products during the year;
- a 22.4% decrease in usage of fuel by to Rp.1,260.0 billion in 2016 from Rp.1,622.8 billion in 2015, primarily as a result of less fuel consumed by our mining vehicles due to efficiency enjoyed through our use of electric-powered heavy equipment.

Gross profit. As a result of the foregoing, gross profit increased by 18.6% to Rp.8,211.2 billion in 2016 from Rp.6,925.5 billion in 2015.

Operating profit. We record general and administrative expense and sales and marketing expenses which amounted to Rp.2,820.9 billion and Rp.1,008.1 billion, respectively, in 2016, as compared to Rp.2,739.3 billion and Rp.1,003.5 billion, respectively, in 2015. As a result, operating profit increased by 37.7% to Rp.4,382.2 billion in 2016 from Rp.3,182.7 billion in 2015.

Finance income. Finance income increased by 26.2% to Rp.635.9 billion in 2016 from Rp.503.9 billion in 2015, due to:

- a significant increase in interest income from available-for-sale financial assets to Rp.69.1 billion in 2016 from Rp.32.6 billion in 2015, primarily as a result of an increase in available-for-sale financial assets during the year; and
- a 20.3% increase in interest income from cash in banks and time deposits to Rp.566.8 billion in 2016 from Rp.471.3 billion in 2015, primarily as a result of an increase in cash and cash equivalents, and time deposits, mainly due to proceeds from the rights issue by Antam in November 2015.

Finance cost. Finance cost decreased substantially to Rp.365.7 billion in 2016 from Rp.1,237.5 billion in 2015, primarily as a result of a significant decrease in interest expense from bank borrowings and finance lease to Rp.287.6 billion in 2016 from Rp.1,231.8 billion in 2015, mainly due to our outstanding borrowings denominated in U.S. dollars and U.S. dollars weakening against Rupiah in 2016, partially offset by a 27.1% decrease in amounts capitalized on qualifying assets to Rp.193.3 billion in 2016 from Rp.265.3 billion in 2015, mainly due to partial completion of our ferronickel plant, FeNi IV during the year.

Share in net (loss)/profit of associates. We recorded share in net profit of associates, which amounted to Rp.88.1 billion in 2016 as compared to share in net loss of associates, which amounted to Rp.249.3 billion in 2015, primarily a result of improvement in the performance of our associates in 2016.

Share in net loss of joint ventures. Share in net loss of joint ventures increased significantly to Rp.216.3 billion in 2016 from Rp.106.6 billion in 2015, primarily as a result of an increase in loss recorded by ICA during the year, due to commencement of commercial operations of the Tayan Chemical Grade Alumina Plant during the year, with a production volume which has yet to reach the optimal level to cover the overhead costs. Prior to 2016, the Tayan Chemical Grade Alumina Plant was in its trial operations stage and accordingly, had lower overhead costs.

Other income/(expense), net. We recorded other expense of Rp.55.0 billion in 2016 as compared to other income of Rp.459.4 billion in 2015, primarily as a result of a net loss on foreign exchange which amounted to Rp.143.6 billion in 2016 as compared to a net gain on foreign exchange which amounted to Rp.382.7 billion in 2015, mainly due to the Company's reporting currency being U.S. dollars and the U.S. dollar weakening against Rupiah during the year**.**

Profit before income tax. As a result of the foregoing, profit before income tax increased by 75.1% to Rp.4,469.2 billion in 2016 from Rp.2,552.6 billion in 2015.

Income tax (expenses)/benefit. We recorded income tax benefit of Rp.1.2 billion in 2016 as compared to income tax expenses of Rp.796.2 billion in 2015, primarily as a result of deferred tax recognized in 2016 in connection with revaluation of our fixed assets.

Profit for the year from continuing operations. As a result of the foregoing, profit for the year from continuing operations increased significantly to Rp.4,470.4 billion in 2016 from Rp.1,756.4 billion in 2015.

Loss for the year from discontinued operations. We recorded a loss from discontinued operations, in relation to TAJ and TBBE, which amounted to Rp.31.1 billion in 2016. No such loss was recorded in 2015 as the classification of TAJ and TBBE as discontinued operations was only effective since 2016.

Profit for the year. As a result of the foregoing, profit for the year increased significantly to Rp.4,439.3 billion in 2016 from Rp.1,756.4 billion in 2015.

Other comprehensive (loss)/income for the year, net of tax. We recorded other comprehensive loss for the year, net of tax of Rp.334.0 billion in 2016 as compared to other comprehensive income for the year, net of tax of Rp.2,423.4 billion in 2015, primarily due to (i) currency differences from translation of the Group entities' financial statements which amounted to a loss of Rp.268.5 billion in 2016 as compared to a gain of Rp.1,659.9 billion in 2015, and (ii) re-measurement of post-employment benefits which amounted to a loss of Rp.234.2 billion in 2016 as compared to a gain of Rp.696.8 billion in 2015.

Total comprehensive income for the year. As a result of the foregoing, total comprehensive income for the year increased slightly to Rp.4,105.3 billion in 2016 from Rp.4,179.8 billion in 2015.

Liquidity and Capital Resources

Our primary sources of liquidity include cash generated from operations and from borrowings, both short-term and long-term, including banking facilities, finance leases and bonds. Going forward, we may require more funding for our expansion projects, see "— Capital Expenditures." We intend to fund these expansion projects, our operations and working capital requirements primarily through existing capital resources, including cash deposits, cash flow from operations and available undrawn working capital lines with banks, see "Description of Material Indebtedness — Other Available Capital Resources," as well as accessing the bank loan markets and/or debt and equity capital markets.

As of June 30, 2018 we had cash and cash equivalents of Rp.20,874.8 billion (US$1,449.2 million) undrawn U.S. dollars facilities of approximately US$793.5 million and undrawn Rupiah facilities of approximately Rp2,225.9 billion (US$154.5 million). In addition, we currently hold 980,283,500 treasury shares of Bukit Asam, which represent a potential source of funding.

As of June 30, 2018, we had consolidated indebtedness totaling Rp.15,266.9 billion (US$1,059.9 million). Our indebtedness comprised short-term bank borrowings of Rp.5,616.3 billion (US$389.9 million), long-term bank borrowings of Rp.4,563.8 billion (US$316.9 million), finance lease liabilities of Rp.589.4 billion (US$40.9 million) and bonds payable of Rp.4,497.3 billion (US$312.2 million). See "Capitalization" and "Description of Material Indebtedness." Taking into consideration the financial resources available to us, including cash generated from our operating activities, we believe we will have sufficient liquidity to meet our working capital and operating requirements for at least the next 12 months.

Cash flows

The following table summarizes our cash flows for the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2017 and 2018:

	Year ended December 31,				Six months ended June 30,		
	2015	2016	2017		2017	2018	
	(Rp. in billion)	(Rp. in billion)	(Rp. in billion)	(US$ in million)	(Rp. in billion)	(Rp. in billion)	(US$ in million)
Net cash received from operating activities	4,614.0	4,256.3	5,750.5	399.2	1,722.0	4,562.5	316.8
Net cash (used in)/from investing activities	(4,280.3)	(3,252.1)	(4,652.4)	(323.0)	(1,933.9)	(23.1)	(1.6)
Net cash from/(used in) financing activities	4,546.2	(1,744.9)	(965.2)	(67.0)	(1,821.7)	(519.4)	(36.1)
Net increase/(decrease) in cash and cash equivalents	**4,879.9**	**(740.7)**	**132.9**	**9.2**	**(2,033.6)**	**4,020.0**	**279.1**

Net cash received from operating activities

Net cash received from operating activities comprise cash receipts from customers, cash receipts from tax restitution, and cash receipt from interest income, net of cash paid to suppliers and employees, payment of taxes and royalties, payment of interest, payment of pension contributions and other receipts/payments, net.

In the six months ended June 30, 2018, cash receipts from customers totaled Rp.30,580.1 billion (US$2,123.0 million), cash receipts from tax restitution totaled Rp.193.5 billion (US$13.4 million), cash receipt from interest income totaled Rp.318.8 billion (US$22.1 million) and other receipts, net totaled Rp.117.2 billion (US$8.1 million). After taking into account cash paid to suppliers and employees which totaled Rp.23,469.7 billion (US$1,629.4 million), payment of taxes and royalties which totaled Rp.2,704.1 billion (US$187.7 million), payment of interest which totaled Rp.449.5 billion (US$31.2 million) and payment of pension contributions which totaled Rp.23.8 billion (US$1.7 million), our net cash received from operating activities amounted to Rp.4,562.5 billion (US$316.8 million) in the six months ended June 30, 2018. Our net cash received in the six months ended June 30, 2018 increased as compared to the six months ended June 30, 2017, primarily due to (i) an increase in cash receipts from customers, in line with the increase in revenue in six months ended June 30, 2018, partially offset by (ii) an increase in cash paid to suppliers and employees, in line with the increase in our production and sales volume, as well as the increase in salaries, wages, bonuses and employee benefits expenses in the six months ended June 30, 2018 and (iii) an increase in payment of taxes and royalties, in line with the increase in profit for the period and our production and sales volumes in the six months ended June 30, 2018.

In the six months ended June 30, 2017, cash receipts from customers totaled Rp.17,748.8 billion, cash receipts from tax restitution totaled Rp.411.8 billion, cash receipt from interest income totaled Rp.293.9 billion and other receipts, net totaled Rp.18.2 billion. After taking into account cash paid to suppliers and employees which totaled Rp.14,795.6 billion, payment of taxes and royalties which totaled Rp.1,490.9 billion, payment of interest which totaled Rp.442.8 billion and payment of pension contributions which totaled Rp.21.5 billion, our net cash received from operating activities amounted to Rp.1,722.0 billion in the six months ended June 30, 2017.

In 2017, cash receipts from customers totaled Rp.43,566.9 billion (US$3,024.6 million), cash receipts from tax restitution totaled Rp.860.3 billion (US$59.7 million) and cash receipt from interest income totaled Rp.598.6 billion (US$41.6 million). After taking into account cash paid to suppliers and employees which totaled Rp.33,999.0 billion (US$2,360.4 million), payment of taxes and royalties which totaled Rp.3,747.8 billion (US$260.2 million), payment of interest which totaled Rp.789.2 billion (US$54.8 million) and payment of pension contributions which totaled Rp.43.8 billion (US$3.0 million) and other payments, net which totaled

Rp.695.4 billion (US$48.3 million), our net cash received from operating activities amounted to Rp.5,750.6 billion (US$399.2 million) in 2017. Our net cash received in 2017 increased as compared to 2016, primarily due to (i) an increase in cash receipts from customers, in line with the increase in revenue in 2017, partially offset by (ii) an increase in cash paid to suppliers and employees, in line with the increase in our production and sales volume, as well as the increase in salaries, wages, bonuses and employee benefits expenses in 2017 and (iii) an increase in payment of taxes and royalties, in line with the increase in profit for the period and our production and sales volumes in 2017.

In 2016, cash receipts from customers totaled Rp.34,582.4 billion, cash receipts from tax restitution totaled Rp.965.5 billion and cash receipt from interest income totaled Rp.626.4 billion. After taking into account cash paid to suppliers and employees which totaled Rp.28,643.8 billion, payment of taxes and royalties which totaled Rp.2,300.6 billion, payment of interest which totaled Rp.774.0 billion and payment of pension contributions which totaled Rp.39.4 billion and other payments, net which totaled Rp.160.2 billion, our net cash received from operating activities amounted to Rp.4,256.3 billion in 2016.

In 2015, cash receipts from customers totaled Rp.39,048.8 billion, cash receipts from tax restitution totaled Rp.925.1 billion and cash receipt from interest totaled Rp.472.1 billion. After taking into account cash paid to suppliers and employees which totaled Rp.31,729.3 billion, payment of taxes and royalties which totaled Rp.2,872.0 billion, payment of interest which totaled Rp.809.7 billion and payment of pension contributions which totaled Rp.39.4 billion and other payments, net which totaled Rp.381.6 billion, our net cash received from operating activities amounted to Rp.4,614.1 billion in 2015.

Net cash used in investing activities

Net cash used in investing activities comprises proceeds from disposal of available-for-sale financial assets, dividend receipt from associate, dividend receipt from available-for-sale investment, payment for additional mining properties, divestment of shares in associates, disbursements for deferred charges, disbursements for exploration and evaluation assets, loan to joint ventures, purchases of fixed assets, withdrawal/placement of performance bonds, proceeds from sale of fixed assets, additional investment in joint venture, additional investment in associates, purchase of available-for-sale financial assets, net cash received for business combination.

Our net cash used in investing activities was Rp.23.1 billion (US$1.6 million) in the six months ended June 30, 2018, which primarily related to (i) payments of Rp.2,021.6 billion (US$140.3 million) made in connection with our construction-in-progress such as the Tarahan Line Upgrade, Kertapati Line Upgrade, residential camps for our employees, vessels in relation to our offshore mining as well as ore processing facilities at our mines and (ii) payments of Rp.243.7 billion (US$16.9 million) made in connection with loans extended to ICA, partially offset by (i) cash of Rp.2,028.2 billion (US$140.8 million) received in connection with dividend receipt from PTFI and (ii) cash of Rp.219.7 billion (US$15.3 million) received in connection with dividend receipts from our associates.

Our net cash used in investing activities was Rp.1,933.9 billion in the six months ended June 30, 2017, which primarily related to payment of Rp.2,093.7 billion made in connection with purchases of fixed assets including our electric-powered heavy equipment for our coal mines, partially offset by (ii) cash of Rp.104.2 billion received from certain of our mutual fund investments which matured during the period and (iii) cash of Rp.70.5 billion received in connection with dividend receipts from our associates.

Our net cash used in investing activities was Rp.4,652.4 billion (US$323.0 million) in 2017, which primarily related to (i) payments of Rp. 4,611.6 billion (US$320.2 million) made in connection with purchases of fixed assets including our electric-powered heavy equipment for our coal mines and fuming machines for our tin smelting and refining plants and (ii) payments of Rp.724.1 billion (US$50.3 million) made in connection with loans extended to ICA, partially offset by (i) cash of Rp. 427.6 billion (US$29.7 million) received in connection with dividend receipt from PTFI and (ii) cash of Rp. 307.8 billion (US$21.4 million) received from certain of our mutual fund investments which matured during the period.

Our net cash used in investing activities was Rp.3,252.1 billion in 2016, which primarily related to (i) payments of Rp.3,012.1 billion made in connection with our construction-in-progress such as our coal train loading stations and coal hauling facilities, (i) payments of Rp.251.3 billion made in connection with additional mutual fund investments and (ii) payments of Rp.239.3 billion made in connection with loans extended to ICA, partially offset by cash of Rp.200.0 billion received from certain of our mutual fund investments which matured during the period.

Our net cash used in investing activities was Rp.4,280.3 billion in 2015, which primarily related to (i) payments of Rp.3,455.4 billion made in connection acquisition of fixed assets including fixed assets added from our acquisition of a controlling stake in a subsidiary, (ii) payments of Rp.390.5 billion made in connection with additional mutual fund investments, (iii) payments of Rp.285.4 billion made in connection with additional investment in a joint venture and (iv) payments of Rp.237.5 billion made in connection to a loan extended to ICA, partially offset by cash of Rp.226.2 billion received in connection with dividend receipts from our associates.

Net cash used in financing activities

Our net cash used in financing activities was Rp.519.4 billion (US$36.1 million) in the six months ended June 30, 2018, which comprised repayment of Rp.4,415.5 billion (US$306.5 million) of bank borrowings, payment of dividends to our shareholders which amounted to Rp.1,252.7 billion (US$87.0 million), repayment of Rp.49.1 billion (US$3.4 million) of outstanding finance leases, partially offset by proceeds from Rp.5,197.9 billion (US$360.9 million) of bank borrowings.

Our net cash used in financing activities was Rp.1,821.7 billion in the six months ended June 30, 2017, which comprised repayment of Rp.5,866.1 billion of bank borrowings, payment of dividends to our shareholders which amounted to Rp.955.2 billion, and repayment of Rp.68.5 billion of outstanding finance leases, partially offset by proceeds from Rp.5,068.1 billion of bank borrowings.

Our net cash used in financing activities was Rp.965.2 billion (US$67.0 million) in 2017, which comprised repayment of Rp.8,465.4 billion (US$587.7 million) of bank borrowings, payment of dividends to our shareholders which amounted to Rp.955.2 billion (US$66.3 million) and repayment of Rp.126.3 billion (US$8.8 million) of outstanding finance leases, partially offset by proceeds of Rp.7,081.7 billion (US$491.6 million) from bank borrowings and proceeds from issuance of Timah's Rupiah Bonds which amounted to Rp.1,500.0 billion (US$104.1 million). See "Description of Material Indebtedness — Material Indebtedness of Timah — Timah's Bonds."

Our net cash used in financing activities was Rp.1,744.9 billion in 2016, which comprised repayment of Rp.8,731.0 billion of bank borrowings, payment of dividends to our shareholders which amounted to Rp.968.4 billion and repayment of Rp.47.1 billion of finance leases, partially offset by Rp.8,001.6 billion of bank borrowings.

Our net cash generated from financing activities was Rp.4,546.2 billion in 2015, which primarily comprised proceeds of Rp.9,231.3 billion from bank borrowings and proceeds of Rp.5,354.2 billion from proceeds of the rights issue by Antam during the year, partially offset by repayment of Rp.8,684.6 billion of bank borrowings, payment of dividends to our shareholders which amounted to Rp.897.4 billion and share buyback in relation to Bukit Asam, which amounted to Rp.402.2 billion.

Capital Expenditures

The following table sets forth a breakdown of our capital expenditures for the years ended December 31, 2015, 2016, 2017 and the six months ended June 30, 2018:

	Year ended December 31,				Six months ended June 30,	
	2015	2016	2017		2018	
	(Rp. in billion)	(Rp. in billion)	(Rp. in billion)	(US$ in million)	(Rp. in billion)	(US$ in million)
Coal	1,167.1	728.9	1,080.6	75.0	199.8	13.9
Gold	296.8	293.7	254.1	17.6	93.6	6.5
Tin	437.6	472.7	654.4	45.4	452.1	31.4
Aluminum smelting	392.7	1,127.5	6,751.9	468.8	335.4	23.3
Nickel	159.7	341.4	323.8	22.5	83.2	5.7
Others	824.3	236.4	170.2	11.8	100.8	7.0
On-going development projects — gold, nickel and bauxite	1,443.8	635.1	1,286.3	89.3	897.1	62.3
Total	**4,722.0**	**3,835.7**	**10,521.3**	**730.4**	**2,162.0**	**150.1**

For coal, our capital expenditures for the periods indicated above generally related to our expansion projects for the increase in our coal transportation capacity for our railway tracks leading to the Tarahan Terminal and Kertapati Terminal, as well as maintenance capital expenditures.

For gold, our capital expenditures for the periods indicated above generally related to maintenance capital expenditures for our gold mines and the Logam Mulia Precious Metals Refinery.

For tin, our capital expenditures for the periods indicated above generally related to replacement and installation of machineries, acquisition of exploration, mining and production equipment, dry docking of our vessels, refurbishment of our vessels, construction of our research and development facility for rare earth mining and maintenance capital expenditures.

In the year ended December 31, 2015, we incurred capital expenditures in relation to the upgrading of buildings and facilities at our tin mine sites. In the year ended December 31, 2017, we completed a major overhaul for one of our vessels and procured a tin fuming technology equipment to be installed at one of our tin smelting and refining plants located in Bangka. See "Business — Our Tin Business — Our tin development projects — Tin fuming technology." In the six months ended June 30, 2018, we paid further installments relating to our procurement of the tin fuming technology equipment and incurred capital expenditures for new iron mining activities at our concession areas in Belitung Island.

For aluminum smelting, our capital expenditures for the periods indicated above generally related to the expansion of our aluminum casting plant for diversification into production of aluminum billets and alloys, our Company's share of the development of the Mempawah Smelter Grade Alumina Refinery Plant, see "Business — Our Bauxite Business — Production facility under development — The Mempawah Smelter Grade Alumina Refinery Plant," as well as maintenance capital expenditures.

In the years ended December 31, 2016, 2017 and the six months ended June 30, 2018, we incurred capital expenditures in relation to our upgrading project for our aluminum smelter in Kuala Tanjung, prior to commencement of construction, see "Business — Our Aluminum Smelting Business — Our aluminum development projects — Reduction plant upgrading project."

In the year ended December 31, 2017, we incurred capital expenditure in connection with costs incurred for the transfer of land on which our aluminum production plants and supporting facilities are situated, from the Government.

For nickel, our capital expenditures for the periods indicated above generally related to maintenance capital expenditures for our nickel mines and the Pomalaa Ferronickel Facilities.

In the years ended December 31, 2015 and 2016, we incurred capital expenditures for our expansion of the Pomalaa Ferronickel Facilities, see "Business — Our Nickel Business — Our Ferronickel Production Facilities — Pomalaa Ferronickel Facilities."

Other capital expenditures for the periods indicated above generally related to maintenance capital expenditures for our Tayan Bauxite Mine.

In the year ended December 31, 2015, we incurred capital expenditures in connection with our acquisition and establishment of subsidiaries.

Capital expenditures for ongoing development projects for our gold, nickel and bauxite businesses primarily related to capital expenditures for the development of the East Halmahera Ferronickel Plant, prior to commencement of construction of the plant, see "Business — Our Nickel Business — Production facility under development — East Halmahera Ferronickel Plant," Antam's share of the development of the Mempawah Smelter Grade Alumina Refinery Plant, see "Business — Our Bauxite Business — Production facility under development — The Mempawah Smelter Grade Alumina Refinery Plant" and development of our bauxite mine at the Toho-Mempawah bauxite mining concession area, see "Business — Our Bauxite Business — Other bauxite mining concessions."

The following table sets forth our planned capital expenditures for the periods indicated:

	Year ending December 31,		
	2018	2019	2020
	(Rp. in billion)		
East Halmaherra Ferronickel Plant	2,367.6	573.7	—
Aluminum smelter upgrading works	210.3	1,542.3	1,542.3
Mempawah Smelter Grade Alumina Refinery Plant	1,109.1	702.6	479.4
Sumsel 8 CFPP	272.4	408.6	681.0
Others	3,016.4	7,121.6	5,417.8
Maintenance	2,473.7	2,337.3	2,537.7
Total	**9,449.5**	**12,686.1**	**10,658.2**

In addition to these capital expenditures, we also intend to make equity contributions to PTFI and PTII amounting to Rp.55,455.4 billion, Rp.2,160.7 billion and Rp.3,303.3 billion for the years ending December 31, 2018, 2019 and 2020, respectively.

We intend to fund our capital expenditures through a combination of cash generated from cash flow from operations and accessing the bank loan markets and/or debt and equity capital markets. Save for the planned PTFI Share Acquisition, our capital expenditures for expansion and development projects will primarily be focused on the development of the East Halmahera Ferronickel Plant, see "Business — Our Nickel Business — Our ferronickel production facilities — Production facility under development — East Halmahera Ferronickel Plant," the upgrading of our existing aluminum smelter at Kuala Tanjung, see "Business — Our Aluminum Smelting Business — Other development projects — Reduction plant upgrading project, " construction of the Mempawah Smelter Grade Alumina Refinery Plant, see "Business — Our Bauxite Business — Production facility under development — The Mempawah Smelter Grade Alumina Refinery Plant," and development of the Sumsel 8 CFPP, see "Business — Our Coal Business — Downstream coal businesses — Coal-fired power plant development project."

Other capital expenditures primarily relate to the construction of the Tarahan Second Line and the Prajin Line, see "Business — Our Coal Business — Infrastructure development projects," investment in the Dumai CPC Plant, see — Our Aluminum Smelting and Production Business — Other development projects — Calcined petroleum coke plant project," potential acquisition of a gold mining concession, construction of a new tin smelter equipped with a new smelting technology, which we expect will enable us to smelt tin concentrates with tin content ranging from 40.0% to 70.0%, see "Business — Our Tin Business — Our tin development projects," and maintenance capital expenditures. Currently, our committed capital expenditure is Rp.69.7 billion (US$4.8 million).

PTFI Share Acquisition

We intend to fund the planned PTFI Share Acquisition through proceeds from this offering. See "Use of Proceeds." We have committed bank facilities amounting to approximately US$2.85 billion from a syndicate of banks and available cash within our Group to fund the PTFI Share Acquisition in the event the net proceeds from this offering are insufficient or if the offering is not completed. See "Planned Acquisition of Majority Beneficial Stake in PTFI."

Contractual Obligations and Commitments

The following table sets forth our contractual obligations and commitments as of June 30, 2018:

		Payment due by period		
	Total	Less than 1 year	1-5 years	More than 5 years
		(Rp. in billion)		
Trade payables	2,745.5	2,745.5	—	—
Accruals	3,185.8	3,185.8	—	—
Short-term employee benefit liabilities	433.7	433.7	—	—
Finance lease liabilities	638.0	133.1	505.0	—
Bank borrowings	11,090.2	6,346.3	3,304.0	1,439.9
Bonds payable	5,191.8	1,124.6	4,067.2	—
Dividend payable	1,919.8	1,919.8	—	—
Other current liabilities	636.3	636.3	—	—
Other non-current liabilities	3.9	—	3.9	—
Total	**25,845.0**	**16,525.0**	**7,880.2**	**1,439.9**

Contingent Liabilities

Since 2014, we have been in dispute with the Province of North Sumatra ("Badan Pengelolaan Pajak dan Retribusi Daerah Provinsi Sumatera Utara") concerning our local tax liability for our usage of surface water by our hydroelectric power plants. See "Business — Legal Proceedings — Surface Water Tax Dispute." The total amount of surface water tax currently in dispute is Rp.1,993.4 billion, of which we have paid a total amount of Rp.536.1 billion and recorded as tax receivable, pending resolution of the tax dispute. We believe that there is a lack of basis under Indonesian tax law for this assessment of underpaid tax and, accordingly, we have not made any provision for the remaining disputed amount of Rp.1,457.3 billion.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements with unconsolidated entities.

Quantitative and Qualitative Disclosures about Market Risks

Our business exposes us to a variety of financial risks, including commodity price risk, foreign exchange rate risk, interest rate risk, credit risk and liquidity risk. The following discussion summarizes our exposure to fluctuations in commodity prices and foreign exchange rates, credit risk and liquidity risk and our policies to address these risks. The following discussion contains forward-looking statements that are subject to risks, uncertainties and assumptions about us. These statements are based upon current expectations and projections about future events. There are important factors that could cause our actual results and performance to differ materially from such forward-looking statements, including those risks discussed under "Risk Factors."

Commodity price risk

We face commodity price risk as our revenue is predominantly derived from our sale of commodities. Although we are not dependent on a specific market, our revenue and results of operations can be affected by fluctuations in commodity prices. As commodities, our coal, gold and precious metal products, tin, nickel ore,

ferronickel, bauxite and aluminum products are principally dependent on the supply and demand dynamics of these respective products in the world export market. Although we have entered into offtake agreements with PLN for coal produced at our Tanjung Enim Mine, we generally do not enter into offtake agreements for our commodities. We manage our exposure to fluctuations in commodity prices by actively engaging in cost saving initiatives to reduce our production cost and mitigate against any decrease in world export prices for our commodities.

Foreign exchange rate risk

Our sales are predominantly denominated in U.S. dollars or benchmarked against U.S. dollar equivalent prices. While our cost of revenue is denominated in a combination of U.S. dollars and Rupiah, the proportion of cost of revenue denominated in U.S. dollars varies across each of our businesses. Accordingly, we are exposed to varying degrees of foreign exchange rate risk across our different businesses. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2017 and 2018, approximately half to three-quarter of our cost of revenue were in Rupiah. See "Risk Factors — Risks Common to All Our Businesses — We are subject to foreign exchange rate risk." We have entered into futures contracts to hedge against foreign exchange rate risks. We intend to continue to monitor the movement in the U.S. dollar/Rupiah exchange rate and may enter into other hedging arrangements as and when we deem appropriate.

Interest rate risk

We are exposed to interest rate risk resulting from fluctuations in interest rates on our short-term and long-term indebtedness. While the majority of our financing agreements are on fixed interest rates, certain of our financing agreements are on floating interest rates and we may from time to time, enter into new financing agreements with floating interest rates. Upward fluctuations in interest rates increase the cost of new borrowings and the interest cost of our outstanding floating rate indebtedness. See "Risk Factors — Risks Common to All Our Businesses — We are subject to interest rate risk." As of June 30, 2018, substantially all our long-term indebtedness are either subject to fixed interest rates or subject to floating interest rates and have been hedged through interest rate swaps.

Credit risk

We are exposed to the credit risk of our customers and certain other third-parties. We seek to minimize credit risk by limiting business dealings to business partners of high creditworthiness. As part of our credit policies and procedures, we conduct credit verification procedures on all our customers who wish to trade on credit terms, and require them to provide a domestic letter of credit, a *Surat Kredit Berdokumen Dalam Negeri* ("SKBDN"). We also monitor our receivables on a quarterly basis. As of June 30, 2018, we had trade receivables of Rp.6,807.1 billion (US$472.6 million). We make impairment provisions for our trade receivables in accordance with our accounting policies.

Liquidity risk

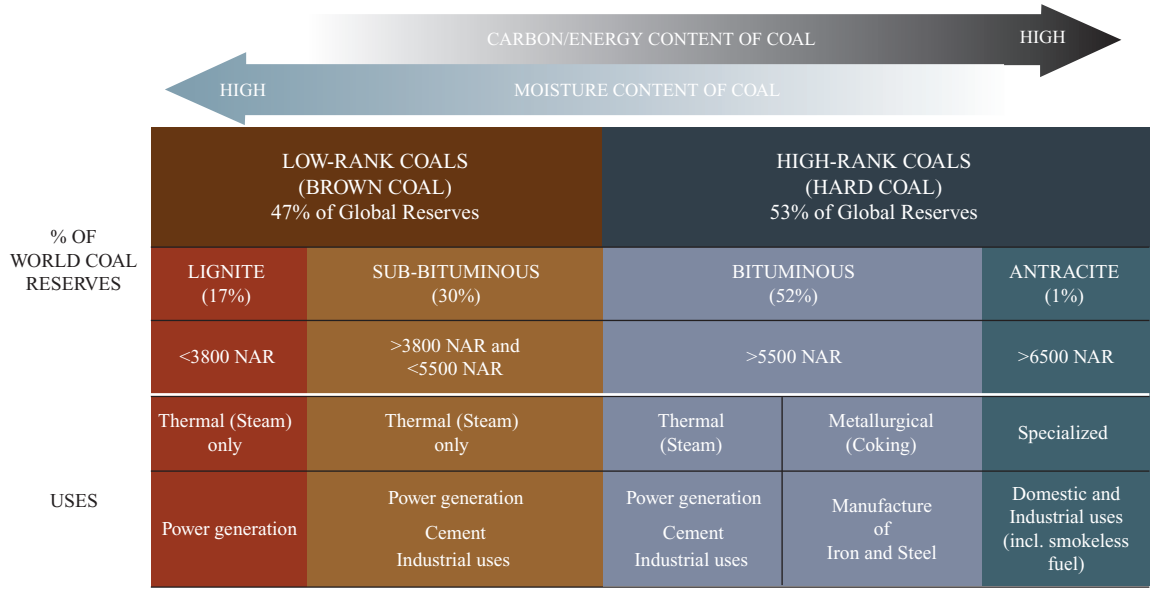
We are subject to the risk that we will not have sufficient funds to meet our operating requirements and financial obligations when they fall due. "Risk Factors — Risks Common to All Our Businesses — We require a significant amount of working capital and may be adversely affected if we fail to maintain sufficient levels of working capital." We manage our liquidity risk by ensuring that we maintain diversified funding sources, including bank financing, trade financing, domestic debt and equity markets and others, and maintaining strong cash flows generated from our operations.

The following industry and market data has been prepared by and obtained from our mining and aluminum smelting consultant, AME, using information provided by us as well as publicly available information. Such data has not been independently verified and neither we, except with respect to information which we have provided, nor the Joint Bookrunners and Joint Lead Managers make any representation as to the accuracy or completeness of such data or any assumptions relied upon thereon. See "Forward-Looking Statements" and "Mining and Aluminum Smelting Industry Consultant" which are included elsewhere in this Offering Memorandum.

Coal Industry

Coal is a common and widely distributed carbon-based energy natural resource. There are two main types of coal produced, based on the end-use of the coal, namely thermal coal and metallurgical coal. Generally, traded coal falls into the broad categories of bituminous and sub-bituminous coal. While markets for metallurgical coal and thermal coal are largely independent of one another, some substitution can occur between specific thermal coal and lower ranked coking coal.

The following diagram sets forth the typical types of coal and their uses.



Source: AME

The most important factors to be considered in determining the quality of a coal generally include energy content, mineral matter content (i.e. ash content), volatile matter, fixed carbon, sulfur, nitrogen, trace elements and moisture levels. The major controllable determinants are mineral matter content and moisture, both of which are non-useful materials and not preferred because of the added transportation costs. Furthermore, such features often have detrimental effects on the combustion process. They also present environmental problems in collection and disposal or, if not properly collected, in air quality. In the case of metallurgical coal, specific physical and plastic properties are also important.

Unblended coal on its own may be of such quality that it could have detrimental effects on the plant and equipment or create environmental issues. The blending process allows the coal to achieve the characteristics of higher quality, more expensive coal. The blending of coal allows plants to fire less expensive coal which, in turn, enables plant managers to take advantage of changing prices on the international coal market, as well as navigate supply disruptions, in order to maintain production and plant efficiency.

Generally, exported thermal coal is either bituminous or sub-bituminous coal. Lignite or 'brown coal' is also used as thermal coal, however, due to the low energy and usually high moisture content of lignite coal, it is not

efficient to export lignite coal. As a result, in order to reduce transportation costs, lignite coal is instead typically used to generate power in power stations situated adjacent to mines.

Important characteristics of thermal coal include:

- *Calorific value*. The energy content of coal, also referred to as calorific value or "CV," is measured as heat released upon complete combustion, expressed as the amount of heat (most commonly measured in kilocalories) per unit weight of coal (in kilograms), or "kcal/kg." High volatile bituminous thermal coal brands exported from Australia and South Africa are typically preferred in the seaborne markets. Certain markets, such as Japan, have been traditionally reluctant to accept low ranked coal. Low-ranked coal consumed in Japan are generally used for specific purposes, such as using their very low ash content to blend with higher ash bituminous coal.

- *Ash*. Representative of the non-combustible, inorganic residue after burning, premiums are typically paid for coal with low ash content. The ash content of export thermal coal, specifically coal from South Africa and Australia, is relatively high. Coal from Indonesia typically has low ash content ranging from 3.0% to 12.0% ash. Newcastle coal out of Australia for power utility suppliers typically contains 12.0% to 16.0% ash, which is slightly lower than the average for coal from South Africa, but considerably higher than Indonesian coal. Ash levels of less than 14.0% are generally preferred by Japanese power utility suppliers. There is a growing trend of acceptance of higher ash coal as an export product. Power utilities in South Korea, Taiwan and China are generally more likely to take higher ash coal. Ash levels of approximately 17.0% to 19.0% are now considered acceptable. There remains resistance to ash levels greater than 20.0%, but coal with ash levels of over 20.0% is still exported.

- *Moisture*. Water is contained in pores within the coal. It diminishes the heating value and can make it more difficult to ignite. In the processing stage, it can affect the coal's handling and crushing properties. While low moisture content is desirable, it is not critical. Moisture consumes heat to evaporate during combustion, much of which is lost in the exhaust gas.

- *Sulfur*. Continued pressure is being placed on coal producers to deliver low sulfur coal so that power stations need not install flue-gas desulfurization ("FGD") units. Only power producers that have installed FGD units, as is the case for several West European utilities, can purchase high sulfur coal, if the price is in line with the market. High-sulfur coal is generally less competitive than low-sulfur coal in power generation, as it will be excluded from markets where no FGD units are installed but environmental restrictions on sulfur oxide emissions are stringent. Coal with sulfur levels above 1.0% are generally disadvantageous in international markets and may attract penalties. A sulfur content of 1.0% is generally accepted as the maximum level for power plants, but this can vary depending on blending options for individual plants.

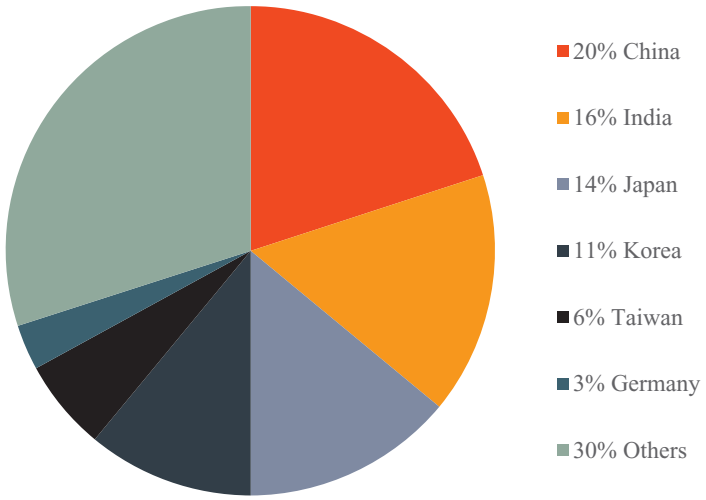
- *Fuel ratio*. Many power generators from Asia rely on imported coal design boilers with a fixed carbon to volatile matter or "fuel ratio" between 1.0 and 2.5, with a preference for fuel ratios of approximately 1.6. Newer power stations, particularly in India and China, have been designed with lower energy imported coal in mind and are expected to be able to handle fuel ratios of approximately 0.9 to 1.0.

Thermal coal demand outlook

Strong growth in thermal coal import demand in Asia over the past 10 years has been driven by the rapid development of economies and the resulting strong growth in electricity generation. For the past eight years, China has been the largest importer of thermal coal, overtaking Japan in 2010. China is forecasted to remain the dominant importer, with deliveries totaling approximately 215 million tonnes, an increase of approximately 6.8% year-on-year, primarily driven by multi-year high imports of 61 million tonnes in the first quarter of 2018. Strong growth from India also saw it overtake Japan in 2013 to become the second largest importer of thermal coal. India is expected to be the second largest with imports totaling 164 million tonnes, an increase of 10.1% year-on-year, the first growth recorded since 2014. Japan is set to remain the third largest importer of thermal

coal in 2018, with shipments totaling a record 147 million tonnes, an increase of almost 1.6% year-on-year. China is anticipated to remain the largest importer of thermal coal globally, although shipments are forecasted to stabilize closer to 2017 volumes at 209 million tonnes. India's thermal coal imports are forecasted to reach 189 million tonnes by 2025, with Japan remaining in third position at 151 million tonnes. China, India and Japan are expected to remain the top three thermal coal importing countries through 2025. South Korea and Taiwan round out the top five, and are forecasted to import approximately 116 million tonnes and 63 million tonnes of thermal coal, respectively, in 2018. The top five countries are anticipated to account for approximately 66.8% of global thermal coal import demand in 2018.

The following diagram sets forth estimated thermal coal imports in 2018 for the following countries.



Source: AME

The price of coal has experienced significant fluctuations over the past 20 years as a result of a growing global coal market and a corresponding increase in demand and supply for coal worldwide. In 2008, the price for FOB Newcastle 6,322 kcal/kg GAR was as high as US$180/tonne, before declining to US$80/tonne. In 2011, the price for such specification of coal rose to as high as US$130/tonne, before experiencing five consecutive years of declining prices, during which the price of such coal in 2016 was as low as US$50/tonne. In November 2016, the price for such specification of coal rose to as high as US$116/tonne.

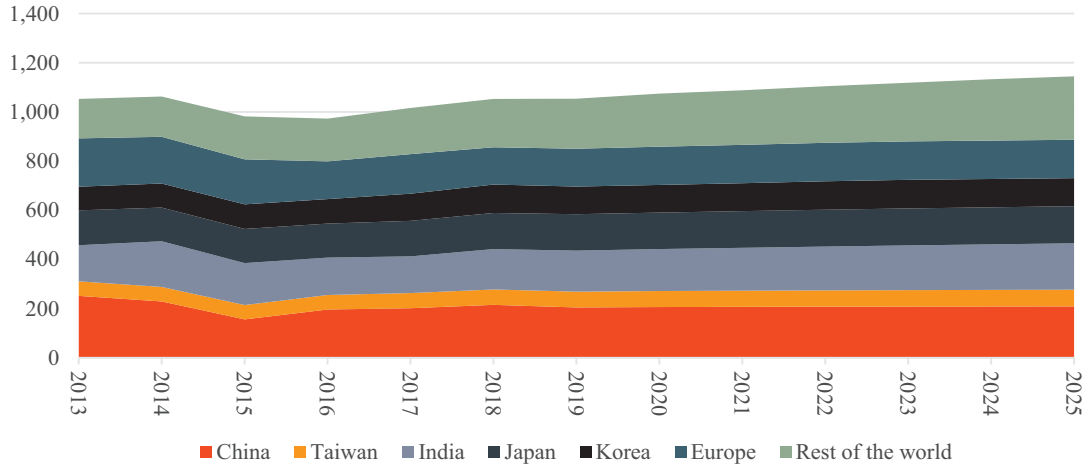
AME forecasts global thermal coal import demand to total 1,053 million tonnes in 2018, an increase of almost 4.0% year-on-year. Thermal coal imports volumes from key Asian demand markets strengthened over the first half of 2018, led by China's January to May imports of 94 million tonnes, representing an increase of 25.0% year-on-year. Japan's thermal coal imports for the first five months of 2018 have risen by 4.1% year-on-year to 47 million tonnes. India's demand for thermal coal imports for the first half of 2018 is estimated to have increased approximately 10.1% year-on-year to total 81 million tonnes. Demand for internationally traded thermal coal is anticipated to reach 1,054 million tonnes in 2019, representing a growth of only 0.1% year-on-year, with a stabilizing of China's import volumes partially offsetting increases in Japan and India. In the period between 2018 to 2025, AME expects global demand for internationally traded thermal coal to increase at a compound annual growth rate ("CAGR") of approximately 1.5% to approximately 1,148 million tonnes.

Demand growth for internationally traded thermal coal in the short to medium term is likely to be primarily driven by increased electricity requirements from South Korea, Taiwan, India and China. South Korea and Taiwan are wholly-reliant on the international market for their coal supply, with any increases in coal-fired electricity generation translating directly to greater thermal coal imports. South Korea's coal-fired electricity generation is forecasted to increase by over 4.5% from 2018 to 2022, whereas Taiwan's is anticipated to increase by 8.1% over the same period. The ability of India to ramp up domestic coal production to its target of 1.0 billion mtpa by 2020 will determine its reliance on thermal coal imports, as coal-fired electricity generation increases

from approximately 1.17PWh in 2018 to approximately 1.36PWh by 2022. Similarly, China's domestic coal production will have a marked impact on its demand for imports. China's coal-fired electricity generation is forecasted to increase at a CAGR of almost 1.8% to 4.26PWh from 2018 to 2022.

The pace at which developed countries diversify their electricity generation mix away from thermal coal will have an impact on global demand for imports in the short to medium term. Coal-fired power in China, for example, is forecasted to account for 55.0% of the country's total electricity generation in 2025, down from 63.1% in 2018 as renewables increases by 9.0% to 15.0%. After several years of growth, India is also expected to start diversifying its electricity generation mix in the short-medium term, with coal-fired power forecasted to account for 68.0% market share in 2025, down from 74.0% in 2018, with renewables increasing from 7.0% to 12.0%. Japan's ramp up of nuclear power generation, combined with increasing renewable utilization, is anticipated to slightly erode coal's market share of the country's electricity generation in the medium term to 31.0%.

The following diagram sets forth estimated thermal coal imports for the following countries between 2013 and 2025, in million tonnes.



Source: AME

Construction of new coal-fired power stations continues all around the world. India currently has approximately 26GW of coal-fired electricity generation actively under construction, some of which will be completely dependent on imports. Japan has plans for 49 new coal-fired power stations in the next 10 years, representing approximately 22GW of capacity. Power utilities in Japan, China and India all have new coal-fired power station projects in developing countries such as Myanmar, Vietnam, Egypt and the Philippines.

China is set to remain the dominant importer of thermal coal until 2025, with volumes forecasted to marginally increase at a CAGR of 0.6% to 209 million tonnes amid increasing coal-fired electricity generation, despite coal's share of China's energy mix falling from 61.0% to 55.0%. India's imports are anticipated to rise at a CAGR of approximately 2.1% to 189 million tonnes by 2025. Japan's imports are expected to continue rising steadily in the medium term at a CAGR of 0.4% to 151 million tonnes by 2025. South Korea's and Taiwan's thermal coal imports are forecasted to total 114 million tonnes and 68 million tonnes in 2025, respectively.

Thermal coal demand upside predominately center around China and India. Any substantial improvements in high efficiency, low emissions coal-fired electricity generation technology is likely to be widely utilized in these countries due to China and India's vast coal reserves and relatively small percentage of alternative energy sources. Further upside potential rests with additional domestic thermal coal production capacity cuts in China, with the country only importing approximately 7.0% of its thermal coal requirements in 2018.

Extensive development and implementation of renewable electricity generation technologies presents the largest downside risk to thermal coal import demand going forward. If improvements in costs and reliability can be achieved, the switch to these technologies has the potential to occur at a faster rate than currently modeled in

AME's base case scenario. Policy decisions around the utilization of thermal coal from individual countries on quality and environmental grounds also have the potential to influence thermal coal demand going forward.

Thermal coal supply outlook

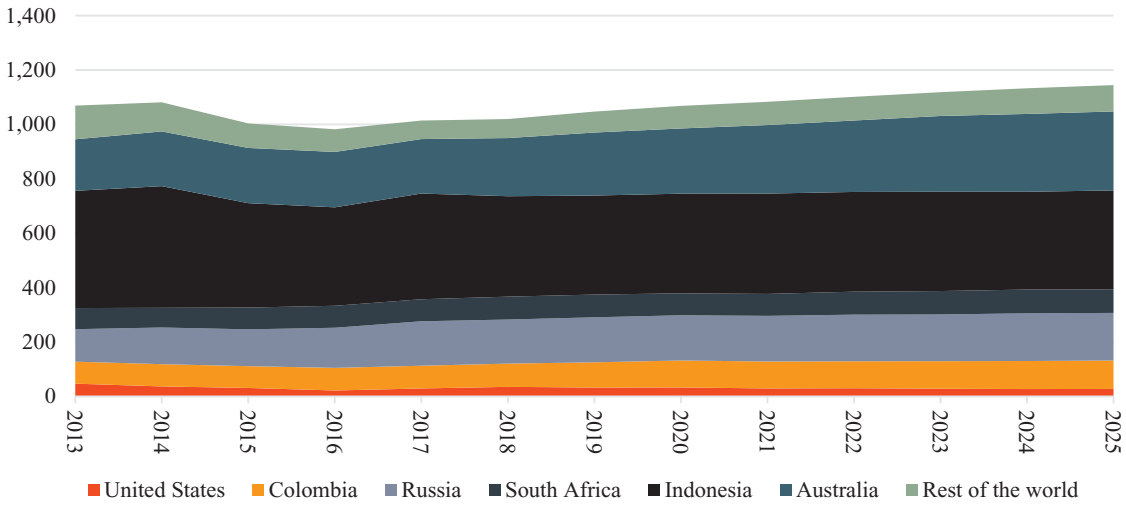
AME forecasts export thermal coal supply to reach 1,020 million tonnes in 2018, up by only 0.5% year-on-year, as increases in exports from Australia, South Africa and the United States will be offset by a decline in exports from Indonesia. As attractive market conditions encourage operators to increase production, restart idled mines, recommence exports and proceed with the development of new mines, AME anticipates supply growth to rise by approximately 2.6% year-on-year to 1,047 million tonnes in 2019. As prices ease in the medium term between 2020 and 2025, AME forecasts export thermal coal supply to reach 1,148 million tonnes, with growth moderating to a CAGR of almost 2.5% based on current mine plans and scheduled openings. Further, several new projects and expansions are anticipated to be undertaken over the next five years including MACH Energy's soon-to-commence Mount Pleasant coal mine in New South Wales, Australia, Resource Generation's Boikarabelo coal mine in Limpopo province, South Africa, Golden Energy and Resources Limited's expansion of its Borneo Indobara coal mine in Indonesia and Yancoal Australia's expansion of its Moolarben coal mine in New South Wales, Australia.

Indonesia is the dominant exporter of thermal coal globally, with shipments to the international market anticipated to total 369 million tonnes in 2018, down by 4.9% year-on-year. The decline, which amounts to approximately 19 million tonnes in absolute terms, is primarily attributable to increased sales to the domestic market, as Indonesia attempts to grow its electricity generation. Unseasonal wet weather throughout the first half of 2018 also had an impact on Indonesia's production volumes. Australia is the second-largest exporter of thermal coal in 2018, with sales to the international market forecasted to total 214 million tonnes, an increase of almost 6.7% year-on-year as producers take full advantage of improved market conditions. Russia is anticipated to be in third position with shipments totaling 162 million tonnes, with Colombia and South Africa rounding out the top five with an estimated 85 million tonnes and 84 million tonnes of thermal coal exports, respectively. By 2025, Indonesia is expected to account for approximately 31.2% of the global export market, down from 36.2% in 2018, with shipments declining marginally to 367 million tonnes. Australia's considerable project development and expansion pipeline will see thermal coal exports reach 290 million tonnes in 2025, representing a CAGR of over 5.0%. Russia, Colombia and South Africa will remain in the top five, with exports of approximately 175 million tonnes, 105 million tonnes and 87 million tonnes in 2022, respectively.

Glencore plc ("Glencore") has been the dominant exporter of thermal coal globally since its merger with Xstrata plc ("Xstrata") in 2013, with exports forecasted to total 97 million tonnes in 2018, on an equity basis. Glencore owns coal assets in Australia, South Africa and Colombia, with flexibility to target both the Asian and Atlantic markets. Russian miner Siberian Coal Energy Company ("SUEK") and Indonesia's PT Adaro Energy Tbk ("Adaro Energy") are forecasted to be the next largest exporters of thermal coal, delivering 43 million tonnes and 41 million tonnes to the international market, respectively. By 2022, Glencore is forecasted to increase exports to 115 million tonnes, with production growth from both its Australian and Colombian operations. This volume does not include output from its currently incomplete acquisition of the Hail Creek mine in Queensland. SUEK and Adaro Energy are anticipated to remain in the top three thermal coal exporters globally with 47 million tonnes and 45 million tonnes, respectively.

One of the primary areas for technological advances in coal mining in the next five years is in autonomous machinery. Several coal mining trials have been completed in recent years, including by BHP Bilton ("BHP") and Stanwell Corporation. The capital costs involved in automation are not excessive, and such machinery is forecasted to eventually replace up to 80.0% of the workforce at an operation. Australian producers are the most incentivized to explore automation in the coal industry, with potential savings maximized due to the high wage costs in the country. Automation in coal mining, however, is likely to be restricted by mine size and geological complexity.

The following diagram sets forth estimated thermal coal exports for the following countries between 2013 and 2025 by country, in million tonnes.



Source: AME

Accounting for approximately 36.2% of the international market, Indonesia is expected to be the lead supplier of export thermal coal in 2018 at 369 million tonnes, a fall of 4.9% year-on-year. Indonesia's exports are forecasted to decrease further to 364 million tonnes in 2019 due to increased domestic demand. Australia is expected to be the second-largest exporter of thermal coal in 2018, with exports totaling 214 million tonnes in 2018 before rising to 232 million tonnes in 2019. Russia, Colombia and South Africa are forecasted to round out the top five exporters in the short term, delivering an estimated 166 million tonnes, 93 million tonnes and 84 million tonnes, respectively to the market in 2019.

Moving into the medium term, the top five exporting countries are expected to retain their respective positions. Indonesian exports are anticipated to stabilize at 363 million tonnes by 2025, driven by continuing domestic demand. Australian exports are forecasted to increase at a CAGR of 3.9% from 2020 to 2025 to 290 million tonnes. Russia's increased sales into the Asian market are forecasted to continue in the medium term, with exports rising at a CAGR of almost 1.1% to 175 million tonnes over the same period.

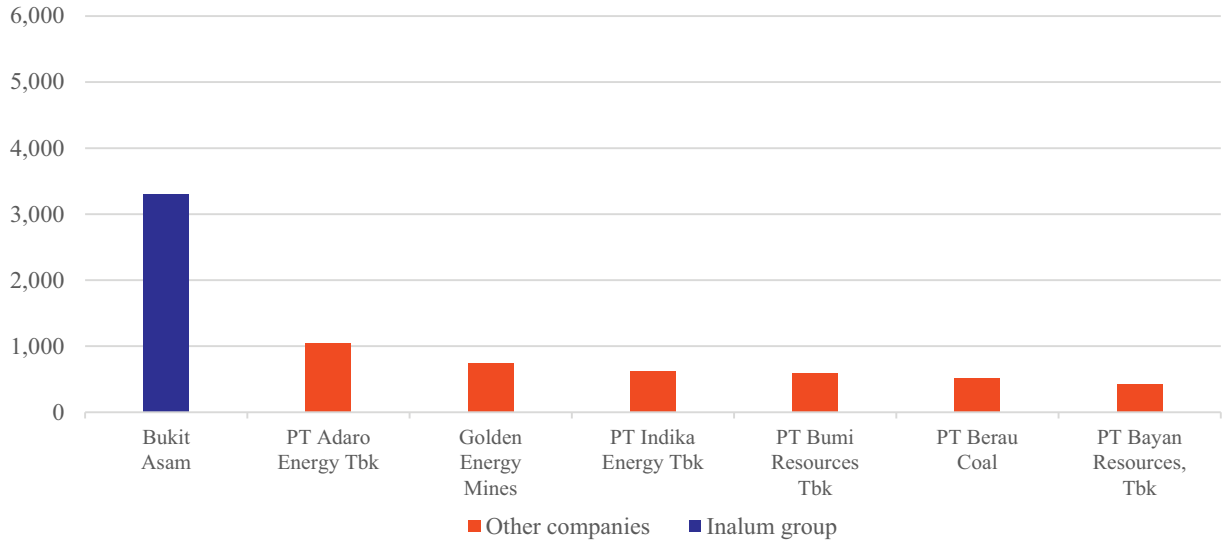
The developing thermal coal supply regions of the Surat and Galilee basins in Queensland, Australia have the potential to offer significant supply upside to the international market. With several largescale greenfield projects currently on the backburner, strong demand increases from Asian target markets could lead to a surge of new developments. Besides demand, the primary limitation to the development of these regions is lack of rail infrastructure.

Indonesian government projections for domestic thermal coal consumption indicate significant downside risk for the country's export volumes going forward. The Indonesian Ministry of Energy and Mineral Resources forecasts exports to fall by 15.0% year-on-year to 311 million tonnes in 2018, on account of an 18.0% rise in domestic coal consumption. In 2019, the ministry forecasts Indonesian coal exports to fall to 160 million tonnes, as domestic consumption doubles to 240 million tonnes. If these projections prove accurate, they would lead to dynamic shifts on the internationally traded market.

Operational benchmarking

Bukit Asam holds extensive coal reserves on the island of Sumatra. As of June 30, 2018, Bukit Asam was the largest holder of coal reserves in Indonesia and fourth largest holder of coal reserves in the world. As of June 30, 2018, Bukit Asam was the sixth largest producer in Southeast Asia in terms of production volume, on an equity basis.

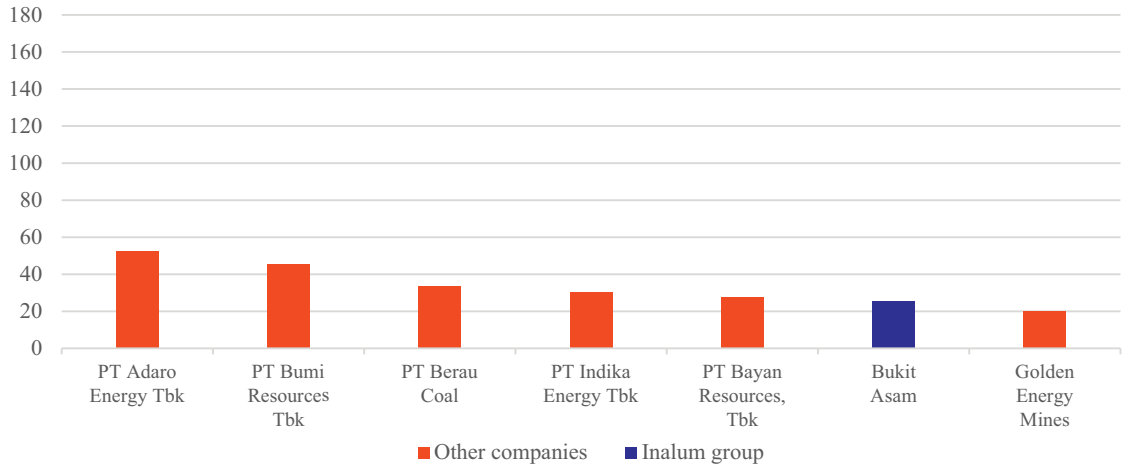
The following diagram sets forth the coal reserves held by the following companies in 2017, on an equity basis, in million tonnes.



Source: Company reports

Note: On an equity basis means that the total reserves of all owned operations have been pro-rated to account for the shareholding of the named company in each operation.

The following diagram sets forth estimated thermal coal production by the following companies in 2018, on an equity basis, in million tonnes.

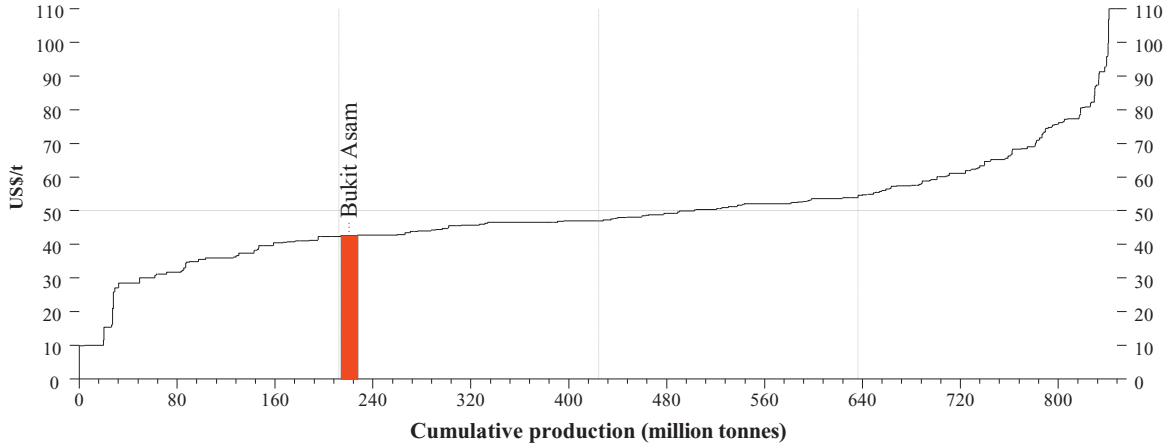


Source: AME

Note: On an equity basis means that the total production of all owned operations have been pro-rated to account for the shareholding of the named company in each operation.

Bukit Asam is a low cost producer of export thermal coal, sitting just inside the second quartile of the global coal cost curve. It is estimated that Bukit Asam's FOB cash costs for 2018 will be approximately US$40/tonne due to the low cost of its mining operations and logistics. Unlike other Indonesian producers, Bukit Asam utilizes rail and port facilities similar to those used by its international peers for the export of coal.

The following diagram sets forth Bukit Asam's position on the estimated global cash cost curve for export thermal FOB coal in 2018.



Source: AME

Tin Industry

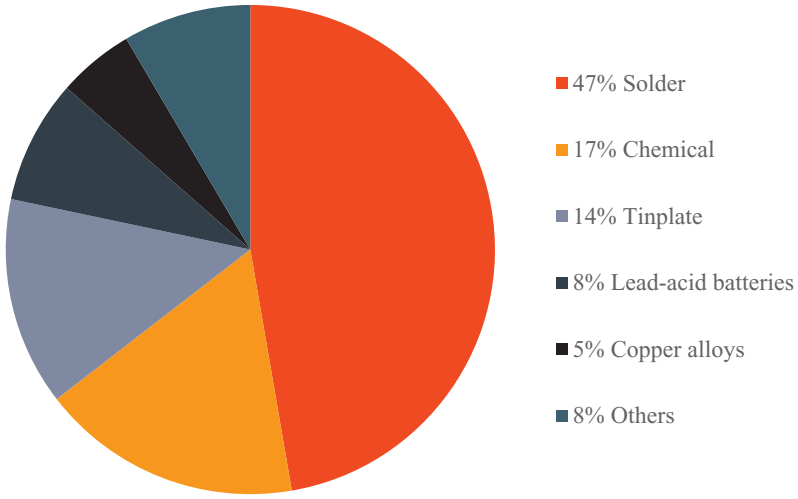
Tin is, almost without exception, used in alloys. The predominant ore mineral of tin is cassiterite. Although tin is a metallic mineral, it is rarely used in the elemental form because it decomposes at temperatures below approximately 13°C. Tin alloys such as tin solder are mainly used in electronics such as smartphones and account for approximately half of refined tin consumption. Pewter is also used due to its soft nature. As tin is corrosion resistant, it is used to coat other metals such as steel. Tin-plated steel, which accounts for approximately 15.0% of tin consumption, is most widely used in food packaging. The proportion of scrap used in tin production is between 10.0% and 25.0%. Unlike many metals, tin recycling is relatively efficient and the fraction of tin in discarded products that are recycled is greater than 50.0% percent.

Similar to other base and non-ferrous metals, only approximately 20.0% of mined tin is sourced from hard rock deposits. Over 80.0% of tin is sourced from alluvial placer deposits in valleys and stream bed, as well as from the ocean floor. The largest concentration of both onshore and offshore placers is in the extensive tin belt of Southeast Asia, which stretches from China in the north, through Thailand, Myanmar and Malaysia, to the islands of Indonesia in the south. Furthermore, tin placers are almost always found closely allied to the granites from which they originate. Other countries with significant tin resources are Australia, Bolivia, and Brazil. Many of the placer deposits located in Burma, Indonesia, Malaysia, and Thailand are located offshore. Most offshore placer tin deposits are mined by dredging method.

Tin demand outlook

Expanding consumer electronics industry and food and beverage industry are the key driving factors for the growth of the global tin market. The overall packaged food industry is growing due to changing food habits, thereby leading the demand for related packaging materials. With the substantially growing consumption of packaged food in developing economies, the overall tin market too is expected to witness promising growth in the following years. Apart from food & beverages, the major share of revenue comes from the consumer electronics industry.

The following diagram sets forth estimated refined tin end-use in 2017.



Source: AME

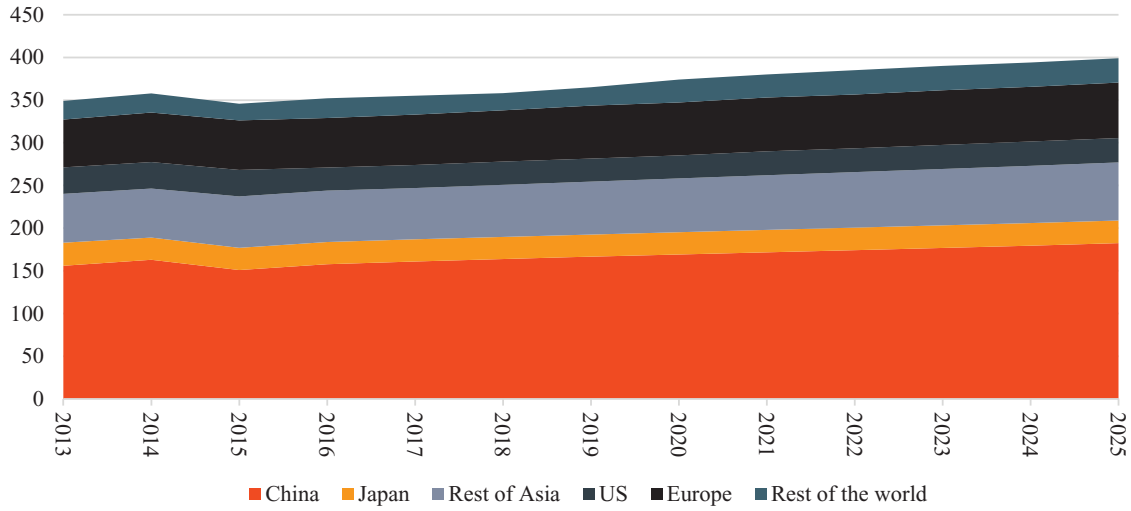
Soldering is the most crucial application of tin across the semiconductor and electronics industry. Soldering contributed almost 47.0% of shares in the overall tin market in 2017. As a result, the expectation of a growing electronics industry is forecasted to be the largest driver of demand growth, Additionally, AME expects the growth in electric vehicles and the solar photovoltaic industry to be a key secondary driver of demand growth. The most significant barrier faced by the global tin market is the shrinking levels of tin ore in tin mines across the world, resulting in recycling and drawdown of existing stockpiles becoming an ever more important source of supply.

In the past 10 years, although the price of tin has matched the price cycle of other metal, the price for tin peaked at over US$33,000/tonne in 2011, where strong demand from China, combined with a decline in world production, exacerbated a market that had regularly been in undersupply. Over the past five years, the price of tin has averaged just under US$20,000/tonne.

Asia was the dominant market with a share of approximately 75.0% in 2017, with China alone accounting for 45.0%. The strong presence of the semiconductor and electronics manufacturing industry in China, as well as Taiwan, Korea and Japan, is likely to drive the regional growth. Central and South America is also forecasted to grow due to their growing manufacturing industries and the close proximity of significant tin resources to these regions.

AME expects refined tin demand to grow at a CAGR of approximately 1.5% to approximately 399 kilo tonnes by 2025, driven primarily by China's expected growth at a CAGR of just over 1.5%, as well as the rest of Asia's (excluding Japan) expected growth at a CAGR of just under 1.5%. Growth in demand in regions outside of the traditional manufacturing countries is expected to see the strongest rate of growth with a CAGR of approximately 5.0%, albeit of a very small base.

The following diagram sets forth estimated refined tin demand by country between 2013 and 2025, in kilo tonnes.



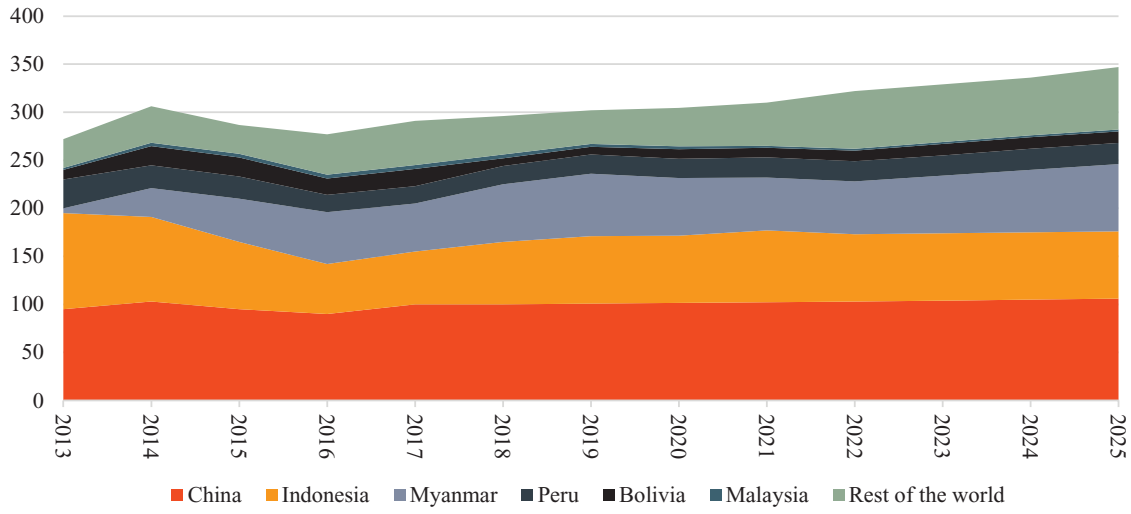
Source: AME

Tin supply outlook

China, Indonesia and Myanmar provided approximately 70.0% of global tin mine production in 2017. The tin market has been faced with a consistent undersupply since 2013 and AME forecasts that the global tin market will remain in deficit until 2025 as a result of increasing regulations in producing countries and depletion of ore reserves. Mined supply is expected to grow at a CAGR of approximately 3.7% from 2018 to 2025, driven primarily by growth from Myanmar, with a CAGR of approximately 2.2%, and Indonesia, with a CAGR of approximately 1.1%. Other factors affecting global supply include Indonesian export regulations and potential supply shortage may appear in the coming years. Continued growth from Myanmar, the largest emerging player in the global tin market, which has grown to become the third largest producer over the past four years, is expected to contribute to continued incremental growth in the market.

China's imports of tin in concentrate from Myanmar are estimated to have increased in 2017, as a result of improved processing equipment in the key Man Maw mining area. In 2017, the average tin content of concentrate imported from Myanmar was estimated to be approximately 23.0%, compared with the 2016 estimated average tin content of approximately 13.0%. China has also announced that in April 2017 it granted the first tolling license that would allow tin smelters to import tin concentrate and re-export metal without paying import or export taxes. In August 2017, the Russian Government announced plans to develop two tin deposits in eastern Russia, and approved a tax exemption on tin produced in Russia until 2022. This has the potential to significantly increase Russia's tin production. There also exists a number of potential tin projects in Australia, such as Metals X Limited's projects, which could become a modestly sized low cost producers from the reprocessing of tailing deposits.

The following diagram sets forth estimated mined tin supply from 2013 to 2025, in kilo tonnes.

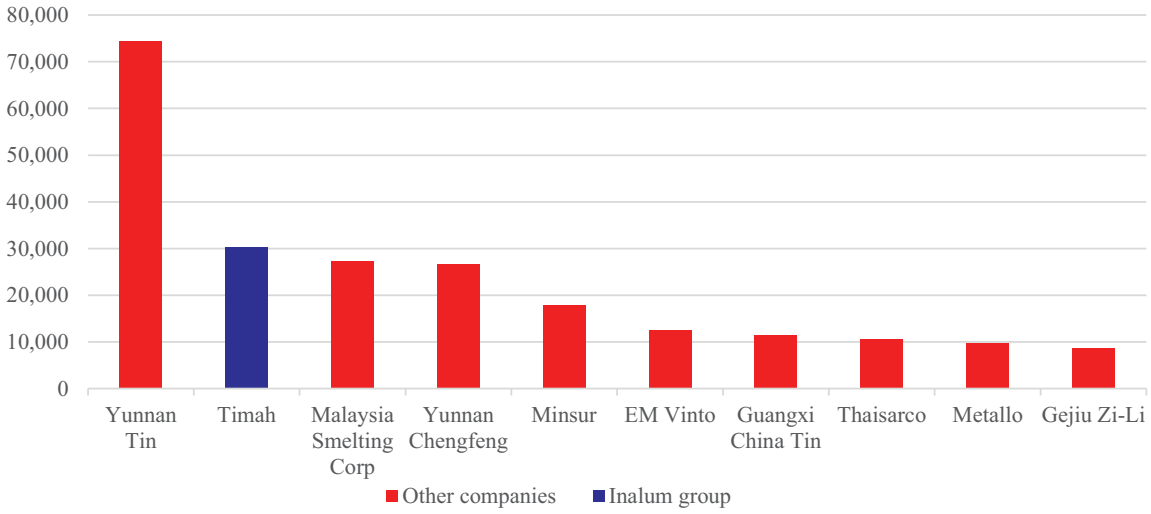


Source: AME

Operational benchmarking

As of June 30, 2018, Timah was the second largest producer of refined tin in the world in terms of refined tin production in 2017, which is the latest available data as of June 30, 2018.

The following diagram sets forth refined tin production by company in 2017, in tonnes.



Source: AME

Gold Industry

Gold is a well-known precious metal that is bright yellow in color and exists in solid form under standard room conditions. It is malleable, ductile and an effective conductor of heat and electricity. As one of the least reactive chemical elements, gold metal often exists in native state or free element form, such as grains or nuggets in rocks, quartz veins and alluvial deposits. It can also be found as a solid solution naturally alloyed with elements such as silver or with other metals such as copper and palladium.

Although typically unreactive, gold can dissolve in aqua regia and alkaline solutions of cyanide. It can also be dissolved in mercury. However, it is not soluble in nitric acid, which can dissolve silver and base metals. This property gives rise to the acid test that is used to confirm the presence of gold in the materials. Geographically, gold is widely distributed across various regions, and is mainly extracted for jewelry, industrial fabrication and investment purposes.

There are several ways of mining gold on a large scale. Vein hosted and stratigraphic gold deposits are mined mainly using underground methods. However, since the mid-1970s open-pit mining has been used for many deposits where lower grades and cheaper mining methods dictate economics. Shallow disseminated deposits, especially in the south-western United States are also mined by open pit methods. Gold is commonly refined using the Miller process of chlorination or the Wohlwill process of electrolysis. Chlorination produces gold bullion fineness of 996 to 997, which denotes 996 to 997 parts per thousand or 99.6% to 99.7% purity of gold. The Wohlwill process produces gold bullion finance of 999.5 to 999.9.

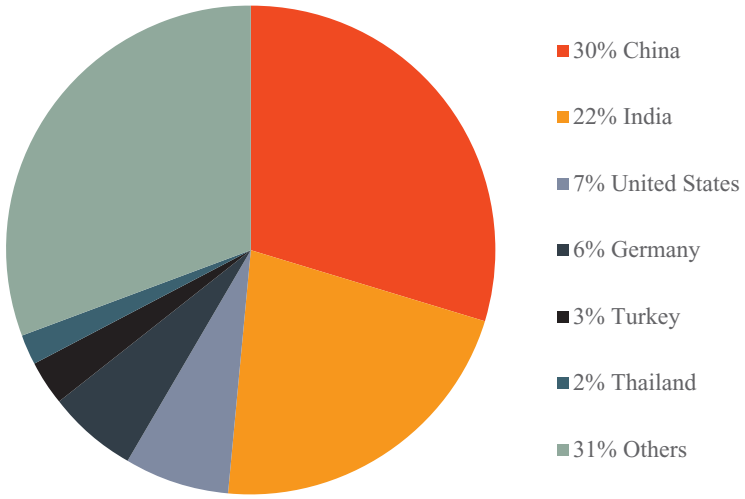
Various processing routes exist for gold, the choice of which also depends on grade and mineralogy. The cyanidation process, either used directly or after pre-treatment as dictated by the nature of the ore, is the most widely used treatment method of all types of ore. After cyanidation, gold is recovered from the aurocyanide solution by adsorption on activated carbon or by precipitation on zinc dust (the Merrill–Crowe process). Gold is also recovered as a by-product of base metals from uranium and silver mines.

Gold demand outlook

The major use of gold is for the production of jewelry and coins. Gold is unaffected by air, moisture and most corrosive reagents, and is therefore suitable for use in jewelry and coins and as a protective coating on other more reactive metals. It is estimated that the jewelry sector will account for approximately 49.4% of global demand in 2018, followed by gold bar hoarding (18.2%), industrial and other uses (13.2%) and central bank purchases (9.6%).

Gold bar hoarding represents demand for physical gold in bar form, while Industrial and Other uses represent gold used in industrial applications such as bonding wire and catalytic converters in the electronics and automotive sectors, and also the consumption of gold in the production of coins and medals. Gold investment represents the net inflow of investment funds into gold through exchange traded funds and similar products, inclusive of demand of over-the-counter gold investment products. Amongst other applications, gold is also used in electronics, pollution control, and medical and dental applications. Demand from these applications are categorized under ‘Industrial and Other’ uses.

The following diagram sets forth estimated gold demand by country in 2017.



Source: AME

Demand for gold fell to 1,058 tonnes in the first quarter of 2018, representing an over 8.0% quarter-on-quarter decline and a 1.1% rise year-on-year. AME expects full-year gold demand to reach 4.8% year-on-year to 4,681 tonnes in 2018, growing again by approximately 3.1% in 2019. Medium-term gold demand is forecasted to decline by a CAGR of 0.7% to 4,836 tonnes in 2025. Gold demand for jewelry is expected to absorb additional supply and reduced investment appetite on the back of continuing economic growth.

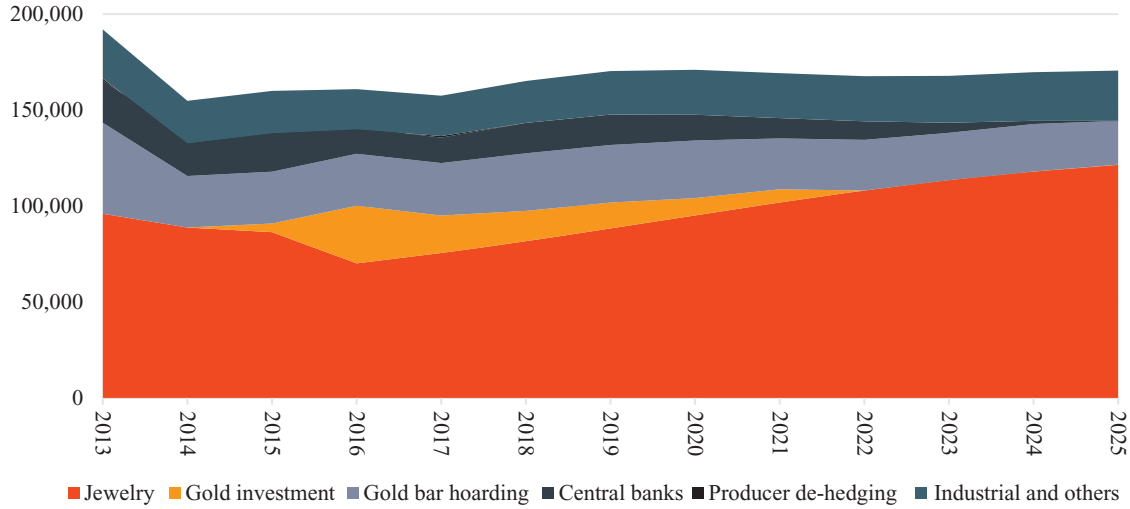
Jewelry demand, which contributed approximately 48.0% of the total gold demand in 2017, is expected to hold its position as the key driver of demand in the short to medium-term as it continues to grow upward from a six-year low in 2016. Jewelry demand is forecasted to grow by a CAGR of 5.5% to 3,444 tonnes in the period between 2019 to 2025, driven by increasing incomes in rural areas, particularly in India, and is forecasted to contribute approximately 71.2% to global demand in 2025. Decrease in gold investment is forecasted to decline to zero by 2022 before switching to net divestment in 2023.

AME expects China will hold its position as the largest gold consumer until 2025, followed by India. Jewelry demand, which accounts for the majority of each country's consumer demand profile, is expected to grow over the medium term as India digests its revised tax regimes and markets, particularly those in Asia, continue to grow. These drivers are expected to see global jewelry demand lift from a trough bottoming out in 2016.

Electronics, industrial applications and coinage are expected to comprise a 13.2% to 14.0% share of the market in the short to medium term. These uses, which include technical applications such as bonding wire, printed circuit boards and LED displays, dental and medical uses, coinage and medallions, have been in decline, falling at a CAGR of 3.1% between 2010 and 2017. Higher prices have led to more-sparing use and substitution away from gold in industrial applications and dentistry. The 2017 value of 595 tonnes is expected to be a local minimum and a turning point, with electronics, industrial and coinage-driven demand forecasted to rise for the first time in five years to 618 tonnes in 2018, rising again to 642 tonnes in 2019 before leveling off at 666 tonnes by 2025.

In the short term, a pickup in global economic activity will drive a recovery in consumer demand. The World Bank forecasts a 3.1% and 3.0% rise in GDP in 2018 and 2019 respectively, which will normalize to approximately 2.9% in 2020 and drive improvement in consumer gold consumption. The U.S. Federal Reserve has indicated an additional interest rate hike in 2018, bringing the expected total to four for the year. This will likely continue to encourage movement away from gold investment toward United States Treasury bonds and similar interest-bearing investments in the short term.

The following diagram sets forth estimated gold demand by sector from 2013 to 2025, in koz.



Source: AME

China has maintained its position as the world's largest consumer of total gold, accounting for 33 million oz of jewelry, bar and coin demand in the first quarter of 2018, closely followed by India. This was despite three consecutive years of declining Chinese consumer demand from 2014 to 2016 and sluggish year-on-year growth of 4.1% in 2017. Over the short term, Chinese consumption is expected to account for a 32.1% share of global jewelry demand, in line with the preceding two years as its solid economic expansion continues. This would result in Chinese jewelry demand to reach 741 tonnes in 2018 and 800 tonnes in 2019.

AME expects global gold demand to decline at a CAGR of 0.5% from 2019 to 2025. Gold jewelry is expected to lose some appeal in China with millennials expected to turn away from pure-gold pieces. This is likely to be balanced by improving economic conditions and a rise in wealth in rural communities, with no substantial change predicted in China's market share. Between 2020 and 2025, global jewelry demand is expected to rise by a CAGR of over 4.9%, with Chinese demand growth expected to follow suit.

Global demand growth will be constrained by global economic growth with AME expecting global GDP to track sideways at growth of 3.0% to 2025. India and China will remain key demand drivers. Chinese economic growth is expected to slow in the longer term with AME expecting real GDP to moderate. Following several years of high growth rates, the forecast reduction still sees Chinese growth exceeding that of most other major gold consumers. With an expected increase in GDP per capita, Chinese consumers' share of demand will likely increase in the long term.

China's One Belt One Road project is expected to have a substantial impact on the Chinese and global economies. This and other global policy changes could potentially see substantial rises in consumer demand in the longer term as per-capita GDP rises and industrial sector activity picks up. Jewelry demand, in particular, is expected to be boosted by a sustained long-term improvement in China's consumer spending.

Chinese demand is overwhelmingly dependent on jewelry demand and in turn upon personal wealth. A devaluation of the Yuan, a scenario which may be evaluated by the Chinese Government in the wake of trade tensions with the United States, would risk weakening the purchasing power of Chinese consumers to buy gold, typically sold in United States Dollars. Gold investment could also see downside from sustained rises in real interest rates, bond yields or the United States Dollar, each of which signals a headwind for gold as alternative investments provide a more attractive return, driving higher rates of gold and reducing demand in the short, medium and longer term.

India remained the world's second-largest consumer of gold in the first quarter of 2018, accounting for 116 tonnes of total consumer demand. The country's share of global consumer demand lifted from 21.6% in 2016 to 23.0% in 2017, driven by an almost 14.2% year-on-year rise in jewelry demand. In the short-term future India is expected to retain a share of just under 25.0% of the consumer market. However, if the 2018 monsoon season produces heavy agricultural yields, Indian consumer demand could swell as high as 950 tonnes of gold, or 30.3% of global consumer demand, in 2018.

The impacts of India's 2017 tax reforms on gold demand are expected to continue into the medium-term future, with consumers remaining hesitant to buy gold under the new, more-transparent system. Although the transition is not expected to continue directly past 2018, the reforms will likely continue to impact consumer patterns. An improvement of the Indian economy after 2020 is expected to see consumer demand improve. Positive responses could see Indian consumer gold demand rise by a CAGR of at least 1.0% to 2.0% between 2020 and 2023.

Gold consumption varies periodically in India based on the seasonality of weddings and the heavily agriculture-based wealth of the rural population. The latter, pinned to the success of crop yields, can be substantially boosted by a strong monsoon season, like that expected in the second half of 2018. Further upside could be driven in the short-term by a rise in the population bolstering the number of weddings, which is typically another seasonal driver of Indian consumer gold demand. India's gold demand is driven strongly by the wealth of its working and middle classes. The moderation of income in India's rural class coupled with complex labor laws, attempts to reign in the gray economy and a revamp of regulation could provide headwinds for economic growth and hence gold demand.

Gold supply outlook

Supply fell by 8.1% quarter-on-quarter but rose by 1.1% year-on-year to 1,110 tonnes in the first quarter of 2018, driven by a change in mined gold supply. AME expects total supply will be boosted to 4,681 tonnes in 2018, growing again by approximately 3.1% in 2019. In the medium term, supply will normalize, declining at a CAGR of 0.7% to reach 4,753 tonnes by 2022, following a forecasted peak in mined supply in 2020.

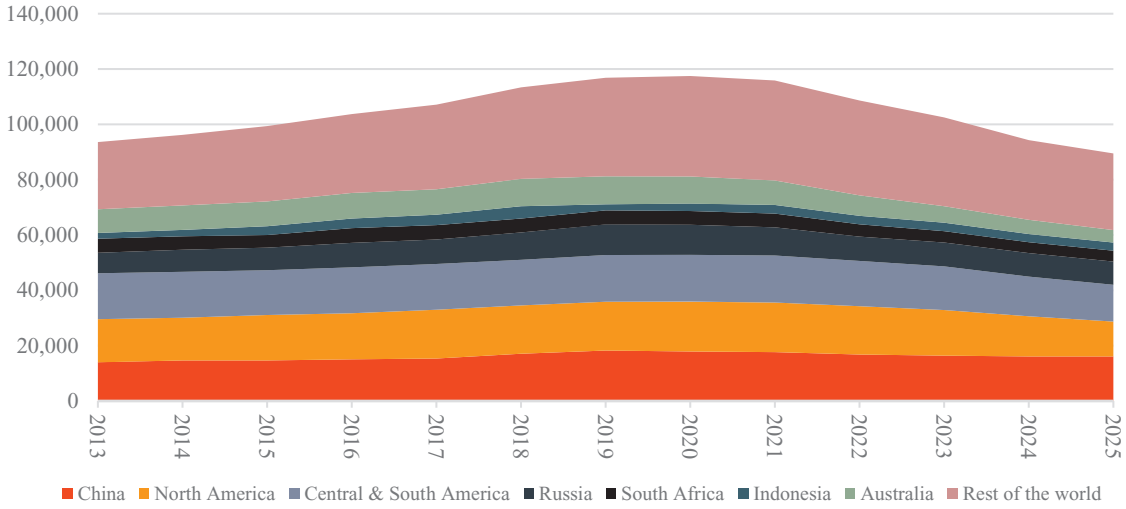
Over 314 tonnes of new and expanded mined gold supply capacity is forecasted to commission in the short to medium-term future. In 2018, these additions are expected to account for 102 tonnes, or 3.2% of the year's forecast global mined gold production. This is forecasted to rise to 3.1% in 2019 before falling back to 2.1% in 2020. Producers typically commit to capacity increases based on the prevailing economic environment and increased project confidence. New capacity increases, both new and expansion-based, are typically announced progressively in the medium term.

AME expects mined supply to grow until 2020 hitting peak gold as production from projects in the development pipeline enter production and ramp up. Peak gold is a country-by-country story. Australia's production is expected to decline from 2020 to contribute 5.0% of supply by 2025 as large projects in the Western Australian gold fields approach the end of their lives. Sudan, conversely, is expected to ramp up production in the short term, with 140 tonnes of gold production forecast for 2018. This production surge, driven almost entirely by small-scale or artisanal mining, is expected to see Sudan become the largest gold producer in Africa in the medium term. Russian production is expected to decline slightly in the medium term, with closures largely offset by ramp ups at several of PJSC Polyus's ("Polyus Gold") projects, including the Natalka project, which produces 450 to 600 koz of gold per annum. In Indonesia, PTFI expects to increase production by over 1 million oz at the Grasberg mine in 2018 before falling to 650 koz in the following year.

During the short and medium term, the top five producers are expected to contribute a stable 15.0% of mined gold supply. Newmont Mining Corporation is expected to maintain its position as the world's largest gold producer for the entirety of the forecast period from 2018 to 2022, followed by Barrick Gold Corporation ("Barrick Gold"). Targeting a 20.0% improvement in production over the next three years, Goldcorp Inc. ("Goldcorp") is expected to surpass Kinross in 2018 and rise to the position of fourth-largest producer by 2020. Likewise, Polyus Gold's plan to ramp up to full capacity at its Natalka project by the end of 2018 and would see the company rank fifth by 2019 and hold this position for the remainder of the medium term.

Since 2013, improvements in technology, efficiency and production, ever-increasing economies of scale and the breaking-down of trade and investment barriers have impacted production efficiencies and raw material costs. In the short to medium term, producers will embrace autonomous mining technology. During the first quarter of 2018, Hecla reported that 5.0% of output from its Greens Creek operation in the United States was from automated headings. In April, Randgold Resources identified automated materials handling as a key supporter of the planned ramp-up of its Kibali gold mine production. Indirect advances are also being made. For example, Barrick Gold recently commenced the roll-out of a data analytics network and Goldcorp is ramping up its use of telemetry. These advances will lay the groundwork for greater adoption of autonomous operations.

The following diagram sets forth estimated mined gold supply from 2013 to 2025, in koz.



Source: AME

In the short term, supply growth will primarily come from mines within Russia, Canada and Australia. Canada is expected to add 1.1 million oz a year to supply by 2019, including Agnico's 440 koz per year Meliadine gold mine and Eldorado's 140 koz per year Sigma Lamaque gold mine. Australia will likely see 0.9 million oz of additional capacity come online, including Gold Fields Limited and Gold Road Resources's 320 koz a year Gruyere gold mine and Dacian Gold Ltd's 220 koz a year Mount Morgans gold mine. Russia and Burkina Faso will each bring on 500 koz a year of capacity, including the Nordgold's 240 koz per year Gross gold mine in Russia and SEMAFO and the Burkinabe Government's Boungou gold mine in Burkina Faso.

North and Central America's share of mined gold supply is expected to grow between 2020 and 2025, with Centerra Gold's Hardrock project initially expected to commission in the medium term and Goldcorp Inc.'s Coffee project expected to commence in 2021. Production from China is expected to plateau as new supply additions from medium-scale mines fail to offset reductions in output from small-scale operations in the face of stricter environmental requirements.

Over the long term, China and Russia are expected to retain their current positions as the world's largest producers of mined gold. Australia, consistently in the top five mined gold suppliers, is likely to fall from its position in the forecast period, reflective of a dry project pipeline and the depletion of existing Resources. The long-term source of scrap will continue to shift to China and Southeast Asia, as rates of recycling of industrial gold picks at higher rates in these regions. Government policy shifts can encourage development of domestic gold supply. The Chinese Ministry of Industry and Information Technology has inked plans to lift annual gold output to 16 million oz a year by 2020 and is backed by a government division tasked with gold exploration. Similarly, Russia plans to lift production to a record 13 million oz a year by 2030 through exploration of prospects in Eastern Siberia, Magadan and Yakutia regions.

Tightening scrutiny around development of projects, particularly in remote regions of developed countries such as Canada, could exacerbate declining output. Development of projects in the United States are subject to increased opposition with large-scale mining in Alaska's Bristol Bay banned due to fauna concerns halting the Pebble project. Seabridge Gold's transboundary KSM project, also in Alaska, has faced significant community opposition. Similarly, development of Goldcorp's Coffee project in Canada's Yukon has been delayed due to back-and-forth with environmental assessments.

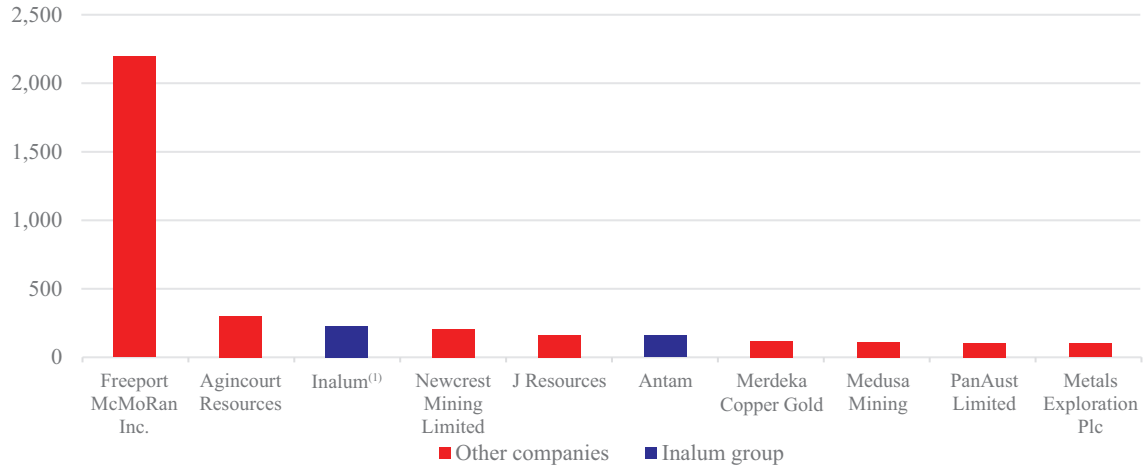
Operational benchmarking

As of June 30, 2018, Inalum holds 9.36% of PTFI's Grasberg mine in West Papua, which is currently the largest gold mine in the world in terms of production volume and total gold reserves. Based on this, Inalum is

the third largest gold producer in Southeast Asia in terms of production volume, on an equity basis, and would become the largest producer upon increasing its beneficial ownership in PTFI to 51.2%.

Antam owns the Pongkor and Cibaliung gold mines on the island of Java, as well as a 25.0% stake in the Gosowong gold mine on the island of Halmahera. As of June 30, 2018, Antam is the sixth largest producer of gold in Southeast Asia in terms of production volume, on an equity basis. As of June 30, 2018, Antam is the eighth largest holder of gold reserves in Southeast Asia, on an equity basis.

The following diagram sets forth gold production, on an equity basis, of the following companies in Southeast Asia in 2018, in koz.

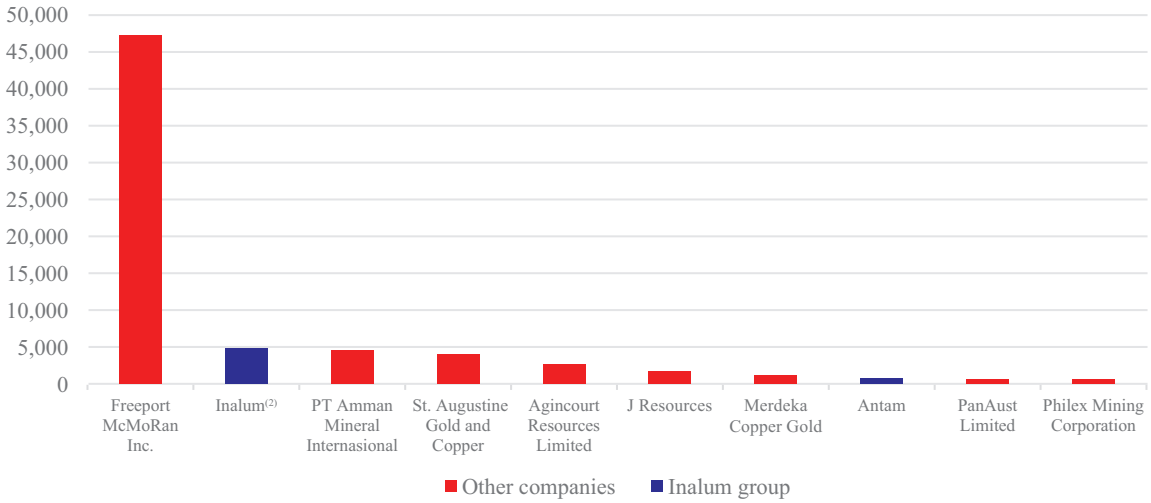


Source: AME

Note:

(1) Includes only equity held in PTFI; excludes equity held in Antam.

The following diagram sets forth gold reserves, on an equity basis, of the following companies in Southeast Asia in 2017, in koz.



Source: Company reports

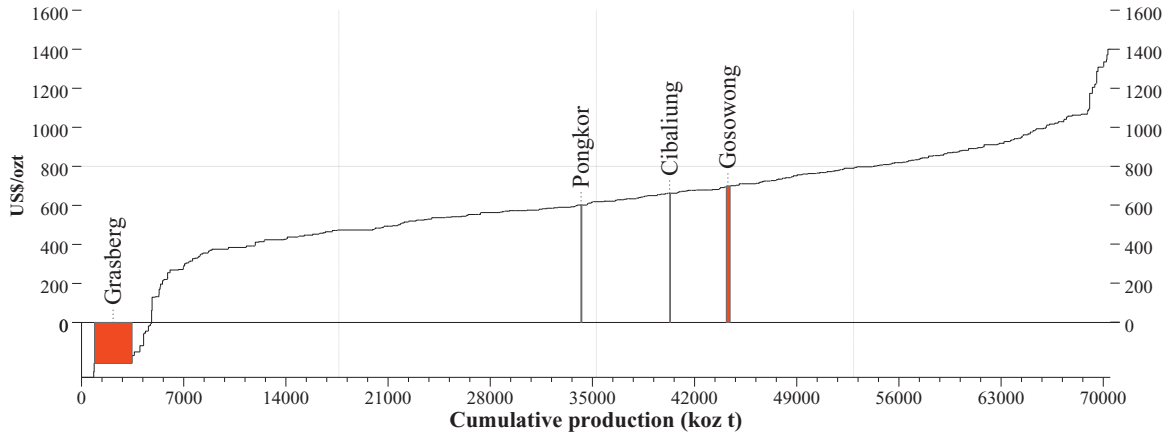
Notes:

(1) The graph contains only JORC equivalent resources. On an equity basis means that the total reserves of all owned operations have been pro-rated to account for the shareholding of the named company in each operation.

(2) Includes only equity held in PTFI; excludes equity held in Antam.

As of June 30, 2018, PTFI's Grasberg mine is one of the lowest cost gold mines in the world, and sits in the first quartile of the first quartile of the gold cash cost curve, due to its low mining costs and high credits from its copper and silver production. It is estimated that its 2018 cash cost are approximately US$(-300)/oz. Antam's operations lie approximately the center of the cost curve, with its Pongkor mine in the second quartile and the Cibaliung mine and Gosowong mine just inside the third quartile of the curve. As these are smaller operations, they do not receive the scale advantage of the larger operations, and as a result have higher mining and processing costs. They also do not receive large by-product credits to offset costs. It is estimated that the cash cost of these operations are between US$600/oz and US$700/oz for 2018.

The following diagram sets forth the position of the Grasberg, Pongkor, Cibaliung and Gosowong gold mines on the estimated global cash cost curve for gold production in 2018.



Source: AME

Note: Estimated costs take into account the credits received by the operation from the other metals recovered during processing which is treated as a negative cost.

Copper Industry

Copper is a reddish-brown colored metal and amongst the most widely used chemical elements in the world. In 2017, copper was considered to be the second most consumed base metal after aluminum. The copper mineralogy is varied. Copper ore deposits vary in size and grade and commercial extraction typically targets sulfide or oxide ore bodies. Copper ore bodies are widely spread around the world however global production is dominated by a relatively small number of countries including Chile and Peru. The global copper market is a deep and transparent commodity market with many market participants. Copper is traded on the LME, Shanghai Futures Exchange ("SHFE") and the CME Group COMEX exchange.

Copper sulfide ores are typically extracted at grades of 0.5% to 7.0%. These ores are beneficiated onsite by crushing and grinding and converting into copper concentrate. Copper concentrates usually have grades of approximately 25.0% to 35.0%. Concentrate is sold to smelters around the world which smelt the copper concentrate. This smelted product is then refined into pure, saleable copper. AME estimates that sulfide ores account for approximately 80.0% of mined copper production.

Copper's chemical properties make it a ductile, anti-bacterial, corrosion resistant and malleable element which is an excellent conductor of heat and electricity. Copper can also be alloyed with other metals such as zinc to create brass, aluminum or tin to create bronze or nickel for specialized alloys including coins and marine applications. Over the course of the economic cycle, construction is generally the largest end use sector for copper. AME estimates that the construction sector accounts for approximately 40.0% of copper end use, closely followed by the manufacture of consumer durable and electric goods (35.0% to 40.0%). The transportation sector is the third largest sector at approximately 10.0%. Copper is one of the most recycled of all metals. Recycled copper or "secondary" copper is indiscernible from copper produced from ores or "primary" copper.

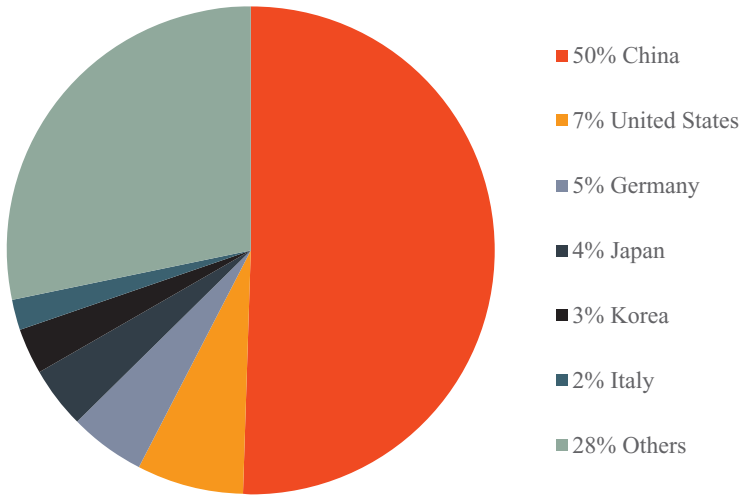
Copper concentrate is the main saleable sulfide product of copper mines. Miners are paid for the metallic copper content of their concentrates. In addition, miners may also receive revenue for the metallic by-product elements in their concentrates such as gold, silver and molybdenum. A deduction is usually made for the presence of deleterious elements in the concentrate such as arsenic and fluorine. The presence of metallic by-products or deleterious elements in a concentrate can have a very substantial impact on the profitability of a mine.

Copper oxide ores can typically be economically extracted at grades lower than sulfide ores. These ores are typically beneficiated onsite through a process called Solvent Extraction Electro-Winning ("SXEW"). With the SXEW process, copper ore is processed to refined copper, a saleable product. SXEW processes do not incur any smelter or refiner treatment charges or refining costs. SXEW is a chemical process whereby the ore is crushed and the copper is leached from the ore at the mine site using a leachant such as sulfuric acid.

Refined copper demand outlook

China is the largest consumer of refined copper globally and is estimated to account for approximately 49.9% of global demand for 2018. The next largest consumers are the United States (7.3%), followed by Germany (5.0%), Japan (4.1%) and Korea (3.1%). AME expects global refined copper apparent demand to grow by 2.1% in 2018 to 24 million tonnes, up from weak growth of just 0.6% in 2017. The higher growth is largely due to Chinese demand, forecasted to increase by approximately 2.5% after lifting by only 0.8% in 2017. In 2019, global demand growth is forecasted to increase 2.5% on an outlook of 2.3% growth in China. AME forecasts refined copper demand to grow at a CAGR of 2.0% in the period 2018 to 2025. This is more subdued than the 3.2% CAGR from 2013 to 2017.

The following diagram sets forth refined copper demand for the following countries in 2018.



Source: AME

Over the past five years, the growth in copper demand has been driven by China, and the emerging economies of Southeast Asia, as they develop infrastructure and grow their manufacturing sectors, and to a lesser extent India. However, AME expects India to be a strong source of future growth as development continues to accelerate in the country driven by the push to electrify the country and develop an advanced manufacturing sector. Advanced economies have seen their copper demand either relatively flat or decline over the period. In Russia, demand has declined significantly.

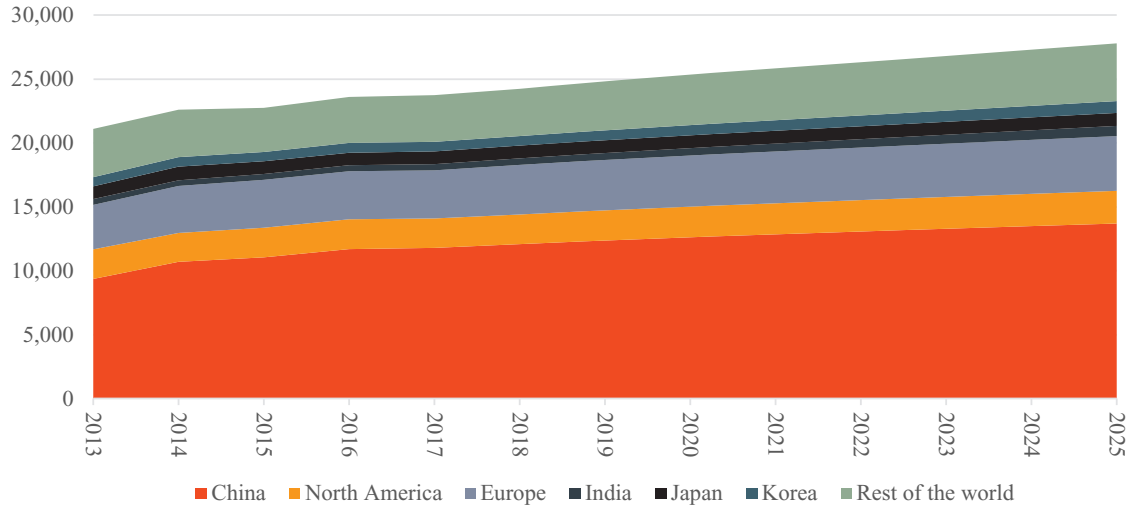
After five years of the copper price falling from its record price of just over US$10,000/tonne in 2011, 2016 was the low point in the current price cycle with an average just under US$4,900/tonne. In 2017, the average price surged 27.0% and there was a refined copper supply deficit that was influenced by mine and smelter supply disruptions, to average approximately US$6,200/tonne.

China accounts for approximately 49.9% of global refined copper demand and was responsible for 91.0% of the over 3 million tonne increase in global demand from 2012 to 2017. China is copper's key demand driver. In terms of first use of copper, production of continuous cast wire rod is the key demand driver. Wire rod accounts for approximately 75.0% of global copper cathode output and is used to make copper wire. In terms of end uses, China's biggest demand sector is power (i.e. electricity generation and distribution) at 51.0% of total use, followed by air conditioning (15.0%) and transportation (9.0%). After China, the next largest copper consuming country is the United States. United States demand is forecasted to rise by 0.4% in 2018 to just under 2 million tonnes and by 2.1% in 2019. Europe's copper demand is forecasted to increase by 3.1% in 2018 to just under 4 million tonnes and by almost 1.9% in 2019. Forecast 2018 to 2025 CAGRs are over 1.8% for China, 1.4% for the United States and almost 1.5% for Europe. The countries with the highest forecast demand CAGRs to 2025 are Vietnam (7.4% CAGR to 502 kilo tonnes in 2025), India (7.3% to 795 kilo tonnes) and Poland (4.1% to 375 kilo tonnes).

Copper's end uses are in construction (including building wire, plumbing, heating and air conditioning), electrical and electronic products (including power utilities), transportation, industrial machinery and equipment, and consumer and general products. In China, electrical and electronic products make up 58.0% of demand due to the power sector. Construction accounts for 24.0% and transportation makes up 9.0% of Chinese demand. In the US, construction accounts for 43.0% of demand, followed by transportation (19.0%) and electrical and electronic products (19.0%). Greatest demand growth is expected in transportation due to increasing sales of electric vehicles and in power due to growth in renewable energy generation.

Copper rod capacity growth has been strongest in China in recent years. Capacity continues to be added in China, and also in India, Vietnam and Russia. China's Jiandong Alloy Technology is to commission a 300 ktpa copper wire rod plant in early 2019 and Jiangsu Jinhui will start production on a 420 ktpa system in 2018. A new 315 ktpa rod mill ordered by Jiangsu ZGR New Material Technology is expected to be installed in Jiangsu Province and start production in mid-2019. Ningbo Jintian Copper has also ordered two 315 ktpa rod mills. The first is to be installed in Zhejiang Province and is expected to commence production in mid-2019. The second mill should start up in early 2020 in Guangdong Province. In India, Hindalco has commissioned a new continuous cast copper rod plant at the Dahej complex, lifting its rod production capacity from 240 ktpa to 484 ktpa. A joint venture between Trafigura and India's Polycab will start up a 240 ktpa copper rod plant in 2018. LS Cable & System is expanding its 27 ktpa rod plant in Vietnam to 100 ktpa, with additional output from 2019.

The following diagram sets forth estimated refined copper demand for the following countries from 2013 to 2025, in kilo tonnes.



Source: AME

AME forecasts China's refined copper demand growth to ease in the medium term. In 2020, approximately 2.1% growth is forecast, and fall below 2.0% between 2021 and in 2025 to 1.6%. Copper demand of 14 million tonnes in 2025 will still be approximately 49.3% of global demand. China's copper demand per capita growth will ease as the economy's focus shifts from manufacturing to consumption. China may continue to develop power and transport infrastructure and export greater quantities of manufactured goods (e.g. motor vehicles and electrical appliances). Strong growth in production of electric vehicles ("EVs") over internal combustion engine ("ICE") vehicles and construction of solar and wind power generating capacity will add to copper demand. Downside risks to the China demand forecast include the potential for restricted access to foreign markets for Chinese manufactured goods, and slower economic growth in China and with that reduced domestic demand for house construction, new vehicles and consumer durables such as refrigerators, air conditioners and televisions.

After China, the next largest copper consuming country is the United States, accounting for approximately 7.3% of global demand. United States demand is forecasted to rise by 0.4% in 2018 to just under 2 million tonnes and by 1.9% in 2019. This follows an over 1.6% decline in 2017. Refined copper demand in the United States has been stable at close to approximately 2 million tonnes per annum since 2010. Wire rod mills dominate United States demand taking 73.0% of the refined copper used each year. The brass mills account for 420 ktpa or 23.6% of refined copper usage, and also consume close to 600 ktpa of scrap copper that is not refined prior to re-use. The brass mills produce strip, sheet, plate, foil, rod, bar, tube and pipe products. In terms of end use, construction accounts for 43.0% of United States demand, followed by transport (19.0%) and electrical and electronic products (18.8%). Copper demand growth in the United States is forecasted to be modest in the medium term. From 2020 to 2025, approximately 1.3% growth is forecasted for each year and the United States copper demand is forecasted to reach almost two million tonnes in 2025. In 2025, the United States share of total demand will remain approximately 6.9%.

The change to growth reflects greater copper use in transport due to increasing production and sales of electric vehicles, which use more copper per vehicle than traditional ICE vehicles, and in the power sector due to growth in more copper intensive renewable energy generation, storage and distribution. There is upside to the United States copper demand forecast should there be particularly strong growth in production of EVs over ICE vehicles and greater construction of solar and wind power generating capacity. A sustained period of economic growth in the United States would boost copper demand as consumers increased spending on housing, motor vehicles and durable goods.

Downside risks to United States copper demand include trade restrictions, a preference by manufacturers to invest in other countries, and slower than expected uptake of electric vehicles and renewable energy generating capacity. The United States is a net importer of refined copper with approximately one-third of apparent refined copper demand made up of cathode net imports. If the United States move towards trade protectionism through import tariffs widens and includes copper cathode, United States copper demand would be expected to reduce. Copper semi-fabricators would face higher input costs than international competitors.

Refined copper supply outlook

Following 1.1% growth in 2017, global refined copper supply is forecasted to increase by 3.1% to 24 million tonnes in 2018 and further increase by almost 2.6% to 25 million tonnes in 2019. In China, Yunnan Copper's 400 kilo tonnes per year Dongnan Copper and Western Mining's 100 ktpa Qinghai Copper commenced trial production in the June Quarter of 2018, Hechi Nanfang Non-ferrous Metal Smelt Co Ltd's 150 kilo tonnes per year Guangxi Nanguo phase one is scheduled to commence operation by the end of 2018. In the DRC, Katanga Mining has restarted the 300 kilo tonnes per year Kamoto complex. In the period 2020 to 2025, AME expects refined supply to grow at a CAGR of approximately 2.0% to reach 28 million tonnes in 2025.

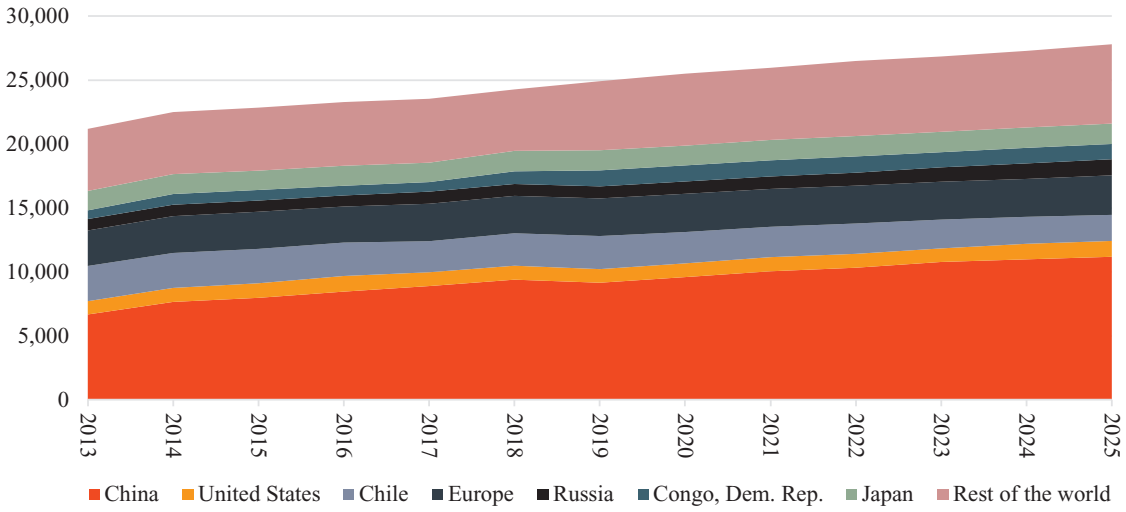
A total of 4 million tonnes of additional refined copper capacity is expected to be brought on line between 2018 and 2025. The largest three capacity contributions are Hechi Nanfang's 550 kilo tonnes per year Guangxi Nanguo project (150 kilo tonnes per year phase one and 400 kilo tonnes per year phase two), Yunnan Copper's 400 kilo tonnes per year new Dongnan project and Katanga Mining's reopened 300 ktpa SX/EW upgrade at the Kamoto complex. AME forecasts 700 kilo tonnes of refined capacity to be removed from the market through SX/

EW mine closures in the next five years. The largest anticipated closure is Codelco's 160 kilo tonnes per year SX/EW operation at Chuquicamata in Chile.

China is the dominant producer of refined copper, producing 36.7% to 39.0% of global refined copper in the short to medium term. Chile is the second largest, producing 10.4% of the total and 37.0% to 41.0% of the world's SX/EW copper. Japan is in third position producing 6.4% of the total. The DRC's share will increase from approximately 3.1% in 2017 to an average of approximately 4.7% between 2020 and 2025, taking its ranking from number seven to number four. This is largely due to a return to full production at Katanga Mining's 300 kilo tonnes per year Kamoto complex and China Railway's planned 125 kilo tonnes per year Sicomines expansion. In the short to medium term, approximately 40.0% of the world's refined copper supply will come from the top ten producers, including mining giants like Codelco, Jiangxi Copper, Aurubis, Tongling Nonferrous and Glencore. Yunnan Copper and Vedanta Resources are forecasted to join the top ten by 2022, due to their respective new or expansion projects being brought on line in the next five years.

Approximately 66.0% of global refined copper will be produced by smelting and refining sulfide concentrates. The smelting and/or refining of copper scrap will comprise 17.0% of supply, while electrowon or leach-SX/EW mined copper will make up the remaining 17.0%. One of the main areas for technological advance in the smelting industry is the development of continuous operations between processes. Benefits include lower energy consumption and operating costs and no sulfur emissions as occur in cooling intermediate products.

The following diagram sets forth estimated refined copper supply for the following countries from 2013 to 2025, in kilo tonnes.



Source: AME

The largest refined copper producing countries have a wide geographical distribution and are, in general, the world's major copper-consuming countries. In 2018 and 2019, China is expected to supply approximately 37.7% of the total refined copper, with Japan producing over 6.4% of the total, and the United States with over 4%. Chile, producing approximately 40.0% of the world's SX/EW copper, continues to play a significant role in the global copper supply profile, and is forecasted to produce over 10.4% of the world's refined metal in 2018 and 2019.

From 2020 to 2025, China, Chile and Japan are forecasted to retain the top three refined copper producer rankings. The DRC's share of refined production is forecasted to increase from 3.2% in 2017 to 4.1% in 2018 and to an average of 4.7% between 2020 and 2025, taking its ranking from number seven to number four. This is largely due to a return to full production at Glencore's 300 kilo tonnes per year Katanga Mining and the planned 125 kilo tonnes per year expansion at the Sicomines (Cuvette Dima) SX/EW operation.

The ongoing development of large-scale copper smelters and refineries in China has the potential to offer significant supply upside for the global refined copper market. Chinese producers are forecasted to add 800 kilo tonnes per year of refined copper capacity from new smelters in 2018 and 2019, including Yunnan Copper's 400 kilo tonnes per year Dongnan Copper, Hechi Nanfang's 150 kilo tonnes per year Guangxi Nanguo Copper Zijin Mining's 150 kilo tonnes per year Heilongjiang Zijin Copper, and Western Mining's 100 kilo tonnes per year Qinghai Copper.

Chile's refined copper production share faces a notable downside risk as mines exhaust reserves suitable for leaching and SX/EW processing. Cathode production is expected to have ceased in the next 15 years at Codelco's 300 kilo tonnes per year Radomiro Tomic, 160 kilo tonnes per year Chuquicamata and 150 kilo tonnes per year Gaby, Freeport and Codelco's 227 kilo tonnes per year El Abra, BHP's 200 kilo tonnes per year Spence, Antofagasta and Barrick Gold's 145 kilo tonnes per year Zaldivar, and Glencore's 75 kilo tonnes per year Lomas Bayas mines.

Mined copper supply outlook

After disruptions at major copper mines in 2017, AME expects copper in concentrate supply to increase by over 3.1% to almost 17 million tonnes in 2018 and further increase by 4.7% to almost 18 million tonnes in 2019. Over the period 2020 to 2025, copper in concentration supply is forecasted to increase at a CAGR of 1.8% to 21 million tonnes in 2025.

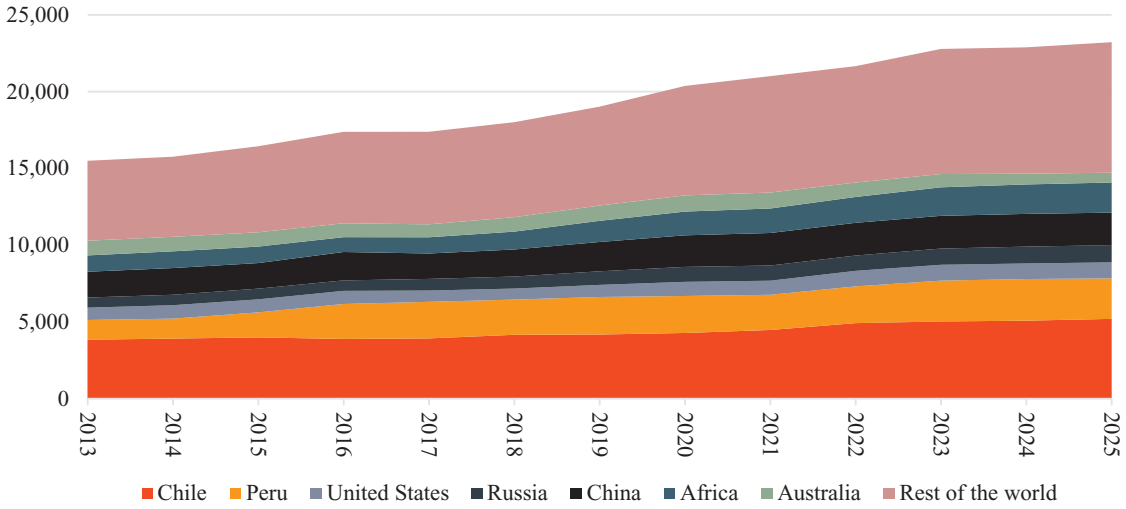
A total of 2.9 million tonnes of additional copper in concentrate capacity is expected to be brought on line between 2018 and 2022. The largest capacity contributions are First Quantum's 340 kilo tonnes per year Cobre Panama in Panama, Teck Resources' 275 kilo tonnes per year Quebrada Blanca Phase Two and BHP's 200 kilo tonnes per year Spence expansion in Chile. In the next five years, notable expected closures include Sandfire Resources' 80 ktpa DeGrussa in Australia, Guangdong Rising's 80 kilo tonnes per year Phu Kham in Laos, and Codelco's 50 kilo tonnes per year Salvador in Chile.

Chile, Peru and China will continue as the top three producer countries, making up an average of 47.3% of global supply in 2018 to 2022 at proportions of 23.7%, 12.8% and 10.7%, respectively. Other major producing countries include the United States (produces 5.1% of the total in 2025), Russia (5.0%), Zambia (4.9%) and Australia (4.7%). Zambia's production share will increase to 4.1% in 2018 and to an average of 4.9% in 2020 to 2025, largely due to Sentinel's ramp-up, plus additions from Kansanshi (+80 kilo tonnes), Nkana (+50 kilo tonnes), Chambishi (+45 kilo tonnes), and Konkola (+40 kilo tonnes).

AME forecasts that approximately 41.0% of the world's copper in concentrate supply will come from the top ten producers in short to medium term. The major producers include Chile's Codelco, which will produce 8.2% of the world's copper in concentrate in 2018, as well as multinational mining companies, such as Glencore (6.0%), Freeport (5.7%), BHP (5.3%) and Southern Copper (4.2%). Currently ranked fourth, BHP will be the second ranked producer in 2022, as its 57.5%-owned Escondida increases output from 685 kilo tonnes in 2017 to more than 900 kilo tonnes from 2018, and the 200 ktpa Spence Growth Option comes on line in 2021. First Quantum is forecasted to move from being the eighth ranked producer in 2018 to the sixth ranked in 2025, owing to the 340 ktpa Cobre Panama project and full-scale 310 ktpa production from the Sentinel mine.

One of the primary areas for changing technologies in copper mining industry is seafloor mining. Nautilus Minerals plans to start pioneer undersea copper mining at its Solwara 1 project in the Bismarck Sea off the coast of Papua New Guinea in 2019. Access to water in the Chilean and Peruvian Andes, the world's largest copper-producing region, and reliable electrical power (particularly in Africa), will remain important and costly issues with which producers must contend.

The following diagram sets forth estimated mined copper supply from 2013 to 2025, in kilo tonnes.



Source: AME

Geographically, the world's largest copper producing country, Chile, is forecasted to produce approximately 24.2% of the world's copper in concentrate in 2018 and 2019, followed by Peru (13.7%) and China (10.6%). Zambia's production share is expected to increase to 4.1% in 2018 and to 4.7% in 2019, largely due to Sentinel's ramp-up, plus additions from Nkana (+50 kilo tonnes), Chambishi (+45 kilo tonnes), and Konkola (+40 kilo tonnes). In 2019, Indonesia is expected to move from number ten to number fourteen ranking among producer countries due to lower output from Grasberg as it transitions from the high-grade final open-pit phase to block cave underground operations.

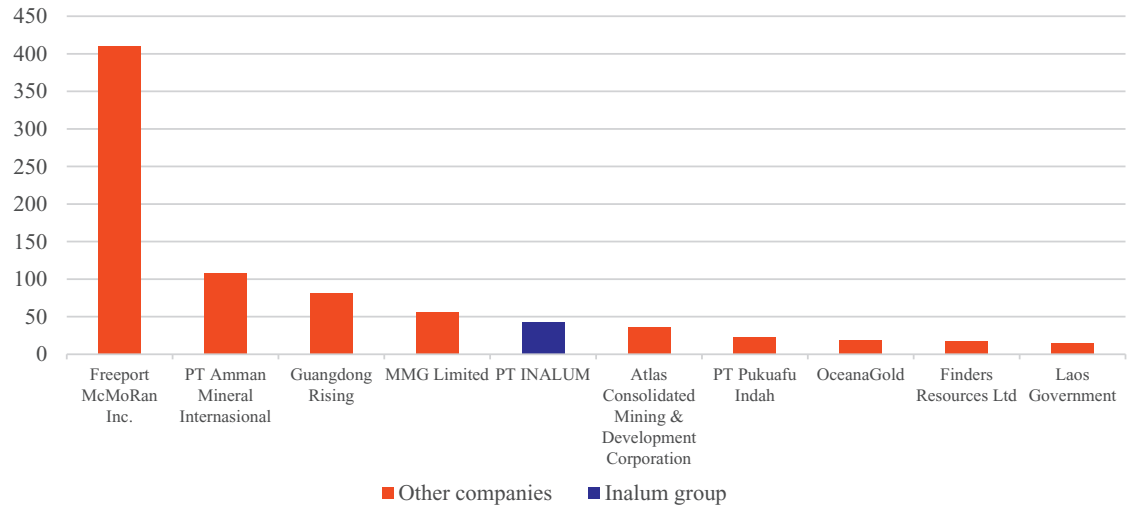
Between 2020 and 2025, Chile, Peru and China will continue as the top three producer countries, making up 46.8% of global supply in 2025. Other major producing countries include the United States (4.9%), Russia (5.2%), Zambia (4.9%), Australia (5.4%), Indonesia (3.6%), Kazakhstan (3.7%), and Canada (3.0%). Currently ranked fourth, Australia is forecasted to be seventh ranked in 2025 due to the expected closure at Sandfire Resources' 80 kilo tonnes per year DeGrussa and Glencore's 180 kilo tonnes per year Mount Isa Copper approaching the end of its mine life.

The development of large-scale copper mines in the Democratic Republic of the Congo has the potential to offer significant supply upside for global supply. The largest new project in the Democratic Republic of the Congo is expected to be Ivanhoe and Zijin's Kamoa-Kakula project. Options include a 6 million tonnes per year mine at Kakula producing 284 kilo tonnes per year of copper in concentrate in the first ten years, and a two-stage development, starting with a 6 million tonnes per annum Kakula copper mine, increasing to 12 million tonnes per year (and 542 kilo tonnes of copper by year nine) with ore from the Kansoko copper mine, and construction of a smelter.

Operational benchmarking

As of June 30, 2018, Inalum holds 9.36% of PTFI's Grasberg mine in West Papua, which is currently the second largest copper mine in the world. Based on this, Inalum is the fifth largest copper producer in Southeast Asia, on an equity basis, and would become the largest producer upon increasing its beneficial ownership to 51.2%, taking into account 100.0% of the production of PTFI. Inalum is the third largest holder of copper reserves in Southeast Asia, and is expected to become the largest upon increasing its beneficial ownership of PTFI to 51.2%, taking into account 100.0% of the production of PTFI.

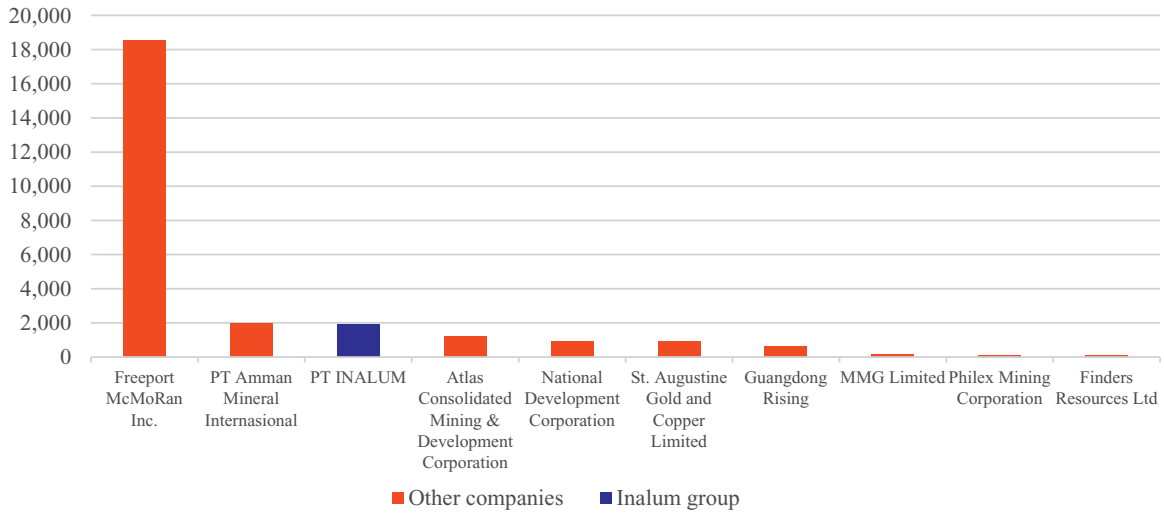
The following diagram sets forth copper production, on an equity basis, of the following companies in Southeast Asia in 2018, in kilo tonnes.



Source: AME

Note: On an equity basis means that the total production of all owned operations have been pro-rated to account for the shareholding of the named company in each operation.

The following diagram sets forth copper reserves, on an equity basis, of the following companies in Southeast Asia in 2017, in kilo tonnes.



Source: Company reports, AME

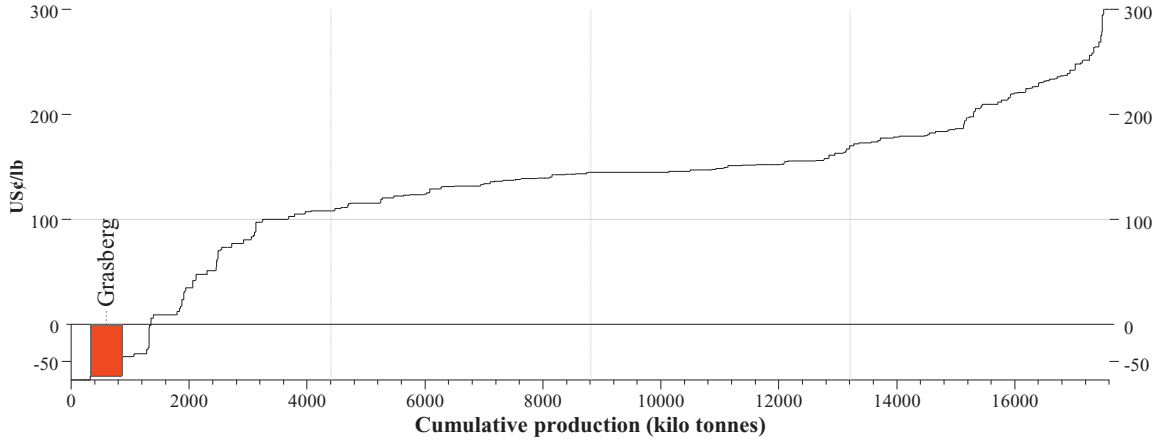
Notes:

(1) Graph contains only JORC equivalent resources.

(2) On an equity basis means that the total reserves of all owned operations have been pro-rated to account for the shareholding of the named company in each operation.

The Grasberg mine's low costs and high gold and silver credits, place it in the first quartile of the 2018 copper mine cash cost curve, as one of the lowest cost copper mines in the world with cash costs of US¢(-70)/lb of copper after credits.

The following diagram sets forth the position of the Grasberg mine on the estimated global cash cost curve for copper production in 2018.



Source: AME

Note: Estimated costs take into account the credits received by the operation from the other metals recovered during processing which is treated as a negative cost.

Nickel Industry

In its pure state, nickel is white to dull-silver in color with a slight metallic luster. It is ductile and malleable, and readily conducts heat and electricity. The similarities between the chemical and physical properties of nickel and iron are no surprise given their close proximity on the periodic table. However, iron is not nearly as resistant to corrosion as nickel, which is not corroded by water, alkalis, ether or chlorine, making it extremely valuable to modern industry.

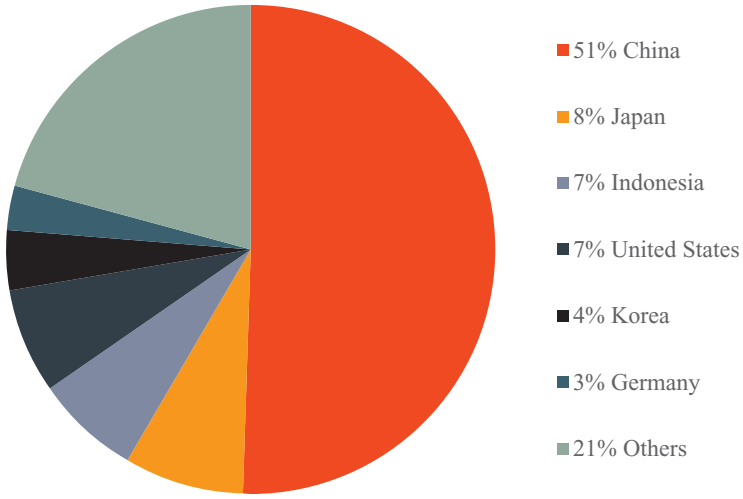
Its ductility and malleability, resistance to corrosion and relatively high strength at elevated temperatures were properties that made nickel useful in the construction of radio valves and cathode-ray tubes. More recently, nickel has been used extensively in conjunction with manganese and silica for vehicle spark plug electrodes. Currently, nickel is used predominantly as a component in the production of stainless steel in order to enhance its properties, such as making it non-magnetic and increasing the strength of the alloy. Nickel is currently believed to be the most efficient element in making stainless steels non-magnetic.

Although the stainless steel industry consumes substantial quantities of nickel in the form of oxide and ferronickel alloys, most of the nickel supplied for other industrial uses is in a pure metallic form. The most common form of refined nickel is electrolytic cathode. To meet the contract specification for London Metal Exchange ("LME") branding, refined nickel must be a minimum of 99.8% purity and be in the form of full plate cathode, cut cathode, pellets or briquettes. Other metallic forms of refined nickel include shot, ingot and rondelle.

Nickel demand outlook

On a country level, China is estimated to be the largest consuming country of finished nickel, accounting for just over half of global demand in 2018. Other major nickel consuming countries are Japan (7.8%), Indonesia (7.4%), the United States (6.5%), Korea (3.6%) and Germany (2.7%). AME forecasts global finished nickel apparent demand to grow by almost 8.2% in 2018 to 2,358 kilo tonnes. Chinese demand is forecasted to increase by almost 1.8% to 1,191 kilo tonnes after increasing to over 6.3% in 2017. In 2019, global demand growth is forecasted to increase by over 2.3% to 1,223 kilo tonnes in China. AME forecasts finished nickel demand to grow at a CAGR of approximately 2.3% to reach 2,767 kilo tonnes in 2025. This is more subdued than the 5.2% CAGR from 2013 to 2017.

The following diagram sets forth estimated finished nickel demand for the following countries in 2018.



Source: AME

Since 2013, global finished nickel demand is estimated to have increased from approximately 1,785 kilo tonnes to 2,358 kilo tonnes in 2018, representing a CAGR of almost 5.9%. Strong growth in annual demand was largely driven by significant increases in nickel consumption in China, where estimated demand almost tripled from approximately 445 kilo tonnes in 2009 to 1,191 kilo tonnes in 2018, but also contributed to by Indonesia, where demand went from none in 2016 to 174 kilo tonnes in 2018, as it established its stainless steel industry. Over this period, China increased its share of global finished nickel demand from an estimated 36.1% in 2009 to approximately 50.5% by 2018, making the country the single largest market for finished nickel.

Strong growth in finished nickel demand in China was largely driven by significant growth in the country's stainless steel sector over the period 2009 to 2018. Stainless steel production is estimated to be one of the most significant drivers for ferronickel demand as this finished nickel product is mostly used for this purpose. Whereas finished nickel demand increased by a CAGR of over 7.2%, Chinese stainless steel production grew by an estimated CAGR of 13.9% over this period. China's stainless steel sector now accounts for more than half of global stainless steel production. In 2017, 300-series stainless steel products accounted for approximately 52.0% of Chinese stainless steel production, according to the Stainless Steel Council of China Special Steel Enterprises Association. Whereas 200 and 400 series accounted for approximately 28.0% and 20.0%, respectively.

Unlike other base metals, the nickel price reached its record during the 2007 price rally at just over US$54,000/tonne. A strong supply response out of Southeast Asia, and in particular Indonesia, in response to the strong growth in NPI production saw the 2011 price peak top out at just over US$29,000/tonne. The growth in production of low cost nickel units via the production of NPI has seen the nickel price under perform other base metals.

China accounts for approximately 26.1% of mined metal demand and 50.5% of global finished nickel demand. Finished demand in China has grown by almost 300 kilo tonnes from 2013 to 2018, driven by stainless steel growth at a CAGR of almost 5.9% during this period, offsetting diminished demand from other countries. Stainless steel is nickel's key first use, accounting for approximately 70.0% of finished nickel demand. As smelter capacity becomes increasingly difficult to build in the developed world, due to environmental regulation and emissions penalties, most incremental mined metal demand is likely to come from emerging economies. In the period to 2025, Chinese mined nickel demand will remain relatively flat while Indonesian mined nickel demand will increase at a CAGR of over 2.6% from 2018 to 2025, to reach 209 ktpa.

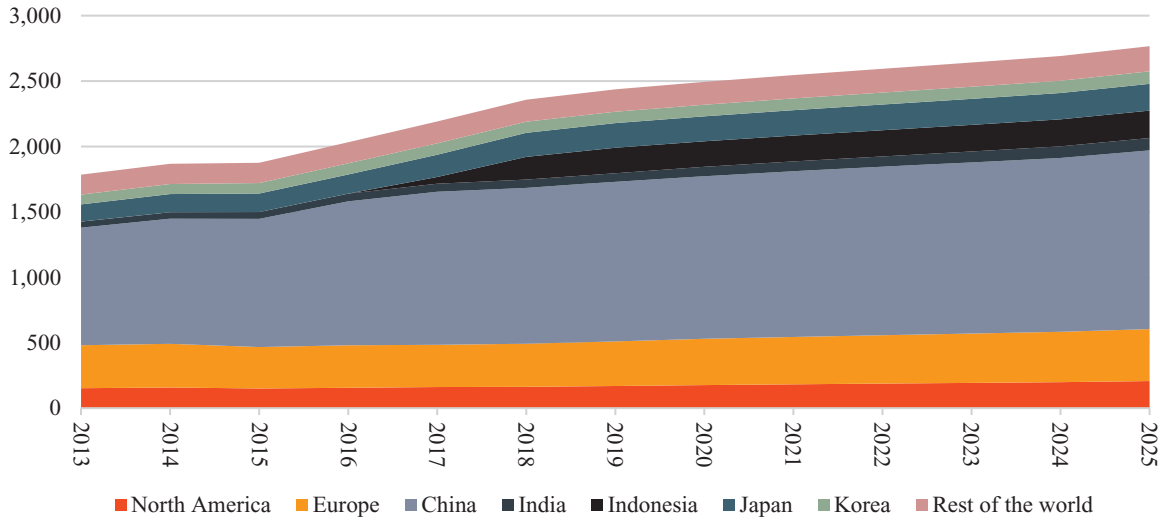
There has been no significant improvement in end-use technology to pose a viable substitution threat to finished nickel demand in all but an extremely high-priced environment. The market is fixated on the battery

end-use sector, and in the short to medium term this will still comprise a small, albeit growing, market segment. It is expected that demand for nickel in electric vehicles (EV) to account for 9.0% of total demand by 2025, up from 3.0% in 2018. China has implemented changes to its EV subsidies designed to encourage longer-range, pure-battery, high-performance production as opposed to plug-in hybrids with ranges under 150km. AME expects demand from batteries to rise by 0.6 kilo tonnes in the medium term.

Further integration of ferronickel plants into new downstream stainless steel production has begun in Indonesia, as has occurred previously in China, as stainless steel mills with captive ferronickel plants benefit from the energy contained in the hot ferronickel melt, which is otherwise lost in cooling before transport. The development of stainless steel mills may also provide avenues for the utilization of lower grade limonite, as a source of iron units, which would otherwise not be suitable feed for the initial rotary kiln plus submerged arc furnace ("RKEF") based ferronickel plant. Tsingshan's 1.5 million tonnes per year IMIP operation is the first of the large new integrated mines and smelters which have arisen as a result of the Indonesian ore export ban of January 2014. The three phase project containing 20 RKEF lines now accounts for more than 80.0% of China's Indonesian NPI capacity.

Nickel's end uses are in construction, metal goods, consumer products and medical devices, transportation, industrial products, tubular products and electronic goods. In developed countries, end use is dominated by the engineering sector whilst consumer durables dominate in developing economies. In China, metal goods account for over 30.0% of demand whilst construction accounts for 20.0% followed by industrial applications at 15.0%. In Japan, engineering applications account for approximately 28.0% followed by electronic applications at 16.0% and transport at 15.0%.

The following diagram sets forth estimated finished nickel demand for the following countries from 2013 to 2025, in kilo tonnes.



Source: AME

China's finished nickel demand growth is forecasted to grow at a CAGR of approximately 1.5% over the period 2020 to 2025. By 2025, nickel demand in China is expected to reach 1,366 kilo tonnes and still account for 49.4% of global demand. With government backing, the growing adoption of new energy vehicles ("NEV") in China is expected to see increased demand for nickel cathodes suitable for sulfate applications. AME expects nickel alloys usage in the power and chemical processing industries to grow in the medium term.

China's nickel demand could see upside from exponential development of its electric vehicle sector. Amidst trade tensions, China has pledged to scrap profit sharing and intellectual property rules for foreign car manufacturers signaling its confidence in its domestic vehicle industry. An extension of provincial subsidies for electrical vehicles could also see upside in demand as EVs become more affordable. Additionally, should China

look to curb pollution and reliance on oil imports, an end to production of traditional ice vehicles would see nickel demand lift substantially above AME's base case forecast.

Downside risks to China's EV demand story include the slated phasing out of EV subsidies by 2021 by the Ministry of Finance. This could see consumer demand dive leading to high inventories for producers and thus a weakening in associated nickel demand. Outside the transport sector, the potential for restricted access to foreign markets for Chinese manufactured goods and slower economic growth in China would see reduced domestic demand for house construction and consumer durables.

After China, the next largest nickel consuming country is Japan, accounting for 7.8% of global demand in 2018. Japanese demand is forecasted to rise by 8.1% in 2018 to 184 kilo tonnes and by a further 2.3% in 2019. Prior to 2017, finished nickel demand in Japan has fluctuated around the 150 kilo tonnes mark since mid-2000. Compared to the rest of the developed world, Japan has a high intensity of nickel use per capita. Nickel demand growth in Japan is forecasted to moderate in the medium term to a CAGR of approximately 0.9% to reach 209 kilo tonnes by 2025. Japan's share of global demand is expected to drop slightly, from 7.8% in 2018 to 7.4% by 2025. Despite the subdued growth, this is more optimistic than the 0.1% CAGR over the past decade from 2008 to 2017. This reflects increased nickel use in transport due to increasing sales of NEVs and an expansion of the manufacturing sector. Several Japanese firms have been investing in capacity to manufacture batteries for electric vehicle applications. Tanaka Chemical Corp which is investing over US$4.6 million.

Japan's nickel demand could see further upside from development of its electric vehicle sector with the country already rolling out over 20,000 charging stations. Japan is part of the Electric Vehicle Initiative (EVI) of governments which seek to accelerate the deployment of NEVs. Nissan and Sumitomo will produce lithium-ion batteries at a new factory in Fukushima from 2018 whilst major Japanese car manufacturer, Suzuki, unveiled new EV models in early 2018 and plans to launch EV sales in India in 2020.

Downside risks to Japanese nickel demand include domestic manufacturers increasingly moving their operations abroad to countries such as China. Nissan has announced plans to build NEVs in China under a JV with Dongfeng Motor, especially with China's relaxation of intellectual property and foreign ownership rules. Another key risk is security of nickel imports as Japanese stainless steel makers rely primarily on ferronickel producers which in turn relies on imports of nickel ore; primarily sourced from Indonesia.

Nickel supply

AME expects approximately 690 kilo tonnes of new or expansion finished nickel supply to come online between 2018 and 2025 with 195 tonnes of capacity to be added in 2018 of which over 90.0% will be based in Indonesia. Jinchuan's Obi project is expected to add 33 kilo tonnes per year of capacity, with an additional 20 kilo tonnes per year of mined nickel capacity expected by 2019 from Axiom's Isabel operation in the Solomon Islands. A total of 415 kilo tonnes of finished nickel capacity is expected to be bought online in the short to medium term. The largest contribution is Delong Holding's Konawe Virtue Dragon RKEF expansion which is expected to ramp up to 130 kilo tonnes per year of capacity by 2020 with several other Chinese-funded NPI plans slated to commission in the short to medium term.

A spate of mine restarts have been announced over the Quarter. In Australia, Dundas Mining announced a restart of its Avebury mine in January 2019, Poseidon Nickel released a feasibility study for its 8 kilo tonnes per year Silver Swan mine, Panoramic Resources inked an early 2019 restart of its 11 ktpa Savannah. BHP Nickel West has also outlined plans to provide mill feed from its nickel Resources in Western Australia until 2040 on the back of several brownfields developments.

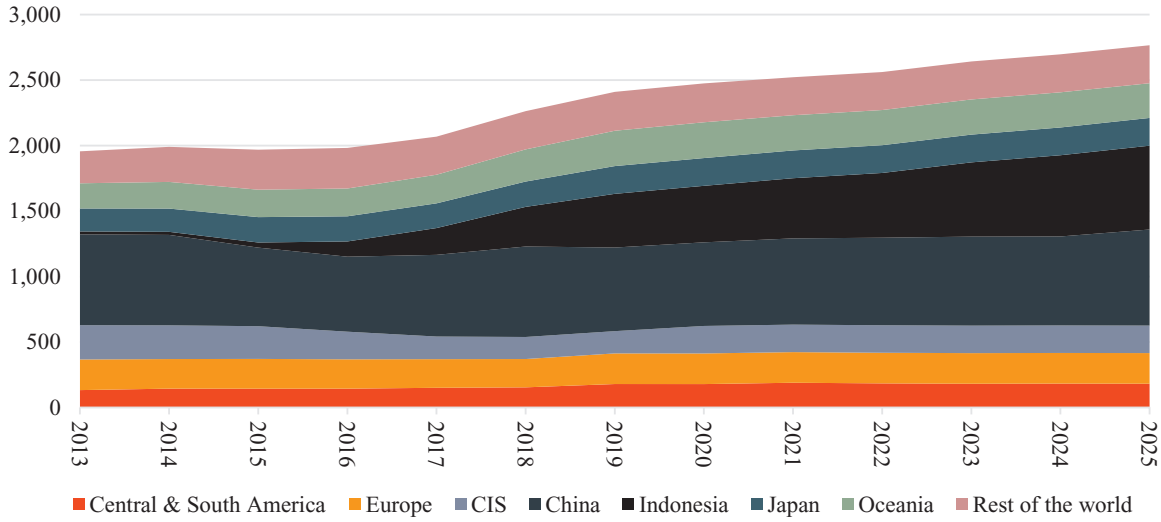
China is the dominant producer of finished nickel, predominately producing nickel pig iron for use in stainless steel, producing 25.0% to 30.0% of global finished nickel in the short to medium term. China relies on exports of ore from Indonesia and the Philippines to drive its NPI production. While overall direct ship ore supply will be more constrained in the short term, new supply out of Indonesia and New Caledonia is likely to increase the grade of direct ship ore delivered to China. Indonesia is the largest producer of mined nickel contributing some approximately 22.3% of supply. AME expects Indonesian and New Caledonian ore permitted

for export to grade approximately 1.5% to 1.7% nickel, whilst Philippine exports are expected to grade 1.2%. Indonesia also growing its contribution to global finished nickel from approximately 9.9% to approximately 23.1% by 2025, to become second behind China.

Despite Vale's dial back of its nickel output over the short to medium term, Vale is expected to retain its position as the largest producer of mined and finished nickel. Vale is proceeding with a US$1.7 billion underground development at its Voisey's Bay nickel mine in Canada after completing cobalt streaming agreements with Wheaton Precious Metals and Cobalt 27 Capital. The world's second largest nickel producer, Norilsk is expected to ramp-up output to 245 kilo tonnes of finished nickel by 2022 with a commitment of US$2.0 billion to US$4.5 billion per year in capital investments to 2020.

AME estimates that approximately 63.0% of contained nickel feed is produced from laterite ores. Production from sulfides historically dominated nickel output until 2009 when laterite output outstripped that of sulfides. As the nickel industry shifts toward a greater proportion of nickel originating from laterite deposits, blast furnace and high pressure acid leach ("HPAL") operations will dominate limonite production growth and RKEF installations for saprolite processing. As a result of the growth in HPAL, intermediate mixed precipitate products will become commonplace and downstream facilities will require flexibility to treat these intermediate products.

The following diagram sets forth estimated finished nickel supply for the following countries from 2013 to 2025, in kilo tonnes.



Source: AME

Indonesia is forecasted to retain the top mined nickel supplier spot with 480 kilo tonnes in 2018 before lifting to 550 kilo tonnes in 2019 as mined output rises to feed new smelter capacity and fill new export permits. In 2018, China is expected to retain its status as the largest producer of finished nickel with 690 kilo tonnes, before decreasing to 638 kilo tonnes in 2019, comprising approximately 26.4% of global supply. Indonesia is expected to lift finished nickel output by almost 48.0% year-on-year in 2018 to 303 kilo tonnes as a number of new projects commission, rising to 410 kilo tonnes in 2019.

In the period to 2025, AME forecasts Indonesia's mined nickel supply to remain flat at approximately 560 kilo tonnes. The Philippines is expected to produce 500 kilo tonnes of mined nickel by 2022. The Philippines mined production share is forecasted to increase from 15.2% in 2017 to 19.9% by 2025, as the open-pit mining ban eases; although this is still a key risk to supply. On the finished front, China's output is expected to grow at a CAGR of almost 1.9% to reach 734 kilo tonnes by 2025 to contribute approximately 26.5% to supply. Finished supply from Indonesia is expected to lift by a CAGR of approximately 7.1% to 640 kilo tonnes in 2025.

The relaxation of the Indonesian raw ore export ban could see upside to Chinese nickel pig iron output. Additionally, further ore could become available to Chinese NPI producers if direct ship ore output from the

Philippines lifts above AME's base case forecast should the ban on open-pit mining be lifted. Whilst there has been significant production growth in Indonesia's NPI industry, there are many other Chinese-backed developments in the pipeline stemming from China's financial commitments to Indonesian-based entities.

The transition to Indonesian finished nickel production away from China is not likely to be a simple one. A key risk to new nickel mine projects, particularly in Indonesia, is the timeline for delivery of adjacent smelter capacity. If smelter projects are delayed, Indonesia's willingness to extend export permits could be put to the test. Infrastructure constraints have been identified as a potential hurdle for new projects, which will need to construct power plants and other remote site infrastructure not required by ferronickel operations in China.

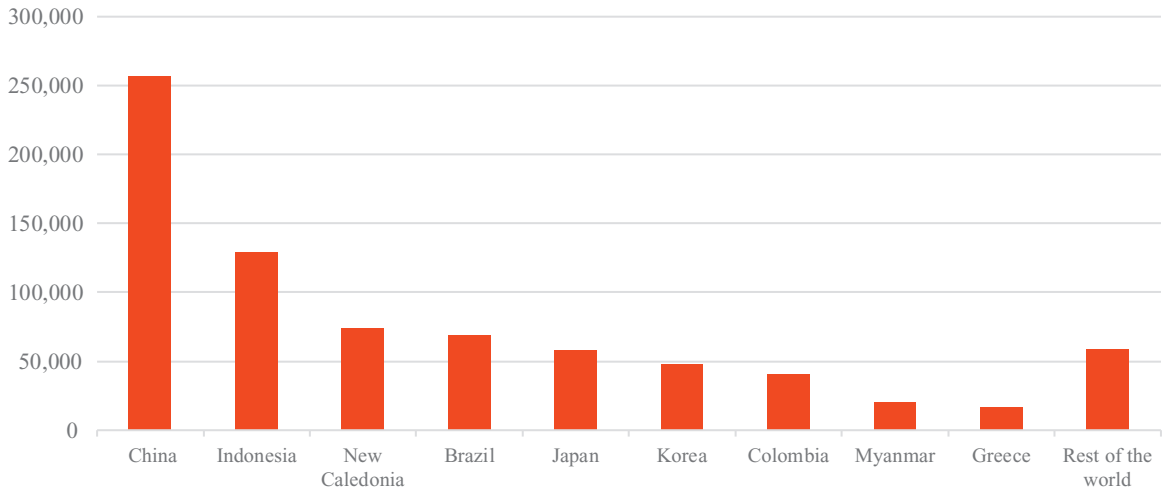
Ferronickel demand outlook

Ferronickel demand is currently dominated by stainless steel producers, where it is used as a feed-stock nickel source for the production of nickel containing stainless steels. The two primary grades of stainless steel are the low-nickel 200-series and the high nickel 300-series. The production of 300-series stainless steel is the is by far the dominant form of stainless steel production, accounting for over 50.0% of production in China, as well as globally, with 200-series only accounting for approximately 20.0% of production, and the balance of production being non-nickel containing stainless steels.

For ferronickel to be included as a feed-stock for use in the production of 300-series stainless steels, nickel content must have a nickel grade greater than 5.0%. Ferronickel with grades below thus are only suitable for use in the manufacture of 200-series stainless steels, which may have nickel contents as low as 1.0%. Ferronickel with grades of 10.0% to 12.0% nickel, are suitable for use in grade 304, which is the most commonly produced 300-series stainless steel. With its superior corrosion resistance properties, 300-series are expected to remain the dominant product produced, which will require continued supplies of high grade ferronickel.

Ferronickel and NPI production is dominated by China, however its industry is heavily reliant on imports of ore from Southeast Asia, which have been subject to export bans in the past, in order to drive the development of domestic minerals processing industries. This has seen growth, particularly in Indonesia of the nickel smelting industry, which is almost double the size of the next largest countries.

The following diagram sets forth ferronickel and NPI production for the following countries in 2017, in tonnes.



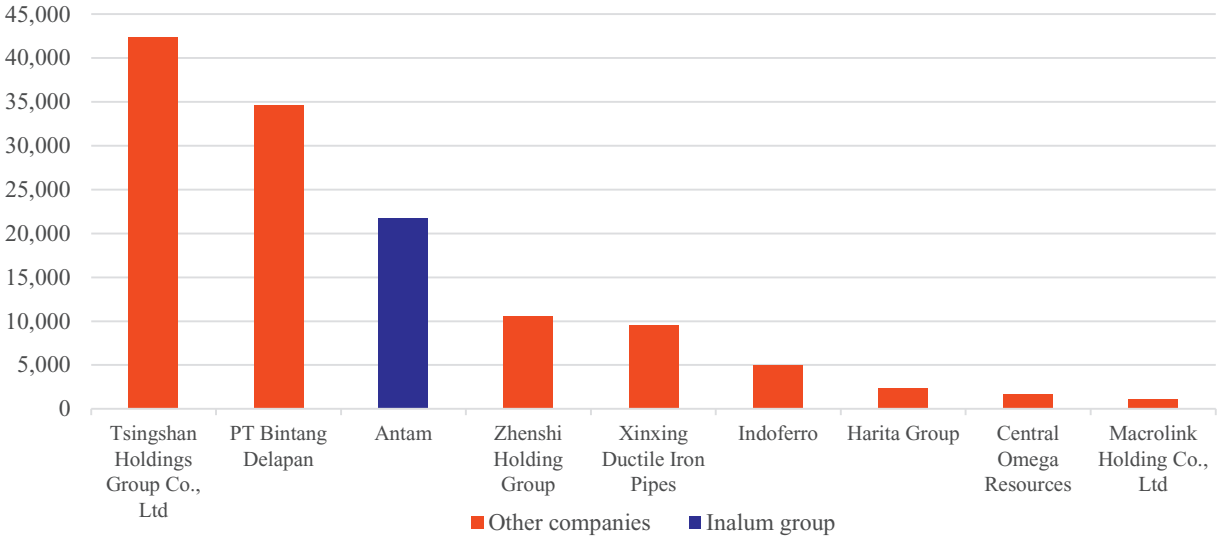
Source: AME

Operational benchmarking

Antam owns the Pomalaa ferronickel smelter in Sulawesi, which produced approximately 21 kilo tonnes of nickel contained in ferronickel in 2017. This places Antam as the third largest ferronickel producer in Southeast

Asia based on contained nickel production as of June 30, 2018. The largest producers globally are currently Chinese companies Tsingshan Holdings and Shandong Xinhai, who produced 92 kilo tonnes and 71 kilo tonnes of nickel in ferronickel respectively in 2017.

The following diagram sets forth ferronickel and NPI production, on an equity basis, for the following countries in Southeast Asia in 2017, in tonnes.

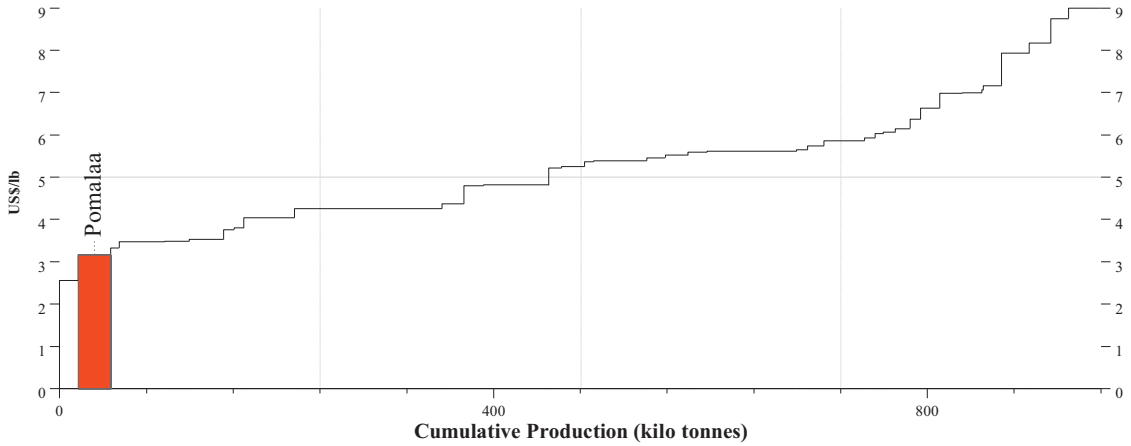


Source: AME

Note: Equity reserves mean that the total reserves of all owned operations have been pro-rated to account for the shareholding of the named company in each operation

Based on company reports and AME's modeling, Antam's Pomalaa smelter is assessed to be one of the lowest cost ferronickel and NPI producers globally, estimated to have cash costs of approximately US$3.2/lb of contained nickel. This is estimated to be due to the higher grade and captive nickel ore supply, along with a low cost captive power supply.

The following diagram sets forth the position of Antam's Pomalaa smelter on the estimated global cash cost curve for ferronickel and NPI production in 2018.



Alumina Industry

Aluminum production involves two independent processes for conversion from naturally occurring aluminum oxide ores to the extracted metal. The first stage is the refining of ore (bauxite) to alumina (aluminum

oxide, Al2O3). The second stage is the reduction process of pure alumina to aluminum metal. The common route to alumina production in the first stage is the refining of bauxite by using the Bayer process.

The main types of alumina produced from the refining of bauxite are alumina hydrate (also referred to as alumina trihydrate, hydrated alumina, or aluminum hydroxide), calcined alumina, fused alumina and tabular alumina. Alumina hydrate consists of approximately 65.0% Al2O3 and is the first useable product obtained from the Bayer process. Calcined alumina, the major product, normally has greater than 99.0% Al2O3 content, although 'activated alumina' contains approximately 93.0% Al2O3 plus 6.0% chemically combined water. The calcined alumina is generally noted as Smelter Grade Alumina ("SGA"), or Metallurgical Grade alumina ("MG") and is used as the supply to aluminum smelters. European plants have traditionally produced the fine-grained, highly calcined floury alumina but, in response to environmental pressures, plants were modified or redesigned to produce the sandy type, which has lower chemical impurities and is non-dusting. The shift to sandy alumina accelerated with the development of dry scrubber systems using the pot feed alumina as absorbents for the fluorides in the pot gas effluent in smelters. Special calcined alumina is produced by varying their chemical and physical properties. Fused alumina (also referred to as fused aluminum oxide or synthetic or artificial corundum), for use by the abrasives industry, is produced from calcined alumina in an electric furnace. Tabular alumina is 99.5% pure Al2O3 and is produced by heating alumina hydrate to temperatures slightly below the fusion point of alumina to convert it to the corundum state in extremely hard and dense tablet-like crystals for use in refractories.

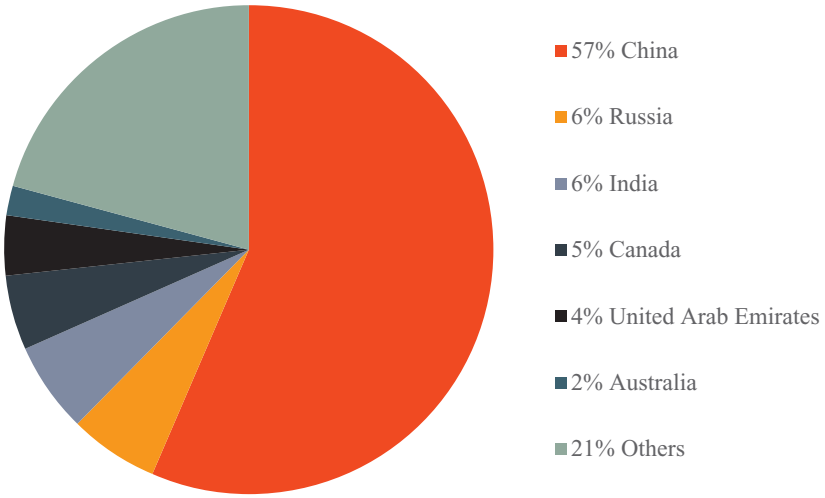
Alumina demand outlook

The largest consuming country of alumina is China, which is expected to account for approximately 56.8% of global demand in 2018. This is followed by Russia (5.8%), India (5.6%), Canada (4.6%) and the United Arab Emirates (3.9%). As alumina's primary use is for aluminum production, demand is directly linked to primary aluminum production, resulting in the largest consuming countries being the largest aluminum producing countries.

Over the past five years growth in demand has been in new and emerging markets as China has significantly grown it aluminum industry, India looks to develop its aluminum industry as part of its drive for self-sufficiency in metals production, and in the Middle East, where new smelters have taken advantage of low power prices to develop aluminum export industries. Demand elsewhere has either stagnated or declined as older aluminum smelters, particularly in western countries and Russia, have not been able to compete with this new, low cost production.

Supply growth has also matched these demand trends, as supply growth has been focus on China in particular, as well as the Middle East as refineries have been built to supply smelting operations.

The following diagram sets forth estimated alumina demand for the following countries in 2018.



Source: AME

AME forecasts global smelter grade alumina demand to grow at a CAGR of approximately 3.5% over 2018 to 2025, down from the almost 5.8% seen over 2013 to 2017. This sees demand increase from 122 million tonnes in 2017 to 158 million tonnes in 2025. AME forecasts Annual alumina demand growth at approximately 3.9% in 2018 to reach 127 million tonnes. Projected increases in aluminum supply will see alumina demand growth in 2019 at approximately 4.3%.

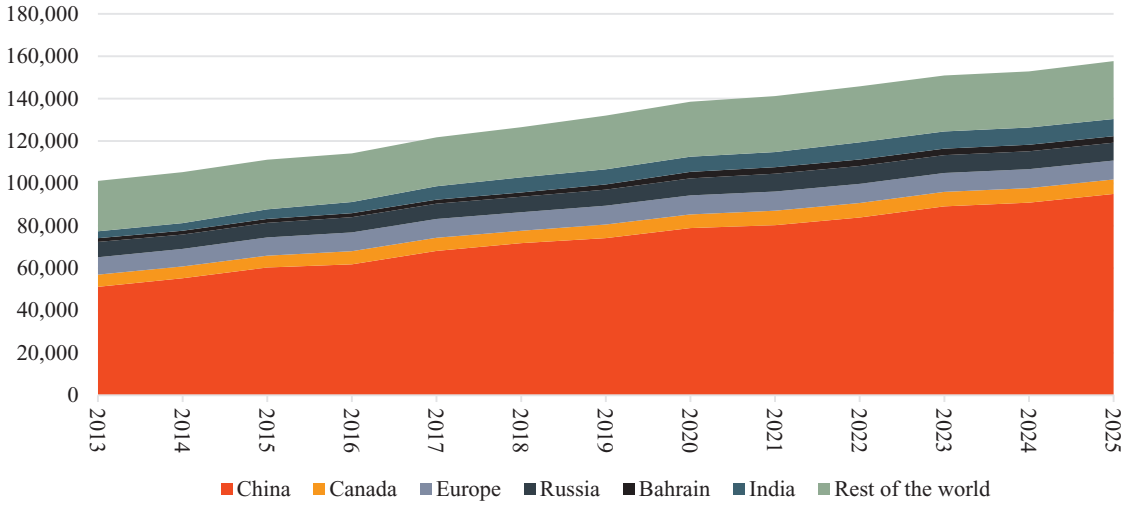
The driver of smelter grade alumina demand is primary aluminum production which is forecasted to increase with a CAGR of approximately 3.5% to 2025. The primary demand driver is expected to continue growing, but at a slower rate than the period between 2005 and 2016, when installed Chinese aluminum smelting capacity grew from approximately 7 million tonnes per year, to over 35 million tonnes per year. A primary aluminum supply deficit of approximately 1.5 million tonnes is forecasted for 2018. In a tight alumina market, filling this supply gap will promote the utilization and development of refinery capacity for production of smelter grade alumina.

The structure of global alumina consumption has changed substantially over the past decade following the explosive growth of the Chinese aluminum smelting industry. China now accounts for the bulk of alumina demand. Further, in the period to 2025, China's aluminum production is expected to increase from current levels at a CAGR of over 4.2% until 2025 to contribute 48 million tonnes to supply. Given China's recent historical development excesses, the supply side of the global balance can change very rapidly if an advantage is seen. Alumina production will need to respond to facilitate projected metal production.

Company demand for smelter grade alumina will be dictated by the production forecasts of the major aluminum producers. The top ten companies in the primary aluminum smelting industry are expected to produce approximately 49.3% of total aluminum supply in 2018, with that percentage staying around this level to 2025. Demand from United Company RUSAL, the second largest aluminum producer, is likely to be impacted by United States sanctions in the short to medium term but is not expected to be realized until after the deadline to conform in October.

In 2019, supply is forecasted to grow a further 4.3% to 68 million tonnes, predicated on the return of curtailed Chinese capacity returning to production and the need to close the supply gap. By 2025, net primary aluminum supply is forecasted to be 73 million tonnes for a CAGR of almost 4.2% over 2018 to 2025.

The following diagram sets forth estimated alumina demand for the following countries from 2013 to 2025, in kilo tonnes.



Source: AME

China comprises the largest proportion of global demand for smelter grade alumina, accounting for 56.8% of demand in 2018 which is expected to be maintained in 2019. AME forecasts demand in China to increase over 5.3% during 2018 as new smelter capacity is ramped-up and idled capacity restarts due to favorable aluminum prices. Smelter grade alumina demand grows in line primary aluminum production which is expected to continue

growing primarily on the back of increasing application of the material in the automotive sector, packaging applications and use in electrical infrastructure.

The medium term global demand for aluminum, and hence smelter grade alumina, is expected to continue being dominated by China. Alumina demand in China is expected to grow at a CAGR of approximately 3.8% from 2020 to reach 95 million tonnes by 2025, exceeding the global CAGR of just over 3.1%. Most alumina produced within China will be consumed by domestic aluminum smelters. In China, primary aluminum demand is forecasted to grow significantly on the back of its increasing uptake of new energy vehicles which AME expects to account for 14.0% of motor vehicle production by 2025.

China's smelting capacity control and environmental protection initiatives may impact primary aluminum production and therefore alumina demand in the country. Shifting production centers may also pose a risk to existing smelting assets, potentially reducing local demand for alumina. Additionally, the return of first use aluminum, displacing primary production has significant potential in China. With huge consumption of aluminum in China, there is significant scope for recycled material to offset demand for primary metal and subsequently the demand for smelter grade alumina.

Outside China, global demand for alumina is expected to grow at a more measured 2.0% and 3.4% in 2018 and 2019 to reach 58 million tonnes. With the ex-China share of smelter grade alumina demand remaining constant at approximately 43.0%. The growth in ex-China demand is primarily driven by increased primary aluminum production capacity in Vietnam and the Middle East due to start-up in 2019. The restart of smelting capacity in the United States on the back of protectionist measures being implemented will also contribute to a rise in demand outside China in the short term.

AME expects Ex-China demand for smelter grade alumina to gradually decline as a proportion of global demand, forecasted to account for 38.3% of global demand by 2025, with demand growth continued to be focused in China. Despite demand outside China expected to have a CAGR to 2025 of approximately 2.1% to reach 62 million tonnes, this is significantly below China's demand CAGR of approximately 3.8% over the same period. Demand growth will be on the back of expanding capacity in the Middle East, and Russian projects with relatively high likelihood of being realized.

New smelter developments and expansions outside China are likely to be announced, particularly in India, Southeast Asia and the Middle East, increasing demand for smelter grade alumina in other regions, but the increased volume is not expected to be on the scale already seen in China. China's increasing environmental regulations and capacity control initiatives, impacting aluminum smelters and associated power stations will potentially see growth in alumina demand slow, but will be coming off a large base, ensuring it will continue to dominate global demand. Ex-China primary production may increase as emerging economies develop and are likely to look at developing secure, domestic primary aluminum production facilities which will see increased demand for smelter grade alumina outside China, but this is expected to be at a much smaller scale.

China is approximately 95.0% self-sufficient in domestic smelter grade alumina production to meet demand from its domestic smelters. China's continued development of refinery capacity will provide limited opportunity for ex-China producers to take advantage of China's growing demand from its smelter development pipeline. Additionally, Western countries with developed economies are at a higher risk of primary aluminum being displaced by recycled material as first-use material comes to the end of its life and is returned to the supply side of the market-reducing demand for primary metal and subsequently smelter grade alumina

Alumina supply outlook

It is estimated that a total of 124 million tonnes of alumina supply will be available in 2018 increasing to 129 million tonnes in 2019. The 4.2% increase in 2019 is predicated on significant aluminum smelting capacity planned to be brought online in western China as the construction of a number of large capacity smelters is completed and ramp-ups commence. Such smelters include 500 kilo tonnes per year East Hope Guyang smelter, 500 kilo tonnes per year Chuangyuan, 5000 kilo tonnes per year Qianhengda and 400 kilo tonnes per year SPIC Baiyinhua planned to be brought to production in the short to medium term. Aluminum supply, and consequently

alumina demand, will be temporarily impacted by a repeat of China's winter curtailment policy at the end of the year. A CAGR of over 3.5% up to 2025 is forecasted to see alumina supply continue increasing to 158 million tonnes.

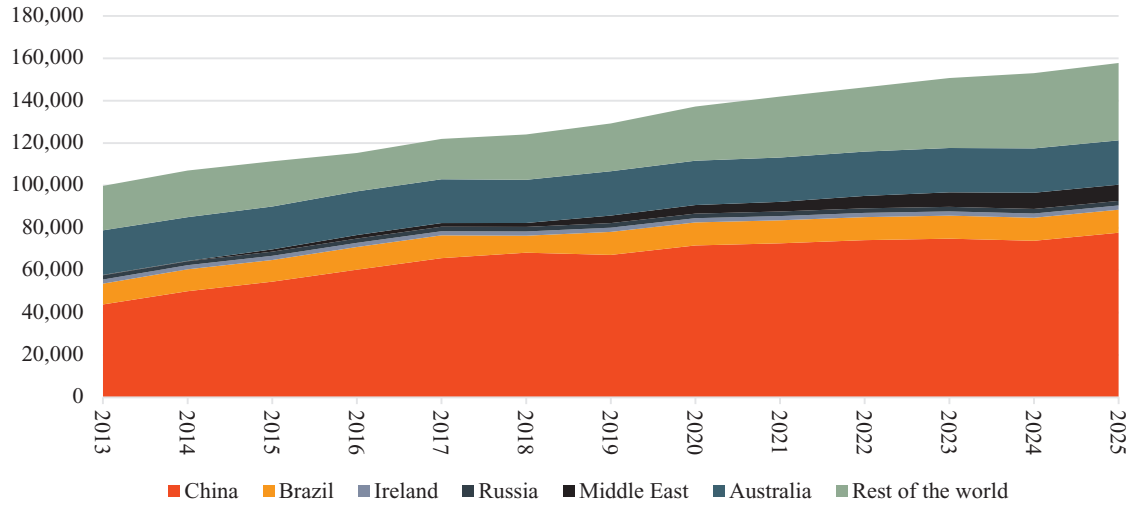
AME estimates approximately 4 million tonnes of refining capacity was added in 2017, but full year production was offset by the forced curtailment of refinery capacity in China under its environmental policies. Up to 6 million tonnes per annum of additional capacity, both green- and brownfield, is tracked for development through 2018. This new capacity may be offset by curtailments in Shanxi and Henan provinces as refineries deal with bauxite supply issues. While forecast alumina capacity development may exceed demand growth for 2018, it will help close the supply gap anticipated in 2019, should forecast aluminum supply be realized.

The planned repeat of China's winter curtailment policy, which will impact an expanded area, will affect significant alumina production regions in China. The policies are expected to again mandate the curtailment of approximately 30.0% of alumina refinery production. This cut in supply is expected to be returned to market in the June Quarter of the following year. In the medium term, China's supply is expected to increase at a CAGR of almost 2.9% until 2025 to contribute an additional 9 million tonnes of production to its total 78 million tonnes of global supply. Given the present smelter capacity in China, securing reliable alumina supplies domestically remains a priority but degrading bauxite availability and quality has created challenges.

The top ten companies in the alumina refining industry are projected to produce approximately 64.5% of the total smelter grade alumina supply in 2018, falling to 60.2% in 2025 as new players enter the market. The Aluminum Corporation of China Limited ("Chalco") is forecasted to remain the largest producer globally; with its entire SGA production in 2018 of 14 million tonnes almost entirely consumed by China's domestic smelting industry. Chalco's production is expected to grow to 18 million tonnes in 2022.

While the conventional Bayer process has dominated alumina production for over a century, pilot plants for the production of alumina from coal fly-ash have reportedly commenced in the Western provinces of China. With its degrading domestic bauxite quality, due to increasing reactive silica content, Chinese companies are increasingly looking to source bauxite externally, particularly from Guinea. Higher quality bauxite is being transported large distances to low temperature Bayer refineries, with the higher freight costs offset by lower processing costs, primarily being developed in provinces along China's Eastern seaboard.

The following diagram sets forth estimated aluminum supply for the following countries from 2013 to 2025, in kilo tonnes.



Source: AME

The top ten countries dominate supply and are expected to produce 92.9% of global alumina supply in 2018. China is the largest alumina producer in the world, already producing approximately 68.2 million tonnes, nearly 55.0% of global alumina volumes, winter curtailments are expected to see production in China for 2019 retreat

slightly to 67.3 million tonnes. Almost all of China's production is consumed domestically. Australia, the second largest producing country, contributes 16.4% of global supply and will continue to be the largest exporter.

China will continue to dominate the alumina industry and maintain its share of over 50.7% of global supply out to 2022. China, Australia and Brazil combined will represent 72.4% of global alumina production, down from a forecast 77.9% in 2018 as developments in Indonesia and the Middle East come on stream by 2022. In recent years, a number of aluminum companies have announced development plans for refineries in Guinea, which has the world's largest reserves of metallurgical grade bauxite. Chinese companies have recently been investigating the exploitation of Guinea's bauxite to feed refineries in China but a shift, by companies with access to resources, toward developing refineries at the bauxite source is likely to occur.

The rate of supply growth will steadily reduce over time as a result of slowing investment in China. Refinery developments are expected to continue to be located in countries with significant bauxite resources with high potential in bauxite-rich West Africa. With continued development of large scale bauxite mining operations in Guinea, significant alumina production in the country is expected to be seen in the medium to long term.

The larger Chinese aluminum companies are striving for an integrated supply chain, both domestically and abroad. This will continue to bolster world alumina supply as geographical changes to supply occur. Alumina producers in emerging markets will grow in importance; this will be from a combination of ongoing capacity expansions in India, China and the Middle East, as well as other emerging markets, such as Vietnam and Indonesia, with good-quality bauxite and competitive energy costs. Increasing freight rates will benefit refineries in close proximity to bauxite resources.

An emerging risk to the domestic Chinese refining industry is the increasing difficulty in obtaining high quality (low silica) bauxites in-country. A number of inland refineries transitioned to processing imported bauxite despite the additional transportation costs. Increasing freight costs will pressure margins. Additional risks to refineries are environmental concerns, with refining caustic residue and contaminated water management, being major industry issues. Other developing countries simply cannot replicate the scale and the previous rapidity of development in China. While similar growth potential may essentially exist in India, existing governmental processes, and the sovereign environment in comparison to China, make this unlikely to happen.

Aluminum Smelting Industry

The production of primary aluminum involves two independent processes for conversion of naturally occurring aluminum oxide ores to the aluminum metal.

The first stage of this process is the refining of the aluminum ore, which is typically bauxite, to alumina. The second stage of the process is the reduction, by electrolysis, of alumina to produce aluminum metal. As the mechanical properties of aluminum are strongly influenced by small amounts of alloying agents, it is important that the smelter-grade metal is of a high quality. Accordingly, the smelting of aluminum begins with a high purity alumina feed. Generally, to produce one tonne of aluminum metal it is considered to smelt approximately two tonnes of alumina.

Given the energy requirements in the primary aluminum production process — with older smelter technologies using over 17DCkWh/kg of metal produced, and newer technologies nearing the 12DCkWh/kg of aluminum level in addition to the alumina refining and bauxite mining contributions — the ease of recycling aluminum has become a significant contributor to total aluminum consumption in some advanced markets. This involves collection, aggregation, sorting, cleaning, and re-melting of previously fabricated aluminum products after their life cycle has been completed. Despite being typically accepted that secondary aluminum uses less than 10.0% of the energy of primary aluminum production, the costs of collection, sorting, and re-melting of the aluminum for recycling must also be considered across the intensity of use and end-use products.

The base standard primary aluminum product produced at aluminum smelters and traded on the LME is P1020A ingot of approximately 22 kg and a minimum of 99.7% pure aluminum. Aluminum is increasingly produced from smelters as a wide range of products which command a price premium over a standard, unalloyed

P1020A ingot. Value-added products (VAP), are often alloyed for and come in many forms for specific downstream applications:

- *High purity aluminum ("HPA").* Aluminum of purities of less than 99.9% can be produced by the further refining of the primary aluminum tapped from cells. Depending on grade requirements, higher quality aluminum can preferentially tapped from reduction cells in a potline that are performing well from a combination of operating practice and age of cell. Very HPA is most commonly used in electronic applications but is also used in specialized material applications and as an alloying material with other metals.
- *Foundry alloy ingot.* The addition of small quantities of other metals to liquid aluminum creates aluminum alloys, classified into different series, for a wide variety of applications. Alloy ingots are generally for remelt, forging and casting into fabricated aluminum products. Often used as feedstock for producing automotive castings like wheel rims, hubs and engine blocks.
- *Extrusion billet.* Aluminum 'log', often alloyed, produced in a range of lengths and diameters. Suitable as feedstock to extrusion processes for producing materials for the construction and transportation sectors.
- *Slab.* Large blocks, used as feedstock for producing aluminum foil and sheet products. The foil and sheet products are used in the production of many consumer items, packaging, building materials, and automotive body paneling.
- *Wire/rod.* Aluminum rod/wire is produced directly from liquid metal and used in electrical applications including transmission wires. Aluminum provides cost advantages over traditional copper usage in electrical applications.
- *Sheet*. More recently strip casting methods have been developed for directly producing aluminum sheet from liquid metal, eliminating the need for the intermediate process for the hot rolling of slab when producing sheet/strip of certain thickness.

More recently, smelters with downstream processing customers in close proximity have begun offering direct deliveries of liquid metal, which reduces the amount re-melting energy costs for customers.

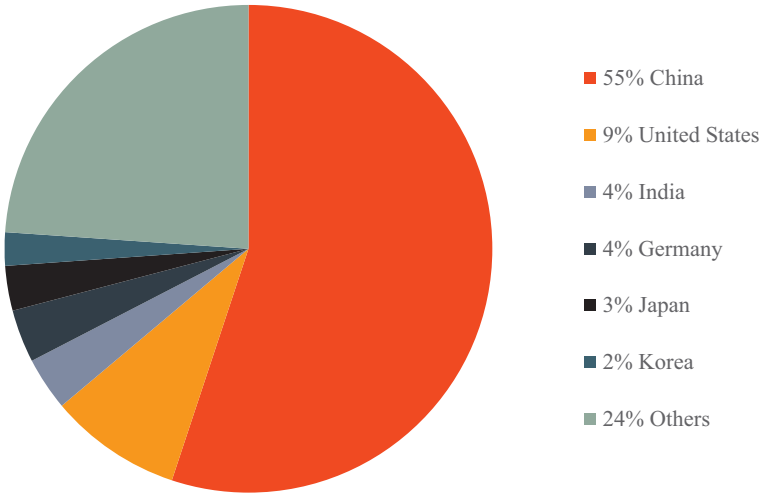
Aluminum demand outlook

The largest consuming country of aluminum is China, which is expected to account for approximately 55.1% of global demand in 2018. This is followed by the United States (8.8%), India (3.5%), Germany (3.5%) and Japan (3.0%).

As the largest producer of primary aluminum, China accounted for over 55.1% of global primary aluminum supply in 2016. Broadly speaking, the global aluminum industry is dominated by China as both the largest producer and consumer of primary aluminum metal. China has increased net primary smelting production from 10 million tonnes in 2006 to 42 million tonnes in 2018, a CAGR of approximately 12.7%. In addition to utilizing modern reduction cell technology, many smelter developments were coupled with the construction of a captive power plant, significantly lowering electricity costs and placing many smelters in more favorable cost positions.

Aluminum demand growth is expected to continue to be primarily driven by economic growth in the Asian region. India's large population will see its contribution to this regional growth increase. Demand in Brazil and Russia may also increase as they emerge from a downturn. Traditional demand regions Europe and North America are expected to make up a smaller proportion of global demand with lower projected growth rates.

The following diagram sets forth estimated aluminum demand for the following countries in 2018.



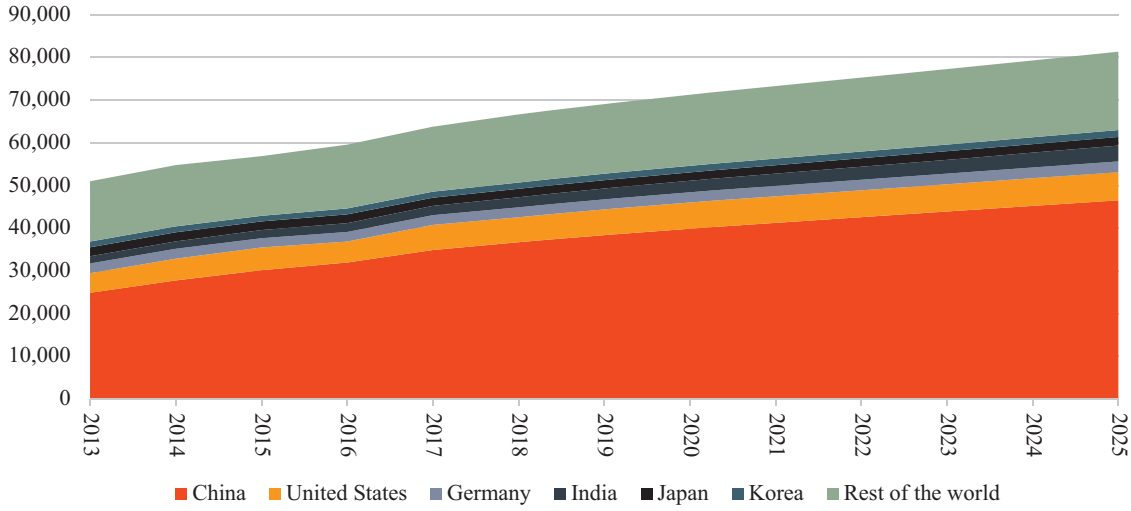
Source: AME

Demand for aluminum will be driven by increasing applications in the transportation sector as well as consumer durables and packaging as it transitions to a consumption economy. China's announced commitment, along with the commitment of many global car producers, to increase the production proportion of NEVs will drive see increased focus on light-weighting to improve the range and fuel efficiency of vehicles. By the medium term, aluminum content in cars is expected to reach approximately 90 kg, an additional 20 kg compared to today's cars. Additionally, the required infrastructure, including charging stations and increased electricity transmission capacity, to enable the efficient use of NEV's will contribute significantly to demand.

China's policies to increase the production and uptake of NEV's, which involve increasing NEV production to one in ten cars and extending tax credits to 2020, will contribute to increased demand for aluminum components within China. Additionally, the 10.0% U.S. tariff on imported aluminum, to encourage the restart of domestic smelting capacity, will result in material planned for the United States being re-routed and allow demand outside the United States, in a deficit market, to be filled. Customers for primary aluminum within the United States will see prices increase in the interim.

AME expects global primary aluminum demand is forecasted to grow at a CAGR of 2.9% over 2018 to 2025, down from the 5.9% seen over 2012 to 2017. Global aluminum demand is forecasted to drop to year-on-year growth of 4.5% in 2018 after a large increase in 2017 of 7.1%. As the middle class in emerging economies continues to expand, the development of infrastructure and demand for automobiles and aluminum-based consumer durable goods, will remain strong. AME expects the biggest growth component to stem from transport applications with an increasing proportion of aluminum components used. The increasing use of aluminum in automotive components, as well as robust Chinese residential and infrastructure development, are expected to remain primary drivers of ongoing primary aluminum demand growth.

The following diagram sets forth estimated aluminum demand for the following countries from 2013 to 2025, in kilo tonnes.



Source: AME

China comprises the largest proportion of global demand, accounting for 55.1% of demand in 2018 and forecasted to increase to 55.6% of demand in 2019. Demand in China is forecasted to increase 5.2% and 4.5% in 2018 and 2019, respectively, to 38.4 million tonnes. Short term demand is expected to continue growing primarily on the back of increasing application of aluminum in the automotive sector, packaging applications and use in electrical infrastructure as long distance transmission from the western provinces to consumers on the eastern seaboard is developed. The medium term global demand for aluminum is also expected to be dominated by China. Demand in China is expected to grow at a CAGR of 3.5% from 2020 to reach 46.5 million tonnes by 2025. The application of aluminum in NEV's is of particular focus to Chinese authorities who have implemented policies to foster growth in the sector. By 2020, China aims to reach a target of having one in ten vehicles produced in the country being an NEV and has extended tax credits for purchasing NEVs. By 2025, one out of every five cars sold must be an NEV.

With China's huge population in the early stages of transitioning from a manufacturing economy to a consumption economy, there is huge potential for increased aluminum use in the consumer durables sector. Additionally, increased environmental regulation will see increased aluminum use in the transportation sector as light weighting, through the replacement of steel parts, improves fuel efficiency and the range of NEVs. China is not expected to return to the double digit demand growth seen between 2009 and 2015, however future growth is coming off a large base and increasing volume requirements will be significant. Given its size and contribution to global aluminum demand, any economic contraction in China will have a significant impact on projected global aluminum demand growth. Substitution of aluminum in end use products will remain a risk, with any uptake by China expected to have a significant impact.

AME expects outside of China demand for aluminum to continue growing with increases of 3.6% and 2.4% respectively for 2018 and 2019. In Europe, use of aluminum in automotive applications has been reported as increasing 6.0% through 2017 and this rate of growth is expected to be maintained at least into the medium term as European manufacturers target improved fuel efficiency and NEV's as a proportion of sales. Both European governments and car-makers based in the region are setting NEV targets for the medium to long term.

Outside of China aluminum demand growth is forecasted to increase at a CAGR of 2.5% out to 2025. A key growth area will continue to be in the transportation sector. Globally, the transportation sector is expected to grow the most rapidly with global momentum transitioning to a NEV future amplified by the Electric Vehicle Initiative (EVI) comprising 16 key economies seeking to deploy 20 million NEVs in the medium term. There is also expected to be increasing demand in the power and construction sectors to support economic growth in

developing economies. With its huge and increasing population, significant demand growth potential exists in India which is expected to grow at a CAGR of 7.3%, a significantly higher rate than China, to reach 3.7 million tonnes by 2025.

Demand outside China is expected to be driven by other emerging economies along with its increasing applications in automobiles. Light-weighting of vehicles to improve fuel efficiency and extend the range of NEV's will contribute to demand growth. In particular, the expanding middle class within the rest of Asia (ex-China) will further support increasing demand from construction, automobile, packaging and the consumer durable goods sectors.

Aluminum demand forecasts in the long term is predicated on consumption profiles in developing countries being similar to that seen in the developed countries where manufacturing saw a rapid increase in demand per capita growth before plateauing into a consumption phase. Demand for primary aluminum in Europe and other established economies is expected to taper. In the longer term, demand in developed economies may also increasingly be met by recycled material, reducing demand for primary metal.

Aluminum supply outlook

AME forecasts net primary aluminum supply will grow by 3.9% to 65.2 million tonnes in 2018. In 2019, supply is forecasted to grow a further 4.3% to 68.1 million tonnes predicated on curtailed Chinese capacity returning and the need to close the current supply gap. By 2025, the net primary aluminum supply is forecasted to be 81.3 million tonnes for a CAGR of 3.2% over 2018 to 2025.

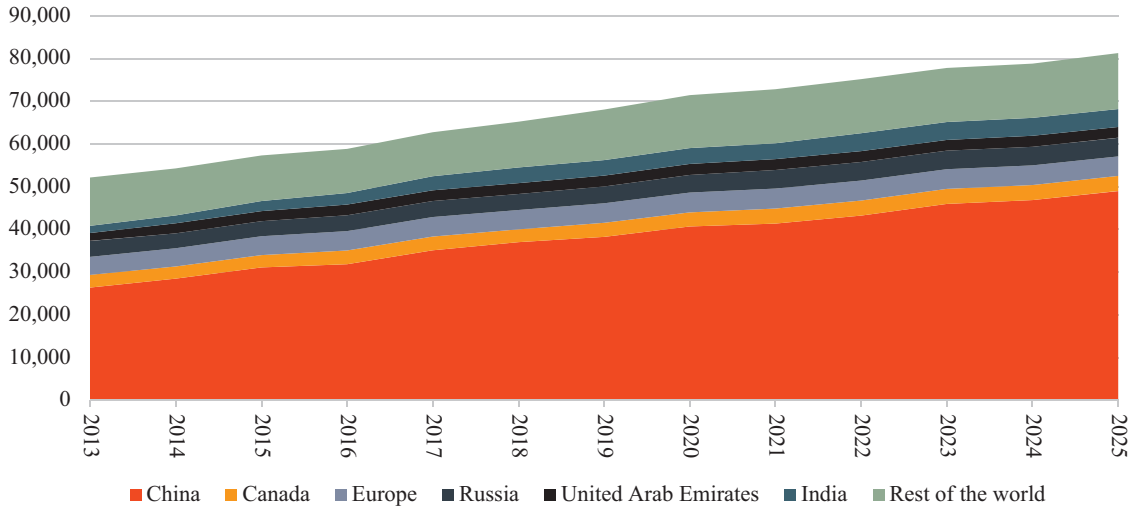
AME estimates a total of 5.4Mtpa of new and expanded smelter capacity was completed and brought into production over 2017. All new production recorded was in China besides the startup of Norsk Hydro's 75 kilo tonnes per year Karmoy Technology Pilot line in Norway. This additional production capacity does not include capacity available for restart following China's winter curtailment initiative which concluded in mid-March. AME estimates in 2018, an additional 3.2 million tonnes per year of capacity will be available to come online with approximately 2.2 million tonnes per year already completed and starting to ramp up. A further 2.2 million tonnes of new smelting capacity is currently tracked for 2019.

In the medium term, AME expects China's supply to lift a CAGR of 4.3% from 2020 to 2025 to contribute 49 million tonnes to supply. Given China's recent historical development excesses and the ability to realize a less than 12-month timeframe for completing a new smelter project, the supply side of the global balance can change very rapidly if an advantage is seen, such as the offer of sufficient local government incentives or attractive benchmark metal pricing. Constraining supply, in at least the short term, is the United States sanctions announced on Russian companies which may impact up to approximately 3.8 million tonnes, or 5.8%, of global supply in 2018. The practical impact of these sanctions will be clear once the October compliance deadline passes but are already being factored into the market.

The top ten companies in the primary aluminum smelting industry are projected to produce approximately 49.3% of the total aluminum supply in 2018 and maintain a relatively constant proportion of global supply through to 2022. Despite having to curtail 2.68 million tonnes per year of unapproved capacity, the world's largest producer, China Hongqiao Group, is still expected to produce nearly 7 million tonnes in 2018 accounting for 10.7% of global production. UC Rusal, the second largest producer in the world, who export nearly 85.0% of their production could have a significant impact on supply or be facing force majeure if the issues leading to placement of sanctions remain unresolved.

Large Chinese companies have been evolving within the industry, in particular by embracing economies of scale and vertical integration. Shandong Xinfa and China Hongqiao are pursuing both upstream and downstream integration for their operations, maintaining captive supply and logistics chains, and utilizing captive power sources. Chalco has also shifted to developing new for old replacement capacity, in regions such as Inner Mongolia, Xinjiang and Guangxi province, with competitive power pricing and away from the spotlight of targeted environmental policies.

The following diagram sets forth estimated aluminum supply for the following countries from 2015 to 2025, kilo tonnes.



Source: AME

In the short term, the make-up of the top ten countries contributing to global supply are not expected to change. As home to five of the top ten aluminum producing companies, China which contributes over 56.8% to global aluminum supply and is expected to lift output by 3.3% by the end of 2019. Russia which contributes approximately 5.8% to global supply was expected to produce an additional 3.6% or 3.9Mtpa by 2019. Should sanctions on Russian producer Rusal not be lifted, there is significant downside potential to the country's forecast. Supply from India is expected to remain relatively unchanged through 2019.

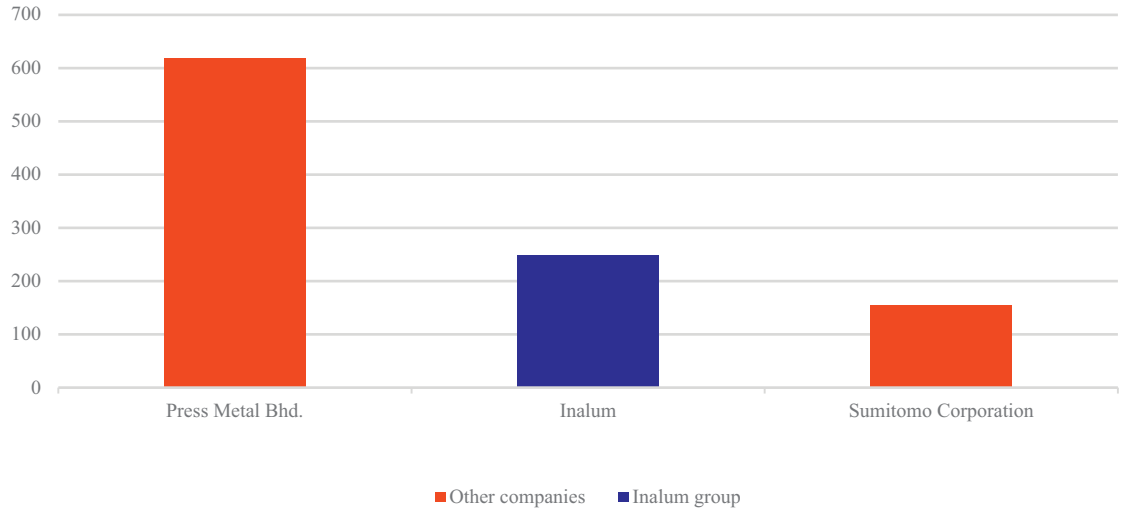
Power prices and logistics are the main competitive differentiators within the aluminum smelting industry. Opportunities to bring online competitive supply exist for countries with ready access to cheap power sources or ability to develop them. Additionally, the governments of countries with ready access to the raw materials, bauxite/alumina may also actively promote and encourage development of a smelting industry — provided a reasonable power price is available — to promote value add to national resources.

Supply from China could be hampered by policy changes as the government looks to curtail production. Smaller, older smelters with outdated technology are expected to be the first to face closures. Remote regions such as Inner Mongolia have been relatively unaffected by policy curtailments as infrastructure moves west, however, this is not a given in the long term. Outside of China, operations in developed countries such as Australia and in Europe could face curtailment as energy prices continue to rise and perceived dirty industries are moved abroad.

Operational benchmarking

Inalum owns the Asahan aluminum smelter in North Sumatra. As of June 30, 2018, Inalum is the second largest producer of aluminum in Southeast Asia in terms of production volume, on an equity basis.

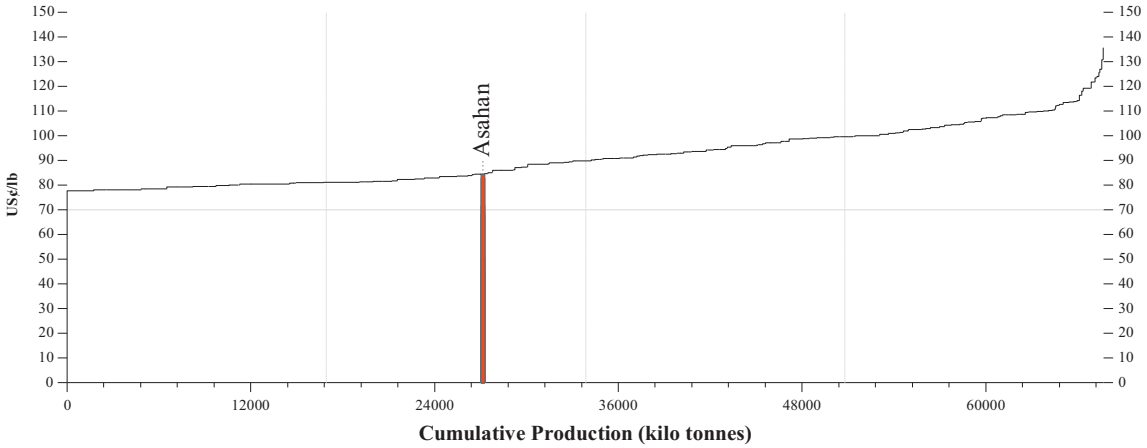
The following diagram sets forth estimated aluminum production, on an equity basis, for the following countries in Southeast Asia in 2018, in kilo tonnes.



Note: On an equity basis means that the total production of all owned operations have been pro-rated to account for the shareholding of the named company in each operation.

Based on company reports and AME's modeling, the Asahan smelter is assessed to operate at below average costs, with estimated cash costs of approximately US$0.84/lb of aluminum. This is estimated to be due to the low cost of power provided by its hydroelectric power plants.

The following diagram sets forth the position of Inalum's Asahan smelter on the estimated 2018 aluminum smelting cash cost curve.



Source: AME

INDONESIAN REGULATORY FRAMEWORK

Mining Regulation

Under the Indonesian Constitution, all natural resources in the Republic of Indonesia are controlled by the Government and must be used for the maximum benefit of the Indonesian people. Mining activities in Indonesia are governed by Law No. 4 of 2009 regarding Mineral and Coal Mining (the "Mining Law"), which was enacted on January 12, 2009 by former President Susilo Bambang Yudhoyono. The Government has issued several implementing regulations to implement the Mining Law, including: Government Regulation No. 23 of 2010 on Implementation of Mineral and Coal Mining Activities as recently amended by Government Regulation No. 8 of 2018 ("GR 23/2010 (as amended)"), Government Regulation No. 55 of 2010 on the Guidance and Supervision of Mining Business Practice ("GR 55/2010"); and Government Regulation No. 78 of 2010 on Reclamation and Post-mining ("GR 78/2010").

One of the objectives of the Mining Law is to provide equal treatment to foreign and domestic investors introduced under the Investment Law (as defined below) through, among other things, (i) the abolishment of the contract of work system under the previous mining legal framework; (ii) the introduction of a license-based system equally applicable to both foreign and domestic investors; (iii) the allowance of foreign investment subject to certain divestment requirements; (iv) the authorization of the Government to designate mining areas (*Wilayah Pertambangan* or "WP") within Indonesia; (v) the requirement of a tender process for the granting of new coal and mineral mining concessions; (vi) the regulation of larger mining areas and reduction terms for production; (vii) the requirement to comply with onshore processing obligations; and (viii) the regulation of mining services contractors.

The Mining Law also demonstrates the Government's attempt to protect and promote national and local mining companies. This is reflected, for example, in the obligation of mining business license holders to engage either national or local mining service companies. However, foreign direct investment (*Penanaman Modal Asing* or "PMA") mining services companies may be engaged in the event that national or local mining service companies are not available. Similarly, mining services companies have a similar obligation to prioritize both local contractors and human resources in supporting their businesses. A holder of an IUP or an IUPK is also prohibited from engaging its subsidiaries and/or affiliated mining services companies in its mining operational area, unless a permit has been obtained from the MEMR in respect of such engagement.

Under GR 55/2010, the supervision of licensed mining activities is generally conducted by the MEMR and the governor of the province in which the mining area is located. GR 55/2010 also regulates the supervision of finances, mineral and coal processing data, conservation of minerals and coal, operational safety, environmental impacts, land reclamation, post-mining management, technical training of laborers, as well as a host of production data of the types, quality, and total amount of extracted minerals. Supervision of mining facilities is carried out by mining inspectors endorsed by the MEMR or by authorized representatives of the MEMR and/or the relevant governor. In any case, only a mining inspector has the authority to recommend to the Directorate General of Minerals and Coal or the head of the provincial mining office, as applicable, that a mining business license holder temporarily suspend mining activities in part or entirely or permanently cease mining operations.

Mining licensing system

Old licensing system

The Mining Law abolished the old mining licensing system, which previously provided for mining authorizations (*Kuasa Pertambangan* or "KP"), contracts of work (*Kontrak Karya* or "CoW") and coal contracts of work (*Perjanjian Karya Pengusahaan Pertambangan Batubara* or "CCoW").

Under the Mining Law, all existing KPs, CoWs and CCoWs will remain valid for the remainder of their respective terms and, upon their expiration, may be converted into licenses under the new mining licensing system. Pursuant to GR 23/2010 (as amended), in order to extend an expiring CoW, the CoW must be converted into a Production-Operation IUPK within two years, at the earliest, and six months, at the latest, before the end of the CoW validity period. The terms of such CoWs and CCoWs had to be modified within one year following

adoption of the Mining Law to bring them into conformity with the obligations of license holders under the Mining Law. However, the Mining Law expressly states that the provisions of these existing CoWs and CCoWs that relate to state revenue, including royalty and tax payments, need not be amended.

Current licensing system

The new mining licensing regime under the Mining Law introduced the following licensing classifications:

- *IUP.* A Mining Business License (*Izin Usaha Pertambangan* or "IUP") grants the holder the right to mine one type of resource, including coal, rock, metal minerals or non-metal minerals, within a designated Mining Business License Area (*Wilayah Izin Usaha Pertambangan* or "WIUP"). A WIUP must be located within a Mining Business Area (*Wilayah Usaha Pertambangan* or "WUP"), which are areas stipulated by the Government, after being determined by the regional government and submitted in writing to the House of Representatives (*Dewan Perwakilan Rakyat* or "DPR"). An IUP comprises two stages: (i) Exploration IUP stage; and (ii) Production-Operation IUP stage. An Exploration IUP covers the general survey, exploration and feasibility study stages, while a Production-Operation IUP covers the stages of construction, mining, processing, refining, as well as transportation and sales. An IUP will only be granted to a business entity, individual or a cooperative. GR 23/2010 (as amended) provides additional guidance on what constitutes a business entity that may be granted an IUP. Both domestically owned business entities and PMA companies are eligible to apply for an IUP. The business entity must first secure the WUP through an auction process (except for rocks) and then apply for an IUP with respect to that WUP by submitting an application to the MEMR or the relevant governor based on its authority over the WUP. However, IUPs issued to PMA companies are issued by the MEMR irrespective of where the WUP is located. In the event that the WUP is found to contain more than one type of resource, the existing IUP holder's additional IUP application for the newly discovered resource will be prioritized;
- *IUPK.* A Special Mining Business License (*Izin Usaha Pertambangan Khusus* or "IUPK") grants the holder the right to mine coal or metal minerals within a Special Mining Business Area (*Wilayah Izin Usaha Pertambangan Khusus* or "WIUPK"). A WIUPK must be located within a State Reserved Area (*Wilayah Pencadangan Negara* or "WPN") that has been approved by the DPR for mining operations and converted into a Special Mining Business Area (*Wilayah Usaha Pertambangan Khusus* or "WUPK"). Similar to an IUP, an IUPK may only be granted for the mining operation of one type of resource and comprises two stages: (i) Exploration IUPK stage; and (ii) Production-Operation IUPK stage. Further, an IUPK will only be granted to a legal entity established in one of the following forms: (i) a state-owned enterprise (*Badan Usaha Milik Negara* or "BUMN"); (ii) a regional government-owned enterprise (*Badan Usaha Milik Daerah* or "BUMD"); (iii) or a business entity. BUMNs and BUMDs have priority over non-government business entities in relation to obtaining an IUPK. If the BUMN or BUMD does not exercise its privilege to obtain an IUPK, a non-government business entity may obtain the IUPK by participating in the auction for the WIUPK and, upon winning the auction, submitting an application to MEMR to obtain the IUPK. However, GR 23/2010 (as amended) states that an existing holder of a CCoW or CoW under the previous licensing regime whose CCoW or CoW is expiring may submit an application to MEMR to obtain an IUPK without participating in an auction. In addition, a CoW holder may convert its CoW into a Production-Operation IUPK by submitting an application to MEMR prior to the expiry of the CoW's term; and
- *IPR.* A People's Mining License (*Izin Pertambangan Rakyat* or "IPR") grants the holder the right to mine coal, rock, metal minerals and non-metal minerals within a limited mining operational area within an area designated by the Government, in consultation with the DPR, as a People's Mining Area (*Wilayah Pertambangan Rakyat* a "WPR"). An IPR can be granted to individuals, community groups or cooperatives.

The following table sets forth certain details on the mining licenses available under the Mining Law.

No.	Type and description	Permitted minerals	Validity period	Permitted area (hectares)
1.	**Exploration IUP** is a mining business license that is granted for general surveys, explorations and feasibility studies in a WUP.	Metal minerals	Maximum 8 years	5,000 – 100,000
		Non-metal minerals	Maximum 3 years	500 – 25,000
		Certain types of non-metal minerals	Maximum 7 years	500 – 25,000
		Rock	Maximum 3 years	5 – 5,000
		Coal	Maximum 7 years	5,000 – 50,000
2.	**Production-Operation IUP** is a mining business license that is granted upon the completion of the exploration activities under the respective Exploration IUP to commence the construction, mining, processing and refining, transportation and sales activities.	Metal minerals	Maximum 20 years, which can be extended twice, each for a period of 10 years	Maximum 25,000
		Non-metal minerals	Maximum 10 years, which can be extended twice, each for a period of 5 years	Maximum 5,000
		Certain types of non-metal minerals	Maximum 20 years, which can be extended twice, each for a period of 10 years	Maximum 5,000
		Rock	Maximum 5 years, which can be extended twice, each for a period of 5 years	Maximum 1,000
		Coal	Maximum 20 years, which can be extended twice, each for a period of 10 years	Maximum 15,000
3.	**Exploration IUPK** is a special mining business license that is granted for general surveys, exploration, and feasibility studies in a WUPK.	Minerals	Maximum 8 years	Maximum 100,000 hectares
		Coal	Maximum 7 years	Maximum 50,000 hectares
4.	**Production-Operation IUPK** is a special mining business license that is granted upon completion of an Exploration IUP stage in order that production in a WUPK can be undertaken.	Minerals	Maximum 20 years, which can be extended twice, each for a period of 10 years[(1)]	Maximum 25,000 hectares
		Coal	Maximum 20 years, which can be extended twice, each for a period of 10 years[(2)]	Maximum 15,000 hectares
5.	**IPR** is a license to conduct mining within a small-scale mining area with a limited area size and investment	Metal minerals and non-metal minerals, rock and coal	Maximum 5 years, which can be extended	Maximum 1 hectare, for individuals, 5 hectares for community groups and 10 hectares for cooperatives

Notes:

(1) For holders of CoWs that have been converted into Production-Operation IUPKs, the validity period will be the remainder of CoW period, and can then be extended twice, each for a period of 10 years. For holders of CoWs that have been converted into the Production-Operation IUPKs within the last two years of the CoW's tenure, the validity period is for a maximum of 10 years. For holders of converted CoWs that have not yet been provided with a first CoW extension, the Production-Operation IUPK can be extended once, for a period of 10 years.

(2) For holders of CCoWs that have been converted into Production-Operation IUPKs within the last two years of the CCoW's tenure, the validity period is for a maximum of 10 years. For holders of converted CCoWs that have not yet been provided with a first CCoW extension, the Production-Operation IUPK can be extended once, for a period of 10 years.

Transferability of license

While the Mining Law clearly prohibits the transfer of an IUP or IUPK to a third-party, Article 7A of GR 23/2010 (as amended) provides that both an IUP and IUPK may be transferred, provided that the transferee is an affiliate of the transferor. For the purposes of this provision, an "affiliate" is an entity that is at least 51.0% owned by the transferor. Further, under MEMR Regulation No. 11 of 2018 on Procedures for Granting of Areas, Licensing, and Reporting in Mineral and Coal Mining Business Activities as amended by MEMR Regulation No. 22 of 2018 ("MEMR Regulation 11/2018"), the transfer of an IUP or IUPK may only be conducted upon obtaining written approval from the MEMR or the relevant governor.

Foreign divestment requirements

GR 23/2010 (as amended) sets out a foreign divestment scheme for foreign-owned entities holding an IUP or IUPK. Under the divestment obligation, foreign shareholders must divest their interest in the entity such that the ownership of Indonesian shareholders is not less than the following percentages in the respective years below from the commencement of production operation:

- 20% by the 6th year;
- 30% by the 7th year;
- 37% by the 8th year;
- 44% by the 9th year; and
- 51% by the 10th year.

If the share capital of a foreign-owned company is increased, then the aggregate shareholding of the Indonesian participants must not be diluted and must remain in compliance with the domestic shareholding requirement set forth in GR 23/2010 (as amended). The divestment obligation applies to holders of IUPs and IUPKs, regardless of whether the relevant IUP or IUPK was granted prior or subsequent to the issuance of GR 23/2010 (as amended).

The divestment obligation is further regulated by MEMR Regulation No. 9 of 2017 on the Procedure of Share Divestment and the Mechanism of Divestment Share's Price Determination in Coal and Mineral Mining Business Activities, as amended by MEMR Regulation No. 43 of 2018 ("MEMR Regulation 9/2017"). Under MEMR Regulation 9/2017, to make a divestment to an Indonesian entity, the foreign-owned shares must initially be offered to the Government through the MEMR, who will have 90 days to evaluate and negotiate such offer and an additional 30 days to determine whether to accept such offer or not. If the Government does not purchase the shares, then the shares must then be offered to provincial and regent/municipal governments. If these provincial or regent/municipal governments also do not purchase these shares, these shares are then tendered to both state and regional-owned enterprises. In each case, parties are given 30 days from the date of the offer to declare their interest. If there is no state or regional-owned enterprise willing to purchase the shares, the shares can be tendered to private local companies, who are given 30 days from the date of the offer to declare their interest. If a local private company does not purchase these shares, the shares may then be offered to the public. Divestment may be executed through issuance of new shares and/or transfer of existing shares, whether directly or indirectly. The Government may form a consortium among provincial, municipal, state and/or regional-owned enterprises for the purpose of participating in the purchase of the shares.

Reclamation and post-mining activities

Reclamation plan

Under GR 78/2010, as implemented by MEMR Decree No. 1827 K/30/MEM/2018 on Guidelines for Implementation of Good Mining Engineering Principle ("MEMR Decree 1827/2018"), mining companies are obliged to carry out reclamation and post-mining activities. Prior to undertaking any exploration activities, Exploration IUP or Exploration IUPK holders must prepare a reclamation plan in accordance with the approved

environmental document and submit it to the MEMR or the respective governor for approval. The approval by the MEMR will state the amount of reclamation guarantee required to be paid by the license holder. The reclamation guarantee must be in the form of a time deposit and denominated in either U.S. dollars or Rupiah and placed in a Government bank under the name of the Director of the Directorate General of Minerals and Coal ("DGMC") or the respective governor and the name of the license holder. The period of the time deposit shall be in line with the reclamation's schedule.

Exploration IUP or Exploration IUPK holders are also required to submit a reclamation plan for the production-operation phase, which must be prepared in accordance with the feasibility study and the approved environmental document. The plan must be included in the submission of the application for a Production-Operation IUP or Production-Operation IUPK to the MEMR or the respective governor. Similar to the reclamation plan at the exploration phase, the approval of the reclamation plan for the production-operation phase shall also state the amount of reclamation guarantee which shall be paid by the holder of IUP or IUPK either in U.S. dollars or Rupiah. The reclamation guarantee may be placed in one of the following manners: (i) joint account in an Indonesian state-owned bank; (ii) time deposit in a Government's bank in Indonesia; (iii) bank guarantee issued by a Government bank in Indonesia; or (iv) accounting reserve for a Production-Operation IUP or Production-Operation IUPK holder who lists at least 40.0% of its shares on the Indonesian Stock Exchange or its paid-up capital is in the amount of at least US$50.0 million. Production-Operation IUP or Production-Operation IUPK holders who place their reclamation guarantee in an accounting reserve are required to submit a statement letter made before a notary stating that the reclamation guarantee has been paid to MEMR or the respective governor.

The reclamation guarantee both in the exploration and production-operation phase may be withdrawn by the holder of the IUP or IUPK upon obtaining the approval from the MEMR or the respective governor and such approval will be based on the success rate of the reclamation activities.

Post-mining plan

In addition to the reclamation plan for the production-operation phase, Exploration IUP or Exploration IUPK holders are also required to prepare a post-mining plan as a prerequisite to obtain the Production-Operation IUP or Production-Operation IUPK. Similar to the reclamation plan, the post-mining plan's approval will be issued by the MEMR or the respective governor and shall contain the amount of post-mining guarantee which shall be paid by the Production-Operation IUP or Production-Operation IUPK holders, the payment schedule and the placement's period. The post-mining guarantee shall be placed in an Indonesian state-owned bank under the name of the Director of the DGMC or the respective governor and the name of the license holder, either in U.S. dollars or Rupiah. The post-mining guarantee may be withdrawn by the Production-Operation IUP or Production-Operation IUPK holder upon securing approval from the MEMR or the respective governor. Such approval will be based on the success rate of the post-mining activities. In the case that the Production-Operation IUP or Production-Operation IUPK's validity period is extended by the MEMR or the respective governor, the Production-Operation IUP or Production-Operation IUPK holders shall amend their post-mining plan.

Government royalties

Pursuant to Government Regulation No. 9 of 2012 on the Types and Tariffs of Non-State Tax Revenue Applicable in the Ministry of Energy and Natural Resources, IUP and IUPK holders are required to pay production royalties to the Government. Currently, a range of royalties apply with respect to different types of coal and mineral mining. Under the Mining Law, Production-Operation IUPK holders are required to pay 10.0% of net profit from the mine, which comprises 4.0% to be paid to the Government and 6.0% to be shared between the relevant provincial and regional governments in whose jurisdictions the mine is located.

Under the Mining Law, coal and other minerals mined within Indonesia are required to be processed and refined domestically in accordance with the standard set out by MEMR Regulation No. 25 of 2018 on Mineral and Coal Mining Business Operations ("MEMR Regulation 25/2018"). However, to date, MEMR Regulation 25/2018 only sets out the standard processing and refining of mineral products. The minimum standard of

processing of coal products has not yet been set out in any implementing regulations of the Mining Law. As of the date of this offering memorandum, the Mining Law provides that "processing and refinery" shall mean a process which increases the quality of minerals and/or coal and the utilization of and the extraction of associated minerals.

Domestic market obligations

GR 23/2010 (as amended) provides that Production-Operation IUP and Production-Operation IUPK holders must prioritize domestic needs for coal and minerals. Production-Operation IUP and Production-Operation IUPK holders may export their coal or minerals only after the Indonesian domestic market has been fulfilled. The same provision is adopted by MEMR Regulation 25/2018, which provides that the MEMR will control mineral and coal trading for the purpose of safeguarding the domestic mineral market. Accordingly, the MEMR may determine the type and amount of minerals which shall be provided for the domestic market, as well as the type and amount of mineral which may be exported. The MEMR has not yet issued a decree or regulation which sets out the type and amount of minerals which shall be provided for the domestic market.

Good mining practices

The Mining Law requires IUP and IUPK holders to implement Good Mining Principles (*Kaidah Pertambangan yang Baik* or "KPB"), further details of which are provided in its implementing regulations including MEMR Regulation No 26 of 2018 on Implementation of KPB and Supervision on Mineral and Coal Mining ("MEMR Regulation 26/2018") and MEMR Decree 1827/2018. The KPB consists of good mining engineering and good mining business governance.

Good mining engineering practices

Good mining engineering practices relates to several aspects of the mining process, including: (i) mining engineering, (ii) coal and mineral conservation, (iii) mining occupational health and safety, (iv) mining operational safety, (v) environmental management, reclamation and post mining, as well as post operation, and (vi) the utilization of technology, engineering skills, design, development, and implementation of mining technology. The implementation of good mining engineering practices shall be performed by, among others: (i) appointing a head of mining technician as the highest authority on the mining site and employing mining technical manpower, (ii) utilizing exploration, mining, processing and/or refining, and transportation methods in line with the approved annual Work and Budget Plan (*Rencana Kerja Anggaran dan Biaya* or "RKAB"), (iii) providing equipment, tools, self-safety equipment, facility, personnel, and adequate funds for the implementation of safe mining, (iv) implementing mining environment management and supervision in accordance with the environmental document, as well as environmental recovery and countermeasures in the event of environmental damage or pollution, and (v) planning and implementing the mining and processing recovery.

Good mining business governance

Good mining business governance relates to several aspects of the mining business, including: (i) marketing, (ii) accounting, (iii) data processing, (iv) utilization of goods, services and technology, (v) development of mining technical manpower, (vi) fostering and developing the surrounding community, (vii) other mining-related activities which relate to public interest, (viii) compliance with the IUP or IUPK conditions, and (ix) amount, type, and quality of the mining product. The implementation of good mining business governance practices shall be performed by, among others: (i) trading coal or minerals with qualities and quantities that are in line with the approved annual RKAB, (ii) prioritizing domestic market obligations, (iii) implementation of financial aspects in line with the approved annual RKAB, (iv) preparing financial statements in line with Indonesian accounting standards, (v) performing data management from the collection phase to deletion phase, (vi) utilizing goods, services and technologies in accordance with the approved RKAB, and (vii) fostering and developing surrounding communities.

Mining services

The Mining Law stipulates that IUP or IUPK holders must engage local and/or national mining services companies and if no local and/or national mining services company is available, IUP or IUPK holders may engage other Indonesian mining services companies. IUP or IUPK holders that engage mining services companies shall retain responsibility for mining business activities. In addition, mining service companies must give preference to local contractors and workers in their hiring process. Mining services companies must be in the form of business entities, cooperatives, or individuals. In the case of an individual, only consultation and/or planning mining services may be provided.

Under MEMR Regulation 11/2018, Production-Operation IUP and Production-Operation IUPK holders may only engage mining services companies to conduct overburden stripping. For other types of license holders, mining services companies may be engaged for the other services including: (i) consultation, planning and performance (general surveys, exploration, feasibility studies, mining construction, mining environment, reclamation and post-mining, and/or mine safety) and (ii) consultation and planning (for mining or processing and refining). In addition, Production-Operation IUP or Production-Operation IUPK holders who perform underground mining may engage mining services companies for activities such as the construction of a tunnel or shaft access to vein ore/seam coal, ventilation and dewatering.

Under MEMR Regulation 11/2018, any party that intends to perform mining services activities in the territory of Indonesia is required to first obtain a Mining Service Business License (*Izin Usaha Jasa Pertambangan* or "IUJP") issued by (i) the MEMR, if the business intends to conduct its operations in all Indonesian territories or if the applicant is a PMA company, or (ii) the governor, if the business will conduct its operations within one province in Indonesia. Further, MEMR Regulation 11/2018 stipulates that mining services may be provided to a business entity, cooperative or individual. The IUJP is valid for a maximum of 5 years and may be extended up to a period of 5 years for each extension. An IUJP covers the following activities: (i) consultation, planning, implementation and equipment testing with respect to general surveys, exploration, feasibility studies, mining construction, transportation, mining environment, post-mining and reclamation, and/or mining safety; and (ii) consultation and planning with respect to mining works and processing and refining.

The Mining Law prohibits mining concession holders from using their subsidiaries and/or affiliates to conduct mining operations in their mining concession areas, unless the MEMR approves such arrangement. The definition of a subsidiary and/or an affiliated mining service company is a mining service company that has a direct share ownership relationship with a mining company. According to the Director General of Mineral, Coal and Geothermal Regulation No. 376.K/30/DJB/2010 of 2010 on the Procedure and Requirements to Request Approval of Using Subsidiaries and/or Affiliates in the Mining Service Business ("Regulation 376"), a mining service company has a direct share ownership with a mining company if (i) 20% of the mining service company's shares are directly owned by IUP or IUPK holders; (ii) 50% of the voting rights of a mining service company are held by an IUP or IUPK holder by virtue of an agreement directly controlling financial and operation policies of the mining service company; and/or (iii) an IUP or IUPK holder has the authority to appoint and discharge finance and operational directors (or persons having equivalent positions) of a mining service company. In addition to obtaining approval from the MEMR, for a mining company to engage its own subsidiary or an affiliated company for the supply of mining services, it must be unable to engage an unaffiliated mining services companies or there must be no mining services company classified as interested or capable of performing the mining services required based on certain criteria as stipulated under the Mining Law.

Further, MEMR Regulation 11/2018 prohibits IUJP holders from holding any other mining licenses, such as an IUP or IUPK. Under MEMR Regulation 11/2018, IUJP holders are obligated to, among other things, (i) draft and submit a work plan and budget, (ii) prioritize using domestic goods, services and manpower and (iii) submit a written report on its business activities. Failure to comply with these requirements may result in the imposition of administrative sanctions which range from written warnings to revocation of the IUJP.

Subject to the prior consent of the Director of the DGMC, Production-Operation IUP and Production-Operation IUPK holders may assign the alluvial mineral sediment excavation to the surrounding community, provided that such community holds an IUJP, through a partnership program. The purpose of such partnership

programs is to improve the welfare of the community around the mine. The partnership program shall be based on a cooperation agreement between the Production-Operation IUP or Production-Operation IUPK holder and the IUJP holder, in compliance with the criteria set out under MEMR Regulation 11/2018.

Price controls and export licensing

Coal sales price controls

Pursuant to MEMR Regulation No. 7 of 2017 on Method of Determination of Minerals and Coal Benchmark Sale Price, as lastly amended by MEMR Regulation No. 19 of 2018 ("MEMR Regulation 7/2017 (as amended)"), the coal pricing arrangement between IUP, IUPK, or CCoW holders and coal purchasers (including their affiliated parties) should be no less than the coal benchmark price (*Harga Patokan Batubara* or "HPB") that is determined by the MEMR. There are two types of HPB: HPB for steam (thermal) coal and HPB for coking (metallurgical) coal. The applicable HPB will be determined based on a formula containing several variables including moisture content, sulfur content, ash content, and the coal reference price (*Harga Batubara Acuan* or "HBA"). The HBA is determined by the MEMR on a monthly basis and the HPB will be determined based on market mechanisms and/or in accordance with general pricing in the international market. The HPB may be calculated in U.S. dollars or in Rupiah. If the price of coal is calculated in U.S. dollars, then the Rupiah conversion of this price shall be calculated in accordance with the middle exchange rate quoted by Bank Indonesia on a date or period agreed upon between the seller and the buyer.

Production-Operation IUP, Production-Operation IUPK or CCoW holders are allowed to sell certain types of coal below the HPB, in accordance with the formula determined by MEMR. Such exemption is applicable for the following type of coal: fine coal, rejected coal, and coal with certain impurities, provided that such sale is made for the following purpose: (i) coal utilized by the license holder for its own consumption, (ii) coal utilized by the license holder to increase the added value of coal from mine-mouth mining activities, and (iii) coal utilized for development of undeveloped areas around the mining area.

Coal selling price for electricity supply for public interest

Pursuant to MEMR Decision No. 1395K/30/MEM/2018 as lastly amended by MEMR Decision No. 1925K/30/MEM/2018 dated August 7, 2018 regarding Coal Price for Electricity Supply for Public Interest, the Government determined the coal price for national electricity purposes ("MEMR 1395K (as amended)"). The Government determined that the FOB coal sales price for local thermal power stations is US$70 per tonne for coal with specifications of 6,322 kcal/kg GAR, total moisture of 8.0%, total sulfur of 0.8% and ash content of 15.0%. For coal that does not meet these specifications, the coal sales price will be calculated based on the applicable calculation guidance stipulated in MEMR 1395K (as amended). The special price determination is effective up to December 31, 2019 and the maximum amount of coal that can be sold under the specially determined price is 100.0 million tonnes of coal per year, with an additional 10.0% allowed for sale of coal for national electricity purposes, subject to certain conditions.

Coal export license

Pursuant to Minister of Trade Regulation No. 39/M-DAG/PER/7/2014 on Provision on Coal Export and Coal Products as lastly amended by Minister of Trade Regulation No. 52 of 2018 ("MOTR 39/2014"), the export of certain types of coal and coal products are subject to certain limitations. The types of coal and coal products that are subject to MOTR 39/2014 are listed in its appendix, which, among others, include benzol, toluene, xylene and cooking coal. Any IUP, IUPK, or CCoW holders who intend to export any product listed therein must be recognized by the Minister of Trade as a Registered Coal Exporter (*Eksportir Terdaftar Batubara* or "ET-Batubara"). An ET-Batubara registration is valid for three years from the date of issuance.

Mineral sales price controls

Pursuant to MEMR Regulation No. 7 of 2017 (as amended), the metal (*logam*) mineral pricing arrangement between the IUP, IUPK or CoW holders and metal mineral purchaser (including their affiliated parties) should be

no less than the metal mineral benchmark price (*Harga Patokan Mineral Logam* or "HPM") that is determined by the MEMR. The applicable HPM will be determined based on certain formula, containing several variables, among others the content/value of the metal mineral, corrective factor, treatment and refining charges, and metal mineral reference price (*Harga Mineral Logam Acuan* or "HMA"). The HMA will be determined by the MEMR on a monthly basis. The HMA will be determined based on market mechanisms and/or in accordance with general pricing on the international market. Further, the HPM may be calculated in Rupiah or in U.S. dollars. If the price of metal mineral is calculated in U.S. dollars, then the Rupiah conversion of this price shall be calculated in accordance with the middle exchange rate quoted by Bank Indonesia on a date or period agreed upon between the seller and the buyer.

Mineral export license

Pursuant to Minister of Trade Regulation No. 01/M-DAG/PER/1/2017 on Export Provision for Processed and Refined Mining Products ("MOTR 1/2017"), the export of certain types of processed and/or refined mining products are subject to certain limitations. Mining products which are subject to MOTR 1/2017 are listed in its appendix I, appendix II, and appendix III, which mainly list minerals that have been purified and/processed in accordance with the applicable minimum level of processing and/or purification. However, mining products listed in appendix II and appendix III of MOTR 1/2017 may only be exported up to January 11, 2022. MOTR 1/2017 further provides that mining products in the form of raw materials or ore and mining products which have not met the minimum limits of processing and/or purifying shall not be exported. The list of export-banned mining products is detailed in appendix IV of MOTR 1/2017.

Further, mining products listed in appendix III of MOTR 1/2017 may only be exported by the following parties: (i) a Production-Operation IUP or Production-Operation IUPK holder that produces nickel and at least 30% of the input capacity of its nickel processing and refining facility is nickel with content of less than 1.7% and has or has been constructing a refining facility, either independently or in cooperation with another party; or (ii) a holder of a Production-Operation IUP, Production-Operation IUPK, Production-Operation IUP for Processing and Refining (*Production-Operation IUP Khusus Pengolahan dan Pemurnian* or "Production-Operation IUPK OM"), or Industrial Business License (*Izin Usaha Industri* or "IUI") for processing and refining that produces bauxite and has or has been constructing a refining facility, either independently or in cooperation with another party.

The export of processed and/or refined mining products listed in appendix I and II of MOTR may only be performed by holders of a Production-Operation IUP which has been declared as clean and clear (as proven by a clean and clear certificate), Production-Operation IUPK, Production-Operation IUPK OM or IUI. Export of processed and/or refined mining products listed in appendix I of MOTR 1/2017 may only be conducted after verification or technical investigation has been performed by a qualified surveyor. Export of processed and/or refined mining products listed in appendix II and III of MOTR 1/2017 may only be conducted after verification or technical investigation has been performed by a qualified surveyor, and after securing export approval from the Directorate General of Offshore Trade on behalf of the Minister of Trade. Such verification or technical investigation shall be conducted by a qualified surveyor, which may be performed prior to and during the loading of the designated ship and/or stuffing of the container.

Land rights for mining purposes in Indonesia

A mining company is not obliged to hold any land title in order to conduct mining operations in a mining concession area. Such mining company will rely on the mining licenses to conduct mining activities. The Mining Law imposes an obligation on holders of mining concessions to come to a "settlement" with people holding land titles within the mining concession. The purpose of this "settlement" is to compensate the land title holder for the disruption to their utilization of the surface of the land caused by the mining activities. A settlement only needs to be reached with land title holders in areas of the concession which will actually be affected by mining activities. There is no requirement to compensate every land title holder whose land title overlaps with the mining concession. Despite the Mining Law not requiring a mining concession holder to acquire ownership of overlapping land titles, mining concession holders sometimes do choose to acquire ownership of the underlying

land title, particularly for mining infrastructure. This is to avoid disputes in the future in respect of whether compensation was adequately provided and to provide legal certainty in respect of the concession holder's right to conduct activities in particular strategic areas.

Power generation for internal use

Pursuant to Law No. 30 of 2009 on Electricity and Government Regulation No. 14 of 2012 as amended by Government Regulation No. 23 of 2014, a company that uses a power plant to generate electricity for its own use shall obtain a license to operate the power plant. A power plant for internal use, commonly known as a Captive Power Plant, is usually constructed by a company in order to provide simultaneous electricity supply for its main business operations without reliance on services from other parties. Under MEMR Regulation No. 35 of 2013 as amended by MEMR Regulation No. 12 of 2016 on Procedures of Electricity Business Licensing, a power plant operator may generate electricity for its own use by obtaining an Operational License for power plants with a capacity of over 200 kVA, obtaining a Registration Certificate (*Surat Keterangan Terdaftar*) for power plants with a capacity between 25 kVA and 200 kVA or by submitting reports to the Directorate General of Electricity for power plants that have a capacity lower than 25 kVA. Operational License holders are also obliged to submit a semi-annual report regarding its business activities, non-compliance with which may result in administrative sanctions imposed by the Government in accordance with the applicable laws and regulations.

Smelting Regulation

The Mining Law provides that Production-Operation IUP and Production-Operation IUPK holders are allowed to assign their processing and refining activities to a party that holds a special Production-Operation IUP OM. Pursuant to MEMR Regulation 11/2018, a special Production-Operation IUP OM is a mining business license for a party that buys, transports, processes and refines mining products, as well as sells the processed mining products.

Under MEMR Regulation 11/2018, a special Production-Operation IUP OM holder is entitled to: (i) process and refine mining commodities of holders of a Production-Operation IUP, Production-Operation IUPK, special Production-Operation IUP OM, IPR, special Production-Operation IUP for Transportation and Trade (*Production-Operation IUP Khusus untuk Pengangkutan dan Penjualan*), CoW or CCoW; (ii) enter into cooperation agreements with third parties for the utilization of residual and/or side products of the processing and/or refining products for domestic industrial raw materials; (iii) mix mining commodity products in order to meet a buyer's specifications; and (iv) utilize public facilities and/or infrastructure in order to support its business activities, in accordance with the prevailing laws and regulations.

Environmental Regulation

Environmental protection in Indonesia is governed by various laws, regulations and decrees, including the following:

- Law No. 32 of 2009 on Environmental Protection and Management ("Environmental Law");
- Government Regulation No. 27 of 2012 on Environmental Permit ("Regulation 27/2012");
- Government Regulation No. 24 of 2018 on Online Single Submission (OSS) ("Regulation 24/2018");
- Minister of Environment Regulation No. 5 of 2012 on Businesses and/or Action Plans which must be completed with an Environmental Impact and Analysis Assessment (*Analisis Mengenai Dampak Lingkungan* or "AMDAL");
- Minister of Environment Regulation No. 16 of 2012 on the Guidelines on Preparation of Environmental Documents ("ME Regulation 16/2012");
- MEMR Regulation 11/2018;
- MEMR Regulation 26/2018;

- MEMR Decree 1827/2018; and
- Minister of Environment and Forestry Regulation No. P.26/MENLHK/SETJEN/KUM.1/7/2018 on the Guidelines for the Preparation, Assessment, and Examination of Environmental Documents in the Implementation of OSS ("MEF Regulation 26/2018").

These laws generally provide, among others, that mining companies must have the facilities and bear the costs and expenses of reclamation and rehabilitation of concession areas, and shall prevent and minimize environmental pollution and destruction resulting from mining activities. Mining companies whose operations have a significant environmental or social impact must create and maintain AMDAL documents, which must contain:

- an analysis known as Terms of Reference on Environmental Impact Analysis;
- an environmental impact assessment;
- an environmental management plan; and
- an environmental monitoring plan.

In certain circumstances, AMDAL documents are not required and an Environmental Management Effort document and an Environmental Monitoring Effort document must be prepared instead. Technical guidelines for the preparation of these documents are set out in ME Regulation 16/2012.

Once AMDAL documents or the Environmental Management Effort and Environmental Monitoring Effort documents have been obtained, pursuant to Regulation 27/2012, a company must obtain an environmental permit which will be issued by the Minister of Environment and Forestry, Governor or Mayor/Regent (in accordance with their respective authorities) simultaneously with the issuance of the environmental feasibility decision. However, after the issuance of Regulation 24/2018 and MEF Regulation 26/2018, environmental permits will be issued by the OSS Body on behalf of the Minister of Environment and Forestry, Governor or Mayor/Regent (in accordance with their respective authorities) through the OSS system.

After all environmental documents are obtained, the company must conduct environmental management of the mining areas under the Good Mining Practice. MEMR Regulation 26/2018 states that environmental management of the mining areas include the implementation of environmental management and supervision according to the company's environmental document; and prevention and recovery of the environment in the event of pollution and/or environmental damage. Mining companies have to prepare an annual RKAB which includes environmental aspects. Holders of Exploration IUP, Exploration IUPK, Production-Operation IUP, and Production-Operation IUPK are required to provide a reclamation guarantee, and for holders of Production-Operation IUP and Production-Operation IUPK are also required to provide post-mining guarantee. MEMR Decree 1827/2018 further stipulates the guidelines on the environmental management of the mining areas. The environmental management activities are supervised by the mining inspector with further supervision from the head of the mining inspector.

In addition, mining companies are required to appoint a head of mining technology and Person-in-Charge for Technical and Environmental matters who is required to: submit regular reports on the environmental management and supervision activities to the mining inspector; report if there is a potential environmental pollution and/or damage indication to the mining inspector; submit a report regarding environmental case no later than 24 hours after the case occurred accompanied by the mitigation plan to the mine inspector; create procedural standard for environmental pollution and/or damage mitigation of the potentially caused environmental pollution and damaged area; and lead the reclamation and post-mining operation.

Under Indonesian environmental regulations, remedial and preventative measures and sanctions (such as the imposition of substantial criminal penalties, fines and the cancelation of concessions) may be imposed in order to remedy or prevent pollution caused by operations. Such sanctions range from three to 15 years of imprisonment for any person who intentionally has caused environmental pollution or environmental damage, and fines ranging from between Rp.3.0 million to Rp.15.0 billion, subject to an additional penalty of one-third of the fine amount if

the charge is filed against the party who ordered the criminal act or against the criminal mastermind. The Ministry of Environmental Affairs also reserves the right to impose a monetary penalty in lieu of any rehabilitation obligations of a liable person.

Wastewater disposal

Government Regulation No. 82 of 2001 on Water Quality Management and Water Pollution Control requires reports to be submitted by concession holders detailing their disposal of wastewater and compliance with applicable regulations. Such reports are to be submitted on a quarterly basis to the relevant authority, with a copy provided to the Minister of Environmental Affairs. The Decision of the Minister of Environmental Affairs No. 113 of 2003 concerning Standard Quality for Coal Mining Business and/or Activities requires mining companies to process their wastewater from mining and processing activities in accordance with mandated quality standards set out therein, and to manage water that is affected by mining activities by way of sedimentation pools. Mining companies are also required to monitor surface water quality where wastewater from the sedimentation pools or wastewater treatment facilities is discharged into streams and rivers, and to comply with any additional requirements stipulated in their respective concessions or licenses. Analysis of wastewater and daily flow rates must be submitted on a quarterly basis to the relevant authority and to the Minister of Environmental Affairs.

Hazardous and toxic substances

Government Regulation No. 101 of 2014 on Management of Hazardous and Toxic Waste Materials and Government Regulation No. 74 of 2001 on Management of Hazardous or Toxic Materials regulate the management of certain stipulated materials and waste. Flammable, poisonous or infectious waste from mining operations is subject to these regulations unless it can be proven scientifically by the applicant that it falls outside the categories set forth in such regulations. These regulations require a company using the specified materials, or which produces waste which is specified in the regulations, to obtain a license in order to store, collect, utilize, process and accumulate such waste. Such licenses may be revoked and the license-holder may be required to cease operations in the event of violation.

In addition, Decree of the Head of Regional Environmental Impact Controlling Agency (*Badan Pengendalian Dampak Lingkungan Daerah*) No. 255 of 1996 on Procedure on the Storing and Collecting of Used Lubricant Oil provides, among others, that an entity which collects used oil for further use or processing must comply with certain requirements as set out in the decree, including obtaining a license, ensuring that buildings used for the storage of such lubricants comply with the specifications set out in the decree, establishing procedures on the collection and distribution of used oil and submitting quarterly periodic reports with respect to these activities.

Usage of explosives

Explosives usage in Indonesia for mining purposes is regulated by Mining License Regulation and Regulation of Head of National Police No. 17 of 2017 on Licensing, Supervision, Control and Safety of Commercial Explosive Materials ("Regulation 17/2017"). Based on Regulation 17/2017, an "end-user" is defined as a legal entity performing a government project and/or a private entity that is directly responsible as the user of an explosive material. Regulation 17/2017 requires end-users who are engaging in the mineral, coal and geothermal sectors to have:

- an IUP, CoW, CCoW, concession, or other license;
- a head of mining technician and explosive expert that holds a Blasting Permit Card issued by the Director General of Mineral and Coal or the head of the provincial mining office, as applicable; or
- A local mineral business license for an entity that engages in the industrial mineral sector or C class material in accordance with the prevailing laws and regulations.

Regulation 17/2017 also provides that end-users may be granted certain explosive-related licenses including a storage license, ownership, possession, and storage license, purchasing and utilization license, transfer of use license, residual use license, transport of explosives license and annihilation license.

Corporate Social and Environmental Responsibility

In respect of limited liability companies, Law No. 40 of 2007 on Limited Liability Company (the "Company Law") sets out an additional obligation imposed on companies operating in the natural resources industry, including mining companies. Such companies have corporate, social and environmental responsibility obligations. The purpose of this obligation is to create a sustainable relationship with the environment and to enhance the norms, values and culture of the local community. Such obligation is required to be budgeted and calculated as an expense of the company and it must be implemented in reasonable measures. Any non-compliance will be sanctioned in accordance with applicable laws.

On April 4, 2012, the government issued Government Regulation No. 47 of 2012 on Corporate Social and Environmental Responsibility ("Regulation No. 47 of 2012") to implement Article 74(4) of the Company Law which imposes a mandatory corporate social and environmental responsibilities ("CSR") on companies engaging in business activities in the field of and/or related to natural resources. Generally, Regulation No. 47 of 2012 declares that any company has social and environmental responsibilities.

Regulation No. 47 of 2012 stipulates that the Board of Directors of a company is responsible to implement the CSR in accordance with the annual working plan of the relevant company. The annual working plan shall include the business plan and budget to implement the CSR.

The Mining Law and MEMR Regulation 26/2018 also require the holders of an IUP or an IUPK to organize community development programs. The guidelines to organize community development programs is regulated in the Decree of MEMR No. 1824K/30/MEM/2018 on the Guidelines on Implementation of Community Development and Empowerment program.

Forestry Regulation

Law No. 41 of 1999 on Forestry, as amended by Government Regulation as Substitute of Law No. 1 of 2004 ("Forestry Law"), provides that open-pit mining operations cannot be conducted within protected forests. Notwithstanding this general prohibition, a number of licenses and contracts for open-pit mining in protected forest areas that existed prior to the enactment of Forestry Law 1999 remain valid until their expiration. Significant areas of forestry in Indonesia have been classified as protected forests.

Based on Forestry Law, if the WIUP is located in a forest area, the use of forests for mining purposes must be conducted with a Borrow to Use Forestry Permit (*Izin Pinjam Pakai Kawasan Hutan* or "IPPKH") issued by the Minister of Forestry, with restrictions that mining activities can only be carried out in production forest (*hutan produksi*) and protected forests (*hutan lindung*), where protected forests are only allowed to be used to conduct underground mining activities. Further, under Regulation of the Minister of Forestry No. P.27/Menlhk/Setjen/Kum.1/7/2018 regarding the Guidelines on Borrow and Use of Forest Area ("Regulation 27 of 2018"), a mineral and coal underground mining activities carried out in protected forest areas are only permitted if such activities do not cause land subsidence, permanent changes in forest function, or damage to groundwater aquifer.

Regulation 27 of 2018 also states that company applying for a IPPKH may deliver non-forest land as compensation or pay compensation for the use of forest area in the form of a non-tax state income. It also stipulates that an IPPKH is valid for the same period as the applicable operational license, such as the mining licenses (IUP or IUPK). Pursuant to the Forestry Law, to make any changes on the utilization of the forest, due to its strategic value, the Minister of Forestry must obtain the approval of the House of Representatives.

Pursuant to Regulation of the Minister of Forestry No. P. 4/Menhut-II/2011 dated January 18, 2011 on the Guidelines for Forest Reclamation, a mining company whose mining activities are conducted within a forest, based on an IPPKH from the Minister of Forestry, is required to include forest reclamation as a part of its mining activities. It further stipulates that the reclamation process is required to commence without waiting for the mining operations to be completed or no further than one year from the expiry of the IPPKH.

The reclamation process is required to be consolidated in a five-year plan with additional details contained in the annual plan. The reclamation plan will be assessed by the Directorate General of Watershed Management and Social Forestry at the Ministry of Forestry, on behalf of the Minister. If found to be adequate, then a recommendation will be issued by the Directorate General of Watershed Management and Social Forestry at the Ministry of Forestry, on behalf of the Minister of Forestry, and will be further approved by MEMR, the head of the regional or the regency government. If the mining period is less than five years, the reclamation plan will be adjusted to the mining period, while the assessment and the approval by the related authorities will follow the "five-year plan" steps.

The IPPKH holder is required to establish a special body to execute the forest reclamation process, which must include experts in forestry, agriculture, mining, soil and other fields related to forest reclamation. A progress report concerning the reclamation process must be submitted periodically to the Directorate General of Watershed Management and Social Forestry at the Ministry of Forestry, with a carbon copy to the Directorate General of Forestry Planology at the Ministry of Forestry, Directorate of the DGMC at the MEMR, Provincial Technical Agency that handles forestry matters, and the Regent Technical Agency that handles forestry matters, and such report must include quarterly and annual reports.

Regional Government Law

Indonesia is divided into provinces which are further sub-divided into regencies and municipalities. The regencies and municipalities within a province are autonomous in most of their activities and, therefore, are not subservient to the province.

On October 2, 2014, the Government enacted Law No. 23 of 2014 concerning the Regional Government ("Law 23") which has revoked the previous Law No. 32 of 2004 concerning the Regional Government ("Law 32"), which substantially changed the legal and regulatory framework of the mining industry in Indonesia. Law 23 divides the governmental affairs into (i) absolute governmental affairs; (ii) concurrent governmental affairs; and (iii) general governmental affairs. Mining business activities are categorized as concurrent governmental affairs, which require the distribution of authority between the Government and other regional governments when discharging their governmental affairs. The distribution of authority will mainly be assessed based on the location, the customer, the impact and the efficiency of the natural resources utilization. To date, the Government has issued a number of amendments of Law 23 including Government Regulation as Substitute of Law No. 2 of 2014 and Law No. 9 of 2015 as the second amendment to Law 23.

Shipping Regulations

On May 7, 2008, the Indonesian Government issued Law No. 17 of 2008 on Shipping (the "Shipping Law") to foster the development of the maritime industry in Indonesia, revoking and replacing the previous law on shipping, namely Law No. 21 of 1992. The Shipping Law covers, among other matters, the implementation of the cabotage principle, minimum navigation requirements, good port governance, port tariffs and port status (including designation of ports for international seaborne trade), ship registration, standard requirements for crew members and maritime management and environmental safety requirements. The implementing regulations of the Shipping Law have been issued which include, among others, Government Regulation 20 of 2010 on Water Transportation, was issued on February 1, 2010 as amended by Government Regulation No. 22 of 2011 on the Amendment of Regulation 20/2010 ("Regulation 20/2010 (as amended)"), which further elaborates the regulation of water transportation including sea transportation.

Port business entities

Port business entity license

Under the Shipping Law, any state-owned port company or private port company that intends to be a port operator (a "Port Business Entity") is required to apply for a Port Business Entity License (*Izin Badan Usaha Pelabuhan*) from the following institutions, as applicable:

- The Minister of Transportation, if the Port Business Entity operates at a port that falls under the category of "main ports," which are ports that serve domestic and international sea transport activities,

transfer of domestic and international sea transport freights of large quantities and provide inter-provincial service as the origin/destination of passengers and/or goods as well as ferries, or "collecting ports," which are ports that serve domestic sea transport activities, transfer of domestic sea transport freights of medium quantities and provide inter-provincial service as the origin/destination of passengers and/or goods as well as ferries;

- The governor of the respective region, if the Port Business Entity operates at a port that falls under the category of "regional feeder ports," which are ports that serve domestic sea transport activities, transfer of domestic sea transport freights and provide inter-provincial service as the origin/destination of passengers and/or goods as well as ferries; and
- The respective regent or mayor, if the Port Business Entity operates at a port that falls under the category of "local feeder ports," which are ports that only provide services to support sea transportation within one city or regency.

A Port Business Entity may be assigned to operate one or several terminals within a port area with the following scope of business: (i) to provide terminal services for vessel berthing or anchorage; (ii) to provide fuel and fresh water supply; (iii) to provide embarkation and disembarkation facilities for passengers and/ or vehicles; (iv) to provide terminal services related to loading and unloading of goods and containers; (v) to provide warehouse and hoarding places for goods, loading and unloading equipment, as well as port equipment; (vi) to provide loading container, liquid bulk, dry bulk and roll-on/roll-off terminals; (vii) to provide stevedoring services; (viii) to provide good distribution and consolidation centers; and/or (ix) to provide towing services for ships.

In operating a port, a Port Business Entity liaises and cooperates with the local port authority (the "Port Authority"). The cooperation must be made in the form of a concession that is implemented under an agreement.

Port concessions

A port concession is a right granted by the local Port Authority or Port Administration Unit to a Port Business Entity, in order to operate a port or to provide certain port services within a certain period of time and in return for a certain compensation depending on the provision of the concession agreement ("Port Concession").

In September 2015, the Minister of Transportation issued a regulation that specifically regulates the port concession mechanism namely Minister of Transportation Regulation No. PM 15 of 2015 as subsequently amended by Minister of Transportation Regulation No. PM 166 of 2015 concerning Concessions and Other Forms of Cooperation between the Government and Port Business Entities in the Business Line of Ports ("MoT Regulation No. 15/2015"). Under the MoT Regulation No. 15/2015, the cooperation between the Government and Port Business Entities may be conducted through (i) a direct appointment mechanism; (ii) tender; or (iii) other forms of cooperation which may consist of Utilization Cooperation, Leasing, Management Contract and Operating Cooperation. The concession right must be granted through a tender mechanism as governed by Presidential Regulation No. 38 of 2015 on Public Private Partnership for Infrastructure Procurement.

A Port Business Entity together with the Port Authority shall prepare and discuss the draft of concession agreement which must, at the minimum, provide details of the parties, scope of work, duration of the concession agreement, concession fee, collateral, starting tariff rate and tariff adjustment mechanism, rights and obligation of the parties including risk allocation and mitigation, working standard and complain handling procedures, supervision mechanism on service performance, utilization and ownership of assets, representations and warranties, procedures for handling public complaints, share transfers, sanction for defaulting parties, dispute resolution, termination clause, governing law as Indonesian law, port facilities transfer or assignment to the Port Authority upon the expiration of concession, force majeure clause and amendment clause.

Cooperation agreement

Upon the expiration of the concession agreement, all of the port facilities constructed during the period of concession must be assigned or returned to the Port Authority. The Port Authority will appoint a Port Business

Entity through a tender process to manage the port facilities under a cooperation agreement. This may result in the appointment of the Port Business Entity that previously held the port concession which would authorize such Port Business Entity to continue operating the port under a cooperation agreement.

There are slight differences between a cooperation agreement and a concession agreement. Under a concession agreement, the Port Business Entity receives a portion of the profit gained from the operation of the Port, whereas in a cooperation agreement, the Port Business Entity merely acts as the Port Authority's contractor and only receives a fee payment for its services. The relevant regulations, however, do not specify when the profit or fee shall be paid to the Port Business Entity.

Port Master Plan approval

Before allowing a Port Business Entity to commence construction of a port, a Port Authority is required to obtain approval for a Port Master Plan. The Port Master Plan must include the detailed plan on land and waters area allocation which shall consist of an allocation plan for main and supporting facilities. The said Port Master Plan must be in line with the National Port Master Plan (*Rencana Induk Pelabuhan Nasional*), which must be used as guidance in determining the location of the port, and in the establishment, management, development and preparation of the Port Master Plan. Such Port Master Plan shall be determined by the Minister for Transportation for main ports and collecting ports, the relevant governor for regional feeder ports and the relevant regent/mayor for local feeder ports.

Following the issuance of the Port Master Plan, the Port Authority will then be required to apply for Port Location Permit with the Ministry of Transportation. Upon such application, the Ministry of Transportation will issue a decree determining the location of the port. This decision will contain, among other information, the location of the port, the name of the port and the name of the administrative area where the port is located.

Port construction permit

In order to construct a new port, the Port Authority is required to obtain a construction permit from the Minister of Transportation for main ports and collecting ports, the relevant governor for regional feeder ports and the relevant regent/mayor for local feeder ports. The construction of ports may be conducted only by either the Port Authority or a Port Business Entity based on a concession agreement or any other forms of management that may be determined by the Port Authority for a commercial port and by the Port Administrator Unit for a non-commercial port based on their sole discretion. The construction of facilities on the sea sides of the port can also be performed after a Public Port Construction Permit is issued.

The application for a construction permit is initiated by the Port Authority and includes the Port Master Plan, feasibility documents, technical design documents and environmental documents. The applicable regulation does not define the terms "feasibility documents," "technical design documents" or "environmental documents." It is expected that this terminology will be explained in future implementing regulations. After the Port Master Plan is approved, the relevant government agency must issue a building construction permit (*Izin Mendirikan Bangunan* or "IMB") before the construction of port facilities can commence.

Operational license

To conduct the business, a Port Business Entity shall obtain its business license issued by (i) Chairman of Indonesian Capital Investment Coordinating Body (*Badan Koordinasi Penanaman Modal* or "BKPM") having authority over the main port and feeder port, (ii) Governor for Port Business Entity having authority over the regional collecting port; and (iii) Regent/Mayor for Port Business Entity having authority over the local feeder port.

Other local governmental licenses

Regulation 20/2010 (as amended) requires any party providing port-related services to obtain specific business licenses such as for stevedoring. These business licenses are issued by the regional government where such specific port service activities are conducted.

Use and operation of ports, jetties or terminals for internal use

An Indonesian entity must obtain a location permit with respect to any ports, jetty or terminal for internal use, pursuant to the Shipping Law; Government Regulation No. 61 of 2009 concerning Ports as amended with Government Regulation No. 64 of 2015 ("Regulation 61/2009"); Ministry of Transportation Regulation No. PM 51 of 2015 on Sea Port Operation as amended by Ministry of Transportation Regulation No. PM 146 of 2016; and Ministry of Transportation Regulation No. PM 20 of 2017 on Special Terminal and Terminal for Internal Use. Location permits are issued by the Minister of Transportation and are different from the location permits issued by the land office which evidence acquisition and possession of a land area. This location permit is issued by considering the National Port Master Plan regulated in the Decree of Minister of Transportation No. KP 414 of 2014 as amended by the Decree of Minister of Transportation No. KP 725 of 2014.

Under these regulations, a location permit for any special port or terminal and terminal for internal use must be issued based on recommendations by the governor, mayor or regent, as applicable. For jetty or terminal for internal use, in order to operate a jetty or terminal for internal use to support its business activities, an Indonesian entity is required to obtain a jetty construction license and a terminal operating license, issued by the Minister of Transportation. Once the terminal construction license has been obtained, the license holder has one year in which to commence the construction of the terminal, and the construction must be completed within three years of the date of issuance of the license. The terminal operating license is valid for five years and may be extended.

Cabotage Principle

The Shipping Law implements the Cabotage Principle in connection with water transportation for all marine transportation companies by requiring that sea transportation in the domestic waters must be conducted by national shipping companies using Indonesian-flagged vessels and employing Indonesian crews. The Shipping Law was issued for the purpose of implementing the Cabotage Principle for the protection of the sovereignty of the Indonesian archipelago and to provide opportunities for domestic sea transportation companies to gain market share.

Regulation 20/2010 (as amended) allows certain types of foreign vessels to operate in Indonesia provided that such vessels do not transport passengers and/or goods, Indonesian-flagged vessels are not, or not sufficiently available, and such vessels have obtained licenses from the Minister of Transportation. Activities which are defined as not transporting passengers and/or goods include surveying oil and gas, drilling, offshore construction, offshore operational support (including anchor handling tug supply vessels larger than 5,000 BHP with dynamic positions (DP2/DP3), platform supply vessels ("PSV") and diving support vessels ("DSV")), dredging, and salvage and underwater works. The terms and conditions for granting the operational licenses of foreign-flagged vessels are regulated by the Minister of Transportation Regulation No. PM 100 of 2016 on Procedures and Requirements of Granting the Operational Licenses of Foreign-Flagged Vessels Engaged in Activities Other Than Passengers and/or Goods Transportation in Domestic Sea Transportation Activities (as amended from time to time). In the event foreign-flagged carriers violate these regulations, the carriers will not be able to obtain services from any port in Indonesia. Other sanctions under the Shipping Law may also apply.

Under Minister of Transport Regulation No. KM. 22 of 2010 on Goods/Cargo Transportation Inter-Domestic Sea Ports as amended by Minister of Transportation Regulation No. PM 73 of 2010 ("MoT No. 22/2010"), goods transported to and from inter-domestic sea ports should be conducted by national shipping companies using Indonesian flagged vessels and employing crew of Indonesian nationality.

Special vessels

The Shipping Law defines special vessels as vessels used for internal transport activities by a business entity in order to support its main business, such as to transport materials, production equipment, and/or the final product for internal use. Regulation 20/2010 (as amended) further stipulates that a business entity engaging in special vessel activity must be an Indonesian legal entity whose main business activity is in the industrial, forestry, tourism, mining, agricultural, fishery, salvage, dredging, construction, or research sector. The special vessel must be an Indonesian-flagged vessel that has fulfilled the ship feasibility requirement and employs

Indonesian crew. Ministry of Transportation Regulation No. PM 93 of 2013 on Management and Administration of Sea Transport as amended by Ministry of Transportation Regulation No. 74 of 2014 regulates that the special vessel activity is conducted based on its Operational License for Special Sea Transportation Companies (*Surat Izin Operasi Perusahaan Angkutan Laut Khusus* or "SIOPSUS"). The special vessels company must report its ship operational activity to the Minister of Transportation. Special vessels are prohibited from transporting cargo or property of a third-party and/or transporting general cargo or property of third-party except if there is no other ship available for transporting the cargo or property and there is no transportation company that is able to provide, partially or entirely, such service demands.

Safety and security requirements

Any seagoing vessel operating within Indonesian waters shall be subject to Indonesian safety regulations. Article 117 of the Shipping Law sets forth certain safety and security requirements for ship sea-worthiness and navigation that must be fulfilled. Requirements regarding ship-seaworthiness relate to vessel safety, prevention of pollution from vessel manning, ship guards, lines and loading and unloading of vessels, crew prosperity and passengers' health, vessel legal status, management of safety and prevention of pollution from ships and management of ship safety. Requirements regarding navigation relate to navigation aid means, telecommunications, hydrograph and meteorology, lanes and crossings, dredging and reclamation, scouting, handling of vessel bodies and salvage and underwater works.

In connection with the enforcement of safety and maintenance requirements, Indonesian marine inspectors are authorized to carry out the necessary surveys or inspections on board vessels including initial surveys, annual surveys, renewal surveys and interim surveys. Initial surveys are carried out for a new vessel built at a shipyard or for the reflagging of a foreign-flagged vessel to an Indonesian-flagged vessel. Renewal surveys are conducted once every five years. Interim surveys are conducted annually to every five years. In addition to such regularly scheduled surveys, spot inspections and surveys due to vessel damage or repair are also conducted.

Indonesia is a signatory to numerous international conventions including the International Convention for the Prevention of Pollution from Ships ("MARPOL") and the International Convention for the Safety for Life at Sea ("SOLAS").

BUSINESS

Overview

We are the state-owned national mining company appointed by the Government as the holding company for Indonesia's mining operators. We engage in the mining and processing of coal, gold, tin, nickel and bauxite, and aluminum smelting and production. According to AME, as of June 30, 2018, we are the (i) second largest tin producer in the world, in terms of refined tin production volume, (ii) largest holder of coal reserves in Indonesia and the sixth largest coal producer in Southeast Asia in terms of coal production volume, (iii) sixth largest gold producer in Southeast Asia, in terms of gold production volume and (iv) only primary aluminum producer in Indonesia and second largest aluminum smelting company in Southeast Asia, in terms of production capacity.

We commenced business operations in 1979 as an aluminum smelter and have, over the course of almost 40 years, acquired in-depth expertise in managing and operating downstream production plants and supporting faculties for the refining of minerals and production of downstream mineral products. As the holding company for Antam, Bukit Asam and Timah, following the Government's transfer of its 65.0% equity interests in each of these entities to us in 2017, we oversee the management and exploitation of the coal and mineral resources held by these entities and aim to leverage our expertise to develop the various downstream businesses of these entities so as to achieve stronger financial performance and growth of our Group. Concurrent with the Government's transfer of its equity interests in Antam, Bukit Asam and Timah, the Government also transferred its 9.36% equity interests in PTFI to our Company. We plan to acquire a majority beneficial stake in PTFI. See "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia."

Our business operations are divided into six main segments, namely (i) coal, (ii) gold, (iii) tin, (iv) nickel, (v) bauxite, and (vi) aluminum smelting.

- ***Coal***. We are the largest holder of coal reserves in Indonesia and the sixth largest coal producer in Southeast Asia in terms of coal production volume, as of June 30, 2018, according to AME. Our coal business is vertically integrated and we undertake all stages of the mining and processing process, starting from exploration, mining and processing of coal to marketing of our coal products. We own and operate five coal mines located on the islands of Sumatra and Kalimantan, which, together, span a total area of approximately 69,211 hectares. Our coal products benefit from having a relatively low ash and low sulfur content, and high HGI and AFT. We sell a large proportion of our coal domestically to PLN, the state-owned electricity generation and distribution company, and internationally to commodity traders and coal-fired power producers. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 19.3 million tonnes, 19.6 million tonnes, 24.3 million tonnes and 11.2 million tonnes of coal, respectively, and sold 19.1 million tonnes, 20.8 million tonnes, 23.6 million tonnes and 12.2 million tonnes of coal, respectively. For the same periods, our revenue from sale of coal was Rp.13,801.0 billion, Rp.13,785.4 billion, Rp.19,133.5 billion (US$1,328.3 million) and Rp.10,289.5 billion (US$714.4 million), respectively.
- ***Gold***. We are the sixth largest gold producer in Southeast Asia in terms of gold production volume, as of June 30, 2018, according to AME. Following the completion of our planned PTFI Share Acquisition, see "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia," we expect to be the largest gold producer in the world, in terms of gold production volume, taking into account 100.0% of the production of PTFI. We own and operate two gold mines located in Pongkor and Cibaliung, which, together, span a total area of approximately 7,387 hectares. Our gold and precious metals business is vertically integrated and we undertake all stages of mining and processing of precious metals. We produce and sell fine gold, mainly in the form of gold bars, as well as other precious metal products such as platinum and fine silver. Our fine gold is produced at the Logam Mulia Precious Metals Refinery, the only precious metals refinery in Indonesia that is accredited by the London Bullion Market Association ("LBMA"), from gold doré bullion, which we purchase from third-party precious metals trading companies, and gold doré, which we produce at our gold mines. In addition to producing and selling fine gold and other precious metal products, we provide precious metals refining services to other third-party mining companies. For the years ended December 31,

2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 71,053 oz t, 70,988 oz t, 63,240 oz t and 33,468 oz t of gold, respectively, and sold 455,865 oz t, 328,805 oz t, 424,454 oz t and 442,394 oz t of gold, respectively. For the same periods, our revenue from sale of gold was Rp.7,314.7 billion, Rp.5,543.6 billion, Rp.7,375.5 billion (US$512.0 million) and Rp.8,203.9 billion (US$569.6 million), respectively.

- ***Tin***. We are the second largest refined tin producer in the world, in terms of refined tin production volume, as of June 30, 2018, according to AME. Our tin business is vertically integrated and we undertake all stages of the mining and processing process, starting from exploration, mining and processing of tin to marketing of our tin products. We own and operate tin mines in the Bangka Belitung Islands, the Riau Islands and Riau, which, together, span a total area of approximately 473,402 hectares. We produce refined tin products as well as other downstream tin products, including tin chemical and solder, which we primarily sell internationally, in countries including Japan, South Korea, Netherlands, the United States and Taiwan, mainly to the trading arms of automobile manufacturers and customers in the manufacturing industry. Our Banka tin and Kundur tin are registered and traded on the London Metal Exchange, which requires our refined tin products to be at least of "Grade A" quality. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 27,431 tonnes, 23,756 tonnes, 30,249 tonnes and 12,366 tonnes of refined tin, respectively, and sold 30,087 tonnes, 26,677 tonnes, 29,914 tonnes and 12,359 tonnes of refined tin, respectively. For the same periods, our revenue from sale of tin metal and other downstream tin products was Rp.6,548.4 billion, Rp.6,629.8 billion, Rp.8,481.7 billion (US$588.8 million) and Rp.3,912.4 billion (US$271.6 million), respectively.

- ***Nickel***. We are a vertically integrated nickel ore mining company and undertake all stages of the mining and processing of nickel ore. We also produce ferronickel from the nickel ore we mine and process. We own and operate five nickel ore mines located in Kolaka, Southeast Sulawesi, which, together, span a total area of approximately 81,437 hectares. We operate three ferronickel plants, FeNi II, FeNi III and FeNi IV, at our Pomalaa Ferronickel Facilities. Together, these plants have a combined production capacity of approximately 27,000TNi to 30,000TNi per year. Our ferronickel products generally consist of approximately 20.0% nickel content and 80.0% iron content and are sold in the form of shots or pellets, either with high or low carbon content. We sell the majority of our nickel ore and ferronickel in the international market, including India, South Korea, Taiwan, China and Ukraine. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 1.7 million wmt, 1.6 million wmt, 5.5 million wmt and 3.8 million tonnes of nickel ore, respectively, and sold 0.05 million wmt, 0.7 million wmt, 2.9 million wmt and 1.9 million wmt of nickel ore, respectively. For the same periods, we produced 17,211TNi, 20,293TNi, 21,762TNi and 12,811TNi of ferronickel, respectively, and sold 18,643TNi, 20,887TNi, 21,878TNi and 12,578TNi of ferronickel, respectively. For the same periods, our revenue from the sale of nickel ore and ferronickel was Rp.2,729.0 billion, Rp.3,077.6 billion, Rp.4,592.4 billion (US$318.8 million) and Rp.3,355.9 billion (US$232.9 million), respectively.

- ***Bauxite***. We are a vertically integrated bauxite mining company and undertake all stages of the mining and processing of bauxite. We own and operate a bauxite mine located in Tayan, West Kalimantan, spanning a total area of approximately 34,360 hectares. We sell bauxite of varying alumina content based on our customers' requirements, although we typically sell bauxite with a minimum alumina content of 42.0%. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 201,517 wmt, 241,202 wmt, 648,431 wmt and 416,733 wmt of bauxite ore, respectively, and sold 182,624 wmt, 290,581 wmt, 838,069 wmt and 256,500 wmt of bauxite ore, respectively. For the same periods, our revenue from sale of bauxite was Rp.66.1 billion, Rp.104.2 billion, Rp.398.0 billion (US$27.6 million) and Rp.125.8 billion (US$8.7 million), respectively.

- ***Aluminum smelting***. We produce, smelt and sell aluminum products such as aluminum ingots, aluminum billets and aluminum alloys. As of June 30, 2018, we were the second largest aluminum producer in Southeast Asia, in terms of aluminum production volume, according to AME. Our aluminum production plants and facilities, comprising our aluminum smelter, casting plant, power plants, regulating dams and ports are located at Kuala Tanjung, North Sumatra. We are able to produce our aluminum products more cost effectively as compared to other aluminum producers as we have access to hydroelectric power that we generate at our Siguragura and Tangga Power Plants. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 257,149 tonnes, 245,483 tonnes, 218,816 tonnes and 119,455 tonnes of aluminum, respectively, and sold 256,622 tonnes, 247,994 tonnes, 207,276 tonnes and 97,507 tonnes of aluminum, respectively. For the same periods, our revenue from sale of aluminum products was Rp.6,238.0 billion, Rp.5,576.4 billion, Rp.5,744.3 billion (US$398.8 million) and Rp.3,127.5 billion (US$217.1 million), respectively.

For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, our total revenue was Rp.37,821.4 billion, Rp.35,904.5 billion, Rp.47,184.3 billion (US$3,275.8 million) and Rp.29,855.6 billion (US$2,072.7 million), respectively, and our gross profit was Rp.6,925.5 billion, Rp.8,211.2 billion, Rp.13,907.8 billion (US$965.6 million) and Rp.7,954.0 billion (US$552.2 million), respectively. For the same periods, our EBITDA was Rp.5,623.3 billion, Rp.6,639.4 billion, Rp.12,567.7 billion (US$872.5 million) and Rp.9,451.0 billion (US$656.1 million), respectively, and our adjusted EBITDA was Rp.4,660.0 billion, Rp.6,058.5 billion, Rp.11,199.0 billion (US$777.5 million) and Rp.6,759.7 billion (US$469.3 million), respectively.

Strengths

We believe that we have the following key competitive strengths:

Leading state-owned national mining company with a mandate to manage and develop domestic reserves

We are the state-owned national mining company with a mandate from the Government to productively and sustainably utilize and develop value-added downstream businesses for Indonesia's domestic reserves. We own and control a significant proportion of Indonesia's coal and mineral reserves, and own and operate mining assets and production facilities that are strategically distributed across Indonesia. As of June 30, 2018, we hold approximately 99.0%, 12.0%, 11.0% and 4.0% of Indonesia's tin, nickel, coal and bauxite reserves, and, upon the completion of the planned PTFI Share Acquisition, are expected to hold 74% and 25% of Indonesia's copper and gold reserves. In addition to having ownership and control over a significant proportion of Indonesia's coal and mineral reserves, we are also a leading commodities producer and a significant contributor to Indonesia's commodity exports. According to AME, in 2017, we accounted for all of Indonesia's aluminum production and exports and, 44.0% and 37.7%, 23.5% and 51.0%, 18.3% and 52.5%, and 5.3% and 2.5% of Indonesia's production and exports of refined tin, nickel ore, ferronickel and coal, respectively. Following the completion of the planned PTFI Share Acquisition, we expect to account for over 75.0% and 57.0% of Indonesia's copper and gold production, and over 58% and 13% of Indonesia's copper and gold exports, taking into account 100% of the production volumes of PTFI.

Diversified and integrated business to minimize cash flow volatility from commodity cycles

We believe that our diversified and integrated business structure, which provides us with exposure to six major commodities, namely coal, gold, tin, nickel, bauxite and aluminum products, allows us to maintain steady cash flows across commodity cycles. Further, stemming from the vertically integrated nature of our business, we produce multiple commodities across the value chain of the minerals that we mine, allowing us to capture increasing margins as we move downstream, minimize our exposure to cyclicality in demand for commodities generally, and reduce our customer concentration risk. For example, we mine and sell processed nickel ore, which our customers use to produce ferronickel, and we also produce higher margin downstream nickel products, such as ferronickel, which is used as feed material for stainless steel production and the manufacture of batteries.

Our ability to manufacture a combination of products processed from the same underlying mineral allows us to not only benefit from the sale of downstream products from which we derive higher margins, but also adapt to shifting demand and supply cycles so as to maintain steady cash flows for our business operations.

Through our broad range of upstream and downstream commodity products, we benefit from having a geographically diverse customer base, with customers from Indonesia, Singapore, China, India, South Korea and Japan accounting for 46.3%, 11.4%, 10.3%, 7.8%, 7.0% and 6.9% of our total revenue for the year ended December 31, 2017, respectively. For the same period, our top three customers, namely PLN, ICBC Standard Bank PLC and Adani Global Pte. Ltd., accounted for 20.4%, 6.0% and 3.2% of our total revenue, respectively. Substantially all of our remaining customers each accounted for less than 2.0% of our total revenue for the period. We believe that our diverse customer base also provides us with steady cash flows across commodity cycles.

Competitively positioned in the global commodity market

We believe that our fast growing production volumes and large range of commodity products well-positions us to be competitive in the global commodity market. In 2017, we were the third largest producer of nickel ore and ferronickel in Southeast Asia, ninth largest producer of thermal coal in the world and second largest producer of refined tin in the world. Between 2015 and 2017:

- our nickel ore production grew at a CAGR of 79.9% from 1.7 million wmt to 5.5 million wmt;
- our ferronickel production grew at a CAGR of 12.4% from 17,211 TNi to 21,762 TNi;
- our coal production grew at a CAGR of 12.0% from 19.3 million tonnes to 24.3 million tonnes; and
- our refined tin production grew at a CAGR of 5.0% from 27,431 tonnes to 30,249 tonnes.

Over the same period, PTFI's copper production grew at a CAGR of 14.4% from 752 million pounds to 984 million pounds and its gold production grew at a CAGR of 15.5% from 1.2 million ozs to 1.6 million ozs, making PTFI the largest producer of copper and gold in Southeast Asia in 2017.

Low cost structure

We benefit from a low cost structure for most of our commodity products, which we believe allows us to enjoy stronger margins as compared to other commodity producers and provides us with a buffer against individual commodity price cycles. According to AME, our coal production cost is within the second quartile of the global coal cost curve. Unlike most of the other Indonesian coal producers who rely on barging as part of the transportation chain to export coal, we utilize rail and port facilities similar to those used by our international peers for the export of coal. Further, according to AME, our Pomalaa smelter makes us one of the lowest cost ferronickel producers in the world, which is mainly attributable to the higher grade of nickel ore feedstock used and captive nickel ore supply, along with a low cost captive power supply. Also, benefiting from low cost of power provided by our hydroelectric power plants, the Siguragura and Tangga Power Plants, we are able to produce our aluminum products more cost effectively as compared to other aluminum producers.

Additional equity investment in the world class Grasberg Mine

PTFI, in which we currently hold a 9.36% equity interest, owns the Grasberg Mine situated in the remote highlands of West Papua, Indonesia. We plan to acquire a majority beneficial stake in PTFI, see "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia."

The Grasberg Mine is the largest gold mine and the second largest copper mine in the world, in terms of production volume of gold and copper ore, respectively. According to AME, as of June 30, 2018, the Grasberg Mine is one of the lowest cost gold mines in the world, and sits in the first quartile of the gold cash cost curve, due to its low mining costs and high credits from its copper and silver production. It is estimated that its cash cost in 2018 is approximately US$(-300)/oz. The Grasberg Mine's low costs and high gold and silver credits also place it in the first quartile of the 2018 copper mine cash cost curve, as one of the lowest cost copper mines in the world with cash costs of US$(-0.70)/lb of copper after credits, according to AME.

The Grasberg Mine is operated by FCX, which currently holds a 90.64% equity interest in PTFI. Following the completion of our planned PTFI Share Acquisition, we expect FCX to continue to manage the mining operations of the Grasberg Mine through PTFI. Operations at the Grasberg Mine require strong technical expertise, especially in light of current plans to develop the underground, more complex, phase of the mine. We expect the Grasberg Mine's substantial amount of ore reserves to, following PTFI's completion of its planned infrastructure projects in 2020, support production at current levels through 2041 and we believe that continued control of operations at the Grasberg Mine by FCX, an experienced operator of the Grasberg Mine, will ensure that the high technical requirements of the Grasberg Mine will be met and will optimize production during the remainder of its mine life.

Led by a highly-experienced management team and have high standards of corporate governance

Our management team has extensive experience in the mining and metals industry, geology and engineering, as well as accounting, law, economics, and business and financial management. We believe that the extensive experience of our management team gives us the ability to manage our operations efficiently, maintain profitability through commodity price cycles and develop new downstream projects strategically. We also believe that our management team was instrumental in transitioning our Company into a fully integrated diversified coal and metals mining company in 2017, when we became the holding company of Antam, Bukit Asam and Timah.

Our management team is committed to actively monitoring, evaluating and refining the corporate governance practices throughout our corporate structure. Stemming from our high standards in corporate governance, we were granted Gold status for the Indonesia Good Corporate Governance Award-III-2017, in the non-listed state-owned enterprise category, from the Indonesia Economic Review. Antam, Bukit Asam and Timah also maintain high corporate governance standards in compliance with the Listing Rules of the IDX and the Indonesian Capital Markets Law. In the past three years, Antam, Bukit Asam and Timah have each achieved recognition as The Most Trusted Company by the Indonesia Institute of Corporate Governance. In addition, as part of the corporate governance processes of our Group, business decisions made by Antam, Bukit Asam and Timah relating to certain matters must be approved by (i) the respective company's Board of Commissioners, (ii) both the respective company's Board of Commissioners and the Government, by virtue of the Series A Dwiwarna share it holds in each of Antam, Bukit Asam and Timah, or (iii) us, as their majority shareholder, as the case may be, depending on the nature and commercial significance for our Group. See "Management — Good Corporate Governance and Risk Management Committee." We believe that such processes allow us to maintain our operational excellence and safeguard the interests of all our stakeholders.

Strategies

The main elements of our business strategy include the following:

Continued consolidation of domestic mining reserves and resources

In line with our mandate from the Government to productively and sustainably utilize and develop value-added downstream businesses for Indonesia's coal and mineral reserves, we plan to undertake targeted exploration activities in our mining concession areas and to increase our holdings of key minerals and resources. We plan to own between approximately 15.0% and 20.0% of the domestic reserves and resources for coal and the minerals that we currently mine, and plan to acquire additional mining concessions for nickel, coal and bauxite, and increase our copper and gold reserves through the planned PTFI Share Acquisition.

We believe that our continued consolidation and increasing control over domestic mining reserves and resources will solidify our position as the leading state-owned national mining company and allow us to become an impactful Fortune 500 global mining company by 2028.

Development of production facilities to increase production capacity and expand into new capabilities

We plan to expand our existing and construct new production facilities to grow our production capacity and develop new downstream capabilities. Our expansion plans for increasing the production capacity of our

midstream and downstream products include upgrading works at our aluminum reduction plant at Kuala Tanjung, North Sumatra, to increase the aluminum production capacity from 260ktpa to 300ktpa, as well as construction of the new East Halmahera Ferronickel Plant which is expected to increase our ferronickel production capacity by 50.0% after completion of the first phase of construction.

We intend to construct new facilities for the purpose of developing downstream value chains of relevant industries and increasing our production of high-value added products. For example, we are exploring the construction of a new stainless steel plant with a planned production capacity of 500,000 tonnes of stainless steel per year. In addition, we are in the process of acquiring an idle primary aluminum billet plant located next to our existing aluminum smelter in Kuala Tanjung in order to convert it into a secondary aluminum billet plant that will have a production capacity of 50,000 tonnes of secondary aluminum billets per year.

We also aim to develop our integrated capabilities with respect to our aluminum business by producing our own alumina as raw material for our aluminum products. We are planning the construction of the Mempawah Smelter Grade Alumina Refinery, which we expect will allow us to process 3,000ktpa of bauxite ore into smelter grade alumina. We believe that the new alumina refinery will significantly facilitate our growth into a fully integrated aluminum smelter, allowing us to exercise better control of our supply chain and reduce our aluminum production costs.

Facilitate higher coal production by increasing transportation capacity and expanding our coal downstream business

We are undertaking several infrastructure projects with the goal of substantially increasing our coal transportation capacity. In order to support higher levels of coal production, we are upgrading two of our existing railways and building two new railway tracks to serve transportation of coal from our Tanjung Enim Coal Mine. Our railway expansion projects are expected to allow us to transport, and thereby increase coal production to, 60 million mtpa of coal by 2023 as compared to our current transportation capacity of 23 million mtpa.

Further, given our substantial coal reserves and strong potential to increase production capacity, we believe that we are well placed to exploit opportunities for downstream growth. We are currently constructing the Sumsel 8 CFPP, a coal-fired power plant with a planned output capacity of 2x620 MW that is expected to consume coal at a rate of 5.4 million mtpa and is intended to be fueled by coal from our Tanjung Enim Coal Mine. Upon commencing commercial operations, the Sumsel 8 CFPP is expected to be the biggest coal-fired power plant in Indonesia, in terms of output capacity. We are also exploring coal to chemical business opportunities and have commenced studies in relation to the development of a coal gasification plant, which would use gasification technology to convert our coal into syngas, a raw material for further processing into products such as fuel, fertilizer and plastic raw material. We believe that growing our coal downstream business will allow us to further optimize coal production and extract maximum value from our coal reserves.

Leverage our position as the state-owned holding company for Indonesia's mining operators and selectively collaborate and grow our business with experienced world-class partners

We believe that our status as a state-owned entity gives us an advantage when acquiring domestic mining concessions and also makes us as an attractive domestic partner for experienced world-class mining and commodity producing companies.

As the owner of Indonesia's mineral reserves and resources, the Government, through the MEMR, in accordance with MEMR Ministerial Decree No. 11 of 2018, conducts a priority bidding process for mining concessions among state-owned entities and regional government-owned entities, before opening the opportunity to bid for such mining concessions to the public. We have in the past leveraged and intend to continue capitalizing on our priority access to domestic mining concessions to continue to grow our business. For example, when the Matarape and North Bahodopi nickel mining concession areas (formerly part of PT Vale Indonesia's nickel mining concession) were recently returned to the Government, we collaborated with a reputable domestic mining company to acquire these mining concessions, where we would leverage our state-

owned entity status to participate in the priority bidding process and our domestic partner would fully fund the acquisition, development and operation of the mining concessions.

Further, we also intend to leverage our state-owned entity status and selectively collaborate and grow our business with experienced world-class partners. For example, we have entered into a heads of agreement with Chalco Hong Kong, a subsidiary of the Aluminum Corporation of China Limited, the largest alumina producer in the world, according to AME, to establish a joint venture for the purpose of constructing the Mempawah Smelter Grade Alumina Refinery Plant. See"— Our Bauxite Business — Production facility under development — The Mempawah Smelter Grade Alumina Refinery Plant." We believe that collaborating with such experienced partners would allow us develop our technical know-how and grow our downstream businesses.

Reserves and Resources Data

The following table sets forth our aggregate net working interest reserves and resources, as of December 31, 2017.

	Reserves			
	Proved	**Probable**	**Total**	**Resources**
Coal (tonnes in million)[1]	1,470	1,826	3,296	5,753
Gold (koz)[2]	413	92	505	1,242
Silver (koz)[2]	3,130	910	4,040	12,377
Tin ore (tonnes)[3]	136,722	240,872	377,594	796,343
Nickel (wmt in million)[2]	203	180	383	1,222
Bauxite (wmt in million)[2]	29	17	46	568

Notes:

(1) According to the 2017 Coal Reserves Statement, see Appendix A.

(2) According to the 2017 Nickel, Gold, Silver and Bauxite Reserves Statement, see Appendix B.

(3) According to the 2017 Tin Reserves Statement, see Appendix C.

The following table sets forth PTFI's aggregate gross reserves and resources at its Grasberg Mine, as of December 31, 2017.

	Reserves			
	Proven	**Probable**	**Total**	**Resources**
Ore (tonnes in million)[1]	627	1,329	1,956	1,969
Copper (kilo tonnes)	7,401	13,156	20,557	14,321
Gold (koz)	19,963	32,470	52,433	40,501
Silver (koz)	97,393	183,287	280,680	233,275

Note:

(1) According to the 2017 Grasberg Reserves Statement, see Appendix D.

See "Risk Factors — Risks Common to All Our Mining Businesses — Our estimates of reserves and resources may be inaccurate and materially different from mineral quantities we actually recover."

History

We were incorporated in January 1976 as a joint venture company between the Government and Nippon Asahan Aluminium Co. Ltd. ("Nippon Asahan"), a company formed by a consortium of Japanese investors, to construct two hydroelectric power plants and an aluminum smelter along the Asahan River in Indonesia. We have since grown to become the second largest aluminum producer in Southeast Asia, in terms of aluminum production volume, according to AME, as well as a vertically integrated coal and mineral production company

which undertakes all stages of the mining and processing of coal, tin, gold, nickel and bauxite. The following table sets forth a number of key milestones in our history.

Year	Event/s
July 1975	Master agreement was signed by the Government and Nippon Asahan.
January 1976	Inalum is established as a joint venture company between the Government and Nippon Asahan.
July 1979	Inalum commenced operation of its aluminum smelter.
July 1982	Inalum commenced operation of the Siguragura Power Plant.
March 1983	Inalum commenced operation of the Tangga Power Plant.
December 2013	The Government and Nippon Asahan signed a termination agreement and Nippon Asahan transferred all its shareholding interests in Inalum to the Government.
April 2014	Inalum was appointed by Indonesia's Ministry of State-Owned Enterprises as a state-owned enterprise.
January 2015	Groundbreaking by President Joko Widodo of several strategic projects of Indonesian state-owned enterprises in North Sumatra, including Inalum's diversification project.
December 2016	The Government made a capital contribution to Inalum in the form of land assets amounting to a total value of Rp.5,049.2 billion.
April 2017	Inalum began commercial production of aluminum billets.
May 2017	Inalum began commercial production of foundry alloys.
November 2017	Inalum was appointed the holding company of Indonesia's state-owned mining entities including Antam, Bukit Asam, and Timah, which were listed on the IDX in November 1997, December 2002 and October 1995, respectively, and became a vertically integrated coal and mineral production company.

Our Coal Business

We conduct our coal mining and processing business primarily through Bukit Asam. As of June 30, 2018, Bukit Asam is the largest holder of coal reserves in Indonesia and the sixth largest coal producer in Southeast Asia in terms of coal production volume, according to AME. As a vertically integrated coal mining company, we undertake all stages of the coal production process, starting from the exploration, mining and processing of coal to the marketing and sale of our coal products. We also engage in the production and sale of coal-fired power.

Our coal business is our largest business segment in terms of revenue. As of December 31, 2017, our aggregate coal reserves and resources was 3,296 million tonnes and 5,753 million tonnes, respectively, and for the year ended December 31, 2017, our aggregate coal production volume and sales volume was 24.3 million tonnes and 23.6 million tonnes, respectively. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, revenue from sale of coal was Rp.13,801.0 billion, Rp.13,785.4 billion, Rp.19,133.5 billion (US$1,328.3 million) and Rp.10,289.5 billion (US$714.4 million), respectively, representing 36.5%, 38.4%, 40.6% and 34.5%, respectively, of our total revenue.

Our coal mines

We own and operate five coal mines located on the islands of Sumatra and Kalimantan, Indonesia.

Our Tanjung Enim coal mine ("Tanjung Enim Coal Mine"), which is situated in Muara Enim, South Sumatra, spans a total area of approximately 41,663 hectares. Substantially all of our coal is produced at our Tanjung Enim Coal Mine. See "Risk Factors — Risks Common to All Our Mining Businesses — We depend on a small number of mines for a substantial portion of our production volume." It is comprised of seven coal mining concessions including the (i) Tambang Air Laya, (ii) Muara Tiga Besar, (iii) Banko Barat, (iv) Banko Tengah A, (v) Banko

Tengah B and (vi) Bukit Kendi coal mining concessions. The Bukit Kendi coal mining concession is not currently in operation. See "— Tanjung Enim coal mining concessions" and "— Coal mines not in operation." Our Tanjung Enim Coal Mine previously also included our Lahat coal mining concession, which was revoked in 2004. See "Risk Factors — Risks Common to All Our Mining Businesses — Our mining operations and expansion programs depend on our ability to obtain, maintain and renew necessary permits and approvals from the Government." Our Tanjung Enim Coal Mine is accessible by an approximately one-hour flight from Jakarta to Palembang, the capital of South Sumatra, and then by an approximately five-hour journey by car to the mine site.

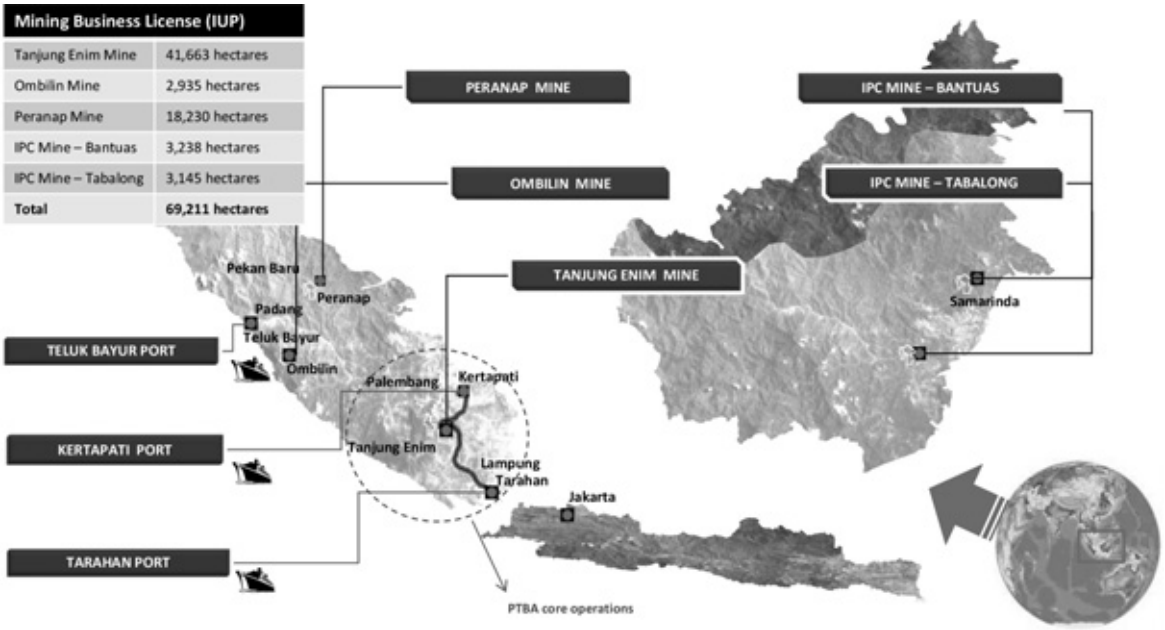
Our Bantuas coal mine ("Bantuas Coal Mine"), which is situated in Samarinda, East Kalimantan, spans a total area of approximately 3,238 hectares. It is comprised of the Bantuas coal mining concession held by our subsidiary, PT Internasional Prima Coal ("IPC"). See "— Bantuas coal mining concession." Our Bantuas Coal Mine is accessible by an approximately two-hour flight from Jakarta to Samarinda, the capital of East Kalimantan, and then by an approximately two-hour journey by car to the mine site.

Our Ombilin coal mine ("Ombilin Coal Mine"), which is situated in Sawahlunto, West Sumatra, spans a total area of approximately 2,935 hectares. It is comprised of the Ombilin coal mining concession and is not currently in operation as it requires underground mining, which is generally more expensive than the surface mining we undertake at our other coal mines. See "— Coal mines not in operation." Our Ombilin Coal Mine is accessible by an approximately one and a half-hour flight from Jakarta to Padang, the capital of West Sumatra, and then by an approximately four-hour journey by car to the mine site.

Our Peranap coal mine ("Peranap Coal Mine"), which is situated in Indragiri Hulu, Riau, spans a total area of approximately 18,230 hectares. It is comprised of the Peranap coal mining concession and is not currently in operation due to the low calorific value and high stripping ratio of the coal in the concession area. See "— Coal mines not in operation." Our Peranap Coal Mine is accessible by an approximately one and a half-hour flight from Jakarta to Pekanbaru, the capital of Riau, and then by an approximately six-hour journey by car to the mine site.

Our Tabalong coal mine ("Tabalong Coal Mine"), which is situated in Tabalong, South Kalimantan, spans a total area of approximately 3,145 hectares. It is comprised of the Tabalong coal mining concession held by our subsidiary, IPC, at which we have not yet begun operations. See "— Coal mines not in operation." Our Tabalong Coal Mine is accessible by an approximately two-hour flight from Jakarta to Banjarmasin, the capital of South Kalimantan, and then by an approximately five-hour journey by car to the mine site.

The following map sets forth the location of our coal mines and the amount of reserves and resources at each coal mine, as well as the location of the main transshipment points for onward delivery of our coal products to our customers. See "— Coal hauling, processing and delivery — Coal transshipment points."



Tanjung Enim coal mining concessions

We hold our Tanjung Enim Coal Mine by virtue of six coal mining concessions with expiry dates ranging from August 30, 2019 to September 7, 2035. We commenced coal production at our Tanjung Enim Coal Mine in 1981. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, production volume for the Tanjung Enim Coal Mine was 18.6 million tonnes, 18.8 million tonnes, 23.4 million tonnes and 10.8 million tonnes of coal, respectively, representing 96.3%, 95.7%, 96.4% and 96.4% respectively, of our total coal production.

The following table sets forth certain information relating to the active mining concession areas within our Tanjung Enim Coal Mine, as of December 31, 2017.

No.	Mining concession	Concession holder	Concession expiry	Concession area	Reserves[2]		Resources[2]	Coal quality
					Proved	Probable		
				(hectares)	(tonnes in million)		(tonnes in million)	(calorific value)[3]
1.	Tambang Air Laya	Bukit Asam	December 31, 2020	7,621	158.0	232.0	729.0	5,000 – 6,400
2.	Muara Tiga Besar	Bukit Asam	August 30, 2019	3,300	189.0	44.0	306.0	4,400 – 4,700
3.	Banko Barat	Bukit Asam	April 10, 2027	4,500	259.0	57.0	501.0	4,600 – 5,000
4.	Banko Tengah A	Bukit Asam	September 7, 2035	2,423	181.0	182.0	371.0	3,500 – 4,500
5.	Banko Tengah B	Bukit Asam	September 7, 2035	22,937	389.0	1,170.0	2,756.0	3,000 – 4,500
	Total[1]			**40,781**	**1,177.0**	**1,685.0**	**4,663.0**	

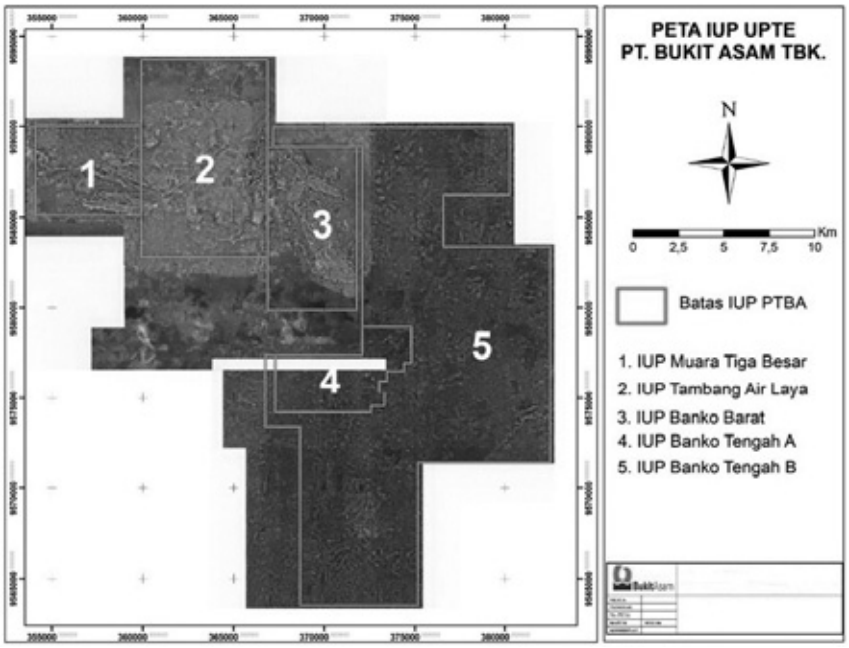
Notes:

(1) Not including the Bukit Kendi mining concession, which is part of our Tanjung Enim Coal Mine but not currently in operation. See "— Coal mines not in operation."

(2) According to the 2017 Coal Reserves Statement, see Appendix A.

(3) Calculated on a "gross-as-received" basis.

The following map sets forth the relative location of the mining concession areas in operation within our Tanjung Enim Coal Mine.



The following table sets forth certain production and sales information for the coal produced at our Tanjung Enim Coal Mine, for the periods indicated.

	For the years ended December 31,			For the six months ended June 30,
	2015	2016	2017	2018
Sales (Rp. in billion)	13,505.6	13,656.0	19,107.6	10,298.9
Average selling price (Rp. in million per tonne)(1)	0.7	0.7	0.8	0.8
Cash costs (Rp. in million per tonne)(2)	0.5	0.7	0.6	0.6

Notes:

(1) Average selling price per tonne is calculated by dividing sales by sales volumes for the relevant periods.

(2) Cash cost per tonne is calculated as the sum of (a) mining costs, transportation, freight and handling costs, royalties paid to the Government, coal processing and other cash production costs, restoration costs and increases or decreases in coal inventories, divided by (b) coal sales volumes for the relevant periods. Although depreciation and amortization related to the production of coal is added to our cost of revenue, it is not included in cash costs.

Tambang Air Laya coal mining concession

We hold the Tambang Air Laya coal mining concession at our Tanjung Enim Coal Mine by virtue of an IUP granted in October 2010 and valid until December 2020. The Tambang Air Laya coal mining concession area is approximately 7,621 hectares and contains bituminous and sub-bituminous coal with calorific values, as-received, between 5000 kcal/kg and 6400 kcal/kg. The following table sets forth certain production

information for the coal produced at our Tambang Air Laya coal mining concession area, for the periods indicated.

	For the years ended December 31,			For the six months ended June 30,
	2015	2016	2017	2018
Production volume (tonnes in million)	10.7	9.8	5.6	3.3
Average strip ratio[1]	5.5	6.2	4.7	5.8

Note:

(1) Average strip ratio is calculated by dividing the number of bank cubic meters of overburden (rock and soil) removed during such period by the number of tonnes of coal produced during such period.

Muara Tiga Besar coal mining concession

We hold the Muara Tiga Besar coal mining concession at our Tanjung Enim Coal Mine by virtue of an IUP granted in April 2010 and valid until August 2019. The Muara Tiga Besar coal mining concession area is approximately 3,300 hectares and contains sub-bituminous coal with calorific values, as-received, between 4,400 kcal/kg and 4,700 kcal/kg. The following table sets forth certain production information for the coal produced at our Muara Tiga Besar coal mining concession area, for the periods indicated.

	For the years ended December 31,			For the six months ended June 30,
	2015	2016	2017	2018
Production volume (tonnes in million)	2.2	2.9	5.9	3.3
Average strip ratio[1]	5.3	3.6	3.8	5.8

Note:

(1) Average strip ratio is calculated by dividing the number of bank cubic meters of overburden (rock and soil) removed during such period by the number of tonnes of coal produced during such period.

Banko Barat coal mining concession

We hold the Banko Barat coal mining concession at our Tanjung Enim Coal Mine by virtue of an IUP granted in October 2011 and valid until April 2027. The Banko Barat coal mining concession area is approximately 4,500 hectares and contains sub-bituminous coal with calorific values, as-received, between 4,600 kcal/kg and 5,000 kcal/kg. The following table sets forth certain production information for the coal produced at our Banko Barat coal mining concession area, for the periods indicated.

	For the years ended December 31,			For the six months ended June 30,
	2015	2016	2017	2018
Production volume (tonnes in million)	5.7	6.1	11.9	4.6
Average strip ratio[1]	2.3	3.1	2.4	3.0

Note:

(1) Average strip ratio is calculated by dividing the number of bank cubic meters of overburden (rock and soil) removed during such period by the number of tonnes of coal produced during such period.

Banko Tengah A coal mining concession

We hold the Banko Tengah A coal mining concession at our Tanjung Enim Coal Mine by virtue of an IUP granted in April 2010 and valid until September 2035. The Banko Tengah A coal mining concession area is approximately 2,423 hectares and contains sub-bituminous and lignite coal with calorific values, as-received, between 3,500 kcal/kg and 4,500 kcal/kg. The Banko Tengah A coal mining concession area is still being developed for large-scale coal mining. We expect to use the low-rank lignite coal produced at the Banko Tengah

A coal mining concession area to fuel the Sumsel 8 CFPP. See "Business — Our Coal Business — Downstream coal businesses — Coal-fired power plant development project." The following table sets forth certain production information for the coal produced at our Banko Tengah A coal mining concession area, for the periods indicated.

	For the years ended December 31,			For the six months ended June 30,
	2015	2016	2017	2018
Production volume (tonnes in thousands)	5.2	3.3	5.7	—(2)
Average strip ratio(1)	1.2	1.0	0.7	—(2)

Notes:

(1) Average strip ratio is calculated by dividing the number of bank cubic meters of overburden (rock and soil) removed during such period by the number of tonnes of coal produced during such period.

(2) We generally only calculate production volume at the end of every calendar year.

Banko Tengah B coal mining concession

We hold the Banko Tengah B coal mining concession at our Tanjung Enim Coal Mine by virtue of an IUP granted in April 2010 and valid until September 2035. The Banko Tengah B coal mining concession area is approximately 22,937 hectares and contains sub-bituminous and lignite coal with calorific values, as-received, between 3,000 kcal/kg and 4,500 kcal/kg. The Banko Tengah B coal mining concession area is still being developed for large-scale coal mining. We expect to use the low-rank lignite coal produced at the Banko Tengah B coal mining concession area to fuel the Sumsel 8 CFPP. See "Business — Our Coal Business — Downstream coal businesses — Coal-fired power plant development project." The following table sets forth certain production information for the coal produced at our Banko Tengah B coal mining concession area, for the periods indicated.

	For the years ended December 31,			For the six months ended June 30,
	2015	2016	2017	2018
Production volume (tonnes in thousands)	2.2	7.9	5.9	—(2)
Average strip ratio(1)	13.9	2.6	2.3	—(2)

Notes:

(1) Average strip ratio is calculated by dividing the number of bank cubic meters of overburden (rock and soil) removed during such period by the number of tonnes of coal produced during such period.

(2) We generally only calculate production volume at the end of every calendar year.

Bantuas coal mining concession

We hold our Bantuas Coal Mine through our subsidiary, IPC, by virtue of an IUP granted in November 2016 and valid until November 2026. The Bantuas coal mining concession area is approximately 3,238 hectares and contains sub-bituminous and lignite coal with calorific values, on an as-received basis, between 4,200 kcal/kg and 4,800 kcal/kg. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, production volume for the Bantuas Coal Mine was 686.4 kilotons, 844.0 kilotons, 870.5 kilotons and 431.5 kilotons of coal, respectively, representing 3.6%, 4.3%, 3.6% and 3.8% respectively, of our total coal production.

The following table sets forth certain information relating to our Bantuas coal mining concession, as of December 31, 2017.

Mining concession	Concession holder	Concession expiry	Concession area	Reserves		Resources	Coal quality
				Proved	Probable		
			(hectares)	(tonnes in million)		(tonnes in million)	(calorific value)(2)
Bantuas	IPC	November 2026	3,238	5.0(1)	2.0(1)	25.0	4,200 – 4,800

Notes:

(1) According to the 2017 Coal Reserves Statement, see Appendix A.

(2) Measured on a "gross-as-received" basis.

The following table sets forth certain production and sales information for the coal produced at our Bantuas coal mining concession area, for the periods indicated.

	For the years ended December 31,			For the six months ended June 30,
	2015	2016	2017	2018
Sales (Rp. in billion)	348.6	455.2	660.3	438.6
Average strip ratio[1]	7.1	7.6	10.2	11.8
Average selling price (Rp. in million per tonne)[2]	0.5	0.5	0.8	0.9
Cash costs (Rp. in million per tonne)[3]	0.5	0.4	0.5	0.6

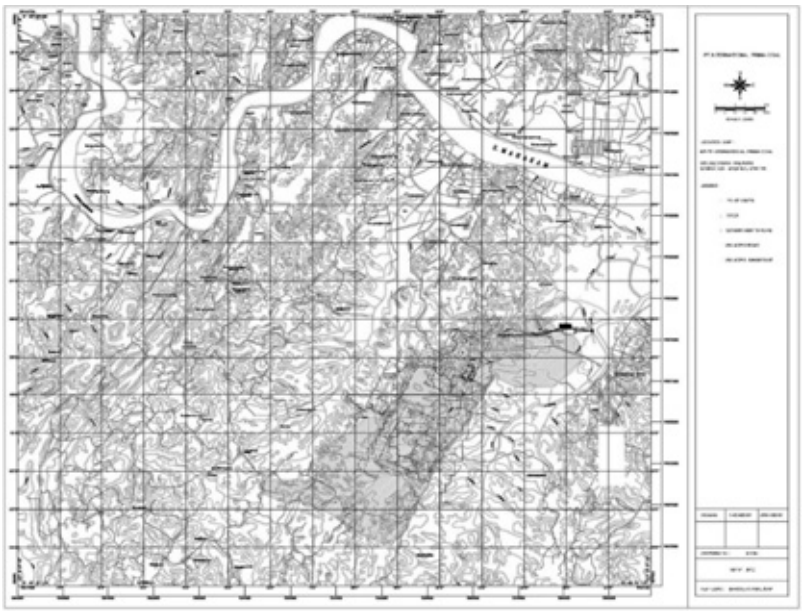
Notes:

(1) Average selling price per tonne is calculated by dividing sales by sales volumes for the relevant periods.

(2) Average strip ratio is calculated by dividing the number of bank cubic meters of overburden (rock and soil) removed during such period by the number of tonnes of coal produced during such period.

(3) Cash cost per tonne is calculated as the sum of (a) mining costs, transportation, freight and handling costs, royalties paid to the Government, coal processing and other cash production costs, restoration costs and increases or decreases in coal inventories, divided by (b) coal sales volumes for the relevant periods. Although depreciation and amortization related to the production of coal is added to our cost of revenue, it is not included in cash costs.

The following map sets forth the location of our Bantuas coal mining concession.



Coal mines not in operation

The following table sets forth certain information relating to our coal mining concessions for our coal mines not currently in operation.

	Concession holder	Concession expiry	Concession area	Reserves[2]		Resources[2]	Coal quality
				Proved	Probable		
			(hectares)	(tonnes in million)		(tonnes in million)	(calorific value)[3]
Bukit Kendi[1]	PT Batubara Bukit Kendi	October 2025	882	—	—	—	—
Ombilin	Bukit Asam	February 2019	2,935	23.0	0.0	102.0	6,400 – 7,200
Peranap	Bukit Asam	June 2035	18,230	167.0	128.0	671.0	2,300 – 3,200
Tabalong	PT Tabalong Prima Resources	October 2030	3,145	98.0	11.0	292.0	3,300 – 4,200
Total			**25,192**	**288.0**	**139.0**	**1,065.0**	

Notes:

(1) Reserves for the Bukit Kendi concession have not been measured and classified.

(2) According to the 2017 Coal Reserves Statement, see Appendix A.

(3) Calculated on a "gross-as-received" basis.

Bukit Kendi coal mining concession

We hold the Bukit Kendi coal mining concession at our Tanjung Enim Coal Mine through our subsidiary, PT Batubara Bukit Kendi, by virtue of an IUP granted in April 2010 and valid until October 2025. The Bukit Kendi coal mining concession area is approximately 882 hectares. We do not currently have operations at the Bukit Kendi coal mining concession due to a lack of mineable reserves in the concession area. We are currently evaluating the continuity of our Bukit Kendi coal mining concession.

Ombilin coal mining concession

We hold our Ombilin Coal Mine by virtue of an IUP granted in April 2010 and valid until February 2019. The Ombilin coal mining concession area is approximately 2,935 hectares and contains bituminous coal with calorific values, as-received, between 6,400 kcal/kg and 7,200 kcal/kg. Unlike our Tanjung Enim and Bantuas coal mines, where we undertake open-pit surface mining, our Ombilin Coal Mine requires underground mining. As compared to surface mining, the process of underground mining involves more extensive labor and advanced machinery and is therefore more capital intensive. We therefore do not currently have active operations at our Ombilin Coal Mine due to the higher costs associated with underground mining, and we are currently devoting more resources towards increasing our coal transportation capacity at our Tanjung Enim Coal Mine. See "— Infrastructure development projects." We are currently evaluating the continuity of our Ombilin coal mining concession.

Peranap coal mining concession

We hold our Peranap Coal Mine by virtue of an IUP granted in April 2010 and valid until June 2035. The Peranap coal mining concession area is approximately 18,320 hectares and contains lignite coal with calorific values, as-received, between 2,300 kcal/kg and 3,200 kcal/kg. Due to the relatively low calorific value and high stripping ratio of the coal at the Peranap Coal Mine, we do not currently have active operations there.

Tabalong coal mining concession

We hold our Tabalong Coal Mine through PT Tabalong Prima Resources, IPC's subsidiary, by virtue of an IUP granted in October 2010 and valid until October 2030. The Tabalong coal mining concession area is

approximately 3,145 hectares and contains sub-bituminous and lignite coal with calorific value, as-received, between 3,300 kcal/kg and 4,250 kcal/kg. We currently have not begun operations at the Tabalong Coal Mine because we are in the process of acquiring the land rights to the coal hauling road leading to and from the Tabalong Coal Mine. Upon completion of the acquisition of the land rights to the coal hauling road, we expect to require approximately another two years before commencing commercial operations at the Tabalong Coal Mine in order to construct coal handling facilities and transportation infrastructure to support the Tabalong Coal Mine.

Our coal products

We have a variety of coal products that we market under our "Bukit Asam" brand. We believe that our coal products are superior due to their relatively low ash and low sulfur content, as well as high Hardgrove Grindability Index ("HGI"), which measures the coal's resistance to crushing, and high Ash Fusion Temperature ("AFT"), which predicts the coal's reactivity to high boiler temperatures.

The following table sets forth standard marketing coal specifications for our coal brands.

Coal brand	Average calorific value[1] (kcal/kg)	Total moisture[2] (%)	Inherent moisture[1] (%)	Ash content[2] (%)	Volatile matter[2] (%)	Fixed carbon[2] (%)	Total sulfur[1] (%)	Hardgrove Grindability Index
Bukit Asam – 45	4,500	30.0	15.0	6.0	35.0	29.0	1.0	52
Bukit Asam – 48	4,800	29.0	14.0	6.0	35.0	30.0	1.0	52
Bukit Asam – 50	5,000	28.0	12.0	6.0	35.0	31.0	1.0	55
Bukit Asam – 55	5,500	24.0	10.0	6.0	34.0	36.0	1.0	54
Bukit Asam – 64	6,400	14.0	5.0	6.0	34.0	46.0	1.2	60
IPC 53[3]	5,300	34.0	15.0	8.0	39.0	40.0	0.5	—

Notes:

(1) Measured on an "air-dried" basis.

(2) Measured on an "as-received" basis.

(3) Refers to coal produced at our Bantuas coal mining concession, which we own through our subsidiary, IPC. See "— Bantuas coal mining concession."

Coal mine operations and logistics

Mine planning

With information collected through our exploration activities such as the environmental impact studies and mine feasibility studies conducted by our geologists, we prepare mine plans in relation to further exploration and operation of each pit within our mines. We begin with a conceptual life-of-mine plan and determine the optimum production rate in order to maximize reserves for a particular mine throughout its life. We then begin discussions with our third-party mining contractors to agree on optimal fleet sizes and annual production rates that are necessary to reach our optimum production rate. As ongoing mining operations are conducted, more exploration data is collected and the geological model is revised, allowing us to review and increase the accuracy of our mine plans. In cooperation with our mining contractors, our mine planning committee prepares our mine plans for 12-month periods, which are then reviewed on a monthly basis.

Our mine planning process takes into consideration our sales obligations to PLN and its subsidiary, IP, our primary offtakers of coal produced from our Tanjung Enim Coal Mine with whom we have collaborated with since 1988. We enter into long-term offtake contracts with PLN, which enables us to secure our future coal sales and cash flows against the risk of decrease in global coal demand. We adjust our coal production rates according to the volume of coal to be supplied to PLN and IP, which is determined with each of them on an annual basis. See "— Customers — Coal — Coal offtake agreements with PLN."

We also account for surface features such as topography, position of rivers and creeks, local villages and associated infrastructure, and begin planning for rehabilitation of disturbed areas. See "Risk Factors — Risks

Common to All Our Mining Businesses — Our operations are subject to environmental regulations which may cause us to incur significant costs, liabilities or interrupt or cease mining operations, any of which may adversely affect our results of operations." In addition, our mine plans also factor in adverse weather conditions, particularly during the rainy season, when heavy rains can completely stop overburden removal and reduce coal production volumes. By using historical rainfall data to statistically predict the wet seasons every year, we are able to adjust our production rates and overall mine plan accordingly. See "Risk Factors — Risks Common to All Our Businesses — We may experience unexpected disruptions to our mining and smelting operations as a result of operational and infrastructure risks."

Coal mining

In its natural state, the land in our Tanjung Enim Coal Mine and Bantuas Coal Mine is covered with primary and secondary forest that has to be cleared to get to the coal seam. First, we conduct an initial environmental impact analysis to assess the potential impact on the environment from the planned mining activity. After that, marketable timber is recovered and vegetation is cleared. Top soil is then removed and transported directly to reclamation areas or stockpiled until required. To shatter the overburden layer, drilling, blasting and dozer ripping are performed to fragment the layer. Waste is then removed using typical hydraulic shovel-and-truck configuration. Waste is typically removed to a level slightly above the coal seam.

Our Tanjung Enim Coal Mine and Bantuas Coal Mine generally feature coal seams with a minimum thickness of five meters. The coal is mined using surface open-cut mining methods. Once the coal is exposed, it is mined using a hydraulic backhoe and transported by rear dump trucks. Coal is delivered to our coal handling facilities and dumped directly into either a reclaimer unit, crusher surge bin hopper or stockpiled. As our mines generally benefit from a relatively parallel seam structure, we enjoy relatively lower strip ratios.

Coal hauling, processing and delivery

Coal handling facilities

All handling of our coal is conducted in accordance with the Quality Management System ISO 9001. See "— Quality control." We have coal handling facilities comprised of ROM coal handling and stockpiles located near each of the active mining concession areas in our Tanjung Enim Coal Mine. At our Tambang Air Laya coal handling facility, coal is conveyed into a stockpile via a bucket wheel excavator and then placed into discrete stockpiles by a stacker/reclaimer or using a shovel-truck system. At our Muara Tiga Besar coal handling facility, coal is pushed via a bulldozer or directly transported by a truck into a stockpile and then placed into discrete stockpiles via an overland conveyer. At our other coal handling facilities, coal is conveyed into a stockpile via a hopper wagon and then placed into discrete stockpiles via an overland conveyer. We conduct the coal blending process ourselves at the mine stockpiling area using our dump hopper. Coal is then reclaimed from the discrete stockpiles at each coal handling facility via underground feeders, conveyed over land and then transferred to a designated customer stockpile for onward distribution to our local customers or to the designated train loading stations for transport to our transshipment points. Coal from our Bantuas Coal Mine is processed manually using excavators and the shovel-and-track system at the mine site. The coal is conveyed into a temporary stockpile by trucks and then directly transferred to our terminal located in Samarinda for onward distribution to our customers via haul roads or barge ports.

Coal train loading stations

We have train loading stations located near each of our Tanjung Enim coal handling facilities. Coal is transported from the coal handling facilities by front-end loaders to the designated train loading station. At the train loading station, the coal is loaded via a conveyor system onto train carriages operated by KAI for onward distribution to our transshipment points. See "— Coal transportation agreements with KAI," "— Coal transshipment points" and "Related-Party Transactions — Coal Transportation Agreements with KAI." The coal is unloaded from the train carriages using rotary car dumpers, at our Tarahan Port, and apron feeders, at our Kertapati Port.

Coal transshipment points

Coal produced at our Tanjung Enim Coal Mine is primarily served by our terminals at Tarahan, Lampung ("Tarahan Port"), Kertapati, Palembang ("Kertapati Port") and Teluk Bayur, Padang ("Teluk Bayur Port"). Our Tarahan Port has an existing capacity of 19.4 million mtpa and is capable of handling 205,000 DWT coal bulk carriers. Our Kertapati Port has an existing capacity of 3.7 million mtpa and is capable of handling 5,000 DWT coal bulk carriers. Our Teluk Bayur Port has a stockpiling capacity of up to 90,000 tonnes and is capable of handling 40,000 DWT coal bulk carriers. We do not currently transport any coal through our Teluk Bayur Port as it typically serves our Ombilin Coal Mine, which is not currently in operation. See "— Coal mines not in operation — Ombilin coal mining concession." Coal produced at our Bantuas Coal Mine is served by haul roads and three barge port alternatives with stockpiling capacities of up to 8,000 tonnes.

Coal transportation agreement with KAI

We have collaborated with KAI, Indonesia's state-owned railway operator, for over 30 years for the provision of transportation services. KAI owns and operates the trains that transport the coal from our Tanjung Enim train loading stations to our transshipment points at our Tarahan Port and Kertapati Port.

On June 9, 2017, we entered into a five-year transportation agreement with KAI. Under the terms of the agreement, KAI committed to transporting coal from our Tanjung Enim Coal Mine to our Tarahan Port and Kertapati Port from January 1, 2017 until December 31, 2021. See "— Coal hauling, processing and delivery — Coal transshipment points" and "Related-Party Transactions — Coal Transportation Agreement with KAI." For the years ending December 31, 2017, 2018, 2019, 2020 and 2021, KAI has committed to transporting a minimum of 21.7 million tonnes, 23.1 million tonnes, 25.3 million tonnes, 30.0 million tonnes and 30.0 million tonnes, respectively, of our coal. In the event that KAI does not transport the minimum amount of coal stipulated for any given year, KAI's fees for that year may be reviewed and adjusted by agreement by both parties. In addition, if the fuel price paid by KAI is 10.0% more than Rp.5,649/liter, we are required to bear the difference in cost. The agreement with KAI may be terminated by either party in the event of, among others, default or bankruptcy of either party or if the parties are unable to agree on the transportation cost.

We are also cooperating with KAI with respect to developing our railway infrastructure in order to increase our transportation capacity and efficiency. See "— Infrastructure development projects." KAI's fees are reviewed on an annual basis and are paid in a combination of U.S. dollars and Rupiah. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, total expenses for KAI's transportation services was Rp.3,057.5 billion, Rp.3,215.0 billion, Rp.4,030.0 billion and Rp.2,181.0 billion, respectively, representing 9.9%, 11.6%, 12.1% and 10.0%, respectively, of our total cost of revenue.

Third-party contractors

We contract out certain of our mining activities with a view to maximizing efficiency while minimizing costs. We typically select mining contractors through direct negotiations with existing contractors or by way of a competitive open tender, with potential contractors submitting their bids based on the requirements we specify. We select our mining contractors after considering various factors such as price, equipment, experience and previous track record in our mining operations. See "Risk Factors — Risks Relating to Our Business — We rely on third-party contractors to conduct our mining operations, and such contractors may be constrained by labor disputes, face operational difficulties or perform unsatisfactory work, which may result in a significant reduction in their services or termination or modification of our operating agreements."

Mining service agreement with Pama

We have contracted with Pama since 2011 for the provision of mining-related services in relation to overburden removal and coal hauling services to the stockpile and train loading stations, including the supply of heavy equipment and dump trucks, at our Tambang Air Laya and Muara Tiga Besar coal mining concession areas.

On April 11, 2014, we entered into a five-year services agreement with Pama. The agreement sets out production schedules of overburden to be removed and coal to be hauled for the years 2014 to 2019. The production volume commitment is removal of 165.6 million bank cubic meters of overburden and hauling of 40.8 million tonnes of coal over the period of the agreement. In the event Pama fails to achieve at least 90.0% of the annual production volume commitment, it is required to pay us penalties of 1.0% of Pama's remaining annual fee per day up to a maximum of 5.0%, We can suspend production or any part of Pama's works under the agreement with Pama without any additional fees for suspensions due to technical issues such as weather, work safety, environmental conditions and changes in government policies. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, total expense for Pama's mining services amounted to Rp.3,095.0 billion, Rp.2,579.3 billion, Rp.2,226.3 billion (US$154.6 million) and Rp.1,339.2 billion (US$93.0 million), respectively, which amounted to 32.2%, 26.7%, 20.3% and 21.9%, of our total cost of revenue for our coal business.

Corporate synergy

We are focusing on reducing dependability on third parties through subsidiaries that are able to assist in our mining activities. In January 2015, we acquired PT Satria Bahana Sarana ("SBS"), which supplies mining services including overburden removal and coal transportation for our Tanjung Enim Coal Mine, as well as heavy equipment and the personnel required to operate and maintain the equipment. We believe that insourcing our mining services requirements within our Group reduces the operational risks related to dependence on third-party contractors. See "Risk Factors — Risks Common to All Our Mining Businesses — We rely on third-party contractors to conduct our mining operations, and such contractors may be constrained by labor disputes, face operational difficulties or perform unsatisfactory work." Our synergy initiatives contributed to improvement in our cost efficiency, resulting in a Rp.388.0 billion or 11.4% decrease in the costs of our mining services from Rp.3,400.0 billion for the year ended December 31, 2015 to Rp.3,012.0 billion for the year ended December 31, 2016, and a further Rp.785.7 billion or 26.1% decrease in the costs of our mining services to Rp.2,226.3 billion for the year ended December 31, 2017.

Quality control

We maintain a strict quality-control process during all stages of our mining and logistics operations to ensure that the product delivered to our customers satisfies the minimum quality requirements specified in our sales contracts. Quality control begins during exploration drilling where coal samples taken from the cores of boreholes are analyzed to assess the quality of such coal. The analysis of the quality of the coal is conducted in our laboratory, which is ISO 9001 certified by the National Accreditation Committee of Indonesia. During this stage, the in situ coal quality of a particular coal block or seam is checked for consistency. Coal from different blocks or seams, and separate pits, is then scheduled and mined in accordance with the detailed mine plan in order to meet our coal brand requirements. See "— Our coal products." The next phase of quality control is during the stockpiling process conducted at the coal processing facility at each mining area before being distributed to local customers or at the train loading station before the coal is transported to the transshipment point for onward delivery. The coal is separately stockpiled according to its quality classification and additional testing is conducted on samples from each stockpile to ensure consistency. At the transshipment point, the quality of the coal is again sampled and analyzed before the vessels leave the port and coal quality is certified by PT Surveyor Indonesia, an independent laboratory.

As of June 30, 2018, we have received the following quality assurance certifications and awards in respect of our production processes:

No.	Certification/award	Awarding body/authority	Validity period of certificate/award	Process
1.	ISO 9001:2015	TŰV SŰD PSB Pte Ltd	Until March 5, 2021	Process from mining the coal up to marketing of the coal
2.	ISO 14001:2015	TŰV SŰD PSB Pte Ltd	Until March 4, 2021	Process from mining the coal up to marketing of the coal
3.	OHSAS 18001:2007	TŰV SŰD Asia Pacific TŰV SŰD Group	Until February 27, 2021	Process from mining the coal up to marketing of the coal

Reclamation

Pursuant to Decree No. 1827 of 2018 of the Minister of Energy and Mineral Resources, we are required to provide reclamation and post-mining guarantees. See "Indonesian Regulatory Framework — Mining Regulation — Reclamation and post-mining activities." Reclamation is part of the ongoing mining activities and we carry out the reclamation process on the previous digging area while mining in other areas. We also conduct revegetation in our mining areas and have implemented initiatives to support our revegetation process including the establishment of a 2.5 hectare plant breeding center in our Tambang Air Laya coal mining concession. As of June 30, 2018, we have conducted revegetation in a total of approximately 21.7 hectares of our post-mining areas.

Infrastructure development projects

One of the main challenges we face in terms of operational efficiency is the limited transportation capacity supporting the high levels of coal production at our Tanjung Enim Coal Mine. We intend to further develop our transportation infrastructure to serve our Tanjung Enim Coal Mine, and are aiming to reach a coal transportation capacity of approximately 60 million mtpa by 2023. In order to reach this target, we have collaborated with PT KAI, who currently transports our coal from Tanjung Enim to our Tarahan Port and Kertapati Port, to improve our railway infrastructure through the following projects:

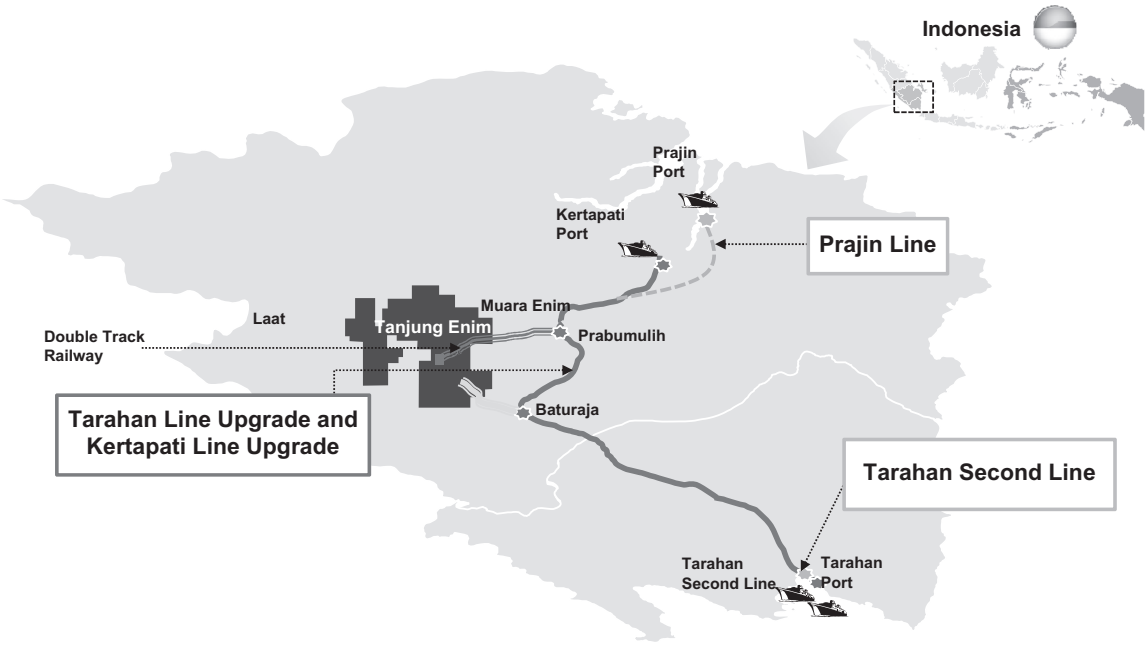
- *Tarahan Line Upgrade.* We are upgrading the existing railway track leading to the Tarahan Port into a double track railway (the "Tarahan Line Upgrade"). The Tarahan Line Upgrade is expected to increase our annual coal transportation capacity on the route to approximately 20.3 million mtpa by 2019 and approximately 25 million mtpa by 2020, as compared to the existing capacity of 18.2 million mtpa. We commenced the Tarahan Line Upgrade in February 2018 and have completed construction of a new flyover bridge that will serve to accommodate trans-Sumatra traffic crossing over from the new double track railway. Our planned capital expenditure for the Tarahan Line Upgrade is approximately Rp.116.2 billion and Rp.132.5 billion for the years ending December 31, 2019 and 2020, respectively.
- *Kertapati Line Upgrade*. The upgrade to our Kertapati Line (the "Kertapati Line Upgrade") involves, among other things, repairing our two shiploaders, and the construction of a new coal handling facility and a new coal receiving system, at our Kertapati Port. The Kertapati Line Upgrade is scheduled to be completed by July 2019 and is expected to increase our annual coal transportation capacity on the route to approximately 5 million mtpa, as compared to the existing capacity of 3.7 million mtpa. We commenced the upgrade in December 2016 and have completed the repair of our shiploaders. Our planned capital expenditure for the Kertapati Line Upgrade is approximately Rp.154.6 billion for the year ending December 31, 2019.
- *Tarahan Second Line.* We are constructing a second railway track leading to the Tarahan Port (the "Tarahan Second Line"). The Tarahan Second Line is scheduled to be operational by 2023 and is expected to, together with our existing Tarahan Line, have a total capacity of approximately 45 million mtpa. On September 13, 2018, we selected a bankable feasibility study consultant. We estimate that the detailed engineering design for the project will be completed by June 2019, and procurement of the

construction contractor and supervising consultants for the Tarahan Second Line project will be completed by September 2019. Our planned capital expenditure for the development of the Tarahan Second Line is approximately Rp.121.6 billion and Rp.425.6 billion for the years ending December 31, 2018 and 2019, respectively.

- *Prajin Line.* We are constructing a new railway track that will lead to the Prajin barging port in the northern part of South Sumatra, as well as a train loading station and port to serve the new railway track (the "Prajin Line"). The Prajin Line is scheduled to be operational by 2023 and is expected to have a capacity of approximately 10 million mtpa. We are currently conducting the bankable feasibility study, which will be completed by the end of October 2018. We estimate that procurement of the construction contractor and supervising consultants for the Prajin Line project will be completed by July 2019. Our planned capital expenditure for the development of the Prajin Line is Rp.130.6 billion and Rp.457.2 billion for the years ending December 31, 2018 and 2019, respectively.

See "Risk Factors — Risks Common to All Our Mining Businesses — The mining industry is capital intensive and we may experience limited availability of funds," and "Management's Discussion and Analysis of Financial Condition and Results of Operation — Capital Expenditures."

The following map sets forth our planned railway upgrades and construction.



Downstream coal businesses

Coal-fired power plant business

In addition to our coal mining business, we also engage in the production and sale of coal-fired power. We own two steam-electric power plants including one located at our Tanjung Enim Coal Mine (the "Tanjung Enim CFPP") and one located at our Tarahan Port (the "Tarahan CFPP"), both of which are fed by coal from our Tanjung Enim Coal Mine. The Tanjung Enim CFPP began operations in May 2013 with an output capacity of 3x10 MW. The Tanjung Enim CFPP supplies power for our mining operations and housing for our employees located at the Tanjung Enim Coal Mine. The Tarahan CFPP began operations in December 2014 with an output capacity of 2x8 MW and supplies power for our coal handling operations at the Tarahan Port. Our mining operations require a substantial amount of electricity and we believe that producing our own electricity with the surplus of coal from our Tanjung Enim Coal Mine will significantly increase our cost efficiency.

We also hold a 59.8% ownership interest in BPI, a joint venture between us, PT Pembangkitan Jawa Bali, a subsidiary of PLN, and PT Navigat Innovative Indonesia. Through BPI, we own and operate a steam-electric power plant located at Banjarsari, South Sumatra (the "Banjarsari CFPP") that is also fed by coal from our Tanjung Enim Coal Mine. We began commercial operations at Banjarsari CFPP in 2015 and sell all of the power produced to PLN.

Coal-fired power plant development project

We are further expanding our downstream coal business through the development of a new coal-fired power plant in Muara Enim, South Sumatra (the "Sumsel 8 CFPP"), a joint venture with China Huadian Hong Kong Company Limited. The Sumsel 8 CFPP will be fueled by the coal from our Tanjung Enim Coal Mine and will generate electricity for onward distribution by PLN. Construction on the Sumsel 8 CFPP commenced in June 2018 and is scheduled to be completed by March 2022. The Sumsel 8 CFPP will consume coal at a rate of 5.4 million mtpa and have an output capacity of 2x620 MW. Our total planned capital expenditure for the development of the Sumsel 8 CFPP is US$420.3 million, of which we have committed US$189.1 million in the form of equity injection, and planned capital expenditure is US$18.9 million, US$28.4 million and US$47.3 million for the years ending December 31, 2018, 2019 and 2020. We expect to finance the capital expenditures using cash flow generated from operations and bank loans.

See "Risk Factors — Risks Common to All Our Mining Businesses — The mining industry is capital intensive and we may experience limited availability of funds," and "Management's Discussion and Analysis of Financial Condition and Results of Operation — Capital Expenditures."

Coal to chemical plant project

On December 8, 2017, we entered into a heads of agreement with Pertamina, PT Pupuk Indonesia (Persero) and PT Chandra Asri Petrochemical Tbk to build a processing plant to convert our coal into final products with higher selling value than coal through the process of gasification (the "Coal Gasification Plant"). We will employ the use of gasification technology that enables the conversion of young coal into syngas, a raw material for further processing into products such as dimethyl ether ("DME") as fuel, urea as a fertilizer and polypropylene as a plastic raw material.

The Coal Gasification Plant will be built on our Tanjung Enim Coal Mine in South Sumatra and is scheduled to be operational by November 2022. Construction on the Coal Gasification Plant is planned to commence in March 2020. We expect production at the Coal Gasification Plant to be able to meet market demand of 400,000 tonnes of DME per year, 570,000 tonnes of urea per year and 450,000 tonnes of polypropylene per year. We are currently conducting the bankable feasibility study for the coal gasification plant. Upon completion of the feasibility study, a definitive agreement will be entered into for the construction of the coal gasification plant and our total planned capital expenditure for the development of the coal gasification plant will be confirmed.

Our Gold Business

We conduct our gold and precious metals mining and production business through Antam. As of June 30, 2018, Antam is the sixth largest gold producer in Southeast Asia in terms of gold production volume, according to AME. In addition, our precious metals refinery (the "Logam Mulia Precious Metals Refinery") is the only precious metals refinery in Indonesia, which is accredited by the London Bullion Market Association ("LBMA"). We produce and sell fine gold, mainly in the form of gold bars, as well as other precious metal products such as fine silver and platinum. Our fine gold are produced at the Logam Mulia Precious Metals Refinery, from gold doré bullion which we purchase from third-party precious metals trading companies and gold doré which we produce at our gold mines. In addition to producing and selling fine gold and other precious metal products, we provide precious metals refining services to other third-party mining companies.

As of December 31, 2017, our aggregate gold doré reserves and resources was 506 koz and 1,242 koz, respectively, and for the year ended December 31, 2017, our aggregate gold production volume and sales volume

was 63,240 oz t and 424,454 oz t, respectively. As of December 31, 2017, our aggregate silver ore reserves and resources was 4,040 koz and 12,377 koz, respectively, and for the year ended December 31, 2017, our aggregate silver production volume and sales volume was 456,251 oz t and 533,284 oz t, respectively. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, revenue from sale of our gold products was Rp.7,314.7 billion, Rp.5,543.6 billion, Rp.7,375.5 billion (US$512.0 million) and Rp.8,203.9 billion (US$569.6 million), respectively, representing 19.3%, 15.4%, 15.6% and 27.5%, respectively, of our total revenue.

Our gold mines

We own and operate two gold mines including our Pongkor gold mine located in Bogor, West Java ("Pongkor Gold Mine") and our Cibaliung gold mine located in Pandeglang, Banten ("Cibaliung Gold Mine"). The following map sets forth the location of our gold mines and our Logam Mulia Precious Metals Refinery.

The following table sets forth certain information relating to our gold mining concessions within our Pongkor Gold Mine and Cibaliung Gold Mine.

Mining concession	Mining concession holder	Mining concession expiry	Concession area	Reserves				Resources					
				Proved		Probable		Measured		Indicated		Inferred	
				Gold	Silver	Gold	Silver	Gold	Silver	Gold	Silver	Gold	Silver
			(hectares)	(koz)				(koz)					
Pongkor[1]	Antam	March 9, 2021	6,047	90	648	19	99	333	4,267	300	2,886	37	410
Cibaliung[1]	PT Cibaliung Sumberdaya	July 27, 2025	1,340	323	2,482	74	811	460	3,608	103	1,117	9	89
Total			**7,387**	**413**	**3,130**	**93**	**910**	**793**	**7,875**	**403**	**4,003**	**46**	**499**

Note:

(1) According to the 2017 Nickel, Gold, Silver and Bauxite Reserves Statement, see Appendix B.

Pongkor gold mining concession

Our Pongkor Gold Mine, which is situated in Bogor, West Java, spans a total area of approximately 6,047 hectares. We hold our Pongkor Gold Mine by virtue of an IUP granted on June 22, 2010 and valid until March 9, 2021. The Pongkor Gold Mine is accessible by car from Jakarta, through an approximately three-hour journey.

We commenced gold doré production at the Pongkor Gold Mine in 1994. The Pongkor Gold Mine has three primary veins of gold, Ciguha, Kubang Cicau and Ciurug, all of which are currently being mined by us. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, production volume for the Pongkor Gold Mine was 48,193 oz t, 47,036 oz t, 44,335 oz t and 21,412 oz t of gold doré, respectively, representing 67.4%, 66.3%, 69.8% and 63.4%, respectively, of our total gold doré production.

The following table sets forth certain production and sales information for the gold doré produced at our Pongkor Gold Mine, for the periods indicated.

	Year ended December 31,			Six months ended June 30,
	2015	2016	2017	2018
Sales (Rp. in billion)	793.8	850.7	872.6	417.0
Average selling price (Rp. in million / oz t)[1]	14.6	14.8	15.5	17.3
Cash costs (Rp. in million / oz t)[2]	9.6	10.6	11.2	12.6
Gold grade (gram of gold per tonne of gold doré)	5.7	5.5	5.4	5.3

Notes:

(1) Average selling price per oz t is calculated by dividing sales by sales volumes for the relevant periods.

(2) Cash cost per oz t is calculated as the sum of (a) mining costs, gold doré processing and other cash production costs, restoration costs and increases or decreases in gold doré inventories, divided by (b) gold production volumes for the relevant periods. Although depreciation and amortization related to the production of gold doré is added to our cost of revenue, it is not included in cash costs.

We produce silver as a by-product of the gold doré we produce at our Pongkor Gold Mine. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 409,504 oz t, 361,470 oz t, 322,279 oz t and 162,811 oz t of silver, respectively, from the gold doré we produce at our Pongkor Gold Mine. The following table sets forth certain production and sales information for the silver ore produced at our Pongkor Gold Mine, for the periods indicated.

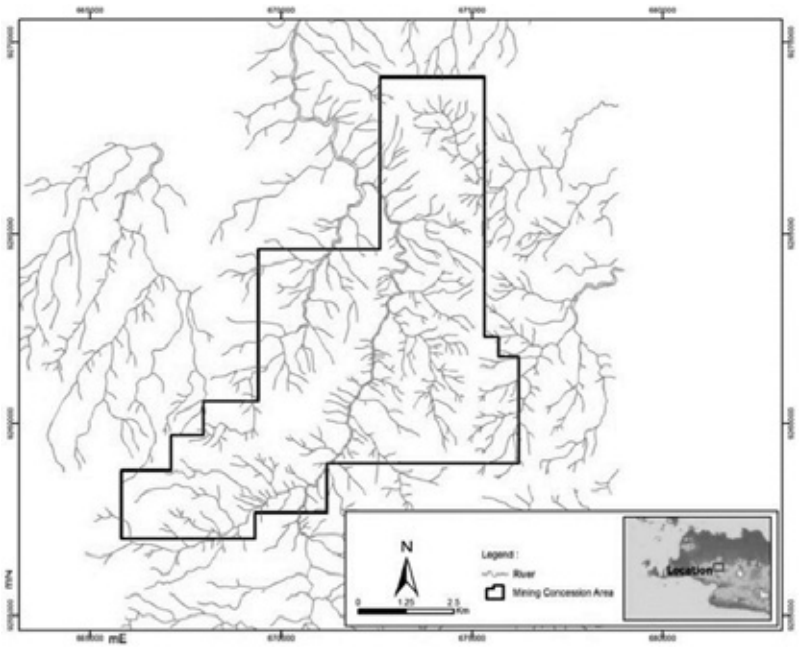
	Year ended December 31,			Six months ended June 30,
	2015	2016	2017	2018
Sales (Rp. in billion)	66.3	84.9	81.1	36.5
Average selling price (Rp. in million / oz t)[1]	0.2	0.2	0.2	0.2
Cash costs (Rp. in million / oz t)[2]	0.1	0.1	0.2	0.1
Silver grade (gram of silver per tonne of ore)	82.0	72.6	67.2	69.0

Notes:

(1) Average selling price per oz t is calculated by dividing sales by sales volumes for the relevant periods.

(2) Cash cost per oz t is calculated as the sum of (a) mining costs, silver ore processing and other cash production costs, restoration costs and increases or decreases in silver ore inventories, divided by (b) silver production volumes for the relevant periods. Although depreciation and amortization related to the production of silver ore is added to our cost of revenue, it is not included in cash costs.

The following map sets forth the location of our gold mining concession at our Pongkor Gold Mine.



Cibaliung gold mining concession

Our Cibaliung Gold Mine, which is situated in Pandeglang, Banten, spans a total area of approximately 1,320 hectares. It is comprised of one gold mining concession. We hold our Cibaliung Gold Mine through our subsidiary, PT Cibaliung Sumberdaya, by virtue of an IUP granted on October 8, 2014 and valid until July 27, 2025, which was acquired in 2009 from an Australian company, Arc Exploration Limited. The Cibaliung gold mining concession area is accessible by car from Jakarta, through an approximately six-hour journey.

We commenced gold doré production at the Cibaliung Gold Mine in 2010. The Cibaliung Gold Mine comprises high grade Cikoneng and Cibutung gold-silver shoots in an epithermal quartz vein system, with a known strike length of 1.5 km. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, production volume for the Cibaliung Gold Mine 22,987 oz t, 23,920 oz t, 18,904 oz t and 12,217 oz t of gold doré, respectively, representing 32.6%, 33.7%, 30.2% and 36.6%, respectively, of our total gold doré production.

The following table sets forth certain production and sales information for the gold doré produced at our Cibaliung Gold Mine, for the periods indicated.

	Year ended December 31,			Six months ended June 30,
	2015	2016	2017	2018
Sales (Rp. in billion)	379.2	428.4	342.8	252.0
Average selling price (Rp. in million / oz t)[(1)]	14.7	15.3	15.5	17.4
Cash costs (Rp. in million / oz t)[(2)]	11.5	11.1	14.1	13.2
Gold grade (gram of gold per tonne of doré)	5.2	5.2	4.1	5.7

Notes:

(1) Average selling price per oz t is calculated by dividing sales by sales volumes for the relevant periods.

(2) Cash cost per oz t is calculated as the sum of (a) mining costs, gold doré processing and other cash production costs, restoration costs and increases or decreases in gold doré inventories, divided by (b) gold production volumes for the relevant periods. Although depreciation and amortization related to the production of gold doré is added to our cost of revenue, it is not included in cash costs.

We produce silver as a by-product of the gold doré we produce at our Cibaliung Gold Mine. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, we produced 147,314 oz t, 147,121 oz t, 134,261 oz t and 84,009 oz t of silver, respectively, from the gold doré we produce at our Cibaliung Gold Mine. The following table sets forth certain production and sales information for the silver ore produced at our Cibaliung Gold Mine, for the periods indicated.

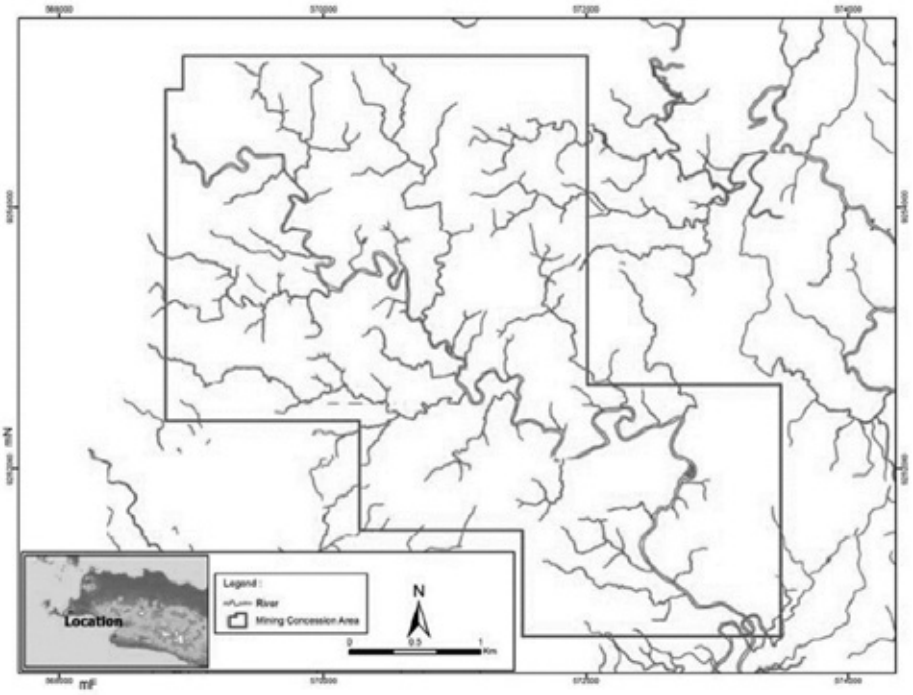
	Year ended December 31,			Six months ended June 30,
	2015	2016	2017	2018
Sales (Rp. in billion)	30.5	32.9	29.0	20.9
Average selling price (Rp. in million / oz t)[1]	0.2	0.2	0.2	0.2
Cash costs (Rp. in million / oz t)[2]	0.1	0.2	0.2	0.2
Silver grade (gram of silver per tonne of ore)	46.3	43.8	39.8	60.8

Notes:

(1) Average selling price per oz t is calculated by dividing sales by sales volumes for the relevant periods.

(2) Cash cost per oz t is calculated as the sum of (a) mining costs, silver ore processing and other cash production costs, restoration costs and increases or decreases in silver ore inventories, divided by (b) silver production volumes for the relevant periods. Although depreciation and amortization related to the production of silver ore is added to our cost of revenue, it is not included in cash costs.

The following map sets forth the location of our gold mining concession at our Cibaliung Gold Mine.



Logam Mulia Precious Metals Refinery

We own and operate a precious metals refinery, the Logam Mulia Precious Metals Refinery, the only precious metals refinery in Indonesia which is accredited by the LBMA. The Logam Mulia Precious Metals Refinery comprises two units: (i) a refining unit with a refining capacity of approximately 75 tonnes of gold per year and approximately 250 tonnes of silver per year, at which we smelt and refine gold doré that we produce at our own gold mines and gold doré of third-party mining companies as part of our precious metals refining services and (ii) a minting production unit with a production capacity of approximately 40 tonnes of fine gold per year, at which we process the gold bullion which we import from third-party gold trading companies. The

following table sets forth the Logam Mulia Precious Metals Refinery's production volume for the periods indicated.

	Year ended December 31,			Six months ended June 30,
	2015	2016	2017	2018
Gold (tonnes)	55.2	43.8	49.3	34.6
Silver (tonnes)	175.4	177.0	182.8	91.5

Mine operations and ore processing

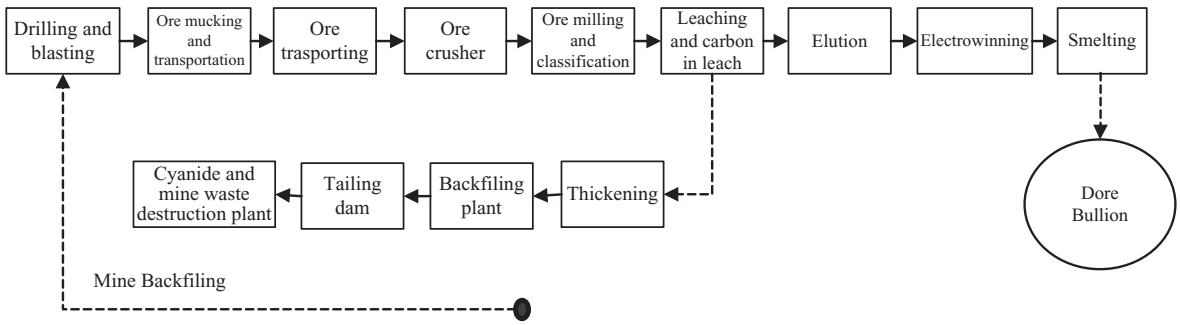
Mine planning

With information collected through our exploration activities, we prepare mine plans in relation to further exploration and operation of each pit within our mines. We begin with a conceptual life-of-mine plan and determine the potential production profiles for a particular mine throughout its life. We also account for surface features such as topography, position of rivers and creeks, local villages and associated infrastructure, and begin planning for rehabilitation of disturbed areas. See "Risk Factors — Risks Common to All Our Mining Businesses — Our operations are subject to environmental regulations which may cause us to incur significant costs, liabilities or interrupt or cease mining operations, any of which may adversely affect our results of operations." As more exploration data is collected, the geological model is revised, which necessitates revisions to mine plans. We prepare plans for 12-month periods on an ongoing basis alongside three-month and monthly rolling mine plans which are intended to capture differences arising from equipment failures and malfunctions, changes in operating costs and weather conditions.

Gold mining and processing

We use a conventional cut-and-fill stoping mining method with hydraulic replacement of tailings as fill for the Ciguha gold vein and the Kubang Cicau gold vein at the Pongkor Gold Mine. For the Ciurug gold vein at the Pongkor Gold Mine, we use a mechanized cut-and-fill method, with hydraulic jumbo drill and load haul dump. At the Cibaliung Gold Mine, we use mechanized cut-and-fill and undercut and fill methods to maintain the stability of underground mining infrastructure.

The following diagram sets forth the principal stages of our gold and silver processing, smelting and refining processes.



Ore from the stopes is carried via dump trucks to the primary crusher at the respective processing plants at the Pongkor Gold Mine and the Cibaliung Gold Mine. The product from the primary crusher continues to the fine ore bin via a triple-deck washing screen which separates out the oversize and undersize material. The oversize material is fed to a secondary crusher while the undersize, a 12.5 millimeters (+1 millimeter) fraction, feeds directly to the fine ore storage bin and the finest fraction (-1 millimeter) comprising clays is collected in a surge pond. Mined ore is further processed using the cyanide process, followed by the carbon-in-leach process and electro-winning. The processing plant at the Pongkor Gold Mine has a processing capacity of 400,000 wmt of ore per year and 340,000 dmt of ore per year, with recoveries of 95.0% and 70.0% for gold and silver, respectively.

The Cibaliung Gold Mine has a processing capacity of 200,000 wmt of ore per year and 170,000 dmt of ore per year, with recoveries of 95.0% and 70.0% for gold and silver, respectively.

The processed material from the processing plant is then allowed to cool down and change from its molten form into solid doré bullion, which is transported via armored vehicles to the Logam Mulia Precious Metals Refinery to be further processed into fine gold and silver. In the Logam Mulia Precious Metals Refinery, the gold and silver bullion is smelted in furnaces to produce anodes. Following the smelting process, the anodes are undergoes electro-refining to produce fine gold and fine silver. See "— Logam Mulia Precious Metals Refinery."

Reclamation

Reclamation is part of the ongoing mining activities and we carry out the reclamation process on the previous digging area while mining in other areas. We carry out our reclamation works in collaboration with the local community as part of our corporate and social responsibility efforts and are required to comply with the requirements set out in the respective mine's environmental documents including the AMDAL document, reclamation plan, post-mining plan and the MEMR Decree 1827/2018. See "Indonesian Regulatory Framework — Mining Regulation — Reclamation and post-mining activities."

Security

Gold and gold-bearing materials are kept in the storages of our own mines with access restricted to authorized persons. Each storage is attended by security guards and is equipped with stringent security systems. We hire a third-party security services provider, PT Universal Security Indonesia, to provide secure transportation services for our gold. Transportation of gold-bearing materials to the processing plants and Logam Mulia Precious Refinery is guarded by police officers and carried via armored vehicles. In addition, our gold mine and processing plant in the Pongkor concession area have been designated as National Vital Objects and as a result of which, benefit from security services provided by the national police force.

Third-party contractors

We contract out certain of our mining activities, including security services and hauling and transportation, with a view to maximizing efficiency while minimizing costs. We typically select our mining contractors through direct negotiations with existing contractors or by way of a competitive open tender, with potential contractors submitting their bids based on the requirements we specify. We select our mining contractors after considering various factors such as price, equipment, experience and previous track record in our mining operations. See "Risk Factors — Risks Relating to Our Business — We rely on third-party contractors to conduct our mining operations, and such contractors may be constrained by labor disputes, face operational difficulties or perform unsatisfactory work, which may result in a significant reduction in their services or termination or modification of our operating agreements."

Logam Mulia gold boutiques and depository services

We operate 15 gold boutiques located across Indonesia, in Jakarta, Surabaya, Medan, Bandung, Banjarmasin, Balikpapan, Palembang, Makassar, Yogyakarta, Denpasar and Semarang. Our gold boutiques capture the retail customers in Indonesia and diversify our customer base for our gold products. In addition, we also launched our precious metal depository services in 2016, which we brand as "BRANKAS." We currently offer three types of services under BRANKAS, namely (i) the "Corporate BRANKAS" service which caters to corporations looking to invest their liquid funds as well as employees of such corporations who are interested in investing a portion of their monthly income in gold stored in ANTAM, (ii) the "BRANKAS Berzakat" service which is an investment service that caters to Muslims and includes automatic computation of the zakat on the gold investment, and (iii) the "Individual BRANKAS" service which caters to individuals interested in investing in gold products.

Our gold, silver and other precious metal products

Our gold products are predominantly fine gold in the form of gold bars. In addition to gold bars, we also produce and sell custom-made gold products including jewelry and gold dinar coins. Other precious metal

products which we produce and sell include silver products such as silver bars, silver dirham coins, silver granules and silver nitrate, as well as other precious metal products such as platinum products. We sell our gold and other precious metal products in both the domestic market and overseas markets including Singapore, South Korea, Japan and India. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, 66.0%, 45.4%, 47.9% and 41.5%, respectively, of our revenue from sale of gold and precious metal products were from export sales.

Quality control

We have implemented comprehensive quality assurance and monitoring procedures to ensure that our products meet our stringent quality control standards and the expectations and requirements of our customers. Our quality assurance system encompasses stringent quality control checks at each stage of our production process, from procurement and processing of the raw materials, to the inspection of the end product. Our quality control department monitors the internal production process, storage and delivery of raw materials and products as well as conduct on-site inspections from time to time. It closely monitors the various production process by taking samples at different checkpoints for examination at our laboratories. We keep our production records to facilitate the continued improvement of our quality control management systems. In addition, as part of our quality control policies, we require that all our contractors possess the requisite qualifications for undertaking their respective works in exploration, mining, processing or production. Our quality assurance procedures are subject to semi-annual internal quality audits by a team of trained internal quality auditors. Surveillance audits and re-certification audits are carried out annually by SAI Global and TUV Rheinland, a company of internationally accredited external ISO auditors to ensure we comply with the certified standards. As of June 30, 2018, we have received the following quality assurance certifications and awards in respect of our production processes:

No.	Certification/award	Awarding body/ authority	Validity period of certificate/ Date of award	Process awarded
1.	ISO 9001:2015 (Quality Management System)	SAI Global	Until November 5, 2020	Gold and silver mining and processing operations at the Pongkor Gold Mine
2.	ISO 14001:2015 (Environmental Management System)	SAI Global	Until September 17, 2020	Gold and silver mining and processing operations at the Pongkor Gold Mine
3.	ISO 18001:2007 (Occupational, Health and Safety Management System)	SAI Global	Until October 14, 2020	Gold and silver mining and processing operations at the Pongkor Gold Mine
4.	ISO 9001:2015 (Quality Management System)	TUV Rheinland	Until June 8, 2020	Logam Mulia Precious Metals Refinery for quality management assurance
5.	ISO 14001:2015 (Environmental Management System)	TUV Rheinland	Until June 8, 2020	Logam Mulia Precious Metals Refinery for environmental assurance
6.	LBMA Accreditation	LBMA	Certified on March 16, 2018	Gold certification processes at the Logam Mulia Precious Metals Refinery
7.	SNI/ISO 17025	Komite Akreditasi Nasional	Until September 15, 2019	Testing laboratory processes at the Logam Mulia Precious Metals Refinery
8.	GOLD PROPER (Gold Environment Award)	Ministry of Environment and Forestry of the Republic of Indonesia	Awarded on December 15, 2017	Mining and processing operations of the Pongkor Gold Mining Unit
9.	GREEN PROPER (Silver Environment Award)	Ministry of Environment and Forestry of the Republic of Indonesia	Awarded on December 15, 2017	Mining and processing operations of the Logam Mulia Processing and Refinery Business Unit

No.	Certification/award	Awarding body/ authority	Validity period of certificate/ Date of award	Process awarded
10.	Indonesia Green Awards 2017	The La Tofi School of CSR	Awarded on May 3, 2017	Mining and processing operations at the Pongkor Gold Mine for environmental assurance
11.	PRATAMA Award on the Mining Safety Management Category for Holders of Mining Business Permits, Special Mining Business Permits and Special Operations Mining Business Permits for Processing and Refinery (Bronze Award, 2016)	Ministry of Energy and Mineral Resources	Awarded on June 8, 2017	Mining and processing operations of the Logam Mulia Processing and Refinery Business Unit
12.	ADITAMA Award the Mining Environmental Management Category for Holders of Mining Business Permits, Special Mining Business Permits and Special Operations Mining Business Permits for Processing and Refinery in the 2016	Ministry of Energy and Mineral Resources	Awarded on June 8, 2017	Mining and processing operations of the Pongkor Gold Mining Unit

Our Tin Business

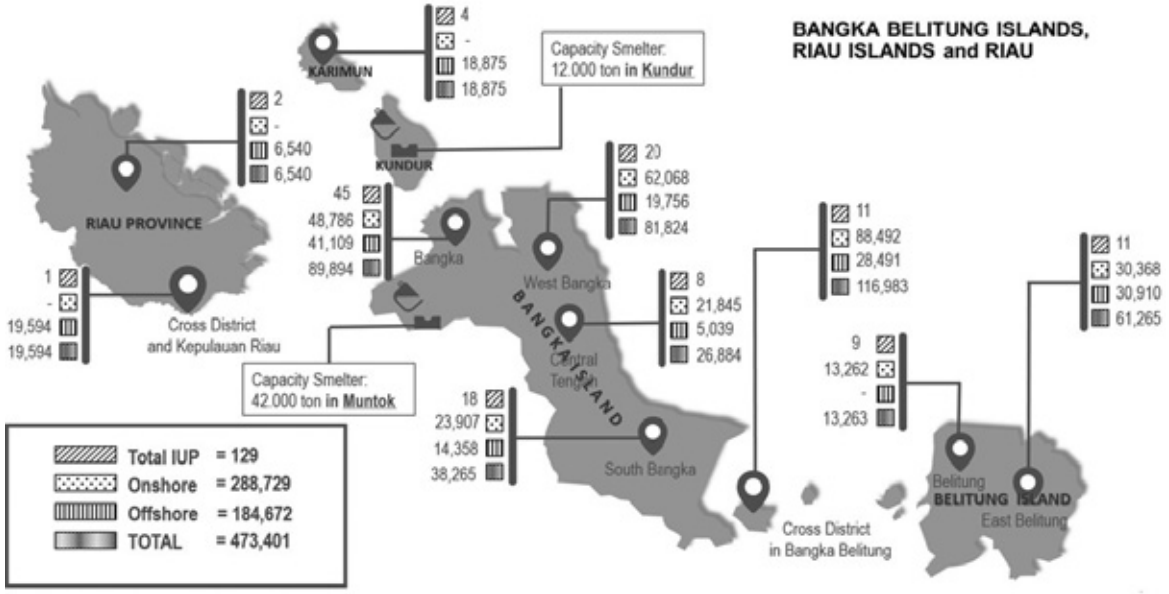
We conduct our tin mining and processing business through Timah. As of June 30, 2018, Timah was the second largest refined tin producer in the world in terms of refined tin production volume, according to AME. As a vertically integrated tin mining company, we undertake all stages of the production process of our refined tin, starting from the exploration, mining and processing of tin to the marketing and sale of our refined tin. In addition to refined tin, we also sell other tin products such as tin stabilizers and tin solder.

As of December 31, 2017, our aggregate tin ore reserves and resources was 377,594 wmt and 450,485 wmt, respectively, and for the year ended December 31, 2017, our aggregate refined tin production volume and sales production volume was 30,249 tonnes and 29,914 tonnes, respectively. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, revenue from sale of tin products was Rp.6,548.4 billion, Rp.6,629.8 billion, Rp.8,481.7 billion (US$588.8 million) and Rp.3,912.4 billion (US$271.6 million), respectively, representing 17.3%, 18.5%, 18.0% and 13.1%, respectively, of our total revenue.

Our tin mines

We own and operate tin mines spread across Bangka Island ("Bangka Tin Mines"), Belitung Island ("Belitung Tin Mines"), and Kundur Island, Karimun Island and the Riau province ("Kundur Tin Mines"), Indonesia.

The following map sets forth the location of our tin mines.



The following table sets forth certain information relating to our mining concessions for our Bangka Tin Mines, Belitung Tin Mines and Kundur Tin Mines.

Tin mines	Number of concessions held		Concessions holder	Concession expiry	Concession area		Reserves		Resources			Tin quality
	Onshore	Offshore			Onshore	Offshore	Proved	Probable	Measured	Indicated	Inferred	
					(hectares)		(tonnes)			(tonnes)		(grade in Sn, Kg/M³)[4]
Bangka[1][2]	79	19	Timah	2025 – 2027	235,693	108,753	90,109	107,754	275,824	63,732	178,457	0.33
Belitung[1][3]	23	1	Timah	2025 – 2026	53,037	30,910	21,288	83,594	70,687	53,588	29,455	0.23
Kundur[1]	—	7	Timah	2026	—	45,009	25,325	49,524	103,974	13,390	7,237	0.26
Total	**102**	**27**	**—**	**—**	**288,729**	**184,672**	**136,722**	**240,872**	**450,485**	**130,710**	**215,149**	**—**

Notes:

(1) According to the 2017 Tin Reserves Statement, see Appendix C.

(2) Includes one production operation IUP that we are in the process of obtaining.

(3) Includes three IUPs for iron ore mining, of which two are in the process of being renewed.

(4) Refers to ore grade of proven tin reserves.

The following table sets forth certain production sales information for our refined tin.

	For the years ended December 31,			For the six months ended June 30,
	2015	2016	2017	2018
Sales (Rp. in billion)	6,548.4	6,629.8	8,481.7	3,912.4
Average tin grade (% of tin content)	99.9%	99.9%	99.9%	99.9%
Average selling price per tonne (Rp. in million per tonne)[1]	223.3	247.3	276.8	308.1
Cash costs (Rp. in million per tonne)[2]	157.7	179.7	201.0	213.9

Notes:

(1) Average selling price per tonne is calculated by dividing sales by sales volumes for the relevant periods.

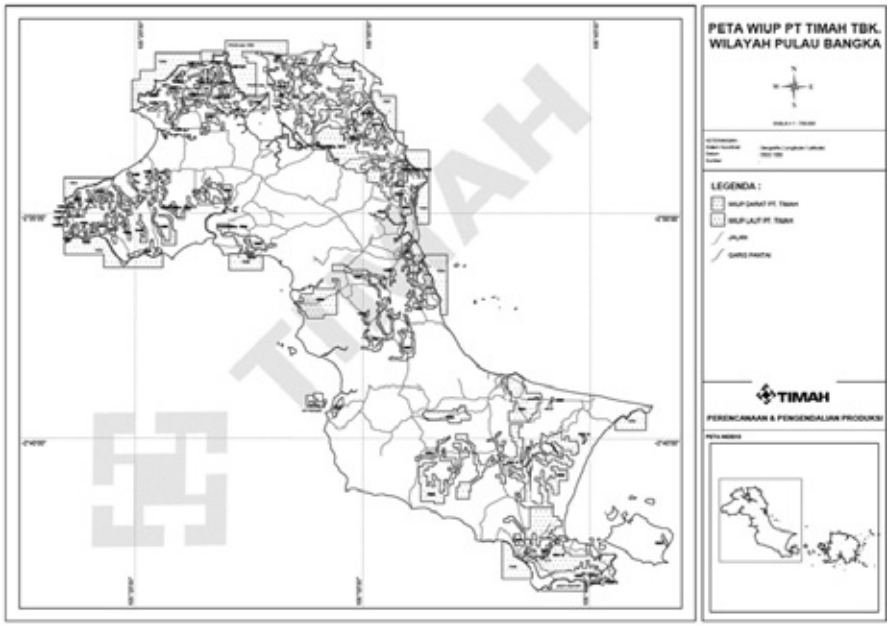
(2) Cash cost per tonne is calculated as the sum of (a) costs of raw materials, royalties paid to the Government, tin processing and other cash production costs and increases or decreases in tin inventories, divided by (b) refined tin production for the relevant periods. Although depreciation and amortization related to the production of tin is added to our cost of revenue, it is not included in cash costs.

Bangka tin mining concessions

Our Bangka Tin Mines, which are situated on Bangka Island, span a total area of approximately 344,367 hectares, of which 108,753 hectares are located offshore. We hold our Bangka Tin Mines by virtue of 97 IUPs, of which 19 are located offshore, granted from April 2010 to March 2017 with expiry dates ranging from February 2023 to August 2027. The Bangka Tin Mines are accessible by an approximately one-hour flight from Jakarta to Pangkalpinang, the capital of the Bangka Belitung Islands, and then by an approximately two-hour journey by car to the mine site. The offshore area of the Bangka Tin Mines is accessible through the use of a small boat to the dredger vessel or cutter section dredger stationed at the offshore area. Tin produced at our Bangka Tin Mines are processed at our tin smelting and refining plants located on Bangka Island. See "— Our tin smelting and refining plants — Bangka smelting and refining plants."

Substantially all of our tin ore is produced at the Bangka Tin Mines. See "Risk Factors — Risks Common to All Our Mining Businesses — We depend on a small number of mines for a substantial portion of our production volume." The Bangka Tin Mines contain alluvial tin and primary tin. We commenced tin production at the Bangka Tin Mines in 1993. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, production volume for the Bangka Tin Mines was 15,367 tonnes, 15,743 tonnes, 20,348 tonnes and 9,850 tonnes of tin ore, respectively, representing 58.3%, 65.3%, 65.3% and 65.1% respectively, of our total tin ore production.

The following map sets forth the location of the tin mining concessions at our Bangka Tin Mines.

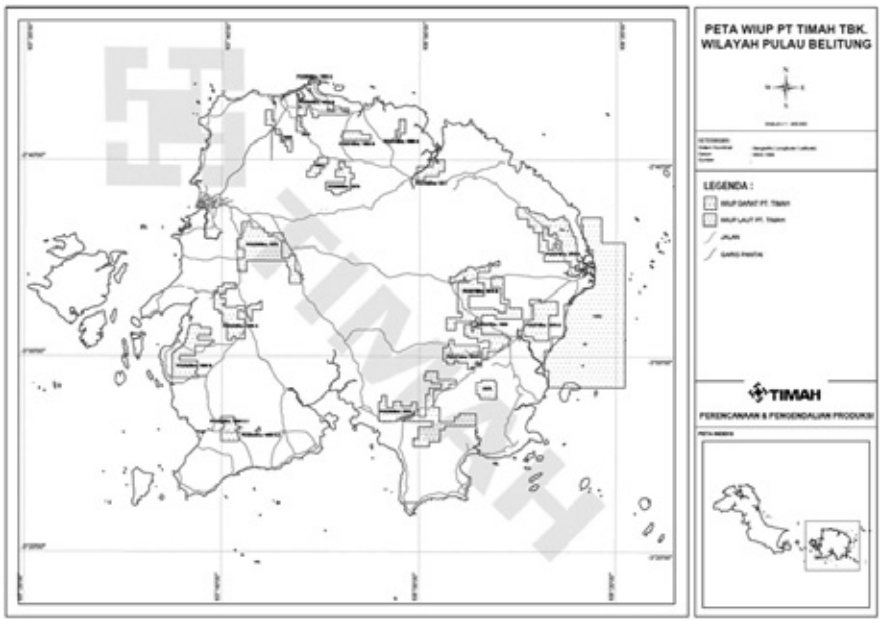


Belitung tin mining concessions

Our Belitung tin mines ("Belitung Tin Mines"), which are situated on Belitung Island, span a total area of approximately 83,947 hectares, of which 30,910 hectares is located offshore. We hold our Belitung Tin Mines by virtue of 24 IUPs (including three IUPs which are for iron ore mining, of which two are in the process of being renewed) granted from April 2010 to October 2016 with expiry dates ranging from July 2025 to July 2026. The Belitung Tin Mines are accessible by an approximately one-hour flight from Jakarta to Belitung, and then by a two-hour journey by car to the mine site. The offshore area of the Belitung Tin Mines is accessible through the use of a small boat to the dredger vessel or cutter section dredger stationed at the offshore area. Tin from our Belitung Tin Mines is processed at our facilities on Bangka Island. See "— Our tin smelting and refining plants — Bangka smelting and refining plants."

We commenced tin production at the Belitung Tin Mines in 1993. The Belitung Tin Mines contain alluvial tin and primary tin. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, production volume for the Belitung Tin Mines was 1,286 tonnes, 1,159 tonnes, 2,193 tonnes and 980 tonnes of tin ore, respectively, representing 4.9%, 4.8%, 7.0% and 6.5%, respectively, of our total tin ore production.

The following map sets forth the location of our tin mining concession at our Belitung Tin Mines.

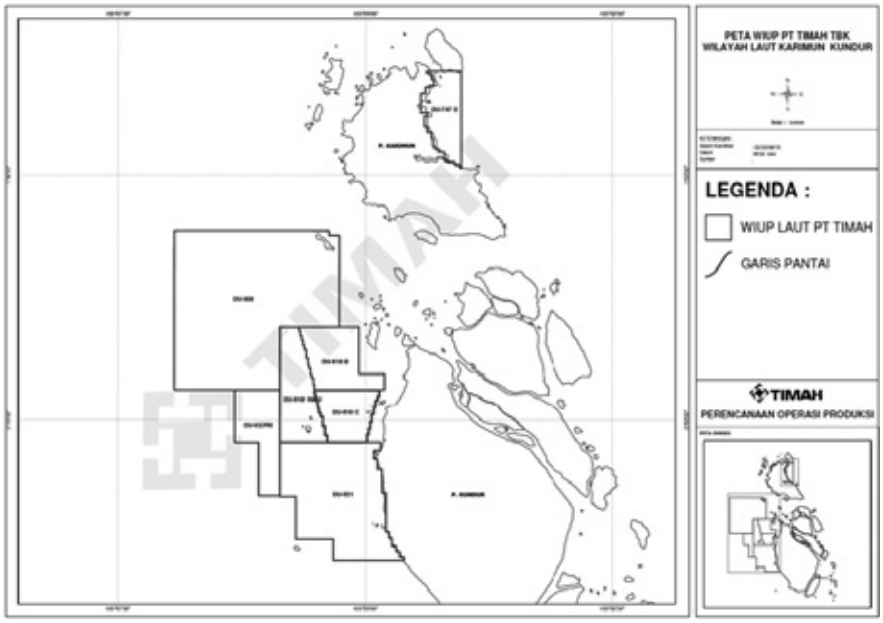


Kundur tin mining concessions

Our Kundur tin mines ("Kundur Tin Mines"), which are situated across the Riau Islands and Riau, span a total offshore area of approximately 45,009 hectares. We hold our Kundur Tin Mines by virtue of seven IUPs granted from May 2011 to April 2018 with expiry dates ranging from April 2023 to November 2026. The Kundur Tin Mines are located entirely offshore and are accessible by an approximately two-hour flight from Jakarta to Batam, the capital of the Riau Islands, followed by a one-hour journey by boat to Karimun Island, and then by a one-hour journey by boat to the mine site. Tin from our Kundur tin mines are processed at our facilities on Kundur Island. See "— Our tin smelting and refining plants — Kundur smelting and refining plants."

We commenced tin production at the Kundur Tin Mines in 1995. The Kundur Tin Mines contains alluvial tin. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, production volume for the Kundur Tin Mines was 9,708 tonnes, 7,220 tonnes, 8,637 tonnes and 4,305 tonnes of tin ore, respectively, representing 36.8%, 29.9%, 27.7% and 28.5%, respectively, of our total tin production.

The following map sets forth the location of our tin mining concessions at our Kundur Tin Mines.



Our tin smelting and refining plants

We own and operate nine tin smelting and refining plants located in Indonesia, seven of which are located in Muntok, Bangka Island and two of which are located in Kundur, Riau Islands.

Bangka smelting and refining plants

The following table summarizes certain operating data of our Bangka tin smelting and refining plants, for the periods indicated.

	Year ended December 31,			Six months ended June 30,
	2015	2016	2017	2018
Smelting:				
Total smelting capacity (mtpa)	42,000	42,000	42,000	42,000
Processed tin ore concentrate (tonne)	10,598	9,019	9,292	4,211
Crude tin production volume (tonne)	22,139	20,684	26,764	13,073
Refining:				
Total refining capacity (mtpa)	40,000	40,000	40,000	40,000
Crude tin fed (tonne)	19,290	17,341	21,782	8,803
Refined tin production volume (tonne)	19,065	16,826	21,500	8,550

Kundur smelting and refining plants

The following table summarizes certain operating data of our Kundur tin smelting and refining plants, for the periods indicated.

	Year ended December 31,			Six months ended June 30,
	2015	2016	2017	2018
Smelting:				
Total smelting capacity (mtpa)	12,000	12,000	12,000	12,000
Processed tin ore concentrate (tonne)	9,876	7,241	8,650	4,269
Crude tin production volume (tonne)	9,677	6,983	8,597	3,590
Refining:				
Total refining capacity (mtpa)	10,800	10,800	10,800	10,800
Crude tin fed (tonne)	9,677	6,983	8,597	3,590
Refined tin production volume (tonne)	8,366	6,853	8,748	3,816

Our vessels and dredges

As part of our offshore mining process, we require the use of cutter section vessels and dredges to mine alluvial tin deposits located beneath the seabed. See "— Mine operations and logistics — Tin mining and processing." As of June 30, 2018, we own and operate three dredger vessels, 17 cutter suction vessels and one bucket-wheel dredge for our offshore tin mining activities. The following table sets forth certain details relating to our vessels and dredges, as of June 30, 2018.

No.	Name	Type	Year constructed	Gross tonnage	Installed power (horsepower)	Digging capacity	Digging depth
1.	KIP PERMIS	Cutter suction dredger	2008	337	2,819	250 m^3/hour	35m
2.	KIP TIMAH I	Cutter suction dredger	2008	423	2,819	250 m^3/hour	35m
3.	KIP TIMAH II	Cutter suction dredger	2008	459	2,819	250 m^3/hour	35m
4.	KIP TIMAH III	Cutter suction dredger	2008	459	2,819	250 m^3/hour	35m
5.	KIP TIMAH IV	Cutter suction dredger	2008	459	2,819	250 m^3/hour	35m
6.	KIP TIMAH 6	Cutter suction dredger	2009	459	2,819	250 m^3/hour	35m
7.	KIP TIMAH 7	Cutter suction dredger	2009	624	2,819	250 m^3/hour	45m
8.	KIP TIMAH 8	Cutter suction dredger	2009	624	2,819	250 m^3/hour	45m
9.	KIP TIMAH 9	Cutter suction dredger	2010	566	3,137	250 m^3/hour	45m
10.	KIP TIMAH 10	Cutter suction dredger	2010	503	3,137	250 m^3/hour	45m
11.	KIP TIMAH 11	Cutter suction dredger	2010	506	3,137	250 m^3/hour	45m
12.	KIP TIMAH 12	Cutter suction dredger	2010	507	3,137	250 m^3/hour	45m
13.	KIP TIMAH 15	Cutter suction dredger	2012	566	2,819	250 m^3/hour	45m
14.	KIP TIMAH 16	Cutter suction dredger	2012	566	2,819	250 m^3/hour	45m
15.	KIP TIMAH 17	Cutter suction dredger	2012	548	2,819	250 m^3/hour	45m
16.	KIP TIMAH 18	Cutter suction dredger	2012	548	2,819	250 m^3/hour	45m
17.	KIP TIMAH 19	Cutter suction dredger	2013	537	2,819	250 m^3/hour	45m
18.	BWD Kundur 1	Bucket wheel dredger	1997	4,929	12,786	1,200 m^3/hour	60m
19.	KK Singkep 1	Bucket line	1984	4,703	8,806	860 m^3/hour	50m
20.	KK Bangka I	Bucket line	1964	3,000	6,650	612 m^3/hour	46m
21.	KK Bangka II	Bucket line	1978	4,203	8,397	859 m^3/hour	50m

Mine operations and logistics

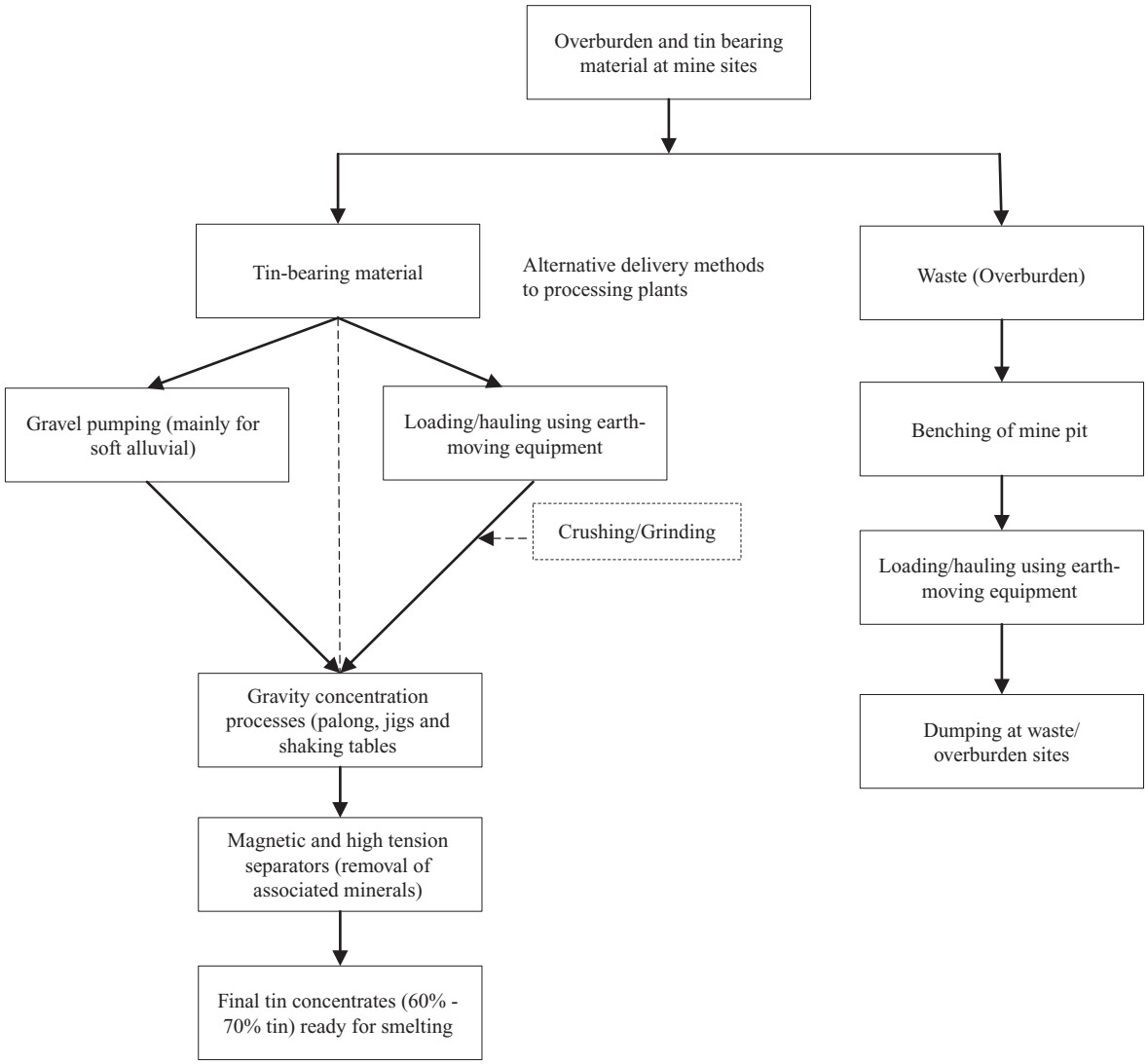
Mine planning

With the data on our tin reserves and resources collected through our exploration activities, we prepare mine plans based on several factors, including (i) our annual, mid-term and long-term tin ore production targets; (ii) our number and type of production equipment; (iii) the mine lifetime; (iv) type of deposit including whether

the deposit is onshore or offshore and the depth of layer of tin ore; and (v) the mine's surface and subsurface topography. We begin with a conceptual life-of-mine plan and determine the potential production profiles for a particular mine throughout its life. We also account for surface features such as topography, position of rivers and creeks, local villages and associated infrastructure, and begin planning for rehabilitation of disturbed areas. See "Risk Factors — Risks Common to All Our Mining Businesses — Our operations are subject to environmental regulations which may cause us to incur significant costs, liabilities or interrupt or cease mining operations, any of which may adversely affect our results of operations." As more exploration data is collected, the geological model is revised, which necessitates revisions to mine plans. We prepare plans for 12-month periods on an ongoing basis alongside three-month and monthly rolling mine plans which are intended to capture differences in equipment failures and malfunctions, changes in operating costs and weather conditions.

Tin mining and processing

We are engaged in both onshore and offshore tin mining activities. The following diagram sets forth the principal stages of our tin mining and processing procedures.



- *Onshore mining*. We undertake open-pit mining at our tin mines which involves drilling and blasting of the hard rock with a proper benching system in accordance with our mine design and planning. First,

the overburden is removed from the mine pit using excavators and the tin-bearing ore is hauled to our processing plant using earth-moving equipment. Overburden which is removed is transported to the designated overburden dumping areas. We also minimize excavation by drilling directly on the surface into the ore, spraying the ore with high pressure water to separate it from the ground, and then sucking the ore out using a ground pump.

- *Offshore mining.* Alluvial tin deposits located offshore are mined using dredges or smaller cutter suction dredges. The operating depths for offshore mining may be up to one meter of water and a maximum of 70 meters of alluvium. The mining of tin deposits located at greater depths require larger and deeper-digging dredges. The dredges have onboard processing plants comprising mainly jigs for initial concentration of the tin ore, before the tin concentrates are brought to onshore processing plants for further tin concentration as well as for separation of associated minerals.

- *Tin ore processing*. The softer-weathered tin ore is fed directly to the palong or sluice box. The palong is a traditional and cost-effective method for the initial stage of processing of large volumes of alluvium, where tin is concentrated at the bottom while sand and other lighter material overflow and are discarded at the end of the troughs. The palong is typically constructed of wood and built on an inclined foundation (with gradients of 1:12 to 1:16) or on stilts. The size of the palong varies from a small single-lane palong with two or three troughs to a large palong with up to 20 lanes, each with more than 10 troughs. A larger palong may have dimensions of 50 meters by 30 meters.

- *Crushing and grinding*. While the softer-weathered tin ore is processed, the harder rocky material is pulverized using crushers and grinding mills to liberate the tin.

- *Jigging and shaking*. Further processing follows by gravity concentration using jigs and shaking tables to separate the tin. During a jigging operation, water is forced upwards through the jig beds by using diaphragms for separating the tin and other heavy material from lighter sandy material using gravity. The jigging is done in two or three stages for gradual tin concentration. Jigs typically handle tin ore with particle sizes in the range of 2.5 mm to 10 mm while finer particles are treated using shaking tables.

  Shaking tables receive feed from the jigs for further tin concentration. These tables are equipped with longitudinal ridges or ripples to regulate the flow of tin-bearing slurry. The longitudinal movement of the shaking tables and the cross-flow of the water cause the particles to become stratified. This results in the heavier particles including tin being carried to the short end of the table, while the lighter sandy materials are washed away. In order to achieve final tin concentration, the tabling process is performed in two to three stages.

  Various associated minerals such as ilmenite, monazite and zircon are further separated using magnetic and high-tension separators. The final tin concentrate contains between 60.0% and 70.0% of tin content which is then ready to be sent for smelting.

- *Smelting.* The tin concentrate, which typically has an average tin content of 69.0%, are sent to our smelters to be smelted in furnaces at a temperature of approximately 1,350 degree Celsius. During the smelting stage, tin oxide is reduced to molten crude tin metal and a by-product called tin slag, which floats above the molten crude tin metal.

- *Refining*. The resulting crude tin metal undergoes a refining process to remove impurities present. The tin slag is re-smelted to recover more tin and the resulting final slag which typically contains tin content of less than 2.0% is removed and stored in our inventory. As of June 30, 2018, we have a volume of approximately 164,382 tonnes of tin slag in our inventory. See "— Our tin development projects — Tin fuming technology."

- *Casting*. The refined tin metal is casted into our various tin products at our smelting and refining plants.

Reclamation

Reclamation is part of the ongoing mining activities and we carry out the reclamation process on the previous digging area while mining in other areas. We conduct reclamation activities on both our onshore mining areas, which consists of land stewardship and revegetation, and our offshore mining areas, which consists of coral reef transplants, fish shelter placements, sea wall construction and planting of mangroves. Our reclamation activities are carried out, under our full supervision, by a total of 18 third-party contractors, which include state-owned companies, regional-owned companies, private companies and academic institutions. We typically contract with our third-party reclamation services providers for three-year periods, in the case of our onshore reclamation activities, and for one-year periods, in the case of our offshore reclamation activities. In addition, pursuant to Decree No. 1827 of 2018 of the Minister of Energy and Mineral Resources, we are required to provide reclamation and post-mining guarantees. See "Indonesian Regulatory Framework — Mining Regulation — Reclamation and post-mining activities."

Security

We have security systems in place to protect against illegal and small-scale mining, as well as for safeguarding the transportation of our products from the mine site. See "Risk Factors — Risks Common to All Our Mining Businesses — We may be affected by issues relating to small-scale and illegal mining." In addition to our own internal security guards, our onshore and offshore mining operations are also protected by the national armed forces and national police. Our tin ore is escorted by security guards and police officers from the mine site, and then to and from all checkpoints until delivered to the designated smelting facility. We have also made efforts to cooperate with small-scale miners who may otherwise be operating, unauthorized, in our tin mining concession areas. We cooperate with such small-scale miners by entering into agreements with them under which we collect the tin ore mined by them in our tin mining concession areas based on an annual quantity approved by the authorities and in exchange for a fee. All materials procured from small-scale miners are documented to ensure that the origin of the tin ore is from within the tin mining concession area. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, collection of tin ore from small scale miners is estimated to have accounted for approximately 13.1%, 18.0%, 36.1% and 13.2%, respectively.

Our tin products

We produce refined tin products which we market under our "BANKA" brand and "KUNDUR" brand as well as other downstream tin products. Our tin products are primarily sold to the trading arms of automobile manufacturers and customers in the manufacturing industry. Our Banka tin and Kundur tin are registered and traded on the London Metal Exchange. As a registered brand, our refined tin products are at least of the "Grade A" quality standard which requires, among others, that the tin content be not less than 99.92%. Our tin products include five main types of Banka tin and four main types of Kundur tin.

Banka tin

We sell five main types of Banka tin. Our Banka tin is produced by mixing tin ore produced at our Bangka Tin Mines and Belitung Tin Mines. The following table summarizes the key specifications of our different types of Banka tin.

	Minimum tin content (%)	Maximum lead content (parts per million)
Banka	99.9	300
Banka LL 200	99.9	200
Banka LL 100	99.9	100
Banka LL 50	99.9	50
Banka 99.99	99.99	24

Kundur tin

We sell four main types of Kundur tin. Our Banka tin is produced from the tin ore produced at our Kundur Tin Mines. The following table summarizes the key specifications of our different types of Kundur tin.

	Minimum tin content (%)	Maximum lead content (parts per million)
Kundur	99.9	300
Kundur LL 200	99.9	200
Kundur LL 100	99.9	100
Kundur LL 50	99.9	50

Other downstream tin products

We commenced selling tin stabilizers in 2011 under our registered brand "BANKASTAB," and tin solder in 2016 under our brand "BANKAESA." The following table sets forth the volume of sales for our downstream tin products, for the periods indicated.

	Year ended December 31,			Six months ended June 30,
	2015	2016	2017	2018
			(tonnes)	
Methyl tin stabilizer	1,471	2,016	4,739	2,634
Methyl tin intermediate	—	—	380	80
Stannic chloride	—	—	—	—
Tin solder	—	463	1,078	676

We sell the majority of our tin products in the international market, including Japan, South Korea, Netherlands, the United States and Taiwan. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, 97.0%, 93.6%, 96.0% and 95.7%, respectively, of our revenue from sale of tin products were from export sales.

Quality control

We have implemented comprehensive quality assurance and monitoring procedures to ensure that our products meet our stringent quality control standards and the expectations and requirements of our customers. Our quality assurance system encompasses stringent quality control checks at each stage of our production process, from procurement and processing of the raw materials, to the inspection of the end product. Our quality control department monitors the internal production process, storage and delivery of raw materials and products, as well as conduct on-site inspections from time to time. It closely monitors the various production processes by taking samples at different checkpoints for examination at our laboratories. We keep our production records to facilitate continual improvement of our quality control management systems. In addition, as part of our quality control policies, we require that all our contractors possess the requisite qualifications for undertaking their respective works in exploration, mining, processing or production. Our quality assurance procedures are subject to semi-annual internal quality audits by a team of trained internal quality auditors. Surveillance audits and re-certification audits are carried out once every six months and once every three months, respectively, by a company of internationally accredited external ISO auditors to ensure we comply with the certified standards.

As of June 30, 2018, we have received the following quality assurance certifications and awards in respect of our production processes:

No.	Certification/award	Awarding body/ authority	Validity period of certificate/ award	Process
1.	ISO 9001:2015	SGS United Kingdom Ltd	Until April 18, 2019	Tin mineral processing, tin smelting, refining and casting of Banka tin, Banka Low Lead tin and Banka 99.99% tin
2.	ISO 9001:2015	SGS Indonesia	Until February 20, 2020	Tin smelting, processing, refining and casting
3.	ISO 14001:2015	SGS United Kingdom Ltd	Until December 2, 2018	Tin ore processing, material preparation for smelting, refining and casting, and other supporting processes such as mechanic and electrical engineering, logistics, warehousing and telecommunication system
4.	OHSAS 18001:2007	SGS Indonesia	Until March 30, 2021	Tin ore processing, material preparation for smelting, refining and casting, and other supporting processes such as mechanic and electrical engineering, logistics, warehousing and telecommunication system
5.	ISO/IEC 17025:2008	Komite Akreditasi Nasional	Until August 6, 2021	Laboratory testing

Our tin development projects

As part of our expansion plans, we are currently engaged in the following key development projects which are in various stages of development:

Ausmelt technology

In July 2017, we entered into a licence agreement with Outotec Pty Ltd ("Outotec") for the acquisition of licenses for the use of Outotec's Ausmelt Top Submerged Lance ("TSL") technology at one of our Bangka smelting and refining plants. We expect that application of the Ausmelt TSL technology will enable us to smelt tin concentrates with tin content ranging from 40.0% to 70.0%, thereby enabling us to increase our annual production capacity up to 45,000 tonnes of crude tin. We have completed the engineering design for the integration of the Ausmelt TSL technology into our plant and are in the process of procuring the core equipment in order to begin construction. We expect to complete implementation of the Ausmelt TSL technology by August 2020 and to begin utilization of the technology by September 2020. Our planned capital expenditure for the Ausmelt Tin Smelter is Rp.410.8 billion and Rp.385.4 billion for the years ending December 31, 2018 and 2019, respectively.

Tin fuming technology

In September 2017, we entered into a cooperation agreement with PT Alvindo Sakti Persada ("Alvindo") pursuant to which Alvindo procured, on our behalf, tin fuming technology equipment from a third party to be installed at one of our tin smelting and refining plants located in Bangka. The tin fuming technology will enable us to re-smelt tin slag with tin content of less than 2.0%, and recover more refined tin from our tin ore. As of June 30, 2018, we have a volume of approximately 164,382 tonnes of tin slag in our inventory, which we intend to re-smelt using the tin fuming technology. See "— Mine operations and logistics — Tin mining and processing." The tin fuming equipment is scheduled to be delivered by October 2018 and is expected to be

operational by November 2018. The total cost of the tin fuming equipment is Rp.61.8 billion, of which we have paid Rp.24.7 billion, with the remaining Rp.37.1 billion to be paid in the remainder of 2018 and in 2019.

Borehole mining technology

We carry out sub-surface mining at our tin mines using the borehole mining method, which is conducted at our onshore mines through the use of our borehole mining equipment developed in-house in 2012. We are currently experimenting with the use of the borehole method at our offshore mines with borehole mining equipment which we currently rent from a third-party vendor. We plan to develop our own offshore borehole mining equipment and expect to begin construction of a prototype in 2019. We have currently completed the detailed engineering design of the prototype. Our planned capital expenditure for the development of in-house capabilities for our own offshore borehole mining equipment is approximately Rp.75.0 billion.

Joint venture in Nigeria

We entered into an agreement with Topwide Ventures Limited in December 2017 to establish a joint venture company (the "Nigeria JV") for the purpose of expanding our tin operations and sales into Nigeria. We are currently conducting exploration activities within six mining concession areas situated in the states of Plateau and Kaduna, Nigeria, to identify the location of mineable tin deposits.

See "Risk Factors — Risks Common to All Our Mining Businesses — The mining industry is capital intensive and we may experience limited availability of funds," and "Management's Discussion and Analysis of Financial Condition and Results of Operation — Capital Expenditures."

Our Nickel Business

We conduct our nickel mining and processing business through Antam. We are a vertically integrated nickel ore mining company and undertake all stages of the mining and processing of nickel ore. Apart from mining and processing nickel ore, we also produce ferronickel from the nickel ore we mine and process.

As of December 31, 2017, our aggregate nickel ore reserves and resources was 383.0 million wmt and 1,222.3 million wmt, respectively, and for the year ended December 31, 2017, our aggregate nickel production volume and sales volume was 5,572,056 wmt and 2,935,666 wmt, respectively. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, revenue from sale of nickel and ferronickel was Rp.2,729.0 billion, Rp.3,077.6 billion, Rp.4,592.4 billion (US$318.8 million) and Rp.3,355.9 billion (US$232.9 million), respectively, representing 7.2%, 8.5%, 9.7% and 11.3%, respectively, of our total revenue.

Our nickel mines

We own and operate nine nickel mines located in Southeast Sulawesi, North Maluku and West Papua, Indonesia.

Our Pomalaa nickel mine ("Pomalaa Nickel Mine"), which is situated in Kolaka, Southeast Sulawesi, spans a total area of approximately 6,129 hectares. It is comprised of four nickel mining concessions including the (i) Pomalaa, (ii) Tambea, (iii) Bt. Kilat and (iv) Sitallo nickel mining concessions. See "— Pomalaa nickel mining concessions." The Pomalaa Nickel Mine is accessible by an approximately three-hour flight from Jakarta to Kolaka and a less than an hour journey by car from Kolaka airport. The Pomalaa Nickel Mine has its own port for the loading and unloading of ore and ferronickel and for the delivery of fuel and other supplies used in the smelting process. The port is divided into two areas which include a quay of 120 meters with a draft of six meters allowing vessels of up to 7,000 dwt to dock. Unloading is also undertaken at a separate area of the port with a land fixed crane.

Our Mornopo nickel mine ("Mornopo Nickel Mine"), Pakal Island nickel mine (the "Pakal Island Nickel Mine"), Sangaji nickel mine ("Sangaji Nickel Mine") and Tanjung Buli nickel mine ("Tanjung Buli Nickel Mine") are located within one nickel mining concession, the Buli Serani nickel mining concession. See "— Buli

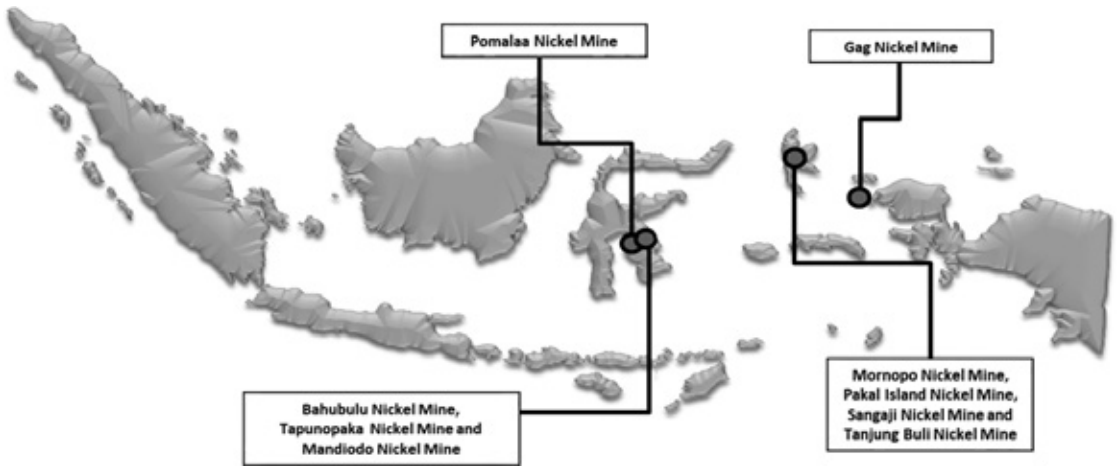
Serani nickel mining concession." The Buli Serani nickel mining concession is situated in East Halmahera, North Maluku, and spans a total area of approximately 39,040 hectares. The Buli Serani nickel mining concession is accessible by an approximately five-hour flight from Jakarta to Tanjung Buli, and a less than an hour journey by car from Tanjung Buli airport. The Pakal Island Nickel Mine is accessible by an approximately less than an hour journey by boat from the Tanjung Buli Nickel Mine.

Our Bahubulu nickel mine ("Bahubulu Nickel Mine") and Tapunopaka nickel mine ("Tapunopaka Nickel Mine") are located within one nickel mining concession area, the Asera and Molawe nickel mining concession. See "— Asera and Molawe nickel mining concession." The Asera and Molawe nickel mining concession is situated in North Konawe, Southeast Sulawesi, and spans a total area of approximately 16,920 hectares. The Asera and Molawe nickel mining concession area is accessible by an approximately four-hour fight from Jakarta to Kendari, the capital of Southeast Sulawesi, and an approximately three-hour journey by car from Kendari airport.

Our Gag nickel mine ("Gag Nickel Mine"), which is situated in Raja Ampat Island, West Papua, spans a total area of approximately 13,136 hectares. It is comprised of one nickel mining concession, the Gag nickel mining concession. See "— Gag nickel mining concession." The Gag Nickel Mine is accessible by an approximately four-hour flight from Jakarta to Sorong, and an approximately four-hour journey by speedboat from Sorong.

Our Mandiodo nickel mine ("Mandiodo Nickel Mine"), which is situated in North Konawe, Southeast Sulawesi, spans a total area of approximately 6,213 hectares. It is comprised of one nickel mining concession, the Lasolo nickel mining concession. See "— Lasolo nickel mining concession." We do not currently have active operations at our Mandiodo Nickel Mine. The Mandiodo Nickel Mine is accessible by an approximately four-hour flight from Jakarta to Kendari and an approximately three-hour journey by car from the Kendari airport.

The following map sets forth the location of our nickel mines.



Pomalaa nickel mining concessions

We hold our Pomalaa Nickel Mine by virtue of four IUPs granted from June 25, 2010 to March 14, 2014 with expiry dates ranging from June 25, 2020 to March 14, 2024. Our nickel operations began with the discovery of nickel in Pomalaa in 1909, and we commenced nickel production at the Pomalaa Nickel Mine in 1962. The Pomalaa Nickel Mine contains limonite and saprolite nickel ore. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, total nickel ore produced at our Pomalaa Nickel Mine was 0.5 million wmt, 0.5 million wmt, 3.5 million wmt and 1.6 million wmt respectively, representing 30.3%, 28.9%, 63.5% and 43.0% respectively, of our total nickel production.

The following table sets forth certain information relating to the mining concession areas within our Pomalaa Nickel Mine, as of December 31, 2017.

No.	Mining concession	Mine	Concession holder	Mining concession expiry	Concession area	Reserves		Resources		
						Proved	Probable	Measured	Indicated	Inferred
					(hectares)	(million wmt)		(million wmt)		
1.	Pomalaa[1]	Pomalaa	Antam	June 25, 2020	1,954	—[2]	—[2]	—[2]	—[2]	—[2]
2.	Tambea[1]	Pomalaa	Antam	March 14, 2024	2,712	—[2]	—[2]	—[2]	—[2]	—[2]
3.	Bt. Kilat[1]	Pomalaa	Antam	June 25, 2020	878.2	—[2]	—[2]	—[2]	—[2]	—[2]
4.	Sitallo[1]	Pomalaa	Antam	March 14, 2024	584.3	—[2]	—[2]	—[2]	—[2]	—[2]
	Total				**6,129**	**10.8**	**13.5**	**17.4**	**26.1**	**30.6**

Notes:

(1) According to the 2017 Nickel, Gold, Silver and Bauxite Reserves Statement, see Appendix B.

(2) Reserves and resources data for our nickel mining concessions within our Pomalaa Nickel Mine are measured calculated in aggregate.

The following table sets forth certain production and sales information for the nickel ore produced at our Pomalaa Nickel Mine, for the periods indicated.

	Year ended December 31,			Six months ended June 30,
	2015	2016	2017	2018
Sales (Rp. in billion)	—[1]	—[1]	811.9	397.4
Average selling price (Rp. in million / wmt)[2]	—[1]	—[1]	0.5	0.4
Cash costs (Rp. in million / wmt)[3]	0.2	0.3	0.2	0.1
Nickel ore grade (% of nickel content)	2.0	2.1	1.9	1.9

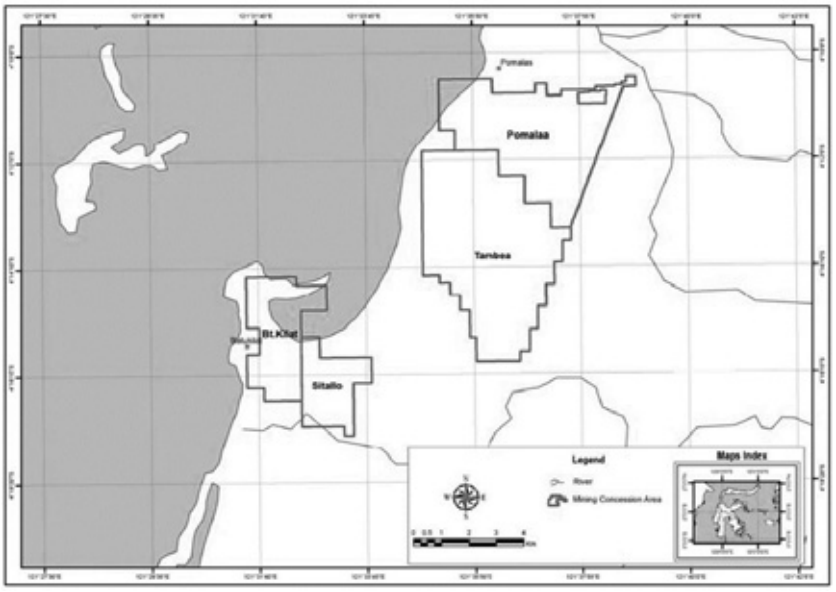
Notes:

(1) All the nickel ore produced from the Pomalaa Nickel Mine in 2015 and 2016 were used as feedstock for our ferronickel plant to produce ferronickel.

(2) Average selling price per wmt is calculated by dividing sales by sales volumes for the relevant periods.

(3) Cash cost per wmt is calculated as the sum of (a) mining costs, nickel ore processing and other cash production costs, restoration costs and increases or decreases in nickel ore inventories, divided by (b) nickel production volume for the relevant periods. Although depreciation and amortization related to the production of nickel ore is added to our cost of revenue, it is not included in cash costs.

The following map sets forth the relative location of the mining concession areas within our Pomalaa Nickel Mine.



Buli Serani nickel mining concession

Our Mornopo Nickel Mine, Pakal Island Nickel Mine, Tanjung Buli Nickel Mine and Sangaji Nickel Mine are located within the Buli Serani nickel mining concession, which we hold by virtue of an IUP granted on October 27, 2011 and valid until October 27, 2040. The Buli Serani nickel mining concession contains limonite and saprolite nickel ore. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, total nickel ore produced at our Buli Serani nickel mining concession was 1.2 million wmt, 1.2 million wmt, 2.0 million wmt and 1.9 million wmt respectively, representing 69.7%, 71.1%, 36.5% and 49.4% respectively, of our total nickel ore production.

The following table sets forth certain information relating to our Buli Serani nickel mining concession, as of December 31, 2017.

Mining concession	Concession holder	Mining concession expiry	Concession area	Reserves		Resources		
				Proved	Probable	Measured	Indicated	Inferred
			(hectares)	(million wmt)		(million wmt)		
Buli Serani[1]	Antam	October 27, 2040	39,040	113.9	87.7	193.4	152.3	185.3

Note:

(1) According to the Nickel, Gold, Silver and Bauxite Reserves and Resources Statement, see Appendix C.

We currently have active operations at our Tanjung Buli Nickel Mine and Pakal Island Nickel Mine and do not have active production operations at our Mornopo Nickel Mine and Sangaji Nickel Mine. The following table sets forth certain production and sales information for the nickel ore produced at our Tanjung Buli Nickel Mine and Pakal Island Nickel Mine, for the periods indicated.

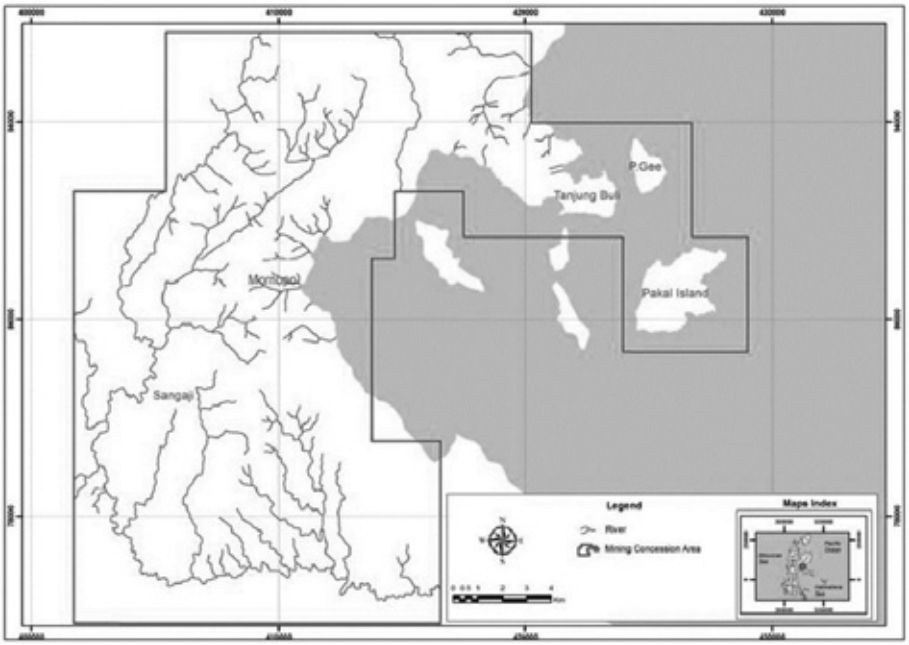
	Year ended December 31,			Six months ended June 30,
	2015	2016	2017	2018
Sales (Rp. in billion)	10.9	295.2	512.8	352.4
Average selling price per wmt (Rp. in million / wmt)[1]	0.2	0.4	0.4	0.5
Cash costs (Rp. in million / wmt)[2]	0.3	0.3	0.2	0.2
Nickel ore grade (% of nickel content)	2.4	2.3	2.3	2.1

Notes:

(1) Average selling price per wmt is calculated by dividing sales by sales volumes for the relevant periods.

(2) Cash cost per wmt is calculated as the sum of (a) mining costs, nickel ore processing and other cash production costs, restoration costs and increases or decreases in nickel ore inventories, divided by (b) production volume for the relevant periods. Although depreciation and amortization related to the production of nickel ore is added to our cost of revenue, it is not included in cash costs.

The following map sets forth the location of our mine sites within our Buli Serani nickel mining concession area.



Asera and Molawe nickel mining concession

Our Bahubulu Nickel Mine and Tapunopaka Nickel Mine are within the Asera and Molawe nickel mining concession, which we hold by virtue of an IUP granted on April 29, 2010 and valid until April 29, 2030. The Asera and Molawe nickel mining concession contains limonite and saprolite nickel ore. We recently commenced nickel mining operations at the Asera and Molawe nickel mining concession in August 2018.

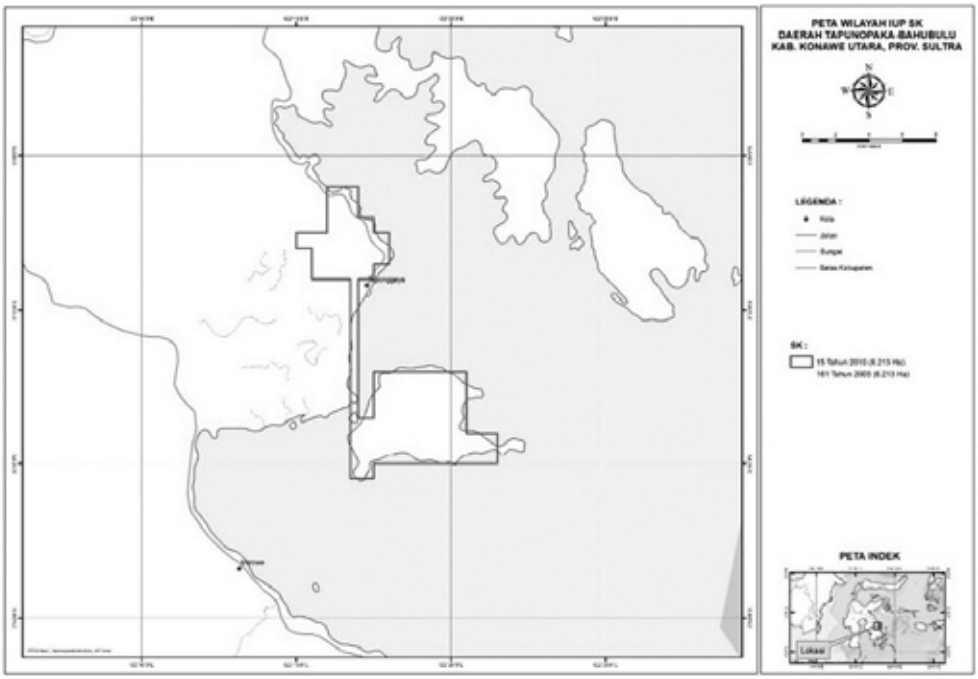
The following table sets forth certain information relating to our Asera and Molawe nickel mining concession, as of December 31, 2017.

Mining concession	Concession holder	Mining concession expiry	Concession area	Reserves		Resources		
				Proved	Probable	Measured	Indicated	Inferred
			(hectares)	(million wmt)		(million wmt)		
Asera and Molawe[1]	Antam	April 29, 2030	16,920	47.5	70.9	53.7	67.9	52.5

Note:

(1) According to the 2017 Nickel, Gold, Silver and Bauxite Reserves Statement, see Appendix B.

The following map sets forth the location of our Asera and Molawe nickel mining concession area.



Gag nickel mining concession

We hold our Gag Nickel Mine by virtue of a CoW granted on January 19, 1998 and valid until November 30, 2047. The Gag Nickel Mine contains limonite and saprolite nickel ore. We commenced nickel production at the Gag Nickel Mine in November 2017. For the six months ended June 30, 2018, total nickel produced at our Gag Nickel Mine was 285,276 wmt, which represented 7.6% of our total nickel production.

The following table sets forth certain information relating to our Gag nickel mining concession, as of December 31, 2017.

Mining concession	Concession holder	Mining concession expiry	Concession area	Reserves		Resources		
				Proved	Probable	Measured	Indicated	Inferred
			(hectares)	(million wmt)		(million wmt)		
Gag[1]	PT Gag Nikel	November 30, 2047	13,136	30.4	8.3	80.1	19.9	223.5

Note:

(1) According to the 2017 Nickel, Gold, Silver and Bauxite Reserves Statement, see Appendix B.

The following table sets forth certain production and sales information for the nickel produced at our Gag Nickel Mine, for the periods indicated.

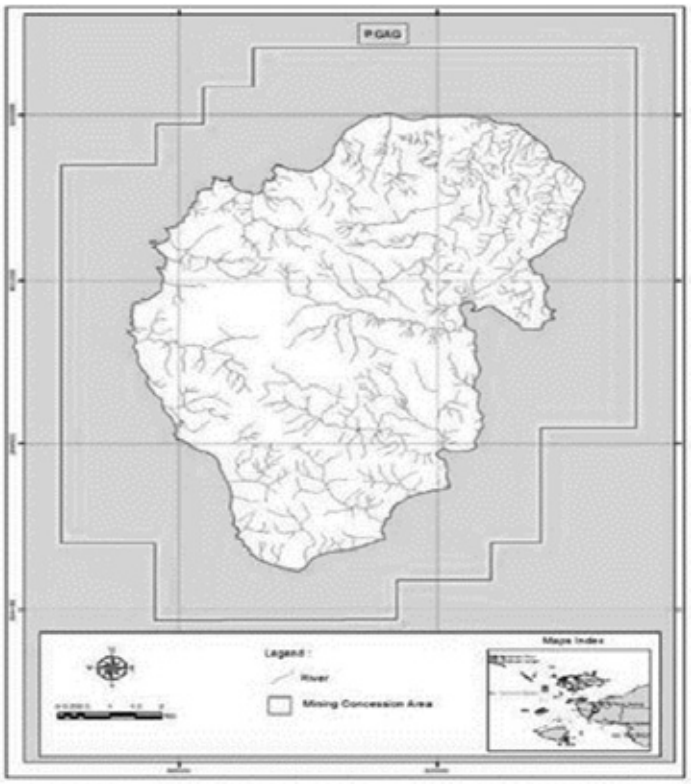
	Year ended December 31,			Six months ended June 30,
	2015	2016	2017	2018
Sales (Rp. in billion)	—	—	—	113.8
Average selling price per wmt (Rp. in million / wmt)(1)	—	—	—	0.54
Cash costs (Rp. in million / wmt)(2)	—	—	—	0.14
Nickel ore grade (% of nickel content)	—	—	—	1.96

Notes:

(1) Average selling price per wmt is calculated by dividing sales by sales volumes for the relevant periods.

(2) Cash cost per wmt is calculated as the sum of (a) mining costs, nickel ore processing and other cash production costs, restoration costs and increases or decreases in nickel ore inventories, divided by (b) nickel production volume for the relevant periods. Although depreciation and amortization related to the production of nickel ore is added to our cost of revenue, it is not included in cash costs.

The following map sets forth the location of our Gag nickel mining concession area.



Lasolo nickel mining concession

We hold our Mandiodo Nickel Mine by virtue of our Lasolo IUP granted on January 11, 2010 and valid until January 11, 2030. The Lasolo nickel mining concession area is approximately 6,213 hectares. We have not yet commenced operations at our Mandiodo Nickel Mine as we are currently focusing on the development of our Tapunopaka Nickel Mine, which we recently began operations at in August 2018. See "— Asera and Molawe nickel mining concession." We are also studying the possibility of implementing our hydromet technology

project at our Lasolo nickel mining concession. See "— Other nickel development projects." The following table sets forth certain information relating to our Lasolo nickel mining concession area.

Mining concession	Concession holder	Mining concession expiry	Concession area	Reserves		Resources		
				Proved	Probable	Measured	Indicated	Inferred
			(hectares)	(million wmt)		(million wmt)		
Lasolo[1]	Antam	January 11, 2030	6,213	—[2]	—[2]	35.0	53.0	31.6

Notes:

(1) According to the 2017 Nickel, Gold, Silver and Bauxite Reserves Statement, see Appendix B.

(2) Reserves for the Lasolo concession have not been measured and classified.

Our ferronickel production facilities

Pomalaa Ferronickel Facilities

The Pomalaa Ferronickel Facilities consist of three operating ferronickel plants, FeNi II, FeNi III and FeNi IV (the "Pomalaa Ferronickel Plants"), which commenced operations in 1995, 2007 and 2017, respectively, with a combined production capacity of approximately 27,000TNi to 30,000TNi per year. In addition to ferronickel plants, the Pomalaa Ferronickel Facilities also consist of an oxygen plant for the production of oxygen gas used as a reactant in the ferronickel refining process, a coal-fired power plant with a capacity of 2 x 30MWh and a diesel power plant with a capacity of 8 x 17MWh used for providing power to the ferronickel plants as well as port and jetty facilities. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, the Pomalaa Ferronickel Facilities' production volume was 17,211TNi, 20,293TNi, 21,762TNi and 12,811TNi per year.

The following table sets forth certain production and sales information for the ferronickel produced at our Pomalaa Ferronickel Facilities, for the periods indicated.

	Year ended December 31,			Six months ended June 30,
	2015	2016	2017	2018
Sales (Rp. in billion)	2,718.1	2,782.4	3,222.6	2,469.4
Average selling price per tonne (Rp. in million / TNi)[1]	142.6	133.5	146.8	194.0
Cash costs (Rp. in million / TNi)[2]	126.6	99.8	103.8	112.0
Ferronickel ore grade (% of nickel content)	23.8	21.5	19.96	20.8

Notes:

(1) Average selling price per TNi is calculated by dividing sales by sales volumes for the relevant periods.

(2) Cash cost per TNi is calculated as the sum of (a) mining costs, ferronickel processing and other cash production costs, restoration costs and increases or decreases in ferronickel inventories, divided by (b) ferronickel production volume for the relevant periods. Although depreciation and amortization related to the production of ferronickel is added to our cost of revenue, it is not included in cash costs.

Production facility under development — East Halmahera Ferronickel Plant

We commenced construction of a new ferronickel plant (the "East Halmahera Ferronickel Plant") on the island of Halmahera, in April, 2017. The planned production capacity of the East Halmahera Ferronickel Plant is 27,000TNi per year, with an annual production capacity of 13,500TNi after completion of the first phase of the East Halmahera Ferronickel Plant and a subsequent 13,500TNi after completion of the second phase of the East Halmahera Ferronickel Plant. Accordingly, upon completion of the first phase of the East Halmahera Ferronickel Plant, our annual ferronickel production capacity is expected to increase by 50.0% to 40,500TNi from 27,000TNi. Our planned and committed capital expenditure for the East Halmahera Ferronickel Plant is Rp.2,367.6 billion and Rp.573.7 billion for the years ending December 31, 2018 and 2019, respectively. As of June 30, 2018, we have incurred Rp.2,189.0 billion of the planned capital expenditure. See "Risk Factors — Risks Common to All Our Mining Businesses — The mining industry is capital intensive and we may

experience limited availability of funds," and "Management's Discussion and Analysis of Financial Condition and Results of Operation — Capital Expenditures." We expect to finance the capital expenditures using cash generated from our operations and proceeds from the rights issue by Antam in November 2015. The expected date of completion of the East Halmahera Ferronickel Plant is December 2018 and we expect to commence production at the East Halmahera Ferronickel Plant by June 2019.

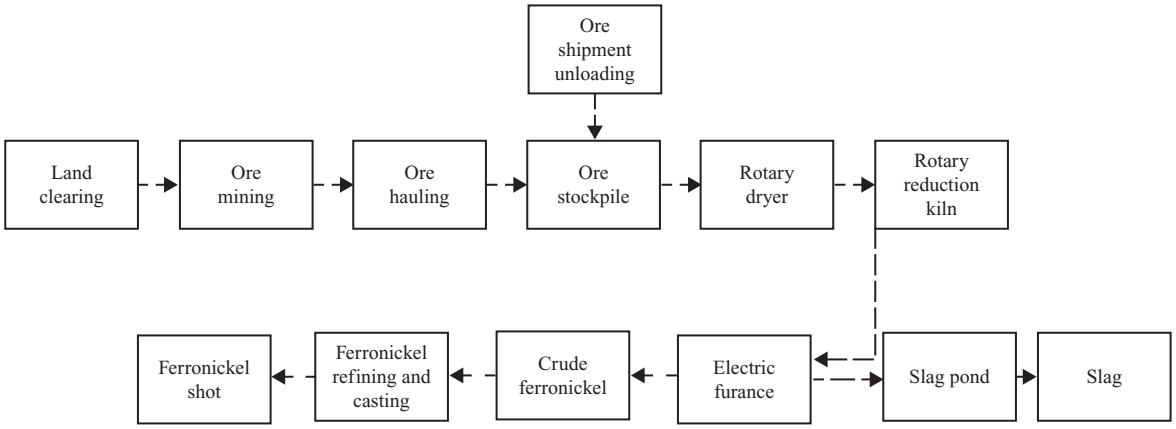
Mine operations and ore processing

Mine planning

With information collected through our exploration activities, we prepare mine plans in relation to further exploration and operation of each pit within our mines. We begin with a conceptual mine plan and determine the potential production profiles for a particular mine throughout its life. We also account for surface features such as topography, position of rivers and creeks, local villages and associated infrastructure, and begin planning for rehabilitation of disturbed areas. See "Risk Factors — Risks Common to All Our Mining Businesses — Our operations are subject to environmental regulations which may cause us to incur significant costs, liabilities or interrupt or cease mining operations, any of which may adversely affect our results of operations." As more exploration data is collected, the geological model is revised, which necessitates revisions to mine plans. We prepare plans for 12-month periods on an ongoing basis alongside three-month and monthly rolling mine plans which are intended to capture differences arising from equipment failures and malfunctions, changes in operating costs and weather conditions.

Nickel ore mining and processing

Our nickel ore and ferronickel production process starts with the land clearing process and ends with the processing of nickel ore into ferronickel. The following diagram sets forth the principal stages of our nickel ore mining and ferronickel production process.



As our nickel deposits are generally located at a shallow depth beneath the earth's surface, mining for nickel ore can be carried out under an open-pit mining method, with the use of trucks and shovels and with limited need for blasting. Little beneficiation is required other than drying and screening as well as some limited crushing of oversized material. For instance, saprolite nickel ores which rest deeper beneath the earth's surface is often lumpy and requires crushing to reduce it to the required size specifications.

The mining operations conducted at each of our nickel mines are largely similar, with slight variations that are mostly due to topographical differences. First, the vegetation is cleared and the overburden is stripped to expose the limonite nickel ore. Following which, the limonite nickel ore and the saprolite nickel ore are extracted through the use of bench mining techniques. Limonite nickel ore rests above saprolite nickel ore and extraction of limonite nickel ore takes place before mining of saprolite nickel ore. Each bench has a height of three meters. At some of our nickel mines, production drilling is carried out for grade control. Sampling is conducted at three-

meter intervals along each bench. The samples are assayed and each sample area is designated using colored stakes, thereby enabling miners to effectively determine the product they are mining and to which stockpile the ore must be transported based on its type and grade.

At the Pomalaa Nickel Mine where we mine saprolite nickel ore, the rocky portions of the site are segregated to maximize ore recovery. Oversized ore is then reduced in size. The low grade limonite is pushed out of the way and used for backfill after extraction of the ore is completed. Bulldozers are used to strip the overburden, which is pushed to the side and used where possible for reclamation after mining. Similar techniques are used in the other nickel ore mines. After mining, the saprolite nickel ore is solar dried by placing it in narrow piles and turning it over every several days. Solar drying reduces the moisture content of ore to a range of approximately 30.0% to 35.0%, making it suitable for shipment.

The nickel ore is then moved to the stockyards at the port and piled for barging, where it is covered with tarpaulins for dust control and for protection from rainfall. Ore is transported from the mine face to the stockpile areas by trucks operated by contractors for processing in the ferronickel plants at Pomalaa (the "Pomalaa Ferronickel Facilities") to produce ferronickel. See "— Ferronickel production." Large vessels are loaded using barges approximately 500 meters to 600 meters offshore due to limited draft closer to the shore. Loading usually takes two to three days, but can occasionally take longer under poor weather conditions. Our mining operations are usually interrupted during Indonesia's rainy season due to the challenging working conditions posed by the heavy rainfall.

Ferronickel production

Ferronickel generally consists of 20.0% to 25.0% nickel and 75.0% to 80.0% iron and its processing consumes saprolite nickel ore. Ferronickel production depends on the grade of ore feed and the smelter load, and is produced by smelting nickel ore to produce ferronickel in the form of shots or pellets, using a pyro-metallurgy processing which consumes large amounts of electricity. Approximately 75 to 90 wmt of saprolite nickel ore is required to produce one TNi.

Saprolite nickel ore typically with a grade above 1.8% of nickel content is fed through a shakeout machine to a rotary drier to lower its moisture content from a range of 30.0% to 33.0%, to a range of 20.0% to 22.0%, using heat produced from the combustion of pulverized coal at an operating temperature of 800 degrees Celsius. The dried ore is screened at five centimeters at the impeller breaker and passed to the ore bins in the mixing house. The oversized ore is crushed in a breaker and re-joins the undersized ore and the dust from the rotary dryer. Other bins contain anthracite, limestone and coal which are mixed with the ore in exact proportions. The addition of limestone is required to increase slag basicity in the electric furnace. The ore is then fed into the rotary kilns. In order to process the ore in the electric furnace, the rest of the moisture inside the ore must be removed, including water of hydration of minerals such as serpentine and goethite contained in the ore. This is carried out in rotary kilns where the operating temperature is approximately 1,000 degrees Celsius. Dust is collected from the kiln in the form of exhaust gas through a dust collecting system. It is formed into pellets for recycling as kiln feed. The calcined product from the kiln is collected in a surge hopper, weighed and charged into insulated, closed containers to conserve heat and to minimize dust. These containers are automatically transferred and charged to the top bin of the electric furnace. The electric furnace is a cylindrical furnace. Smelting temperature is approximately 1,600 degree Celsius. Slag is tapped at one side of the furnace while metal is tapped at the other. The off-gasses from the furnace pass through a baghouse system to remove particulates prior to recycling to the rotary drier. The crude ferronickel from the ferronickel plants are collected in 25-ton lots in ladles and transferred to the refinery. The crude ferronickel is de-sulfurized by the addition of calcium carbide and soda ash which are stirred into the molten ferronickel. The slag produced in this process is skimmed off manually. This slag contains approximately 8.0% to 9.0% nickel. Metal and slag are separated by hand picking and the metal so recovered is returned to the electric furnace. The de-sulfurization process takes approximately 20 minutes to complete. The maximum final sulfur content is 0.03%.

The high carbon ferronickel product from de-sulfurization is either routed to a casting unit if a high carbon product is required. If a low carbon product is required, the de-sulfurized ferronickel is passed to an oxygen

converter where oxygen is top blown onto the liquid metal to remove carbon, phosphorous and to slag off chromium and silica. Burnt lime and limestone are added as flux. The converting process takes about an hour to complete. The off-gasses from the shaking converter are cleaned in an electrostatic precipitator and the collected dust sent to the pelletizer and briquette machine.

Reclamation

Reclamation is part of the ongoing mining activities and we carry out the reclamation process on the previous digging area while mining in other areas. We carry out our reclamation works in collaboration with the local community as part of our corporate and social responsibility efforts and are required to comply with the requirements set out in the respective mine's environmental documents including the environmental impact assessment (AMDAL), reclamation plan, post-mining plan and MEMR Decree 1827/2018. See "Indonesian Regulatory Framework — Mining Regulation — Reclamation and post-mining activities."

Security

We hire third-party security services providers, PT Prima Karya Sarana Sejahtera and PT Kartika Cipta Indonesia, to provide general labor services including security guards for surveillance at our nickel mines and processing plants. In addition, our nickel mines and processing plants located within the South Sulawesi and North Maluku area have been designated as National Vital Objects and as a result of which, benefit from security services provided by the local police force.

Third-party contractors

We contract out certain of our mining activities, including security services and hauling and transportation, with a view to maximizing efficiency while minimizing costs. We typically select our mining contractors through direct negotiations with existing contractors or by way of a competitive open tender, with potential contractors submitting their bids based on the requirements we specify. We select our mining contractors after considering various factors such as price, equipment, experience and previous track record in our mining operations. See "Risk Factors — Risks Relating to Our Business — We rely on third-party contractors to conduct our mining operations, and such contractors may be constrained by labor disputes, face operational difficulties or perform unsatisfactory work, which may result in a significant reduction in their services or termination or modification of our operating agreements."

Our nickel development projects

As part of our expansion plans, we are currently engaged in the following key development projects which are in various stages of development.

Blast Furnace NPI

On December 9, 2014 (as most recently amended on September 21, 2015), we entered into an investment agreement with Ocean Energy to construct a nickel pig iron plant (the "Blast Furnace NPI") at our Buli Serani mining concession area. Pursuant to the joint venture agreement, Ocean Energy will own 75.0% interests in the project and we will own the remaining 25.0% interests. Pursuant to the investment agreement, financing of the Blast Furnace NPI will be provided by Ocean Energy and we will contribute through sharing of our mining expertise and land development, facilities and infrastructure development capabilities. The planned annual production capacity of the Blast Furnace NPI upon completion of construction is 15,000TNi. The expected completion date of the Blast Furnace NPI is the second quarter of 2021.

Other development projects

In addition to the Blast Furnace NPI project, we are also exploring other development projects including (i) the construction of a new ferronickel plant and stainless steel plant, with a planned annual production capacity of 40,000TNi and 500,000 tonnes of stainless steel, respectively, and (ii) the implementation of the hydromet technology at our nickel mining concession areas in order to produce nickel products for use in batteries.

Our nickel ore and ferronickel products

We sell processed nickel ore which we extract from our Pomalaa, Buli Serani and Gag nickel mining concession areas, as well as ferronickel products which we produce at our Pomalaa Ferronickel Plants.

- *Nickel ore.* We sell saprolite nickel ore, which are high grade nickel ore, as well as, limonite nickel ore, which are low grade nickel ore. Saprolite nickel ore are found deeper beneath the earth's surface as compared to limonite nickel ore and as a result, are generally more difficult and expensive to mine. Our saprolite nickel ore is composed of nickel content of up to 1.8%. Our limonite nickel ore is composed of nickel content typically ranging between 1.2% and 1.7% and a minimum of 30.0% iron content. Saprolite nickel ore is also used as the primary raw material in the production of ferronickel. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, revenue from our sale of nickel ore was Rp.10.9 billion, Rp.295.2 billion, Rp.1,369.8 billion (US$95.1 million) and Rp.886.5 billion (US$61.5 million), respectively, representing 0.4%, 9.6%, 29.8% and 26.4%, respectively, of our total revenue from nickel ore and ferronickel.
- *Ferronickel.* Our ferronickel products generally consist of approximately 20.0% nickel content and 80.0% iron content and are sold in the form of shots or pellets, either with high or low carbon content. Ferronickel is used as feed material in the production of stainless steel. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, revenue from sale of ferronickel was Rp.2,718.1 billion, Rp.2,782.4 billion, Rp.3,222.6 billion (US$223.7 million) and Rp.2,469.4 billion (US$171.4 million), respectively, representing, 99.6%, 90.4%, 70.2% and 73.6%, respectively, of our total revenue from nickel ore and ferronickel.

We sell the majority of our nickel ore and ferronickel in the international market, including India, South Korea, Taiwan, China and Ukraine. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, 99.6%, 90.4%, 98.0% and 94.0%, respectively, of our revenue from our sale of nickel ore and ferronickel were from export sales.

Quality control

We have implemented comprehensive quality assurance and monitoring procedures to ensure that our products meet our stringent quality control standards and the expectations and requirements of our customers. Our quality assurance system encompasses stringent quality control checks at each stage of our production process, from procurement and processing of the raw materials, to the inspection of the end product. Our quality control department monitors the internal production process, storage and delivery of raw materials and products, as well as conduct on-site inspections from time to time. It closely monitors the various production process by taking samples at different checkpoints for examination at our laboratories. We keep our production records to facilitate the continued improvement of our quality control management systems. In addition, as part of our quality control policies, we require that all our contractors possess the requisite qualifications for undertaking their respective works in exploration, mining, processing or production. Our quality assurance procedures are subject to semi-annual internal quality audits by a team of trained internal quality auditors. Surveillance audits and re-certification audits are carried out annually by SAI Global and SGS S.A., a company of internationally accredited external ISO auditors to ensure we comply with the certified standards.

As of June 30, 2018, we have received the following quality assurance certifications and awards in respect of our production processes:

No.	Certification/award	Awarding body/ authority	Validity period of certificate/ award	Process awarded
1.	ISO 9001:2015 (Quality Management System)	SAI Global	Until May 25, 2020	Mining processes at the Tanjung Buli and Pakal Island Nickel Mine
2.	ISO 14001:2015 (Environmental Management System)	SAI Global	Until May 25, 2020	Mining processes at the Tanjung Buli and Pakal Island Nickel Mine

No.	Certification/award	Awarding body/ authority	Validity period of certificate/ award	Process awarded
3.	ISO 18001:2007 (Occupational, Health and Safety Management System)	SAI Global	Until May 25, 2020	Mining processes at the Tanjung Buli and Pakal Island Nickel Mine
4.	SNI/ISO 17025:2008	Komite Akreditasi Nasional	Until November 22, 2020	Mining processes at the Tanjung Buli and Pakal Island Nickel Mine
5.	ISO 9001:2008 (Quality Management System)	SGS	Until September 15, 2018	Ferronickel production process and supporting activities at the Pomalaa Ferronickel Facilities
6.	ISO 14001:2004 (Environmental Management System)	SGS	Until May 2, 2018	Ferronickel production process and supporting activities at the Pomalaa Ferronickel Facilities
7.	ISO 18001:2007 (Occupational, Health and Safety Management System)	SGS	Until May 7, 2018	Mining processes at the Southeast Sulawesi Nickel Mine and ferronickel production process and supporting activities at the Pomalaa Ferronickel Facilities
8.	BLUE PROPER (Bronze Environment Award)	Ministry of Environment and Forestry of the Republic of Indonesia	Awarded on December 15, 2017	Mining and ferronickel production processes by the Southeast Sulawesi and North Maluku Nickel Mining Units
9.	Indonesia Green Awards 2017	The La Tofi School of CSR	Awarded on May 3, 2017	Southeast Sulawesi Nickel Mining (slag)
10.	UTAMA Award on the Mining Safety Management Category for Holders of Mining Business Permits, Special Mining Business Permits and Special Operations Mining Business Permits for Processing and Refinery (Silver Award, 2016)	Ministry of Energy and Mineral Resources	Awarded on June 8, 2017	Southeast Sulawesi Nickel Mining Business Unit, North Maluku Nickel Mining Business Unit
11.	PRATAMA Award the Mining Environmental Management Category for Holders of Mining Business Permits, Special Mining Business Permits and Special Operations Mining Business Permits for Processing (Bronze Award, 2016)	Ministry of Energy and Mineral Resources	Awarded on June 8, 2017	Southeast Sulawesi Nickel Mining Business Unit and North Maluku Nickel Mining Business Unit

Our Bauxite Business

We conduct our bauxite mining business through Antam. As of December 31, 2017, our aggregate bauxite ore reserves and resources was 45.9 million wmt and 567.5 million wmt, respectively, and for the year ended December 31, 2017, our aggregate bauxite production volume and sales volume was 648,431 wmt and 838,069 wmt, respectively. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, revenue from sale of bauxite was Rp.66.1 billion, Rp.104.2 billion, Rp.398.0 billion

(US$27.6 million) and Rp.125.8 billion (US$8.7 million), respectively, representing 0.2%, 0.3%, 0.8% and 0.4%, respectively, of our total revenue.

Tayan bauxite mine and mining concession

We own and operate one bauxite mine, our Tayan bauxite mine ("Tayan Bauxite Mine"), which is situated in Sanggau, West Kalimantan, Indonesia and spans a total area of approximately 34,360 hectares. We hold our Tayan Bauxite Mine by virtue of an IUP granted on January 2, 2015 and valid until January 4, 2030. The Tayan Bauxite Mine is accessible by an approximately two-hour flight from Jakarta to Pontianak City, West Kalimantan, and an approximately three-hour journey by car from Pontianak City to the mine site. We commenced bauxite production at the Tayan Bauxite Mine in 2013. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, production volume our Tayan Bauxite Mine was 201,517 wmt, 241,202 wmt, 648,431 wmt and 416,733 wmt, respectively.

The following table sets forth certain information relating to our Tayan bauxite mining concession, as of December 31, 2017.

Mining concession	Mining concession holder	Mining concession expiry	Concession area	Reserves		Resources		
				Proved	Probable	Measured	Indicated	Inferred
			(hectares)	(wmt in million)		(wmt in million)		
Tayan[1]	Antam	January 4, 2030	34,360	29.3	16.6	90.2	58.1	12.0

Note:

(1) According to the 2017 Nickel, Gold, Silver and Bauxite Reserves Statement, see Appendix B.

The following table sets forth certain production and sales information for the bauxite ore produced at our Tayan Bauxite Mine, for the periods indicated.

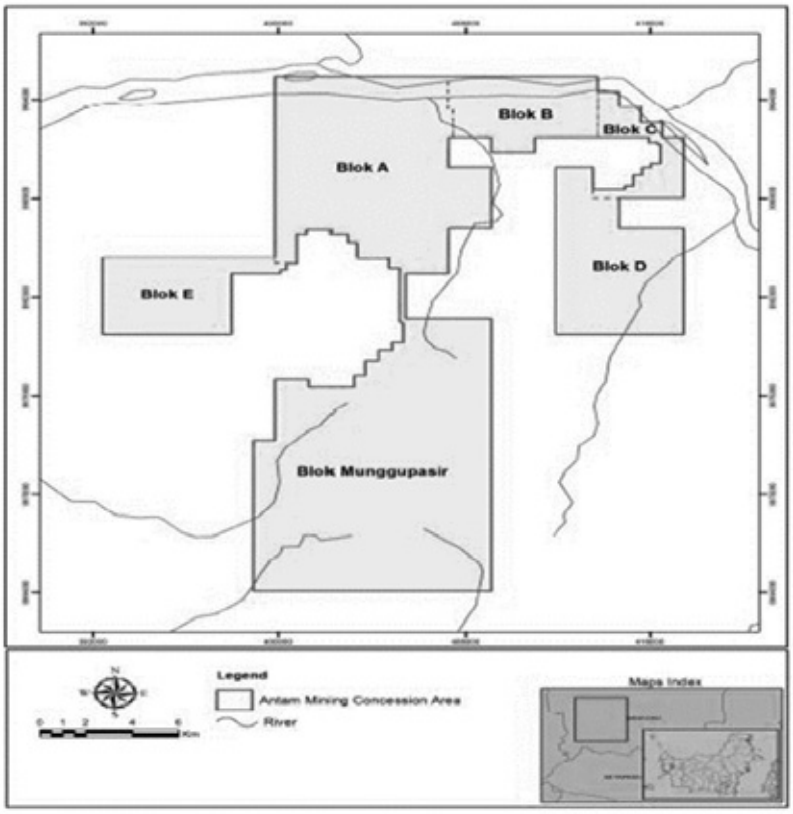
	Year ended December 31,			Six months ended June 30,
	2015	2016	2017	2018
Sales (Rp. in billion)	66.1	104.2	398.1	125.7
Average selling price per wmt (Rp. in million / wmt)[1]	0.4	0.4	0.5	0.5
Cash costs (Rp. in million / wmt)[2]	0.3	0.2	0.2	0.3
Bauxite grade (% of aluminum oxide content)	50.4	47.6	50.0	49.7

Notes:

(1) Average selling price per wmt is calculated by dividing sales by sales volumes for the relevant periods.

(2) Cash cost per wmt is calculated as the sum of (a) mining costs, bauxite ore processing and other cash production costs, restoration costs and increases or decreases in bauxite ore inventories, divided by (b) bauxite production volumes for the relevant periods. Although depreciation and amortization related to the production of bauxite ore is added to our cost of revenue, it is not included in cash costs.

The following map sets forth the location of the bauxite mining concession at our Tayan Bauxite Mine.



Other bauxite mining concessions

The following table sets forth certain information relating to our bauxite mining concessions where we do not currently have active operations at.

No.	Mining concession	Mining concession holder	Mining concession expiry	Concession area	Reserves		Resources		
				Land	Proved	Probable	Measured	Indicated	Inferred
				(hectares)	(wmt in million)		(wmt in million)		
1.	Mempawah-Hulu[1]	Antam	December 16, 2034	20,710	—	—	64.9	8.7	5.0
2.	Toho-Mempawah[1]	Antam	July 1, 2028	12,630	—	—	13.1	5.0	5.1
	Menjalin[1]	PT Borneo Edo International	April 22, 2033	18,630	—	—	13.9	7.6	25.0
3.	Sebadu[1]	PT Borneo Edo International	September 16, 2034	19,090	—	—	10.0	6.9	59.3
4.	Meliau[1]	PT Mega Citra Utama	December 21, 2028	10,000	—	—	31.8	14.3	18.3
5.	Menjalin[1][2]	PT Dwimitra Enggang Khatulistiwa	September 23, 2016	4,900	—	—	1.8	—	29.5
6.	Mempawah Hulu-Landak[1]	PT Gunung Kendaik	May 25, 2035	12,184	—	—	—	—	87.0
	Total			**98,144**	**—**	**—**	**135.5**	**42.5**	**229.2**

Notes:

(1) According to the 2017 Nickel, Gold, Silver and Bauxite Reserves and Resources Statement, see Appendix B.

(2) Our Menjalin concession is held by virtue of an Exploration IUP.

All our bauxite mining concessions not currently in operation are situated in West Kalimantan, Indonesia. They are accessible by an approximately two-hour flight from Jakarta to Pontianak, and an approximately two-hour journey by car from the Supadio airport located in Pontianak.

We intend to commence producing at the Toho-Mempawah bauxite mining concession area in the fourth quarter of 2020, in line with our construction plans for the Mempawah Smelter Grade Alumina Refinery Plant. See "— Production facility under development — The Mempawah Smelter Grade Alumina Refinery Plant."

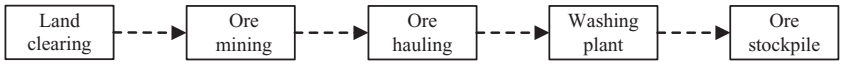
Mine operations and ore processing

Mine planning

With information collected through our exploration activities, we prepare mine plans in relation to further exploration and operation of each pit within our mines. We begin with a conceptual life-of-mine plan and determine the potential production profiles for a particular mine throughout its life. We also account for surface features such as topography, position of rivers and creeks, local villages and associated infrastructure, and begin planning for rehabilitation of disturbed areas. See "Risk Factors — Risks Common to All Our Mining Businesses — Our operations are subject to environmental regulations which may cause us to incur significant costs, liabilities or interrupt or cease mining operations, any of which may adversely affect our results of operations." As more exploration data is collected, the geological model is revised, which necessitates revisions to mine plans. We prepare plans for 12-month periods on an ongoing basis alongside three-month and monthly rolling mine plans which are intended to capture differences arising from equipment failures and malfunctions, changes in operating costs and weather conditions.

Bauxite mining and processing

Our bauxite production process starts with the land clearing process and ends with the processing of bauxite ore. The following diagram sets forth the principal stages of our bauxite mining and production process.



Mining for bauxite is carried out under an open-pit mining method, using a combination of trucks and excavators. To expose the bauxite, the vegetation is cleared and the overburden is stripped. Upon exposure of the bauxite, we extract the layer of bauxite, which typically has an average thickness of six meters.

The extracted bauxite is transported via trucks, to a washing plant, where the bauxite will be crushed, washed and screened. The washed bauxite is transported to the stockpile via trucks, after which it will be blended according to the feed specification of the processing and refinery plant.

Reclamation

Reclamation is part of the ongoing mining activities and we carry out the reclamation process on the previous digging area while mining in other areas. We carry out our reclamation works in collaboration with the local community as part of our corporate and social responsibility efforts and are required to comply with the requirements set out in the respective mine's environmental documents including the environmental impact assessment (AMDAL), reclamation plan, post-mining plan and the MEMR Decree 1827/2018. See "Indonesian Regulatory Framework — Mining Regulation — Reclamation and post-mining activities."

Security

We hire a third-party security services provider, PT Persona Prima Utama, to provide surveillance services at our Tayan Bauxite Mine, washing plant facilities and jetty. In addition, the Tayan Chemical Grade Alumina Plant has been designated as a National Vital Object and as a result of which, benefits from security services provided by the local police force.

Third-party contractors

We contract out certain of our mining activities, including security services and hauling and transportation, with a view to maximizing efficiency while minimizing costs. We typically select our mining contractors through direct negotiations with existing contractors or by way of a competitive open tender, with potential contractors submitting their bids based on the requirements we specify. We select our mining contractors after considering various factors such as price, equipment, experience and previous track record in our mining operations. See "Risk Factors — Risks Relating to Our Business — We rely on third-party contractors to conduct our mining operations, and such contractors may be constrained by labor disputes, face operational difficulties or perform unsatisfactory work, which may result in a significant reduction in their services or termination or modification of our operating agreements."

Tayan Chemical Grade Alumina Plant

Our joint venture company, PT Indonesia Chemical Alumina ("ICA"), developed a chemical grade alumina plant (the "Tayan Chemical Grade Alumina Plant") located near our Tayan Bauxite Mine in West Kalimantan, Indonesia in 2014, to produce chemical grade alumina from bauxite ore. The Tayan Chemical Grade Alumina Plant commenced production of alumina in January 2015 and has a production capacity of 300,000 tonnes of chemical grade alumina per year. It consists of a bayer process plant, a fine-hydrate plant, a white hydrate plant, a calcining plant and a utility plant.

While we own 80.0% of the shares of ICA and the remaining 20.0% is owned by our joint venture partner, Showa Denko K.K. ("Showa Denko") of Japan, ICA requires consent from shareholders representing at least 84.0% of the total shareholding interests for significant financial and operating decisions. Accordingly, our ownership in ICA has been accounted for in our financials using the equity method for the years ended December 31, 2015, 2016 and 2017, and the six months ended June 30, 2018. On May 29, 2018, we entered into the ICA CSPA with Showa Denko to purchase its 20.0% interest in ICA. Pursuant to the terms of the ICA CSPA, both Antam and Showa Denko agreed to continue providing operational assistance in connection with the operations of ICA until completion of the share transfer, which has a long stop date in March 2019. Following the completion of the acquisition of the remaining 20.0% interest in ICA, the results of operations of ICA will be consolidated into our accounts in accordance with SFAS 22 "Business Combination."

For the years ended December 31, 2015, 2016 and 2017, the Tayan Chemical Grade Alumina Plant's production volume was 69,868 tonnes, 104,495 tonnes and 46,262 tonnes, respectively, and all the bauxite ore used as feed material in the production process was supplied by Antam. Since June 2017, there has been a temporary cessation of operations at the Tayan Chemical Grade Alumina Plant as it is undergoing maintenance works in conjunction with the restructuring of the joint venture between Antam and Showa Denko.

Production facility under development — The Mempawah Smelter Grade Alumina Refinery Plant

We have entered into a heads of agreement with Chalco Hong Kong to establish a joint venture for the purpose of constructing a production plant to process bauxite ore into smelter grade alumina (the "Mempawah Smelter Grade Alumina Refinery Plant"), in Mempawah, West Kalimantan, Indonesia. Pursuant to the terms of the heads of agreement, Inalum, Antam and Chalco Hong Kong will own a 40.0%, 30.0% and 30.0% interest in the joint venture, respectively. We plan to commence construction of the Mempawah Smelter Grade Alumina Refinery Plant by the end of 2018. The planned production capacity of the Mempawah Smelter Grade Alumina Refinery Plant is 1.0 million tonnes per annum of smelter grade alumina. Our total planned capital expenditure for the Mempawah Smelter Grade Alumina Refinery Plant, which includes Inalum and Antam's aggregate equity contribution of 70.0%, is approximately Rp.2,287.3 billion. See "Risk Factors — Risks Common to All Our Mining Businesses — The mining industry is capital intensive and we may experience limited availability of funds," and "Management's Discussion and Analysis of Financial Condition and Results of Operation — Capital Expenditures." We have completed the feasibility study for the Mempawah Smelter Grade Alumina Refinery Plant. We expect to finance the capital expenditures using cash flow generated from operations. The Mempawah Smelter Grade Alumina Refinery Plant is expected to be completed by the last quarter of 2020 and we expect to commence production at the Mempawah Smelter Grade Alumina Refinery Plant by the first quarter of 2021.

Our bauxite products

We mine and sell bauxite ore of varying alumina content based on our customers' requirements, although we typically sell bauxite ore with a minimum alumina content of 42.0%. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, revenue from sale of bauxite ore was Rp.66.1 billion, Rp.104.2 billion, Rp.398.1 billion (US$27.6 million) and Rp.125.7 billion (US$8.7 million), respectively. For the years ended 2015 and 2016, we sold all our bauxite ore domestically to ICA. We obtained a mineral export license for our bauxite ore in April 2017 and commenced exporting our bauxite ore in June 2017. Pursuant to MOTR 1/2017, we are allowed to export of certain types of processed and/or refined mining products subject to requirements stipulated under MOTR 1/2017. See "Indonesian Regulatory Framework — Mining Regulation — Price controls and export licensing — Mineral export license." Accordingly, commencing from 2017, we sell the majority of our bauxite ore in the international market, predominantly to China. For the years ended December 31, 2017 and the six months ended June 30, 2018, our revenue from bauxite ore export sales represented 93.6% and 100.0%, respectively, of our total revenue from sale of bauxite ore.

Quality control

We have implemented comprehensive quality assurance and monitoring procedures to ensure that our products meet our stringent quality control standards and the expectations and requirements of our customers. Our quality assurance system encompasses stringent quality control checks at each stage of our production process, from procurement and processing of the raw materials, to the inspection of the end product. Our quality control department monitors the internal production process, storage and delivery of raw materials and products as well as conduct on-site inspections from time to time. It closely monitors the various production process by taking samples at difference checkpoints for examination at our laboratories. We keep our production records to facilitate the continued improvement of our quality control management systems. In addition, as part of our quality control policies, we require that all our contractors possess the requisite qualifications for undertaking their respective works in exploration, mining, processing or production. Our quality assurance procedures are subject to semi-annual internal quality audits by a team of trained internal quality auditors. Surveillance audits and re-certification audits are carried out annually by SAI Global, a company of internationally accredited external ISO auditors to ensure we comply with the certified standards.

As of June 30, 2018, we have received the following quality assurance certifications and awards in respect of our production processes:

No.	Certification/award	Awarding body/ authority	Validity period of certificate / award	Process awarded
1.	ISO 9001:2008 (Quality Management System)	SAI Global	Until September 14, 2018	Mining operations at the Tayan Bauxite Mine
2.	ISO 14001:2004 (Environmental Management System)	SAI Global	Until September 14, 2018	Mining operations at the Tayan Bauxite Mine
3.	ISO 18001:2007 (Occupational, Health and Safety Management System)	SAI Global	Until January 12, 2019	Mining operations at the Tayan Bauxite Mine
4.	GREEN PROPER (Silver Environment Award)	Ministry of Environment and Forestry of the Republic of Indonesia	Awarded on December 18, 2017	Mining operations by the Tayan Bauxite Mine

No.	Certification/award	Awarding body/ authority	Validity period of certificate / award	Process awarded
5.	UTAMA Award on the Mining Safety Management Category for Holders of Mining Business Permits, Special Mining Business Permits and Special Operations Mining Business Permits for Processing and Refinery (Silver Award, 2016)	Ministry of Energy and Mineral Resources	Awarded on June 8, 2017	Mining operations by the Tayan Bauxite Mine
6.	PRATAMA Award the Mining Environmental Management Category for Holders of Mining Business Permits, Special Mining Business Permits and Special Operations Mining Business Permits for Processing and Refinery (Bronze Award, 2016)	Ministry of Energy and Mineral Resources	Awarded on June 8, 2017	Mining operations by the Tayan Bauxite Mine

Our Aluminum Smelting Business

We produce, smelt and sell aluminum ingots, aluminum billets and aluminum alloys. As of June 30, 2018, we are the second largest aluminum producer in Southeast Asia, in terms of aluminum production volume, according to AME.

As of December 31, 2017, our aggregate aluminum production volume and sales production volume was 218,816 tonnes and 207,276 tonnes, respectively. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, revenue from our sale of aluminum products was Rp.6,238.0 billion, Rp.5,576.4 billion, Rp.5,744.3 billion (US$398.8 million) and Rp.3,127.5 billion (US$217.1 million), respectively, representing 16.5%, 15.5%, 12.2% and 10.5%, respectively, of our total revenue.

Aluminum production plants and supporting facilities

Our key aluminum production plants and supporting facilities are (i) our aluminum smelter, (ii) casting plant, (iii) power plants, (iv) regulating dams and (v) ports.

Aluminum smelter

Our aluminum smelter at Kuala Tanjung, North Sumatra, comprises the following:

Reduction plant. We smelt alumina into primary aluminum at our reduction plant which consists of three reduction lines, each with 170 reduction cells. The following table sets forth the annual capacity, production volume and utilization rate of our reduction plant for the periods indicated:

	Year ended December 31,			Six months ended June 30,
	2015	2016	2017	2018
Production capacity (tonne/year)	260,000	260,000	260,000	260,000
Production volume (tonne)	257,149	245,483	218,816	119,420
Utilization rate (%)	98.9	94.4	84.2	91.9

The following table sets forth certain production and sales information for the aluminum produced at our reduction plant, for the periods indicated.

	Year ended December 31,			Six months ended June 30,
	2015	2016	2017	2018
Average selling price per wmt (Rp. in million / tonne)[1]	24.3	22.5	27.7	32.1
Cash costs (Rp. in million / tonne)[2]	17.5	14.8	16.6	18.9

Notes:

(1) Average selling price per tonne is calculated by dividing sales by sales volumes for the relevant periods.

(2) Cash cost per tonne is calculated as (a) production costs less (b) depreciation related to the production of aluminum, divided by (c) aluminum production volumes for the relevant periods.

Anode plant. We produce anode assemblies used in the electrolytic reduction process of alumina, at our anode plant which consists of three main facilities: the carbon plant where green anodes are produced, the baking plant where the green anodes are converted into baked anodes and the rodding plant where the baked anodes are attached with rods to form anode assemblies.

Gas cleaning system. Our gas cleaning system consists of 27 units of dry scrubbing chambers which are used to react alumina with hydrogen fluoride.

Casting plant

We cast molten aluminum into aluminum ingots, aluminum extrusion billets and aluminum foundry alloys at our casting plant located in Kuala Tanjung, North Sumatra. Our casting plant consists of one melting furnace with a capacity of 30 tonnes and nine holding furnaces with a capacity of 40 tonnes each. In April 2016 and May 2016, we installed our first extrusion billet casting line and our first foundry alloy casting line, respectively, for the production of aluminum extrusion billets and aluminum foundry alloys, respectively. As of June 30, 2018, we have five aluminum ingot casting lines with a total annual production capacity of 180,000 tonnes, one extrusion billet casting line with an annual production capacity of 30,000 tonnes and one foundry alloy casting line with an annual production capacity of 90,000 tonnes installed at our casting plant.

Hydroelectric power plants

We own and operate two hydroelectric power plants located along the Asahan River at the Southeast part of Lake Toba, the Siguragura Power Plant and the Tangga Power Plant. The power generated by both power plants is transmitted to our aluminum smelter to provide power for our production process. The Siguragura Power Plant is installed with four generators sets with a total installed capacity of 286MW and the Tangga Power Plant is installed with four generator sets with a total installed capacity of 317MW. See "Risk Factors — Risks Relating to Our Aluminum Smelting and Production Business — Our aluminum smelting business may be adversely affected by interruptions in our supply of electricity."

Regulating dams

We own and operate three dams, the Siruar Dam located approximately 14.5 km from Lake Toba and the Siguragura Dam located approximately 8.8 km downstream from the Siruar Dam, both of which are used to regulate the water flow to the Siguragura Power Plant, as well as, the Tangga Dam located approximately 4.9 km downstream from the Siguragura Power Plant, which is used to regulate the water flow to the Tangga Power Plant.

Port

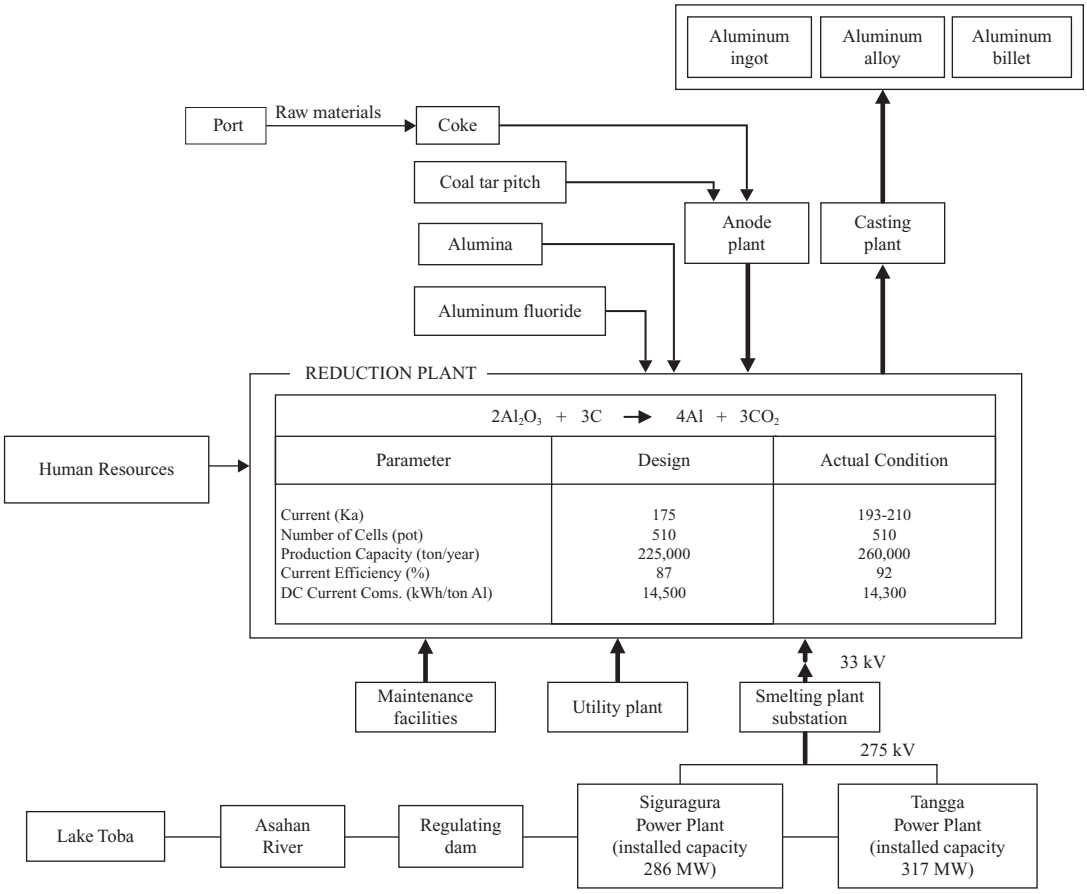
We own and operate two jetties at a port in Kuala Tanjung, North Sumatra, which is connected to our aluminum smelter by a 2.5 km long offshore trestle. We use one jetty for unloading our raw materials used in the production process of our aluminum products and the other jetty for loading our finished aluminum products for shipping to our customers.

Other supporting facilities

In addition to our main production facilities, we own a residential camp near our hydroelectric power plants (the "Paritohan Residential Camp"), which spans a total area of approximately 90.0 hectares and comprises 180 houses and 12 dormitories. The Paritohan Residential Camp is intended to serve as a residential area for our employees and has facilities such as a sports center, a school, a hospital, places of worship and a post office. We also own a residential complex located within 14.0 km from our aluminum smelter (the "Tanjung Gading Residential Complex"), which spans a total area of approximately 200.0 hectares and comprises 1,340 houses and seven dormitories. The Tanjung Gading Residential Complex is intended to serve as a residential area for our employees and has similar facilities to the Paritohan Residential Camp.

Production process for aluminum products

Our aluminum products are produced through reduction of alumina at our reduction plant and casting of the primary aluminum at our casting plant. The following diagram sets forth the principal stages of our production process of our aluminum products.



We smelt alumina into primary aluminum through electrolytic reduction in our reduction plant. The electrolytic process takes place in a reduction cell lined with carbon cathodes and refractory materials. The raw materials used in the production of aluminum, such as alumina, aluminum fluoride, coke and coal tar pitch, are unloaded at our port at Kuala Tanjung, and loaded to silos with conveyor belts. The alumina in the silo is then flowed to a dry scrubber system to be reacted with hydrogen fluoride and the reacted alumina is then poured into a reduction cell.

Coke from the silo is mixed with carbon anode butt and preheated in our preheating machine which has a capacity of 25 tonnes. These materials are then mixed with pitch as binder to produce green anode paste which is

then converted to green anode blocks in a vibro-compactor. These green anodes are baked in the baking furnace and the resulting baked anodes are transported to the anode rodding plant to be attached with rods to form anode assemblies. The anode assemblies are transported to the reduction plant by car to be used as electrodes in the electrolysis process. In the reduction cells, powerful electric currents are passed through to convert the alumina into molten aluminum. The molten aluminum from the reduction plant is transported to the casting plant by car to be casted into aluminum ingots, aluminum billets and aluminum alloys.

Our aluminum products

We produce the following types of aluminum ingots, aluminum extrusion billets and aluminum foundry alloys for sale in both the domestic and international markets:

- *Aluminum ingot.* We produce and sell aluminum ingots weighing 22.7kg each, with two different quality standards, namely aluminum ingots which consist of 99.9% and 99.7% aluminum content. Our aluminum ingots have been listed on the London Metal Exchange since September 23, 1987.
- *Aluminum extrusion billet.* We produce the 6000 series aluminum extrusion billets of various diameters, namely five inches, seven inches and eight inches and customized lengths ranging from 400mm to 5,800mm.
- *Aluminum foundry alloy.* We produce A356 aluminum foundry alloys which weigh approximately 10kg each.

Quality control

We have established and implemented strict quality control systems at various stages of our production processes for our various aluminum products, in accordance with applicable industry standards. Our aluminum quality management team conducts regular checks on each batch of aluminum products, and our laboratory where we conduct our internal quality control testing has been certified with ISO 17025:2008 by the Indonesia National Accreditation Committee. In addition, we implement an international standard quality management system, ISO 9001:2015, which is subject to semi-annual surveillance audits by and certified by SGS Indonesia, an independent quality control inspection and certification company.

Our aluminum development projects

As part of our expansion plans, we are currently engaged in the following key development projects which are in various stages of development:

Calcined petroleum coke plant project

On December 28, 2017, we entered into a heads of agreement with Pertamina to construct a calcined petroleum coke plant (the "Dumai CPC Plant") in Dumai, Riau. Pursuant to the terms of the heads of agreement, Pertamina will own 75.0% of the Dumai CPC Plant and we will own the remaining 25.0%. The planned production capacity of the Dumai CPC Plant upon completion of construction is 300 ktpa and the Dumai CPC Plant is expected to supply calcined petroleum coke to our anode plant in Kuala Tanjung as raw material in our aluminum production process, thereby reducing our cost of raw materials and ensuring stability in supply of calcine petroleum coke to our anode plant. We plan to commence construction of the Dumai CPC Plant in the first quarter of 2019 and we expect to complete construction of the Dumai CPC Plant by the end of 2020. Our total planned capital expenditure for the Dumai CPC Plant is US$44.7 million and our planned capital expenditure for the Dumai CPC Plant for the years ending December 31, 2019 and 2020 is US$21.2 million and US$23.5 million, respectively.

Aluminum recycle project

We are in the process of acquiring an idle primary aluminum billet plant located next to our existing aluminum smelter in Kuala Tanjung, from PT Asahan Aluminum Alloys in order to convert it into a secondary

aluminum billet plant. The planned annual production capacity of the secondary aluminum billet plant is 50,000 tonnes of secondary aluminum billet. We plan to complete the acquisition of the plant by the end of 2018 and commence remodeling of the plant in early 2019 with targeted completion by the end of 2019. Our planned capital expenditure for the secondary aluminum billet plant for the years ending December 31, 2018 and 2019 is US$10.0 million and US$16.8 million, respectively.

Reduction plant upgrading project

We intend to upgrade our reduction plant at our existing aluminum smelter at Kuala Tanjung to increase its production capacity from 260 ktpa to 300 ktpa. As part of the upgrading plan, we plan to implement the reduction cell technology developed by the Shenyang Aluminium & Magnesium Engineering & Research Institute ("SAMI") at one of our three existing reduction lines. We plan to commence the upgrading works at our reduction plant in October 2019, and expect to complete the upgrade by December 2020. Our planned capital expenditure for the upgrade of our reduction plant at Kuala Tanjung for the years ending December 31, 2019 and 2020 is US$107.1 million and US$107.1 million, respectively.

See "Risk Factors — Risks Common to All Our Businesses — We require a significant amount of working capital and may be adversely affected if we fail to maintain sufficient levels of working capital," and "Management's Discussion and Analysis of Financial Condition and Results of Operation — Capital Expenditures."

Other Businesses

In addition to our mining and related businesses as well as our aluminum smelting business, we also engage in several other business, including:

- ***Vessel maintenance, shipbuilding and other related services***. We provide vessel maintenance, shipbuilding and other related services through our subsidiary, PT Dok Perkapalan Air Kantung ("DAK");
- ***Trading***. We trade crude palm oil in domestic markets through our subsidiary, PT Bumi Sawindo Permai, and tin and tin ingots in international markets including the United States and Europe through our subsidiaries, Indometal (London) Limited ("IL"), Timah International Investment Pte. Ltd. and Great Force Trading Limited;
- ***Logistics***. In collaboration with PT Pelabuhan Indonesia I (Persero), one of Indonesia's state-owned port operators, we provide sea port services including tugboat and sea port utility services at our port in Kuala Tanjung, North Sumatra;
- ***Property***. We provide real estate services through our subsidiary, PT Timah Karya Persada Property, which currently holds land management rights in several locations including Bekasi and Bandung;
- ***Healthcare***. We provide healthcare services at our five pharmacies, six hospitals and 16 clinics located across Indonesia through our subsidiaries PT Rumah Sakit Bakti Timah and PT Bukit Asam Medika as well as one clinic we manage directly;
- ***Agriculture***. We engage in agribusiness by developing our reclaimed post-mining land into palm plantations, fisheries and animal husbandry farms, through our subsidiaries, PT Bumi Sawindo Permai and PT Timah Agro Manunggal; and
- ***Mining-related services***. We provide mining services such as waste removal, land clearing, slope dozing and other related works through our subsidiary, SBS, shipping services for the transshipment of coal through our subsidiary, PT Bukit Prima Bahari, and waste management services through our joint venture company, PT Nasional Hijau Lestari.

For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, revenue from our other businesses was Rp.1,775.7 billion, Rp.2,315.0 billion, Rp.2,692.5 billion (US$186.9 million) and Rp.3,473.5 billion (US$832.3 million), respectively, representing 4.7%, 6.4%, 5.7% and 11.6%, respectively, of our total revenue.

Sales and Marketing

Coal

We market coal produced from our Tanjung Enim Coal Mine under our "BUKITASAM" brand and coal from our Bantuas Coal Mine under our "IPC" brand, which we believe are considered premium brands due to their relatively low ash and sulfur content. Our principal marketing strategy for our coal products is to explore market opportunities for long-term contracts with potential customers. We implement our strategy through market research and analysis of the regions that we serve such as by tracking the product requirements for coal consumed, and the competitive prices of coal being marketed to consumers, in a specific region or country. Our coal business management team holds a routine supply chain coordination meeting every three months during which they discuss, among other things, the development of coal market conditions and factors and changes in consumer demand, in order to determine optimum production and sales strategy. We generally set our prices with reference to the global market price of thermal coal and in response to the fluctuation of coal prices in 2017, we increased our marketing efforts by enhancing our market brand and conducting and searching for new markets to enter.

Prior to commencing a business relationship with a potential customer for our coal products, we examine the potential customer and assess its creditworthiness. If the potential customer satisfactorily meets our credit criteria, a trial shipment is sent to such potential customer to ensure that our coal products comply with the customer's product specifications, before the rest of the shipment is delivered. We generally require our customers to either make prepayments for coal sales or purchase our coal on letter-of-credit and telegraphic transfer terms.

Gold

Our principal marketing strategy for our gold products is to maintain and grow our presence in both the domestic and international markets that we serve. We implement our strategy by exploring innovative ways to break through new marketing channels and reach potential customers. For example, we exported our first precious metals product into the Japanese market in 2017. We have also expanded our gold sales in the domestic market by collaborating with PT Pos Indonesia (Persero) ("Pos Indonesia"), Indonesia's state-owned postal service provider, to make our gold available for purchase in 205 post offices located throughout Indonesia. The collaboration has significantly increased our network of customers by providing nationwide public access to our gold and enabling us to serve and educate more customers who are otherwise unfamiliar with the gold industry. With respect to our silver products, we implement our strategy by collaborating with the Ministry of Trade to supply silver to domestic small and medium enterprises of silver craftsmen.

Prior to commencing a business relationship with a potential customer for our gold and silver products, we review the customer's administrative documents and conduct further background checks if necessary. We generally require our customers to purchase our gold and silver products on letter-of-credit and telegraphic transfer terms. For our precious metal refinery services, we undertake a know-your-customer ("KYC") process prior to commencing a business relationship with a potential customer. Our KYC process includes reviewing the customer's licenses, permits, reports and other documents and conduct site visits to assess the customer's facilities and activities.

Tin

We market our tin products under our "BANKA" and "KUNDUR" brands, which are registered and traded on the London Metal Exchange. Our principal marketing strategy for our tin products is to further our brand recognition while maintaining our current customer base. We implement our strategy by engaging in government programs for the improvement of the regional economy and education system for the communities located around our mining operation areas, involving local communities in post-mining and reclamation services and by optimizing our partnerships with micro, small and medium-scale businesses located around our mining operations. We also directly engage with our customers by holding site visits at our tin production facilities and arranging social events for our customers to attend. We communicate information about our brand through our website, social media, newspaper advertisements and distribution of our corporate video and catalog.

We also form and continue to seek potential strategic cooperations in order to facilitate our penetration into new tin markets. For example, we have partnered with Yunnan Tin Group, our primary competitor and the world's largest tin producer, to utilize its existing brand presence in the U.S. markets in relation to the sale of our downstream products such as tin chemical and tin solder. We are also collaborating with Topwide Ventures Limited, a company domiciled in Nigeria, in relation to expanding our mining production and sales activities in Nigeria. See "— Our Tin Business — Our tin development projects — Joint venture in Nigeria."

Our tin sales are typically conducted through a combination of short-term contracts for a period of one year and deliveries made on a monthly basis, and spot contracts. For new customers, we first enter into trial agreements and, if both parties are satisfied with the transaction, will continue the business relationship on telegraphic transfer terms. We generally accept payment by telegraphic transfer and allow customers with whom we have existing relationships to make payment for tin sales within 60 days after the date of delivery or issuance of the bill of lading. In order to minimize the risk of default, we maintain credit insurance coverage.

Nickel

Our principal marketing strategy for our nickel and ferronickel products is to focus on maintaining a competitive position in the Asian markets that we serve including South Korea, India and China. We implement our strategy by showing our commitment to our customers through good communication and ensuring the consistent quality of our products. We have a representative office in Shanghai, China to provide customer support for our consumers throughout Asia.

Prior to commencing a business relationship with a potential customer for our nickel and ferronickel products, we review the customer's administrative documents and conduct further background checks if necessary. Our ferronickel sales are typically conducted through short-term contracts for periods of less than one year, while our nickel sales are generally conducted by way of auction. We generally require our customers to purchase our nickel and ferronickel products on letter-of-credit and telegraphic transfer terms.

Bauxite

Our principal marketing strategy for our bauxite products involves maintaining strong relationships with our customers. We implement our strategy by pricing our products competitively and ensuring that we always honor all aspects of our delivery commitments to our customers.

Prior to commencing a business relationship with a potential customer for our nickel and ferronickel products, we review the customer's administrative documents and conduct further background checks if necessary. We generally require our customers to purchase our nickel and ferronickel products on letter-of-credit and telegraphic transfer terms.

Aluminum

Our principal marketing strategy for our aluminum products involves engaging directly with existing and potential customers in Indonesia. We implement our strategy by inviting customers to visit our smelter and power plants, allowing customers to sample our aluminum products, holding dinner gatherings with our customers and providing financial aid and sponsoring the business activities of our customers. We also have a loyalty rewards program for our three largest customers in each region. Marketing and sales activities with respect to our end-user international customers are conducted through traders. We communicate information about our products through periodic distribution of brochures to existing, prospective and potential customers in both our domestic and international markets. In addition, we conduct surveys to assess customer satisfaction with our aluminum products and how we can improve our product quality and services.

Prior to commencing a business relationship with a potential customer for our aluminum products, we review the licenses, permits and other administrative documents of the customer as well as visit the customer's plant sites to assess their facilities and activities. In order to minimize our credit risk, we generally require customers of our aluminum products to make payment by cash in advance or by a letter of credit with tenors of up to 90 days.

Customers

With the exception of our coal products, a substantial amount of which we sell to PLN and IP, we do not depend on any particular customers for the sale of our other products. See "— Coal — Coal offtake agreements with PLN." Our largest customers for our other products are Toyota Tsusho Asia Pacific Pte. Ltd. for our refined tin products, ICBC Standard Bank PLC for our gold and silver products, Taiyuan Iron and Steel Co. Ltd. for our nickel and ferronickel products, Alakasa Company Limited for our bauxite products and PT Indonesia Smelting Technology for our aluminum products. Aggregate sales to these customers, including PLN and IP, accounted for 22.8%, 25.6%, 31.8% and 31.2% of our total revenue for the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, respectively.

Coal

Our major customers for our coal mining business primarily consist of electricity suppliers and commodity traders. We sell a substantial amount of our coal on a long-term offtake basis to PLN, Indonesia's state-owned supplier of electricity. For the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2018, revenue from the aggregate sale of coal to PLN represented 42.6%, 49.0%, 50.2% and 39.5%, respectively, of our total revenue from coal sales. As of June 30, 2018, we had a total of 54 customers for our coal products, primarily located in Indonesia, China, India, Thailand, Cambodia, Taiwan, South Korea, Malaysia, Vietnam, Philippines and Hong Kong. The following table sets forth the revenues from our five largest customers for our coal business for the periods indicated, in absolute terms and expressed as a percentage of total revenue from our coal business.

Customer	Length of relationship	Nature of business	Year ended December 31,							Six months ended June 30,		
			2015		2016		2017			2018		
	(years)		(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(US$ in million)
PLN[1]	25	Electricity supplier	3,742.5	27.1	2,210.4	16.0	3,276.2	17.1	227.5	2,991.8	29.1	207.7
PT Indonesia Power[1]	10	Electricity supplier	2,134.2	15.5	4,540.8	32.9	6,331.4	33.1	439.6	1,073.7	10.4	74.5
Noble Resources International	5	Trader	—	—	—	—	1,368.9	7.2	95.0	1,046.5	10.2	72.7
Adani Global Pte. Ltd.	5	Trader	—	—	—	—	1,506.3	7.9	104.6	704.8	6.9	48.9
Dragon Energy Corp.	5	Trader	1,863.8	13.5	837.3	6.1	921.1	4.8	64.0	—	—	—
Phoenix Resources Inc.	5	Trader	1,444.4	10.5	—	—	—	—	—	—	—	—
Idemitsu Kosan, Co. Ltd.	5	Trader	721.0	5.2	532.7	3.9	—	—	—	—	—	—
PT Sumber Segara Primadaya	5	Electricity supplier	—	—	651.7	4.7	—	—	—	331.1	3.2	23.0
Total			**9,905.9**	**71.8**	**8,772.9**	**63.6**	**13,403.9**	**70.1**	**930.7**	**6,147.9**	**59.8**	**426.8**

Note:

(1) PT Indonesia Power is a subsidiary of PLN. Unless the context otherwise requires, references to PLN in this Offering Memorandum mean PLN and its subsidiaries, including PT Indonesia Power.

Coal offtake agreements with PLN

We have collaborated with PLN, Indonesia's state-owned electricity supplier and our primary offtaker of the coal produced from our Tanjung Enim Coal Mine, since the inception of our coal production business. We entered into our first long-term coal supply agreement with PLN on May 21, 2004, under which we delivered an aggregate volume of 9.9 million tonnes of coal between 2004 and 2013. Pursuant to four existing coal supply agreements dated September 29, 2004, October 14, 2014, January 28, 2013 and December 28, 2012, our coal currently fuels 18 of PLN's thermal power plant units. See "Related-Party Transactions — Agreements with PLN."

We generally renew our coal agreements with PLN for 10-year periods. The volume of coal to be supplied for a given year is confirmed by PLN at the beginning of each year, taking into account the indicative volume to be supplied as set forth in the respective agreement. Total volume of coal sold to PLN, in aggregate, was approximately 8.5 million tonnes, 11.2 million tonnes, 12.8 million tonnes and 5.6 million tonnes for the years ended December 31, 2015, 2016 and 2017 and the six months ended June 30, 2017 and 2018. The price to be paid for each tonne of coal supplied to PLN in a given year is determined at the end of every year, with the possibility of varying rates for each quarter, taking into account the market price for coal that year, the total volume of coal supplied, the coal reference price set by the Government (*Harga Batubara Acuan* or "HBA") and other market coal price benchmarks such as the Indonesian Coal Index, the Global Coal Index, the Newcastle Export Index and Platts Benchmark Price. See "Indonesian Regulatory Framework — Mining Regulation — Price controls and export licensing — Coal sales price controls."

Gold

Our major customers for our gold business primarily consist of banks, trading companies and jewelry stores. As of June 30, 2018, we had 66 institutional customers and over one thousand retail customers for our gold and silver products, primarily located in Indonesia and Singapore. The following table sets forth the revenues from our five largest customers for our gold business for the periods indicated, in absolute terms and expressed as a percentage of total revenue from our gold business.

Customer	Length of relationship	Nature of business	Year ended December 31,							Six months ended June 30,		
			2015		2016		2017			2018		
	(years)		(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(US$ in million)
ICBC Standard Bank PLC	6	Banking	437.3	6.0	432.6	7.8	2,820.6	38.2	195.8	3,448.0	42.0	239.4
Budi Said	1	Retail customer	—	—	—	—	—	—	—	1,457.0	17.8	101.2
Pegadaian	4	Financial services	368.9	5.0	701.7	12.7	671.5	9.1	46.6	476.5	5.8	33.1
Suryadi Lukmantara	1	Retail customer	—	—	—	—	—	—	—	249.8	3.1	17.3
Standard Chartered Singapore	3	Banking	253.8	3.5	1,582.7	28.6	692.3	9.4	48.1	115.9	1.4	8.1
Bank of Nova Scotia, Hong Kong branch	4	Banking	93.8	1.3	350.6	6.3	—	—	—	—	—	—
Kundan Group	4	Trading	4,361.9	59.6	274.0	4.9	—	—	—	—	—	—
Samsung Gold Exchange Co., Ltd.	1	Trading	—	—	—	—	173.4	2.4	12.0	—	—	—
MKK Co., Ltd	1	Trading	—	—	—	—	2.9	0.0	0.2	—	—	—
Total			**5,515.7**	**75.4**	**3,341.6**	**60.3**	**4,360.7**	**59.1**	**302.7**	**5,747.2**	**70.1**	**399.1**

Tin

Our major customers for our tin business primarily consist of trading companies with whom we have built long-term business relationships with. As of June 30, 2018, we had 78 customers for our tin products, primarily located in Asia, the United States and Europe. The following table sets forth the revenues from our five largest customers for our tin business for the periods indicated, in absolute terms and expressed as a percentage of total revenue from our tin business.

Customer	Length of relationship	Nature of business	Year ended December 31,							Six months ended June 30,		
			2015		2016		2017			2018		
	(years)		(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(US$ in million)
Toyota Tsusho Asia Pacific Pte. Ltd.	5	Trading	1,212.1	18.6	898.5	13.6	1,317.2	15.5	91.4	670.9	17.2	46.6
Mitsubishi Corporation Unimetals Ltd.	42	End-user	1,021.5	15.6	1,212.0	18.3	1,274.0	15.0	88.5	602.9	15.4	41.9
Posco Daewoo Corporation	38	Trading	281.8	3.9	573.2	10.3	1,183.0	16.0	82.1	498.0	12.7	34.6
Traxys Europe S.A.	38	Trading	254.1	3.5	214.0	3.9	392.0	5.3	27.2	226.4	5.8	15.7
TCC Trading Co.	4	Trading	245.5	3.4	310.5	5.6	428.0	5.8	29.7	188.0	4.8	13.0
Total			**3,015.0**	**45.0**	**3,208.2**	**51.6**	**4,594.2**	**57.6**	**318.9**	**2,186.2**	**55.9**	**151.8**

Nickel

Our major customers for our nickel business primarily consist of stainless steel producers and commodity traders. Customers for our nickel and ferronickel products are primarily located in South Korea, the PRC, India and Taiwan. The following table sets forth the revenues from our five largest customers for our nickel business for the periods indicated, in absolute terms and expressed as a percentage of total revenue from our nickel business.

Customer	Length of relationship	Nature of business	Year ended December 31,							Six months ended June 30,		
			2015		2016		2017			2018		
	(years)		(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(US$ in million)
Taiyuan Iron and Steel Co. Ltd.	4	Steel manufacturer	543.5	19.9	564.3	18.3	623.2	13.6	43.3	619.3	18.5	43.0
Jindal Stainless Limited	3	Steel manufacturer	—	—	420.5	13.7	760.0	16.5	52.8	574.7	17.1	39.9
Pohang Iron and Steel Company	10	Steel manufacturer	444.1	16.3	1,017.1	33.1	644.8	14.0	44.8	417.7	12.4	29.0
Yieh United Steel Corporation	3	Steel manufacturer	—	—	90.0	2.9	470.1	10.2	32.6	312.5	9.3	21.7
SeAH Changwon Integrated Special Steel Corporation	4	Steel manufacturer	—	—	170.6	5.5	261.4	5.7	18.1	129.6	3.9	9.0
Mitsubishi Corporation RtM International Pte Ltd	3	Trader	128.6	4.7	—	—	—	—	—	—	—	—
Glencore International AG	3	Trader	369.6	13.5	—	—	—	—	—	—	—	—
Outukumpu Stainless Ltd	3	Steelmaker	194.6	7.1	—	—	—	—	—	—	—	—
Total			**1,680.4**	**61.6**	**2,262.5**	**73.5**	**2,759.5**	**60.1**	**191.6**	**2,053.8**	**61.2**	**142.6**

Bauxite

As of June 30, 2018, our customers for our bauxite business primarily consist of commodity traders. The following table sets forth the revenues from all our customers for our bauxite business for the periods indicated, in absolute terms and expressed as a percentage of total revenue from our bauxite business.

Customer	Length of relationship	Nature of business	Year ended December 31,							Six months ended June 30,		
			2015[1]		2016[1]		2017			2018		
	(years)		(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(US$ in million)
Alakasa Company Limited	2	Trading	—	—	—	—	76.6	19.4	5.3	70.4	56.0	4.8
Zhejiang Metal and Materials Co	1	Trading	—	—	—	—	—	—	—	27.7	22.0	1.9
Sojitz Corporation	2	Trading	—	—	—	—	98.4	24.6	6.8	27.6	22.0	1.9
Topsun International Group Co., Ltd	1	Trading	—	—	—	—	104.6	26.2	7.2	—	—	—
PT Indonesia Chemical Alumina[1]	4	Alumina plant	66.1	100.0	104.2	100.0	25.6	6.4	1.8	—	—	—
Benzhou Sheng Chao Trading Co., Ltd	1	Trading	—	—	—	—	92.9	23.3	6.4	—	—	—
Total			**66.1**	**100.0**	**104.2**	**100.0**	**398.1**	**100.0**	**27.6**	**125.8**	**100.0**	**8.7**

Note:

(1) PT Indonesia Chemical Alumina is a joint venture of Antam. See "Business — Our Bauxite Business — Tayan Chemical Grade Alumina Plant."

Aluminum

Our major customers for our aluminum smelting business primarily consist of manufacturers of aluminum-based products and aluminum traders. As of June 30, 2018, we had 74 customers for our aluminum products, primarily located in Indonesia, Malaysia and Japan. The following table sets forth the revenues from our five largest customers for our aluminum smelting business for the periods indicated, in absolute terms and expressed as a percentage of total revenue from our aluminum smelting business.

Customer	Length of relationship	Nature of business	Year ended December 31,							Six months ended June 30,		
			2015		2016		2017			2018		
	(years)		(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(US$ in million)
PT Indonesia Smelting Technology	12	Molten alloy production	599.9	9.6	552.2	9.9	566.1	9.9	39.3	405.1	13.0	28.1
Marubeni Corporation	4	Trading	—	—	—	—	—	—	—	343.6	11.0	23.9
PT Tembaga Mulia Semanan Tbk.	16	Cable production	393.9	6.3	325.1	5.8	308.7	5.4	21.4	322.4	10.3	22.4
PT Nusantara Electric	12	Cable manufacturer	—	—	336.8	6.0	—	—	—	170.5	5.5	11.8
PT HP Metals Indonesia	16	Aluminum extrusion	453.5	7.2	496.0	8.9	377.0	6.6	26.1	160.5	5.1	11.1
Trafigura Pte Ltd	5	Trading	798.1	12.8	—	—	291.5	5.1	20.2	—	—	—
PT Alfo Citra Abadi	14	Aluminum extrusion	—	—	339.4	6.1	324.2	5.6	22.5	—	—	—
ARG International AG	4	Trading	249.7	4.0	—	—	—	—	—	—	—	—
Total			**2,495.2**	**39.9**	**2,049.5**	**36.8**	**1,867.5**	**32.6**	**129.5**	**1,402.2**	**44.8**	**97.3**

Suppliers

We believe securing reliable suppliers for our various business segments allows us to be cost efficient and competitive in our pricing and profit margins. We have long-standing working relationships with our main suppliers, who supply us with the following services or materials:

- mining and transportation services for our coal business, such as from Pama and KAI;
- fuel and spare parts for our tin business, such as from Pertamina (Persero) UPms II Palembang and Jebsen & Jessen Technology Indonesia;
- machinery and equipment for our gold business, such as from Italimpianti Orafi S.p.A;
- coal for our nickel business, such as from PT Kaltim Prima Coal and PT Arutimin Indonesia;
- heavy equipment for our bauxite business, such as from PT Meta Estetika Graha; and
- alumina and coke, for our aluminum smelting business, such as from Alakasa Company Limited, Karinya Trading Pty Ltd and PT Yosomulyo Jajag.

While we generally use the same suppliers, we are not obligated to do so and there are numerous alternative suppliers. As such, our business operations are not dependent on any one of our suppliers. Only Pama, our mining services provider, and KAI, our transportation services provider, for our coal business, individually accounted for approximately 5.0% or more of our total cost of revenue. In order to ensure sufficient supply of the services and materials we need, we enter into long-term supply agreements for our coal transportation and mining services, fuel, alumina, coke, coal tar pitch and aluminum fluoride.

Coal

Our major suppliers for our coal business are KAI, our coal transportation services provider, and Pama, our mining services provider. See "Business — Our Coal Business — Third-party contractors." The following table sets forth the amounts incurred by us for our five largest suppliers for our coal business for the periods indicated, in absolute terms and expressed as a percentage of total cost of revenue for our coal business.

Supplier	Length of relationship	Service/Raw material	Year ended December 31,							Six months ended June 30,		
			2015		2016		2017			2018		
	(years)		(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(US$ in million)
KAI	30	Coal transportation	2,971.5	31.0	3,245.8	33.6	4,043.5	36.9	280.7	2,183.9	35.8	151.6
Pama	15	Mining services	3,095.0	32.2	2,579.3	26.7	2,226.3	20.3	154.6	1,339.2	21.9	93.0
Pertamina	30	Fuel	153.0	1.6	58.5	0.6	368.2	3.4	25.6	214.9	3.5	14.9
PT Asuransi Jasa Indonesia	5	Insurance	3.0	0.0	8.6	0.1	11.5	0.1	0.8	10.7	0.2	0.7
PLN	30	Electricity	29.7	0.3	27.7	0.3	27.7	0.3	1.9	15.3	0.3	1.1
Total			**6,252.2**	**65.1**	**5,919.9**	**61.3**	**6,677.2**	**61.0**	**463.6**	**3,764.0**	**61.7**	**261.3**

Gold

Our major suppliers for our gold mining business primarily consist of PT Inconis Nusa Jaya, our main supplier of labor services, and other Indonesian suppliers of machinery and equipment. The following table sets forth the amounts incurred by us for our five largest suppliers for our gold mining business for the periods indicated, in absolute terms and expressed as a percentage of total cost of revenue for our gold mining business.

Supplier	Length of relationship	Services/ raw material	Year ended December 31,							Six months ended June 30,		
			2015		2016		2017			2018		
	(years)		(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(US$ in million)
PT Sapta Sarana Sejahtera	1	Labor services	—	—	—	—	—	—	—	59.5	9.5	4.1
PT Nawakara Perkasa Nusantara	3	Security services	—	—	19.9	1.6	—	—	—	11.8	1.9	0.8
PT Rajawali JMP	3	Heavy equipment services	3.7	0.3	—	—	—	—	—	10.8	1.8	0.7
PT Bintang Kencana	10	Chemical reagent	—	—	—	—	—	—	—	—	—	—
PT Serasi Autoraya	2	Operational vehicle services	1.0	0.8	2.8	0.2	—	—	—	—	—	—
PT Proton Liftindo Perkasa	3	Lifting crane services	1.0	0.8	1.0	0.1	—	—	—	—	—	—
PT Sentral Sumber Daya	2	Labor services	—	—	48.0	4.0	29.0	2.4	2.0	—	—	—
PT Jaya Abadi Dwiputra	5	Heavy equipment services	—	—	4.7	0.4	—	—		—	—	—
PT Kreasitama Unggul Mandiri	1	Heavy equipment services	—	—	—	—	14.6	1.2	1.0	—	—	—
PT Dahana (Persero)	5	Explosive materials	—	—	—	—	11.3	0.9	0.8	7.5	1.2	0.0
PT SNP Indonesia	2	Employee transportation services	—	—	—	—	10.4	0.8	0.7	—	—	—
PT Refindo Intiselaras Indonesia	5	Spare parts	0.4	0.0	—	—	4.4	0.4	0.3	—	—	—
PT Universal	5	Transportation services	0.4	0.0	—	—	—	—	—	—	—	—
PT Jasa Prima Internusa	1	Heavy equipment services	—	—	—	—	—	—	—	8.0	1.3	0.6
Total			**6.5**	**1.9**	**76.4**	**6.3**	**69.7**	**5.7**	**4.8**	**97.6**	**15.7**	**6.2**

Tin

Our major suppliers for our tin business primarily consist of Indonesian suppliers of spare parts, such as machinery for our dredger vessels, gearboxes for our drilling machines and bearings. The following table sets forth the amounts incurred by us for our five largest suppliers for our tin business for the periods indicated, in absolute terms and expressed as a percentage of total cost of revenue for our tin business.

Supplier	Length of relationship	Raw material	Year ended December 31,							Six months ended June 30,		
			2015		2016		2017			2018		
	(years)		(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(US$ in million)
Pertamina (Persero) UPms II Palembang	4	Diesel oil and fuel oil	290.5	4.7	173.3	3.0	195.1	2.5	13.5	116.6	3.2	8.1
Timah International Investment Pte. Ltd.(1)	4	Spare parts	6.6	0.1	6.0	0.1	17.7	0.2	1.2	93.5	2.5	6.5
Jebsen & Jessen Technology Indonesia	4	Spare parts	25.9	0.4	63.7	1.1	39.7	0.5	2.8	33.6	0.9	2.3
PT Trakindo Utama	4	Spare parts	23.0	0.4	23.5	0.4	15.3	0.2	1.1	31.5	0.9	2.2
PT Tri Tunggal Sakti Mandiri	4	Spare parts	59.4	1.0	45.3	0.8	45.6	0.6	3.2	9.2	0.3	0.6
Total			**405.4**	**6.6**	**311.8**	**5.4**	**313.4**	**4.0**	**21.8**	**284.4**	**7.8**	**19.7**

Note:

(1) Timah International Investment Pte. Ltd. is a wholly-owned subsidiary of Timah.

Nickel

Our major suppliers for our nickel business primarily consist of Indonesian suppliers of energy. The following table sets forth the amounts incurred by us for our five largest suppliers for our nickel business for the periods indicated, in absolute terms and expressed as a percentage of total cost of revenue for our nickel business.

Supplier	Length of relationship	Raw material	Year ended December 31,							Six months ended June 30,		
			2015		2016		2017			2018		
	(years)		(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(US$ in million)
PT Pertamina (Persero)	4	Fuel	1,077.9	38.2	989.9	34.6	1,099.9	33.8	76.4	549.9	26.3	38.2
PT Indonesia Coal Resources and PT Surya Megah Adiperkasa	4	Low calorific coal	493.9	15.5	453.6	17.4	504.0	15.5	35.0	252.0	12.0	17.5
PT Alberta Makmur Utama & One United Ltd	4	Refractory materials	86.7	3.1	79.7	3.1	88.5	2.7	6.1	44.2	2.1	3.1
Elkem Carbon, Norway	4	Carbon electrode paste	51.9	1.8	47.7	1.8	53.0	1.6	3.7	26.5	1.2	1.8
PT Kaltim Prima Coal and PT Arutmin	4	High calorific coal	3.4	0.1	3.2	0.1	3.5	0.1	0.2	1.7	0.1	0.1
Total			**1,713.8**	**58.7**	**1,574.1**	**57.0**	**1,748.9**	**53.7**	**121.4**	**874.3**	**41.7**	**60.7**

Bauxite

Our major suppliers for our bauxite business primarily consist of Indonesian suppliers of heavy equipment and vehicles. The following table sets forth the amounts incurred by us for our five largest suppliers for our bauxite business for the periods indicated, in absolute terms and expressed as a percentage of total cost of revenue for our bauxite business.

Supplier	Length of relationship	Services/ material	Year ended December 31,							Six months ended June 30,		
			2015		2016		2017			2018		
	(years)		(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(US$ in million)
PT Meta Estetika Graha	5	Equipment rental	6.9	11.9	21.2	35.3	12.2	7.2	0.8	31.4	37.9	2.2
PT Pelayaran Tonicogita Ekamarindo	4	Transshipment services	—	—	—	—	31.5	18.6	2.2	11.9	14.3	0.8
Pertamina	3	Fuel supplier	3.1	5.3	1.6	2.6	4.3	2.5	0.3	6.1	7.3	0.0
PT Mitra Multi Niti Usaha	1	Labor services	—	—	—	—	7.1	4.1	0.5	3.5	4.2	0.2
PT Bhakti Sasana	1	Construction	—	—	—	—	—	—	—	2.5	3.0	0.2
PT Persona Prima Utama	3	Security services	1.9	3.2	3.9	6.5	—	—	—	—	—	—
PT Prima Khatulistiwa	1	Construction	0.7	0.0	—	—	—	—	—	—	—	—
PT. Angkutan Lancar Pembangunan	1	Vehicle Rental	0.1	0.0	0.6	1.0	—	—	—	—	—	—
PT Rama Kapuas Indah	1	Transporter Services	—	—	1.2	2.0	—	—	—	—	—	—
CV Karya Tangguh	1	EPC contractor	—	—	—	—	0.8	0.4	0.0	—	—	—
Total			**12.7**	**21.5**	**28.5**	**47.4**	**55.9**	**32.8**	**3.8**	**55.4**	**66.7**	**3.4**

Aluminum

Our major suppliers for our aluminum smelting business primarily consist of alumina and coke traders from Indonesia and Australia. The following table sets forth the amounts incurred by us for our five largest suppliers for our aluminum smelting business for the periods indicated, in absolute terms and expressed as a percentage of total cost of revenue for our aluminum smelting business.

Supplier	Length of relationship	Raw material	Year ended December 31,							Six months ended June 30,		
			2015		2016		2017			2018		
	(years)		(Rp. in billion)	(%)	(Rp. in billion)	(%)	(Rp. in billion)	(%)	(US$ in million)	(Rp. in billion)	(%)	(US$ in million)
Karinya Trading Pty Ltd	10	Alumina	246.4	5.2	434.3	11.1	721.8	20.0	50.1	822.6	3.8	57.1
Vitol S.A.	4	Alumina	655.9	13.7	418.5	10.7	—	—	—	560.1	2.6	38.9
Alakasa Company Limited	19	Alumina and Coke	604.7	12.7	1,136.9	29.1	661.2	18.3	45.9	292.9	1.3	20.3
PT Yosomulyo Jajag	4	Coke	490.8	10.3	344.8	8.8	260.6	7.2	18.1	220.5	1.0	15.3
PT Well Harvest Winning Alumina Refinery	1	Alumina	—	—	—	—	—	—	—	147.1	0.7	10.2
Glencore International AG	10	Alumina	356.3	7.5	—	—	109.7	3.0	7.6	—	—	—
Himadri Speciality Chemical Ltd.	10	Coal tar pitch	—	—	193.7	5.0	—	—	—	—	—	—
Trafigura Pte. Ltd.	6	Alumina	—	—	—	—	136.2	3.8	9.5	—	—	—
Total			**2,354.1**	**49.3**	**2,528.2**	**64.7**	**1,889.5**	**52.3**	**131.2**	**2,043.1**	**9.3**	**141.8**

Competition

Coal

We compete in the domestic and international coal and fossil fuel markets with other coal producers. Competition is primarily based on coal quality, price, reliability of delivery and the ability to supply coal as and when required by customers. We compete with a significant number of large Indonesian coal producers, including PT Adaro Energy Tbk, PT Kaltim Prima Coal and PT Berau Coal, and other large coal producers from China, India and Australia, such as Yanzhou Coal Mining, Coal India Ltd and BHP Billiton Ltd. We also face competition in all markets in which we operate from providers of alternative sources of energy to coal, most significantly natural gas.

Gold

We compete with leading gold producers in Southeast Asia, including gold producers who also own and operate mines in Indonesia, such as Agincourt Resources, which owns the Martabe gold mine in North Maluku, and Newcrest Mining Ltd., which owns the Gosowong gold mine in North Sumatra. We also face competition from Australian companies such as Kingsgate Consolidated Limited, which owns the Chatree gold mine in Thailand, and PanAust Limited, which owns the Phu Kam and Ban Houayxai mines in Laos. Competition for our gold products is primarily based on brand value and LBMA certification.

Tin

We compete with other leading global producers of refined tin. Competition for our tin products is primarily based on tin production capacity. We compete with various tin producers from China such as Yunnan Tin, Yunnan Chengfeng and Guangxi China Tin, as well as from other countries such as Malaysia Smelting Corporation from Malaysia, Minsur S.A. from Peru and Empresa Metalurgica Vinto S.A. from Bolivia. We also face competition for our downstream tin products such, in the case of our tin solder products, Senju Metal Industry Co., Ltd. and Alpha Assembly Solutions and, in the case of our tin chemical products, PMC Group, Galta Chemicals and Hubei Benxing Chemical Industry Co., Ltd.

Nickel and ferronickel

As all our ferronickel products are exported, we primarily compete with other large international producers of ferronickel. Although most of our nickel products are also exported, this may be affected by recent changes to Government regulations limiting our ability to export our nickel ore. See "Indonesian Regulatory Framework — Mining Regulation — Price controls and export licensing — Mineral export license" and "Management's Discussion and Analysis — Factors Affecting Our Business and Results of Operations — Government policies and changes in law." Competition for our nickel and ferronickel products is primarily based on the quality of our nickel, such as the nickel content of our ore. In addition, Indonesia's geographically strategic location provides us with a competitive advantage in terms of being able to offer more competitive freight fares to leading stainless steelmakers, which are primarily located in the Southeast Asia region.

Bauxite

We compete in the domestic and international bauxite markets. Competition is primarily based on price, quality and ability to sustain adequate supply to meet customer demand. Our competitors primarily include domestic bauxite producers, such as Harita Group, and producers with bauxite mining operations in Australia and Brazil, such as Rio Tinto Group.

Aluminum

We compete in the domestic and international aluminum markets. Competition is primarily based on the consistency of our product quality, the competitiveness of our price and payment terms and our ability to meet delivery obligations. We compete with producers from Australia, the Middle-East, Eastern Europe and Asia, such as Rio Tinto Aluminum, Emirates Global Aluminum, United Company Rusal Limited and Press Metal Berhad, respectively.

Properties

Other than our mining concessions, we hold land rights to the land on which our production facilities, power plants and other facilities are located. We do not lease any properties that are material to our operations.

Production facilities

The following table sets forth certain information relating to the main properties on which we conduct our production operations.

No.	Property registration number[1]	Property holder	Purpose	Location	Land area (hectares)	Type of land right	Expiry of land right
1.	4	Antam	Gold mining facility	Bogor, West Java	23.5	HGB[2]	March 22, 2037
2.	5	Antam	Gold mining facility	Bogor, West Java	4.5	HGB[2]	March 22, 2037
3.	126	Antam	Logam Mulia precious metal processing and refinery	Pulo Gadung, East Jakarta	3.8	HGB[2]	July 24, 2023
4.	127	Antam	Logam Mulia precious metal processing and refinery	Pulo Gadung, East Jakarta	0.3	HGB[2]	July 24, 2023
5.	1	Antam	Nickel mining facility	Pomalaa, Southeast Sulawesi	64.4	HGB[2]	October 25, 2023
6.	2	Antam	Nickel mining facility	Pomalaa, Southeast Sulawesi	52.6	HGB[2]	October 25, 2023
7.	3	Antam	Nickel mining facility	Pomalaa, Southeast Sulawesi	30.4	HGB[2]	October 25, 2023
8.	4	Antam	Nickel mining facility	Pomalaa, Southeast Sulawesi	44.6	HGB[2]	October 25, 2023
9.	7	Antam	Nickel mining facility	Pomalaa, Southeast Sulawesi	17.7	HGB[2]	October 25, 2023
10.	8	Antam	Nickel mining facility	Pomalaa, Southeast Sulawesi	14.6	HGB[2]	March 21, 2022
11.	1	Antam	Nickel mining facility	Pomalaa, Southeast Sulawesi	3.4	HGB[2]	October 25, 2023
12.	2	Antam	Nickel mining facility	East Halmahera, North Maluku	8.6	HGB[2]	—[4]
13.	3	Antam	Nickel mining facility	East Halmahera, North Maluku	5.1	HGB[2]	—[4]
14.	4	Antam	Nickel mining facility	East Halmahera, North Maluku	1.2	HGB[2]	—[4]
15.	34	Bukit Asam	Kertapati coal terminal and office	Palembang, South Sumatera	9.5	HGB[2]	October 16, 2025
16.	450	Bukit Asam	Tarahan coal terminal, office and coal-fired power plant	Tarahan, Lampung	47.7	HGB[2]	May 7, 2027
17.	15	Bukit Asam	Briquettes Plant & Office	Gresik, East Java	14.2	HGB[2]	September 24, 2024
18.	400	Bukit Asam	Briquettes Land & Building	Semarang, Central Java	4.0	HGB[2]	September 24, 2026
19.	5	Bukit Asam	Briquettes Land & Building	Serang, Banten	10.1	HGB[2]	September 24, 2024
20.	00001	Timah	Tin smelting facility and office complex	Kundur, Riau	0.3	HGB[2]	March 11, 2024
21.	00002	Timah	Tin smelting facility and office complex	Kundur, Riau	1.0	HGB[2]	March 11, 2024

No.	Property registration number[1]	Property holder	Purpose	Location	Land area (hectares)	Type of land right	Expiry of land right
22.	00003	Timah	Tin smelting facility and office complex	Kundur, Riau	1.5	HGB[2]	March 11, 2024
23.	00004	Timah	Tin smelting facility and office complex	Kundur, Riau	0.5	HGB[2]	March 11, 2024
24.	00005	Timah	Tin smelting facility and office complex	Kundur, Riau	3.5	HGB[2]	March 11, 2024
25.	00006	Timah	Tin smelting facility and office complex	Kundur, Riau	1.6	HGB[2]	March 11, 2024
26.	00007	Timah	Tin smelting facility and office complex	Kundur, Riau	21.4	HGB[2]	March 11, 2024
27.	00008	Timah	Tin smelting facility and office complex	Kundur, Riau	2.5	HGB[2]	March 11, 2024
28.	1	Timah	Factory	Gemuruh, Riau	4.0	HGB[2]	October 13, 2039
29.	02	Timah	Ore receiving center	Belo Laut, Bangka Belitung Islands	10.0	HGB[2]	June 29, 2024
30.	119	Timah	Metallurgy complex	Sungai Baru, Bangka Belitung Islands	121.5	HGB[2]	September 21, 2025
31.	168	Timah	Docking facility	Sungai Baru, Bangka Belitung Islands	7.0	HGB[2]	July 20, 2030
32.	349/07/2016	Inalum	Aluminum smelters and aluminum down-stream product plants	Batubara, North Sumatra	258.2	HPL[3]	—[4]
33.	41, 42, 45, 47, 48, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 184, 185, 187, 189, 191, 192, 193, 194, 196, 197, 198, 226, 229, 255, 256, 258, 259, 260, 262/2016	Inalum	Spoil bank	Toba Samosir, North Sumatra	208.2	HPL[3]	—[4]

Notes:

(1) Refers to the official registration number provided by the National Land Affairs Agency.

(2) *Hak Guna Bangunan*, or HGB, is a right to build on state-owned land. HGB title is granted for a maximum initial term of 30 years. By application to the relevant local land office upon the expiration of this initial term, HGB title may be extended for an additional term not exceeding 20 years.

(3) *Hak Pengelolaan*, or HPL, is a right to operate state-owned land for a specific purpose as approved by the Government and granted pursuant to a Government decision. The period of the time that the HPL is granted for is determined on a case-by-case basis.

(4) These land rights have no expiry date.

Power plants, water facilities and other supporting facilities

The following table sets forth certain information relating to our power plants, main water facilities and other key supporting facilities and infrastructure.

No.	Property registration number[1]	Property holder	Purpose	Location	Land area (hectares)	Type of land right	Expiry of land right
1.	38	Bukit Asam	Railway bridge	Tanjung Enim, South Sumatra	2.6	HGB[2]	February 5, 2048
2.	39	Bukit Asam	Railway bridge	Tanjung Enim, South Sumatra	4.8	HGB[2]	February 5, 2048

No.	Property registration number[1]	Property holder	Purpose	Location	Land area (hectares)	Type of land right	Expiry of land right
3.	37	Bukit Asam	Land for Prajin dock	Banyuasin, South Sumatera	9.1	HGB[2]	November 4, 2038
4.	38	Bukit Asam	Land for Prajin dock	Banyuasin, South Sumatera	3.1	HGB[2]	January 6, 2039
5.	03	Timah	Water reservoir	Belo Laut, Bangka Belitung Islands	5.1	HGB[2]	June 29, 2024
6.	Field Map No. 502/07/2016	Inalum	Tangga Power Plant	Asahan, North Sumatra	46.5	HPL[3]	—[4]
7.	Field Map No. 46/2016	Inalum	Siguragura Power Plant	Toba Samosir, North Sumatra	11.9	HPL[3]	—[4]
8.	Field Map No. 350/07/2016	Inalum	Water intake facility	Batubara, North Sumatra	2.5	HPL[3]	—[4]
9.	Field Map No. 351/07/2016	Inalum	Water intake facility	Batubara, North Sumatra	3.0	HPL[3]	—[4]
10.	Field Map No. 370-380/07/2016	Inalum	Transmission Line	Batubara, North Sumatra	110.1	HPL[3]	—[4]
11.	Field Map No. 352-369/07/2016	Inalum	Transmission Line	Asahan, North Sumatra	160.5	HPL[3]	—[4]
12.	Field Map No. 2456, 2458, 2459, 2488, 2489/2015	Inalum	Transmission line	Simalungun, North Sumatra	20.9	HPL[3]	—[4]
13.	Field Map No. 44/2016	Inalum	Water dam	Toba Samosir, North Sumatra	0.3	HPL[3]	—[4]
14.	Field Map No. 227/2016	Inalum	Water dam	Toba Samosir, North Sumatra	19.6	HPL[3]	—[4]
15.	Field Map No. 261/2016	Inalum	Water dam	Toba Samosir, North Sumatra	7.4	HPL[3]	—[4]
16.	Field Map No. 267/2016	Inalum	Access tunnel	Toba Samosir, North Sumatra	2.0	HPL[3]	—[4]
17.	Field Map No. 43, 224/2016	Inalum	Tower training	Toba Samosir, North Sumatra	18.0	HPL[3]	—[4]
18.	Field Map No. 265/2016	Inalum	Siguragura tunnel	Toba Samosir, North Sumatra	0.8	HPL[3]	—[4]
19.	Field Map No. 344/2016	Inalum	Transmission line	Toba Samosir, North Sumatra	4.8	HPL[3]	—[4]
20.	Field Map No. 346/07/2016	Inalum	Housing, R&D facilities and other supporting premises	Batubara, North Sumatra	258.5	HPL[3]	—[4]
21.	Field Map No. 52, 268, 375/2016	Inalum	Housing and sport facilities	Toba Samosir, North Sumatra	75.4	HPL[3]	—[4]
22.	Field Map No. 182/2016	Inalum	Spare parts warehouse	Toba Samosir, North Sumatra	3.2	HPL[3]	—[4]

Notes:

(1) Refers to the official registration number provided by the National Land Affairs Agency.

(2) *Hak Guna Bangunan*, or HGB, is a right to build on state-owned land. HGB title is granted for a maximum initial term of 30 years. By application to the relevant local land office upon the expiration of this initial term, HGB title may be extended for an additional term not exceeding 20 years.

(3) *Hak Pengelolaan*, or HPL, is a right to operate state-owned land for a specific purpose as approved by the Government and granted pursuant to a Government decision. The period of the time that the HPL is granted for is determined on a case-by-case basis.

(4) These land rights have no expiry date.

Environmental, Health and Safety Compliance

We comply with Indonesian safety and health standards as set forth in the National Management System of Safety and Health (*Sistem Manajemen Kesalamatan dan Kesehatan Kerja* or "SMK3"). Our third-party contractors are also required to comply with such safety standards. We conduct regular safety inspections as well

as both internal and external audits to monitor and identify areas of improvement in our safety measures. In addition, we have a safety committee that reviews and provides advice on occupational safety and health issues.

We comply with Indonesian environmental standards. We have a comprehensive environmental impact analysis and management team that guides our Company's activities. Our environmental management policies include measures that cover the entire mining process, impact analyses on wildlife and vegetation, mine rehabilitation and tailings disposal management. We collaborate with local communities surrounding our mining areas in the reclamation process and redevelopment of the land for other purposes, such as commercial crop plantations, fish and livestock farms and recreational areas. We implement reclamation and rehabilitation of the land in consultation with the Ministry of Energy and Mineral Resources of Indonesia which, in turn, consults with the local government. In addition, we attempt to keep disturbed areas to a minimum and have pollution control facilities such as a gas cleaning system, closed circuit water circulation for our inland mining, and waste water treatment plants in order to mitigate the environmental impact from our operations. We have hazardous waste storage facilities for temporary placement before sending the waste to a third-party waste processing company for reuse and treatment. We have our water quality and air quality in our concession areas and production facilities periodically monitored by the National Accreditation Body of Indonesia (*Komite Akreditasi Nasional* or "KAN"). We also have dust collection systems to collect and dispose of dust from our smelting and power plants.

We are required to prepare and submit a quarterly and/or biannual report, depending on the business segment, on environmental performance to the Government. The Ministry of Energy and Mineral Resources, in conjunction with the Environmental Ministry, oversees our compliance with environmental laws and regulations in Indonesia. We have, in general, complied with relevant environmental laws and regulations and no significant environmental incident has been noted.

Corporate and Social Responsibility

We engage in corporate and social responsibility ("CSR") activities through an established CSR program under which we focus on maintaining environmental sustainability and empowering the communities in and around the areas in which we operate. To achieve these goals, we donate to the schools surrounding our mining concession areas and production facilities in the form of repairs to school grounds, donations of computer equipment and furniture as well as fund scholarships for students and training for teachers. We engage our local community through transparent disclosure of information as well as regular and open communication channels, and generally encourage employment of individuals from the local communities surrounding our mining operations. We also provide assistance to improvement and repairs to places of worship such as mosques and churches. In addition, we construct access roads and bridges to improve accessibility, provide electricity and construct toilets, signboards and shelters, within the area surrounding our mining concession areas and production facilities. We provide social assistance to the underprivileged communities surrounding our operations in various ways, including funding surgeries, distributing medicine to residents and distributing food during the Ramadhan and Christmas periods. We also assist in disaster relief by providing monetary assistance to victims of natural disasters throughout Indonesia.

Insurance

We maintain insurance coverage for our employees and board of directors, vehicles, office premises and mining sites through policies issued by Indonesian insurers, which include Asuransi Wahana Tata, Asuransi Kredit Indonesia, Asuransi Adira Dinamika, Asuransi Astra, Asuransi Jasindo, Jasaraharja Putra, Asuransi Jasindo Syariah, Asuransi Ramayana and Indonesia's Social Security Health Administrator (*Badan Penyelenggara Jaminan Sosial* or "BPJS"). Our insurance coverage includes the following insurance policies:

- industrial all risks, property all risks and earthquake insurance;
- vehicle insurance for vehicles, including motorcycles and vessels, owned by us;
- heavy equipment insurance for the machinery and other equipment, owned and operated by us;

- hull insurance for the vessels owned by us;
- life group personal accidents insurance for all of our employees and directors; and
- legal and defense representation costs.

The insurance policies arranged by us do not cover liability or damage arising from acts of war and terrorism, and other customary exclusions from coverage. Under our operating agreements with our third-party mining contractors, the contractors are responsible for their own employees and they and their employees must also be covered by appropriate insurance including insurance for property and vehicles, loss and damage and third-party claims. Neither we nor our contractors carry any business interruption coverage.

Intellectual Property

We hold the following intellectual property rights, which are the most significant intellectual property to our business:

Trademarks. We hold four registered trademarks on which our tin mining business is materially dependent including our "BANKA," "KUNDUR," "BANKA 99.99" and "BANKALL." We hold six registered trademarks on which our gold and silver as well as our nickel and bauxite mining businesses are materially dependent including our "antam," "antam," "ANEKA TAMBANG," "ANTAM," "LOGAM MULIA" and "" trademarks. We hold two registered trademarks on which our aluminum smelting business is materially dependent including our "INAL" and "INALUM" trademarks.

Patents. We are currently processing a patent for our borehole tin mining method and technology, which we have been developing since 2014 and recently put into operation at our Bangka Island and Belitung Island tin mining concession areas. See "— Our Tin Business — Our tin development projects — Borehole tin mining technology."

Registered designs. We hold five registered designs on which our gold business is materially dependent, including for our gold pendant, gold pendant frame and gold bar configurations.

Employees

We had 11,917 employees as of December 31, 2015, 11,950 employees as of December 31, 2016, 11,658 employees as of December 31, 2017 and 11,506 employees as of June 30, 2018. The following table sets forth a breakdown of our employees by function as of the periods indicated.

	As of December 31,			As of June 30,
	2015	2016	2017	2018
Operations	8,457	8676	8516	8283
Finance and accounting	248	312	291	276
Business development	149	159	165	158
Sales and marketing	114	80	85	90
Corporate support	685	722	688	650
Human resources development and general affairs	625	629	499	543
General services	173	158	229	214
Supply chain and logistic	990	835	807	784
General management	476	379	378	508
Total	**11,917**	**11,950**	**11,658**	**11,506**

Most of our employees are unionized and we consider ourselves to have good relationships with the unions and our employees, which we have sought to maintain by, among other things, having regular dialog with the union representatives. We have not experienced a labor strike since 1999, when some of our employees protested due to dissatisfaction with the outcome of salary negotiations between us and the union representatives. The dispute arose in the background of the 1998 financial crisis and we were eventually successful in reaching an

agreement with the union involving reasonable salary increases and review of employee benefit systems. See "Risk Factors — Risks Common to All Our Businesses — We may be adversely affected by labor disputes and may not be able to renew our arrangements with trade unions on favorable terms."

Governmental Regulations and Licenses

Our operations are subject to a variety of laws and regulations promulgated by the national and local governments of each jurisdiction in which we operate. See "Indonesian Regulatory Framework." We believe we are in compliance in all material respects with the applicable governmental regulations in each jurisdiction in which we operate. We are not aware of any governmental proceedings or investigations to which we might become a party and which may have a material adverse effect on our properties and operations.

Various governmental, quasi-governmental, and regulatory agencies require the holding of certain licenses, concessions, and permits with respect to operations in the mining industry and the aluminum production industry, including mine operation licenses, forestry permits and environmental permits. Our operations are conducted under valid licenses, concessions, permits, or certificates granted by the applicable regulatory body in that jurisdiction.

We maintain regular dialog with local governments and regulatory authorities through their management teams or representatives in each jurisdiction. Ensuring compliance with the requirements and conditions for obtaining and maintaining the aforementioned licenses, concessions, permits, or certificates.

Legal Proceedings

We are and, from time to time, may be a party to various legal proceedings arising in the ordinary course of our business. As of the date of this Offering Memorandum, other than as set forth below, there were no governmental, legal or arbitration proceedings (including any such proceedings that are pending or threatened of which we are aware) that may have a material effect on our financial position or profitability.

Surface Water Tax Dispute

Since 2014, we have been in dispute with the Province of North Sumatra ("Badan Pengelolaan Pajak dan Retribusi Daerah Provinsi Sumatera Utara") concerning our local tax liability for our usage of surface water by our hydroelectric power plants. The dispute relates to the interpretation of Governor Regulation No. 24 of 2011 on Procedures for the Calculation of the Water Procurement Value, Price of Raw Water and the Base Price of Water for the Determination of Surface Water Taxes in North Sumatra dated April 8, 2011, which sets forth how surface water tax is to be calculated. We believe that, as a state-owned entity, the tax rate applicable to us should be the same rate applicable to PLN, Indonesia's state-owned electricity supplier, which would equal Rp.75.0 per Kwh of electricity generated by our power plants. However, according to the Dispenda Balige, the calculation of surface water tax applicable to us should instead be the industrial rate applicable to private sector entities, which is calculated based on the total volume of water used in cubic meters (m^3) multiplied by progressive rates of Rp.1,234/m^3 to Rp.1,444/m^3.

We have filed 54 objection letters against the Dispenda Balige's local tax assessment letters with the Governor of North Sumatra, most of which have been rejected and some of which are still being processed. With respect to the rejected objection letters, we have filed 31 appeal letters to the Tax Court of Indonesia. Further, as Article 36 paragraph (4) of the Tax Court Law requires us to first pay 50.0% of our alleged tax liability in order to be eligible for submission of an appeal to the Tax Court, we have paid a total amount of Rp.536.1 billion with respect to our alleged tax liability for the period between November 2013 and March 2016.

As of June 30, 2018, the total amount of surface water taxes still in dispute with the Dispenda Balige was Rp.1,993.4 billion (US$138.4 million).

As of October 31, 2018, out of the 31 appeal letters which we have filed to the Tax Court of Indonesia, 13 of the appeal letters for the period between April 2016 and April 2017 have been declared to be inadmissible (*Niet Ontvankelijke Verklaard*) due to the non-fulfilment of formality requirements by the Tax Court of Indonesia.

Accordingly, the Company may be invoiced Rp.1,106.1 billion (US$76.8 million) by the local government. The Company intends to submit these decisions for judicial review (*peninjauan kembali*) to the Supreme Court of Indonesia (the "Supreme Court").

Antam's litigation with PT Perusahaan Toradja ("Perto")

On February 24, 2017, Perto filed a lawsuit against Antam, the Ministry of State-Owned Enterprises, the MEMR and the Ministry of Finance alleging that Perto had not been fully compensated with respect to the loss of Perto's mining assets in Pomalaa, Southeast Sulawesi. The lawsuit relates to events occurring from 1961 to 1980, during which Perto filed two lawsuits against PT Nikkel Indonesia ("Nikkel"), a company that was merged into Antam in 1968, asserting that the Government and Nikkel had unlawfully seized certain of Perto's mining assets located in Pomalaa. The two lawsuits included (i) a lawsuit in 1967 (the "1967 Case"), as a result of which Antam had been required by the Supreme Court to pay Perto, and has satisfied payment of, Rp.41.0 million and (ii) a lawsuit in 1975 (the "1975 Case"), in which Perto sought interest payments on the damages granted in the 1967 case amounting to a total of Rp.456.0 million, and which was rejected by the Supreme Court.

Under the current lawsuit, Perto is seeking (i) payment from Antam for damages amounting to a total of Rp.107.9 trillion for material losses and Rp.12.0 billion for immaterial losses incurred, (ii) a seizure of Antam's assets including, among others, Antam's head office located in South Jakarta as well as its nickel mining concession areas located in North Maluku and Northeast Sulawesi, its gold mining concession area located in Bogor and its bauxite mining concession area located in West Kalimantan and (iii) payment by Antam in the amount of Rp.100.0 billion for litigation costs incurred by Perto.

On August 15, 2018, the South Jakarta District Court rejected Perto's lawsuit on the grounds that the case had already been filed and settled in the Supreme Court under the 1967 Case and the 1975 Case. On August 29, 2018, Perto filed an appeal to the DKI Jakarta High Court. Antam is in the process of submitting a memorandum to counter Perto's appeal.

PLANNED ACQUISITION OF MAJORITY BENEFICIAL STAKE IN PT FREEPORT INDONESIA

We and Freeport-McMoRan Inc. ("FCX") currently respectively own 9.36% and 90.64% of shares of PT Freeport Indonesia ("PTFI"), a limited liability company organized under the laws of the Republic of Indonesia. We plan to acquire a direct and indirect majority beneficial stake in PTFI (the "PTFI Share Acquisition"), see "— Planned transaction structure for PTFI Share Acquisition," using the proceeds from this offering. We have committed bank facilities amounting to approximately US$2.85 billion from a syndicate of banks and available cash within our Group to fund the PTFI Share Acquisition in the event the net proceeds from this offering are insufficient or if the offering is not completed.

Overview of PT Freeport Indonesia

PTFI is engaged in the exploration for and mining and processing of ore containing copper, gold and silver in Papua, Indonesia, and in the marketing of concentrate containing such metals. PTFI's assets include the Grasberg minerals district in Indonesia (the "Grasberg Mine"), one of the world's largest copper and gold deposits. For the years ended December 2015, 2016 and 2017 and the six months ended June 30, 2018, PTFI's total production volume of copper was 752 million lbs, 1.1 billion lbs, 1.0 billion lbs and 0.7 billion lbs, respectively, and its total production volume of gold was 1.2 million ozs, 1.1 million ozs, 1.6 million ozs and 1.3 million ozs, respectively.

PTFI conducts its current exploration and mining operations in Indonesia under a temporary IUPK with the Indonesian government, see "— PTFI's Mining License," which allows it to conduct exploration, mining and production activities in the 9,946-hectare mining concession area, which is where all of PTFI's proven and probable mineral reserves and all of its current mining operations are located. See "— The Grasberg Mine."

PTFI has an unincorporated joint venture with PT Rio Tinto Indonesia ("PTRTI"), under which PTRTI has a 40.0% interest in certain assets and future production exceeding specified annual amounts of copper, gold and silver through December 31, 2022 in Block A of PTFI's CoW, and after December 31, 2022, a 40.0% interest in all production from Block A. As part of the PTFI Share Acquisition, we intend to acquire all the shares held in PTRTI. See "— Planned transaction structure for the PTFI Share Acquisition."

PTFI's Mining License

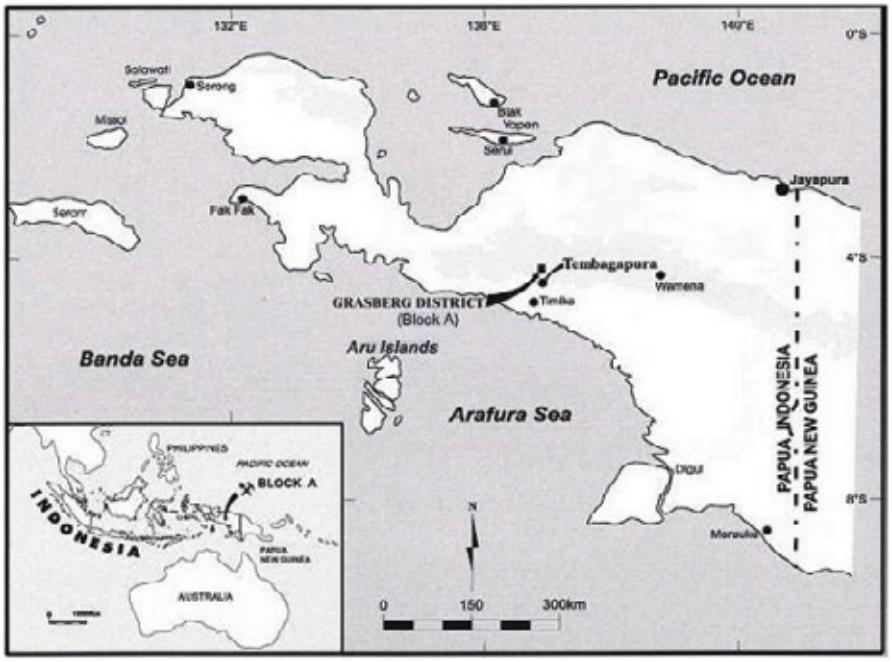
PTFI's original CoW was entered into in 1967, and was replaced in 1991 by a new CoW. In early 2017, the Indonesian government issued new regulations pursuant to the 2009 Mining Law to address exports of unrefined metals, including copper concentrate and anode slimes, and other matters related to the mining sector. The new regulations permit the continuation of copper concentrate exports for a five-year period through January 2022, subject to various conditions, including conversion from a CoW to an IUPK (an IUPK would not provide the same level of fiscal and legal protections as PTFI's CoW, which remains in effect), a commitment to the completion of smelter construction within five years and payment of export duties to be determined by the Ministry of Finance. In addition, the new regulations enable application for extension of mining rights five years before expiration of the IUPK and require foreign IUPK holders to divest 51.0% to Indonesian interests no later than the tenth year of production. See "Indonesian Regulatory Framework — Mining licensing system." Following the issuance of such regulations, PTFI and the MEMR entered into a memorandum of understanding on March 31, 2017 confirming that PTFI's CoW would continue to be valid and honored until replaced by a mutually agreed IUPK and investment stability agreement.

Following a framework understanding reached in August 2017, PTFI and the relevant Government authorities have been engaged in negotiation and documentation of an IUPK and accompanying documentation for assurances on legal and fiscal terms to replace PTFI's CoW while providing PTFI with long-term mining rights through 2041. In addition, such IUPK would provide that PTFI construct a smelter within five years of reaching a definitive agreement and include agreement for the divestment of 51.0% of the project area interests to

Indonesian participants at fair market value. PTFI's current temporary IUPK is valid until November 30, 2018, and PTFI intends to seek extensions to its temporary IUPK until the planned PTFI Share Acquisition is complete, at which point PTFI would have received an extended or a permanent IUPK as part of the planned transaction's closing conditions.

The Grasberg Mine

The Grasberg mining concession area spans a total area of approximately 9,946 hectares. The Grasberg Mine consists of four active mines including the (i) Grasberg open-pit mine, (ii) the Deep Ore Zone ("DOZ") underground mine, (iii) the Deep Mill Level Zone ("DMLZ") underground mine and (iv) the Big Gossan underground mine. The following map sets forth the location of the Grasberg Mine (referred to as the Grasberg District on the map).



Grasberg open-pit mine

PTFI began open-pit mining of the Grasberg ore body in 1990 and is currently mining the final phase of the Grasberg open-pit mine, which contains high copper and gold ore grades. For the years ended December 31, 2015, 2016, 2017 and the six months ended June 30, 2018, ore produced from the Grasberg open-pit averaged 115,900 tonnes, 119,700 tonnes, 101,800 tonnes and 136,800 tonnes, respectively, per day.

The Grasberg open-pit mine equipment fleet consists of over 500 units. The larger mining equipment directly associated with production includes an available fleet of 99 haul trucks with payloads of 218 tonnes and 15 shovels with bucket sizes ranging from 17 to 42 cubic meters, which are capable of moving an average of 340,000 tonnes per day. Crushing and conveying systems are integral to the Grasberg open-pit mine and provide the capacity to transport more than 250,000 tonnes of ore per day.

PTFI expects to mine high-grade ore at the Grasberg open-pit mine prior to transitioning to the Grasberg Block Cave underground mine in the first half of 2019. See "— Common infrastructure projects and Grasberg Block Cave mine — Grasberg Block Cave underground mine." Production in the Grasberg open-pit mine is currently at the 3,200 to 3,400-meter elevation level and totaled 24.8 million tonnes of ore for the six months ended June 30, 2018, which represented 76.0% of PTFI's total ore production for the same period. Production from the Grasberg open-pit mine is expected to continue through the first half of 2019.

DOZ underground mine

PTFI began production from the DOZ underground mine in 1989 using open-stope mining methods, but suspended production in 1991 in favor of production from the Grasberg open-pit mine. Production resumed in September 2000 using the block-cave method and is at the 3,110-meter elevation level. For the years ended December 31, 2015, 2016, 2017 and the six months ended June 30, 2018, ore produced from the DOZ underground mine averaged 43,700 tonnes, 38,000 tonnes, 31,200 tonnes and 34,300 tonnes, respectively, per day.

The DOZ underground mine is a mature block-cave mine that previously produced 80,000 tonnes of ore per day. Current production rates from the DOZ underground mine are driven by the value of the incremental DOZ ore grade compared to the ore from the Grasberg open-pit and ore grade material from the development of the DMLZ mine and Grasberg Block Cave underground mines. See "— DMLZ underground mine" and "— Common infrastructure projects and Grasberg Block Cave Mine."

The DOZ underground mine fleet consists of 159 pieces of mobile equipment. The primary mining equipment directly associated with production and development includes an available fleet of 45 load-haul-dump ("LHD") machine units and 22 haul trucks. Each production LHD unit typically carries approximately 11 tonnes of ore. Using ore passes and chutes, the LHD units transfer ore into 55-tonne capacity haul trucks. The trucks dump into two gyratory crushers, and the ore is then conveyed to the surface stockpiles for processing.

DMLZ underground mine

The DMLZ underground mine lies below the DOZ underground mine at the 2,590-meter elevation. For the years ended December 31, 2015, 2016, 2017 and the six months ended June 30, 2018, ore produced from the DMLZ underground mine averaged 2,900 tonnes, 4,400 tonnes, 3,200 tonnes and 2,700 tonnes, respectively, per day.

The DMLZ underground mine fleet consists of over 230 pieces of mobile equipment, which includes 27 LHD units and 15 haul trucks used in production and development activities.

Big Gossan Underground Mine

The Big Gossan underground mine is a tabular, near vertical ore body with approximate dimensions of 1,200 meters along strike and 800 meters down dip, with varying thicknesses from 20 meters to 120 meters. The Big Gossan underground mine was on care-and-maintenance status during most of 2017 and production restarted in the fourth quarter of 2017. For the six months ended June 30, 2018, ore produced from the Big Gossan underground mine averaged 3,100 tonnes per day.

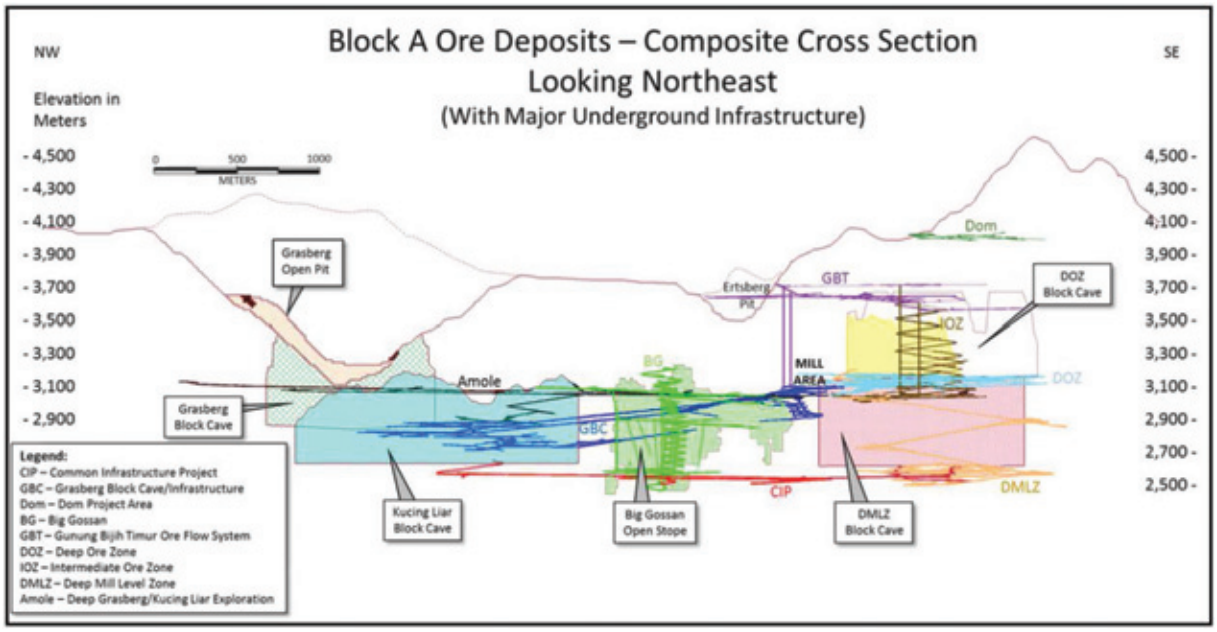
The Big Gossan underground mine utilizes a blasthole stoping method with delayed paste backfill. Stopes of varying sizes are mined and the ore dropped down passes to a truck haulage level. Trucks are chute loaded and transport the ore to a jaw crusher. The crushed ore is then hoisted vertically via a two-skip production shaft to a level where it is loaded onto a conveyer belt. The belt carries the ore to one of the main underground conveyors where the ore is transferred and conveyed to the surface stockpiles for processing. The Big Gossan underground mine fleet consists of over 72 pieces of mobile equipment, which includes nine LHD units and nine haul trucks used in development and production activities.

Description of ore bodies of the Grasberg Mine

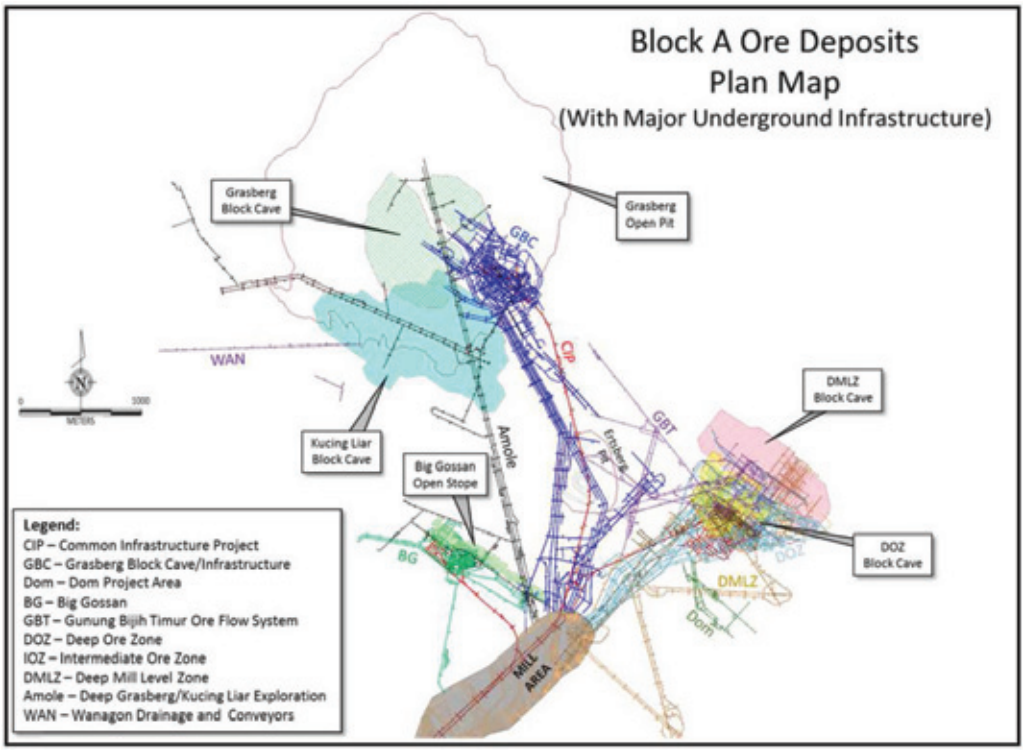
The ore bodies of the Grasberg Mine are located within and around two main igneous intrusions, the Grasberg monzodiorite and the Ertsberg diorite. The host rocks of these ore bodies include both carbonate and clastic rocks that form the ridge crests and upper flanks of the Sudirman Range, and the igneous rocks of monzonitic to dioritic composition that intrude them. The igneous-hosted ore bodies (the Grasberg open pit and block cave, and portions of the DOZ block cave) occur as vein stockworks and disseminations of copper sulfides, dominated by chalcopyrite and, to a lesser extent, bornite. The sedimentary-rock hosted ore bodies (portions of the DOZ and all of the Big Gossan) occur as "magnetite-rich, calcium/magnesian skarn" replacements, whose location and orientation are strongly influenced by major faults and by the chemistry of the carbonate rocks along the margins of the intrusions.

The copper mineralization in these skarn deposits is dominated by chalcopyrite, but higher bornite concentrations are common. Moreover, gold occurs in significant concentrations in all of the district's ore bodies, though rarely visible to the naked eye. These gold concentrations usually occur as inclusions within the copper sulfide minerals, though, in some deposits, these concentrations can also be strongly associated with pyrite.

The following diagram sets forth the relative elevations (in meters) of PTFI's reported ore bodies.



The following map sets forth the relative positions and sizes of PTFI's reported Indonesia ore bodies and their locations.



Security

As part of its security program, PTFI maintains its own internal security department. Both employees and contractors are unarmed and perform functions such as protecting company facilities, monitoring shipments of supplies and products, assisting in traffic control and aiding in emergency response operations. The security department receives human rights training annually. As the Grasberg Mine has been designated by the Indonesian government as one of Indonesia's vital national assets, the police, and to a lesser extent, the military, play a significant role in protecting the area of PTFI's operations. The Indonesian government is responsible for employing police and military personnel and directing their operations.

PT Smelting

Pursuant to PTFI's CoW entered into in 1991, PTFI was required to construct a smelter in Indonesia if FCX and the Government determined that such a project would be economically viable. In 1995, following the completion of a feasibility study, PTFI entered into agreements relating to the formation of PT Smelting, an Indonesian incorporated company, and the construction of a copper smelter and refinery in Gresik, Indonesia, to be owned and operated by PT Smelting. PTFI owns 25.0% of PT Smelting with the remainder owned by Mitsubishi Materials Corporation (60.5%), Mitsubishi Corporation RtM Japan Ltd. (9.5%) and JX Nippon Mining & Metals Corporation (5.0%).

PTFI has committed to supplying, on a priority basis, 100.0% of PT Smelting's copper concentrate requirements to enable PT Smelting to produce 205,000 tonnes of copper annually. PTFI may also sell copper concentrate to PT Smelting at market rates for quantities in excess of 205,000 tonnes of copper annually. Sales by PTFI to PT Smelting totaled US$1.3 billion for the six months ended June 30, 2018.

Operating and Development Activities

PTFI is currently mining the final phase of the Grasberg open pit, which contains high copper and gold ore grades. PTFI has revised its mine plans to extend mining activities in the open pit by approximately six months through the first half of 2019 following results of an economic analysis. PTFI expects to mine ore from the open pit until transitioning to the Grasberg Block Cave underground mine in the first half of 2019. PTFI expects lower copper and gold production during the transition period in 2019 and 2020.

PTFI has several projects in the Grasberg Mine related to the development of its large-scale, long-lived, high-grade underground ore bodies. In aggregate, these underground ore bodies are expected to produce large-scale quantities of copper and gold following the transition from the Grasberg open pit. Substantial progress has been made to prepare for the transition to mining of the Grasberg Block Cave underground mine. First undercut blasting occurred at the Grasberg Block Cave underground mine in September 2018, with production scheduled for the first half of 2019. All underground mining levels and the ore flow system are being commissioned. Production rates over the next five years are expected to ramp up to approximately 130,000 metric tons of ore per day.

Subject to reaching definitive agreements with the Government in relation to an extended IUPK, estimated annual capital spending on PTFI's underground development projects would average US$0.8 billion per year over the next five years. Considering the long-term nature and size of these projects, actual costs could vary from these estimates. In response to market conditions and Indonesian regulatory uncertainty, the timing of these expenditures continues to be reviewed and could be reduced or deferred significantly.

PTFI has also committed to commence construction of a new smelter during a five-year timeframe after obtaining an investment stability agreement under an extended IUPK providing equivalent rights with the same level of legal and fiscal certainty provided under the CoW.

The following provides additional information on the continued development of the Common Infrastructure project, the Grasberg Block Cave underground mine and the DMLZ ore body that lies below the DOZ underground mine. Current plans and mineral reserves in Indonesia assume that PTFI's long-term mining rights will be extended through 2041, as stated in the CoW.

Common infrastructure projects and Grasberg Block Cave Mine

In 2004, PTFI commenced its common infrastructure project to provide access to its large undeveloped underground ore bodies located in the Grasberg Mine through a tunnel system located approximately 400 meters deeper than its existing underground tunnel system. In addition to providing access to the underground ore bodies, the tunnel system will enable PTFI to conduct future exploration in prospective areas associated with currently identified ore bodies. The tunnel system was connected to the Big Gossan terminal, and the Big Gossan mine was brought into production in 2010. The Big Gossan underground mine was on care-and-maintenance status during most of 2017 and production restarted in fourth-quarter 2017. Development of the Grasberg Block Cave and DMLZ underground mines is advancing using the common infrastructure project tunnels as access.

Grasberg Block Cave underground mine

The Grasberg Block Cave underground mine accounts for approximately half of PTFI's recoverable proven and probable reserves in Indonesia. Production from the Grasberg Block Cave mine is expected to commence in the first half of 2019, following the end of mining of the Grasberg open pit. Targeted production rates once the Grasberg Block Cave mining operation reaches full capacity in 2023 are expected to approximate 130,000 to 160,000 metric tons of ore per day. PTFI continues to review its operating plans to determine the optimum mine plan for the Grasberg Block Cave underground mine.

Aggregate mine development capital for the Grasberg Block Cave underground mine and associated common infrastructure is expected to approximate US$6.4 billion (incurred between 2008 and 2023), with PTFI's share totaling approximately US$5.9 billion. Aggregate project costs totaling US$3.6 billion have been incurred through June 30, 2018, including US$290 million during the first six months of 2018, US$270 million during the first six months of 2017, US$511 million for the year 2017, US$574 million for the year 2016 and US$466 million for the year 2015.

DMLZ underground mine

The DMLZ ore body lies below the DOZ mine at the 2,590-meter elevation and represents the downward continuation of mineralization in the Ertsberg East Skarn system and neighboring Ertsberg porphyry. In September 2015, PTFI initiated pre-commercial production that represented ore extracted during the development phase for the purpose of obtaining access to the ore body. Following mining-induced seismic activity, which began in 2017 and continued in 2018, PTFI revised its mine plans, which resulted in a delay in the ramp-up of the DMLZ underground mine. During second-quarter 2018, PTFI initiated plans to conduct hydraulic fracturing activities to manage rock stresses and pre-condition the DMLZ underground mine for large-scale production. Hydraulic fracturing activities designed to safely manage production commenced in the third quarter of 2018 and have, to date, accomplished expected results. PTFI's revised mine plans for the DMLZ underground mine, which continue to be reviewed, currently project block cave mining activities in the DMLZ underground mine to commence in mid-2019. PTFI expects the DMLZ underground mine to reach full production rates of 80,000 metric tons per day in 2022. Estimates of timing of future production continue to be reviewed and may be modified as additional information becomes available.

Drilling efforts continue to determine the extent of the ore body. Aggregate mine development capital costs for the DMLZ underground mine are expected to approximate US$3.1 billion (incurred between 2009 and 2021), with PTFI's share totaling approximately US$1.9 billion. Aggregate project costs totaling US$2.3 billion have been incurred through June 30, 2018, including US$159 million during the first six months of 2018, US$156 million during the first six months of 2017, US$290 million for the year 2017, US$334 million for the year 2016 and US$350 million for the year 2015.

Summary Discussion of PTFI's Financial Condition and Results of Operations

Results of operations

PTFI sells copper concentrate, which contains significant quantities of gold and silver. Substantially all of PT-FI's copper concentrate is sold under long-term contracts.

Six months ended June 30, 2017 and 2018

Net revenues increased to US$3.2 billion for the six months ended June 30, 2018, compared with US$1.6 billion for the six months ended June 30, 2017, primarily because of lower copper and gold sales volumes in the 2017 period reflecting the impact of regulatory restrictions on PTFI concentrate exports and lower gold ore grades. See "— Operating Results."

Cost of sales increased to US$1.4 billion for the six months ended June 30, 2018, compared with US$1.0 billion for the six months ended June 30, 2017, primarily because of lower copper and gold sales volumes reflecting the impact of regulatory restrictions on PTFI concentrate exports during the 2017 period.

Years ended December 31, 2015, 2016 and 2017

For the years ended December 31, 2015, 2016 and 2017, net revenues totaled US$2.7 billion, US$3.3 billion and US$4.4 billion, respectively. Higher net revenues in 2017, compared with 2016, primarily resulted from higher realized copper prices and higher gold sales volumes reflecting higher ore grades, partially offset by lower copper sales volumes primarily reflecting the impact of regulatory restrictions on PTFI concentrate exports at the beginning of 2017, see "Indonesian Regulatory Framework." Higher net revenues for 2016, compared with 2015, primarily resulted from higher copper sales volumes reflecting higher copper ore grades, partially offset by lower gold sales volumes reflecting lower gold ore grades. See "— Operating Results."

Costs of sales totaled US$2.3 billion in both 2017 and 2016, and US$2.2 billion in 2015. Depreciation and amortization included in cost of sales increased to US$629 million in 2017 from US$465 million in 2016 and US$337 million in 2015, primarily resulting from higher amortization of asset retirement costs ("ARCs") for the Grasberg open pit because of revisions that increased ARCs as open pit operations are nearing completion. Partly offsetting the increase in depreciation and amortization costs in 2017, compared with 2016, were lower employee costs in 2017 following restructuring activities in the first half of the year.

Operating results

PTFI proportionately consolidates its joint venture with PTRTI. For the years ended December 31, 2015, 2016 and 2017, PTFI was allocated nearly all of copper, gold and silver production and sales. The following table sets forth certain production and sales information of PTFI for the periods indicated.

Operating data (net of PTRTI's joint venture interest)

	For the years ended December 31,			For the six months ended June 30,	
	2015	2016	2017	2017	2018
Copper (millions of recoverable pounds)					
Production	752	1,063	984	354	658
Sales	744	1,054	981	372	635
Average realized price per pound (US$)	2.33	2.32	3.00	2.64	3.07
Gold (thousands of recoverable ozs)					
Production	1,232	1,061	1,554	580	1,335
Sales	1,224	1,054	1,540	604	1,274
Average realized price per pound (US$)	1,129	1,237	1,268	1,242	1,291
Ore milled (metric tons per day)[1]					
Grasberg open pit	115,900	119,700	101,800	71,200	136,800
DOZ underground mine	43,700	38,000	31,200	26,800	34,300
DMLZ underground mine	2,900	4,400	3,200	3,500	2,700
Grasberg Block Cave underground mine	—	2,700	3,600	3,200	3,900
Big Gossan underground mine	—	900	600	800	3,100
Total	**162,500**	**165,700**	**140,400**	**105,500**	**180,800**
Average ore grade					
Copper (%)	0.67	0.91	1.01	1.08	1.09
Gold (grams per metric ton)	0.79	0.68	1.15	1.17	1.71
Recovery rates					
Copper (%)	90.4	91.0	91.6	92.0	92.4
Gold (%)	83.4	82.2	85.0	85.1	85.5
Production (recoverable)					
Copper (millions of pounds)	752	1,063	996	393	693
Gold (thousands of ozs)	1,232	1,061	1,554	588	1,489

Note:

(1) Amounts represent the approximate average daily throughput processed at PTFI's mill facilities from each producing mine and from development activities that result in metal production.

PTFI's sales of 635 million pounds of copper and 1.3 million ozs of gold for the first six months of 2018 were higher than sales of 372 million pounds of copper and 604 thousand ozs of gold for the first six months of 2017, primarily reflecting higher operating rates and ore grades. Lower operating rates for the first six months of 2017 reflected the regulatory restrictions on PTFI's concentrate exports from mid-January 2017 to mid-April 2017 and the impact of labor disruptions.

PTFI's sales volumes totaled 981 million pounds of copper and 1.5 million ozs of gold in the year 2017, compared with 1.1 billion pounds of copper and 1.1 million ozs of gold in the year 2016. Lower copper sales in the year 2017 primarily reflected the impact of the issuance of new regulations by the Indonesian government in early 2017, which resulted in a temporary suspension of PTFI's concentrate exports from mid-January 2017 to mid-April 2017, partly offset by higher copper ore grades. Higher gold sales volumes in 2017 primarily reflected higher gold ore grades.

PTFI's sales volumes totaled 1.1 billion pounds of copper and 1.1 million ozs of gold in the year 2016, compared with 744 million pounds of copper and 1.2 million ozs of gold in the year 2015. Higher copper sales volumes in the year 2016 primarily reflected higher copper ore grades. Lower gold sales volumes in the year 2016 primarily reflected lower gold ore grades.

Gross profit per pound of copper and per ounce of gold

The following tables set forth certain information relating to PTFI's gross profit per pound of copper and per ounce of gold for the periods indicated.

	For the six months ended June 30,					
	2017			2018		
	By-Product Method	Co-Product Method		By-Product Method	Co-Product Method	
		Copper	Gold		Copper	Gold
Revenues, excluding adjustments (US$)	2.64	2.64	1,242	3.07	3.07	1,291
Site production and delivery, before net noncash and other costs shown below	1.89	1.05	497	1.34	0.72	304
Gold and silver credits	(2.10)	—	—	(2.67)	—	—
Treatment charges	0.27	0.15	71	0.25	0.14	57
Export duties	0.11	0.06	29	0.16	0.09	36
Royalty on metals	0.17	0.10	47	0.22	0.11	50
Unit net cash costs (credits)	0.34	1.36	644	(0.70)	1.06	447
Depreciation and amortization	0.63	0.35	167	0.55	0.30	125
Noncash and other costs, net[1]	0.32[4]	0.18	82	0.02	0.01	4
Total unit costs (credits)	1.29	1.89	893	(0.13)	1.37	576
Revenue adjustments, primarily for pricing on prior period open sales[2]	0.11	0.11	15	(0.05)	(0.05)	13
PT Smelting intercompany profit/(loss)	—	—	1	(0.04)	(0.01)	(7)
Gross profit per pound/ounce (US$)[3]	**1.46**	**0.86**	**365**	**3.11**	**1.64**	**721**
Copper sales (millions of recoverable pounds)	372	372	—	635	635	—
Gold sales (thousands of recoverable pounds)	—	—	604	—	—	1,274

Notes:

(1) Non-cash and other costs, which are removed from site production and delivery costs in the calculation of unit net cash costs, consist of items such as stock-based compensation costs, restructuring and/or unusual charges. Gold and silver revenues are reflected as credits against site production and delivery costs in the by-product method. The table above includes presentations under both the by-product and co-product methods. Co-product amounts for silver are excluded because they are not material.

(2) Revenue adjustments for prior period open sales are shown as a separate line item because these adjustments do not result from current period sales.

(3) Gross profit per pound of copper employs both a "by-product" method and a "co-product" method. PTFI uses the by-product method in its presentation of gross profit per pound of copper because (i) the majority of PTFI's revenues are copper revenues, (ii) PTFI mines ore, which contains copper, gold and silver, (iii) it is not possible to specifically assign all of costs to revenues from the copper, gold and silver that PTFI produces and (iv) it is the method used by PTFI's management to monitor its mining operations and to compare mining operations in certain industry publications. In the co-product method presentations, shared costs are allocated to the different products based on their relative revenue values, which will vary to the extent metals sales volumes and realized prices change.

(4) Includes fixed costs charged directly to production and delivery costs totaling $0.28 per pound of copper for the first six months of 2017 associated with workforce reductions.

	For the years ended December 31,								
	2015			2016			2017		
	By-Product Method	Co-Product Method		By-Product Method	Co-Product Method		By-Product Method	Co-Product Method	
		Copper	Gold		Copper	Gold		Copper	Gold
Revenues, excluding adjustments (US$)	2.33	2.33	1,129	2.32	2.32	1,237	3.00	3.00	1,268
Site production and delivery, before net noncash and other costs shown below	2.39	1.32	638	1.63	1.05	559	1.58	0.94	398
Gold and silver credits	(1.91)	—	—	(1.30)	—	—	(2.05)	—	—
Treatment charges	0.31	0.17	83	0.28	0.18	97	0.27	0.16	67
Export duties	0.15	0.08	39	0.09	0.06	31	0.12	0.07	30
Royalty on metals	0.15	0.09	41	0.13	0.07	47	0.17	0.10	47
Unit net cash costs	1.09	1.66	801	0.83	1.36	734	0.09	1.27	542
Depreciation and amortization	0.39	0.22	105	0.36	0.24	125	0.57	0.34	142
Noncash and other costs, net[1]	0.05	0.03	14	0.05	0.03	17	0.17[4]	0.10	42
Total unit costs	1.53	1.91	920	1.24	1.63	876	0.83	1.71	726
Revenue adjustments, primarily for pricing on prior period open sales[2]	(0.07)	(0.06)	7	—	—	16	0.04	0.04	6
PT Smelting intercompany profit/ (loss)	0.01	0.01	4	(0.02)	(0.02)	(8)	(0.02)	(0.01)	(7)
Gross profit per pound/ounce (US$)[3]	**0.74**	**0.37**	**220**	**1.06**	**0.67**	**369**	**2.19**	**1.32**	**541**
Copper sales (millions of recoverable pounds)	744	744	—	1,054	1,054	—	981	981	—
Gold sales (thousands of recoverable pounds)	—	—	1,224	—	—	1,054	—	—	1,540

Notes:

(1) Non-cash and other costs, which are removed from site production and delivery costs in the calculation of unit net cash costs, consist of items such as stock-based compensation costs, restructuring and/or unusual charges. Gold and silver revenues are reflected as credits against site production and delivery costs in the by-product method. The table above includes presentations under both the by-product and co-product methods. Co-product amounts for silver are excluded because they are not material.

(2) Revenue adjustments for prior period open sales are shown as a separate line item because these adjustments do not result from current period sales.

(3) Gross profit per pound of copper employs both a "by-product" method and a "co-product" method. PTFI uses the by-product method in its presentation of gross profit per pound of copper because (i) the majority of PTFI's revenues are copper revenues, (ii) PTFI mines ore, which contains copper, gold and silver, (iii) it is not possible to specifically assign all of costs to revenues from the copper, gold and silver that PTFI produces and (iv) it is the method used by PTFI's management to monitor its mining operations and to compare mining operations in certain industry publications. In the co-product method presentations, shared costs are allocated to the different products based on their relative revenue values, which will vary to the extent metals sales volumes and realized prices change.

(4) Includes US$0.12 per pound of copper of costs charged directly to cost of sales as a result of workforce reductions.

Cash costs. A significant portion of PTFI's costs are fixed, and unit costs vary depending on production volumes and other factors. As a result of higher copper sales volumes and gold and silver credits, PTFI had unit net cash credits (including gold and silver credits) of US$0.70 per pound of copper for the six months ended June 30, 2018, compared with unit net cash costs of US$0.34 per pound of copper for the six months ended June 30, 2017.

Higher gold and silver credits resulted in lower unit net cash costs (including gold and silver credits) of US$0.09 per pound of copper in 2017, compared with US$0.83 per pound in 2016. PTFI's unit net cash costs (net of gold and silver credits) of US$0.83 per pound of copper in 2016 were lower than unit net cash costs of

US$1.09 per pound in 2015, primarily reflecting higher copper sales volumes, partly offset by lower gold and silver credits.

Treatment charges. Treatment charges vary with the volume of metals sold and the price of copper, and royalties vary with the volume of metals sold and the prices of copper and gold.

Export duties. PTFI's export duties totaled US$101 million for the six months ended June 30, 2018 and US$41 million for the six months ended June 30, 2017. PTFI's export duties totaled US$115 million in 2017, US$95 million in 2016 and US$109 million in the year 2015.

Royalty on metals. PTFI's royalties totaled US$138 million for the six months ended June 30, 2018 and US$63 million for the six months ended June 30, 2017. PTFI's royalties totaled US$173 million in 2017, US$131 million in 2016 and US$114 million in the year 2015.

Depreciation and amortization. As certain assets are depreciated on a straight-line basis, PTFI's unit depreciation rate varies with the level of copper production and sales. Higher unit depreciation and amortization in the year 2017, compared with the year 2016, primarily related to higher amortization of ARCs associated with revised estimates at the end of 2016 for an overburden stockpile.

Revenue adjustments. Revenue adjustments primarily result from changes in prices on provisionally priced copper sales recognized in prior periods.

PT Smelting intercompany profit/(loss). PT Smelting intercompany profit/(loss) represents the change in the deferral of 25 percent of PTFI's profit on sales to PT Smelting.

Capital resources and liquidity

Subject to future commodity prices for copper and gold, PTFI expects estimated consolidated operating cash flows for 2018, plus available cash and its availability under the revolving credit facility with FCX, to be sufficient to fund its budgeted capital expenditures, dividends and other cash requirements for the year.

Operating Cash Flow

PTFI's operating cash flows vary with prices realized from copper and gold sales, sales volumes, production costs, income taxes, other working capital changes and other factors.

Six Months Ended June 30, 2018 and 2017

Higher operating cash flows of US$2.0 billion for six months ended June 30, 2018, compared with US$0.9 billion for the six months ended June 30, 2017, primarily reflected higher copper and gold sales volumes and prices, partly offset by an increase in cash paid for income taxes.

Years Ended December 31, 2017, 2016 and 2015

Operating cash flows totaled US$2.4 billion in 2017, US$1.2 billion in 2016 and US$0.8 billion in 2015. Higher operating cash flows in 2017, compared with 2016, primarily reflected higher realized copper prices and higher gold sales volumes. Higher operating cash flows in 2016, compared with 2015, primarily reflected higher copper sales volumes.

Investing Cash Flow

PTFI's investing cash flows primarily reflect capital expenditures associated with underground development projects, including the Grasberg Block Cave mine and the DMLZ mine.

Six Months Ended June 30, 2018 and 2017

PTFI's investing cash outflow totaled US$421 million for the six months ended June 30, 2018 and US$401 million for the six months ended June 30, 2017, primarily reflecting investment in the underground development projects.

Years Ended December 31, 2015, 2016 and 2017

PTFI's investing cash outflow totaled US$769 million in 2017, US$944 million in 2016 and US$869 million in 2015, primarily reflecting investment in the underground development projects.

Financing Cash Flow

PTFI's principal financing cash flow activities include borrowings and repayments of loans from FCX and dividend payments. Loans from FCX are primarily to manage working capital needs and capital expenditures when operating cash flows are insufficient. The declaration of dividends is at the discretion of PTFI's Board of Directors (the Board) and is dependent upon PTFI's financial results, cash requirements, future prospects and other factors deemed relevant by the Board.

Six Months Ended June 30, 2017 and 2018

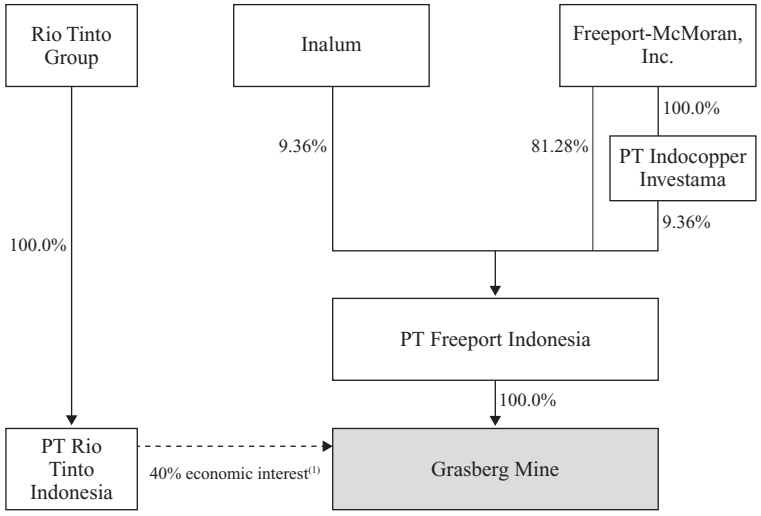
PTFI had no borrowings or repayments of loans from FCX in the six months ended June 30, 2018 and US$88 million of net repayments of loans from FCX in the six months ended June 30, 2017. PTFI paid dividends totaling US$1.6 billion in the six months ended June 30, 2018 and no dividends were paid in the six months ended June 30, 2017.

Years Ended December 31, 2015, 2016 and 2017

PTFI had net repayments of loans from FCX totaling US$88 million in 2017 and US$222 million in 2016. Net loans from FCX totaled US$97 million in 2015. PTFI paid dividends totaling US$1.4 billion in 2017. No dividends were paid in 2016 and 2015.

Planned transaction structure for the PTFI Share Acquisition

The following diagram sets forth certain information relating to the current shareholding structure of PTFI and of the economic interests in PTFI held by PTRTI.



Note:

(1) Pursuant to a participation agreement between PTFI and PTRTI, PTRTI has a 40% interest in certain assets and future production exceeding specified annual amounts of copper, gold and silver through December 31, 2022 in Block A of PTFI's CoW, and, after December 31, 2022, a 40% interest in all production from Block A.

Transaction agreements relating to the PTFI Share Acquisition

PTFI Divestment Agreement

On September 27, 2018, we entered into an agreement relating to our acquisition of an increased equity stake in PTFI (the "PTFI Divestment Agreement") with PTFI, FCX, International Support LLC ("International Support") and PT Indocopper Investama ("PTII"), pursuant to which:

(i) our Company will purchase, and FCX and International Support will sell to us, all of their shares in PTII for a consideration of US$350.0 million, which is required to be paid in cash at the completion of the PTFI Share Acquisition (the "PTII Share Acquisition") (See Step 1 in the diagram below).

(ii) our Company, PTFI and PTII will enter into an agreement (the "PTFI Share Subscription Agreement"), through which our Company and PTII will subscribe for, and PTFI will issue to our Company and PTII, shares in PTFI, respectively, representing 20.6% and 19.4% of the outstanding ordinary shares of PTFI immediately following the completion of the PTFI Share Acquisition (See Step 2 in the diagram below);

(iii) our Company, Rio Tinto International Holdings Limited ("Rio Tinto International"), Rio Tinto Nominees Limited ("Rio Tinto Nominees") and Rio Tinto Indonesian Holdings Limited ("Rio Tinto Indonesian Holding," together with Rio Tinto Nominees, the "PTRTI sellers") will enter into an agreement (the "PTRTI Buyout Agreement"), relating to our or PTFI acquiring all of the outstanding shares of PTRTI, see "— PTRTI Buyout Agreement (See Step 3 in the diagram below)"; and

(iv) PTFI and PTRTI will enter into a merger deed, which will effect the merger of PTRTI into PTFI (the "PTFI and PTRTI Merger") (See Step 3 in the diagram below).

The PTFI Divestment Agreement contains representations, warranties, covenants and indemnifications of the parties to the agreement that are customary for transactions of this nature. The conditions precedent contained in the PTFI Divestment Agreement include, among others, the following: (i) the extension and stability of PTFI's long-term mining rights (in the form of a new IUPK or otherwise) through 2041 in a form acceptable to us and FCX, (ii) the resolution of environmental regulatory matters satisfactory to the Indonesian government, including the Ministry of Environment and Forestry issuing a decree approving the environmental compliance road map proposed by PTFI in relation to prospective mining operations at the Grasberg Mine, see "Risks Factors — Risks Relating to PT Freeport Indonesia — PTFI's mining operations may create difficult and costly environmental challenges, and future changes in environmental laws, could require PTFI to incur increased costs and/or result in its temporary IUPK not being extended," (iii) the completion of various other Indonesian regulatory actions and receipt of various other Indonesian regulatory approvals, including the Indonesian Tax Office approving the merger of PTFI and PTRTI, and determining the transfer of relevant assets relating to the same to be, on a tax-neutral basis, and the Indonesian State Auditor and the Indonesian Attorney General, respectively, issuing its review report and legal opinion, in respect of the transactions contemplated under the PTFI Divestment Agreement; (iv) receipt of customary approvals from international competition authorities; and (v) we and FCX having agreed on the six members of the boards of commissioners and directors of PTFI, each of which will take office from the closing of the transactions under the PTFI Divestment Agreement. See "Risk Factors — Risks Common to All Our Businesses — We may not successfully complete our planned acquisition of a majority beneficial stake in PTFI."

The Divestment Agreement also provides us and FCX with the right to terminate, in certain circumstances, including if the transaction is not consummated on or before December 31, 2018, subject to a six month extension if needed to obtain approvals from Indonesian regulatory authorities and/or international competition authorities; or if the consummation of the divestment transaction would violate any non-appealable final order, decree or judgment of any governmental authority having competent jurisdiction.

PTFI Share Subscription Agreement

On September 27, 2018, we entered into the PTFI Share Subscription Agreement with PTFI and PTII, pursuant to which, our Company and PTII will subscribe for, and PTFI will issue to our Company and PTII,

shares in PTFI, representing 20.6% and 19.4% of the outstanding ordinary shares of PTFI immediately following the completion of the PTFI Share Acquisition. Under the agreement, we and PTII are each required to pay US$1,802.5 million and US$1,697.5 million, respectively, for such shares in PTFI.

Closing of the transactions contemplated under the PTFI Share Subscription Agreement are subject to the satisfaction or waiver of the conditions precedent under the PTFI Divestment Agreement. See "— PTFI Divestment Agreement." The PTFI Share Subscription Agreement will automatically terminate upon the termination of the PTFI Divestment Agreement.

PTRTI Buyout Agreement

On September 28, 2018, we entered into the PTRTI Buyout Agreement with Rio Tinto International Holdings Limited ("Rio Tinto International"), Rio Tinto Nominees Limited ("Rio Tinto Nominees") and Rio Tinto Indonesian Holdings Limited ("Rio Tinto Indonesian Holding," together with Rio Tinto Nominees, the "PTRTI sellers"), pursuant to which we have agreed to purchase and the PTRTI sellers have agreed to sell to us all the outstanding shares of PTRTI (the "PTRTI Shares") for a consideration of US$3.5 billion, required to be paid in cash at the completion of such sale and purchase of shares. Under this agreement, we are permitted to, and we have nominated PTFI as the purchaser of the PTRTI Shares.

The obligations of the parties with respect to closing under the PTRTI Buyout Agreement is subject to the satisfaction or waiver of the following conditions precedent: (i) receipt by PTRTI of written approval from the MEMR for the transfer of the PTRTI Shares from the PTRTI sellers to PTFI as purchaser, as nominated by us, to PTFI; (ii) receipt by the PTRTI sellers of a valid tax ruling or clearance issued by the Indonesian Tax Authority in a form and substance satisfactory to the PTRTI sellers; (iii) termination of intercompany agreements between PTRTI and other members of the Rio Tinto Group; (vi) satisfaction or waiver of the conditions precedent under the PTFI Divestment Agreement and PTFI Share Subscription Agreement, see "— PTFI Divestment Agreement" and "— PTFI Share Subscription Agreement"; and (vii) issuance of a document which sets out the environmental management and monitoring procedure as part of the environmental audit process imposed on licensed businesses and/or activities and resolution of environmental matters which could result in environmental liabilities to our or, if nominated by us as purchaser of the PTRTI Shares, PTFI's satisfaction.

Under the terms of the PTRTI Buyout Agreement, no party is entitled to rescind or terminate the PTRTI Buyout Agreement, except in the event that the conditions precedent are not satisfied or waived on or before December 31, 2018, or within six months from December 31, 2018, if such period for the fulfilment of the conditions precedent has been extended by any party to the agreement by way of notice. In addition, following the closing of the transactions under the PTRTI Buyout Agreement, the PTRTI sellers have agreed to indemnify us with respect to any amount of tax payable by PTRTI, to the extent that such tax arises from or relates to an event or omission at or before completion of the sale and purchase of the PTRTI Shares, or any income, profit or gain earned before the closing of the transactions contemplated under the PTRTI Buyout Agreement.

Agreement between the Government of Indonesia, Provincial Government of Papua, the Regency of Mimika and Inalum

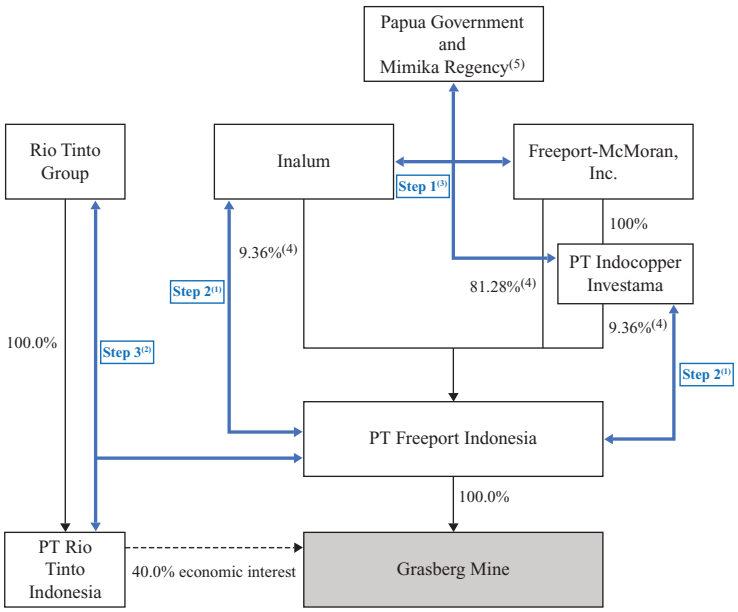
On January 12, 2018, our Company, the Government of Indonesia ("GOI"), the Provincial Government of Papua (the "Papua Government") and the Regency of Mimika (the "Mimika Regency") entered into an agreement relating to the planned PTFI Share Acquisition and the equity interests in PTFI that each entity is intended to hold following the completion of the PTFI Acquisition (the "GOI, Papua Government, Mimika Regency and Inalum Agreement"). The GOI, the Papua Government and the Mimika Regency are stakeholders in the Grasberg Mine, with the GOI being the holder of the mining concession for the Grasberg Mine, and the Grasberg Mine being situated in the province of Papua and in the province's Mimika Regency.

Pursuant to the GOI, Papua Government, Mimika Regency and Inalum Agreement, the GOI has agreed to procure, and the Papua Government and the Mimika Regency have agreed to subscribe for shares in an entity nominated by the GOI that would result in, the Papua Government and the Mimika Regency, together, indirectly holding 10.0% of the shares of PTFI, respectively, following the completion of the PTFI Share Acquisition (See Step 1 in the diagram below). Under the GOI, Papua Government, Mimika Regency and Inalum Agreement, the

Papua Government and the Mimika Regency will indirectly hold their shares in PTFI by subscribing for shares in the entity nominated by the GOI through a regional state owned enterprise to be jointly owned by them. The subscription price for the aforementioned shares to be paid by the Papua Government and the Mimika Regency, respectively, will be equivalent to the value of their respective indirect stakes in PTFI, calculated on the same basis the GOI, through Inalum, would have paid for its shares in PTFI in the PTFI Share Acquisition.

Under the GOI, Papua Government, Mimika Regency and Inalum Agreement, Inalum would loan to the Papua Government and the Mimika Regency the funds required to subscribe for the shares in such nominated entity (currently contemplated to be PTII), and such loan will be secured by the same shares. The Papua Government and the Mimika Regency have also agreed (i) not to transfer or sell these shares to any party, other than to Inalum, and (ii) to transfer an agreed portion of the dividends paid on such shares to us, until the loan that is contemplated to be provided by Inalum to the Papua Government and the Mimika Regency has been fully repaid.

The following diagram sets forth certain information relating to the series of transactions (as described in the aforementioned transaction agreements, see "— Transaction agreements relating to the PTFI Share Acquisition") designed to result in our increased equity stake in PTFI.



Notes:

(1) **Step 1**: Pursuant to the PTFI Divestment Agreement, we will purchase all of the outstanding ordinary shares of PTII from FCX and its subsidiary, International Support, for a consideration of US$350.0 million. At or around the same time, pursuant to the GOI, Papua Government, Mimika Regency and Inalum Agreement, it is intended that the Papua Government and the Mimika Regency would, through an entity jointly owned by them, subscribe for shares in PTII, which would result in such entity holding 40.0% of the outstanding shares of PTII.

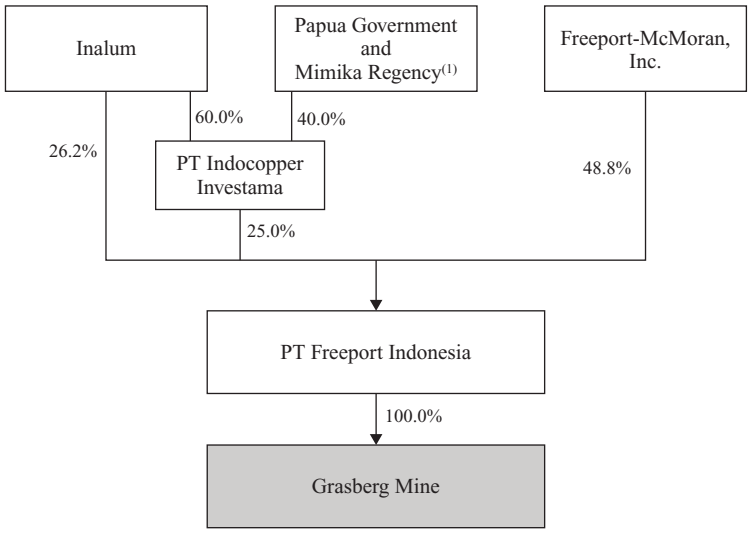
(2) **Step 2**: Pursuant to the PTFI Divestment Agreement and the PTFI Share Subscription Agreement, we and PTII will, respectively, subscribe for 20.6% and 19.4% of shares in PTFI (such shareholding percentages representing the outstanding ordinary shares of PTFI immediately following the completion of the PTFI Share Acquisition), for a consideration of US$1,802.5 million and US$1,697.5 million, respectively.

(3) **Step 3**: Pursuant to the PTRTI Buyout Agreement, we have nominated PTFI to purchase all of the outstanding shares of PTRTI, PTFI's joint venture partner for the Grasberg Mine, who has a 40.0% economic interest in the Grasberg Mine. Following the completion of the aforementioned share purchase, it is intended that PTRTI would be merged into PTFI through a deed of merger.

(4) Represents shareholdings prior to the our Company's and PTII's subscription for, and PTFI's issuance of, new shares in PTFI, in accordance with the PTFI Divestment Agreement and PTFI Subscription Agreement, both of which are discussed in greater detail below.

(5) It is contemplated that the Papua Government and the Mimika Regency will subscribe for and hold shares in PTII through a regional state owned enterprise to be jointly owned by them.

The following diagram sets forth certain information relating to the planned shareholding structure of PTFI, following the completion of the PTFI Share Acquisition.



Note:

(1) It is contemplated that the Papua Government and the Mimika Regency will hold shares in PTII through a regional state owned enterprise to be jointly owned by them.

Economic interests in the Grasberg Mine

Pursuant to a shareholders agreement to be entered into between us, PTII, PTFI and FCX (or a subsidiary of FCX), upon completion of the PTFI Share Acquisition, it is contemplated that, between the completion of the PTFI Share Acquisition and the earlier of (i) December 31, 2022 or (ii) PTFI's cumulative production and sales of gold and copper exceeding predetermined amounts (the "Initial Period"), we and FCX will retain the economics of revenue and cost sharing arrangements in relation to PTFI in the same manner as though PTFI's joint venture with PTRTI was still in place. Following the Initial Period, it is intended that the economics of revenue and cost sharing arrangements in relation to PTFI will reflect our and FCX's respective equity interest in PTFI.

SUMMARY CONSOLIDATED FINANCIAL DATA OF PT FREEPORT INDONESIA

You should read the following summary consolidated financial information in conjunction with PTFI's consolidated financial statements and related notes included elsewhere in this Offering Memorandum. PTFI's consolidated financial statements have been prepared and presented in accordance with IFAS, which differs in certain respects from U.S. GAAP.

Consolidated Statements of Profit or Loss and Other Comprehensive Income Data

	For the year ended December 31,			For the six months ended June 30,	
	2015	2016	2017	2017	2018
		(Audited)		(Unaudited)	
			(US$ in million)		
Net revenue	2,652.8	3,294.3	4,445.0	1,598.7	3,213.1
Cost of sales	2,200.9	2,338.1	2,349.7	1,041.5	1,350.4
Gross profit	**451.9**	**956.2**	**2,095.3**	**557.2**	**1,862.7**
Expenses:					
General and administrative expenses	99.9	87.4	123.6	59.8	66.3
Selling and marketing expenses	2.1	1.9	2.1	0.9	1.1
Other expense/(income), net	30.8	(21.4)	0.2	(4.7)	12.0
Operating profit	**319.1**	**888.3**	**1,969.4**	**501.2**	**1,783.3**
Interest income	4.9	3.4	5.7	2.4	29.3
Equity in associated company's net earnings/ (losses)	(4.9)	8.3	9.7	2.8	0.7
Profit before income tax expense	**319.1**	**900.0**	**1,984.8**	**506.4**	**1,813.3**
Income tax expense					
Current	(15.0)	(70.7)	(574.5)	(134.8)	(618.9)
Deferred	(106.3)	(250.2)	(127.4)	(39.3)	(24.0)
Net profit	**197.8**	**579.1**	**1,282.9**	**332.3**	**1,170.4**
Other comprehensive income/(loss):					
Other comprehensive income/(loss) not to be reclassified to profit or loss in subsequent periods					
Remeasurement gains/(losses) on pension plans	(2.4)	24.8	12.0	15.0	0.1
Tax recognized	0.6	(8.8)	(4.2)	(5.2)	—
Foreign exchange impact	7.2	(1.8)	0.4	(0.5)	2.6
Net other comprehensive income not to be reclassified to profit or loss in subsequent periods	**5.4**	**14.2**	**8.2**	**9.3**	**2.7**
Total comprehensive income attributable to stockholders	**203.2**	**593.3**	**1,291.1**	**341.6**	**1,173.1**

Condensed Consolidated Statements of Financial Position

	As of December 31,			As of June 30,
	2015	2016	2017	2018
		(Audited)		(Unaudited)
		(US$ in million)		
Total current assets	1,535.2	1,615.3	1,873.8	1,766.2
Total non-current assets	8,059.3	8,920.6	8,787.9	8,726.6
Total assets	**9,594.5**	**10,535.9**	**10,661.7**	**10,492.8**
Total current liabilities	723.8	821.8	1,150.3	1,425.1
Total non-current liabilities	3,011.1	3,258.3	3,205.7	3,165.0
Total liabilities	**3,734.9**	**4,080.1**	**4,356.0**	**4,590.2**
Net equity	**5,859.6**	**6,455.8**	**6,305.7**	**5,902.6**
Total liabilities and equity	**9,594.5**	**10,535.9**	**10,661.7**	**10,492.8**

Condensed Consolidated Statements of Cash Flows

	For the year ended December 31,			For the six months ended June 30,	
	2015	2016	2017	2017	2018
		(Audited)		(Unaudited)	
			(US$ in million)		
Net cash provided by operating activities	753.1	1,186.0	2,421.6	854.3	1,984.7
Net cash used in investing activities	(868.8)	(943.8)	(768.9)	(400.9)	(420.9)
Net cash (used in)/provided by financing activities	77.8	(243.5)	(1,555.1)	(100.8)	(1,580.4)
Net increase (decrease) in cash and cash equivalents	**(38.0)**	**(1.3)**	**97.6**	**352.6**	**(16.6)**
Cash and cash equivalents at the beginning of the period	46.2	8.2	6.9	6.9	104.5
Cash and cash equivalents at the end of the period	**8.2**	**6.9**	**104.5**	**359.5**	**87.9**

UNAUDITED PRO FORMA COMBINED FINANCIAL INFORMATION

In November 2017, the Government transferred its 9.36% equity interests in PT Freeport Indonesia ("PTFI") to our Company. We plan to acquire a direct and indirect majority beneficial stake in PTFI. To effect the planned acquisition, we have entered into a series of agreements including the PTFI Divestment Agreement, the PTFI Share Subscription Agreement, the PTRTI Buyout Agreement and the Agreement between the Government of Indonesia, Provincial Government of Papua, the Regency of Mimika and Inalum, see "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia — Transaction agreements relating to the PTFI Share Acquisition." Following the completion of the planned PTFI Share Acquisition, we expect to own, directly and indirectly, a 51.2% beneficial equity interest in PTFI.

The unaudited pro forma consolidated financial information below for the year ended December 31, 2017 and for the six months ended June 30, 2018 has been adjusted to give effect to the planned acquisition of a majority beneficial stake in PTFI. See "Planned Acquisition of PT Freeport Indonesia — Planned transaction structure for PTFI Share Acquisition."

Our historical consolidated financial statements are reported in Rupiah while PTFI's historical consolidated financial statements are reported in U.S. dollars. In preparing the pro forma financial information, we have translated the U.S. dollars to Rupiah amounts using the exchange rate of Rp 14,404 = US$1.00. For additional information regarding convenience translations, see "Presentation of financial and other information — Exchange rate information."

The unaudited pro forma consolidated financial information is presented for illustrative purposes only and is not necessarily indicative of the results of operations that would have been achieved had the planned acquisition of a majority beneficial stake in PTFI been consummated on the dates indicated, nor is it necessarily indicative of the future operating results of our Group. See "Risk Factors — Risks Relating to PT Freeport Indonesia — We may not successfully complete our planned acquisition of a majority beneficial stake in PTFI." The unaudited pro forma consolidated financial information are qualified in its entirety by reference to and should be read in conjunction with (i) the notes and bases of preparation accompanying the unaudited pro forma consolidated financial information, (ii) our historical consolidated financial statements and the related notes thereto and (iii) PTFI's historical consolidated financial statements and the related notes thereto, included elsewhere in this Offering Memorandum. Our historical consolidated financial statements and PTFI's historical consolidated financial statements are prepared in accordance with Indonesian Financial Accounting Standards ("IFAS"), which differ in certain respects from U.S. GAAP. See "Summary of Certain Differences between Indonesian Financial Accounting Standards and U.S. GAAP."

Our unaudited pro forma consolidated financial information herein has been prepared in accordance with IFAS. Our unaudited pro forma consolidated financial information has not been prepared or presented in compliance with the published guidelines of Article 11 of Regulation S-X promulgated by the U.S. Securities and Exchange Commission for the preparation and presentation of pro forma financial information. As a result, investors should not rely on the report on the unaudited pro forma financial information included in this Offering Memorandum.

The unaudited pro forma consolidated financial information below for the year ended December 31, 2017 and for the six months ended June 30, 2018 has been adjusted to give effect to the acquisition of a majority beneficial stake in PTFI as if it occurred on January 1, 2017 for the purpose of the consolidated statements of profit or loss and other comprehensive income and on June 30, 2018 for the purpose of the consolidated statement of financial position. The unaudited pro forma consolidated financial information reflects adjustments for the planned PTFI Share Acquisition that are based upon the good faith assumptions made by our management at the date of this Offering Memorandum. The unaudited pro forma consolidated financial information does not include adjustments for all contingencies or all consequences relating to the PTFI Share Acquisition. For example, it does not account for the impact of environmental contingent liabilities or provisions, as detailed quantifications of such liabilities and provisions are currently not available, or for costs, expenses or indemnifications relating to the PTFI Share Acquisition.

Consolidated Statements of Profit or Loss and Other Comprehensive Income for the Six Months Ended June 30, 2018

	Historical for the six months ended June 30, 2018				
	Inalum and subsidiaries	PT Indocopper Investama	Transaction related adjustments	Pro forma for the six months ended June 30, 2018	
	Rp.	Rp.	Rp.	Rp.	US$
			(Rp. in billion and US$ in million)		
Revenue	29,855.6	2,124.6	(2,124.6)	29,855.6	2,072.7
Cost of revenue	(21,901.6)	—	—	(21,901.6)	(1,520.5)
Gross profit	**7,954.0**	**2,124.6**	**(2,124.6)**	**7,954.0**	**552.2**
General and administrative expenses	(1,608.9)	(0.0)	—	(1,608.9)	(111.7)
Selling and marketing expenses	(709.5)	—	—	(709.5)	(49.2)
Operating profit	**5,635.6**	**2,124.6**	**(2,124.6)**	**5,635.6**	**391.3**
Financial income	343.3	6.5	—	349.8	24.3
Finance costs	(965.9)	—	(1,584.4)	(2,550.3)	(177.1)
Share in net (loss)/profit of associates	(64.3)	—	3,156.0	3,091.7	214.6
Share in net loss of joint ventures	(49.1)	—	—	(49.1)	(3.4)
Other (expenses)/income, net	2,348.0	(26.1)	(2,028.3)	293.6	20.4
Profit before income tax	**7,247.6**	**2,105.0**	**(2,581.3)**	**6,771.3**	**470.1**
Income tax (expenses)/benefit	(1,820.3)	(531.2)	645.3	(1,706.2)	(118.5)
Profit for the period from continuing operations	**5,427.3**	**1,573.8**	**(1,936.0)**	**5,065.1**	**351.6**
Loss for the period from discontinued operations	(4.4)	—	—	(4.4)	(0.3)
Profit for the period	**5,422.9**	**1,573.8**	**(1,936.0)**	**5,060.7**	**351.3**
Other comprehensive income					
Items that will not be reclassified to profit or loss	537.0	—	—	537.0	37.3
Items that will be reclassified to profit or loss	1,581.5	—	7.3	1,588.8	110.3
Other comprehensive income for the period, net of tax	**2,118.5**	**—**	**7.3**	**2,125.8**	**147.6**
Total comprehensive income for the period	**7,541.4**	**1,573.8**	**(1,928.7)**	**7,186.5**	**498.9**

Consolidated Statements of Profit or Loss and Other Comprehensive Income for the Year Ended December 31, 2017

	Historical for the year ended December 31, 2017				
	Inalum and subsidiaries	PT Indocopper Investama	Transaction related adjustments	Pro forma for the year ended December 31, 2017	
	Rp.	Rp.	Rp.	Rp.	US$
			(Rp. in billion and US$ in million)		
Revenue	47,184.3	1,945.1	(1,945.1)	47,184.3	3,275.8
Cost of revenue	(33,276.5)	—	—	(33,276.5)	(2,310.2)
Gross profit	**13,907.8**	**1,945.1**	**(1,945.1)**	**13,907.8**	**965.6**
General and administrative expenses	(3,339.0)	(0.2)	—	(3,339.2)	(231.8)
Selling and marketing expenses	(1,322.5)	—	—	(1,322.5)	(91.9)
Operating profit	**9,246.3**	**1,944.9**	**(1,945.1)**	**9,246.1**	**641.9**
Financial income	629.9	0.6	—	630.5	43.8
Finance costs	(974.2)	—	(3,168.9)	(4,143.1)	(287.6)
Share in net (loss)/profit of associates	(196.8)	—	3,459.1	3,262.3	226.5
Share in net (loss) of joint ventures	(158.0)	—	—	(158.0)	(11.0)
Other income/(expenses), net	738.8	(0.0)	(427.5)	311.3	21.6
Profit before income tax	**9,286.0**	**1,945.5**	**(2,082.4)**	**9,149.1**	**635.2**
Income tax (expenses)/benefit	(2,474.3)	(486.0)	520.6	(2,439.7)	(169.4)
Profit for the period from continuing operations	**6,811.7**	**1,459.5**	**(1,561.8)**	**6,709.4**	**465.8**
Loss for the period from discontinued operations	(6.5)	—	—	(6.5)	(0.5)
Profit for the period	**6,805.2**	**1,459.5**	**(1,561.8)**	**6,702.9**	**465.3**
Other comprehensive income					
Items that will not be reclassified to profit or loss	(757.8)	—	—	(757.8)	(52.6)
Items that will be reclassified to profit or loss	219.3	—	22.1	241.4	16.8
Other comprehensive income for the period, net of tax	**(538.5)**	**—**	**22.1**	**(516.4)**	**(35.8)**
Total comprehensive income for the period	**6,266.7**	**1,459.5**	**(1,539.7)**	**6,186.5**	**429.5**

Consolidated Statements of Financial Position Data as of June 30, 2018

	Historical as of June 30, 2018				
	Inalum and subsidiaries	PT Indocopper Investama	Transaction related adjustments	Pro forma as of June 30, 2018	
	Rp.	Rp.	Rp.	Rp.	US$
	(Rp. in billion and US$ in million)				
Total current assets	43,116.7	520.1	2,160.6	45,797.4	3,179.5
Total non-current assets	56,853.3	6,183.3	48,963.7	112,000.3	7,775.6
Total assets	**99,970.0**	**6,703.4**	**51,124.3**	**157,797.7**	**10,955.1**
Total current liabilities	17,256.5	211.7	—	17,468.2	1,212.7
Total non-current liabilities	12,337.3	—	57,616.0	69,953.3	4,856.5
Total liabilities	**29,593.8**	**211.7**	**57,616.0**	**87,421.5**	**6,069.2**
Total equity attributable to owner of the parent	**57,570.5**	**6,491.7**	**(6,491.7)**	**57,570.5**	**3,996.8**
Total equity	**70,376.2**	**6,491.7**	**(6,491.7)**	**70,376.2**	**4,885.9**
Total liabilities and equity	**99,970.0**	**6,703.4**	**51,124.3**	**157,797.7**	**10,955.1**

DESCRIPTION OF MATERIAL INDEBTEDNESS

We have raised debt financing and have entered into working capital loans, term loans, syndicated loans, revolving loans and letters of credit. The following summary of the principal terms of our material indebtedness may not contain all of the information that may be important to you. You should read the notes to our financial statements for additional information about our indebtedness and the indebtedness of our subsidiaries.

Overview

As of June 30, 2018, we had consolidated indebtedness totaling Rp.15,266.8 billion (US$1,059.9 million). The following table sets forth our material indebtedness as of June 30, 2018. In addition to the description below, see also notes 24, 25 and 27 to our Interim Consolidated Financial Statements contained in this Offering Memorandum.

No	Description of indebtedness	Borrower	Lender	Total facility amount	Maturity	Amount outstanding as of June 30, 2018
1.	Credit Facility	Antam	PT Lembaga Pembiayaan Ekspor Indonesia ("LPEI") and PT Bank ICBC Indonesia ("ICBC")	US$160.0 million	June 6, 2024	US$143.0 million
2.	Sharia Line Facility	Antam	PT Bank Maybank Indonesia Tbk ("Maybank Indonesia")	US$100.0 million	November 2025	US$90.0 million
3.	Syndicated Non-revolving Loan Facility	Antam	BCA and ICBC	US$65.0 million	March 2021	US$63.4 million
4.	Credit Facility	Antam	PT Bank Sumitomo Mitsui Indonesia ("BSMI")	US$34.2 million	June 17, 2021	US$14.6 million
5.	Term Loan Facility	Antam	BRI	US$200.0 million	July 15, 2019	US$50.0 million
6.	Term Loan Facility	Antam	Mandiri	US$200.0 million	May 30, 2019	US$150.0 million
7.	Rupiah Series A Bonds	Antam	Various bondholders	Rp.900.0 billion	December 14, 2018	Rp.900.0 billion
8.	Rupiah Series B Bonds	Antam	Various bondholders	Rp.2,100.0 billion	December 14, 2021	Rp.2,100.0 billion
9.	Bill Purchasing Line	Bukit Asam	Mandiri	US$ 50.0 million	May 27, 2019	—(3)
10.	Non-cash Loan Facility	Bukit Asam	Mandiri	US$100.0 million	May 27, 2019	—(3)
11.	Foreign Exchange and Derivative Line	Bukit Asam	BNI	US$750,000	January 19, 2019	—(3)
12.	Non-Cash Loan Facility	Bukit Asam	BNI	US$75.0 million	January 19, 2019	US$10.1 million
13.	Foreign Exchange Credit Line	Bukit Asam	BRI	US$35.0 million	December 8, 2018	—(3)
14.	Non-Cash Credit Line	Bukit Asam	BRI	Rp.500.0 billion	December 8, 2018	Rp.271.3 billion
15.	Import Guarantee	Bukit Asam	BRI	Rp.300.0 billion	December 8, 2018	—(3)
16.	Ijarah Muntahiyya Bit Tamlik and Murabahah Line Facilities	SBS	PT Bank Syariah Mandiri ("BSM")	US$14.0 million	August 20, 2019	US$3.5 million
17.	Musyarakah Line Facility	SBS	BSM	US$2.0 million	August 20, 2019	US$0.7 million
18.	Musyarakah Facility	SBS	PT Bank Muamalat Indonesia Tbk ("Muamalat")	US$7.8 million	June 25, 2019	US$2.3 million

No	Description of indebtedness	Borrower	Lender	Total facility amount	Maturity	Amount outstanding as of June 30, 2018
19.	Packing Credit Facility	SBS	PT Bank UOB Indonesia ("UOB")	Rp.212.6 billion	November 24, 2020	Rp.22.0 billion
20.	Cash Collateral Credit Facility	IPC	BNI	US$1.0 million	November 27, 2018	US$0.9 million
21.	Credit Facility	PT Bukit Asam Prima ("BAP")	BNI	Rp.75.0 billion	January 19, 2019	—(3)
22.	BNI Foreign Exchange and Derivative Line	BAP	BNI	US$300,000	January 19, 2019	—(3)
23.	Export Letter of Credit	BAP	BNI	US$12.0 million	January 19, 2019	—(3)
24.	Letter of Credit and Trust Receipt	Anthrakas Pte. Ltd. ("Anthrakas")	BNI, Singapore Branch	US$15.0 million	August 31, 2018	—(3)
25.	Revolving Facility	Timah	Mandiri	US$25.0 million	June 28, 2019	—(3)
26.	Revolving Facility	Timah	Mandiri	Rp.500.0 billion	June 28, 2019	Rp.19.4 billion
27.	Term Loan Facility	Timah	Mandiri	US$60.0 million	June 28, 2019	US$17.0 million and Rp.400.0 billion
28.	Foreign Exchange Agreement	Timah	Mandiri	US$30.0 million	June 28, 2019	—(3)
29.	Supplier Financing Agreement	Timah	Mandiri	Rp.300.0 billion	June 28, 2019	—(3)
30.	Facility Package	Timah	PT Bank DBS Indonesia ("DBS")	US$40.0 million	March 15, 2019	—(3)
31.	Rupiah Bonds I Phase I	Timah	Various bondholders	Rp.1,200.0 billion	September 28, 2020-September 28, 2022	Rp.1,200.0 billion
32.	Rupiah Sukuk Ijarah Bonds I Phase I	Timah	Various sukukholders	Rp.300.0 billion	September 28, 2020-September 28, 2022	Rp.300.0 billion
33.	Facility Package	Timah	MUFG Bank, Ltd, Jakarta Branch ("MUFG Jakarta")	Rp.1,300.0 billion	September 30, 2019 and August 31, 2019	Rp.1,300.0 billion
34.	Supply Chain Finance Facility	Timah	MUFG Jakarta	Rp.100.0 billion	August 31, 2019	—(3)
35.	Revolving Credit Facility and Term Loan Facility(1)	Timah	BRI	Rp.500.0 billion	November 15, 2018	Rp.250.0 billion
36.	Revolving Facility	Timah	PT Bank CIMB Niaga Tbk ("CIMB Niaga")	Rp.300.0 billion	April 12, 2019	Rp.300.0 billion
37.	Revolving Facility	Indometal (London) Limited ("Indometal")	Bank Mandiri Europe Limited ("Mandiri Europe")	US$10.0 million	—(2)	US$10.0 million
38.	Facility Package	PT Dok Dan Perkapalan Air Kantung ("DAK")	BNI	Rp.60.0 billion	December 20, 2018	Rp.30.0 billion

Notes:

(1) Timah's revolving credit facility and term loan facility from BRI are interchangeable. See "— Material Indebtedness of Timah — Timah's BRI Facility I and II."

(2) Financing provided under Indometal's Mandiri Europe Facility has a tenor per invoice of 90 days. See "— Material Indebtedness of Timah — Indometal's Mandiri Europe Facility."

(3) Unutilized as of June 30, 2018.

Material Indebtedness of the Issuer

As of June 30, 2018, the Issuer did not have any material indebtedness.

Material Indebtedness of Antam

Antam's LPEI-ICBC Facility

On May 23, 2014 (as most recently amended on March 11, 2015), Antam obtained a non-revolving credit facility from LPEI and ICBC for a maximum amount of US$160.0 million (the "LPEI-ICBC Facility") for the purpose of financing Antam's export activities. The LPEI-ICBC Facility bears interest at the rate of 5.0% per annum and is unsecured. The LPEI-ICBC Facility will mature on June 6, 2024.

Under the terms of the LPEI-ICBC Facility, the prior consent of LPEI and ICBC is required for Antam to (i) conduct any merger or consolidation, unless required by prevailing laws and regulations or a legally binding court decision; (ii) sell, transfer or dispose its rights over all or part of its assets with a value of 50.0% or more than its equity, unless required by prevailing regulations or provisions, including government policies; (iii) provide security or encumber its assets, including its current income and future income rights (this provision does not apply to security or encumbrances provided for certain purposes including to finance Antam's ordinary business activities); (iv) provide loans or financing to any third parties (this provision does not apply to loans, financings or corporate guarantees that are (a) existing prior to the date of the LPEI-ICBC Facility, (b) extended to employees, employee cooperatives, its employee foundations or welfare programs, or to small business and cooperative operations in accordance with Government programs relating to CSR, partnership programs and environmental development, (c) related to the obligations of its subsidiaries, whether consolidated or not, or (d) ordinary trade payables and given in connection with its daily business activities); (v) change its main business activities from what is provided in its articles of associations; or (vi) expand or narrow its business activities in a way that could result in its failure to repay the LPEI-ICBC Facility. In addition, Antam is required to comply with certain financial covenants, including maintaining (i) a debt to equity ratio not exceeding 2.5, (ii) a minimum debt to beginning cash balance (defined as cash balance at the beginning of the relevant financial reporting period) plus EBITDA ratio of 1.25 and (iii) maintaining tangible net worth not less than Rp.7,000.0 billion.

Antam's Maybank Facility

On June 21, 2013, Antam obtained a sharia line facility in the form of a *Musharaka* contract from Maybank Indonesia for a maximum amount of US$100.0 million (the "Maybank Facility") for the purpose of financing Antam's general capital expenditure including the expansion of its Pomalaa Ferronickel Facilities. See "Business — Our Nickel Business — Our ferronickel production facilities — Pomalaa Ferronickel Facilities." A *Musharaka* contract is a form of financing under Islamic law that is structured as a partnership or joint venture under which the financier, in this case Maybank Indonesia, contributes to the capital of the client, in this case Antam, for a share in the profits (and loss) of the client through its ownership in the partnership or joint venture. The Maybank Facility bears interest at a rate of 5.25% per annum and is unsecured. The Maybank Facility will mature in November 2025.

Under the terms of the Maybank Facility, the prior written consent of Maybank Indonesia is required for Antam to (i) conduct any merger or consolidation, except if required by prevailing laws and regulations or a legally binding court decision; (ii) sell, transfer or dispose rights over all or part of its assets with a value of 50.0% or more than Antam's equity, except if required by prevailing regulations or provisions, including government policies; (iii) provide security or encumber its assets, including current income and future income rights (this provision does not apply to security or encumbrances (a) existing prior to the date of the Maybank Facility, (b) relating to new facilities entered into for refinancing purposes and secured by the same assets as the refinanced loan, and (c) required for Antam's daily business activities); (iv) provide loans or financing to any third parties (this provision does not apply to certain loans or financing, including those (a) existing prior to the date of the Maybank Facility, (b) to employees, employee cooperatives, its employee foundations for welfare programs or small business and cooperative operations in accordance with Government programs relating to CSR, partnership

programs and environmental development, (c) related to the obligations of its subsidiaries, whether consolidated or not, or (d) that are ordinary trade payables and given in connection with its ordinary business activities); (v) change its main business activities to an activity that is not listed in its articles of associations; (vi) expand or narrow its business activities in a way that may result in its failure to repay the Maybank Facility; or (vii) use the Maybank Facility for any purpose other than those specified under the Maybank Facility. Antam is not permitted to use the Maybank Facility for any business activities that are prohibited under sharia principles such as activities involving gambling, alcohol and tobacco. In addition, Antam is required to comply with certain financial covenants, including maintaining: (i) a debt to equity ratio not exceeding 3.0, (ii) a minimum debt to beginning cash balance (defined as cash balance at the beginning of the relevant financial reporting period) plus EBITDA ratio of 1.25, and (iii) a net worth of at least Rp.7,000.0 billion.

Antam's BCA-ICBC Facility

On December 27, 2017, Antam obtained a syndicated non-revolving facility from BCA and ICBC for a maximum amount of US$65.0 million (the "BCA-ICBC Facility") for the purpose of financing Antam's capital expenditure including the expansion of our Pomalaa Ferronickel Facilities. See "Business — Our Nickel Business — Our ferronickel production facilities — Pomalaa Ferronickel Facilities." The BCA-ICBC Facility bears interest at a rate of three month LIBOR plus 1.79% per annum and is unsecured. The BCA-ICBC Facility will mature in March 2021.

Under the terms of the BCA-ICBC Facility, the prior written consent of BCA and ICBC is required for Antam to (i) change the nature of its main business activities; (ii) transfer or provide security over all or part of its assets or income; (iii) provide loans or financing to any third parties (this provision does not apply to loans, financing or corporate guarantees (a) existing prior to the date of the BCA-ICBC Facility, (b) extended to employees, employee cooperatives, its employee foundations for welfare programs or to small business and cooperative operations in accordance with Government programs relating to CSR, partnership programs and environmental development or (c) related to the obligations of its subsidiaries, whether consolidated or not; (iv) make any transactions with any person or party including but not limited to affiliated parties, which are not in the ordinary course of business; (v) sell or dispose its rights over all or part of its assets with a value of 50.0% or more than its equity, unless required by prevailing regulations or provisions, including government policies; (vi) dissolve its business; (vii) file for bankruptcy; or (viii) make any investment or subscription, or engage, in a new business other than a business sector listed in its articles of associations. In addition, Antam is required to comply with certain financial covenants, including (i) maintaining a debt to equity ratio not exceeding 2.5, (ii) a minimum debt to beginning cash balance (defined as cash balance at the beginning of the relevant financial reporting period) plus EBITDA ratio of 1.25, and (iii) maintaining a tangible net worth of not less than Rp.7,000.0 billion.

Antam's BSMI Facility I

On June 21, 2013, Antam obtained a non-revolving credit facility from BSMI for a maximum amount of US$34.2 million (the "BSMI Facility I") for the purpose of financing the procurement of equipment and services for its diesel power plant in Pomalaa. See "Business — Our Nickel Business — Our ferronickel production facilities — Pomalaa Ferronickel Facilities." The BSMI Facility I bears interest at a rate of 4.56% per annum and is unsecured. The BSMI Facility I will mature on June 17, 2021.

Under the terms of the BSMI Facility I, the prior written consent of BSMI is required for Antam to (i) take any steps towards dissolution, liquidation or winding-up of its business or to lease, assign, transfer or otherwise dispose of, whether by a single or a series of transactions, all or any substantial parts of its assets, whether currently owned or acquired in the future; (ii) reorganize, consolidate or merge with any other company that would materially affect the nature of its business as defined in its articles of association; (iii) create, incur, assume or allow to exist any security right over or otherwise encumber its immovable assets or sell, lease or otherwise dispose of its assets by one or more transactions or a series of independent or interrelated transactions other than on an arm's length basis for full consideration in the ordinary course of business (this provision does not apply to security provided for certain purposes such as to refinance existing facilities or to refinance Antam's

operational business activities); (iv) issue any corporate guarantee for any third-party or for any subsidiary or affiliate where the amount of the corporate guarantee would exceed the value of Antam's share interest in that subsidiary or affiliate and the period of the corporate guarantee is longer than the loan term, unless such corporate guarantee is already existing at the date of the BSMI Facility I; or (v) materially affect the nature of its business as defined in its articles of associations. In addition, Antam is required to comply with certain financial covenants, including maintaining (i) a minimum debt to beginning cash balance (defined as cash balance at the beginning of the relevant financial reporting period) plus EBITDA ratio of 1.25 and (iii) a net worth of not less than Rp.7,000.0 billion.

Antam's BRI Facility

On July 15, 2013 (as amended on August 15, 2018), Antam obtained a term loan from BRI for a maximum amount of US$200.0 million (the "BRI Facility") for the purpose of financing Antam's working capital. The BRI Facility bears interest at a rate of 2.3% per annum and is unsecured. The BRI Facility will mature on July 15, 2019. Under the terms of the BRI Facility, the prior written consent of BRI is required for Antam to (i) file for bankruptcy or (ii) assign or transfer Antam's rights and obligations under the BRI Facility.

Antam's Mandiri Facility

On November 25, 2015 (as most recently amended on August 6, 2018), Antam obtained a term loan from Mandiri for a maximum amount of US$200.0 million (the "Mandiri Facility") for the purpose of financing Antam's working capital. The Mandiri Facility bears interest at a rate of 1.35% per annum and is unsecured. The Mandiri Facility will mature on May 30, 2019.

Under the terms of the Mandiri Facility, the prior written consent of Mandiri is required for Antam to (i) obtain a new loan from Mandiri or a third-party that may result in a breach of Antam's financial covenants under the Mandiri Facility; (ii) provide loans or financing to any third parties (this provision does not apply to certain loans or financing, including those (a) existing prior to the date of the Mandiri Facility, (b) to employees, employee cooperatives, its employee foundations for welfare programs or small business and cooperative operations in accordance with Government programs relating to CSR, partnership programs and environmental development, (c) related to the obligations of its non-consolidated subsidiaries, or (d) that are ordinary trade payables and given in connection with its ordinary business activities); (iii) file for bankruptcy to the commercial court; (iv) conduct any merger or consolidation, unless such merger or consolidation does not exceed the value of material transactions under Bapepam-LK Rule No. IX.E.2 regarding Material Transactions and Changes in Core Business ("Bapepam Rule IX.E.2") or is required by prevailing laws and regulations or a legally binding court decision; (v) reduce or conduct capital reduction of Antam's paid up capital, unless it is conducted according to applicable regulations or provisions, including government policies; (vi) provide security or encumber its assets, including current income and future income rights (this provision does not apply to security or encumbrances (a) existing prior to the date of the Mandiri Facility, (b) relating to new facilities entered into for refinancing purposes and secured by the same assets as the refinanced loan, (c) provided prior to the merger or consolidation as mentioned in (iv), (d) required for Antam's daily business activities); (vii) provide security or encumber its new assets and/or rights on Antam's income in the future; (viii) provide security or encumber its shares for project financing; and/or (ix) provide security or encumbrances for acquisition financing. In addition, Antam is required to comply with certain financial covenants including maintaining (i) a debt to equity ratio not exceeding 2.5, (ii) a minimum debt to beginning cash balance (defined as cash balance at the beginning of the relevant financial reporting period) plus EBITDA ratio of 1.25, and (iii) maintaining tangible net worth of at least Rp.7,000.0 billion.

Antam's Bonds

On December 28, 2011, Antam issued Rupiah-denominated shelf-registered bonds with fixed interest for an aggregate amount of Rp3.0 trillion (the "Antam Bonds"). The Antam Bonds comprises (i) Series A bonds in an aggregate amount of Rp.900.0 billion with a term of seven years. The Series A bonds bear interest at a fixed rate of 8.375% per annum and will mature on December 14, 2018; and (ii) Series B bonds in an aggregate amount of

Rp.2.10 trillion with a term of 10 years. The Series A bonds bear interest at a fixed rate of 9.05% per annum and will mature on December 14, 2021.

The Antam Bonds are listed on the Indonesian Stock Exchange with PT Bank Permata Tbk as the trustee. The net proceeds of the Antam Bonds were used to finance Antam's business units, renovation and modernization of its ferronickel plant in Pomalaa, as well as the opening of its nickel mines in North Maluku, Southeast Sulawesi, and a bauxite mine in West Kalimantan.

Under the terms of the Antam Bonds, the prior written consent of trustee is required for Antam to (i) conduct any merger or consolidation which would result in the dissolution of Antam, unless such merger or consolidation is required by prevailing laws and regulations or a legally binding court decision; (ii) acquire any other party that does not comply with Antam's articles of association, unless such merger or consolidation is required by prevailing laws and regulations or a legally binding court decision; (iii) reducing its authorized, issued and paid-up capital; (iv) provide security or encumber its assets, including current income and future income rights, except (a) security or encumbrance existing prior to the date of the Antam Bonds, (b) relating to new facilities entered into for refinancing purposes and secured by the same assets as the refinanced loan, (c) provided prior to the merger or consolidation as mentioned in (i) and (ii), (d) required for Antam's daily business activities, (e) security or encumbrance and/or the right of Antam's future income in respect of export credit facility agency; (f) security or shares encumbrance owned by Antam, in respect of project finance, either for current or future, (g) security or encumbrance for acquisition financing; (v) provide loan or corporate guarantee to any third parties, except (a) existing loan or corporate guarantee prior to the Antam Bonds; (b) loan to employees, employee cooperatives and/or Antam's employee foundations for welfare programs; (c) loan or corporate guarantee related to the obligations of subsidiaries, whether it is consolidated companies and non-consolidated companies; and/or (d) advances, loans or guarantees which are ordinary trade payables and given in connection with Antam's daily business activities; (vi) changing Antam's main business activities which is not listed in its articles of associations; (vii) issue any bonds, syndicated loan and other debt securities, where Antam provide security over its assets; (viii) submit application for bankruptcy or suspension of payment obligation (*penundaan kewajiban pembayaran utang*); and (ix) transfer Antam's assets with a value of 50% or more than Antam's equity.

In addition, Antam is required to comply with certain financial covenants including maintaining (i) a maximum total interest-bearing debts (excluding trade payables but including sharia funding) to total equity ratio of 3.0, (ii) a minimum total EBITDA plus cash on hand and cash in banks to total matured debt and interest ratio of 1.25 and (iii) equity of more than Rp.7,000.0 billion.

Material Indebtedness of Bukit Asam

Bukit Asam's Mandiri Bill Purchasing Line

On December 28, 2017 (as recently amended on May 14, 2018), Bukit Asam obtained a revolving bill purchasing line facility from Mandiri for a maximum amount of US$50.0 million (the " Mandiri Bill Purchasing Line Facility") for the purpose of accelerating income from coal sales receivables. The Mandiri Bill Purchasing Line Facility bears a transaction interest of 1.3% per annum (for LC sight) and for LC usance in accordance with fees applicable at Mandiri. This facility is valid until May 27, 2019.

Bukit Asam's Mandiri Non-Cash Loan Facility

On January 28, 2013 (as most recently amended on July 27, 2017), Bukit Asam obtained a non-cash loan facility agreement with Mandiri for a maximum amount of US$100.0 million (the "Mandiri Non-Cash Loan Facility") for the purpose of guaranteeing ongoing projects of Bukit Asam and purchases of machinery or spare parts. The Mandiri Non-Cash Loan Facility comprises (i) an import letter of credit for a maximum amount of US$100.0 million, (ii) an domestic letter of credit for a maximum amount of Rp.500.0 billion, (iii) trust receipt as a sub-limit from import letter of credit and domestic letter of credit for a maximum amount of US$15.0 million or its equivalent in other currencies, and (iv) bank guarantee for a maximum amount of Rp.420.0 billion. In July 2018, the Mandiri Non-Cash Loan Facility was extended to May 2019.

Under the terms of the Mandiri Non-Cash Loan Facility, Bukit Asam is required to comply with certain financial covenants including maintaining (i) a maximum Net Debt/EBITDA ratio of 2.5, (ii) a minimum EBITDA to interest ratio of 2.5 and (iii) minimum debt service coverage ratio of 100%.

Bukit Asam's BNI Foreign Exchange and Derivative Line

On April 11, 2016 (as most recently amended on June 29, 2018), Bukit Asam obtained a foreign exchange and derivative line from BNI for a maximum amount of US$750,000 (the "BNI Foreign Exchange and Derivative Line") for the purpose of foreign exchange and derivative transactions. The BNI Foreign Exchange and Derivative Line will mature on January 19, 2019. Under the terms of the BNI Foreign Exchange and Derivative Line, Bukit Asam is required to comply with certain financial covenants including maintaining (i) a minimum current ratio of 1.0, (ii) a maximum debt to equity ratio of 2.0 and (iii) minimum debt service coverage of 100%.

Bukit Asam's BNI Non-Cash Loan Facility

On March 24, 2014 (as most recently amended on June 29, 2018), Bukit Asam obtained a non-cash loan facility agreement with BNI for a maximum amount of US$75.0 million ("BNI Non-Cash Loan Facility") for the purpose of guaranteeing ongoing projects of Bukit Asam and to guarantee its purchase of machinery or spare parts. The BNI Non-Cash Loan Facility comprises (i) a domestic letter of credit and (ii) a standby letter of credit. The BNI Non-Cash Loan Facility will mature on January 19, 2019. Under the terms of the BNI Non-Cash Loan Facility, Bukit Asam is required to comply with certain financial covenants including maintaining (i) a minimum current ratio of 1.0, (ii) a maximum debt to equity ratio of 2.0 and (iii) minimum debt service coverage of 100%.

Bukit Asam's BRI Foreign Exchange Credit Line

On December 8, 2016 (as most recently amended on June 4, 2018), Bukit Asam obtained a foreign exchange credit line from BRI for a maximum amount of US$35.0 million ("BRI Foreign Exchange Credit Line") for the purpose of TOD, TOM, spot, forward and swap transactions. The BRI Foreign Exchange Credit Line will mature on December 8, 2018. Under the terms of the BRI Foreign Exchange Credit Line, BRI's prior written consent is required for Bukit Asam to assign or transfer the BRI Foreign Exchange Credit Line or to incur indebtedness that may result in Bukit Asam's debt to equity ratio to exceed 300.0%.

Bukit Asam's BRI Non-Cash Credit Line

On December 8, 2016 (as most recently amended on June 4, 2018), Bukit Asam obtained a non-cash credit line from BRI for a maximum amount of Rp.500.0 billion ("BRI Non-Cash Credit Line") for the purpose of issuing bank guarantees to Bukit Asam's suppliers. The BRI Non-Cash Credit Line comprises (i) a bank guarantee and (ii) a standby letter of credit. The BRI Non-Cash Credit Line will mature on December 8, 2018. Under the terms of the BRI Non-Cash Credit Line, BRI's prior written consent is required for Bukit Asam to assign or transfer the BRI Non-Cash Credit Line or to incur indebtedness that may result in Bukit Asam's debt to equity ratio to exceed 300.0%.

Bukit Asam's BRI Import Guarantee

On December 8, 2016 (as most recently amended on June 4, 2018), Bukit Asam obtained an import guarantee from BRI for a maximum amount of Rp.300.0 billion (the "BRI Import Guarantee") for the purpose of providing guarantees for the purchase of operational goods. The BRI Import Guarantee comprises (i) a domestic letter of credit and (ii) a letter of credit at sight. The BRI Import Guarantee will mature on December 8, 2018. Under the terms of the BRI Import Guarantee, BRI's prior written consent is required for Bukit Asam to assign or transfer the BRI Import Guarantee or to incur indebtedness that may result in Bukit Asam's debt to equity ratio exceeds 300.0%.

SBS' BSM Ijarah Muntahiyya Bit Tamlik and Murabahah Line Facilities

On June 11, 2010 (as most recently amended on October 30, 2017), Bukit Asam's subsidiary, SBS, obtained Ijarah Muntahiyya Bit Tamlik and Murabahah line facilities from BSM for a maximum amount of

US$14.0 million (the "IMBT and Murabahah Line Facilities") for the purpose of purchase and rent of heavy equipment for the purpose of financing SBS' operations. Under the terms of IMBT and Murabahah Line Facilities, BSM is entitled to receive certain amount of margin which will be determined between SBS and BSM at the time of each drawdown. The IMBT and Murabahah Line Facilities will mature on August 20, 2019. The IMBT and Murabahah Line Facilities are secured by SBS' receivables from PT Nusantara Termal Coal, heavy machineries, inventories, and a personal guarantee and deposit from Mr. Tjahyono Imawan.

Under the terms of the IMBT and Murabahah Line Facilities, the prior written consent from BSM is required for SBS to, among other things, (i) change its shareholding composition; (ii) sell, transfer and secure the assets which have been secured to BSM; (iii) incur new indebtedness; (iv) merge, acquire and liquidate SBS; or (v) file a request for bankruptcy.

SBS' BSM Musyarakah Line Facility

On June 11, 2010 (as most recently amended on October 30, 2017) SBS obtained a musyarakah line facility from BSM for a maximum amount of US$2.0 million (the "BSM Musyarakah Facility") for the purpose of financing SBS' working capital. Under the terms of Musyarakah Facility, BSM is entitled to receive 0.03% of SBS' revenue during the period of the BSM Musyarakah Facility. The BSM Musyarakah Facility will mature on August 20, 2019. The BSM Musyarakah Facility is secured by SBS' receivables from PT Nusantara Termal Coal, heavy machineries, inventories, and personal guarantee and deposit from Mr. Tjahyono Imawan.

Under the terms of the BSM Musyarakah Facility, the prior written consent from BSM is required for SBS to, *among other things*, (i) change its shareholding composition; (ii) sell, transfer and secure the assets which have been secured to BSM; (iii) incur new indebtedness; (iv) merge, acquire and liquidate SBS; or (v) file a request for bankruptcy.

SBS' Muamalat Musyarakah Facility

On December 2, 2009 (as most recently amended on February 13, 2015) SBS obtained a musyarakah line facility from Muamalat for a maximum amount of US$7.8 million (the "Muamalat Musyarakah Facility") for the purpose of financing SBS' working capital. Under the terms of the Muamalat Musyarakah Facility, Muamalat is entitled to receive a part of SBS' revenue during the period of the Muamalat Musyarakah Facility, based on SBS' cash flow projection. The Muamalat Musyarakah Facility will mature on June 25, 2019. The Muamalat Musyarakah Facility is secured by SBS' receivables from PT Putra Muba Coal and PT Pesona Khatulistiwa Nusantara, heavy machineries, personal guarantee and deposit from Mr. Tjahyono Imawan.

Under the terms of the Muamalat Musyarakah Facility, the prior written consent from Muamalat is required for SBS to, among other things, (i) change its shareholding composition or (ii) move the mining equipment from the mining sites.

SBS' UOB Packing Credit Facility

On May 24, 2018, SBS obtained a packing credit facility from UOB (the "Packing Credit Facility") for a maximum amount of Rp.212.601 billion for the purpose of monetizing contracts between SBS and Bukit Asam. The Packing Credit Facility bears an interest rate equal to UOB's cost of fund plus 3.0% per annum. The final maturity date of the Packing Credit Facility is 30 months from the date of the agreement or until the final payment date of the contracts funded by UOB, whichever is earlier. The Packing Credit Facility is secured by fiduciary security over receivables from SBS' mining services contract with Bukit Asam and certain machineries, a pledge of sales proceeds account and a pledge of debt service reserve account maintained by SBS, and an assignment of rights over SBS' mining services contract with Bukit Asam.

Under the terms of the Packing Credit Facility, the prior written consent from UOB is required for SBS to, among other things, (i) conduct a merger, liquidation, acquisition, consolidation or spin-off, or file for bankruptcy or suspension of debt payment; (ii) sell, assign, lease or secure its secured assets in favor of any third parties; (iii) provide lending to any parties, except as conducted in its ordinary course of business; (iv) establish

new subsidiary or acquiring shares in other company; (v) change the articles of association, management, and composition of board of directors, board of commissioners, and shareholders; and (vi) act as a guarantor for other party. In addition, SBS is required to comply with certain financial covenants, including maintaining (i) a maximum debt to equity ratio of 2.5, and (ii) a minimum debt service coverage ratio of 1.25.

IPC's BNI Cash Collateral Credit Facility

On November 28, 2017 (as most recently amended on August 24, 2018), Bukit Asam's subsidiary, IPC, obtained a cash collateral facility from BNI for a maximum amount of US$1.0 million (the "BNI Cash Collateral Credit Facility") for the purpose of working capital for coal trading. The BNI Cash Collateral Credit Facility bears interest at a rate equal to BNI's dollar deposit rate plus a margin of 2.5% per annum and is secured by a pledge and blocking of IPC's deposit in BNI. The BNI Cash Collateral Credit Facility will mature on November 27, 2018.

BAP's BNI Credit Facility

On January 19, 2018, Bukit Asam's subsidiary, BAP, obtained a working capital credit facility from BNI for a maximum amount of Rp.75.0 billion (the "BNI Facility") for the purpose of financing BAP's coal trading business. The BNI Facility bears a floating interest rate of 11.0% per annum and will mature on January 19, 2019.

Under the BNI Facility, prior written consent of BNI is required for BAP to make an additional investment with a value exceeding Rp.10.0 billion. In addition, BAP is required to comply with certain financial covenants, including maintaining (i) a minimum current ratio of 1.0, (ii) a maximum debt to equity ratio of 2.0 and (iii) a minimum debt service coverage ratio of 1.0.

The BNI Facility was unutilized as of June 30, 2018

BAP's BNI Foreign Exchange and Derivative Line

On January 19, 2018, BAP, obtained a foreign exchange and derivative line from BNI for a maximum amount of US$300,000 (the "BNI Foreign Exchange and Derivative Line") for the purpose of derivative and foreign exchange transactions. The BNI Foreign Exchange and Derivative Line is valid until January 19, 2019.

Under the BNI Foreign Exchange and Derivative Line, prior written consent of BNI is required for BAP to make an additional investment with a value exceeding Rp.10.0 billion. In addition, BAP is required to comply with certain financial covenants, including maintaining (i) a minimum current ratio of 1.0, (ii) a maximum debt to equity ratio of 2.0 and (iii) a minimum debt service coverage ratio of 1.0.

The BNI Foreign Exchange and Derivative Line was unutilized as of June 30, 2018.

BAP's BNI Export Letter of Credit

On January 19, 2018, BAP, obtained an export letter of credit negotiation facility from BNI for a maximum amount of US$12.0 million (the "BNI Export LC") for the purpose of negotiation letters of credit from BAP's export coal sales. The BNI Export LC is valid until January 19, 2019.

Under the BNI Export LC, prior written consent of BNI is required for BAP to make an additional investment with value exceeding Rp.10.0 billion. In addition, BAP is required to comply with certain financial covenants, including maintaining (i) a minimum current ratio of 1.0, (ii) a maximum debt to equity ratio of 2.0 and (iii) a minimum debt service coverage ratio of 1.0.

The BNI Export LC was unutilized as of June 30, 2018.

Anthrakas' BNI Facilities

On March 16, 2018, Bukit Asam's subsidiary, Anthrakas, obtained two banking facilities from BNI, Singapore Branch, for a maximum aggregate amount of US$15.0 million (the "BNI Facilities"). The BNI

Facilities comprised (i) a letter of credit facility with a maximum amount of US$15.0 million and (ii) a trust receipt facility with a maximum amount of US$5.0 million for the purpose of financing Anthrakas' coal trading business.

The BNI Facilities expired on August 31, 2018.

Material Indebtedness of Timah

Timah's Mandiri Revolving Facility Package

On June 27, 2008, Timah entered into two facility agreements with Mandiri, both of which were most recently amended on June 26, 2018 (the "Mandiri Facility Package") for the purpose of financing its working capital requirements including its smelting operations. The Mandiri Facility Package comprise (i) a revolving credit facility for a maximum amount of US$25.0 million, which bears interest at the rate of 3.0% per annum to be paid monthly and (ii) a revolving credit facility for a maximum amount of Rp.500.0 billion, which bears interest at the rate of 8.25% per annum to be paid monthly. The final maturity date of the Mandiri Facility Package is June 28, 2019.

Under the terms of the Mandiri Facility Package, the prior written consent of Mandiri is required for Timah to (i) obtain a credit facility from any third-party unless negotiated on an arm's length basis; (ii) bind itself as a guarantor or secure its assets for any third-party, unless it is able to maintain its financial ratio in which Mandiri must be notified within one month of the transaction; (iii) file for bankruptcy or request a postponement for repayment of its debt; or (iv) assign or transfer the whole or any part of its rights or obligations under the Mandiri Facility Package. In addition, Timah is required to comply with certain financial covenants, including maintaining (i) a minimum current ratio of 1, (ii) a maximum debt to equity ratio of 2.5, (iii) a maximum EBITDA to interest ratio of 3.0, (iv) a minimum debt service coverage ratio of 1.0 and (v) a minimum fixed asset and inventory to total debt and other financial instruments ratio of 1.0.

The US$25.0 million revolving credit facility under the Mandiri Facility Package was unutilized as of June 30, 2018.

Timah's Mandiri Term Loan Facility

On December 8, 2014 (as most recently amended on June 26, 2018), Timah obtained a term loan facility agreement from Mandiri for a maximum amount of US$60.0 million (the "Mandiri Term Loan Facility") for the purpose of financing its working capital requirements including its smelting operations. The Mandiri Term Loan Facility is subject to an interest rate to be determined upon each drawdown and will mature June 28, 2019.

Under the terms of the Mandiri Term Loan Facility, the prior written consent of Mandiri is required for Timah to (i) obtain a credit facility from any third-party unless negotiated on an arm's length basis; (ii) bind itself as a guarantor or secure its assets for any third-party, unless it is able to maintain its financial ratio in which Mandiri must be notified within one month of the transaction; (iii) file for bankruptcy or request a postponement for repayment of its debt; or (iv) assign or transfer the whole or any part of its rights or obligations under the Mandiri Term Loan Facility. In addition, Timah is required to comply with certain financial covenants, including maintaining (i) a minimum current ratio of 1, (ii) a maximum debt to equity ratio of 2.5, (iii) a maximum EBITDA to interest ratio of 3.0, (iv) a minimum debt service coverage ratio of 1.0 and (v) a minimum fixed asset and inventory to total debt and other financial instruments ratio of 1.0.

Timah's Mandiri Foreign Exchange Agreement

On June 28, 2010 (as most recently amended on June 26, 2018), Timah entered into a foreign exchange agreement with Mandiri for a maximum amount of US$30.0 million (the "Mandiri Foreign Exchange Agreement") for the purpose of financing Timah's acquisition of raw materials and export sales. Pursuant to the Mandiri Foreign Exchange Agreement, we can sell U.S. dollars to Mandiri on a spot, forward or swap basis, in exchange for Rupiah. The final maturity date of the Mandiri Foreign Exchange Agreement is June 28, 2019.

The Mandiri Foreign Exchange Agreement was unutilized as of June 30, 2018.

Timah's Mandiri Supplier Financing Agreement

On February 6, 2017 (as most recently amended on June 28, 2018), Timah entered into a supplier financing agreement with Mandiri for a maximum amount of Rp.300.0 billion (the "Mandiri Supplier Financing Agreement") for the purpose of financing the procurement of goods and/or services from Timah's local business partners. The Mandiri Supplier Financing Agreement bears interest at a rate of 8.0% per annum. The final maturity date of the Mandiri Supplier Financing Agreement is June 28, 2019.

The Mandiri Supplier Financing Agreement was unutilized as of June 30, 2018.

Timah's DBS Facility Package

On March 24, 2017 (as most recently amended on May 15, 2018), Timah obtained a facility package from DBS for a maximum amount of US$40.0 million (the "DBS Facility Package") for the purpose of financing Timah's working capital requirements. The DBS Facility Package comprises (i) an uncommitted revolving credit facility for an available maximum amount of US$10.0 million and bearing an interest rate of DBS' cost of fund plus 1.0% per annum and (ii) an uncommitted account receivables facility for up to a maximum amount of US$30.0 million and bearing interest at the rate of JIBOR plus a margin of 2.0% per annum, if denominated in Rupiah, and of LIBOR plus a margin of 2.0% per annum, if denominated in U.S. dollars. The DBS Facility Package will mature on March 15, 2019 and is unsecured.

Under the terms of the DBS Facility Package, the prior written consent of DBS is required for Timah to (i) change the nature of its business; (ii) transfer major assets or material assets or companies in any form under any name whatsoever and for any purpose whatsoever to any third-party, where the most important assets or assets are for a value of more than 20.0% of the total assets of Timah; (iii) file for bankruptcy or propose a postponement of debt repayment; (iv) bind itself as a guarantor for third parties; (v) pay any loans to existing or future shareholders, directors, commissioners and/or subsidiaries in any form whatsoever; (vi) execute or sign any material agreements which provide benefits to, or any parties related to, the board of directors, board of commissioners or shareholders; (vii) increase, or approve an increase, in its capital expenditure; or (viii) procure or grant permission to procure a fiduciary transfer of rights, acknowledgment of debt, mortgage rights, charging fees (either fixed or floating), pledges, or other guarantees, agreements or arrangements that would have led to the same outcome as any of the foregoing. In addition, Timah is required to comply with certain financial covenants including maintaining (i) a quarterly gross debt to equity ratio not exceeding 3.0, (ii) a minimum quarterly current ratio of 1.0, and (iii) a minimum quarterly interest service coverage ratio of 2.0.

The DBS Facility Package was unutilized as of June 30, 2018.

Timah's Bonds

Rupiah Bonds I Phase I

On September 28, 2017, Timah issued Rp.1,200.0 billion of unsecured notes under its Rp.2,100.0 billion bond program (the "Rupiah Bonds I Phase I"). The Rupiah Bonds I Phase I comprises (i) Rp.480.0 billion notes bearing interest at a fixed rate of 8.5% per annum and maturing on September 28, 2020 and (ii) Rp.720.0 billion notes bearing interest at a fixed rate of 8.75% per annum and maturing on September 28, 2022.

The Rupiah Bonds I Phase I are listed on the Indonesian Stock Exchange with BNI as the trustee. The net proceeds of the Rupiah Bonds I Phase I were used to refinance Timah's capital expenditures and to repay Rp.360.0 billion of the Rp.500.0 billion revolving credit facility under the Mandiri Facility Package. See "— Timah's Mandiri Revolving Facility Package."

Rupiah Sukuk Ijarah Bonds

On September 28, 2017, Timah issued Rp.300.0 billion of unsecured notes under its Rp.700.0 billion Islamic bond program (the "Rupiah Sukuk Ijarah Bonds I Phase I"). The Rupiah Sukuk Ijarah Bonds I Phase I comprises (i) Rp.120.0 billion notes bearing interest in the form of annual ijarah installments amounting to

Rp.10,200.0 million per annum and maturing on September 28, 2020 and (ii) Rp.180.0 billion notes bearing interest in the form of annual ijarah installments amounting to Rp.15,750.0 million per annum and maturing on September 28, 2022.

The Rupiah Sukuk Ijarah Bonds I Phase I are listed on the Indonesian Stock Exchange with BNI as the trustee. The net proceeds of the Rupiah Sukuk Ijarah Bonds I Phase I were used to finance Timah's capital expenditures.

Restrictions under Timah's Bonds

Under the terms of the Rupiah Bonds I Phase I and the Rupiah Sukuk Ijarah Bonds I Phase I (together, "Timah's Bonds"), the prior written consent of BNI is required for Timah to:

- provide a corporate guarantee to other parties if the aggregate amount of the guarantee exceeds 50.0% of the total equity of the Timah, except for corporate guarantees provided prior to the date Timah's Bonds were issued or given in relation to the main or supporting business activities of Timah and/or its subsidiaries;
- change its main business activities, unless pursuant to a decision by the Government as the shareholder of Timah;
- reduce its authorized and paid-up capital, unless pursuant to a decision by the Government as a shareholder of Timah;
- merge with other companies which may result in the dissolution of, or have a negative effect on the business of, Timah. This provision does not apply if (i) the merger is conducted at the request of the Government and/or the holder of the Series A Dwiwarna share, or (ii) all terms and conditions of Timah's Bonds remain in force and are fully binding on the surviving company and, if Timah is not the surviving company, then all obligations under Timah's Bonds have been legally transferred to the surviving company, which has assets and sufficient ability to guarantee repayment of Timah's Bonds;
- sell or transfer assets to other parties in part or in whole exceeding 50.0% of the total assets of Timah based on the latest audited financial statements, in one transaction or a combination of transactions in one year. This provision does not apply to (i) a sale or transfer done as part of the main business activity of Timah or its subsidiaries, in accordance with the articles of association of Timah or its subsidiaries, (ii) a sale or transfer carried out in accordance with the framework of restructuring and/or privatization stipulated or approved by the Government, or (iii) replacement or renewal of assets that are obsolete due to usage;
- conduct transactions with affiliates (not including Government-related companies). This provision does not apply to transactions that are (i) carried out on terms that are favorable (and/or not detrimental) to Timah or at least on the same terms that would be obtained by Timah from third parties who are not affiliates in a common transaction, or (ii) the transaction is carried out by Timah to support its business activities in accordance with its articles of association;
- provide loans to or make investments in the form of equity participation to other parties. This provision does not apply to (i) pre-existing loans or investments, (ii) loans or investments to its subsidiaries, affiliated companies or carried out in connection with activities that are in line with its business or in connection with the construction of its business facilities, or (iii) loans to members of the Timah's Board of Commissioners, Board of Directors, employees, cooperatives and employee foundations; or
- make payment for other obligations in Timah's fiscal year if Timah has failed to pay the interest or ijarah installments and/or the principal amounts due under Timah's Bonds in accordance with the terms of Timah's Bonds. This provision does not apply to payments made in the context of daily operational activities and capital expenditure.

Timah's MUFG Jakarta Facility Package

On August 31, 2012 (as most recently amended on August 31, 2018), Timah obtained a facility package from MUFG Jakarta for an aggregate maximum amount of Rp.1,300.0 billion or the equivalent in U.S. dollars (the "MUFG Jakarta Facility Package") for the purpose of financing Timah's working capital requirements. The MUFG Jakarta Facility Package comprises (i) a term loan facility, which bears interest at the rate of JIBOR plus a margin of 1.0% per annum, if denominated in Rupiah, and of MUFG's cost of fund plus a margin of 1.0% per annum, if denominated in U.S. dollars, and will mature on September 30, 2019, and (ii) an overdraft facility for up to a maximum amount of Rp.300.0 billion, which bears interest at the rate of MUFG's cost of fund plus a margin of 1.5% per annum and will mature on August 31, 2019. The MUFG Jakarta Facility Package is unsecured.

Under the terms of the MUFG Jakarta Facility Package, the prior written consent of MUFG Jakarta is required for Timah to (i) grant any security over any of its assets with a value of more than Rp.300.0 billion, or (ii) obtain a loan or credit from any third-party, unless to carry out activities within the ordinary course of business. In addition, Timah is required to comply with certain financial covenants, including maintaining (i) a minimum current ratio of 1.0, (ii) a maximum debt to equity ratio of 2.5, (iii) a maximum EBITDA to interest ratio of 3.0, (iv) a minimum debt service coverage ratio of 1.0 and (v) a minimum fixed asset and inventory to total debt and other financial instruments ratio of 1.0.

Timah's MUFG Jakarta Supply Chain Finance Facility

On November 7, 2017 (as most recently amended on August 31, 2018), Timah obtained a supply chain financing facility from MUFG Jakarta for a maximum amount of Rp.100.0 billion (the "MUFG Jakarta Supply Chain Facility"). The MUFG Jakarta Supply Chain Facility bears an interest rate equal to the discount of the cost of fund plus 0.75% per annum. The final maturity date of the MUFG Jakarta Supply Chain Facility is August 31, 2019.

Under the terms of the MUFG Jakarta Supply Chain Facility, the prior written consent of MUFG Jakarta is required for Timah to (i) grant any security over any of its assets with a value of more than Rp.300.0 billion, or (ii) obtain a loan or credit from any third-party, unless for the purpose of carrying out activities within the ordinary course of business. In addition, Timah is required to comply with certain financial covenants, including maintaining (i) a minimum current ratio of 1.0, (ii) a maximum debt to equity ratio of 2.5, (iii) a maximum EBITDA to interest ratio of 3.0, (iv) a minimum debt service coverage ratio of 1.0 and (v) a minimum fixed asset and inventory to total debt and other financial instruments ratio of 1.0.

The MUFG Jakarta Supply Chain Finance Facility was unutilized as of June 30, 2018.

Timah's BRI Facility I and II

On November 15, 2011 (as amended most recently on January 28, 2018), Timah obtained a revolving credit facility from BRI for a maximum amount of Rp.500.0 billion (the "BRI Facility I") for the purpose of financing its working capital requirements. The BRI Facility bears an interest rate of 9.25% per annum and is unsecured. The final maturity date of the BRI Facility is November 15, 2018. Under the terms of the BRI Facility, the prior written consent of BRI is required for Timah to file or request for a bankruptcy, or secure or encumber its assets to any third-party. In addition, Timah is required to maintain a maximum debt to equity ratio of 2.5.

On January 29, 2018, Timah obtained a short-term uncommitted loan facility with BRI for a maximum amount of Rp.250.0 billion (the "BRI Facility II"). Under the terms of the BRI Facility II, any amount drawn down under the BRI Facility II will be considered a drawdown from, and will result in a decrease of, the total amount available under the BRI Facility I. The BRI Facility II is subject to an interest rate to be determined by BRI and is unsecured. The BRI Facility II will mature on November 15, 2018. Under the terms of the BRI Facility, the prior written consent of BRI is required for Timah to file or request for a bankruptcy. In addition, Timah is required to maintain a maximum debt to equity ratio of 2.5.

Timah's CIMB Facility

On April 12, 2018, Timah obtained a revolving facility from CIMB Niaga on an uncommitted basis for a maximum amount of Rp.300.0 billion (the "CIMB Facility") for the purpose of financing Timah's working capital requirements. The CIMB Facility bears an interest rate that is determined upon drawdown and is unsecured. The CIMB Facility will mature on April 12, 2019.

Under the terms of the CIMB Facility, the prior written consent of CIMB Niaga is required for Timah to (i) sell, lease, transfer and/or otherwise dispose all or any part of its immovable or movable assets; (ii) encumber all or any part of its asset for another party; (iii) enter into an agreement that requires Timah to make any payment to another party; (iv) grant a loan to another party, unless within the ordinary course of business; (v) change its purpose, objectives and business activities; (vi) change its shareholders composition; or (vii) pay or repay any existing or future invoices or receivables of its shareholders or any related-party. In addition, Timah is required to comply with certain financial covenants, including maintaining (i) a minimum current ratio of 1.0 and (ii) a maximum debt to equity ratio of a 3.0.

Indometal's Mandiri Europe Facility

On December 16, 2016, Timah's subsidiary, Indometal, obtained an uncommitted revolving loan facility from Mandiri Europe for a maximum amount of US$10.0 million (the "Mandiri Europe Facility") for the purpose of financing Indometal's invoice and account receivables from its tin trading activities. The Mandiri Europe Facility bears interest at a rate of 2.2% per annum, adjustable according to Mandiri Europe's cost of fund. The Mandiri Europe Facility has a tenor per invoice of 90 days.

DAK's BNI Facility Package

On December 21, 2012 (as most recently amended on December 21, 2017), Timah's subsidiary, DAK, entered into two facility agreements from BNI (the "BNI Facility Package") for the purpose of financing DAK's working capital requirements in relation to operational services and shipbuilding. The BNI Facility Package comprises (i) Rp.30.0 billion which consists of a pre-existing credit facility for a maximum amount of Rp.10.0 billion and an additional working capital credit facility for a maximum amount of Rp.20.0 billion, and (ii) a credit facility for a maximum amount of Rp.30.0 billion, both bearing interest at a rate of 10.0% per annum. The BNI Facility Package is unsecured and will mature on December 20, 2018.

Under the terms of the BNI Facility, the prior written consent from BNI is required for DAK to, among other things, (i) change its legal form or status or change its articles of association, except for in relation to increasing the company's capital or the transfer of shares between shareholders or to third parties resulting in changes to the ultimate shareholder; (ii) sell or guarantee its assets to any third parties; (iii) incur further indebtedness from a bank or other financial institution; (iv) bind itself as a guarantor or secure its assets to any third parties; (v) propose liquidation or file for bankruptcy; (vi) conduct a merger, liquidation, acquisition, reorganization or investment in other companies; or (vii) change the nature of its business. In addition, DAK is required to comply with certain financial covenants, including maintaining (i) a minimum current ratio of 1.0, (ii) a maximum debt to equity ratio of 2.5, and (iii) a minimum debt service coverage ratio of 1.0.

Other Available Capital Resources

Antam's BCA Facility

On June 13, 2013, Antam obtained (i) an uncommitted term loan facility from BCA for a maximum amount of US$100.0 million (the "BCA Facility") and (ii) an uncommitted foreign exchange line for a maximum amount of US$10.0 million for the purpose of financing Antam's working capital requirements. The BCA Facility bears interest at a rate to be agreed between Antam and BCA at each drawdown. The BCA Facility is unsecured will mature on November 7, 2018.

Under the terms of the BCA Facility, the prior written consent of BCA is required for Antam to (i) provide loans to any party, including but not limited to its affiliated companies, unless for the purpose of carrying out the

ordinary business activities of Antam or its affiliates, (ii) enter into any transaction with any party including, but not limited to its affiliated parties, which are not in the ordinary course of business, (iii) make any investment or subscription, or engage, in a business not listed in its articles of association, or (iv) sell or dispose any of its immovable or main assets, except in the ordinary course of business.

The BCA Facility was unutilized as of June 30, 2018.

Antam's BTMU Facility

On July 25, 2012 (as most recently amended on June 22, 2018), Antam obtained a credit facility from BTMU for a maximum amount of US$100.0 million (the "BTMU Facility") for the purpose of financing Antam's working capital. The BTMU Facility bears an interest rate to be determined upon drawdown and is unsecured. The BTMU Facility is available until November 30, 2018 and has a final maturity date of March 30, 2019.

Under the terms of the BTMU Facility, the prior written consent of BTMU is required for Antam to (i) sell, lease, transfer or otherwise dispose of, except in its ordinary course of business, or grant any security interest over, any of Antam's asset which might result in a material adverse change in Antam's ability to meet its obligation under this agreement; (ii) merge or consolidate with any party whereby the value or cost of the merger or consolidation reaches a value equivalent to 20.0% or more of Antam's equity; (iii) acquire any other party whether or not such acquisition would constitute a material transaction under Bapepam Rule IX.E.2; (iv) obtain a loan from any other party, except in its ordinary course of business; (v) prepay any other indebtedness other than indebtedness under the BTMU Facility; (vi) act as a guarantor or perform any act with similar effect, against any third-party's obligations; (vii) acquire by purchase, lease or other means any assets, except in its ordinary course of business; or (viii) merge or consolidate with any party whereby the value or cost of the merger or consolidation below the threshold of 20% of Antam's equity.

In addition, Antam is required to comply with certain financial covenants including maintaining (i) a maximum total interest bearing debt to total equity ratio of 3.0, (ii) a minimum EBITDA plus beginning cash balance to debt service ratio of 1.25 and (iii) tangible net worth of at least Rp.7,000.0 billion.

The BTMU Facility was unutilized as of June 30, 2018.

Antam's Panin Facility

On November 30, 2010 (as most recently amended on March 30, 2017), Antam obtained a revolving credit facility from PT Bank Pan Indonesia Tbk ("Panin") for a maximum amount of US$100.0 million (the "Panin Facility") for the purpose of financing Antam's working capital. The Panin Facility bears an interest rate to be determined upon drawdown. The Panin Facility is unsecured and will mature on November 30, 2018.

Under the terms of the Panin Facility, prior written consent of Panin is required for Antam to (i) submit an application for bankruptcy or suspension of payment obligation; (ii) merge or consolidate with any party; or (iii) change its main business activities other than as stipulated under the articles of association. In addition, Antam is required to comply with certain financial covenants including maintaining (i) a maximum total interest bearing debt to total equity ratio of 2.5, (ii) a minimum EBITDA plus beginning cash balance to debt service ratio of 1.25 and (iii) net assets of at least Rp.7,000.0 billion.

The Panin Facility was unutilized as of June 30, 2018.

Antam's BSMI Facility II

On July 6, 2012 (as most recently amended on May 2, 2018), Antam obtained a credit facility from BSMI for a maximum amount of US$75.0 million (the "BSMI Facility II") for general capital expenditure and working capital purposes. The BSMI Facility II bears an interest rate to be determined upon drawdown. The BSMI Facility is available until December 2018, and has a maturity date of three months following the date of each drawdown.

Under the terms of the BSMI Facility II, prior written consent of BSMI is required for Antam to sell, lease, transfer, or otherwise dispose of its assets, except in the ordinary course of business. Further, Antam is prohibited from (i) granting its assets to its creditors to be secured by mortgage, fiduciary, hypothec, pledge; (ii) securing or otherwise encumbering its assets including rights over current and future revenue, except securities and encumbrances (a) which were in effect or notified to BSMI prior to the signing of the BSMI Facility II; (b) for refinancing purposes which are secured by the same assets as the refinanced loan; (c) provided prior to the merger or consolidation as mentioned in (iii) below; (d) necessary in respect of the ordinary course of business; (e) including rights in Antam's future income in respect of export credit facilities; (f) or shares, either current or future, owned by Antam, in respect of project financing, (g) or acquisition financing; (iii) granting any security interest over any of its assets (except in the ordinary course of business, including providing any security interest over any of Antam's assets to its affiliated party) which would result in a material adverse change in Antam's ability to satisfy its obligation under this facility; (iv) merge or consolidate with any party, with a value of at least 20.0% of Antam's equity; or (iv) acquire any other party that would amount to a material transaction under Bapepam Rule No. IX.E.2. In addition, Antam is required to comply with certain financial covenants including maintaining (i) a maximum total interest bearing debt to total equity ratio of 3.0, (ii) a minimum EBITDA plus beginning cash balance to debt service ratio of 1.25 and (iii) equity of at least Rp.7,000.0 billion.

The BSMI Facility II was unutilized as of June 30, 2018.

MANAGEMENT

In accordance with Indonesian law, our Company has both a Board of Commissioners and a Board of Directors. The two boards are separate and no individual may serve as a member on both boards.

The rights and obligations of each member of the Board of Commissioners and Board of Directors are regulated by our articles of association and by the decisions of our shareholders in general meeting. Under our articles of association, our Board of Directors is composed of such number of directors as our shareholder considers necessary. If our Board of Directors consists of more than one member, we are required to appoint a President Director. Any of the President Director, or one of the Directors (in the event the President Director is unavailable, and as appointed in writing by the President Director) is entitled to act for and on behalf of our Company, provided that their actions have been approved in the meeting of Board of Directors. If there is no such written approval, the Director who has had the longest term of office may act on our behalf. The Board of Commissioners must consist of one or more Commissioners, one of which will be appointed as the President Commissioner.

Board of Commissioners

The principal function of the Board of Commissioners is to supervise the policy of the Board of Directors in connection with our business activities and to give advice to the Board of Directors in accordance with our Company's articles of association, shareholder resolutions and prevailing rules and regulations.

Members of the Board of Commissioners are appointed and removed at a shareholder's general meeting shareholders and generally serve five-year terms. The Board of Commissioners comprises five members.

The following table sets forth certain information concerning the current members of the Company's Board of Commissioners.

Name	Position	Age	Appointed since
Fajar Harry Sampurno	President Commissioner	52	April 11, 2018
Bambang Gatot Ariyono	Commissioner	58	August 6, 2018
Purbaya Yudhi Sadewa	Commissioner	52	January 10, 2017
Sigit Hardwinarto	Commissioner	57	November 5, 2018
Agus Tjahana Wirakusumah	Independent Commissioner	62	March 10, 2014
Muhammad Munir	Independent Commissioner	59	April 11, 2018

Fajar Harry Sampurno was appointed as our President Commissioner in April 2018. Mr. Sampurno has served as the Deputy of Mining, Strategic Industries & Media at the Ministry of State-Owned Enterprises since 2015 and previously served as the Chief Executive Officer of PT Dahana from 2012 to 2015. He obtained a Bachelor's degree in Economics from Brawijaya University in 1988, a Master's degree in Technology Management from Monash University in 1995, a Doctoral degree in Industry Strategies from the University of Iowa in 1999 and completed an Executive Education program in Disruptive Innovation at the University of Cambridge in 2017.

Bambang Gatot Ariyono was appointed to our Board of Commissioners in August 2018. He has served as the Director General of Mineral and Coal since 2015 and as an economic expert from 2014 to 2015 at the Ministry of Energy and Mineral Resources. He obtained a Bachelor's degree in Geology Techniques from University of Pembangunan Nasional in 1987, a Master's degree in Management from STIE IPWI Jakarta in 1997 and a Doctoral degree in Mining Public Administration from École nationale supérieure des Mines de Paris in 2002.

Purbaya Yudhi Sadewa was appointed to our Board of Commissioners in January 2017. Mr. Sadewa has served at the Ministry for Maritime Affairs as the Deputy Minister for coordinating maritime sovereignty since May 2018 and as Special Staff at the Coordinating Ministry of Maritime Affairs from 2015 to 2018. He obtained a Bachelor's degree in Electrical Engineering from the Bandung Institute of Technology in 1989, a Master's degree in Economics from Purdue University in 1997 and a Doctoral degree in Economics from Purdue University in 2000.

Sigit Hardwinarto was appointed to our Board of Commissioners in November 2018. He has served as the Director General of Forestry Planning and Environmental Management since November 2017. He previously served as a lecturer at Universitas Mulawarman from 1986 to 2014 and was honored as a professor in Universitas Mulawarman by the Minister of National Education, since January 2009. He obtained a Bachelor's degree in Forestry from the Gajah Mada University in 1985, a Master's degree in Agriculture in 1993 and a Doctoral degree in Agricultural Science in 1996, from Kyushu University.

Agus Tjahana Wirakusumah was appointed to our Board of Commissioners in March 2014 and as an Independent Commissioner in August 2018. Mr. Wirakusumah served as Vice Chairman of the Batam Industrial Development Authority from 2016 to 2017 and Director General of the International Industrial Cooperation at the Ministry of Industry from 2010 to 2015. He obtained a Bachelor's degree in Mechanical Engineering from the Bandung Institute of Technology in 1979 and a Master's degree in Industrial System Engineering from the University of Florida in 1991.

Muhammad Munir was appointed to our Board of Commissioners in April 2018 and as an Independent Commissioner in August 2018. Mr. Munir served as the Secretary General of the National Resilience Institute of Indonesia from 2015 to 2016 and as the Vice Chief of Staff of the Indonesian Army from 2013 to 2015. He graduated from the Indonesian Military Academy, Infantry branch, in 1983.

Board of Directors

Members of the Board of Directors are elected for five-year terms at a shareholder's general meeting. The Board of Directors comprises six members, including a President Director, responsible for the management of our business.

The following table sets forth certain information concerning the current members of the Board of Directors.

Name	Position	Age	Appointed since
Budi Gunadi Sadikin	Chief Executive Officer	54	September 14, 2017
Oggy Achmad Kosasih	Chief Operating Officer & Director of Business Development	52	April 7, 2014
Orias Petrus Moedak	Director of Finance	51	April 11, 2018
Ogi Prastomiyono	Director of Strategic Support	54	April 11, 2018
Sahala Hasoloan Sijabat	Director of Production	64	April 7, 2014
Carry EF Mumbunan	Director of General Affairs & Human Capital	52	April 7, 2014

Budi Gunadi Sadikin was appointed as our Chief Executive Officer in September 2017. Mr. Sadikin served as Senior Advisor for the Minister of State-Owned Enterprises from 2016 to 2017 and was previously Chief Executive Officer of Mandiri from 2013 to 2016. He obtained a Bachelor's degree in Nuclear Physics from the Bandung Institute of Technology in 1988.

Oggy Achmad Kosasih was appointed to our Board of Directors in April 2014 and as our Chief Operating Officer and Director of Business Development in April 2018. Mr. Kosasih served as our Director of Finance from 2014 to 2018. He obtained a Bachelor's degree in Management from Krisnadwipayana University in 1990 and a Master's degree in Management from IPMI International Business School in 2003.

Orias Petrus Moedak was appointed as our Director of Finance in April 2018. Mr. Moedak served as Chief Financial Officer of Bukit Asam from 2017 to 2018 and Chief Executive Officer of PT Pelabuhan Indonesia III (Persero) from 2016 to 2017. He obtained a Bachelor's degree in Economics from the Padjadjaran University in Bandung in 1990.

Ogi Prastomiyono was appointed as our Director of Strategic Support in April 2018. Mr. Prastomiyono served as Director of Mandiri from 2008 until April 2018 and as Director of PT Bank Syariah Mandiri from 2003 to 2005. He obtained a Bachelor's degree in Industry Technology from Bogor Agricultural Institute in 1984 and a Master's degree in Business Administration from the University of Notre Dame in Indiana in 1994.

Sahala Hasoloan Sijabat was appointed to our Board of Directors in April 2014 and as our Director of Production in April 2018. Mr. Sijabat served as our Director of Business & Development from 2016 to 2018 and as our Director of Operations from 2014 to 2016. He obtained a Bachelor's degree in Chemistry from the State University of Medan in 1983.

Carry EF Mumbunan was appointed to our Board of Directors in April 2017 and as our Director of General Affairs & Human Capital in April 2018. Mr. Mumbunan served at Antam as Senior Vice President of the Shanghai Representative Office from 2013 to 2014 and Division Head of Human Resources from 2012 to 2013. He obtained a Bachelor's degree in Livestock Socioeconomics from Sam Ratulangi University in 1992, a Master's degree in Strategic Management from Bogor Agricultural Institute in 2005 and a Doctoral degree in Business Management, with a focus in Human Resources, from the Bogor Agricultural Institute in 2015.

Senior Management

The following table sets forth certain information concerning our senior management.

No.	Name	Position	Age	Appointed since
1.	Anton Herdianto	Senior VP of Finance	49	October 2, 2018
2.	Dante Sinaga	Senior VP of Business Development	56	September 1, 2018
3.	Syafrizal	Head of Corporate Strategy	45	September 1, 2018
4.	Dwi Fatan Lilyana	Head of Human Capital Policy	43	August 15, 2018
5.	Elizabeth S. Silalahi	Head of Corporate Legal	44	July 9, 2018
6.	Rendi Akhmad Witular	Head of Government & Media Relations	40	February 15, 2018
7.	Ricky Gunawan	Head of Corporate Secretary	44	April 1, 2014
8.	Iskandar Umar	Head of Internal Audit	56	February 15, 2018
9.	Edi Mugiono	Head of Risk Management	42	August 1, 2018
10.	Rainaldy Harahap	Head of Reduction & Casting	47	February 1, 2015
11.	Firman Ashad	Head of Carbon	46	February 1, 2015
12.	Benny Iskandar	Head of General Maintenance	50	February 15, 2018
13.	Ivan Ermisyam	Head of Engineering	46	April 1, 2014
14.	Antoni O. Galingging	Head of Power Operation & Civil	53	April 1, 2015
15.	Kusdarjanto B.P	Head of Power Maintenance & Engineering	46	February 15, 2018
16.	Kusnandar D. Sartono	Head of Quality Assurance	46	February 1, 2015
17.	Muhammad Ridwan	Head of Procurement	46	April 1, 2016
18.	Joko Susilo Mulyono	Head of Logistics	45	November 1, 2016
19.	Indra Welly Arifin	Head of Power Administration	52	May 19, 2017
20.	Ismadi Y.S	Head of Strategic Performance	44	November 1, 2016
21.	Moh. Rozak Hudioro	Head of Human Capital Services	56	April 1, 2014
22.	Dedi Arianto	Head of Accounting	41	January 9, 2017
23.	Yohanes Sigit Subandriawan	Head of Treasury	53	July 20, 2017
24.	Satiyawarman Tarigan	Head of Internal Control & Compliance	47	September 1, 2014
25.	Darwin Saleh Siregar	Head of Business Planning	42	October 1, 2018
26.	Susyam Widodo	Head of Corporate Social Responsibility	41	October 1, 2018
27.	Abd Syukur Dalimunthe	Head of General Affairs	52	October 1, 2018
28.	Ade Buandra	Head of Marketing & Sales	40	October 1, 2018
29.	Dwi Yantho Soetimin	Assistant to Management	49	October 1, 2018

Good Corporate Governance and Risk Management Committee

The Good Corporate Governance ("GCG") and Risk Management Committee, which was formed in January 2018, is headed by a member of the Board of Commissioners and must include at least two other persons. The current head of the GCG and Risk Management Committee is Purbaya Yudhi Sadewa. The other members are Ida Arini and Rizka Zamzani Ibrahim. The GCG and Risk Management Committee generally meets

monthly and its primary role is to propose corporate governance and risk management guidelines to the Board of Commissioners and advise the Board of Commissioners on matters concerning corporate governance and risk management.

As part of the corporate governance process of our Group, business decisions made by Antam, Bukit Asam and Timah relating to certain matters must be approved by (i) the respective company's Board of Commissioners, (ii) both the respective company's Board of Commissioners and the Government, by virtue of the Series A Dwiwarna share it holds in each of Antam, Bukit Asam and Timah, or (iii) us, as their majority shareholder, as the case may be, depending on the nature and commercial significance for our Group. The Government, as the holder of the Series A Dwiwarna share in each of Antam, Bukit Asam and Timah, has, through a special power of attorney in favor of us, provided us with the right to vote on its behalf with respect to certain actions set forth in the articles of association of each of those companies. See "Relationship with the Government — Government as Shareholder."

For example, matters that must be approved by the respective company's Board of Commissioners include conducting any action that does not fall within the respective company's Company Work Plan and Budget *(Rencana Kerja dan Anggaran Perusahaan* or "RKAP") and relinquishing rights under any production-operation IUP or IUPK. Matters that must be approved by the respective company's Board of Commissioners and the Government include, among others; (i) provision of security over company assets that have a value exceeding a threshold amount specified by the Government; (ii) engaging in a business cooperation or other cooperation agreements of a similar nature, which are for a period of time or value exceeding a maximum period or amount specified by the Government; (iii) establishing or conducting a merger, amalgamation, segregation or dissolution of a subsidiary or joint venture, where the value of the transaction exceeds a threshold amount specified by the Government; (iv) providing loans or guarantees for a value exceeding a threshold amount specified by the Government; (v) writing off non-performing receivables or inventory, which exceed a maximum amount specified by the Government; and (vi) entering into transactions considered material under the Indonesian Capital Markets Law. Matters that must be approved by us include the transfer of any of our subsidiaries' assets to third-parties and the provision of security over any of our subsidiaries' assets that exceed 50.0% of the subsidiary's equity value.

Key Management of our Group Members

Antam

Antam's Board of Commissioners

The following table sets forth certain information concerning the current members of Antam's Board of Commissioners.

Name	Position	Age	Appointed since
Fachrul Razi	President Commissioner	71	October 7, 2015
Zaelani	Commissioner	58	May 31, 2012
Robert A. Simanjuntak	Commissioner	56	March 26, 2014
Gumilar Rusliwa Somantri	Independent Commissioner	55	May 2, 2017
Ir. Anang Sri Kusuwardono	Independent Commissioner	55	May 2, 2017

Fachrul Razi was appointed as Antam's President Commissioner in October 2015. Mr. Razi also currently serves as President Commissioner of PT Central Proteina Prima Tbk. He was previously with the Indonesian Armed Forces until 2000, where he held various key positions including Governor of the Indonesian Military Academy from 1996 to 1997, Assistant of Operations to the General Chief of Staff of the Indonesian Army from 1997 to 1998, Chief of Staff in 1998, Secretary General of the Ministry of Defense from 1998 to 1999 and Vice Commander of the Indonesian Army from 1999 to 2000. Mr. Razi graduated from the Indonesian Military Academy in 1970.

Zaelani was appointed as a Commissioner of Antam in May 2012 and re-appointed in May 2017. Mr. Zaelani has served as the Main Secretary of Indonesia's State Intelligence Agency since 2014, where he

previously served as a Deputy IV in Economics from 2010 to 2014. He obtained a Bachelor's degree in Economics from Airlangga University in Surabaya in 1984. He is also an alumnus of the National Resilience Institute of Indonesia.

Robert A. Simanjuntak was appointed as a Commissioner of Antam in March 2014. Mr. Simanjuntak has served as Special Staff to the Minister of Finance on the Formulation of Fiscal Policy since 2013, and previously served as the Head of the Fiscal Decentralization Team at the Ministry of Finance from 2009 to 2013. He was the Head of the Economics Department at the University of Indonesia from 2005 to 2009. Mr. Simanjuntak obtained a Bachelor's degree in Economics from the University of Indonesia in 1986, as well as a Master's degree in Economics in 1988 and a Doctoral degree in Philosophy in 1998 from the University of Birmingham, England.

Gumilar Rusliwa Somantri was appointed as an Independent Commissioner of Antam in May 2017. Mr. Somantri has been a Professor at the Faculty of Social and Political Science of the University of Indonesia since 2006. He obtained a Bachelor's degree in Social and Political Sciences from the University of Indonesia in 1989 and a Doctoral degree in Sociology from Bielefeld University, Germany in 1995.

Anang Sri Kusuwardono was appointed as an Independent Commissioner of Antam in May 2017. Mr. Kusuwardono has served as President Director of PT Prama Energi Nusantara since 2011. Between 1992 and 2011, he was a database and groundwater modeler and geologist at various mining companies including Newcrest Mining Limited, Newmont Mining Corporation and PTFI. Prior to that, he was a mining exploration data processing consultant from 1990 to 1992. He obtained a Bachelor's degree in Geological Mining from the Bandung Institute of Technology in 1990.

Antam's Board of Directors

The following table sets forth certain information concerning the current members of Antam's Board of Directors.

Name	Position	Age	Appointed since
Arie Prabowo Ariotedjo	President Director	58	May 2, 2017
Dimas Wikan Pramudhito	Director of Finance	36	October 7, 2015
Sutrisno S. Tatetdagat	Director of Development	54	May 2, 2017
Tatang Hendra	Director of Marketing	48	May 2,2017
Hari Widjajanto	Director of Operations	55	March 26, 2014
Johan N.B. Nababan	Director of Human Capital & Corporate Social Responsibility	52	March 31, 2015

Arie Prabowo Ariotedjo was appointed as Antam's President Director in May 2017. Mr. Ariotedjo has held key positions in various industries, including Commerce Director of Bukit Asam from 2016 to 2017, President Director of PT Medco Energi Mining Internasional from 2006 to 2015, President Director of PT Wikarga Sapta Utama from 2002 to 2005, Managing Director of PT Menara Wenang from 1998 to 2005, Managing Director of PT Citra Permata Sakti Persada from 1992 to 1998, Control and Operational Manager of PT Citra Marga Nusaphala Persada from 1987 to 1992 and Civil Servant in Directorate General of Highways, Ministry of Public Works with the last position as Project Deputy Head from 1983 to 1987. He obtained a Bachelor of Science in Civil Engineering from Purdue University, West Lafayette, Indiana, AS in 1981 and Master of Science in Civil Engineering from University of Michigan, Ann Arbor, Michigan, AS in 1982.

Dimas Wikan Pramudhito was appointed as Antam's Director of Finance in October 2015. Mr. Dimas previously held key positions in various financial institutions such as Compliance Analyst at Franklin Templeton Investments from 2005 to 2006, Relationship Manager-Assistant Manager at Rabobank International Indonesia from 2006 to 2008, Associate Director at Standard Chartered Bank Indonesia from 2008 to 2011 and Vice President of the Bank of Tokyo Mitsubishi UFJ from 2012-2015. He obtained a Bachelor of Science in Business Administration from the McLaren School of Business, University of San Francisco, in 2003 and a Master's degree in Business Administration, with a Corporate Finance concentration, from the Ageno School of Business, Golden Gate University in 2005.

Sutrisno S. Tatetdagat was appointed as Antam's Director of Development in May 2017. Mr. Tatetdagat was previously with Timah until 2017, where he served as Corporate Secretary in 2017, Senior Assistant to the Board of Directors from 2015 to 2016, Director of PT Timah Eksplorasi Mineral from 2014 to 2015 and Director of PT Tambang Timah from 2008 to 2014. He obtained a Bachelor's degree in Mining Engineering from Sriwijaya University in 1989 and a Master's degree in Management from IPMI International Business School in 2001.

Tatang Hendra was appointed as Antam's Director of Marketing in May 2017. Mr. Hendra has been with Antam for 22 years and served as Senior Vice President of Operations Management, Health, Safety and Environment from 2016 to May 2017, Senior Vice President of Indonesia Chemical Alumina General Management from 2015 to 2016, General Manager of Southeast Sulawesi Nickel Mining Business Unit from 2013 to 2015 and Vice President Operation Division Head of Southeast Sulawesi Nickel Mining Business Unit in 2013. He obtained a Bachelor's degree in Metallurgical Mining Engineering from the Bandung Institute of Technology in 1995 and a Master's degree in Material Sciences from the University of Indonesia in 2011.

Hari Widjajanto was appointed as Antam's Director of Operations in May 2017. Mr. Widjajanto has been with Antam for 29 years serving as Analysis Staff to the Director of Development in 2006, Senior Manager of Corporate Strategy Development from 2006 to 2011, General Manager of the Gold Mining Business Unit from 2011 to 2014 and Human Resources Director from 2014 to 2016. Mr. Widjajanto obtained a Bachelor's degree in Geological Engineering from the Bandung Institute of Technology in 1988 and a Master's degree in International Management from the Prasetiya Mulya University in 1999.

Johan N.B. Nababan was appointed as Antam's Director of Human Capital & Corporate Social Responsibility in May 2017. Mr. Nababan has served as Managing Director of PT Putra Bestari since April 2009. He previously served as Vice President of the Corporate Banking & Corporate Finance Division of PT Bank PDFCI Tbk from 1998 to 1999, Business Partner of PT Moores Rowland Indonesia from 2003 to 2009 and Managing Director of PT Putra Bestari from 2009 to 2015. Mr. Nababan obtained a Bachelor's degree in Economics from the Indonesia Christian University in 1990.

Bukit Asam

Bukit Asam's Board of Commissioners

The following table sets forth certain information concerning the current members of Bukit Asam's Board of Commissioners.

Name	Position	Age	Appointed since
Agus Suhartono	President Commissioner	63	October 10, 2013
Robert Heri	Commissioner	54	May 3, 2012
Muhammad Said Didu	Commissioner	56	March 30, 2015
Purnomo Sinar Hadi	Commissioner	52	April 14, 2016
Heru Setyobudi Suprayogo	Commissioner	61	April 14, 2016
Johan O. Silalahi	Independent Commissioner	49	April 20, 2017

Agus Suhartono was appointed as Bukit Asam's President Commissioner in October 2013. Mr. Suhartono previously served as the Head of the Indonesian Navy Staff from 2009 to 2010 and as Indonesian Army Commander from 2010 to 2013. He obtained a Bachelor's degree in Economics, with a major in Management, from University of Merdeka Surabaya in 1998.

Robert Heri was appointed as a Commissioner of Bukit Asam in May 2012. Mr. Heri has been the Head of the Energy and Mining Office since 2016 and previously served as the Head of the Energy and Mining Office of South Sumatra from 2010 to 2016. He obtained a Bachelor's degree in Engineering, with a major in Geology Engineering, from University of Pakuan Bogor in 1991 and a Master's degree in Management from Universitas Bina Darma Palembang in 2008.

Muhammad Said Didu was appointed as a Commissioner of Bukit Asam in March 2015. Mr. Didu has been an engineer at the Board of Technology Assessment and Application since 2011 and as the Chief of the Task

Force for Planning at Indonesia's Ministry of Defense since 2012. He previously served as Special Staff to the Minister of Energy and Mineral Resources from 2014 to 2016. He obtained a Master's degree in Industrial Engineering in 1966 and a Doctoral degree in System Engineering in 2000, from Bogor Agricultural Institute.

Purnomo Sinar Hadi was appointed as a Commissioner of Bukit Asam in April 2016. Mr. Hadi currently serves as Deputy Assistant for the Pharmaceutical Industry in the Agro Business Department of the Ministry of State-Owned Enterprises, where he previously served as Deputy Assistant for the First Service Business Sector in the Service Business Department from 2012 to 2014 and as Deputy Assistant of SOE Executive Human Resources from 2014 to 2015. He obtained a Bachelor's degree in Economics, with a major in Management, from University Jenderal Soedirman in 1990 and a Master's degree in Management, with a major in Financial Management, from University of Bhayangkara in 2003.

Heru Setyobudi Suprayogo was appointed as a Commissioner of Bukit Asam in April 2016. Mr. Suprayogo has served as Special Staff at Indonesia's State Intelligence Agency, where he previously served as Expert Staff in 2016 and as a Deputy from 2016 to 2017. He obtained a Bachelor's degree in Economics, with a major in Management, from Airlangga University in Surabaya in 1984 and a Master's degree in Law from Tanjungpura University, Pontianak in 2002.

Johan O. Silalahi was appointed as a Commissioner of Bukit Asam in April 2017. Mr. Silalahi was previously a lecturer on Business Law and Ethics for the Master of Management program at the University of Indonesia. He obtained a Bachelor's degree in Electrical Engineering from the Bandung Institute of Technology in 1988. He also obtained a Bachelor's degree in Economics Management in 1989, followed by a Master's degree in Business Law and a Doctoral degree in Legal Studies, from Padjajaran University.

Bukit Asam's Board of Directors

The following table sets forth certain information concerning the current members of Bukit Asam's Board of Directors.

Name	Position	Age	Appointed since
Arviyan Arifin	President Director	54	April 14, 2016
Mega Satria	Director of Finance	41	April 11, 2018
Fuad Iskandar Zulkarnain Fachroeddin	Director of Business Development	52	April 20, 2017
Adib Ubaidillah	Director of Commerce	50	November 29, 2017
Suryo Eko Hadianto	Director of Operation and Production	52	April 14, 2016
Joko Pramono	Director of Human Resources and General Affairs	49	April 14, 2016

Arviyan Arifin was appointed as Bukit Asam's President Director in April 2016. Mr. Arifin was previously with PT Bank Muamalat Tbk for 23 years where he held various key positions including Head of the Asset Restructuring Team in 1991 and Business Director from 1999 to 2009, and then served as Chief Executive Officer from 2009 until 2014. He obtained a Bachelor's degree in Industrial Technology from the Bandung Institute of Technology in 1988.

Mega Satria was appointed as Bukit Asam's Director of Finance in April 2018. Mr. Satria previously served as Corporate Treasurer at PT Garuda Indonesia (Persero) Tbk ("Garuda") from 2012 to 2015, during which he also served as a Commissioner at Abacus Distribution System Indonesia, a subsidiary of Garuda, from 2013 to 2015. He was then promoted to serve as Chief Financial Officer of PT Citilink Indonesia from 2015 to 2017 and continued as Director of Finance and Human Capital at PT Pengembang Pelabuhan Indonesia from 2017 to April 2018. He obtained a Bachelor of Business Administration degree from Wichita State University in Kansas in 1998 and a Master of Business Administration from Loyola University of Chicago in 1999. Mr. Satria is also a Certified Management Accountant.

Fuad Iskandar Zulkarnain Fachroeddin was appointed as Bukit Asam's Director of Business Development in April 2017. Mr. Fachroeddin has held key roles at various companies including Head of Business

Development of PT Mass Rapid Transit Jakarta, Corporate Services Director of PT Indosat Mega Media and Chief Executive Officer of Indosat Singapore Pte Ltd. He also served as Director of ASEAN Cableship Pte Ltd, a joint venture among Indosat Indonesia, SingTel Singapore, CAT Thailand, TelBru Brunei, Telekom Malaysia and ETPI Phillipines. He obtained a Bachelor's degree in Industrial Engineering from the National Institute of Technology, Bandung, in 1990 and a Master of Business Administration from the Bandung Institute of Technology in 2008.

Adib Ubaidillah was appointed as Bukit Asam's Director of Commerce in November 2017. Mr. Ubaidillah has been with Bukit Asam for over 25 years, during part of which he was with Bukit Asam's subsidiary, PT Bukit Asam Prima, where he served as President Director in 2016, as Corporate Secretary from 2016 to 2017 and as Commercial General Manager in 2017. He obtained a Bachelor's Degree in Economics from Sjakhyakirti University in 2006 and a Master's Degree in Management from Sriwijaya University in 2011.

Suryo Eko Hadianto was appointed as Bukit Asam's Director of Operation and Production in April 2017. Mr. Hadianto previously served as Bukit Asam's Director of Human Resources and General Affairs from April 2016 to April 2017, as well as President Director of Bukit Asam's subsidiary, IPC. He obtained a Bachelor's degree in Mathematics from Gadjah Mada University and a Master's degree in Management, with a major in Production Management, from Mercu Buana University.

Joko Pramono was appointed as Bukit Asam's Director of Human Resources and General Affairs in April 2017. Mr. Pramono has been with Bukit Asam for over 20 years and previously served as Bukit Asam's Corporate Secretary from 2011 to March 2016 and as Bukit Asam's Director of Operation and Production from April 2016 to April 2017. He obtained a Bachelor's degree in Mining Engineering from the University of Pembangunan Nasional Veteran Yogyajakarta in 1995.

Timah

Timah's Board of Commissioners

The following table sets forth certain information concerning the current members of Timah's Board of Commissioners.

Name	Position	Age	Appointed since
Fachry Ali	President Commissioner / Independent Commissioner	64	March 26, 2015
Milawarma	Independent Commissioner	60	April 7, 2016
Rudy Suhendar	Commissioner	58	April 16, 2018
Satriya Hari Prasetya	Commissioner	60	April 28, 2017
Teuku Pribadi	Commissioner	68	April 28, 2017

Fachry Ali was appointed as Timah's President Commissioner in March 2015. Mr. Ali previously served as Commissioner at PT Indonesia Kendaraan Terminal from 2014 to 2017, Chairman of the Public Policy Committee for the Ministry of State-Owned Entities from 2006 to 2012 and Commissioner at PT Semen Tonasa from 2001 to 2003. He obtained a Bachelor's degree in English Literature and a Master's Degree of Art in History of Southeast Asia from Monash University in 1994.

Milawarma was appointed as a Commissioner of Timah in April 2016. Mr. Milawarma was previously with Bukit Asam for 25 years, where he served as Corporate Secretary 2003 to 2006, Director of Operations and Production from 2006 to 2011 and President Director from 2011 to 2016. He obtained a Bachelor's degree in Mining Engineering from the University of Pembangunan Nasional Veteran Yogyakarta and a Master's degree in Civil Engineering and Mining from Wollongong University in 1995.

Rudy Suhendar was appointed as a Commissioner of Timah in April 2018. Mr. Suhendar was previously with the MEMR for 18 years, where he served as Head of Geology from 2017 to 2018 and Secretary of General Inspectorate from in 2017. He obtained a Bachelor's degree in Geology Technique from Padjadjaran University in 1986 and a Master's degree from the International Institute for Geo-Information Science and Earth Observation in 1995.

Satriya Hari Prasetya was appointed as a Commissioner of Timah in April 2017. Mr. Prasetya previously served as Deputy of Economic Intelligence at Indonesia's State Intelligence Agency from 2016 until now and Chief of the Jambi Regional Police from 2013 to 2014. He obtained a Bachelor's degree in Law, with a major in Criminal Law, from Bung Karno University in 2001 and graduated from Indonesia's Police Academy (*Akademi Kepolisian* or "AKPOL") in 1982.

Teuku Pribadi was appointed as a Commissioner of Timah in April 2017. Mr. Pribadi previously served as an Official of the North Aceh Regency from 2006 to 2007 and Head of the NAD Provincial Infocom Office from 2005 to 2006. He obtained a Bachelor's degree from Iskandar Muda College of Social Politics in 1983.

Timah's Board of Directors

The following table sets forth certain information concerning the current members of Timah's Board of Directors.

Name	Position	Age	Appointed since
Mochtar Riza Pahlevi Tabrani	President Director	50	April 7, 2016
Emil Ermindra	Chief Financial Officer	50	April 7, 2016
Alwin Albar	Director of Operations and Production	50	April 28, 2017
Trenggono Sutioso	Director of Business Development and Commerce	51	April 28, 2017
Muhammad Rizki	Director of Human Resources and General Affairs	47	April 28, 2017

Mochtar Riza Pahlevi Tabrani was appointed as Timah's President Director in April 2016. Mr. Tabrani previously served as Chief Financial Officer of PT Perusahaan Gas Negara Tbk from 2008 to 2016 and as Commissioner of PT Gagas Energi Indonesia from 2014 to 2016. He obtained a Bachelor's degree in Geology from Trisakti University and a Master's degree from Cleveland State University in 1995.

Emil Ermindra was appointed to Timah's Board of Directors and as Chief Financial Officer in April 2016. Mr. Ermindra has worked in the banking sector for over 23 years and was previously at BNI for 13 years, where he served as Regional Chief Executive Officer, Management Office Head and Strategic Planning Head. He obtained a Bachelor's degree in Economics from Sriwijaya University and a Master's degree in Agribusiness from the Bogor Agricultural Institute in 2004.

Alwin Albar was appointed as Timah's Director of Operations in April 2017. Mr. Albar has been at Timah for over 17 years, serving as Head of Business Development from 2011 to 2012 and as Head of Regional Engineering and Production from 2015 to 2017. He obtained a Bachelor's degree in Mechanical Engineering from the Bandung Institute of Technology in 1992, a Master's degree in Mechanical Engineering from the University of Wisconsin in 1996 and a Doctoral degree from Texas A&M University in 2001.

Trenggono Sutioso was appointed as Timah's Director of Business Development in April 2017. Mr. Sutioso previously served as Timah's Corporate Secretary from 2016 to 2017 and as Senior VP of Corporate Strategic Development from 2013 to 2016. He obtained a Bachelor's Degree in Geology Engineering from the Bandung Institute of Technology in 1991, a Master's degree in Financial Management from the Indonesia Business and Informatics Institute in 2006 and a Doctoral degree in Economics from Trisakti University in 2009.

Muhammad Rizki was appointed to Timah's Board of Directors in April 2016 and as Director of Human Resources in April 2017. Mr. Rizki had been with Timah for over 20 years, serving as Head of Offshore Operations from 2013 to 2015, Head of Logistics from 2013 to 2013 and Head of Metallurgy from 2009 to 2012. He obtained a Bachelor's degree of Engineering in Metallurgy from the University of Indonesia in 1995 and a Master's degree in Management from IPMI International Business School in 2003.

The Audit Committee

The Audit Committee is headed by a member of the Board of Commissioners, who must be an independent commissioner, and must include at least two other persons, who do not have to be members of the Board of Commissioners. The current Head of the Audit Committee is Agus Tjahajana Wirakusumah. The other members

of the Audit Committee are Togu Sihombing and Hary Noegroho Soelistyo. The Audit Committee supports the Board of Commissioners as a consulting, controlling and initiating body which functions include, among other things, overseeing our financial reporting system and processes, supervising the external audit process, reviewing and assessing the independence of external auditors, assessing the adequacy and effectiveness of internal control systems, supervising the independence and objectivity of the internal audit function and supervising the effectiveness of technical and operational reviews of performance.

The Audit Committee normally meets at least 12 times a year for the time necessary to fulfill its purpose, which is estimated to be no less than one-hour, or more frequently as circumstances dictate. In 2017, the committee held 14 meetings, lasting approximately two or more-hours each.

Compensation

Payment of compensation to the commissioners and directors is determined at the annual shareholder's general meeting. For the years ended December 31, 2015, 2016 and 2017, and the six months ended June 30, 2018, total compensation paid to our commissioners, as our a group, was Rp.17.8 billion, Rp.17.1 billion, Rp.21.5 billion and Rp.14.1 billion, respectively, and total compensation paid to our directors, as a group, was Rp.47.8 billion, Rp.41.2 billion, Rp.30.5 billion and Rp.26.9 billion, respectively.

RELATIONSHIP WITH THE GOVERNMENT

History

We are a profit-based, state-owned limited liability company, established in Indonesia under the Deed of Limited Liability Company of PT Indonesia Asahan Aluminium No. 2, dated January 6, 1976, made before Juliaan Nimrod Siregar, S.H., Notary in Jakarta. We were initially formed as a joint venture company between the Government and Nippon Asahan for the purpose of constructing two hydroelectric power plants and an aluminum smelting plant at the Asahan River located in North Sumatra. At the time of our establishment, the Government and Nippon Asahan respectively held equity interests of 10.0% and 90.0% in our Company.

In 2014, the Government acquired all of Nippon Asahan's shares in our Company. Pursuant to Government Regulation No. 26 of 2014 concerning the Change of Status of PT Indonesia Asahan Aluminium into a State-Owned Entity (Persero), we were converted into a state-owned enterprise wholly owned by the Government and our name was changed to PT Indonesia Asahan Aluminium (Persero).

In 2016, the Government announced its plan to create synergies among Indonesia's state-owned entities through the establishment of a designated holding company for each of the country's key sectors including, among others, mining, oil and gas, and infrastructure. In 2017, we were appointed as the holding company for the state's mining operators and, on November 27, 2017, the Government transferred its 65.0% equity interests in each of Antam, Bukit Asam and Timah to our Company. Concurrent with this handover, the Government also transferred its 9.36% equity interests in PTFI to our Company. On July 12, 2018, we entered into a heads of agreement with FCX, RT Holdings and RT Nominees pursuant to which, subject to, among other things, satisfactory completion of our due diligence and the execution of binding transaction documents, we agreed to acquire an additional 41.8% of the outstanding shares in PTFI. See "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia."

Government as Shareholder

The Government currently owns 100.0% of our issued share capital, which was Rp.54,178.0 billion (US$3,761.3 million) as of June 30, 2018. As our sole shareholder, the Government is entitled to receive dividend payments from us on an interim or annual basis and plays a key role in our budget planning. The Government is also entitled, in its capacity as our sole shareholder, to approve changes to our capital structure or to our articles of association, as well as certain corporate actions which we may propose in line with our business strategy such as, among others, mergers or acquisitions, separation or dissolution, certain transfer of assets, and certain non-operational long-term investments and financing. The Government, as the holder of the Series A Dwiwarna share in each of Antam, Bukit Asam and Timah, has, through a special power of attorney in favor of us, provided us with the right to vote on its behalf with respect to certain actions set forth in the articles of association of each of those companies. However, save for requiring or accessing information from each of those companies, we would consult with the Government prior to exercising any rights under such power of attorney. See "Management — Good Corporate Governance and Risk Management Committee." Our commissioners and directors are appointed by the Government, through the Ministry of State-Owned Enterprises, based on merit.

Government as Regulator

Under the Indonesian constitution, all natural resources in the Republic of Indonesia are deemed to be national assets and must be used for the maximum benefit of the Indonesian people. To ensure the fulfillment of this objective, the mining of natural resources is controlled by the Government through the MEMR, who acts as both the regulatory and licensing authority of the mining sector, the Ministry of Industry, who acts as the licensing authority for certain mineral processing and refining activities, and other relevant ministries. See "Indonesian Regulatory Framework."

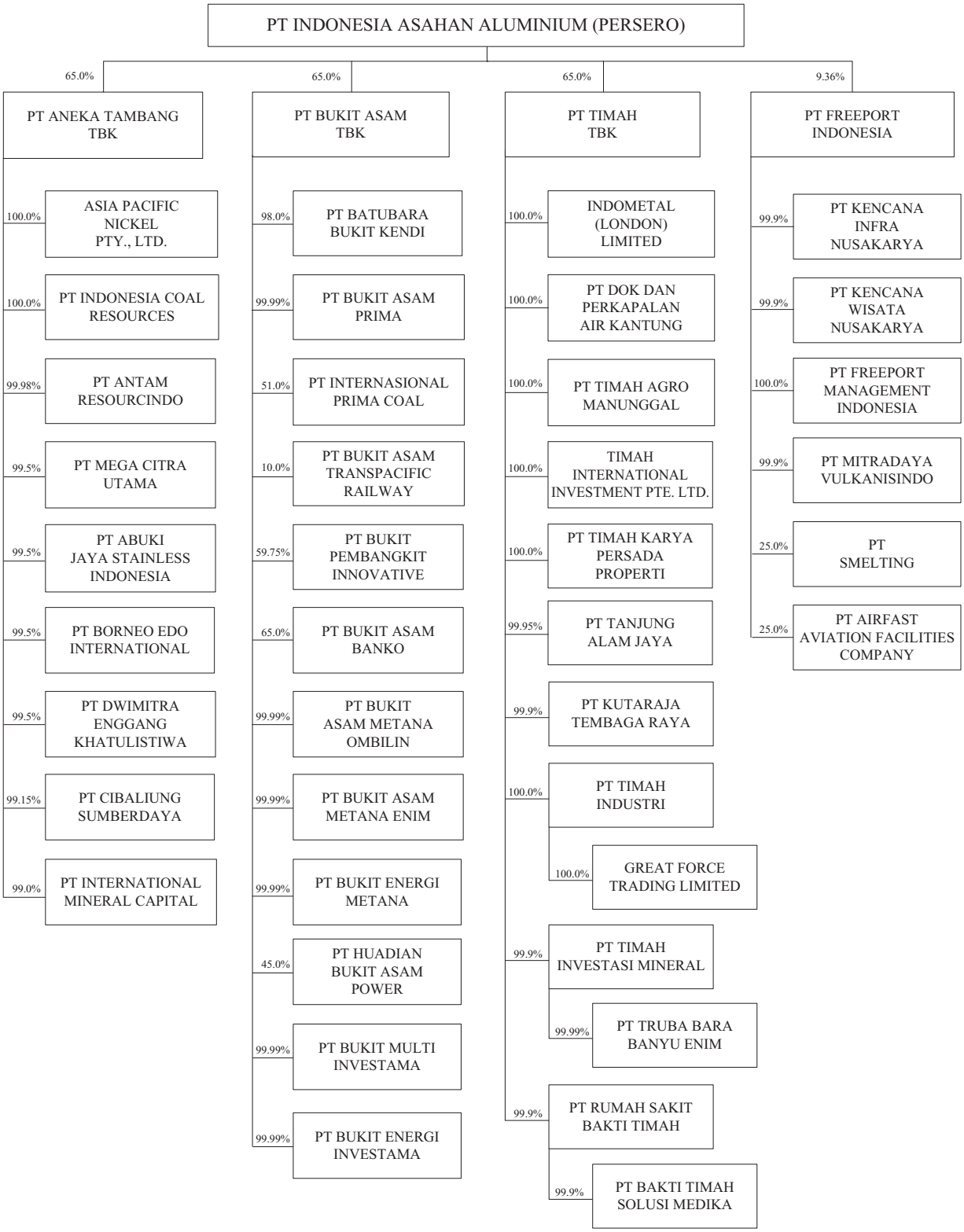
A mining license must be obtained from the MEMR in order to engage in mining activities including exploration, production and processing activities. In addition, ownership of any mined coal or minerals will only be transferred to the mining entity after payment of the necessary royalties to the Government, which includes payment

of 10.0% of net profits from the mining activity. The Government, through MEMR Ministerial Decree No. 11 of 2018, conducts a priority bidding process for mining concessions among state-owned entities and regional government-owned entities, before opening the opportunity to bid for such mining concessions to the public. The Government, through the MEMR, also sets the minimum price that coal and minerals may be sold at through the coal benchmark price and metal mineral benchmark price that is determined by the MEMR. The export of mineral and coals is also subject to the approval of the MEMR. Certain types of processed or refined mining products are further subject to verification procedures or technical investigations by the Directorate General of Offshore Trade, on behalf of the Minister of Trade.

In conducting our mining, aluminum smelting and other related business activities, we are also subject to the supervision of the Ministry of Environment to ensure that our operations are in line with the prevailing environmental laws and regulations.

CORPORATE STRUCTURE

The following chart sets forth, in simplified form, our corporate structure as of June 30, 2018.



RELATED-PARTY TRANSACTIONS

We have entered into various transactions with certain of our related-parties in the ordinary course of business. We believe each of these transactions as described below have been entered into on an arm's length basis or on terms that are as favorable to us as similar transactions with non-related-parties.

We also have existing financing agreements with state-owned, and therefore related, banks such as Mandiri, BRI, and BNI. See "Description of Material Indebtedness."

Agreements with Pertamina

Dumai CPC Plant

On December 28, 2017, Inalum entered into a heads of agreement with Pertamina to establish a joint venture for the construction, development and operation of the Dumai CPC Plant. See "Business — Our Aluminum Smelting Business — Other development projects — Calcined petroleum coke plant project." Under the terms of the agreement, Pertamina will own a 75.0% interest in the joint venture and we will own the remaining 25.0% interest.

Coal Gasification Plant

On December 8, 2017, Bukit Asam entered into a heads of agreement with Pertamina, PT Pupuk Indonesia (Persero) and PT Chandra Asri Petrochemical Tbk to conduct a feasibility study in relation to the construction of the Coal Gasification Plant. See "Business — Our Coal Business — Downstream coal businesses — Coal to chemical plant project." The agreement is valid for a period of 15 months. Under the terms of the agreement, upon completion of the feasibility study, a definitive agreement will be entered into for the construction of the Coal Gasification Plant.

Fuel sales agreements

On June 7, 2017, Antam entered into a three-year fuel sales agreement with Pertamina for the purchase of marine fuel oil, biodiesel and fuel oil for Antam's operations in Pomalaa, Pongkor, Tayan, and Cibaliung. The agreement sets forth the estimated amount of fuel to be supplied by Pertamina, which may be adjusted based on Antam's needs by written agreement between the parties. The price to be paid by Antam under the agreement may be adjusted based on the fuel prices published periodically by Pertamina. Disputes arising out of the agreement are to be settled by arbitration at Indonesia National Board of Arbitration.

On February 18, 2016, Timah entered into a three-year fuel sales agreement with Pertamina for the purchase of diesel and fuel oil from Pertamina for Timah's tin processing operations. See "Business — Our Tin Business — Our tin smelting and refining plants." The agreement sets forth the estimated amount of fuel to be supplied by Pertamina to Timah, which may be adjusted based on Timah's needs by written agreement between the parties. The price to be paid by Timah under the agreement is determined by Pertamina upon delivery of the fuel. Disputes arising out of the agreement are to be settled by arbitration at the Indonesia National Board of Arbitration.

Agreements with PLN

Coal supply agreements with PLN

On October 14, 2014, Bukit Asam entered into a 10-year agreement with PLN to supply PLN's Bukit Asam coal-fired power plant with 1.0 million tonnes of coal per year. The price to be paid by PLN under the agreement is determined annually by reference to the published coal FOB barge benchmark prices for the last three months of the previous year in accordance with the regulations of the MEMR, with certain adjustments for the transportation and survey of the coal. Disputes arising out of the agreement are to be settled by arbitration at the Indonesia National Board of Arbitration.

On January 28, 2013, Bukit Asam entered into a 10-year coal supply agreement with PLN's subsidiary, PT Indonesia Power ("IP"). The total amount of coal to be supplied by Bukit Asam to IP within the period of the agreement is 51.8 million tonnes. Pursuant to the terms of the agreement, Bukit Asam must deliver to the Tarahan Port a daily dedicated stock of 30,000 tonnes of coal for IP. The price to be paid by PLN under the agreement is determined annually by negotiations between Bukit Asam and IP. Disputes arising out of the agreement are to be settled by arbitration at the Indonesia National Board of Arbitration.

On December 28, 2012, Bukit Asam entered into a 20-year agreement with PLN to supply an aggregate total of 265.65 million tonnes of coal within the period of the agreement, with an option for PLN to increase or decrease the supply by 10.0% per year. The price to be paid by PLN under the agreement is determined annually by reference to the published FOB coal benchmark prices for the last three months of the previous year in accordance with the regulations of the MEMR. Disputes arising out of the agreement are to be settled by arbitration at the Indonesia National Board of Arbitration.

On September 29, 2004, Bukit Asam entered into a 25-year agreement with PLN to supply PLN's Tarahan coal-fired power plant with 700,000 tonnes of coal per year, with an option for PLN to increase or decrease the supply by 15.0% per year to the Tarahan steam-fired power plant. The price is determined by negotiation between Bukit Asam and PLN every year, except prices for deliveries during the first year will be equal to the initial price specified under the Agreement. Disputes arising out of the agreement are to be settled by arbitration at the Indonesia National Board of Arbitration.

See "Business — Customers — Coal — Coal offtake agreements with PLN."

Power purchase agreements with PLN

On March 16, 2018, Timah entered into a power purchase agreement with PLN to supply electricity for Timah's housing complex in Riau Islands and Riau Province with a voltage of approximately 200 Volts. The electricity tariff to be paid by Timah under the agreement is in accordance with MEMR Regulation No. 31 Year 2014 on the Electricity Tariff Provided by PT PLN (Persero) dated November 5, 2014, as amended from time to time. The agreement is valid for an unlimited period of time and may be terminated at any time by the parties in writing. Disputes arising out of the agreement are to be settled at the Tanjung Pinang District Court.

On March 16, 2018, Timah entered into a power purchase agreement with PLN to supply electricity for Timah's workshop in Riau Islands and Riau Province with a voltage of approximately 20 kV. The electricity tariff to be paid by Timah under the agreement depends on a specific formula determined under the agreement. The agreement is valid for an unlimited period of time and may be terminated at any time by the parties in written form. Disputes arising out of the agreement are to be settled at the Tanjung Pinang District Court.

Coal Transportation Agreement with KAI

On June 9, 2017, Bukit Asam entered into a five-year transportation agreement with KAI. Under the terms of the agreement, KAI committed to transporting up to a minimum of 30.0 million tonnes of coal per year, from January 1, 2017 until December 31, 2021, from our Tanjung Enim Coal Mine to our Tarahan Port and Kertapati Port. Under the terms of the agreement with KAI, in the event that KAI transports less than the minimum limit stipulated in the agreement of coal in a given year, KAI's fees may be reviewed and adjusted by both parties. In addition, if the fuel price incurred by KAI is 10.0% more than Rp.5,649/liter, we are required to bear the difference in cost; whereas if the fuel price incurred by KAI is less than 10.0% more than Rp.5,649/liter, our fees paid to KAI will be lowered by the difference in cost. Further, under the terms of the agreement, KAI is required to maintain insurance coverage for any train accident occurring during the transportation of the coal. The agreement with KAI may be terminated by either party in the event of, among others, default or bankruptcy of either party or if the parties are unable to agree on the transportation cost.

On September 6, 2017, we entered into a non-binding memorandum of understanding with KAI to develop train coal transportation capacity, from our Tanjung Enim Coal Mine to Kertapati Port, Tarahan Port, Prajin, and Srengsem. The scope of this memorandum of understanding is to increase the capacity of the existing routes from

Tanjung Enim to Kertapati and Tanjung Enim to Tarahan and to conduct feasibility studies on the development of the planned Tanjung Enim to Prajin and Tanjung Enim to Srengsem routes. See "Business — Our Coal Business — Infrastructure development projects." The costs for the feasibility studies will be borne equally by the parties. This memorandum of understanding is valid until September 6, 2018 and can be extended with the mutual consent of the parties. Any disputes arising out of the memorandum of understanding are to be settled at the Bandung District Court.

See "Business — Our Coal Business — Coal hauling, processing and delivery — Coal transportation agreement with KAI."

Land Agreement with Mandiri

On September 29, 2003, Bukit Asam entered into an agreement with Mandiri for Mandiri to build an office on land owned by Bukit Asam located in Muara Enim, South Sumatera. Under the terms of the agreement, Mandiri is entitled to use the land and the office building for up to 15 years from the date that construction of the office building is completed. In the event that Mandiri intends to extend the usage of the office building, Mandiri may lease the office building from Bukit Asam. Mandiri is prohibited from lending, leasing, securing, or transferring the land or building to any other party. Any disputes arising out of the agreement are to be settled at the Muara Enim District Court.

Coal Supply Agreement with PT Huadian Bukit Asam Power ("HBAP")

On September 12, 2012, Bukit Asam entered into an agreement with HBAP to supply the Sumsel 8 CFPP with a total of 6.1 million tonnes of coal per year, with an option for HBAP to increase or decrease the supply by 10.0%. See "Business — Our Coal Business — Downstream coal businesses — Coal-fired power plant development project." This agreement is valid for 25 years from the date that commercial operations at the power plant commences. Under the terms of the agreement, the price to be paid by HBAP for the first year of the agreement is US$31.4 per tonne, which shall be increased by 4.0% annually. Further, the parties may also amend the coal price in the event of any changes in governmental policy relating to coal prices. Any disputes arising out of the agreement are to be settled by arbitration at the Singapore International Arbitration Center.

Coal Supply Agreements with PT Semen Baturaja (Persero) Tbk ("Baturaja")

On May 31, 2017, Bukit Asam entered into two agreements with Baturaja, each for a period of three years, to supply a total of approximately 1.1 million tonnes of coal and 603,000 tonnes of coal, respectively, within the period of the agreements. The price to be paid by Baturaja is determined on a quarterly basis by reference to the published coal FOB barge benchmark prices by the MEMR for the preceding three months, with certain adjustments for the transportation and survey of the coal. Disputes arising out of the agreement are to be settled by arbitration at the Indonesia National Board of Arbitration.

Coal Supply Agreement with BPI

On December 7, 2011, Bukit Asam entered into a 30-year agreement with its joint venture, BPI, to supply BPI's Banjarsari coal-fired power plant with an aggregate total of 30.0 million tonnes of coal over the period of the agreement, with an option for BPI to increase or decrease the supply by 10.0%. The price to be paid by BPI under the agreement is negotiated annually between Bukit Asam and BPI. Any disputes arising out of the agreement are to be settled by arbitration at the Indonesia National Board of Arbitration.

Agreement with PT PAL Indonesia (Persero) ("PAL")

On December 13, 2013 (as amended on August 21, 2018), Timah entered into a settlement agreement with PAL with respect to the cancelation by PAL of the purchase of a chemical tanker from Timah's subsidiary, DAK. Under the settlement agreement, PAL will pay Timah an aggregate total of US$8,232,114.0 in quarterly payments from March 2014 until December 2023. Disputes arising out of the agreement are to be settled by arbitration at the Indonesia National Board of Arbitration.

Agreement with PT Industri Nuklir Indonesia (Persero) ("INUKI")

On November 4, 2015 (as amended and restated on January 16, 2017), Timah entered into a cooperation agreement with INUKI to revitalize the production of radioisotopes and radiopharmaceuticals. Under the terms of the cooperation agreement, Timah will bear the cost of the revitalization of the production facility, working capital of production and/or the procurement of radioisotopes and radiopharmeuticals up to a total amount of Rp.30.0 billion and will receive 60.0% of profit sharing. The agreement is valid up to November 3, 2021. Disputes arising out of the agreement are to be settled by arbitration at the Indonesia National Board of Arbitration.

Distribution Agreement with Pos Indonesia

On July 16, 2018, Antam entered into a distribution agreement with Pos Indonesia. The agreement covers the distribution of Antam's Logam Mulia products by Pos Indonesia to be made available for purchase in 205 post offices located throughout Indonesia. The agreement expires on July 15, 2019. Disputes arising out of the agreement are to be settled at South Jakarta District Court.

DESCRIPTION OF THE 2021 NOTES

For purposes of this "**Description of the 2021 Notes**," the term "**Company**" refers only to PT Indonesia Asahan Aluminium (Persero), a state-owned enterprise established and existing with limited liability under the laws of the Republic of Indonesia, and any successor obligor on the Notes (including the Surviving Person (as defined below, under the caption "— Consolidation, Merger and Sale of Assets")), and not to any of its Subsidiaries. Any reference to the "Notes" in this "**Description of the 2021 Notes**" is solely to the 2021 Notes. The Notes are to be issued under an indenture (the "**Indenture**") to be dated as of the Original Issue Date, between the Company and The Bank of New York Mellon, as trustee (the "**Trustee**").

The following is a summary of certain provisions of the Indenture, the Notes and the Escrow Agreement (as defined below). This summary does not purport to be complete and is qualified in its entirety by reference to all of the provisions of the Indenture and the Notes and of the Escrow Agreement. It does not restate the provisions of the Indenture or the Notes or the Escrow Agreement in their entirety. Whenever particular sections or defined terms of the Indenture not otherwise defined herein are referred to, such sections or defined terms are incorporated herein by reference. Copies of the Indenture and the Escrow Agreement will be available for inspection on or after the Original Issue Date during normal office hours at the corporate trust office of the Trustee at 240 Greenwich Street, New York, NY 10286, United States of America.

The proceeds from the offering of the Notes will be used to fund the purchase of shares in PTFI pursuant to the planned PTFI Share Acquisition and/or to refinance acquisition debt as set forth in this Offering Memorandum under the caption "Use of Proceeds" or to fund the Special Mandatory Redemption (as defined below). Pending such application of the proceeds, the net proceeds from the offering of the Notes will be deposited into one or more escrow accounts held by the Company in Indonesia with certain state-owned Indonesian banks and will only be released upon the fulfillment of certain conditions, as more fully described below under the captions "— Escrow of Proceeds" and "— Redemption Upon Special Mandatory Redemption Event."

Brief Description of the Notes

The Notes will:

(a) be direct, unsecured and unsubordinated obligations of the Company;

(b) be senior in right of payment to any existing and future obligations of the Company expressly subordinated in right of payment to the Notes;

(c) rank at least *pari passu* in right of payment with all other unsecured and unsubordinated Debt of the Company (subject to any priority rights of such unsubordinated Debt pursuant to applicable law); and

(d) be effectively subordinated to secured obligations of the Company and the obligations of its subsidiaries.

The Company will initially issue US$1,000,000,000 in aggregate principal amount of the Notes, which will mature on November 15, 2021 unless earlier redeemed pursuant to the terms thereof and the Indenture. The Indenture allows the Company to issue additional Notes from time to time (the "**Additional Notes**"), subject to certain limitations described under "— Further Issues" and applicable law. The Notes offered hereby and any Additional Notes may be treated as a single class for all purposes under the Indenture.

Interest

The Notes will bear interest at 5.230% per annum from the Original Issue Date or from the most recent interest payment date on which interest has been paid or duly provided for, payable semi-annually in arrears on May 15 and November 15 of each year (each, an "**Interest Payment Date**") commencing on May 15, 2019. Interest on the Notes will be paid to Holders of record at the close of business on each April 30 or October 30, immediately preceding an Interest Payment Date (each, a "**Record Date**"), notwithstanding any transfer, exchange or cancelation thereof after a Record Date and prior to the immediately following Interest Payment Date. Interest on the Notes will be calculated on the basis of a 360-day year comprised of twelve 30-day months.

Payment of Notes

In any case in which the date of the payment of principal of, premium, if any, or interest on the Notes (including any payment to be made on any date fixed for redemption or purchase of any Note) is not a Business Day in the relevant place of payment, then payment of principal, premium, if any, or interest need not be made in such place on such date but may be made on the next succeeding Business Day in such place. Any payment made on such Business Day will have the same force and effect as if made on the date on which such payment is due. Interest on overdue principal and interest and Additional Amounts, if any, will accrue at a rate that is 1% higher than the then applicable interest rate on the Notes.

The Notes will be issued only in fully registered form, without coupons, in minimum denominations of US$200,000 and integral multiples of US$1,000 in excess thereof. See "— Book-Entry; Delivery and Form." No service charge will be made for any registration of transfer or exchange of Notes, but the Company may require payment of a sum sufficient to cover any transfer tax or other similar governmental charge payable in connection therewith.

All payments on the Notes will be made in U.S. dollars in immediately available funds by the Company at the office or agency of the Company maintained for that purpose in the Borough of Manhattan, the City of New York (which initially will be the specified office of The Bank of New York Mellon (the "**Paying Agent**"), currently located at 240 Greenwich Street, New York, NY 10286, United States of America), and the Notes may be presented for registration of transfer or exchange at such office or agency. However, at the option of the Company, payment of interest may be made by wire transfer. Interest payable on the Notes held through DTC will be available to DTC participants (as defined herein) on the Business Day following payment thereof.

Further Issues

Subject to the covenants described below and in accordance with the terms of the Indenture, the Company may, from time to time, without notice to or the consent of the Holders, issue Additional Notes having the same terms and conditions as the Notes in all respects (or in all respects except for the issue date, issue price and the date of first payment of interest on them and, to the extent necessary, certain temporary securities law transfer restrictions) so that such Additional Notes may be consolidated and form a single class with the previously outstanding Notes and vote together as one class on all matters with respect to the Notes; *provided that*, in order for Additional Notes to have the same CUSIP, ISIN, or other identifying number as the outstanding Notes, the Additional Notes must be fungible with the outstanding Notes for U.S. federal income tax purposes.

In addition, the issuance of any Additional Notes by the Company will be subject to the following conditions:

(a) the Company shall have delivered to the Trustee an Officer's Certificate, in form and substance satisfactory to the Trustee, confirming that the issuance of the Additional Notes complies with the Indenture; and

(b) the Company shall have delivered to the Trustee one or more Opinions of Counsel, in form and substance satisfactory to the Trustee, confirming, among other things, (i) that the issuance of the Additional Notes does not conflict with applicable law and (ii) that such Additional Notes will constitute legally valid and binding obligations of the Company, enforceable in accordance with their terms, subject to customary exceptions.

Repurchase of Notes Upon a Change of Control

Not later than 30 days following a Change of Control, the Company will make an Offer to Purchase all outstanding Notes (a "**Change of Control Offer**") at a purchase price equal to 101.0% of the principal amount thereof plus accrued and unpaid interest, if any, to the Offer to Purchase Payment Date.

The Company will agree in the Indenture that it will timely repay all Debt or obtain consents as necessary under, or terminate, agreements or instruments that would otherwise prohibit a Change of Control Offer required

to be made pursuant to the Indenture. Notwithstanding these agreements, it is important to note that if the Company is unable to repay (or cause to be repaid) all of the Debt, if any, that would prohibit the repurchase of the Notes or is unable to obtain the requisite consents of the holders of such Debt, or terminate any agreements or instruments that would otherwise prohibit a Change of Control Offer, the Company would continue to be prohibited from purchasing the Notes. In that case, the failure of the Company to purchase tendered Notes would constitute an Event of Default (as defined below) under the Indenture.

Future Debt of the Company or its Subsidiaries may also (a) prohibit the Company from purchasing the Notes in the event of a Change of Control; (b) provide that a Change of Control is a default; or (c) require the repayment or repurchase of such Debt upon a Change of Control. Moreover, the exercise by the Holders of their right to require the Company to purchase the Notes could cause a default under other Debt, even if the Change of Control itself does not, due to the financial effect of the purchase on the Company or its Subsidiaries. The ability of the Company to pay cash to Holders of the Notes following the occurrence of a Change of Control may be limited by the financial resources then available to the Company. There can be no assurance that sufficient funds will be available when necessary to make the required purchase of the Notes. See "Risk Factors — Risks Relating to the Notes — We may not have the ability to raise the funds necessary to finance an offer to repurchase the Notes upon the occurrence of certain events constituting a change of control or otherwise as required by the Indenture governing the Notes."

Notwithstanding the above, the Company will not be required to make a Change of Control Offer following a Change of Control if a third party makes the Change of Control Offer in the manner, at the times and otherwise in compliance with the requirements set forth in the Indenture applicable to a Change of Control Offer to be made by the Company and such third party purchases all Notes validly tendered and not withdrawn under such Change of Control Offer.

A Holder will have no right to require the Company to repurchase portions of Notes if it would result in the issuance of new Notes, representing the portion not purchased, in an amount of less than US$200,000.

The Company will comply with the requirements of Rule 14e-1 under the Exchange Act and any other securities laws and regulations thereunder to the extent those laws and regulations are applicable in connection with each repurchase of Notes pursuant to a Change of Control Offer. To the extent that the provisions of any securities laws or regulations conflict with the provisions of the covenant described hereunder, the Company will comply with the applicable securities laws and regulations and will not be deemed to have breached its obligations described hereunder by virtue of its compliance with such laws and regulations.

Except as described above with respect to a Change of Control Offer, the Indenture does not contain provisions that permit the Holders to require that the Company purchase or redeem the Notes in the event of a takeover, recapitalization or similar transaction.

The Trustee shall not be required to take any steps to ascertain whether a Change of Control or any event which could lead to the occurrence of a Change of Control has occurred and shall not be liable to any person for any failure to do so.

Escrow of Proceeds

Concurrently with the closing of the offering of the Notes on the Original Issue Date, the Company will enter into an escrow agreement (the "**Escrow Agreement**") dated as of the Original Issue Date among the Company, the Trustee, PT Bank Mandiri (Persero) Tbk as escrow agent (the "**Escrow Agent**"), and PT Bank Mandiri (Persero) Tbk, PT Bank Negara Indonesia (Persero) Tbk and PT Bank Rakyat Indonesia (Persero) Tbk as escrow banks (the "**Escrow Banks**"), pursuant to which the Company will deposit or will instruct the Initial Purchasers to deposit with the Escrow Banks an amount in cash equal to the net proceeds of the offering of the Notes sold on the Original Issue Date into one or more Escrow Accounts (as defined below) held by the Company in Indonesia with the Escrow Banks, in the amounts specified for each of the Escrow Accounts in the Escrow Agreement. The initial funds deposited into the Escrow Accounts, and all other funds, securities, interest, dividends and other distributions and payments thereon credited to each Escrow Account (less any funds paid in accordance with the Escrow Agreement) are referred to collectively as the "**Escrowed Funds**."

The Escrowed Funds will be released from the Escrow Accounts only in accordance with the terms of the Escrow Agreement. Pursuant to the terms of the Escrow Agreement, the Escrowed Funds may be released from the Escrow Accounts only in whole and not in part and either (i) to fund the completion of the PTFI Share Acquisition, including associated costs and expenses, or (ii) if the PTFI Share Acquisition has not been completed by June 30, 2019 (such non-completion of the PTFI Share Acquisition by such date, the "**Special Mandatory Redemption Event**"), to fund the redemption by the Company of the Notes (the "**Special Mandatory Redemption**"), in whole and not in part, at a redemption price (the "**Special Mandatory Redemption Price**") equal to 101.0% of the principal amount thereof, together with accrued and unpaid interest (including any Additional Amounts), if any, up to but not including the date fixed for redemption (the "**Special Mandatory Redemption Date**"); see "— Redemption Upon Special Mandatory Redemption Event," below. The Escrow Agent will release the Escrowed Funds, in whole but not in part, (the "**Release**") to the Company or to the order of the Company (as described in more detail below) on a date specified by the Company (the "**Escrow Release Date**") after delivery by the Company and the Trustee of a release instruction and delivery by the Company of (i) an Officer's Certificate addressed to the Escrow Agent and the Trustee, upon which both the Escrow Agent and the Trustee shall rely, without further investigation, requesting the Release of the Escrowed Funds and certifying certain matters of fact, as further described below, and (ii) an Opinion of Counsel stating that all conditions precedent provided for in the Indenture and the Escrow Agreement relating to the Release have been complied with, prior to the Escrow Release Date.

No provisions of the Escrow Agreement (including those relating to the Release of the Escrowed Funds) may be amended, waived or modified in any manner materially adverse to the Holders without the written consent of the Holders of a majority in principal amount of the Notes outstanding; *provided that* no such amendment, waiver or modification shall reduce the Special Mandatory Redemption Price without the written consent of each affected Holder.

In the event an Event of Default has occurred prior to the Special Mandatory Redemption Event and prior to completion of the PTFI Share Acquisition, the Trustee may, by notice in writing to the Company and the Escrow Agent, require the Escrow Agent (i) to act thereafter, until otherwise instructed by the Trustee, as agent of the Trustee under the provisions of the Escrow Agreement on the terms provided thereby and (ii) to deliver the Escrowed Funds, to the Trustee or as the Trustee shall direct, for payment to the Holders.

Release for PTFI Share Acquisition

In the context of a Release of the Escrowed Funds for the completion of the PTFI Share Acquisition, the Officer's Certificate shall certify that the following conditions have been met and will be met following the Release on the Escrow Release Date:

(1) the parties to the PTFI Share Acquisition Agreements have confirmed that all the conditions precedent described in the PTFI Share Acquisition Agreements for completion of the PTFI Share Acquisition have been met (or waived in compliance with the PTFI Share Acquisition Agreements), and the parties to the PTFI Share Acquisition Agreements have designated a PTFI Share Acquisition Closing Date for the PTFI Share Acquisition pursuant to the terms of the PTFI Share Acquisition Agreements (and the certificate shall include relevant documentation evidencing such confirmation);

(2) following the Release of the Escrowed Funds on the Escrow Release Date, the PTFI Share Acquisition will be completed pursuant to the terms of the PTFI Share Acquisition Agreements and on or prior to the PTFI Share Acquisition Closing Date; and

(3) as of the date of the Officer's Certificate and the Escrow Release Date, no Event of Default has occurred and no Event of Default would occur taking into account the completion of the PTFI Share Acquisition and the application of the Escrowed Funds as set forth under the caption "Certain Covenants — Use of Proceeds."

The Officer's Certificate shall specify the PTFI Share Acquisition Closing Date and the Escrow Release Date. The Escrow Release Date shall be no more than one Business Day prior to the PTFI Share Acquisition Closing Date

and no later than the PTFI Share Acquisition Closing Date. The Company may instruct the Escrow Agent to Release the Escrowed Funds to the Company itself or to a third party at the order of the Company, at the Company's option. Any excess Escrowed Funds after payment of the purchase price for the PTFI Share Acquisition and related costs and expenses and after payment of fees and expenses of the Escrow Agent and Trustee shall enure to the Company.

Release for Special Mandatory Redemption

In the context of a Release of the Escrowed Funds to fund the Special Mandatory Redemption, the Officer's Certificate shall certify that the following conditions have been met and will be met following the Release on the Escrow Release Date:

(1) the Special Mandatory Redemption Event has occurred;

(2) the Company has provided Holders with a notice regarding the Special Mandatory Redemption, as required by the Indenture and described below under the Caption "— Redemption Upon Special Mandatory Redemption Event" (and a copy of such notice shall be attached to the certificate); and

(3) the Company will complete the Special Mandatory Redemption as required under the terms of the Indenture.

The Officer's Certificate shall specify the amount equal to the Special Mandatory Redemption Price and the Escrow Release Date, which shall be no more than one Business Day prior to the Special Mandatory Redemption Date. The Release of the Escrowed Funds in the amount equal to the Special Mandatory Redemption Price (or, if the amount of Escrowed Funds is less than the amount equal to the Special Mandatory Redemption Price, then the full amount of Escrowed Funds) shall be only to the Trustee or the Paying Agent, for payment to the Holders, and not to the Company, and the Company shall instruct the Escrow Agent accordingly in the Officer's Certificate. Any excess Escrowed Funds after payment of the Special Mandatory Redemption Price and after payment of fees and expenses of the Escrow Agent and Trustee shall be delivered to and enure to the Company.

Redemption Upon Special Mandatory Redemption Event

Upon the occurrence of the Special Mandatory Redemption Event, the Company or the Surviving Person, as the case may be, will redeem the Notes, in whole and not in part, upon giving 30 days' notice to the Holders (which notice shall be irrevocable and shall oblige the Company or the Surviving Person to redeem the Notes on the Special Mandatory Redemption Date and which notice shall be given promptly upon the occurrence of the Special Mandatory Redemption Event), at the Special Mandatory Redemption Price. The Special Mandatory Redemption Date shall be no later than 30 days after the Special Mandatory Redemption Event.

On the Business Day prior to the Special Mandatory Redemption Date, the Escrow Agent shall apply funds standing to the credit of the Escrow Account to make a transfer from the Escrow Account to the Trustee or the Paying Agent for payment to the Holders of the Special Mandatory Redemption Price.

Following a Special Mandatory Redemption, the Notes will be canceled.

Sinking Fund

There will be no sinking fund payments for the Notes.

Additional Amounts

All payments of principal of, and premium, if any, and interest on the Notes will be made without withholding or deduction for, or on account of, any present or future taxes, duties, assessments or other governmental charges of whatever nature imposed or levied by or within any jurisdiction in which the Company or the Surviving Person is organized or resident for tax purposes (or any political subdivision or taxing authority thereof or therein) or through which payment is made on behalf of the Company or the Surviving Person (each, as applicable, a "**Relevant Taxing Jurisdiction**"), unless such withholding or deduction is required by law or by regulation or governmental policy having the force of law.

In such event, the Company or the Surviving Person, as the case may be, will make or cause to be made such deduction or withholding, make payment of the amount so deducted or withheld to the appropriate governmental authority and will pay such additional amounts ("**Additional Amounts**") as will result in receipt by the Holder of such amounts as would have been received by such Holder had no such withholding or deduction been required. However, no Additional Amounts will be payable:

(a) for or on account of:

(i) any tax, duty, assessment or other governmental charge that would not have been imposed but for:

(A) the existence of any present or former connection between the Holder or beneficial owner of such Note and the Relevant Taxing Jurisdiction including, without limitation, such Holder's or beneficial owner's being or having been a citizen or resident of such Relevant Taxing Jurisdiction or treated as a resident thereof or being or having been physically present or engaged in a trade or business therein or having or having had a permanent establishment therein, other than merely holding such Note or the receipt of payments thereunder or enforcing payment under the Note;

(B) the presentation of such Note (where presentation is required) more than 30 days after the later of the date on which the payment of the principal of, premium, if any, or interest on, such Note became due and payable pursuant to the terms thereof or was made or duly provided for, except to the extent that the Holder thereof would have been entitled to such Additional Amounts if it had presented such Note for payment on any date within such 30-day period;

(C) the failure of the Holder or beneficial owner to comply with a timely request of the Company or the Surviving Person, as the case may be, addressed to the Holder, to provide information to the Company or the Surviving Person on an applicable Form DGT-1, Form DGT-2 or any other document, information or form concerning such Holder's or beneficial owner's nationality, residence, identity or connection with any Relevant Taxing Jurisdiction, if and to the extent that due and timely compliance with such request is required under the laws of a Relevant Taxing Jurisdiction in order to reduce or eliminate any withholding or deduction as to which Additional Amounts would have otherwise been payable to such Holder; or

(D) the presentation of such Note (where presentation is required) for payment in the Relevant Taxing Jurisdiction, unless such withholding or deduction could not have been avoided by presenting the Note for payment elsewhere;

(ii) any estate, inheritance, gift, sale, transfer or similar tax, assessment or other governmental charge;

(iii) any tax, duty, assessment or other governmental charge which is payable other than by deduction or withholding from payments of principal of or interest or any premium on the Note;

(iv) any tax required to be withheld or deducted under Sections 1471 to 1474 of the U.S. Internal Revenue Code of 1986, as amended (the "**Code**") (or any amended or successor versions of such Sections), any agreements described under section 1471(b) of the Code, any regulations or other official guidance thereunder, any intergovernmental agreement relating thereto, or any law, regulation or other official guidance enacted in any jurisdiction implementing any of the foregoing; or

(v) any combination of taxes, duties, assessments or other governmental charges referred to in the preceding paragraphs (i), (ii), (iii) and (iv); or

(b) with respect to any payment of the principal of, or premium, if any, or interest on, such Note to such Holder, if the Holder is a fiduciary, corporation, limited liability company, partnership or person other than the sole beneficial owner of any payment to the extent that, under the laws of a Relevant Taxing Jurisdiction, such payment would be required to be included in income, for tax purposes, of a

beneficiary or settlor with respect to the fiduciary, a shareholder of that corporation, a member of that partnership or limited liability company or a beneficial owner who would not have been entitled to such Additional Amounts had that beneficiary, settlor, shareholder, partner, or beneficial owner been the Holder thereof; or

(c) any combination of paragraphs (a) and (b).

As a result of these provisions, there are circumstances in which taxes could be withheld or deducted but Additional Amounts would not be payable to some or all beneficial owners of Notes.

Whenever there is mentioned in any context the payment of principal, premium or interest in respect of any Note, such mention will be deemed to include payments of Additional Amounts provided for in the Indenture to the extent that, in such context, Additional Amounts are, were or would be payable in respect thereof.

The Paying Agent and the Trustee will make payments free of withholdings or deductions on account of taxes unless required by applicable law. If such a deduction or withholding is required, the Paying Agent or the Trustee will not be obligated to pay any Additional Amount to the recipient unless such an Additional Amount is received by the Paying Agent or the Trustee from the Company or the Surviving Person.

In addition to the foregoing, the Company or the Surviving Person, as the case may be, will also pay and indemnify the Holder or beneficial owner, as applicable, for any present or future stamp, issue, registration, court or documentary taxes, or any other excise or property taxes, charges or similar levies (including penalties and interest) which are levied by any jurisdiction on the execution, delivery, issuance, registration, redemption or retirement of any of the Notes or the Indenture or any other document referred to therein (other than a transfer of the Notes after this offering) or any such taxes, charges or similar levies imposed by the United States, Indonesia, or any political subdivision thereof as a result of, or in connection with, the enforcement of any of the Notes.

Redemption for Taxation Reasons

The Notes may be redeemed at the option of the Company or the Surviving Person, as the case may be, as a whole but not in part, by giving not less than 30 days' nor more than 60 days' notice to the Holders (which notice will be irrevocable) and the Trustee, at a redemption price equal to 100% of the principal amount thereof, together with accrued and unpaid interest (including any Additional Amounts), if any, to (but not including) the date fixed by the Company or the Surviving Person, as the case may be, for redemption (the "**Tax Redemption Date**"), if the Company or the Surviving Person, as the case may be, is, or on the next Interest Payment Date would be, required to pay Additional Amounts, and such requirement cannot be avoided by taking reasonable measures (including an appointment of a new paying agent) by the Company or the Surviving Person, as the case may be, as a result of:

(a) any change in, or amendment to, the laws or any regulations or rulings promulgated thereunder of a Relevant Taxing Jurisdiction affecting taxation; or

(b) any change in, or amendment to, an official position regarding the application, administration or interpretation of such laws, regulations or rulings (including a holding, judgment or order by a court of competent jurisdiction or a change in published practice),

which change or amendment is announced and becomes effective on or after the Original Issue Date with respect to any payment due or to become due under the Notes or the Indenture (or, if the Relevant Taxing Jurisdiction was not a Relevant Taxing Jurisdiction on the Original Issue Date, the date on which such jurisdiction became a Relevant Taxing Jurisdiction under the Indenture).

Notwithstanding the above, (i) no such notice of redemption will be given earlier than 90 days prior to the earliest date on which the Company or the Surviving Person, as the case may be, would be obligated to pay such Additional Amounts if a payment in respect of the Notes were then due, and (ii) if such requirement to pay Additional Amounts is due to taxes of the Republic of Indonesia (or any political subdivision or taxing authority thereof or therein), the Company or the Surviving Person shall only be permitted to redeem the Notes in

accordance with the provisions above if the rate of withholding or deduction in respect of which Additional Amounts are required is in excess of 20%.

Prior to the mailing of any notice of redemption of the Notes pursuant to the foregoing, the Company will deliver to the Trustee:

(a) an Officer's Certificate stating that such change or amendment referred to in the prior paragraph has occurred, and describing the facts related thereto and stating that such requirement cannot be avoided by the Company, taking reasonable measures available to it; and

(b) an Opinion of Counsel of recognized standing with respect to tax matters of the Relevant Taxing Jurisdiction stating that the requirement to pay such Additional Amounts, and withhold or deduct such taxes, duties, assessments or other government charges results from such change or amendment referred to in the prior paragraph.

The Trustee shall be entitled to accept and rely upon such certificate and opinion as sufficient evidence of the satisfaction of the conditions precedent described above without further verification, and it will be conclusive and binding on the Holders. The Trustee will not investigate or verify such certificate and opinion.

Any Notes that are redeemed will be canceled.

Certain Covenants

Set forth below are summaries of certain covenants contained in the Indenture.

Negative Pledge

So long as any of the Notes remain outstanding, the Company will not create or permit to exist, and the Company will ensure that none of its Material Subsidiaries will create or permit to exist, any Lien for the benefit of the holders of any Securities on the whole or any part of its property or assets, present or future, to secure: (a) payment of any sum due in respect of any Securities; (b) any payment under any guarantee in respect of any Securities; or (c) any indemnity or other like obligation in respect of any Securities, without in any such case, at the same time or prior thereto, making effective provision whereby the Notes are accorded (i) the same Liens equally and ratably as are created or subsisting to secure any such Securities, guarantee or indemnity or like obligation, or (ii) such other Liens as may be consented to by the holders of a majority in aggregate principal amount of the outstanding Notes.

However, the foregoing restriction shall not apply to (a) any Lien existing on any property or assets at the time of acquisition of such property or assets by the Company; *provided that* such Lien was not created, and the principal, capital or nominal amount of the Securities secured by such Lien outstanding at the time of such acquisition was not increased, in contemplation of such acquisition or in connection therewith, and (b) any Lien arising out of the refinancing, extension, renewal or refunding of any Securities secured by any such Lien; *provided that* the principal, capital or nominal amount of such Securities is not increased and such Securities are not secured by any additional property or assets.

Use of Proceeds

The Company will use the proceeds received from the Notes as set forth in this Offering Memorandum under the caption "Use of Proceeds" or for the Special Mandatory Redemption, as described under the caption "— Redemption Upon Special Mandatory Redemption Event."

Provision of Financial Statements and Reports

For so long as any of the Notes remain outstanding, the Company will file with the Trustee and furnish to the Holders upon request:

(a) as soon as they are available, but in any event within 120 calendar days after the end of its fiscal year, copies of its financial statements (on a consolidated basis) in respect of such financial year (including a statement of income, balance sheet and cash flow statement) audited by a member firm of an internationally recognized firm of independent accountants; and

(b) as soon as they are available, but in any event within 90 calendar days, after the end of each of its first, second and third fiscal quarters, copies of its financial statements (on a consolidated basis) in respect of such period (including a statement of income, balance sheet and cash flow statement) prepared on a basis consistent with its audited financial statements, together with a certificate signed by the Person then authorized to sign financial statements on behalf of it, to the effect that such financial statements are true in all material respects and present fairly its financial position as at the end of, and the results of its operations for, the relevant quarterly period;

provided that, in each case, the financial statements shall be in the English language, or if such statements shall be in any other language, accompanied with an English translation of the same and translated by (i) an internationally recognized firm of independent accountants or (ii) a professional translation service provider and checked by an internationally recognized firm of independent accountants, together with a certificate in English signed by the Person then authorized to sign financial statements of the Company, certifying that such translation is complete and accurate (on each of which the Trustee may conclusively rely without liability to any Holder or any other person).

If the Company makes any financial or other report (or any English translation of any financial or other report in any other language) described above available on its corporate website, the Company will be deemed to have satisfied the foregoing obligation to furnish such report (or such translation) to the Holders upon request.

In addition, so long as any of the Notes remain outstanding, the Company will provide to the Trustee promptly and in any event within seven days after it obtains actual knowledge of the occurrence thereof, written notice of the occurrence of any event or condition which constitutes an Event of Default and an Officer's Certificate setting forth the details thereof and the action it is taking or proposes to take with respect thereto, and the Trustee shall be entitled to accept such certificate as sufficient evidence thereof, in which event it shall be conclusive and binding on the Holders.

Further, the Company has agreed that, for so long as there are Notes which are "restricted securities" within the meaning of Rule 144(a)(3) under the U.S. Securities Act of 1933, as amended (the "**Securities Act**"), during any period in which the Company is neither subject to Section 13 or 15(d) of the U.S. Securities Exchange Act of 1934, as amended (the "**Exchange Act**"), nor exempt from reporting pursuant to Rule 12g3-2(b) thereunder, the Company will supply to (i) any Holder or beneficial owner of a Note or (ii) a prospective purchaser of a Note or a beneficial interest therein designated by such Holder or beneficial owner, the information specified in, and meeting the requirements of, Rule 144A(d)(4) under the Securities Act upon the request of any Holder or beneficial owner of a Note.

Events of Default

The following events will be defined as "**Events of Default**" in the Indenture:

(a) default in the payment of principal of (or premium, if any, on) the Notes when the same becomes due and payable at maturity, upon acceleration, redemption or otherwise;

(b) default in the payment of interest on any Note when the same becomes due and payable, and such default continues for a period of 30 consecutive days;

(c) default in the performance of or breach of any provisions of the covenants described under "— Consolidation, Merger and Sale of Assets" or failure to make or consummate a Change of Control Offer in the manner described under the caption "— Repurchase of Notes Upon a Change of Control" or failure to make or consummate the Special Mandatory Redemption in the manner described under the caption "— Redemption Upon Special Mandatory Redemption Event";

(d) default in the performance of or breach of any other covenant or agreement in the Indenture or under the Notes (other than a default specified in paragraph (a), (b) or (c) above) and such default or breach continues for a period of 60 consecutive days after written notice by the Trustee or the Holders of 25% or more in aggregate principal amount of the outstanding Notes;

(e) (i) the Company ceasing to own and control, directly or indirectly, at least 51.0% of the issued and paid-up shares of any of its Subsidiaries that are Material Subsidiaries as of the Original Issue Date or, subsequent to the closing of the PTFI Share Acquisition, of PTFI or (ii) in the event of a Qualifying PTFI IPO, the Company ceasing to own and control, directly or indirectly, at least 40.0% of the issued and paid-up shares of PTFI or ceasing to be the single largest beneficial shareholder of PTFI;

(f) there occurs with respect to any Debt of the Company or any of its Material Subsidiaries or PTFI having an outstanding principal amount of US$50.0 million (or the Dollar Equivalent thereof) or more in the aggregate for all such Debt of all such Persons, whether such Debt now exists or will hereafter be created, (A) an event of default that has caused the holder thereof to declare such Debt to be due and payable prior to its Stated Maturity or (B) the failure to make a payment of principal (subject to the applicable grace period in the relevant documents) of such Debt when the same becomes due;

(g) one or more final judgments or orders for the payment of money are rendered against the Company or any of its Subsidiaries or PTFI and are not paid or discharged, and there is a period of 60 consecutive days following entry of the final judgment or order that causes the aggregate amount for all such final judgments or orders outstanding and not paid or discharged against all such Persons to exceed US$50.0 million (or the Dollar Equivalent thereof) during which a stay of enforcement, by reason of a pending appeal or otherwise, is not in effect;

(h) an involuntary case or other proceeding is commenced against the Company or any Material Subsidiary or PTFI with respect to it or its Debts under any applicable bankruptcy, insolvency or other similar law now or hereafter in effect seeking the appointment of a receiver, liquidator, assignee, custodian, trustee, sequestrator or similar official of the Company or any Material Subsidiary or PTFI or for any substantial part of the property and assets of the Company or any Material Subsidiary or PTFI and such involuntary case or other proceeding remains undismissed and unstayed for a period of 60 consecutive days; or an order for relief is entered against the Company or any Material Subsidiary or PTFI under any applicable bankruptcy, insolvency or other similar law as now or hereafter in effect; or

(i) the Company or any Material Subsidiary or PTFI (i) commences a voluntary case under any applicable bankruptcy, insolvency or other similar law now or hereafter in effect, or consents to the entry of an order for relief in an involuntary case under any such law, (ii) consents to the appointment of or taking possession by a receiver, liquidator, assignee, custodian, trustee, sequestrator or similar official of the Company or any Material Subsidiary or PTFI or for all or substantially all of the property and assets of the Company or any Material Subsidiary or PTFI or (iii) effects any general assignment for the benefit of creditors.

If an Event of Default (other than an Event of Default specified in paragraph (h) or (i) above) occurs and is continuing under the Indenture, the Trustee (in its sole discretion and without further notice) or the Holders of at least 25% in aggregate principal amount of the Notes, then outstanding, by written notice to the Company (and to the Trustee if such notice is given by the Holders), may, and the Trustee at the written request of such Holders will (subject to being indemnified and/or secured and/or prefunded to its satisfaction), declare the principal of, premium, if any, and accrued and unpaid interest on the Notes to be immediately due and payable. Upon a declaration of acceleration, such principal of, premium, if any, and accrued and unpaid interest will be immediately due and payable. If an Event of Default specified in paragraph (h) or (i) above occurs, the principal of, premium, if any, and accrued and unpaid interest on the Notes then outstanding will automatically become and be immediately due and payable without any declaration or other act on the part of the Trustee or any Holder.

The Holders of at least a majority in principal amount of the outstanding Notes by written notice to the Company and the Trustee, may on behalf of all of the Holders waive all past defaults and rescind and annul a declaration of acceleration and its consequences with respect to the Notes if:

(a) the Company pays or deposits with the Trustee a sum sufficient to pay all monies then due with respect to the Notes (other than amounts due solely because of such declaration of acceleration) and all other existing Events of Default have been cured or waived, and

(b) the rescission would not conflict with any judgment or decree of a court of competent jurisdiction.

Upon such waiver, the Default will cease to exist, and any Event of Default arising therefrom will be deemed to have been cured, but no such waiver will extend to any subsequent or other Default or impair any right consequent thereon.

The Holders of at least a majority in aggregate principal amount of the outstanding Notes may direct the time, method and place of conducting any proceeding for any remedy available to the Trustee or exercising any trust or power conferred on the Trustee, subject to the Trustee being indemnified and/or secured and/or prefunded to its satisfaction in advance of the proceedings. However, the Trustee may refuse to follow any direction that is unclear, conflicting or equivocal, that conflicts with law or the Indenture, that may involve the Trustee in personal liability, or that may be unduly prejudicial to the rights of Holders not joining in the giving of such direction and may take any other action it deems proper that is not inconsistent with any such direction received from Holders. In addition, the Trustee will not be required to expend its own funds in following such direction if it does not believe that reimbursement or satisfactory indemnification and/or security and/or prefunding is assured to it.

A Holder may not pursue or institute any proceeding, judicial or otherwise, with respect to the Indenture or the Notes, or for the appointment of a receiver or trustee, or for any other remedy under the Indenture or the Notes, unless:

(a) the Holder has previously given the Trustee written notice of a continuing Event of Default;

(b) the Holders of at least 25% in aggregate principal amount of outstanding Notes make a written request to the Trustee to pursue the remedy;

(c) such Holder or Holders offer the Trustee indemnity and/or security and/or pre-funding satisfactory to the Trustee against any costs, liability or expense to be incurred in compliance with such request;

(d) the Trustee does not comply with the request within 60 days after receipt of the request and the offer of indemnity and/or security and/or pre-funding; and

(e) during such 60-day period, the Holders of a majority in aggregate principal amount of the outstanding Notes do not give the Trustee a direction that is inconsistent with the request.

However, such limitations do not apply to the right of any Holder of a Note to receive payment of the principal of, premium, if any, or interest, and Additional Amounts, if any, on, such Note or to bring suit for the enforcement of any such payment, on or after the due date expressed in the Notes, which right will not be impaired or affected without the consent of the Holder.

Officers of the Company must certify to the Trustee in writing, on or before a date not more than 120 calendar days after the end of each fiscal year, that a review has been conducted of the activities of the Company and its Subsidiaries and PTFI and the Company's performance under the Indenture and the Notes and that the Company has fulfilled all obligations thereunder, or, if there has been a default in the fulfillment of any such obligation, specifying each such default and the nature and status thereof. The Company will also be obligated to notify the Trustee in writing of any default or defaults in the performance of any covenants or agreements under the Indenture. See "— Provision of Financial Statements and Reports."

The Trustee and the Agents need not do anything to ascertain whether any Event of Default has occurred or is continuing and will not be responsible to Holders or any other person for any loss arising from any failure by it to do so, and the Trustee or the Agents may assume that no such event has occurred and that the Company is performing all its obligations under the Indenture and the Notes unless the Trustee has received written notice of the occurrence of such event or facts establishing that an Event of Default has occurred or the Company is not performing all of its obligations under the Indenture and the Notes. The Trustee is entitled to rely on any Opinion of Counsel or Officer's Certificate regarding whether an Event of Default has occurred.

Consolidation, Merger and Sale of Assets

The Company will not consolidate with, or merge with or into, another Person, permit any Person to merge with or into it, or sell, convey, transfer, lease or otherwise dispose of all or substantially all of its properties and

assets, computed on a consolidated basis with its Subsidiaries (as an entirety or substantially an entirety in one transaction or a series of related transactions), unless:

(a) the Company will be the continuing Person, or the Person (if other than the Company) formed by such consolidation or merger or that acquired or leased such property and assets (the "**Surviving Person**") will be a corporation organized and validly existing under the laws of the jurisdiction in which the Company is organized and will expressly assume, by a supplemental indenture to the Indenture, executed and delivered to the Trustee, all the obligations of the Company under the Indenture and the Notes (including, if applicable, pursuant to the Escrow Agreement), including the obligation to pay Additional Amounts, and under the Escrow Agreement, and the Indenture and the Notes and the Escrow Agreement will remain in full force and effect;

(b) immediately after giving effect to such transaction, no Default or Event of Default will have occurred and be continuing; and

(c) the Company delivers to the Trustee an Officer's Certificate and an Opinion of Counsel, in each case stating that such consolidation, merger or transfer and the relevant supplemental indenture (and, if applicable, any documentation in respect of the Escrow Agreement) complies with this provision and that all conditions precedent provided for in the Indenture relating to such transaction have been complied with and that the relevant supplemental indenture is enforceable.

For purposes of this covenant, the conveyance, transfer or lease of all or substantially all of the property or assets of one or more Subsidiaries of the Company, which constitutes all or substantially all of the property or assets of the Company and its Subsidiaries on a consolidated basis, shall be deemed to be the transfer of all or substantially all of the property or assets of the Company.

Although there is a limited body of case law interpreting the phrase "substantially all," there is no precise established definition of the phrase under applicable law. Accordingly, in certain circumstances there may be a degree of uncertainty as to whether a particular transaction would involve "all or substantially all" of the property or assets of a Person.

The foregoing provisions would not necessarily afford Holders protection in the event of highly-leveraged or other transactions involving the Company that may adversely affect Holders.

Payments for Consents

The Company will not, and will not permit any of its Subsidiaries or PTFI to, directly or indirectly, pay or cause to be paid any consideration, whether by way of interest, fee or otherwise, to any Holder for or as an inducement to any consent, waiver or amendment of any of the terms or provisions of the Indenture or the Notes, unless such consideration is offered to be paid or is paid to all Holders that consent, waive or agree to amend such term or provision within the time period set forth in the solicitation documents relating to such consent, waiver or amendment. Notwithstanding the foregoing, in any offer or payment of consideration for, or as an inducement to, any consent, waiver or amendment of any of the terms or provisions of the Indenture or the Notes in connection with an exchange offer, the Company and any of its Subsidiaries and PTFI may exclude (a) holders or beneficial owners of the Notes that are not qualified institutional buyers as defined in Rule 144A under the Securities Act, and (b) holders or beneficial owners of the Notes in any jurisdiction where the inclusion of such holders or beneficial owners would require the Company or any of its Subsidiaries or PTFI to comply with the registration requirements or other similar requirements under any securities laws of such jurisdiction, or the solicitation of such consent, waiver or amendment from, or the granting of such consent or waiver, or the approval of such amendment by, holders or beneficial owners in such jurisdiction would be unlawful, in each case as determined by the Company in its sole discretion.

Defeasance

Defeasance and Discharge

The Indenture will provide that the Company will be deemed to have paid and will be discharged from any and all obligations in respect of the Notes on the 183rd day after the deposit referred to below and payments of

all amounts due to the Trustee were made, and the provisions of the Indenture will no longer be in effect with respect to the Notes (except for, among other matters, certain obligations to register the transfer or exchange of the Notes, to replace stolen, lost or mutilated Notes, to maintain paying agencies and to hold monies for payment in trust and to pay Additional Amounts) if, among other things:

(a) the Company has (i) deposited with the Trustee, in trust, cash in U.S. dollars, U.S. Government Obligations or a combination thereof that through the payment of interest, premium, if any, and principal in respect thereof in accordance with their terms will provide money in an amount sufficient to pay the principal of, premium, if any, and accrued interest on the Notes on the Stated Maturity of such payments in accordance with the terms of the Indenture and the Notes and (ii) delivered to the Trustee (x) a certificate of an internationally recognized firm of independent accountants to the effect that the amount deposited by the Company is sufficient to provide payment for the principal of, premium, if any, and accrued interest on, the Notes on the Stated Maturity of such payment in accordance with the terms of the Indenture and the Notes and (y) an Opinion of Counsel to the effect that the Holders have a valid, perfected, exclusive security in such trust;

(b) the Company has delivered to the Trustee either (x) an Opinion of Counsel of recognized standing with respect to U.S. federal income tax matters which is based on a change in applicable U.S. federal income tax law occurring after the Original Issue Date to the effect that beneficial owners will not recognize income, gain or loss for U.S. federal income tax purposes as a result of the Company's exercise of its option under this "— Defeasance and Discharge" provision and will be subject to U.S. federal income tax on the same amount and in the same manner and at the same time as would have been the case if such deposit, defeasance and discharge had not occurred or (y) a ruling directed to the Company or the Trustee received from the U.S. Internal Revenue Service to the same effect as the aforementioned Opinion of Counsel;

(c) the Company has delivered to the Trustee an Officer's Certificate stating that the deposit was not made by it with the intent of preferring the Holders over any other of its creditors or with the intent of defeating, hindering, delaying or defrauding any other of its creditors or others; and

(d) immediately after giving effect to such deposit on a pro forma basis, no Event of Default, or event that after the giving of notice or lapse of time or both would become an Event of Default, will have occurred and be continuing on the date of such deposit or during the period ending on the 183rd day after the date of such deposit, and such defeasance will not result in a breach or violation of, or constitute a default under, any other agreement or instrument to which the Company or any Material Subsidiary or PTFI is a party or by which the Company or any Material Subsidiary or PTFI is bound.

Amendments and Waivers

Amendments Without Consent of Holders

The Indenture and the Escrow Agreement may be amended or supplemented, without the consent of any Holder of Notes, to:

(a) cure any ambiguity, defect or inconsistency in the Indenture or the Notes or the Escrow Agreement, provided that any such amendment may not adversely affect the interests of the Holder;

(b) comply with the provisions described under "Certain Covenants — Consolidation, Merger and Sale of Assets";

(c) evidence and provide for the acceptance of appointment by a successor Trustee;

(d) add any guarantor or guarantee with respect to the Notes;

(e) provide for the issuance of Additional Notes in accordance with the limitations set forth in the Indenture;

(f) effect any change in any other case where a supplemental indenture to the Indenture is required or permitted to be entered into pursuant to the provisions of the Indenture without the consent of any Holder;

(g) effect any changes to the Indenture in a manner necessary to comply with the procedures of DTC;

(h) provide collateral to secure the Notes;

(i) make any other change that does not materially and adversely affect the rights of any Holder of Notes;

(j) comply with the rules of any applicable securities depositary; or

(k) conform the text of the Indenture or the Notes to any provision of this "Description of the 2021 Notes" to the extent that such provision in this "Description of the 2021 Notes" was intended to be a verbatim recitation of a provision of the Indenture or the Notes.

Amendments With Consent of Holders

Amendments of the Indenture and the Escrow Agreement may be made by the Company and the Trustee with the consent of the Holders of not less than a majority in aggregate principal amount of the outstanding Notes, and the holders of a majority in aggregate principal amount of the outstanding Notes may waive future compliance by the Company with any provision of the Indenture or the Notes or the Escrow Agreement, *provided that* no such modification, amendment or waiver may, without the consent of each Holder:

(a) change the Stated Maturity of the principal of, or any installment of interest on, any Note;

(b) reduce the principal amount of, or premium, if any, or interest on, any Note or reduce the Special Mandatory Redemption Price;

(c) change the currency, time or place of payment of principal of, or premium, if any, or interest on, any Note;

(d) impair the right to institute suit for the enforcement of any payment on or after the Stated Maturity (or, in the case of a redemption, on or after the redemption date) of any Note;

(e) reduce the above stated percentage of outstanding Notes the consent of whose Holders is necessary to modify or amend the Indenture, to waive compliance with certain provisions of the Indenture or to waive certain defaults;

(f) waive a default in the payment of principal of, premium, if any, or interest on the Notes;

(g) amend, change or modify (i) the obligation of the Company in respect of the due and punctual payment of the principal of, premium, if any, or interest on, any Note; (ii) the obligation of the Company to pay Additional Amounts, or (iii) the ranking of the Notes, in each case, in a manner that adversely affects the Holders; or

(h) reduce the premium payable upon the redemption or repurchase of any Note, or change the time and manner in which any Note may be redeemed or repurchased as described above under the captions "— Repurchase of Notes Upon a Change of Control" or "— Redemption for Taxation Reasons," except that the 75.0% threshold in the definition of the term "Change of Control" in the Indenture may, prior to the occurrence of a Change of Control, be waived modified or amended with the consent of the holders of not less than a majority in aggregate principal amount of the Notes.

No Personal Liability of Incorporators, Shareholders, Directors, Commissioners, Officers or Employees

No recourse for the payment of the principal of, premium, if any, or interest on any of the Notes or for any claim based thereon or otherwise in respect thereof, and no recourse under or upon any obligation, covenant or agreement of the Company in the Indenture, or in any of the Notes or because of the creation of any Debt represented thereby, will be had against any incorporator, shareholder, director, commissioner, officer, employee or controlling person of the Company or of any successor Person thereof. Each Holder, by accepting the Notes, waives and releases all such liability. The waiver and release are part of the consideration for the issuance of the Notes. Such waiver may not be effective to waive liabilities under the applicable securities laws.

Concerning the Trustee and the Agents

Except during the continuance of an Event of Default, the Trustee will not be liable, except for the performance of such duties as are specifically set forth in the Indenture and the Escrow Agreement. If an Event of Default has occurred and is continuing, the Trustee will use the same degree of care and skill in its exercise of the rights and powers vested in it under the Indenture as a prudent person would exercise under the circumstances in the conduct of such person's own affairs.

The Trustee and the Agents assume no responsibility for the accuracy or completeness of the information concerning the Company or its Affiliates or any other party referenced in this Offering Memorandum or for any failure of the Company or any other party to disclose events that may have occurred or may affect the completeness or accuracy of such information.

The Trustee is permitted to engage in other transactions with the Company and its Affiliates and shall not be obligated to account for any profits therefrom, and no Trustee and no director or officer of any corporation being a Trustee hereof shall by reason of the fiduciary position of such Trustee be in any way precluded from making any contracts or entering into any transactions in the ordinary course of business with the Company, or any person or body corporate directly or indirectly associated with the Company, or from accepting the trusteeship of any other debenture stock, debentures or securities of the Company or any person or body corporate directly or indirectly associated with the Company, and neither the Trustee nor any such director or officer shall be accountable to the Holders or the Company, or any person or body corporate directly or indirectly associated with the Company, for any profit, fees, commissions, interest, discounts or share of brokerage earned, arising or resulting from any such contracts or transactions and the Trustee and any such director or officer shall also be at liberty to retain the same for its or his own benefit, *provided that* if such Trustee of any such director or officer acquires any conflicting interest that may have a materially prejudicial effect upon the Holders, it must eliminate such conflict or resign.

The Trustee shall not be responsible for the performance by any other person appointed by the Company in relation to the Notes and, unless notified in writing to the contrary, shall assume that the same are being duly performed. The Trustee shall not be liable to any Holders or any other person for any action taken by the Holders or the Trustee in accordance with the instructions of the Holders. The Trustee shall be entitled to rely on any written direction of the Holders which has been duly given by the Holders of the requisite principal amount of the Notes outstanding.

Neither the Trustee nor the Agents will be responsible for making calculations or for verifying calculations performed by the Company or any other persons unless otherwise specified in the Indenture.

The Trustee will be under no obligation to exercise any rights or powers conferred under the Indenture for the benefit of the Holders, unless such Holders have offered to the Trustee and, if the Trustee accepts such offer, the Trustee has received, indemnity and/or security and/or pre-funding satisfactory to the Trustee against any loss, liability or expense. In the exercise of its duties, the Trustee shall not be responsible for the verification of the accuracy or completeness of any certification submitted to it by the Company and is entitled to rely exclusively on the certification contained therein. Notwithstanding anything described herein, the Trustee has no duty to monitor the performance or compliance of the Company in the fulfillment of its obligations under the Indenture and the Notes.

For so long as the Notes are listed on the SGX-ST and the rules of the SGX-ST so require, in the event that a Global Note is exchanged for definitive Notes, the Company shall appoint and maintain a paying agent in Singapore, where the definitive Notes may be presented or surrendered for payment or redemption. In addition, in the event that a Global Note is exchanged for definitive Notes, an announcement of such exchange shall be made by or on behalf of the Company through the SGX-ST and such announcement will include all material information with respect to the delivery of the definitive Notes, including details of the paying agent in Singapore.

Book-Entry; Delivery and Form

The certificates representing the Notes will be issued in fully registered form without interest coupons. Notes sold in offshore transactions in reliance on Regulation S under the Securities Act will initially be represented by one or more permanent global notes in definitive, fully registered form without interest coupons (each, a "**Regulation S Global Note**") and will be deposited with The Bank of New York Mellon as custodian for, and registered in the name of a nominee of, DTC for the accounts of Euroclear and Clearstream. Notes sold in reliance on Rule 144A will be represented by one or more permanent global notes in definitive, fully registered form without interest coupons (each, a "**Restricted Global Note**"; and together with the Regulation S Global Notes, the "**Global Notes**") and will be deposited with The Bank of New York Mellon as custodian for, and registered in the name of a nominee of, DTC.

Each Global Note (and any Notes issued for exchange therefor) will be subject to certain restrictions on transfer set forth therein as described under "Transfer Restrictions."

Notes transferred to institutional "accredited investors" (as defined in Rule 501(a) (1), (2), (3) or (7) of Regulation D under the Securities Act (an "**Institutional Accredited Investor**")) who are not qualified institutional buyers ("**Non-Global Purchasers**") will be in registered form without interest coupons ("**Certificated Notes**"). Upon the transfer of Certificated Notes initially issued to a Non-Global Purchaser to a qualified institutional buyer or in accordance with Regulation S, such Certificated Notes will, unless the relevant Global Note has previously been exchanged in whole for Certificated Notes, be exchanged for an interest in a Global Note. For a description of the restrictions on the transfer of Certificated Notes, see "Transfer Restrictions."

Ownership of beneficial interests in a Global Note will be limited to persons who have accounts with DTC ("**participants**") or persons who hold interests through participants. Ownership of beneficial interests in a Global Note will be shown on, and the transfer of that ownership will be effected only through, records maintained by DTC or its nominee (with respect to interests of participants) and the records of participants (with respect to interests of persons other than participants). Beneficial owners may hold their interests in a Global Note directly through DTC if they are participants in such system, or indirectly through organizations which are participants in such system.

Euroclear and Clearstream will hold interests in the Global Notes on behalf of their participants through DTC.

So long as DTC, or its nominee, is the registered owner or holder of a Global Note, DTC or such nominee, as the case may be, will be considered the sole owner or holder of the Notes represented by such Global Note for all purposes under the Indenture and the Notes. No beneficial owner of an interest in a Global Note will be able to transfer that interest except in accordance with DTC's applicable procedures, in addition to those provided for under the Indenture and, if applicable, those of Euroclear and Clearstream.

Payments of the principal of, premium, if any, and interest on, a Global Note, will be made to DTC or its nominee, as the case may be, as the registered owner thereof. Neither the Company, the Trustee nor the Paying Agent will have any responsibility or liability for any aspect of the records relating to or payments made on account of beneficial ownership interests in a Global Note or for maintaining, supervising or reviewing any records relating to such beneficial ownership interests.

The Company expects that DTC or its nominee, upon receipt of any payment of principal of, premium, if any, or interest in respect of a Global Note, will credit participants' accounts with payments in amounts proportionate to their respective beneficial interests in the principal amount of such Global Note as shown on the records of DTC or its nominee. The Company also expects that payments by participants to owners of beneficial interests in such Global Note held through such participants will be governed by standing instructions and customary practices, as is now the case with securities held for the accounts of customers registered in the names of nominees for such customers. Such payments will be the responsibility of such participants.

The Company expects that DTC will take any action permitted to be taken by a holder of Notes (including the presentation of Notes for exchange as described below) only at the direction of one or more participants to

whose account the DTC interests in a Global Note is credited and only in respect of such portion of the aggregate principal amount of Notes as to which such participant or participants has or have given such direction. However, if there is an Event of Default under the Notes, DTC will exchange the applicable Global Note for Certificated Notes, which it will distribute to its participants and which may be legended as set forth under the heading "Transfer Restrictions."

Although DTC, Euroclear and Clearstream are expected to follow the foregoing procedures in order to facilitate transfers of interests in a Global Note among participants of DTC, Euroclear and Clearstream, they are under no obligation to perform or continue to perform such procedures, and such procedures may be discontinued at any time. None of the Company, the Trustee or the Paying Agent will have any responsibility for the performance by DTC, Euroclear or Clearstream or their respective participants or indirect participants of their respective obligations under the rules and procedures governing their operations.

If DTC is at any time unwilling or unable to continue as a depositary for the Global Notes and a successor depositary is not appointed by the Company within 90 days, the Company will issue Certificated Notes in registered form, which may bear the legend referred to under "Transfer Restrictions," in exchange for the Global Notes. Holders of an interest in a Global Note may receive Certificated Notes, which may bear the legend referred to under "Transfer Restrictions," in accordance with the DTC's rules and procedures in addition to those provided for under the Indenture.

The Clearing Systems

General

DTC, Euroclear and Clearstream have advised the Company as follows:

DTC: DTC is a limited-purpose trust company organized under the laws of the State of New York, a "banking organization" within the meaning of New York Banking Law, a member of the Federal Reserve System, a "clearing corporation" within the meaning of the New York Uniform Commercial Code, and a "clearing agency" registered pursuant to the provisions of Section 17A of the Exchange Act. DTC was created to hold securities of its participants and to facilitate the clearance and settlement of securities transactions among its participants in such securities through electronic book-entry changes in accounts of its participants, thereby eliminating the need for physical movement of securities certificates. DTC's participants include securities brokers and dealers, banks, trust companies, clearing corporations, and certain other organizations, some of whom own DTC, and may include the initial purchaser. Indirect access to the DTC system is also available to others that clear through or maintain a custodial relationship with a DTC participant, either directly or indirectly ("**indirect participants**"). Transfers of ownership or other interests in Notes in DTC may be made only through DTC participants. In addition, beneficial owners of Notes in DTC will receive all distributions of principal of, premium, if any, and interest on the Notes from the Trustee through such DTC participant.

Euroclear and Clearstream: Euroclear and Clearstream hold securities for participating organizations and facilitate the clearance and settlement of securities transactions between their respective participants through electronic book-entry changes in accounts of such participants. Euroclear and Clearstream provide to their participants, among other things, services for safekeeping, administration, clearance and settlement of internationally-traded securities and securities lending and borrowing. Euroclear and Clearstream interface with domestic securities markets. Euroclear and Clearstream participants are financial institutions such as underwriters, securities brokers and dealers, banks, trust companies and certain other organizations. Indirect access to Euroclear or Clearstream is also available to others such as banks, brokers, dealers and trust companies that clear through or maintain a custodial relationship with a Euroclear or Clearstream participant, either directly or indirectly.

Initial Settlement

Investors' interests in Notes held in book-entry form by DTC will be represented through financial institutions acting on their behalf as direct and indirect participants in DTC. As a result, Euroclear and Clearstream will hold positions on behalf of their participants through DTC.

Investors electing to hold their Notes through DTC (other than through accounts at Euroclear or Clearstream) must follow the settlement practices applicable to United States corporate debt obligations. The securities custody accounts of investors will be credited with their holdings against payment in same day funds on the settlement date.

Investors electing to hold their Notes through Euroclear or Clearstream accounts will follow the settlement procedures applicable to conventional Eurobonds in registered form. Notes will be credited to the securities custody accounts of Euroclear Holders and of Clearstream Holders on the Business Day following the settlement date against payment for value on the settlement date.

Secondary Market Trading

Secondary market trading between DTC participants will occur in the ordinary way in accordance with DTC rules. Secondary market trading between Clearstream participants and/or Euroclear participants will occur in the ordinary way in accordance with the applicable rules and operating procedures of Clearstream and Euroclear and will be settled using the procedures applicable to conventional eurobonds.

Cross-market transfers between persons holding directly or indirectly through DTC, on the one hand, and directly or indirectly through Clearstream participants or Euroclear participants, on the other, will be effected in DTC in accordance with DTC rules on behalf of the relevant European international clearing system by its U.S. depositary; however, such cross-market transactions will require delivery of instructions to the relevant European international clearing system by the counterparty in such system in accordance with its rules and procedures and within its established deadlines (European time). The relevant European international clearing system will, if a transaction meets its settlement requirements, deliver instructions to its U.S. depositary to take action to effect final settlement on its behalf by delivering or receiving Notes in DTC, and making or receiving payment in accordance with normal procedures for same-day funds settlement applicable to DTC. Clearstream participants and Euroclear participants may not deliver instructions directly to the U.S. depositaries.

Because of time zone differences, credits of Notes received in Clearstream or Euroclear as a result of a transaction with a DTC participant will be made during subsequent securities settlement processing and dated the Business Day following the DTC settlement date. Such credits or any transactions in such Notes settled during such processing will be reported to the relevant Clearstream participants or Euroclear participants on such Business Day. Cash received in Clearstream or Euroclear as a result of sales of Notes by or through a Clearstream participant or a Euroclear participant to a DTC participant will be received with value on the DTC settlement date but will be available in the relevant Clearstream or Euroclear cash account only as of the Business Day following settlement in DTC.

For so long as the Notes are listed on the SGX-ST and the rules of the SGX-ST so require, the Notes, if traded on the SGX-ST, will be traded in a minimum board lot size of S$200,000 (or its equivalent in foreign currencies). Accordingly, the Notes, if traded on the SGX-ST, will be traded in a minimum board lot size of US$200,000.

Notices

All notices or demands required or permitted by the terms of the Notes or the Indenture to be given to or by the Holders are required to be in writing and may be given or served by being sent by prepaid courier or by being deposited, first-class postage prepaid, in the United States mails (if intended for the Company) addressed to the Company (if intended for the Trustee), at the corporate trust office of the Trustee; and (if intended for any Holder) addressed to such Holder at such Holder's last address as it appears in the Note register (the "**Register**").

Any such notice or demand will be deemed to have been sufficiently given or served when so sent or deposited and, if to the Holders, when delivered in accordance with the applicable rules and procedures of DTC. Any such notice will be deemed to have been delivered on the day such notice is delivered to DTC or if by mail, when so sent or deposited.

Language

The Notes, the Indenture and the Escrow Agreement will be executed in both English and Bahasa Indonesia to comply with Law 24 of 2009 regarding Flag, Language, National Emblem and National Anthem enacted July 9, 2009, and in the event of any inconsistency between the English and Bahasa Indonesia versions of these documents, the English version shall prevail. See "Risk Factors — Risks Relating to the Notes — The Indenture and certain other documents entered into in connection with the issue of the Notes thereunder will also be prepared in Bahasa Indonesia as required under Indonesian law. However, we cannot assure you that, in the event of inconsistencies between the Bahasa Indonesia and English language versions of these documents, an Indonesian court would hold that the English language versions of such documents would prevail."

Consent to Jurisdiction; Service of Process

The Company will irrevocably (i) submit to the non-exclusive jurisdiction of any U.S. federal or New York state court located in the Borough of Manhattan, The City of New York in connection with any suit, action or proceeding arising out of, or relating to, the Notes or the Indenture or any transaction contemplated thereby and (ii) designate and appoint Law Debenture Corporate Services Inc., for receipt of service of process in any such suit, action or proceeding.

Governing Law

Each of the Notes and the Indenture provides that such instrument will be governed by, and construed in accordance with, the laws of the State of New York.

Definitions

Set forth below are defined terms used in the covenants and other provisions of the Indenture. Reference is made to the Indenture for other capitalized terms used in this "Description of the 2021 Notes" for which no definition is provided.

"**Affiliate**" means, with respect to any Person, any other Person (a) directly or indirectly controlling, controlled by, or under direct or indirect common control with, such Person or (b) who is a commissioner, director or officer of such Person or any subsidiary of such Person or of any Person referred to in clause (a) of this definition. For purposes of this definition, "**control**" (including, with correlative meanings, the terms "**controlling**," "**controlled by**" and "**under common control with**"), as applied to any Person, means the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of such Person, whether through the ownership of voting securities, by contract or otherwise.

"**Business Day**" means any day which is not a Saturday, Sunday, legal holiday or other day on which banking institutions in The City of New York, Singapore or Indonesia or the city where the corporate trust office of the Trustee is then located are authorized by law or governmental regulation to close; *provided that*, solely for purposes of determining the date of any payment to be made on any Note, "**Business Day**" means any day which is not a Saturday, Sunday, legal holiday or other day on which banking institutions in The City of New York, Singapore, Indonesia or the place in which payments on the Notes are to be made are authorized by law or governmental regulation to close.

"**Capital Stock**" means, with respect to any Person, any and all shares, interests, participations or other equivalents (however designated, whether voting or non-voting) in equity of such Person, whether outstanding on the Original Issue Date or issued thereafter.

"**Change of Control**" means the occurrence of any event resulting in the government of the Republic of Indonesia ceasing to directly own and control at least 75.0% of the issued and paid-up shares of the Company.

"**Clearstream**" means Clearstream Banking, société anonyme or any successor thereof.

"**Commission**" means the U.S. Securities and Exchange Commission, as from time to time constituted under the Exchange Act, or if at any time after the execution of this instrument such Commission is not existing, then the body performing such duties on such date.

"**Debt**" means, with respect to any Person as of any date of determination, without duplication, (a) all obligations, contingent or otherwise, of such Person for borrowed money, (b) all obligations of such Person evidenced by bonds, notes or other similar instruments, (c) all obligations of such Person in respect of letters of credit or other similar instruments, (d) all obligations of such Person to pay the unpaid purchase price of any property or service, (e) all obligations secured by a Lien on any property or asset of such Person, whether or not such obligations are assumed by such Person and (f) all obligations of others guaranteed by such Person to the extent of such guarantees and, for clauses (a), (b), (c) and (e), which has a final maturity of one year or more. The amount of Debt of any Person as of any date of determination shall be the outstanding balance at such date of all unconditional obligations as described above, the maximum liability of such Person for any such contingent obligations at such date and, in the case of clause (d), the lesser of the fair market value (as determined in good faith by the board of directors of such Person) at such date of the property or asset of such Person subject to a Lien securing the obligations of others and the amount of such obligations secured.

"**Default**" means any event that is, or after notice or passage of time or both would be, an Event of Default.

"**Dollar Equivalent**" means, with respect to any monetary amount in a currency other than U.S. dollars, at any time for the determination thereof, the amount of U.S. dollars obtained by converting such foreign currency involved in such computation into U.S. dollars at the base rate for the purchase of U.S. dollars with the applicable foreign currency as quoted by the Federal Reserve Bank of New York on the date of determination.

"**DTC**" means The Depository Trust Company and its successors.

"**Escrow Accounts**" means the escrow accounts designated to hold the net proceeds of the offering of the Notes as per the terms of the Escrow Agreement and held by the Company with any one or more of the following: PT Bank Rakyat Indonesia (Persero) Tbk., PT Bank Mandiri (Persero) Tbk. and PT Bank Negara Indonesia (Persero) Tbk.; and each such account an "**Escrow Account**."

"**Euroclear**" means Euroclear Bank S.A./N.V. or any successor thereof.

"**GAAP**" means generally accepted accounting principles in Indonesia as in effect from time to time.

"**guarantee**" means any obligation, contingent or otherwise, of any Person directly or indirectly guaranteeing any Debt or other obligation of any other Person and, without limiting the generality of the foregoing, any obligation, direct or indirect, contingent or otherwise, of such Person (1) to purchase or pay (or advance or supply funds for the purchase or payment of) such Debt or other obligation of such other Person (whether arising by virtue of partnership arrangements, or by agreements to keep-well, to purchase assets, goods, securities or services, to take-or-pay, or to maintain financial statement conditions or otherwise) or (2) entered into for purposes of assuring in any other manner the obligee of such Debt or other obligation of the payment thereof or to protect such obligee against loss in respect thereof (in whole or in part); *provided that* the term "**guarantee**" will not include endorsements for collection or deposit in the ordinary course of business. The term "**guarantee**" used as a verb has a corresponding meaning.

"**Holder**" means the Person in whose name a Note is registered in the Register.

"**Lien**" means any mortgage, pledge, fiduciary, security interest, encumbrance, lien or charge of any kind (including, without limitation, any conditional sale or other title retention agreement or lease in the nature thereof or any agreement to create any mortgage, pledge, security interest, lien, charge, easement or encumbrance of any kind but excluding liens arising by operation of law).

"**Material Subsidiary**" means at any time a Subsidiary of the Company:

(a) whose total revenues (consolidated in the case of a Subsidiary which itself has Subsidiaries) or whose total assets (consolidated in the case of a Subsidiary which itself has Subsidiaries) represent in each case (or, in the case of a Subsidiary acquired after the end of the financial period to which the then latest audited consolidated accounts of the Company and its Subsidiaries relate, are equal to) not less than 5.0% of the consolidated total revenues, or, as the case may be, consolidated total assets, of the Company and its Subsidiaries taken as a whole, all as calculated respectively by

reference to the then latest audited accounts (consolidated or, as the case may be, unconsolidated) of such Subsidiary and the then latest audited consolidated accounts of the Company and its Subsidiaries, *provided that*, in the case of a Subsidiary of the Company acquired after the end of the financial period to which the then latest audited consolidated accounts of the Company and its Subsidiaries relate, the reference to the then latest audited consolidated accounts of the Company and its Subsidiaries for the purposes of the calculation above shall, until consolidated accounts for the financial period in which the acquisition is made have been prepared and audited as aforesaid, be deemed to be a reference to such first-mentioned accounts as if such Subsidiary had been shown in such accounts by reference to its then latest relevant audited accounts, adjusted as deemed appropriate by the Company; or

(b) to which is transferred the whole or substantially the whole of the undertaking and assets of a Subsidiary of the Company which immediately prior to such transfer is a Material Subsidiary, *provided that* the transferor Subsidiary shall upon such transfer forthwith cease to be a Material Subsidiary and the transferee Subsidiary shall cease to be a Material Subsidiary pursuant to this subparagraph (b) on the date on which the consolidated accounts of the Company and its Subsidiaries for the financial period current at the date of such transfer have been prepared and audited as aforesaid but so that such transferor Subsidiary or such transferee Subsidiary may be a Material Subsidiary on or at any time after the date on which such consolidated accounts have been prepared and audited as aforesaid by virtue of the provisions of subparagraph (a) above or, prior to or after such date, by virtue of any other applicable provision of this definition; or

(c) to which is transferred an undertaking or assets which, taken together with the undertaking or assets of the transferee Subsidiary, generated (or, in the case of the transferee Subsidiary being acquired after the end of the financial period to which the then latest audited consolidated accounts of the Company and its Subsidiaries relate, generate total revenues equal to) not less than 5.0% of the consolidated total revenues of the Company, or represent (or, in the case aforesaid, are equal to) not less than 5.0% of the consolidated total assets of the Company and its Subsidiaries taken as a whole, all as calculated as referred to in subparagraph (a) above, *provided that* the transferor Subsidiary (if a Material Subsidiary) shall upon such transfer forthwith cease to be a Material Subsidiary unless immediately following such transfer its undertaking and assets generate (or, in the case aforesaid, generate total revenues equal to) not less than 5.0% of the consolidated total revenues of the Company, or its assets represent (or, in the case aforesaid, are equal to) not less than 5.0% of the consolidated total assets of the Company and its Subsidiaries taken as a whole, all as calculated as referred to in subparagraph (a) above, and the transferee Subsidiary shall cease to be a Material Subsidiary pursuant to this subparagraph (c) on the date on which the consolidated accounts of the Company and its Subsidiaries for the financial period current at the date of such transfer have been prepared and audited but so that such transferor Subsidiary or such transferee Subsidiary may be a Material Subsidiary on or at any time after the date on which such consolidated accounts have been prepared and audited as aforesaid by virtue of the provisions of subparagraph (a) above or, prior to or after such date, by virtue of any other applicable provision of this definition.

"**Offer to Purchase**" means an offer to purchase the Notes by the Company from the Holders commenced by the Company mailing a notice by prepaid courier or first class mail, postage prepaid, to the Trustee and each Holder at its last address appearing in the Register stating:

(a) that the offer is being made pursuant to the provisions of the Indenture described under the caption "Repurchase of Notes Upon a Change of Control" and that all Notes validly tendered will be accepted for payment on a pro rata basis;

(b) the purchase price and the date of purchase (which will be a Business Day no earlier than 30 days nor later than 60 days from the date such notice is mailed) (the "**Offer to Purchase Payment Date**");

(c) that any Note not tendered will continue to accrue interest pursuant to its terms;

(d) that, unless the Company defaults in the payment of the purchase price, any Note accepted for payment pursuant to the Offer to Purchase will cease to accrue interest on and after the Offer to Purchase Payment Date;

(e) that Holders electing to have a Note purchased pursuant to the Offer to Purchase will be required to surrender the Note, together with the form entitled "Option of the Holder to Elect Purchase" on the reverse side of the Note completed, to the Paying Agent at the address specified in the notice prior to the close of business on the Business Day immediately preceding the Offer to Purchase Payment Date;

(f) that Holders will be entitled to withdraw their election if the Paying Agent receives, not later than the close of business on the third Business Day immediately preceding the Offer to Purchase Payment Date, a facsimile transmission or letter setting forth the name of such Holder, the principal amount of Notes delivered for purchase and a statement that such Holder is withdrawing his election to have such Notes purchased;

(g) that Holders whose Notes are being purchased only in part will be issued new Notes equal in principal amount to the unpurchased portion of the Notes surrendered; *provided that* each Note purchased and each new Note issued will be in a principal amount of US$200,000 or integral multiples of US$1,000 in excess thereof; and

(h) the CUSIP number(s) of the Notes.

One (1) Business Day prior to the Offer to Purchase Payment Date, the Company will deposit with the Paying Agent money sufficient to pay the purchase price of all Notes or portions thereof to be accepted by the Company for payment on the Offer to Purchase Payment Date. On the Offer to Purchase Payment Date, the Company will (a) accept for payment on a pro rata basis Notes or portions thereof tendered pursuant to an Offer to Purchase; and (b) deliver, or cause to be delivered, to the Trustee all Notes or portions thereof so accepted together with an Officer's Certificate specifying the Notes or portions thereof accepted for payment by the Company.

The Paying Agent will promptly mail to the Holders the accepted payment in an amount equal to the purchase price, and the Trustee will promptly authenticate and mail to such Holders a new Note equal in principal amount to any unpurchased portion of the Note surrendered; *provided that* each Note purchased and each new Note issued will be in a principal amount of US$200,000 or integral multiples of US$1,000 in excess thereof. The Company will publicly announce the results of an Offer to Purchase as soon as practicable after the Offer to Purchase Payment Date.

The offer is required to contain or incorporate by reference information concerning the business of the Company and its Subsidiaries and PTFI which the Company in good faith believes will assist such Holders to make an informed decision with respect to the Offer to Purchase, including a brief description of the events requiring the Company to make the Offer to Purchase, and any other information required by applicable law to be included therein. The offer is required to contain all instructions and materials necessary to enable such Holders to tender Notes pursuant to the Offer to Purchase.

"**Officer**" means one of the executive officers or directors of the Company.

"**Officer's Certificate**" means a certificate signed by at least one Officer.

"**Opinion of Counsel**" means a written opinion from legal counsel which opinion is reasonably acceptable to the Trustee that meets the requirements of the Indenture; *provided that* legal counsel shall be entitled to rely on a certificate of the Company as to matters of fact.

"**Original Issue Date**" means the date on which the Notes are originally issued under the Indenture.

"**Person**" means any individual, corporation, partnership, limited liability company, joint venture, trust, unincorporated organization or government or any agency or political subdivision thereof.

"**PTFI**" means PT Freeport Indonesia.

"**PTFI Share Acquisition**" means the acquisition by the Company, directly or indirectly, of a 51.2% beneficial equity interest in PTFI, as described in this Offering Memorandum under the caption "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia."

"**PTFI Share Acquisition Agreements**" means, collectively, (i) the Agreement for the Sale and Purchase of PT Rio Tinto Indonesia dated as of September 28, 2018 among the Company, Rio Tinto Indonesian Holdings Limited, Rio Tinto Nominees Limited and Rio Tinto International Holdings Limited; (ii) the PTFI Subscription Agreement dated as of September 27, 2018 among the Company, PTFI and PT Indocopper Investama; and (iii) the PTFI Divestment Agreement dated as of September 27, 2018 among the Company, PTFI, PT Indocopper Investama, Freeport-McMoran, Inc. and International Support LLC (the "**PTFI Divestment Agreement**").

"**PTFI Share Acquisition Closing Date**" means the closing date for the PTFI Share Acquisition, as defined in the PTFI Divestment Agreement.

"**Qualifying PTFI IPO**" means the first offering or listing of shares of PTFI, which complies with (A) the rules and regulations of a Stock Exchange; and (B) the following conditions: (i) it is an offer of shares of PTFI that consists wholly or in part of primary shares and that is made to the public for subscription or sale exclusively for cash, accompanied (or preceded) by the grant of listing of, and permission to deal in, the PTFI shares or depository shares or securities representing the PTFI shares by such Stock Exchange; and (ii) the Company shall have delivered an Officer's Certificate to the Trustee stating that the offer satisfies the conditions in this paragraph and that, immediately after giving effect to such public offering, no Event of Default and no event which, with the giving of notice or the passage of time, or both, would constitute an Event of Default, shall have occurred and be continuing.

"**Securities**" means bonds, debentures, notes or other similar securities having an original maturity of more than one (1) year from its date of issue which (a) are, or are issued with the intention on the part of the issuer thereof that they should be quoted, listed or ordinarily dealt in or traded on any stock exchange, over-the-counter or other securities market, and (b) either (i) are by their terms payable, or confer a right to receive payment, in any currency other than Rupiah or (ii) are denominated in Rupiah and more than 50% of the aggregate principal amount of the offering of such securities is initially distributed outside Indonesia by or with the Company's consent.

"**Stated Maturity**" means, (a) with respect to any Debt, the date specified in such debt security as the fixed date on which the final installment of principal of such Debt is due and payable as set forth in the documentation governing such Debt and (b) with respect to any scheduled installment of principal of or interest on any Debt, the date specified as the fixed date on which such installment is due and payable as set forth in the documentation governing such Debt.

"**Stock Exchange**" means The Indonesia Stock Exchange or such other internationally recognized stock exchange approved by the shareholders of PTFI and notified in writing to the Trustee.

"**Subsidiary**" means (a) any corporation or other entity of which securities or other ownership interests having ordinary voting power to elect a majority of the board of directors or other persons performing similar functions are at the time directly or indirectly owned by the Company or (b) any subsidiary subject to consolidation with the Company's financial statements under GAAP.

"**U.S. Government Obligations**" means securities that are (a) direct obligations of the United States of America for the payment of which its full faith and credit is pledged or (b) obligations of a Person controlled or supervised by and acting as an agency or instrumentality of the United States of America the payment of which is unconditionally guaranteed as a full faith and credit obligation by the United States of America, which, in either case, are not callable or redeemable at the option of the issuer thereof at any time prior to the Stated Maturity of the Notes, and will also include a depository receipt issued by a bank or trust company as custodian with respect to any such U.S. Government Obligation or a specific payment of interest on or principal of any such U.S. Government Obligation held by such custodian for the account of the holder of a depository receipt;

provided that (except as required by law) such custodian is not authorized to make any deduction from the amount payable to the holder of such depository receipt from any amount received by the custodian in respect of the U.S. Government Obligation or the specific payment of interest on or principal of the U.S. Government Obligation evidenced by such depository receipt.

DESCRIPTION OF THE 2023 NOTES

For purposes of this "**Description of the Notes**," the term "**Company**" refers only to PT Indonesia Asahan Aluminium (Persero), a state-owned enterprise established and existing with limited liability under the laws of the Republic of Indonesia, and any successor obligor on the Notes (including the Surviving Person (as defined below, under the caption "— Consolidation, Merger and Sale of Assets")), and not to any of its Subsidiaries. Any reference to the "Notes" in this "Description of the 2023 Notes" is solely to the 2023 Notes. The Notes are to be issued under an indenture (the "**Indenture**") to be dated as of the Original Issue Date, between the Company and The Bank of New York Mellon, as trustee (the "**Trustee**").

The following is a summary of certain provisions of the Indenture, the Notes and the Escrow Agreement (as defined below). This summary does not purport to be complete and is qualified in its entirety by reference to all of the provisions of the Indenture and the Notes and of the Escrow Agreement. It does not restate the provisions of the Indenture or the Notes or the Escrow Agreement in their entirety. Whenever particular sections or defined terms of the Indenture not otherwise defined herein are referred to, such sections or defined terms are incorporated herein by reference. Copies of the Indenture and the Escrow Agreement will be available for inspection on or after the Original Issue Date during normal office hours at the corporate trust office of the Trustee at 240 Greenwich Street, New York, NY 10286, United States of America.

The proceeds from the offering of the Notes will be used to fund the purchase of shares in PTFI pursuant to the planned PTFI Share Acquisition and/or to refinance acquisition debt as set forth in this Offering Memorandum under the caption "Use of Proceeds" or to fund the Special Mandatory Redemption (as defined below). Pending such application of the proceeds, the net proceeds from the offering of the Notes will be deposited into one or more escrow accounts held by the Company in Indonesia with certain state-owned Indonesian banks and will only be released upon the fulfillment of certain conditions, as more fully described below under the captions "— Escrow of Proceeds" and "— Redemption Upon Special Mandatory Redemption Event."

Brief Description of the Notes

The Notes will:

(a) be direct, unsecured and unsubordinated obligations of the Company;

(b) be senior in right of payment to any existing and future obligations of the Company expressly subordinated in right of payment to the Notes;

(c) rank at least *pari passu* in right of payment with all other unsecured and unsubordinated Debt of the Company (subject to any priority rights of such unsubordinated Debt pursuant to applicable law); and

(d) be effectively subordinated to secured obligations of the Company and the obligations of its subsidiaries.

The Company will initially issue US$1,250,000,000 in aggregate principal amount of the Notes, which will mature on November 15, 2023 unless earlier redeemed pursuant to the terms thereof and the Indenture. The Indenture allows the Company to issue additional Notes from time to time (the "**Additional Notes**"), subject to certain limitations described under "— Further Issues" and applicable law. The Notes offered hereby and any Additional Notes may be treated as a single class for all purposes under the Indenture.

Interest

The Notes will bear interest at 5.710% per annum from the Original Issue Date or from the most recent interest payment date on which interest has been paid or duly provided for, payable semi-annually in arrears on May 15 and November 15 of each year (each, an "**Interest Payment Date**") commencing on May 15, 2019. Interest on the Notes will be paid to Holders of record at the close of business on each April 30 or October 30, immediately preceding an Interest Payment Date (each, a "**Record Date**"), notwithstanding any transfer, exchange or cancelation thereof after a Record Date and prior to the immediately following Interest Payment Date. Interest on the Notes will be calculated on the basis of a 360-day year comprised of twelve 30-day months.

Payment of Notes

In any case in which the date of the payment of principal of, premium, if any, or interest on the Notes (including any payment to be made on any date fixed for redemption or purchase of any Note) is not a Business Day in the relevant place of payment, then payment of principal, premium, if any, or interest need not be made in such place on such date but may be made on the next succeeding Business Day in such place. Any payment made on such Business Day will have the same force and effect as if made on the date on which such payment is due. Interest on overdue principal and interest and Additional Amounts, if any, will accrue at a rate that is 1% higher than the then applicable interest rate on the Notes.

The Notes will be issued only in fully registered form, without coupons, in minimum denominations of US$200,000 and integral multiples of US$1,000 in excess thereof. See "— Book-Entry; Delivery and Form." No service charge will be made for any registration of transfer or exchange of Notes, but the Company may require payment of a sum sufficient to cover any transfer tax or other similar governmental charge payable in connection therewith.

All payments on the Notes will be made in U.S. dollars in immediately available funds by the Company at the office or agency of the Company maintained for that purpose in the Borough of Manhattan, the City of New York (which initially will be the specified office of The Bank of New York Mellon (the "**Paying Agent**"), currently located at 240 Greenwich Street, New York, NY 10286, United States of America), and the Notes may be presented for registration of transfer or exchange at such office or agency. However, at the option of the Company, payment of interest may be made by wire transfer. Interest payable on the Notes held through DTC will be available to DTC participants (as defined herein) on the Business Day following payment thereof.

Further Issues

Subject to the covenants described below and in accordance with the terms of the Indenture, the Company may, from time to time, without notice to or the consent of the Holders, issue Additional Notes having the same terms and conditions as the Notes in all respects (or in all respects except for the issue date, issue price and the date of first payment of interest on them and, to the extent necessary, certain temporary securities law transfer restrictions) so that such Additional Notes may be consolidated and form a single class with the previously outstanding Notes and vote together as one class on all matters with respect to the Notes; *provided that*, in order for Additional Notes to have the same CUSIP, ISIN, or other identifying number as the outstanding Notes, the Additional Notes must be fungible with the outstanding Notes for U.S. federal income tax purposes.

In addition, the issuance of any Additional Notes by the Company will be subject to the following conditions:

(a) the Company shall have delivered to the Trustee an Officer's Certificate, in form and substance satisfactory to the Trustee, confirming that the issuance of the Additional Notes complies with the Indenture; and

(b) the Company shall have delivered to the Trustee one or more Opinions of Counsel, in form and substance satisfactory to the Trustee, confirming, among other things, (i) that the issuance of the Additional Notes does not conflict with applicable law and (ii) that such Additional Notes will constitute legally valid and binding obligations of the Company, enforceable in accordance with their terms, subject to customary exceptions.

Repurchase of Notes Upon a Change of Control

Not later than 30 days following a Change of Control, the Company will make an Offer to Purchase all outstanding Notes (a "**Change of Control Offer**") at a purchase price equal to 101.0% of the principal amount thereof plus accrued and unpaid interest, if any, to the Offer to Purchase Payment Date.

The Company will agree in the Indenture that it will timely repay all Debt or obtain consents as necessary under, or terminate, agreements or instruments that would otherwise prohibit a Change of Control Offer required

to be made pursuant to the Indenture. Notwithstanding these agreements, it is important to note that if the Company is unable to repay (or cause to be repaid) all of the Debt, if any, that would prohibit the repurchase of the Notes or is unable to obtain the requisite consents of the holders of such Debt, or terminate any agreements or instruments that would otherwise prohibit a Change of Control Offer, the Company would continue to be prohibited from purchasing the Notes. In that case, the failure of the Company to purchase tendered Notes would constitute an Event of Default (as defined below) under the Indenture.

Future Debt of the Company or its Subsidiaries may also (a) prohibit the Company from purchasing the Notes in the event of a Change of Control; (b) provide that a Change of Control is a default; or (c) require the repayment or repurchase of such Debt upon a Change of Control. Moreover, the exercise by the Holders of their right to require the Company to purchase the Notes could cause a default under other Debt, even if the Change of Control itself does not, due to the financial effect of the purchase on the Company or its Subsidiaries. The ability of the Company to pay cash to Holders of the Notes following the occurrence of a Change of Control may be limited by the financial resources then available to the Company. There can be no assurance that sufficient funds will be available when necessary to make the required purchase of the Notes. See "Risk Factors — Risks Relating to the Notes — We may not have the ability to raise the funds necessary to finance an offer to repurchase the Notes upon the occurrence of certain events constituting a change of control or otherwise as required by the Indenture governing the Notes."

Notwithstanding the above, the Company will not be required to make a Change of Control Offer following a Change of Control if a third party makes the Change of Control Offer in the manner, at the times and otherwise in compliance with the requirements set forth in the Indenture applicable to a Change of Control Offer to be made by the Company and such third party purchases all Notes validly tendered and not withdrawn under such Change of Control Offer.

A Holder will have no right to require the Company to repurchase portions of Notes if it would result in the issuance of new Notes, representing the portion not purchased, in an amount of less than US$200,000.

The Company will comply with the requirements of Rule 14e-1 under the Exchange Act and any other securities laws and regulations thereunder to the extent those laws and regulations are applicable in connection with each repurchase of Notes pursuant to a Change of Control Offer. To the extent that the provisions of any securities laws or regulations conflict with the provisions of the covenant described hereunder, the Company will comply with the applicable securities laws and regulations and will not be deemed to have breached its obligations described hereunder by virtue of its compliance with such laws and regulations.

Except as described above with respect to a Change of Control Offer, the Indenture does not contain provisions that permit the Holders to require that the Company purchase or redeem the Notes in the event of a takeover, recapitalization or similar transaction.

The Trustee shall not be required to take any steps to ascertain whether a Change of Control or any event which could lead to the occurrence of a Change of Control has occurred and shall not be liable to any person for any failure to do so.

Escrow of Proceeds

Concurrently with the closing of the offering of the Notes on the Original Issue Date, the Company will enter into an escrow agreement (the "**Escrow Agreement**") dated as of the Original Issue Date among the Company, the Trustee, PT Bank Mandiri (Persero) Tbk as escrow agent (the "**Escrow Agent**"), and PT Bank Mandiri (Persero) Tbk, PT Bank Negara Indonesia (Persero) Tbk and PT Bank Rakyat Indonesia (Persero) Tbk as escrow banks (the "**Escrow Banks**"), pursuant to which the Company will deposit or will instruct the Initial Purchasers to deposit with the Escrow Banks an amount in cash equal to the net proceeds of the offering of the Notes sold on the Original Issue Date into one or more Escrow Accounts (as defined below) held by the Company in Indonesia with the Escrow Banks, in the amounts specified for each of the Escrow Accounts in the Escrow Agreement. The initial funds deposited into the Escrow Accounts, and all other funds, securities, interest, dividends and other distributions and payments thereon credited to each Escrow Account (less any funds paid in accordance with the Escrow Agreement) are referred to collectively as the "**Escrowed Funds**."

The Escrowed Funds will be released from the Escrow Accounts only in accordance with the terms of the Escrow Agreement. Pursuant to the terms of the Escrow Agreement, the Escrowed Funds may be released from the Escrow Accounts only in whole and not in part and either (i) to fund the completion of the PTFI Share Acquisition, including associated costs and expenses, or (ii) if the PTFI Share Acquisition has not been completed by June 30, 2019 (such non-completion of the PTFI Share Acquisition by such date, the "**Special Mandatory Redemption Event**"), to fund the redemption by the Company of the Notes (the "**Special Mandatory Redemption**"), in whole and not in part, at a redemption price (the "**Special Mandatory Redemption Price**") equal to 101.0% of the principal amount thereof, together with accrued and unpaid interest (including any Additional Amounts), if any, up to but not including the date fixed for redemption (the "**Special Mandatory Redemption Date**"); see "— Redemption Upon Special Mandatory Redemption Event," below. The Escrow Agent will release the Escrowed Funds, in whole but not in part, (the "**Release**") to the Company or to the order of the Company (as described in more detail below) on a date specified by the Company (the "**Escrow Release Date**") after delivery by the Company and the Trustee of a release instruction and delivery by the Company of (i) an Officer's Certificate addressed to the Escrow Agent and the Trustee, upon which both the Escrow Agent and the Trustee shall rely, without further investigation, requesting the Release of the Escrowed Funds and certifying certain matters of fact, as further described below, and (ii) an Opinion of Counsel stating that all conditions precedent provided for in the Indenture and the Escrow Agreement relating to the Release have been complied with, prior to the Escrow Release Date.

No provisions of the Escrow Agreement (including those relating to the Release of the Escrowed Funds) may be amended, waived or modified in any manner materially adverse to the Holders without the written consent of the Holders of a majority in principal amount of the Notes outstanding; *provided that* no such amendment, waiver or modification shall reduce the Special Mandatory Redemption Price without the written consent of each affected Holder.

In the event an Event of Default has occurred prior to the Special Mandatory Redemption Event and prior to completion of the PTFI Share Acquisition, the Trustee may, by notice in writing to the Company and the Escrow Agent, require the Escrow Agent (i) to act thereafter, until otherwise instructed by the Trustee, as agent of the Trustee under the provisions of the Escrow Agreement on the terms provided thereby and (ii) to deliver the Escrowed Funds, to the Trustee or as the Trustee shall direct, for payment to the Holders.

Release for PTFI Share Acquisition

In the context of a Release of the Escrowed Funds for the completion of the PTFI Share Acquisition, the Officer's Certificate shall certify that the following conditions have been met and will be met following the Release on the Escrow Release Date:

(1) the parties to the PTFI Share Acquisition Agreements have confirmed that all the conditions precedent described in the PTFI Share Acquisition Agreements for completion of the PTFI Share Acquisition have been met (or waived in compliance with the PTFI Share Acquisition Agreements), and the parties to the PTFI Share Acquisition Agreements have designated a PTFI Share Acquisition Closing Date for the PTFI Share Acquisition pursuant to the terms of the PTFI Share Acquisition Agreements (and the certificate shall include relevant documentation evidencing such confirmation);

(2) following the Release of the Escrowed Funds on the Escrow Release Date, the PTFI Share Acquisition will be completed pursuant to the terms of the PTFI Share Acquisition Agreements and on or prior to the PTFI Share Acquisition Closing Date; and

(3) as of the date of the Officer's Certificate and the Escrow Release Date, no Event of Default has occurred and no Event of Default would occur taking into account the completion of the PTFI Share Acquisition and the application of the Escrowed Funds as set forth under the caption "Certain Covenants — Use of Proceeds."

The Officer's Certificate shall specify the PTFI Share Acquisition Closing Date and the Escrow Release Date. The Escrow Release Date shall be no more than one Business Day prior to the PTFI Share Acquisition Closing Date

and no later than the PTFI Share Acquisition Closing Date. The Company may instruct the Escrow Agent to Release the Escrowed Funds to the Company itself or to a third party at the order of the Company, at the Company's option. Any excess Escrowed Funds after payment of the purchase price for the PTFI Share Acquisition and related costs and expenses and after payment of fees and expenses of the Escrow Agent and Trustee shall enure to the Company.

Release for Special Mandatory Redemption

In the context of a Release of the Escrowed Funds to fund the Special Mandatory Redemption, the Officer's Certificate shall certify that the following conditions have been met and will be met following the Release on the Escrow Release Date:

(1) the Special Mandatory Redemption Event has occurred;

(2) the Company has provided Holders with a notice regarding the Special Mandatory Redemption, as required by the Indenture and described below under the Caption "— Redemption Upon Special Mandatory Redemption Event" (and a copy of such notice shall be attached to the certificate); and

(3) the Company will complete the Special Mandatory Redemption as required under the terms of the Indenture.

The Officer's Certificate shall specify the amount equal to the Special Mandatory Redemption Price and the Escrow Release Date, which shall be no more than one Business Day prior to the Special Mandatory Redemption Date. The Release of the Escrowed Funds in the amount equal to the Special Mandatory Redemption Price (or, if the amount of Escrowed Funds is less than the amount equal to the Special Mandatory Redemption Price, then the full amount of Escrowed Funds) shall be only to the Trustee or the Paying Agent, for payment to the Holders, and not to the Company, and the Company shall instruct the Escrow Agent accordingly in the Officer's Certificate. Any excess Escrowed Funds after payment of the Special Mandatory Redemption Price and after payment of fees and expenses of the Escrow Agent and Trustee shall be delivered to and enure to the Company.

Redemption Upon Special Mandatory Redemption Event

Upon the occurrence of the Special Mandatory Redemption Event, the Company or the Surviving Person, as the case may be, will redeem the Notes, in whole and not in part, upon giving 30 days' notice to the Holders (which notice shall be irrevocable and shall oblige the Company or the Surviving Person to redeem the Notes on the Special Mandatory Redemption Date and which notice shall be given promptly upon the occurrence of the Special Mandatory Redemption Event), at the Special Mandatory Redemption Price. The Special Mandatory Redemption Date shall be no later than 30 days after the Special Mandatory Redemption Event.

On the Business Day prior to the Special Mandatory Redemption Date, the Escrow Agent shall apply funds standing to the credit of the Escrow Account to make a transfer from the Escrow Account to the Trustee or the Paying Agent for payment to the Holders of the Special Mandatory Redemption Price.

Following a Special Mandatory Redemption, the Notes will be canceled.

Sinking Fund

There will be no sinking fund payments for the Notes.

Additional Amounts

All payments of principal of, and premium, if any, and interest on the Notes will be made without withholding or deduction for, or on account of, any present or future taxes, duties, assessments or other governmental charges of whatever nature imposed or levied by or within any jurisdiction in which the Company or the Surviving Person is organized or resident for tax purposes (or any political subdivision or taxing authority thereof or therein) or through which payment is made on behalf of the Company or the Surviving Person (each, as applicable, a "**Relevant Taxing Jurisdiction**"), unless such withholding or deduction is required by law or by regulation or governmental policy having the force of law.

In such event, the Company or the Surviving Person, as the case may be, will make or cause to be made such deduction or withholding, make payment of the amount so deducted or withheld to the appropriate governmental authority and will pay such additional amounts ("**Additional Amounts**") as will result in receipt by the Holder of such amounts as would have been received by such Holder had no such withholding or deduction been required. However, no Additional Amounts will be payable:

(a) for or on account of:

(i) any tax, duty, assessment or other governmental charge that would not have been imposed but for:

(A) the existence of any present or former connection between the Holder or beneficial owner of such Note and the Relevant Taxing Jurisdiction including, without limitation, such Holder's or beneficial owner's being or having been a citizen or resident of such Relevant Taxing Jurisdiction or treated as a resident thereof or being or having been physically present or engaged in a trade or business therein or having or having had a permanent establishment therein, other than merely holding such Note or the receipt of payments thereunder or enforcing payment under the Note;

(B) the presentation of such Note (where presentation is required) more than 30 days after the later of the date on which the payment of the principal of, premium, if any, or interest on, such Note became due and payable pursuant to the terms thereof or was made or duly provided for, except to the extent that the Holder thereof would have been entitled to such Additional Amounts if it had presented such Note for payment on any date within such 30-day period;

(C) the failure of the Holder or beneficial owner to comply with a timely request of the Company or the Surviving Person, as the case may be, addressed to the Holder, to provide information to the Company or the Surviving Person on an applicable Form DGT-1, Form DGT-2 or any other document, information or form concerning such Holder's or beneficial owner's nationality, residence, identity or connection with any Relevant Taxing Jurisdiction, if and to the extent that due and timely compliance with such request is required under the laws of a Relevant Taxing Jurisdiction in order to reduce or eliminate any withholding or deduction as to which Additional Amounts would have otherwise been payable to such Holder; or

(D) the presentation of such Note (where presentation is required) for payment in the Relevant Taxing Jurisdiction, unless such withholding or deduction could not have been avoided by presenting the Note for payment elsewhere;

(ii) any estate, inheritance, gift, sale, transfer or similar tax, assessment or other governmental charge;

(iii) any tax, duty, assessment or other governmental charge which is payable other than by deduction or withholding from payments of principal of or interest or any premium on the Note;

(iv) any tax required to be withheld or deducted under Sections 1471 to 1474 of the U.S. Internal Revenue Code of 1986, as amended (the "**Code**") (or any amended or successor versions of such Sections), any agreements described under section 1471(b) of the Code, any regulations or other official guidance thereunder, any intergovernmental agreement relating thereto, or any law, regulation or other official guidance enacted in any jurisdiction implementing any of the foregoing; or

(v) any combination of taxes, duties, assessments or other governmental charges referred to in the preceding paragraphs (i), (ii), (iii) and (iv); or

(b) with respect to any payment of the principal of, or premium, if any, or interest on, such Note to such Holder, if the Holder is a fiduciary, corporation, limited liability company, partnership or person other than the sole beneficial owner of any payment to the extent that, under the laws of a Relevant Taxing Jurisdiction, such payment would be required to be included in income, for tax purposes, of a

beneficiary or settlor with respect to the fiduciary, a shareholder of that corporation, a member of that partnership or limited liability company or a beneficial owner who would not have been entitled to such Additional Amounts had that beneficiary, settlor, shareholder, partner, or beneficial owner been the Holder thereof; or

(c) any combination of paragraphs (a) and (b).

As a result of these provisions, there are circumstances in which taxes could be withheld or deducted but Additional Amounts would not be payable to some or all beneficial owners of Notes.

Whenever there is mentioned in any context the payment of principal, premium or interest in respect of any Note, such mention will be deemed to include payments of Additional Amounts provided for in the Indenture to the extent that, in such context, Additional Amounts are, were or would be payable in respect thereof.

The Paying Agent and the Trustee will make payments free of withholdings or deductions on account of taxes unless required by applicable law. If such a deduction or withholding is required, the Paying Agent or the Trustee will not be obligated to pay any Additional Amount to the recipient unless such an Additional Amount is received by the Paying Agent or the Trustee from the Company or the Surviving Person.

In addition to the foregoing, the Company or the Surviving Person, as the case may be, will also pay and indemnify the Holder or beneficial owner, as applicable, for any present or future stamp, issue, registration, court or documentary taxes, or any other excise or property taxes, charges or similar levies (including penalties and interest) which are levied by any jurisdiction on the execution, delivery, issuance, registration, redemption or retirement of any of the Notes or the Indenture or any other document referred to therein (other than a transfer of the Notes after this offering) or any such taxes, charges or similar levies imposed by the United States, Indonesia, or any political subdivision thereof as a result of, or in connection with, the enforcement of any of the Notes.

Redemption for Taxation Reasons

The Notes may be redeemed at the option of the Company or the Surviving Person, as the case may be, as a whole but not in part, by giving not less than 30 days' nor more than 60 days' notice to the Holders (which notice will be irrevocable) and the Trustee, at a redemption price equal to 100% of the principal amount thereof, together with accrued and unpaid interest (including any Additional Amounts), if any, to (but not including) the date fixed by the Company or the Surviving Person, as the case may be, for redemption (the "**Tax Redemption Date**"), if the Company or the Surviving Person, as the case may be, is, or on the next Interest Payment Date would be, required to pay Additional Amounts, and such requirement cannot be avoided by taking reasonable measures (including an appointment of a new paying agent) by the Company or the Surviving Person, as the case may be, as a result of:

(a) any change in, or amendment to, the laws or any regulations or rulings promulgated thereunder of a Relevant Taxing Jurisdiction affecting taxation; or

(b) any change in, or amendment to, an official position regarding the application, administration or interpretation of such laws, regulations or rulings (including a holding, judgment or order by a court of competent jurisdiction or a change in published practice),

which change or amendment is announced and becomes effective on or after the Original Issue Date with respect to any payment due or to become due under the Notes or the Indenture (or, if the Relevant Taxing Jurisdiction was not a Relevant Taxing Jurisdiction on the Original Issue Date, the date on which such jurisdiction became a Relevant Taxing Jurisdiction under the Indenture).

Notwithstanding the above, (i) no such notice of redemption will be given earlier than 90 days prior to the earliest date on which the Company or the Surviving Person, as the case may be, would be obligated to pay such Additional Amounts if a payment in respect of the Notes were then due, and (ii) if such requirement to pay Additional Amounts is due to taxes of the Republic of Indonesia (or any political subdivision or taxing authority thereof or therein), the Company or the Surviving Person shall only be permitted to redeem the Notes in

accordance with the provisions above if the rate of withholding or deduction in respect of which Additional Amounts are required is in excess of 20%.

Prior to the mailing of any notice of redemption of the Notes pursuant to the foregoing, the Company will deliver to the Trustee:

(a) an Officer's Certificate stating that such change or amendment referred to in the prior paragraph has occurred, and describing the facts related thereto and stating that such requirement cannot be avoided by the Company, taking reasonable measures available to it; and

(b) an Opinion of Counsel of recognized standing with respect to tax matters of the Relevant Taxing Jurisdiction stating that the requirement to pay such Additional Amounts, and withhold or deduct such taxes, duties, assessments or other government charges results from such change or amendment referred to in the prior paragraph.

The Trustee shall be entitled to accept and rely upon such certificate and opinion as sufficient evidence of the satisfaction of the conditions precedent described above without further verification, and it will be conclusive and binding on the Holders. The Trustee will not investigate or verify such certificate and opinion.

Any Notes that are redeemed will be canceled.

Certain Covenants

Set forth below are summaries of certain covenants contained in the Indenture.

Negative Pledge

So long as any of the Notes remain outstanding, the Company will not create or permit to exist, and the Company will ensure that none of its Material Subsidiaries will create or permit to exist, any Lien for the benefit of the holders of any Securities on the whole or any part of its property or assets, present or future, to secure: (a) payment of any sum due in respect of any Securities; (b) any payment under any guarantee in respect of any Securities; or (c) any indemnity or other like obligation in respect of any Securities, without in any such case, at the same time or prior thereto, making effective provision whereby the Notes are accorded (i) the same Liens equally and ratably as are created or subsisting to secure any such Securities, guarantee or indemnity or like obligation, or (ii) such other Liens as may be consented to by the holders of a majority in aggregate principal amount of the outstanding Notes.

However, the foregoing restriction shall not apply to (a) any Lien existing on any property or assets at the time of acquisition of such property or assets by the Company; *provided that* such Lien was not created, and the principal, capital or nominal amount of the Securities secured by such Lien outstanding at the time of such acquisition was not increased, in contemplation of such acquisition or in connection therewith, and (b) any Lien arising out of the refinancing, extension, renewal or refunding of any Securities secured by any such Lien; *provided that* the principal, capital or nominal amount of such Securities is not increased and such Securities are not secured by any additional property or assets.

Use of Proceeds

The Company will use the proceeds received from the Notes as set forth in this Offering Memorandum under the caption "Use of Proceeds" or for the Special Mandatory Redemption, as described under the caption "— Redemption Upon Special Mandatory Redemption Event."

Provision of Financial Statements and Reports

For so long as any of the Notes remain outstanding, the Company will file with the Trustee and furnish to the Holders upon request:

(a) as soon as they are available, but in any event within 120 calendar days after the end of its fiscal year, copies of its financial statements (on a consolidated basis) in respect of such financial year (including a statement of income, balance sheet and cash flow statement) audited by a member firm of an internationally recognized firm of independent accountants; and

(b) as soon as they are available, but in any event within 90 calendar days, after the end of each of its first, second and third fiscal quarters, copies of its financial statements (on a consolidated basis) in respect of such period (including a statement of income, balance sheet and cash flow statement) prepared on a basis consistent with its audited financial statements, together with a certificate signed by the Person then authorized to sign financial statements on behalf of it, to the effect that such financial statements are true in all material respects and present fairly its financial position as at the end of, and the results of its operations for, the relevant quarterly period;

provided that, in each case, the financial statements shall be in the English language, or if such statements shall be in any other language, accompanied with an English translation of the same and translated by (i) an internationally recognized firm of independent accountants or (ii) a professional translation service provider and checked by an internationally recognized firm of independent accountants, together with a certificate in English signed by the Person then authorized to sign financial statements of the Company, certifying that such translation is complete and accurate (on each of which the Trustee may conclusively rely without liability to any Holder or any other person).

If the Company makes any financial or other report (or any English translation of any financial or other report in any other language) described above available on its corporate website, the Company will be deemed to have satisfied the foregoing obligation to furnish such report (or such translation) to the Holders upon request.

In addition, so long as any of the Notes remain outstanding, the Company will provide to the Trustee promptly and in any event within seven days after it obtains actual knowledge of the occurrence thereof, written notice of the occurrence of any event or condition which constitutes an Event of Default and an Officer's Certificate setting forth the details thereof and the action it is taking or proposes to take with respect thereto, and the Trustee shall be entitled to accept such certificate as sufficient evidence thereof, in which event it shall be conclusive and binding on the Holders.

Further, the Company has agreed that, for so long as there are Notes which are "restricted securities" within the meaning of Rule 144(a)(3) under the U.S. Securities Act of 1933, as amended (the "**Securities Act**"), during any period in which the Company is neither subject to Section 13 or 15(d) of the U.S. Securities Exchange Act of 1934, as amended (the "**Exchange Act**"), nor exempt from reporting pursuant to Rule 12g3-2(b) thereunder, the Company will supply to (i) any Holder or beneficial owner of a Note or (ii) a prospective purchaser of a Note or a beneficial interest therein designated by such Holder or beneficial owner, the information specified in, and meeting the requirements of, Rule 144A(d)(4) under the Securities Act upon the request of any Holder or beneficial owner of a Note.

Events of Default

The following events will be defined as "**Events of Default**" in the Indenture:

(a) default in the payment of principal of (or premium, if any, on) the Notes when the same becomes due and payable at maturity, upon acceleration, redemption or otherwise;

(b) default in the payment of interest on any Note when the same becomes due and payable, and such default continues for a period of 30 consecutive days;

(c) default in the performance of or breach of any provisions of the covenants described under "— Consolidation, Merger and Sale of Assets" or failure to make or consummate a Change of Control Offer in the manner described under the caption "— Repurchase of Notes Upon a Change of Control" or failure to make or consummate the Special Mandatory Redemption in the manner described under the caption "— Redemption Upon Special Mandatory Redemption Event";

(d) default in the performance of or breach of any other covenant or agreement in the Indenture or under the Notes (other than a default specified in paragraph (a), (b) or (c) above) and such default or breach continues for a period of 60 consecutive days after written notice by the Trustee or the Holders of 25% or more in aggregate principal amount of the outstanding Notes;

(e) (i) the Company ceasing to own and control, directly or indirectly, at least 51.0% of the issued and paid-up shares of any of its Subsidiaries that are Material Subsidiaries as of the Original Issue Date or, subsequent to the closing of the PTFI Share Acquisition, of PTFI or (ii) in the event of a Qualifying PTFI IPO, the Company ceasing to own and control, directly or indirectly, at least 40.0% of the issued and paid-up shares of PTFI or ceasing to be the single largest beneficial shareholder of PTFI;

(f) there occurs with respect to any Debt of the Company or any of its Material Subsidiaries or PTFI having an outstanding principal amount of US$50.0 million (or the Dollar Equivalent thereof) or more in the aggregate for all such Debt of all such Persons, whether such Debt now exists or will hereafter be created, (A) an event of default that has caused the holder thereof to declare such Debt to be due and payable prior to its Stated Maturity or (B) the failure to make a payment of principal (subject to the applicable grace period in the relevant documents) of such Debt when the same becomes due;

(g) one or more final judgments or orders for the payment of money are rendered against the Company or any of its Subsidiaries or PTFI and are not paid or discharged, and there is a period of 60 consecutive days following entry of the final judgment or order that causes the aggregate amount for all such final judgments or orders outstanding and not paid or discharged against all such Persons to exceed US$50.0 million (or the Dollar Equivalent thereof) during which a stay of enforcement, by reason of a pending appeal or otherwise, is not in effect;

(h) an involuntary case or other proceeding is commenced against the Company or any Material Subsidiary or PTFI with respect to it or its Debts under any applicable bankruptcy, insolvency or other similar law now or hereafter in effect seeking the appointment of a receiver, liquidator, assignee, custodian, trustee, sequestrator or similar official of the Company or any Material Subsidiary or PTFI or for any substantial part of the property and assets of the Company or any Material Subsidiary or PTFI and such involuntary case or other proceeding remains undismissed and unstayed for a period of 60 consecutive days; or an order for relief is entered against the Company or any Material Subsidiary or PTFI under any applicable bankruptcy, insolvency or other similar law as now or hereafter in effect; or

(i) the Company or any Material Subsidiary or PTFI (i) commences a voluntary case under any applicable bankruptcy, insolvency or other similar law now or hereafter in effect, or consents to the entry of an order for relief in an involuntary case under any such law, (ii) consents to the appointment of or taking possession by a receiver, liquidator, assignee, custodian, trustee, sequestrator or similar official of the Company or any Material Subsidiary or PTFI or for all or substantially all of the property and assets of the Company or any Material Subsidiary or PTFI or (iii) effects any general assignment for the benefit of creditors.

If an Event of Default (other than an Event of Default specified in paragraph (h) or (i) above) occurs and is continuing under the Indenture, the Trustee (in its sole discretion and without further notice) or the Holders of at least 25% in aggregate principal amount of the Notes, then outstanding, by written notice to the Company (and to the Trustee if such notice is given by the Holders), may, and the Trustee at the written request of such Holders will (subject to being indemnified and/or secured and/or prefunded to its satisfaction), declare the principal of, premium, if any, and accrued and unpaid interest on the Notes to be immediately due and payable. Upon a declaration of acceleration, such principal of, premium, if any, and accrued and unpaid interest will be immediately due and payable. If an Event of Default specified in paragraph (h) or (i) above occurs, the principal of, premium, if any, and accrued and unpaid interest on the Notes then outstanding will automatically become and be immediately due and payable without any declaration or other act on the part of the Trustee or any Holder.

The Holders of at least a majority in principal amount of the outstanding Notes by written notice to the Company and the Trustee, may on behalf of all of the Holders waive all past defaults and rescind and annul a declaration of acceleration and its consequences with respect to the Notes if:

(a) the Company pays or deposits with the Trustee a sum sufficient to pay all monies then due with respect to the Notes (other than amounts due solely because of such declaration of acceleration) and all other existing Events of Default have been cured or waived, and

(b) the rescission would not conflict with any judgment or decree of a court of competent jurisdiction.

Upon such waiver, the Default will cease to exist, and any Event of Default arising therefrom will be deemed to have been cured, but no such waiver will extend to any subsequent or other Default or impair any right consequent thereon.

The Holders of at least a majority in aggregate principal amount of the outstanding Notes may direct the time, method and place of conducting any proceeding for any remedy available to the Trustee or exercising any trust or power conferred on the Trustee, subject to the Trustee being indemnified and/or secured and/or prefunded to its satisfaction in advance of the proceedings. However, the Trustee may refuse to follow any direction that is unclear, conflicting or equivocal, that conflicts with law or the Indenture, that may involve the Trustee in personal liability, or that may be unduly prejudicial to the rights of Holders not joining in the giving of such direction and may take any other action it deems proper that is not inconsistent with any such direction received from Holders. In addition, the Trustee will not be required to expend its own funds in following such direction if it does not believe that reimbursement or satisfactory indemnification and/or security and/or prefunding is assured to it.

A Holder may not pursue or institute any proceeding, judicial or otherwise, with respect to the Indenture or the Notes, or for the appointment of a receiver or trustee, or for any other remedy under the Indenture or the Notes, unless:

(a) the Holder has previously given the Trustee written notice of a continuing Event of Default;

(b) the Holders of at least 25% in aggregate principal amount of outstanding Notes make a written request to the Trustee to pursue the remedy;

(c) such Holder or Holders offer the Trustee indemnity and/or security and/or pre-funding satisfactory to the Trustee against any costs, liability or expense to be incurred in compliance with such request;

(d) the Trustee does not comply with the request within 60 days after receipt of the request and the offer of indemnity and/or security and/or pre-funding; and

(e) during such 60-day period, the Holders of a majority in aggregate principal amount of the outstanding Notes do not give the Trustee a direction that is inconsistent with the request.

However, such limitations do not apply to the right of any Holder of a Note to receive payment of the principal of, premium, if any, or interest, and Additional Amounts, if any, on, such Note or to bring suit for the enforcement of any such payment, on or after the due date expressed in the Notes, which right will not be impaired or affected without the consent of the Holder.

Officers of the Company must certify to the Trustee in writing, on or before a date not more than 120 calendar days after the end of each fiscal year, that a review has been conducted of the activities of the Company and its Subsidiaries and PTFI and the Company's performance under the Indenture and the Notes and that the Company has fulfilled all obligations thereunder, or, if there has been a default in the fulfillment of any such obligation, specifying each such default and the nature and status thereof. The Company will also be obligated to notify the Trustee in writing of any default or defaults in the performance of any covenants or agreements under the Indenture. See "— Provision of Financial Statements and Reports."

The Trustee and the Agents need not do anything to ascertain whether any Event of Default has occurred or is continuing and will not be responsible to Holders or any other person for any loss arising from any failure by it to do so, and the Trustee or the Agents may assume that no such event has occurred and that the Company is performing all its obligations under the Indenture and the Notes unless the Trustee has received written notice of the occurrence of such event or facts establishing that an Event of Default has occurred or the Company is not performing all of its obligations under the Indenture and the Notes. The Trustee is entitled to rely on any Opinion of Counsel or Officer's Certificate regarding whether an Event of Default has occurred.

Consolidation, Merger and Sale of Assets

The Company will not consolidate with, or merge with or into, another Person, permit any Person to merge with or into it, or sell, convey, transfer, lease or otherwise dispose of all or substantially all of its properties and

assets, computed on a consolidated basis with its Subsidiaries (as an entirety or substantially an entirety in one transaction or a series of related transactions), unless:

(a) the Company will be the continuing Person, or the Person (if other than the Company) formed by such consolidation or merger or that acquired or leased such property and assets (the "**Surviving Person**") will be a corporation organized and validly existing under the laws of the jurisdiction in which the Company is organized and will expressly assume, by a supplemental indenture to the Indenture, executed and delivered to the Trustee, all the obligations of the Company under the Indenture and the Notes (including, if applicable, pursuant to the Escrow Agreement), including the obligation to pay Additional Amounts, and under the Escrow Agreement, and the Indenture and the Notes and the Escrow Agreement will remain in full force and effect;

(b) immediately after giving effect to such transaction, no Default or Event of Default will have occurred and be continuing; and

(c) the Company delivers to the Trustee an Officer's Certificate and an Opinion of Counsel, in each case stating that such consolidation, merger or transfer and the relevant supplemental indenture (and, if applicable, any documentation in respect of the Escrow Agreement) complies with this provision and that all conditions precedent provided for in the Indenture relating to such transaction have been complied with and that the relevant supplemental indenture is enforceable.

For purposes of this covenant, the conveyance, transfer or lease of all or substantially all of the property or assets of one or more Subsidiaries of the Company, which constitutes all or substantially all of the property or assets of the Company and its Subsidiaries on a consolidated basis, shall be deemed to be the transfer of all or substantially all of the property or assets of the Company.

Although there is a limited body of case law interpreting the phrase "substantially all," there is no precise established definition of the phrase under applicable law. Accordingly, in certain circumstances there may be a degree of uncertainty as to whether a particular transaction would involve "all or substantially all" of the property or assets of a Person.

The foregoing provisions would not necessarily afford Holders protection in the event of highly-leveraged or other transactions involving the Company that may adversely affect Holders.

Payments for Consents

The Company will not, and will not permit any of its Subsidiaries or PTFI to, directly or indirectly, pay or cause to be paid any consideration, whether by way of interest, fee or otherwise, to any Holder for or as an inducement to any consent, waiver or amendment of any of the terms or provisions of the Indenture or the Notes, unless such consideration is offered to be paid or is paid to all Holders that consent, waive or agree to amend such term or provision within the time period set forth in the solicitation documents relating to such consent, waiver or amendment. Notwithstanding the foregoing, in any offer or payment of consideration for, or as an inducement to, any consent, waiver or amendment of any of the terms or provisions of the Indenture or the Notes in connection with an exchange offer, the Company and any of its Subsidiaries and PTFI may exclude (a) holders or beneficial owners of the Notes that are not qualified institutional buyers as defined in Rule 144A under the Securities Act, and (b) holders or beneficial owners of the Notes in any jurisdiction where the inclusion of such holders or beneficial owners would require the Company or any of its Subsidiaries or PTFI to comply with the registration requirements or other similar requirements under any securities laws of such jurisdiction, or the solicitation of such consent, waiver or amendment from, or the granting of such consent or waiver, or the approval of such amendment by, holders or beneficial owners in such jurisdiction would be unlawful, in each case as determined by the Company in its sole discretion.

Defeasance

Defeasance and Discharge

The Indenture will provide that the Company will be deemed to have paid and will be discharged from any and all obligations in respect of the Notes on the 183rd day after the deposit referred to below and payments of

all amounts due to the Trustee were made, and the provisions of the Indenture will no longer be in effect with respect to the Notes (except for, among other matters, certain obligations to register the transfer or exchange of the Notes, to replace stolen, lost or mutilated Notes, to maintain paying agencies and to hold monies for payment in trust and to pay Additional Amounts) if, among other things:

(a) the Company has (i) deposited with the Trustee, in trust, cash in U.S. dollars, U.S. Government Obligations or a combination thereof that through the payment of interest, premium, if any, and principal in respect thereof in accordance with their terms will provide money in an amount sufficient to pay the principal of, premium, if any, and accrued interest on the Notes on the Stated Maturity of such payments in accordance with the terms of the Indenture and the Notes and (ii) delivered to the Trustee (x) a certificate of an internationally recognized firm of independent accountants to the effect that the amount deposited by the Company is sufficient to provide payment for the principal of, premium, if any, and accrued interest on, the Notes on the Stated Maturity of such payment in accordance with the terms of the Indenture and the Notes and (y) an Opinion of Counsel to the effect that the Holders have a valid, perfected, exclusive security in such trust;

(b) the Company has delivered to the Trustee either (x) an Opinion of Counsel of recognized standing with respect to U.S. federal income tax matters which is based on a change in applicable U.S. federal income tax law occurring after the Original Issue Date to the effect that beneficial owners will not recognize income, gain or loss for U.S. federal income tax purposes as a result of the Company's exercise of its option under this "— Defeasance and Discharge" provision and will be subject to U.S. federal income tax on the same amount and in the same manner and at the same time as would have been the case if such deposit, defeasance and discharge had not occurred or (y) a ruling directed to the Company or the Trustee received from the U.S. Internal Revenue Service to the same effect as the aforementioned Opinion of Counsel;

(c) the Company has delivered to the Trustee an Officer's Certificate stating that the deposit was not made by it with the intent of preferring the Holders over any other of its creditors or with the intent of defeating, hindering, delaying or defrauding any other of its creditors or others; and

(d) immediately after giving effect to such deposit on a pro forma basis, no Event of Default, or event that after the giving of notice or lapse of time or both would become an Event of Default, will have occurred and be continuing on the date of such deposit or during the period ending on the 183rd day after the date of such deposit, and such defeasance will not result in a breach or violation of, or constitute a default under, any other agreement or instrument to which the Company or any Material Subsidiary or PTFI is a party or by which the Company or any Material Subsidiary or PTFI is bound.

Amendments and Waivers

Amendments Without Consent of Holders

The Indenture and the Escrow Agreement may be amended or supplemented, without the consent of any Holder of Notes, to:

(a) cure any ambiguity, defect or inconsistency in the Indenture or the Notes or the Escrow Agreement, provided that any such amendment may not adversely affect the interests of the Holder;

(b) comply with the provisions described under "Certain Covenants — Consolidation, Merger and Sale of Assets";

(c) evidence and provide for the acceptance of appointment by a successor Trustee;

(d) add any guarantor or guarantee with respect to the Notes;

(e) provide for the issuance of Additional Notes in accordance with the limitations set forth in the Indenture;

(f) effect any change in any other case where a supplemental indenture to the Indenture is required or permitted to be entered into pursuant to the provisions of the Indenture without the consent of any Holder;

(g) effect any changes to the Indenture in a manner necessary to comply with the procedures of DTC;

(h) provide collateral to secure the Notes;

(i) make any other change that does not materially and adversely affect the rights of any Holder of Notes;

(j) comply with the rules of any applicable securities depositary; or

(k) conform the text of the Indenture or the Notes to any provision of this "Description of the 2023 Notes" to the extent that such provision in this "Description of the 2023 Notes" was intended to be a verbatim recitation of a provision of the Indenture or the Notes.

Amendments With Consent of Holders

Amendments of the Indenture and the Escrow Agreement may be made by the Company and the Trustee with the consent of the Holders of not less than a majority in aggregate principal amount of the outstanding Notes, and the holders of a majority in aggregate principal amount of the outstanding Notes may waive future compliance by the Company with any provision of the Indenture or the Notes or the Escrow Agreement, *provided that* no such modification, amendment or waiver may, without the consent of each Holder:

(a) change the Stated Maturity of the principal of, or any installment of interest on, any Note;

(b) reduce the principal amount of, or premium, if any, or interest on, any Note or reduce the Special Mandatory Redemption Price;

(c) change the currency, time or place of payment of principal of, or premium, if any, or interest on, any Note;

(d) impair the right to institute suit for the enforcement of any payment on or after the Stated Maturity (or, in the case of a redemption, on or after the redemption date) of any Note;

(e) reduce the above stated percentage of outstanding Notes the consent of whose Holders is necessary to modify or amend the Indenture, to waive compliance with certain provisions of the Indenture or to waive certain defaults;

(f) waive a default in the payment of principal of, premium, if any, or interest on the Notes;

(g) amend, change or modify (i) the obligation of the Company in respect of the due and punctual payment of the principal of, premium, if any, or interest on, any Note; (ii) the obligation of the Company to pay Additional Amounts, or (iii) the ranking of the Notes, in each case, in a manner that adversely affects the Holders; or

(h) reduce the premium payable upon the redemption or repurchase of any Note, or change the time and manner in which any Note may be redeemed or repurchased as described above under the captions "— Repurchase of Notes Upon a Change of Control" or "— Redemption for Taxation Reasons," except that the 75.0% threshold in the definition of the term "Change of Control" in the Indenture may, prior to the occurrence of a Change of Control, be waived modified or amended with the consent of the holders of not less than a majority in aggregate principal amount of the Notes.

No Personal Liability of Incorporators, Shareholders, Directors, Commissioners, Officers or Employees

No recourse for the payment of the principal of, premium, if any, or interest on any of the Notes or for any claim based thereon or otherwise in respect thereof, and no recourse under or upon any obligation, covenant or agreement of the Company in the Indenture, or in any of the Notes or because of the creation of any Debt represented thereby, will be had against any incorporator, shareholder, director, commissioner, officer, employee or controlling person of the Company or of any successor Person thereof. Each Holder, by accepting the Notes, waives and releases all such liability. The waiver and release are part of the consideration for the issuance of the Notes. Such waiver may not be effective to waive liabilities under the applicable securities laws.

Concerning the Trustee and the Agents

Except during the continuance of an Event of Default, the Trustee will not be liable, except for the performance of such duties as are specifically set forth in the Indenture and the Escrow Agreement. If an Event of Default has occurred and is continuing, the Trustee will use the same degree of care and skill in its exercise of the rights and powers vested in it under the Indenture as a prudent person would exercise under the circumstances in the conduct of such person's own affairs.

The Trustee and the Agents assume no responsibility for the accuracy or completeness of the information concerning the Company or its Affiliates or any other party referenced in this Offering Memorandum or for any failure of the Company or any other party to disclose events that may have occurred or may affect the completeness or accuracy of such information.

The Trustee is permitted to engage in other transactions with the Company and its Affiliates and shall not be obligated to account for any profits therefrom, and no Trustee and no director or officer of any corporation being a Trustee hereof shall by reason of the fiduciary position of such Trustee be in any way precluded from making any contracts or entering into any transactions in the ordinary course of business with the Company, or any person or body corporate directly or indirectly associated with the Company, or from accepting the trusteeship of any other debenture stock, debentures or securities of the Company or any person or body corporate directly or indirectly associated with the Company, and neither the Trustee nor any such director or officer shall be accountable to the Holders or the Company, or any person or body corporate directly or indirectly associated with the Company, for any profit, fees, commissions, interest, discounts or share of brokerage earned, arising or resulting from any such contracts or transactions and the Trustee and any such director or officer shall also be at liberty to retain the same for its or his own benefit, *provided that* if such Trustee of any such director or officer acquires any conflicting interest that may have a materially prejudicial effect upon the Holders, it must eliminate such conflict or resign.

The Trustee shall not be responsible for the performance by any other person appointed by the Company in relation to the Notes and, unless notified in writing to the contrary, shall assume that the same are being duly performed. The Trustee shall not be liable to any Holders or any other person for any action taken by the Holders or the Trustee in accordance with the instructions of the Holders. The Trustee shall be entitled to rely on any written direction of the Holders which has been duly given by the Holders of the requisite principal amount of the Notes outstanding.

Neither the Trustee nor the Agents will be responsible for making calculations or for verifying calculations performed by the Company or any other persons unless otherwise specified in the Indenture.

The Trustee will be under no obligation to exercise any rights or powers conferred under the Indenture for the benefit of the Holders, unless such Holders have offered to the Trustee and, if the Trustee accepts such offer, the Trustee has received, indemnity and/or security and/or pre-funding satisfactory to the Trustee against any loss, liability or expense. In the exercise of its duties, the Trustee shall not be responsible for the verification of the accuracy or completeness of any certification submitted to it by the Company and is entitled to rely exclusively on the certification contained therein. Notwithstanding anything described herein, the Trustee has no duty to monitor the performance or compliance of the Company in the fulfillment of its obligations under the Indenture and the Notes.

For so long as the Notes are listed on the SGX-ST and the rules of the SGX-ST so require, in the event that a Global Note is exchanged for definitive Notes, the Company shall appoint and maintain a paying agent in Singapore, where the definitive Notes may be presented or surrendered for payment or redemption. In addition, in the event that a Global Note is exchanged for definitive Notes, an announcement of such exchange shall be made by or on behalf of the Company through the SGX-ST and such announcement will include all material information with respect to the delivery of the definitive Notes, including details of the paying agent in Singapore.

Book-Entry; Delivery and Form

The certificates representing the Notes will be issued in fully registered form without interest coupons. Notes sold in offshore transactions in reliance on Regulation S under the Securities Act will initially be represented by one or more permanent global notes in definitive, fully registered form without interest coupons (each, a "**Regulation S Global Note**") and will be deposited with The Bank of New York Mellon as custodian for, and registered in the name of a nominee of, DTC for the accounts of Euroclear and Clearstream. Notes sold in reliance on Rule 144A will be represented by one or more permanent global notes in definitive, fully registered form without interest coupons (each, a "**Restricted Global Note**"; and together with the Regulation S Global Notes, the "**Global Notes**") and will be deposited with The Bank of New York Mellon as custodian for, and registered in the name of a nominee of, DTC.

Each Global Note (and any Notes issued for exchange therefor) will be subject to certain restrictions on transfer set forth therein as described under "Transfer Restrictions."

Notes transferred to institutional "accredited investors" (as defined in Rule 501(a) (1), (2), (3) or (7) of Regulation D under the Securities Act (an "**Institutional Accredited Investor**")) who are not qualified institutional buyers ("**Non-Global Purchasers**") will be in registered form without interest coupons ("**Certificated Notes**"). Upon the transfer of Certificated Notes initially issued to a Non-Global Purchaser to a qualified institutional buyer or in accordance with Regulation S, such Certificated Notes will, unless the relevant Global Note has previously been exchanged in whole for Certificated Notes, be exchanged for an interest in a Global Note. For a description of the restrictions on the transfer of Certificated Notes, see "Transfer Restrictions."

Ownership of beneficial interests in a Global Note will be limited to persons who have accounts with DTC ("**participants**") or persons who hold interests through participants. Ownership of beneficial interests in a Global Note will be shown on, and the transfer of that ownership will be effected only through, records maintained by DTC or its nominee (with respect to interests of participants) and the records of participants (with respect to interests of persons other than participants). Beneficial owners may hold their interests in a Global Note directly through DTC if they are participants in such system, or indirectly through organizations which are participants in such system.

Euroclear and Clearstream will hold interests in the Global Notes on behalf of their participants through DTC.

So long as DTC, or its nominee, is the registered owner or holder of a Global Note, DTC or such nominee, as the case may be, will be considered the sole owner or holder of the Notes represented by such Global Note for all purposes under the Indenture and the Notes. No beneficial owner of an interest in a Global Note will be able to transfer that interest except in accordance with DTC's applicable procedures, in addition to those provided for under the Indenture and, if applicable, those of Euroclear and Clearstream.

Payments of the principal of, premium, if any, and interest on, a Global Note, will be made to DTC or its nominee, as the case may be, as the registered owner thereof. Neither the Company, the Trustee nor the Paying Agent will have any responsibility or liability for any aspect of the records relating to or payments made on account of beneficial ownership interests in a Global Note or for maintaining, supervising or reviewing any records relating to such beneficial ownership interests.

The Company expects that DTC or its nominee, upon receipt of any payment of principal of, premium, if any, or interest in respect of a Global Note, will credit participants' accounts with payments in amounts proportionate to their respective beneficial interests in the principal amount of such Global Note as shown on the records of DTC or its nominee. The Company also expects that payments by participants to owners of beneficial interests in such Global Note held through such participants will be governed by standing instructions and customary practices, as is now the case with securities held for the accounts of customers registered in the names of nominees for such customers. Such payments will be the responsibility of such participants.

The Company expects that DTC will take any action permitted to be taken by a holder of Notes (including the presentation of Notes for exchange as described below) only at the direction of one or more participants to

whose account the DTC interests in a Global Note is credited and only in respect of such portion of the aggregate principal amount of Notes as to which such participant or participants has or have given such direction. However, if there is an Event of Default under the Notes, DTC will exchange the applicable Global Note for Certificated Notes, which it will distribute to its participants and which may be legended as set forth under the heading "Transfer Restrictions."

Although DTC, Euroclear and Clearstream are expected to follow the foregoing procedures in order to facilitate transfers of interests in a Global Note among participants of DTC, Euroclear and Clearstream, they are under no obligation to perform or continue to perform such procedures, and such procedures may be discontinued at any time. None of the Company, the Trustee or the Paying Agent will have any responsibility for the performance by DTC, Euroclear or Clearstream or their respective participants or indirect participants of their respective obligations under the rules and procedures governing their operations.

If DTC is at any time unwilling or unable to continue as a depositary for the Global Notes and a successor depositary is not appointed by the Company within 90 days, the Company will issue Certificated Notes in registered form, which may bear the legend referred to under "Transfer Restrictions," in exchange for the Global Notes. Holders of an interest in a Global Note may receive Certificated Notes, which may bear the legend referred to under "Transfer Restrictions," in accordance with the DTC's rules and procedures in addition to those provided for under the Indenture.

The Clearing Systems

General

DTC, Euroclear and Clearstream have advised the Company as follows:

DTC: DTC is a limited-purpose trust company organized under the laws of the State of New York, a "banking organization" within the meaning of New York Banking Law, a member of the Federal Reserve System, a "clearing corporation" within the meaning of the New York Uniform Commercial Code, and a "clearing agency" registered pursuant to the provisions of Section 17A of the Exchange Act. DTC was created to hold securities of its participants and to facilitate the clearance and settlement of securities transactions among its participants in such securities through electronic book-entry changes in accounts of its participants, thereby eliminating the need for physical movement of securities certificates. DTC's participants include securities brokers and dealers, banks, trust companies, clearing corporations, and certain other organizations, some of whom own DTC, and may include the initial purchaser. Indirect access to the DTC system is also available to others that clear through or maintain a custodial relationship with a DTC participant, either directly or indirectly ("**indirect participants**"). Transfers of ownership or other interests in Notes in DTC may be made only through DTC participants. In addition, beneficial owners of Notes in DTC will receive all distributions of principal of, premium, if any, and interest on the Notes from the Trustee through such DTC participant.

Euroclear and Clearstream: Euroclear and Clearstream hold securities for participating organizations and facilitate the clearance and settlement of securities transactions between their respective participants through electronic book-entry changes in accounts of such participants. Euroclear and Clearstream provide to their participants, among other things, services for safekeeping, administration, clearance and settlement of internationally-traded securities and securities lending and borrowing. Euroclear and Clearstream interface with domestic securities markets. Euroclear and Clearstream participants are financial institutions such as underwriters, securities brokers and dealers, banks, trust companies and certain other organizations. Indirect access to Euroclear or Clearstream is also available to others such as banks, brokers, dealers and trust companies that clear through or maintain a custodial relationship with a Euroclear or Clearstream participant, either directly or indirectly.

Initial Settlement

Investors' interests in Notes held in book-entry form by DTC will be represented through financial institutions acting on their behalf as direct and indirect participants in DTC. As a result, Euroclear and Clearstream will hold positions on behalf of their participants through DTC.

Investors electing to hold their Notes through DTC (other than through accounts at Euroclear or Clearstream) must follow the settlement practices applicable to United States corporate debt obligations. The securities custody accounts of investors will be credited with their holdings against payment in same day funds on the settlement date.

Investors electing to hold their Notes through Euroclear or Clearstream accounts will follow the settlement procedures applicable to conventional Eurobonds in registered form. Notes will be credited to the securities custody accounts of Euroclear Holders and of Clearstream Holders on the Business Day following the settlement date against payment for value on the settlement date.

Secondary Market Trading

Secondary market trading between DTC participants will occur in the ordinary way in accordance with DTC rules. Secondary market trading between Clearstream participants and/or Euroclear participants will occur in the ordinary way in accordance with the applicable rules and operating procedures of Clearstream and Euroclear and will be settled using the procedures applicable to conventional eurobonds.

Cross-market transfers between persons holding directly or indirectly through DTC, on the one hand, and directly or indirectly through Clearstream participants or Euroclear participants, on the other, will be effected in DTC in accordance with DTC rules on behalf of the relevant European international clearing system by its U.S. depositary; however, such cross-market transactions will require delivery of instructions to the relevant European international clearing system by the counterparty in such system in accordance with its rules and procedures and within its established deadlines (European time). The relevant European international clearing system will, if a transaction meets its settlement requirements, deliver instructions to its U.S. depositary to take action to effect final settlement on its behalf by delivering or receiving Notes in DTC, and making or receiving payment in accordance with normal procedures for same-day funds settlement applicable to DTC. Clearstream participants and Euroclear participants may not deliver instructions directly to the U.S. depositaries.

Because of time zone differences, credits of Notes received in Clearstream or Euroclear as a result of a transaction with a DTC participant will be made during subsequent securities settlement processing and dated the Business Day following the DTC settlement date. Such credits or any transactions in such Notes settled during such processing will be reported to the relevant Clearstream participants or Euroclear participants on such Business Day. Cash received in Clearstream or Euroclear as a result of sales of Notes by or through a Clearstream participant or a Euroclear participant to a DTC participant will be received with value on the DTC settlement date but will be available in the relevant Clearstream or Euroclear cash account only as of the Business Day following settlement in DTC.

For so long as the Notes are listed on the SGX-ST and the rules of the SGX-ST so require, the Notes, if traded on the SGX-ST, will be traded in a minimum board lot size of S$200,000 (or its equivalent in foreign currencies). Accordingly, the Notes, if traded on the SGX-ST, will be traded in a minimum board lot size of US$200,000.

Notices

All notices or demands required or permitted by the terms of the Notes or the Indenture to be given to or by the Holders are required to be in writing and may be given or served by being sent by prepaid courier or by being deposited, first-class postage prepaid, in the United States mails (if intended for the Company) addressed to the Company (if intended for the Trustee), at the corporate trust office of the Trustee; and (if intended for any Holder) addressed to such Holder at such Holder's last address as it appears in the Note register (the "**Register**").

Any such notice or demand will be deemed to have been sufficiently given or served when so sent or deposited and, if to the Holders, when delivered in accordance with the applicable rules and procedures of DTC. Any such notice will be deemed to have been delivered on the day such notice is delivered to DTC or if by mail, when so sent or deposited.

Language

The Notes, the Indenture and the Escrow Agreement will be executed in both English and Bahasa Indonesia to comply with Law 24 of 2009 regarding Flag, Language, National Emblem and National Anthem enacted July 9, 2009, and in the event of any inconsistency between the English and Bahasa Indonesia versions of these documents, the English version shall prevail. See "Risk Factors — Risks Relating to the Notes — The Indenture and certain other documents entered into in connection with the issue of the Notes thereunder will also be prepared in Bahasa Indonesia as required under Indonesian law. However, we cannot assure you that, in the event of inconsistencies between the Bahasa Indonesia and English language versions of these documents, an Indonesian court would hold that the English language versions of such documents would prevail."

Consent to Jurisdiction; Service of Process

The Company will irrevocably (i) submit to the non-exclusive jurisdiction of any U.S. federal or New York state court located in the Borough of Manhattan, The City of New York in connection with any suit, action or proceeding arising out of, or relating to, the Notes or the Indenture or any transaction contemplated thereby and (ii) designate and appoint Law Debenture Corporate Services Inc., for receipt of service of process in any such suit, action or proceeding.

Governing Law

Each of the Notes and the Indenture provides that such instrument will be governed by, and construed in accordance with, the laws of the State of New York.

Definitions

Set forth below are defined terms used in the covenants and other provisions of the Indenture. Reference is made to the Indenture for other capitalized terms used in this "Description of the 2023 Notes" for which no definition is provided.

"**Affiliate**" means, with respect to any Person, any other Person (a) directly or indirectly controlling, controlled by, or under direct or indirect common control with, such Person or (b) who is a commissioner, director or officer of such Person or any subsidiary of such Person or of any Person referred to in clause (a) of this definition. For purposes of this definition, "**control**" (including, with correlative meanings, the terms "**controlling**," "**controlled by**" and "**under common control with**"), as applied to any Person, means the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of such Person, whether through the ownership of voting securities, by contract or otherwise.

"**Business Day**" means any day which is not a Saturday, Sunday, legal holiday or other day on which banking institutions in The City of New York, Singapore or Indonesia or the city where the corporate trust office of the Trustee is then located are authorized by law or governmental regulation to close; *provided that*, solely for purposes of determining the date of any payment to be made on any Note, "**Business Day**" means any day which is not a Saturday, Sunday, legal holiday or other day on which banking institutions in The City of New York, Singapore, Indonesia or the place in which payments on the Notes are to be made are authorized by law or governmental regulation to close.

"**Capital Stock**" means, with respect to any Person, any and all shares, interests, participations or other equivalents (however designated, whether voting or non-voting) in equity of such Person, whether outstanding on the Original Issue Date or issued thereafter.

"**Change of Control**" means the occurrence of any event resulting in the government of the Republic of Indonesia ceasing to directly own and control at least 75.0% of the issued and paid-up shares of the Company.

"**Clearstream**" means Clearstream Banking, société anonyme or any successor thereof.

"**Commission**" means the U.S. Securities and Exchange Commission, as from time to time constituted under the Exchange Act, or if at any time after the execution of this instrument such Commission is not existing, then the body performing such duties on such date.

"**Debt**" means, with respect to any Person as of any date of determination, without duplication, (a) all obligations, contingent or otherwise, of such Person for borrowed money, (b) all obligations of such Person evidenced by bonds, notes or other similar instruments, (c) all obligations of such Person in respect of letters of credit or other similar instruments, (d) all obligations of such Person to pay the unpaid purchase price of any property or service, (e) all obligations secured by a Lien on any property or asset of such Person, whether or not such obligations are assumed by such Person and (f) all obligations of others guaranteed by such Person to the extent of such guarantees and, for clauses (a), (b), (c) and (e), which has a final maturity of one year or more. The amount of Debt of any Person as of any date of determination shall be the outstanding balance at such date of all unconditional obligations as described above, the maximum liability of such Person for any such contingent obligations at such date and, in the case of clause (d), the lesser of the fair market value (as determined in good faith by the board of directors of such Person) at such date of the property or asset of such Person subject to a Lien securing the obligations of others and the amount of such obligations secured.

"**Default**" means any event that is, or after notice or passage of time or both would be, an Event of Default.

"**Dollar Equivalent**" means, with respect to any monetary amount in a currency other than U.S. dollars, at any time for the determination thereof, the amount of U.S. dollars obtained by converting such foreign currency involved in such computation into U.S. dollars at the base rate for the purchase of U.S. dollars with the applicable foreign currency as quoted by the Federal Reserve Bank of New York on the date of determination.

"**DTC**" means The Depository Trust Company and its successors.

"**Escrow Accounts**" means the escrow accounts designated to hold the net proceeds of the offering of the Notes as per the terms of the Escrow Agreement and held by the Company with any one or more of the following: PT Bank Rakyat Indonesia (Persero) Tbk., PT Bank Mandiri (Persero) Tbk. and PT Bank Negara Indonesia (Persero) Tbk.; and each such account an "**Escrow Account**."

"**Euroclear**" means Euroclear Bank S.A./N.V. or any successor thereof.

"**GAAP**" means generally accepted accounting principles in Indonesia as in effect from time to time.

"**guarantee**" means any obligation, contingent or otherwise, of any Person directly or indirectly guaranteeing any Debt or other obligation of any other Person and, without limiting the generality of the foregoing, any obligation, direct or indirect, contingent or otherwise, of such Person (1) to purchase or pay (or advance or supply funds for the purchase or payment of) such Debt or other obligation of such other Person (whether arising by virtue of partnership arrangements, or by agreements to keep-well, to purchase assets, goods, securities or services, to take-or-pay, or to maintain financial statement conditions or otherwise) or (2) entered into for purposes of assuring in any other manner the obligee of such Debt or other obligation of the payment thereof or to protect such obligee against loss in respect thereof (in whole or in part); *provided that* the term "**guarantee**" will not include endorsements for collection or deposit in the ordinary course of business. The term "**guarantee**" used as a verb has a corresponding meaning.

"**Holder**" means the Person in whose name a Note is registered in the Register.

"**Lien**" means any mortgage, pledge, fiduciary, security interest, encumbrance, lien or charge of any kind (including, without limitation, any conditional sale or other title retention agreement or lease in the nature thereof or any agreement to create any mortgage, pledge, security interest, lien, charge, easement or encumbrance of any kind but excluding liens arising by operation of law).

"**Material Subsidiary**" means at any time a Subsidiary of the Company:

(a) whose total revenues (consolidated in the case of a Subsidiary which itself has Subsidiaries) or whose total assets (consolidated in the case of a Subsidiary which itself has Subsidiaries) represent in each case (or, in the case of a Subsidiary acquired after the end of the financial period to which the then latest audited consolidated accounts of the Company and its Subsidiaries relate, are equal to) not less than 5.0% of the consolidated total revenues, or, as the case may be, consolidated total assets, of the Company and its Subsidiaries taken as a whole, all as calculated respectively by

reference to the then latest audited accounts (consolidated or, as the case may be, unconsolidated) of such Subsidiary and the then latest audited consolidated accounts of the Company and its Subsidiaries, *provided that*, in the case of a Subsidiary of the Company acquired after the end of the financial period to which the then latest audited consolidated accounts of the Company and its Subsidiaries relate, the reference to the then latest audited consolidated accounts of the Company and its Subsidiaries for the purposes of the calculation above shall, until consolidated accounts for the financial period in which the acquisition is made have been prepared and audited as aforesaid, be deemed to be a reference to such first-mentioned accounts as if such Subsidiary had been shown in such accounts by reference to its then latest relevant audited accounts, adjusted as deemed appropriate by the Company; or

(b) to which is transferred the whole or substantially the whole of the undertaking and assets of a Subsidiary of the Company which immediately prior to such transfer is a Material Subsidiary, *provided that* the transferor Subsidiary shall upon such transfer forthwith cease to be a Material Subsidiary and the transferee Subsidiary shall cease to be a Material Subsidiary pursuant to this subparagraph (b) on the date on which the consolidated accounts of the Company and its Subsidiaries for the financial period current at the date of such transfer have been prepared and audited as aforesaid but so that such transferor Subsidiary or such transferee Subsidiary may be a Material Subsidiary on or at any time after the date on which such consolidated accounts have been prepared and audited as aforesaid by virtue of the provisions of subparagraph (a) above or, prior to or after such date, by virtue of any other applicable provision of this definition; or

(c) to which is transferred an undertaking or assets which, taken together with the undertaking or assets of the transferee Subsidiary, generated (or, in the case of the transferee Subsidiary being acquired after the end of the financial period to which the then latest audited consolidated accounts of the Company and its Subsidiaries relate, generate total revenues equal to) not less than 5.0% of the consolidated total revenues of the Company, or represent (or, in the case aforesaid, are equal to) not less than 5.0% of the consolidated total assets of the Company and its Subsidiaries taken as a whole, all as calculated as referred to in subparagraph (a) above, *provided that* the transferor Subsidiary (if a Material Subsidiary) shall upon such transfer forthwith cease to be a Material Subsidiary unless immediately following such transfer its undertaking and assets generate (or, in the case aforesaid, generate total revenues equal to) not less than 5.0% of the consolidated total revenues of the Company, or its assets represent (or, in the case aforesaid, are equal to) not less than 5.0% of the consolidated total assets of the Company and its Subsidiaries taken as a whole, all as calculated as referred to in subparagraph (a) above, and the transferee Subsidiary shall cease to be a Material Subsidiary pursuant to this subparagraph (c) on the date on which the consolidated accounts of the Company and its Subsidiaries for the financial period current at the date of such transfer have been prepared and audited but so that such transferor Subsidiary or such transferee Subsidiary may be a Material Subsidiary on or at any time after the date on which such consolidated accounts have been prepared and audited as aforesaid by virtue of the provisions of subparagraph (a) above or, prior to or after such date, by virtue of any other applicable provision of this definition.

"**Offer to Purchase**" means an offer to purchase the Notes by the Company from the Holders commenced by the Company mailing a notice by prepaid courier or first class mail, postage prepaid, to the Trustee and each Holder at its last address appearing in the Register stating:

(a) that the offer is being made pursuant to the provisions of the Indenture described under the caption "Repurchase of Notes Upon a Change of Control" and that all Notes validly tendered will be accepted for payment on a pro rata basis;

(b) the purchase price and the date of purchase (which will be a Business Day no earlier than 30 days nor later than 60 days from the date such notice is mailed) (the "**Offer to Purchase Payment Date**");

(c) that any Note not tendered will continue to accrue interest pursuant to its terms;

(d) that, unless the Company defaults in the payment of the purchase price, any Note accepted for payment pursuant to the Offer to Purchase will cease to accrue interest on and after the Offer to Purchase Payment Date;

(e) that Holders electing to have a Note purchased pursuant to the Offer to Purchase will be required to surrender the Note, together with the form entitled "Option of the Holder to Elect Purchase" on the reverse side of the Note completed, to the Paying Agent at the address specified in the notice prior to the close of business on the Business Day immediately preceding the Offer to Purchase Payment Date;

(f) that Holders will be entitled to withdraw their election if the Paying Agent receives, not later than the close of business on the third Business Day immediately preceding the Offer to Purchase Payment Date, a facsimile transmission or letter setting forth the name of such Holder, the principal amount of Notes delivered for purchase and a statement that such Holder is withdrawing his election to have such Notes purchased;

(g) that Holders whose Notes are being purchased only in part will be issued new Notes equal in principal amount to the unpurchased portion of the Notes surrendered; *provided that* each Note purchased and each new Note issued will be in a principal amount of US$200,000 or integral multiples of US$1,000 in excess thereof; and

(h) the CUSIP number(s) of the Notes.

One (1) Business Day prior to the Offer to Purchase Payment Date, the Company will deposit with the Paying Agent money sufficient to pay the purchase price of all Notes or portions thereof to be accepted by the Company for payment on the Offer to Purchase Payment Date. On the Offer to Purchase Payment Date, the Company will (a) accept for payment on a pro rata basis Notes or portions thereof tendered pursuant to an Offer to Purchase; and (b) deliver, or cause to be delivered, to the Trustee all Notes or portions thereof so accepted together with an Officer's Certificate specifying the Notes or portions thereof accepted for payment by the Company.

The Paying Agent will promptly mail to the Holders the accepted payment in an amount equal to the purchase price, and the Trustee will promptly authenticate and mail to such Holders a new Note equal in principal amount to any unpurchased portion of the Note surrendered; *provided that* each Note purchased and each new Note issued will be in a principal amount of US$200,000 or integral multiples of US$1,000 in excess thereof. The Company will publicly announce the results of an Offer to Purchase as soon as practicable after the Offer to Purchase Payment Date.

The offer is required to contain or incorporate by reference information concerning the business of the Company and its Subsidiaries and PTFI which the Company in good faith believes will assist such Holders to make an informed decision with respect to the Offer to Purchase, including a brief description of the events requiring the Company to make the Offer to Purchase, and any other information required by applicable law to be included therein. The offer is required to contain all instructions and materials necessary to enable such Holders to tender Notes pursuant to the Offer to Purchase.

"**Officer**" means one of the executive officers or directors of the Company.

"**Officer's Certificate**" means a certificate signed by at least one Officer.

"**Opinion of Counsel**" means a written opinion from legal counsel which opinion is reasonably acceptable to the Trustee that meets the requirements of the Indenture; *provided that* legal counsel shall be entitled to rely on a certificate of the Company as to matters of fact.

"**Original Issue Date**" means the date on which the Notes are originally issued under the Indenture.

"**Person**" means any individual, corporation, partnership, limited liability company, joint venture, trust, unincorporated organization or government or any agency or political subdivision thereof.

"**PTFI**" means PT Freeport Indonesia.

"**PTFI Share Acquisition**" means the acquisition by the Company, directly or indirectly, of a 51.2% beneficial equity interest in PTFI, as described in this Offering Memorandum under the caption "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia."

"**PTFI Share Acquisition Agreements**" means, collectively, (i) the Agreement for the Sale and Purchase of PT Rio Tinto Indonesia dated as of September 28, 2018 among the Company, Rio Tinto Indonesian Holdings Limited, Rio Tinto Nominees Limited and Rio Tinto International Holdings Limited; (ii) the PTFI Subscription Agreement dated as of September 27, 2018 among the Company, PTFI and PT Indocopper Investama; and (iii) the PTFI Divestment Agreement dated as of September 27, 2018 among the Company, PTFI, PT Indocopper Investama, Freeport-McMoran, Inc. and International Support LLC (the "**PTFI Divestment Agreement**").

"**PTFI Share Acquisition Closing Date**" means the closing date for the PTFI Share Acquisition, as defined in the PTFI Divestment Agreement.

"**Qualifying PTFI IPO**" means the first offering or listing of shares of PTFI, which complies with (A) the rules and regulations of a Stock Exchange; and (B) the following conditions: (i) it is an offer of shares of PTFI that consists wholly or in part of primary shares and that is made to the public for subscription or sale exclusively for cash, accompanied (or preceded) by the grant of listing of, and permission to deal in, the PTFI shares or depository shares or securities representing the PTFI shares by such Stock Exchange; and (ii) the Company shall have delivered an Officer's Certificate to the Trustee stating that the offer satisfies the conditions in this paragraph and that, immediately after giving effect to such public offering, no Event of Default and no event which, with the giving of notice or the passage of time, or both, would constitute an Event of Default, shall have occurred and be continuing.

"**Securities**" means bonds, debentures, notes or other similar securities having an original maturity of more than one (1) year from its date of issue which (a) are, or are issued with the intention on the part of the issuer thereof that they should be quoted, listed or ordinarily dealt in or traded on any stock exchange, over-the-counter or other securities market, and (b) either (i) are by their terms payable, or confer a right to receive payment, in any currency other than Rupiah or (ii) are denominated in Rupiah and more than 50% of the aggregate principal amount of the offering of such securities is initially distributed outside Indonesia by or with the Company's consent.

"**Stated Maturity**" means, (a) with respect to any Debt, the date specified in such debt security as the fixed date on which the final installment of principal of such Debt is due and payable as set forth in the documentation governing such Debt and (b) with respect to any scheduled installment of principal of or interest on any Debt, the date specified as the fixed date on which such installment is due and payable as set forth in the documentation governing such Debt.

"**Stock Exchange**" means The Indonesia Stock Exchange or such other internationally recognized stock exchange approved by the shareholders of PTFI and notified in writing to the Trustee.

"**Subsidiary**" means (a) any corporation or other entity of which securities or other ownership interests having ordinary voting power to elect a majority of the board of directors or other persons performing similar functions are at the time directly or indirectly owned by the Company or (b) any subsidiary subject to consolidation with the Company's financial statements under GAAP.

"**U.S. Government Obligations**" means securities that are (a) direct obligations of the United States of America for the payment of which its full faith and credit is pledged or (b) obligations of a Person controlled or supervised by and acting as an agency or instrumentality of the United States of America the payment of which is unconditionally guaranteed as a full faith and credit obligation by the United States of America, which, in either case, are not callable or redeemable at the option of the issuer thereof at any time prior to the Stated Maturity of the Notes, and will also include a depository receipt issued by a bank or trust company as custodian with respect to any such U.S. Government Obligation or a specific payment of interest on or principal of any such U.S. Government Obligation held by such custodian for the account of the holder of a depository receipt;

provided that (except as required by law) such custodian is not authorized to make any deduction from the amount payable to the holder of such depository receipt from any amount received by the custodian in respect of the U.S. Government Obligation or the specific payment of interest on or principal of the U.S. Government Obligation evidenced by such depository receipt.

DESCRIPTION OF THE 2028 NOTES

For purposes of this "**Description of the Notes**," the term "**Company**" refers only to PT Indonesia Asahan Aluminium (Persero), a state-owned enterprise established and existing with limited liability under the laws of the Republic of Indonesia, and any successor obligor on the Notes (including the Surviving Person (as defined below, under the caption "— Consolidation, Merger and Sale of Assets")), and not to any of its Subsidiaries. Any reference to the "Notes" in this "Description of the 2028 Notes" is solely to the 2028 Notes. The Notes are to be issued under an indenture (the "**Indenture**") to be dated as of the Original Issue Date, between the Company and The Bank of New York Mellon, as trustee (the "**Trustee**").

The following is a summary of certain provisions of the Indenture, the Notes and the Escrow Agreement (as defined below). This summary does not purport to be complete and is qualified in its entirety by reference to all of the provisions of the Indenture and the Notes and of the Escrow Agreement. It does not restate the provisions of the Indenture or the Notes or the Escrow Agreement in their entirety. Whenever particular sections or defined terms of the Indenture not otherwise defined herein are referred to, such sections or defined terms are incorporated herein by reference. Copies of the Indenture and the Escrow Agreement will be available for inspection on or after the Original Issue Date during normal office hours at the corporate trust office of the Trustee at 240 Greenwich Street, New York, NY 10286, United States of America.

The proceeds from the offering of the Notes will be used to fund the purchase of shares in PTFI pursuant to the planned PTFI Share Acquisition and/or to refinance acquisition debt as set forth in this Offering Memorandum under the caption "Use of Proceeds" or to fund the Special Mandatory Redemption (as defined below). Pending such application of the proceeds, the net proceeds from the offering of the Notes will be deposited into one or more escrow accounts held by the Company in Indonesia with certain state-owned Indonesian banks and will only be released upon the fulfillment of certain conditions, as more fully described below under the captions "— Escrow of Proceeds" and "— Redemption Upon Special Mandatory Redemption Event."

Brief Description of the Notes

The Notes will:

(a) be direct, unsecured and unsubordinated obligations of the Company;

(b) be senior in right of payment to any existing and future obligations of the Company expressly subordinated in right of payment to the Notes;

(c) rank at least *pari passu* in right of payment with all other unsecured and unsubordinated Debt of the Company (subject to any priority rights of such unsubordinated Debt pursuant to applicable law); and

(d) be effectively subordinated to secured obligations of the Company and the obligations of its subsidiaries.

The Company will initially issue US$1,000,000,000 in aggregate principal amount of the Notes, which will mature on November 15, 2028 unless earlier redeemed pursuant to the terms thereof and the Indenture. The Indenture allows the Company to issue additional Notes from time to time (the "**Additional Notes**"), subject to certain limitations described under "— Further Issues" and applicable law. The Notes offered hereby and any Additional Notes may be treated as a single class for all purposes under the Indenture.

Interest

The Notes will bear interest at 6.530% per annum from the Original Issue Date or from the most recent interest payment date on which interest has been paid or duly provided for, payable semi-annually in arrears on May 15 and November 15 of each year (each, an "**Interest Payment Date**") commencing on May 15, 2019. Interest on the Notes will be paid to Holders of record at the close of business on each April 30 or October 30, immediately preceding an Interest Payment Date (each, a "**Record Date**"), notwithstanding any transfer, exchange or cancelation thereof after a Record Date and prior to the immediately following Interest Payment Date. Interest on the Notes will be calculated on the basis of a 360-day year comprised of twelve 30-day months.

Payment of Notes

In any case in which the date of the payment of principal of, premium, if any, or interest on the Notes (including any payment to be made on any date fixed for redemption or purchase of any Note) is not a Business Day in the relevant place of payment, then payment of principal, premium, if any, or interest need not be made in such place on such date but may be made on the next succeeding Business Day in such place. Any payment made on such Business Day will have the same force and effect as if made on the date on which such payment is due. Interest on overdue principal and interest and Additional Amounts, if any, will accrue at a rate that is 1% higher than the then applicable interest rate on the Notes.

The Notes will be issued only in fully registered form, without coupons, in minimum denominations of US$200,000 and integral multiples of US$1,000 in excess thereof. See "— Book-Entry; Delivery and Form." No service charge will be made for any registration of transfer or exchange of Notes, but the Company may require payment of a sum sufficient to cover any transfer tax or other similar governmental charge payable in connection therewith.

All payments on the Notes will be made in U.S. dollars in immediately available funds by the Company at the office or agency of the Company maintained for that purpose in the Borough of Manhattan, the City of New York (which initially will be the specified office of The Bank of New York Mellon (the "**Paying Agent**"), currently located at 240 Greenwich Street, New York, NY 10286, United States of America), and the Notes may be presented for registration of transfer or exchange at such office or agency. However, at the option of the Company, payment of interest may be made by wire transfer. Interest payable on the Notes held through DTC will be available to DTC participants (as defined herein) on the Business Day following payment thereof.

Further Issues

Subject to the covenants described below and in accordance with the terms of the Indenture, the Company may, from time to time, without notice to or the consent of the Holders, issue Additional Notes having the same terms and conditions as the Notes in all respects (or in all respects except for the issue date, issue price and the date of first payment of interest on them and, to the extent necessary, certain temporary securities law transfer restrictions) so that such Additional Notes may be consolidated and form a single class with the previously outstanding Notes and vote together as one class on all matters with respect to the Notes; *provided that*, in order for Additional Notes to have the same CUSIP, ISIN, or other identifying number as the outstanding Notes, the Additional Notes must be fungible with the outstanding Notes for U.S. federal income tax purposes.

In addition, the issuance of any Additional Notes by the Company will be subject to the following conditions:

(a) the Company shall have delivered to the Trustee an Officer's Certificate, in form and substance satisfactory to the Trustee, confirming that the issuance of the Additional Notes complies with the Indenture; and

(b) the Company shall have delivered to the Trustee one or more Opinions of Counsel, in form and substance satisfactory to the Trustee, confirming, among other things, (i) that the issuance of the Additional Notes does not conflict with applicable law and (ii) that such Additional Notes will constitute legally valid and binding obligations of the Company, enforceable in accordance with their terms, subject to customary exceptions.

Repurchase of Notes Upon a Change of Control

Not later than 30 days following a Change of Control, the Company will make an Offer to Purchase all outstanding Notes (a "**Change of Control Offer**") at a purchase price equal to 101.0% of the principal amount thereof plus accrued and unpaid interest, if any, to the Offer to Purchase Payment Date.

The Company will agree in the Indenture that it will timely repay all Debt or obtain consents as necessary under, or terminate, agreements or instruments that would otherwise prohibit a Change of Control Offer required

to be made pursuant to the Indenture. Notwithstanding these agreements, it is important to note that if the Company is unable to repay (or cause to be repaid) all of the Debt, if any, that would prohibit the repurchase of the Notes or is unable to obtain the requisite consents of the holders of such Debt, or terminate any agreements or instruments that would otherwise prohibit a Change of Control Offer, the Company would continue to be prohibited from purchasing the Notes. In that case, the failure of the Company to purchase tendered Notes would constitute an Event of Default (as defined below) under the Indenture.

Future Debt of the Company or its Subsidiaries may also (a) prohibit the Company from purchasing the Notes in the event of a Change of Control; (b) provide that a Change of Control is a default; or (c) require the repayment or repurchase of such Debt upon a Change of Control. Moreover, the exercise by the Holders of their right to require the Company to purchase the Notes could cause a default under other Debt, even if the Change of Control itself does not, due to the financial effect of the purchase on the Company or its Subsidiaries. The ability of the Company to pay cash to Holders of the Notes following the occurrence of a Change of Control may be limited by the financial resources then available to the Company. There can be no assurance that sufficient funds will be available when necessary to make the required purchase of the Notes. See "Risk Factors — Risks Relating to the Notes — We may not have the ability to raise the funds necessary to finance an offer to repurchase the Notes upon the occurrence of certain events constituting a change of control or otherwise as required by the Indenture governing the Notes."

Notwithstanding the above, the Company will not be required to make a Change of Control Offer following a Change of Control if a third party makes the Change of Control Offer in the manner, at the times and otherwise in compliance with the requirements set forth in the Indenture applicable to a Change of Control Offer to be made by the Company and such third party purchases all Notes validly tendered and not withdrawn under such Change of Control Offer.

A Holder will have no right to require the Company to repurchase portions of Notes if it would result in the issuance of new Notes, representing the portion not purchased, in an amount of less than US$200,000.

The Company will comply with the requirements of Rule 14e-1 under the Exchange Act and any other securities laws and regulations thereunder to the extent those laws and regulations are applicable in connection with each repurchase of Notes pursuant to a Change of Control Offer. To the extent that the provisions of any securities laws or regulations conflict with the provisions of the covenant described hereunder, the Company will comply with the applicable securities laws and regulations and will not be deemed to have breached its obligations described hereunder by virtue of its compliance with such laws and regulations.

Except as described above with respect to a Change of Control Offer, the Indenture does not contain provisions that permit the Holders to require that the Company purchase or redeem the Notes in the event of a takeover, recapitalization or similar transaction.

The Trustee shall not be required to take any steps to ascertain whether a Change of Control or any event which could lead to the occurrence of a Change of Control has occurred and shall not be liable to any person for any failure to do so.

Escrow of Proceeds

Concurrently with the closing of the offering of the Notes on the Original Issue Date, the Company will enter into an escrow agreement (the "**Escrow Agreement**") dated as of the Original Issue Date among the Company, the Trustee, PT Bank Mandiri (Persero) Tbk as escrow agent (the "**Escrow Agent**"), and PT Bank Mandiri (Persero) Tbk, PT Bank Negara Indonesia (Persero) Tbk and PT Bank Rakyat Indonesia (Persero) Tbk as escrow banks (the "**Escrow Banks**"), pursuant to which the Company will deposit or will instruct the Initial Purchasers to deposit with the Escrow Banks an amount in cash equal to the net proceeds of the offering of the Notes sold on the Original Issue Date into one or more Escrow Accounts (as defined below) held by the Company in Indonesia with the Escrow Banks, in the amounts specified for each of the Escrow Accounts in the Escrow Agreement. The initial funds deposited into the Escrow Accounts, and all other funds, securities, interest, dividends and other distributions and payments thereon credited to each Escrow Account (less any funds paid in accordance with the Escrow Agreement) are referred to collectively as the "**Escrowed Funds**."

The Escrowed Funds will be released from the Escrow Accounts only in accordance with the terms of the Escrow Agreement. Pursuant to the terms of the Escrow Agreement, the Escrowed Funds may be released from the Escrow Accounts only in whole and not in part and either (i) to fund the completion of the PTFI Share Acquisition, including associated costs and expenses, or (ii) if the PTFI Share Acquisition has not been completed by June 30, 2019 (such non-completion of the PTFI Share Acquisition by such date, the "**Special Mandatory Redemption Event**"), to fund the redemption by the Company of the Notes (the "**Special Mandatory Redemption**"), in whole and not in part, at a redemption price (the "**Special Mandatory Redemption Price**") equal to 101.0% of the principal amount thereof, together with accrued and unpaid interest (including any Additional Amounts), if any, up to but not including the date fixed for redemption (the "**Special Mandatory Redemption Date**"); see "— Redemption Upon Special Mandatory Redemption Event," below. The Escrow Agent will release the Escrowed Funds, in whole but not in part, (the "**Release**") to the Company or to the order of the Company (as described in more detail below) on a date specified by the Company (the "**Escrow Release Date**") after delivery by the Company and the Trustee of a release instruction and delivery by the Company of (i) an Officer's Certificate addressed to the Escrow Agent and the Trustee, upon which both the Escrow Agent and the Trustee shall rely, without further investigation, requesting the Release of the Escrowed Funds and certifying certain matters of fact, as further described below, and (ii) an Opinion of Counsel stating that all conditions precedent provided for in the Indenture and the Escrow Agreement relating to the Release have been complied with, prior to the Escrow Release Date.

No provisions of the Escrow Agreement (including those relating to the Release of the Escrowed Funds) may be amended, waived or modified in any manner materially adverse to the Holders without the written consent of the Holders of a majority in principal amount of the Notes outstanding; *provided that* no such amendment, waiver or modification shall reduce the Special Mandatory Redemption Price without the written consent of each affected Holder.

In the event an Event of Default has occurred prior to the Special Mandatory Redemption Event and prior to completion of the PTFI Share Acquisition, the Trustee may, by notice in writing to the Company and the Escrow Agent, require the Escrow Agent (i) to act thereafter, until otherwise instructed by the Trustee, as agent of the Trustee under the provisions of the Escrow Agreement on the terms provided thereby and (ii) to deliver the Escrowed Funds, to the Trustee or as the Trustee shall direct, for payment to the Holders.

Release for PTFI Share Acquisition

In the context of a Release of the Escrowed Funds for the completion of the PTFI Share Acquisition, the Officer's Certificate shall certify that the following conditions have been met and will be met following the Release on the Escrow Release Date:

(1) the parties to the PTFI Share Acquisition Agreements have confirmed that all the conditions precedent described in the PTFI Share Acquisition Agreements for completion of the PTFI Share Acquisition have been met (or waived in compliance with the PTFI Share Acquisition Agreements), and the parties to the PTFI Share Acquisition Agreements have designated a PTFI Share Acquisition Closing Date for the PTFI Share Acquisition pursuant to the terms of the PTFI Share Acquisition Agreements (and the certificate shall include relevant documentation evidencing such confirmation);

(2) following the Release of the Escrowed Funds on the Escrow Release Date, the PTFI Share Acquisition will be completed pursuant to the terms of the PTFI Share Acquisition Agreements and on or prior to the PTFI Share Acquisition Closing Date; and

(3) as of the date of the Officer's Certificate and the Escrow Release Date, no Event of Default has occurred and no Event of Default would occur taking into account the completion of the PTFI Share Acquisition and the application of the Escrowed Funds as set forth under the caption "Certain Covenants — Use of Proceeds."

The Officer's Certificate shall specify the PTFI Share Acquisition Closing Date and the Escrow Release Date. The Escrow Release Date shall be no more than one Business Day prior to the PTFI Share Acquisition Closing Date

and no later than the PTFI Share Acquisition Closing Date. The Company may instruct the Escrow Agent to Release the Escrowed Funds to the Company itself or to a third party at the order of the Company, at the Company's option. Any excess Escrowed Funds after payment of the purchase price for the PTFI Share Acquisition and related costs and expenses and after payment of fees and expenses of the Escrow Agent and Trustee shall enure to the Company.

Release for Special Mandatory Redemption

In the context of a Release of the Escrowed Funds to fund the Special Mandatory Redemption, the Officer's Certificate shall certify that the following conditions have been met and will be met following the Release on the Escrow Release Date:

(1) the Special Mandatory Redemption Event has occurred;

(2) the Company has provided Holders with a notice regarding the Special Mandatory Redemption, as required by the Indenture and described below under the Caption "— Redemption Upon Special Mandatory Redemption Event" (and a copy of such notice shall be attached to the certificate); and

(3) the Company will complete the Special Mandatory Redemption as required under the terms of the Indenture.

The Officer's Certificate shall specify the amount equal to the Special Mandatory Redemption Price and the Escrow Release Date, which shall be no more than one Business Day prior to the Special Mandatory Redemption Date. The Release of the Escrowed Funds in the amount equal to the Special Mandatory Redemption Price (or, if the amount of Escrowed Funds is less than the amount equal to the Special Mandatory Redemption Price, then the full amount of Escrowed Funds) shall be only to the Trustee or the Paying Agent, for payment to the Holders, and not to the Company, and the Company shall instruct the Escrow Agent accordingly in the Officer's Certificate. Any excess Escrowed Funds after payment of the Special Mandatory Redemption Price and after payment of fees and expenses of the Escrow Agent and Trustee shall be delivered to and enure to the Company.

Redemption Upon Special Mandatory Redemption Event

Upon the occurrence of the Special Mandatory Redemption Event, the Company or the Surviving Person, as the case may be, will redeem the Notes, in whole and not in part, upon giving 30 days' notice to the Holders (which notice shall be irrevocable and shall oblige the Company or the Surviving Person to redeem the Notes on the Special Mandatory Redemption Date and which notice shall be given promptly upon the occurrence of the Special Mandatory Redemption Event), at the Special Mandatory Redemption Price. The Special Mandatory Redemption Date shall be no later than 30 days after the Special Mandatory Redemption Event.

On the Business Day prior to the Special Mandatory Redemption Date, the Escrow Agent shall apply funds standing to the credit of the Escrow Account to make a transfer from the Escrow Account to the Trustee or the Paying Agent for payment to the Holders of the Special Mandatory Redemption Price.

Following a Special Mandatory Redemption, the Notes will be canceled.

Sinking Fund

There will be no sinking fund payments for the Notes.

Additional Amounts

All payments of principal of, and premium, if any, and interest on the Notes will be made without withholding or deduction for, or on account of, any present or future taxes, duties, assessments or other governmental charges of whatever nature imposed or levied by or within any jurisdiction in which the Company or the Surviving Person is organized or resident for tax purposes (or any political subdivision or taxing authority thereof or therein) or through which payment is made on behalf of the Company or the Surviving Person (each, as applicable, a "**Relevant Taxing Jurisdiction**"), unless such withholding or deduction is required by law or by regulation or governmental policy having the force of law.

In such event, the Company or the Surviving Person, as the case may be, will make or cause to be made such deduction or withholding, make payment of the amount so deducted or withheld to the appropriate governmental authority and will pay such additional amounts ("**Additional Amounts**") as will result in receipt by the Holder of such amounts as would have been received by such Holder had no such withholding or deduction been required. However, no Additional Amounts will be payable:

(a) for or on account of:

(i) any tax, duty, assessment or other governmental charge that would not have been imposed but for:

(A) the existence of any present or former connection between the Holder or beneficial owner of such Note and the Relevant Taxing Jurisdiction including, without limitation, such Holder's or beneficial owner's being or having been a citizen or resident of such Relevant Taxing Jurisdiction or treated as a resident thereof or being or having been physically present or engaged in a trade or business therein or having or having had a permanent establishment therein, other than merely holding such Note or the receipt of payments thereunder or enforcing payment under the Note;

(B) the presentation of such Note (where presentation is required) more than 30 days after the later of the date on which the payment of the principal of, premium, if any, or interest on, such Note became due and payable pursuant to the terms thereof or was made or duly provided for, except to the extent that the Holder thereof would have been entitled to such Additional Amounts if it had presented such Note for payment on any date within such 30-day period;

(C) the failure of the Holder or beneficial owner to comply with a timely request of the Company or the Surviving Person, as the case may be, addressed to the Holder, to provide information to the Company or the Surviving Person on an applicable Form DGT-1, Form DGT-2 or any other document, information or form concerning such Holder's or beneficial owner's nationality, residence, identity or connection with any Relevant Taxing Jurisdiction, if and to the extent that due and timely compliance with such request is required under the laws of a Relevant Taxing Jurisdiction in order to reduce or eliminate any withholding or deduction as to which Additional Amounts would have otherwise been payable to such Holder; or

(D) the presentation of such Note (where presentation is required) for payment in the Relevant Taxing Jurisdiction, unless such withholding or deduction could not have been avoided by presenting the Note for payment elsewhere;

(ii) any estate, inheritance, gift, sale, transfer or similar tax, assessment or other governmental charge;

(iii) any tax, duty, assessment or other governmental charge which is payable other than by deduction or withholding from payments of principal of or interest or any premium on the Note;

(iv) any tax required to be withheld or deducted under Sections 1471 to 1474 of the U.S. Internal Revenue Code of 1986, as amended (the "**Code**") (or any amended or successor versions of such Sections), any agreements described under section 1471(b) of the Code, any regulations or other official guidance thereunder, any intergovernmental agreement relating thereto, or any law, regulation or other official guidance enacted in any jurisdiction implementing any of the foregoing; or

(v) any combination of taxes, duties, assessments or other governmental charges referred to in the preceding paragraphs (i), (ii), (iii) and (iv); or

(b) with respect to any payment of the principal of, or premium, if any, or interest on, such Note to such Holder, if the Holder is a fiduciary, corporation, limited liability company, partnership or person other than the sole beneficial owner of any payment to the extent that, under the laws of a Relevant Taxing Jurisdiction, such payment would be required to be included in income, for tax purposes, of a

beneficiary or settlor with respect to the fiduciary, a shareholder of that corporation, a member of that partnership or limited liability company or a beneficial owner who would not have been entitled to such Additional Amounts had that beneficiary, settlor, shareholder, partner, or beneficial owner been the Holder thereof; or

(c) any combination of paragraphs (a) and (b).

As a result of these provisions, there are circumstances in which taxes could be withheld or deducted but Additional Amounts would not be payable to some or all beneficial owners of Notes.

Whenever there is mentioned in any context the payment of principal, premium or interest in respect of any Note, such mention will be deemed to include payments of Additional Amounts provided for in the Indenture to the extent that, in such context, Additional Amounts are, were or would be payable in respect thereof.

The Paying Agent and the Trustee will make payments free of withholdings or deductions on account of taxes unless required by applicable law. If such a deduction or withholding is required, the Paying Agent or the Trustee will not be obligated to pay any Additional Amount to the recipient unless such an Additional Amount is received by the Paying Agent or the Trustee from the Company or the Surviving Person.

In addition to the foregoing, the Company or the Surviving Person, as the case may be, will also pay and indemnify the Holder or beneficial owner, as applicable, for any present or future stamp, issue, registration, court or documentary taxes, or any other excise or property taxes, charges or similar levies (including penalties and interest) which are levied by any jurisdiction on the execution, delivery, issuance, registration, redemption or retirement of any of the Notes or the Indenture or any other document referred to therein (other than a transfer of the Notes after this offering) or any such taxes, charges or similar levies imposed by the United States, Indonesia, or any political subdivision thereof as a result of, or in connection with, the enforcement of any of the Notes.

Redemption for Taxation Reasons

The Notes may be redeemed at the option of the Company or the Surviving Person, as the case may be, as a whole but not in part, by giving not less than 30 days' nor more than 60 days' notice to the Holders (which notice will be irrevocable) and the Trustee, at a redemption price equal to 100% of the principal amount thereof, together with accrued and unpaid interest (including any Additional Amounts), if any, to (but not including) the date fixed by the Company or the Surviving Person, as the case may be, for redemption (the "**Tax Redemption Date**"), if the Company or the Surviving Person, as the case may be, is, or on the next Interest Payment Date would be, required to pay Additional Amounts, and such requirement cannot be avoided by taking reasonable measures (including an appointment of a new paying agent) by the Company or the Surviving Person, as the case may be, as a result of:

(a) any change in, or amendment to, the laws or any regulations or rulings promulgated thereunder of a Relevant Taxing Jurisdiction affecting taxation; or

(b) any change in, or amendment to, an official position regarding the application, administration or interpretation of such laws, regulations or rulings (including a holding, judgment or order by a court of competent jurisdiction or a change in published practice),

which change or amendment is announced and becomes effective on or after the Original Issue Date with respect to any payment due or to become due under the Notes or the Indenture (or, if the Relevant Taxing Jurisdiction was not a Relevant Taxing Jurisdiction on the Original Issue Date, the date on which such jurisdiction became a Relevant Taxing Jurisdiction under the Indenture).

Notwithstanding the above, (i) no such notice of redemption will be given earlier than 90 days prior to the earliest date on which the Company or the Surviving Person, as the case may be, would be obligated to pay such Additional Amounts if a payment in respect of the Notes were then due, and (ii) if such requirement to pay Additional Amounts is due to taxes of the Republic of Indonesia (or any political subdivision or taxing authority thereof or therein), the Company or the Surviving Person shall only be permitted to redeem the Notes in

accordance with the provisions above if the rate of withholding or deduction in respect of which Additional Amounts are required is in excess of 20%.

Prior to the mailing of any notice of redemption of the Notes pursuant to the foregoing, the Company will deliver to the Trustee:

(a) an Officer's Certificate stating that such change or amendment referred to in the prior paragraph has occurred, and describing the facts related thereto and stating that such requirement cannot be avoided by the Company, taking reasonable measures available to it; and

(b) an Opinion of Counsel of recognized standing with respect to tax matters of the Relevant Taxing Jurisdiction stating that the requirement to pay such Additional Amounts, and withhold or deduct such taxes, duties, assessments or other government charges results from such change or amendment referred to in the prior paragraph.

The Trustee shall be entitled to accept and rely upon such certificate and opinion as sufficient evidence of the satisfaction of the conditions precedent described above without further verification, and it will be conclusive and binding on the Holders. The Trustee will not investigate or verify such certificate and opinion.

Any Notes that are redeemed will be canceled.

Certain Covenants

Set forth below are summaries of certain covenants contained in the Indenture.

Negative Pledge

So long as any of the Notes remain outstanding, the Company will not create or permit to exist, and the Company will ensure that none of its Material Subsidiaries will create or permit to exist, any Lien for the benefit of the holders of any Securities on the whole or any part of its property or assets, present or future, to secure: (a) payment of any sum due in respect of any Securities; (b) any payment under any guarantee in respect of any Securities; or (c) any indemnity or other like obligation in respect of any Securities, without in any such case, at the same time or prior thereto, making effective provision whereby the Notes are accorded (i) the same Liens equally and ratably as are created or subsisting to secure any such Securities, guarantee or indemnity or like obligation, or (ii) such other Liens as may be consented to by the holders of a majority in aggregate principal amount of the outstanding Notes.

However, the foregoing restriction shall not apply to (a) any Lien existing on any property or assets at the time of acquisition of such property or assets by the Company; *provided that* such Lien was not created, and the principal, capital or nominal amount of the Securities secured by such Lien outstanding at the time of such acquisition was not increased, in contemplation of such acquisition or in connection therewith, and (b) any Lien arising out of the refinancing, extension, renewal or refunding of any Securities secured by any such Lien; *provided that* the principal, capital or nominal amount of such Securities is not increased and such Securities are not secured by any additional property or assets.

Use of Proceeds

The Company will use the proceeds received from the Notes as set forth in this Offering Memorandum under the caption "Use of Proceeds" or for the Special Mandatory Redemption, as described under the caption "— Redemption Upon Special Mandatory Redemption Event."

Provision of Financial Statements and Reports

For so long as any of the Notes remain outstanding, the Company will file with the Trustee and furnish to the Holders upon request:

(a) as soon as they are available, but in any event within 120 calendar days after the end of its fiscal year, copies of its financial statements (on a consolidated basis) in respect of such financial year (including a statement of income, balance sheet and cash flow statement) audited by a member firm of an internationally recognized firm of independent accountants; and

(b) as soon as they are available, but in any event within 90 calendar days, after the end of each of its first, second and third fiscal quarters, copies of its financial statements (on a consolidated basis) in respect of such period (including a statement of income, balance sheet and cash flow statement) prepared on a basis consistent with its audited financial statements, together with a certificate signed by the Person then authorized to sign financial statements on behalf of it, to the effect that such financial statements are true in all material respects and present fairly its financial position as at the end of, and the results of its operations for, the relevant quarterly period;

provided that, in each case, the financial statements shall be in the English language, or if such statements shall be in any other language, accompanied with an English translation of the same and translated by (i) an internationally recognized firm of independent accountants or (ii) a professional translation service provider and checked by an internationally recognized firm of independent accountants, together with a certificate in English signed by the Person then authorized to sign financial statements of the Company, certifying that such translation is complete and accurate (on each of which the Trustee may conclusively rely without liability to any Holder or any other person).

If the Company makes any financial or other report (or any English translation of any financial or other report in any other language) described above available on its corporate website, the Company will be deemed to have satisfied the foregoing obligation to furnish such report (or such translation) to the Holders upon request.

In addition, so long as any of the Notes remain outstanding, the Company will provide to the Trustee promptly and in any event within seven days after it obtains actual knowledge of the occurrence thereof, written notice of the occurrence of any event or condition which constitutes an Event of Default and an Officer's Certificate setting forth the details thereof and the action it is taking or proposes to take with respect thereto, and the Trustee shall be entitled to accept such certificate as sufficient evidence thereof, in which event it shall be conclusive and binding on the Holders.

Further, the Company has agreed that, for so long as there are Notes which are "restricted securities" within the meaning of Rule 144(a)(3) under the U.S. Securities Act of 1933, as amended (the "**Securities Act**"), during any period in which the Company is neither subject to Section 13 or 15(d) of the U.S. Securities Exchange Act of 1934, as amended (the "**Exchange Act**"), nor exempt from reporting pursuant to Rule 12g3-2(b) thereunder, the Company will supply to (i) any Holder or beneficial owner of a Note or (ii) a prospective purchaser of a Note or a beneficial interest therein designated by such Holder or beneficial owner, the information specified in, and meeting the requirements of, Rule 144A(d)(4) under the Securities Act upon the request of any Holder or beneficial owner of a Note.

Events of Default

The following events will be defined as "**Events of Default**" in the Indenture:

(a) default in the payment of principal of (or premium, if any, on) the Notes when the same becomes due and payable at maturity, upon acceleration, redemption or otherwise;

(b) default in the payment of interest on any Note when the same becomes due and payable, and such default continues for a period of 30 consecutive days;

(c) default in the performance of or breach of any provisions of the covenants described under "— Consolidation, Merger and Sale of Assets" or failure to make or consummate a Change of Control Offer in the manner described under the caption "— Repurchase of Notes Upon a Change of Control" or failure to make or consummate the Special Mandatory Redemption in the manner described under the caption "— Redemption Upon Special Mandatory Redemption Event";

(d) default in the performance of or breach of any other covenant or agreement in the Indenture or under the Notes (other than a default specified in paragraph (a), (b) or (c) above) and such default or breach continues for a period of 60 consecutive days after written notice by the Trustee or the Holders of 25% or more in aggregate principal amount of the outstanding Notes;

(e) (i) the Company ceasing to own and control, directly or indirectly, at least 51.0% of the issued and paid-up shares of any of its Subsidiaries that are Material Subsidiaries as of the Original Issue Date or, subsequent to the closing of the PTFI Share Acquisition, of PTFI or (ii) in the event of a Qualifying PTFI IPO, the Company ceasing to own and control, directly or indirectly, at least 40.0% of the issued and paid-up shares of PTFI or ceasing to be the single largest beneficial shareholder of PTFI;

(f) there occurs with respect to any Debt of the Company or any of its Material Subsidiaries or PTFI having an outstanding principal amount of US$50.0 million (or the Dollar Equivalent thereof) or more in the aggregate for all such Debt of all such Persons, whether such Debt now exists or will hereafter be created, (A) an event of default that has caused the holder thereof to declare such Debt to be due and payable prior to its Stated Maturity or (B) the failure to make a payment of principal (subject to the applicable grace period in the relevant documents) of such Debt when the same becomes due;

(g) one or more final judgments or orders for the payment of money are rendered against the Company or any of its Subsidiaries or PTFI and are not paid or discharged, and there is a period of 60 consecutive days following entry of the final judgment or order that causes the aggregate amount for all such final judgments or orders outstanding and not paid or discharged against all such Persons to exceed US$50.0 million (or the Dollar Equivalent thereof) during which a stay of enforcement, by reason of a pending appeal or otherwise, is not in effect;

(h) an involuntary case or other proceeding is commenced against the Company or any Material Subsidiary or PTFI with respect to it or its Debts under any applicable bankruptcy, insolvency or other similar law now or hereafter in effect seeking the appointment of a receiver, liquidator, assignee, custodian, trustee, sequestrator or similar official of the Company or any Material Subsidiary or PTFI or for any substantial part of the property and assets of the Company or any Material Subsidiary or PTFI and such involuntary case or other proceeding remains undismissed and unstayed for a period of 60 consecutive days; or an order for relief is entered against the Company or any Material Subsidiary or PTFI under any applicable bankruptcy, insolvency or other similar law as now or hereafter in effect; or

(i) the Company or any Material Subsidiary or PTFI (i) commences a voluntary case under any applicable bankruptcy, insolvency or other similar law now or hereafter in effect, or consents to the entry of an order for relief in an involuntary case under any such law, (ii) consents to the appointment of or taking possession by a receiver, liquidator, assignee, custodian, trustee, sequestrator or similar official of the Company or any Material Subsidiary or PTFI or for all or substantially all of the property and assets of the Company or any Material Subsidiary or PTFI or (iii) effects any general assignment for the benefit of creditors.

If an Event of Default (other than an Event of Default specified in paragraph (h) or (i) above) occurs and is continuing under the Indenture, the Trustee (in its sole discretion and without further notice) or the Holders of at least 25% in aggregate principal amount of the Notes, then outstanding, by written notice to the Company (and to the Trustee if such notice is given by the Holders), may, and the Trustee at the written request of such Holders will (subject to being indemnified and/or secured and/or prefunded to its satisfaction), declare the principal of, premium, if any, and accrued and unpaid interest on the Notes to be immediately due and payable. Upon a declaration of acceleration, such principal of, premium, if any, and accrued and unpaid interest will be immediately due and payable. If an Event of Default specified in paragraph (h) or (i) above occurs, the principal of, premium, if any, and accrued and unpaid interest on the Notes then outstanding will automatically become and be immediately due and payable without any declaration or other act on the part of the Trustee or any Holder.

The Holders of at least a majority in principal amount of the outstanding Notes by written notice to the Company and the Trustee, may on behalf of all of the Holders waive all past defaults and rescind and annul a declaration of acceleration and its consequences with respect to the Notes if:

(a) the Company pays or deposits with the Trustee a sum sufficient to pay all monies then due with respect to the Notes (other than amounts due solely because of such declaration of acceleration) and all other existing Events of Default have been cured or waived, and

(b) the rescission would not conflict with any judgment or decree of a court of competent jurisdiction.

Upon such waiver, the Default will cease to exist, and any Event of Default arising therefrom will be deemed to have been cured, but no such waiver will extend to any subsequent or other Default or impair any right consequent thereon.

The Holders of at least a majority in aggregate principal amount of the outstanding Notes may direct the time, method and place of conducting any proceeding for any remedy available to the Trustee or exercising any trust or power conferred on the Trustee, subject to the Trustee being indemnified and/or secured and/or prefunded to its satisfaction in advance of the proceedings. However, the Trustee may refuse to follow any direction that is unclear, conflicting or equivocal, that conflicts with law or the Indenture, that may involve the Trustee in personal liability, or that may be unduly prejudicial to the rights of Holders not joining in the giving of such direction and may take any other action it deems proper that is not inconsistent with any such direction received from Holders. In addition, the Trustee will not be required to expend its own funds in following such direction if it does not believe that reimbursement or satisfactory indemnification and/or security and/or prefunding is assured to it.

A Holder may not pursue or institute any proceeding, judicial or otherwise, with respect to the Indenture or the Notes, or for the appointment of a receiver or trustee, or for any other remedy under the Indenture or the Notes, unless:

(a) the Holder has previously given the Trustee written notice of a continuing Event of Default;

(b) the Holders of at least 25% in aggregate principal amount of outstanding Notes make a written request to the Trustee to pursue the remedy;

(c) such Holder or Holders offer the Trustee indemnity and/or security and/or pre-funding satisfactory to the Trustee against any costs, liability or expense to be incurred in compliance with such request;

(d) the Trustee does not comply with the request within 60 days after receipt of the request and the offer of indemnity and/or security and/or pre-funding; and

(e) during such 60-day period, the Holders of a majority in aggregate principal amount of the outstanding Notes do not give the Trustee a direction that is inconsistent with the request.

However, such limitations do not apply to the right of any Holder of a Note to receive payment of the principal of, premium, if any, or interest, and Additional Amounts, if any, on, such Note or to bring suit for the enforcement of any such payment, on or after the due date expressed in the Notes, which right will not be impaired or affected without the consent of the Holder.

Officers of the Company must certify to the Trustee in writing, on or before a date not more than 120 calendar days after the end of each fiscal year, that a review has been conducted of the activities of the Company and its Subsidiaries and PTFI and the Company's performance under the Indenture and the Notes and that the Company has fulfilled all obligations thereunder, or, if there has been a default in the fulfillment of any such obligation, specifying each such default and the nature and status thereof. The Company will also be obligated to notify the Trustee in writing of any default or defaults in the performance of any covenants or agreements under the Indenture. See "— Provision of Financial Statements and Reports."

The Trustee and the Agents need not do anything to ascertain whether any Event of Default has occurred or is continuing and will not be responsible to Holders or any other person for any loss arising from any failure by it to do so, and the Trustee or the Agents may assume that no such event has occurred and that the Company is performing all its obligations under the Indenture and the Notes unless the Trustee has received written notice of the occurrence of such event or facts establishing that an Event of Default has occurred or the Company is not performing all of its obligations under the Indenture and the Notes. The Trustee is entitled to rely on any Opinion of Counsel or Officer's Certificate regarding whether an Event of Default has occurred.

Consolidation, Merger and Sale of Assets

The Company will not consolidate with, or merge with or into, another Person, permit any Person to merge with or into it, or sell, convey, transfer, lease or otherwise dispose of all or substantially all of its properties and

assets, computed on a consolidated basis with its Subsidiaries (as an entirety or substantially an entirety in one transaction or a series of related transactions), unless:

(a) the Company will be the continuing Person, or the Person (if other than the Company) formed by such consolidation or merger or that acquired or leased such property and assets (the "**Surviving Person**") will be a corporation organized and validly existing under the laws of the jurisdiction in which the Company is organized and will expressly assume, by a supplemental indenture to the Indenture, executed and delivered to the Trustee, all the obligations of the Company under the Indenture and the Notes (including, if applicable, pursuant to the Escrow Agreement), including the obligation to pay Additional Amounts, and under the Escrow Agreement, and the Indenture and the Notes and the Escrow Agreement will remain in full force and effect;

(b) immediately after giving effect to such transaction, no Default or Event of Default will have occurred and be continuing; and

(c) the Company delivers to the Trustee an Officer's Certificate and an Opinion of Counsel, in each case stating that such consolidation, merger or transfer and the relevant supplemental indenture (and, if applicable, any documentation in respect of the Escrow Agreement) complies with this provision and that all conditions precedent provided for in the Indenture relating to such transaction have been complied with and that the relevant supplemental indenture is enforceable.

For purposes of this covenant, the conveyance, transfer or lease of all or substantially all of the property or assets of one or more Subsidiaries of the Company, which constitutes all or substantially all of the property or assets of the Company and its Subsidiaries on a consolidated basis, shall be deemed to be the transfer of all or substantially all of the property or assets of the Company.

Although there is a limited body of case law interpreting the phrase "substantially all," there is no precise established definition of the phrase under applicable law. Accordingly, in certain circumstances there may be a degree of uncertainty as to whether a particular transaction would involve "all or substantially all" of the property or assets of a Person.

The foregoing provisions would not necessarily afford Holders protection in the event of highly-leveraged or other transactions involving the Company that may adversely affect Holders.

Payments for Consents

The Company will not, and will not permit any of its Subsidiaries or PTFI to, directly or indirectly, pay or cause to be paid any consideration, whether by way of interest, fee or otherwise, to any Holder for or as an inducement to any consent, waiver or amendment of any of the terms or provisions of the Indenture or the Notes, unless such consideration is offered to be paid or is paid to all Holders that consent, waive or agree to amend such term or provision within the time period set forth in the solicitation documents relating to such consent, waiver or amendment. Notwithstanding the foregoing, in any offer or payment of consideration for, or as an inducement to, any consent, waiver or amendment of any of the terms or provisions of the Indenture or the Notes in connection with an exchange offer, the Company and any of its Subsidiaries and PTFI may exclude (a) holders or beneficial owners of the Notes that are not qualified institutional buyers as defined in Rule 144A under the Securities Act, and (b) holders or beneficial owners of the Notes in any jurisdiction where the inclusion of such holders or beneficial owners would require the Company or any of its Subsidiaries or PTFI to comply with the registration requirements or other similar requirements under any securities laws of such jurisdiction, or the solicitation of such consent, waiver or amendment from, or the granting of such consent or waiver, or the approval of such amendment by, holders or beneficial owners in such jurisdiction would be unlawful, in each case as determined by the Company in its sole discretion.

Defeasance

Defeasance and Discharge

The Indenture will provide that the Company will be deemed to have paid and will be discharged from any and all obligations in respect of the Notes on the 183rd day after the deposit referred to below and payments of

all amounts due to the Trustee were made, and the provisions of the Indenture will no longer be in effect with respect to the Notes (except for, among other matters, certain obligations to register the transfer or exchange of the Notes, to replace stolen, lost or mutilated Notes, to maintain paying agencies and to hold monies for payment in trust and to pay Additional Amounts) if, among other things:

(a) the Company has (i) deposited with the Trustee, in trust, cash in U.S. dollars, U.S. Government Obligations or a combination thereof that through the payment of interest, premium, if any, and principal in respect thereof in accordance with their terms will provide money in an amount sufficient to pay the principal of, premium, if any, and accrued interest on the Notes on the Stated Maturity of such payments in accordance with the terms of the Indenture and the Notes and (ii) delivered to the Trustee (x) a certificate of an internationally recognized firm of independent accountants to the effect that the amount deposited by the Company is sufficient to provide payment for the principal of, premium, if any, and accrued interest on, the Notes on the Stated Maturity of such payment in accordance with the terms of the Indenture and the Notes and (y) an Opinion of Counsel to the effect that the Holders have a valid, perfected, exclusive security in such trust;

(b) the Company has delivered to the Trustee either (x) an Opinion of Counsel of recognized standing with respect to U.S. federal income tax matters which is based on a change in applicable U.S. federal income tax law occurring after the Original Issue Date to the effect that beneficial owners will not recognize income, gain or loss for U.S. federal income tax purposes as a result of the Company's exercise of its option under this "— Defeasance and Discharge" provision and will be subject to U.S. federal income tax on the same amount and in the same manner and at the same time as would have been the case if such deposit, defeasance and discharge had not occurred or (y) a ruling directed to the Company or the Trustee received from the U.S. Internal Revenue Service to the same effect as the aforementioned Opinion of Counsel;

(c) the Company has delivered to the Trustee an Officer's Certificate stating that the deposit was not made by it with the intent of preferring the Holders over any other of its creditors or with the intent of defeating, hindering, delaying or defrauding any other of its creditors or others; and

(d) immediately after giving effect to such deposit on a pro forma basis, no Event of Default, or event that after the giving of notice or lapse of time or both would become an Event of Default, will have occurred and be continuing on the date of such deposit or during the period ending on the 183rd day after the date of such deposit, and such defeasance will not result in a breach or violation of, or constitute a default under, any other agreement or instrument to which the Company or any Material Subsidiary or PTFI is a party or by which the Company or any Material Subsidiary or PTFI is bound.

Amendments and Waivers

Amendments Without Consent of Holders

The Indenture and the Escrow Agreement may be amended or supplemented, without the consent of any Holder of Notes, to:

(a) cure any ambiguity, defect or inconsistency in the Indenture or the Notes or the Escrow Agreement, provided that any such amendment may not adversely affect the interests of the Holder;

(b) comply with the provisions described under "Certain Covenants — Consolidation, Merger and Sale of Assets";

(c) evidence and provide for the acceptance of appointment by a successor Trustee;

(d) add any guarantor or guarantee with respect to the Notes;

(e) provide for the issuance of Additional Notes in accordance with the limitations set forth in the Indenture;

(f) effect any change in any other case where a supplemental indenture to the Indenture is required or permitted to be entered into pursuant to the provisions of the Indenture without the consent of any Holder;

(g) effect any changes to the Indenture in a manner necessary to comply with the procedures of DTC;

(h) provide collateral to secure the Notes;

(i) make any other change that does not materially and adversely affect the rights of any Holder of Notes;

(j) comply with the rules of any applicable securities depositary; or

(k) conform the text of the Indenture or the Notes to any provision of this "Description of the 2028 Notes" to the extent that such provision in this "Description of the 2028 Notes" was intended to be a verbatim recitation of a provision of the Indenture or the Notes.

Amendments With Consent of Holders

Amendments of the Indenture and the Escrow Agreement may be made by the Company and the Trustee with the consent of the Holders of not less than a majority in aggregate principal amount of the outstanding Notes, and the holders of a majority in aggregate principal amount of the outstanding Notes may waive future compliance by the Company with any provision of the Indenture or the Notes or the Escrow Agreement, *provided that* no such modification, amendment or waiver may, without the consent of each Holder:

(a) change the Stated Maturity of the principal of, or any installment of interest on, any Note;

(b) reduce the principal amount of, or premium, if any, or interest on, any Note or reduce the Special Mandatory Redemption Price;

(c) change the currency, time or place of payment of principal of, or premium, if any, or interest on, any Note;

(d) impair the right to institute suit for the enforcement of any payment on or after the Stated Maturity (or, in the case of a redemption, on or after the redemption date) of any Note;

(e) reduce the above stated percentage of outstanding Notes the consent of whose Holders is necessary to modify or amend the Indenture, to waive compliance with certain provisions of the Indenture or to waive certain defaults;

(f) waive a default in the payment of principal of, premium, if any, or interest on the Notes;

(g) amend, change or modify (i) the obligation of the Company in respect of the due and punctual payment of the principal of, premium, if any, or interest on, any Note; (ii) the obligation of the Company to pay Additional Amounts, or (iii) the ranking of the Notes, in each case, in a manner that adversely affects the Holders; or

(h) reduce the premium payable upon the redemption or repurchase of any Note, or change the time and manner in which any Note may be redeemed or repurchased as described above under the captions "— Repurchase of Notes Upon a Change of Control" or "— Redemption for Taxation Reasons," except that the 75.0% threshold in the definition of the term "Change of Control" in the Indenture may, prior to the occurrence of a Change of Control, be waived modified or amended with the consent of the holders of not less than a majority in aggregate principal amount of the Notes.

No Personal Liability of Incorporators, Shareholders, Directors, Commissioners, Officers or Employees

No recourse for the payment of the principal of, premium, if any, or interest on any of the Notes or for any claim based thereon or otherwise in respect thereof, and no recourse under or upon any obligation, covenant or agreement of the Company in the Indenture, or in any of the Notes or because of the creation of any Debt represented thereby, will be had against any incorporator, shareholder, director, commissioner, officer, employee or controlling person of the Company or of any successor Person thereof. Each Holder, by accepting the Notes, waives and releases all such liability. The waiver and release are part of the consideration for the issuance of the Notes. Such waiver may not be effective to waive liabilities under the applicable securities laws.

Concerning the Trustee and the Agents

Except during the continuance of an Event of Default, the Trustee will not be liable, except for the performance of such duties as are specifically set forth in the Indenture and the Escrow Agreement. If an Event of Default has occurred and is continuing, the Trustee will use the same degree of care and skill in its exercise of the rights and powers vested in it under the Indenture as a prudent person would exercise under the circumstances in the conduct of such person's own affairs.

The Trustee and the Agents assume no responsibility for the accuracy or completeness of the information concerning the Company or its Affiliates or any other party referenced in this Offering Memorandum or for any failure of the Company or any other party to disclose events that may have occurred or may affect the completeness or accuracy of such information.

The Trustee is permitted to engage in other transactions with the Company and its Affiliates and shall not be obligated to account for any profits therefrom, and no Trustee and no director or officer of any corporation being a Trustee hereof shall by reason of the fiduciary position of such Trustee be in any way precluded from making any contracts or entering into any transactions in the ordinary course of business with the Company, or any person or body corporate directly or indirectly associated with the Company, or from accepting the trusteeship of any other debenture stock, debentures or securities of the Company or any person or body corporate directly or indirectly associated with the Company, and neither the Trustee nor any such director or officer shall be accountable to the Holders or the Company, or any person or body corporate directly or indirectly associated with the Company, for any profit, fees, commissions, interest, discounts or share of brokerage earned, arising or resulting from any such contracts or transactions and the Trustee and any such director or officer shall also be at liberty to retain the same for its or his own benefit, *provided that* if such Trustee of any such director or officer acquires any conflicting interest that may have a materially prejudicial effect upon the Holders, it must eliminate such conflict or resign.

The Trustee shall not be responsible for the performance by any other person appointed by the Company in relation to the Notes and, unless notified in writing to the contrary, shall assume that the same are being duly performed. The Trustee shall not be liable to any Holders or any other person for any action taken by the Holders or the Trustee in accordance with the instructions of the Holders. The Trustee shall be entitled to rely on any written direction of the Holders which has been duly given by the Holders of the requisite principal amount of the Notes outstanding.

Neither the Trustee nor the Agents will be responsible for making calculations or for verifying calculations performed by the Company or any other persons unless otherwise specified in the Indenture.

The Trustee will be under no obligation to exercise any rights or powers conferred under the Indenture for the benefit of the Holders, unless such Holders have offered to the Trustee and, if the Trustee accepts such offer, the Trustee has received, indemnity and/or security and/or pre-funding satisfactory to the Trustee against any loss, liability or expense. In the exercise of its duties, the Trustee shall not be responsible for the verification of the accuracy or completeness of any certification submitted to it by the Company and is entitled to rely exclusively on the certification contained therein. Notwithstanding anything described herein, the Trustee has no duty to monitor the performance or compliance of the Company in the fulfillment of its obligations under the Indenture and the Notes.

For so long as the Notes are listed on the SGX-ST and the rules of the SGX-ST so require, in the event that a Global Note is exchanged for definitive Notes, the Company shall appoint and maintain a paying agent in Singapore, where the definitive Notes may be presented or surrendered for payment or redemption. In addition, in the event that a Global Note is exchanged for definitive Notes, an announcement of such exchange shall be made by or on behalf of the Company through the SGX-ST and such announcement will include all material information with respect to the delivery of the definitive Notes, including details of the paying agent in Singapore.

Book-Entry; Delivery and Form

The certificates representing the Notes will be issued in fully registered form without interest coupons. Notes sold in offshore transactions in reliance on Regulation S under the Securities Act will initially be represented by one or more permanent global notes in definitive, fully registered form without interest coupons (each, a "**Regulation S Global Note**") and will be deposited with The Bank of New York Mellon as custodian for, and registered in the name of a nominee of, DTC for the accounts of Euroclear and Clearstream. Notes sold in reliance on Rule 144A will be represented by one or more permanent global notes in definitive, fully registered form without interest coupons (each, a "**Restricted Global Note**"; and together with the Regulation S Global Notes, the "**Global Notes**") and will be deposited with The Bank of New York Mellon as custodian for, and registered in the name of a nominee of, DTC.

Each Global Note (and any Notes issued for exchange therefor) will be subject to certain restrictions on transfer set forth therein as described under "Transfer Restrictions."

Notes transferred to institutional "accredited investors" (as defined in Rule 501(a) (1), (2), (3) or (7) of Regulation D under the Securities Act (an "**Institutional Accredited Investor**")) who are not qualified institutional buyers ("**Non-Global Purchasers**") will be in registered form without interest coupons ("**Certificated Notes**"). Upon the transfer of Certificated Notes initially issued to a Non-Global Purchaser to a qualified institutional buyer or in accordance with Regulation S, such Certificated Notes will, unless the relevant Global Note has previously been exchanged in whole for Certificated Notes, be exchanged for an interest in a Global Note. For a description of the restrictions on the transfer of Certificated Notes, see "Transfer Restrictions."

Ownership of beneficial interests in a Global Note will be limited to persons who have accounts with DTC ("**participants**") or persons who hold interests through participants. Ownership of beneficial interests in a Global Note will be shown on, and the transfer of that ownership will be effected only through, records maintained by DTC or its nominee (with respect to interests of participants) and the records of participants (with respect to interests of persons other than participants). Beneficial owners may hold their interests in a Global Note directly through DTC if they are participants in such system, or indirectly through organizations which are participants in such system.

Euroclear and Clearstream will hold interests in the Global Notes on behalf of their participants through DTC.

So long as DTC, or its nominee, is the registered owner or holder of a Global Note, DTC or such nominee, as the case may be, will be considered the sole owner or holder of the Notes represented by such Global Note for all purposes under the Indenture and the Notes. No beneficial owner of an interest in a Global Note will be able to transfer that interest except in accordance with DTC's applicable procedures, in addition to those provided for under the Indenture and, if applicable, those of Euroclear and Clearstream.

Payments of the principal of, premium, if any, and interest on, a Global Note, will be made to DTC or its nominee, as the case may be, as the registered owner thereof. Neither the Company, the Trustee nor the Paying Agent will have any responsibility or liability for any aspect of the records relating to or payments made on account of beneficial ownership interests in a Global Note or for maintaining, supervising or reviewing any records relating to such beneficial ownership interests.

The Company expects that DTC or its nominee, upon receipt of any payment of principal of, premium, if any, or interest in respect of a Global Note, will credit participants' accounts with payments in amounts proportionate to their respective beneficial interests in the principal amount of such Global Note as shown on the records of DTC or its nominee. The Company also expects that payments by participants to owners of beneficial interests in such Global Note held through such participants will be governed by standing instructions and customary practices, as is now the case with securities held for the accounts of customers registered in the names of nominees for such customers. Such payments will be the responsibility of such participants.

The Company expects that DTC will take any action permitted to be taken by a holder of Notes (including the presentation of Notes for exchange as described below) only at the direction of one or more participants to

whose account the DTC interests in a Global Note is credited and only in respect of such portion of the aggregate principal amount of Notes as to which such participant or participants has or have given such direction. However, if there is an Event of Default under the Notes, DTC will exchange the applicable Global Note for Certificated Notes, which it will distribute to its participants and which may be legended as set forth under the heading "Transfer Restrictions."

Although DTC, Euroclear and Clearstream are expected to follow the foregoing procedures in order to facilitate transfers of interests in a Global Note among participants of DTC, Euroclear and Clearstream, they are under no obligation to perform or continue to perform such procedures, and such procedures may be discontinued at any time. None of the Company, the Trustee or the Paying Agent will have any responsibility for the performance by DTC, Euroclear or Clearstream or their respective participants or indirect participants of their respective obligations under the rules and procedures governing their operations.

If DTC is at any time unwilling or unable to continue as a depositary for the Global Notes and a successor depositary is not appointed by the Company within 90 days, the Company will issue Certificated Notes in registered form, which may bear the legend referred to under "Transfer Restrictions," in exchange for the Global Notes. Holders of an interest in a Global Note may receive Certificated Notes, which may bear the legend referred to under "Transfer Restrictions," in accordance with the DTC's rules and procedures in addition to those provided for under the Indenture.

The Clearing Systems

General

DTC, Euroclear and Clearstream have advised the Company as follows:

DTC: DTC is a limited-purpose trust company organized under the laws of the State of New York, a "banking organization" within the meaning of New York Banking Law, a member of the Federal Reserve System, a "clearing corporation" within the meaning of the New York Uniform Commercial Code, and a "clearing agency" registered pursuant to the provisions of Section 17A of the Exchange Act. DTC was created to hold securities of its participants and to facilitate the clearance and settlement of securities transactions among its participants in such securities through electronic book-entry changes in accounts of its participants, thereby eliminating the need for physical movement of securities certificates. DTC's participants include securities brokers and dealers, banks, trust companies, clearing corporations, and certain other organizations, some of whom own DTC, and may include the initial purchaser. Indirect access to the DTC system is also available to others that clear through or maintain a custodial relationship with a DTC participant, either directly or indirectly ("**indirect participants**"). Transfers of ownership or other interests in Notes in DTC may be made only through DTC participants. In addition, beneficial owners of Notes in DTC will receive all distributions of principal of, premium, if any, and interest on the Notes from the Trustee through such DTC participant.

Euroclear and Clearstream: Euroclear and Clearstream hold securities for participating organizations and facilitate the clearance and settlement of securities transactions between their respective participants through electronic book-entry changes in accounts of such participants. Euroclear and Clearstream provide to their participants, among other things, services for safekeeping, administration, clearance and settlement of internationally-traded securities and securities lending and borrowing. Euroclear and Clearstream interface with domestic securities markets. Euroclear and Clearstream participants are financial institutions such as underwriters, securities brokers and dealers, banks, trust companies and certain other organizations. Indirect access to Euroclear or Clearstream is also available to others such as banks, brokers, dealers and trust companies that clear through or maintain a custodial relationship with a Euroclear or Clearstream participant, either directly or indirectly.

Initial Settlement

Investors' interests in Notes held in book-entry form by DTC will be represented through financial institutions acting on their behalf as direct and indirect participants in DTC. As a result, Euroclear and Clearstream will hold positions on behalf of their participants through DTC.

Investors electing to hold their Notes through DTC (other than through accounts at Euroclear or Clearstream) must follow the settlement practices applicable to United States corporate debt obligations. The securities custody accounts of investors will be credited with their holdings against payment in same day funds on the settlement date.

Investors electing to hold their Notes through Euroclear or Clearstream accounts will follow the settlement procedures applicable to conventional Eurobonds in registered form. Notes will be credited to the securities custody accounts of Euroclear Holders and of Clearstream Holders on the Business Day following the settlement date against payment for value on the settlement date.

Secondary Market Trading

Secondary market trading between DTC participants will occur in the ordinary way in accordance with DTC rules. Secondary market trading between Clearstream participants and/or Euroclear participants will occur in the ordinary way in accordance with the applicable rules and operating procedures of Clearstream and Euroclear and will be settled using the procedures applicable to conventional eurobonds.

Cross-market transfers between persons holding directly or indirectly through DTC, on the one hand, and directly or indirectly through Clearstream participants or Euroclear participants, on the other, will be effected in DTC in accordance with DTC rules on behalf of the relevant European international clearing system by its U.S. depositary; however, such cross-market transactions will require delivery of instructions to the relevant European international clearing system by the counterparty in such system in accordance with its rules and procedures and within its established deadlines (European time). The relevant European international clearing system will, if a transaction meets its settlement requirements, deliver instructions to its U.S. depositary to take action to effect final settlement on its behalf by delivering or receiving Notes in DTC, and making or receiving payment in accordance with normal procedures for same-day funds settlement applicable to DTC. Clearstream participants and Euroclear participants may not deliver instructions directly to the U.S. depositaries.

Because of time zone differences, credits of Notes received in Clearstream or Euroclear as a result of a transaction with a DTC participant will be made during subsequent securities settlement processing and dated the Business Day following the DTC settlement date. Such credits or any transactions in such Notes settled during such processing will be reported to the relevant Clearstream participants or Euroclear participants on such Business Day. Cash received in Clearstream or Euroclear as a result of sales of Notes by or through a Clearstream participant or a Euroclear participant to a DTC participant will be received with value on the DTC settlement date but will be available in the relevant Clearstream or Euroclear cash account only as of the Business Day following settlement in DTC.

For so long as the Notes are listed on the SGX-ST and the rules of the SGX-ST so require, the Notes, if traded on the SGX-ST, will be traded in a minimum board lot size of S$200,000 (or its equivalent in foreign currencies). Accordingly, the Notes, if traded on the SGX-ST, will be traded in a minimum board lot size of US$200,000.

Notices

All notices or demands required or permitted by the terms of the Notes or the Indenture to be given to or by the Holders are required to be in writing and may be given or served by being sent by prepaid courier or by being deposited, first-class postage prepaid, in the United States mails (if intended for the Company) addressed to the Company (if intended for the Trustee), at the corporate trust office of the Trustee; and (if intended for any Holder) addressed to such Holder at such Holder's last address as it appears in the Note register (the "**Register**").

Any such notice or demand will be deemed to have been sufficiently given or served when so sent or deposited and, if to the Holders, when delivered in accordance with the applicable rules and procedures of DTC. Any such notice will be deemed to have been delivered on the day such notice is delivered to DTC or if by mail, when so sent or deposited.

Language

The Notes, the Indenture and the Escrow Agreement will be executed in both English and Bahasa Indonesia to comply with Law 24 of 2009 regarding Flag, Language, National Emblem and National Anthem enacted July 9, 2009, and in the event of any inconsistency between the English and Bahasa Indonesia versions of these documents, the English version shall prevail. See "Risk Factors — Risks Relating to the Notes — The Indenture and certain other documents entered into in connection with the issue of the Notes thereunder will also be prepared in Bahasa Indonesia as required under Indonesian law. However, we cannot assure you that, in the event of inconsistencies between the Bahasa Indonesia and English language versions of these documents, an Indonesian court would hold that the English language versions of such documents would prevail."

Consent to Jurisdiction; Service of Process

The Company will irrevocably (i) submit to the non-exclusive jurisdiction of any U.S. federal or New York state court located in the Borough of Manhattan, The City of New York in connection with any suit, action or proceeding arising out of, or relating to, the Notes or the Indenture or any transaction contemplated thereby and (ii) designate and appoint Law Debenture Corporate Services Inc., for receipt of service of process in any such suit, action or proceeding.

Governing Law

Each of the Notes and the Indenture provides that such instrument will be governed by, and construed in accordance with, the laws of the State of New York.

Definitions

Set forth below are defined terms used in the covenants and other provisions of the Indenture. Reference is made to the Indenture for other capitalized terms used in this "Description of the 2028 Notes" for which no definition is provided.

"**Affiliate**" means, with respect to any Person, any other Person (a) directly or indirectly controlling, controlled by, or under direct or indirect common control with, such Person or (b) who is a commissioner, director or officer of such Person or any subsidiary of such Person or of any Person referred to in clause (a) of this definition. For purposes of this definition, "**control**" (including, with correlative meanings, the terms "**controlling**," "**controlled by**" and "**under common control with**"), as applied to any Person, means the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of such Person, whether through the ownership of voting securities, by contract or otherwise.

"**Business Day**" means any day which is not a Saturday, Sunday, legal holiday or other day on which banking institutions in The City of New York, Singapore or Indonesia or the city where the corporate trust office of the Trustee is then located are authorized by law or governmental regulation to close; *provided that*, solely for purposes of determining the date of any payment to be made on any Note, "**Business Day**" means any day which is not a Saturday, Sunday, legal holiday or other day on which banking institutions in The City of New York, Singapore, Indonesia or the place in which payments on the Notes are to be made are authorized by law or governmental regulation to close.

"**Capital Stock**" means, with respect to any Person, any and all shares, interests, participations or other equivalents (however designated, whether voting or non-voting) in equity of such Person, whether outstanding on the Original Issue Date or issued thereafter.

"**Change of Control**" means the occurrence of any event resulting in the government of the Republic of Indonesia ceasing to directly own and control at least 75.0% of the issued and paid-up shares of the Company.

"**Clearstream**" means Clearstream Banking, société anonyme or any successor thereof.

"**Commission**" means the U.S. Securities and Exchange Commission, as from time to time constituted under the Exchange Act, or if at any time after the execution of this instrument such Commission is not existing, then the body performing such duties on such date.

"**Debt**" means, with respect to any Person as of any date of determination, without duplication, (a) all obligations, contingent or otherwise, of such Person for borrowed money, (b) all obligations of such Person evidenced by bonds, notes or other similar instruments, (c) all obligations of such Person in respect of letters of credit or other similar instruments, (d) all obligations of such Person to pay the unpaid purchase price of any property or service, (e) all obligations secured by a Lien on any property or asset of such Person, whether or not such obligations are assumed by such Person and (f) all obligations of others guaranteed by such Person to the extent of such guarantees and, for clauses (a), (b), (c) and (e), which has a final maturity of one year or more. The amount of Debt of any Person as of any date of determination shall be the outstanding balance at such date of all unconditional obligations as described above, the maximum liability of such Person for any such contingent obligations at such date and, in the case of clause (d), the lesser of the fair market value (as determined in good faith by the board of directors of such Person) at such date of the property or asset of such Person subject to a Lien securing the obligations of others and the amount of such obligations secured.

"**Default**" means any event that is, or after notice or passage of time or both would be, an Event of Default.

"**Dollar Equivalent**" means, with respect to any monetary amount in a currency other than U.S. dollars, at any time for the determination thereof, the amount of U.S. dollars obtained by converting such foreign currency involved in such computation into U.S. dollars at the base rate for the purchase of U.S. dollars with the applicable foreign currency as quoted by the Federal Reserve Bank of New York on the date of determination.

"**DTC**" means The Depository Trust Company and its successors.

"**Escrow Accounts**" means the escrow accounts designated to hold the net proceeds of the offering of the Notes as per the terms of the Escrow Agreement and held by the Company with any one or more of the following: PT Bank Rakyat Indonesia (Persero) Tbk., PT Bank Mandiri (Persero) Tbk. and PT Bank Negara Indonesia (Persero) Tbk.; and each such account an "**Escrow Account**."

"**Euroclear**" means Euroclear Bank S.A./N.V. or any successor thereof.

"**GAAP**" means generally accepted accounting principles in Indonesia as in effect from time to time.

"**guarantee**" means any obligation, contingent or otherwise, of any Person directly or indirectly guaranteeing any Debt or other obligation of any other Person and, without limiting the generality of the foregoing, any obligation, direct or indirect, contingent or otherwise, of such Person (1) to purchase or pay (or advance or supply funds for the purchase or payment of) such Debt or other obligation of such other Person (whether arising by virtue of partnership arrangements, or by agreements to keep-well, to purchase assets, goods, securities or services, to take-or-pay, or to maintain financial statement conditions or otherwise) or (2) entered into for purposes of assuring in any other manner the obligee of such Debt or other obligation of the payment thereof or to protect such obligee against loss in respect thereof (in whole or in part); *provided that* the term "**guarantee**" will not include endorsements for collection or deposit in the ordinary course of business. The term "**guarantee**" used as a verb has a corresponding meaning.

"**Holder**" means the Person in whose name a Note is registered in the Register.

"**Lien**" means any mortgage, pledge, fiduciary, security interest, encumbrance, lien or charge of any kind (including, without limitation, any conditional sale or other title retention agreement or lease in the nature thereof or any agreement to create any mortgage, pledge, security interest, lien, charge, easement or encumbrance of any kind but excluding liens arising by operation of law).

"**Material Subsidiary**" means at any time a Subsidiary of the Company:

(a) whose total revenues (consolidated in the case of a Subsidiary which itself has Subsidiaries) or whose total assets (consolidated in the case of a Subsidiary which itself has Subsidiaries) represent in each case (or, in the case of a Subsidiary acquired after the end of the financial period to which the then latest audited consolidated accounts of the Company and its Subsidiaries relate, are equal to) not less than 5.0% of the consolidated total revenues, or, as the case may be, consolidated total assets, of the Company and its Subsidiaries taken as a whole, all as calculated respectively by

reference to the then latest audited accounts (consolidated or, as the case may be, unconsolidated) of such Subsidiary and the then latest audited consolidated accounts of the Company and its Subsidiaries, *provided that*, in the case of a Subsidiary of the Company acquired after the end of the financial period to which the then latest audited consolidated accounts of the Company and its Subsidiaries relate, the reference to the then latest audited consolidated accounts of the Company and its Subsidiaries for the purposes of the calculation above shall, until consolidated accounts for the financial period in which the acquisition is made have been prepared and audited as aforesaid, be deemed to be a reference to such first-mentioned accounts as if such Subsidiary had been shown in such accounts by reference to its then latest relevant audited accounts, adjusted as deemed appropriate by the Company; or

(b) to which is transferred the whole or substantially the whole of the undertaking and assets of a Subsidiary of the Company which immediately prior to such transfer is a Material Subsidiary, *provided that* the transferor Subsidiary shall upon such transfer forthwith cease to be a Material Subsidiary and the transferee Subsidiary shall cease to be a Material Subsidiary pursuant to this subparagraph (b) on the date on which the consolidated accounts of the Company and its Subsidiaries for the financial period current at the date of such transfer have been prepared and audited as aforesaid but so that such transferor Subsidiary or such transferee Subsidiary may be a Material Subsidiary on or at any time after the date on which such consolidated accounts have been prepared and audited as aforesaid by virtue of the provisions of subparagraph (a) above or, prior to or after such date, by virtue of any other applicable provision of this definition; or

(c) to which is transferred an undertaking or assets which, taken together with the undertaking or assets of the transferee Subsidiary, generated (or, in the case of the transferee Subsidiary being acquired after the end of the financial period to which the then latest audited consolidated accounts of the Company and its Subsidiaries relate, generate total revenues equal to) not less than 5.0% of the consolidated total revenues of the Company, or represent (or, in the case aforesaid, are equal to) not less than 5.0% of the consolidated total assets of the Company and its Subsidiaries taken as a whole, all as calculated as referred to in subparagraph (a) above, *provided that* the transferor Subsidiary (if a Material Subsidiary) shall upon such transfer forthwith cease to be a Material Subsidiary unless immediately following such transfer its undertaking and assets generate (or, in the case aforesaid, generate total revenues equal to) not less than 5.0% of the consolidated total revenues of the Company, or its assets represent (or, in the case aforesaid, are equal to) not less than 5.0% of the consolidated total assets of the Company and its Subsidiaries taken as a whole, all as calculated as referred to in subparagraph (a) above, and the transferee Subsidiary shall cease to be a Material Subsidiary pursuant to this subparagraph (c) on the date on which the consolidated accounts of the Company and its Subsidiaries for the financial period current at the date of such transfer have been prepared and audited but so that such transferor Subsidiary or such transferee Subsidiary may be a Material Subsidiary on or at any time after the date on which such consolidated accounts have been prepared and audited as aforesaid by virtue of the provisions of subparagraph (a) above or, prior to or after such date, by virtue of any other applicable provision of this definition.

"**Offer to Purchase**" means an offer to purchase the Notes by the Company from the Holders commenced by the Company mailing a notice by prepaid courier or first class mail, postage prepaid, to the Trustee and each Holder at its last address appearing in the Register stating:

(a) that the offer is being made pursuant to the provisions of the Indenture described under the caption "Repurchase of Notes Upon a Change of Control" and that all Notes validly tendered will be accepted for payment on a pro rata basis;

(b) the purchase price and the date of purchase (which will be a Business Day no earlier than 30 days nor later than 60 days from the date such notice is mailed) (the "**Offer to Purchase Payment Date**");

(c) that any Note not tendered will continue to accrue interest pursuant to its terms;

(d) that, unless the Company defaults in the payment of the purchase price, any Note accepted for payment pursuant to the Offer to Purchase will cease to accrue interest on and after the Offer to Purchase Payment Date;

(e) that Holders electing to have a Note purchased pursuant to the Offer to Purchase will be required to surrender the Note, together with the form entitled "Option of the Holder to Elect Purchase" on the reverse side of the Note completed, to the Paying Agent at the address specified in the notice prior to the close of business on the Business Day immediately preceding the Offer to Purchase Payment Date;

(f) that Holders will be entitled to withdraw their election if the Paying Agent receives, not later than the close of business on the third Business Day immediately preceding the Offer to Purchase Payment Date, a facsimile transmission or letter setting forth the name of such Holder, the principal amount of Notes delivered for purchase and a statement that such Holder is withdrawing his election to have such Notes purchased;

(g) that Holders whose Notes are being purchased only in part will be issued new Notes equal in principal amount to the unpurchased portion of the Notes surrendered; *provided that* each Note purchased and each new Note issued will be in a principal amount of US$200,000 or integral multiples of US$1,000 in excess thereof; and

(h) the CUSIP number(s) of the Notes.

One (1) Business Day prior to the Offer to Purchase Payment Date, the Company will deposit with the Paying Agent money sufficient to pay the purchase price of all Notes or portions thereof to be accepted by the Company for payment on the Offer to Purchase Payment Date. On the Offer to Purchase Payment Date, the Company will (a) accept for payment on a pro rata basis Notes or portions thereof tendered pursuant to an Offer to Purchase; and (b) deliver, or cause to be delivered, to the Trustee all Notes or portions thereof so accepted together with an Officer's Certificate specifying the Notes or portions thereof accepted for payment by the Company.

The Paying Agent will promptly mail to the Holders the accepted payment in an amount equal to the purchase price, and the Trustee will promptly authenticate and mail to such Holders a new Note equal in principal amount to any unpurchased portion of the Note surrendered; *provided that* each Note purchased and each new Note issued will be in a principal amount of US$200,000 or integral multiples of US$1,000 in excess thereof. The Company will publicly announce the results of an Offer to Purchase as soon as practicable after the Offer to Purchase Payment Date.

The offer is required to contain or incorporate by reference information concerning the business of the Company and its Subsidiaries and PTFI which the Company in good faith believes will assist such Holders to make an informed decision with respect to the Offer to Purchase, including a brief description of the events requiring the Company to make the Offer to Purchase, and any other information required by applicable law to be included therein. The offer is required to contain all instructions and materials necessary to enable such Holders to tender Notes pursuant to the Offer to Purchase.

"**Officer**" means one of the executive officers or directors of the Company.

"**Officer's Certificate**" means a certificate signed by at least one Officer.

"**Opinion of Counsel**" means a written opinion from legal counsel which opinion is reasonably acceptable to the Trustee that meets the requirements of the Indenture; *provided that* legal counsel shall be entitled to rely on a certificate of the Company as to matters of fact.

"**Original Issue Date**" means the date on which the Notes are originally issued under the Indenture.

"**Person**" means any individual, corporation, partnership, limited liability company, joint venture, trust, unincorporated organization or government or any agency or political subdivision thereof.

"**PTFI**" means PT Freeport Indonesia.

"**PTFI Share Acquisition**" means the acquisition by the Company, directly or indirectly, of a 51.2% beneficial equity interest in PTFI, as described in this Offering Memorandum under the caption "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia."

"**PTFI Share Acquisition Agreements**" means, collectively, (i) the Agreement for the Sale and Purchase of PT Rio Tinto Indonesia dated as of September 28, 2018 among the Company, Rio Tinto Indonesian Holdings Limited, Rio Tinto Nominees Limited and Rio Tinto International Holdings Limited; (ii) the PTFI Subscription Agreement dated as of September 27, 2018 among the Company, PTFI and PT Indocopper Investama; and (iii) the PTFI Divestment Agreement dated as of September 27, 2018 among the Company, PTFI, PT Indocopper Investama, Freeport-McMoran, Inc. and International Support LLC (the "**PTFI Divestment Agreement**").

"**PTFI Share Acquisition Closing Date**" means the closing date for the PTFI Share Acquisition, as defined in the PTFI Divestment Agreement.

"**Qualifying PTFI IPO**" means the first offering or listing of shares of PTFI, which complies with (A) the rules and regulations of a Stock Exchange; and (B) the following conditions: (i) it is an offer of shares of PTFI that consists wholly or in part of primary shares and that is made to the public for subscription or sale exclusively for cash, accompanied (or preceded) by the grant of listing of, and permission to deal in, the PTFI shares or depository shares or securities representing the PTFI shares by such Stock Exchange; and (ii) the Company shall have delivered an Officer's Certificate to the Trustee stating that the offer satisfies the conditions in this paragraph and that, immediately after giving effect to such public offering, no Event of Default and no event which, with the giving of notice or the passage of time, or both, would constitute an Event of Default, shall have occurred and be continuing.

"**Securities**" means bonds, debentures, notes or other similar securities having an original maturity of more than one (1) year from its date of issue which (a) are, or are issued with the intention on the part of the issuer thereof that they should be quoted, listed or ordinarily dealt in or traded on any stock exchange, over-the-counter or other securities market, and (b) either (i) are by their terms payable, or confer a right to receive payment, in any currency other than Rupiah or (ii) are denominated in Rupiah and more than 50% of the aggregate principal amount of the offering of such securities is initially distributed outside Indonesia by or with the Company's consent.

"**Stated Maturity**" means, (a) with respect to any Debt, the date specified in such debt security as the fixed date on which the final installment of principal of such Debt is due and payable as set forth in the documentation governing such Debt and (b) with respect to any scheduled installment of principal of or interest on any Debt, the date specified as the fixed date on which such installment is due and payable as set forth in the documentation governing such Debt.

"**Stock Exchange**" means The Indonesia Stock Exchange or such other internationally recognized stock exchange approved by the shareholders of PTFI and notified in writing to the Trustee.

"**Subsidiary**" means (a) any corporation or other entity of which securities or other ownership interests having ordinary voting power to elect a majority of the board of directors or other persons performing similar functions are at the time directly or indirectly owned by the Company or (b) any subsidiary subject to consolidation with the Company's financial statements under GAAP.

"**U.S. Government Obligations**" means securities that are (a) direct obligations of the United States of America for the payment of which its full faith and credit is pledged or (b) obligations of a Person controlled or supervised by and acting as an agency or instrumentality of the United States of America the payment of which is unconditionally guaranteed as a full faith and credit obligation by the United States of America, which, in either case, are not callable or redeemable at the option of the issuer thereof at any time prior to the Stated Maturity of the Notes, and will also include a depository receipt issued by a bank or trust company as custodian with respect to any such U.S. Government Obligation or a specific payment of interest on or principal of any such U.S. Government Obligation held by such custodian for the account of the holder of a depository receipt;

provided that (except as required by law) such custodian is not authorized to make any deduction from the amount payable to the holder of such depository receipt from any amount received by the custodian in respect of the U.S. Government Obligation or the specific payment of interest on or principal of the U.S. Government Obligation evidenced by such depository receipt.

DESCRIPTION OF THE 2048 NOTES

For purposes of this "**Description of the Notes**," the term "**Company**" refers only to PT Indonesia Asahan Aluminium (Persero), a state-owned enterprise established and existing with limited liability under the laws of the Republic of Indonesia, and any successor obligor on the Notes (including the Surviving Person (as defined below, under the caption "— Consolidation, Merger and Sale of Assets")), and not to any of its Subsidiaries. Any reference to the "Notes" in this "Description of the 2048 Notes" is solely to the 2048 Notes. The Notes are to be issued under an indenture (the "**Indenture**") to be dated as of the Original Issue Date, between the Company and The Bank of New York Mellon, as trustee (the "**Trustee**").

The following is a summary of certain provisions of the Indenture, the Notes and the Escrow Agreement (as defined below). This summary does not purport to be complete and is qualified in its entirety by reference to all of the provisions of the Indenture and the Notes and of the Escrow Agreement. It does not restate the provisions of the Indenture or the Notes or the Escrow Agreement in their entirety. Whenever particular sections or defined terms of the Indenture not otherwise defined herein are referred to, such sections or defined terms are incorporated herein by reference. Copies of the Indenture and the Escrow Agreement will be available for inspection on or after the Original Issue Date during normal office hours at the corporate trust office of the Trustee at 240 Greenwich Street, New York, NY 10286, United States of America.

The proceeds from the offering of the Notes will be used to fund the purchase of shares in PTFI pursuant to the planned PTFI Share Acquisition and/or to refinance acquisition debt as set forth in this Offering Memorandum under the caption "Use of Proceeds" or to fund the Special Mandatory Redemption (as defined below). Pending such application of the proceeds, the net proceeds from the offering of the Notes will be deposited into one or more escrow accounts held by the Company in Indonesia with certain state-owned Indonesian banks and will only be released upon the fulfillment of certain conditions, as more fully described below under the captions "— Escrow of Proceeds" and "— Redemption Upon Special Mandatory Redemption Event."

Brief Description of the Notes

The Notes will:

(a) be direct, unsecured and unsubordinated obligations of the Company;

(b) be senior in right of payment to any existing and future obligations of the Company expressly subordinated in right of payment to the Notes;

(c) rank at least *pari passu* in right of payment with all other unsecured and unsubordinated Debt of the Company (subject to any priority rights of such unsubordinated Debt pursuant to applicable law); and

(d) be effectively subordinated to secured obligations of the Company and the obligations of its subsidiaries.

The Company will initially issue US$750,000,000 in aggregate principal amount of the Notes, which will mature on November 15, 2048 unless earlier redeemed pursuant to the terms thereof and the Indenture. The Indenture allows the Company to issue additional Notes from time to time (the "**Additional Notes**"), subject to certain limitations described under "— Further Issues" and applicable law. The Notes offered hereby and any Additional Notes may be treated as a single class for all purposes under the Indenture.

Interest

The Notes will bear interest at 6.757% per annum from the Original Issue Date or from the most recent interest payment date on which interest has been paid or duly provided for, payable semi-annually in arrears on May 15 and November 15 of each year (each, an "**Interest Payment Date**") commencing on May 15, 2019. Interest on the Notes will be paid to Holders of record at the close of business on each April 30 or October 30, immediately preceding an Interest Payment Date (each, a "**Record Date**"), notwithstanding any transfer, exchange or cancelation thereof after a Record Date and prior to the immediately following Interest Payment Date. Interest on the Notes will be calculated on the basis of a 360-day year comprised of twelve 30-day months.

Payment of Notes

In any case in which the date of the payment of principal of, premium, if any, or interest on the Notes (including any payment to be made on any date fixed for redemption or purchase of any Note) is not a Business Day in the relevant place of payment, then payment of principal, premium, if any, or interest need not be made in such place on such date but may be made on the next succeeding Business Day in such place. Any payment made on such Business Day will have the same force and effect as if made on the date on which such payment is due. Interest on overdue principal and interest and Additional Amounts, if any, will accrue at a rate that is 1% higher than the then applicable interest rate on the Notes.

The Notes will be issued only in fully registered form, without coupons, in minimum denominations of US$200,000 and integral multiples of US$1,000 in excess thereof. See "— Book-Entry; Delivery and Form." No service charge will be made for any registration of transfer or exchange of Notes, but the Company may require payment of a sum sufficient to cover any transfer tax or other similar governmental charge payable in connection therewith.

All payments on the Notes will be made in U.S. dollars in immediately available funds by the Company at the office or agency of the Company maintained for that purpose in the Borough of Manhattan, the City of New York (which initially will be the specified office of The Bank of New York Mellon (the "**Paying Agent**"), currently located at 240 Greenwich Street, New York, NY 10286, United States of America), and the Notes may be presented for registration of transfer or exchange at such office or agency. However, at the option of the Company, payment of interest may be made by wire transfer. Interest payable on the Notes held through DTC will be available to DTC participants (as defined herein) on the Business Day following payment thereof.

Further Issues

Subject to the covenants described below and in accordance with the terms of the Indenture, the Company may, from time to time, without notice to or the consent of the Holders, issue Additional Notes having the same terms and conditions as the Notes in all respects (or in all respects except for the issue date, issue price and the date of first payment of interest on them and, to the extent necessary, certain temporary securities law transfer restrictions) so that such Additional Notes may be consolidated and form a single class with the previously outstanding Notes and vote together as one class on all matters with respect to the Notes; *provided that*, in order for Additional Notes to have the same CUSIP, ISIN, or other identifying number as the outstanding Notes, the Additional Notes must be fungible with the outstanding Notes for U.S. federal income tax purposes.

In addition, the issuance of any Additional Notes by the Company will be subject to the following conditions:

(a) the Company shall have delivered to the Trustee an Officer's Certificate, in form and substance satisfactory to the Trustee, confirming that the issuance of the Additional Notes complies with the Indenture; and

(b) the Company shall have delivered to the Trustee one or more Opinions of Counsel, in form and substance satisfactory to the Trustee, confirming, among other things, (i) that the issuance of the Additional Notes does not conflict with applicable law and (ii) that such Additional Notes will constitute legally valid and binding obligations of the Company, enforceable in accordance with their terms, subject to customary exceptions.

Repurchase of Notes Upon a Change of Control

Not later than 30 days following a Change of Control, the Company will make an Offer to Purchase all outstanding Notes (a "**Change of Control Offer**") at a purchase price equal to 101.0% of the principal amount thereof plus accrued and unpaid interest, if any, to the Offer to Purchase Payment Date.

The Company will agree in the Indenture that it will timely repay all Debt or obtain consents as necessary under, or terminate, agreements or instruments that would otherwise prohibit a Change of Control Offer required

to be made pursuant to the Indenture. Notwithstanding these agreements, it is important to note that if the Company is unable to repay (or cause to be repaid) all of the Debt, if any, that would prohibit the repurchase of the Notes or is unable to obtain the requisite consents of the holders of such Debt, or terminate any agreements or instruments that would otherwise prohibit a Change of Control Offer, the Company would continue to be prohibited from purchasing the Notes. In that case, the failure of the Company to purchase tendered Notes would constitute an Event of Default (as defined below) under the Indenture.

Future Debt of the Company or its Subsidiaries may also (a) prohibit the Company from purchasing the Notes in the event of a Change of Control; (b) provide that a Change of Control is a default; or (c) require the repayment or repurchase of such Debt upon a Change of Control. Moreover, the exercise by the Holders of their right to require the Company to purchase the Notes could cause a default under other Debt, even if the Change of Control itself does not, due to the financial effect of the purchase on the Company or its Subsidiaries. The ability of the Company to pay cash to Holders of the Notes following the occurrence of a Change of Control may be limited by the financial resources then available to the Company. There can be no assurance that sufficient funds will be available when necessary to make the required purchase of the Notes. See "Risk Factors — Risks Relating to the Notes — We may not have the ability to raise the funds necessary to finance an offer to repurchase the Notes upon the occurrence of certain events constituting a change of control or otherwise as required by the Indenture governing the Notes."

Notwithstanding the above, the Company will not be required to make a Change of Control Offer following a Change of Control if a third party makes the Change of Control Offer in the manner, at the times and otherwise in compliance with the requirements set forth in the Indenture applicable to a Change of Control Offer to be made by the Company and such third party purchases all Notes validly tendered and not withdrawn under such Change of Control Offer.

A Holder will have no right to require the Company to repurchase portions of Notes if it would result in the issuance of new Notes, representing the portion not purchased, in an amount of less than US$200,000.

The Company will comply with the requirements of Rule 14e-1 under the Exchange Act and any other securities laws and regulations thereunder to the extent those laws and regulations are applicable in connection with each repurchase of Notes pursuant to a Change of Control Offer. To the extent that the provisions of any securities laws or regulations conflict with the provisions of the covenant described hereunder, the Company will comply with the applicable securities laws and regulations and will not be deemed to have breached its obligations described hereunder by virtue of its compliance with such laws and regulations.

Except as described above with respect to a Change of Control Offer, the Indenture does not contain provisions that permit the Holders to require that the Company purchase or redeem the Notes in the event of a takeover, recapitalization or similar transaction.

The Trustee shall not be required to take any steps to ascertain whether a Change of Control or any event which could lead to the occurrence of a Change of Control has occurred and shall not be liable to any person for any failure to do so.

Escrow of Proceeds

Concurrently with the closing of the offering of the Notes on the Original Issue Date, the Company will enter into an escrow agreement (the "**Escrow Agreement**") dated as of the Original Issue Date among the Company, the Trustee, PT Bank Mandiri (Persero) Tbk as escrow agent (the "**Escrow Agent**"), and PT Bank Mandiri (Persero) Tbk, PT Bank Negara Indonesia (Persero) Tbk and PT Bank Rakyat Indonesia (Persero) Tbk as escrow banks (the "**Escrow Banks**"), pursuant to which the Company will deposit or will instruct the Initial Purchasers to deposit with the Escrow Banks an amount in cash equal to the net proceeds of the offering of the Notes sold on the Original Issue Date into one or more Escrow Accounts (as defined below) held by the Company in Indonesia with the Escrow Banks, in the amounts specified for each of the Escrow Accounts in the Escrow Agreement. The initial funds deposited into the Escrow Accounts, and all other funds, securities, interest, dividends and other distributions and payments thereon credited to each Escrow Account (less any funds paid in accordance with the Escrow Agreement) are referred to collectively as the "**Escrowed Funds**."

The Escrowed Funds will be released from the Escrow Accounts only in accordance with the terms of the Escrow Agreement. Pursuant to the terms of the Escrow Agreement, the Escrowed Funds may be released from the Escrow Accounts only in whole and not in part and either (i) to fund the completion of the PTFI Share Acquisition, including associated costs and expenses, or (ii) if the PTFI Share Acquisition has not been completed by June 30, 2019 (such non-completion of the PTFI Share Acquisition by such date, the "**Special Mandatory Redemption Event**"), to fund the redemption by the Company of the Notes (the "**Special Mandatory Redemption**"), in whole and not in part, at a redemption price (the "**Special Mandatory Redemption Price**") equal to 101.0% of the principal amount thereof, together with accrued and unpaid interest (including any Additional Amounts), if any, up to but not including the date fixed for redemption (the "**Special Mandatory Redemption Date**"); see "— Redemption Upon Special Mandatory Redemption Event," below. The Escrow Agent will release the Escrowed Funds, in whole but not in part, (the "**Release**") to the Company or to the order of the Company (as described in more detail below) on a date specified by the Company (the "**Escrow Release Date**") after delivery by the Company and the Trustee of a release instruction and delivery by the Company of (i) an Officer's Certificate addressed to the Escrow Agent and the Trustee, upon which both the Escrow Agent and the Trustee shall rely, without further investigation, requesting the Release of the Escrowed Funds and certifying certain matters of fact, as further described below, and (ii) an Opinion of Counsel stating that all conditions precedent provided for in the Indenture and the Escrow Agreement relating to the Release have been complied with, prior to the Escrow Release Date.

No provisions of the Escrow Agreement (including those relating to the Release of the Escrowed Funds) may be amended, waived or modified in any manner materially adverse to the Holders without the written consent of the Holders of a majority in principal amount of the Notes outstanding; *provided that* no such amendment, waiver or modification shall reduce the Special Mandatory Redemption Price without the written consent of each affected Holder.

In the event an Event of Default has occurred prior to the Special Mandatory Redemption Event and prior to completion of the PTFI Share Acquisition, the Trustee may, by notice in writing to the Company and the Escrow Agent, require the Escrow Agent (i) to act thereafter, until otherwise instructed by the Trustee, as agent of the Trustee under the provisions of the Escrow Agreement on the terms provided thereby and (ii) to deliver the Escrowed Funds, to the Trustee or as the Trustee shall direct, for payment to the Holders.

Release for PTFI Share Acquisition

In the context of a Release of the Escrowed Funds for the completion of the PTFI Share Acquisition, the Officer's Certificate shall certify that the following conditions have been met and will be met following the Release on the Escrow Release Date:

(1) the parties to the PTFI Share Acquisition Agreements have confirmed that all the conditions precedent described in the PTFI Share Acquisition Agreements for completion of the PTFI Share Acquisition have been met (or waived in compliance with the PTFI Share Acquisition Agreements), and the parties to the PTFI Share Acquisition Agreements have designated a PTFI Share Acquisition Closing Date for the PTFI Share Acquisition pursuant to the terms of the PTFI Share Acquisition Agreements (and the certificate shall include relevant documentation evidencing such confirmation);

(2) following the Release of the Escrowed Funds on the Escrow Release Date, the PTFI Share Acquisition will be completed pursuant to the terms of the PTFI Share Acquisition Agreements and on or prior to the PTFI Share Acquisition Closing Date; and

(3) as of the date of the Officer's Certificate and the Escrow Release Date, no Event of Default has occurred and no Event of Default would occur taking into account the completion of the PTFI Share Acquisition and the application of the Escrowed Funds as set forth under the caption "Certain Covenants — Use of Proceeds."

The Officer's Certificate shall specify the PTFI Share Acquisition Closing Date and the Escrow Release Date. The Escrow Release Date shall be no more than one Business Day prior to the PTFI Share Acquisition Closing Date

and no later than the PTFI Share Acquisition Closing Date. The Company may instruct the Escrow Agent to Release the Escrowed Funds to the Company itself or to a third party at the order of the Company, at the Company's option. Any excess Escrowed Funds after payment of the purchase price for the PTFI Share Acquisition and related costs and expenses and after payment of fees and expenses of the Escrow Agent and Trustee shall enure to the Company.

Release for Special Mandatory Redemption

In the context of a Release of the Escrowed Funds to fund the Special Mandatory Redemption, the Officer's Certificate shall certify that the following conditions have been met and will be met following the Release on the Escrow Release Date:

(1) the Special Mandatory Redemption Event has occurred;

(2) the Company has provided Holders with a notice regarding the Special Mandatory Redemption, as required by the Indenture and described below under the Caption "— Redemption Upon Special Mandatory Redemption Event" (and a copy of such notice shall be attached to the certificate); and

(3) the Company will complete the Special Mandatory Redemption as required under the terms of the Indenture.

The Officer's Certificate shall specify the amount equal to the Special Mandatory Redemption Price and the Escrow Release Date, which shall be no more than one Business Day prior to the Special Mandatory Redemption Date. The Release of the Escrowed Funds in the amount equal to the Special Mandatory Redemption Price (or, if the amount of Escrowed Funds is less than the amount equal to the Special Mandatory Redemption Price, then the full amount of Escrowed Funds) shall be only to the Trustee or the Paying Agent, for payment to the Holders, and not to the Company, and the Company shall instruct the Escrow Agent accordingly in the Officer's Certificate. Any excess Escrowed Funds after payment of the Special Mandatory Redemption Price and after payment of fees and expenses of the Escrow Agent and Trustee shall be delivered to and enure to the Company.

Redemption Upon Special Mandatory Redemption Event

Upon the occurrence of the Special Mandatory Redemption Event, the Company or the Surviving Person, as the case may be, will redeem the Notes, in whole and not in part, upon giving 30 days' notice to the Holders (which notice shall be irrevocable and shall oblige the Company or the Surviving Person to redeem the Notes on the Special Mandatory Redemption Date and which notice shall be given promptly upon the occurrence of the Special Mandatory Redemption Event), at the Special Mandatory Redemption Price. The Special Mandatory Redemption Date shall be no later than 30 days after the Special Mandatory Redemption Event.

On the Business Day prior to the Special Mandatory Redemption Date, the Escrow Agent shall apply funds standing to the credit of the Escrow Account to make a transfer from the Escrow Account to the Trustee or the Paying Agent for payment to the Holders of the Special Mandatory Redemption Price.

Following a Special Mandatory Redemption, the Notes will be canceled.

Sinking Fund

There will be no sinking fund payments for the Notes.

Additional Amounts

All payments of principal of, and premium, if any, and interest on the Notes will be made without withholding or deduction for, or on account of, any present or future taxes, duties, assessments or other governmental charges of whatever nature imposed or levied by or within any jurisdiction in which the Company or the Surviving Person is organized or resident for tax purposes (or any political subdivision or taxing authority thereof or therein) or through which payment is made on behalf of the Company or the Surviving Person (each, as applicable, a "**Relevant Taxing Jurisdiction**"), unless such withholding or deduction is required by law or by regulation or governmental policy having the force of law.

In such event, the Company or the Surviving Person, as the case may be, will make or cause to be made such deduction or withholding, make payment of the amount so deducted or withheld to the appropriate governmental authority and will pay such additional amounts ("**Additional Amounts**") as will result in receipt by the Holder of such amounts as would have been received by such Holder had no such withholding or deduction been required. However, no Additional Amounts will be payable:

(a) for or on account of:

(i) any tax, duty, assessment or other governmental charge that would not have been imposed but for:

(A) the existence of any present or former connection between the Holder or beneficial owner of such Note and the Relevant Taxing Jurisdiction including, without limitation, such Holder's or beneficial owner's being or having been a citizen or resident of such Relevant Taxing Jurisdiction or treated as a resident thereof or being or having been physically present or engaged in a trade or business therein or having or having had a permanent establishment therein, other than merely holding such Note or the receipt of payments thereunder or enforcing payment under the Note;

(B) the presentation of such Note (where presentation is required) more than 30 days after the later of the date on which the payment of the principal of, premium, if any, or interest on, such Note became due and payable pursuant to the terms thereof or was made or duly provided for, except to the extent that the Holder thereof would have been entitled to such Additional Amounts if it had presented such Note for payment on any date within such 30-day period;

(C) the failure of the Holder or beneficial owner to comply with a timely request of the Company or the Surviving Person, as the case may be, addressed to the Holder, to provide information to the Company or the Surviving Person on an applicable Form DGT-1, Form DGT-2 or any other document, information or form concerning such Holder's or beneficial owner's nationality, residence, identity or connection with any Relevant Taxing Jurisdiction, if and to the extent that due and timely compliance with such request is required under the laws of a Relevant Taxing Jurisdiction in order to reduce or eliminate any withholding or deduction as to which Additional Amounts would have otherwise been payable to such Holder; or

(D) the presentation of such Note (where presentation is required) for payment in the Relevant Taxing Jurisdiction, unless such withholding or deduction could not have been avoided by presenting the Note for payment elsewhere;

(ii) any estate, inheritance, gift, sale, transfer or similar tax, assessment or other governmental charge;

(iii) any tax, duty, assessment or other governmental charge which is payable other than by deduction or withholding from payments of principal of or interest or any premium on the Note;

(iv) any tax required to be withheld or deducted under Sections 1471 to 1474 of the U.S. Internal Revenue Code of 1986, as amended (the "**Code**") (or any amended or successor versions of such Sections), any agreements described under section 1471(b) of the Code, any regulations or other official guidance thereunder, any intergovernmental agreement relating thereto, or any law, regulation or other official guidance enacted in any jurisdiction implementing any of the foregoing; or

(v) any combination of taxes, duties, assessments or other governmental charges referred to in the preceding paragraphs (i), (ii), (iii) and (iv); or

(b) with respect to any payment of the principal of, or premium, if any, or interest on, such Note to such Holder, if the Holder is a fiduciary, corporation, limited liability company, partnership or person other than the sole beneficial owner of any payment to the extent that, under the laws of a Relevant Taxing Jurisdiction, such payment would be required to be included in income, for tax purposes, of a

beneficiary or settlor with respect to the fiduciary, a shareholder of that corporation, a member of that partnership or limited liability company or a beneficial owner who would not have been entitled to such Additional Amounts had that beneficiary, settlor, shareholder, partner, or beneficial owner been the Holder thereof; or

(c) any combination of paragraphs (a) and (b).

As a result of these provisions, there are circumstances in which taxes could be withheld or deducted but Additional Amounts would not be payable to some or all beneficial owners of Notes.

Whenever there is mentioned in any context the payment of principal, premium or interest in respect of any Note, such mention will be deemed to include payments of Additional Amounts provided for in the Indenture to the extent that, in such context, Additional Amounts are, were or would be payable in respect thereof.

The Paying Agent and the Trustee will make payments free of withholdings or deductions on account of taxes unless required by applicable law. If such a deduction or withholding is required, the Paying Agent or the Trustee will not be obligated to pay any Additional Amount to the recipient unless such an Additional Amount is received by the Paying Agent or the Trustee from the Company or the Surviving Person.

In addition to the foregoing, the Company or the Surviving Person, as the case may be, will also pay and indemnify the Holder or beneficial owner, as applicable, for any present or future stamp, issue, registration, court or documentary taxes, or any other excise or property taxes, charges or similar levies (including penalties and interest) which are levied by any jurisdiction on the execution, delivery, issuance, registration, redemption or retirement of any of the Notes or the Indenture or any other document referred to therein (other than a transfer of the Notes after this offering) or any such taxes, charges or similar levies imposed by the United States, Indonesia, or any political subdivision thereof as a result of, or in connection with, the enforcement of any of the Notes.

Redemption for Taxation Reasons

The Notes may be redeemed at the option of the Company or the Surviving Person, as the case may be, as a whole but not in part, by giving not less than 30 days' nor more than 60 days' notice to the Holders (which notice will be irrevocable) and the Trustee, at a redemption price equal to 100% of the principal amount thereof, together with accrued and unpaid interest (including any Additional Amounts), if any, to (but not including) the date fixed by the Company or the Surviving Person, as the case may be, for redemption (the "**Tax Redemption Date**"), if the Company or the Surviving Person, as the case may be, is, or on the next Interest Payment Date would be, required to pay Additional Amounts, and such requirement cannot be avoided by taking reasonable measures (including an appointment of a new paying agent) by the Company or the Surviving Person, as the case may be, as a result of:

(a) any change in, or amendment to, the laws or any regulations or rulings promulgated thereunder of a Relevant Taxing Jurisdiction affecting taxation; or

(b) any change in, or amendment to, an official position regarding the application, administration or interpretation of such laws, regulations or rulings (including a holding, judgment or order by a court of competent jurisdiction or a change in published practice),

which change or amendment is announced and becomes effective on or after the Original Issue Date with respect to any payment due or to become due under the Notes or the Indenture (or, if the Relevant Taxing Jurisdiction was not a Relevant Taxing Jurisdiction on the Original Issue Date, the date on which such jurisdiction became a Relevant Taxing Jurisdiction under the Indenture).

Notwithstanding the above, (i) no such notice of redemption will be given earlier than 90 days prior to the earliest date on which the Company or the Surviving Person, as the case may be, would be obligated to pay such Additional Amounts if a payment in respect of the Notes were then due, and (ii) if such requirement to pay Additional Amounts is due to taxes of the Republic of Indonesia (or any political subdivision or taxing authority thereof or therein), the Company or the Surviving Person shall only be permitted to redeem the Notes in

accordance with the provisions above if the rate of withholding or deduction in respect of which Additional Amounts are required is in excess of 20%.

Prior to the mailing of any notice of redemption of the Notes pursuant to the foregoing, the Company will deliver to the Trustee:

(a) an Officer's Certificate stating that such change or amendment referred to in the prior paragraph has occurred, and describing the facts related thereto and stating that such requirement cannot be avoided by the Company, taking reasonable measures available to it; and

(b) an Opinion of Counsel of recognized standing with respect to tax matters of the Relevant Taxing Jurisdiction stating that the requirement to pay such Additional Amounts, and withhold or deduct such taxes, duties, assessments or other government charges results from such change or amendment referred to in the prior paragraph.

The Trustee shall be entitled to accept and rely upon such certificate and opinion as sufficient evidence of the satisfaction of the conditions precedent described above without further verification, and it will be conclusive and binding on the Holders. The Trustee will not investigate or verify such certificate and opinion.

Any Notes that are redeemed will be canceled.

Certain Covenants

Set forth below are summaries of certain covenants contained in the Indenture.

Negative Pledge

So long as any of the Notes remain outstanding, the Company will not create or permit to exist, and the Company will ensure that none of its Material Subsidiaries will create or permit to exist, any Lien for the benefit of the holders of any Securities on the whole or any part of its property or assets, present or future, to secure: (a) payment of any sum due in respect of any Securities; (b) any payment under any guarantee in respect of any Securities; or (c) any indemnity or other like obligation in respect of any Securities, without in any such case, at the same time or prior thereto, making effective provision whereby the Notes are accorded (i) the same Liens equally and ratably as are created or subsisting to secure any such Securities, guarantee or indemnity or like obligation, or (ii) such other Liens as may be consented to by the holders of a majority in aggregate principal amount of the outstanding Notes.

However, the foregoing restriction shall not apply to (a) any Lien existing on any property or assets at the time of acquisition of such property or assets by the Company; *provided that* such Lien was not created, and the principal, capital or nominal amount of the Securities secured by such Lien outstanding at the time of such acquisition was not increased, in contemplation of such acquisition or in connection therewith, and (b) any Lien arising out of the refinancing, extension, renewal or refunding of any Securities secured by any such Lien; *provided that* the principal, capital or nominal amount of such Securities is not increased and such Securities are not secured by any additional property or assets.

Use of Proceeds

The Company will use the proceeds received from the Notes as set forth in this Offering Memorandum under the caption "Use of Proceeds" or for the Special Mandatory Redemption, as described under the caption "— Redemption Upon Special Mandatory Redemption Event."

Provision of Financial Statements and Reports

For so long as any of the Notes remain outstanding, the Company will file with the Trustee and furnish to the Holders upon request:

(a) as soon as they are available, but in any event within 120 calendar days after the end of its fiscal year, copies of its financial statements (on a consolidated basis) in respect of such financial year (including a statement of income, balance sheet and cash flow statement) audited by a member firm of an internationally recognized firm of independent accountants; and

(b) as soon as they are available, but in any event within 90 calendar days, after the end of each of its first, second and third fiscal quarters, copies of its financial statements (on a consolidated basis) in respect of such period (including a statement of income, balance sheet and cash flow statement) prepared on a basis consistent with its audited financial statements, together with a certificate signed by the Person then authorized to sign financial statements on behalf of it, to the effect that such financial statements are true in all material respects and present fairly its financial position as at the end of, and the results of its operations for, the relevant quarterly period;

provided that, in each case, the financial statements shall be in the English language, or if such statements shall be in any other language, accompanied with an English translation of the same and translated by (i) an internationally recognized firm of independent accountants or (ii) a professional translation service provider and checked by an internationally recognized firm of independent accountants, together with a certificate in English signed by the Person then authorized to sign financial statements of the Company, certifying that such translation is complete and accurate (on each of which the Trustee may conclusively rely without liability to any Holder or any other person).

If the Company makes any financial or other report (or any English translation of any financial or other report in any other language) described above available on its corporate website, the Company will be deemed to have satisfied the foregoing obligation to furnish such report (or such translation) to the Holders upon request.

In addition, so long as any of the Notes remain outstanding, the Company will provide to the Trustee promptly and in any event within seven days after it obtains actual knowledge of the occurrence thereof, written notice of the occurrence of any event or condition which constitutes an Event of Default and an Officer's Certificate setting forth the details thereof and the action it is taking or proposes to take with respect thereto, and the Trustee shall be entitled to accept such certificate as sufficient evidence thereof, in which event it shall be conclusive and binding on the Holders.

Further, the Company has agreed that, for so long as there are Notes which are "restricted securities" within the meaning of Rule 144(a)(3) under the U.S. Securities Act of 1933, as amended (the "**Securities Act**"), during any period in which the Company is neither subject to Section 13 or 15(d) of the U.S. Securities Exchange Act of 1934, as amended (the "**Exchange Act**"), nor exempt from reporting pursuant to Rule 12g3-2(b) thereunder, the Company will supply to (i) any Holder or beneficial owner of a Note or (ii) a prospective purchaser of a Note or a beneficial interest therein designated by such Holder or beneficial owner, the information specified in, and meeting the requirements of, Rule 144A(d)(4) under the Securities Act upon the request of any Holder or beneficial owner of a Note.

Events of Default

The following events will be defined as "**Events of Default**" in the Indenture:

(a) default in the payment of principal of (or premium, if any, on) the Notes when the same becomes due and payable at maturity, upon acceleration, redemption or otherwise;

(b) default in the payment of interest on any Note when the same becomes due and payable, and such default continues for a period of 30 consecutive days;

(c) default in the performance of or breach of any provisions of the covenants described under "— Consolidation, Merger and Sale of Assets" or failure to make or consummate a Change of Control Offer in the manner described under the caption "— Repurchase of Notes Upon a Change of Control" or failure to make or consummate the Special Mandatory Redemption in the manner described under the caption "— Redemption Upon Special Mandatory Redemption Event";

(d) default in the performance of or breach of any other covenant or agreement in the Indenture or under the Notes (other than a default specified in paragraph (a), (b) or (c) above) and such default or breach continues for a period of 60 consecutive days after written notice by the Trustee or the Holders of 25% or more in aggregate principal amount of the outstanding Notes;

(e) (i) the Company ceasing to own and control, directly or indirectly, at least 51.0% of the issued and paid-up shares of any of its Subsidiaries that are Material Subsidiaries as of the Original Issue Date or, subsequent to the closing of the PTFI Share Acquisition, of PTFI or (ii) in the event of a Qualifying PTFI IPO, the Company ceasing to own and control, directly or indirectly, at least 40.0% of the issued and paid-up shares of PTFI or ceasing to be the single largest beneficial shareholder of PTFI;

(f) there occurs with respect to any Debt of the Company or any of its Material Subsidiaries or PTFI having an outstanding principal amount of US$50.0 million (or the Dollar Equivalent thereof) or more in the aggregate for all such Debt of all such Persons, whether such Debt now exists or will hereafter be created, (A) an event of default that has caused the holder thereof to declare such Debt to be due and payable prior to its Stated Maturity or (B) the failure to make a payment of principal (subject to the applicable grace period in the relevant documents) of such Debt when the same becomes due;

(g) one or more final judgments or orders for the payment of money are rendered against the Company or any of its Subsidiaries or PTFI and are not paid or discharged, and there is a period of 60 consecutive days following entry of the final judgment or order that causes the aggregate amount for all such final judgments or orders outstanding and not paid or discharged against all such Persons to exceed US$50.0 million (or the Dollar Equivalent thereof) during which a stay of enforcement, by reason of a pending appeal or otherwise, is not in effect;

(h) an involuntary case or other proceeding is commenced against the Company or any Material Subsidiary or PTFI with respect to it or its Debts under any applicable bankruptcy, insolvency or other similar law now or hereafter in effect seeking the appointment of a receiver, liquidator, assignee, custodian, trustee, sequestrator or similar official of the Company or any Material Subsidiary or PTFI or for any substantial part of the property and assets of the Company or any Material Subsidiary or PTFI and such involuntary case or other proceeding remains undismissed and unstayed for a period of 60 consecutive days; or an order for relief is entered against the Company or any Material Subsidiary or PTFI under any applicable bankruptcy, insolvency or other similar law as now or hereafter in effect; or

(i) the Company or any Material Subsidiary or PTFI (i) commences a voluntary case under any applicable bankruptcy, insolvency or other similar law now or hereafter in effect, or consents to the entry of an order for relief in an involuntary case under any such law, (ii) consents to the appointment of or taking possession by a receiver, liquidator, assignee, custodian, trustee, sequestrator or similar official of the Company or any Material Subsidiary or PTFI or for all or substantially all of the property and assets of the Company or any Material Subsidiary or PTFI or (iii) effects any general assignment for the benefit of creditors.

If an Event of Default (other than an Event of Default specified in paragraph (h) or (i) above) occurs and is continuing under the Indenture, the Trustee (in its sole discretion and without further notice) or the Holders of at least 25% in aggregate principal amount of the Notes, then outstanding, by written notice to the Company (and to the Trustee if such notice is given by the Holders), may, and the Trustee at the written request of such Holders will (subject to being indemnified and/or secured and/or prefunded to its satisfaction), declare the principal of, premium, if any, and accrued and unpaid interest on the Notes to be immediately due and payable. Upon a declaration of acceleration, such principal of, premium, if any, and accrued and unpaid interest will be immediately due and payable. If an Event of Default specified in paragraph (h) or (i) above occurs, the principal of, premium, if any, and accrued and unpaid interest on the Notes then outstanding will automatically become and be immediately due and payable without any declaration or other act on the part of the Trustee or any Holder.

The Holders of at least a majority in principal amount of the outstanding Notes by written notice to the Company and the Trustee, may on behalf of all of the Holders waive all past defaults and rescind and annul a declaration of acceleration and its consequences with respect to the Notes if:

(a) the Company pays or deposits with the Trustee a sum sufficient to pay all monies then due with respect to the Notes (other than amounts due solely because of such declaration of acceleration) and all other existing Events of Default have been cured or waived, and

(b) the rescission would not conflict with any judgment or decree of a court of competent jurisdiction.

Upon such waiver, the Default will cease to exist, and any Event of Default arising therefrom will be deemed to have been cured, but no such waiver will extend to any subsequent or other Default or impair any right consequent thereon.

The Holders of at least a majority in aggregate principal amount of the outstanding Notes may direct the time, method and place of conducting any proceeding for any remedy available to the Trustee or exercising any trust or power conferred on the Trustee, subject to the Trustee being indemnified and/or secured and/or prefunded to its satisfaction in advance of the proceedings. However, the Trustee may refuse to follow any direction that is unclear, conflicting or equivocal, that conflicts with law or the Indenture, that may involve the Trustee in personal liability, or that may be unduly prejudicial to the rights of Holders not joining in the giving of such direction and may take any other action it deems proper that is not inconsistent with any such direction received from Holders. In addition, the Trustee will not be required to expend its own funds in following such direction if it does not believe that reimbursement or satisfactory indemnification and/or security and/or prefunding is assured to it.

A Holder may not pursue or institute any proceeding, judicial or otherwise, with respect to the Indenture or the Notes, or for the appointment of a receiver or trustee, or for any other remedy under the Indenture or the Notes, unless:

(a) the Holder has previously given the Trustee written notice of a continuing Event of Default;

(b) the Holders of at least 25% in aggregate principal amount of outstanding Notes make a written request to the Trustee to pursue the remedy;

(c) such Holder or Holders offer the Trustee indemnity and/or security and/or pre-funding satisfactory to the Trustee against any costs, liability or expense to be incurred in compliance with such request;

(d) the Trustee does not comply with the request within 60 days after receipt of the request and the offer of indemnity and/or security and/or pre-funding; and

(e) during such 60-day period, the Holders of a majority in aggregate principal amount of the outstanding Notes do not give the Trustee a direction that is inconsistent with the request.

However, such limitations do not apply to the right of any Holder of a Note to receive payment of the principal of, premium, if any, or interest, and Additional Amounts, if any, on, such Note or to bring suit for the enforcement of any such payment, on or after the due date expressed in the Notes, which right will not be impaired or affected without the consent of the Holder.

Officers of the Company must certify to the Trustee in writing, on or before a date not more than 120 calendar days after the end of each fiscal year, that a review has been conducted of the activities of the Company and its Subsidiaries and PTFI and the Company's performance under the Indenture and the Notes and that the Company has fulfilled all obligations thereunder, or, if there has been a default in the fulfillment of any such obligation, specifying each such default and the nature and status thereof. The Company will also be obligated to notify the Trustee in writing of any default or defaults in the performance of any covenants or agreements under the Indenture. See "— Provision of Financial Statements and Reports."

The Trustee and the Agents need not do anything to ascertain whether any Event of Default has occurred or is continuing and will not be responsible to Holders or any other person for any loss arising from any failure by it to do so, and the Trustee or the Agents may assume that no such event has occurred and that the Company is performing all its obligations under the Indenture and the Notes unless the Trustee has received written notice of the occurrence of such event or facts establishing that an Event of Default has occurred or the Company is not performing all of its obligations under the Indenture and the Notes. The Trustee is entitled to rely on any Opinion of Counsel or Officer's Certificate regarding whether an Event of Default has occurred.

Consolidation, Merger and Sale of Assets

The Company will not consolidate with, or merge with or into, another Person, permit any Person to merge with or into it, or sell, convey, transfer, lease or otherwise dispose of all or substantially all of its properties and

assets, computed on a consolidated basis with its Subsidiaries (as an entirety or substantially an entirety in one transaction or a series of related transactions), unless:

(a) the Company will be the continuing Person, or the Person (if other than the Company) formed by such consolidation or merger or that acquired or leased such property and assets (the "**Surviving Person**") will be a corporation organized and validly existing under the laws of the jurisdiction in which the Company is organized and will expressly assume, by a supplemental indenture to the Indenture, executed and delivered to the Trustee, all the obligations of the Company under the Indenture and the Notes (including, if applicable, pursuant to the Escrow Agreement), including the obligation to pay Additional Amounts, and under the Escrow Agreement, and the Indenture and the Notes and the Escrow Agreement will remain in full force and effect;

(b) immediately after giving effect to such transaction, no Default or Event of Default will have occurred and be continuing; and

(c) the Company delivers to the Trustee an Officer's Certificate and an Opinion of Counsel, in each case stating that such consolidation, merger or transfer and the relevant supplemental indenture (and, if applicable, any documentation in respect of the Escrow Agreement) complies with this provision and that all conditions precedent provided for in the Indenture relating to such transaction have been complied with and that the relevant supplemental indenture is enforceable.

For purposes of this covenant, the conveyance, transfer or lease of all or substantially all of the property or assets of one or more Subsidiaries of the Company, which constitutes all or substantially all of the property or assets of the Company and its Subsidiaries on a consolidated basis, shall be deemed to be the transfer of all or substantially all of the property or assets of the Company.

Although there is a limited body of case law interpreting the phrase "substantially all," there is no precise established definition of the phrase under applicable law. Accordingly, in certain circumstances there may be a degree of uncertainty as to whether a particular transaction would involve "all or substantially all" of the property or assets of a Person.

The foregoing provisions would not necessarily afford Holders protection in the event of highly-leveraged or other transactions involving the Company that may adversely affect Holders.

Payments for Consents

The Company will not, and will not permit any of its Subsidiaries or PTFI to, directly or indirectly, pay or cause to be paid any consideration, whether by way of interest, fee or otherwise, to any Holder for or as an inducement to any consent, waiver or amendment of any of the terms or provisions of the Indenture or the Notes, unless such consideration is offered to be paid or is paid to all Holders that consent, waive or agree to amend such term or provision within the time period set forth in the solicitation documents relating to such consent, waiver or amendment. Notwithstanding the foregoing, in any offer or payment of consideration for, or as an inducement to, any consent, waiver or amendment of any of the terms or provisions of the Indenture or the Notes in connection with an exchange offer, the Company and any of its Subsidiaries and PTFI may exclude (a) holders or beneficial owners of the Notes that are not qualified institutional buyers as defined in Rule 144A under the Securities Act, and (b) holders or beneficial owners of the Notes in any jurisdiction where the inclusion of such holders or beneficial owners would require the Company or any of its Subsidiaries or PTFI to comply with the registration requirements or other similar requirements under any securities laws of such jurisdiction, or the solicitation of such consent, waiver or amendment from, or the granting of such consent or waiver, or the approval of such amendment by, holders or beneficial owners in such jurisdiction would be unlawful, in each case as determined by the Company in its sole discretion.

Defeasance

Defeasance and Discharge

The Indenture will provide that the Company will be deemed to have paid and will be discharged from any and all obligations in respect of the Notes on the 183rd day after the deposit referred to below and payments of

all amounts due to the Trustee were made, and the provisions of the Indenture will no longer be in effect with respect to the Notes (except for, among other matters, certain obligations to register the transfer or exchange of the Notes, to replace stolen, lost or mutilated Notes, to maintain paying agencies and to hold monies for payment in trust and to pay Additional Amounts) if, among other things:

(a) the Company has (i) deposited with the Trustee, in trust, cash in U.S. dollars, U.S. Government Obligations or a combination thereof that through the payment of interest, premium, if any, and principal in respect thereof in accordance with their terms will provide money in an amount sufficient to pay the principal of, premium, if any, and accrued interest on the Notes on the Stated Maturity of such payments in accordance with the terms of the Indenture and the Notes and (ii) delivered to the Trustee (x) a certificate of an internationally recognized firm of independent accountants to the effect that the amount deposited by the Company is sufficient to provide payment for the principal of, premium, if any, and accrued interest on, the Notes on the Stated Maturity of such payment in accordance with the terms of the Indenture and the Notes and (y) an Opinion of Counsel to the effect that the Holders have a valid, perfected, exclusive security in such trust;

(b) the Company has delivered to the Trustee either (x) an Opinion of Counsel of recognized standing with respect to U.S. federal income tax matters which is based on a change in applicable U.S. federal income tax law occurring after the Original Issue Date to the effect that beneficial owners will not recognize income, gain or loss for U.S. federal income tax purposes as a result of the Company's exercise of its option under this "— Defeasance and Discharge" provision and will be subject to U.S. federal income tax on the same amount and in the same manner and at the same time as would have been the case if such deposit, defeasance and discharge had not occurred or (y) a ruling directed to the Company or the Trustee received from the U.S. Internal Revenue Service to the same effect as the aforementioned Opinion of Counsel;

(c) the Company has delivered to the Trustee an Officer's Certificate stating that the deposit was not made by it with the intent of preferring the Holders over any other of its creditors or with the intent of defeating, hindering, delaying or defrauding any other of its creditors or others; and

(d) immediately after giving effect to such deposit on a pro forma basis, no Event of Default, or event that after the giving of notice or lapse of time or both would become an Event of Default, will have occurred and be continuing on the date of such deposit or during the period ending on the 183rd day after the date of such deposit, and such defeasance will not result in a breach or violation of, or constitute a default under, any other agreement or instrument to which the Company or any Material Subsidiary or PTFI is a party or by which the Company or any Material Subsidiary or PTFI is bound.

Amendments and Waivers

Amendments Without Consent of Holders

The Indenture and the Escrow Agreement may be amended or supplemented, without the consent of any Holder of Notes, to:

(a) cure any ambiguity, defect or inconsistency in the Indenture or the Notes or the Escrow Agreement, provided that any such amendment may not adversely affect the interests of the Holder;

(b) comply with the provisions described under "Certain Covenants — Consolidation, Merger and Sale of Assets";

(c) evidence and provide for the acceptance of appointment by a successor Trustee;

(d) add any guarantor or guarantee with respect to the Notes;

(e) provide for the issuance of Additional Notes in accordance with the limitations set forth in the Indenture;

(f) effect any change in any other case where a supplemental indenture to the Indenture is required or permitted to be entered into pursuant to the provisions of the Indenture without the consent of any Holder;

(g) effect any changes to the Indenture in a manner necessary to comply with the procedures of DTC;

(h) provide collateral to secure the Notes;

(i) make any other change that does not materially and adversely affect the rights of any Holder of Notes;

(j) comply with the rules of any applicable securities depositary; or

(k) conform the text of the Indenture or the Notes to any provision of this "Description of the 2048 Notes" to the extent that such provision in this "Description of the 2048 Notes" was intended to be a verbatim recitation of a provision of the Indenture or the Notes.

Amendments With Consent of Holders

Amendments of the Indenture and the Escrow Agreement may be made by the Company and the Trustee with the consent of the Holders of not less than a majority in aggregate principal amount of the outstanding Notes, and the holders of a majority in aggregate principal amount of the outstanding Notes may waive future compliance by the Company with any provision of the Indenture or the Notes or the Escrow Agreement, *provided that* no such modification, amendment or waiver may, without the consent of each Holder:

(a) change the Stated Maturity of the principal of, or any installment of interest on, any Note;

(b) reduce the principal amount of, or premium, if any, or interest on, any Note or reduce the Special Mandatory Redemption Price;

(c) change the currency, time or place of payment of principal of, or premium, if any, or interest on, any Note;

(d) impair the right to institute suit for the enforcement of any payment on or after the Stated Maturity (or, in the case of a redemption, on or after the redemption date) of any Note;

(e) reduce the above stated percentage of outstanding Notes the consent of whose Holders is necessary to modify or amend the Indenture, to waive compliance with certain provisions of the Indenture or to waive certain defaults;

(f) waive a default in the payment of principal of, premium, if any, or interest on the Notes;

(g) amend, change or modify (i) the obligation of the Company in respect of the due and punctual payment of the principal of, premium, if any, or interest on, any Note; (ii) the obligation of the Company to pay Additional Amounts, or (iii) the ranking of the Notes, in each case, in a manner that adversely affects the Holders; or

(h) reduce the premium payable upon the redemption or repurchase of any Note, or change the time and manner in which any Note may be redeemed or repurchased as described above under the captions "— Repurchase of Notes Upon a Change of Control" or "— Redemption for Taxation Reasons," except that the 75.0% threshold in the definition of the term "Change of Control" in the Indenture may, prior to the occurrence of a Change of Control, be waived modified or amended with the consent of the holders of not less than a majority in aggregate principal amount of the Notes.

No Personal Liability of Incorporators, Shareholders, Directors, Commissioners, Officers or Employees

No recourse for the payment of the principal of, premium, if any, or interest on any of the Notes or for any claim based thereon or otherwise in respect thereof, and no recourse under or upon any obligation, covenant or agreement of the Company in the Indenture, or in any of the Notes or because of the creation of any Debt represented thereby, will be had against any incorporator, shareholder, director, commissioner, officer, employee or controlling person of the Company or of any successor Person thereof. Each Holder, by accepting the Notes, waives and releases all such liability. The waiver and release are part of the consideration for the issuance of the Notes. Such waiver may not be effective to waive liabilities under the applicable securities laws.

Concerning the Trustee and the Agents

Except during the continuance of an Event of Default, the Trustee will not be liable, except for the performance of such duties as are specifically set forth in the Indenture and the Escrow Agreement. If an Event of Default has occurred and is continuing, the Trustee will use the same degree of care and skill in its exercise of the rights and powers vested in it under the Indenture as a prudent person would exercise under the circumstances in the conduct of such person's own affairs.

The Trustee and the Agents assume no responsibility for the accuracy or completeness of the information concerning the Company or its Affiliates or any other party referenced in this Offering Memorandum or for any failure of the Company or any other party to disclose events that may have occurred or may affect the completeness or accuracy of such information.

The Trustee is permitted to engage in other transactions with the Company and its Affiliates and shall not be obligated to account for any profits therefrom, and no Trustee and no director or officer of any corporation being a Trustee hereof shall by reason of the fiduciary position of such Trustee be in any way precluded from making any contracts or entering into any transactions in the ordinary course of business with the Company, or any person or body corporate directly or indirectly associated with the Company, or from accepting the trusteeship of any other debenture stock, debentures or securities of the Company or any person or body corporate directly or indirectly associated with the Company, and neither the Trustee nor any such director or officer shall be accountable to the Holders or the Company, or any person or body corporate directly or indirectly associated with the Company, for any profit, fees, commissions, interest, discounts or share of brokerage earned, arising or resulting from any such contracts or transactions and the Trustee and any such director or officer shall also be at liberty to retain the same for its or his own benefit, *provided that* if such Trustee of any such director or officer acquires any conflicting interest that may have a materially prejudicial effect upon the Holders, it must eliminate such conflict or resign.

The Trustee shall not be responsible for the performance by any other person appointed by the Company in relation to the Notes and, unless notified in writing to the contrary, shall assume that the same are being duly performed. The Trustee shall not be liable to any Holders or any other person for any action taken by the Holders or the Trustee in accordance with the instructions of the Holders. The Trustee shall be entitled to rely on any written direction of the Holders which has been duly given by the Holders of the requisite principal amount of the Notes outstanding.

Neither the Trustee nor the Agents will be responsible for making calculations or for verifying calculations performed by the Company or any other persons unless otherwise specified in the Indenture.

The Trustee will be under no obligation to exercise any rights or powers conferred under the Indenture for the benefit of the Holders, unless such Holders have offered to the Trustee and, if the Trustee accepts such offer, the Trustee has received, indemnity and/or security and/or pre-funding satisfactory to the Trustee against any loss, liability or expense. In the exercise of its duties, the Trustee shall not be responsible for the verification of the accuracy or completeness of any certification submitted to it by the Company and is entitled to rely exclusively on the certification contained therein. Notwithstanding anything described herein, the Trustee has no duty to monitor the performance or compliance of the Company in the fulfillment of its obligations under the Indenture and the Notes.

For so long as the Notes are listed on the SGX-ST and the rules of the SGX-ST so require, in the event that a Global Note is exchanged for definitive Notes, the Company shall appoint and maintain a paying agent in Singapore, where the definitive Notes may be presented or surrendered for payment or redemption. In addition, in the event that a Global Note is exchanged for definitive Notes, an announcement of such exchange shall be made by or on behalf of the Company through the SGX-ST and such announcement will include all material information with respect to the delivery of the definitive Notes, including details of the paying agent in Singapore.

Book-Entry; Delivery and Form

The certificates representing the Notes will be issued in fully registered form without interest coupons. Notes sold in offshore transactions in reliance on Regulation S under the Securities Act will initially be represented by one or more permanent global notes in definitive, fully registered form without interest coupons (each, a "**Regulation S Global Note**") and will be deposited with The Bank of New York Mellon as custodian for, and registered in the name of a nominee of, DTC for the accounts of Euroclear and Clearstream. Notes sold in reliance on Rule 144A will be represented by one or more permanent global notes in definitive, fully registered form without interest coupons (each, a "**Restricted Global Note**"; and together with the Regulation S Global Notes, the "**Global Notes**") and will be deposited with The Bank of New York Mellon as custodian for, and registered in the name of a nominee of, DTC.

Each Global Note (and any Notes issued for exchange therefor) will be subject to certain restrictions on transfer set forth therein as described under "Transfer Restrictions."

Notes transferred to institutional "accredited investors" (as defined in Rule 501(a) (1), (2), (3) or (7) of Regulation D under the Securities Act (an "**Institutional Accredited Investor**")) who are not qualified institutional buyers ("**Non-Global Purchasers**") will be in registered form without interest coupons ("**Certificated Notes**"). Upon the transfer of Certificated Notes initially issued to a Non-Global Purchaser to a qualified institutional buyer or in accordance with Regulation S, such Certificated Notes will, unless the relevant Global Note has previously been exchanged in whole for Certificated Notes, be exchanged for an interest in a Global Note. For a description of the restrictions on the transfer of Certificated Notes, see "Transfer Restrictions."

Ownership of beneficial interests in a Global Note will be limited to persons who have accounts with DTC ("**participants**") or persons who hold interests through participants. Ownership of beneficial interests in a Global Note will be shown on, and the transfer of that ownership will be effected only through, records maintained by DTC or its nominee (with respect to interests of participants) and the records of participants (with respect to interests of persons other than participants). Beneficial owners may hold their interests in a Global Note directly through DTC if they are participants in such system, or indirectly through organizations which are participants in such system.

Euroclear and Clearstream will hold interests in the Global Notes on behalf of their participants through DTC.

So long as DTC, or its nominee, is the registered owner or holder of a Global Note, DTC or such nominee, as the case may be, will be considered the sole owner or holder of the Notes represented by such Global Note for all purposes under the Indenture and the Notes. No beneficial owner of an interest in a Global Note will be able to transfer that interest except in accordance with DTC's applicable procedures, in addition to those provided for under the Indenture and, if applicable, those of Euroclear and Clearstream.

Payments of the principal of, premium, if any, and interest on, a Global Note, will be made to DTC or its nominee, as the case may be, as the registered owner thereof. Neither the Company, the Trustee nor the Paying Agent will have any responsibility or liability for any aspect of the records relating to or payments made on account of beneficial ownership interests in a Global Note or for maintaining, supervising or reviewing any records relating to such beneficial ownership interests.

The Company expects that DTC or its nominee, upon receipt of any payment of principal of, premium, if any, or interest in respect of a Global Note, will credit participants' accounts with payments in amounts proportionate to their respective beneficial interests in the principal amount of such Global Note as shown on the records of DTC or its nominee. The Company also expects that payments by participants to owners of beneficial interests in such Global Note held through such participants will be governed by standing instructions and customary practices, as is now the case with securities held for the accounts of customers registered in the names of nominees for such customers. Such payments will be the responsibility of such participants.

The Company expects that DTC will take any action permitted to be taken by a holder of Notes (including the presentation of Notes for exchange as described below) only at the direction of one or more participants to

whose account the DTC interests in a Global Note is credited and only in respect of such portion of the aggregate principal amount of Notes as to which such participant or participants has or have given such direction. However, if there is an Event of Default under the Notes, DTC will exchange the applicable Global Note for Certificated Notes, which it will distribute to its participants and which may be legended as set forth under the heading "Transfer Restrictions."

Although DTC, Euroclear and Clearstream are expected to follow the foregoing procedures in order to facilitate transfers of interests in a Global Note among participants of DTC, Euroclear and Clearstream, they are under no obligation to perform or continue to perform such procedures, and such procedures may be discontinued at any time. None of the Company, the Trustee or the Paying Agent will have any responsibility for the performance by DTC, Euroclear or Clearstream or their respective participants or indirect participants of their respective obligations under the rules and procedures governing their operations.

If DTC is at any time unwilling or unable to continue as a depositary for the Global Notes and a successor depositary is not appointed by the Company within 90 days, the Company will issue Certificated Notes in registered form, which may bear the legend referred to under "Transfer Restrictions," in exchange for the Global Notes. Holders of an interest in a Global Note may receive Certificated Notes, which may bear the legend referred to under "Transfer Restrictions," in accordance with the DTC's rules and procedures in addition to those provided for under the Indenture.

The Clearing Systems

General

DTC, Euroclear and Clearstream have advised the Company as follows:

DTC: DTC is a limited-purpose trust company organized under the laws of the State of New York, a "banking organization" within the meaning of New York Banking Law, a member of the Federal Reserve System, a "clearing corporation" within the meaning of the New York Uniform Commercial Code, and a "clearing agency" registered pursuant to the provisions of Section 17A of the Exchange Act. DTC was created to hold securities of its participants and to facilitate the clearance and settlement of securities transactions among its participants in such securities through electronic book-entry changes in accounts of its participants, thereby eliminating the need for physical movement of securities certificates. DTC's participants include securities brokers and dealers, banks, trust companies, clearing corporations, and certain other organizations, some of whom own DTC, and may include the initial purchaser. Indirect access to the DTC system is also available to others that clear through or maintain a custodial relationship with a DTC participant, either directly or indirectly ("**indirect participants**"). Transfers of ownership or other interests in Notes in DTC may be made only through DTC participants. In addition, beneficial owners of Notes in DTC will receive all distributions of principal of, premium, if any, and interest on the Notes from the Trustee through such DTC participant.

Euroclear and Clearstream: Euroclear and Clearstream hold securities for participating organizations and facilitate the clearance and settlement of securities transactions between their respective participants through electronic book-entry changes in accounts of such participants. Euroclear and Clearstream provide to their participants, among other things, services for safekeeping, administration, clearance and settlement of internationally-traded securities and securities lending and borrowing. Euroclear and Clearstream interface with domestic securities markets. Euroclear and Clearstream participants are financial institutions such as underwriters, securities brokers and dealers, banks, trust companies and certain other organizations. Indirect access to Euroclear or Clearstream is also available to others such as banks, brokers, dealers and trust companies that clear through or maintain a custodial relationship with a Euroclear or Clearstream participant, either directly or indirectly.

Initial Settlement

Investors' interests in Notes held in book-entry form by DTC will be represented through financial institutions acting on their behalf as direct and indirect participants in DTC. As a result, Euroclear and Clearstream will hold positions on behalf of their participants through DTC.

Investors electing to hold their Notes through DTC (other than through accounts at Euroclear or Clearstream) must follow the settlement practices applicable to United States corporate debt obligations. The securities custody accounts of investors will be credited with their holdings against payment in same day funds on the settlement date.

Investors electing to hold their Notes through Euroclear or Clearstream accounts will follow the settlement procedures applicable to conventional Eurobonds in registered form. Notes will be credited to the securities custody accounts of Euroclear Holders and of Clearstream Holders on the Business Day following the settlement date against payment for value on the settlement date.

Secondary Market Trading

Secondary market trading between DTC participants will occur in the ordinary way in accordance with DTC rules. Secondary market trading between Clearstream participants and/or Euroclear participants will occur in the ordinary way in accordance with the applicable rules and operating procedures of Clearstream and Euroclear and will be settled using the procedures applicable to conventional eurobonds.

Cross-market transfers between persons holding directly or indirectly through DTC, on the one hand, and directly or indirectly through Clearstream participants or Euroclear participants, on the other, will be effected in DTC in accordance with DTC rules on behalf of the relevant European international clearing system by its U.S. depositary; however, such cross-market transactions will require delivery of instructions to the relevant European international clearing system by the counterparty in such system in accordance with its rules and procedures and within its established deadlines (European time). The relevant European international clearing system will, if a transaction meets its settlement requirements, deliver instructions to its U.S. depositary to take action to effect final settlement on its behalf by delivering or receiving Notes in DTC, and making or receiving payment in accordance with normal procedures for same-day funds settlement applicable to DTC. Clearstream participants and Euroclear participants may not deliver instructions directly to the U.S. depositaries.

Because of time zone differences, credits of Notes received in Clearstream or Euroclear as a result of a transaction with a DTC participant will be made during subsequent securities settlement processing and dated the Business Day following the DTC settlement date. Such credits or any transactions in such Notes settled during such processing will be reported to the relevant Clearstream participants or Euroclear participants on such Business Day. Cash received in Clearstream or Euroclear as a result of sales of Notes by or through a Clearstream participant or a Euroclear participant to a DTC participant will be received with value on the DTC settlement date but will be available in the relevant Clearstream or Euroclear cash account only as of the Business Day following settlement in DTC.

For so long as the Notes are listed on the SGX-ST and the rules of the SGX-ST so require, the Notes, if traded on the SGX-ST, will be traded in a minimum board lot size of S$200,000 (or its equivalent in foreign currencies). Accordingly, the Notes, if traded on the SGX-ST, will be traded in a minimum board lot size of US$200,000.

Notices

All notices or demands required or permitted by the terms of the Notes or the Indenture to be given to or by the Holders are required to be in writing and may be given or served by being sent by prepaid courier or by being deposited, first-class postage prepaid, in the United States mails (if intended for the Company) addressed to the Company (if intended for the Trustee), at the corporate trust office of the Trustee; and (if intended for any Holder) addressed to such Holder at such Holder's last address as it appears in the Note register (the "**Register**").

Any such notice or demand will be deemed to have been sufficiently given or served when so sent or deposited and, if to the Holders, when delivered in accordance with the applicable rules and procedures of DTC. Any such notice will be deemed to have been delivered on the day such notice is delivered to DTC or if by mail, when so sent or deposited.

Language

The Notes, the Indenture and the Escrow Agreement will be executed in both English and Bahasa Indonesia to comply with Law 24 of 2009 regarding Flag, Language, National Emblem and National Anthem enacted July 9, 2009, and in the event of any inconsistency between the English and Bahasa Indonesia versions of these documents, the English version shall prevail. See "Risk Factors — Risks Relating to the Notes — The Indenture and certain other documents entered into in connection with the issue of the Notes thereunder will also be prepared in Bahasa Indonesia as required under Indonesian law. However, we cannot assure you that, in the event of inconsistencies between the Bahasa Indonesia and English language versions of these documents, an Indonesian court would hold that the English language versions of such documents would prevail."

Consent to Jurisdiction; Service of Process

The Company will irrevocably (i) submit to the non-exclusive jurisdiction of any U.S. federal or New York state court located in the Borough of Manhattan, The City of New York in connection with any suit, action or proceeding arising out of, or relating to, the Notes or the Indenture or any transaction contemplated thereby and (ii) designate and appoint Law Debenture Corporate Services Inc., for receipt of service of process in any such suit, action or proceeding.

Governing Law

Each of the Notes and the Indenture provides that such instrument will be governed by, and construed in accordance with, the laws of the State of New York.

Definitions

Set forth below are defined terms used in the covenants and other provisions of the Indenture. Reference is made to the Indenture for other capitalized terms used in this "Description of the 2048 Notes" for which no definition is provided.

"**Affiliate**" means, with respect to any Person, any other Person (a) directly or indirectly controlling, controlled by, or under direct or indirect common control with, such Person or (b) who is a commissioner, director or officer of such Person or any subsidiary of such Person or of any Person referred to in clause (a) of this definition. For purposes of this definition, "**control**" (including, with correlative meanings, the terms "**controlling**," "**controlled by**" and "**under common control with**"), as applied to any Person, means the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of such Person, whether through the ownership of voting securities, by contract or otherwise.

"**Business Day**" means any day which is not a Saturday, Sunday, legal holiday or other day on which banking institutions in The City of New York, Singapore or Indonesia or the city where the corporate trust office of the Trustee is then located are authorized by law or governmental regulation to close; *provided that*, solely for purposes of determining the date of any payment to be made on any Note, "**Business Day**" means any day which is not a Saturday, Sunday, legal holiday or other day on which banking institutions in The City of New York, Singapore, Indonesia or the place in which payments on the Notes are to be made are authorized by law or governmental regulation to close.

"**Capital Stock**" means, with respect to any Person, any and all shares, interests, participations or other equivalents (however designated, whether voting or non-voting) in equity of such Person, whether outstanding on the Original Issue Date or issued thereafter.

"**Change of Control**" means the occurrence of any event resulting in the government of the Republic of Indonesia ceasing to directly own and control at least 75.0% of the issued and paid-up shares of the Company.

"**Clearstream**" means Clearstream Banking, société anonyme or any successor thereof.

"**Commission**" means the U.S. Securities and Exchange Commission, as from time to time constituted under the Exchange Act, or if at any time after the execution of this instrument such Commission is not existing, then the body performing such duties on such date.

"**Debt**" means, with respect to any Person as of any date of determination, without duplication, (a) all obligations, contingent or otherwise, of such Person for borrowed money, (b) all obligations of such Person evidenced by bonds, notes or other similar instruments, (c) all obligations of such Person in respect of letters of credit or other similar instruments, (d) all obligations of such Person to pay the unpaid purchase price of any property or service, (e) all obligations secured by a Lien on any property or asset of such Person, whether or not such obligations are assumed by such Person and (f) all obligations of others guaranteed by such Person to the extent of such guarantees and, for clauses (a), (b), (c) and (e), which has a final maturity of one year or more. The amount of Debt of any Person as of any date of determination shall be the outstanding balance at such date of all unconditional obligations as described above, the maximum liability of such Person for any such contingent obligations at such date and, in the case of clause (d), the lesser of the fair market value (as determined in good faith by the board of directors of such Person) at such date of the property or asset of such Person subject to a Lien securing the obligations of others and the amount of such obligations secured.

"**Default**" means any event that is, or after notice or passage of time or both would be, an Event of Default.

"**Dollar Equivalent**" means, with respect to any monetary amount in a currency other than U.S. dollars, at any time for the determination thereof, the amount of U.S. dollars obtained by converting such foreign currency involved in such computation into U.S. dollars at the base rate for the purchase of U.S. dollars with the applicable foreign currency as quoted by the Federal Reserve Bank of New York on the date of determination.

"**DTC**" means The Depository Trust Company and its successors.

"**Escrow Accounts**" means the escrow accounts designated to hold the net proceeds of the offering of the Notes as per the terms of the Escrow Agreement and held by the Company with any one or more of the following: PT Bank Rakyat Indonesia (Persero) Tbk., PT Bank Mandiri (Persero) Tbk. and PT Bank Negara Indonesia (Persero) Tbk.; and each such account an "**Escrow Account**."

"**Euroclear**" means Euroclear Bank S.A./N.V. or any successor thereof.

"**GAAP**" means generally accepted accounting principles in Indonesia as in effect from time to time.

"**guarantee**" means any obligation, contingent or otherwise, of any Person directly or indirectly guaranteeing any Debt or other obligation of any other Person and, without limiting the generality of the foregoing, any obligation, direct or indirect, contingent or otherwise, of such Person (1) to purchase or pay (or advance or supply funds for the purchase or payment of) such Debt or other obligation of such other Person (whether arising by virtue of partnership arrangements, or by agreements to keep-well, to purchase assets, goods, securities or services, to take-or-pay, or to maintain financial statement conditions or otherwise) or (2) entered into for purposes of assuring in any other manner the obligee of such Debt or other obligation of the payment thereof or to protect such obligee against loss in respect thereof (in whole or in part); *provided that* the term "**guarantee**" will not include endorsements for collection or deposit in the ordinary course of business. The term "**guarantee**" used as a verb has a corresponding meaning.

"**Holder**" means the Person in whose name a Note is registered in the Register.

"**Lien**" means any mortgage, pledge, fiduciary, security interest, encumbrance, lien or charge of any kind (including, without limitation, any conditional sale or other title retention agreement or lease in the nature thereof or any agreement to create any mortgage, pledge, security interest, lien, charge, easement or encumbrance of any kind but excluding liens arising by operation of law).

"**Material Subsidiary**" means at any time a Subsidiary of the Company:

(a) whose total revenues (consolidated in the case of a Subsidiary which itself has Subsidiaries) or whose total assets (consolidated in the case of a Subsidiary which itself has Subsidiaries) represent in each case (or, in the case of a Subsidiary acquired after the end of the financial period to which the then latest audited consolidated accounts of the Company and its Subsidiaries relate, are equal to) not less than 5.0% of the consolidated total revenues, or, as the case may be, consolidated total assets, of the Company and its Subsidiaries taken as a whole, all as calculated respectively by

reference to the then latest audited accounts (consolidated or, as the case may be, unconsolidated) of such Subsidiary and the then latest audited consolidated accounts of the Company and its Subsidiaries, *provided that*, in the case of a Subsidiary of the Company acquired after the end of the financial period to which the then latest audited consolidated accounts of the Company and its Subsidiaries relate, the reference to the then latest audited consolidated accounts of the Company and its Subsidiaries for the purposes of the calculation above shall, until consolidated accounts for the financial period in which the acquisition is made have been prepared and audited as aforesaid, be deemed to be a reference to such first-mentioned accounts as if such Subsidiary had been shown in such accounts by reference to its then latest relevant audited accounts, adjusted as deemed appropriate by the Company; or

(b) to which is transferred the whole or substantially the whole of the undertaking and assets of a Subsidiary of the Company which immediately prior to such transfer is a Material Subsidiary, *provided that* the transferor Subsidiary shall upon such transfer forthwith cease to be a Material Subsidiary and the transferee Subsidiary shall cease to be a Material Subsidiary pursuant to this subparagraph (b) on the date on which the consolidated accounts of the Company and its Subsidiaries for the financial period current at the date of such transfer have been prepared and audited as aforesaid but so that such transferor Subsidiary or such transferee Subsidiary may be a Material Subsidiary on or at any time after the date on which such consolidated accounts have been prepared and audited as aforesaid by virtue of the provisions of subparagraph (a) above or, prior to or after such date, by virtue of any other applicable provision of this definition; or

(c) to which is transferred an undertaking or assets which, taken together with the undertaking or assets of the transferee Subsidiary, generated (or, in the case of the transferee Subsidiary being acquired after the end of the financial period to which the then latest audited consolidated accounts of the Company and its Subsidiaries relate, generate total revenues equal to) not less than 5.0% of the consolidated total revenues of the Company, or represent (or, in the case aforesaid, are equal to) not less than 5.0% of the consolidated total assets of the Company and its Subsidiaries taken as a whole, all as calculated as referred to in subparagraph (a) above, *provided that* the transferor Subsidiary (if a Material Subsidiary) shall upon such transfer forthwith cease to be a Material Subsidiary unless immediately following such transfer its undertaking and assets generate (or, in the case aforesaid, generate total revenues equal to) not less than 5.0% of the consolidated total revenues of the Company, or its assets represent (or, in the case aforesaid, are equal to) not less than 5.0% of the consolidated total assets of the Company and its Subsidiaries taken as a whole, all as calculated as referred to in subparagraph (a) above, and the transferee Subsidiary shall cease to be a Material Subsidiary pursuant to this subparagraph (c) on the date on which the consolidated accounts of the Company and its Subsidiaries for the financial period current at the date of such transfer have been prepared and audited but so that such transferor Subsidiary or such transferee Subsidiary may be a Material Subsidiary on or at any time after the date on which such consolidated accounts have been prepared and audited as aforesaid by virtue of the provisions of subparagraph (a) above or, prior to or after such date, by virtue of any other applicable provision of this definition.

"**Offer to Purchase**" means an offer to purchase the Notes by the Company from the Holders commenced by the Company mailing a notice by prepaid courier or first class mail, postage prepaid, to the Trustee and each Holder at its last address appearing in the Register stating:

(a) that the offer is being made pursuant to the provisions of the Indenture described under the caption "Repurchase of Notes Upon a Change of Control" and that all Notes validly tendered will be accepted for payment on a pro rata basis;

(b) the purchase price and the date of purchase (which will be a Business Day no earlier than 30 days nor later than 60 days from the date such notice is mailed) (the "**Offer to Purchase Payment Date**");

(c) that any Note not tendered will continue to accrue interest pursuant to its terms;

(d) that, unless the Company defaults in the payment of the purchase price, any Note accepted for payment pursuant to the Offer to Purchase will cease to accrue interest on and after the Offer to Purchase Payment Date;

(e) that Holders electing to have a Note purchased pursuant to the Offer to Purchase will be required to surrender the Note, together with the form entitled "Option of the Holder to Elect Purchase" on the reverse side of the Note completed, to the Paying Agent at the address specified in the notice prior to the close of business on the Business Day immediately preceding the Offer to Purchase Payment Date;

(f) that Holders will be entitled to withdraw their election if the Paying Agent receives, not later than the close of business on the third Business Day immediately preceding the Offer to Purchase Payment Date, a facsimile transmission or letter setting forth the name of such Holder, the principal amount of Notes delivered for purchase and a statement that such Holder is withdrawing his election to have such Notes purchased;

(g) that Holders whose Notes are being purchased only in part will be issued new Notes equal in principal amount to the unpurchased portion of the Notes surrendered; *provided that* each Note purchased and each new Note issued will be in a principal amount of US$200,000 or integral multiples of US$1,000 in excess thereof; and

(h) the CUSIP number(s) of the Notes.

One (1) Business Day prior to the Offer to Purchase Payment Date, the Company will deposit with the Paying Agent money sufficient to pay the purchase price of all Notes or portions thereof to be accepted by the Company for payment on the Offer to Purchase Payment Date. On the Offer to Purchase Payment Date, the Company will (a) accept for payment on a pro rata basis Notes or portions thereof tendered pursuant to an Offer to Purchase; and (b) deliver, or cause to be delivered, to the Trustee all Notes or portions thereof so accepted together with an Officer's Certificate specifying the Notes or portions thereof accepted for payment by the Company.

The Paying Agent will promptly mail to the Holders the accepted payment in an amount equal to the purchase price, and the Trustee will promptly authenticate and mail to such Holders a new Note equal in principal amount to any unpurchased portion of the Note surrendered; *provided that* each Note purchased and each new Note issued will be in a principal amount of US$200,000 or integral multiples of US$1,000 in excess thereof. The Company will publicly announce the results of an Offer to Purchase as soon as practicable after the Offer to Purchase Payment Date.

The offer is required to contain or incorporate by reference information concerning the business of the Company and its Subsidiaries and PTFI which the Company in good faith believes will assist such Holders to make an informed decision with respect to the Offer to Purchase, including a brief description of the events requiring the Company to make the Offer to Purchase, and any other information required by applicable law to be included therein. The offer is required to contain all instructions and materials necessary to enable such Holders to tender Notes pursuant to the Offer to Purchase.

"**Officer**" means one of the executive officers or directors of the Company.

"**Officer's Certificate**" means a certificate signed by at least one Officer.

"**Opinion of Counsel**" means a written opinion from legal counsel which opinion is reasonably acceptable to the Trustee that meets the requirements of the Indenture; *provided that* legal counsel shall be entitled to rely on a certificate of the Company as to matters of fact.

"**Original Issue Date**" means the date on which the Notes are originally issued under the Indenture.

"**Person**" means any individual, corporation, partnership, limited liability company, joint venture, trust, unincorporated organization or government or any agency or political subdivision thereof.

"**PTFI**" means PT Freeport Indonesia.

"**PTFI Share Acquisition**" means the acquisition by the Company, directly or indirectly, of a 51.2% beneficial equity interest in PTFI, as described in this Offering Memorandum under the caption "Planned Acquisition of Majority Beneficial Stake in PT Freeport Indonesia."

"**PTFI Share Acquisition Agreements**" means, collectively, (i) the Agreement for the Sale and Purchase of PT Rio Tinto Indonesia dated as of September 28, 2018 among the Company, Rio Tinto Indonesian Holdings Limited, Rio Tinto Nominees Limited and Rio Tinto International Holdings Limited; (ii) the PTFI Subscription Agreement dated as of September 27, 2018 among the Company, PTFI and PT Indocopper Investama; and (iii) the PTFI Divestment Agreement dated as of September 27, 2018 among the Company, PTFI, PT Indocopper Investama, Freeport-McMoran, Inc. and International Support LLC (the "**PTFI Divestment Agreement**").

"**PTFI Share Acquisition Closing Date**" means the closing date for the PTFI Share Acquisition, as defined in the PTFI Divestment Agreement.

"**Qualifying PTFI IPO**" means the first offering or listing of shares of PTFI, which complies with (A) the rules and regulations of a Stock Exchange; and (B) the following conditions: (i) it is an offer of shares of PTFI that consists wholly or in part of primary shares and that is made to the public for subscription or sale exclusively for cash, accompanied (or preceded) by the grant of listing of, and permission to deal in, the PTFI shares or depository shares or securities representing the PTFI shares by such Stock Exchange; and (ii) the Company shall have delivered an Officer's Certificate to the Trustee stating that the offer satisfies the conditions in this paragraph and that, immediately after giving effect to such public offering, no Event of Default and no event which, with the giving of notice or the passage of time, or both, would constitute an Event of Default, shall have occurred and be continuing.

"**Securities**" means bonds, debentures, notes or other similar securities having an original maturity of more than one (1) year from its date of issue which (a) are, or are issued with the intention on the part of the issuer thereof that they should be quoted, listed or ordinarily dealt in or traded on any stock exchange, over-the-counter or other securities market, and (b) either (i) are by their terms payable, or confer a right to receive payment, in any currency other than Rupiah or (ii) are denominated in Rupiah and more than 50% of the aggregate principal amount of the offering of such securities is initially distributed outside Indonesia by or with the Company's consent.

"**Stated Maturity**" means, (a) with respect to any Debt, the date specified in such debt security as the fixed date on which the final installment of principal of such Debt is due and payable as set forth in the documentation governing such Debt and (b) with respect to any scheduled installment of principal of or interest on any Debt, the date specified as the fixed date on which such installment is due and payable as set forth in the documentation governing such Debt.

"**Stock Exchange**" means The Indonesia Stock Exchange or such other internationally recognized stock exchange approved by the shareholders of PTFI and notified in writing to the Trustee.

"**Subsidiary**" means (a) any corporation or other entity of which securities or other ownership interests having ordinary voting power to elect a majority of the board of directors or other persons performing similar functions are at the time directly or indirectly owned by the Company or (b) any subsidiary subject to consolidation with the Company's financial statements under GAAP.

"**U.S. Government Obligations**" means securities that are (a) direct obligations of the United States of America for the payment of which its full faith and credit is pledged or (b) obligations of a Person controlled or supervised by and acting as an agency or instrumentality of the United States of America the payment of which is unconditionally guaranteed as a full faith and credit obligation by the United States of America, which, in either case, are not callable or redeemable at the option of the issuer thereof at any time prior to the Stated Maturity of the Notes, and will also include a depository receipt issued by a bank or trust company as custodian with respect to any such U.S. Government Obligation or a specific payment of interest on or principal of any such U.S. Government Obligation held by such custodian for the account of the holder of a depository receipt;

provided that (except as required by law) such custodian is not authorized to make any deduction from the amount payable to the holder of such depository receipt from any amount received by the custodian in respect of the U.S. Government Obligation or the specific payment of interest on or principal of the U.S. Government Obligation evidenced by such depository receipt.

TAXATION

The following summary is based on applicable tax laws, administrative guidelines and circulars, and practices in effect on the date of this Offering Memorandum, and is subject to changes, including changes that could have retroactive effect. The following summary does not take into account or discuss the tax laws of any jurisdiction other than the ones described below. The following summary does not purport to be a comprehensive description of all of the tax considerations that may be relevant to a decision to purchase, own or dispose of the Notes and does not purport to deal with the tax consequences applicable to all categories of investors, some of which may be subject to special rules. Prospective purchasers in all jurisdictions are advised to consult their own tax advisors as to tax consequences applicable to the acquisition, ownership and disposition of the Notes, including, in particular, the effect of any foreign, state or local tax laws to which they are subject.

Indonesian Taxation

The following is a summary of the principal Indonesian tax consequences relevant to prospective holders of the Notes based on Indonesian tax laws and their implementing regulations in force as of the date of this Offering Memorandum. The summary does not address any laws other than the tax laws of the Republic of Indonesia. Prospective investors in all jurisdictions are advised to consult their own tax advisors as to other tax consequences of the acquisition, ownership and disposition of the Notes. The summary represents a general guide only. The summary does not constitute tax advice for a particular individual or corporate holder of the Notes. The holders of the Notes should seek independent tax advice relevant to their facts and circumstances.

General

In general, an individual is considered to be a non-resident of Indonesia if the individual does not reside in Indonesia, does not stay in Indonesia for more than 183 days within a 12-month period, or is present in Indonesia during a tax year but does not intend to reside in Indonesia. A corporation will be considered a non-resident of Indonesia if the entity is not established or domiciled in Indonesia. Non-resident individuals and non-resident corporates are further classified into those that have a permanent establishment in Indonesia and those that do not. In determining the tax residence or existence of a permanent establishment of an individual or a corporation consideration will also be given to the provision of any applicable agreement for the avoidance of double taxation (a "tax treaty"). In this section, both a non-resident individual and a non-resident corporation will be referred to as "non-resident taxpayers."

Corporate resident taxpayers including permanent establishments are generally subject to the Indonesian corporate income tax at 25.0% on the taxable income. The taxable income for permanent establishments will include all income, including but not limited to foreign source income directly or indirectly attributable to such permanent establishment. In addition, the after tax taxable income of a permanent establishment in Indonesia is subject to a branch profits tax at the rate of 20.0% (which may be reduced according to the applicable tax treaty). Further, individual resident taxpayers are subject to income tax at progressive rates at the maximum of 30.0% on the taxable income.

Non-resident taxpayers who receive Indonesian sourced income, including interest, are generally subject to a final withholding income tax at the rate of 20.0%. This withholding tax may be reduced or exempted under the provisions of the applicable tax treaty. If the income is effectively connected with a permanent establishment in Indonesia, such income shall be regarded as income earned by the permanent establishment, and is taxable in the same manner as for resident taxpayers as elaborated above.

Withholding tax on interest on the Notes

Pursuant to Government Regulation No. 16/2009 dated February 9, 2009 ("GR 16/2009"), which has been amended by Government Regulation No. 100/2013 dated December 31, 2013 ("GR 100/2013"), and Ministry of Finance Regulation No. 85/PMK.03/2011 dated May 23, 2011 ("MoFR 85/2011"), which has been amended by Ministry of Finance Regulation No. 07/PMK.011/2012 dated January 13, 2012 ("MoFR 07/2012"), interest on the Notes is subject to a final withholding tax under Article 4(2) of the Income Tax Law.

For a resident taxpayer or a non-resident taxpayer with a permanent establishment in Indonesia, a final withholding tax of 15.0% applies to interest on the Notes. However, an Indonesian bank or foreign bank having a permanent establishment in Indonesia is exempt from this withholding tax. A special tax rate of 5.0% is available for interest received by a mutual fund taxpayer starting from 2014 until 2020, and a special tax rate of 10.0% applies from 2021 onwards, provided that the mutual fund is registered at the Financial Services Authority (*Otoritas Jasa Keuangan* or "OJK").

For a non-resident taxpayer, a final withholding tax of 20.0% applies to interest received on the Notes. However, the withholding tax rate could be reduced or exempted under the applicable tax treaty. For example, under the U.S.-Indonesia Tax Treaty, the interest withholding tax rate is reduced to 10.0%. The application of the tax treaty rate or benefits is subject to the completion of certain requirements by the non-tax residents as stipulated under the Indonesian tax regulations. See "Procedures for the application of tax treaty benefits" below. As described under "Description of the Notes — Additional Amounts" the Company will be required to pay Additional Amounts in respect of withholding tax for payments under or with respect to the Notes.

Withholding tax on disposition and redemption of the Notes

Pursuant to GR 16/2009 (as amended by GR 100/2013) and MoFR 85/2011 (as amended by MoFR 07/2012), gains from the sale, and gains from the redemption at maturity, of the Notes are considered interest and is therefore subject to the final withholding tax outlined above.

Gains from the sale of the Notes or gains from redemption of the Notes at maturity derived by a resident taxpayer, whether an individual or a corporation, or by a non-resident taxpayer with a permanent establishment in Indonesia, are subject to final withholding tax at the rate of 15.0%. Non-resident taxpayers that derive gains from sale or gains from redemption of the Notes at maturity will be subject to 20.0% final withholding tax, subject to reduction or exemption under the provisions of the applicable tax treaty.

Pursuant to Article 3A of MoFR 07/2012, loss incurred from the sale of the Notes can be deducted from the accrued interest realized at the time of the sale in calculating the withholding tax due on the accrued interest, subject to the provisions of the applicable tax treaty. The application of the tax treaty rate or benefits is subject to the completion of certain requirements by the non-tax residents as stipulated under the Indonesian tax regulations. See "— Procedures for the application of tax treaty benefits."

Withholding tax agent

Pursuant to Article 4 of MoFR 85/2011, the following parties are liable for the withholding tax obligation on interest on the Notes, gains from sale of the Notes and gains from redemption of the Notes at maturity:

- the issuer or custodian as appointed paying agent, with respect to:
  - (a) interest received or earned by the holders of the Notes on the interest maturity date; and
  - (b) gains from redemption of the Notes received or earned by the holders of the Notes at maturity of the Notes;
- securities companies, dealers, or banks, acting as an intermediary (broker), with respect to the gains from the sale of the Notes and accrued interest at the time of sale;
- securities companies, dealers, banks, pension funds, and mutual funds, as a direct buyer of the Notes without intermediary (broker) parties, with respect to gains from the sale of the Notes and accrued interest at the time of sale; and/or
- if the Notes are directly sold without intermediary parties (brokers), a custodian or sub-registry (as a recording party of the ownership change of the Notes) will be required to withhold the final income tax payable from the sellers of the Notes.

Pursuant to MoFR 07/2012, there is a general requirement for the seller of the Notes to notify the tax withholding tax agent of its actual gain or loss on the sale or at maturity, and the date of acquisition, of the Notes.

Procedures for the application of tax treaty benefits

Indonesia has concluded tax treaties with a number of countries, including the United States of America, the United Kingdom, the Netherlands, Australia, Belgium, Canada, France, Germany, Japan, Singapore, Sweden and Switzerland. The relevant tax treaty may provide a different definition of non-resident taxpayers and permanent establishment and the reduced rate or exemption of withholding tax that might be applied to payments on the Notes.

Where a tax treaty exists and the eligibility and reporting requirements of that treaty are satisfied, a reduced rate of withholding tax or exemption may be applicable on interest, gains from sale or gains at maturity of the Notes.

Indonesia has specific rules regarding the application of benefits under the various tax treaties. On June 19, 2017, the Indonesian tax authority issued regulation No. PER-10/PJ/2017 ("PER 10/2017") revising the previous anti-tax treaty abuse rules. The regulation is effective starting August 1, 2017. This regulation sets out tests and administrative criteria to be satisfied. Failure to comply with the conditions means that the domestic withholding tax of 20.0% will apply. Under PER 10/2017, the provisions of tax treaty apply under the following conditions:

- the provisions of the tax treaty differ from those of the domestic income tax law;
- the income recipient is not an Indonesian tax resident;
- the income recipient is an individual or an entity who is a tax resident of the country under the concerned tax treaty;
- the non-resident submits to the Indonesian withholding tax agent its certificate of domicile ("COD") that meets the administrative requirements and certain other requirements;
- there is no tax treaty abuse; and
- the income recipient is the beneficial owner if required under the tax treaty.

Administrative requirements

The COD must meet the following administrative requirements:

- be in the Form DGT-1 or Form DGT-2, as applicable;
- filled in correctly, completely and clearly;
- signed by the non-resident or equivalent mark as normally used in its country;
- signed by the authorized official of the treaty country of the non-resident or equivalent mark as normally used;
- used for the period stated in the COD (a maximum of 12 months); and
- submitted by the Indonesian withholding tax agent in the submission of its monthly tax return at the latest by due date of the submission (i.e. the 20th of the following month).

The requirement under (d) above can be fulfilled by a COD that:

- is in the English language;
- in the form of original document of photocopy that is legalized by the tax office where the Indonesian tax withholder is registered;
- contains, at least, information concerning the name of the non-resident taxpayer, issuance date and the applicable tax year;
- bears the name and signature of the authorized tax officer of the competent tax authority of the treaty country; or sign/stamp that is equal to the signature of the tax officer and the name of the tax officer as commonly used; and

- is completed in the Form DGT-1 or Form DGT-2, as the case may be, except for the Part III of the Form DGT-1 and Part III of the Form DGT-2.

Form DGT-1 and Form DGT-2

Form DGT-2 must be used by non-residents earning and/or receiving income through custodians in relation to the income from the transfer of shares or bonds transacted through or reported to the exchange in Indonesia, not in the form of interest or dividend; non-resident banks; and non-resident pension funds. Form DGT-1 must be used by all other non-residents.

In the Form DGT-1, the non-resident should state that it has:

- the relevant economic motives relating to the establishment of the entity;
- the business activities managed by its own management and the management has sufficient authority to carry out transactions;
- fixed and non-fixed assets (other than the assets generating income from Indonesia) that are sufficient to carry out business activities in the treaty country;
- sufficient number of and enough employees with certain expertise in accordance with the field of the business;
- other activities or businesses in addition to only receive income in the form of dividends, interest and/or royalties from Indonesia; and
- if the tax treaty provisions require the recipient to be the beneficial owner, that:
  - (a) for a non-resident individuals, that he or she does not act as an agent or nominee; or
  - (b) for a non-resident entity, that it does not act as an agent, nominee or conduit, which is an entity that:
    - (i) has control in using or enjoying funds, assets, or rights that generate income from Indonesia;
    - (ii) not more than 50.0% of its income is used to fulfill obligations to other parties;
    - (iii) bears the risks of the assets, capital, and/or liabilities; and
    - (iv) has no written or unwritten obligation to provide part or all of the income derived from Indonesia to another party.

In the Form DGT-2, the non-resident should state that:

- it is a tax resident in the treaty country according to the tax laws of the country; and
- it does not act as an agent, nominee or conduit in respect of the income received, if the non-resident is required to be the beneficial owner based on the tax treaty.

No treaty abuse

A tax treaty abuse takes place when the main purpose or one of the main purposes of the transaction arrangement is to obtain tax treaty benefits and in contradiction with the purposes and intention of the tax treaty. A treaty abuse will not have taken place where:

- there is economic substance in the establishment of the entity or in the execution of the transaction;
- the legal form is the same as the economic substance in the establishment of the entity or the execution of the transaction;
- the non-resident has activities managed by its own management and the management has sufficient authorities to carry out transactions;

- the non-resident has fixed assets and non-fixed assets (other than the assets generating income from Indonesia), which are adequate and sufficient to conduct business activities in the treaty country;
- the non-resident has sufficient employees with the expertise and certain skills in accordance with the line of business; and
- the non-resident has activities or active business other than receiving the income in the form of dividends, interest, royalties from Indonesia.

Beneficial Owner

For the purposes of the COD, a non-resident is considered to be the beneficial owner if:

- for a non-resident individual, he does not act as an agent or nominee; or
- for a non-resident entity, it does not act as an agent, nominee, or conduit, which is an entity that:
  (i) has control in using or enjoying funds, assets, or rights that generate income from Indonesia;
  (ii) not more than 50.0% of the total non-consolidated income is used to fulfill obligations to other parties (such obligations do not include fair compensation payments to employees in relation to works, other normal business expenditures, and profit repatriation in the form of dividend to shareholders);
  (iii) bears the risks of the assets, capital, and/or liabilities; and
  (iv) has no written or unwritten obligation to provide part or all of the income derived from Indonesia to another party.

VAT, Stamp duty and Other Indonesian taxes

VAT is not payable on the sale and redemption of the Notes or on interest payment on the notes as securities and interest are not considered VAT objects.

Nominal stamp duty applies on a per document basis, and is not related to the value of the transaction. Stamp duty applies to certain documents made, executed or brought into Indonesia or intended to be used as evidence for civil proceedings. Documents subject to stamp duty include notarial deeds, documents evidencing or recording the receipt of money and securities instruments. The nominal amount of the Indonesian stamp duty for any kind of securities transaction having a value greater than Rp.1,000,000 is Rp.6,000. Generally, the stamp duty is due at the time the document is executed. Stamp duty is payable by the party that benefits from the executed document unless both parties state otherwise.

There are no other Indonesian taxes (namely estate tax, inheritance tax, succession tax or gift taxes) applicable to an acquisition, ownership or disposition of the Notes.

Taxation outside Indonesia

The tax treatment of non-resident holders of the Notes in a jurisdiction outside Indonesia may vary depending on the tax laws applicable to such holder by reason of domicile or business activities and such holder's particular situation.

Certain U.S. Federal Income Tax Considerations for U.S. Holders

The following discussion is a summary of certain material U.S. federal income tax considerations relating to the purchase, ownership and disposition of the Notes by a U.S. holder (as defined below), but does not purport to be a complete analysis of all potential tax effects and does not address the effects of the U.S. federal estate or gift tax laws or any state, local or non-U.S. tax laws. This discussion is based upon the U.S. Internal Revenue Code of 1986, as amended (the "Code"), U.S. Treasury regulations issued thereunder, and judicial and administrative interpretations thereof, as well as the U.S.-Indonesia income tax treaty, each as publicly available and in effect on

the date hereof, and all of which are subject to change, possibly with retroactive effect. There can be no assurance that the IRS will not take a different position concerning the tax consequences of the purchase, ownership or disposition of the Notes or that any such position would not be sustained.

This discussion does not address all of the U.S. federal income tax consequences that might be relevant to a holder in light of such holder's particular circumstances or to holders subject to special tax rules, such as:

- banks, insurance companies, or certain other financial institutions;
- dealers or traders in securities;
- partnerships or other pass-through entities, or persons holding the Notes through such entities;
- real estate investment trusts or regulated investment companies;
- accrual method taxpayers subject to special tax accounting rules as a result of its use of financial statements under section 451(b) of the Code;
- persons subject to the alternative minimum tax;
- tax-exempt organizations;
- certain U.S. expatriates;
- U.S. holders whose functional currency is not the U.S. dollar; or
- persons holding the Notes as part of a straddle, hedge, conversion or integrated transaction.

In addition, this discussion is limited to persons that purchase the Notes for cash at original issue and at their "issue price" (generally, the first price at which a substantial portion of the Notes is sold to the public for cash, excluding sales to bond houses, brokers or similar persons or organizations acting in the capacity of underwriters, placement agents or wholesalers) and that hold the Notes as capital assets within the meaning of section 1221 of the Code (generally, property held for investment).

For purposes of this discussion, a "U.S. holder" is a beneficial owner of a Note that is, for U.S. federal income tax purposes:

- an individual who is a citizen or resident of the United States;
- a corporation (or other entity treated as a corporation for U.S. federal income tax purposes) created or organized in the United States or under the laws of the United States, any state thereof or the District of Columbia;
- an estate, the income of which is subject to U.S. federal income taxation regardless of its source; or
- a trust, if a court within the United States is able to exercise primary supervision over the administration of the trust and one or more U.S. persons have the authority to control all substantial decisions of the trust, or if a valid election is in place to treat the trust as a U.S. person.

If a partnership (or other entity treated as a partnership for U.S. federal income tax purposes) holds the Notes, the tax treatment of a partner in the partnership will generally depend upon the status of the partner and the activities of the partnership. Holders that are partnerships, and partners in such partnerships, should consult their tax advisors regarding the tax consequences of the purchase, ownership and disposition of the Notes.

This discussion of certain U.S. federal income tax considerations is for general information only and is not tax advice. Prospective investors should consult their tax advisors concerning the tax consequences of owning Notes in light of their particular circumstances, including the application of the U.S. federal income tax considerations discussed below, as well as the application of the U.S. federal estate or gift tax laws, any state, local or non-U.S. tax laws, or provisions of any applicable tax treaties.

Payments of interest

It is anticipated, and this discussion assumes, that the Notes will not be issued with more than a *de minimis* amount of original issue discount for U.S. federal income tax purposes. Payments of stated interest on the Notes

will generally be taxable to a U.S. holder as ordinary income at the time that such payments are received or accrued, in accordance with such U.S. holder's method of accounting for U.S. federal income tax purposes.

Interest income on a Note will generally be foreign source "passive category income," but could, in the case of certain U.S. holders, be "general category income" for purposes of computing the foreign tax credit allowable to U.S. holders under U.S. federal income tax laws.

As described in "— Indonesian Taxation," interest payments will be subject to a 20.0% Indonesian withholding tax. Subject to certain customary exceptions, the Issuer is required to pay Additional Amounts with respect to such tax as described in "Description of the Notes — Additional Amounts." The amount of a U.S. holder's interest income for U.S. federal income tax purposes will include the Indonesian withholding tax deducted from interest payments and any Additional Amounts paid in respect thereof. Indonesian taxes (withheld at a rate not exceeding the applicable rate under the U.S.-Indonesia income tax treaty (generally 10.0%) in the case of a U.S. holder that is entitled to the treaty benefits) would, subject to limitations and conditions, be treated as foreign income tax eligible for credit against such holder's U.S. federal income tax liability or, at such holder's election, eligible for deduction in computing such holder's U.S. federal taxable income. U.S. holders should consult their tax advisors regarding the creditability or deductibility of any withholding taxes. U.S. holders that are entitled to the benefits of the U.S.-Indonesia income tax treaty should review "— Indonesian Taxation" regarding how to obtain the treaty rate.

Sale, exchange, redemption or other taxable disposition of Notes

Upon the sale, exchange, redemption or other taxable disposition of a Note, a U.S. holder will generally recognize U.S. source gain or loss equal to the difference between the amount realized upon the disposition (less an amount equal to any accrued but unpaid interest, which will be taxable as interest income as discussed above to the extent not previously included in income by the U.S. holder) and the adjusted tax basis of the Note. A U.S. holder's adjusted tax basis in a Note will generally be its cost for that Note.

Any gain or loss will be capital gain or loss. Capital gains of non-corporate U.S. holders (including individuals) derived in respect of capital assets held for more than one year are eligible for reduced rates of taxation. The deductibility of capital losses is subject to limitations.

As described in "— Indonesian Taxation," in certain circumstances gain from the sale of Notes may be subject to Indonesian tax. U.S. holders will likely not be able to credit such Indonesian tax against its U.S. federal income tax liability with respect to any gain realized by the U.S. holder upon the disposition. U.S. holders should consult their tax advisors regarding the creditability of any such tax. U.S. holders that are entitled to the benefits of the U.S.-Indonesia income tax treaty should review "— Indonesian Taxation" regarding how to obtain any treaty relief.

Information reporting and backup withholding

In general, information reporting requirements will apply to certain payments of principal and interest paid on the Notes and to the proceeds of the sale or other disposition of a Note paid to a U.S. holder, unless such U.S. holder is an exempt recipient that, when required, demonstrates this fact. Backup withholding might apply to such payments if the U.S. holder fails to provide a taxpayer identification number or otherwise fails to comply with applicable certification requirements. Certain U.S. holders who are individuals and who do not hold Notes through U.S. financial institutions (within the meaning of section 6038D of the Code) are required to report information relating to an interest in our Notes, subject to certain exceptions. Under certain circumstances, an entity may be treated as an individual for purposes of the foregoing rules. U.S. holders should consult their tax advisors regarding the application of the information reporting and backup withholding rules.

Backup withholding is not an additional tax and any amounts withheld under the backup withholding rules may be allowed as a credit against a U.S. holder's U.S. federal income tax liability or as a refund, provided the required information is timely furnished to the IRS.

Singapore Taxation

The statements below are general in nature and are based on certain aspects of current tax laws in Singapore and administrative guidelines and circulars issued by the Inland Revenue Authority of Singapore ("IRAS") and the Monetary Authority of Singapore ("MAS") in force as at the date of this offering memorandum and are subject to any changes in such laws, administrative guidelines or circulars, or the interpretation of those laws, guidelines or circulars, occurring after such date, which changes could be made on a retroactive basis. These laws, guidelines and circulars are also subject to various interpretations and the relevant tax authorities or the courts could later disagree with the explanations or conclusions set out below. Neither these statements nor any other statements in this offering memorandum are intended or are to be regarded as advice on the tax position of any holder of the Notes or of any person acquiring, selling or otherwise dealing with the Notes or on any tax implications arising from the acquisition, sale or other dealings in respect of the Notes. The statements made herein do not purport to be a comprehensive or exhaustive description of all the tax considerations that may be relevant to a decision to subscribe for, purchase, own or dispose of the Notes and do not purport to deal with the tax consequences applicable to all categories of investors, some of which (such as dealers in securities or financial institutions in Singapore which have been granted the relevant Financial Sector Incentive(s)) may be subject to special rules or tax rates. Holders or prospective holders of the Notes are advised to consult their own professional tax advisors as to the Singapore or other tax consequences of the acquisition, ownership, or disposal of the Notes, including, in particular, the effect of any foreign, state or local tax laws to which they are subject. It is emphasized that none of the Issuer, the Joint Bookrunners and Joint Lead Managers or any other persons involved in the issuance of the Notes accepts responsibility for any tax effects or liabilities resulting from the subscription for, purchase, holding or disposal of the Notes.

Interest and other payments

Certain Singapore-sourced investment income derived by individuals from financial instruments is exempt from tax, including:

(a) interest from debt securities derived on or after January 1, 2004;

(b) discount income (not including discount income arising from secondary trading) from debt securities derived on or after February 17, 2006; and

(c) prepayment fee, redemption premium and break cost from debt securities derived on or after February 15, 2007,

except where such income is derived through a partnership in Singapore or is derived from the carrying on of a trade, business or profession.

In addition, as more than half of the Joint Lead Managers for the Notes (namely BNP Paribas, Citigroup, MUFG and Standard Chartered Bank) are Financial Sector Incentive (Standard Tier) Companies (as defined in the ITA), the Notes would be, pursuant to the ITA and the MAS Circular FDD Cir 11/2018 entitled "Extension of Tax Concessions for Promoting the Debt Market" issued by MAS on May 31, 2018, qualifying debt securities ("QDS") for the purposes of the ITA, to which the following treatment shall apply:

(i) subject to certain prescribed conditions having been fulfilled (including the furnishing by the Issuer, or such other person as the MAS may direct, to the MAS of a return on debt securities for the Notes in the prescribed format within such period as the MAS may specify and such other particulars in connection with the Notes as the MAS may require, and the inclusion by the Issuer in all offering documents relating to the Notes of a statement to the effect that where interest, discount income, prepayment fee, redemption premium or break cost from the Notes is derived by a person who is not resident in Singapore and who carries on any operation in Singapore through a permanent establishment in Singapore, the tax exemption for qualifying debt securities shall not apply if the non-resident person acquires the Notes using the funds and profits of such person's operations through the Singapore permanent establishment), interest, discount income (not including discount income arising from secondary trading), prepayment fee, redemption premium and break cost (collectively, the "Qualifying

Income") from the Notes paid by the Issuer and derived by a holder who is not resident in Singapore and who (aa) does not have any permanent establishment in Singapore or (bb) carries on any operation in Singapore through a permanent establishment in Singapore but the funds used by that person to acquire the Notes are not obtained from such person's operation through a permanent establishment in Singapore, are exempt from Singapore tax; and

(ii) subject to certain conditions having been fulfilled (including the furnishing by the Issuer, or such other person as the MAS may direct, to the MAS of a return on debt securities for the Notes in the prescribed format within such period as the MAS may specify and such other particulars in connection with the Notes as the MAS may require), Qualifying Income from the Notes paid by the Issuer and derived by any company or body of persons (as defined in the ITA) in Singapore is subject to income tax at a concessionary rate of 10.0% (except for holders of the relevant Financial Sector Incentive(s) who may be taxed at different rates).

Notwithstanding the foregoing:

(a) if during the primary launch of the Notes, the Notes are issued to fewer than four persons and 50.0% or more of the issue of the Notes is beneficially held or funded, directly or indirectly, by related parties of the Issuer, the Notes would not qualify as QDS; and

(b) even though the Notes are QDS, if, at any time during the tenure of the Notes, 50.0% or more of the Notes which are outstanding at any time during the life of their issue is beneficially held or funded, directly or indirectly, by any related party(ies) of the Issuer, Qualifying Income derived from the Notes held by:

(i) any related party of the Issuer; or

(ii) any other person where the funds used by such person to acquire the Notes are obtained, directly or indirectly, from any related party of the Issuer,

shall not be eligible for the tax exemption or concessionary rate of tax as described above.

The term "related party" in relation to a person, means any other person who, directly or indirectly, controls that person, or is controlled, directly or indirectly, by that person, or where he and that other person, directly or indirectly, are under the control of a common person.

The terms "prepayment fee," "redemption premium" and "break cost" are defined in the ITA as follows:

"prepayment fee," in relation to debt securities and qualifying debt securities, means any fee payable by the issuer of the securities on the early redemption of the securities, the amount of which is determined by the terms of the issuance of the securities;

"redemption premium," in relation to debt securities and qualifying debt securities, means any premium payable by the issuer of the securities on the redemption of the securities upon their maturity; and

"break cost," in relation to debt securities and qualifying debt securities, means any fee payable by the issuer of the securities on the early redemption of the securities, the amount of which is determined by any loss or liability incurred by the holder of the securities in connection with such redemption.

References to "prepayment fee," "redemption premium" and "break cost" in this Singapore tax disclosure have the same meaning as defined in the ITA.

Where interest, discount income, prepayment fee, redemption premium or break cost (i.e. the Qualifying Income) is derived from the Notes by any person who is not resident in Singapore and who carries on any operations in Singapore through a permanent establishment in Singapore, the tax exemption available for QDS under the ITA (as mentioned above) shall not apply if such person acquires such Notes using the funds and profits of such person's operations through a permanent establishment in Singapore. Any person whose interest, discount income, prepayment fee, redemption premium or break cost (i.e. the Qualifying Income) derived from the Notes is not exempt from tax is required to include such income in a return of income made under the ITA.

Capital gains

Any gains considered to be in the nature of capital made from the sale of the Notes will not be taxable in Singapore. However, any gains derived by any person from the sale of the Notes which are gains from any trade, business, profession or vocation carried on by that person, if accruing in or derived from Singapore, may be taxable as such gains are considered revenue in nature.

Holders of the Notes who apply or who are required to apply the Financial Reporting Standard ("FRS") 39 or FRS 109, may for Singapore income tax purposes be required to recognize gains or losses (not being gains or losses in the nature of capital) on the Notes, irrespective of disposal, in accordance with FRS 39 or FRS 109. Please see the section below on "Adoption of FRS 39 and FRS 109 for Singapore Income Tax Purposes."

Adoption of FRS 39 and FRS 109 for Singapore Income Tax Purposes

Section 34A of the ITA provides for the tax treatment for financial instruments in accordance with FRS 39 (subject to certain exceptions and "opt-out" provisions) to taxpayers who are required to comply with FRS 39 for financial reporting purposes. The IRAS has also issued a circular entitled "Income Tax Implications Arising from the Adoption of FRS 39 — Financial Instruments: Recognition & Measurement."

FRS 109 is mandatorily effective for annual periods beginning on or after January 1, 2018, replacing FRS 39. Section 34AA of the ITA requires taxpayers who comply or who are required to comply with FRS 109 for financial reporting purposes to calculate their profit, loss or expense for Singapore income tax purposes in respect of financial instruments in accordance with FRS 109, subject to certain exceptions. The IRAS has also issued a circular entitled "Income Tax: Income Tax Treatment Arising from Adoption of FRS 109 — Financial Instruments."

Holders of the Notes who may be subject to the tax treatment under Sections 34A or 34AA of the ITA should consult their own accounting and tax advisors regarding the Singapore income tax consequences of their acquisition, holding or disposal of the Notes.

Estate duty

Singapore estate duty has been abolished with respect to all deaths occurring on or after February 15, 2008.

PLAN OF DISTRIBUTION

Subject to the terms and conditions set forth in a purchase agreement (the "Purchase Agreement") among us and BNP Paribas, Citigroup, MUFG, CIMB, Maybank, SMBC Nikko Capital Markets Limited and Standard Chartered Bank as the initial purchasers (the "Initial Purchasers"), we have agreed to sell to the Initial Purchasers, and each of the Initial Purchasers has agreed, severally and not jointly, to purchase from us, the principal amount of the Notes set forth opposite its name below.

Initial Purchasers	Principal Amount of the 2021 Notes (US$)	Principal Amount of the 2023 Notes (US$)	Principal Amount of the 2028 Notes (US$)	Principal Amount of the 2048 Notes (US$)
BNP Paribas	288,889,000	361,112,000	288,889,000	216,668,000
Citigroup	288,890,000	361,112,000	288,890,000	216,668,000
MUFG	288,889,000	361,112,000	288,889,000	216,668,000
CIMB	33,333,000	41,666,000	33,333,000	24,999,000
Maybank	33,333,000	41,666,000	33,333,000	24,999,000
SMBC Nikko Capital Markets Limited	33,333,000	41,666,000	33,333,000	24,999,000
Standard Chartered Bank	33,333,000	41,666,000	33,333,000	24,999,000
Total	**1,000,000,000**	**1,250,000,000**	**1,000,000,000**	**750,000,000**

Subject to the terms and conditions set forth in the Purchase Agreement, the Initial Purchasers have agreed, severally and not jointly, to purchase all of the Notes sold under the Purchase Agreement if any of these Notes are purchased. If an Initial Purchaser defaults, the Purchase Agreement provides that the purchase commitments of the non-defaulting Initial Purchasers may be increased or the Purchase Agreement may be terminated. The Purchase Agreement provides that the obligations of the Initial Purchasers to purchase the Notes are subject to approval of legal matters by counsel and to other conditions. The issue of the Notes may be canceled by the Initial Purchasers in certain circumstances at any time up to the time when the proceeds of the issue have been received and the Notes issued. The Initial Purchasers reserve the right to withdraw, cancel or modify offers to investors and to reject orders in whole or in part. The Initial Purchasers may offer and sell the Notes in various jurisdictions through certain of their affiliates.

We have agreed to indemnify the Initial Purchasers against certain liabilities, including liabilities under the Securities Act, or to contribute to payments the Initial Purchasers may be required to make in respect of those liabilities.

The Initial Purchasers or their respective affiliates may purchase the Notes for its or their own account and enter into transactions, including credit derivatives, such as asset swaps, repackaging and credit default swaps relating to the Notes and/or other securities of the Company or its subsidiaries or associates at the same time as the offer and sale of the Notes or in secondary market transactions. Such transactions would be carried out as bilateral trades with selected counterparties and separately from any existing sale or resale of Notes to which this Offering Memorandum relates (notwithstanding that such selected counterparties may also be purchasers of Notes). The Initial Purchasers or certain of their affiliates may purchase Notes and be allocated Notes for asset management and/or proprietary purposes but not with a view to distribution.

To the extent the Initial Purchasers intend to make any offers or sales of the Notes in the United States, or to nationals or residents of the United States, they will do so only through one or more registered broker-dealers in compliance with applicable securities laws and regulations, and the rules of the Financial Industry Regulatory Authority, as well as with applicable laws of the various states.

Commissions and Discounts

The Initial Purchasers propose initially to offer the Notes at the offering price set forth on the cover page of this Offering Memorandum. After the initial offering, the offering price or any other term of the offering may be changed.

Notes Are Not Being Registered

The Notes have not been registered under the Securities Act or any state securities laws. The Initial Purchasers propose to offer the Notes for resale in transactions not requiring registration under the Securities Act or applicable state securities laws, including sales pursuant to Rule 144A and Regulation S. The Initial Purchasers will not offer or sell the Notes except to persons they reasonably believe to be qualified institutional buyers or pursuant to offers and sales that occur outside of the United States within the meaning of Regulation S. Each purchaser of the Notes will be deemed to have made acknowledgments, representations and agreements as described under "Transfer Restrictions."

New Issue of Notes

The Notes are a new issue of securities with no established trading market. Approval in-principle has been received for the listing of the 2021 Notes on SGX-ST. Application will be made to the SGX-ST for the listing and quotation of the 2023 Notes, the 2028 Notes and the 2048 Notes on the SGX-ST. We cannot assure you that we will obtain or be able to maintain a listing of the Notes on the SGX-ST, or that, if listed, a liquid trading market will develop. We have been advised by the Initial Purchasers that they presently intend to make a market in the Notes after completion of the offering. However, they are under no obligation to do so and may discontinue any market-making activities at any time without any notice. We cannot assure the liquidity of the trading market for the Notes. If an active trading market for the Notes does not develop, the market price and liquidity of the Notes may be adversely affected. If the Notes are traded, they may trade at a discount from their initial offering price, depending on prevailing interest rates, the market for similar securities, our operating performance and financial condition, general economic conditions and other factors.

Settlement

We expect that delivery of the Notes will be made to investors on or about the closing date specified on the cover page of this Offering Memorandum, which will be the fifth business day following the date of this Offering Memorandum (such settlement being referred to as "T+5"). Under Rule 15c6-1 under the Exchange Act, trades in the secondary market are required to settle in three business days, unless the parties to any such trade expressly agree otherwise. Accordingly, purchasers who wish to trade the Notes prior to the delivery of the Notes hereunder will be required, by virtue of the fact that the Notes initially settle in T+5, to specify an alternate settlement arrangement at the time of any such trade to prevent a failed settlement. Purchasers of the Notes who wish to trade the Notes prior to their date of delivery hereunder should consult their advisors.

No Sales of Similar Securities

We have agreed that we will not, for a period of 40 days after the date of the Purchase Agreement, without first obtaining the prior written consent of the Joint Bookrunners and Joint Lead Managers on behalf of the Initial Purchasers (which consent shall not be unreasonably withheld), directly or indirectly offer, sell, contract to sell or otherwise dispose of any debt securities (except for the Notes sold to the Initial Purchasers pursuant to the Purchase Agreement) or enter into any transaction which is designed to, or might reasonably be expected to, result in the disposition of any debt securities or securities exchangeable for or convertible into debt securities issued or guaranteed by the Company or any of its subsidiaries and having a tenor of more than one year.

Short Positions and Stabilizing Transactions

In connection with this offering, Citigroup, as Stabilizing Manager, or any person acting for it, may purchase and sell Notes in the open market. These transactions may, to the extent permitted by law, include short sales, stabilizing transactions and purchases to cover positions created by short sales. Short sales involve the sale of a greater amount of Notes than the Initial Purchasers are required to purchase in this offering. Stabilizing transactions consist of certain bids or purchases for the purpose of preventing or retarding a decline in the market price of the Notes while this offering is in progress. These activities, to the extent permitted by law, may stabilize, maintain or otherwise affect the market price of the Notes. These activities may be conducted in the over-the-counter market or otherwise. As a result, the price of the Notes may be higher than the price that

otherwise might exist in the open market. If these activities are commenced, they may be discontinued at any time and must in any event be brought to an end after a limited time. These activities will be undertaken solely for the account of the Stabilizing Manager and not for and on behalf of the Issuer.

Other Relationships

Certain of the Initial Purchasers and their respective affiliates have, from time to time, performed, and may in the future perform, certain commercial banking, investment banking and advisory and other banking services for us, and/or our affiliates for which they have received or will receive customary fees and expenses. In particular, certain Initial Purchasers and/or their respective affiliates may provide a bridge loan to the Company to finance part of the acquisition costs of the PTFI Share Acquisition. The Initial Purchasers and their respective affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advice, investment management, principal investment, hedging, financing and brokerage activities. In the ordinary course of their various business activities, the Initial Purchasers and their respective affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers and may at any time hold long and short positions in such securities and instruments. Such investments and securities activities may involve securities and instruments of the Company.

Selling Restrictions

General

We and the Initial Purchasers have not taken any action, nor will we and the Initial Purchasers take any action, in any jurisdiction that would permit a public offering of the Notes, or the possession, circulation or distribution of this Offering Memorandum or any other material relating to us, the Notes in any jurisdiction where action for that purpose is required. Accordingly, an investor may not offer or sell, directly or indirectly, any Note and may not distribute or publish either this Offering Memorandum or any other offering material or advertisements in connection with the Notes, in or from any country or jurisdiction except in compliance with any applicable rules and regulations of such country or jurisdiction.

Public offer selling restriction under the Prospectus Directive

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive (each, a "Relevant Member State"), each Initial Purchaser has represented and agreed that with effect from and including the date on which the Prospectus Directive is implemented in that Relevant Member State (the "Relevant Implementation Date") it has not made and will not make an offer of Notes which are the subject of the offering contemplated by this Offering Memorandum to the public in that Relevant Member State other than:

(a) to any legal entity which is a qualified investor as defined in the Prospectus Directive;

(b) to fewer than 150 natural or legal persons (other than qualified investors as defined in the Prospectus Directive), subject to obtaining the prior consent of the relevant Initial Purchaser or Initial Purchasers for any such offer; or

(c) in any other circumstances falling within Article 3(2) of the Prospectus Directive,

provided that no such offer of Notes shall require the Company or any Initial Purchaser to publish a prospectus pursuant to Article 3 of the Prospectus Directive or supplement a prospectus pursuant to Article 16 of the Prospectus Directive.

For the purposes of this provision, the expression an "offer of Notes to the public" in relation to any Notes in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and the Notes to be offered so as to enable an investor to decide to purchase or subscribe for the Notes, as the same may be varied in that Member State by any measure implementing the Prospectus Directive

in that Member State, the expression Prospectus Directive means Directive 2003/71/EC (as amended, including by Directive 2010/73/EU), and includes any relevant implementing measure in the Relevant Member State.

United Kingdom

Each Initial Purchaser has severally represented, warranted and undertaken that:

(a) it has only communicated or caused to be communicated and will only communicate or cause to be communicated an invitation or inducement to engage in investment activity (within the meaning of Section 21 of the Financial Services and Markets Act 2000 ("FSMA")) received by it in connection with the issue or sale of the Notes in circumstances in which Section 21(1) of the FSMA does not apply to us; and

(b) it has complied and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to the Notes in, from or otherwise involving the United Kingdom.

Hong Kong

Each Initial Purchaser has severally represented and agreed that (i) it has not offered or sold and will not offer or sell in the Hong Kong Special Administrative Region of the People's Republic of China ("Hong Kong"), by means of any document, any Notes other than (x) to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong and any rules made under that Ordinance; or (y) in other circumstances which do not result in the document being a "prospectus" as defined in the Companies (Winding Up and Miscellaneous Provisions) Ordinance (Cap. 32) of Hong Kong or which do not constitute an offer to the public within the meaning of that Ordinance; and (ii) it has not issued or had in its possession for the purposes of issue and will not issue or have in its possession for the purposes of issue any advertisement, invitation or document relating to the Notes, whether in Hong Kong or elsewhere, which is directed at, or the contents of which are likely to be accessed or read by, the public of Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to Notes which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571) and any rules made under that Ordinance.

Indonesia

This offering does not constitute a public offering in Indonesia under the Indonesia Capital Markets Law. This Offering Memorandum may not be distributed in Indonesia and the Notes may not be offered or sold in Indonesia or to Indonesian citizens wherever they are domiciled, or to Indonesian residents in a manner which constitutes a public offering under the laws and regulations of Indonesia.

Japan

The Notes have not been and will not be registered in Japan pursuant to Article 4, Paragraph 1 of the Financial Instruments and Exchange Act of Japan (Act No. 25 of 1948, as amended, the "FIEA") in reliance upon the exemption from the registration requirements since the offering constitutes the small number private placement as provided for in "*ha*" of Article 2, Paragraph 3, Item 2 of the FIEA. A transferor of the Notes shall not transfer or resell the Notes except where the transferor transfers or resells all the Notes en bloc to one transferee.

Korea

The Notes have not been registered and will not be registered with the Financial Services Commission of Korea for a public offering in Korea under the Korea Financial Investment Services and Capital Markets Act ("FSCMA"). The Notes have not been and will not be offered, sold or delivered directly or indirectly, or offered, sold or delivered to any person for re-offering or resale, directly or indirectly, in Korea or to any resident of Korea (as defined in the Foreign Exchange Transactions Law of Korea ("FETL") and its Enforcement Decree)

within 1 year of the issuance of the Notes, except as otherwise permitted under applicable Korean laws and regulations, including the FSCMA and the FETL and the decrees and regulations thereunder. Without prejudice to the foregoing, the number of Notes offered in Korea or to a resident in Korea shall be less than 50 and for a period of one year from the issue date of the Notes, none of the Notes may be divided resulting in an increased number of Notes. By the purchase of a Note, the relevant holder thereof will be deemed to represent and warrant that if it is in Korea or is a resident of Korea, it purchased such Note pursuant to the applicable laws and regulations of Korea.

Malaysia

Each Initial Purchaser has acknowledged that no lodgement of the relevant documents with the Securities Commission Malaysia ("SC") has been or will be made and no approval from the SC under the Capital Markets and Services Act 2007 of Malaysia ("CMSA") has been or will be obtained and this Offering Memorandum has not been nor will it be registered with the SC as a prospectus under the CMSA for the offering or issuance of the Notes on the basis that the Notes will be offered or sold exclusively to persons outside Malaysia. Accordingly, each Joint Bookrunner and Joint Lead Manager has represented and warranted and agrees that it has not offered or sold any Notes or caused such Notes to be made the subject of an invitation for subscription or purchase not will it offer or sell such Notes or cause such Notes to be made the subject of an invitation for subscription or purchase, nor has it circulated or distributed, nor will it circulate or distribute, either this Offering Memorandum or any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the Notes, whether directly or indirectly, to any person in Malaysia.

Singapore

This Offering Memorandum has not been and will not be registered as a prospectus with the Monetary Authority of Singapore under the Securities and Futures Act, Chapter 289 of Singapore (the "Securities and Futures Act"). Accordingly, this Offering Memorandum and any other document or material in connection with the offer or sale, or invitation for the subscription or purchase, of the Notes may not be circulated or distributed, nor may the Notes be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to any person in Singapore other than (a) to an institutional investor under Section 274 of the Securities and Futures Act, (b) to a relevant person pursuant to Section 275(1), or any person pursuant to Section 275(1A), and in accordance with the conditions specified in Section 275, of the Securities and Futures Act, or (c) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the Securities and Futures Act.

Where the Notes are subscribed or purchased under Section 275 of the Securities and Futures Act by a relevant person which is:

(a) a corporation (which is not an accredited investor (as defined in Section 4A of the Securities and Futures Act)), the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or

(b) a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor,

securities or securities-based derivatives contracts (each term as defined in the Securities and Futures Act) of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the Notes pursuant to an offer made under Section 275 of the Securities and Futures Act, except:

(i) to an institutional investor or to a relevant person defined in Section 275(2) of the Securities and Futures Act, or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i)(B) of the Securities and Futures Act;

(ii) where no consideration is or will be given for the transfer;

(iii) where the transfer is by operation of law; or

(iv) as specified in Section 276(7) of the Securities and Futures Act.

Switzerland

This Offering Memorandum is not intended to constitute an offer or solicitation to purchase or invest in the Notes described herein. The Notes may not be publicly offered, sold or advertised, directly or indirectly, in, into or from Switzerland and will not be listed on the SIX Swiss Exchange or on any other exchange or regulated trading facility in Switzerland. Neither this Offering Memorandum nor any other offering or marketing material relating to the Notes constitutes a prospectus as such term is understood pursuant to article 652a or article 1156 of the Swiss Code of Obligations or a listing prospectus within the meaning of the listing rules of the SIX Swiss Exchange or any other regulated trading facility in Switzerland, and neither this Offering Memorandum nor any other offering or marketing material relating to the Notes may be publicly distributed or otherwise made publicly available in Switzerland.

Taiwan

The Notes have not been and will not be registered or filed with, or approved by, the Financial Supervisory Commission of Taiwan and/or other regulatory authority of Taiwan pursuant to relevant securities laws and regulations of Taiwan and may not be issued, offered or sold within Taiwan through a public offering or in circumstances which constitute an offer within the meaning of the Securities and Exchange Act of Taiwan that requires a registration, filing or approval of the Financial Supervisory Commission of Taiwan and/or other regulatory authority of Taiwan. No person or entity in Taiwan has been authorized to offer or sell the Notes in Taiwan. The Notes may be made available outside Taiwan for purchase outside Taiwan by Taiwan resident investors, but may not be offered or sold in Taiwan.

United States

The Notes have not been and will not be registered under the Securities Act or any state securities laws and, unless so registered, may not be offered or sold within the United States except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the Securities Act and applicable state securities laws. See "Transfer Restrictions" for a description of other restrictions on the transfer of Notes. Accordingly, the Notes are being offered and sold only to qualified institutional buyers in accordance with Rule 144A and outside the United States in offshore transactions in accordance with Regulation S. Resales of the Notes are restricted as described under "Transfer Restrictions."

Until 40 days after the commencement of this offering, an offer or sale of Notes within the United States by a dealer (whether or not participating in this offering) may violate the registration requirements of the Securities Act if such offer or sale is made otherwise than in accordance with Rule 144A or pursuant to another exemption from registration under the Securities Act.

As used herein, the term "United States" has the meaning given to it in Regulation S.

TRANSFER RESTRICTIONS

Because the following restrictions will apply to the Notes, investors should consult legal counsel prior to making any offer, resale, pledge or transfer of the Notes.

The Notes have not been and will not be registered under the Securities Act and may not be offered or sold within the United States except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the Securities Act. Accordingly, the Notes are being offered and sold only:

- to "qualified institutional buyers" in compliance with Rule 144A; and
- outside the United States in offshore transactions, in reliance upon Regulation S under the Securities Act.

Rule 144A Notes

Each purchaser of the Notes within the United States pursuant to Rule 144A, by accepting delivery of this Offering Memorandum, will be deemed to have represented, agreed and acknowledged that:

(1) It is (a) a qualified institutional buyer within the meaning of Rule 144A (a "QIB"), (b) acquiring such notes for its own account or for the account of a QIB and (c) aware, and each beneficial owner of such notes has been advised, that the sale of such notes to it is being made in reliance on Rule 144A.

(2) It understands that such notes have not been and will not be registered under the Securities Act and (a) may not be offered, sold, pledged or otherwise transferred except (i) in accordance with Rule 144A to a person that it and any person acting on its behalf reasonably believe is a QIB purchasing for its own account or for the account of a QIB, (ii) in an offshore transaction in accordance with Rule 903 or Rule 904 of Regulation S or (iii) pursuant to an exemption from registration under the Securities Act provided by Rule 144 thereunder (if available), in each case in accordance with any applicable securities laws of any State of the United States; (b) the purchaser will, and each subsequent purchaser is required to, notify any subsequent purchaser of such notes from it of the resale restrictions referred to in (a) above; and (c) no representation can be made as to the availability of the exemption provided by Rule 144 under the Securities Act for resale of the Notes.

(3) If it is a person other than a person outside the United States, it agrees that if it should resell or otherwise transfer the Notes, it will do so only:

- to the Company or any of our respective affiliates;
- inside the United States to a qualified institutional buyer in compliance with Rule 144A;
- outside the United States in compliance with Rules 903 or 904 under the Securities Act;
- pursuant to the exemption from registration provided by Rule 144 under the Securities Act (if available); or
- pursuant to an effective registration statement under the Securities Act.

(4) It understands that such notes, unless otherwise agreed between the Company and the Trustee in accordance with applicable law, will bear a legend to the following effect:

"THIS NOTE HAS NOT BEEN AND WILL NOT BE REGISTERED UNDER THE U.S. SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), OR WITH ANY SECURITIES REGULATORY AUTHORITY OF ANY STATE OR OTHER JURISDICTION OF THE UNITED STATES AND, MAY NOT BE OFFERED, SOLD, PLEDGED OR OTHERWISE TRANSFERRED EXCEPT (1) IN ACCORDANCE WITH RULE 144A UNDER THE SECURITIES ACT ("RULE 144A") TO A PERSON THAT THE HOLDER AND ANY PERSON ACTING ON ITS BEHALF REASONABLY BELIEVE IS A QUALIFIED INSTITUTIONAL BUYER WITHIN THE MEANING OF RULE 144A PURCHASING FOR ITS OWN ACCOUNT OR FOR THE ACCOUNT OF A QUALIFIED INSTITUTIONAL BUYER, (2) IN AN OFFSHORE

TRANSACTION IN ACCORDANCE WITH RULE 903 OR RULE 904 OF REGULATION S UNDER THE SECURITIES ACT OR (3) PURSUANT TO AN EXEMPTION FROM REGISTRATION UNDER THE SECURITIES ACT PROVIDED BY RULE 144 THEREUNDER (IF AVAILABLE), IN EACH CASE IN ACCORDANCE WITH ANY APPLICABLE SECURITIES LAWS OF ANY STATE OF THE UNITED STATES. THE HOLDER WILL, AND EACH SUBSEQUENT HOLDER IS REQUIRED TO, NOTIFY ANY SUBSEQUENT PURCHASER OF THESE NOTES FROM IT OF THE RESALE RESTRICTIONS REFERRED TO ABOVE. NO REPRESENTATION CAN BE MADE AS TO THE AVAILABILITY OF THE EXEMPTION PROVIDED BY RULE 144 UNDER THE SECURITIES ACT FOR RESALES OF THIS NOTE."

(5) The Company, the Registrar, the Initial Purchasers and their affiliates, and others will rely upon the truth and accuracy of the foregoing acknowledgments, representations and agreements and, if any such acknowledgments, representations or agreements deemed to have been made by virtue of its purchase of the Notes are no longer accurate, it agrees to promptly notify us. If it is acquiring any Notes for the account of one or more qualified institutional buyers, it represents that it has sole investment discretion with respect to each such account and it has full power to make the foregoing acknowledgments, representations and agreements on behalf of each such account.

(6) It understands that the Notes offered in reliance on Rule 144A will be represented by the Rule 144A Global Notes. Before any interest in the Rule 144A Global Notes may be offered, sold, pledged or otherwise transferred to a person who takes delivery in the form of an interest in the Regulation S Global Notes, it will be required to provide the Registrar with a written certification (in the form provided in the Indentures) as to compliance with applicable securities laws.

Prospective purchasers are hereby notified that sellers of the Notes may be relying on the exemption from the provisions of Section 5 of the Securities Act provided by Rule 144A.

Regulation S Notes

Each purchaser of the Notes outside the United States pursuant to Regulation S, by accepting delivery of this Offering Memorandum and the Notes, will be deemed to have represented, agreed and acknowledged that:

(1) It is, or at the time such Notes are purchased will be, the beneficial owner of such notes and (a) it is located outside the United States (within the meaning of Regulation S) and (b) it is not an affiliate of the Company or a person acting on behalf of such an affiliate.

(2) It understands that such Notes have not been and will not be registered under the Securities Act.

(3) The Company, the Registrar, the Initial Purchasers and their affiliates, and others will rely upon the truth and accuracy of the foregoing acknowledgments, representations and agreements and, if any such acknowledgments, representations or agreements deemed to have been made by virtue of its purchase of the Notes are no longer accurate, it agrees to promptly notify us.

SUMMARY OF CERTAIN DIFFERENCES BETWEEN INDONESIAN FINANCIAL ACCOUNTING STANDARDS AND U.S. GAAP

Our consolidated financial information included in this Offering Memorandum has been prepared and presented in conformity with Indonesian Financial Accounting Standards ("IFAS"). Certain differences exist between IFAS and U.S. GAAP which might be material to the financial information herein. The matters described below summarizes certain differences between IFAS and U.S. GAAP that may be material. We are responsible for preparing the summary below. We have not prepared a complete reconciliation of our consolidated financial statements and related footnote disclosures between IFAS and U.S. GAAP and have not quantified such differences. Accordingly, we cannot assure you that the following summary of differences between IFAS and U.S. GAAP is complete. In making an investment decision, investors must rely upon their own examination of the Company and its subsidiaries, the terms of the offering and the financial information contained herein. Potential investors should consult their own professional advisors for an understanding of the differences between IFAS and U.S. GAAP and how those differences might affect the financial information herein.

Statement of Financial Position

Under IFAS, generally, an entity presents its statement of financial position as classified between current and non-current assets and liabilities. An unclassified statement of financial position based on the order of liquidity is acceptable only if it provides reliable and more relevant information.

Under U.S. GAAP, there is no requirement to present a classified statement of financial position. There is also no restriction on when an unclassified statement of financial position based on the order of liquidity may be present.

Under IFAS, a liability that is payable on demand because certain conditions are breached is classified as current even if the lender has agreed, after the reporting date but before the financial statements are authorized for issue, not to demand repayment.

Under U.S. GAAP, generally, obligations that are payable on demand are classified as current, which is the same as under IFAS. However, unlike IFAS, a liability is not classified as current when it is refinanced on a long-term basis subsequent to the reporting date but before the financial statements are issued (available to be issued for certain non-public entities), or when the lender has waived after the reporting date its right to demand repayment for more than 12 months from the reporting date.

Under IFAS, there is no specific guidance on when an otherwise long-term debt agreement includes a subjective acceleration clause. Classification is based on whether the entity has an unconditional right to defer settlement of the liability at the reporting date.

Under U.S. GAAP, there is specific guidance on when an otherwise long-term debt agreement includes a subjective acceleration clause. Classification is based on the likelihood that the creditor will choose to accelerate repayment of the liability, which may result in differences from IFAS.

Statement of Cash Flows

Under IFAS, companies which present their cash flows using the direct method are not required to present a reconciliation of net income to net cash flow from operating activities. Furthermore, cash flows from interest received and paid are disclosed in a consistent manner from period to period as operating or financing activities.

Under U.S. GAAP, companies which present their cash flows using the direct method are required to present, in a separate schedule, a reconciliation of net income to cash flows from operating activities. Such reconciliation shows: (a) the effects of all deferrals of past operating cash receipts and payments, such as changes during the period in inventory, deferred income, and all accruals of expected future operating cash receipts and payments, such as changes during the period in receivables and payables, and (b) the effects of all items which cash effects are investing or financing cash flows, such as depreciation, gains or losses on sales of property, plant and equipment and discontinued operations and gains or losses on extinguishment of debt. Also, cash flows from

interest received and paid are classified in the statement of cash flows as operating activity only. Also, cash flows from interest received and paid are classified in the statement of cash flows as operating activities only, while dividend paid are classified as financing activities. Bank overdrafts are not included in cash and cash equivalents and the changes are classified as financing cash flows.

Consolidation, Joint Venture Accounting and Equity-Method Investment

Under IFAS, there is one model for determining whether consolidation is appropriate that encompasses the guidance in both governance and economic indicators of control. "Control" is defined as the power to govern the financial and operating policies of an entity to obtain benefits from its activities. In this case, the definition of control encompasses both the notion of governance and the economic consequences of that governance. The standard and interpretation provide indicators of when the substance of a relationship indicates control is present.

Under U.S. GAAP, an entity should first determine whether an entity is a variable interest entity ("VIE"). VIEs are evaluated for consolidation based on all contractual, ownership, or other interest that expose their holders to the risks and rewards of the entity, where such interests are termed variable interests. The holder of a variable interest that has (i) the power to direct the activities of a VIE that most significantly impact the VIE's economic performance, (ii) the obligation to absorb losses of the VIE that could potentially be significant to the VIE or (iii) the right to receive benefits from the VIE that could potentially be significant to the VIE is the VIE's primary beneficiary, and is required to consolidate the VIE.

Under IFAS, uniform accounting policies between parent and subsidiary are required.

Under U.S. GAAP, uniform accounting policies between parent and subsidiary are not required.

Under IFAS, proportionate consolidation is not permitted, regardless of industry. However, when a joint arrangement meets the definition of a joint operation instead of a joint venture, an investor would recognize its share of the entity's assets, liabilities, revenues, and expenses, and not apply the equity method.

Under U.S. GAAP, proportionate consolidation may be permitted to account for interests in unincorporated entities in certain limited industries when it is an established practice (i.e. construction and extractive industries).

Under IFAS, when determining significant influence, which is an investment of 20% or more voting power of the equity of an investee (including potential rights), potential voting rights are considered if currently exercisable. Under U.S. GAAP, when determining significant influence, which is an investment of 20% or more of the voting common stock of an investee, potential voting rights are generally not considered.

Under IFAS, investments in associates and joint ventures held by venture capital organizations, mutual funds, unit trusts, or similar entities are exempt from using the equity method and the investor may elect to measure its investment at fair value through profit or loss.

Under U.S. GAAP, entities are provided with the option to account for certain equity method investments at fair value. If the entity does not elect to use the fair value option, the equity method of accounting is required.

Investments in Associates

Under IFAS, losses of the associates in excess of the Company and its subsidiaries' interest in those associates (which includes any long-term interests that, in substance, form part of the Company and its subsidiaries' net investment in the associate) are recognized only to the extent that the Company and its subsidiaries have incurred legal or constructive obligations or made payments on behalf of the associate.

Under U.S. GAAP, an investor should continue to recognize losses when the imminent return to profitable operations of an investee appears to be assured, even if the investor has not (1) guaranteed obligations of the investee or (2) otherwise committed to provide further financial support to the investee.

Investments in Joint Ventures

Under IFAS, a joint arrangement is a contractual agreement whereby two or more parties undertake an economic activity that is subject to joint control. Joint control is the contractually agreed sharing of control of an

economic activity. Unanimous consent is required for the relevant activities of the parties sharing control, but not necessarily of all parties in the arrangement.

Under IFAS, joint arrangements are classified in two types: (i) joint operations, which give parties to the arrangement direct rights to the assets and obligations for the liabilities; and (ii) joint ventures, which give the parties rights to the net asset of the arrangement.

Under U.S. GAAP, the term "joint venture" refers only to jointly controlled entities, where the arrangement is carried on through a separate entity. A corporate joint venture is defined as a corporation owned and operated by a small group of businesses as a separate and specific business or project for the mutual benefit of the members of the group. Most joint venture arrangements give each venturer (investor) participating rights over the joint venture (with no single venturer having unilateral control), and each party sharing control must consent to the venture's operating, investing, and financing decisions.

Business Combinations

Under IFAS, non-controlling interest components that are present ownership interests and entitle their holders to a proportionate share of the acquiree's net assets in the event of liquidation may be measured at (i) fair value (including goodwill) or (ii) the non-controlling interest's proportionate share of the fair value of the acquiree's identifiable net assets (exclusive of goodwill), while all other components of non-controlling interest are measured at fair value unless another measurement basis is required. Accordingly, the choice is available on a business combination-by-business combination basis.

Under U.S. GAAP, non-controlling interest is measured at fair value (including goodwill).

Under IFAS, liabilities arising from contingencies are recognized as of the acquisition date if there is a present obligation that arises from past events and the fair value can be measured reliably, while contingent assets are not recognized. The contingent liability is measured subsequently at the higher of the amount initially recognized less, if appropriate, cumulative amortization recognized under the revenue guidance (Indonesian Financial Accounting Standards/Pernyataan Standard Akuntansi Keuangan ("PSAK") 23 on "Revenue") or the best estimate of the amount required to settle (under the provisions guidance — PSAK 57 on "Provisions, Contingent Liabilities, and Contingent Assets"). Contingent assets are not recognized.

Under U.S. GAAP, assets and liabilities arising from contingencies are recognized at fair value in accordance with Accounting Standards Codification 820 on "Fair Value Measurement and Disclosures" ("ASC 820"), if the fair value can be determined during the measurement period; otherwise, those assets or liabilities are recognized at the acquisition date in accordance with ASC 450 on "Contingencies" ("ASC 450"), if the related criteria for recognition are met. If contingent assets and liabilities are initially recognized at fair value, an acquirer should develop a systematic and rational basis for subsequently measuring and accounting for those assets and liabilities depending on their nature. If amounts are initially recognized and measured in accordance with ASC 450, the subsequent accounting and measurement should be based on that guidance.

Under IFAS, no guidance exists for pushdown accounting. The general view is that entities may not use the hierarchy in PSAK 25 on "Accounting Policies, Changes in Accounting Estimates, and Errors" to refer to U.S. GAAP and apply pushdown accounting in the separate financial statements of an acquired subsidiary, because the application of pushdown accounting will result in the recognition and measurement of assets and liabilities in a manner that conflicts with certain standards and interpretations under IFAS.

Under U.S. GAAP, companies have the option to apply pushdown accounting in their separate financial statements upon a change-in-control event. The election is available to the acquired company, as well as to any direct or indirect subsidiaries of the acquired company. If an acquired company elects to apply pushdown accounting, the acquired company should reflect the new basis of accounting established by the parent for the individual assets and liabilities of the acquired company arising from the acquisition in its standalone financial statements. Goodwill should be calculated and recognized consistent with business combination accounting. Bargain purchase gains, however, should not be recognized in the income statement of the acquired company that applies pushdown accounting. Instead, they should be recognized in additional paid-in capital within equity. Debt

(including acquisition related debt) and any other liabilities of the acquirer should be recognized by the acquired company only if they represent an obligation of the acquired company.

Accounting Policies, Errors and Estimates

Under IFAS, a statement of financial position as at the beginning of the preceding period is presented when an entity restates comparative information following a change in accounting policy, the correction of an error of items in the statement of financial position.

Under U.S. GAAP, a statement of financial position as at the beginning of the earliest comparative period is not required in any circumstances.

Inventory

Under IFAS, inventory provisions related to adjustments for the lower of cost and net realizable value can be written back up if there is clear evidence that the net realizable value has increased because of changed economic circumstances so that the carrying amount is the lower of cost and revised net realizable value.

Under U.S. GAAP, a provision to write down inventories to the lower of cost and net realizable value cannot be reversed should the market value recover prior to the sale or disposition. As a result, under U.S. GAAP, write-downs of inventory can only be recovered through a sale or a disposition.

Under IFAS, cost of inventory is generally determined using the first-in, first-out ("FIFO") or weighted average cost method. The use of the last-in, first-out ("LIFO") method is prohibited.

Under U.S. GAAP, the cost of inventory may be determined using the LIFO method in addition to the FIFO or weighted-average cost method.

Land Rights

The title of land in Indonesia rests with the state under Agrarian Law No. 5 of 1960. Land use is granted through land rights, whereby the holder of the right enjoys the full use of the land for a stated period of time, subject to extensions. Land rights generally are freely tradeable and may be pledged as security under borrowing agreements.

Under IFAS, the cost of acquired land rights is not amortized unless (a) the condition of the land is no longer suitable for the main operation of the enterprise, (b) the nature of the enterprise's main operation will result in the abandonment of the land and buildings subsequent to completion of the project, or (c) management's prediction or certainty that an extension or removal of the land rights will not be obtained. Costs to obtain those rights for the first time are capitalized as fixed assets but subsequent costs to extend or renew the rights are recognized as intangible assets and then amortized.

Under U.S. GAAP, the cost of acquired land rights is amortized over the period for which the holder is expected to retain the land rights.

Long-Lived Assets

Under IFAS, revaluation of long-lived assets is a permitted accounting policy election whereby long-lived assets are revalued to their fair values on a regular basis. If a long-lived asset is revalued, then all long-lived assets within the same category are also required to be revalued.

Under U.S. GAAP, revaluation of long-lived assets is not permitted.

Under IFAS, long-lived asset component depreciation is required if components of an asset have differing patterns of benefit.

Under U.S. GAAP, long-lived asset component depreciation is permitted, but considered uncommon.

Under IFAS, eligible borrowing costs that are capitalized as part of a qualifying long-lived asset include exchange rate differences from foreign currency borrowings to the extent that such borrowing costs are regarded

as an adjustment to interest costs. For borrowings associated with a specific qualifying long-lived asset, actual borrowing costs are capitalized and offset by investment income earned on those borrowings.

Under U.S. GAAP, long-lived asset component depreciation is permitted, but considered uncommon.

Under IFAS, costs that represent a replacement of a previously identified component of a long-lived asset, such as costs of a major overhaul, are capitalized if future economic benefits are probable and the costs can be reliably measured; otherwise, expensed as incurred.

Under U.S. GAAP, eligible borrowing costs that are capitalized as part of qualifying long-lived assets do not include exchange rate differences. Interest earned on the investment of borrowed funds generally cannot offset interest costs incurred during the period. For borrowings associated with a specific qualifying long-lived asset, borrowing costs equal to the weighted-average accumulated expenditures times the borrowing rate are capitalized.

Under U.S. GAAP, multiple accounting models have evolved in practice for costs related to a major overhaul, including (i) expense costs as incurred, (ii) capitalize costs and amortize them through the date of the next overhaul or (iii) follow the approach provided under IFAS or the International Financial Reporting Standards.

Under IFAS, investment property is separately defined as property held to earn rent, for capital appreciation, or both and may include property held by lessees under a finance or operating lease. Investment property may be accounted for on a historical cost basis or on a fair value basis as an accounting policy election. Capitalized operating leases classified as investment property must be accounted for using the fair value model.

Under U.S. GAAP, investment property is not separately defined and is therefore accounted for as held for use or held for sale.

Investment Property

Under IFAS, investment property is property, land or building, held to earn rentals or for capital appreciation, or both.

Under U.S. GAAP, there is no specific definition of investment property; such property is accounted for as property, plant and equipment unless it meets the criteria to be classified as held-for-sale.

Under IFAS, subsequent to initial recognition, all investment property is measured under either the fair value model (subject to limited exceptions) or the cost model. If the fair value model is chosen, then changes in fair value are recognized in profit or loss.

Under U.S. GAAP, subsequent to initial recognition, all investment property is measured using the cost model as property, plant and equipment.

Under IFAS, disclosure of the fair value of all investment property is required, regardless of the measurement model used.

Under U.S. GAAP, there is no requirement to disclose the fair value of investment property.

Intangible Assets and Goodwill

Under IFAS, development costs are capitalized when technical and economic feasibility of a project can be demonstrated in accordance with specific criteria, including (i) demonstrating technical feasibility, (ii) intent to complete the asset, (iii) ability to sell the asset in the future, (IV) how the intangible asset will generate probable future economic benefits (the entity should demonstrate the existence of a market or, if for internal use, the usefulness of the intangible asset), (v) availability of adequate resources to complete the development and to use or sell it and (vi) ability to measure reliably the expenditure attributable to the intangible asset during its development. Although application of these principles may be largely consistent with those under U.S. GAAP, there is no separate guidance addressing development costs for computer software.

Under U.S. GAAP, development costs are expensed as incurred unless addressed by guidance in another ASC Topic. Development costs related to computer software developed or external use are capitalized once technological feasibility is established in accordance with specific criteria. In the case of software developed for internal use, only those costs incurred during the application development stage may be capitalized.

Under IFAS, advertising and promotional costs are expensed as incurred. A prepayment may be recognized as an asset only when payment for the goods or services is made in advance of the entity having access to the goods or receiving the services.

Under U.S. GAAP, advertising and promotional costs are either expensed as incurred or expensed when the advertising takes place for the first time (policy choice). Direct response advertising may be capitalized if the specific criteria are met.

Under IFAS, revaluation to fair value of intangible assets other than goodwill is a permitted accounting policy election for a class of intangible assets. Because revaluation requires reference to an active market for the specific type of intangible, this is relatively uncommon in practice.

Under U.S. GAAP, revaluation of to fair value of intangible assets other than goodwill is not permitted.

Impairment of Long-Lived Assets, Goodwill, and Intangible Assets

Under IFAS, impairment of long-lived assets is determined using the "one-step" approach, which requires that impairment loss calculation be performed if impairment indicators exist. Impairment loss is recognized when the carrying amount of the long-lived asset exceeds its recoverable amount. Recoverable amount is the higher of (i) fair value less costs to sell, or (ii) value in use, which means the present value of future cash flows in use including disposal value.

Under U.S. GAAP, impairment of long-lived assets is determined using the "two-steps" approach, which requires that a recoverability test be performed first. Under a recoverability test, the carrying amount of the long-lived asset is compared with the sum of the future undiscounted cash flows generated through use and eventual disposition. If it is determined that the long-lived asset is not recoverable, an impairment loss calculation is required. Impairment loss is recognized when the carrying amount of the long-lived asset exceeds its fair value as calculated in accordance with ASC 820.

Under IFAS, changes in market interest rates are not considered impairment indicators.

Under U.S. GAAP, Changes in market interest rates can potentially trigger impairment and, hence, are impairment indicators.

Under IFAS, goodwill is allocated to a cash-generating unit ("CGU") or group of CGUs that represents the lowest level within the entity at which the goodwill is monitored for internal management purposes and cannot be larger than an operating segment (before aggregation). The use of qualitative assessment in determining the impairment of goodwill (and indefinite-lived intangibles) is not permitted. Impairment of goodwill (and indefinite-lived intangibles) is determined using the "one-step" approach, which requires that an impairment test be performed at the CGU level by comparing the CGU's carrying amount (including goodwill) and its recoverable amount. Impairment loss on the CGU, which is the amount by which the CGU's carrying amount (including goodwill) exceeds its recoverable amount, is allocated first to reduce goodwill to zero, then, the carrying amount of other assets in the CGU are reduced on a pro rata basis based on the carrying amount of each asset.

Under U.S. GAAP, goodwill is assigned to a reporting unit, which is defined as an operating segment or one level below an operating segment (component). Entities have the option to qualitatively assess whether it is more-likely-than-not that the fair value of a reporting unit is less than its carrying amount. Impairment of goodwill (and indefinite-lived intangibles) is determined using the "two-steps" approach, which requires that a recoverability test be performed first at the reporting unit level (the carrying amount of the reporting unit is compared with its fair value). If the carrying amount of the reporting unit exceeds its fair value, then impairment testing must be performed.

Under IFAS, if the indefinite-lived intangible asset does not generate cash inflows that are largely independent of those from other assets or groups of assets, then the indefinite-lived intangible asset should be tested annually for impairment, irrespective of indicators as part of the CGU to which it belongs unless certain conditions are met.

Under U.S. GAAP, indefinite-lived intangible assets separately recognized should be assessed for impairment individually unless they operate in concert with other indefinite-lived intangible assets as a single asset (i.e. the indefinite-lived intangible assets are essentially inseparable). Indefinite-live intangible assets may be combined with other assets (e.g. finite-lived intangible assets or goodwill) for purposes of an impairment test.

Under IFAS, the reversal of impairment loss previously recognized is prohibited for goodwill, while other assets must be reviewed at the end of each reporting period for reversal indicators. If appropriate, impairment loss should be reversed up to the newly estimated recoverable amount, not to exceed the initial carrying amount adjusted for depreciation.

Under U.S. GAAP, the reversal of impairment loss previously recognized is prohibited for all assets to be held and used.

Provisions and Contingencies

Under IFAS, a loss must be "probable" to be recognized. "Probable" is interpreted as "more likely than not" and "more likely than not" refers to a probability of greater than 50%.

Under U.S. GAAP, a loss must be "probable" to be recognized. "Probable" is interpreted as "likely" and is not ascribed a percentage, but is intended to denote a high likelihood (e.g. 75% or more).

Under IFAS, provisions should be recorded at the estimated amount to settle or transfer the obligation taking into consideration the time value of money. The discount rate to be used should be "a pre-tax rate (or rates) that reflects (or reflect) current market assessments of the time value of money and the risks specific to the liability."

Under U.S. GAAP, provisions may be discounted only when the amount of the liability and the timing of the payments are fixed or reliably determinable, or when the obligation is a fair value obligation. The discount rate to be used is dependent upon the nature of the provision. However, when a provision is measured at fair value, the time value of money and the risks specific to the liability should be considered.

Under IFAS, best estimate of obligation should be accrued. For a large population of items being measured, such as warranty costs, best estimate is typically expected value, although midpoint in the range may also be used when any point in a continuous range is as likely as another. Best estimate for a single obligation may be the most likely outcome, although other possible outcomes should still be considered.

Under U.S. GAAP, most likely outcome within the range should be accrued. When no one outcome is more likely than the others, the minimum amount in the range of outcomes should be accrued.

Under IFAS, once management has "demonstrably committed" to a detailed exit plan, which means that a legal or constructive obligation has been incurred, the general provisions under PSAK apply. Costs are typically recognized earlier than under U.S. GAAP because PSAK 57 focuses on the exit plan as a whole, rather than individual cost component of the plan.

Under U.S. GAAP, once management has committed to a detailed exit plan, each type of cost is examined to determine when recognized. Involuntary employee termination costs under a one-time benefit arrangement are recognized over future service period, or immediately if there is no future service required. Other exit costs are expensed when incurred.

Employee Benefits other than Share-Based Payments

Under IFAS, the projected unit credit method is required in all cases when computing employee benefits liability in defined benefit plans.

Under U.S. GAAP, different methods are required when computing employee benefits liability in defined benefit plans, depending on the characteristics of the plan's benefit formula.

Under IFAS, the concept of an expected return on plan assets does not exist. Instead, a "net interest" expense/(income) on the net defined benefit liability/(asset) is recognized as a component of defined benefit cost based on the discount rate used to determine the obligation.

Under U.S. GAAP, the concept of an expected return on plan assets exists, which is calculated using the expected long-term rate of return on invested assets and the market related value of the assets (based on either the fair value of plan assets at the measurement date or a "calculated value" that smooth the changes in fair value over a period not to exceed five years, at the employer's election).

Under IFAS, treatment of re-measurement must be recognized immediately in other comprehensive income. Gains and losses are not subsequently recognized in profit or loss.

Under U.S. GAAP, actuarial gains and losses may be recognized in net income as they occur or deferred in other comprehensive income and subsequently amortized to net income through a corridor approach.

Under IFAS, prior service costs or credits from plan amendments are immediately recognized in profit or loss.

Under U.S. GAAP, prior service costs or credits from plan amendments are initially deferred in other comprehensive income and subsequently recognized in net income over the average remaining service period of active employees or, when all or almost all participants are inactive, over the average remaining life expectancy of those participants.

Under IFAS, gain or loss from settlement is recognized in profit or loss when it occurs. Change in the defined benefit obligation from a curtailment is recognized in profit or loss at the earlier of when it occurs or when related restructuring costs or termination benefits are recognized.

Under U.S. GAAP, settlement gain or loss is recognized in net income when the obligation is settled. Curtailment loss is recognized in net income when the curtailment is probable of occurring and the loss is estimable, while curtailment gain is recognized in net income only when the curtailment occurs.

Under IFAS, multi-employer post-retirement plans are accounted for as either a defined contribution plan or defined benefit plan based on the contractual and constructive terms of the plan. If a defined benefit plan, it must account for the proportionate share of the plan similar to any other defined benefit plan unless sufficient information is not available.

Under U.S. GAAP, multi-employer post-retirement plans are accounted for similar to a defined contribution plan.

Taxation

Under IFAS, taxes are required to be paid on intercompany profits to be recognized as incurred and requires the recognition of deferred taxes on temporary differences between the tax-bases of assets transferred between entities/tax jurisdictions that remain within the consolidated group.

U.S. GAAP requires taxed paid on intercompany profits to be deferred and prohibits the recognition of deferred taxes on temporary differences between the tax-bases of assets transferred between entities/tax jurisdictions that remain within the consolidated group.

Under IFAS, there is no specific guidance on uncertain tax positions. PSAK 46, "Income Taxes," indicates that tax assets and liabilities should be measured at the amount expected to be paid based on enacted or substantively enacted tax legislation. Some adopt a "one-step" approach that recognized all uncertain tax positions at an expected value, while others adopt a "two-step" approach that recognizes only those uncertain tax positions that are considered probable to result in a cash outflow. Practice varies regarding the consideration of detection risk in the analysis.

Under U.S. GAAP, entities are required to recognize and measure their uncertain tax positions using a two-step process, separating recognition from measurement. A benefit is recognized when it is "more likely than not" to be sustained based on the technical merits of the position. Detection risk is precluded from being considered in the analysis. The amount of benefit to be recognized is based on the largest amount of tax benefit that is greater than 50% likely of being realized upon ultimate settlement.

Under IFAS, deferred tax effects arising from the initial recognition of an asset or liability are not recognized when (i) the amounts did not arise from a business combination and (ii) upon occurrence, the transaction affects neither accounting nor taxable profit (e.g. acquisition of non-deductible assets).

Under U.S. GAAP, there is no exemption for non-recognition of deferred tax effects for certain assets or liabilities.

Under IFAS, deferred tax assets are recognized only to the extent that it is probable that sufficient taxable profits will be available to utilize the deductible temporary difference or unused tax losses.

Under U.S. GAAP, deferred tax assets are recognized in full but are then reduced by a valuation allowance if it is considered more likely than not that some portion of the deferred tax assets will not be realized.

Under IFAS, enacted or "substantively enacted" tax rates as of the date of the statement of financial position must be used in computing deferred tax asset or liability.

Under U.S. GAAP, enacted tax rates must be used in computing deferred tax asset or liability.

Under IFAS, recognition of deferred tax liabilities from investments in subsidiaries or joint ventures (often referred to as outside basis differences) is required unless the reporting entity has control over the timing of the reversal of the temporary difference and it is probable that the difference will not reverse in the foreseeable future.

Under U.S. GAAP, recognition of deferred tax liabilities from investments in subsidiaries or joint ventures (often referred to as outside basis differences) is not required for investment in a foreign subsidiary or foreign corporate joint venture that is essentially permanent in duration unless it becomes apparent that the difference will reverse in the foreseeable future.

Revenue Recognition

Under IFAS, revenue from sale of goods is recognized only when (i) risks and rewards of ownership have been transferred, (ii) the seller retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold, (iii) revenues can be measured reliably, (iv) it is probable that the economic benefits will flow to the seller and (v) the costs incurred or to be incurred in respect of the transaction can be measured reliably. Revenue from rendering of services may be recognized in accordance with long-term contract accounting whenever revenues, costs, and the stage of completion can be measured reliably and it is probable that economic benefits will flow to the seller.

Under U.S. GAAP, public companies must follow Staff Accounting Bulletin Topic 13 on "Revenue Recognition" ("SAB Topic 13") when recognizing revenue from sale of goods, which requires that (i) delivery has occurred (the risks and rewards of ownership have been transferred), (ii) there is a persuasive evidence of an arrangement, (iii) the fee is fixed or determinable and (iv) collectability is reasonable assured. Revenue from rendering certain types of services, primarily relating to services sold with software, are addressed separately in U.S. GAAP literature, while all other service revenue should follow SAB Topic 13. Application of long-term contract accounting generally is not permitted for non-construction services.

Under IFAS, construction contracts are accounted for using the percentage-of-completion method if certain criteria are met; otherwise, revenue recognition is limited to recoverable costs incurred. The use of completed contract method is not permitted. Construction contracts are combined or segmented if certain criteria are met.

Under U.S. GAAP, construction contracts are accounted for using the percentage-of-completion method if certain criteria are met; otherwise, the completed contract method must be used. Construction contracts may be, but are not required to be, combined or segmented if certain criteria are met.

Under IFAS, recognition of revenue for each separately identifiable component of a single transaction is required if separation reflects the substance of the transaction; conversely, two or more transactions may be grouped together when their commercial effects are linked. IFAS does not provide specific criteria for making the determination on how to identify separate components in a single transaction.

Under U.S. GAAP, specific criteria are required in order for each element to be a separate unit of accounting, including delivered elements must have standalone value. If those criteria are met, revenue for each element of the transaction may be recognized when the element is delivered.

Under IFAS, deferred receipt of receivables is considered to be a financing agreement. Accordingly, the value of revenue to be recognized is determined by discounting all future receipts using an imputed rate of interest.

Under U.S. GAAP, discounting the deferred receipt of receivables to present value is required only in limited situations.

Under IFAS, the new standard "revenue from contracts with customers," which provides framework that replaces existing revenue guidance, is effective for annual periods beginning on or after January 1, 2020. Early adoption is permitted. A five-step model is used to implement the core transfer of control principle that is used to determine when to recognize revenue, and at what amount.

Under U.S. GAAP, the new Codification Topic, which provides framework that replaces existing revenue guidance, is effective for annual periods beginning after December 15, 2017 (public business entities) or after December 15, 2018 (other entities). Early adoption is permitted but not before annual periods beginning after December 15, 2016. A five-step model is used to implement the core transfer of control principle that is used to determine when to recognize revenue, and at what amount.

Financial Instruments

Under IFAS, compound (hybrid) financial instruments are required to be split into a debt component and an equity component and, if applicable, a derivative component. The derivative component is accounted for using fair value accounting.

Under U.S. GAAP, compound (hybrid) financial instruments are not split into debt and equity components unless certain specific requirements are met, but they may be bifurcated into debt and derivative components, with the derivate component accounted for using fair value accounting.

Under IFAS, only objective evidence of one or more credit loss events can generally result in an impairment being recognized in the statement of comprehensive income for an available-for-sale ("AFS") debt instrument. The impairment loss is measured as the difference between the debt instrument's amortized cost basis and its fair value. Impairment losses for AFS debt instruments may be reversed through profit or loss if the fair value of the instrument increases in a subsequent period and the increase can be objectively related to an event occurring after the impairment loss was recognized.

Under U.S. GAAP, declines in fair value below cost may result in an impairment loss being recognized in the income statement on an AFS debt instrument due solely to a change in interest rates (risk free or otherwise) if the entity has the intent to sell the debt instrument or it is more likely than not that it will be required to sell the debt instrument before its anticipated recovery. In this circumstance, the impairment loss is measured as the difference between the debt instrument's amortized cost basis and its fair value. When a credit loss exits, but (i) the entity does not intend to sell the debt instrument or (ii) it is not more likely than not that the entity will be required to sell the debt instrument before the recovery of the remaining cost basis, the impairment is separated into the amount representing the credit loss and the amount related to all other factors. The amount of the total impairment related to the credit loss is recognized in the income statement and the amount related to all other factors is recognized in other comprehensive income, net of applicable taxes. When an impairment loss is recognized in the income statement, a new cost basis in the instrument is established equal to the previous cost basis less the impairment recognized in earnings, and therefore, impairment losses recognized in the income statement cannot be reversed for any future recoveries.

Under IFAS, impairment of an AFS equity instrument is recognized in profit or loss when there is objective evidence that the AFS equity instrument is impaired and the cost of the investment in the equity instrument may not be recovered. A significant or prolonged decline in the fair value of an equity instrument below its cost is considered objective evidence of an impairment.

Under U.S. GAAP, impairment of an AFS equity instrument is recognized in the income statement if the equity instrument's fair value is not expected to recover sufficiently in the near term to allow a full recovery of the entity's cost basis. An entity must have the intent and ability to hold an impaired equity instrument until such near-term recovery; otherwise, an impairment loss must be recognized in the income statement.

Under IFAS, the definition of a derivative does not include a requirement that a notional amount be indicated, nor is net settlement a requirement. Certain of the scope exceptions under IFAS differ from those under U.S. GAAP.

Under U.S. GAAP, to meet the definition of a derivative, an instrument must (i) have one or more underlyings, one or more notional amounts or payment provisions, or both, (ii) require no initial net investment (as defined) and (iii) be able to be settled net (as defined). Certain scope exceptions exit for instruments that would otherwise meet these criteria.

Under IFAS, risks associated with only a portion of the instrument's cash flows or fair value, such as one or more selected contractual cash flows or portions of them or a percentage of the fair value, are allowed when hedging a risk component of a financial instrument, provided that the portion is separately identifiable and reliably measurable.

Under U.S. GAAP, the risk components that may be hedged are specifically defined by the literature, with no additional flexibility.

Under IFAS, the use of the shortcut method for interest rate swaps hedging recognized debt is not permitted. Assessment and measurement of hedge effectiveness considers only the change in fair valued of the designated hedged portion of the instrument's cash flows, as long as the portion is separately identifiable and reliably measurable.

Under U.S. GAAP, the shortcut method for interest rate swaps hedging recognized debt instruments is permitted. The long-haul method of assessing and measuring hedge effectiveness for a fair value hedge of the benchmark interest rate component of a fixed rate debt instrument requires that all contractual cash flows be considered in calculating the change in the hedged item's fair value even though only a component of the contractual coupon payment is the designated hedged item.

Under IFAS, the inclusion of an option's time value in assessing and measuring the hedge effectiveness is not permitted.

Under U.S. GAAP, the inclusion of an option's time value in assessing and measuring the hedge effectiveness is permitted.

Under IFAS, derecognition of financial assets is based on a mixed model that considers transfer of risks and rewards and control. Transfer of control is considered only when the transfer of risks and rewards assessment is not conclusive. If the transferor has neither retained nor transferred substantially all of the risks and rewards, there is then an evaluation of the transfer of control. Control is considered to be surrendered if the transferee has the practical ability to unilaterally sell the transferred asset to a third-party without restrictions. There is no legal isolation test required. The derecognition criteria may be applied to a portion of a financial asset if the cash flows are specifically identified or represent a pro rata share of the financial asset or a pro rata share of specifically identified cash flows.

Under U.S. GAAP, derecognition of financial assets (i.e. sales treatment) occurs when effective control over the financial asset has been surrendered whereby (i) the transferred financial assets are legally isolated from the transferor, (ii) each transferee (or, if the transferee is a securitization entity or an entity whose sole purpose is to facilitate an asset-backed financing, each holder of its beneficial interests) has the right to pledge or exchange the

transferred financial assets (or beneficial interests) and (iii) the transferor does not maintain effective control over the transferred financial assets or beneficial interests (e.g. through a call option or repurchase agreement). The derecognition criteria may be applied to a portion of a financial asset only if it mirrors the characteristics of the initial entire financial asset.

Under IFAS, the initial effective interest rate must be used throughout the life of the instrument for all financial assets and liabilities, except for certain reclassified financial assets, in which case the effect of increases in cash flows are recognized as prospective adjustments to the effective interest rate.

Under U.S. GAAP, the catch-up approach, retrospective method, or prospective method of calculating the interest for amortized cost-based assets must be used, depending on the type of instrument.

Under IFAS, loans and receivables are carried at amortized cost unless classified into the "fair value through profit or loss" category or the "available for sale" category, both of which are carried at fair value on the statement of financial position.

Under U.S. GAAP, unless the fair value option is elected, loans and receivables are classified as either (i) held for investment, which are measured at amortized cost or (ii) held for sale, which are measured at the lower of cost or fair value.

Under IFAS, the day one gains and losses on financial instruments are recognized only when their fair value is evidenced by a quoted price in an active market for an identical asset or liability (i.e. level 1 or level 2 input) or based on a valuation technique that uses only data from observable markets.

Under U.S. GAAP, entities are not precluded from recognizing day one gains and losses on financial instruments reported at fair value even when all inputs to the measurement model are not observable. Unlike IFAS, U.S. GAAP contains no specific requirements regarding the observability of inputs, thereby potentially allowing for the recognition of gains or losses at initial recognition of an asset or liability even when the fair value measurement is based on a valuation model with significant unobservable inputs (i.e. level 3 measurements).

Under IFAS, PSAK 71 replaces PSAK 55 on "Financial Instruments: Recognition and Measurement," and includes the accounting requirements for classification and measurement of financial instruments, impairment of financial assets and hedge accounting. The new model for classification of financial assets is driven by cash flow characteristics and the business model in which an asset is held. The expected-loss impairment model requires entities to account for expected credit losses from when financial instruments are first recognized and to recognize full lifetime expected losses on a timely basis. It also requires disclosures to assist users in understanding the amount of expected credit losses, the basis for their measurement and the reasons for changes in expected credit losses over time. PSAK 71 removes the volatility in profit or loss that was caused by changes in the credit risk of liabilities elected to be measured at fair value. The new hedge-accounting model aligns the accounting treatment with risk management activities and includes additional disclosures of information about risk management and the effect of hedge accounting on the financial statements. The standard is effective for annual periods beginning on or after January 1, 2020. Early adoption is permitted.

Under U.S. GAAP, in January 2016, the Financial Accounting Standards Board (the "FASB") issued the "Accounting Standards Update (ASU) 2016-01, Financial Instruments — Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities" (the "ASU"), which will require entities to measure equity investments (except those accounted for under the equity method, those that result in consolidation of the investee and certain other investments) at fair value and recognize any changes in fair value in net income. A measurement alternative will be available for equity investments without a readily determinable fair value. The ASU does not change the guidance for classifying and measuring investments in debt securities. The ASU will also require entities to record changes in instrument-specific credit risk for financial liabilities measured under the fair value option in other comprehensive income. It also makes other targeted amendments to certain disclosure requirements and other aspects of current U.S. GAAP. The FASB ultimately decided to make only targeted amendments in response to feedback it received on two earlier proposals, resulting in a significant departure from the joint model it developed with the International Accounting Standards Board and the final

version of IFRS 9 on "Financial Instruments." As a result, entities that report under U.S. GAAP will use a significantly different model for classifying and measuring financial instruments than entities that report under IFRS. The ASU is effective for calendar-year of a public business entity ("PBE") beginning in 2018. For all other calendar-year entities, it is effective for annual periods beginning in 2019 and interim periods beginning in 2020. Non-PBEs can adopt the standard at the same time as PBEs, and both PBEs and non-PBEs can early adopt certain provisions.

Leases

Under IFAS, a lease is classified as a finance lease if it transfers substantially all risks and rewards incidental to ownership. At the commencement of the lease term, lessees shall recognize finance leases as assets and liabilities in their statements of financial position at amounts equal to the fair value of the leased property or, if lower, the present value of the minimum lease payments, each determined at the inception of the lease. Minimum lease payments shall be apportioned between the finance charge and the reduction of the outstanding liability. The asset is depreciated over its useful life or the lease term if shorter. However, the latter is only permitted if there is no reasonable certainty of the lessee obtaining ownership of the asset. The following conditions normally lead to a finance lease (a) ownership is transferred to lessee at the end of the lease term; (b) a bargain purchase option exists; (c) the lease term is for the majority of the leased asset's economic life; (d) the present value of minimum lease payments is equal to substantially all of the fair value of the leased asset; and (e) the leased assets are of a specialized nature that only the lessee can use without major modification.

U.S. GAAP defines a lease as a contract conveying the right to use property, plant or equipment for a stated period of time. A service agreement may be accounted for as a leasing arrangement, as opposed to a service contract, if the substance conveys a right to use the underlying property, plant and equipment. U.S. GAAP has specific "bright line" tests, while IFAS does not. This may result in differences between transactions that are close to these test parameters.

Under IFAS, the new standard leases, is effective for annual periods beginning on or after January 1, 2020. Early adoption is permitted only in conjunction with PSAK 72 Revenue from Contracts with Customers. The new standard applies to leases of property, plant and equipment and other assets, with limited exclusions. Lessees apply a single on-balance sheet lease accounting model, except for leases to which they elect to apply the recognition exemptions for short-term leases or leases of low-value assets. A lessee measures the right-of-use asset at cost less accumulated depreciation and accumulated impairment losses, except when it applies the alternative measurement models for revalued assets and investment property. Lease classification by lessors is made at inception of the lease and is reassessed only if there is a lease modification and that modification is not accounted for as a separate lease. The classification depends on whether substantially all of the risks and rewards incidental to ownership of the underlying asset have been transferred, based on the substance of the arrangement. In a sub-lease, the intermediate lessor accounts for the head lease and the sub-lease as two separate contracts. An intermediate lessor classifies a sub-lease by reference to the right-of-use asset arising from the head lease.

Under U.S. GAAP, the new Codification Topic is effective for annual periods beginning after December 15, 2018 (public business entities) or after December 15, 2019 (other entities). Early adoption is permitted. The new Codification Topic applies to leases of property, plant and equipment, the scope excludes leases of inventory, leases of assets under construction and all leases of intangible assets. There is a dual classification on-balance sheet lease accounting model for lessees: finance leases and operating leases. Classification is determined by pass/fail tests intended to determine whether the lessee obtains control of the use of the underlying asset as a result of the lease. Classification is made at commencement of the lease and is reassessed only if there is a lease modification and that modification is not accounted for as a separate lease. There is no exemption for leases of low-value assets. For a finance lease, a lessee measures the right-of-use asset at cost less accumulated amortization and accumulated impairment losses. For an operating lease, unless the right-of-use asset has been impaired, a lessee amortizes the right-of-use asset as a balancing amount that together with accretion on the lease liability generally produces straight-line total lease expense, a lessee cannot revalue right-of-use assets, and there is no alternative measurement model for leases of investment property. Lease classification by lessors is made at commencement of the lease. In addition, the classification is determined by a series of pass/fail tests intended to

determine whether the lessee obtains control of the use of the underlying asset as a result of the lease. In a sub-lease transaction, the intermediate lessor accounts for the head lease and the sub-lease as two separate contracts. An intermediate lessor classifies a sub-lease by reference to the underlying asset.

Earnings per Share

Under IFAS, contracts that may be settled in shares or cash at the issuer's option are always assumed to be settled in shares.

Under U.S. GAAP, contracts that may be settled in shares or cash at the issuer's option are presumed to be settled in shares unless evidence is provided to the contrary (i.e. the issuer's past practice or stated policy is to settle in cash).

Under IFAS, in computing the year-to-date and annual diluted earnings per share ("EPS") for options and warrants (using the treasury stock method) and for contingently issuable shares, regardless of whether the period is profitable, the number of incremental shares is computed as if the entire year-to-date period were "the period" (i.e. not to average the current quarter with each of the prior quarters).

Under U.S. GAAP, in computing the year-to-date and annual diluted EPS for options and warrants (using the treasury stock method) and for contingently issuable shares, for year-to-date and annual computations when each period is profitable, the number of incremental shares added to the denominator is the weighted average of the incremental shares that were added to the denominator in each of the quarterly computations.

Under IFAS, when using the treasury stock method for options, warrants, and their equivalents, there is no explicit requirement to assume proceeds to include the income tax effects on additional paid-in capital.

Under U.S. GAAP, when using the treasury stock method, it assumes that proceeds include the income tax effects, if any, on additional paid-in capital at exercise.

Under IFAS, potentially issuable shares in contingently convertible debt are considered "contingently issuable" and are included in diluted EPS using the if-converted method only if the contingencies are satisfied at the end of the reporting period.

Under U.S. GAAP, potentially issuable shares in contingently convertible debt are included in diluted EPS using the if-converted method if one or more contingencies relate to a market price trigger (e.g. the entity's share price), even if the market price trigger is not satisfied at the end of the reporting period.

Segment Reporting

Under IFAS, all entities determine segments based on the management approach, regardless of form of organization.

Under U.S. GAAP, entities with a matrix form of organization must determine segments based on products and services.

Subsequent Events

Under IFAS, subsequent events are evaluated through the date that the financial statements are authorized for issuance. Depending on an entity's corporate governance structure and statutory requirements, authorization may come from management or a board of directors.

Under U.S. GAAP, subsequent events are evaluated through the date the financial statements are issued (for United States Securities and Exchange Commission ("SEC") registrants and conduit bond obligors) or available to be issued (for all entities other than SEC registrants and conduit bond obligors). Financial statements are considered issued when they are widely distributed to shareholders or other users in a form that complies with U.S. GAAP. Financial statements are considered available to be issued when they are in a form that complies with U.S. GAAP and all necessary approvals have been obtained.

Under IFAS, the reissuance of financial statements is not specifically addressed and only one date through which subsequent events are evaluated is recognized. The date recognized is the date that the financial statements are authorized for issuance, even if they are being reissued. As a result, only one date will be disclosed with respect to the evaluation of subsequent events, and an entity could have adjusting subsequent events in reissued financial statements.

Under U.S. GAAP, if the financial statements are reissued, events or transactions may have occurred that require disclosure in the reissued financial statements to keep them from being misleading. However, an entity should not recognize events occurring between the time the financial statements were issued or available to be issued and the time the financial statements were reissued unless the adjustment is required by U.S. GAAP or regulatory requirements.

Deferred Exploration and Development Costs

Under IFAS, entity is permitted to develop an accounting policy for recognition of exploration and evaluation expenditures. As such, an entity may defer exploration and evaluation costs incurred in an area of interest associated with a potential mineral deposit and valid mining right and, when either: (a) exploration costs are expected to be recovered through exploitation or sale of proved reserves; or (b) activities have not yet reached a stage permitting reasonable assessments of the existence or otherwise of economically recoverable reserves. The reporting entity also needs to demonstrate that active and significant exploration of the area of interest is continuing to substantiate deferral. Expenditures related to the development of ore body shall not be recognized as exploration and evaluation assets.

Under U.S. GAAP, costs incurred before mineralization are expensed. The standard prohibits capitalization of exploration and evaluation costs until feasibility study are completed and permits are in place. Costs are capitalized when it has been determined that an ore body can be economically developed, which requires the completion of a feasibility study. The time between initial acquisition and full evaluation of property's potential is variable and is determined by several factors, including the location relative to existing infrastructure, the property's stage of development, geological controls and ore prices. If an ore body is determined to be economically mineable, acquisition and development costs are amortized when production begin using the unit-of-production method based on proved and probable reserves.

Amortization of Mining Properties

Under IFAS, the amortization method used shall reflect the pattern in which the asset's future economic benefits are expected to be consumed by the entity. If that pattern cannot be determined reliably, the straight-line method shall be used. The amortization charge for the period shall be recognized in profit or loss unless this or another standard permits or requires it to be included in the carrying amount of another asset. A variety of amortization methods can be used, including the method used is selected on the basis of the expected pattern of consumption of the expected future economic benefits embodies in the asset and is applied consistently from period to period, unless there is a change in the expected pattern of consumption of those future economic benefits. If the unit-of-production method is used, the amortization rate each year should be based on the reasonable reserves which could be produced until the end of the exploration period of that area of interest. If the amortization is based on the passage of time, then the estimated economic useful life should not be longer than the exploitation period. The exploitation period is based on the permission to mine.

Under U.S. GAAP, amortization of mining properties, property, plant and equipment is computed using the units-of-production method over the estimated proved and probable reserves or the economic useful life of the equipment if shorter. In certain limited circumstances, the straight-line method may be used if the impact is substantially similar to the units-of-production method. Units-of-production depreciation rates are revised whenever there is an indication of the need for revision. The revisions are accounted for prospectively as changes in estimates.

Rehabilitation Costs and Asset Retirement Obligations

Under IFAS, management's best estimate of the costs of dismantling and removing item or restoring the site on which it is located is required to be recorded when an obligation exists. The estimate is to be based on a present obligation (legal or constructive) that arises as a result of acquisition, construction or development of a long-lived asset. If it is not clear whether a present obligation exists, the entity may evaluate the evidence under a more-likely-than-not threshold. This threshold is evaluated in relation to the likelihood of settling the obligation. The measurement of the liability is based on the present of the expenditure expected to be required to settle the obligation. The anticipated cash flows are discounted using a pre-tax discount rate (or rates) that reflect(s) current market assessments of the time value of money and the risks specific to the liability (for which the cash flow estimates have not been adjusted) if the effect is material. The estimated liability shall be reviewed at the end of each reporting period and adjusted to reflect the current best estimates. The carrying amount of the liability increases in each period to reflect the passage of time with said increase recognized as a borrowing cost in profit or loss. According to Interpretation of Statement of Financial Accounting Standards/ Intrepretasi Standard Akuntansi Keuangan 9, Change in Existing Decommissioning, Restoration and Similar Liabilities, changes to the amount of retirement obligation that was initially capitalized the related asset are due to: (a) changes in the estimated timing or amount of the cash outflows; (b) changes to the discount rate; or (c) an increase that reflects the passage of time (also referred to as the unwinding of the discount), which shall be adjusted to the carrying value of the related asset. Adjustments may result in an increase in the carrying amount of an asset beyond its recoverable amount. An impairment loss would result in such circumstances. Adjustments may not reduce the carrying amount of an asset to a negative value. Once the carrying value reaches zero, further reductions are recorded in profit or loss.

Under U.S. GAAP, asset retirement obligations ("ARO") are recorded at fair value and are based upon the legal obligation that arises as a result of an acquisition, construction, or development of a long-lived asset. The use of a credit-adjusted, risk-free rate is required for the discounting purposes when an expected present-value technique is used for estimating the fair value of the liability. The guidance also required an entity to measure changes in the liability for an ARO due to (a) passage of time by applying an interest method of allocation to the amount of the liability at the beginning of the period; and (b) revisions to either the timing or the amount of the original estimate of undiscounted cash flow. The interest rate used for measuring that change would be the credit-adjusted, risk-free rate that existed when the liability, or portion thereof, was initially measure. In addition, changes to the undiscounted cash flows are recognized as an increase or decrease in both the liability for an ARO and the related asset retirement cost. Upward revisions are discounted by using the current credit-adjusted, risk-free rate. Downward revisions are discounted by using the credit-adjusted, risk-free rate that existed when the original liability was recognized. If an entity cannot identify the prior period to which the downward revision related, it may use a weighted average, credit-adjusted, risk-free rate to discount the downward revision to estimated future cash flows.

LEGAL MATTERS

Certain legal matters with respect to the Notes will be passed upon for us by Sidley Austin LLP as to matters of New York law and U.S. federal securities law and by Assegaf Hamzah & Partners as to matters of Indonesian law. Certain legal matters with respect to the Notes will be passed upon for the Initial Purchasers by Clifford Chance Pte Ltd as to matters of New York law and U.S. federal securities law and by Widyawan & Partners as to matters of Indonesian law.

INDEPENDENT PUBLIC ACCOUNTANTS

The consolidated financial statements of PT Indonesia Asahan Aluminium (Persero) as of and for the years ended December 31, 2015, 2016 and 2017 included in this Offering Memorandum have been audited by KAP Tanudiredja, Wibisana, Rintis & Rekan (a member of the PricewaterhouseCoopers network of firms), independent public accountants, as stated in their report included in this Offering Memorandum.

With respect to the unaudited interim consolidated financial statements of PT Indonesia Asahan Aluminium (Persero) as of June 30, 2018 and for the six months ended June 30, 2017 and 2018 included in this Offering Memorandum. KAP Tanudiredja, Wibisana, Rintis & Rekan (a member of the PricewaterhouseCoopers network of firms) reported that they have applied limited procedures in accordance with professional standards in Indonesia in their review of such financial information. However, their separate report dated October 22, 2018 appearing herein states that they did not audit and they do not express an opinion on that unaudited financial information. Accordingly, the degree of reliance on their report on such information should be restricted in light of the limited nature of the review procedures applied.

The consolidated financial statements of PT Freeport Indonesia as of June 30, 2018 and for the six months ended June 30, 2017 and 2018 included in this Offering Memorandum have been reviewed by, and the consolidated financial statements of PT Freeport Indonesia as of and for the years ended December 31, 2015, 2016 and 2017 included in this Offering Memorandum have been audited by, Purwantono, Sungkoro & Surja (a member firm of Ernst & Young).

INDEPENDENT MINING CONSULTANTS

Our 2015 Tanjung Enim Coal Reserves Statement included in this Offering Memorandum was prepared by PT Britmindo, an independent mining consultant, as stated in the report appearing herein. The reserves and resources data for two of our inactive coal mines included in this Offering Memorandum have been prepared by IMC Group Consulting Limited, an independent mining consultant, as stated in the report appearing herein. The 2017 Grasberg Copper, Gold and Silver Reserves Statement included in this Offering Memorandum was prepared by Independent Mining Consultants, Inc., an independent mining consultant, as stated in the report appearing herein.

MINING AND ALUMINUM SMELTING INDUSTRY CONSULTANT

The information contained in the section "Industry Overview" in this Offering Memorandum, including all statistics and data therein, was prepared by AME Consulting Limited, independent mining and aluminum smelting industry consultants and experts in the mining and aluminum smelting industry. AME Consulting Limited, has given and not withdrawn its written consent to the issue of this Offering Memorandum with the inclusion herein of their name and all references thereto and to the inclusion of the "Industry Overview" section in this Offering Memorandum, in the form and context in which it appears, and to act in such capacity in relation thereto. The "Industry Overview" section does not include all of the information that may be important for an investment decision.

RATINGS

The Notes are expected to be rated "Baa2" by Moody's and "BBB-" by Fitch. A security rating is not a recommendation to buy, sell or hold securities and may be subject to suspension, reduction or withdrawal at any time by the assigning rating agency.

GLOSSARY

AFT	Ash fusion temperature, an indicator of the melting properties of a coal ash and its reactivity to high boiler temperatures.
Air-dried basis	Inclusion of inherent moisture only.
Alloy	A mixture composed of two or more metals.
Alluvium	Unconsolidated mud, silt, sand or pebbles deposited by a stream or river that may contain valuable minerals.
Aluminum extrusion	Extrusion is the process of shaping aluminum by forcing it to flow through a specifically shaped opening in a die. The extruded aluminum comes out as an elongated piece with the same profile as the die opening.
Aluminum fluoride	Aluminum fluoride is an inorganic compound used primarily in the production of aluminum. This colorless solid can be prepared synthetically but also occurs in nature as minerals rosenbergite and oskarssonite.
Aluminum foundry alloys	Aluminum foundry alloys are used for aluminum castings. Metals are cast into shapes by melting them into a liquid, pouring the aluminum in a mold, and removing the mold material or casting after the aluminum has solidified as it cools.
Anodes	An anode is an electrode through which the conventional current enters into a polarized electrical device. This contrasts with a cathode, an electrode through which conventional current leaves an electrical device.
As-received basis	Analytical data calculated to the condition of the sample as it arrived at the laboratory, before processing or conditioning.
Ash	Impurities consisting of iron, alumina and other incombustible matter that are contained in coal. Since ash increases the weight of coal, it adds to the cost of handling and can affect the burning characteristics of coal.
Bank cubic meter	A measure of the volume of overburden waste material.
Benching system	In mining, a bench is a narrow, strip of land cut into the side of an open-pit mine. These step-like zones are created along the walls of an open-pit mine for access and mining.
Beneficiation	Beneficiation is any process that improves the economic value of the ore by removing the commercially valueless minerals, which results in a higher grade product and a waste stream.
Bituminous coal	A dense coal, usually black, sometimes dark brown, often with well-defined bands of bright and dull material, used primarily as fuel in steam-electric power generation, with substantial quantities also used for heat and power applications in manufacturing and to make coke. Its moisture content usually is less than 20.0% The heat content of bituminous coal ranges from 21 to 30 million Btu per tonne on a moist, mineral-matter-free basis.
Blast Furnace	The receptacle for iron ore, coke and other raw materials used in the processing of iron ore into pig iron. Pig iron is subsequently processed into steel.

Blasting	The process of causing explosions in the mine
Bucket-wheel dredger	A bucket-wheel dredger has a rotating mechanical device, an excavator, perpendicular to the ship's axis, mounted in front of the suction head.
Calorific value or CV	A coal sample's energy content measured as the heat released on complete combustion in air or oxygen, usually expressed as the amount of heat (measured in kilo calories) per unit weight of coal (measured in kilograms) or (kcal/kg).
Carbon-in-leach process	A gold extraction process called cyanidation where carbon is added to the leach tanks (or reaction vessel) so that leaching and absorption take place in the same tanks.
Coal tar pitch	Coal tar is a thick dark liquid which is a by-product of the production of coke and coal gas from coal. It has both medical and industrial uses.
Coke	Coke is a fuel with a high carbon content and few impurities, made by heating coal in the absence of air. It is the solid carbonaceous material derived from destructive distillation of low-ash, low-sulfur bituminous coal.
Competent Person	A minerals industry professional responsible for the preparation and/or signing off of reports on exploration results and mineral reserves and resources estimates and who is accountable for the prepared reports.
Concentrate	A powdery product containing higher concentrations of minerals resulting from ore grinding, magnetic separation, flotation or other processing techniques, which as a semi-finished product would need to be further processed, such as by smelting, to effect recovery of metal.
Crusher	A machine for crushing rocks to smaller grain size.
Cu	Chemical symbol for copper.
Cut and fill method	In earthmoving, cut and fill is the process of constructing a railway, road or canal whereby the amount of material from cuts roughly matches the amount of fill needed to make nearby embankments, so minimizing the amount of construction labor.
Cutter suction dredger	A cutter suction dredger is equipped with a rotating cutter head, for cutting and fragmenting hard soils.
Cyanide process	Gold cyanidation is a hydrometallurgical technique for extracting gold from low-grade ore by converting the gold to a water-soluble coordination complex. It is the most commonly used leaching process for gold extraction.
Deposit	A body of mineralization containing a sufficient average grade of tin to warrant further exploration and/or development expenditure.
De-sulfurization process	Desulfurization is a chemical process for the removal of sulfur from a material. This involves either the removal of sulfur from a molecule or the removal of sulfur compounds from a mixture such as oil refinery streams.

dmt	Dry metric tonne, a unit of measurement with the same mass value as a metric tonne, but the material has been dried to decrease the moisture level.
Dozer ripping	The ripper is the long claw-like device on the back of the bulldozer. Rippers can come as a single (single shank/giant ripper) or in groups of two or more (multi shank rippers).
Drilling	A technique or process of making a circular hole in the ground with a drilling machine, which typically occurs to obtain a cylindrical cone as a sample of ore. Alternatively, blasthole drilling is a technique used to create a hole to house an explosive charge in preparation for blasting a zone of rock.
DWT	Deadweight tonnage, a measure of how much weight a ship can carry, not its weight. DWT is the sum of the weights of cargo, fuel, fresh water, ballast water, provisions, passengers, and crew.
Electro-refining	Electro-refining refers to the process of using electrolysis to increase the purity of a metal extracted from its ore (compound or mixture of compounds from which a metal can be extracted commercially). The anode, positive electrode, is the impure metal to be purified.
Electro-winning	Electro-winning, also called electroextraction, is the electrodeposition of metals from their ores that have been put in solution via a process commonly referred to as leaching. Electro-refining uses a similar process to remove impurities from a metal.
Electrolytic reduction	The electrolytic reduction is a type of electrolysis. The oxides, hydroxide and chlorides of metals in fused state are electrically reduced by using this method.
Free on board or FOB	An agreed term of coal sale where the coal is delivered by the seller to the point of shipment, which include barge (i.e. FOB barge) or mother vessel (i.e. FOB mother vessel). The buyer arranges and pays for the transportation (and insurance thereof) of the coal. The responsibility of the seller ceases when the coal is delivered to the agreed point of shipment.
Goethite	Goethite is an iron-bearing hydroxide mineral of the diaspore group. It is found in soil and other low-temperature environments. Goethite has been well known since ancient times for its use as a pigment (brown ochre).
Gold bullion	Refined gold in the form of bars.
Gold concentrate	Concentrate of gold.
Grade	The relative amount of valuable elements or minerals contained in a parcel of ore material.
Grinding mills	A mill is a device that breaks solid materials into smaller pieces by grinding, crushing, or cutting.
Gross-as-received or GAR	A calculation of calorific value of a coal with moisture as received or total moisture ("TM"). The calculation is based on the conversion from the air-dried-basis value. The calculation pursuant to said conversion is dependent on the specific moisture content of the coal.

GW	Gigawatt, a unit of power equal to one billion watts.
GWh	Gigawatt hour, a unit of energy representing one billion watt hours and equivalent to one million kilowatt hours. Gigawatt hour units are often used as a measure of the output of large electricity power stations.
Harga Batubara Acuan or HBA	A monthly reference price published by the Indonesian government, and is used to determine the minimum price of coal sales. The headline HBA for Newcastle benchmark quality coal is calculated based on the monthly average of a basket of spot price indices. Minimum prices for Indonesian export brands are then calculated by applying various quality-based adjustments, with the adjustment formulae used published along with the monthly prices.
HGI	Hardgrove Grindability Index, a measure for the grindability of coal.
Hopper	A hopper car or hopper wagon is a type of railroad freight car used to transport loose bulk commodities such as coal, ore, grain, and track ballast.
Hydraulic	Hydraulic excavators are heavy construction equipment consisting of a boom, dipper (or stick), bucket and cab on a rotating platform known as the "house." The house sits atop an undercarriage with tracks or wheels. They are a natural progression from the steam shovels and often mistakenly called power shovels.
Inherent moisture	The moisture that is stored within the pores of individual particles and can only be removed using thermal methods.
ISO	International Organization for Standardization.
ISO	International Organization for Standardization.
IUP	*Izin Usaha Pertambangan*, a mining permit issued by the Government that is required to carry out mining activities.
JORC	The Australasian Joint Ore Reserves Committee, which is sponsored by the Australian mining industry and its professional organization.
JORC Code	The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves published by the JORC, Australian Institute of Geoscientists and Minerals Council of Australia in 2004, which contains the minimum standards, recommendations and guidelines for the reporting of exploration results, mineral resources and ore reserves.
Jumbo drill	A jumbo drill is a rock drilling machine. Jumbo drills are usually used in underground mining, if mining is done by drilling and blasting. They are also used in tunneling, if rock hardness prevents use of tunneling machines.
Kcal/kg	Kilocalorie per kilogram.
Kilo tonne	A unit of weight, equal to 1000 tonnes.
Koz	Kilo ounce or 1000 ounces.
Koz t	Kilo troy ounce or 1000 troy ounces.
Ktpa	Kilo volt.
kV	Kilo-volt-ampere.

kVa	Kilo-volt-ampere.
kWp	Kilowattpeak.
Lb	Symbol for pound, a unit of mass equal to 0.45359237 kilograms.
LBMA	The London Bullion Market Association.
Lignite	The lowest rank of coal, often referred to as brown coal, used almost exclusively as fuel for steam-electric power generation. It is brownish-black and has a high inherent moisture content, sometimes as high as 45.0% percent.
Limonite	Limonite type laterites are highly enriched in iron due to very strong leaching of magnesium and silica. They consist largely of goethite and contain 1.0% to 2.0% nickel incorporated in goethite.
Liter	A metric unit of capacity equal to 1,000 cubic centimeters.
Load haul dump	Load haul dump loaders are similar to conventional front end loaders but developed for the toughest of hard rock mining applications, with overall production economy, safety and reliability in mind.
Mineable	Portion of a mineralized deposit for which extraction is technically and economically feasible.
Moisture content	The amount of moisture in coal, expressed as a percentage of the weight of the coal. The moisture content of coal varies by the type of coal, the region where it is mined and the location of coal within a seam. In general, high moisture content decreases the calorific value and energy content and increases the weight of the coal. Two types of moisture can be found in coal, including (a) free or surface moisture, which can be removed by exposure to air, and (b) inherent moisture, which is trapped in the coal and can be removed by heating the coal.
Mtpa	Metric ton per annum.
PWh	Petawatt hour, a unit of energy representing one trillion watt hours. Petawatt hour units are large enough to conveniently express the annual electricity generation for whole countries and the world energy consumption.
Open-cut mining	A form of mining designed to extract minerals that lie near the surface. Overburden is removed to expose the minerals for mining. Rock covering the minerals may be blasted and removed by large draglines or electric shovels and trucks.
Open-pit mining	A mining method which involves removing the overlying strata or overburden and extracting the coal.
Ore	Mineral bearing rock which can be mined and treated profitably under current or immediately foreseeable economic conditions.
Ore reserve	The economically mineable part of a measured and/or indicated mineral resource, including diluting materials and allowances for losses which may occur when the material is mined.
Overburden	Any material, consolidated or unconsolidated, such as layers of earth and rock, that overlies a coal seam. In surface mining operations, overburden is removed prior to coal extraction.

Oz or ozs	Ounce or ounces, a unit of mass, weight, or volume equal to approximately 28 grams.
Oz t	Troy ounce, a unit of mass, weight, or volume equal to approximately 31 grams or approximately 1.1 oz.
Rotary dryer	The rotary dryer is a type of industrial dryer employed to reduce or minimize the liquid moisture content of the material it is handling by bringing it into direct contact with a heated gas.
Rotary kiln	A rotary kiln is a pyroprocessing device used to raise materials to a high temperature (calcination) in a continuous process.
Primary aluminum	Primary aluminum refers to aluminum produced directly from mined ore. The ore is refined and electrolytically reduced to elemental aluminum.
Processing	The process which in general refers to the extraction of usable portions of ore by using physical and chemical methods.
Reclamation	The process of restoring the environment to a stable state following mining activities by restoring topsoil and planting vegetation. The process commonly includes "recontouring" or "reshaping" the land to its approximate original appearance, restoring topsoil and planting native grass and ground covers. Reclamation operations are usually underway before the mining of a particular site is completed. Reclamation is regulated by applicable local law.
ROM coal	Run-of-mine coal is coal delivered directly from the mine mouth to the coal preparation or handling facility.
Saprolite	Saprolite nickel ore is formed beneath the limonite zone. It contains generally 1.5% to 2.5% nickel.
Serpentine	The serpentine subgroup are greenish, brownish, or spotted minerals commonly found in serpentinite rocks. They are used as a source of magnesium and asbestos, and as a decorative stone.
Slag	By-product of smelting, consisting of a mixture of metal oxides and silicon dioxide.
Sluice box	A sluice box is a long, narrow box that traps gold as running water passes through. Many gold sluices quickly and easily convert to highbankers and dredges.
Smelting	A pyro-metallurgical process of separating metal by fusion from those impurities with which it is chemically combined or physically mixed in ores.
Stacker/reclaimer	A type of heavy equipment that receives coal from a charge conveyor or discharges coal from a yard to a discharging conveyor. It is operated by remote control with a computer.
Stockpile	A stockpile is a pile or storage location for bulk materials, forming part of the bulk material handling process.
Strip or strip ratio	The strip ratio is the number of bank cubic meters of overburden needing removal to access one tonne of coal. A strip ratio of 4:1 means that four bank cubic meters of overburden must be stripped to

	produce one metric tonne of coal. Strip ratios vary based primarily on geological characteristics of the "in situ" coal and the depth at which deposits lie.
Sub-bituminous coal	A coal whose properties range from those of lignite to those of bituminous coal and used primarily as fuel for steam-electric power generation. It may be dull, dark brown to black, soft and crumbly, at the lower end of the range, to bright, jetblack, hard, and relatively strong, at the upper end. Sub-bituminous coal contains 20.0% to 30.0% inherent moisture by weight.
Sulfur	One of the elements present, in varying quantities, in coal that contributes to environmental degradation when coal is burned. Sulfur dioxide is produced as a gaseous by-product of coal combustion.
Surface mine	A mine in which the ore lies near the surface and can be extracted by removing the overburden.
Thermal coal	Coal used in thermal plants to generate electricity.
TNi	Tonnes of nickel contained in ferronickel.
Tonne	Tonne or metric ton is a metric unit of mass equal to 1,000 kilograms or approximately 2,204.6 pounds.
Total moisture	The entire amount of water stored within a porous medium.
Underground mining	The extraction of coal or its products from rock strata by underground mining methods such as room-and-pillar mining, shortwall (continuous mines) mining and longwall mining.
Vein	Sheet-like body of minerals formed by fracture filling or replacement of host rock.
Vibro-compactor	Vibratory compactors are frequently used machines to compact materials such as soil in order to increase its density for construction and are utilized for in landfill tasks.
Volatile matter	Those substances, other than water, that are given off as gas or vapor when coal is heated under certain prescribed conditions to produce coking coal.
wmt	Wet metric tonne, a unit of measurement with the same mass value as a metric tonne, for materials with slurry or liquid components.

INDEX TO THE CONSOLIDATED FINANCIAL STATEMENTS AND PRO FORMA CONSOLIDATED FINANCIAL INFORMATION

	Page
Unaudited Interim Consolidated Financial Statements as of 30 June 2018 and for the Six-Month Periods Ended 30 June 2018 and 2017	
Director's Statement	F-4
Report on Review of Interim Financial Information	F-5
Interim Consolidated Statements of Financial Position	F-6
Interim Consolidated Statements of Profit or Loss and Other Comprehensive Income	F-9
Interim Consolidated Statements of Changes in Equity	F-11
Interim Consolidated Statements of Cash Flows	F-13
Notes to the Interim Consolidated Financial Statements	F-14
Audited Consolidated Financial Statements as of and for the Years Ended 31 December 2015, 2016 and 2017	
Director's Statement	F-133
Independent Auditors' Report	F-134
Consolidated Statements of Financial Position	F-136
Consolidated Statements of Profit or Loss and Other Comprehensive Income	F-139
Consolidated Statements of Changes in Equity	F-141
Consolidated Statements of Cash Flows	F-144
Notes to the Consolidated Financial Statements	F-146
Pro Forma Consolidated Financial Information as of 30 June 2018 and for the Six Months Ended 30 June 2018 and Year Ended 31 December 2017	
Independent Practitioner's Report on the Pro Forma Consolidated Financial Information	F-281
Pro Forma Consolidated Statement of Financial Position	F-283
Pro Forma Consolidated Statements of Profit or Loss and other Comprehensive Income	F-286
Notes to Pro Forma Consolidated Financial Information	F-289

INDEX TO PT FREEPORT INDONESIA'S CONSOLIDATED FINANCIAL STATEMENTS

	Page
Unaudited Interim Condensed Consolidated Financial Statements as of June 30, 2018 and for the Six Months Ended June 30, 2018 and 2017	
Report on Review of Interim Financial Information	F-296
Interim Condensed Consolidated Statement of Financial Position	F-298
Interim Condensed Consolidated Statement of Profit or Loss and Other Comprehensive Income	F-300
Interim Condensed Consolidated Statement of Changes in Equity	F-301
Interim Condensed Consolidated Statement of Cash Flows	F-302
Notes to Interim Condensed Consolidated Financial Statements	F-303
Consolidated Financial Statements as of December 31, 2017, 2016 and 2015 and for the Years Then Ended	
Independent Auditor's Report	F-315
Consolidated Statement of Financial Position.	F-317
Consolidated Statement of Profit or Loss and Other Comprehensive Income	F-319
Consolidated Statement of Changes in Equity	F-320
Consolidated Statement of Cash Flows.	F-321
Notes to Consolidated Financial Statements.	F-322

PT INDONESIA ASAHAN ALUMINIUM (PERSERO) AND SUBSIDIARIES

INTERIM CONSOLIDATED FINANCIAL STATEMENTS

30 JUNE 2018 AND 31 DECEMBER 2017 AND FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 2017

PT INDONESIA ASAHAN ALUMINIUM (Persero)

DIRECTORS' STATEMENT REGARDING

THE RESPONSIBILITY FOR THE INTERIM CONSOLIDATED FINANCIAL STATEMENTS
AS AT 30 JUNE 2018 and 31 DECEMBER 2017
AND FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 30 JUNE 2017

PT INDONESIA ASAHAN ALUMINIUM (PERSERO) AND SUBSIDIARIES

On behalf of the Board of Directors, we, the undersigned:

1. Name : Budi Gunadi Sadikin
   Office address : Kuala Tanjung, Kecamatan Sei Suka, 21257
   Kabupatan Batu Bara, Sumatara Utara
   Position : President Director

2. Name : Orias Petrus Moedak
   Office address : Kuala Tanjung, Kecamatan Sei Suka, 21257
   Position : Finance Director

declare that:

1. We are responsible for the preparation and presentation of the consolidated financial statements of PT Indonesia Asahan Aluminium (Persero) and subsidiaries (the "Group")

2. The Group's consolidated financial statements have been prepared and presented in accordance with Indonesian Financial Accounting Standards;

3. a. All information has been fully and correctly disclosed in the Group's consolidated financial statements;
   b. The Group's consolidated financial statements do not contain false material information or facts, nor do they omit material information or facts; and

4. We are responsible for the Group's internal control systems.

This statement is confirmed to the best of our knowledge and belief.

Kuala Tanjung
22 October 2018

For and on behalf of the Board of Director

Budi Gunadi Sadikin
President Director

METERAI TEMPEL
68315AFF207517365
6000
ENAM RIBU RUPIAH

Orias Petrus Moedak
Finance Director

pwc

REPORT ON REVIEW OF INTERIM CONSOLIDATED FINANCIAL STATEMENTS TO THE SHAREHOLDER OF

PT INDONESIA ASAHAN ALUMINIUM (PERSERO)

Introduction

We have reviewed the accompanying interim consolidated financial statements of PT Indonesia Asahan Aluminium (Persero) and its subsidiaries, which comprise the interim consolidated statement of financial position as at 30 June 2018, and the interim consolidated statement of profit or loss and other comprehensive income, changes in equity and cash flows for the six-month periods ended 30 June 2018 and 2017, and a summary of significant accounting policies and other explanatory notes. Management is responsible for the preparation and fair presentation of these interim consolidated financial statements in accordance with Indonesian Financial Accounting Standards. Our responsibility is to express a conclusion on these interim consolidated financial statements based on our review.

Scope of review

We conducted our review in accordance with Standards on Review Engagements 2410, "Review of Interim Financial Information Performed by the Independent Auditor of the Entity", established by the Indonesian Institute of Certified Public Accountants. A review of interim financial statements consists of making inquiries, primarily of persons responsible for financial and accounting matters, and applying analytical and other review procedures. A review is substantially less in scope than an audit conducted in accordance with Standards on Auditing established by the Indonesia Institute of Certified Public Accountants and consequently, does not enable us to obtain assurance that we would become aware of all significant matters that might be identified in an audit. Accordingly, we do not express an audit opinion.

Conclusion

Based on our review, nothing has come to our attention that causes us to believe that the accompanying interim consolidated financial statements do not present fairly, in all material respects, the interim consolidated financial position of PT Indonesia Asahan Aluminium (Persero) and its subsidiaries as at 30 June 2018, and their interim consolidated financial performance and cash flows for the six-month periods ended 30 June 2018 and 2017 in accordance with Indonesian Financial Accounting Standards.

Other matter

This report has been prepared solely for inclusion in the offering document in connection with the purpose disclosed in Note 2 to the interim consolidated financial statements. Therefore it is not intended to be, and should not be, used for any other purpose.

JAKARTA
22 October 2018

Yusron, S.E., Ak., CPA
License of Public Accountant No. AP.0243

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Nomor Izin Usaha: KEP-241/KM.1/2015.

N20181022003/DC2/YSR/2018

INTERIM CONSOLIDATED STATEMENTS OF FINANCIAL POSITION
30 JUNE 2018 AND 31 DECEMBER 2017
(Expressed in millions of Rupiah)

	Notes	30 June 2018	31 December 2017
ASSETS			
CURRENT ASSETS			
Cash and cash equivalents	5	20,874,842	16,143,068
Time deposits	6	2,238,166	2,207,042
Trade receivables	7	6,807,132	8,290,890
Other receivables			
- Third parties		713,689	654,944
- Related parties	41a	17,555	15,674
Inventories	8	8,682,327	6,724,621
Prepaid taxes	19a	2,192,830	1,698,548
Available-for-sale financial assets	9	383,882	430,192
Other current assets	10	852,305	946,339
Assets of disposal group classified as held for sale	11a	353,925	351,764
Total current assets		43,116,653	37,463,082
NON-CURRENT ASSETS			
Time deposits	6	-	200,000
Other receivables			
- Third parties		396,253	400,383
- Related parties	41a	1,874,223	1,557,911
Inventories	8	495,038	479,439
Available-for-sale financial assets	9	7,255,450	7,255,450
Investment in associates	12	1,704,919	1,998,986
Investment in joint ventures	13	2,177,422	2,160,516
Exploration and evaluation assets	14	673,144	665,322
Fixed assets	15	33,816,259	32,115,515
Investment properties	16	961,925	912,679
Mining properties	17	2,311,453	2,366,199
Goodwill	18	203,836	203,836
Prepaid taxes	19a	628,929	882,406
Deferred tax assets	19d	2,504,616	2,714,415
Other tax receivables	20	536,058	536,058
Other non-current assets	10	1,313,865	1,332,532
Total non-current assets		56,853,390	55,781,647
TOTAL ASSETS		**99,970,043**	**93,244,729**

The accompanying notes form an integral part of these consolidated financial statements

INTERIM CONSOLIDATED STATEMENTS OF FINANCIAL POSITION
30 JUNE 2018 AND 31 DECEMBER 2017
(Expressed in millions of Rupiah)

	Notes	30 June 2018	31 December 2017
LIABILITIES			
CURRENT LIABILITIES			
Trade payables	21	2,745,498	2,525,160
Accruals	22	3,185,841	2,715,055
Short-term employee benefits liabilities	23	730,774	1,263,880
Short-term bank borrowings	24	5,616,307	5,115,674
Taxes payable	19b	744,976	1,049,363
Current maturities of long-term bank borrowings	25	488,552	576,984
Current maturities of finance lease liabilities	26	133,054	141,874
Current maturities of bonds payable	27	899,784	899,594
Current maturities of provision for environmental reclamation and remediation and mine closure	28	250,038	313,299
Dividend payable	39	1,919,750	-
Other current liabilities	30	441,080	429,561
Liabilities of disposal group directly associated with assets classified as held for sale	11b	100,825	95,348
Total current liabilities		17,256,479	15,125,792
NON-CURRENT LIABILITIES			
Long-term bank borrowings, net of current maturities	25	4,075,227	3,236,282
Finance lease liabilities, net of current maturities	26	456,313	496,612
Bonds payable, net of current maturities	27	3,597,561	3,597,247
Provision for environmental reclamation and remediation and mine closure, net of current maturities	28	636,364	576,079
Post-employment benefits obligation	29	3,567,859	4,154,350
Deferred tax liabilities	19d	-	47,331
Other non-current liabilities	30	3,988	3,762
Total non-current liabilities		12,337,312	12,111,663
TOTAL LIABILITIES		**29,593,791**	**27,237,455**

The accompanying notes form an integral part of these consolidated financial statements

INTERIM CONSOLIDATED STATEMENTS OF FINANCIAL POSITION
30 JUNE 2018 AND 31 DECEMBER 2017
(Expressed in millions of Rupiah)

	Notes	30 June 2018	31 December 2017
EQUITY ATTRIBUTABLE TO OWNER OF THE PARENT			
Share capital	31	54,177,941	54,177,941
Additional paid-in capital	4	(18,199,606)	(18,199,606)
Retained earnings			
- Appropriated		601,440	601,440
- Unappropriated		6,667,440	3,930,851
Currency differences from translation of the Group's entity financial statements		14,323,296	12,767,071
Total equity attributable to owner of the parent		**57,570,511**	**53,277,697**
Non-controlling interests	47	12,805,741	12,729,577
TOTAL EQUITY		**70,376,252**	**66,007,274**
TOTAL LIABILITIES AND EQUITY		**99,970,043**	**93,244,729**

The accompanying notes form an integral part of these consolidated financial statements

INTERIM CONSOLIDATED STATEMENTS OF PROFIT OR LOSS AND OTHER COMPREHENSIVE INCOME
FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 2017
(Expressed in millions of Rupiah)

	Notes	30 June 2018	30 June 2017*)
Revenue	32	29,855,570	18,832,813
Cost of revenue	33	(21,901,542)	(13,636,989)
Gross profit		**7,954,028**	**5,195,824**
General and administrative expenses	34	(1,608,883)	(1,336,902)
Selling and marketing expenses	35	(709,575)	(572,815)
Operating profit		**5,635,570**	**3,286,107**
Finance income	36	343,349	285,556
Finance costs	37	(965,877)	(421,583)
Share in net loss of associates	12	(64,261)	(55,721)
Share in net loss of joint ventures	13	(49,128)	(35,177)
Other income/(expenses), net	38	2,347,985	(206,571)
Profit before income tax		**7,247,638**	**2,852,611**
Income tax expenses	19c	(1,820,372)	(840,644)
Profit for the period from continuing operations		**5,427,266**	**2,011,967**
Loss for the period from discontinued operations	11d	(4,399)	(3,709)
Profit for the period		**5,422,867**	**2,008,258**

*) As restated, (refer to Note 4)

The accompanying notes form an integral part of these consolidated financial statements

INTERIM CONSOLIDATED STATEMENTS OF PROFIT OR LOSS AND OTHER COMPREHENSIVE INCOME
FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 2017
(Expressed in millions of Rupiah)

	Notes	30 June 2018	30 June 2017*)
Profit for the period		**5,422,867**	**2,008,258**
Other comprehensive income/(loss)			
Items that will not be reclassified to profit or loss:			
Remeasurement of post-employment benefits obligation	29	700,023	(734,998)
Related income tax (expense)/benefit	19d	(163,029)	182,164
Items that will be reclassified to profit or loss:			
Currency differences from translation of the Group's entity financial statements		1,519,940	(162,548)
Changes in fair value of available-for-sale financial assets	9	-	(35,305)
Share of other comprehensive income/(loss) of associates and joint ventures	12,13	61,595	(23,075)
Other comprehensive income/(loss) for the period, net of tax		**2,118,529**	**(773,762)**
Total comprehensive income for the period		**7,541,396**	**1,234,496**
Profit for the period attributable to:			
Owner of the parent		4,266,535	1,498,912
Non-controlling interests		1,156,332	509,346
		5,422,867	**2,008,258**
Comprehensive income for the period attributable to:			
Owner of the parent		6,212,564	950,885
Non-controlling interests		1,328,832	283,611
		7,541,396	**1,234,496**
Basic and diluted earning per share attributable to owner of the parent (full amount)	40	**32,681**	**11,482**

*) As restated, (refer to Note 4)

The accompanying notes form an integral part of these consolidated financial statements

PT INDONESIA ASAHAN ALUMINIUM (PERSERO) AND SUBSIDIARIES **Schedule 3/1**

INTERIM CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY
FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 2017
(Expressed in millions of Rupiah)

	Notes	Attributable to the owner of the parent							Non-controlling interests	Total equity
		Share capital	Additional paid-in capital	Currency differences from translation of the Group's entity financial statements	Appropriated retained earnings	Unappropriated retained earnings	Equity of merging entities	Total		
Balance 1 January 2017		**381,998**	**-**	**12,538,301**	**467,605**	**2,718,978**	**20,901,486**	**37,008,368**	**11,382,744**	**48,391,112**
Cash dividends	39, 48	-	-	-	-	(267,811)	(440,435)	(708,246)	(246,938)	(955,184)
Profit for the period		-	-	-	-	594,319	904,593	1,498,912	509,346	2,008,258
Appropriation of retained earnings	39	-	-	-	133,835	(133,835)	-	-	-	-
Other comprehensive income/(loss):										
Share of other comprehensive income from associates and joint ventures	12, 13	-	-	-	-	-	(14,999)	(14,999)	(8,076)	(23,075)
Currency differences from translation of the Group's entity financial statements		-	-	(128,483)	-	-	(22,149)	(150,632)	(11,916)	(162,548)
Changes in fair value of available-for-sale financial assets		-	-	-	-	-	(22,955)	(22,955)	(12,350)	(35,305)
Remeasurement of post-employment benefits obligation, net of tax		-	-	-	-	-	(359,441)	(359,441)	(193,393)	(552,834)
Balance 30 June 2017*)		**381,998**	**-**	**12,409,818**	**601,440**	**2,911,651**	**20,946,100**	**37,251,007**	**11,419,417**	**48,670,424**

*) As restated, (refer to Note 4)

The accompanying notes form an integral part of these consolidated financial statements

INTERIM CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY
FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 2017
(Expressed in millions of Rupiah)

	Notes	Attributable to the owner of the parent								
		Share capital	Additional paid-in capital	Currency differences from translation of the Group's entity financial statements	Appropriated retained earnings	Unappropriated retained earnings	Equity of merging entities	Total	Non-controlling interests	Total equity
Balance 1 January 2018		**54,177,941**	**(18,199,606)**	**12,767,071**	**601,440**	**3,930,851**	**-**	**53,277,697**	**12,729,577**	**66,007,274**
Cash dividends	39, 48	-	-	-	-	(1,919,750)	-	(1,919,750)	(1,252,668)	(3,172,418)
Profit for the period		-	-	-	-	4,266,535	-	4,266,535	1,156,332	5,422,867
Other comprehensive income/(loss):										
Share of other comprehensive income from associates and joint ventures	12, 13	-	-	-	-	40,037	-	40,037	21,558	61,595
Currency differences from translation of the Group's entity financial statements		-	-	1,556,225	-	-	-	1,556,225	(36,285)	1,519,940
Remeasurement of post-employment benefits obligation, net of tax		-	-	-	-	349,767	-	349,767	187,227	536,994
Balance 30 June 2018		**54,177,941**	**(18,199,606)**	**14,323,296**	**601,440**	**6,667,440**	**-**	**57,570,511**	**12,805,741**	**70,376,252**

The accompanying notes form an integral part of these consolidated financial statements

INTERIM CONSOLIDATED STATEMENTS OF CASH FLOWS
FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 2017
(Expressed in millions of Rupiah)

	30 June 2018	30 June 2017*)
CASH FLOWS FROM OPERATING ACTIVITIES		
Cash receipts from customers	30,580,117	17,748,809
Cash receipts from tax restitution	193,514	411,831
Cash receipts from interest income	318,818	293,862
Cash paid to suppliers and employees	(23,469,739)	(14,795,568)
Payment of pension contributions	(23,839)	(21,508)
Payment of interests	(449,488)	(442,753)
Payment of taxes and royalties	(2,704,074)	(1,490,899)
Other receipts, net	117,187	18,221
Net cash received from operating activities	**4,562,496**	**1,721,995**
CASH FLOWS FROM INVESTING ACTIVITIES		
Proceeds from disposal of available-for-sale financial assets	35,000	104,159
Dividend receipt from associate	219,692	70,492
Dividend receipt from available for sale investment	2,028,159	-
Payment for addition of mining properties	(26,446)	(146)
Divestment of shares in associates	33	-
Disbursements for deferred charges	(6,409)	(3,089)
Disbursements for exploration and evaluation assets	(7,822)	(11,591)
Loan to joint ventures	(243,708)	-
Purchases of fixed assets	(2,021,568)	(2,093,729)
Net cash used in investing activities	**(23,069)**	**(1,933,904)**
CASH FLOWS FROM FINANCING ACTIVITIES		
Proceeds from bank borrowings	5,197,899	5,068,111
Payment of dividends	(1,252,668)	(955,184)
Repayment of finance lease	(49,119)	(68,489)
Repayments of bank borrowings	(4,415,542)	(5,866,133)
Net cash used in financing activities	**(519,430)**	**(1,821,695)**
NET INCREASE/(DECREASE) IN CASH AND CASH EQUIVALENTS	**4,019,997**	**(2,033,604)**
Reclassified from/(to) assets of disposal group classified as held for sale	4,108	(5,064)
Effect of foreign exchange rate gain/(loss) on cash and cash equivalents	707,669	(46,849)
CASH AND CASH EQUIVALENTS AT THE BEGINNING OF THE PERIOD	**16,143,068**	**15,966,845**
CASH AND CASH EQUIVALENTS AT THE END OF THE PERIOD	**20,874,842**	**13,881,328**

*) As restated, (refer to Note 4)

The accompanying notes form an integral part of these consolidated financial statements

NOTES TO THE INTERIM CONSOLIDATED FINANCIAL STATEMENTS
30 JUNE 2018 AND 31 DECEMBER 2017
AND FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 2017
(Expressed in millions of Rupiah, unless otherwise stated)

1. GENERAL

The Company's establishment and general information

PT Indonesia Asahan Aluminium (Persero) (the "Company") was established on 6 January 1976 as a joint venture between the Government of the Republic of Indonesia and Nippon Asahan Aluminium Co., Ltd. as a follow-up to a Master Agreement between the Government of the Republic of Indonesia and a consortium of 12 (twelve) Japanese investing companies signed on 7 July 1975. The deed of establishment No. 2 dated 6 January 1976 was prepared by Notary Juliaan Nimrod Siregar Gelar Mangaradja Namora, S.H., and was approved by the Ministry of Justice in its Decision Letter No. Y.A.5/12/20 dated 10 January 1976 and was published in State Gazette No. 4 dated 13 January 1976.

The Master Agreement expired 30 years after commercial production started, which was on 31 October 2013. On 9 December 2013, the signing of the "Agreement in relation to the expiry of the Master Agreement in respect of the transfer of shares in PT Indonesia Asahan Aluminium" marked the termination of the Master Agreement by share transfer of the Company shares owned by Nippon Asahan Aluminium Co., Ltd. to the Government of the Republic of Indonesia (shareholder).

On 19 December 2013, based on the Notarial Deed of Transfer of Shares No. 86 of Notary Aryanti Artisari, S.H., M.Kn., Nippon Asahan Aluminium Co., Ltd. transferred its investment in 541,946 Company shares to the Government of the Republic of Indonesia (shareholder) and the Government of the Republic of Indonesia paid US$556,700,000 to Nippon Asahan Aluminium Co., Ltd. for the transfer of such shares. Through this transfer, the Company's sole shareholder has become the Government of the Republic of Indonesia owning 100% of the Company's 920,476 issued shares. The amendment of the Articles of Association to reflect the change in the shareholder was approved by the Ministry of Law and Human Rights of the Republic of Indonesia in its Decision Letter No. AHU-AH.01.10-56092 dated 24 December 2013.

On 19 December 2013, the Company's status was officially changed to a State-Owned Enterprise ("BUMN") in accordance with Government Regulation No. 26 Year 2014 dated 21 April 2014 on the Determination of PT Indonesia Asahan Aluminium as a Perusahaan Perseroan (Persero).

The change in the Company's status to BUMN has been notarised under Notarial Deed No. 35 dated 8 May 2014 of Notary Aryanti Artisari, S.H., M.Kn., and approved by the Ministry of Justice and Human Rights of the Republic of Indonesia in its Decision Letter No. AHU-02942.40.20.2014 dated 9 May 2014.

The Company's head office and its aluminium smelting plant are located in Kuala Tanjung, Batu Bara Regency, North Sumatra. The power plant is located in Paritohan, Toba Samosir Regency, North Sumatra.

The Company's Articles of Association have been amended several times. The latest amendment is regarding changes in the Company's share capital as explained in Note 31. The changes have been notarised under Notarial Deed No. 59 dated 27 November 2017 of Notary Liestiani Wang, S.H., M.Kn., and have been approved by the Ministry of Justice and Human Rights of the Republic of Indonesia in its Decision Letter No. AHU-0024869.AH.01.02. Year 2017 dated 27 November 2017.

Based on Article 3 of its Articles of Association, the Company's main activities are conducting business in alumina production and processing, calcination plant of coke and its derivatives, aluminium smelting plant and its derivatives, marketing, selling and distribution of its products and other similar products as well as constructing and operating power plants for its own use, and electricity selling.

The Company commenced its commercial operations in 1983.

1. GENERAL (continued)

The Company's establishment and general information (continued)

Based on Notarial Deed No. 17 dated 25 April 2018 of Notary Aryanti Artisari, S.H., M.Kn, and Notarial Deed No. 59 dated 27 November 2017 of Notary Liestiani Wang, S.H., M.Kn., respectively, the composition of the Company's Boards of Commissioners and Directors as at 30 June 2018 and 31 December 2017 are as follows:

Board of Commissioners		**30 June 2018**	**31 December 2017**
President Commissioner	:	Fajar Harry Sampurno	Agus Tjahajana Wirakusumah
Commissioner	:	Agus Tjahajana Wirakusumah	Emmy Yuhassarie
Commissioner	:	Purbaya Yudhi Sadewa	Purbaya Yudhi Sadewa
Commissioner	:	Muhammad Munir	
Board of Directors			
President Director	:	Budi Gunadi Sadikin	Budi Gunadi Sadikin
Director	:	Sahala Hasoloan Sijabat	Sahala Hasoloan Sijabat
Director	:	Oggy Achmad Kosasih	Oggy Achmad Kosasih
Director	:	Carry Mumbunan	Carry Mumbunan
Director	:	Orias Petrus Moedak	
Director	:	Ogi Prastomiyono	

As at 30 June 2018 and 31 December 2017, the members of the Company's Audit Committee were as follows:

Audit Committee		**30 June 2018**	**31 December 2017**
Chairman	:	Agus Tjahajana Wirakusumah	Emmy Yuhassarie
Member	:	Hary Noegroho Soelistianto	Hary Noegroho Soelistianto
Member	:	Togu Sihombing	Togu Sihombing

Mining business permits

The Company and its subsidiaries (together the "Group") has valid Mining Business Permits ("IUP") which consist of Production Operation IUPs and Exploration IUPs and Coal Contract of Work ("CCoW") in various area of Indonesia.

Obligations under IUPs and CCoW

Based on the circular letter of the Ministry of Energy and Mineral Resources No. 04. E/35/DJB/2012 and Government Regulation No. 9 dated 6 January 2012, the Group as the IUPs and CCoW holders are applicable for financial obligation as follows:

- Pay a royalty based on the applicable tariff for each mining products.
- Pay a deadrent based on the applicable tariff for each mining concessions.
- Pay a contribution to the government based on certain rates as the CCoW holders.

1. GENERAL (continued)

As at 30 June 2018 and 31 December 2017, the structure of the Group was as follows:

	Business activity	Location	Commencement of commercial operations	Proportion of ordinary shares held by the Group	Proportion of ordinary shares held by non-controlling interest	Total assets (before consolidation elimination)	
				%	%	30 June 2018	31 December 2017
Directly-owned subsidiaries							
PT Bukit Asam Tbk ("Bukit Asam")	Coal mining	Tanjung Enim, South Sumatra	1938	65.02	34.98	20,634,652	19,899,475
PT Aneka Tambang Tbk ("Antam")	Mining of various mining product	Jakarta	1968	65.00	35.00	31,337,234	30,014,273
PT Timah Tbk ("Timah")	Tin mining	Pangkal Pinang, Bangka	1976	65.00	35.00	12,460,134	11,876,309
PT Nasional Hijau Lestari (formerly PT Panca Mitra Limbah Indonesia)	Waste management	Jakarta	Not operating	100.00	-	13,956	15,823
Indirectly owned subsidiaries							
PT Batubara Bukit Kendi ("BBK")	Coal mining	Tanjung Enim, South Sumatra	1997	98.00	2.00	203	287
PT Bukit Asam Prima ("BAP")	Coal trading	Jakarta	2007	99.99	0.01	355,445	344,599
PT Internasional Prima Coal ("IPC")	Coal mining	Palaran, East Kalimantan	2010	51.00	49.00	769,856	698,962
PT Bukit Asam Metana Ombilin ("BAMO")	Coal methane gas mining	Jakarta	Not operating	99.99	0.01	34	34
PT Bukit Asam Metana Enim ("BAME")	Coal methane gas mining	Jakarta	Not operating	99.99	0.01	73	73
PT Bukit Energi Metana ("BEME")	Coal methane gas mining	Jakarta	Not operating	99.99	0.01	51	51
PT Bukit Asam Banko ("BAB")	Coal mining, trading, and industry	Tanjung Enim, South Sumatra	Not operating	99.99	0.01	313	313
PT Bukit Multi Investama ("BMI")	Investment in other companies	Jakarta	2014	99.99	0.01	2,407,932	2,406,527
PT Bukit Energi Investama ("BEI")	Investment in other companies	Jakarta	2015	99.99	0.01	186,247	163,184
PT Bumi Sawindo Permai ("BSP")	Palm plantation and palm processing	Tanjung Agung, South Sumatra	2007	99.99	0.01	275,754	226,613
PT Internasional Prima Cemerlang	Coal trading	Jakarta	Not operating	99.99	0.01	1,948	1,948
PT Bukit Prima Bahari ("BPB")	Sea voyages	Jakarta	2014	99.99	0.01	179,847	120,987

1. GENERAL (continued)

	Business activity	Location	Commencement of commercial operations	Proportion of ordinary shares held by the Group %	Proportion of ordinary shares held by non-controlling interest %	Total assets (before consolidation elimination) 30 June 2018	31 December 2017
Indirectly owned subsidiaries (continued)							
Anthrakas Pte Ltd	Coal trading	Singapore	2014	100.00	-	53,124	58,753
PT Pelabuhan Bukit Prima ("PBP")	Port service	Jakarta	Not operating	99.99	0.01	57,189	33,311
PT Bukit Asam Medika ("BAM")	Hospital, clinic, polyclinic, specialist polyclinic, and medical services	Tanjung Enim, South Sumatra	2014	97.50	2.50	26,259	25,184
PT Penajam Internasional Prima ("PIT")	Port services	Bekasi, West Java	2015	72.00	28.00	3,840	3,840
PT Satria Bahana Sarana ("SBS")	Mining service and rental	Tanjung Agung, South Sumatra	2014	95.00	5.00	1,102,412	1,107,440
PT Bukit Energi Service Terpadu ("BEST")	Trading, service, workshop, construction, industry, and transportation	Jakarta	2015	99.62	0.38	122,158	98,129
Asia Pacific Nickel Pty., Ltd. ("APN")	Investment company	Australia	2003	100.00	-	190,792	121,877
PT Indonesia Coal Resources ("ICR")	Coal mining exploration and operator	Indonesia	2010	100.00	-	96,070	70,902
PT Antam Resourcindo ("ARI")	Mining exploration and operator	Indonesia	1997	99.98	0.02	137,323	112,694
PT Mega Citra Utama ("MCU")	Construction, trading, industry, agriculture and mining	Indonesia	Not operating	99.50	0.50	114,467	114,625
PT Abuki Jaya Stainless Indonesia ("AJSI")	Manufacturing of stainless steel	Indonesia	Not operating	99.50	0.50	49,249	49,683
PT Borneo Edo International	Construction, trading, industry, agriculture and mining	Indonesia	Not operating	99.50	0.50	38,671	37,877
PT Dwimitra Enggang Khatulistiwa ("DEK")	Mining exploration and operator	Indonesia	Not operating	99.50	0.50	3,843	3,814

NOTES TO THE INTERIM CONSOLIDATED FINANCIAL STATEMENTS
30 JUNE 2018 AND 31 DECEMBER 2017
AND FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 2017
(Expressed in millions of Rupiah, unless otherwise stated)

1. GENERAL (continued)

	Business activity	Location	Commencement of commercial operations	Proportion of ordinary shares held by the Group	Proportion of ordinary shares held by non-controlling interest	Total assets (before consolidation elimination)	
				%	%	30 June 2018	31 December 2017
Indirectly owned subsidiaries (continued)							
PT Cibaliung Sumberdaya ("CSD")	Exploration, construction and mine development, mining, production, processing and refining, haulage and sales in the gold mining industry	Indonesia	2010	99.15	0.85	1,044,758	1,040,930
PT International Mineral Capital ("IMC")	Services and trading	Indonesia	2011	99.00	1.00	621,270	621,361
PT GAG Nikel ("GAG")	Mining exploration and operator	Indonesia	2018	100.00	-	185,298	124,120
PT Citra Tobindo Sukses Perkasa ("CTSP")	Coal mining exploration and operator	Indonesia	2011	100.00	-	40,311	27,050
PT Feni Haltim ("FHT")	Trading, construction and services	Indonesia	Not operating	100.00	-	1,087,134	1,080,649
PT Borneo Edo International Agro ("BEIA")	Agriculture, industry, agricultural land transportation, trading and services	Indonesia	Not operating	100.00	-	41	39
PT Gunung Kendaik ("GK")	Construction, trading, industry, agriculture, ground transportation, services, mining and printing	Indonesia	Not operating	100.00	-	6,942	6,667
PT Nusa Karya Arindo ("NKA")	Mineral and coal mining service	Indonesia	2014	100.00	-	16,367	17,535
PT Sumberdaya Arindo ("SDA")	Mineral and coal mining service	Indonesia	Not operating	100.00	-	39,645	31,510
PT Antam Energi Indonesia ("AEI")	Services, trade and industry	Indonesia	Not operating	100.00	-	144	144

NOTES TO THE INTERIM CONSOLIDATED FINANCIAL STATEMENTS
30 JUNE 2018 AND 31 DECEMBER 2017
AND FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 2017
(Expressed in millions of Rupiah, unless otherwise stated)

1. GENERAL (continued)

	Business activity	Location	Commencement of commercial operations	Proportion of ordinary shares held by the Group %	Proportion of ordinary shares held by non-controlling interest %	Total assets (before consolidation elimination) 30 June 2018	31 December 2017
Indirectly owned subsidiaries (continued)							
PT Kawasan Industri Antam Timur ("KIAT")	Management industrial area service	Indonesia	Not operating	100.00	-	50	51
PT Antam Niterra Haltim ("ANH")	Coal mining exploration and operator	Indonesia	Not operating	100.00	-	68	68
Indometal (London) Limited ("IL")	Marketing agent for Europe regions	United Kingdom	1988	100.00	-	1,335,239	1,303,824
PT Dok dan Perkapalan Air Kantung ("DAK")	Workshop services, shipping dockyard, and transportation	Indonesia	1996	100.00	-	261,620	244,728
PT Timah Industri ("TI")	Chemical industry	Indonesia	1998	100.00	-	1,611,475	1,659,026
PT Timah Investasi Mineral ("TIM")	Exploration and mining of non-tin minerals and coal marketing	Indonesia	1996	99.90	0.10	425,163	453,661
PT Timah Agro Manunggal ("TAMA")	Agriculture and trading	Indonesia	2017	100.00	-	9,519	8,480
PT Tanjung Alam Jaya ("TAJ")	Coal mining	Indonesia	1998	99.95	0.05	159,090	154,018
PT Kutaraja Tembaga Raya ("KTR")	Mineral exploration (ceased operations)	Indonesia	1997	99.95	0.05	3	3
Great Force Trading Limited ("GFT")	Trading	Hongkong	2012	100.00	-	15,268	14,240
Timah Investment International Ltd	Trading	Singapore	2014	100.00	-	20,638	16,959
Rumah Sakit Bakti Timah ("RSBT")	Services	Indonesia	2014	99.90	0.10	244,395	234,935
PT Bakti Timah Solusi Medika ("BTSM")	Distribution and trading	Indonesia	2016	99.90	0.10	4,803	3,801
PT Timah Karya Persada Properti ("TKPP")	Real estate industry	Indonesia	2017	100.00	-	162,447	157,707
PT Truba Bara Banyu Enim ("TBBE")	Coal mining	Indonesia	2001	99.90	0.10	13,918	16,829

2. SIGNIFICANT ACCOUNTING POLICIES

Management of the Company is responsible for the preparation of the interim consolidated financial statements that were completed and authorised for issuance by the Board of Directors on 22 October 2018.

These interim consolidated financial statements as at 30 June 2018 and for the six-month periods ended 30 June 2018 and 2017 were prepared for the purpose of an offering of debt securities of the Company inside and outside the United States of America, in reliance on Rule 144A and Regulation S, respectively, of the United States Securities Act of 1993, as amended.

a. Basis of preparation of the interim consolidated financial statements

The interim consolidated financial statements have been prepared in accordance with Indonesian Financial Accounting Standards.

The interim consolidated financial statements have been prepared under the historical cost convention of accounting, as modified by the available-for-sale financial assets and investment properties and using the accrual basis except for the consolidated statement of cash flows.

The interim consolidated statement of cash flows is prepared based on the direct method by classifying cash flows on the basis of operating, investing and financing activities.

Except as described below, the accounting policies applied are consistent with those of the consolidated financial statements for the year ended 31 December 2017 which conform to the Indonesian Financial Accounting Standards.

In order to provide further understanding of the financial performance of the Group, due to the significance of their nature or amount, several items of income or expense have been shown separately.

The preparation of interim consolidated financial statements in conformity with Indonesian Financial Accounting Standards requires the use of certain critical accounting estimates and assumptions. It also requires management to exercise its judgement in the process of applying the Group's accounting policies. The areas involving a higher degree of judgement or complexity, or areas where assumptions and estimates are significant to the interim consolidated financial statements are disclosed in Note 3.

b. Changes to the Statements of Financial Accounting Standards ("SFAS") and Interpretations of Financial Accounting Standards ("IFAS")

The adoption of the following amended and new accounting standards which are effective from 1 January 2018 did not result in substantial changes to the Group's accounting policies and had no material effect on the amounts reported in the interim consolidated financial statements for the current period:

- SFAS 69 "Agriculture"
- Amendment to SFAS No. 2, "Statement of Cash Flows - Disclosures Initiative"
- Amendment to SFAS No. 13, "Investment Property - Transfers of Investment Property"
- Annual improvement to SFAS No. 15, "Investments in Associates and Joint Ventures"
- Amendment to SFAS No. 16, "Property, Plant and Equipment - Agriculture: Bearer Plants"
- Amendment to SFAS No. 46, "Income Taxes - Recognition of Deferred Tax Assets for Unrealised Losses"
- Amendment to SFAS No. 53, "Share-based Payment - Classification and Measurement of Share-based Payment Transactions"
- Annual improvement to SFAS No. 67, "Disclosures of Interests in Other Entities"

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

b. Changes to the Statements of Financial Accounting Standards ("SFAS") and Interpretations of Financial Accounting Standards ("IFAS") (continued)

New standards, amendments and interpretations issued but not yet effective for the financial year beginning 1 January 2018 are as follows:

- IFAS No. 33, "Foreign Currency Transactions and Advance Consideration"
- IFAS No. 34, "Uncertainty over Income Tax Treatments"
- Amendment to SFAS No. 15, "Investments in Associates and Joint Ventures"
- SFAS No. 71, "Financial Instruments"
- SFAS No. 72, "Revenue from Contracts with Customers"
- SFAS No. 73, "Leases"
- Amendment to SFAS No. 62, "Insurance Contracts"
- Amendment to SFAS No. 71, "Financial Instruments - Prepayment Features with Negative Compensation"

The above new standards, amendments and interpretations are effective beginning 1 January 2020, except for IFAS No. 33, "Foreign Currency Transactions and Advance Consideration" and IFAS No. 34, "Uncertainty over Income Tax Treatments" which are effective from 1 January 2019.

Early adoption of the above standards is permitted, while early adoption of SFAS No. 73 is permitted only upon the early adoption of SFAS No. 72.

As at the authorisation date of these interim consolidated financial statements, the Group is evaluating the potential impact of these new and amended standards and interpretations on the Group's interim consolidated financial statements.

c. Principles of consolidation and equity accounting

i. Subsidiaries

Subsidiaries are all entities (including structured entities) over which the Group has control. The Group controls an entity when the Group is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. Subsidiaries are fully consolidated from the date on which control is transferred to the Group. They are deconsolidated from the date on which that control ceases.

The Group applies the acquisition method to account for business combinations. The consideration transferred for the acquisition of a subsidiary is the fair value of the assets transferred, the liabilities incurred to the former owners of the acquiree and the equity interests issued by the Group. The consideration transferred includes the fair value of any asset or liability resulting from a contingent consideration arrangement. Identifiable assets acquired and liabilities and contingent liabilities assumed in a business combination are measured initially at their fair values at the acquisition date.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

c. Principles of consolidation and equity accounting (continued)

i. Subsidiaries (continued)

The Group recognises any non-controlling interest in the acquiree either at fair value or at the non-controlling interest's proportionate share of the acquiree's net assets. Non-controlling interest is reported as equity in the interim consolidated statement of financial position, separate from the equity of the parent's entity.

Acquisition related costs are expensed as incurred.

If the business combination is achieved in stages, the acquisition date carrying value of the acquirer's previously held equity interest in the acquiree is remeasured to fair value at the acquisition date through profit or loss.

Any contingent consideration to be transferred by the Group is recognised at fair value at the acquisition date. Subsequent changes to the fair value of the contingent consideration that is deemed to be an asset or liability is recognised in accordance with SFAS 55 "Financial Instrument: Recognition and Measurement" in profit or loss. Contingent consideration that is classified as equity is not remeasured, and its subsequent settlement is accounted for within equity.

The excess of the consideration transferred the amount of any non-controlling interest in the acquiree and the acquisition-date fair value of any previous equity interest in the acquiree over the fair value of the net identifiable assets acquired is recorded as goodwill. If those amount are less than the fair value of the net identifiable assets of the business acquired, in the case of a bargain purchase, the difference is recognised directly in profit or loss.

Business combination transactions between entities under common control were accounted for in SFAS 38 (Revised 2012) "Bussiness Combination of Entites Under Common Control" where the differences between transfer price paid and carrying value of net assets acquired is presented as part of the additional paid-in-capital account in equity.

In accordance with SFAS 38 (Revised 2012), the financial statements items of the combined entities, for the period in which the business combination under common control occurred and for any comparative period, shall be presented as if the combination had occurred from the beginning of the period for which the combined entities were under common control.

The business combination of entities under common control occurred in 2017 is described in Note 4.

Inter-company transactions, balances and unrealised gains on transactions between Group companies are eliminated. Unrealised losses are also eliminated. When necessary, amounts reported by subsidiaries have been adjusted to conform to the Group's accounting policies.

ii. Associates

Associates are all entities over which the Group has significant influence but not control, generally accompanying a shareholding of between 20% and 50% of the voting rights. Investments in associates are accounted for using the equity method of accounting (see point (iv) below), after intitially being recognised at cost.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

c. Principles of consolidation and equity accounting (continued)

iii. Joint arrangements

Under SFAS 66, investments in joint arrangements are classified as either joint operations or joint ventures depending on the contractual rights and obligations of each investor rather than the legal structure of the joint arrangement. The Group has assessed the nature of its joint arrangements and determined them to be joint ventures. Joint ventures are accounted for using the equity method, after initially being recognised at cost in the interim consolidated statement of financial position.

iv. Equity method

Under the equity method, the investment is initially recognised at cost and adjusted thereafter to recognise the investor's share of the post-acquisition profits or losses of the investee in profit or loss, and its share of movements in other comprehensive income of the investee in other comprehensive income.

Unrealised gains on transactions between the Group and its associates and joint ventures are eliminated to the extent of the Group’s interest in these entities. Unrealised losses are eliminated unless the transaction provides evidence of an impairment of the asset transferred. Accounting policies of associates and joint ventures have been changed where necessary to ensure consistency with the policies adopted by the Group.

When the Group’s share of losses in an associate or joint venture equals or exceeds its interest in the associate or joint venture, including any other unsecured receivables, the Group does not recognise further losses, unless it has incurred legal or constructive obligations or made payments on behalf of the associate or joint ventures.

The Group determines at each reporting date whether there is any objective evidence that the investment in the associate is impaired. If this is the case, the carrying amount of the equity accounting investments is tested for impairment in accordance with the policy described in Note 2s.

Dividends received or receivable from associates or joint ventures are recognised as reduction in the carrying amount of the investment.

v. Changes in ownership interest

The Group treats transactions with non-controlling interests that do not result in a loss of control as transactions with equity owners of the Parent. A change in ownership interest results in an adjustment between the carrying amounts of the controlling and non-controlling interests to reflect their relative interests in the subsidiary. Any difference between the amount of the adjustment to non-controlling interests and any consideration paid or received is recognised in a separate reserve within equity attributable to owners of the Parent.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

c. Principles of consolidation and equity accounting (continued)

v. Changes in ownerships interest (continued)

When the Group ceases to consolidate or equity account for an investment because of a loss of control, joint control or significant influence, any retained interest in the entity is remeasured to its fair value at the date when the control is lost, with the change in carrying amount recognised in profit or loss. The fair value is the initial carrying amount for the purposes of subsequently accounting for the retained interest as an associate, joint venture or financial asset. In addition, any amounts previously recognised in other comprehensive income in respect of that entity are accounted for as if the Group had directly disposed of the related assets or liabilities. This may mean that amounts previously recognised in other comprehensive income are reclassified to profit or loss.

If the ownership interest in a joint venture or an associate is reduced but joint control or significant influence is retained, only a proportionate share of the amounts previously recognised in other comprehensive income are reclassified to profit or loss where appropriate.

d. Foreign currency translation

(a) Functional and presentation currency

Items included in the financial statements of each of the Group's entities are measured using the currency of the primary economic environment in which the entity operates (the "functional currency").

The Group choose to present the interim consolidated financial statements in Rupiah.

For consolidation purpose, due to the Company's functional currency is US Dollar, therefore the Company's assets and liabilities are translated using Bank of Indonesia middle rate at the end of each reporting period. Besides, revenue and expenses are translated using average Bank of Indonesia middle rate during profit or loss period.

The difference arising from the translation of the Company's financial statements into Rupiah is presented as "Other comprehensive income - difference in foreign currency translation of the Group's entity financial statements" account in the equity section of the interim consolidated statement of financial position.

(b) Transaction and balance

Foreign currency transactions are translated into the functional currency using the exchange rates prevailing at the dates of the transactions. At each reporting date, monetary assets and liabilities denominated in foreign currency are translated into functional currency using the closing exchange rate. The exchange rate used as a benchmark is the rate that is issued by Bank of Indonesia. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation at period-end exchange rates of monetary assets and liabilities denominated in foreign currencies are recognised in profit or loss, except when deferred in other comprehensive income as qualifying cash flow hedges and qualifying net investment hedges.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

d. Foreign currency translation (continued)

(b) Transaction and balance (continued)

As at the interim consolidated statement of financial position dates, the exchange rates used, based on the middle rates published by Bank Indonesia, were as follows:

	30 June 2018	31 December 2017
1 United States Dollar ("US Dollar")	14,404	13,548
100 Japanese Yen	13,037	12,022

e. Transactions with related parties

The Group has transactions with related parties as defined in SFAS 7 (Revised 2015).

Significant transactions and balances of the Group with the related parties are disclosed in the relevant notes to the interim consolidated financial statements.

f. Revenue and expenses

Revenue is recognised to the extent that it is probable that the economic benefits will flow to the Group and the revenue can be reliably measured. Revenue is measured at the fair value of the consideration received or receivable, excluding discounts, rebates and Value Added Taxes ("VAT").

Revenue from sales of goods/products (coal, tin metal and tin solder, tin chemical, aluminium, gold, ferronickel and crude palm oil) are recognised when all of the following conditions are met:

- the Group has transferred to the buyer the significant risks and rewards of ownership of the goods;
- the Group retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold;
- the amount of revenue can be measured reliably;
- it is probable that the economic benefits associated with the transaction will flow to the Group; and
- the costs incurred or to be incurred in relation to the sales transaction can be measured reliably.

The sale of a product arranged by a third party (agent) is recognised as revenue when the product is received by the end-users.

Certain ferronickel sale agreements provide for the provisional pricing of sales at the time of shipment. The final pricing is based on the London Metal Exchange ("LME") nickel price and normally ranges from 30 to 180 days after shipping to customers. Such a provisional sale contains an embedded derivative which is closely related and not recorded separately from the host sales contract. At the reporting date, the provisionally priced ferronickel sales are adjusted to the nearest subsequent monthly average LME nickel price, with the adjustments recorded in sales.

Revenue generated from sales of electricity is recognised when the electrical output is delivered to the customer.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

f. Revenue and expenses (continued)

The Group provides refinery services, healthcare/hospital and port services. For sales of services, revenue is recognised in the accounting period in which the services are rendered, by reference to the stage of completion of the specific transaction and assessed on the basis of the actual service provided as a proportion of the total service to be provided.

Expense are recognised as incurred.

g. Cash and cash equivalents and time deposits

In the interim consolidated statement of cash flows, cash and cash equivalents include cash on hand, deposits held at call with banks, other short-term highly liquid investments with original maturities of three months or less since the date of placement, and bank overdrafts. In the interim consolidated statement of financial position, bank overdrafts are shown within borrowings in current liabilities (if any).

Time deposits with original maturities more than three months since the date of placement are presented separately as time deposits account in the interim consolidated statement of financial position.

Cash in banks and time deposits which are restricted as to use or are used as collateral for obligations are not classified as part of “cash and cash equivalents” instead they are presented as “restricted cash” and presented as part of other assets in the interim consolidated statement of financial position.

h. Trade receivables and non-trade receivables

Trade receivables are amounts due from customers for goods and services sold or provided in the ordinary course of business. If collection is expected in one year or less (or in the normal operating cycle of the business if longer), they are classified as current assets. If not, they are presented as non-current assets.

Non-trade receivables from related parties are receivables balance reflecting loan given to related parties of the Group.

Trade and non-trade receivables are recognised initially at fair value and subsequently measured at amortised cost using the effective interest method. If the impact of discounting is significant, less any provision for impairment.

Collectibility of trade and non-trade receivables is reviewed on an ongoing basis. Debts which are known to be uncollectible are written off by reducing the carrying amount directly. An allowance account is used when there is objective evidence that the Group will not be able to collect all amounts due according to the original terms of the receivables. Significant financial difficulties of the debtor, probability that the debtor will enter bankruptcy or financial reorganisation, and default or delinquency in payments are considered indicators that the trade receivable is impaired. The amount of the impairment allowance is the difference between the asset’s carrying amount and the present value of estimated future cash flow, discounted at the original effective interest rate. Cash flow relating to short-term receivables is not discounted if the effect of discounting is immaterial.

The amount of the impairment loss is charged in profit or loss. When a trade and non-trade receivable for which an impairment allowance had been recognised becomes uncollectible in a subsequent period, it is written off against the allowance account. Subsequent recoveries of amounts previously written off are credited in profit or loss.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

i. Inventories

Finished goods inventory is measured at the lower of cost or net realisable value. Cost is determined using the weighted-average method. The cost of finished goods and work in progress comprises materials, labour and an appropriate proportion of directly attributable fixed and variable overheads.

Net realisable value is the estimated selling price in the ordinary course of business less the estimated costs of completion and estimated cost necessary to make the sale.

Materials, fuels, spare parts and consumable supplies are valued at cost, determined on a moving average basis, less provision for obsolete items.

Provision for obsolete and slow-moving inventory is determined on the basis of estimated future usage of individual inventory items. Supplies of maintenance materials are charged to production costs in the period in which they are used.

j. Prepaid expenses

Prepaid expenses are amortised over their beneficial periods using the straight-line method.

k. Financial assets

(i) Classification

The Group classifies its financial assets in the following categories: at fair value through profit or loss, loans and receivables, available-for-sale, and held to maturity. The classification depends on the purpose for which the financial assets were acquired. Management determines the classification of its financial assets at initial recognition.

The Group has financial assets classified as loans and receivables and available-for-sale financial assets.

(a) Loans and receivables

Loans and receivables are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. They are included in current assets, except for maturities greater than 12 months after the end of the reporting period. These are classified as non-current assets. The Group's loans and receivables comprise cash and cash equivalents, time deposits, trade receivables, other receivables and other financial assets.

(b) Available-for-sale financial assets

Available-for-sale financial assets are non-derivatives that are either designated in this category or not classified in any of the other categories. They are included in non-current assets unless the investment matures or management intends to dispose of it within twelve months of the end of the reporting period.

(ii) Recognition and derecognition

Regular purchases and sale of financial assets are recognised on the trade date - the date on which the Group commits to purchase or sell the asset. Financial assets are derecognised when the rights to receive cash flows from the investments have expired or have been transferred and the Group has transferred substantially all risks and rewards of ownership.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

k. Financial assets (continued)

(iii) Measurement

Investments are initially recognised at fair value plus the transaction costs for all financial assets not carried at fair value through profit or loss. Available-for-sale financial assets are subsequently carried at fair value. Loans and receivables and financial asset held to maturity are carried at amortised cost using the effective interest method.

Changes in the fair value of monetary and non-monetary securities classified as available for sale are recognised in other comprehensive income.

Dividend income from financial assets at fair value through profit or loss and available-for-sale securities are recognised in the profit or loss as part of "other income/(expenses), net" when the Group's right to receive payments is established. Interest income from financial assets at fair value through profit or loss is included in the "finance income".

Interest on available-for-sale securities calculated using the effective interest method is recognised in the profit or loss as part of "finance income".

l. Offsetting financial instruments

Financial assets and liabilities are offset and the net amount is reported in the interim consolidated statement of financial position when there is a legally enforceable right to offset the recognised amounts and there is an intention to settle on a net basis, or realise the asset and settle the liability simultaneously. The legally enforceable right must not be contingent on future events and must be enforceable in the normal course of business and in the event of default in solvency or bankruptcy of the Group or the counterparty.

m. Impairment of financial assets

At the end of each reporting period, the Group assesses whether there is objective evidence that a financial asset or group of financial assets is impaired. A financial asset or a group of assets is impaired and impairment losses are incurred only if there is objective evidence of impairment as a result of one or more events that occurred after the initial recognition of the asset (a "loss event") and that the loss event (or events) have an impact on the estimated future cash flows of the financial asset or group of financial assets that can be reliably estimated.

In the case of equity investments classified as available-for-sale, a significant and prolonged decline in the fair value of the security below its cost is considered as an indicator that the assets are impaired.

(i) Assets carried at amortised cost

For the loans and receivables category, the amount of the loss is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows (excluding future credit losses that have not been incurred) discounted at the financial asset's original effective interest rate. The carrying amount of the asset is reduced and the amount of the loss is recognised in profit or loss. If a loan has a floating interest rate, the discount rate for measuring any impairment loss is the current effective interest rate determined under the contract. The Group measures impairment on the basis of an instrument's fair value using an observable market price.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

m. Impairment of financial assets (continued)

(i) Assets carried at amortised cost (continued)

If, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognised (such as an improvement in the debtor's credit rating), the reversal of the previously recognised impairment loss is recognised in profit or loss.

(ii) Assets classified as available-for-sale

If there is objective evidence of impairment for available-for-sale financial assets, the cumulative loss measured as the difference between the acquisition cost and the current fair value, less any impairment loss on that financial asset previously recognised in profit or loss – is removed from equity and recognised in profit or loss.

If, in a subsequent period, the fair value of a debt instrument classified as available-for-sale increases and the increase can be objectively related to an event occurring after the impairment loss was recognised in profit or loss, the impairment loss is reversed through the interim consolidated statement of profit or loss.

Impairment losses on equity instruments recognised in the interim consolidated statement of profit or loss are not reversed through the interim consolidated statement of profit or loss in a subsequent period.

n. Exploration and evaluation assets

Exploration and evaluation activity involves the search for mineral resources after the Group has obtained legal rights to explore in a specific area, determination of the technical feasibility and assessment of the commercial viability of an identified resource. Exploration and evaluation expenditure comprises costs that are directly attributable to the following:

- Acquisition of rights to explore;
- Topographical, geological, geochemical and geophysical studies;
- Exploratory drilling;
- Trenching and sampling; and
- Activities involved in evaluating the technical feasibility and commercial viability of extracting mineral resources.

Exploration and evaluation expenditure related to an area of interest is written off as incurred, unless it is capitalised and carried forward, on an area of interest basis, provided that one of the following conditions is met:

(i) The rights of tenure of an area are current and it is considered probable that the costs will be recouped through successful development and exploitation of the area of interest or, alternatively, by its sale; or

(ii) Exploration activities in the area of interest have not yet reached the stage which would permit a reasonable assessment of the existence or otherwise of economically recoverable reserves and active and significant operations in or in relation to the area of interest are continuing.

Capitalised costs include costs directly related to exploration and evaluation activities in the relevant area of interest and exclude physical assets, which are recorded in property, plant and equipment. General and administrative costs are allocated to an exploration or evaluation asset only to the extent that those costs can be related directly to operational activities in the relevant area of interest.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

n. Exploration and evaluation assets (continued)

Capitalised exploration and evaluation expenditure is written off where the above conditions are no longer satisfied.

Identifiable exploration and evaluation assets acquired in a business combination are recognised initially as assets at fair value on acquisition and subsequently at cost less impairment charges. Exploration and evaluation expenditure incurred subsequent to the acquisition of an exploration asset in a business combination is accounted for in accordance with the accounting policy outlined above.

As exploration and evaluation assets are not available for use, they are not depreciated. Exploration and evaluation assets are assessed for impairment if facts and circumstances indicate that impairment may exist.

Exploration and evaluation assets are also tested for impairment once commercial reserves are found, before the assets are transferred to “mining properties - mines under development”.

Expenditure incurred before the entity has obtained the legal right to explore a specific area is expensed as incurred.

o. Mining properties

Development expenditure incurred by or on behalf of the Group is accumulated separately for each area of interest in which economically recoverable resources have been identified. Such expenditure comprises costs directly attributable to the construction of a mine and the related infrastructure and excludes physical assets and land rights, which are recorded as property, plant and equipment.

Once a development decision has been taken, the carrying amount of the exploration and evaluation assets in respect of the area of interest is transferred to “mines under development” within mining properties and aggregated with the subsequent development expenditure.

“Mines under development” are reclassified as “mines in production” at the end of the commissioning phase, when the mine is capable of operating in the manner intended by management.

No depreciation is recognised for “mines under development” until they are reclassified as “mines in production”.

When further development expenditure is incurred on a mining properties after the commencement of production, the expenditure is carried forward as part of “mines in production” when it is probable that additional future economic benefits associated with the expenditure will flow to the Group. Otherwise, such expenditure is classified as a cost of production.

“Mines in production” (including reclassified exploration, evaluation and development expenditure, and payments made to acquire mineral rights and leases) are amortised using the units-of-production method, with separate calculations being made for each area of interest. “Mines in production” will be depleted using the units-of-production method.

Identifiable mining properties acquired in a business combination are initially recognised as assets at their fair value. Development expenses incurred subsequent to the acquisition of the mining properties are accounted for in accordance with the policy outlined above.

“Mines under development” and “mines in production” are tested for impairment in accordance with the policy described in Note 2s.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

p. Fixed assets

Fixed assets are stated at cost less accumulated depreciation. Historical cost includes expenditure that is directly attributable to the acquisition of items. Depreciation of the main mining equipment used in mining operations is calculated using the units-of-production method. Other fixed assets, except land, are depreciated using the straight-line method to their estimated residual value over the lesser of the estimated useful lives of the assets, the life of the mine or the IUP term as follows:

	Years
Structure, buildings and improvements	5 to 30 and 50*)
Plant, machinery and mining equipment	4 to 34 and 50*)
Office, hospital and housing equipment and furniture and fixture	3 to 30 and 50*)
Transportation equipment	4 to 8

*) Useful life of fixed assets of 50 years only for fixed assets in the Company.

Subsequent costs are included in the asset's carrying amount or recognised as a separate asset, as appropriate, only when it is probable that future economic benefits associated with the item will flow to the Group and the cost of the item can be measured reliably. The carrying amount of the replaced part is derecognised. All other repairs and maintenance are charged to profit or loss during the financial period in which they are incurred.

Initial legal costs incurred to obtain legal rights are recognised as part of the acquisition cost of the land, and these costs are not depreciated. Costs related to renewal of land rights are recognised as intangible assets and amortised during the period of the land rights.

Net gains or losses on disposals are determined by comparing the proceeds with the carrying amount and are recognised within "other income/(expenses), net" in profit or loss.

The assets' residual values, useful lives and depreciation method are reviewed and adjusted if appropriate, at the end of each reporting period.

An asset's carrying amount is written down immediately to its recoverable amount if the asset's carrying amount is greater than its estimated recoverable amount.

The accumulated costs of the construction of the buildings and plant and the installation of machinery are capitalised as construction-in-progress. These costs are reclassified to fixed asset accounts when the construction or installation is complete. Depreciation is charged from the date the assets are ready for use in the manner intended by management.

q. Goodwill

Goodwill is measured as described in Note 2c.i. Goodwill on acquisitions of subsidiaries is included in intangible assets.

Goodwill impairment reviews are undertaken annually or more frequently if events or changes in circumstances indicate a potential impairment. Goodwill is carried at cost less accumulated impairment losses.

For the purposes of impairment testing, goodwill acquired in a business combination is allocated to each of the cash generating units ("CGU"), or groups of CGUs, that is expected to benefit from the synergies of the combination. Each unit or group of units to which the goodwill is allocated represents the lowest level within the entity at which the goodwill is monitored for internal management purposes. Goodwill is monitored at the operating segment level.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

r. Investment properties

Property that is held for long-term rental yields or for capital appreciation or both, and that is not occupied by the companies in the Group, is classified as investment property. Investment property also includes property that is being constructed or developed for future use as investment property.

Investment property is measured initially at its cost, including related transaction costs and where applicable, borrowing costs.

After initial recognition, investment property is carried at fair value. Investment property that is being redeveloped for continuing use as investment property or for which the market has become less active continues to be measured at fair value. Investment property under construction is measured at fair value if the fair value is considered to be reliably determinable.

Fair value is based on active market prices, adjusted, if necessary, for differences in the nature, location or condition of the specific asset. If this information is not available, the Group uses alternative valuation methods, such as recent prices on less active markets or discounted cash flow projections. Valuations are performed as of the financial position date by professional valuers who hold recognised and relevant professional qualifications and have recent experience in the location and category of the investment property being valued. These valuations form the basis for the carrying amounts in the interim consolidated financial statements.

Subsequent expenditure is capitalised to the asset's carrying amount only when it is probable that future economic benefits associated with the expenditure will flow to the Group and the cost of the item can be measured reliably. All other repairs and maintenance costs are expensed when incurred. When part of an investment property is replaced, the carrying amount of the replaced part is derecognised.

Changes in fair values are recognised in the interim consolidated statement of profit or loss and other comprehensive income. Investment properties are derecognised when they have been disposed.

s. Impairment of non-financial assets

Assets that have an indefinite useful life - for example, goodwill or intangible assets not ready for use - are not subject to amortisation but are tested annually for impairment, or more frequently if events or changes in circumstances indicate that they might be impaired. Assets that are subject to amortisation are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss is recognised for the amount by which the asset's carrying amount exceeds its recoverable amount. The recoverable amount is the higher of an asset's fair value less costs to sell and value in use. For the purposes of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash inflows, which are largely independent of the cash inflows from other assets or groups of assets (cash generating units). Non-financial assets other than goodwill that suffer impairment are reviewed for possible reversal of the impairment at each reporting date.

Reversal on impairment loss for assets other than goodwill would be recognised if, and only if, there has been a change in the estimates used to determine the asset's recoverable amount since the last impairment test was carried out. Reversal on impairment losses will be immediately recognised in profit or loss, except for assets measured using the revalution model as required by other SFAS. Impairment losses relating to goodwill would not be reversed.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

t. Assets held for sale and discontinued operations

Assets are classified as assets held for sale when their carrying amount is to be recovered principally through a sale transaction rather than through continuing use and a sale is considered highly probable. They are stated at the lower of carrying amount and fair value less costs to sell, except for assets such as deferred tax assets, assets arising from employee benefits, financial assets and investment property that are carried at fair value, which are specifically exempts from this requirement.

An impairment loss is recognised for any initial or subsequent write-down of the asset to fair value less costs to sell. A gain is recognised for any subsequent increases in fair value less costs to sell of an asset, but not in excess of any cumulative impairment loss previously recognised. A gain or loss not previously recognised by the date of the sale of the asset is recognised at the date of derecognition.

Non-current assets are not depreciated or amortised while they are classified as held for sale. Interest and other expenses attributable to the liabilities of a disposal group classified as held for sale continue to be recognised.

Assets classified as held for sale are presented separately from the other assets in the interim consolidated statements of financial position. The liabilities as held for sale are presented separately from other liabilities in the interim consolidated statements of financial position.

Assets that stops being classified as held for sale should be remeasured. This should be lower of:

a) Its carrying amount prior to the asset being classified as held for sale, adjusted for any depreciation, amortisation or revaluation that would be recognised if the asset had not been classified as held for sale; and
b) Its recoverable amount at the date of decision not to sell.

A discontinued operation is a component of the entity that has been disposed of or is classified as held for sale and that represents a separate major line of business or geographical area of operations, is part of a single co-ordinated plan to dispose of such a line of business or area of operations, or is a subsidiary acquired exclusively with a view to resale. The results of discontinued operations are presented separately in profit or loss.

A discontinued operation is a component of the entity that has been disposed of or classified as held for sale and that represents a separate major line of business or geographical area of operations, is part of a single co-ordinated plan to dispose of such a line of business or area of operations, or is a subsidiary acquired excusively with a view to resale. The results of discontinued operations are presented separately in the profit or loss.

u. Trade payables

Trade payables are obligations to pay for goods or services that have been acquired in the ordinary course of business from suppliers. Trade payables are classified as current liabilities if payment is due within one year or less (or in the ordinary operating cycle of the business if longer). If not, they are presented as non-current liabilities.

Trade payables are recognised initially at fair value and subsequently measured at amortised cost using the effective interest method.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

v. Borrowings

Borrowings are recognised initially at fair value, net of transaction costs incurred. Borrowings are subsequently carried at amortised cost; any difference between the proceeds (net of transaction costs) and the redemption value is recognised in profit or loss over the period of the borrowings using the effective interest method.

Fees paid on the establishment of loan facilities are recognised as transaction costs of the loan to the extent that it is probable that some or all of the facility will be drawn down. In this case, the fee is deferred until the draw-down occurs. To the extent that there is no evidence that it is probable that some or all of the facility will be drawn down, the fee is capitalised as a pre-payment for liquidity services and amortised over the period of the facility to which it relates.

Borrowings are removed from the interim consolidated statement of financial position when the obligation specified in the contract is discharged, cancelled or expired. The difference between the carrying amount of a financial liability that has been extinguished or transferred to another party and the consideration paid, including any non-cash assets transferred or liabilities assumed, is recognised in profit or loss as “other income/(expenses), net” or “finance cost”.

Borrowings are classified as current liabilities unless the Group has an unconditional right to defer the settlement of the liability for at least 12 months after the reporting date.

w. Borrowing cost

Interest and other borrowing costs, such as discount fees on loans either directly or indirectly used in financing the construction of a qualifying asset, are capitalised up to the date when construction is complete. For borrowings that are directly attributable to a qualifying asset, the amount to be capitalised is determined as the actual borrowing cost incurred during the period, less any income earned on the temporary investment of such borrowings. For borrowings that are not directly attributable to a qualifying asset, the amount to be capitalised is determined by applying a capitalisation rate to the amount expended on the qualifying assets. The capitalisation rate is the weighted average of the total borrowing costs applicable to the total borrowings outstanding during the period, other than borrowings made specifically for the purpose of obtaining a qualifying asset.

x. Leases

Determination of whether an arrangement is, or contains, a lease is made based on the substance of the arrangement and assessment of whether fulfillment of the arrangement is dependent on the use of a specific asset or assets, and the arrangement conveys a right to use the asset.

Leases in which a significant portion of the risks and rewards of ownership are retained by the lessor are classified as operating leases. Payments made under operating leases (net of any incentives received from the lessor) are charged to profit or loss on a straight-line basis over the term of the lease.

The Group leases certain property, plant and equipment. Leases of property, plant and equipment where the Group as lessee has substantially all the risks and rewards of ownership are classified as finance leases. Finance leases are capitalised at the lease’s commencement at the lower of the fair value of the leased asset and the present value of the minimum lease payments.

The corresponding rental obligation net of finance charges, are included in “finance lease liabilities”. Each lease payment is allocated between the liability and finance charges so as to achieve a constant rate on the finance balance outstanding. Finance cost is charged to profit or loss over the lease period so as to produce a constant periodic rate of interest on the remaining balance of the liability for each period. The property, plant and equipment acquired under finance leases is depreciated over the shorter of the useful life of the asset and the lease term if there is no reasonable certainty that the Group will obtain ownership at the end of the lease term.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

y. Employee benefits

i. Short-term employee benefits

Short-term employee benefits are recognised when they accrue to the employees.

ii. Pension benefits, other post-employment benefits and other long-term benefits

The Group is required to provide a minimum amount of pension benefits in accordance with Labour Law No. 13/2003 or the Group's Collective Labour Agreement ("CLA"), whichever is higher. Since the Labour Law and the CLA set the formula for determining the minimum amount of benefits, in substance pension plans under the Labour Law or the CLA represent defined benefit plans.

The pension benefit obligation is the present value of the defined benefit obligation at the balance sheet date less the fair value of plan assets. The defined benefit obligation is calculated annually by independent actuaries using the projected unit credit method. The present value of the defined benefit obligation is determined by discounting the estimated future cash outflows using interest rates of government bonds (considering currently there is no deep market for high quality corporate bonds) that are denominated in Rupiah, the currency in which the benefits will be paid and that have terms to maturity approximating the terms to the related pension obligation.

The Group also provides other post-employment benefits, and other long term benefits such as long service reward, death allowance, jubilee rewards, and separation reward. The long service reward is paid when the employees reach their retirement age. Death allowance is paid when the employee or the qualified family members pass away. The separation reward benefit is paid to employees in the event of voluntary resignation, subject to a minimum number of years of service. These benefits have been accounted for using the same methodology as for the defined benefit pension plan.

Actuarial gains and losses arising from experience adjustments and changes in actuarial assumptions are charged or credited to equity in other comprehensive income in the period in which they arise, except for other long-term benefits, where actuarial gain/loss is directly recognised as expenses in profit or loss.

Past service costs are recognised immediately in profit or loss. Gains or losses on the curtailment or settlement of a defined benefit plan are recognised in profit or loss when the curtailment or settlement occurs.

iii. Post-retirement health care benefits

The Group provides post-retirement healthcare benefits to its retirees. The entitlement to these benefits is usually based on the employee remaining in service up to retirement age and the completion of a minimum service period. The expected costs of these benefits are accrued over the period of employment, using methodology similar for defined benefit pension plans.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

y. Employee benefits (continued)

iv. Termination benefits

Termination benefits are payable when employment is terminated by the Group before the normal retirement date, or whenever an employee accepts voluntary redundancy in exchange for these benefits. The Group recognises termination benefits at the earlier of the following dates: (i) when the Group can no longer withdraw the offer of those benefits; and (ii) when the Group recognises costs for a restructuring that is within the scope of SFAS 57 and involves the payment of termination benefits. In the case of an offer made to encourage voluntary redundancy, the termination benefits are measured based on the number of employees expected to accept the offer. Benefits falling due more than 12 months after the reporting date are discounted to their present value.

z. Provision for environmental reclamation and mine closure

Restoration, rehabilitation, and environmental expenditure to be incurred during the production phase of operations are charged as part of the cost of production.

The Group has certain obligations to restore and rehabilitate mining areas following the completion of production. Provision for environmental and reclamation costs is recognised when the Group has a present legal or constructive obligation as a result of past events; it is probable that an outflow of resources will be required to settle the obligation; and the amount can be reliably estimated.

Such obligations are measured at the present value of the expenditure expected to be required to settle the obligation using the pre-tax discount rate that reflects the current market assessment of the time value of money and the risks specific to the obligation. Obligation recognised at its present value only if impact of discounting is considered material. Changes in estimated restoration and environmental costs to be incurred are accounted for on a prospective basis over the remaining mine life.

aa. Taxation

The tax expenses comprises current and deferred tax. Tax is recognised in profit or loss, except to the extent that it relates to items recognised in other comprehensive income or directly in equity. In this case, the tax is also recognised in other comprehensive income or directly in equity, respectively.

The current income tax charge is calculated on the basis of the tax laws enacted or substantively enacted at the reporting date in the countries where the Company and its subsidiaries operate and generate taxable income. Management periodically evaluates positions taken in tax returns with respect to situations in which applicable tax regulations are subject to interpretation. It establishes provision where appropriate on the basis of amounts expected to be paid to the tax authorities.

Deferred income tax is recognised, using the balance sheet liability method, on temporary differences arising between the tax bases of assets and liabilities and their carrying amounts in the interim consolidated financial statements. However, deferred tax liabilities are not recognised if they arise from the initial recognition of goodwill. Deferred income tax is not accounted for if it arises from initial recognition of an asset or liability in a transaction other than a business combination that at the time of the transaction affects neither accounting nor taxable profit or loss.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

aa. Taxation (continued)

Deferred income tax is determined using tax rates that have been enacted or substantially enacted as at the reporting period and is expected to apply when the related deferred income tax asset is realised or the deferred income tax liability is settled.

Deferred income tax assets are recognised only to the extent that it is probable that future taxable profit will be available against which the temporary differences can be utilised.

Deferred income tax assets and liabilities are offset when there are legally-enforceable right to offset current tax assets against current tax liabilities and when the deferred income taxes assets and liabilities relate to income taxes levied by the same taxation authority on the same taxable entities where there is an intention to settle the balances on a net basis, or to realise the assets and settle the liability simultaneously.

ab. Share capital

Incremental costs directly attributable to the issue of new ordinary shares or options are shown in equity as a deduction, net of tax, from the proceeds.

Where any Group company purchases the Company's equity share capital (treasury shares), the consideration paid, including any directly attributable incremental costs (net of income taxes) is deducted from equity attributable to the Company's equity holders until the shares are cancelled or reissued. Where such ordinary shares are subsequently reissued, any consideration received, net of any directly attributable incremental transaction costs and the related income tax effects, is included in equity attributable to the Company's equity holders.

ac. Dividend distribution

Dividend distribution to the Company's shareholders is recognised as a liability in the Group's interim consolidated financial statements in the period in which the dividends are approved by the Company's shareholders.

ad. Provision

Provision for environmental restoration, restructuring costs and legal claims is recognised when: the Group has a present legal or constructive obligation as a result of past events; it is probable that an outflow of resources will be required to settle the obligation; and the amount has been reliably estimated. Provision is not recognised for future operating losses.

Where there are a number of similar obligations, the likelihood that an outflow will be required in settlement is determined by considering the class of obligations as a whole. A provision is recognised even if the likelihood of an outflow with respect to any one item included in the same class of obligations may be small.

Provisions are measured at the present value of management's best estimate of the expenditure required to settle the present obligation at the end of the reporting period. The discount rate used to determine the present value is a pretax rate that reflects current market assessments of the time value of money and the risks specific to the liability. The increase in the provision due to the passage of time is recognised as interest expense.

ae. Earnings per share

Basic earnings per share are calculated by dividing the profit attributable to the owner of the parent entity of the Company by the weighted average number of ordinary shares outstanding during the period.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

ae. Earnings per share (continued)

Diluted earnings per share is calculated by adjusting the weighted average number of ordinary shares outstanding to assume the conversion of all dilutive potential ordinary shares. As at 30 June 2018 and 31 December 2017, there were no existing instruments which could result in the issue of further ordinary shares. Therefore, diluted earning per share is equivalent to basic earnings per share.

af. Segment reporting

Operating segments are reported in a manner consistent with the internal reporting provided to the chief operating decision-maker. The chief operating decision-maker, who is responsible for allocating resources and assessing performance of the operating segments, has been identified as the steering committee that makes strategic decisions.

3. CRITICAL ACCOUNTING ESTIMATES AND JUDGEMENTS

The preparation of interim consolidated financial statements in conformity with Indonesian Financial Accounting Standards requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the interim consolidated financial statements and the reported amounts of revenue and expenses during the reporting period. Estimates, assumptions and judgements are continually evaluated and are based on historical experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances.

The Group has identified the following critical accounting policies under which significant judgements, estimates and assumptions are made and where actual results may differ from these estimates under different assumptions and conditions and may materially affect financial results or the financial position reported in future periods.

Critical accounting estimates and assumptions

Estimated useful lives of fixed assets

The Group estimates the useful lives of its fixed assets based on expected asset utilisation as anchored on business plans and strategies that also consider expected future technological developments and market behavior. The estimation of the useful lives of fixed asset is based on the Group's collective assessment of industry practice, internal technical evaluation and experience with similar assets.

The estimated useful lives are reviewed at least at each financial period end and are updated if expectations differ from previous estimates due to physical wear and tear, technical or commercial obsolescence and legal or other limitations on the use of the assets. It is possible, however, that future results of operations could be materially affected by changes in the estimates brought about by changes in the factors mentioned above.

The amounts and timing of recorded expenses for any year will be affected by changes in these factors and circumstances. A reduction in the estimated useful lives of the Group's fixed assets will increase the recorded operating expenses and decrease non-current assets.

3. CRITICAL ACCOUNTING ESTIMATES AND JUDGEMENTS (continued)

Critical accounting estimates and assumptions (continued)

Goodwill and impairment of non-financial assets

The interim consolidated financial statements reflect acquired businesses after the completion of the respective acquisition. The Group accounts for the acquired businesses using the acquisition method, which requires extensive use of accounting estimates and judgements to allocate the purchase price to the fair market values of the acquiree's identifiable assets and liabilities at the acquisition date. Any excess in the purchase price over the estimated fair market values of the net assets acquired is recorded as goodwill in the interim consolidated statement of financial position. Thus, the numerous judgements made in estimating the fair market value tobe assigned to the acquiree's assets and liabilities can materially affect the Group's financial performance.

The determination of fair value less cost to sell and value in use requires management to make estimates and the assumptions about expected production and sales volumes, commodity prices (considering current and historical prices, price trends and related factors), mineral resources and reserves, operating costs, closure and rehabilitation costs and future capital expenditure. These estimates and assumptions are subject to risk and uncertainty; hence there is a possibility that changes in circumstances will alter these projections, which may have an impact on the recoverable amount of the assets. In such circumstances, some or all of the carrying value of the assets may be further impaired or the impairment charge reduced with the impact recorded in profit or loss.

Assets held for sale and discontinued operations

Significant judgement is required to determine the recoverable amount of asset held for sale and discontinued operations, in the absence of quoted market price. These values are typically based on the present value of future cash flows where the estimation is required for reserves, future mine plans and production profiles, operational and capital costs, discount rates and expected coal prices. Changes in circumstances may alter these projections, which may impact the recoverable amount of the assets. In such circumstances, some or all of the carrying value of the assets may be impaired and charged to profit or loss. Additional information is disclosed in Note 11.

Mineral reserve estimates

Proven and probable reserves are estimates of the amount of output that can be economically and legally exploited from the Group's mining properties. The Group determines and reports their mineral reserves under the principles incorporated in the Code for Reporting of Mineral Resources and Ore Reserves (the "JORC Code") of the Australasian Joint Ore Reserves Committee ("JORC"). In order to estimate mineral reserves, assumptions are required about a range of geological, technical and economic factors, including quantities, production techniques, stripping ratio, production costs, transportation costs, commodity demand, commodity prices and exchange rates.

Estimating the quantity and/or mineral content of mineral reserves requires the size, shape and depth of mineral bodies or fields to be determined by analysing geological data such as drilling samples. This process may require complex and difficult geological judgements to interpret the data.

3. CRITICAL ACCOUNTING ESTIMATES AND JUDGEMENTS (continued)

Critical accounting estimates and assumptions (continued)

Mineral reserve estimates (continued)

Because the economic assumptions used to estimate reserves change from period to period and because additional geological data are generated during the course of operations, estimates of reserves may change from period to period. Changes in the reported reserves may affect the Group's financial results and financial position in a number of ways, including the following:

- Asset carrying values may be affected due to changes in estimated future cash flows.
- Depreciation, depletion and amortisation charged in the interim consolidated statement of profit or loss and other comprehensive income may change where such charges are determined on a units of production basis, or where the useful economic lives of assets change.
- Decommissioning, site restoration and environmental provision may change where changes in estimated reserves affect expectations about the timing or cost of these activities.
- The carrying value of deferred tax assets/liabilities may change due to changes in estimates of the likely recovery of the tax benefits.

In relation to the acquisition of an additional 7.5% share ownership in PT Nusa Halmahera Mineral ("NHM") in December 2012, the management also performs an estimation of potential gold resources held by NHM at each reporting date.

Provision for environmental reclamation and mine closure

The Group's accounting policy for the recognition of environmental reclamation and mine closure provision requires significant estimates and assumptions such as requirements of the relevant legal and regulatory framework; the magnitude of possible contamination and the timing, extent and costs of required environmental reclamation and mine closure activity. These uncertainties may result in future actual expenditure differing from the amounts currently provided. If total current period expenditure related to past activity is higher than the existing balance, the differences will be charged to the periods where the excess arises. The provision recognised for each site is periodically reviewed and updated based on the facts and circumstances available at the time.

Post-employment benefits obligation

The present value of the pension obligation depends on a number of factors that are determined on an actuarial basis using a number of assumptions. The assumptions used in determining the net cost/(income) for pensions include the discount rate, future salary increase, future remuneration changes, employee attrition rates, life expectancy and expected remaining periods of service of employees. Any changes in these assumptions will have an impact on the carrying amount of the pension obligation.

The Group determines the appropriate discount rate at the end of each period. This is the interest rate that should be used to determine the present value of estimated future cash outflows expected to be required to settle the pension obligation. In determining the appropriate discount rate, the Group considers the interest rates of government bonds (considering there is no deep market for high quality corporate bonds) that are denominated in the currency in which the benefits will be paid and that have terms to maturity approximating the terms of the related pension obligation.

For the rate of future salary increases, the Group collects all historical data relating to changes in base salaries and adjusts it for future business plan.

Other key assumptions for pension obligations are based in part on current market conditions. Additional information is disclosed in Note 29.

3. CRITICAL ACCOUNTING ESTIMATES AND JUDGEMENTS (continued)

Judgements

Uncertain tax exposure

Judgements and assumptions are required to determine the capital allowances and deductibility of certain expenses during the estimation of the provision for income tax expense for each company within the Group. In particular, the calculation of Group's income tax expenses involves the interpretation of applicable tax laws and regulations. There are many transactions and calculations for which the ultimate tax determination is uncertain during the ordinary course of business.

All judgements and estimates taken by management as discussed above may be challenged by the Directorate General of Taxation ("DGT") or the Government Auditors. As a result, the ultimate tax determination becomes uncertain. The resolution of tax positions taken by the Group, can take several years to complete and in some cases it is difficult to predict the ultimate outcome. Where the final outcome of these matters is different from the amounts initially recorded, such differences will have an impact on the income tax and deferred income tax provision in the period in which this determination is made.

Deferred tax assets, including those arising from tax losses carried forward, capital allowances and other temporary differences, are recognised only where it is considered more likely than not that they will be recovered, which is dependent on the generation of sufficient future taxable profits. Similar to "Goodwill and Impairment of non-financial assets" assumptions regarding the generation of future taxable profits are heavily affected by management's estimates and assumptions regarding expected production levels, sales volumes, commodity prices, etc; which are subject to risk and uncertainty, and hence there is a possibility that changes in circumstances will alter the projected future taxable profits.

Determination of functional currency

In the process of applying the Group's accounting policies, the management has to make a judgement on the determination of the functional currency of each of the Group's entities which have significant effects on the amounts recognised in the interim consolidated financial statements.

The functional currency of each entity within the Group is the currency of the primary economic environment in which each of the entities operates. It is the currency, among other factors, that mainly influences the sales prices for goods and services, of the country whose competitive forces and regulations mainly determine the sales prices of its goods and services, the currency that mainly influences labour, material and other costs and the currency in which funds from financing activities are generated.

Assessment whether the Company has control over Antam, Timah and Bukit Asam

The existence of control encompasses the investor's power over the investee, its exposure, or rights, to variable returns from its involvement with the investee, and its ability to use its power over the investee to affect its returns. The interim consolidated financial statements include the interim financial statements of Antam, Timah, and Bukit Asam in which the Company holds, through Series B shares (see Note 31), the majority of the ownership interest in those subsidiaries. In assessing whether it has power over those entities, management applies judgement and considers the rights attached to those ownership interests obtained by virtue of contractual agreement with other shareholders. Those rights have given the Company the ability to direct the activities of those subsidiaries that significantly affect their returns and as such, constitute control.

4. TRANSACTION WITH ENTITIES UNDER COMMON CONTROL

In 2017, the Company received additional state equity participation in the form of transferring all series B shares owned by the Government of Republic of Indonesia at Antam, Timah and Bukit Asam as disclosed in Note 31.

The above transaction was accounted for using the pooling-of-interests method as required under SFAS 38 (Revised 2012) "Business Combination of Entities Under Common Control" since the Company, Antam, Timah and Bukit Asam are entities under common control of the Government of Republic of Indonesia.

The difference between the purchase consideration and the carrying value of investments obtained from this transaction is recorded in the account "additional paid-in capital" in the equity section. The equity of Antam, Timah and Bukit Asam prior to the date of combination is presented as "equity of merging entities" in the equity section. The details of the purchase consideration and the carrying value of the investments are as follows:

	Purchase consideration	Carrying value of investment	Additional paid-in capital
Bukit Asam	18,347,366	8,847,984	9,499,382
Antam	16,902,338	10,503,822	6,398,516
Timah	6,241,548	3,939,840	2,301,708
Total	**41,491,252**	**23,291,646**	**18,199,606**

The significant impact arising in accounting policy uniformity on business combination transactions of entities under common control above is the use of the cost model for class of assets of structure and building in the Company and class of assets of land rights in Antam which previously used revaluation model.

4. TRANSACTION WITH ENTITIES UNDER COMMON CONTROL (continued)

The Group's interim consolidated financial statements as at and for the six-month period ended 30 June 2017 have been restated as follows:

	Before restatement	Restatement	After restatement
30 June 2017			
Statements of profit or loss and other comprehensive income			
Revenue	2,504,104	16,328,709	18,832,813
Gross profit	882,925	4,312,899	5,195,824
Profit before income tax	688,198	2,164,413	2,852,611
Profit for the period	526,404	1,481,854	2,008,258
Total comprehensive income for the period	526,404	708,092	1,234,496
Statements of cash flows			
Net cash flows generated from operating activities	941,338	780,657	1,721,995
Net cash flows used in investing activities	(520,539)	(1,413,365)	(1,933,904)
Net cash flows used in financing activities	(265,717)	(1,555,978)	(1,821,695)
Net increase/(decrease) in cash and cash equivalents	155,082	(2,188,686)	(2,033,604)
Reclassified from assets of disposal group classified as held for sale	-	(5,064)	(5,064)
Effect of foreign exchange loss on cash and cash equivalents	(70,103)	23,254	(46,849)
Cash and cash equivalents at beginning of the period	4,139,125	11,827,720	15,966,845
Cash and cash equivalents at the end of the period	4,224,104	9,657,224	13,881,328

5. CASH AND CASH EQUIVALENTS

Cash and cash equivalents consist of the following:

	30 June 2018	31 December 2017
Cash on hand	**4,325**	**4,070**
Cash in banks		
Related parties (Note 41a)		
Rupiah	2,095,988	1,607,370
US Dollar	1,944,194	1,191,953
Singapore Dollar	274	298
Japanese Yen	255	-
British Pound Sterling	211	376
Australian Dollar	200	11,487
	4,041,122	2,811,484
Third parties		
Rupiah	310,052	153,931
US Dollar	182,952	161,855
British Pound Sterling	1,771	942
Australian Dollar	318	317
China Renminbi	164	64
	495,257	317,109
Total cash in banks	**4,536,379**	**3,128,593**
Short-term time deposits		
Related parties (Note 41a)		
Rupiah	10,645,271	8,051,531
US Dollar	5,212,867	4,315,038
	15,858,138	12,366,569
Third parties		
Rupiah	476,000	549,000
US Dollar	-	94,836
	476,000	643,836
Total short-term time deposits	**16,334,138**	**13,010,405**
Total cash and cash equivalents	**20,874,842**	**16,143,068**

The annual interest rates of time deposits are as follows:

	30 June 2018	31 December 2017
Rupiah	5.00% - 7.50%	4.25% - 9.32%
US Dollar	1.50% - 2.89%	0.50% - 1.50%

The maximum exposure to credit risk at the end of the reporting period is the carrying amount of each class of cash and cash equivalents mentioned above.

6. TIME DEPOSITS

This account represents time deposits with original maturities of more than three months since the date of placement:

	30 June 2018	31 December 2017
Related parties:		
Rupiah:		
PT Bank Tabungan Negara (Persero) Tbk ("BTN")	200,000	400,000
PT Bank Rakyat Indonesia (Persero) Tbk ("BRI")	-	70,000
PT Bank Mandiri (Persero) Tbk ("Mandiri")	-	20,000
	200,000	490,000
US Dollar:		
PT Bank Negara Indonesia (Persero) Tbk ("BNI")	1,173,926	1,104,162
BRI	864,240	812,880
	2,038,166	1,917,042
Total time deposits	**2,238,166**	**2,407,042**
Less :		
Current portion	**(2,238,166)**	**(2,207,042)**
Non-current portion	**-**	**200,000**

The annual interest rates of time deposits are as follows:

	30 June 2018	31 December 2017
Rupiah	6.75%	6.75%
US Dollar	1.70% - 1.82%	1.50%

The maximum exposure to credit risk at the end of the reporting period is the carrying amount of time deposits mentioned above.

NOTES TO THE INTERIM CONSOLIDATED FINANCIAL STATEMENTS
30 JUNE 2018 AND 31 DECEMBER 2017
AND FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 2017
(Expressed in millions of Rupiah, unless otherwise stated)

7. TRADE RECEIVABLES

Trade receivables consist of:

	30 June 2018	31 December 2017
Related parties:		
PT Indonesia Power ("PTIP")	1,034,388	1,972,627
PT Perusahaan Listrik Negara (Persero) ("PLN")	442,841	1,345,714
PT Bukit Pembangkit Innovative ("BPI")	392,753	339,276
Others (each below Rp100,000)	135,657	95,583
	2,005,639	3,753,200
Third parties:		
Trafigura Pte. Ltd.	322,993	-
Jindal Stainles Limited	255,387	83,963
Adani Global Pte. Ltd.	249,217	297,380
Posco Daewoo Corporation	240,258	230,137
Indopacific Energy Pte. Ltd.	203,551	69,095
PT Sumber Segara Primadaya	197,580	143,750
PT Tembaga Mulia Semanan	163,056	53,840
Lei Shing Hong Trading Ltd.	156,976	184,239
Mitsubishi Corporation Unimetals Ltd.	155,477	114,936
Croniment Ferroleg	123,165	-
China Yansheng Oversea Company Ltd.	121,561	-
Falcon Power Co. Ltd.	120,099	-
Toyota Tsusho Asia Pacific Pte. Ltd.	117,406	252,968
PT Indonesia Smelting Technology	116,384	125,836
PT Alfo Citra Abadi	115,610	84,693
Tisco Trading (H.K) Ltd.	104,352	317,689
Noble Resources International	70,856	286,657
Golden Energy Mines Trading	46,530	283,404
Pohang Iron & Steel Co.	37,887	107,494
Raffemet Pte. Ltd.	-	224,840
Others (each below Rp100,000)	2,255,715	2,048,036
	5,174,060	4,908,957
	7,179,699	8,662,157
Less: Provision for impairment	(372,567)	(371,267)
Total trade receivables	**6,807,132**	**8,290,890**

7. TRADE RECEIVABLES (continued)

Due to the short-term nature of trade receivables, their carrying amount approximates their fair values.

The aging analysis of these trade receivables is as follows:

	30 June 2018	31 December 2017
Current	5,494,982	7,092,685
Overdue:		
1 to 30 days	912,268	759,573
31 to 90 days	273,008	427,978
Over 90 days	499,441	381,921
Total	**7,179,699**	**8,662,157**

Movements of provision for impairment of trade receivables are as follows:

	30 June 2018	31 December 2017
At beginning of the period	371,267	351,522
Addition during the period	1,300	25,004
Proceeds from previously impaired amounts	-	(5,259)
At end of period	**372,567**	**371,267**

Management believes that the provision for impairment of receivables is adequate to cover loss on uncollectible trade receivables.

NOTES TO THE INTERIM CONSOLIDATED FINANCIAL STATEMENTS
30 JUNE 2018 AND 31 DECEMBER 2017
AND FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 2017
(Expressed in millions of Rupiah, unless otherwise stated)

8. INVENTORIES

	30 June 2018	31 December 2017
Products inventory:		
Gold and silver	1,166,129	659,159
Aluminium	950,503	412,431
Coal	914,125	1,070,837
Tin metal	733,428	690,824
Nickel ore	307,905	168,593
Tin chemical	107,513	120,604
Bauxite ore	73,695	44,978
Ferronickel	54,714	26,904
Others	61,132	58,508
Work in progress product	2,366,105	2,307,497
Raw materials	1,406,030	479,369
Spare parts and other consumable supplies	1,191,912	1,305,585
Goods-in-transit	-	9,292
Total inventories	**9,333,191**	**7,354,581**
Allowance for impairment of inventories	(155,826)	(150,521)
Total inventories, net	9,177,365	7,204,060
Less:		
Current portion	**(8,682,327)**	**(6,724,621)**
Non-current portion	**495,038**	**479,439**

Inventories amounting to Rp495,038 (31 December 2017:Rp479,439) are classified as “inventories - non-current portion” because the Group plans to process the inventories using the new smelter which has been constructed starting in 2018.

Movement of provision for impairment of inventories is as follows:

	30 June 2018	31 December 2017
Beginning balance	150,521	160,397
Addition/(deduction) during the period, net	5,305	(9,876)
Ending balance	**155,826**	**150,521**

Based on a review at the reporting date, management believes that the above allowance is adequate to cover losses from obsolescence or impairment of inventories.

9. AVAILABLE-FOR-SALE FINANCIAL ASSETS

Available-for-sale financial assets consist of investments in government bonds, corporate shares and mutual funds. Below is the movement of available-for-sale financial assets of the Group:

	30 June 2018	31 December 2017
At beginning of the period	7,685,642	725,046
Additions	-	7,255,450
Disposals	(35,000)	(312,224)
Exchange differences	(11,310)	20,990
Realised loss	-	(35,305)
Unrealised gain	-	31,685
At end of the period	**7,639,332**	**7,685,642**
Less:		
Current portion	**(383,882)**	**(430,192)**
Non-current portion	**7,255,450**	**7,255,450**

Available-for-sale financial assets include the following:

	30 June 2018	31 December 2017
Related parties (Note 41a):		
Mutual funds	210,499	245,499
Corporate bonds	171,726	163,166
Third parties:		
Corporate shares	7,257,107	7,276,977
Total available-for-sale financial assets	**7,639,332**	**7,685,642**

Available-for-sale financial assets are denominated in the following currencies:

	30 June 2018	31 December 2017
Rupiah	7,467,606	7,522,476
US Dollar	171,726	163,166
	7,639,332	**7,685,642**

In November 2017, the Company received transfer of PT Freeport Indonesia's ("PTFI") shares previously owned by Government of Republic of Indonesia of 21,300 shares with total value of Rp7.26 trillion (full amount) based on GR 47/2017 and Ministry of Finance Decision No. 887/KMK.06/2017. PTFI's shares value was based on valuation from KJPP Ruky, Safrudin & Rekan, an independent valuer, on their report dated 2 October 2017. During the six-month period ended 30 June 2018, the Company received dividend income from PTFI amounting to US$147,502,500 or equivalent to Rp2,028,159 (30 June 2017:Rpnil) and presented it as "other income/(expenses), net" in the interim consolidated statements of profit or loss.

9. AVAILABLE-FOR-SALE FINANCIAL ASSETS (continued)

The fair value of all available-for-sale financial assets is based on the current bid price in active markets and observable inputs other than quoted prices. During the six-month period ended 30 June 2018, changes in fair value of the available-for-sale financial assets are immaterial.

The maximum exposure to credit risk at the reporting date is the carrying value of the government bonds, corporate shares and mutual funds classified as available-for-sale.

None of these financial assets are either past due or impaired.

10. OTHER CURRENT AND NON-CURRENT ASSETS

	30 June 2018	31 December 2017
Prepaid expenses and advance payments	1,163,700	1,313,543
Performance bonds	227,685	242,057
Plantation assets	226,316	233,102
Assets of pension plan	125,398	116,130
Real estate assets	112,897	90,900
Software and system	38,552	47,094
Deferred charges	28,842	48,426
Restricted cash	19,792	35,702
Others (each below Rp50,000)	222,988	151,917
Total other current and non-current assets	**2,166,170**	**2,278,871**
Less:		
Current portion	**(852,305)**	**(946,339)**
Non-current portion	**1,313,865**	**1,332,532**

Advance payments represent down payment to suppliers for purchase of goods and services.

11. ASSETS OF DISPOSAL GROUP CLASSIFIED AS HELD FOR SALE

a. Assets of disposal group classified as held for sale

	30 June 2018	31 December 2017
Cash and cash equivalents	2,673	6,781
Restricted cash	38,662	14,700
Trade receivables	42,859	40,014
Other receivables	44	6,340
Advances	43,224	46,387
Inventories	10,612	8,487
Prepaid taxes	19,105	30,126
Fixed assets	2,935	3,290
Mining properties	191,907	193,398
Other assets	1,904	2,241
Total assets of disposal group classified as held for sale	**353,925**	**351,764**

11. ASSETS OF DISPOSAL GROUP CLASSIFIED AS HELD FOR SALE (continued)

b. Liabilities of disposal group directly associated with assets classified as held for sale

	30 June 2018	31 December 2017
Trade payables - third parties	19,131	1,801
Taxes payable	5,167	4,718
Royalties payable	7,063	8,187
Accruals	5,207	16,385
Provision for environmental rehabilitation cost	21,328	21,328
Deferred tax liabilities	42,929	42,929
Total liabilities of disposal group directly associated with assets classified as held for sale	**100,825**	**95,348**

c. Accumulated foreign exchanges of translation adjustment

	30 June 2018	31 December 2017
Accumulated foreign exchanges of translation adjustment	31,097	31,097

d. Discontinued operations

The assets and liabilities related to TAJ and TBBE, a subsidiaries of TIM have been presented as held for sale following the active plan of the Group's management and shareholders to sell TAJ and TBBE. Management estimates that this sales plan can be realised in 2018.

The Group used an income approach to assess impairment of assets held for sale and discontinued operations. The income approach is predicted upon the value of the future cash flows that could be generated as if the Group continue the business. The discounted cash flow method was used which involves projecting cash flows and converting them into a present value equivalent through discounting. The discounting process uses a rate of return that is commensurate with the risk associated with the business or asset and the time value of money. This approach is considered as Level 3 under the fair value hierarchy.

Management believes that there has been no significant changes to the assumption used for the impairment assessment at 30 June 2018 and 31 December 2017, hence no updated calculation was necessary.

Management is of the opinion that the provision for impairment in the value of assets held for sale is not necessary since no impairment indicators exist as at 30 June 2018 and 31 December 2017.

The following table gives cash flows information relating to the discontinued operations:

	30 June 2018	30 June 2017*)
Operating cash flows	19,829	8,340
Investing cash flows	(23,937)	(3,276)
Total discontinued operations	**(4,108)**	**5,064**

*) As restated, (refer to Note 4)

11. ASSETS OF DISPOSAL GROUP CLASSIFIED AS HELD FOR SALE (continued)

d. Discontinued operations (continued)

The following table gives information about the results of discontinued operations:

	30 June 2018	30 June 2017*)
Revenue	10,432	93,456
Expenses	(14,831)	(97,165)
Loss before income tax from discontinued operations	(4,399)	(3,709)
Income tax expenses	-	-
Loss for the period from discontinued operations	**(4,399)**	**(3,709)**

12. INVESTMENTS IN ASSOCIATES

The amounts recognised in the interim consolidated financial statements are as follows:

	30 June 2018	31 December 2017
NHM	1,386,843	1,684,568
Asuransi Jiwa Tugu Mandiri ("AJTM")	137,332	142,257
PT Tabalong Prima Resources ("TPR")	98,609	94,420
PT Mitra Hasrat Bersama ("MHB")	78,582	75,260
PT Menara Antam Sejahtera ("MAS")	3,475	2,404
PT Antamloka Halimun Energi ("AHE")	50	50
PT Nikel Halmahera Timur ("NHT")	28	27
Total investment in associates	**1,704,919**	**1,998,986**

	30 June 2018	31 December 2017
Beginning balance	3,948,998	3,988,416
Share of profit, net	74,129	140,510
Other comprehensive (loss)/income	(4,439)	4,906
Dividend distributions	(225,335)	(185,264)
Addition of investments	-	11,250
Deduction of investments	(32)	(10,820)
Ending balance	3,793,321	3,948,998
Accumulated asset amortisation based on fair value		
Beginning balance	(1,814,142)	(1,476,859)
Addition	(138,390)	(337,283)
Ending balance of accumulated asset amortisation based on fair value	(1,952,532)	(1,814,142)
Accumulated impairment of investments		
Beginning balance	(135,870)	(135,870)
Ending balance of impairment of investments	(135,870)	(135,870)
Carrying amount of investments	**1,704,919**	**1,998,986**

*) As restated, (refer to Note 4)

12. INVESTMENTS IN ASSOCIATES (continued)

The nature of investments in associates as at 30 June 2018 and 31 December 2017 is as follows:

- NHM operates a gold underground mine at North Halmahera Regency, North Maluku Province, Indonesia. Percentage of interest held is 25%.

- AJTM is a life insurance company, from Yayasan Pensiun Timah. Percentage of interest held is 27.78%.

- TPR has a coal mine at Tabalong Regency, South Kalimantan. As at 30 June 2018 and 31 December 2017, TPR has not been in operation yet. Percentage of interest held is 34.17%.

- MHB has a port at South Barito Regency, Central Kalimantan. As at 30 June 2018 and 31 December 2017, MHB has not been in operation yet. Percentage of interest held is 34.17%.

- MAS owns and manages an office building at South Jakarta. Percentage of interest held is 25%.

- AHE engages in the electricity sector, including consultancy, construction, maintenance and development of technology relating to electricity. Percentage of interest held is 25%.

- NHT operates a nickel mine at North Halmahera Regency, North Maluku Province. Percentage of interest held is 50%.

- PT Meratus Jaya Iron & Steel (“MJIS”) operates a sponge iron plant at Tanah Bumbu Regency, South Kalimantan Province. As at 30 June 2018 and 31 December 2017, the carrying amount of investment in MJIS was Rpnil because the Group’s share of losses in MJIS has exceeded its interest in MJIS. Percentage of interest held is 34%.

- PT Koba Tin is a holder of Contract of Work but already expired on 31 March 2013. As at 30 June 2018 and 31 December 2017, the carrying amount of investment in PT Koba Tin equals to Rpnil because the Group’s share of losses in PT Koba Tin has exceeded its interest in PT Koba Tin. Percentage of interest held is 25%.

12. INVESTMENTS IN ASSOCIATES (continued)

All of the associates are private companies and there is no quoted market price available for their shares.

Set out below is the summarised financial information for material associates of the Group, which is accounted for using the equity method:

		30 June 2018									
Associates	Place of business	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Revenue	Profit/(loss) for the period	Other comprehensive loss	Total comprehensive income/(loss) for the period	Dividend received from associates
NHM	North Maluku	1,104,397	2,074,522	433,658	448,767	2,296,494	2,251,017	274,057	(10,060)	263,997	225,335
AJTM	Jakarta	286,548	1,129,087	1,143,510	63,275	208,850	358,097	(10,804)	(6,926)	(17,730)	-

		31 December 2017									
Associates	Place of business	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Revenue	Profit for the year	Other comprehensive (loss)/income	Total comprehensive income for the year	Dividend received from associates
NHM	North Maluku	1,188,897	2,689,449	397,816	546,695	2,933,835	5,342,087	511,452	(1,324)	510,128	185,264
AJTM	Jakarta	174,381	1,063,779	913,801	97,779	226,580	372,500	42,445	16,469	58,914	-

Reconciliation of the summarised financial information presented to the carrying amount of interests in material associates to the Group is as follows:

	30 June 2018									
Associates	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Interest in associate	Fair value uplift	Goodwill	Accumulated impairment of investment	Carrying value
NHM	1,104,397	2,074,522	433,658	448,767	2,296,494	574,124	682,287	174,689	(44,257)	1,386,843
AJTM	286,548	1,129,087	1,143,510	63,275	208,850	58,019	-	79,313	-	137,332

	31 December 2017									
Associates	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Interest in associate	Fair value uplift	Goodwill	Accumulated impairment of investment	Carrying value
NHM	1,188,897	2,689,449	397,816	546,695	2,933,835	733,458	820,677	174,690	(44,257)	1,684,568
AJTM	174,381	1,063,779	913,801	97,779	226,580	62,944	-	79,313	-	142,257

NHM

Effective from 20 December 2012, Antam acquired an additional 7.5% interest in NHM, which increased the total interest held to 25%. Based on the independent appraisal report dated 23 November 2012 of Suwendo Rinaldy & Rekan, the fair value of the investment in NHM for the 17.5% portion amounting to Rp2,519,676. The excess amounting to Rp2,484,008 between fair value and the initial cost of the investment was recorded as a gain on a fair value adjustment in profit or loss.

During the six-month periods ended 30 June 2018 and 2017, the dividend declared by NHM to Antam amounting to US$16,111,148 (equivalent to Rp225,335) and US$13,769,108 (equivalent to Rp185,264), respectively.

On 27 March 2017, 29 April 2017 and 16 October 2017, Antam received cash dividends amounting to US$1,069,322 (equivalent to Rp14,200), US$4,233,185 (equivalent to Rp56,292) and US$7,446,601 (equivalent to Rp101,453), respectively, after NHM had offset the dividends with Antam contingent liability amounting to US$1,000,000 (equivalent to Rp13,319).

On 30 April 2018 and 25 June 2018, Antam received dividends payment amounting to US$8,391,163 (equivalent to Rp116,444) and US$7,319,985 (equivalent to Rp103,248), respectively, after NHM had offset the dividends with the Company's contingent liability amounting to US$400,000 (equivalent to Rp5,643).

12. INVESTMENTS IN ASSOCIATES (continued)

NHM (continued)

Management is of the opinion that there are no facts and circumstances during the period that indicate investment in NHM is impaired. As such, management does not perform impairment test for the carrying amount of investment in NHM.

The key assumptions used in the impairment test for investment in NHM as at 31 December 2017 are as follows:

Cash flow period:	2018-2020
Gold prices per troy ounce:	US$1,290-US$1,319
Discount rate:	5.62%

Refer to Note 42f for the contingent purchase price relating to the Group's interest in NHM.

AJTM

In 2007, Timah acquired 29.59% of the shares of AJTM, a life insurance company, from Yayasan Pensiun Timah.

On 15 February 2016, Timah and other shareholders have agreed to add share issued and paid totaling Rp15,000 by Dana Pensiun Pertamina in AJTM. This capital injection has resulted in a decrease in the percentage of ownership held by Timah to 27.78%. The share capital increase was approved based on Deed No. 7 of Lenny Janis Ishak S.H., notary in Jakarta, dated 15 February 2016.

13. INVESTMENT IN JOINT VENTURES

The amounts recognised in the interim consolidated financial statements are as follows:

	30 June 2018	31 December 2017
BPI	1,324,511	1,274,352
PT Indonesia Chemical Alumina ("ICA")	802,097	835,350
PT Huadian Bukit Asam Power ("HBAP")	45,390	45,390
PT Bukit Asam Transpacific Railway ("BATR")	5,424	5,424
Total investment in joint ventures	**2,177,422**	**2,160,516**
Beginning balance	2,160,516	2,362,496
Share of loss	(49,128)	(157,902)
Other comprehensive income/(loss)	66,034	(21,804)
Unrealised loss/(gain) on intra group transactions	-	(22,274)
Ending balance	**2,177,422**	**2,160,516**

13. INVESTMENT IN JOINT VENTURES (continued)

The nature of investments in joint ventures is as follows:

- ICA engages in chemical grade alumina processing activities. ICA is for the Group's expansion to the chemical grade alumina industry. Percentage of interest held is 80%.
- BPI entered into power purchase agreement with PLN related to Mine Mouth Power Plant at Lahat Regency, South Sumatra. Percentage of interest held is 59.75%.
- HBAP entered into power purchase agreement with PLN related to Mine Mouth Power Plant South Sumatera 8 at Muara Enim Regency, South Sumatera. As at 30 June 2018, HBAP is still under development phase. Percentage of interest held is 45%.
- BATR was established to operate a coal railway infrastructure. As at 30 June 2018, BATR has not been in operation yet. Percentage of interest held is 10%.

All of the joint ventures are private companies and there is no quoted market price available for their shares.

Set out below is the summarised financial information for material joint ventures of the Group, which are accounted for using the equity method:

30 June 2018

Joint ventures	Place of business	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Revenue	Profit/(loss) for the period	Other comprehensive loss	Total comprehensive income/(loss) for the period	Dividends received from joint ventures entities
BPI	Jakarta	549,742	4,441,128	785,941	1,988,174	2,216,755	478,340	144,050	-	144,050	-
ICA	West Kalimantan	342,750	5,593,464	1,535,881	3,397,711	1,002,622	2,161	(124,108)	(82,542)	(206,650)	-

31 December 2017

Joint ventures	Place of business	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Revenue	Profit/(loss) for the year	Other comprehensive income	Total comprehensive income/(loss) for the year	Dividends received from joint ventures entities
BPI	Jakarta	1,074,548	4,328,673	1,157,157	2,113,257	2,132,807	880,214	204,132	-	204,132	-
ICA	West Kalimantan	184,698	3,110,180	678,575	1,572,115	1,044,188	335,146	(349,424)	1,392	(348,032)	-

Reconciliation of the summarised financial information presented to the carrying amount of interests in material joint ventures to the Group is as follows:

30 June 2018

Joint ventures	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Interest in joint ventures	Goodwill	Carrying value
BPI	549,742	4,441,128	785,941	1,988,174	2,216,755	1,324,511	-	1,324,511
ICA	342,750	5,593,464	1,535,881	3,397,711	1,002,622	802,097	-	802,097

31 December 2017

Joint ventures	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Interest in joint ventures	Goodwill	Carrying value
BPI	1,074,548	4,328,673	1,157,157	2,113,257	2,132,807	1,274,352	-	1,274,352
ICA	184,698	3,110,180	678,575	1,572,115	1,044,188	835,350	-	835,350

13. INVESTMENT IN JOINT VENTURES (continued)

ICA

In February 2007, Antam established ICA, a joint venture, in which Antam has a 49% ownership interest. In August 2008, Antam acquired a 16% additional interest in ICA, making the total ownership 65%. In August 2010, Antam increased its interest in ICA to 80%.

Antam considered the contractual terms of the Joint Venture Agreement ("JVA") between Antam, Showa Denko K.K ("SDK") and ICA dated 31 August 2010, under which significant decisions related to financial and operating policies of ICA need approval from all shareholders and determined that, as a result of the contract terms, Antam does not have control over the financial and operating policies of ICA, despite Antam's 80% ownership interest.

ICA processes bauxite in West Kalimantan, Indonesia.

As at 30 June 2018 and 31 December 2017, ICA has outstanding long-term loans from Japan Bank for International Cooperation ("JBIC"), Mizuho Corporate Bank Ltd. ("Mizuho Ltd") and Sumitomo Mitsui Trust Bank Ltd. ("Sumitomo Ltd"). ICA placed collateral for the long-term loans in the form of among others, bank accounts with PT Bank Mizuho Indonesia ("Bank Mizuho"), ICA's interest in the Manufacturing Technology and Technical Operational Assistance Agreement with SDK and the offtake agreement with SDK and Antam. Antam and SDK also guarantee ICA's loan repayment. Antam also entered into a Pledge of Shares Agreement whereby Antam agreed to pledge all of its shares in ICA to Bank Mizuho, as collateral for the full repayment of ICA's loan.

As at 30 June 2018 and 31 December 2017, Antam is committed to provide financial support to ICA to enable ICA to meet its liabilities as and when they fall due for a period of at least twelve months from the date of the financial statements of ICA.

For the six-month period ended 30 June 2018, management is of the opinion that there are no facts and circumstances during the period that indicate investment in ICA is impaired.

As at 31 December 2017, Antam considered the potential impairment of its investment in ICA using the following key assumptions:

Alumina production volumes:	20,000 ton – 200,000 ton
Sales price:	US$382 – US$1,100
Discount rate:	7.13%
Valuation method:	Value-in-use

The result of the impairment analysis showed that the recoverable value of ICA still exceeded the carrying value of Antam's investment in ICA.

14. EXPLORATION AND EVALUATION ASSETS

	30 June 2018			
	1 January 2018	Additions	Transfer and disposal	30 June 2018
Antam:				
Sangaji	162,143	-	-	162,143
Mandiodo	93,146	-	-	93,146
Papandayan	92,201	-	-	92,201
Tapunopaka	84,389	-	-	84,389
Mempawah	73,758	27	-	73,785
Landak	48,360	-	-	48,360
Munggu Pasir	26,858	-	-	26,858
Bahubulu	25,914	-	-	25,914
Others	16,477	7,795	-	24,272
	623,246	7,822	-	631,068
Antam's subsidiaries:				
Meliau	34,797	-	-	34,797
Cibaliung	7,279	-	-	7,279
	42,076	-	-	42,076
Exploration and evaluation assets	**665,322**			**673,144**

	31 December 2017			
	1 January 2017	Additions	Transfer and disposal	31 December 2017
Antam:				
Sangaji	162,143	-	-	162,143
Mandiodo	93,146	-	-	93,146
Papandayan	92,201	-	-	92,201
Tapunopaka	84,389	-	-	84,389
Mempawah	72,655	1,103	-	73,758
Landak	48,360	-	-	48,360
Munggu Pasir	26,858	-	-	26,858
Bahubulu	25,914	-	-	25,914
Pongkor	19,829	-	(19,829)	-
Pomalaa	19,737	-	(19,737)	-
Others	16,139	338	-	16,477
	661,371	1,441	(39,566)	623,246
Antam's subsidiaries:				
Gag Island	83,818	14,600	(98,418)	-
Meliau	34,797	-	-	34,797
Cibaliung	19,371	-	(12,092)	7,279
	137,986	14,600	(110,510)	42,076
Exploration and evaluation assets	**799,357**			**665,322**

As at 30 June 2018 and 31 December 2017, management believes that provision for impairment in the value of the exploration and evaluation assets is not necessary.

For the six-month periods ended 30 June 2018 and 2017, there were no borrowing costs capitalised to the exploration and evaluation assets.

15. FIXED ASSETS

	30 June 2018					
	1 January 2018	Addition	Disposal	Reclassification	Translation	30 June 2018
Cost:						
Land rights	6,234,169	37,012	-	(615)	340,989	6,611,555
Structure, buildings, improvements, and river channel	19,365,542	68,791	(41,102)	122,067	824,922	20,340,220
Plant, machinery and mining equipment	38,647,696	319,335	(58)	375,263	982,871	40,325,107
Office, hospital and housing equipment and furniture and fixture	1,713,642	89,946	(3,143)	82,090	50,873	1,933,408
Transportation equipment	777,433	15,587	(1,754)	-	15,084	806,350
Construction-in-progress	4,312,051	1,617,184	-	(861,382)	93,607	5,161,460
	71,050,533	2,147,855	(46,057)	(282,577)	2,308,346	75,178,100
Leased assets:						
Machinery and mining equipment	720,116	177	-	281,962	-	1,002,255
	720,116	177	-	281,962	-	1,002,255
Total	**71,770,649**	**2,148,032**	**(46,057)**	**(615)**	**2,308,346**	**76,180,355**
Accumulated depreciation:						
Structure, buildings, improvements, and river channel	(15,042,417)	(286,123)	17,827	-	(728,193)	(16,038,906)
Plant, machinery and mining equipment	(22,693,900)	(716,090)	58	-	(801,523)	(24,211,455)
Office, hospital and housing equipment and furniture and fixture	(1,150,613)	(78,552)	2,352	-	(26,359)	(1,253,172)
Transportation equipment	(577,840)	(29,762)	1,088	-	(13,572)	(620,086)
	(39,464,770)	(1,110,527)	21,325	-	(1,569,647)	(42,123,619)
Leased assets:						
Machinery and mining equipment	(115,074)	(50,113)	-	-	-	(165,187)
	(115,074)	(50,113)	-	-	-	(165,187)
Total	**(39,579,844)**	**(1,160,640)**	**21,325**	**-**	**(1,569,647)**	**(42,288,806)**
Accumulated impairment loss	(75,290)	-	-	-	-	(75,290)
Total carrying value	**32,115,515**					**33,816,259**

15. FIXED ASSETS (continued)

	31 December 2017					
	1 January 2017	Addition	Disposal	Reclassification	Translation	31 December 2017
Cost:						
Land rights	817,123	5,416,764	-	130	152	6,234,169
Structure, buildings, improvements, and river channel	18,737,105	246,744	(33)	274,282	107,444	19,365,542
Plant, machinery and mining equipment	30,398,152	1,533,609	(327,063)	6,920,915	122,083	38,647,696
Office, hospital and housing equipment and furniture and fixture	1,489,062	220,513	(10,025)	8,023	6,069	1,713,642
Transportation equipment	656,124	124,709	(5,799)	580	1,819	777,433
Construction-in-progress	9,102,363	2,417,138	(4,337)	(7,213,809)	10,696	4,312,051
	61,199,929	9,959,477	(347,257)	(9,879)	248,263	71,050,533
Leased assets:						
Machinery and mining equipment	710,237	-	-	9,879	-	720,116
	710,237	-	-	9,879	-	720,116
Total	**61,910,166**	**9,959,477**	**(347,257)**	**-**	**248,263**	**71,770,649**
Accumulated depreciation:						
Structure, buildings, improvements, and river channel	(14,460,437)	(487,451)	32	-	(94,561)	(15,042,417)
Plant, machinery and mining equipment	(21,505,279)	(1,366,301)	291,661	(10,317)	(103,664)	(22,693,900)
Office, hospital and housing equipment and furniture and fixture	(996,609)	(159,154)	8,319	-	(3,169)	(1,150,613)
Transportation equipment	(521,205)	(60,566)	5,634	-	(1,703)	(577,840)
	(37,483,530)	(2,073,472)	305,646	(10,317)	(203,097)	(39,464,770)
Leased assets:						
Machinery and mining equipment	(53,410)	(71,981)	-	10,317	-	(115,074)
	(53,410)	(71,981)	-	10,317	-	(115,074)
Total	**(37,536,940)**	**(2,145,453)**	**305,646**	**-**	**(203,097)**	**(39,579,844)**
Accumulated impairment	(17,881)	(57,409)	-	-	-	(75,290)
Total carrying value	**24,355,345**					**32,115,515**

The Group has several land rights in form of land right use and building rights title that will expire in various times and can be extended.

As at 30 December 2016, the transfer of Otorita Asahan's land which is used by the Company as additional State Equity Participations, as stated in Law No. 14 Article 29 of 2015 about State Budget 2016 was finalised through GR76/2016 regarding "Additional Republic of Indonesia's Government's Equity Participation in Perseroan (Persero) PT Indonesia Asahan Aluminium's Share Capital". Value of this additional state equity participation was based on Ministry of Finance of Republic of Indonesia Decision No. 593/KMK.06/2017 dated 1 August 2017 regarding Value Determination of Additional State Equity Participation to Share Capital of Perusahaan Perseroan (Persero) PT Indonesia Asahan Aluminium (Note 31). Tax related to this land acquisition has been recorded in these interim consolidated financial statements.

15. FIXED ASSETS (continued)

Depreciation of fixed assets for the six-month periods ended 30 June 2018 and 2017 were allocated as follows:

	30 June 2018	30 June 2017*)
Cost of revenue	1,036,911	856,756
General and administrative expenses and selling expenses	121,878	136,950
Exploration and evaluation assets, mining properties and construction-in-progress	1,851	1,845
Translation adjustment on the financial statements	1,569,647	251,696
Total	**2,730,287**	**1,247,247**

Construction-in-progress represents projects that have not been completed at the date of the interim consolidated statements of financial position. Construction-in-progress as at 30 June 2108 mainly comprised Township and Existing DERTI and Refurbishment at Tanjung Enim, East Halmahera Ferronickel Plant Project, mining facilities and development in Pomalaa and Pongkor, building and production equipment in Timah and diversification product project at Kuala Tanjung smelter. Those projects are estimated to be completed between 2018 - 2019 with the current percentage of completion being between 10% - 99.5%

During the six-month period ended 30 June 2018, the Group capitalised borrowing costs amounting to Rp8,359 (30 June 2017:Rp3,735) on qualifying assets. Borrowing costs were capitalised at the weighted-average rate of its general borrowings of 1.78% (30 June 2017:3.50%).

As at 30 June 2018 and 31 December 2017, management believes that provision for impairment in the value of the fixed assets is adequate.

Except for land and buildings, management believes that there is no significant difference between the fair value of fixed assets and their carrying value. As at 30 June 2018 and 31 December 2017, the fair value of the land and buildings owned by the Group based on the applied tax value (or *Nilai Jual Objek Pajak*) exceeded its net carrying value.

*) As restated, (refer to Note 4)

16. INVESTMENT PROPERTIES

Investment properties pertain to land rights of 160.3 ha in Kota Legenda Mustikasari, Bekasi, which were acquired as settlement of promissory notes from Bahana Pembinaan Usaha Indonesia owned by Timah. Timah has decided to discontinue the joint cooperation with a third party contractor on the commercial development of these land rights as initially planned. In addition, investment properties also include land rights and buildings covering an area of 0.7 ha in Dago, Bandung.

As at 30 June 2018 and 31 December 2017, the fair value of investment property in Kota Legenda Mustikasari and Dago were recognised based on the results of valuations carried out by Felix Sutandar and Rekan ("FSR") in accordance with their report dated 18 January 2018 showing total fair value of Rp912,679.

In 2018, land rights located in Depok and Tangerang Selatan of 1.4 ha with book value of Rp615 were reclassed to investment property. As at 30 June 2018, the fair value of investment property in Depok and Tangerang Selatan were recognised based on the results of valuations carried out by FSR in accordance with their report dated 30 May 2018, showing total fair value of Rp49,246 (2017:Rpnil). FSR is the independent appraiser with no relation to the Group.

For the six-month period ended 30 June 2018, the gain from difference in the fair value of investment property amounting to Rp48,631 is recognised as "other income/(expenses), net" (Note 38) (30 June 2017:Rpnil).

17. MINING PROPERTIES

	Acquisition of mining rights	Mines under development	Mines in production	Total
Carrying value at 1 January 2017	**27,491**	**1,374,431**	**1,042,226**	**2,444,148**
Additions	-	43,596	33,897	77,493
Transfer	-	(98,136)	126,977	28,841
Amortisation during the year	(19,157)	-	(122,227)	(141,384)
Reclassified to assets of disposal group classified as held for sale	-	-	(347)	(347)
Impairment during the year	-	(42,552)	-	(42,552)
Carrying value at 31 December 2017	**8,334**	**1,277,339**	**1,080,526**	**2,366,199**
Additions	-	13,126	13,320	26,446
Transfer	-	(6,828)	6,828	-
Amortisation during the period	-	-	(81,192)	(81,192)
Carrying value at 30 June 2018	**8,334**	**1,283,637**	**1,019,482**	**2,311,453**

For the six-month period ended 30 June 2018, there were no borrowing costs capitalised to mining properties (30 June 2017:Rp12,460).

18. GOODWILL

	30 June 2018 and 31 December 2017		
	Beginning balances	Addition	Ending balances
Cost:			
SBS	102,077	-	102,077
CTSP	83,614	-	83,614
APN	44,659	-	44,659
BEI	32,440	-	32,440
MCU	19,690	-	19,690
GK	16,307	-	16,307
	298,787	-	298,787
Accumulated impairment:			
CTSP	(83,614)	-	(83,614)
APN	(4,652)	-	(4,652)
BEI	(4,111)	-	(4,111)
MCU	(2,574)	-	(2,574)
	(94,951)	-	(94,951)
Net book value of goodwill	**203,836**	**-**	**203,836**

Goodwill is tested for impairment annually (as at 31 December) or when circumstances indicate that the carrying value may be impaired. The Group's impairment test for goodwill is based on a fair value less costs to sell calculation that uses a discounted cash flow model, which is classified as fair value level 3 in the fair value hierarchy.

As at June 30, 2018, management is of the opinion that there are no facts and circumstances during the period that indicate goodwill is impaired so that impairment test for goodwill is not necessary.

The key assumptions used in the impairment test as at 31 December 2017, are as follows:

	SBS	APN	BEI	MCU	GK
31 December 2017					
Cash flow period	2018-2023	2018-2047	2017-2056	2018-2039	2017-2032
Discount rate	13.69%	10.12%	8.76%	8.76%	8.76%
Growth rate	5.00%	2.50%	2.50%	2.50%	2.50%

NOTES TO THE INTERIM CONSOLIDATED FINANCIAL STATEMENTS
30 JUNE 2018 AND 31 DECEMBER 2017
AND FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 2017
(Expressed in millions of Rupiah, unless otherwise stated)

19. TAXATION

a. Prepaid taxes

	30 June 2018	31 December 2017
VAT	2,201,749	1,697,131
Land and Buildings Tax ("PBB")	154,530	241,630
Income taxes:		
- Article 15	19	-
- Article 22	28,753	25,169
- Article 23/26	8,326	16,584
- Article 25	8,487	81,174
- Article 28	419,895	519,266
Total prepaid taxes	**2,821,759**	**2,580,954**
Less:		
Current portion	**(2,192,830)**	**(1,698,548)**
Non-current portion	**628,929**	**882,406**

b. Taxes payable

	30 June 2018	31 December 2017
VAT	48,987	74,829
Income taxes:		
Article 4(2)	608	166
Article 15	4,428	522
Article 21	46,625	192,711
Article 22	11,152	17,791
Article 23	53,184	36,994
Article 25	171,476	52,450
Article 26	2,652	438
Article 29	384,345	667,383
PBB	21,519	6,079
Total taxes payable	**744,976**	**1,049,363**

c. Income tax expenses

	30 June 2018	30 June 2017*)
Current tax	1,765,518	702,320
Deferred tax	13,826	26,924
Adjustment in respect of prior period current tax expenses	54,293	12,972
Adjustment in respect of prior period deferred tax expenses	(13,265)	98,428
Income tax expenses	**1,820,372**	**840,644**

*) As restated, (refer to Note 4)

19. TAXATION (continued)

c. Income tax expenses (continued)

The tax on the Group's profit before tax differs from the theoretical amount that would arise using the tax rate applicable to profits on the consolidated entities as follows:

	30 June 2018	30 June 2017*)
Consolidated profit before income tax	7,247,638	2,852,611
Tax calculated at applicable tax rates	1,811,910	713,153
Income tax effects of:		
- Share of loss of associates and joint ventures	30,233	22,724
- Non-taxable income	(101,010)	(69,457)
- Expenses not deductible for tax purposes	33,076	56,196
- Gain from revaluation of investment properties	(12,158)	-
- Unrealised profit from transactions within Group	16,087	(11,284)
- Deferred tax assets adjustment from prior period	(13,265)	98,428
- Unrecognised deferred tax assets	1,872	17,912
- Unrecognised tax losses	(666)	-
- Adjustment in respect of prior period tax expense	54,293	12,972
Income tax expenses	**1,820,372**	**840,644**

The reconciliation between profit before income tax as shown in profit or loss and estimated fiscal income of the Company for the periods ended 30 June 2018 and 2017 is as follows:

	30 June 2018	30 June 2017*)
Consolidated profit before income tax	7,247,638	2,852,611
Profit before income tax - subsidiaries	(4,379,489)	(2,073,730)
Adjusment of elimination consolidation	2,473,178	-
Profit before income tax - the Company	5,341,327	778,881
Fiscal adjustments:		
Depreciation of fixed assets	(489,929)	(520,211)
Payment of land remediation	(32,258)	(37,990)
Performance incentive	(33,724)	(25,438)
Amortisation of deferred charges	-	(1,481)
Post-employment benefits	(3,493)	2,709
Other provisions	12,340	-
Dividend income from subsidiaries	(2,473,178)	-
Non-deductible expenses	74,408	6,647
Interest income subject to final tax	(118,918)	(75,975)
Estimated fiscal income of the Company	2,276,575	127,142
Computation of corporate income tax (at 25% tax rate)	569,144	31,786

*) As restated, (refer to Note 4)

19. TAXATION (continued)

c. Income tax expenses (continued)

	30 June 2018	30 June 2017*)
Prepayment of income tax:		
Article 22	39,441	29,130
Article 23	304,505	69
Article 25	54,276	20,007
Total	398,222	49,206
Overpayment of corporate income tax - the Company	-	(17,420)
Overpayment of corporate income tax - the Company - previous period	-	(99,032)
Overpayment of corporate income tax - the subsidiaries	(419,895)	(567,699)
Overpayment of corporate income tax - consolidated	(419,895)	(684,151)
Underpayment of corporate income tax - the Company	170,922	-
Underpayment of corporate income tax - the subsidiaries	213,423	325,710
Underpayment of corporate income tax - consolidated	384,345	325,710

*) As restated, (refer to Note 4)

19. TAXATION (continued)

d. Deferred tax assets/(liabilities)

	30 June 2018				
	Beginning balance	Credited/ (charged) to profit or loss	Charged to other comprehensive income	Reclassification	Ending balance
Deferred tax assets					
Post-employment benefits obligation	1,033,852	13,539	(163,029)	-	884,362
Tax loss carry forward	154,780	(4,138)	-	-	150,642
Provision for impairment loss of other assets	111,554	11,622	-	-	123,176
Provision for impairment trade receivable	87,299	5,667	-	-	92,966
Provision for environmental reclamation and remediation and closure	86,696	15,716	-	-	102,412
Accrued interest	35,630	-	-	-	35,630
Provision for impairment of inventory	33,773	42	-	-	33,815
Short-term employee benefit liabilities	24,188	(7,326)	-	-	16,862
Goodwill impairment	20,904	-	-	-	20,904
Other provisions	95,616	16,686	-	-	112,302
Difference between commercial and tax on net book value of fixed assets	1,187,899	(55,287)	-	-	1,132,612
Amortisation of mining properties	(145,649)	-	-	-	(145,649)
Financial lease payment	(12,127)	-	-	-	(12,127)
Difference between commercial and tax net book value of plantations	-	4,040	-	(47,331)	(43,291)
Total deferred tax assets	**2,714,415**	**561**	**(163,029)**	**(47,331)**	**2,504,616**
Deferred tax liabilities					
Difference between commercial and tax net book value of plantations	(47,331)	-	-	47,331	-
Total deferred tax liabilities	**(47,331)**	**-**	**-**	**47,331**	**-**

	31 December 2017				
	Beginning balance	Credited/ (charged) to profit or loss	Credited to other comprehensive income	Reclassification	Ending balance
Deffered tax assets					
Post-employment benefits obligation	737,613	48,714	247,525	-	1,033,852
Tax loss carry forward	339,880	(185,100)	-	-	154,780
Provision for impairment loss of other assets	95,890	15,664	-	-	111,554
Provision for impairment rade receivable	34,138	53,161	-	-	87,299
Provision for environmental reclamation and remediation and closure	115,439	(28,743)	-	-	86,696
Accrued interest	25,558	10,072	-	-	35,630
Provision for impairment inventory	18,108	15,665	-	-	33,773
Short-term employee benefit liabilities	18,122	6,066	-	-	24,188
Goodwill impairment	20,904	-	-	-	20,904
Other provisions	24,934	70,682	-	-	95,616
Difference between commercial and tax on net book value of fixed assets	1,564,506	(376,607)	-	-	1,187,899
Amortisation of mining properties	(144,801)	(848)	-	-	(145,649)
Financial lease payment	3,638	(15,765)	-	-	(12,127)
Difference between commercial and tax net book value of plantations	(62,829)	15,498	-	47,331	-
Total deferred tax assets	**2,791,100**	**(371,541)**	**247,525**	**47,331**	**2,714,415**
Deferred tax liabilities					
Difference between commercial and tax net book value of plantations	-	-	-	(47,331)	(47,331)
Total deferred tax liabilities	**-**	**-**	**-**	**(47,331)**	**(47,331)**

The deferred tax assets include an amount which relates to tax loss carried forward of the subsidiaries within the group. The Group has concluded that the deferred tax assets will be recoverable using the estimated future taxable income based on the approved business plans and budgets for the Group.

Management believes that the deferred tax assets that resulted from the temporary differences are realisable in future years.

19. TAXATION (continued)

e. Tax assesment letters

The Company

On 18 April 2017, the Company received overpayment tax assessment letter ("SKPLB") for corporate income tax for the 2015 fiscal year amounting to US$20,457,666 or equivalent to Rp282,214. The Company has received restitution for those tax overpayments. Meanwhile, tax corrections amounting to US$538,117 or equivalent to Rp7,243 have been recorded as recognition of current income tax from previous years in income tax expense.

On 24 April 2018, the Company received SKPLB regarding corporate income tax covering fiscal year 2016 amounting to US$4,919,935 or equivalent to Rp67,748. The Company has received restitution for those tax overpayments. Meanwhile, the differences between prepaid tax and SKPLB have been recorded as recognition of current income tax from previous years in income tax expense.

The subsidiaries

For the year ended 31 December 2017, Antam received the following SKPLB as follows:

- SKPLB regarding corporate income tax covering fiscal year 2015 amounting to Rp142,446. Antam received the tax refund in July 2017.

- SKPLB regarding VAT covering fiscal period July until December 2015 amounting to Rp98,254. Antam received the VAT refund in September 2017.

The difference between the amount claimed by Antam and the amount refunded by the Tax Office was recognised in profit or loss.

As at 30 June 2018, Timah received Tax Underpayment Assessment Letters ("SKPKB") related to corporate income tax covering fiscal year 2013 amounting to Rp19,499 which still in objection process.

During 2018, Timah also received tax refund amounting to Rp11,022 for TAJ.

Bukit Asam has PBB disputes for years of 2004-2017 with tax authorities i.e., Prabumulih and Lahat tax offices as a result of the SKPKB and notification of tax due issued. The tax disputes are at various stages, such as objection, appeal or judicial review. Based on those disputes, Bukit Asam has made payments for the PBB underpayments and recorded as expenses in the year payment was made, however, for certain portions of payments made by Bukit Asam, where Bukit Asam believes that the tax authorities was not supposed to issue the underpayment, the payment has been recorded as part of prepaid taxes. As at 30 June 2018, total payment made and recorded as part of prepaid taxes was accounting to Rp154,530 (31 December 2017:Rp241,630). During the six-month period ended 30 June 2018, Bukit Asam has received PBB refund from Tax office for the years of 2009 to 2010 amounting to Rp82,003 and the year of 2016 amounting to Rp6,069.

f. Administration

Under the taxation laws of Indonesia, companies which are domiciled in Indonesia calculate and pay tax on the basis of self assessment. The DGT may assess or amend tax liabilities within five years of the time the tax becomes due.

20. OTHER TAX RECEIVABLES

	30 June 2018	31 December 2017
Payment of Surface Water Tax ("SWT") appeal	**536,058**	**536,058**

Until 30 June 2018, Local Government Revenue Offices ("DISPENDA") had issued Local Tax Assessment Letters ("SKPD") for the period November 2013 to April 2018 for Tanjung, Sipare-pare, Simanimbo, Asahan river (SWT non-industry) and Asahan river where the water is used for the aluminium smelter.

Especially for the use of Asahan river water by the Hydroelectric Power Plant ("PLTA") for the aluminium ingot smelter, the Company has paid tax obligations for the period November 2013 – August 2017 using the tax rates of surface water for power plants (PLN) of Rp75/Kwh based on the North Sumatra Governor Decree No. 24 of 2011 dated 8 April 2011 and for the period September 2017 - April 2018 using Ministrial Regulation No. 15/PRT/M/2017 regarding Guidance on Calculation of Surface Water Acquisition Value ("NPAP") year 2017 dated 30 August 2017 and Ministry Decision No. 568/KPTS/M/2017 regarding Determination of Surface Water Price Base year 2017 dated 31 August 2017 amounting to Rp129,512. On the other hand, the SKPD's issued by DISPENDA use industrial water rates based on cubication water (m^3) (SWT industry) with progressive rates from Rp123.4/m^3 - Rp144.4/m^3 amounting to Rp2,492,654 for the period of November 2013 to July 2018.

The Governor Decree does not state the tariff for PLTA non-PLN. The Company disagreed with DISPENDA on the interpretation of North Sumatra Governor Decree No. 24 of 2011 for Asahan River which was used by the Company as PLTA.

Regarding the above difference in interpretation, the Company submitted an objection letter for SKPD which has been received by the Governor of North Sumatra as follows:

Period	Date of submission of objection letter	Status of objection letter
November 2013 - September 2014	24 December 2014	Rejected
October - November 2014	9 September 2015	Rejected
December 2014 - April 2015	3 September 2015	Rejected
May - June 2015	1 October 2015	Rejected
July 2015	30 December 2015	Rejected
August 2015	25 January 2016	Rejected
September 2015	17 February 2016	Rejected
October - November 2015	30 March 2016	Rejected
December 2015	26 April 2016	Rejected
January 2016	8 June 2016	Rejected
February 2016	27 June 2016	Rejected
March 2016	5 September 2016	Rejected
April - October 2016	17 February 2017	Rejected
November 2016	9 March 2017	Rejected
December 2016	19 April 2017	Rejected
January 2017	8 May 2017	Rejected
February 2017	13 June 2017	Rejected
March 2017	10 July 2017	Rejected
April 2017	9 August 2017	Rejected
May - June 2017	2 October 2017	Rejected
July - August 2017	15 January 2018	Rejected
September 2017	29 January 2018	Rejected
October - November 2017	9 February 2018	Rejected
December 2017	12 April 2018	Rejected
January 2018	3 May 2018	Rejected
February 2018	1 July 2018	Awaiting decision
March 2018	16 August 2018	Awaiting decision
April 2018	16 August 2018	Awaiting decision

20. OTHER TAX RECEIVABLES (continued)

The Company submitted an appeal to the Tax Court on the rejected objection letters of SKPD of Asahan River regarding water usage for the aluminium smelter. Until 30 June 2018, the Company had also paid for the November 2013 – March 2016 periods to the amount of 50% from the calculation in the SKPD amounting to Rp536,058 (31 December 2017:Rp536,058). Payment made by the Company has been recorded as other tax receivables in the interim consolidated statements of financial position due to the fact that management believes that the SKPD received were without merit.

Starting from March 2017, the Company has decided not to pay 50% from the calculation in the SKPD. This decision has been made based on further analysis made by management considering developments of the appeal process in the Tax Court and further research in the prevailing tax regulations.

On 30 August 2017, Ministry of General Work and Public Housing ("KPUPR") issued Ministrial Regulation No. 15/PRT/M/2017 regarding Guidance on Calculation of NPAP. Based on this Ministrial Regulation, the NPAP should consist of: (a) price base of surface water (b) region economic factor (c) surface water value factor and (d) group of surface water user factor, where the NPAP value will be determined by the Governor as basis of surface water tax base. On 31 August 2017, KPUPR issued Ministry Decision No. 568/KPTS/M/2017 regarding Determination of Surface Water Price Base which regulates Surface Water Price Base in each Province in Indonesia on the basis of NPAP calculation. Since these regulations were issued, the Company has paid Surface Water tax obligation based on the formula as stipulated in these regulations.

The following is the status of the appeals and the relevant payments made by the Company:

Period	Submission date of appeal letters	Amount paid on appeal as of 30 June 2018 and 31 December 2017	Status
November 2013 - April 2015	14 December 2015	334,353	Appeal
May-June 2015	26 January 2016	35,343	Appeal
July - September 2015	7 June 2016	56,179	Appeal
October 2015	27 June 2016	18,991	Appeal
November 2015	18 July 2016	17,400	Appeal
December 2015	9 September 2016	18,333	Appeal
January 2016	20 September 2016	18,829	Appeal
February 2016	1 November 2016	17,417	Appeal
March 2016	5 January 2017	19,213	Appeal
April - November 2016	30 March 2017	-	Appeal
December 2016 - April 2017	23 January 2018		
May – November 2017	14 May 2018	-	Appeal
	Total	**536,058**	

As at the date of issuance of these interim consolidated financial statements, decisions on the above appeals have not been issued.

21. TRADE PAYABLES

Trade payables consist of the following:

	30 June 2018	31 December 2017
Third parties	2,190,556	1,809,195
Related parties (Note 41a)	554,942	715,965
Total trade payables	**2,745,498**	**2,525,160**

Trade payables based on currencies consist of the following:

	30 June 2018	31 December 2017
Rupiah	2,484,312	2,246,169
US Dollar	203,456	242,910
Other foreign currencies	57,730	36,081
Total trade payables	**2,745,498**	**2,525,160**

22. ACCRUALS

	30 June 2018	31 December 2017
Mining services	729,945	402,419
Regional taxes and other government charges	702,345	626,731
Construction-in-progress	429,576	481,004
Repair and maintenances	372,306	361,152
Coal railway services	188,139	188,992
Heavy equipment rental	132,900	123,935
Others (each below Rp100,000)	630,630	530,822
Total accruals	**3,185,841**	**2,715,055**

23. SHORT-TERM EMPLOYEE BENEFITS LIABILITIES

Short-term employee benefits liabilities consist of the following:

	30 June 2018	31 December 2017
Employee bonus and *tantiem*	433,679	921,738
Short-term post-employment benefits (Note 29)	297,095	342,142
Total short-term employee benefits liabilities	**730,774**	**1,263,880**

NOTES TO THE INTERIM CONSOLIDATED FINANCIAL STATEMENTS
30 JUNE 2018 AND 31 DECEMBER 2017
AND FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 2017
(Expressed in millions of Rupiah, unless otherwise stated)

24. SHORT-TERM BANK BORROWINGS

	30 June 2018	31 December 2017
Mandiri	2,976,031	2,327,732
Bank of Tokyo-Mitsubishi UFJ, Ltd. ("BTMU")	1,300,000	1,300,000
BRI	973,200	1,377,884
PT Bank CIMB Niaga Tbk ("CIMB")	300,000	-
BNI	42,963	4,038
UOB	24,113	-
PT Bank DBS Indonesia ("DBS")	-	100,000
PT Bank Pan Indonesia ("Panin")	-	6,020
Total short-term bank borrowings	**5,616,307**	**5,115,674**

The fair value of short-term bank borrowings approximate their carrying amount, since the maturity of the borrowings are less than one year.

a. Mandiri

As at 30 June 2018 and 31 December 2017, the Group (through its subsidiaries) has working capital loan facilities from Mandiri. The total available facilities are US$320,000,000 with ranging of interest rate between 1.35% and 3.0% and Rp1,450,000 with ranging of interest rate between 8% and 9.75%. The working capital loans are due on 24 July 2018, 10 October 2018, 19 October 2018 and 28 June 2019. At 24 July 2018, the Group has made repayment of the working capital loan on its due date. As at 30 June 2018, the outstanding working capital loans amounting to Rp426,523 and US$177,000,000 or equivalent to Rp2,549,508 (31 December 2017:Rp243,182 and US$153,859,345 or equivalent to Rp2,084,550).

In addition, the Group also has letter of credit, treasury lines and supplier financing facilities totalling US$64,125,000 which will expire on 28 June 2019.

As specified by the loan agreements, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 30 June 2018 and 31 December 2017, the Group has complied with the covenants in the borrowing agreement.

b. BTMU

As at 30 June 2018 and 31 December 2017, the Group (through its subsidiary) has working capital loan facilities from BTMU. The total available facilities is Rp1,300,000 with interest rate of Certificate of Bank Indonesia ("SBI") + 1% (IDR) and/or Cost of Fund ("COF") + 1% (US$). This working capital loan are due on 31 August 2018 and has been extended until 31 August 2019. As at 30 June 2018 and 31 December 2017, the outstanding working capital loan was amounting to Rp1,300,000.

As specified by the loan agreements, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 30 June 2018 and 31 December 2017 the Group has complied with the covenants in the borrowing agreement.

24. SHORT-TERM BANK BORROWINGS (continued)

c. BRI

As at 30 June 2018 and 31 December 2017, the Group (through its subsidiaries) has working capital loan facilities from BRI. The total available facilities are US$200,000,000 with ranging interest rate between 1.35% and 2.35% per annum and Rp753,000 with ranging of interest rate between 6.34% and 9.25%. The working capital loan will due on 15 September 2018 (subsequently extended to 15 December 2018) and 15 November 2018. As at 30 June 2018, the outstanding working capital loan amounting to Rp253,000 and US$50,000,000 or equivalent to Rp720,200 (31 December 2017:Rp23,084 and US$100,000,000 or equivalent to Rp1,354,800).

As specified by the loan agreements, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 30 June 2018 and 31 December 2017, the Group has complied with the covenants in the borrowing agreement.

d. CIMB

During 2018, the Group (through its subsidiary) has new special extra transaction loan from CIMB with a maximum credit facility of Rp300,000 with an interest rate per annum is COF. This loan facility will expire on 12 April 2019. As at 30 June 2018, the outstanding bank loan amounting to Rp300,000.

As specified by the loan agreements, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 30 June 2018, the Group has complied with the covenants in the borrowing agreement.

e. BNI

As at 30 June 2018, the Group (through its subsidiaries) has working capital loan facilities from BNI with a maximum credit facility of denominated in Rupiah amounting to Rp30,000 and US Dollar amounting to US$900,000 (31 December 2017:Rp105,000 and US$900,000) with applicable rate at the ranging of interest rate between 10.5% and 11.5% per annum. The working capital loan will due on 20 December 2018. As at 30 June 2018, the outstanding working capital loan amounting to Rp30,000 and US$900,000 or equivalent to Rp12,963 (31 December 2017:Rp4,038).

As specified by the loan agreements, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 30 June 2018 and 31 December 2017, the Group has complied with the covenants in the borrowing agreement.

f. UOB

During 2018, the Group (through its subsidiary) has working capital loan facilities from UOB with a maximum credit facility of Rp212,600 with an interest rate 11% per annum. This loan facility will expire on 24 November 2020. The repayment must be made within three months after each drawdown. As at 30 June 2018, the outstanding bank loan amounting to Rp24,113.

As specified by the loan agreements, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 30 June 2018, the Group has complied with the covenants in the borrowing agreement.

24. SHORT-TERM BANK BORROWINGS (continued)

g. DBS

The Group (through its subsidiary) obtained bank loan facility from DBS in the form of uncommitted revolving credit sub-facility with a maximum facility of US$10,000,000 and/or equivalent with Rp100,000 with the applicable rate at the COF + 1% per annum. The loan facility can be withdrawn in Rupiah and/or US Dollar currency. This facility will expire on 15 March 2019. During 2018, the Group has made full repayment for this loan. As at 30 June 2018, the outstanding loan payable was amounting to Rpnil (31 December 2017:Rp100,000).

As specified by the loan agreements, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 31 December 2017, the Group has complied with the covenants in the borrowing agreement.

25. LONG-TERM BANK BORROWINGS

	30 June 2018	31 December 2017
Lembaga Pembiayaan Ekspor Indonesia ("LPEI")	1,609,197	1,566,487
PT Bank Maybank Indonesia Tbk ("Maybank")	1,296,360	1,253,190
ICBC - BCA	912,854	-
Industrial and Commercial Bank of China Ltd ("ICBC")	450,575	438,617
PT Bank Sumitomo Mitsui Indonesia ("BSMI")	210,943	231,600
PT Bank Syariah Mandiri ("BSM")	55,414	68,232
PT Bank Muamalat Tbk ("Muamalat")	36,592	58,009
Bank Mizuho	-	203,220
Mandiri	-	570
	4,571,935	3,819,925
Unamortised upfront fees	(8,156)	(6,659)
Total long-term bank borrowings	4,563,779	3,813,266
Less:		
Current portion	**(488,552)**	**(576,984)**
Non-current portion	**4,075,227**	**3,236,282**

The fair value of the long-term bank borrowings at the reporting dates is as follows:

	30 June 2018	31 December 2017
LPEI	1,783,632	1,596,876
Maybank	1,322,219	1,274,572
ICBC - BCA	915,083	-
ICBC	499,417	447,125
BSMI	211,813	238,201
BSM	55,414	68,232
Muamalat	36,592	58,009
Bank Mizuho	-	206,032
Mandiri	-	570
Total	**4,824,170**	**3,889,617**

The fair values of the loans as at 30 June 2018 are based on discounted cash flows using a borrowing rate of 5.25% (31 December 2017: 5.25%) and are within level 3 of the fair value hierarchy.

25. LONG-TERM BANK BORROWINGS (continued)

a. LPEI and ICBC

On 23 May 2014, the Group (through its subsidiary) obtained a loan facility from LPEI to finance capital expenditures. The loan has a maximum credit facility of US$100,000,000 with an interest rate of 5.00% per annum, which was fully drawndown by the Group on 25 September 2014. The loan is payable in quarterly installments, with a two-year grace period on principal repayments.

On 24 March 2015, the Group obtained a second loan facility from LPEI. The loan has a maximum credit facility of US$60,000,000 with an interest rate of 5.00% per annum, which was fully drawndown by the Group in 2015. The loan is payable in quarterly installments, with a one and a half year grace period on the principal repayment.

As at 23 November 2015, LPEI assigned the Group's investment loan amounting to US$35,000,000 to ICBC, based on a Sale and Purchase and Assignment of Debt Agreement which was stated in Notarial Deed No. 63 of Mellyani Noor Shandra S.H. Based on this agreement, there is no change of interest rate, due date and loan covenants required under the credit agreement. This loan will be due in 2024.

As specified by the loan agreements as described above, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 30 June 2018 and 31 December 2017, the Group has complied with the covenants in the borrowing agreement.

b. Maybank

On 6 November 2015, the Group (through its subsidiary obtained a loan facility from Maybank to finance capital expenditures. The loan has a maximum credit facility of US$100,000,000. The interest rate is 5.25% per annum.

The payments of the loans principal are to be made on a quarterly basis, with a nine-month grace period on principal repayments. This loan will be due in 2025.

As specified by the loan agreements as described above, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 30 June 2018 and 31 December 2017, the Group has complied with the covenants in the borrowing agreement.

c. ICBC - BCA

On 19 February 2018, the Group (through its subsidiary) made a loan drawdown amounting to US$65,000,000 based on syndicated investment loans agreement with ICBC and BCA which was signed on 28 December 2017. The tenor of the loan is three years with a maximum extension option of 48 months. The loan-principal payments are scheduled to be made in every six-months (semester) and the loan interest are due in every three months (quarterly). Interest rate is floating rate of three month LIBOR plus margin. On 26 March 2018, the Group entered into a interest rate swap agreement with ICBA and BCA. Based on the interest swap agreement, the Group will swap the floating rate to fixed rate in order to manage interest risk.

As specified by the loan agreements as described above, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 30 June 2018, the Group has complied with the covenants in the borrowing agreement.

25. LONG-TERM BANK BORROWINGS (continued)

d. BSMI

On 21 June 2013, the Group (through its subsidiary) obtained an investment loan facility with a maximum credit limit amounting to US$75,000,000 from BSMI. The payments of the loan principal are to be made on a semi-annual basis, with a one year grace period on principal repayments. The interest rate is 4.56% per annum. This loan will be due in 2021.

As specified by the loan agreements as described above, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 30 June and 31 December 2017, the Group has complied with the covenants in the borrowing agreement.

e. BSM

In June 2010, the Group (through its subsidiary), entered into a financing agreement for al-Murabahah and al-Ijarah Muntahia Bittamleek, al-Musyarakah and al-Murabahah with BSM.

This agreement has been amended on 30 October 2017 to change the loan period to 20 August 2019.

For this agreement, the Group has handed over some collateral in the form of heavy equipment and supporting equipment, claims to PT Nusantara Termal Coal ("NTC") with total value of US$27,000,000, inventory located in NTC mining site in the amount of US$300,000, personal guarantee from Tjahyono Imawan (one of SBS's commissioner and shareholder of non-controlling interest) and deposits with total value of US$500,000 on behalf of Tjahyono Imawan.

Loan facilities	Currency	Total facility (in thousands)	Loan term	Ujrah, nisbah, margin	Payment period
Ijarah Muntahiyaah Bit Tamblik	US Dollar	7,988	28 Oct 2014 - 28 Aug 2019	583,722	Monthly
Musyarakah	US Dollar	2,000	28 Oct 2014 - 28 Aug 2019	0.17% from revenue	Monthly
Murabahah	US Dollar	14,000	28 Oct 2014 - 28 Aug 2019	127,647	Monthly

25. LONG-TERM BANK BORROWINGS (continued)

f. Muamalat

In 2009, the Group (through its subsidiary), entered into a financing agreement with Muamalat with total facility amounting to US$15,100,000.

This financing facility will be utilised for funding working capital expenditure. Rate equivalent (nisbah) for profit sharing for this financing is multi nisbah based on projected installment schedule.

The period of principal and profit sharing payment is every month based on installment schedule. Early settlement will not deduct the bank's revenue portion.

On 1 June 2017, Group and Muamalat have agreed to reschedule payment of principal and nisbah profit sharing, that changed repayment period to become 1 June 2017 until 1 June 2019.

For this agreement, the Group has handed over some collateral in the form of heavy equipment and supporting equipment, deposits with total value of Rp4,000, claims to PT Putra Muba Coal and PT Pesona Khatulistiwa Nusantara and personal guarantee.

As specified by the loan agreements as described above, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 30 June 2018 and 31 December 2017, the Group has complied with the covenants in the borrowing agreement.

g. Bank Mizuho

On 18 April 2013, the Group (through its subsidiary) entered into a credit agreement with Bank Mizuho whereby Bank Mizuho provided the Group with a credit loan facility amounting to US$75,000,000 which has been fully drawndown. The proceeds of the loan are utilised for the funding of general corporate purpose financing.

The tenor of the loan is five years consisting of a one year grace period and a four years principal repayment period. The interest rate is LIBOR three months +1.80%. Interest payments are due every three months.

As specified by the loan agreements as described above, the Group is required to comply with certain covenants, such as financial ratio covenants.

The loan had been fully repaid on 18 April 2018.

26. FINANCE LEASE LIABILITIES

	30 June 2018	31 December 2017
PT Komatsu Astra Finance ("KAF")	580,960	609,641
PT Surya Artha Nusantara Finance ("San Finance")	8,407	28,176
Others	-	669
Total finance lease liabilities	**589,367**	**638,486**
Less:		
Current portion	**(133,054)**	**(141,874)**
Non-current portion	**456,313**	**496,612**

Future minimum lease payments under finance leases together with the present value of the minimum lease payments were as follows:

	30 June 2018	31 December 2017
Gross finance lease liabilities - minimum lease payments		
No later than 1 year	133,054	148,968
Later than 1 year and no later than 5 year	504,976	546,982
	638,030	695,950
Less:		
Future finance costs on finance leases	(48,663)	(57,464)
Present value of finance lease liabilities	**589,367**	**638,486**

Maturity analysis of present value of finance lease liabilities is as follows:

	30 June 2018	31 December 2017
No later than 1 year	133,054	141,874
Later than 1 year and no later than 5 year	456,313	496,612
Total	**589,367**	**638,486**

There is no significant restriction imposed by lease arrangements between lessor and Bukit Asam on use of the assets or maintenance of certain financial performance.

During 2017, SBS and KAF signed several lease agreements with option to acquire certain capital goods with total amount of Rp8,510,427.

The term of lease is for 36 months whereby at the end of the lease period, the lessee has buy option in the amount of residual amount approved which is equal to Rp1,000. During 2017, the Company has notified to exercise its right to purchase capital goods in accordance with the terms and general conditions. The interest rate is set for the lease agreement at 11.5% p.a.

27. BONDS PAYABLE

	30 June 2018	31 December 2017
Principal:		
Antam Continuation Bonds I with Fixed Interest Rate Phase I Year 2011 ("Antam's bonds")	3,000,000	3,000,000
Timah's bond issued in 2017	1,200,000	1,200,000
Timah's sukuk ijarah issued in 2017	300,000	300,000
Unamortised bonds issuance cost	(2,655)	(3,159)
Total bonds payable	4,497,345	4,496,841
Less:		
Current portion	**(899,784)**	**(899,594)**
Non-current portion	**3,597,561**	**3,597,247**

Antam's bonds

On 2 December 2011, Antam issued the Antam's bonds with a total principal amount of Rp3,000,000. Interest is payable quarterly every 14 March, 14 June, 14 September and 14 December. The Antam's bonds series A and series B will mature on 14 December 2018 and 14 December 2021, respectively. The breakdown of the Antam's bonds is as follows:

Series	Coupon rate	Maturities	Principal (Rp)
A	8.38%	7 years	900,000
B	9.05%	10 years	2,100,000
		Total	**3,000,000**

With regard to the Public Offering of Continuation Bonds, PT Bank Permata Tbk ("Permata") acts as the Trustee or the institution that is entrusted to represent the interests of the bond holders following the provisions of the Bonds Trusteeship Agreement Deed No. 48 dated 30 September 2011, Amendment I of Bonds Trusteeship Agreement Deed No. 49 dated 28 October 2011 and Amendment II of Bonds Trusteeship Agreement Deed No. 52 dated 28 November 2011, of Fathiah Helmi, S.H., Notary in Jakarta, between Antam and the Trustee. As a Trustee, Permata has stated firmly that it is not affiliated with Antam, either directly or indirectly.

The Antam's bonds are listed on the Indonesia Stock Exchange and have been rated BBB+ by PT Pemeringkat Efek Indonesia ("Pefindo") in its rating report released on 13 September 2017.

The Antam's bonds proceeds are used for a routine investment in Antam's business units, renovation and modernisation of ferronickel plant in Pomalaa and for the opening of nickel mines in North Maluku and/or Southeast Sulawesi and/or a bauxite mine in West Kalimantan.

During the term of the Antam's bonds, Antam has the obligation to, among other things, meet certain financial ratios and maintain the direct and/or indirect shareholding in Antam by the Government of the Republic of Indonesia at not less than 51% of the number of shares that has been issued and fully paid. Without the written consent of the Trustee, Antam will not conduct a merger or acquisition with another company that does not comply with the intents and purposes of the Company's Article of Association, unless this is required by applicable regulations or court decisions.

27. BONDS PAYABLE (continued)

Antam's bonds (continued)

Antam will not reduce its authorised capital, issued capital and paid-in capital; pledge assets and provide loans or guarantees to third parties without the written consent of the Trustee. Application for written consent of the Trustee will not be rejected for no apparent or fair reason.

The financial ratios required under the Trusteeship Agreement are as follows:

a) The ratio of total interest-bearing debts (excluding trade payables but including syariah funding) to total equity shall not exceed 3 times;
b) The ratio of the total of EBITDA plus cash on hand and cash in banks to total matured debt and interest shall not be less than 1.25 times;
c) The equity shall be greater than Rp7,000,000.

As at 30 June 2018 and 31 December 2017, management believes that Antam has complied with all the debt covenants.

The fair values of the Antam's bonds payable as at 30 June 2018 and 31 December 2017 amounting to Rp3,009,516 and Rp3,022,536 respectively.

The fair values are based on prices released by Indonesian Bonds Pricing Agency ("IBPA") which are within level 2 of the fair value hierarchy.

Timah's bonds and sukuk ijarah

On 28 September 2017, Timah issued bonds Series A amounting to Rp480,000 and Series B amounting to Rp720,000 (the "Timah's Bonds") through listing in BEI, with BNI acting as the Trustee. The interest of Bond Series A is payable quarterly starting from 28 December 2017 until the maturity date. The interest of Bond Series B is payable quarterly starting from 28 December 2017 until the maturity date.

In addition, on 28 September 2017, Timah issued sukuk ijarah Series A amounting to Rp120,000 and Series B amounting to Rp180,000 through listing in BEI, with BNI acting as the Trustee. Bid price is at 100% from par value. The ijarah Series A return was set at Rp10,200 per annum and is payable quarterly starting from 28 December 2017 until the maturity date. The ijarah Series B return was set at Rp15,750 per annum and is payable quarterly starting from 28 December 2017 until the maturity date.

27. BONDS PAYABLE (continued)

Timah's bonds and sukuk ijarah (continued)

Series	Coupon rate	Maturities	Principal (Rp)	Fair value as at 30 June 2018	Fair value as at 31 December 2017
Bonds - issuance year 2017 - I					
-Seri A	8.50%	3 years	480,000	481,406	482,899
-Seri B	8.75%	5 years	720,000	705,182	736,272
			1,200,000	1,186,588	1,219,171

Series	Installment of return	Maturities	Principal (Rp)	Fair value as at 30 June 2018	Fair value as at 31 December 2017
Sukuk ijarah - issuance year 2017 - I					
-Seri A	Rp10,200/year	3 years	120,000	120,352	120,725
-Seri B	Rp15,750/year	5 years	180,000	176,296	184,068
			300,000	296,648	304,793

The fair values are based on prices released by IBPA which are level 2 of the fair value hierarchy.

These Timah's bonds and sukuk ijarah payable were rated as idA+ from Pefindo at 2017. The rating reflects the assessment of the likelihood of timely payment of the principal and interest on the bonds and of the repayment of ijarah.

The Indenture governed that:

- No later than 1 (one) year after the allotment date, Timah may repurchase the obligation at market price.
- Certain covenants, including amongst others: repurchase of the bonds upon a change of control, limitation of liens, limitation of sale and lease back transactions and provision of financial statements and other reports.
- Timah's Bonds and sukuk ijarah are not secured by special collateral, but are collateralised by all of the Timah's assets, either movable or immovable, whether currently existing or which will be exist in the future, for the holders of the bonds and sukuk ijarah.
- Timah complies with the restrictions specified within the agreements with the acting Trustee.
- Timah is required to comply with certain covenants, such as financial ratio covenants. Timah is in compliance with the respective covenants.
- The proceeds from bonds issue, after deducted with its emission costs, are used for capital expenditures and partial refinancing of the short term-loan from Working Capital Credit Facility in Rupiah.
- The proceeds from sukuk ijarah issue, after deducted with its emission costs, are used for reconditioning of production equipment.

28. PROVISION FOR ENVIRONMENTAL RECLAMATION AND REMEDIATION AND MINE CLOSURE

The operations of the Group have been, and may in the future, be affected from time to time in varying degrees by changes in environmental regulations. The Group policy is to meet or, if possible, surpass the requirements of all applicable regulations issued by the Government, by application of technically proven and economically feasible measures.

The Group makes provision for environmental rehabilitation based on Law No. 32/2009 regarding Conservation and Environmental management, GR 78 regarding the Reclamation and Post Mining, and Minister of Energy and Mineral Resources ("MEMR") No. 7/2014 regarding Reclamation and Mining Closure Activity for Mineral and Coal Mine Business.

Analysis of movement in the provision for environmental rehabilitation, is as follows:

	30 June 2018	31 December 2017
Beginning balance	889,378	942,111
Addition and changes in assumptions	65,720	142,231
Utilisation/realisation	(68,696)	(194,964)
Ending balance	886,402	889,378
Less:		
Current portion	**(250,038)**	**(313,299)**
Non-current portion	**636,364**	**576,079**

29. POST-EMPLOYMENT BENEFITS OBLIGATION

The pension and other employment benefits obligations as at 30 June 2018 and 31 December 2017 were calculated in accordance with SFAS 24 "Employee Benefits" by the Independent Actuaries.

The details of employee benefit obligations are as follows:

	30 June 2018	31 December 2017
Pension benefits	925,060	982,844
Post-employment medical benefits	2,116,213	2,652,958
Other post-retirement benefits	336,066	347,180
Other long-term employment benefits	487,615	513,510
Total	3,864,954	4,496,492
Less :		
Current portion (Note 23)	**(297,095)**	**(342,142)**
Non-current portion	**3,567,859**	**4,154,350**

The details of employee benefit costs are as follows:

	30 June 2018	30 June 2017*)
Pension benefits	48,363	43,516
Post-employment medical benefits	103,664	89,354
Other post-retirement benefits	23,163	23,026
Other long-term employment benefits	15,004	40,476
Total	**190,194**	**196,372**

The employee benefits charged for the six-month periods ended 30 June 2018 and 2017 were allocated as follows:

	30 June 2018	30 June 2017*)
Cost of revenue	112,397	119,172
General and administrative expenses	77,797	77,200
Total	**190,194**	**196,372**

The details of remeasurement of employee benefit obligations are as follows:

	30 June 2018	30 June 2017*)
Pension benefits	(69,458)	384,026
Post-employment medical benefits	(615,369)	340,893
Other post-retirement benefits	(15,196)	10,079
Total	**(700,023)**	**734,998**

*) As restated, (refer to Note 4)

29. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

a. Pension benefits

Bukit Asam and Antam as the Company's subsidiaries has each received approval from the Minister of Finance of the Republic of Indonesia to establish a separate pension fund, with detail as follows:

Entity	SK No.	Date of SK	Separate entity established based on the SK
Bukit Asam	SK No. Kep-245/KM.6/2003	21 October 2003	Dana Pensiun Bukit Asam
Antam	SK No. Kep-369/KM.17/1997	15 July 1997	Dana Pensiun Antam

Movement in the defined benefit obligation, expenses recognised in profit or loss and remeasurement recognised as other comprehensive income, during the periods is as follows:

	Present value of obligation	Fair value of plan assets	Impact of minimum funding requirement assets ceiling	Total
As at 1 January 2017	**2,252,244**	**(1,868,391)**	**189,584**	**573,437**
Recognised in profit or loss:				
- Current service cost	69,147	-	-	69,147
- Past service cost	(4,512)	-	-	(4,512)
- Interest cost/(income)	178,922	(150,792)	-	28,130
	243,557	(150,792)	-	92,765
Remeasurement recognised as other comprehensive income:				
- Changes in financial assumptions	79,306	(57,966)	-	21,340
- Experience adjustment	144,130	-	-	144,130
- Return on plan assets	(20,324)	162,579	-	142,255
- Changes in assets ceiling	-	-	63,762	63,762
	203,112	104,613	63,762	371,487
Contributions paid by:				
- The Group	-	(23,530)	-	(23,530)
- Employee	-	(4,176)	-	(4,176)
	-	(27,706)	-	(27,706)
Benefit paid by:				
- The Group	(26,796)	-	-	(26,796)
- Plan assets	(100,327)	99,984	-	(343)
	(127,123)	99,984	-	(27,139)
As at 31 December 2017	**2,571,790**	**(1,842,292)**	**253,346**	**982,844**

NOTES TO THE INTERIM CONSOLIDATED FINANCIAL STATEMENTS
30 JUNE 2018 AND 31 DECEMBER 2017
AND FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 2017
(Expressed in millions of Rupiah, unless otherwise stated)

29. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

a. Pension benefits (continued)

	Present value of obligation	Fair value of plan assets	Impact of minimum funding requirement assets ceiling	Total
As at 31 December 2017	**2,571,790**	**(1,842,292)**	**253,346**	**982,844**
Recognised in profit or loss:				
- Current service cost	25,746	-	-	25,746
- Interest cost/(income)	86,938	(64,321)	-	22,617
	112,684	(64,321)	-	48,363
Remeasurement recognised as other comprehensive income:				
- Changes in financial assumptions	(63,039)	54,236	-	(8,803)
- Experience adjustment	52,713	-	-	52,713
- Return on plan assets	-	(83,740)	-	(83,740)
- Changes in assets ceiling	-	-	(29,628)	(29,628)
	(10,326)	(29,504)	(29,628)	(69,458)
Contributions paid by:				
- The Group	-	(11,778)	-	(11,778)
- Employee	-	(2,050)	-	(2,050)
	-	(13,828)	-	(13,828)
Benefit paid by:				
- The Group	(4,240)	-	-	(4,240)
- Plan assets	(69,603)	50,982	-	(18,621)
	(73,843)	50,982	-	(22,861)
As at 30 June 2018	**2,600,305**	**(1,898,963)**	**223,718**	**925,060**

The actual return on plan assets during the periods ended 30 June 2018 and 31 December 2017 were Rp62,661 and Rp129,302, respectively.

Plan assets comprise the following:

	30 June 2018		31 December 2017	
	Fair value	%	Fair value	%
Property	549,069	29%	543,903	30%
Debt instruments	521,209	28%	545,840	30%
Mutual funds	308,154	16%	256,108	14%
Equity instruments	138,757	7%	266,998	14%
Others	381,774	20%	229,443	12%
Total	**1,898,963**	**100%**	**1,842,292**	**100%**

As at 30 June 2018 and 31 December 2017, the Group's plan assets for pension benefits plan are invested in Antam's shares and bonds that listed in Indonesia Stock Exchange amounting to Rp50,400 and Rp26,677, respectively.

The Group's plan assets as at 30 June 2018 amounting to Rp529,280 (31 December 2017:Rp513,485) represent investments in stocks, government bonds, corporate bonds and mutual funds traded on the PT Bursa Efek Indonesia. Meanwhile, plan assets amounting to Rp188,821 (31 December 2017:Rp183,186) represent investments in liquid investments, such as time deposits and deposits on-call.

29. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

a. Pension benefits (continued)

The principal actuarial assumptions used by actuaries in determining the benefits obligation were as follows:

	30 June 2018	31 December 2017
Discount rate	7.75% - 8.31%	6.56% - 7.32%
Future salary increases	4% - 10%	4% - 10%
Mortality table - active employees	TMI 3 (2011) Group Annuity	TMI 3 (2011) Group Annuity
Mortality table - pensioners	Mortality 1971[1)]	Mortality 1971 [1)]
Normal retirement age	56 years	56 years

[1)] Only used by Antam

The effect of 1% movement of discount rate and salaries growth rate in pension benefit obligation is as follows:

30 June 2018	Change in assumptions	Impact on overall liability
Discount rate	Increase by 1%	(81,496)
	Decrease by 1%	95,458
Salaries growth rate	Increase by 1%	24,975
	Decrease by 1%	(23,487)
31 December 2017	**Change in assumptions**	**Impact on overall liability**
Discount rate	Increase by 1%	(46,720)
	Decrease by 1%	52,485
Salaries growth rate	Increase by 1%	51,316
	Decrease by 1%	(46,930)

The sensitivity analyses are based on a change in an assumption while holding all other assumptions constant. In practice, this is unlikely to occur, and changes in some of the assumptions may be correlated. When calculating the sensitivity of the defined benefit obligation to significant actuarial assumptions the same method (present value of the defined benefit obligation calculated with the projected unit credit method at the end of the reporting period) has been applied as when calculating the pension liability recognised within the interim consolidated statement of financial position.

Expected maturity analysis of undiscounted pension benefits, are as follows:

	Less than a year	Between 1 - 5 years	More than 5 years
Pension benefits	142,639	528,397	4,367,209

29. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

b. Post-employment medical benefits

Movement in the defined benefit obligation, expenses recognised in profit or loss and remeasurement recognised as other comprehensive income, during the period is as follows:

	Present value of obligation	Fair value of plan assets	Impact of minimum funding requirement assets ceiling	Total
As at 1 January 2017	**2,878,160**	**(1,151,967)**	**196,237**	**1,922,430**
Recognised in profit or loss:				
- Current service cost	41,906	-	-	41,906
- Interest cost/(income)	214,279	(99,038)	-	115,241
	256,185	(99,038)	-	157,147
Remeasurement recognised as other comprehensive income:				
- Changes in financial assumptions	796,158	29,158	-	825,316
- Experience adjustment	(44,130)	-	-	(44,130)
- Changes in assets ceiling	-	-	(165,224)	(165,224)
	752,028	29,158	(165,224)	615,962
Contributions paid by:				
- The Group	-	(2,314)	-	(2,314)
- Employee	-	(1,157)	-	(1,157)
	-	(3,471)	-	(3,471)
Benefit paid by:				
- The Group	(39,110)	-	-	(39,110)
- Plan assets	(68,267)	68,267	-	-
	(107,377)	68,267	-	(39,110)
As at 31 December 2017	**3,778,996**	**(1,157,051)**	**31,013**	**2,652,958**
Recognised in profit or loss:				
- Current service cost	17,541	-	-	17,541
- Interest cost/(income)	127,917	(41,794)	-	86,123
	145,458	(41,794)	-	103,664
Remeasurement recognised as other comprehensive income:				
- Changes in financial assumptions	(598,996)	62,382	-	(536,614)
- Experience adjustment	(82,159)	-	-	(82,159)
- Changes in assets ceiling	-	-	3,404	3,404
	(681,155)	62,382	3,404	(615,369)
Contributions paid by:				
- The Group	-	(1,133)	-	(1,133)
- Employee	-	(567)	-	(567)
	-	(1,700)	-	(1,700)
Benefit paid by:				
- The Group	(23,340)	-	-	(23,340)
- Plan assets	(31,955)	31,955	-	-
	(55,295)	31,955	-	(23,340)
As at 30 June 2018	**3,188,004**	**(1,106,208)**	**34,417**	**2,116,213**

29. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

b. Post-employment medical benefits (continued)

The actual return on plan assets during the six-month periods ended 30 June 2018 and 31 December 2017 were Rp20,732 and Rp95,967, respectively.

Plan assets comprise the following:

	30 June 2018		31 December 2017	
	Fair value	%	Fair value	%
Equity instruments	408,841	37%	416,337	36%
Mutual fund	373,756	34%	355,734	31%
Debt instruments	95,918	9%	51,737	4%
Others	227,693	20%	333,243	29%
Total	**1,106,208**	**100%**	**1,157,051**	**100%**

As at 30 June 2018 and 31 December 2017, the Group's plan assets for pension-employment medical benefit plan are invested in Antam's shares and bonds that listed in PT Bursa Efek Indonesia amounting to Rp12,130.

The Group's plan assets as at 30 June 2018 amounting to Rp878,514 (31 December 2017:Rp823,020) represent investments in stocks, government bonds, corporate bonds and mutual funds traded on the PT Bursa Efek Indonesia. Meanwhile, plan assets amounting to Rp83,400 (31 December 2017:Rp201,900) represent investments in liquid investments, such as time deposits and deposits on-call.

The principal assumptions used in determining the benefits were similar to those used for defined pension benefit, except for the following:

	30 June 2018	31 December 2017
Discount rate	7.75% - 8.31%	6.56% - 7.16%
Medical cost trend rates	4.5% - 6%	4.5% - 6%

The effect of 1% movement of discount rate and salaries growth rate in pension benefit obligation is as follows:

30 June 2018	Change in assumptions	Impact on overall liability
Discount rate	Increase by 1%	(339,078)
	Decrease by 1%	419,494
Salaries growth rate	Increase by 1%	437,656
	Decrease by 1%	(359,551)

31 December 2017	Change in assumptions	Impact on overall liability
Discount rate	Increase by 1%	(446,974)
	Decrease by 1%	567,551
Salaries growth rate	Increase by 1%	625,953
	Decrease by 1%	(493,061)

29. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

b. Post-employment medical benefits (continued)

The sensitivity analysis are based on a change in an assumption while holding all other assumptions constant. In practice, this is unlikely to occur, and changes in some of the assumptions maybe correlated. When calculating the sensitivity of the defined medical benefit obligation to significant actuarial assumptions the same method (present value of the defined medical benefit obligation calculated with the projected unit credit method at the end of the reporting period) has been applied as when calculating the pension liability recognised within the interim consolidated statement of financial position.

Expected maturity analysis of undiscounted post-employment medical benefits, are as follows:

	Less than a year	Between 1 - 5 years	More than 5 years
Post-employment medical benefits	185,906	612,497	4,924,230

c. Other post-retirement benefits

Movement in the defined benefit obligation, expenses recognised in profit or loss and remeasurement recognised as other comprehensive income, during the period is as follows:

	Present value of obligation	Fair value of plan assets	Impact of minimum funding requirement assets ceiling	Total
As at 1 January 2017	**312,546**	**-**	**-**	**312,546**
Recognised in profit or loss:				
- Current service cost	20,762	-	-	20,762
- Past service cost	22	-	-	22
- Interest cost	25,400	-	-	25,400
	46,184	-	-	46,184
Remeasurement recognised as other comprehensive income:				
- Changes in financial assumption	17,856	-	-	17,856
	17,856	-	-	17,856
Contributions paid by:				
- Employee	(18,412)	-	-	(18,412)
	(18,412)	-	-	(18,412)
Benefit paid by:				
- The Group	(10,994)	-	-	(10,994)
	(10,994)	-	-	(10,994)
As at 31 December 2017	**347,180**	**-**	**-**	**347,180**

NOTES TO THE INTERIM CONSOLIDATED FINANCIAL STATEMENTS
30 JUNE 2018 AND 31 DECEMBER 2017
AND FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 2017
(Expressed in millions of Rupiah, unless otherwise stated)

29. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

c. Other post-retirement benefits (continued)

	Present value of obligation	Fair value of plan assets	Impact of minimum funding requirement assets ceiling	Total
As at 31 December 2017	**347,180**	**-**	**-**	**347,180**
Recognised in profit or loss:				
- Current service cost	11,054	-	-	11,054
- Past service cost	75	-	-	75
- Interest cost	12,034	-	-	12,034
	23,163	-	-	23,163
Remeasurement recognised as other comprehensive income:				
- Changes in financial assumption	(10,561)	-	-	(10,561)
- Experience adjusment	(4,635)	-	-	(4,635)
	(15,196)	-	-	(15,196)
Benefit paid by:				
- The Group	(19,081)	-	-	(19,081)
	(19,081)	-	-	(19,081)
As at 30 June 2018	**336,066**	**-**	**-**	**336,066**

Actual contributions to other post-retirement benefits plan for the six-month period ended 30 June 2018 and 2017 were Rp15,286 and Rp18,412, respectively.

The principal assumptions used in determining the benefits were similar to those used for defined pension benefit, except for the following:

	30 June 2018	31 December 2017
Discount rate	8.28% - 8.29%	7.08% - 7.16%

The effect of 1% movement of discount rate and salaries growth rate in pension benefit obligation is as follows:

30 June 2018	Change in assumptions	Impact on overall liability
Discount rate	Increase by 1%	(14,689)
	Decrease by 1%	16,312
31 December 2017	**Change in assumptions**	**Impact on overall liability**
Discount rate	Increase by 1%	(16,649)
	Decrease by 1%	18,704

29. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

c. Other post-retirement benefits (continued)

The sensitivity analyses are based on a change in an assumption while holding all other assumptions constant. In practice, this is unlikely to occur, and changes in some of the assumptions may be correlated. When calculating the sensitivity of the defined benefit obligation to significant actuarial assumptions the same method (present value of the defined benefit obligation calculated with the projected unit credit method at the end of the reporting period) has been applied as when calculating the pension liability recognised within the interim consolidated statement of financial position.

Expected maturity analysis of undiscounted other post-retirement benefits, are as follows:

	Less than a year	Between 1 - 5 years	More than 5 years
Other post-retirement benefits	2,895	18,670	811,285

d. Other long-term employment benefits

Movement in the defined benefit obligation, expenses recognised in profit or loss and remeasurement recognised as other comprehensive income, during the period is as follows:

	30 June 2018	31 December 2017
Beginning balance	513,510	468,385
Recognised in profit or loss:		
- Current service cost	8,888	32,638
- Past service cost	(1,076)	(299)
- Interest expense	8,861	37,599
- Change in financial assumptions	(31,867)	32,449
- Experience adjustment on obligation	30,198	17,034
	15,004	119,421
Benefit payments	(40,899)	(74,296)
Ending balance	**487,615**	**513,510**

The principal assumptions used in determining the benefits were similar to those used for pension benefit, except for the following:

	30 June 2018	31 December 2017
Discount rate	7.75% - 8.31%	6.56% - 7.57%
Medical cost trend rates	4.5% - 6%	8% - 10%

29. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

d. Other long-term employment benefits (continued)

The effect of 1% movement of discount rate in pension benefit obligation is as follows:

30 June 2018	Change in assumptions	Impact on overall liability
Discount rate	Increase by 1%	(17,676)
	Decrease by 1%	19,714

31 December 2017	Change in assumptions	Impact on overall liability
Discount rate	Increase by 1%	(23,580)
	Decrease by 1%	27,264

Expected maturity analysis of undiscounted other long-term employment benefits, are as follows:

	Less than a year	Between 1 - 5 years	More than 5 years
Other long-term employment benefits	53,212	194,853	963,999

The sensitivity analyses are based on a change in an assumption while holding all other assumptions constant. In practice, this is unlikely to occur, and changes in some of the assumptions may be correlated. When calculating the sensitivity of the defined benefit obligation to significant actuarial assumptions the same method (present value of the defined benefit obligation calculated with the projected unit credit method at the end of the reporting period) has been applied as when calculating the pension liability recognised within the interim consolidated statement of financial position.

30. OTHER LIABILITIES

	30 June 2018	31 December 2017
Advance from customers	94,472	183,677
Payable related to acquisition of TBBE	34,200	34,200
Insurance	32,388	10,721
Employee contribution	22,810	33,092
Others (each below Rp20,000)	261,198	171,633
Total other liabilities	**445,068**	**433,323**
Less:		
Current portion	**(441,080)**	**(429,561)**
Non-current portion	**3,988**	**3,762**

31. SHARE CAPITAL

The Company's shareholder is as follows:

	30 June 2018 and 31 December 2017		
Shareholder	Number of isued and fully paid shares	Percentage of ownership	Total
Government of the Republic of Indonesia	130,549,256	100%	54,177,941

Based on a shareholder decision, the Company has changed the Articles of Association which have been notarised under deed No. 59 dated 27 November 2017 of Notary Liestiani Wang, S.H., M.Kn. as follows:

1) Approving increase in the Company's share capital from Rp381,998 to Rp216,711,765 with par value of Rp415,000 (full amount).

2) Approving issuance/placement of portepel shares totaling 129,628,780 shares (full amount), with par value of Rp415,000 (full amount) and with total value of Rp53,795,943 which has been taken by the Government of Republic of Indonesia.

3) Approving additional state equity participation to the Company's share capital amounting to Rp53,795,943 through the following:

   a) Transferring Series B shares owned by the Government of Republic of Indonesia on 65% of Antam amounting to Rp16,902,338, 65% of Timah amounting to Rp6,241,547, 65.02% of Bukit Asam amounting to Rp18,347,366, respectively, and 9.36% of shares owned by the Government of Republic of Indonesia in PTFI amounting to Rp7,255,450.

   b) Of Rp5,049,242 from State Budget Year 2016 in form of land assets on Otorita Pengembangan Proyek Asahan of 1,211.10 Ha in accordance with GR 76/2016.

   c) Of Rp233,156 (full amount) from capitalisation of the Company's retained earnings.

Therefore, as at 30 June 2018 and 31 December 2017, the Company's share capital is Rp216,711,765 divided into 522,197,024 (full amount) shares, par value of Rp415,000 (full amount) and issued and fully paid by the Government of Republic of Indonesia 130,549,256 (full amount) shares or amounting to Rp54,177,941.

32. REVENUE

	30 June 2018	30 June 2017*)
Products:		
Coal	10,289,482	8,830,177
Gold	8,203,949	1,798,955
Tin metal and tin solder	3,912,395	3,986,310
Aluminium	3,127,509	2,408,496
Ferronickel	2,469,390	887,209
Nickel ore	886,473	152,870
Others	772,410	484,250
	29,661,608	18,548,267
Services:		
Purification of precious metals and other services	193,962	284,546
Total revenue	**29,855,570**	**18,832,813**

Details of revenue based on the customer's geographical location are as follows:

	30 June 2018	30 June 2017*)
Local		
- Third parties	17,660,642	11,798,636
- Related parties (Note 41a)	5,168,677	5,030,401
Export - third parties	7,026,251	2,003,776
Total revenue	**29,855,570**	**18,832,813**

*) As restated, (refer to Note 4)

NOTES TO THE INTERIM CONSOLIDATED FINANCIAL STATEMENTS
30 JUNE 2018 AND 31 DECEMBER 2017
AND FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 2017
(Expressed in millions of Rupiah, unless otherwise stated)

33. COST OF REVENUE

	30 June 2018	30 June 2017*)
Production costs:		
Purchases of precious metals	7,896,506	1,383,106
Transportation, barging and ore mining fees	3,895,970	3,283,447
Raw material used	3,779,279	4,205,205
Salaries, wages, and employee benefits	1,471,447	1,267,454
Usage of fuel	1,245,488	680,096
Depreciation and amortisation	1,113,410	889,085
Royalties, tax, and other government charges	1,021,853	989,036
Third-party services	506,520	168,565
Rent	427,502	288,134
Spare parts used	352,802	249,281
Repairs and maintenance	237,244	200,784
Environmental reclamation and mine closure	59,457	36,687
Insurance	54,362	60,598
Purchases of coal	-	169,113
Other (each below Rp50,000)	476,768	389,205
	22,538,608	14,259,796
Work in progress:		
At beginning of period	2,307,497	1,960,366
Transferred to fixed assets	(36,122)	(32,698)
At end of period	(2,366,105)	(2,263,446)
	22,443,878	13,924,018
Finished goods:		
At beginning of period	3,252,838	3,184,573
Purchases of tin metals	568,665	257,431
Addition of provision for impairment of inventories, net	5,305	11,385
At end of period	(4,369,144)	(3,740,418)
Total cost of revenue	**21,901,542**	**13,636,989**

34. GENERAL AND ADMINISTRATIVE EXPENSES

	30 June 2018	30 June 2017*)
Salaries, wages, bonuses and employee benefits	799,224	642,334
Business travel and education	151,342	79,097
Third-party services	137,028	88,886
Corporate social responsibilities program	113,230	80,841
Depreciation and amortisation	54,836	59,013
Repairs and maintenances	50,548	57,773
Others (each below Rp50,000)	302,675	328,958
Total general and administrative expenses	**1,608,883**	**1,336,902**

*) As restated, (refer to Note 4)

NOTES TO THE INTERIM CONSOLIDATED FINANCIAL STATEMENTS
30 JUNE 2018 AND 31 DECEMBER 2017
AND FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 2017
(Expressed in millions of Rupiah, unless otherwise stated)

35. SELLING AND MARKETING EXPENSES

	30 June 2018	30 June 2017*)
Freight and insurance	259,662	235,101
Salaries, wages, bonuses and employee benefits	113,539	96,789
Depreciation and amortisation	73,667	77,937
Others (each below Rp50,000)	262,707	162,988
Total selling and marketing expenses	**709,575**	**572,815**

36. FINANCE INCOME

	30 June 2018	30 June 2017*)
Interest income from cash in banks and time deposits	323,643	258,678
Interest income from available-for-sale financial assets	19,706	26,878
Total finance income	**343,349**	**285,556**

37. FINANCE COSTS

	30 June 2018	30 June 2017*)
Interest expenses from bank borrowings and finance lease	751,262	235,029
Interest expenses from bonds payable	198,092	133,174
Interest expenses on receivables – discounting impact	22,669	68,925
Bank charges	2,213	650
Less:		
Amount capitalised on qualifying assets	(8,359)	(16,195)
Total finance costs	**965,877**	**421,583**

38. OTHER INCOME/(EXPENSES), NET

	30 June 2018	30 June 2017*)
Dividend income (Note 9)	2,028,159	-
Gain/(loss) on foreign exchange, net	167,743	(59,208)
Gain from revaluation of investment properties (Note 16)	48,631	-
Income from liquidated damaged compensation	35,920	97,288
Income from insurance claim	-	47,199
Provision for other tax	-	(95,872)
Others, net (each below Rp50,000)	67,532	(195,978)
Total other income/(expenses), net	**2,347,985**	**(206,571)**

*) As restated, (refer to Note 4)

39. DIVIDENDS

Based on the Annual General Meeting of Shareholders ("AGMS") decisions No. RIS-02/RUPS/2017 dated 5 May 2017, the shareholder approved a cash dividend distribution amounting to Rp267,811 or equivalent to US$19,932,278 or US$22/share. The dividend was paid on 23 May 2017. In addition, the Company's shareholders appropriated retained earnings in accordance with Article 70 Law No. 40 Year 2007 regarding Limited Company Law amounting to US$10,000,000 or equivalent to Rp133,835.

Based on the AGMS decisions No. RIS-10/D3.MBU/06/2018 dated 7 June 2018, the shareholder approved a cash dividend distribution amounting to Rp1,919,750 or equivalent to US$133,278,950 or US$1.02/share. As at 30 June 2018, the cash dividend has not been paid to the shareholder and being recorded as "Dividend payable" in the interim consolidated statements of financial position. At 6 July 2018, the Company has made full payment of the dividends to the Government of the Republic of Indonesia.

40. BASIC AND DILUTED EARNINGS PER SHARE

Basic earnings per share is calculated by dividing the profit attributable to the owner of the parent by the number of the ordinary shares outstanding as at 30 June 2018 after the transaction with entities under common control (Note 4).

	30 June 2018	30 June 2017*)
Profit after tax attributable to owner of the parent	4,266,535	1,498,912
The number of ordinary shares outstanding (in full amount)	130,549,256	130,549,256
Basic earnings per share (in full amount)	**32,681**	**11,482**

As at 30 June 2018 and 2017, there was no dilution to the basic earnings per share.

*) As restated, (refer to Note 4)

NOTES TO THE INTERIM CONSOLIDATED FINANCIAL STATEMENTS
30 JUNE 2018 AND 31 DECEMBER 2017
AND FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 2017
(Expressed in millions of Rupiah, unless otherwise stated)

41. RELATED PARTIES INFORMATION

a. Transactions and balances with related parties

The Company is controlled by the Government of Republic of Indonesia. Transaction and balances with related parties which have not yet been presented and disclosed in the respective notes to the interim consolidated financial statements are as follows:

	30 June 2018	30 June 2017*)
Revenue		
PLN	3,001,767	3,328,504
PTIP	1,073,683	1,250,004
PT Pegadaian (Persero)	565,850	204,046
PT Pupuk Sriwijaya	138,809	30,201
PT Semen Baturaja (Persero) Tbk	117,571	78,684
BSM	96,720	32,648
BPI	81,329	62,239
Others	92,948	44,075
	5,168,677	**5,030,401**

Other transactions mostly represent transaction with entity related with the Government of Republic of Indonesia and other related entities with Group such as ICA and PT Wijaya Karya (Persero) Tbk ("WIKA").

	30 June 2018	30 June 2017*)
Purchases of goods and services		
PT Kereta Api Indonesia (Persero) ("KAI")	2,183,867	1,947,080
WIKA	812,312	1,029,096
PT Pertamina (Persero) ("Pertamina")	761,250	481,184
Others	111,502	24,291
	3,868,931	**3,481,651**

Other transactions mostly represent transaction with entity related with the Government of the Republic of Indonesia and other related entities with Group such as Koperasi Karyawan and Pensiunan Antam, Perum Jasa Tirta, and Jasindo.

*) As restated, (refer to Note 4)

NOTES TO THE INTERIM CONSOLIDATED FINANCIAL STATEMENTS
30 JUNE 2018 AND 31 DECEMBER 2017
AND FOR THE SIX-MONTH PERIODS ENDED 30 JUNE 2018 AND 2017
(Expressed in millions of Rupiah, unless otherwise stated)

41. RELATED PARTIES INFORMATION (continued)

a. Transactions and balances with related parties (continued)

	30 June 2018	30 June 2017*)
Finance income		
Mandiri, BTN, BRI, BNI PT Bank Pembangunan Daerah Sumatera Selatan & Bangka Belitung ("BPD Sumsel Babel"), PT Bank BNI Syariah (Persero) Tbk ("BNI Syariah"), PT Bank Syariah Mandiri ("BSM"), PT Bank Pembangunan Daerah Kalimantan Timur ("BPD Kaltim"), PT Bank Riau Kepri, PT Bank Pembangunan Daerah Sulawesi Tenggara ("BPD Sultra"), PT Bank Pembangunan Daerah Kalimantan Barat ("BPD Kalbar")	**188,028**	**87,710**
Finance costs		
Mandiri, BTN, BRI, BNI, BPD Sumsel Babel, BNI Syariah, BSM, BPD Kaltim, BPD Sultra, BPD Kalbar	**106,547**	**171,499**
Pension fund contribution payment		
Jiwasraya	32,388	10,721
Dana Pensiun Bukit Asam ("DPBA")	10,184	10,862
Dana Pensiun Antam	3,243	5,796
Yakespen Antam	1,133	2,315
	46,948	**29,694**

	30 June 2018	31 December 2017
Other receivables		
Current portion		
US Dollar	13,043	12,268
Rupiah	4,512	3,406
Total other receivables - current portion	**17,555**	**15,674**
Non-current portion		
Rupiah:		
ICA	1,821,689	1,366,688
MJIS	54,793	54,793
Others	61,000	107,871
US Dollar:		
PT PAL	61,067	70,263
Less:		
Provision for impairment	(124,326)	(41,704)
Total other receivables - non-current portion	**1,874,223**	**1,557,911**
Total other receivables, net	**1,891,778**	**1,573,585**

Other balances mostly represent balance to entity related with the Government of Republic of Indonesia and other related entities with Group such as PT Sarana Karya (Persero) and PT Industri Nuklir Indonesia (Persero).

*) As restated, (refer to Note 4)

41. RELATED PARTIES INFORMATION (continued)

a. Transactions and balances with related parties (continued)

	30 June 2018	31 December 2017
Cash in banks		
Rupiah		
Mandiri	1,204,794	718,566
BRI	398,002	694,527
PT Bank Pembangunan Daerah Sumatera Utara ("Bank Sumut")	200,195	-
BNI	142,059	155,416
BPD Sumsel Babel	104,345	24,007
BSM	36,938	2,402
BTN	7,752	3,949
BNI Syariah	1,189	7,937
BPD Kaltim	521	351
BPD Sultra	153	48
PT Bank Riau Kepri	35	162
BPD Kalbar	5	5
	2,095,988	1,607,370
US Dollar		
Mandiri	1,692,311	1,087,235
BNI	171,810	86,003
BRI	80,057	18,715
BSM	16	-
	1,944,194	1,191,953
Singapore Dollar		
BNI	274	298
Japanese Yen		
BNI	255	-
British Pound Sterling		
BNI	211	376
Australian Dollar		
Mandiri	200	11,487
	4,041,122	2,811,484

41. RELATED PARTIES INFORMATION (continued)

a. Transactions and balances with related parties (continued)

	30 June 2018	31 December 2017
Short-term time deposits		
Rupiah		
BRI	5,006,502	4,020,700
BTN	1,858,985	514,640
BNI	1,817,771	880,700
Mandiri	1,297,013	1,707,251
Bank Sumut	350,000	20,000
PT Bank Pembangunan Daerah Jawa Barat dan Banten Tbk ("Bank BJB")	120,000	120,000
BPD Kalbar	80,000	-
BTN Syariah	75,000	160,000
PT Bank Jateng Syariah	20,000	80,000
PT Bank Pembangunan Daerah Sumatera Selatan & Bangka Belitung Syariah (“BPD Sumsel Babel Syariah”)	20,000	-
BPD Sumsel Babel	-	530,000
BSM	-	18,240
	10,645,271	8,051,531
US Dollar		
BNI	2,566,716	1,110,936
BRI	2,146,196	3,190,554
Mandiri	499,955	13,548
	5,212,867	4,315,038

41. RELATED PARTIES INFORMATION (continued)

a. Transactions and balances with related parties (continued)

	30 June 2018	31 December 2017
Restricted cash		
BRI	29,023	29,023
BNI	24,287	-
Mandiri	300	673
	53,610	**29,696**
Available-for-sale financial assets		
Mutual funds		
Rupiah:		
Reksadana Pendapatan Tetap ("RDPT")		
Pemodalan Nasional Madani ("PNM") Perumnas	105,000	107,151
RDPT Danareksa BUMN Fund 2015 Properti II	50,500	50,949
RDPT PNM Properti Syariah	30,000	-
RDPT Danareksa BUMN Fund 2016 Properti III	24,999	51,630
RDPT Danareksa BUMN Fund 2014 Properti I	-	35,769
	210,499	245,499
Corporate bonds		
US Dollar:		
Obligasi Pertamina	171,726	163,166
	382,225	**408,665**
Trade payables		
Rupiah:		
WIKA	201,588	398,818
Pertamina	128,732	89,601
KAI	112,497	100,935
Others	59,909	80,256
US Dollar:		
KAI	52,191	46,355
Jasindo	25	-
	554,942	**715,965**

Other balances mostly represent balances to entity related with the Government of Republic of Indonesia and other related entities with Group such as PT Dahana (Persero), PT Nindya Karya (Persero) and PT Krakatau Engineering.

41. RELATED PARTIES INFORMATION (continued)

a. Transactions and balances with related parties (continued)

	30 June 2018	31 December 2017
Accruals		
KAI	188,140	188,992
WIKA	8,038	16,418
Others	52,232	79,921
	248,410	**285,331**

Other balances mostly represent balances to entity related with the Government of Republic of Indonesia and other related entities with Group such as HBAP, PT Krakatau Engineering and Perum Jasa Tirta.

	30 June 2018	31 December 2017
Bank borrowings		
Short-term borrowings		
Rupiah:		
Mandiri	426,523	222,830
BRI	253,000	23,084
BNI	30,000	4,038
US Dollar:		
Mandiri	2,549,508	2,104,902
BRI	720,200	1,354,800
BNI	12,963	-
Long-term borrowings		
Rupiah:		
Mandiri	-	570
US Dollar:		
BSM	55,414	68,232
	4,047,608	**3,778,456**

b. Key management compensation

For the six-month period ended 30 June 2018 and 2017, salaries and other short-term benefits and post-employment benefits provided to the Group's Boards of Commissioners, Directors and other key management personnels were totaling to Rp105,915 (2017:Rp82,583).

41. RELATED PARTIES INFORMATION (continued)

c. The nature of the relationships

Related parties	Relationships	Nature of transactions
Boards of Commissioners and Directors and other key management personnels	Key management personnel	Salaries and employee benefits
BNI, BRI, Mandiri, BPD Sumsel Babel, BNI Syariah, BTN, BSM, BPD Kaltim, PT Bank Riau Kepri, BPD Sultra, BPD Kalbar, BTN Syariah, PT Bank Jateng Syariah, Bank Sumut, BPD Sumsel Babel Syariah	Entity related with the Government of Republic of Indonesia	Cash in banks, time deposits, customer of precious metal, and bank borrowings
Jasindo and Jiwasraya	Entity related with the Government of Republic of Indonesia	Insurance services
PLN	Entity related with the Government of Republic of Indonesia	Coal sales and electricity usage
Pertamina	Entity related with the Government of Republic of Indonesia	Purchases of goods and services for production activities, customer of precious metal and placement on bonds
WIKA	Entity related with the Government of Republic of Indonesia	Purchases of goods for production activities and construction services and sales of aluminium ingot
PT Pegadaian (Persero), PT Pupuk Sriwijaya	Entity related with the Government of Republic of Indonesia	Customer of precious metal
Dana Pensiun Antam and DPBA	Entity related with the Government of Republic of Indonesia	Pension fund management of Antam and Bukit Asam
Yakespen Antam	Entity related with the Government of Republic of Indonesia	Post-retirement healthcare benefit plan services of Antam
Koperasi Karyawan dan Pensiunan Antam	Entity related with the Government of Republic of Indonesia	Non-permanent labour provider of Antam

41. RELATED PARTIES INFORMATION (continued)

c. The nature of the relationships (continued)

Related parties	Relationships	Nature of transactions
PT Adhi Karya (Persero) Tbk	Entity related with the Government of Republic of Indonesia	Construction services
PT PAL	Entity related with the Government of Republic of Indonesia	DAK partner in building Chemical Tanker Hull 242
KAI	Entity related with the Government of Republic of Indonesia	Coal transportation
PTIP	Entity related with the Government of Republic of Indonesia	Coal sales
PT Semen Baturaja (Persero) Tbk	Entity related with the Government of Republic of Indonesia	Coal sales
BPI	A joint venture of Bukit Asam	Coal sales
ICA	A joint venture of Antam	Customer of bauxite
Danareksa, PNM	Entity related with the Government of Republic of Indonesia	Placement of mutual fund
NHM	An associate of Antam	Customer of precious metal
AJTM	An associate of Timah	Insurance services
MJIS	An associate of Antam	Interest bearing loan to related party
HBAP	A joint venture of Bukit Asam	Other receivables

42. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES

a. Sales agreements

The Group has various commitments to sell its products to various parties customers at specified agreed quantities based on the agreements signed by the Group with those customers. Generally, selling price agreed with customers is based on several indices as adjusted with certain factors. The selling price adjustments vary between customers, which depend on factors like the specification of requested product, handling cost, freight differential, terms of payment, etc. The products will be periodically delivered for periods as agreed with both parties.

b. Fuel purchase agreement with Pertamina

On 1 June 2017, Antam entered into a fuel purchase agreement with Pertamina for the covered period 1 June 2017 to 31 May 2020. The fuel price was based on the price published at the date of the fuel handover from Pertamina to Antam.

For the six-month period ended 30 June 2018, the fuel purchased from Pertamina was amounting to Rp510,399 (30 June 2017:Rp289,237).

42. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

c. Coal sales agreements

As at 30 June 2018 and 30 June 2017, the Group through Bukit Asam, a subsidiary has sales commitments to several customers as follows:

Customer name	Contract date	Expiry date	Total sales for the six-month period ended 30 June 2018	Total sales for the six-month period ended 30 June 2017
PLN – 15 PLTU in Indonesia	28 December 2012	28 December 2032	3,000,000	3,200,000
PTIP – PLTU Suralaya	28 January 2013	31 December 2022	1,100,000	1,200,000
PLN – PLTU Tarahan	29 September 2004	31 December 2031	239,000	187,000
PLN – PLTU Bukit Asam	14 October 2004	31 December 2023	118,000	99,000
BPI	7 December 2011	14 June 2044	81,300	62,200

d. Ownership in joint mining entities

Antam has ownership interests in joint mining entities without any cash contributions ("free carried") as follows:

	Percentage of ownership (%)	Status as at 30 June 2018
PT Sorikmas Mining	25	Exploration
PT Galuh Cempaka	20	Production*
PT Gorontalo Minerals	20	Development
PT Sumbawa Timur Mining	20	Exploration
PT Pelsart Tambang Kencana	15	Exploration
PT Weda Bay Nickel	10	Construction

* Production phase is suspended due to reassessment of the value of reserves.

Antam will only contribute funds for the operations of the above companies in accordance with Antam's ownership interest if they have entered the production stage.

Those mining entities hold a Contract of Work ("CoW") with the Government of the Republic of Indonesia.

On 29 December 2017, Antam divested 20% shares ownership in PT Dairi Prima Minerals ("DPM") to PT Bumi Resources Minerals, Tbk. ("BRM"). The divestment of share ownership was related to the plan of China Nonferrous Metal Industry's Foreign Engineering and Construction Co., Ltd ("NFC") to acquire majority shares of DPM. The Group recognised gain of Rp776,430 from this divestment. The Group receives proceeds from this divestment shares of DPM upon payment from NFC to BRM. The receivable was booked as part of Other receivables – third parties.

42. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

e. Agreement for feasibility study and/or establishment of joint mining entities to undertake exploration, evaluation and development work

Antam has entered into a joint agreement with Herald Mining Antam ("HMG") to undertake exploration, evaluation and development work in relation to IUP held by an affiliate of HMG, covering the following areas located in North Sumatra, as follows:

IUP number	Location	Percentage of ownership (%)
KW99JLP005	Kendit	20
KW98APP035	Parongil	20

Based on the Decision Letter No. 039/40.00/OJG/2002 on April 2002 by the Director General of Geology and Mineral Resources regarding the extension of the CoW area during the exploration stage of DPM, another affiliate of HMG, both mining rights in Kendit and Parongil were merged with those of DPM.

On 29 December 2017, Antam divested 20% shares ownership in PM to BRM.

f. Acquiring interest in NHM

On 20 December 2012, Antam acquired a 7.5% additional interest in NHM, increasing the total interest held to 25%. Based on the Conditional Sale and Purchase Agreement, the consideration for the additional interest acquired was US$130,000,000 with an additional US$30,000,000 (contingent purchase price), payable subject to a further 1 million ounces (unaudited) of additional gold resources (indicated and/or measured) being defined up to 31 December 2017, based on the JORC report issued by an independent consultant.

As at 31 December 2013, Antam has reassessed the probability of additional gold resources being defined for NHM through an assessment by a Competent Person based on the JORC code. Based on the assessment, there is at least a potential 500,000 ounces (unaudited) of additional gold resources in NHM concession areas. Based on such estimate, Antam has recognised a contingent purchase price amounting to US$15,000,000 or equivalent to Rp182,835.

On 30 March 2015, as stated by Newcrest Singapore Holdings Pte., Ltd the potential of additional gold resources in NHM concession area as at 31 December 2014 was 480,000 ounces (unaudited). Antam recognised the decline in the contingent liability so that as at 31 December 2015, the recorded contingent liability became US$14,400,000 or equivalent to Rp194,410.

On 30 July 2015, Antam has reassessed the probability of additional gold resources (measured and/or indicated) in NHM's concession area by considering cut-off grade factors and concluded that potential additional gold resources in the concession areas of NHM is 430,000 ounces (unaudited) of indicated gold resources.

On 30 March 2016, Antam has entered into an amendment of Conditional Sale and Purchase Agreement. Based on the amendment of the agreement, contingent purchase price was amended to US$20,000,000 payable subject to a further 2.445 million ounces (unaudited) of additional gold resources (indicated and/or measured), based on the JORC report issued by an independent consultant.

42. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

f. Acquiring interest in NHM (continued)

Changes in the contingent purchase price based on the amendment of the Conditional Sale and Purchase Agreement are as follows:

- Year 2012: US$30/ounces
- Year 2013: US$22.5/ounces
- Year 2014: US$22.5/ounces
- Year 2015: US$20/ounces
- Year 2016: US$5/ounces
- Year 2017: US$5/ounces

g. Alumina project and joint venture agreement

JVA

On 31 March 2006, Antam entered into a JVA with SDK, Straits Trading Amalgamated Resources Private Limited ("STAR") and Marubeni Corporation ("Marubeni") to form ICA, a foreign investment limited liability Antam ("JVCO"). The JVCO shall exploit and mine bauxite and process and sell the product which is known as chemical grade alumina and/or other products as may be mutually agreed upon by the Parties in the future. On 26 February 2007, Antam and the parties established ICA (Note 13).

As acknowledged and agreed upon by the shareholders, as of the date of the JVA, the estimated total Project Cost was approximately US$257,000,000. The JVA contained a time limit up to 31 December 2007 for ICA to meet certain conditions, among others, the Project Cost cannot be more than US$450,000,000, to obtain the lenders' agreement to fund the Project Cost and enter into all Ancillary Agreements.

As at 31 December 2007, ICA failed to comply with several condition in the JVA. Among others, ICA has not yet entered into a loan agreement for project funding and the Engineering, Procurement and Construction ("EPC") agreement. As result of these conditions, STAR and Marubeni withdrew their equity from ICA's share capital on 12 August 2008 and 30 July 2010, respectively. On 31 August 2010, the JVA was amended and restated. Where the parties of ICA only consist of Antam with 80% interest and SDK with 20% interest.

The construction of ICA's chemical grade alumina plant has been completed in 2014.

Conditional Share Sale and Purchase Agreement ("CSPA")

On 29 May 2018, Antam, SDK and ICA entered into a CSPA which agreed that SDK would divest all of its shares in ICA to Antam with certain terms and obligations, among others the approvals of each shareholder, Ministry of Energy and Mineral Resources, Ministry of Law and Human Right, Investment Coordinating Board and ICA's lenders. The expected long stop completion date is 31 March 2019.

As at the completion of these interim consolidated financial statements, Antam and SDK are still in the process of completing the requirement in the CSPA.

42. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

g. Alumina project and joint venture agreement (continued)

Common Terms Agreement ("CTA")

On 13 June 2011, ICA entered into a CTA with JBIC for a JBIC Loan Facility and Mizuho Ltd and Sumitomo Ltd. for a Commercial Loan Facility. The total amount of the JBIC Loan Facility and Commercial Loan Facility is JPY15,795,000,000 and JPY10,530,000,000, respectively. ICA is required to repay all loan facilities commencing on 15 December 2014 up to 15 December 2020. Antam and SDK provided a guarantee for repayment of ICA's loan. As at 31 December 2017, ICA has made a full drawdown from these loan facilities and the outstanding loans amount to JPY13,167,765,000.

On 28 September 2011, ICA entered into a Pledge of Shares Agreement with Antam and Bank Mizuho, whereby Antam agreed to, among others, pledge all of its shares in ICA for the interest of Bank Mizuho, for and on behalf of the Finance Parties, as security for the full payment of the Secured Obligations.

Agreement regarding entrustment of guarantee commitment

On 13 June 2011, Antam, SDK and Japan Oil, Gas and Metal National Corporation ("JOGMEC") entered into a Guarantee Agreement, whereby JOGMEC agreed to guarantee the payment of 80% of loans from the Commercial Loan Facility. As a result of the JOGMEC guarantee, Antam and SDK as a guarantor has to, among others:

(i) Make sure that the Guarantee Agreement does not breach all applicable laws and regulations including environmental regulations;
(ii) Guarantee not to amend, terminate, cancel and suspend the Offtake Agreement, the Sale and Purchase Agreement for Washed Bauxite ("WBX") and the Manufacturing, Technology and Technical and Operational Agreement;
(iii) Maintain the credit rating and financial ratios required.

Priority agreement

On 28 September 2011, ICA entered into a Priority Agreement with JOGMEC, Mizuho, Antam, and SDK which contains the following significant provisions:

- Until the date on which the payment obligations of all sums of principal, interest and any other amounts payable by ICA to the Finance Parties pursuant to the Finance Documents have been fully paid, JOGMEC may not demand or receive payment from ICA or its shareholders relating to any claims, and any default interest due and owing to JOGMEC under the JOGMEC Guarantee Entrustment Agreement ("JOGMEC Subordinated Guarantee Default Interest"), that is of a higher rate than the highest default interest rate charged to ICA under the CTA.

- JOGMEC acknowledges that the JOGMEC Subordinated Guarantee Default Interest shall be subordinated to all other rights of the Finance Parties under the Finance Documents.

42. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

g. Alumina project and joint venture agreement (continued)

Sales and purchase agreement for washed bauxite

On 1 December 2010, ICA entered into a Sale and Purchase Agreement with Antam, whereby Antam agreed to sell WBX exclusively to the ICA from its mining site in quantities equal to at least 37.8 million wet metric tonnes ("wmt") of WBX at such times and in such quantities as requested by ICA in accordance with a relevant work program and budget.

For the six-month period ended 30 June 2018, ICA did not purchase any WBX from the Antam (30 June 2017: 71,079 wmt amounting to US$1,919,133).

Offtake agreement

On 1 December 2010, ICA entered into an Offtake Agreement with Antam and SDK, whereby Antam will distribute Commodity Grade Alumina product to the entire world excluding Japan with a quantity of 25,000 metric tonnes per quarter and SDK will distribute Speciality Grade Alumina product to the entire world and Commodity Grade Alumina product to Japan in the quantity of 50,000 metric tonnes.

For the six-month period ended 30 June 2018, ICA has sold alumina products through Antam amounting to US$nil (30 June 2017: US$4,312,572).

Performance support facility agreement

On 11 December 2015, Antam entered into a Performance Support Facility Agreement with ICA, whereby Antam agreed to provide loan facility to ICA with maximum credit of US$65,000,000. From 11 December 2015 until 30 June 2018, ICA has drawdown totaling to US$101,464,356 from the loan facility. Based on this agreement, ICA will make payments of loan principal from 30 June 2021 to 31 December 2025. Interest on the loans is payable from 31 December 2015 to the end of principal payment. The rate of the loan interest is USD LIBOR + Margin (3.25%) per annum.

ICA also entered into Shareholder Loan Facility Agreement with SDK. From 27 November 2015 until 30 June 2018, ICA has drawdown a total amount of US$72,975,892 from the loan facility. Based on this agreement, ICA will make payments of loan principal from 30 June 2021 to 31 December 2025. Interest on the loans is payable from 31 December 2015 to the end of principal payment. The rate of the loan interest is USD LIBOR + Margin (2%) per annum.

42. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

h. North Halmahera Ferronickel Plant Construction Project ("P3FH")

Antam has entered into agreement related to the P3FH project to increase the efficiency of the ferronickel plant with the following details:

On 21 December 2016, Antam with the Unincorporated Consortium of WIKA and Kawasaki Heavy Industries, Ltd. entered into an agreement for the letter related to engineering, procurement and construction of North Halmahera Ferronickel Plant phase I with production capacity 13,500 tonnage/year with the contract amount Rp3,421,425. The agreement is effective from 31 January 2017.

i. Pomalaa Ferronickel Plant Expansion Project ("P3FP")

Antam has entered into several agreements related to the P3FP project to increase the efficiency of the ferronickel plant with the following details:

On 17 January 2012, Antam and PT Wika Industri & Konstruksi entered into an agreement for the letter to procure and install a belt conveyor with a contract value of US$13,500,000. The agreement is valid until 17 April 2013. The extension of the contract was not accepted and the Commercial Operation Date ("COD") remained effective on 17 April 2013. Because of that, fines due to late completion of work started to occur based on the contract (six weeks after COD). As at 30 June 2018, Antam and WIKA are still in the process of negotiating liquidated damage calculation.

On 26 March 2012, Antam and PT Adhi Karya (Persero) Tbk entered into an agreement for the letter to procure and install a jetty and facilities with a contract value of US$32,874,083. The agreement is valid until 26 June 2013. Antam and PT Adhi Karya (Persero) Tbk have agreed on a contract extension which is valid until 15 August 2013.

As at 31 December 2013, PT Adhi Karya (Persero) Tbk has not completed the project and Antam did not approve the second amendment to the contract so the target date was still 15 August 2013. Because of that, Antam has the right to impose fines due to late completion of work and started occur based on contract (six weeks after target date). As at the date of these interim consolidated financial statements, Antam and PT Adhi Karya (Persero) Tbk are still in the process of negotiating liquidated damage calculation.

On 28 March 2012, Antam and WIKA entered into an agreement for the latter to procure and install Refining-3 with a contract value of US$35,475,000. The agreement was valid until 28 January 2014. On 2 December 2013 Antam and WIKA have agreed on a contract extension. As at the date of these interim consolidated financial statements, construction of Refining-3 has been completed and Antam is still in the process of negotiating liquidated damage calculation.

On 10 December 2012, Antam and Sumitomo Corporation entered into an agreement related to the construction of the PLTU Pomalaa with total contract values of US$57,275,290, JPY3,439,137,022 and Rp412,748,103.

42. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

i. Pomalaa Ferronickel Plant Expansion Project ("P3FP") (continued)

On 17 May 2013, Antam and Sumitomo Corporation entered into a Notice to Proceed to start construction of the PLTU which is expected to be completed on or before the date falling 25 months and 28 months after the date of the Notice to Proceed for Unit 1 and Unit 2, respectively. On 15 April 2013, Antam and Sumitomo Corporation signed a first amendment of the agreement to amend the provisions on the standby letter of credit stated under the contract signed on 10 December 2012. As at 31 December 2016, construction of PLTU has been completed, however there was delay in the completion of the work which has caused losses by Antam for not being able to operate with a more efficient energy cost. To compensate Antam's losses, Sumitomo Corporation have agreed liquidated damage compensation amounting to US$7,303,370 (or equivalent to Rp97,288), which has been recorded as "other income/(expenses), net" in 2017 profit or loss (Note 38).

On 6 February 2013, Antam entered into a Construction of Ore Preparation Line-4 for P3FP Project Agreement with the Unincorporated Consortium of Kawasaki Heavy Industries, Ltd. and Wika with an aggregate contract value of US$66,899,880 and JPY2,914,808,200. Construction of Ore Preparation Line-4 is expected to be completed on 31 July 2015. On 28 June 2013, Antam and the Unincorporated Consortium of Kawasaki Heavy Industries, Ltd. and Wika signed an amendment to the contract, in order to change the project name from "Modernisation-Optimisation of Pomalaa Ferronickel Smelters Project" to "Proyek Perluasan Pabrik Feronikel Pomalaa". The construction of ore preparation Line-4 has been completed in 2016. As at 30 June 2018, Wika had partially agreed liquidated damage compensation amounting to US$ 2,363,315 (or equivalent to Rp35,920) which was recorded as "other income/(expenses), net" in the current period profit or loss (Note 38).

Antam started a new construction of the Oxygen Plant-5 project in 2013. Antam entered into contracts with Daesung Industrial Gases Co, Ltd. on 11 December 2013 with a contract value of US$11,000,000 (equal to Rp132,055). As at 31 December 2017, construction of Oxygent Plant-5 has been completed.

j. Coal delivery agreements with KAI

The Group through a subsidiary (i.e., Bukit Asam) entered into a coal delivery agreement with KAI whereby KAI agreed to deliver Bukit Asam's coal from Bukit Asam's train loading station in Tanjung Enim to the following ports:

Port names	Contract date	Expiry date	Total coal delivery expenses 30 June 2018	Total coal delivery expenses 30 June 2017
Tarahan, Lampung	9 June 2017	31 December 2021	2,020,000	1,800,000
Kertapati, Palembang	9 June 2017	31 December 2021	161,000	163,000

k. Mining Service Agreements in Muara Tiga Besar Utara ("MTBU"), Muara Tiga Besar Selatan ("MTBS"), and Tambang Air Laya ("TAL") Extension

On 17 November 2011, Bukit Asam entered into an agreement for top soil stripping services and rental of heavy equipment and dump trucks for the coal excavation and transportation area in TAL and MTB (Package 10-200.R.2) with PT Pamapersada Nusantara ("Pama") by agreement No. 077/PJJ/EKS/0500/HK.03/2011 for the period 1 August 2011 to 31 July 2016. The production targets which have to be achieved on schedule are 145,987,500 BCM for soil with an average distance of 4.5 km and 39,850,000 tonages for coal with an average distance of 3.0 km. The total mining cost is US$282.92 million and Rp3.160 trillion (full amount) (including VAT).

42. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

k. Mining Service Agreements in Muara Tiga Besar Utara ("MTBU"), Muara Tiga Besar Selatan ("MTBS"), and Tambang Air Laya ("TAL") Extension (continued)

Based on addendum I No. 017/ADD/EKS- 0500/HK.03/2014 dated 4 April 2014, service period for package 10-200.R.2 is extended to 31 December 2018 with target production of 220,034,971 BCM for soil with average distance of 4.5 km and 53,650,186 tons for coal with an average distance of 3 km. The total mining cost is US$388.98 million and Rp6.635 trillion (full amount) (including VAT).

On 11 April 2014, Bukit Asam entered into an additional agreement for top soil stripping services and rental of heavy equipment and dump trucks for coal excavation and transportation in TAL and MTB (Package 13- 025.R.2) with Pama by agreement No.019/PJJ/Eks-0100/HK.03/2014 for the period 1 February 2014 to 31 January 2019. The production targets which have to be achieved on schedule are 165,638,000 BCM for soil with an average distance of 4.5 km and 40,800,000 tons for coal with an average distance of 3.5 km. Total mining cost is US$293.26 million (full amount) and Rp5.04 trillion (full amount) (including VAT).

Related stripping and coal mining expenses for the six-month periods ended 30 June 2018 and 2017 amounting to Rp1.1 trillion and Rp969 billion (full amount), respectively.

l. Mining Law

On 12 January 2009, the Government of the Republic of Indonesia issued a Mining Law containing certain provisions relating to the obligation to supply the domestic markets, limitations in the mining exploration area and production activities and the requirement to build processing and refinery facilities within five years or up to 2014.

On 1 February 2010, the Government of the Republic of Indonesia issued the GR No. 23 Year 2010, as lastly amended by GR No. 1 Year 2017, regarding the Implementation of Mineral and Coal Business Activities ("GR No. 1/2017") and GR No. 8 Year 2018, regarding the implementation of Mineral and Coal Business Activities ("GR No. 8/2018").

GR No. 1/2017 among others regulates the following matters:

- Change the period for IUP and Special Mining Business Permit ("IUPK") extensions to become five years prior to expiration of the IUP/IUPK;
- Change the provision regarding share divestment in stages up to 51%;
- Regulates the determination of benchmark prices in the sales of minerals and coal;
- Removes the provision which allow the CoW holders performing smelting activities to export their products in certain quantities and period; and
- Stipulates that provisions for increasing added value of minerals and export sales of minerals shall be governed by Regulation of the Minister.

The Government has issued the MEMR Regulation No. 25 of 2018 concerning Mineral and Coal Mining Business ("MEMR Regulation No. 25/2018") which revokes the MEMR Regulation No. 5 of 2017 ("MEMR Regulation No. 5/2017"), as lastly amended by the MEMR Regulation No. 28 of 2017 ("MEMR Regulation No. 28/2017") dated 30 March 2017 on "Increasing Added Value Through Domestic Processing and Refining of Minerals", and the MEMR Regulation No. 6 of 2017 ("MEMR Regulation No. 6/2017"), as lastly amended by MEMR Regulation No. 35 of 2017 ("MEMR Regulation No. 35/2017") dated 15 May 2017 on "Procedures and Requirements to Obtain Recommendations for Export Sale of Minerals Resulting from Processing and Refining" have been issued.

42. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

l. Mining Law (continued)

On 19 February 2018, MEMR revoked Ministerial Regulation No. 15/2017 and issued Ministerial Regulation No. 11/2018 regarding the Procedures for the Granting of Area, Licensing and Reporting in the Business Activity of Mineral and Coal Mining. On 16 April 2018, MEMR issued Ministerial Regulation No. 22/2018 regarding Amendment to Ministerial Regulation No. 11/2018.

Management is closely monitoring the progress of implementing regulations for the Mining Law and is in the process of analysing the impact, if any, of the Mining Law on the Group when these implementing regulations are issued.

m. MEMR Regulation No. 7/2017

On 11 January 2017, MEMR No. 7/2017 was issued as an amendment to MEMR Regulation No. 17/2010.

MEMR Regulation No. 07/2017 stipulates that the Metal Mineral Benchmark Prices ("HPM") and the Coal Benchmark Prices ("HPB") should be used a reference by holders of IUP/IUPK and also parties to the CoW and CCoW for the sales of produced mineral/coal (including the sale to affiliates) both for export and domestic sales.

HPM and HPB are determined by the Director General on a monthly basis pursuant to market mechanisms or in accordance with prices generally applicable in the international market which represent floor price in the calculation of royalty obligation.

Based on MEMR Regulation No. 7/2017, HPM and HPB are calculated in Rupiah or US Dollar. The determination of HPM and HPB follows the formula of HPM and HPB which consider various factors, including but not limited to Mineral Prices Reference ("HMA") and Coal Prices Reference ("HBA"). If the HMA and HBA have not been determined on the current month, the sales are made based on HMA and HBA of the preceeding month.

Management believes that the MEMR Regulation No. 7/2017 will not have a significant impact to the Group's business operations.

n. Regulation of increase in value-add from minerals

On 30 April 2018, MEMR Regulation No. 25/2018, was issued as an implementation regulation of GR No. 1/2017.

Several key provisions of this regulation among others are as follows:

- Holders of IUP Operation Production ("IUP OP"), IUPK OP, IUP OP specially for processing and refinery are required to carry out the processing and refining of mining products within the minimum limits of processing and/or refinery.
- The processing and refining process can be done independently or in cooperation with other parties.
- Holders of IUP OP or IUPK OP can sell <1.7% nickel or bauxite which has been washed with a level of Al2O3 > 42% abroad in a certain amount no later than 11 January 2022, under the condition:
  a. Has built a purification facility
  b. Pay the export duty
- Holders of Mineral CoW, IUP OP, IUPK OP, IUP OP specially for processing and/or refinery can export concentrate for a period of 5 years from 11 January 2017 if they meet certain requirements, as follows: willing to change the form of their mining business from CoW into IUPK OP (specific requirement for CoW holders), provide commitment to build refining facility and pay export duties under the prevailing laws and regulation.
- Export can only be done after an export recommendation from the MEMR is obtained.

42. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

n. Regulation of increase in value-add from minerals (continued)

The processing and refining process can be done independently or in cooperation with other parties.

Management has assessed the provisions in the MEMR Regulation No. 25/2018 and is of the opinion that this regulation will have a positive impact to the financial performance of the Group because, based on management's assessment, the Group will be able to meet the requirements stipulated in the MEMR Regulation No. 25/2018.

o. Mine reclamation and mine closure

On 20 December 2010, the Government of the Republic of Indonesia issued GR No. 78 which deals with reclamation and post-mining activities for both IUP Exploration and IUP OP holders. This regulation updates PerMen No. 18/2008. An IUP Exploration holder must, among other requirements, include a reclamation plan in its exploration work plan and budget and provide a reclamation guarantee in the form of a time deposit placed at a state-owned bank.

On 2 May 2018, the Government of the Republic of Indonesia issued Ministerial Regulation No. 26/2018 ("PerMen 26/2018) concerning the Rules for the Implementation of Good Mining and Supervision of Mineral and Coal Mining, which among others regulates reclamation and post-mining activities for coal and mineral mining companies. Subsequently, the Government of the Republic of Indonesia issued MEMR Decree No.1827K/30/ MEM/2008 concerning Guidelines for the Practice of Good Mining Practices.

Ministerial Regulation No. 26/2018 stipulates that an IUP OP holder is required to provide a reclamation guarantee which may be in the form of a joint account or time deposit placed at a state-owned bank, a bank guarantee or an accounting reserve (if eligible). Reclamation guarantee in the form of an accounting reserve can be provided by a mining company if the following criteria are met:

- Registered on PT Bursa Efek Indonesia and has placed more than 40% from total owned stock;
- Has an issued share capital of not less than US$50,000,000 as stated in the notarial deed and/or authorised by the notary.

The requirement to provide reclamation and post-mine guarantees does not release the IUP holder from the requirement to perform reclamation and post-mine activities.

Based on this regulation, Antam is no longer eligible to provide a reclamation guarantee in the form of an accounting reserve.

As at 30 June 2018, the Group's subsidiaries has placed reclamation guarantees in the form of bank guarantees, as required by Ministerial Regulation No. 7/2014.

42. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

p. Forestry regulation

On 8 June 2016, the Ministry of Forestry issued Ministerial Regulation No. P.50/Menlhk /Setjen/Kum.1/6/2016 regarding Lease Guidelines of Forest Area. Pursuant to this regulation, the Group may be given a forestry permit to use a forest area for two years for exploration activities and the maximum equals to a company mining permits to conduct non-forestry activities subject to a number of preconditions. One of the most significant preconditions under this regulation, depending on the location and the purpose of the activities to be conducted in the forest area, is for a Company to be required to provide compensation land or be obliged to pay Non-Tax State Revenue ("PNBP").

As at 30 June 2018, the Group has implemented the requirements of this regulation and management believes that this regulation will have no significant impact to the Group's operations.

q. Coal selling price for electricity supply for public interest

On 9 March 2018, Ministry of Energy and Resources Mineral, determined coal price for national electricity through decision of MEMR No. 1395K/30/MEM/2018 as latest amended by decision of MEMR No. 1925K/30/MEM/2018 dated 7 August 2018 regarding Coal Price for Electricity Supply for Public Interest.

Government determined that coal sales price for local PLTU is US$70 per ton for calories value of 6,322 GAR or using Coal Benchmark Price ("HBA") if the HBA below US$70 per ton. For coal price with other calories, will be converted to the coal price calories of 6,322 GAR based on applicable calculation guidance.

The special price determination is effective from 12 March 2018 to 31 December 2019.

MEMR determine that maximum volume for coal purchasing for power plant companies is 100 million ton per annum or as needed. Royalty and tax calculated based on transactional prices.

The companies who meet the minimum requirement for coal domestic sales and sales price regulation above mentioned could be granted with the additional production altogether until the national production increase by 100 million MT, subject to certain terms and conditions.

Price determination is only for national electricity sales. Meanwhile, price determination for outside electricity sales will follow HBA.

As at 30 June 2018, management believed that the Group has implemented the requirements of this regulation.

42. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

r. Divestment share of PTFI

The Company was assigned to acquire PTFI's divestment shares based on a letter from Ministry of State Owned Enterprise No. S-715/MBU/12/2017 dated 18 December 2017. Pursuant with the CoW which has been converted into IUPK, Freeport McMoran ("FCX") as the majority shareholder of PTFI has the obligation to divest its shares to Indonesia parties, with priority in sequence, to Government of Republic of Indonesia, Provincial Government, BUMN, Regional-Owned Enterprise ("BUMD") and national private companies.

FCX willingness to divest its shares in PTFI represents one of the five agreements on 27 August 2017 between the Government of Republic of Indonesia in this case through MEMR, Minister of State Owned Enterprise and CEO of FCX. The agreements are as follow:

1. PTFI to convert KK into IUPK and obtain operational guarantee.
2. Government provide fiscal and regulation guarantees for PTFI operational.
3. PTFI to build smelter within five years.
4. FCX willing to reduce its ownership in PTFI so that Indonesian entities have 51% of PTFI shares.
5. After those four points above have been executed, then PTFI will obtain extension on its operation period until 2041.

Agreement between the Government of Indonesia, Provincial Government of Papua and the Regency of Mimika

On 12 January 2018, the Government of Indonesia, the Provincial Government of Papua (the "Papua Government") and the Regency of Mimika (the "Mimika Regency") entered into an agreement relating to the planned PTFI Share Acquisition and the equity interests in PTFI each entity would hold following the completion of the PTFI Acquisition (the "Goverment of Indonesia, Papua Government and Mimika Regency Agreement"). The Goverment of Indonesia, the Papua Government and the Mimika Regency are stakeholders in the Grasberg Mine, with the Goverment of Indonesia being the holder of the mining concession for the Grasberg Mine, and the Grasberg Mine being situated in the province of Papua and in the province's Mimika Regency.

Pursuant to the Goverment of Indonesia, Papua Government and Mimika Regency Agreement, the Goverment of Indonesia has agreed to procure, and the Papua Government and the Mimika Regency have agreed to subscribe for shares in an entity nominated by the Goverment of Indonesia that would result in, the Papua Government and the Mimika Regency indirectly holding 3.0% and 7.0% of the shares of PTFI, respectively, following the completion of the PTFI Share Acquisition. The subscription price for the aforementioned shares to be paid by the Papua Government and the Mimika Regency, respectively, will be equivalent to the value of their respective indirect stakes in PTFI, calculated on the same basis the Goverment of Indonesia, through the Company, would have paid for its shares in PTFI in the PTFI Share Acquisition.

42. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

r. Divestment share of PTFI (continued)

Under the Goverment of Indonesia, Papua Government and Mimika Regency Agreement, the Goverment of Indonesia, through the Company, would loan to the Papua Government and the Mimika Regency the funds required to subscribe for the shares in such nominated entity (currently contemplated to be PTII), and such loan will be secured by the same shares. The Papua Government and the Mimika Regency have also agreed (i) not to transfer or sell these shares to any party, other than the Goverment of Indonesia, (ii) to assign all voting rights relating to these shares to us and (ii) to transfer all dividends paid on such shares to us, until the loan is fully repaid.

Heads of Agreement

On 12 July 2018, the Company signed Heads of Agreement ("HoA") with FCX, PTFI, Rio Tinto Indonesia Holdings Limited, Rio Tinto Nominees Limited and PT Rio Tinto Indonesia ("PTRTI"), before PTFI Divestment Agreement is being issued. See Note 49 for details of the PTFI Divestment Agreement.

s. Production facility under development

On 14 April 2016, as amended per 28 November 2017, the Company entered into a joint venture agreement (the "Mempawah SGA Agreement") with Antam to construct a production plant to process bauxite ore into smelter grade alumina (the "Mempawah Smelter Grade Alumina Refinery Plant"), in Mempawah, West Kalimantan, Indonesia. The Company and Antam will have 60% and 40% interest, respectively, in this project.

As at the completion of these interim consolidated financial statements, the Mempawah Smelter Grade Alumina Refinery Plant is still in the process to commence their construction.

42. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

t. Calcined Petroleum Coke Plant

On 28 December 2017, the Company entered into a Heads of Agreement ("HoA") with Pertamina, to construct a calcined petroleum coke plant (the "Dumai CPC Plant") in Dumai, Riau. Pursuant to the terms of the HoA, Pertamina will own 75% of the Dumai CPC Plant and the Company will own the remaining 25%. The planned production capacity of the Dumai CPC Plant upon completion of construction is 300ktpa and the Dumai CPC Plant is expected to supply calcined petroleum coke to the Company anode plant in Kuala Tanjung as raw material in aluminum production process, thereby reducing the Company cost of raw materials and ensuring stability in supply of calcine petroleum coke to power anode plant. The Company plan to commence construction of the Dumai CPC Plant in the first quarter of 2019 and expect to complete construction of the Dumai CPC Plant by the end of 2020.

u. Legal Case with Perto

On 24 February 2017, Antam received a lawsuit with case registration number 116/Pdt.G/2017/PN JKT.SEL, with PT Perusahaan Toradja ("Perto") (formerly NV Perto) as the Plaintiff and Ministry of BUMN, Energy and Mineral Resources Ministry and Finance Ministry as Defendant II, III and IV. The essence of the lawsuit is that Perto claims that the government through PT Nikel Indonesia (now Antam) has taken over the mining business and Perto's assets in Pomalaa, Southeast Sulawesi and has not been fully compensated. The subject of the lawsuit, among others, is the following:

1. Punish Defendants to fulfill the right, to reimburse and/or pay the total of Plaintiff's material losses of Rp107,889,043;
2. Pay the loss amount equivalent to Rp12,000;
3. Declare the security seizures set upon the assets of the First Defendant as legitimate;
4. Punish Defendant I to pay Rp100,000 for the costs incurred in the Case.

Management believes that this case will be won by Antam because the Plaintiff's lawsuit should not be granted due to the following reasons:

1. The case concerning the indemnification request related to the business takeover has been tried before in court proceedings and it has even been executed because the Plantiff's lawsuit cannot be granted (Ne Bis in Indem);
2. Antam's four-decade book which serves as the basis of the Plaintiff's claims states that Antam is defamatory, but it is premature and unfounded.

43. FINANCIAL ASSETS AND FINANCIAL LIABILITIES

As at 30 June 2018, Group has financial assets which are categorised as loans and receivables consist of cash and cash equivalents, time deposits, trade receivables, other receivables and part of other current assets and other non-current assets totaling to Rp33,443,031 (31 December 2017:Rp29,869,439) and financial asset categorised as available-for-sale financial assets amounting to Rp7,639,332 (31 December 2017:Rp7,685,642).

As at 30 June 2018, Group has financial liabilities which are categorised as other financial liabilities at amortised cost consist of trade payables, accruals, short-term bank borrowings, bond payables, long-term bank borrowings, finance lease liabilities, dividend payable and part of other liabilities totaling to Rp22,223,728 (31 December 2017:Rp19,522,213).

44. MONETARY ASSETS AND LIABILITIES DENOMINATED IN FOREIGN CURRENCIES

	30 June 2018		31 December 2017	
	Foreign currency in US$	Rupiah	Foreign currency in US$	Rupiah
Assets				
Cash and cash equivalent and time deposits	651,081,575	9,378,179	566,926,779	7,680,724
Trade receivables, net	297,854,207	4,290,292	295,969,737	4,009,798
Other receivables	184,875,937	2,662,953	166,033,732	2,249,425
Available-for-sale financial assets	11,922,105	171,726	12,043,549	163,166
	1,145,733,824	16,503,150	1,040,973,797	14,103,113
Liabilities				
Trade payables	14,124,965	203,456	17,929,584	242,910
Bank borrowings	545,307,276	7,854,606	633,234,204	8,579,057
Accruals	26,677,798	384,267	71,550,044	969,360
	586,110,039	8,442,329	722,713,832	9,791,327
Net monetary foreign currency assets	**559,623,785**	**8,060,821**	**318,259,965**	**4,311,786**

45. FINANCIAL RISK MANAGEMENT

The Group's activities expose it to a variety of financial risks, including the effects of foreign currency exchange rates, commodity prices and interest rates. The Group's overall risk management system focuses on the unpredictability of commodity prices financial markets and seeks to minimise potential adverse effects on the financial performance of the Group.

Risk management is carried out by the task force risk management that is directly responsible to Board of Directors. The Board ensures the sufficiency of all procedures and methodology of financial risk management, which consists of accuracy of risk identification, measurement, monitoring, and financial risks control.

a. Commodity price risks

Commodity prices are very unstable due to changes in supply and demand from customers. Currently, there is a high risk that prices of the Group products (i.e. coal, gold, tin, aluminium ingot, nickel) will significantly fluctuate. Although the Group has diversified customers and does not depend on a specific market or country, the Group's revenue could be negatively impacted by the decrease in commodity prices.

The Group believes that the fast way to manage commodity price risk is by decreasing the production cost. The Group has plans to continuously reduce their cost by, among others, revitalising its production facilities, commitment to convert their main fuel sources from Industrial Diesel Oil and Marine Fuel Oil to a cheaper fuel sources, such as natural gas, coal, or hydro power. In addition, the Group also uses average prices for certain period for selling some of its products.

45. FINANCIAL RISK MANAGEMENT (continued)

b. Foreign currency risk

Foreign currency risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates. The Group's exposures to exchange rate fluctuations results primarily from cash and cash equivalents, time deposits, trade receivables, other receivables, other tax receivables, trade payables, other payables, accruals, other payables and bank borrowings.

The linkage of the price fluctuations of the Group's products following the price traded on international markets with the fluctuations in currency exchange rates is considered a natural hedge to reduce the foreign currency risk of Group.

If the Rupiah weakens or strengthens by 5% compared to US Dollar or vice versa, on 30 June 2018 (assuming all other variables remain unchanged), the interim consolidated profit before tax of the Group for the six-month period ended 30 June 2018 will increase or decrease approximately by Rp405,952 (31 December 2017:Rp318,773), mainly as a result of foreign exchange gains or losses on translation of the net assets denominated in foreign currency as at the reporting date.

c. Interest rate risk

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest rates. The Group is exposed to the risk of changes in market interest rates that relates primarily to its cash and cash equivalents and time deposits, bank borrowings, and finance lease liabilities.

Various scenarios are simulated taking into consideration refinancing, renewal of existing positions, alternative financing and hedging if necessary. Based on these scenarios, the Group calculates the impact on profit or loss at a defined interest rate shift.

Sensitivity analysis for interest rate risk

As at 30 June 2018 and 2017, there is no significant interest rate risk due to most of the interest rate from the borrowings are fix. In addition, the interest rate risk from time deposit is low. This was reflected by return on time deposit during the six-month periods ended 30 June 2018 and 2017 which were relatively stable.

45. FINANCIAL RISK MANAGEMENT (continued)

d. Credit risk

Credit risk is the risk that counterparty will fail to discharge its contractual obligation.

Group has in place credit policies and procedures to ensure the ongoing credit evaluation and active account monitoring. The Group manages credit risk exposure from its deposits with banks by monitoring reputation, credit ratings and limiting the aggregate risk to any individual counterparty. To manage credit risk related to trade receivables, Group trades only with recognised and creditworthy third parties. It is Group's policy that all customers who wish to trade on credit terms are subject to credit verification procedures and terms of payment either through Surat Kredit Berdokumen Dalam Negeri ("SKBDN") or letter of credit and has clear policies on the selection of customers, legaly binding agreements in place for mineral commodity sales transactional. In addition, receivable balances are monitored on an ongoing basis to reduce the exposure to bad debts.

The balances of trade receivables and other receivables are as follows:

	Neither past due nor impaired	Past due but not impaired	Impaired	Total
30 June 2018				
Trade receivables	5,494,982	1,312,150	372,567	7,179,699
Other receivables				
- Related parties	194,415	1,697,363	124,326	2,016,104
- Third parties	152,104	957,838	-	1,109,942
Total	**5,841,501**	**3,967,351**	**496,893**	**10,305,745**
31 December 2017				
Trade receivables	7,092,685	1,198,205	371,267	8,662,157
Other receivables				
- Related parties	162,985	1,410,600	41,704	1,615,289
- Third parties	476,471	578,856	-	1,055,327
Total	**7,732,141**	**3,187,661**	**412,971**	**11,332,773**

e. Liquidity risk

Liquidity risk is the risk that the Group is unable to meet its obligations when they are due. The Group has reviewed, monitored and set the policy of terms of payments in accordance with the proceeds from sales of the Group. In general, funding to pay due obligations comes from the settlements of trade receivable from customers, cash and cash equivalents as well as time deposits of the Group and flexibility through bank loans and other borrowings.

45. FINANCIAL RISK MANAGEMENT (continued)

e. Liquidity risk (continued)

The table below summarises the maturity profile of the Group financial liabilities based on contractual payment maturities.

	Less than 3 months	3 months - 1 year	1 - 5 years	More than 5 years	Total
30 June 2018					
Trade payables	2,745,498	-	-	-	2,745,498
Accruals	3,185,841	-	-	-	3,185,841
Short-term employee benefit liabilities	433,679	-	-	-	433,679
Financial lease liabilities	-	133,054	504,976	-	638,030
Bank borrowings	3,065,134	3,281,184	3,304,009	1,439,824	11,090,151
Bonds payable	66,356	1,058,241	4,067,206	-	5,191,803
Dividend payable	1,919,750	-	-	-	1,919,750
Other current liabilities	635,610	643	-	-	636,253
Other non-current liabilities	-	-	3,988	-	3,988
Total	**12,051,868**	**4,473,122**	**7,880,179**	**1,439,824**	**25,844,993**
31 December 2017					
Trade payables	2,525,160	-	-	-	2,525,160
Accruals	2,715,055	-	-	-	2,715,055
Short-term employee benefit liabilities	921,738	-	-	-	921,738
Financial lease liabilities	-	148,968	546,982	-	695,950
Bank borrowings	2,908,155	2,883,513	2,252,424	1,658,527	9,702,619
Bonds payable	99,043	1,194,004	6,183,378	-	7,476,425
Other current liabilities	287,679	643	-	-	288,322
Other non-current liabilities	-	-	3,762	-	3,762
Total	**9,456,830**	**4,227,128**	**8,986,546**	**1,658,527**	**24,329,031**

f. Capital management

The Group aims to achieve an optimal capital structure in pursuit of its business objectives, which include maintaining healthy capital ratios and maximising shareholder value.

The directors of the Group periodically reviews the Group's capital structure. As part of this review, the Directors consider the cost of capital and related risks and direction from shareholders.

Consistent with other entities in the industry, the Group monitors capital on the basis of the debt-to-equity ratio. This ratio is calculated as debt divided by total capital. Debt is calculated as total liabilities as shown in the interim consolidated statements of financial position. Total capital is equity as shown in the interim consolidated statements of financial position.

The debt-to-equity ratio at the Group are as follows:

	30 June 2018	31 December 2017
Total liabilities	29,593,791	27,237,455
Total equity	70,376,252	66,007,274
Debt-to-equity ratio	**0.42:1**	**0.41:1**

45. FINANCIAL RISK MANAGEMENT (continued)

g. Fair value estimation

Fair value is the amount for which an asset could be exchanged or liability settled between knowledgeable and willing parties in an arm's length transaction.

The disclosure of fair value measurements by level of fair value measurement hierarchy are as follows:

- Level 1: quoted prices (unadjusted) in active markets for identical liabilities.
- Level 2: inputs other than quoted prices included within level 1 that are observable for the liability, either directly (as prices) or indirectly (derived from prices).
- Level 3: inputs for liabilities that are not based on observable market data (unobservable inputs).

Management considers that the carrying amounts of current financial asset and financial liabilities recorded at amortised cost in the interim consolidated financial statements approximate their fair values because of their short-term maturities. The information related to fair value of non-current assets and liabilities has been explained in the respective notes to the interim consolidated financial statements.

46. CASH FLOW INFORMATION

a. Non-cash transactions

The Group's non-cash transaction during the periods is as follows:

	30 June 2018	30 June 2017*)
Acquisition of fixed assets through increase of trade payables, accruals and capital lease	118,105	184,379
Capitalisation of borrowing cost to fixed assets, mining properties and exploration and evaluation assets	8,359	16,196
Decrease in long-term contingent liabilities through decrease in dividend receivables	5,643	13,319
	132,107	**213,894**

b. Reconciliation of liabilities arising from financing activities

The below table sets out a reconciliation of liabilities arising from financing activities for the six-month periods ended 30 June 2018 and 2017 as follows:

	Beginning balance 1 January 2018	Proceeds from bank borrowings	Repayment of bank borrowings	Repayment of finance lease	Foreign exchange loss	Ending balance as at 30 June 2018
Movement per 30 June 2018						
Bank borrowings	8,928,940	5,197,899	(4,415,542)	-	468,789	10,180,086
Finance lease	638,486	-	-	(49,119)	-	589,367
Total	**9,567,426**	**5,197,899**	**(4,415,542)**	**(49,119)**	**468,789**	**10,769,453**

	Beginning balance 1 January 2017	Proceeds from bank borrowings	Repayment of bank borrowings	Repayment of finance lease	Foreign exchange gain	Ending balance as at 30 June 2017
Movement per 30 June 2017						
Bank borrowings	10,247,965	5,068,111	(5,866,133)	-	(88,886)	9,361,057
Finance lease	762,597	-	-	(68,489)	-	694,108
Total	**11,010,562**	**5,068,111**	**(5,866,133)**	**(68,489)**	**(88,886)**	**10,055,165**

*) As restated, (refer to Note 4)

47. NON-CONTROLLING INTERESTS

As at 30 June 2018 and 31 December 2017, non-controlling interests of Bukit Asam, Timah and Antam are as follows:

	30 June 2018	31 December 2017
Antam	5,781,940	5,655,924
Bukit Asam	4,879,813	4,952,002
Timah	2,143,988	2,121,651
Total	**12,805,741**	**12,729,577**

Summarised statements of financial position as at 30 June 2018 and 31 December 2017 is as follows:

	30 June 2018				
	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets
Bukit Asam	9,819,773	10,947,986	(3,855,337)	(4,358,313)	12,554,109
Timah	7,227,991	5,232,143	(3,970,647)	(2,364,179)	6,125,308
Antam	9,735,084	21,602,149	(5,699,664)	(6,787,121)	18,850,448
Total	**26,782,848**	**37,782,278**	**(13,525,648)**	**(13,509,613)**	**37,529,865**

	31 December 2017				
	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets
Bukit Asam	11,117,745	10,869,737	(4,513,226)	(3,674,261)	13,799,995
Timah	6,996,966	4,879,343	(3,402,526)	(2,412,290)	6,061,493
Antam	9,001,939	21,012,335	(5,552,462)	(5,971,408)	18,490,404
Total	**27,116,650**	**36,761,415**	**(13,468,214)**	**(12,057,959)**	**38,351,892**

Summarised statements of profit or loss and other comprehensive income for the six-month periods ended at 30 June 2018 and 2017 is as follows:

	30 June 2018					
	Net revenue	Profit for the period	Other comprehensive income for the period	Total comprehensive income for the period	Comprehensive income allocated to non-controlling interests	Dividends paid to non-controlling interests[a]
Bukit Asam	10,525,078	2,709,923	363,623	3,073,546	1,102,205	1,174,394
Timah	4,377,200	170,143	69,518	239,661	83,883	61,546
Antam	11,815,848	344,454	63,385	407,839	142,744	16,728
Total	**26,718,126**	**3,224,520**	**496,526**	**3,721,046**	**1,328,832**	**1,252,668**

	30 June 2017*)					
	Net revenue	Profit/ (loss) for the period	Other comprehensive loss for the period	Total comprehensive income/(loss) for the period	Comprehensive income/(loss) allocated to non-controlling interests	Dividends paid to non-controlling interests[a]
Bukit Asam	9,016,208	1,759,415	(562,328)	1,197,087	433,567	220,495[a]
Timah	4,301,414	150,645	(44,743)	105,902	(187,017)	-[a]
Antam	3,011,087	(496,121)	(38,208)	(534,329)	37,061	26,443[a]
Total	**16,279,530**	**1,374,549**	**(645,279)**	**729,270**	**283,611**	**246,938[a]**

a) The Group applied SFAS 38, "Business Combination of Entities under Common Control" and restated the consolidated financial statements as if Antam, Timah and Bukit Asam had been combined since 1 January 2015. Refer to Note 4.

*) As restated, (refer to Note 4)

47. NON-CONTROLLING INTERESTS (continued)

Summarised statements of cash flows of Bukit Asam for the six-month periods ended 30 June 2018 and 2017 is as follows:

	30 June 2018	30 June 2017*)
Net cash received from operating activities	4,447,349	1,507,915
Net cash used in investing activities	(154,851)	(527,590)
Net cash used in financing activities	(3,321,774)	(1,830,972)
Net increase/(decrease) in cash and cash equivalents	970,724	(850,647)
Cash and cash equivalents at the beginning of the period	3,555,406	3,674,687
Effects of exchange rate changes on cash and cash equivalents	32,253	(4,501)
Cash and cash equivalents at the end of the period	**4,558,383**	**2,819,539**

Summarised statements of cash flows of Timah for the six-month periods ended 30 June 2018 and 2017 is as follows:

	30 June 2018	30 June 2017*)
Net cash used in operating activities	(232,235)	(351,213)
Net cash used in investing activities	(501,491)	(305,142)
Net cash received from financing activities	379,672	553,951
Net decrease in cash and cash equivalents	(354,054)	(102,404)
Cash and cash equivalents at the beginning of the period	1,357,490	563,804
Reclassified from/(to) held for sale	4,108	(5,064)
Effects of exchange rate changes on cash and cash equivalents	12,346	(1,689)
Cash and cash equivalents at the end of the period	**1,019,890**	**454,647**

Summarised statements of cash flows of Antam for the six-month periods ended 30 June 2018 and 2017 is as follows:

	30 June 2018	30 June 2017*)
Net cash used in operating activities	(44,937)	(485,261)
Net cash used in investing activities	(926,549)	(506,511)
Net cash received from/(used in) financing activities	433,916	(238,395)
Net decrease in cash and cash equivalents	(537,570)	(1,230,167)
Cash and cash equivalents at the beginning of the period	5,550,677	7,623,385
Effects of exchange rate changes on cash and cash equivalents	66,934	(11,477)
Cash and cash equivalents at the end of the period	**5,080,041**	**6,381,741**

*) As restated, (refer to Note 4)

48. OPERATING SEGMENT INFORMATION

Management has determined the operating segments based on reports reviewed by the Board of Directors that are used to make strategic decisions. The Board of Directors considers the business operations from both the business type and geographical perspective. The Group's business segments can be identified as six major business operations, consisting of (a) Coal; (b) Gold and other precious metals; (c) Aluminium; (d) Tin metal and solder; (e) Nickel and ferronickel and (f) purification of precious metals and other service segments. The other segments is primarily consist of trading, purification of metals, contruction, mining services and plantation business services. All transactions between segments have been eliminated.

The Board of Directors uses a measure of net sales to assess the performance of the operating segments.

Information concerning the segments for the six-month periods ended 30 June 2018 and 2017, is as follows:

	30 June 2018								
Segment	Coal	Gold and other precious metals	Aluminium	Tin metal and solder	Nickel and ferronickel	Purification of precious metals and other services	Home office	Elimination	Total
Net sales	10,293,122	8,984,049	3,137,444	7,150,946	3,497,079	3,473,472	-	(6,680,542)	29,855,570
Operating profit/(loss)	3,323,143	187,521	931,787	367,386	1,137,515	83,430	(265,351)	(129,861)	5,635,570
Finance income	109,336	3,562	119,867	22,286	701	5,674	81,923	-	343,349
Finance cost	-	16,804	-	(124,051)	332	(73,296)	(768,529)	(17,137)	(965,877)
Other income/ (expenses), net	166,456	2,336	(260,062)	73,753	15,869	124,492	2,232,969	(125,616)	2,230,197
Income tax expense	(912,179)	-	(669,802)	(66,038)	-	(25,281)	(168,099)	21,027	(1,820,372)
Profit for the period	2,686,756	210,223	121,790	273,336	1,154,417	115,019	1,112,913	(251,587)	5,422,867
Segment assets	21,449,326	4,333,351	31,045,542	14,615,231	11,500,972	8,658,048	22,756,140	(14,388,567)	99,970,043
Segment liabilities	6,620,312	746,819	3,963,945	7,913,616	1,017,876	4,586,136	11,255,492	(6,510,405)	29,593,791
Capital expenditures	199,774	93,642	335,438	452,126	83,175	100,845	896,993	-	2,161,993
Depreciation and amortisation	278,591	187,869	162,889	246,326	245,218	120,203	2,307	7,732	1,251,135

	30 June 2017								
Segment	Coal	Gold and other precious metals	Aluminium	Tin metal and solder	Nickel and ferronickel	Purification of precious metals and other services	Home office	Elimination	Total
Net sales	9,206,146	2,453,977	2,504,104	4,231,266	1,159,801	1,248,674	-	(1,971,155)	18,832,813
Operating profit/(loss)	2,906,513	55,833	726,140	387,824	(14,069)	(543,667)	(213,425)	(19,042)	3,286,107
Finance income	65,181	2,106	76,668	4,493	499	3,927	132,682	-	285,556
Finance cost	(36,987)	-	-	(77,086)	-	(141,340)	(235,095)	68,925	(421,583)
Other income/ (expenses), net	(175,931)	5,852	(23,926)	(21,506)	(36,416)	70,801	(198,069)	78,017	(301,178)
Income tax (expense)/ benefit	(844,820)	-	(196,291)	(84,428)	-	297,143	(17,187)	4,939	(840,644)
Profit/(loss) for the period	1,913,956	63,791	582,591	209,297	(49,986)	(313,136)	(531,094)	132,839	2,008,258
Segment assets	13,874,645	4,468,433	21,922,896	11,740,294	10,829,520	7,972,033	15,495,753	(12,602,229)	73,701,345
Segment liabilities	6,441,961	954,354	1,247,081	5,378,390	587,288	4,579,685	11,290,847	(5,362,567)	25,117,039
Capital expenditures	270,698	133,081	524,093	268,622	219,573	441,738	380,319	-	2,238,124
Depreciation and amortisation	187,465	176,604	218,441	234,337	176,585	115,649	2,630	7,879	1,119,590

49. EVENT AFTER THE REPORTING DATE

a. Street Lighting Tax ("PPJ")

On 31 July 2018, DISPENDA issued underpayment of SKPD No. 973/5107 regarding PPJ as amended by SKPD No. 973/6180/2018 on 17 September 2018 for the period November 2013 to December 2017 amounting to Rp209.7 billion (including penalty). Management believed that the SKPD was issued without merit as the Company has paid the PPJ using agreed rate with the DISPENDA. Management is in the process to discuss the SKPD with DISPENDA and believe that provision is not necessary to be provided at this point.

b. Additional investment in HBAP

On 21 September 2018, Bukit Asam subscribed for additional share capital to HBAP, a joint venture entity amounting to USD38,250,000 or equivalent to Rp349,796,250,000 (full amount) from the total share capital to be issued amounting to USD189,112,500 until 2022. This additional share capital is used to build extension of transmission lines from 2.5 km to 45 km for Mine Mouth Power Plant South Sumatera 8 owned by HBAP.

c. PTFI Divestment Agreement

On 27 September 2018, the Company entered into an agreement relating to the Company's acquisition of an increased equity stake in PTFI (the "PTFI Divestment Agreement") with PTFI, Freeport-McMoran Inc. ("FCX"), International Support LLC ("International Support"), PT Indocopper Investama ("PTII"), pursuant to which, and subject to the provisions and conditions precedent stipulated in the PTFI Divestment Agreement:

(i) the Company, PTFI and PTII will enter into an agreement (the "PTFI Share Subscription Agreement", refer to below description), through which the Company and PTII will subscribe for, and PTFI will issue to the Company and PTII, shares in PTFI, representing 20.6% and 19.4% of the outstanding ordinary shares of PTFI immediately following the completion of the PTFI Share Acquisition;

(ii) the Company, Rio Tinto International Holdings Limited ("Rio Tinto International"), Rio Tinto Nominees Limited ("Rio Tinto Nominees") and Rio Tinto Indonesian Holdings Limited ("Rio Tinto Indonesian Holding", together with Rio Tinto Nominees, the "PTRTI sellers") will enter into an agreement (the "PTRTI Buyout Agreement", refer to below description), relating to the Company or PTFI acquiring all of the outstanding shares of PTRTI;

(iii) PTFI and PTRTI will enter into a merger deed, which will effect the merger of PTRTI into PTFI (the "PTFI and PTRTI Merger"); and

(iv) the Company will purchase, and FCX and International Support will sell to the Company, all of their shares in PTII for a consideration of US$350.0 million, which is required to be paid in cash at the completion of the PTFI Share Acquisition (the "PTII Share Acquisition").

49. EVENT AFTER THE REPORTING DATE (continued)

c. PTFI Divestment Agreement (continued)

The PTFI Divestment Agreement contains representations, warranties, covenants and indemnifications of the parties to the agreement that are customary for transactions of this nature. The conditions precedent contained in the PTFI Divestment Agreement include, among others, the following: (i) the extension and stability of PTFI's long-term mining rights (in the form of a new IUPK or otherwise) through 2041 in a form acceptable to us and FCX, (ii) the resolution of environmental regulatory matters satisfactory to the Indonesian government, including the Ministry of Environment and Forestry issuing a decree approving the environmental compliance road map proposed by PTFI in relation to prospective mining operations at the Grasberg Mine, (iii) the completion of various other Indonesian regulatory actions and receipt of various other Indonesian regulatory approvals, including the Indonesian Tax Office approving the merger of PTFI and PTRTI, and determining the transfer of relevant assets relating to the same to be, on a tax-neutral basis, and the Indonesian State Auditor and the Indonesian Attorney General, respectively, issuing its review report and legal opinion, in respect of the transactions contemplated under the PTFI Divestment Agreement; (iv) receipt of customary approvals from international competition authorities; and (v) we and FCX having agreed on the six members of the board of commissioners and directors of PTFI, each of which will take office from the closing of the transactions under the PTFI Divestment Agreement.

The Divestment Agreement also provides the Company and FCX with the right to terminate, in certain circumstances, including if the transaction is not consummated on or before 31 December 2018, subject to a six month extension if needed to obtain approvals from Indonesian regulatory authorities and/or international competition authorities; or if the consummation of the divestment transaction would violate any non-appealable final order, decree or judgment of any governmental authority having competent jurisdiction.

PTFI Share Subscription Agreement

On 27 September 2018, the Company entered into the PTFI Share Subscription Agreement with PTFI and PTII, pursuant to which, the Company and PTII will subscribe for, and PTFI will issue to the Company and PTII, shares in PTFI, representing 20.6% and 19.4% of the outstanding ordinary shares of PTFI immediately following the completion of the PTFI Share Acquisition. Under the agreement, the Company and PTII are each required to pay US$1,802.5 million and US$1,697.5 million, respectively, for such shares in PTFI.

Closing of the transactions contemplated under the PTFI Share Subscription Agreement are subject to the satisfaction or waiver of the conditions precedent under the PTFI Divestment Agreement. The PTFI Share Subscription Agreement will automatically terminate upon the termination of the PTFI Divestment Agreement.

49. EVENT AFTER THE REPORTING DATE (continued)

c. PTFI Divestment Agreement (continued)

PTRTI Buyout Agreement

On 28 September 2018, the Company entered into the PTRTI Buyout Agreement with Rio Tinto PTRTI sellers, pursuant to which the Company has agreed to purchase and the PTRTI sellers have agreed to sell to the Company all the outstanding shares of PTRTI (the "PTRTI Shares") for a consideration of US$3.5 billion, required to be paid in cash at the completion of such sale and purchase of shares. Under this agreement, the Company is permitted to, and the Company intend to, nominate PTFI as the purchaser of the PTRTI Shares, in which case, the Company will procure PTFI to pay the aforementioned cash consideration.

The obligations of the parties with respect to closing under the PTRTI Buyout Agreement is subject to the satisfaction or waiver of the following conditions precedent: (i) receipt by PTRTI of written approval from the MEMR for the transfer of the PTRTI Shares from the PTRTI sellers to the Company or, if the Company nominate PTFI as purchaser, to PTFI; (ii) receipt by the PTRTI sellers of a valid tax ruling or clearance issued by the Indonesian Tax Authority in a form and substance satisfactory to the PTRTI sellers; (iii)) termination of intercompany agreements between PTRTI and other members of the Rio Tinto Group; (vi) satisfaction or waiver of the conditions precedent under the PTFI Divestment Agreement and PTFI Share Subscription Agreement, see "— PTFI Divestment Agreement" and "— PTFI Share Subscription Agreement"; and (vii) issuance of a document which sets out the environmental management and monitoring procedure as part of the environmental audit process imposed on licensed businesses and/or activities and resolution of environmental matters which could result in environmental liabilities to the Company or, if nominated by the Company as purchaser of the PTRTI Shares, PTFI's satisfaction.

Under the terms of the PTRTI Buyout Agreement, no party is entitled to rescind or terminate the PTRTI Buyout Agreement, except in the event that the conditions precedent are not satisfied or waived on or before 31 December 2018, or within six months from 31 December 2018, if such period for the fulfilment of the conditions precedent has been extended by any party to the agreement by way of notice. In addition, following the closing of the transactions under the PTRTI Buyout Agreement, the PTRTI sellers have agreed to indemnify the Company with respect to any amount of tax payable by PTRTI, to the extent that such tax arises from or relates to an event or omission at or before completion of the sale and purchase of the PTRTI Shares, or any income, profit or gain earned before the closing of the transactions contemplated under the PTRTI Buyout Agreement.

Economic interests in the Grasberg Mine

Pursuant to a shareholders agreement to be entered into between the Company, PTII, PTFI and FCX (or a subsidiary of FCX), upon completion of the PTFI Share Acquisition, it is contemplated that, between the completion of the PTFI Share Acquisition and the earlier of (i) 31 December 2022 or (ii) PTFI's cumulative production and sales of gold and copper exceeding predetermined amounts (the "Initial Period"), the Company and FCX will retain the economics of revenue and cost sharing arrangements in relation to PTFI in the same manner as though PTFI's joint venture with PTRTI was still in place. Following the Initial Period, it is intended that the economics of revenue and cost sharing arrangements in relation to PTFI will reflect the Company and FCX's respective equity interest in PTFI.

As at the date of these interim consolidated financial statements, management is still working to complete the conditions precedent.

49. EVENT AFTER THE REPORTING DATE (continued)

d. Changes in Board of Commissioners

As stipulated in the Ministry of BUMN Decision Letter No. SK-225/MBU/08/2018 dated 6 August 2018, Bambang Gatot Ariyono has been appointed as Commissioner. As at the date of these interim consolidated financial statements, the composition of the Company's Board of Commissioners is as follows:

Board of Commissioners

President Commissioner	:	Fajar Harry Sampurno
Commissioner	:	Agus Tjahajana Wirakusumah
Commissioner	:	Purbaya Yudhi Sadewa
Commissioner	:	Muhammad Munir
Commissioner	:	Bambang Gatot Ariyono

PT INDONESIA ASAHAN ALUMINIUM (PERSERO) AND SUBSIDIARIES

CONSOLIDATED FINANCIAL STATEMENTS

31 DECEMBER 2017, 2016 AND 2015

PT INDONESIA ASAHAN ALUMINIUM (Persero)

DIRECTORS' STATEMENT REGARDING

THE RESPONSIBILITY FOR THE CONSOLIDATED FINANCIAL STATEMENTS
AS AT 31 DECEMBER 2017, 2016 AND 2015
AND FOR THE YEARS ENDED 31 DECEMBER 2017, 2016 AND 2015

PT INDONESIA ASAHAN ALUMINIUM (PERSERO) AND SUBSIDIARIES

On behalf of the Board of Directors, we, the undersigned:

1. Name : Budi Gunadi Sadikin
   Office address : Kuala Tanjung, Kecamatan Sei Suka, 21257
   Kabupatan Batu Bara, Sumatara Utara
   Position : President Director

2. Name : Orias Petrus Moedak
   Office address : Kuala Tanjung, Kecamatan Sei Suka, 21257
   Position : Finance Director

declare that:

1. We are responsible for the preparation and presentation of the consolidated financial statements of PT Indonesia Asahan Aluminium (Persero) and subsidiaries (the "Group")

2. The Group's consolidated financial statements have been prepared and presented in accordance with Indonesian Financial Accounting Standards;

3. a. All information has been fully and correctly disclosed in the Group's consolidated financial statements;
   b. The Group's consolidated financial statements do not contain false material information or facts, nor do they omit material information or facts; and

4. We are responsible for the Group's internal control systems.

This statement is confirmed to the best of our knowledge and belief.

Kuala Tanjung
22 October 2018

For and on behalf of the Board of Director

Budi Gunadi Sadikin
President Director

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ENAM RIBU RUPIAH

Orias Petrus Moedak
Finance Director

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INDEPENDENT AUDITORS' REPORT
TO THE SHAREHOLDER OF

PT INDONESIA ASAHAN ALUMINIUM (PERSERO)

We have audited the accompanying consolidated financial statements of PT Indonesia Asahan Aluminium (Persero) and its subsidiaries, which comprise the consolidated statements of financial position as at 31 December 2017, 2016 and 2015 and the consolidated statements of profit or loss and other comprehensive income, changes in equity and cash flows for the years then ended, and a summary of significant accounting policies and other explanatory information.

Management's responsibility for the consolidated financial statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with Indonesian Financial Accounting Standards, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audit. We conducted our audit in accordance with Standards on Auditing established by the Indonesian Institute of Certified Public Accountants. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, the auditors consider internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

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Nomor Izin Usaha: KEP-241/KM.1/2015.

A181022004/DC2/YSR/2018

Opinion

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial positions of PT Indonesia Asahan Aluminium (Persero) and its subsidiaries as at 31 December 2017, 2016 and 2015, and their consolidated financial performances and cash flows for the years then ended, in accordance with Indonesian Financial Accounting Standards.

Other matter

Prior to issuance of this report, we have issued independent auditors' report dated 26 March 2018 on the consolidated financial statements of PT Indonesia Asahan Aluminium (Persero) and its subsidiaries as at 31 December 2017 and for the year then ended, which expressed unqualified opinion. This report has been prepared solely for inclusion in the offering document in connection with the purpose disclosed in Note 2 to the consolidated financial statements. Therefore it is not intended to be, and should not be, used for any other purpose.

JAKARTA
22 October 2018

Yusron, S.E., Ak., CPA
License of Public Accountant No. AP.0243

A181022004/DC2/YSR/2018

CONSOLIDATED STATEMENTS OF FINANCIAL POSITION
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah)

	Notes	31 December 2017	31 December 2016	31 December 2015*)
ASSETS				
CURRENT ASSETS				
Cash and cash equivalents	6	16,143,068	15,966,783	16,928,081
Time deposits	7	2,207,042	2,112,118	1,751,965
Trade receivables	8	8,290,890	4,739,116	3,320,830
Other receivables				
- Third parties	46d	654,944	354,754	218,603
- Related parties	42a	15,674	44,408	17,848
Inventories	9	6,724,621	6,844,222	8,046,058
Prepaid taxes	20a	1,698,548	1,585,375	2,384,157
Available-for-sale financial assets	10	430,192	725,046	625,534
Other current assets	11	946,339	682,069	924,995
Assets of disposal group classified as held for sale	12a	351,764	361,381	-
Total current assets		37,463,082	33,415,272	34,218,071
NON-CURRENT ASSETS				
Time deposits	7	200,000	200,000	-
Other receivables				
- Third parties	46d	400,383	6,445	1,887
- Related parties	42a	1,557,911	626,731	606,929
Inventories	9	479,439	554,245	-
Available-for-sale financial assets	10	7,255,450	-	-
Investment in associates	13	1,998,986	2,375,687	2,282,730
Investment in joint ventures	14	2,160,516	2,362,496	2,551,950
Exploration and evaluation assets	15	665,322	799,357	743,551
Fixed assets	16	32,115,515	24,355,345	22,385,549
Investment properties	17	912,679	882,707	821,951
Mining properties	18	2,366,199	2,444,148	2,708,167
Goodwill	19	203,836	203,836	203,836
Prepaid taxes	20a	882,406	916,222	666,248
Deferred tax assets	20d	2,714,415	2,791,100	1,661,524
Other tax receivables	21	536,058	516,831	334,353
Other non-current assets	11	1,332,532	651,280	655,585
Total non-current assets		55,781,647	39,686,430	35,624,260
TOTAL ASSETS		**93,244,729**	**73,101,702**	**69,842,331**

*) As restated, (refer to Note 4)

The accompanying notes form an integral part of these consolidated financial statements

CONSOLIDATED STATEMENTS OF FINANCIAL POSITION
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah)

	Notes	31 December 2017	31 December 2016	31 December 2015*)
LIABILITIES				
CURRENT LIABILITIES				
Trade payables	22	2,525,160	2,177,183	2,677,491
Accruals	23	2,715,055	2,605,771	2,367,066
Short-term employee benefit liabilities	24	1,263,880	585,783	510,660
Short-term bank borrowings	25	5,115,674	5,377,995	5,661,639
Taxes payable	20b	1,049,363	433,063	340,259
Current maturities of long-term bank borrowings	26	576,984	1,049,088	976,741
Current maturities of finance lease liabilities	27	141,874	178,964	15,851
Current maturities of bonds payable	28	899,594	-	-
Current maturities of provision for environmental reclamation and remediation and mine closure	29	313,299	367,975	161,430
Other current liabilities	31	429,561	725,143	329,953
Liabilities of disposal group directly associated with assets classified as held for sale	12b	95,348	99,805	-
Total current liabilities		15,125,792	13,600,770	13,041,090
NON-CURRENT LIABILITIES				
Long-term bank borrowings, net of current maturities	26	3,236,282	3,820,882	4,550,661
Finance lease liabilities, net of current maturities	27	496,612	583,633	46,980
Bonds payable, net of current maturities	28	3,597,247	2,995,896	2,995,031
Provision for environmental reclamation and remediation and mine closure, net of current maturities	29	576,079	574,136	865,705
Post-employment benefits obligation	30	4,154,350	3,131,574	2,847,411
Deferred tax liabilities	20d	47,331	-	42,929
Other non-current liabilities	31	3,762	3,699	198,361
Total non-current liabilities		12,111,663	11,109,820	11,547,078
TOTAL LIABILITIES		**27,237,455**	**24,710,590**	**24,588,168**

*) As restated, (refer to Note 4)

The accompanying notes form an integral part of these consolidated financial statements

CONSOLIDATED STATEMENTS OF FINANCIAL POSITION
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah)

	Notes	31 December 2017	31 December 2016	31 December 2015*)
EQUITY ATTRIBUTABLE TO OWNER OF THE PARENT				
Share capital	32	54,177,941	381,998	381,998
Equity of merging entities		-	20,901,486	19,847,457
Additional paid-in capital	4	(18,199,606)	-	-
Retained earnings				
- Appropriated		601,440	467,605	334,534
- Unappropriated		3,930,851	2,718,978	1,084,696
Currency differences from translation of the Group's entity financial statements		12,767,071	12,538,301	12,808,257
Total equity attributable to owner of the parent		**53,277,697**	**37,008,368**	**34,456,942**
Non-controlling interests	48	12,729,577	11,382,744	10,797,221
TOTAL EQUITY		**66,007,274**	**48,391,112**	**45,254,163**
TOTAL LIABILITIES AND EQUITY		**93,244,729**	**73,101,702**	**69,842,331**

*) As restated, (refer to Note 4)

The accompanying notes form an integral part of these consolidated financial statements

CONSOLIDATED STATEMENTS OF PROFIT OR LOSS AND OTHER COMPREHENSIVE INCOME
FOR THE YEARS ENDED 31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah)

	Notes	31 December 2017	31 December 2016	31 December 2015*)
Revenue	33	47,184,283	35,904,458	37,821,358
Cost of revenue	34	(33,276,439)	(27,693,307)	(30,895,908)
Gross profit		**13,907,844**	**8,211,151**	**6,925,450**
General and administrative expenses	35	(3,338,998)	(2,820,925)	(2,739,260)
Selling and marketing expenses	36	(1,322,579)	(1,007,978)	(1,003,441)
Operating profit		**9,246,267**	**4,382,248**	**3,182,749**
Finance income	37	629,860	635,900	503,887
Finance costs	38	(974,172)	(365,676)	(1,237,454)
Share in net (loss)/profit of associates	13	(196,773)	88,088	(249,295)
Share in net loss of joint ventures	14	(157,902)	(216,378)	(106,598)
Other income/(expenses), net	39	738,759	(55,006)	459,348
Profit before income tax		**9,286,039**	**4,469,176**	**2,552,637**
Income tax (expenses)/benefit	20c	(2,474,385)	1,175	(796,200)
Profit for the year from continuing operations		**6,811,654**	**4,470,351**	**1,756,437**
Loss for the year from discontinued operations	12d	(6,497)	(31,080)	-
Profit for the year		**6,805,157**	**4,439,271**	**1,756,437**

*) As restated, (refer to Note 4)

The accompanying notes form an integral part of these consolidated financial statements

CONSOLIDATED STATEMENTS OF PROFIT OR LOSS AND OTHER COMPREHENSIVE INCOME
FOR THE YEARS ENDED 31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah)

	Notes	31 December 2017	31 December 2016	31 December 2015*)
Profit for the year		**6,805,157**	**4,439,271**	**1,756,437**
Other comprehensive income/(loss)				
Items that will not be reclassified to profit or loss:				
Remeasurement of post-employment benefits obligation	30	(1,005,305)	(234,207)	696,757
Related income tax benefits	20d	247,525	95,421	73,275
Items that will be reclassified to profit or loss:				
Currency differences from translation of the Group's entity financial statements		239,796	(268,468)	1,659,888
Changes in fair value of available-for-sale financial assets	10	(3,620)	46,876	(13,237)
Share of other comprehensive (loss)/income of associates and joint ventures	13,14	(16,898)	26,447	6,641
Other comprehensive (loss)/income for the year, net of tax		**(538,502)**	**(333,931)**	**2,423,324**
Total comprehensive income for the year		**6,266,655**	**4,105,340**	**4,179,761**
Profit for the year attributable to:				
Owner of the parent		4,944,899	3,608,330	1,511,841
Non-controlling interests		1,860,258	830,941	244,596
		6,805,157	**4,439,271**	**1,756,437**
Comprehensive income for the year attributable to:				
Owner of the parent		4,672,884	3,295,502	3,647,198
Non-controlling interests		1,593,771	809,838	532,563
		6,266,655	**4,105,340**	**4,179,761**
Basic and diluted earning per share attributable to owner of the parent (full amount)	**40**	**37,878**	**27,640**	**11,581**

*) As restated, (refer to Note 4)

The accompanying notes form an integral part of these consolidated financial statements

PT INDONESIA ASAHAN ALUMINIUM (PERSERO) AND SUBSIDIARIES **Schedule 3/1**

CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY
FOR THE YEARS ENDED 31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah)

	Notes	Attributable to the owner of the parent								
		Share capital	Additional paid-in capital	Currency differences from translation of Group's entity financial statements	Appropriated retained earnings	Unappropriated retained earnings	Equity of merging entities	Total	Non-controlling interests	Total equity
Balance 1 January 2015 (as previously reported)		**381,998**	**-**	**11,205,556**	**180,900**	**216,447**	**-**	**11,984,901**	**-**	**11,984,901**
Impact of Statement of Financial Accounting Standard ("SFAS") 38, "Business Combination of Entities Under Common Control" implementation	4	-	-	-	-	-	16,224,018	16,224,018	8,845,196	25,069,214
Balance 1 January 2015*)		**381,998**	**-**	**11,205,556**	**180,900**	**216,447**	**16,224,018**	**28,208,919**	**8,845,196**	**37,054,115**
Purchase of subsidiary's treasury shares		-	-	-	-	-	(261,526)	(261,526)	(140,698)	(402,224)
Shares issuance of subsidiary		-	-	-	-	-	3,480,260	3,480,260	1,873,986	5,354,246
Cash dividend	40	-	-	-	-	-	(583,224)	(583,224)	(313,826)	(897,050)
Profit for the year		-	-	-	-	1,058,617	453,224	1,511,841	244,596	1,756,437
Appropriation of retained earnings	40	-	-	-	153,634	(153,634)	-	-	-	-
Appropriation or partnership and community development program ("PKBL")		-	-	-	-	(34,685)	-	(34,685)	-	(34,685)
Other comprehensive income/(loss):										
Changes in fair value of available-for-sale financial assets	10	-	-	-	-	-	(8,607)	(8,607)	(4,630)	(13,237)
Share of other comprehensive income from associates and joint ventures	13, 14	-	-	-	-	-	4,317	4,317	2,324	6,641
Currency differences from translation of the Group's entity financial statements		-	-	1,602,701	-	-	37,182	1,639,883	20,005	1,659,888
Remeasurement of post-employment benefits obligation, net of tax		-	-	-	-	(2,049)	501,813	499,764	270,268	770,032
Balance 31 December 2015*)		**381,998**	**-**	**12,808,257**	**334,534**	**1,084,696**	**19,847,457**	**34,456,942**	**10,797,221**	**45,254,163**

*) As restated, (refer to Note 4)

The accompanying notes form an integral part of these consolidated financial statements

PT INDONESIA ASAHAN ALUMINIUM (PERSERO) AND SUBSIDIARIES **Schedule 3/2**

CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY
FOR THE YEARS ENDED 31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah)

	Notes	Attributable to the owner of the parent							Non-controlling interests	Total equity
		Share capital	Additional paid-in capital	Currency differences from translation of Group's entity financial statements	Appropriated retained earnings	Unappropriated retained earnings	Equity of merging entities	Total		
Balance 1 January 2016*		381,998	-	12,808,257	334,534	1,084,696	19,847,457	34,456,942	10,797,221	45,254,163
Cash dividend	41	-	-	-	-	(327,142)	(416,934)	(744,076)	(224,315)	(968,391)
Appropriation of retained earnings	41	-	-	-	133,071	(133,071)	-	-	-	-
Profit for the year		-	-	-	-	2,098,090	1,510,240	3,608,330	830,941	4,439,271
Other comprehensive income/(loss):										
Changes in fair value of available-for-sale financial assets	10	-	-	-	-	-	30,479	30,479	16,397	46,876
Share of other comprehensive income from associates and joint ventures	13, 14	-	-	-	-	-	17,191	17,191	9,256	26,447
Currency differences from translation of the Group's entity financial statements		-	-	(269,956)	-	-	963	(268,993)	525	(268,468)
Remeasurement of post-employment benefits obligation, net of tax		-	-	-	-	(3,595)	(87,910)	(91,505)	(47,281)	(138,786)
Balance 31 December 2016*		381,998	-	12,538,301	467,605	2,718,978	20,901,486	37,008,368	11,382,744	48,391,112

*) As restated, (refer to Note 4)

The accompanying notes form an integral part of these consolidated financial statements

CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY
FOR THE YEARS ENDED 31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah)

	Notes	Attributable to the owner of the parent							Non-controlling interests	Total equity
		Share capital	Additional paid-in capital	Currency differences from translation of Group's entity financial statements	Appropriated retained earnings	Unappropriated retained earnings	Equity of merging entities	Total		
Balance 1 January 2017*		**381,998**	**-**	**12,538,301**	**467,605**	**2,718,978**	**20,901,486**	**37,008,368**	**11,382,744**	**48,391,112**
Issuance of new shares		12,304,691	-	-	-	-	-	12,304,691	-	12,304,691
Cash dividend	41	-	-	-	-	(267,811)	(440,435)	(708,246)	(246,938)	(955,184)
Profit for the year		-	-	-	-	1,619,006	3,325,893	4,944,899	1,860,258	6,805,157
Appropriation of retained earnings	41	-	-	-	133,835	(133,835)	-	-	-	-
Other comprehensive income/(loss):										
Changes in fair value of available-for-sale financial assets	10	-	-	-	-	-	(2,354)	(2,354)	(1,266)	(3,620)
Share of other comprehensive loss from associates and joint ventures	13, 14	-	-	-	-	-	(10,984)	(10,984)	(5,914)	(16,898)
Currency differences from translation of the Group's entity financial statements		-	-	228,770	-	-	7,169	235,939	3,857	239,796
Remeasurement of post-employment benefits obligation, net of tax		-	-	-	-	(5,487)	(489,129)	(494,616)	(263,164)	(757,780)
Restructuring of entities under common control	4	41,491,252	(18,199,606)	-	-	-	(23,291,646)	-	-	-
Balance 31 December 2017		**54,177,941**	**(18,199,606)**	**12,767,071**	**601,440**	**3,930,851**	**-**	**53,277,697**	**12,729,577**	**66,007,274**

*) As restated, (refer to Note 4)

The accompanying notes form an integral part of these consolidated financial statements

CONSOLIDATED STATEMENTS OF CASH FLOWS
FOR THE YEARS ENDED 31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah)

	31 December 2017	31 December 2016	31 December 2015*)
CASH FLOWS FROM OPERATING ACTIVITIES			
Cash receipts from customers	43,566,878	34,582,383	39,048,829
Cash receipts from tax restitution	860,298	965,476	925,146
Cash receipts from interest income	598,604	626,408	472,119
Cash paid to suppliers and employees	(33,998,959)	(28,643,789)	(31,729,346)
Payment of pension contributions	(43,813)	(39,375)	(39,473)
Payment of interest	(789,217)	(774,017)	(809,671)
Payment of taxes and royalties	(3,747,772)	(2,300,601)	(2,871,980)
Other payments, net	(695,442)	(160,176)	(381,561)
Net cash received from operating activities	5,750,577	4,256,309	4,614,063
CASH FLOWS FROM INVESTING ACTIVITIES			
Proceeds from disposal of available-for-sale financial assets	307,792	200,000	62,555
(Withdrawal)/placement of performance bonds	(153,236)	67,338	104,926
Dividend receipt from associate	171,945	87,753	226,172
Dividend receipt from available for sale investment	427,587	-	-
Proceeds from sale of fixed assets	2,527	1,187	1,963
Payment for addition of mining properties	(50,308)	(15,909)	(64,207)
Disbursement for deferred charges	(19,711)	(19,264)	(19,975)
Additional investment in joint venture	-	(29,639)	(285,448)
Additional investment in associates	(11,250)	-	(169,730)
Proceeds from sale of investment in associates	11,000	-	-
Disbursements for exploration and evaluation assets	(3,082)	(40,877)	(55,749)
Loan to joint ventures	(724,055)	(239,295)	(237,500)
Purchase of available-for-sale financial assets	-	(251,347)	(390,500)
Net cash received for business combination	-	-	2,574
Purchases of fixed assets	(4,611,647)	(3,012,072)	(3,455,352)
Net cash used in investing activities	(4,652,438)	(3,252,125)	(4,280,271)
CASH FLOWS FROM FINANCING ACTIVITIES			
Proceeds from bank borrowings	7,081,729	8,001,614	9,231,267
Repayment of finance lease	(126,342)	(47,062)	(31,506)
Payment of dividends	(955,184)	(968,391)	(897,379)
Proceeds from share issuance of subsidiary	-	-	5,354,246
Payments of appropriation for PKBL	-	-	(23,675)
Receipt from issuance of bonds	1,500,000	-	-
Purchase of subsidary's treasury shares	-	-	(402,224)
Repayments of bank borrowings	(8,465,435)	(8,731,018)	(8,684,576)
Net cash (used in)/received from financing activities	(965,232)	(1,744,857)	4,546,153
NET INCREASE/(DECREASE) IN CASH AND CASH EQUIVALENTS	**132,907**	**(740,673)**	**4,879,945**

*) As restated, (refer to Note 4)

The accompanying notes form an integral part of these consolidated financial statements

CONSOLIDATED STATEMENTS OF CASH FLOWS
FOR THE YEARS ENDED 31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah)

	31 December 2017	31 December 2016	31 December 2015*)
NET INCREASE/(DECREASE) IN CASH AND CASH EQUIVALENTS	**132,907**	**(740,673)**	**4,879,945**
Reclassified (to)/from assets of disposal group classified as held for sale	(4,376)	1,508	4,286
Effect of foreign exchange gain/(loss) on cash and cash equivalents	47,754	(222,133)	452,999
CASH AND CASH EQUIVALENTS AT THE BEGINNING OF THE YEAR	15,966,783	16,928,081	11,590,851
CASH AND CASH EQUIVALENTS AT THE END OF THE YEAR	**16,143,068**	**15,966,783**	**16,928,081**

*) As restated, (refer to Note 4)

The accompanying notes form an integral part of these consolidated financial statements

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

1. GENERAL

The Company's establishment and general information

PT Indonesia Asahan Aluminium (the "Company") was established on 6 January 1976 as a joint venture between the Government of the Republic of Indonesia and Nippon Asahan Aluminium Co., Ltd. as a follow-up to a Master Agreement between the Government of the Republic of Indonesia and a consortium of 12 (twelve) Japanese investing companies signed on 7 July 1975. The deed of establishment No. 2 dated 6 January 1976 was prepared by Notary Juliaan Nimrod Siregar Gelar Mangaradja Namora, S.H., and was approved by the Ministry of Justice in its Decision Letter No. Y.A.5/12/20 dated 10 January 1976 and was published in State Gazette No. 4 dated 13 January 1976.

The Master Agreement expired 30 years after commercial production started, which was on 31 October 2013. On 9 December 2013, the signing of the "Agreement in relation to the expiry of the Master Agreement in respect of the transfer of shares in PT Indonesia Asahan Aluminium" marked the termination of the Master Agreement by share transfer of the Company shares owned by Nippon Asahan Aluminium Co., Ltd. to the Government of the Republic of Indonesia (shareholder).

On 19 December 2013, based on the Notarial Deed of Transfer of Shares No. 86 of Notary Aryanti Artisari, S.H., M.Kn., Nippon Asahan Aluminium Co., Ltd. transferred its investment in 541,946 Company shares to the Government of the Republic of Indonesia (shareholder) and the Government of the Republic of Indonesia paid US$556,700,000 to Nippon Asahan Aluminium Co., Ltd. for the transfer of such shares. Through this transfer, the Company's sole shareholder has become the Government of the Republic of Indonesia owning 100% of the Company's 920,476 issued shares. The amendment of the Articles of Association to reflect the change in the shareholder was approved by the Ministry of Law and Human Rights of the Republic of Indonesia in its Decision Letter No. AHU-AH.01.10-56092 dated 24 December 2013.

On 19 December 2013, the Company's status was officially changed to a State-Owned Enterprise ("BUMN") in accordance with Government Regulation No. 26 Year 2014 dated 21 April 2014 on the Determination of PT Indonesia Asahan Aluminium as a Perusahaan Perseroan (Persero).

The change in the Company's status to BUMN has been notarised under Notarial Deed No. 35 dated 8 May 2014 of Notary Aryanti Artisari, S.H., M.Kn., and approved by the Ministry of Justice and Human Rights of the Republic of Indonesia in its Decision Letter No. AHU-02942.40.20.2014 dated 9 May 2014.

The Company's head office and its aluminium smelting plant are located in Kuala Tanjung, Batu Bara Regency, North Sumatra. The power plant is located in Paritohan, Toba Samosir Regency, North Sumatra.

The Company's Articles of Association have been amended several times. The latest amendment is regarding changes in the Company's share capital as explained in Note 31. The changes have been notarised under Notarial Deed No. 59 dated 27 November 2017 of Notary Liestiani Wang, S.H., M.Kn., and have been approved by the Ministry of Justice and Human Rights of the Republic of Indonesia in its Decision Letter No. AHU-0024869.AH.01.02. Year 2017 dated 27 November 2017.

Based on Article 3 of its Articles of Association, the Company's main activities are conducting business in alumina production and processing, calcination plant of coke and its derivatives, aluminium smelting plant and its derivatives, marketing, selling and distribution of its products and other similar products as well as constructing and operating power plants for its own use, and electricity selling.

The Company commenced its commercial operations in 1983.

1. GENERAL (continued)

The Company's establishment and general information (continued)

Based on Notarial Deed No. 59 dated 27 November 2017 of Notary Liestiani Wang, S.H., M.Kn., the composition of the Company's Boards of Commissioners and Directors as at 31 December 2017 was as follows:

Board of Commissioners

President Commissioner	: Agus Tjahajana Wirakusumah
Commissioner	: Emmy Yuhassarie
Commissioner	: Purbaya Yudhi Sadewa

Board of Directors

President Director	: Budi Gunadi Sadikin
Director	: Sahala Hasoloan Sijabat
Director	: Oggy Achmad Kosasih
Director	: Carry Mumbunan

Based on Notarial Deed No. 1 dated 1 April 2016 of Notary Aryanti Artisari, S.H., M.Kn., the composition of the Company's Boards of Commissioners and Directors as at 31 December 2016 was as follows:

Board of Commissioners

President Commissioner	: Agus Tjahajana Wirakusumah
Commissioner	: Emmy Yuhassarie
Commissioner	: Ferry S.P Sinamo
Commissioner	: Chairuman Harahap

Board of Directors

President Director	: Winardi
Director	: Sahala Hasoloan Sijabat
Director	: Oggy Achmad Kosasih
Director	: Carry Mumbunan

Based on Notarial Deed No. 125 dated 31 July 2015 of Notary Aryanti Artisari, S.H., M.Kn, the composition of the Company's Boards of Commissioners and Directors as at 31 December 2015 was as follows:

Board of Commissioners

President Commissioner	: Agus Tjahajana Wirakusumah
Commissioner	: Emmy Yuhassarie
Commissioner	: Ferry S.P Sinamo
Commissioner	: Chairuman Harahap

Board of Directors

President Director	: Winardi
Director	: Sahala Hasoloan Sijabat
Director	: Harmon Yunaz
Director	: Oggy Achmad Kosasih
Director	: Carry Mumbunan

1. GENERAL (continued)

The Company's establishment and general information (continued)

As at 31 December 2017, 2016 and 2015, the members of the Company's Audit Committee were as follows:

Chairman	:	Emmy Yuhassarie
Member	:	Hary Noegroho Soelistianto
Member	:	Togu Sihombing

Mining business permits

The Company and its subsidiaries (together the "Group") has valid Mining Business Permits ("IUP") which consist of Production Operation IUPs and Exploration IUPs and Coal Contract of Work ("CCoW") in various area of Indonesia.

Obligations under IUPs and CCoW

Based on the circular letter of the Ministry of Energy and Mineral Resources No. 04. E/35/DJB/2012 and Government Regulation No. 9 dated 6 January 2012, the Group as the IUPs and CCoW holders is liaible for financial obligations as follows:

- Pay a royalty based on the applicable tariff for each mining products.
- Pay a deadrent based on the applicable tariff for each mining concessions.
- Pay a contribution to the government based on certain rates as the CCoW holders.

1. GENERAL (continued)

As at 31 December 2017, 2016 and 2015, the structure of the Group was as follows:

	Business activity	Location	Commencement of commercial operations	Proportion of ordinary shares held by the Group*)	Proportion of ordinary shares held by non-controlling interest*)	Total assets (before consolidation elimination)		
				%	%	2017	2016	2015
Directly-owned subsidiaries								
PT Bukit Asam ("Bukit Asam")	Coal mining	Tanjung Enim, South Sumatra	1938	65.02	34.98	19,899,475	16,817,286	16,894,043
PT Aneka Tambang ("Antam")	Mining of various mining product	Jakarta	1968	65.00	35.00	30,014,273	29,981,536	30,356,850
PT Timah ("Timah")	Tin mining	Pangkal Pinang, Bangka	1976	65.00	35.00	11,876,309	9,548,631	9,292,683
PT Panca Mitra Limbah Indonesia ("PMLI")	Waste management	Jakarta	Not operating	100.00	-	15,823	63	63
Indirectly owned subsidiaries								
PT Batubara Bukit Kendi ("BBK")	Coal mining	Tanjung Enim, South Sumatra	1997	98.00	2.00	287	443	1,978
PT Bukit Asam Prima ("BAP")	Coal trading	Jakarta	2007	99.99	0.01	344,599	225,844	238,692
PT Internasional Prima Coal ("IPC")	Coal mining	Palaran, East Kalimantan	2010	51.00	49.00	698,962	580,411	551,388
PT Bukit Asam Metana Ombilin ("BAMO")	Coal methane gas mining	Jakarta	Not operating	99.99	0.01	34	33	16
PT Bukit Asam Metana Enim ("BAME")	Coal methane gas mining	Jakarta	Not operating	99.99	0.01	73	72	71
PT Bukit Energi Metana ("BEME")	Coal methane gas mining	Jakarta	Not operating	99.99	0.01	51	51	109
PT Bukit Asam Banko ("BAB")	Coal mining, trading, and industry	Tanjung Enim, South Sumatra	Not operating	99.99	0.01	313	313	363
PT Bukit Multi Investama ("BMI")	Investment in other companies	Jakarta	2014	99.99	0.01	2,406,527	2,386,308	2,505,883
PT Bukit Energi Investama ("BEI")	Investment in other companies	Jakarta	2015	99.99	0.01	163,184	136,004	83,171
PT Bumi Sawindo Permai ("BSP")	Palm plantation and palm processing	Tanjung Agung, South Sumatra	2007	99.99	0.01	223,613	242,012	227,831
PT Internasional Prima Cemerlang	Coal trading	Jakarta	Not operating	99.99	0.01	1,948	2,147	2,187
PT Bukit Prima Bahari ("BPB")	Sea voyages	Jakarta	2014	99.99	0.01	120,987	704,035	33,602

*) The Group applied SFAS 38, "Business Combination of Entities under Common Control" and restated the consolidated financial statements as if Antam, Timah and Bukit Asam had been combined since 1 January 2015. Refer to Note 4.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

1. GENERAL (continued)

	Business activity	Location	Commencement of commercial operations	Proportion of ordinary shares held by the Group*)	Proportion of ordinary shares held by non-controlling interest*)	Total assets (before consolidation elimination)		
				%	%	2017	2016	2015
Indirectly owned subsidiaries (continued)								
Anthrakas Pte Ltd	Coal trading	Singapore	2014	100.00	-	58,753	41,124	39,643
PT Pelabuhan Bukit Prima ("PBP")	Port service	Jakarta	Not operating	99.99	0.01	33,311	16,257	11,605
PT Bukit Asam Medika ("BAM")	Hospital, clinic, polyclinic, specialist polyclinic, and medical services	Tanjung Enim, South Sumatra	2014	97.50	2.50	25,184	22,858	20,143
PT Penajam Internasional Prima ("PIT")	Port services	Bekasi, West Java	2015	72.00	28.00	3,840	2,097	3,720
PT Satria Bahana Sarana ("SBS")	Mining service and rental	Tanjung Agung, South Sumatra	2014	95.00	5.00	1,107,440	1,071,722	899,673
PT Bukit Energi Service Terpadu ("BEST")	Trading, service, workshop, construction, industry, and transportation	Jakarta	2015	99.62	0.38	98,129	80,325	24,534
Asia Pacific Nickel Pty., Ltd. ("APN")	Investment company	Australia	2003	100.00	-	121,877	141,593	85,009
PT Indonesia Coal Resources ("ICR")	Coal mining exploration and operator	Indonesia	2010	100.00	-	70,902	134,418	217,035
PT Antam Resourcindo ("ARI")	Mining exploration and operator	Indonesia	1997	99.98	0.02	112,694	121,719	141,000
PT Mega Citra Utama ("MCU")	Construction, trading, industry, agriculture and mining	Indonesia	Not operating	99.50	0.50	114,625	115,507	120,000
PT Abuki Jaya Stainless Indonesia ("AJSI")	Manufacturing of stainless steel	Indonesia	Not operating	99.50	0.50	49,683	50,392	51,570
PT Borneo Edo International ("BEI")	Construction, trading, industry, agriculture and mining	Indonesia	Not operating	99.50	0.50	37,877	36,789	38,238
PT Dwimitra Enggang Khatulistiwa ("DEK")	Mining exploration and operator	Indonesia	Not operating	99.50	0.50	3,814	3,782	4,463

*) The Group applied SFAS 38, "Business Combination of Entities under Common Control" and restated the consolidated financial statements as if Antam, Timah and Bukit Asam had been combined since 1 January 2015. Refer to Note 4.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

1. GENERAL (continued)

	Business activity	Location	Commencement of commercial operations	Proportion of ordinary shares held by the Group*) %	Proportion of ordinary shares held by non-controlling interest *) %	Total assets (before consolidation elimination) 2017	2016	2015
Indirectly owned subsidiaries (continued)								
PT Cibaliung Sumberdaya ("CSD")	Exploration, construction and mine development, mining, production, processing and refining, haulage and sales in the gold mining industry	Indonesia	2010	99.15	0.85	1,040,930	1,074,899	1,082,958
PT International Mineral Capital ("IMC")	Services and trading	Indonesia	2011	99.00	1.00	621,361	621,228	620,946
PT GAG Nikel ("GAG")	Mining exploration and operator	Indonesia	Not operating	100.00	-	124,120	142,113	84,786
PT Citra Tobindo Sukses Perkasa ("CTSP")	Coal mining exploration and operator	Indonesia	2011	100.00	-	27,050	44,320	64,364
PT Feni Haltim ("FHT")	Trading, construction and services	Indonesia	Not operating	100.00	-	1,080,649	1,096,975	1,116,746
PT Borneo Edo International Agro ("BEIA")	Agriculture, industry, agricultural land transportation, trading and services	Indonesia	Not operating	100.00	-	39	4,840	298
PT Gunung Kendaik ("GK")	Construction, trading, industry, agriculture, ground transportation, services, mining and printing	Indonesia	Not operating	100.00	-	6,667	5,423	6,663
PT Nusa Karya Arindo ("NKA")	Mineral and coal mining service	Indonesia	2014	100.00	-	17,535	25,762	34,193
PT Sumberdaya Arindo ("SDA")	Mineral and coal mining service	Indonesia	Not operating	100.00	-	31,510	13,543	12,940
PT Borneo Alumina Indonesia ("BAI")	Industry, services and trade	Indonesia	Not operating	100.00	-	56	56	56
PT Antam Energi Indonesia ("AEI")	Services, trade and industry	Indonesia	Not operating	100.00	-	144	144	144

*) The Group applied SFAS 38, "Business Combination of Entities under Common Control" and restated the consolidated financial statements as if Antam, Timah and Bukit Asam had been combined since 1 January 2015. Refer to Note 4.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

1. GENERAL (continued)

As at 31 December 2017, 2016 and 2015, the structure of the Group was as follows: (continued)

	Business activity	Location	Commencement of commercial operations	Proportion of ordinary shares held by the Group*) 2017 %	Proportion of ordinary shares held by non-controlling interest (%)*) 2017 %	Total assets (before consolidation elimination) 2017	2016	2015
Indirectly owned subsidiaries (continued)								
PT Kawasan Industri Antam Timur ("KIAT")	Management industrial area service	Indonesia	Not operating	100.00	-	51	51	51
PT Antam Niterra Haltim ("ANH")	Coal mining exploration and operator	Indonesia	Not operating	100.00	-	68	68	68
Indometal (London) Limited ("IL")	Marketing agent for Europe regions	United Kingdom	1988	100.00	-	1,303,824	1,132,117	994,892
PT Dok dan Perkapalan Air Kantung ("DAK")	Workshop services, shipping dockyard, and transportation	Indonesia	1996	100.00	-	244,728	165,564	142,957
PT Timah Industri ("TI")	Chemical industry	Indonesia	1998	100.00	-	1,659,026	1,045,774	1,403,094
PT Timah Investasi Mineral ("TIM")	Exploration and mining of non-tin minerals and coal marketing	Indonesia	1996	99.90	0.10	453,661	600,088	638,904
PT Timah Agro Manunggal ("TAMA")	Agriculture and trading	Indonesia	2017	100.00	-	8,480	4,080	2,500
PT Tanjung Alam Jaya ("TAJ")	Coal mining	Indonesia	1998	99.95	0.05	154,018	161,667	242,564
PT Kutaraja Tembaga Raya ("KTR")	Mineral exploration (ceased operations)	Indonesia	1997	99.95	0.05	3	3	3
Great Force Trading Limited ("GFT")	Trading	Hongkong	2012	100.00	-	14,240	20,031	33,782
Timah Investment International	Trading	Singapore	2014	100.00	-	16,959	9,510	4,977
Rumah Sakit Bakti Timah ("RSBT")	Services	Indonesia	2014	99.90	0.10	234,935	100,051	80,094
PT Bakti Timah Solusi Medika ("BTSM")	Distribution and trading	Indonesia	2016	99.90	0.10	3,801	1,852	-
PT Timah Karya Persada Properti ("TKPP")	Real estate industry	Indonesia	2017	100.00	-	77,343	45,536	45,300
PT Truba Bara Banyu Enim ("TBBE")	Coal mining	Indonesia	2001	99.90	0.10	16,829	18,315	16,610

*) The Group applied SFAS 38, "Business Combination of Entities under Common Control" and restated the consolidated financial statements as if Antam, Timah and Bukit Asam had been combined since 1 January 2015. Refer to Note 4.

2. SIGNIFICANT ACCOUNTING POLICIES

Management of the Company is responsible for the preparation of the consolidated financial statements that were completed and authorised for reissuance by the Board of Directors on 22 October 2018.

The consolidated financial statements for the year ended 31 December 2017 were originally issued on 26 March 2018, in a bilingual format in both Bahasa Indonesia and English. The consolidated financial statements have been reissued as one set of English-only financial statements with the consolidated financial statements for the years ended 31 December 2016 and 2015 as a comparative consolidated financial statements for the purpose of offering debt securities of the Company inside and outside the United States of America, in reliance on Rule 144A and Regulation S, respectively, of the United States Securities Act of 1993, as amended. There were no significant changes between the previously issued consolidated financial statements and these reissued consolidated financial statements, except for inclusion of statements of profit or loss, changes in equity and cash flows for the year ended 31 December 2015 and related notes to the consolidated financial statements of 2015 as the additional comparative period.

a. Basis of preparation of the consolidated financial statements

The consolidated financial statements have been prepared in accordance with Indonesian Financial Accounting Standards.

The consolidated financial statements have been prepared under the historical cost convention of accounting, as modified by the available-for-sale financial assets and investment properties and using the accrual basis except for the consolidated statement of cash flows.

The consolidated statement of cash flows is prepared based on the direct method by classifying cash flows on the basis of operating, investing and financing activities.

Except as described below, the accounting policies applied are consistent with those of the consolidated financial statements for the years ended 31 December 2017 and 2016, which conform to the Indonesian Financial Accounting Standards.

In order to provide further understanding of the financial performance of the Group, due to the significance of their nature or amount, several items of income or expense have been shown separately.

The preparation of consolidated financial statements in conformity with Indonesian Financial Accounting Standards requires the use of certain critical accounting estimates and assumptions. It also requires management to exercise its judgement in the process of applying the Group's accounting policies. The areas involving a higher degree of judgement or complexity, or areas where assumptions and estimates are significant to the consolidated financial statements are disclosed in Note 3.

b. Changes to the Statements of Financial Accounting Standards ("SFAS") and Interpretations of Financial Accounting Standards ("IFAS")

The adoption of the following amended and new accounting standards which are effective from 1 January 2017 did not result in substantial changes to the Group's accounting policies and had no material effect on the amounts reported in the consolidated financial statements for the current period:

- Amendment to SFAS 1 (Revised 2015) "Presentation of Financial Statements"
- IFAS 31 "Interpretation of SFAS 13 Investment Property"
- IFAS 32 "Interpretation on Definition and Hierarchy of Financial Accounting Standards"
- SFAS 3 (Adjusted 2016) "Interim Financial Statements"
- SFAS 24 (Adjusted 2016) "Employee Benefits"
- SFAS 58 (Adjusted 2016) "Non-Current Assets Held for Sale and Discontinued Operations"
- Amendment to SFAS 60 (Adjusted 2016) "Financial Instruments: Disclosure"

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

b. Changes to the Statements of Financial Accounting Standards ("SFAS") and Interpretations of Financial Accounting Standards ("IFAS") (continued)

New standards, amendments and interpretations issued and effective for the financial year beginning 1 January 2018 which did not have a material impact on the consolidated financial statements of the Group are as follows:

- Amendment to SFAS 2 "Statement of Cash Flows"
- Amendment to SFAS 13 "Investment Property"
- Annual Improvement on SFAS 15 "Investments in Associate and Joint Ventures"
- Amendment to SFAS 16 (Revised 2015) "Property, Plant and Equipment"
- Amendment to SFAS 46 "Income Taxes"
- Amendment to SFAS 53 "Share Based Payment"
- Annual Improvement on SFAS 67 "Disclosures of Interest in Other Entities"
- SFAS 69 "Agriculture"

As at the authorisation date of these consolidated financial statements, management is evaluating the potential impact of the following new and revised SFAS and IFAS which have been issued but are not yet effective for the financial year beginning on 1 January 2018:

- Amendment to SFAS 62 "Insurance Contract"
- Amendment to SFAS 15 "Investments in Associate and Joint Ventures"
- IFAS 33 "Foreign Currency Transactions and Advance Consideration"
- IFAS 34 "Uncertainty over Income Tax Treatments"
- SFAS 71 "Financial Instrument"
- SFAS 72 "Revenue from Contract with Customers"
- SFAS 73 "Leases"
- Amendment to SFAS 71 "Financial Instrument - Prepayment Features with Negative Compensation"

The above new standards, amendments and interpretations are effective beginning 1 January 2020, except for IFAS No. 33, "Foreign Currency Transactions and Advance Consideration" and IFAS No. 34, "Uncertainty over Income Tax Treatments" which are effective from 1 January 2019.

Early adoption of the above standards is permitted, except for SFAS 73 for which early adoption is permitted only when an entity has applied SFAS 72.

c. Principles of consolidation and equity accounting

i. Subsidiaries

Subsidiaries are all entities (including structured entities) over which the Group has control. The Group controls an entity when the Group is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. Subsidiaries are fully consolidated from the date on which control is transferred to the Group. They are deconsolidated from the date on which that control ceases.

The Group applies the acquisition method to account for business combinations. The consideration transferred for the acquisition of a subsidiary is the fair value of the assets transferred, the liabilities incurred to the former owners of the acquiree and the equity interests issued by the Group. The consideration transferred includes the fair value of any asset or liability resulting from a contingent consideration arrangement. Identifiable assets acquired and liabilities and contingent liabilities assumed in a business combination are measured initially at their fair values at the acquisition date.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

c. Principles of consolidation and equity accounting (continued)

i. Subsidiaries (continued)

The Group recognises any non-controlling interest in the acquiree either at fair value or at the non-controlling interest's proportionate share of the acquiree's net assets. Non-controlling interest is reported as equity in the consolidated statement of financial position, separate from the equity of the parent's entity.

Acquisition related costs are expensed as incurred.

If the business combination is achieved in stages, the acquisition date carrying value of the acquirer's previously held equity interest in the acquiree is remeasured to fair value at the acquisition date through profit or loss.

Any contingent consideration to be transferred by the Group is recognised at fair value at the acquisition date. Subsequent changes to the fair value of the contingent consideration that is deemed to be an asset or liability is recognised in accordance with SFAS 55 "Financial Instrument: Recognition and Measurement" in profit or loss. Contingent consideration that is classified as equity is not remeasured, and its subsequent settlement is accounted for within equity.

The excess of the consideration transferred the amount of any non-controlling interest in the acquiree and the acquisition-date fair value of any previous equity interest in the acquiree over the fair value of the net identifiable assets acquired is recorded as goodwill. If those amount are less than the fair value of the net identifiable assets of the business acquired, in the case of a bargain purchase, the difference is recognised directly in profit or loss.

Business combination transactions between entities under common control were accounted for in SFAS 38 (Revised 2012) "Business Combination of Entities Under Common Control" where the differences between transfer price paid and carrying value of net assets acquired is presented as part of the additional paid-in-capital account in equity.

In accordance with SFAS 38 (Revised 2012), the financial statements items of the combined entities, for the period in which the business combination under common control occurred and for any comparative period, shall be presented as if the combination had occurred from the beginning of the period for which the combined entities were under common control.

The business combination of entities under common control occurred in 2017 is described in Note 4.

Inter-company transactions, balances and unrealised gains on transactions between Group companies are eliminated. Unrealised losses are also eliminated. When necessary, amounts reported by subsidiaries have been adjusted to conform to the Group's accounting policies.

ii. Associates

Associates are all entities over which the Group has significant influence but not control, generally accompanying a shareholding of between 20% and 50% of the voting rights. Investments in associates are accounted for using the equity method of accounting (see point (iv) below), after intitially being recognised at cost.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

c. Principles of consolidation and equity accounting (continued)

iii. Joint arrangements

Under SFAS 66, investments in joint arrangements are classified as either joint operations or joint ventures depending on the contractual rights and obligations of each investor rather than the legal structure of the joint arrangement. The Group has assessed the nature of its joint arrangements and determined them to be joint ventures. Joint ventures are accounted for using the equity method, after initially being recognised at cost in the consolidated statement of financial position.

iv. Equity method

Under the equity method, the investment is initially recognised at cost and adjusted thereafter to recognise the investor's share of the post-acquisition profits or losses of the investee in profit or loss, and its share of movements in other comprehensive income of the investee in other comprehensive income.

Unrealised gains on transactions between the Group and its associates and joint ventures are eliminated to the extent of the Group’s interest in these entities. Unrealised losses are eliminated unless the transaction provides evidence of an impairment of the asset transferred. Accounting policies of associates and joint ventures have been changed where necessary to ensure consistency with the policies adopted by the Group.

When the Group’s share of losses in an associate or joint venture equals or exceeds its interest in the associate or joint venture, including any other unsecured receivables, the Group does not recognise further losses, unless it has incurred legal or constructive obligations or made payments on behalf of the associate or joint ventures.

The Group determines at each reporting date whether there is any objective evidence that the investment in the associate is impaired. If this is the case, the carrying amount of the equity accounting investment is tested for impairment in accordance with the policy described in Note 2s.

Dividends received or receivable from associates or joint ventures are recognised as reductions in the carrying amount of the investment.

v. Changes in ownership interest

The Group treats transactions with non-controlling interests that do not result in a loss of control as transactions with equity owners of the Group. A change in ownership interest results in an adjustment between the carrying amounts of the controlling and non-controlling interests to reflect their relative interests in the subsidiary. Any difference between the amount of the adjustment to non-controlling interests and any consideration paid or received is recognised in a separate reserve within equity attributable to owners of the Parent.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

c. Principles of consolidation and equity accounting (continued)

v. Changes in ownerships interest (continued)

When the Group ceases to consolidate or equity account for an investment because of a loss of control, joint control or significant influence, any retained interest in the entity is remeasured to its fair value at the date when the control is lost, with the change in carrying amount recognised in profit or loss. The fair value is the initial carrying amount for the purposes of subsequently accounting for the retained interest as an associate, joint venture or financial asset. In addition, any amounts previously recognised in other comprehensive income in respect of that entity are accounted for as if the Group had directly disposed of the related assets or liabilities. This may mean that amounts previously recognised in other comprehensive income are reclassified to profit or loss.

If the ownership interest in a joint venture or an associate is reduced but joint control or significant influence is retained, only a proportionate share of the amounts previously recognised in other comprehensive income are reclassified to profit or loss where appropriate.

d. Foreign currency translation

(a) Functional and presentation currency

Items included in the financial statements of each of the Group's entities are measured using the currency of the primary economic environment in which the entity operates (the "functional currency").

The Group chooses to present the consolidated financial statements in Rupiah.

For consolidation purposes, due to the Company's functional currency is US Dollars, therefore, the Company's assets and liabilities are translated using Bank of Indonesia middle rate at the end of each reporting period. Besides, revenue and expenses are translated using average Bank of Indonesia middle rate during profit or loss period.

The difference arising from the translation of the Company's financial statements into Rupiah is presented as "Other comprehensive income - difference in foreign currency translation of the Group's entity financial statements" account in the equity section of the consolidated statement of financial position.

(b) Transaction and balance

Foreign currency transactions are translated into the functional currency using the exchange rates prevailing at the dates of the transactions. At each reporting date, monetary assets and liabilities denominated in foreign currency are translated into functional currency using the closing exchange rate. The exchange rate used as a benchmark is the rate that is issued by Bank of Indonesia. Foreign exchange gains and losses resulting from the settlement of such transactions and from the translation at period-end exchange rates of monetary assets and liabilities denominated in foreign currencies are recognised in profit or loss, except when deferred in other comprehensive income as qualifying cash flow hedges and qualifying net investment hedges.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

d. Foreign currency translation (continued)

(b) Transaction and balance (continued)

As at the consolidated statement of financial position dates, the exchange rates used, based on the middle rates published by Bank Indonesia, were as follows:

	31 December 2017	31 December 2016	31 December 2015
1 United States Dollar ("US Dollar")	13,548	13,436	13,795
100 Japanese Yen	12,022	11,540	11,452

e. Transactions with related parties

The Group has transactions with related parties as defined in SFAS 7 (Revised 2015).

Significant transactions and balances of the Group with the related parties are disclosed in the relevant notes to the financial statements.

f. Revenue and expenses

Revenue is recognised to the extent that it is probable that the economic benefits will flow to the Group and the revenue can be reliably measured. Revenue is measured at the fair value of the consideration received or receivable, excluding discounts, rebates and Value Added Taxes ("VAT").

Revenue from sales of goods/products (coal, tin metal and tin solder, tin chemical, aluminium, gold, ferronickel and crude palm oil) are recognised when all of the following conditions are met:

- the Group has transferred to the buyer the significant risks and rewards of ownership of the goods;
- the Group retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold;
- the amount of revenue can be measured reliably;
- it is probable that the economic benefits associated with the transaction will flow to the Group; and
- the costs incurred or to be incurred in relation to the sales transaction can be measured reliably.

The sale of a product arranged by a third party (agent) is recognised as revenue when the product is received by the end-users.

Certain ferronickel sale agreements provide for the provisional pricing of sales at the time of shipment. The final pricing is based on the London Metal Exchange ("LME") nickel price and normally ranges from 30 to 180 days after shipping to customers. Such a provisional sale contains an embedded derivative which is closely related and not recorded separately from the host sales contract. At the reporting date, the provisionally priced ferronickel sales are adjusted to the nearest subsequent monthly average LME nickel price, with the adjustments recorded in sales.

Revenue generated from sales of electricity is recognised when the electrical output is delivered to the customer.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

f. Revenue and expenses (continued)

The Group provides refinery services, healthcare/hospital and port services. For sales of services, revenue is recognised in the accounting period in which the services are rendered, by reference to the stage of completion of the specific transaction and assessed on the basis of the actual service provided as a proportion of the total service to be provided.

Expenses are recognised as incurred.

g. Cash and cash equivalents and time deposits

In the consolidated statement of cash flows, cash and cash equivalents include cash on hand, deposits held at call with banks, other short-term highly liquid investments with original maturities of three months or less since the date of placement, and bank overdrafts. In the consolidated statement of financial position, bank overdrafts are shown within borrowings in current liabilities (if any).

Time deposits with original maturities more than three months since the date of placement are presented separately as time deposits account in the statement of financial position.

Cash in banks and time deposits which are restricted as to use or are used as collateral for obligations are not classified as part of “cash and cash equivalents” instead they are presented as “restricted cash” and presented as part of other assets in the consolidated statement of financial position.

h. Trade receivables and non-trade receivables

Trade receivables are amounts due from customers for goods and services sold or provided in the ordinary course of business. If collection is expected in one year or less (or in the normal operating cycle of the business if longer), they are classified as current assets. If not, they are presented as non-current assets.

Non-trade receivables from related parties are receivables balance reflecting loan given to related parties of the Group.

Trade and non-trade receivables are recognised initially at fair value and subsequently measured at amortised cost using the effective interest method. If the impact of discounting is significant, less any provision for impairment.

Collectibility of trade and non-trade receivables is reviewed on an ongoing basis. Debts which are known to be uncollectible are written off by reducing the carrying amount directly. An allowance account is used when there is objective evidence that the Group will not be able to collect all amounts due according to the original terms of the receivables. Significant financial difficulties of the debtor, probability that the debtor will enter bankruptcy or financial reorganisation, and default or delinquency in payments are considered indicators that the trade receivable is impaired. The amount of the impairment allowance is the difference between the asset’s carrying amount and the present value of estimated future cash flow, discounted at the original effective interest rate. Cash flow relating to short-term receivables is not discounted if the effect of discounting is immaterial.

The amount of the impairment loss is charged in profit or loss. When a trade and non-trade receivable for which an impairment allowance had been recognised becomes uncollectible in a subsequent period, it is written off against the allowance account. Subsequent recoveries of amounts previously written off are credited in profit or loss.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

i. Inventories

Finished goods inventory is measured at the lower of cost or net realisable value. Cost is determined using the weighted-average method. The cost of finished goods and work in progress comprises materials, labour and an appropriate proportion of directly attributable fixed and variable overheads.

Net realisable value is the estimated selling price in the ordinary course of business less the estimated costs of completion and estimated cost necessary to make the sale.

Materials, fuels, spare parts and consumable supplies are valued at cost, determined on a moving average basis, less provision for obsolete items.

Provision for obsolete and slow-moving inventory is determined on the basis of estimated future usage of individual inventory items. Supplies of maintenance materials are charged to production costs in the period in which they are used.

j. Prepaid expenses

Prepaid expenses are amortised over their beneficial periods using the straight-line method.

k. Financial assets

(i) Classification

The Group classifies its financial assets in the following categories: at fair value through profit or loss, loans and receivables, available-for-sale, and held to maturity. The classification depends on the purpose for which the financial assets were acquired. Management determines the classification of its financial assets at initial recognition.

The Group has financial assets classified as loans and receivables and available-for-sale financial assets.

(a) Loans and receivables

Loans and receivables are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. They are included in current assets, except for maturities greater than 12 months after the end of the reporting period. These are classified as non-current assets. The Group's loans and receivables comprise cash and cash equivalents, time deposits, trade receivables, other receivables and other financial assets.

(b) Available-for-sale financial assets

Available-for-sale financial assets are non-derivatives that are either designated in this category or not classified in any of the other categories. They are included in non-current assets unless the investment matures or management intends to dispose of it within twelve months of the end of the reporting period.

(ii) Recognition and derecognition

Regular purchases and sale of financial assets are recognised on the trade date - the date on which the Group commits to purchase or sell the asset. Financial assets are derecognised when the rights to receive cash flows from the investments have expired or have been transferred and the Group has transferred substantially all risks and rewards of ownership.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

k. Financial assets (continued)

(iii) Measurement

Investments are initially recognised at fair value plus the transaction costs for all financial assets not carried at fair value through profit or loss. Available-for-sale financial assets are subsequently carried at fair value. Loans and receivables and financial asset held to maturity are carried at amortised cost using the effective interest method.

Changes in the fair value of monetary and non-monetary securities classified as available for sale are recognised in other comprehensive income.

Dividend income from financial assets at fair value through profit or loss and available-for-sale securities are recognised in profit or loss as part of "other income, net" when the Group's right to receive payments is established. Interest income from financial assets at fair value through profit or loss is included in "finance income".

Interest on available-for-sale securities calculated using the effective interest method is recognised in the profit or loss as part of "finance income".

l. Offsetting financial instruments

Financial assets and liabilities are offset and the net amount is reported in the statement of financial position when there is a legally enforceable right to offset the recognised amounts and there is an intention to settle on a net basis, or realise the asset and settle the liability simultaneously. The legally enforceable right must not be contingent on future events and must be enforceable in the normal course of business and in the event of default in solvency or bankruptcy of the Group or the counterparty.

m. Impairment of financial assets

At the end of each reporting period, the Group assesses whether there is objective evidence that a financial asset or group of financial assets is impaired. A financial asset or a group of assets is impaired and impairment losses are incurred only if there is objective evidence of impairment as a result of one or more events that occurred after the initial recognition of the asset (a "loss event") and that the loss event (or events) have an impact on the estimated future cash flows of the financial asset or group of financial assets that can be reliably estimated.

In the case of equity investments classified as available-for-sale, a significant and prolonged decline in the fair value of the security below its cost is considered as an indicator that the assets are impaired.

(i) Assets carried at amortised cost

For the loans and receivables category, the amount of the loss is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows (excluding future credit losses that have not been incurred) discounted at the financial asset's original effective interest rate. The carrying amount of the asset is reduced and the amount of the loss is recognised in profit or loss. If a loan has a floating interest rate, the discount rate for measuring any impairment loss is the current effective interest rate determined under the contract. The Group measures impairment on the basis of an instrument's fair value using an observable market price.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

m. Impairment of financial assets (continued)

(i) Assets carried at amortised cost (continued)

If, in a subsequent period, the amount of the impairment loss decreases and the decrease can be related objectively to an event occurring after the impairment was recognised (such as an improvement in the debtor's credit rating), the reversal of the previously recognised impairment loss is recognised in profit or loss.

(ii) Assets classified as available-for-sale

If there is objective evidence of impairment for available-for-sale financial assets, the cumulative loss measured as the difference between the acquisition cost and the current fair value, less any impairment loss on that financial asset previously recognised in profit or loss – is removed from equity and recognised in profit or loss.

If, in a subsequent period, the fair value of a debt instrument classified as available-for-sale increases and the increase can be objectively related to an event occurring after the impairment loss was recognised in profit or loss, the impairment loss is reversed through the consolidated statement of profit or loss.

Impairment losses on equity instruments recognised in the consolidated income statement are not reversed through the consolidated income statement in a subsequent period.

n. Exploration and evaluation assets

Exploration and evaluation activity involves the search for mineral resources after the Group has obtained legal rights to explore in a specific area, determination of the technical feasibility and assessment of the commercial viability of an identified resource. Exploration and evaluation expenditure comprises costs that are directly attributable to the following:

- Acquisition of rights to explore;
- Topographical, geological, geochemical and geophysical studies;
- Exploratory drilling;
- Trenching and sampling; and
- Activities involved in evaluating the technical feasibility and commercial viability of extracting mineral resources.

Exploration and evaluation expenditure related to an area of interest is written off as incurred, unless it is capitalised and carried forward, on an area of interest basis, provided that one of the following conditions is met:

(i) The rights of tenure of an area are current and it is considered probable that the costs will be recouped through successful development and exploitation of the area of interest or, alternatively, by its sale; or

(ii) Exploration activities in the area of interest have not yet reached the stage which would permit a reasonable assessment of the existence or otherwise of economically recoverable reserves and active and significant operations in or in relation to the area of interest are continuing.

Capitalised costs include costs directly related to exploration and evaluation activities in the relevant area of interest and exclude physical assets, which are recorded in property, plant and equipment. General and administrative costs are allocated to an exploration or evaluation asset only to the extent that those costs can be related directly to operational activities in the relevant area of interest.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

n. Exploration and evaluation assets (continued)

Capitalised exploration and evaluation expenditure is written off where the above conditions are no longer satisfied.

Identifiable exploration and evaluation assets acquired in a business combination are recognised initially as assets at fair value on acquisition and subsequently at cost less impairment charges. Exploration and evaluation expenditure incurred subsequent to the acquisition of an exploration asset in a business combination is accounted for in accordance with the accounting policy outlined above.

As exploration and evaluation assets are not available for use, they are not depreciated. Exploration and evaluation assets are assessed for impairment if facts and circumstances indicate that impairment may exist.

Exploration and evaluation assets are also tested for impairment once commercial reserves are found, before the assets are transferred to “mining properties - mines under development”.

Expenditure incurred before the entity has obtained the legal right to explore a specific area is expensed as incurred.

o. Mining properties

Development expenditure incurred by or on behalf of the Group is accumulated separately for each area of interest in which economically recoverable resources have been identified. Such expenditure comprises costs directly attributable to the construction of a mine and the related infrastructure and excludes physical assets and land rights, which are recorded as property, plant and equipment.

Once a development decision has been taken, the carrying amount of the exploration and evaluation assets in respect of the area of interest is transferred to “mines under development” within mining properties and aggregated with the subsequent development expenditure.

“Mines under development” are reclassified as “mines in production” at the end of the commissioning phase, when the mine is capable of operating in the manner intended by management.

No depreciation is recognised for “mines under development” until they are reclassified as “mines in production”.

When further development expenditure is incurred on a mining properties after the commencement of production, the expenditure is carried forward as part of “mines in production” when it is probable that additional future economic benefits associated with the expenditure will flow to the Group. Otherwise, such expenditure is classified as a cost of production.

“Mines in production” (including reclassified exploration, evaluation and development expenditure, and payments made to acquire mineral rights and leases) are amortised using the units-of-production method, with separate calculations being made for each area of interest. “Mines in production” will be depleted using the units-of-production method.

Identifiable mining properties acquired in a business combination are initially recognised as assets at their fair value. Development expenses incurred subsequent to the acquisition of the mining properties are accounted for in accordance with the policy outlined above.

“Mines under development” and “mines in production” are tested for impairment in accordance with the policy described in Note 2s.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

p. Fixed assets

Fixed assets are stated at cost less accumulated depreciation. Historical cost includes expenditure that is directly attributable to the acquisition of items. Depreciation of the main mining equipment used in mining operations is calculated using the unit-of-production method. Other fixed assets, except land, are depreciated using the straight-line method to their estimated residual value over the lesser of the estimated useful lives of the assets, the life of the mine or the IUP term as follows:

	Years
Structure, buildings and improvements	5 to 30 and 50*)
Plant, machinery and mining equipment	4 to 34 and 50*)
Office, hospital and housing equipment and furniture and fixtures	3 to 30 and 50*)
Transportation equipment	4 to 8

*) Useful life of fixed assets of 50 years only for fixed assets in the Company.

Subsequent costs are included in the asset's carrying amount or recognised as a separate assets, as appropriate, only when it is probable that future economic benefits associated with the item will flow to the Group and the cost of the item can be measured reliably. The carrying amount of the replaced part is derecognised. All other repairs and maintenance are charged to profit or loss during the financial period in which they are incurred.

Initial legal costs incurred to obtain legal rights are recognised as part of the acquisition cost of the land, and these costs are not depreciated. Costs related to renewal of land rights are recognised as intangible assets and amortised during the period of the land rights.

Net gains or losses on disposals are determined by comparing the proceeds with the carrying amount and are recognised within "other income, net" in profit or loss.

The assets' residual values, useful lives and depreciation method are reviewed and adjusted if appropriate, at the end of each reporting period.

An asset's carrying amount is written down immediately to its recoverable amount if the asset's carrying amount is greater than its estimated recoverable amount.

The accumulated costs of the construction of the buildings and plant and the installation of machinery are capitalised as construction in progress. These costs are reclassified to fixed asset accounts when the construction or installation is complete. Depreciation is charged from the date the assets are ready for use in the manner intended by management.

q. Goodwill

Goodwill is measured as described in Note 2c.i. Goodwill on acquisitions of subsidiaries is included in intangible assets.

Goodwill impairment reviews are undertaken annually or more frequently if events or changes in circumstances indicate a potential impairment. Goodwill is carried at cost less accumulated impairment losses.

For the purposes of impairment testing, goodwill acquired in a business combination is allocated to each of the cash generating units ("CGU"), or groups of CGUs, that is expected to benefit from the synergies of the combination. Each unit or group of units to which the goodwill is allocated represents the lowest level within the entity at which the goodwill is monitored for internal management purposes. Goodwill is monitored at the operating segment level.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

r. Investment properties

Property that is held for long-term rental yields or for capital appreciation or both, and that is not occupied by the companies in the Group, is classified as investment property. Investment property also includes property that is being constructed or developed for future use as investment property.

Investment property is measured initially at its cost, including related transaction costs and where applicable, borrowing costs.

After initial recognition, investment property is carried at fair value. Investment property that is being redeveloped for continuing use as investment property or for which the market has become less active continues to be measured at fair value. Investment property under construction is measured at fair value if the fair value is considered to be reliably determinable.

Fair value is based on active market prices, adjusted, if necessary, for differences in the nature, location or condition of the specific asset. If this information is not available, the Group uses alternative valuation methods, such as recent prices on less active markets or discounted cash flow projections. Valuations are performed as at the financial position date by professional valuers who hold recognised and relevant professional qualifications and have recent experience in the location and category of the investment property being valued. These valuations form the basis for the carrying amounts in the consolidated financial statements.

Subsequent expenditure is capitalised to the asset's carrying amount only when it is probable that future economic benefits associated with the expenditure will flow to the Group and the cost of the item can be measured reliably. All other repairs and maintenance costs are expensed when incurred. When part of an investment property is replaced, the carrying amount of the replaced part is derecognised.

Changes in fair values are recognised in the statement of profit or loss and other comprehensive income. Investment properties are derecognised when they have been disposed.

s. Impairment of non-financial assets

Assets that have an indefinite useful life - for example, goodwill or intangible assets not ready for use - are not subject to amortisation but are tested annually for impairment, or more frequently if events or changes in circumstances indicate that they might be impaired. Assets that are subject to amortisation are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss is recognised for the amount by which the asset's carrying amount exceeds its recoverable amount. The recoverable amount is the higher of an asset's fair value less costs to sell and value in use. For the purposes of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash inflows, which are largely independent of the cash inflows from other assets or groups of assets (cash generating units). Non-financial assets other than goodwill that suffer impairment are reviewed for possible reversal of the impairment at each reporting date.

Reversal on impairment loss for assets other than goodwill would be recognised if, and only if, there has been a change in the estimates used to determine the asset's recoverable amount since the last impairment test was carried out. Reversal on impairment losses will be immediately recognised in profit or loss, except for assets measured using the revalution model as required by other SFAS. Impairment losses relating to goodwill would not be reversed.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

t. Assets held for sale and discontinued operations

Assets are clasiified as assets held for sale when their carrying amount is to be recovered principally through a sale transaction rather than through continuing use and a sale is considered highly probable. They are stated at the lower of carrying amount and fair value less costs to sell, except for assets such as deferred tax assets, assets arising from employee benefits, financial assets and investment property that are carried at fair value, which are specifically exempts from this requirement.

An impairment loss is recognised for any initial or subsequent write-down of the asset to fair value less costs to sell. A gain is recognised for any subsequent increases in fair value less costs to sell of an asset, but not in excess of any cumulative impairment loss previously recognised. A gain or loss not previously recognised by the date of the sale of the asset is recognised at the date of derecognition.

Non-current assets are not depreciated or amortised while they are classified as held for sale. Interest and other expenses attributable to the liabilities of a disposal group classified as held for sale continue to be recognised.

Assets classified as held for sale are presented separately from the other assets in the statements of financial position. The liabilities as held for sale are presented separately from other liabilities in the statements of financial position.

Assets that stops being classified as held for sale should be remeasured. This should be lower of:

a) Its carrying amount prior to the asset being classified as held for sale, adjusted for any depreciation, amortisation or revaluation that would be recognised if the asset had not been classified as held for sale; and
b) Its recoverable amount at the date of decision not to sell.

A discontinued operation is a component of the entity that has been disposed of or is classified as held for sale and that represents a separate major line of business or geographical area of operations, is part of a single co-ordinated plan to dispose of such a line of business or area of operations, or is a subsidiary acquired exclusively with a view to resale. The results of discontinued operations are presented separately in profit or loss.

u. Trade payables

Trade payables are obligations to pay for goods or services that have been acquired in the ordinary course of business from suppliers. Trade payables are classified as short-term liabilities if payment is due within one year or less (or in the ordinary operating cycle of the business if longer). If not, they are presented as long-term liabilities.

Trade payables are recognised initially at fair value and subsequently measured at amortised cost using the effective interest method.

v. Borrowings

Borrowings are recognised initially at fair value, net of transaction costs incurred. Borrowings are subsequently carried at amortised cost; any difference between the proceeds (net of transaction costs) and the redemption value is recognised in profit or loss over the period of the borrowings using the effective interest method.

Fees paid on the establishment of loan facilities are recognised as transaction costs of the loan to the extent that it is probable that some or all of the facility will be drawn-down. In this case, the fee is deferred until the draw-down occurs. To the extent that there is no evidence that it is probable that some or all of the facility will be drawn down, the fee is capitalised as a pre-payment for liquidity services and amortised over the period of the facility to which it relates.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

v. Borrowings (continued)

Borrowings are removed from the statement of financial position when the obligation specified in the contract is discharged, cancelled or expired. The difference between the carrying amount of a financial liability that has been extinguished or transferred to another party and the consideration paid, including any non-cash assets transferred or liabilities assumed, is recognised in profit or loss as "Other income/(expenses), net" or "Finance cost".

Borrowings are classified as current liabilities unless the Group has an unconditional right to defer the settlement of the liability for at least 12 months after the reporting date.

w. Borrowing cost

Interest and other borrowing costs, such as discount fees on loans either directly or indirectly used in financing the construction of a qualifying asset, are capitalised up to the date when construction is complete. For borrowings that are directly attributable to a qualifying asset, the amount to be capitalised is determined as the actual borrowing cost incurred during the period, less any income earned on the temporary investment of such borrowings. For borrowings that are not directly attributable to a qualifying asset, the amount to be capitalised is determined by applying a capitalisation rate to the amount expended on the qualifying assets. The capitalisation rate is the weighted average of the total borrowing costs applicable to the total borrowings outstanding during the period, other than borrowings made specifically for the purpose of obtaining a qualifying asset.

x. Leases

Determination of whether an arrangement is, or contains, a lease is made based on the substance of the arrangement and assessment of whether fulfillment of the arrangement is dependent on the use of a specific asset or assets, and the arrangement conveys a right to use the asset.

Leases in which a significant portion of the risks and rewards of ownership are retained by the lessor are classified as operating leases. Payments made under operating leases (net of any incentives received from the lessor) are charged to profit or loss on a straight-line basis over the term of the lease.

The Group leases certain property, plant and equipment. Leases of property, plant and equipment where the Group as lessee has substantially all the risks and rewards of ownership are classified as finance leases. Finance leases are capitalised at the lease's commencement at the lower of the fair value of the leased asset and the present value of the minimum lease payments.

The corresponding rental obligation net of finance charges, are included in "finance lease liabilities". Each lease payment is allocated between the liability and finance charges so as to achieve a constant rate on the finance balance outstanding. Finance cost is charged to profit or loss over the lease period so as to produce a constant periodic rate of interest on the remaining balance of the liability for each period. The property, plant and equipment acquired under finance leases is depreciated over the shorter of the useful life of the asset and the lease term if there is no reasonable certainty that the Group will obtain ownership at the end of the lease term.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

y. Employee benefits

i. Short-term employee benefits

Short-term employee benefits are recognised when they accrue to the employees.

ii. Pension benefits, other post-employment benefits and other long-term benefits

The Group is required to provide a minimum amount of pension benefits in accordance with Labour Law No. 13/2003 or the Group's Collective Labour Agreement ("CLA"), whichever is higher. Since the Labour Law and the CLA set the formula for determining the minimum amount of benefits, in substance pension plans under the Labour Law or the CLA represent defined benefit plans.

The pension benefit obligation is the present value of the defined benefit obligation at the balance sheet date less the fair value of plan assets. The defined benefit obligation is calculated annually by independent actuaries using the projected unit credit method. The present value of the defined benefit obligation is determined by discounting the estimated future cash outflows using interest rates of government bonds (considering currently there is no deep market for high quality corporate bonds) that are denominated in Rupiah, the currency in which the benefits will be paid and that have terms to maturity approximating the terms to the related pension obligation.

The Group also provides other post-employment benefits, and other long term benefits such as long service reward, death allowance, jubilee rewards, and separation reward. The long service reward is paid when the employees reach their retirement age. Death allowance is paid when the employee or the qualified family members pass away. The separation reward benefit is paid to employees in the event of voluntary resignation, subject to a minimum number of years of service. These benefits have been accounted for using the same methodology as for the defined benefit pension plan.

Actuarial gains and losses arising from experience adjustments and changes in actuarial assumptions are charged or credited to equity in other comprehensive income in the period in which they arise, except for other long-term benefits, where actuarial gain/loss is directly recognised as expenses in profit or loss.

Past service costs are recognised immediately in profit or loss. Gains or losses on the curtailment or settlement of a defined benefit plan are recognised in profit or loss when the curtailment or settlement occurs.

iii. Post-retirement health care benefits

The Group provides post-retirement healthcare benefits to its retirees. The entitlement to these benefits is usually based on the employee remaining in service up to retirement age and the completion of a minimum service period. The expected costs of these benefits are accrued over the period of employment, using methodology similar for defined benefit pension plans.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

y. Employee benefits (continued)

iv. Termination benefits

Termination benefits are payable when employment is terminated by the Group before the normal retirement date, or whenever an employee accepts voluntary redundancy in exchange for these benefits. The Group recognises termination benefits at the earlier of the following dates: (i) when the Group can no longer withdraw the offer of those benefits; and (ii) when the Group recognises costs for a restructuring that is within the scope of SFAS 57 and involves the payment of termination benefits. In the case of an offer made to encourage voluntary redundancy, the termination benefits are measured based on the number of employees expected to accept the offer. Benefits falling due more than 12 months after the reporting date are discounted to their present value.

z. Provision for environmental reclamation and mine closure

Restoration, rehabilitation, and environmental expenditure to be incurred during the production phase of operations are charged as part of the cost of production.

The Group has certain obligations to restore and rehabilitate mining areas following the completion of production. Provision for environmental and reclamation costs is recognised when the Group has a present legal or constructive obligation as a result of past events; it is probable that an outflow of resources will be required to settle the obligation; and the amount can be reliably estimated.

Such obligations are measured at the present value of the expenditure expected to be required to settle the obligation using the pre-tax discount rate that reflects the current market assessment of the time value of money and the risks specific to the obligation. Obligation recognised at its present value only if the impact of discounting is considered material. Changes in estimated restoration and environmental costs to be incurred are accounted for on a prospective basis over the remaining mine life.

aa. Taxation

The tax expenses comprise current and deferred tax. Tax is recognised in profit or loss, except to the extent that it relates to items recognised in other comprehensive income or directly in equity. In this case, the tax is also recognised in other comprehensive income or directly in equity, respectively.

The current income tax charge is calculated on the basis of the tax laws enacted or substantively enacted at the reporting date in the countries where the Company and its subsidiaries operate and generate taxable income. Management periodically evaluates positions taken in tax returns with respect to situations in which applicable tax regulations are subject to interpretation. It establishes provision where appropriate on the basis of amounts expected to be paid to the tax authorities.

Deferred income tax is recognised, using the balance sheet liability method, on temporary differences arising between the tax bases of assets and liabilities and their carrying amounts in the consolidated financial statements. However, deferred tax liabilities are not recognised if they arise from the initial recognition of goodwill. Deferred income tax is not accounted for if it arises from initial recognition of an asset or liability in a transaction other than a business combination that at the time of the transaction affects neither accounting nor taxable profit or loss.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

aa. Taxation (continued)

Deferred income tax is determined using tax rates that have been enacted or substantially enacted as at the reporting period and is expected to apply when the related deferred income tax asset is realised or the deferred income tax liability is settled.

Deferred income tax assets are recognised only to the extent that it is probable that future taxable profit will be available against which the temporary differences can be utilised.

Deferred income tax assets and liabilities are offset when there are legally-enforceable right to offset current tax assets against current tax liabilities and when the deferred income taxes assets and liabilities relate to income taxes levied by the same taxation authority on the same taxable entities where there is an intention to settle the balances on a net basis, or to realise the assets and settle the liability simultaneously.

ab. Share capital

Incremental costs directly attributable to the issue of new ordinary shares or options are shown in equity as a deduction, net of tax, from the proceeds.

Where any Group company purchases the Company's equity share capital (treasury shares), the consideration paid, including any directly attributable incremental costs (net of income taxes) is deducted from equity attributable to the Company's equity holders until the shares are cancelled or reissued. Where such ordinary shares are subsequently reissued, any consideration received, net of any directly attributable incremental transaction costs and the related income tax effects, is included in equity attributable to the Company's equity holders.

ac. Dividend distribution

Dividend distribution to the Company's shareholders is recognised as a liability in the Group's financial statements in the period in which the dividends are approved by the Company's shareholders.

ad. Provision

Provision for environmental restoration, restructuring costs and legal claims is recognised when: the Group has a present legal or constructive obligation as a result of past events; it is probable that an outflow of resources will be required to settle the obligation; and the amount has been reliably estimated. Provision is not recognised for future operating losses.

Where there are a number of similar obligations, the likelihood that an outflow will be required in settlement is determined by considering the class of obligations as a whole. A provision is recognised even if the likelihood of an outflow with respect to any one item included in the same class of obligations may be small.

Provisions are measured at the present value of management's best estimate of the expenditure required to settle the present obligation at the end of the reporting period. The discount rate used to determine the present value is a pretax rate that reflects current market assessments of the time value of money and the risks specific to the liability. The increase in the provision due to the passage of time is recognised as interest expense.

ae. Earnings per share

Basic earnings per share are calculated by dividing the profit attributable to the owner of the parent entity of the Company by the weighted average number of ordinary shares outstanding during the year.

2. SIGNIFICANT ACCOUNTING POLICIES (continued)

ae. Earnings per share (continued)

Diluted earnings per share is calculated by adjusting the weighted average number of ordinary shares outstanding to assume the conversion of all dilutive potential ordinary shares. As at 31 December 2017, 2016 and 2015, there were no existing instruments which could result in the issue of further ordinary shares. Therefore, diluted earning per share is equivalent to basic earnings per share.

af. Segment reporting

Operating segments are reported in a manner consistent with the internal reporting provided to the chief operating decision-maker. The chief operating decision-maker, who is responsible for allocating resources and assessing performance of the operating segments, has been identified as the steering committee that makes strategic decisions.

3. CRITICAL ACCOUNTING ESTIMATES AND JUDGEMENTS

The preparation of consolidated financial statements in conformity with Indonesian Financial Accounting Standards requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenue and expenses during the reporting period. Estimates, assumptions and judgements are continually evaluated and are based on historical experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances.

The Group has identified the following critical accounting policies under which significant judgements, estimates and assumptions are made and where actual results may differ from these estimates under different assumptions and conditions and may materially affect financial results or the financial position reported in future periods.

Critical accounting estimates and assumptions

Estimated useful lives of fixed assets

The Group estimates the useful lives of its fixed assets based on expected asset utilisation as anchored on business plans and strategies that also consider expected future technological developments and market behavior. The estimation of the useful lives of fixed asset is based on the Group's collective assessment of industry practice, internal technical evaluation and experience with similar assets.

The estimated useful lives are reviewed at least at each financial year end and are updated if expectations differ from previous estimates due to physical wear and tear, technical or commercial obsolescence and legal or other limitations on the use of the assets. It is possible, however, that future results of operations could be materially affected by changes in the estimates brought about by changes in the factors mentioned above.

The amounts and timing of recorded expenses for any year will be affected by changes in these factors and circumstances. A reduction in the estimated useful lives of the Group's fixed assets will increase the recorded operating expenses and decrease non-current assets.

3. CRITICAL ACCOUNTING ESTIMATES AND JUDGEMENTS (continued)

Critical accounting estimates and assumptions (continued)

Goodwill and impairment of non-financial assets

The consolidated financial statements reflect acquired businesses after the completion of the respective acquisition. The Group accounts for the acquired businesses using the acquisition method, which requires extensive use of accounting estimates and judgements to allocate the purchase price to the fair market values of the acquiree's identifiable assets and liabilities at the acquisition date. Any excess in the purchase price over the estimated fair market values of the net assets acquired is recorded as goodwill in the consolidated statement of financial position. Thus, the numerous judgements made in estimating the fair market value tobe assigned to the acquiree's assets and liabilities can materially affect the Group's financial performance.

The determination of fair value less cost to sell and value in use requires management to make estimates and the assumptions about expected production and sales volumes, commodity prices (considering current and historical prices, price trends and related factors), mineral resources and reserves, operating costs, closure and rehabilitation costs and future capital expenditure. These estimates and assumptions are subject to risk and uncertainty; hence there is a possibility that changes in circumstances will alter these projections, which may have an impact on the recoverable amount of the assets. In such circumstances, some or all of the carrying value of the assets may be further impaired or the impairment charge reduced with the impact recorded in profit or loss.

Assets held for sale and discontinued operations

Significant judgement is required to determine the recoverable amount of asset held for sale and discontinued operations, in the absence of quoted market price. These values are typically based on the present value of future cash flows where the estimation is required for reserves, future mine plans and production profiles, operational and capital costs, discount rates and expected coal prices. Changes in circumstances may alter these projections, which may impact the recoverable amount of the assets. In such circumstances, some or all of the carrying value of the assets may be impaired and charged to profit or loss.

3. CRITICAL ACCOUNTING ESTIMATES AND JUDGEMENTS (continued)

Critical accounting estimates and assumptions (continued)

Mineral reserve estimates

Proven and probable reserves are estimates of the amount of output that can be economically and legally exploited from the Group's mining properties. The Group determines and reports their mineral reserves under the principles incorporated in the Code for Reporting of Mineral Resources and Ore Reserves (the "JORC Code") of the Australasian Joint Ore Reserves Committee ("JORC"). In order to estimate mineral reserves, assumptions are required about a range of geological, technical and economic factors, including quantities, production techniques, stripping ratio, production costs, transportation costs, commodity demand, commodity prices and exchange rates.

Estimating the quantity and/or mineral content of mineral reserves requires the size, shape and depth of mineral bodies or fields to be determined by analysing geological data such as drilling samples. This process may require complex and difficult geological judgements to interpret the data.

Because the economic assumptions used to estimate reserves change from period to period and because additional geological data are generated during the course of operations, estimates of reserves may change from period to period. Changes in the reported reserves may affect the Group's financial results and financial position in a number of ways, including the following:

- Asset carrying values may be affected due to changes in estimated future cash flows.
- Depreciation, depletion and amortisation charged in the consolidated statement of profit or loss and other comprehensive income may change where such charges are determined on a units of production basis, or where the useful economic lives of assets change.
- Decommissioning, site restoration and environmental provision may change where changes in estimated reserves affect expectations about the timing or cost of these activities.
- The carrying value of deferred tax assets/liabilities may change due to changes in estimates of the likely recovery of the tax benefits.

In relation to the acquisition of an additional 7.5% share ownership in PT Nusa Halmahera Mineral ("NHM") in December 2012, the management also performs an estimation of potential gold resources held by NHM at each reporting date.

Provision for environmental reclamation and mine closure

The Group's accounting policy for the recognition of environmental reclamation and mine closure provision requires significant estimates and assumptions, such as requirements of the relevant legal and regulatory framework; the magnitude of possible contamination and the timing, extent and costs of required environmental reclamation and mine closure activity. These uncertainties may result in future actual expenditure differing from the amounts currently provided. If total current year expenditure related to past activity is higher than the existing balance, the differences will be charged to the periods where the excess arises. The provision recognised for each site is periodically reviewed and updated based on the facts and circumstances available at the time.

3. CRITICAL ACCOUNTING ESTIMATES AND JUDGEMENTS (continued)

Critical accounting estimates and assumptions (continued)

Post employment benefits obligation

The present value of the pension obligation depends on a number of factors that are determined on an actuarial basis using a number of assumptions. The assumptions used in determining the net cost/(income) for pensions include the discount rate, future salary increase, future remuneration changes, employee attrition rates, life expectancy and expected remaining periods of service of employees. Any changes in these assumptions will have an impact on the carrying amount of the pension obligation.

The Group determines the appropriate discount rate at the end of each year. This is the interest rate that should be used to determine the present value of estimated future cash outflows expected to be required to settle the pension obligation. In determining the appropriate discount rate, the Group considers the interest rates of government bonds (considering there is no deep market for high quality corporate bonds) that are denominated in the currency in which the benefits will be paid and that have terms to maturity approximating the terms of the related pension obligation.

For the rate of future salary increases, the Group collects all historical data relating to changes in base salaries and adjusts it for future business plan.

Other key assumptions for pension obligations are based in part on current market conditions. Additional information is disclosed in Note 30.

Judgements

Uncertain tax exposure

Judgements and assumptions are required to determine the capital allowances and deductibility of certain expenses during the estimation of the provision for income tax expense for each company within the Group. In particular, the calculation of Group's income tax expenses involves the interpretation of applicable tax laws and regulations. There are many transactions and calculations for which the ultimate tax determination is uncertain during the ordinary course of business.

All judgements and estimates taken by management as discussed above may be challenged by the Directorate General of Taxation ("DGT") or the Government Auditors. As a result, the ultimate tax determination becomes uncertain. The resolution of tax positions taken by the Group, can take several years to complete and in some cases it is difficult to predict the ultimate outcome. Where the final outcome of these matters is different from the amounts initially recorded, such differences will have an impact on the income tax and deferred income tax provision in the year in which this determination is made.

Deferred tax assets, including those arising from tax losses carried forward, capital allowances and other temporary differences, are recognised only where it is considered more likely than not that they will be recovered, which is dependent on the generation of sufficient future taxable profits. Similar to "Goodwill and Impairment of non-financial assets", assumptions regarding the generation of future taxable profits are heavily affected by management's estimates and assumptions regarding expected production levels, sales volumes, commodity prices, etc; which are subject to risk and uncertainty, and hence there is a possibility that changes in circumstances will alter the projected future taxable profits.

3. CRITICAL ACCOUNTING ESTIMATES AND JUDGEMENTS (continued)

Judgements (continued)

Determination of functional currency

In the process of applying the Group's accounting policies, the management has to make a judgement on the determination of the functional currency of each of the Group's entities which has significant effects on the amounts recognised in the consolidated financial statements.

The functional currency of each entity within the Group is the currency of the primary economic environment in which each of the entities operates. It is the currency, among other factors, that mainly influences the sales prices for goods and services, of the country whose competitive forces and regulations mainly determine the sales prices of its goods and services, the currency that mainly influences labour, material and other costs and the currency in which funds from financing activities are generated.

Assessment whether the Company has control over Antam, Timah and Bukit Asam

The existence of control encompasses the investor's power over the investee, its exposure, or rights, to variable returns from its involvement with the investee, and its ability to use its power over the investee to affect its returns. The consolidated financial statements include the financial statements of Antam, Timah, and Bukit Asam in which the Company holds, through Series B shares (see Note 32), the majority of the ownership interest in those subsidiaries. In assessing whether it has power over those entities, management applies judgement and considers the rights attached to those ownership interests obtained by virtue of contractual agreement with other shareholders. Those rights have given the Company the ability to direct the activities of those subsidiaries that significantly affect their returns and as such, constitute control.

4. TRANSACTION WITH ENTITIES UNDER COMMON CONTROL

In 2017, the Company received additional state equity participation in the form of transferring all series B shares owned by the Government of Indonesia of Antam, Timah and Bukit Asam as disclosed in Note 32.

The above transaction was accounted for using the pooling-of-interests method as required under SFAS 38 (Revised 2012) "Business Combination of Entities Under Common Control" since the Company, Antam, Timah and Bukit Asam are entities under common control of the Government of Republic of Indonesia.

The difference between the purchase consideration and the carrying value of investments obtained from this transaction is recorded in the account "additional paid-in capital" in the equity section. The equity of Antam, Timah and Bukit Asam prior to the date of combination is presented as "equity of merging entities" in the equity section. The details of the purchase consideration and the carrying value of the investments are as follows:

	Purchase consideration	Carrying value of investment	Additional paid-in capital
Bukit Asam	18,347,366	8,847,984	9,499,382
Antam	16,902,338	10,503,822	6,398,516
Timah	6,241,548	3,939,840	2,301,708
Total	**41,491,252**	**23,291,646**	**18,199,606**

4. TRANSACTION WITH ENTITIES UNDER COMMON CONTROL (continued)

The Group has restated the consolidated financial statements as if Antam, Timah and Bukit Asam had been combined since 31 December 2015.

The significant impact arising in accounting policy uniformity on business combination transactions of entities under common control above is the use of the cost model for class of assets of structure and building in the Company and class of assets of land rights in Antam which previously used revaluation model.

The Group's consolidated financial statements as at 31 December 2016 have been restated as follows:

	Before restatement	Restatement	After restatement
31 December 2016			
Statements of financial position			
Current assets	9,197,216	24,218,056	33,415,272
Non-current assets	12,616,019	27,070,411	39,686,430
Current liabilities	1,144,476	12,456,294	13,600,770
Non-current liabilities	74,058	11,035,762	11,109,820
Equity	20,594,701	27,796,411	48,391,112
Statements of profit or loss and other comprehensive income			
Revenue	5,771,035	30,133,423	35,904,458
Gross profit	1,730,238	6,480,913	8,211,151
Profit before income tax	1,197,308	3,271,868	4,469,176
Profit for the year	884,134	3,555,137	4,439,271
Total comprehensive income for the year	6,312,358	(2,207,018)	4,105,340
Statements of cash flows			
Net cash received from operating activities	344,133	3,912,176	4,256,309
Net cash used in investing activities	(1,006,742)	(2,245,383)	(3,252,125)
Net cash used in financing activities	(315,569)	(1,429,288)	(1,744,857)
Net decrease in cash and cash equivalents	(978,178)	237,505	(740,673)
Reclassified from assets of disposal group classified as held for sale	-	1,508	1,508
Effect of foreign exchange loss on cash and cash equivalents	(145,553)	(76,580)	(222,133)
Cash and cash equivalents at beginning of the year	5,228,638	11,699,443	16,928,081
Cash and cash equivalents at the end of the year	4,104,907	11,861,876	15,966,783

4. TRANSACTION WITH ENTITIES UNDER COMMON CONTROL (continued)

The Group's consolidated financial statements as at 31 December 2015 have been restated as follows:

	Before restatement	Restatement	After restatement
31 December 2015			
Statements of financial position			
Current assets	9,922,568	24,295,503	34,218,071
Non-current assets	5,719,840	29,904,420	35,624,260
Current liabilities	780,072	12,261,018	13,041,090
Non-current liabilities	252,851	11,294,227	11,547,078
Equity	14,609,485	30,644,678	45,254,163
Statements of profit or loss and other comprehensive income			
Revenue	6,570,462	31,250,896	37,821,358
Gross profit	1,793,004	5,132,446	6,925,450
Profit before income tax	1,389,451	1,163,186	2,552,637
Profit for the year	1,058,617	697,820	1,756,437
Total comprehensive income for the year	1,056,568	3,123,193	4,179,761
Statements of cash flows			
Net cash received from operating activities	894,636	3,719,427	4,614,063
Net cash used in investing activities	(381,250)	(3,899,021)	(4,280,271)
Net cash (used in)/ received from financing activities	(23,674)	4,569,827	4,546,153
Net increase in cash and cash equivalents	489,712	4,390,233	4,879,945
Reclassified from assets of disposal group classified as held for sale	-	4,286	4,286
Effect of foreign exchange loss on cash and cash equivalents	478,766	(25,767)	452,999
Cash and cash equivalents at beginning of the year	4,260,160	7,330,691	11,590,851
Cash and cash equivalents at the end of the year	5,228,638	11,699,443	16,928,081

5. BUSINESS COMBINATION

a. TBBE

On 26 November 2012, TIM, a subsidiary of Timah, entered into a Memorandum of Understanding No. 001/DIR/TIM-TBBE/NKB/XI/2012-S7 with TBBE, which has been formally stated in the coal purchase (offtake) agreement No. 003/DIR/4000/TIM/TBBE/XI/2012/S/7 dated 26 November 2012 and has been legalised through Notarial Deed No. 5 dated 10 December 2012, of Drs. Andy A. Agus S.H., a notary in Jakarta to buy 6 million metric tons of coal at price Rp10,000 (full amount) per metric ton of coal located in Lekukam Block, South Sumatera. TIM paid Rp60,000 for the coal. As the payment has been completed, the Group received 10% share ownership in TBBE.

The transfer of 10% share ownership was completed in June 2013. TIM paid Rp4,341 for the purchase of coal and the transfer of share ownership. This transaction is recorded as investment in associates.

On 1 October 2014, based on Notarial Deed No. 8 from Drs. Andy Alhadis Agus, S.H., a notary in Jakarta, regarding the decisions of the extraordinary general meeting of shareholders, the shareholders of TBBE agreed to appoint representatives from TIM as members of its Board of Directors and Board of Commissioners. As such, TIM has an ability to exercise influence to participate in developing the financial and operational policy of TBBE.

On 18 September 2015, based on Notarial Deed No.11 from Drs. Andy Alhadis Agus, S.H., a notary in Jakarta, regarding the Decisions of the Extraordinary General Meeting of Shareholders, the shareholders of TBBE agreed the transfer of shares to TIM and DAK for 99.8% and 0.2%, respectively.

As a result of this share sale and purchase transaction, the Group owns 100% of the shares of TBBE. The total consideration for purchase of shares in TBBE was Rp121,415 which included the fair value of the previously held interest amounted to Rp60,538. Cash payment made on the date of the transaction was Rp20,000 while the remaining is still payable and recorded as part of financial liabilities.

Fair value of the assets and liabilities arising from this acquisition are as follows:

	18 September 2015
Purchase consideration	121,415
Purchase consideration allocation	
Cash and cash equivalents	205
Trade and other receivables	1,965
Inventories	9,779
Fixed assets	1,340
Mining properties	175,335
Other assets	3,607
Trade payables	(19,499)
Accruals and other current liabilities	(8,388)
Deferred tax liabilities	(42,929)
Fair value of net assets	121,415
Interest acquired	100%
Fair value of net assets acquired	121,415
Purchase consideration	(121,415)
Goodwill	-
Cash consideration	20,000
Cash and cash equivalents in TBBE	(205)
Net cash outflow on acquisition of subsidiary	**19,795**

5. BUSINESS COMBINATION (continued)

a. TBBE (continued)

The fair value of the previously held interest in TBBE is similar with its carrying value.

Total loss recorded in TBBE from the acquisition date until 31 December 2015 was Rp6,525.

b. SBS

On 28 January 2015, Bukit Asam, through BMI, a subsidiary of Bukit Asam, acquired ownership of SBS shares.

BMI made a capital contribution amounting to Rp48 billion (full amount) to acquire 95% ownership of SBS' shares.

SBS's activities include transportation, construction, trading, mining, workshop, and services. SBS' home office is located at Jakarta.

In accordance with the relevant accounting standard, fair value of assets acquired and liabilities assumed, may be adjusted within twelve months after the acquisition date. As at 31 December 2015, Bukit Asam re-analysed the fair values of assets acquired and liabilities assumed recognised at the acquisition date. The following table summarises the result of the reassessment of the consideration paid on the acquisition of SBS and the amounts of the assets acquired and liabilities assumed recognised at the acquisition date.

	28 January 2015
Purchase consideration	48,000
Purchase consideration allocation:	
Cash and cash equivalents	50,574
Trade receivables	47,299
Other receivables	10,784
Prepayments and advances	3,397
Prepaid taxes	8,580
Inventories	4,617
Fixed assets	174,019
Intangible assets	1,957
Deferred tax assets	65,874
Goodwill	102,077
Trade payables	(60,996)
Accruals	(23,946)
Other payables	(33,932)
Amount due to related party	(9,754)
Tax payables	(6,010)
Financial lease payables	(73,229)
Bank borrowings	(216,157)
Fair value of identifiable net assets acquired	45,154
Non-controlling interest	2,846
Purchase consideration	**48,000**

5. BUSINESS COMBINATION (continued)

b. SBS (continued)

The following table is the reconciliation of cash paid and acquired from the acquisition of BSP.

	28 January 2015
Cash consideration	48,000
Cash and cash equivalents in SBS	(50,574)
Net cash inflow on acquisition of subsidiary	**(2,574)**

The goodwill of Rp102 billion (full amount) arising from the acquisition is attributable to the economies of scale expected from synergy of the operations between the Group and SBS through expertise in mining contractor business and human resource owned by SBS. None of the goodwill recognised is expected to be deductible for income tax purposes.

Acquisition related costs have been charged to general and administrative expenses in profit or loss for the year ended 31 December 2015.

The fair value of the non-controlling interest in SBS, was estimated by using the purchase price paid for acquisition of the 95% interest in SBS.

Total trade and other receivables amounting to Rp58.1 billion (full amount) were considered by management as collectible receivables.

The revenue and loss included in profit or loss since 28 January 2015 contributed by SBS was Rp169 billion (full amount) and Rp35 billion (full amount).

Had SBS been consolidated from 1 January 2015, profit or loss would show proforma revenue of Rp169 billion (full amount) and proforma profit of Rp33 billion (full amount).

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

6. CASH AND CASH EQUIVALENTS

Cash and cash equivalents consist of the following:

	31 December 2017	31 December 2016	31 December 2015*)
Cash on hand	**4,070**	**3,474**	**4,696**
Cash in banks			
Related parties (Note 42a)			
Rupiah	1,607,370	1,162,374	4,370,107
US Dollar	1,191,953	2,414,096	2,856,336
Australian Dollar	11,487	6,365	50,788
British Pound Sterling	376	162	171
Singapore Dollar	298	82	786
Japanese Yen	-	-	256
	2,811,484	3,583,079	7,278,444
Third parties			
US Dollar	161,855	476,876	497,675
Rupiah	153,931	125,480	76,987
British Pound Sterling	942	817	1,467
Australian Dollar	317	292	2,316
China Renminbi	64	56	111
	317,109	603,521	578,556
Total cash in banks	**3,128,593**	**4,186,600**	**7,857,000**
Short-term time deposits			
Related parties (Note 42a)			
Rupiah	8,051,531	8,336,643	3,737,068
US Dollar	4,315,038	3,191,050	4,897,226
Australian Dollar	-	48,622	-
	12,366,569	11,576,315	8,634,294
Third parties			
Rupiah	549,000	160,086	418,296
US Dollar	94,836	40,308	13,795
	643,836	200,394	432,091
Total short-term time deposits	**13,010,405**	**11,776,709**	**9,066,385**
Total cash and cash equivalents	**16,143,068**	**15,966,783**	**16,928,081**

The annual interest rates of time deposits are as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Rupiah	4.25% - 9.32%	4.00% - 9.25%	3.15% - 11.00%
US Dollar	0.50% - 1.50%	0.25% - 1.60%	0.50% - 2.85%

The maximum exposure to credit risk at the end of the reporting period is the carrying amount of each class of cash and cash equivalents mentioned above.

*) As restated, (refer to Note 4)

7. TIME DEPOSITS

This account represents time deposits with original maturities of more than three months from the date of placement:

	31 December 2017	31 December 2016	31 December 2015*)
Related parties:			
Rupiah:			
PT Bank Tabungan Negara (Pesero) Tbk ("BTN")	400,000	200,000	-
PT Bank Rakyat Indonesia (Persero) Tbk ("BRI")	70,000	70,000	-
PT Bank Mandiri (Persero) Tbk ("Mandiri")	20,000	20,000	-
	490,000	290,000	-
US Dollar:			
PT Bank Negara Indonesia (Persero) Tbk ("BNI")	1,104,162	1,095,034	965,650
BRI	812,880	927,084	786,315
	1,917,042	2,022,118	1,751,965
Total time deposits	**2,407,042**	**2,312,118**	**1,751,965**
Less:			
Current portion	**(2,207,042)**	**(2,112,118)**	**(1,751,965)**
Non-current portion	**200,000**	**200,000**	**-**

The annual interest rates of time deposits are as follows:

	31 December 2017	31 December 2016	31 December 2015
Rupiah	6.75%	6.75% - 7.25%	-
US Dollar	1.50%	1.25% - 1.60%	0.75% - 0.80%

The maximum exposure to credit risk at the end of the reporting period is the carrying amount of time deposits mentioned above.

*) As restated, (refer to Note 4)

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

8. TRADE RECEIVABLES

Trade receivables consist of:

	31 December 2017	31 December 2016	31 December 2015*)
Related parties:			
PT Indonesia Power ("PTIP")	1,972,627	768,640	465,800
PT Perusahaan Listrik Negara (Persero) ("PLN")	1,345,714	376,635	341,557
PT Bukit Pembangkit Innovative ("BPI")	339,276	298,372	162,575
PT Indonesia Chemical Alumina ("ICA")	-	190,762	104,415
Others (each below Rp100,000)	95,583	29,517	40,803
	3,753,200	1,663,926	1,115,150
Third parties:			
Tisco Trading (H.K) Ltd.	317,689	136,329	156,897
Adani Global Pte. Ltd.	297,380	198,347	-
Noble Resources International	286,657	40,882	-
Golden Energy Mines Trading	283,404	-	-
Toyota Tsusho Asia Pacific Pte. Ltd.	252,968	230,644	-
Posco Daewoo Corporation	230,137	58,003	-
Raffemet Pte. Ltd.	224,840	73,927	-
Lei Shing Hong Trading Ltd.	184,239	-	-
PT Sumber Segara Primadaya	143,750	139,174	98,591
PT Indonesia Smelting Technology	125,836	152,938	96,670
Pohang Iron & Steel Co.	107,494	83,813	77,158
Dragon Energy Corp.	-	126,094	114,305
JX Nippon	-	-	128,497
Phoenix Resources Inc.	-	-	105,159
Others (each below Rp100,000)	2,454,563	2,186,561	1,701,128
	4,908,957	3,426,712	2,478,405
	8,662,157	5,090,638	3,593,555
Less: Provision for impairment	(371,267)	(351,522)	(272,725)
Total trade receivables	**8,290,890**	**4,739,116**	**3,320,830**

*) As restated, (refer to Note 4)

8. TRADE RECEIVABLES (continued)

Due to the short-term nature of trade receivables, their carrying amount approximates their fair values.

The aging analysis of these trade receivables is as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Current	7,092,685	3,928,349	2,792,110
Overdue:			
1 to 30 days	759,573	535,993	175,087
31 to 90 days	427,978	88,181	189,446
Over 90 days	381,921	538,115	436,912
Total	**8,662,157**	**5,090,638**	**3,593,555**

Movements of provision for impairment of trade receivables are as follows:

	31 December 2017	31 December 2016	31 December 2015*)
At beginning of year	351,522	272,725	232,828
Addition during the year	25,004	94,152	34,173
Reclassified from held for sale	-	-	9,028
Proceeds from previously impaired amounts	(5,259)	(15,355)	(3,304)
At end of year	**371,267**	**351,522**	**272,725**

Management believes that the provision for impairment of receivables is adequate to cover loss on uncollectible trade receivables.

*) As restated, (refer to Note 4)

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

9. INVENTORIES

	31 December 2017	31 December 2016	31 December 2015*)
Products inventory:			
Coal	1,070,837	1,026,988	1,197,470
Tin metal	690,824	668,907	931,142
Gold and silver	659,159	794,821	908,866
Aluminium	412,431	147,929	221,410
Nickel ore	168,593	154,815	10,349
Tin chemical	120,604	227,295	184,271
Bauxite ore	44,978	96,019	103,994
Ferronickel	26,904	32,865	110,800
Others	58,508	31,093	38,246
Work in progress product	2,307,497	1,962,679	1,997,896
Raw materials	479,369	925,530	946,720
Spare parts and other consumable supplies	1,305,585	1,335,172	1,481,307
Goods-in-transit	9,292	154,751	134,019
Total inventories	**7,354,581**	**7,558,864**	**8,266,490**
Allowance for impairment of inventories	(150,521)	(160,397)	(220,432)
Total inventories, net	7,204,060	7,398,467	8,046,058
Less:			
Current portion	**(6,724,621)**	**(6,844,222)**	**(8,046,058)**
Non-current portion	**479,439**	**554,245**	**-**

Inventories amounting to Rp479,439 (2016: Rp554,245 and 2015: Rpnil) are classified as "inventories - non-current portion" because the Group plans process the inventories using the new smelter which has been constructed starting in 2018.

Movement of provision for impairment of inventory is as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Beginning balance	160,397	220,432	151,381
(Deduction)/addition during the year, net	(9,876)	(60,035)	69,051
Ending balances	**150,521**	**160,397**	**220,432**

Based on a review at the reporting date, management believes that the above allowance is adequate to cover possible losses from obsolescence or impairment of inventories.

*) As restated, (refer to Note 4)

10. AVAILABLE-FOR-SALE FINANCIAL ASSETS

Available-for-sale financial assets consist of investments in government bonds, corporate shares and mutual funds. Below is the movement of available-for-sale financial assets of the Group:

	31 December 2017	31 December 2016	31 December 2015*)
At beginning of the year	725,046	625,534	297,826
Additions	7,255,450	255,460	390,500
Disposals	(312,224)	(200,000)	(62,555)
Exchange differences	20,990	(2,824)	13,000
Realised (loss)/gain	(35,305)	11,571	(1,666)
Unrealised gain/(loss)	31,685	35,305	(11,571)
At end of the year	**7,685,642**	**725,046**	**625,534**
Less:			
Current portion	**(430,192)**	**(725,046)**	**(625,534)**
Non-current portion	**7,255,450**	**-**	**-**

Available-for-sale financial assets include the following:

	31 December 2017	31 December 2016	31 December 2015*)
Related parties (Refer to Note 42a):			
Mutual funds	245,499	582,582	502,529
Corporate bonds	163,166	136,375	121,350
Third parties:			
Corporate shares	7,276,977	6,089	1,655
Total available-for-sale financial assets	**7,685,642**	**725,046**	**625,534**

Available-for-sale financial assets are denominated in the following currencies:

	31 December 2017	31 December 2016	31 December 2015*)
Rupiah	7,522,476	588,671	504,184
US Dollar	163,166	136,375	121,350
	7,685,642	**725,046**	**625,534**

In November 2017, the Company received transfer of PT Freeport Indonesia's ("PTFI") shares previously owned by Government of Republic of Indonesia of 21,300 shares with total value of Rp7.26 trillion (full amount) based on GR 47/2017 and Ministry of Finance Decision No. 887/KMK.06/2017. PTFI's shares value was based on valuation from KJPP Ruky, Safrudin & Rekan, independent valuer, on their report dated 2 October 2017. During the year ended 31 December 2017, the Company received dividend income from PTFI amounting to US$31,950,000 or equivalent to Rp427,587 (2016 and 2015: Rpnil) and is presented as "other income/(expenses), net" in the consolidated statements of profit or loss.

*) As restated, (refer to Note 4)

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

10. AVAILABLE-FOR-SALE FINANCIAL ASSETS (continued)

The fair value of all available-for-sale financial assets is based on the current bid price in active markets and observable inputs other than quoted prices.

The maximum exposure to credit risk at the reporting date is the carrying value of the government bonds, corporate shares and mutual funds classified as available-for-sale.

None of these financial assets are either past due or impaired.

11. OTHER CURRENT AND NON-CURRENT ASSETS

	31 December 2017	31 December 2016	31 December 2015*)
Prepaid expenses and advance payments	1,313,543	629,018	707,990
Performance bonds	242,057	87,921	155,259
Plantation assets	233,102	245,350	274,118
Assets of pension plan	116,130	77,382	83,881
Real estate assets	90,900	-	-
Deferred charges	48,426	38,279	80,809
Software and system	47,094	41,137	41,330
Restricted cash	35,702	3,504	3,481
Others (each below Rp50,000)	151,917	210,758	233,712
Total other current and non-current assets	**2,278,871**	**1,333,349**	**1,580,580**
Less:			
Current portion	**(946,339)**	**(682,069)**	**(924,995)**
Non-current portion	**1,332,532**	**651,280**	**655,585**

Advance payments represent down payment to suppliers for purchase of goods and services.

12. ASSETS OF DISPOSAL GROUP CLASSIFIED AS HELD FOR SALE

a. Assets of disposal group classified as held for sale

	31 December 2017	31 December 2016	31 December 2015*)
Cash and cash equivalents	6,781	2,405	-
Restricted cash	14,700	11,973	-
Trade receivables	40,014	15,764	-
Other receivables	6,340	9,418	-
Advances	46,387	47,936	-
Inventories	8,487	45,609	-
Prepaid taxes	30,126	30,110	-
Fixed assets	3,290	3,490	-
Mining properties	193,398	191,697	-
Other assets	2,241	2,979	-
Total assets of disposal group classified as held for sale	**351,764**	**361,381**	**-**

*) As restated, (refer to Note 4)

12. ASSETS OF DISPOSAL GROUP CLASSIFIED AS HELD FOR SALE (continued)

b. Liabilities of disposal group directly associated with assets classified as held for sale

	31 December 2017	31 December 2016	31 December 2015*)
Trade payables - third parties	1,801	2,398	-
Taxes payable	4,718	5,537	-
Royalties payable	8,187	4,654	-
Accruals	16,385	25,195	-
Provision for environmental rehabilitation cost	21,328	19,092	-
Deferred tax liabilities	42,929	42,929	-
Total liabilities of disposal group directly associated with assets classified as held for sale	**95,348**	**99,805**	-

c. Accumulated foreign exchanges of translation adjustment

	31 December 2017	31 December 2016	31 December 2015*)
Accumulated foreign exchanges of translation adjustment	31,097	31,097	-

d. Discontinued operations

The assets and liabilities related to TAJ and TBBE, a subsidiaries of TIM have been presented as held for sale following the active plan of the Group's management and shareholders to sell TAJ and TBBE. Management estimates that this sales plan can be realised in 2018.

The Group used an income approach to assess impairment of assets held for sale and discontinued operations. The income approach is predicted upon the value of the future cash flows that could be generated as if the Group continue the business. The discounted cash flow method was used which involves projecting cash flows and converting them into a present value equivalent through discounting. The discounting process uses a rate of return that is commensurate with the risk associated with the business or asset and the time value of money. This approach is considered as Level 3 under the fair value hierarchy.

Management is of the opinion that the provision for impairment in the value of assets held for sale is not provided since no impairment indicators exist as at 31 December 2017.

*) As restated, (refer to Note 4)

12. ASSETS OF DISPOSAL GROUP CLASSIFIED AS HELD FOR SALE (continued)

d. Discontinued operations (continued)

The following table gives information about the results of discontinued operations:

	31 December 2017	31 December 2016	31 December 2015*)
Operating cash flows	10,848	22,172	-
Investing cash flows	(6,472)	(23,680)	-
Total discontinued operations	**4,376**	**(1,508)**	**-**
Revenue	118,264	88,213	110,957
Expenses	(124,761)	(119,293)	(127,408)
Loss before income tax from discontinued operations	(6,497)	(31,080)	(16,451)
Income tax expenses	-	-	-
Reclassified to continued operations	-	-	16,451
Loss for the year from discontinued operations	**(6,497)**	**(31,080)**	**-**

13. INVESTMENT IN ASSOCIATES

The amounts recognised in the consolidated financial statements are as follows:

	31 December 2017	31 December 2016	31 December 2015*)
NHM	1,684,568	2,079,582	1,984,484
Asuransi Jiwa Tugu Mandiri ("AJTM")	142,257	125,891	120,534
PT Tabalong Prima Resources ("TPR")	94,420	94,420	94,420
PT Mitra Hasrat Bersama ("MHB")	75,260	75,260	75,260
PT Menara Antam Sejahtera ("MAS")	2,404	456	7,954
PT Antamloka Halimun Energi ("AHE")	50	50	50
PT Nikel Halmahera Timur ("NHT")	27	28	28
Total investment in associates	**1,998,986**	**2,375,687**	**2,282,730**

*) As restated, (refer to Note 4)

13. INVESTMENT IN ASSOCIATES (continued)

	31 December 2017	31 December 2016	31 December 2015*)
Beginning balance	3,988,416	3,991,539	4,090,489
Share of profit/(loss), net	140,510	(7,992)	229,433
Other comprehensive income	4,906	4,869	8,271
Dividend distributions	(185,264)	-	(444,150)
Addition of investments	11,250	-	169,730
Deduction of investments	(10,820)	-	(62,234)
Ending balance	3,948,998	3,988,416	3,991,539
Accumulated asset amortisation based on fair value			
Beginning balance	(1,476,859)	(1,276,113)	(830,342)
Addition	(337,283)	(200,746)	(445,771)
Ending balance of accumulated asset amortisation based on fair value	(1,814,142)	(1,476,859)	(1,276,113)
Accumulated impairment of investments			
Beginning balance	(135,870)	(432,696)	(399,739)
Addition	-	-	(32,957)
Reversal	-	296,826	-
Ending balance of impairment of investment	(135,870)	(135,870)	(432,696)
Carrying amount of investments	**1,998,986**	**2,375,687**	**2,282,730**

The nature of investments in associates as at 31 December 2017, 2016 and 2015 is as follows:

- NHM operates a gold underground mine at North Halmahera Regency, North Maluku Province. Percentage of interest held is 25%.
- AJTM is a life insurance company, from Yayasan Pensiun Timah. Percentage of interest held is 27.78%.
- TPR has a coal mine at Tabalong Regency, South Kalimantan. As at 31 December 2017, 2016 and 2015, TPR has not been in operation yet. Percentage of interest held is 34.17%.
- MHB has a port at South Barito Regency, Central Kalimantan. As at 31 December 2017, 2016 and 2015, MHB has not been in operation yet. Percentage of interest held is 34.17%.
- MAS owns and manages an office building at South Jakarta. Percentage of interest held is 25%.
- AHE engages in the electricity sector, including consultancy, construction, maintenance and development of technology relating to electricity. Percentage of interest held is 25%.
- NHT operates a nickel mine at North Halmahera Regency, North Maluku Province. Percentage of interest held is 50%.
- PT Meratus Jaya Iron & Steel (“MJIS”) operates a sponge iron plant at Tanah Bumbu Regency, South Kalimantan Province. As at 31 December 2017, 2016 and 2015, the carrying amount of investment in MJIS was equal to Rpnil because the Group’s share of losses in MJIS has exceeded its interest in MJIS. Percentage of interest held is 34%.
- Koba Tin is a holder of Mining Contract of Work but already expired on 31 March 2013. As at 31 December 2017, 2016 and 2015, the carrying amount of investment in PT Koba Tin equals to Rpnil because the Group’s share of losses in PT Koba Tin has exceeded its interest in PT Koba Tin. Percentage of interest held is 25%.

*) As restated, (refer to Note 4)

13. INVESTMENT IN ASSOCIATES (continued)

All of the associates are private companies and there is no quoted market price available for their shares.

Set out below is the summarised financial information for material associates of the Group, which is accounted for using the equity method:

31 December 2017

Associates	Place of business	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Revenue	Profit for the year	Other comprehensive (loss)/income	Total comprehensive income for the year	Dividends received from associate
NHM	North Maluku	1,188,897	2,689,449	397,816	546,695	2,933,835	5,342,087	511,452	(1,324)	510,128	185,264
AJTM	Jakarta	174,381	1,063,779	913,801	97,779	226,580	372,500	42,445	16,469	58,914	-

31 December 2016

Associates	Place of business	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Revenue	(Loss)/Profit for the year	Other comprehensive income	Total comprehensive (loss)/income for the year	Dividends received from associate
NHM	North Maluku	759,002	3,476,036	408,566	661,711	3,164,761	2,854,029	(15,505)	11,581	(3,924)	-
AJTM	Jakarta	129,840	844,949	772,362	34,761	167,666	375,398	12,173	2,383	14,556	-

31 December 2015*)

Associates	Place of business	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Revenue	Profit for the year	Other comprehensive income	Total comprehensive income for the year	Dividends received from associate
NHM	North Maluku	966,412	3,190,206	396,748	591,185	3,168,685	5,300,250	1,011,453	21,807	1,033,260	444,150
AJTM	Jakarta	93,111	710,120	622,948	27,174	153,109	232,275	25,508	1,395	26,903	-

Reconciliation of the summarised financial information presented to the carrying amount of interests in material associates to the Group is as follows:

31 December 2017

Associates	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Interest in associates	Fair value uplift	Goodwill	Accumulated impairment of investment	Carrying value
NHM	1,188,897	2,689,449	397,816	546,695	2,933,835	733,458	820,677	174,690	(44,257)	1,684,568
AJTM	174,381	1,063,779	913,801	97,779	226,580	62,944	-	79,313	-	142,257

31 December 2016

Associates	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Interest in associates	Fair value uplift	Goodwill	Accumulated impairment of investment	Carrying value
NHM	759,002	3,476,036	408,566	661,711	3,164,761	791,190	1,157,959	174,690	(44,257)	2,079,582
AJTM	129,840	844,949	772,362	34,761	167,666	46,578	-	79,313	-	125,891

31 December 2015*)

Associates	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Interest in associates	Fair value uplift	Goodwill	Accumulated impairment of investment	Carrying value
NHM	966,412	3,190,206	396,748	591,185	3,168,685	792,171	1,358,706	174,690	(341,083)	1,984,484
AJTM	93,111	710,120	622,948	27,174	153,109	44,065	-	76,469	-	120,534

NHM

Effective from 20 December 2012, Antam acquired an additional 7.5% interest in NHM, which increased the total interest held to 25%. Based on the independent appraisal report dated 23 November 2012 of Suwendo Rinaldy & Rekan, the fair value of the investment in NHM for the 17.5% portion amounting to Rp2,519,676. The excess amounting to Rp2,484,008 between fair value and the initial cost of the investment was recorded as a gain on a fair value adjustment in profit or loss.

During the year ended 31 December 2017, the dividend declared by NHM to Antam amounting to Rp185,264 (2016: nil and 2015: US$32,176,050 or equivalent to Rp444,150).

On 27 March 2017, 29 April 2017 and 16 October 2017, Antam received cash dividends amounting to US$1,069,322 (equivalent to Rp14,200), US$4,233,185 (equivalent to Rp56,292) and US$7,446,601 (equivalent to Rp101,453), respectively, after NHM had offset the dividends with Antam contingent liability amounting to US$1,000,000 (equivalent to Rp13,319).

*) As restated, (refer to Note 4)

13. INVESTMENT IN ASSOCIATES (continued)

NHM (continued)

Total cash dividend declared by NHM to Antam as at 31 December 2015, amounted to US$16,374,871 or equivalent to Rp226,172. On 29 April 2016, Antam received cash dividend amounting to US$6,609,914 or equivalent to Rp87,753, after NHM had offset it with Antam's contingent liability amounted to Rp127,807.

In December 2016, the Group recognised the reversal of past impairment losses on its investment in NHM amounting to Rp296,826. This reversal was presented in profit or loss as part of "Share in net (loss)/profit of associates". The reversal of past impairment losses on investment in NHM was mainly due to higher gold price assumptions used in the 2016 year ended impairment test, compared to the gold price assumptions used at the time the impairment was recognised.

The key assumptions used in the impairment test for investment in NHM as at 31 December 2017, impairment recovery test for investment in NHM as at 31 December 2016 and impairment test for investment in NHM as at 31 December 2015, are as follows:

	31 December 2017	31 December 2016	31 December 2015
Cash flow period	2018-2020	2017-2020	2016-2020
Gold prices per troy ounce	US$1,290-US$1,319	US$1,250-US$1,380	US$1,160-US$1,246
Discount rate	5.62%	5.69%	7.56%

Refer to Note 43f for the contingent purchase price relating to the Group's interest in NHM.

AJTM

In 2007, Timah acquired 29.59% of the shares of AJTM, a life insurance company, from Yayasan Pensiun Timah.

On 15 February 2016, Timah and other shareholders have agreed to add share issued and paid totaling Rp15,000 by Dana Pensiun Pertamina in AJTM. This capital injection has resulted in a decrease in the percentage of ownership held by Timah to 27.78% (2015: 28.78%). The share capital increase was approved based on Notarial Deed No. 7 of Lenny Janis Ishak S.H., notary in Jakarta, dated 15 February 2016.

14. INVESTMENT IN JOINT VENTURES

The amounts recognised in the consolidated financial statements are as follows:

	31 December 2017	31 December 2016	31 December 2015*)
BPI	1,274,352	1,174,987	1,035,616
ICA	835,350	1,136,695	1,481,636
PT Huadian Bukit Asam Power ("HBAP")	45,390	45,390	29,274
PT Bukit Asam Transpacific Railway ("BATR")	5,424	5,424	5,424
Total investment in joint ventures	**2,160,516**	**2,362,496**	**2,551,950**
Beginning balance	2,362,496	2,551,950	2,374,730
Share of loss	(157,902)	(216,378)	(106,598)
Other comprehensive (loss)/income	(21,804)	21,578	(1,630)
Unrealised gains on intra group transactions	(22,274)	(24,293)	-
Addition of investment	-	29,639	285,448
Ending balance	**2,160,516**	**2,362,496**	**2,551,950**

The nature of investments in joint ventures is as follows:

- ICA engages in chemical grade alumina processing activities. ICA is for the Group's expansion to the chemical grade alumina industry. Percentage of interest held is 80%.
- BPI entered into power purchase agreement with PLN related to Mine Mouth Power Plant at Lahat Regency, South Sumatra. Percentage of interest held is 59.75%.
- HBAP entered into power purchase agreement with PLN related to Coal Fire Steam Power Plant South Sumatra 8 at Muara Enim Regency, South Sumatra. As at 31 December 2017, 2016 and 2015, HBAP is still under development phase. Percentage of interest held is 45%.
- BATR was established to operate a coal railway infrastructure. As at 31 December 2017, 2016 and 2015, BATR has not been in operation yet. Percentage of interest held is 10%.

All of the joint ventures are private companies and there is no quoted market price available for their shares.

*) As restated, (refer to Note 4)

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

14. INVESTMENT IN JOINT VENTURES (continued)

Set out below is the summarised financial information for material joint ventures of the Group, which are accounted for using the equity method:

31 December 2017

Joint ventures	Place of business	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Revenue	Profit/(loss) for the year	Other comprehensive income	Total comprehensive income/(loss) for the year	Dividends received from joint ventures entities
BPI	Jakarta	1,074,548	4,328,673	1,157,157	2,113,257	2,132,807	880,214	204,132	-	204,132	-
ICA	West Kalimantan	184,698	3,110,180	678,575	1,572,115	1,044,188	335,146	(349,424)	1,392	(348,032)	-

31 December 2016

Joint ventures	Place of business	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Revenue	Profit/(loss) for the year	Other comprehensive loss	Total comprehensive income/(loss) for the year	Dividends received from joint ventures entities
BPI	Jakarta	995,791	4,764,121	857,215	2,331,953	2,570,744	745,369	264,753	-	264,753	-
ICA	West Kalimantan	424,948	3,576,791	1,805,260	775,610	1,420,869	471,951	(458,147)	(3,122)	(461,269)	-

31 December 2015*)

Joint ventures	Place of business	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Revenue	Profit/(loss) for the year	Other comprehensive loss	Total comprehensive income/(loss) for the year	Dividends received from joint ventures entities
BPI	Jakarta	1,132,032	3,759,179	240,914	2,917,031	1,733,266	1,211,100	234,937	-	234,937	-
ICA	West Kalimantan	290,567	3,988,273	696,429	1,730,366	1,852,045	287,573	(300,709)	(2,038)	(302,747)	-

Reconciliation of the summarised financial information presented to the carrying amount of interests in material joint ventures to the Group is as follows:

31 December 2017

Joint ventures	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Interest in joint ventures	Goodwill	Carrying value
BPI	1,074,548	4,328,673	1,157,157	2,113,257	2,132,807	1,274,352	-	1,274,352
ICA	184,698	3,110,180	678,575	1,572,115	1,044,188	835,350	-	835,350

31 December 2016

Joint ventures	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Interest in joint ventures	Goodwill	Carrying value
BPI	995,791	4,159,882	857,215	2,331,953	1,966,505	1,174,987	-	1,174,987
ICA	424,948	3,576,791	1,805,260	775,610	1,420,869	1,136,695	-	1,136,695

31 December 2015*)

Joint ventures	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets	Interest in joint ventures	Goodwill	Carrying value
BPI	1,132,032	3,759,179	240,931	2,917,031	1,733,249	1,035,616	-	1,035,616
ICA	290,567	3,988,273	696,429	1,730,366	1,852,045	1,481,636	-	1,481,636

ICA

In February 2007, Antam established ICA, a joint venture, in which Antam has a 49% ownership interest. In August 2008, Antam acquired a 16% additional interest in ICA, making the total ownership 65%. In August 2010, Antam increased its interest in ICA to 80%.

Antam considered the contractual terms of the Joint Venture Agreement ("JVA") between Antam, Showa Denko K.K ("SDK") and ICA dated 31 August 2010, under which significant decisions related to financial and operating policies of ICA need approval from all shareholders and determined that, as a result of the contract terms, Antam does not have control over the financial and operating policies of ICA, despite Antam's 80% ownership interest.

*) As restated, (refer to Note 4)

14. INVESTMENT IN JOINT VENTURES (continued)

ICA (continued)

ICA processes bauxite in West Kalimantan, Indonesia.

As at 31 December 2017, 2016 and 2015, ICA has outstanding long-term loans from Japan Bank for International Cooperation ("JBIC"), Mizuho Corporate Bank Ltd. ("Mizuho Ltd") and Sumitomo Mitsui Trust Bank Ltd. ("Sumitomo Ltd"). ICA placed collateral for the long-term loans in the form of among others, bank accounts with PT Bank Mizuho Indonesia ("Bank Mizuho"), ICA's interest in the Manufacturing Technology and Technical Operational Assistance Agreement with SDK and the offtake agreement with SDK and Antam. Antam and SDK also guarantee ICA's loan repayment. Antam also entered into a Pledge of Shares Agreement whereby Antam agreed to pledge all of its shares in ICA to Bank Mizuho, as collateral for the full repayment of ICA's loan.

As at 31 December 2017, 2016 and 2015, Antam has committed to provide financial support to ICA, As at 31 December 2016 and 2015, SDK also has committed to provide financial support to ICA to enable ICA to meet its liabilities as and when they fall due for a period of at least 12 months from the date of the financial statements of ICA.

As at 31 December 2016 and 2015, the Group's management is of the opinion that there were no events or changes of circumstances which may indicate impairment in the value of the investments, therefore, no provision for impairment in the value of investments in ICA is necessary.

As at 31 December 2017, Antam considered the potential impairment of its investment in ICA using the following key assumptions:

Alumina production volumes	20,000 ton – 200,000 ton
Sales price	US$382 – US$1,100
Discount rate	7.13%
Valuation method	Value-in-use

The result of the impairment analysis showed that the recoverable value of ICA still exceeded the carrying value of Antam's investment in ICA.

15. EXPLORATION AND EVALUATION ASSETS

	31 December 2017			
	1 January 2017	Additions	Reclassification and deduction	31 December 2017
Antam:				
Sangaji	162,143	-	-	162,143
Mandiodo	93,146	-	-	93,146
Papandayan	92,201	-	-	92,201
Tapunopaka	84,389	-	-	84,389
Mempawah	72,655	1,103	-	73,758
Landak	48,360	-	-	48,360
Munggu Pasir	26,858	-	-	26,858
Bahubulu	25,914	-	-	25,914
Pongkor	19,829	-	(19,829)	-
Pomalaa	19,737	-	(19,737)	-
Others	16,139	338	-	16,477
	661,371	1,441	(39,566)	623,246
Antam's subsidiaries:				
Gag Island	83,818	14,600	(98,418)	-
Meliau	34,797	-	-	34,797
Cibaliung	19,371	-	(12,092)	7,279
	137,986	14,600	(110,510)	42,076
Exploration and evaluation assets	**799,357**			**665,322**

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

15. EXPLORATION AND EVALUATION ASSETS (continued)

	31 December 2016			
	1 January 2016	Additions	Reclassification and deduction	31 December 2016
Antam:				
Sangaji	125,390	36,753	-	162,143
Mandiodo	92,207	939	-	93,146
Papandayan	91,490	711	-	92,201
Tapunopaka	84,389	-	-	84,389
Mempawah	70,299	2,356	-	72,655
Landak	48,360	-	-	48,360
Munggu Pasir	26,858	-	-	26,858
Bahubulu	25,914	-	-	25,914
Pongkor	13,716	6,113	-	19,829
Pomalaa	11,607	8,130		19,737
Others	16,139	-	-	16,139
	606,369	55,002	-	661,371
Antam's subsidiaries:				
Gag Island	83,014	804	-	83,818
Meliau	34,797	-	-	34,797
Cibaliung	19,371	-	-	19,371
	137,182	804	-	137,986
Exploration and evaluation assets	**743,551**			**799,357**

	31 December 2015*)			
	1 January 2015*)	Additions	Reclassification and deduction	31 December 2015*)
Antam:				
Sangaji	108,585	16,805	-	125,390
Papandayan	91,490	-	-	91,490
Mandiodo	90,895	1,312	-	92,207
Tapunopaka	84,389	-	-	84,389
Mempawah	65,697	4,602	-	70,299
Landak	48,360	-	-	48,360
Munggu Pasir	26,858	-	-	26,858
Bahubulu	25,914	-	-	25,914
Pongkor	-	13,716		13,716
Pomalaa	-	11,607	-	11,607
Others	10,962	5,177	-	16,139
	553,150	53,219	-	606,369
Antam's subsidiaries:				
Gag Island	80,707	2,307	-	83,014
Meliau	33,836	961	-	34,797
Cibaliung	19,371	-	-	19,371
	133,914	3,268	-	137,182
Exploration and evaluation assets	**687,064**			**743,551**

As at 31 December 2017, 2016 and 2015, management believes that provision for impairment in the value of the exploration and evaluation assets is not necessary.

During the year ended 31 December 2017, borrowing costs amounting to Rpnil (2016: Rp14,928 and 2015: Rp1,724) were capitalised to the exploration and evaluation assets.

*) As restated, (refer to Note 4)

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

16. FIXED ASSETS

	31 December 2017					
	1 January 2017	Addition[a)]	Disposal	Reclassification	Reclassified to assets of disposal group classified as held for sale	31 December 2017
Cost:						
Land rights	817,123	5,416,916	-	130	-	6,234,169
Structure, buildings, improvements and river channel	18,737,105	354,188	(33)	274,282	-	19,365,542
Plant, machinery and mining equipment	30,398,152	1,655,692	(327,063)	6,920,915	-	38,647,696
Office, hospital and housing equipment and furniture and fixtures	1,489,062	226,582	(10,025)	8,023	-	1,713,642
Transportation equipment	656,124	126,528	(5,799)	580	-	777,433
Construction-in-progress	9,102,363	2,427,834	(4,337)	(7,213,809)	-	4,312,051
	61,199,929	10,207,740	(347,257)	(9,879)	-	71,050,533
Leased assets:						
Machinery and mining equipment	710,237	-	-	9,879	-	720,116
	710,237	-	-	9,879	-	720,116
Total	**61,910,166**	**10,207,740**	**(347,257)**	**-**	**-**	**71,770,649**
Accumulated depreciation:						
Structure, buildings, improvements and river channel	(14,460,437)	(582,012)	32	-	-	(15,042,417)
Plant, machinery and mining equipment	(21,505,279)	(1,469,965)	291,661	(10,317)	-	(22,693,900)
Office, hospital and housing equipment and furniture and fixtures	(996,609)	(162,323)	8,319	-	-	(1,150,613)
Transportation equipment	(521,205)	(62,269)	5,634	-	-	(577,840)
	(37,483,530)	(2,276,569)	305,646	(10,317)	-	(39,464,770)
Leased assets:						
Machinery and mining equipment	(53,410)	(71,981)	-	10,317	-	(115,074)
	(53,410)	(71,981)	-	10,317	-	(115,074)
Total	**(37,536,940)**	**(2,348,550)**	**305,646**	**-**	**-**	**(39,579,844)**
Accumulated impairment	(17,881)	(57,409)	-	-	-	(75,290)
Total carrying value	**24,355,345**					**32,115,515**

[a)] Includes immaterial difference on translation of financial statements of entity in Group.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

16. FIXED ASSETS (continued)

	31 December 2016					
	1 January 2016	Addition[a)]	Disposal	Reclassification	Reclassified to assets of disposal group classified as held for sale	31 December 2016
Cost:						
Land rights	774,570	45,206	(2,455)	(198)	-	817,123
Structure, buildings, improvements and river channel	18,368,065	167,889	(368,036)	571,812	(2,625)	18,737,105
Plant, machinery and mining equipment	28,898,208	485,039	(453,296)	1,468,756	(555)	30,398,152
Office, hospital and housing equipment and furniture and fixtures	1,385,044	97,270	(21,324)	30,048	(1,976)	1,489,062
Transportation equipment	608,885	52,621	(12,810)	7,765	(337)	656,124
Construction-in-progress	8,952,432	2,790,122	(20,024)	(2,617,621)	(2,546)	9,102,363
	58,987,204	3,638,147	(877,945)	(539,438)	(8,039)	61,199,929
Leased assets:						
Machinery and mining equipment	37,766	133,033	-	539,438	-	710,237
	37,766	133,033	-	539,438	-	710,237
Total	**59,024,970**	**3,771,180**	**(877,945)**	**-**	**(8,039)**	**61,910,166**
Accumulated depreciation:						
Structure, buildings, improvements and river channel	(14,295,266)	(473,759)	306,082	-	2,506	(14,460,437)
Plant, machinery and mining equipment	(20,906,435)	(980,224)	376,679	4,591	110	(21,505,279)
Office, hospital and housing equipment and furniture and fixtures	(872,634)	(136,592)	10,689	-	1,928	(996,609)
Transportation equipment	(486,961)	(42,457)	8,208	-	5	(521,205)
	(36,561,296)	(1,633,032)	701,658	4,591	4,549	(37,483,530)
Leased assets:						
Machinery and mining equipment	(14,743)	(34,076)	-	(4,591)	-	(53,410)
	(14,743)	(34,076)	-	(4,591)	-	(53,410)
Total	**(36,576,039)**	**(1,667,108)**	**701,658**	**-**	**4,549**	**(37,536,940)**
Accumulated impairment	(63,382)	(4,267)	49,768	-	-	(17,881)
Total carrying value	**22,385,549**					**24,355,345**

[a)] Includes immaterial difference on translation of financial statements of entity in Group.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

16. FIXED ASSETS (continued)

	31 December 2015*)						
	1 January 2015*)	Acquisition	Addition[a)]	Disposal	Reclassification	Reclassified from assets of disposal group classified as held for sale	31 December 2015*)
Cost:							
Land rights	745,760	-	28,810	-	-	-	774,570
Structure, buildings, improvements and river channel	17,375,950	-	33,991	(44,674)	947,004	55,794	18,368,065
Plant, machinery and mining equipment	27,095,481	189,616	861,760	(46,858)	797,060	1,149	28,898,208
Office, hospital and housing equipment and furniture and fixtures	1,252,031	1,168	99,250	(13,882)	45,155	1,322	1,385,044
Transportation equipment	589,215	142	38,589	(22,102)	3,041	-	608,885
Construction-in-progress	7,027,214	-	3,620,883	-	(1,695,665)	-	8,952,432
	54,085,651	190,926	4,683,283	(127,516)	96,595	58,265	58,987,204
Leased assets:							
Transportation equipment	-	14	1,431	-	(1,445)	-	-
Machinery and mining equipment	-	132,916	-	-	(95,150)	-	37,766
	-	132,930	1,431	-	(96,595)	-	37,766
Total	**54,085,651**	**323,856**	**4,684,714**	**(127,516)**	**-**	**58,265**	**59,024,970**
Accumulated depreciation:							
Structure, buildings, improvements and river channel	(13,819,587)	-	(468,756)	39,186	-	(46,109)	(14,295,266)
Plant, machinery and mining equipment	(19,804,526)	(92,830)	(1,002,058)	46,858	(52,733)	(1,146)	(20,906,435)
Office, hospital and housing equipment and furniture and fixtures	(729,299)	(1,164)	(152,625)	11,776	-	(1,322)	(872,634)
Transportation equipment	(451,673)	(141)	(51,797)	16,897	(247)	-	(486,961)
	(34,805,085)	(94,135)	(1,675,236)	114,717	(52,980)	(48,577)	(36,561,296)
Leased assets:							
Transportation equipment	-	(6)	(241)	-	247	-	-
Machinery and mining equipment	-	(54,356)	(13,120)	-	52,733	-	(14,743)
	-	(54,362)	(13,361)	-	52,980	-	(14,743)
Total	**(34,805,085)**	**(148,497)**	**(1,688,597)**	**114,717**	**-**	**(48,577)**	**(36,576,039)**
Accumulated impairment loss	(63,382)	-	-	-	-	-	(63,382)
Total carrying value	**19,217,184**						**22,385,549**

[a)] Includes immaterial difference on translation of financial statements of entity in Group.

The Group has several land rights in form of land right use and building rights title that will expire at various times and can be extended.

As at 30 December 2016, the transfer of Otorita Asahan's land which is used by the Company as additional State Equity Participations, as stated in Law No. 14 Article 29 of 2015 about State Budget 2016 was finalised through GR76/2016 regarding "Additional Republic of Indonesia's Government's Equity Participation in Perseroan (Persero) PT Indonesia Asahan Aluminium's Share Capital". Value of this additional state equity participation was based on Ministry of Finance of Republic of Indonesia Decision No. 593/KMK.06/2017 dated 1 August 2017 regarding Value Determination of Additional State Equity Participation to Share Capital of Perusahaan Perseroan (Persero) PT Indonesia Asahan Aluminium (Note 32). Tax related to this land acquisition has been recorded in these consolidated financial statements.

*) As restated, (refer to Note 4)

16. FIXED ASSETS (continued)

Depreciation of fixed assets for the years ended 31 December 2017, 2016 and 2015 were allocated as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Cost of revenue	1,948,531	1,348,597	1,457,312
General and administrative expenses and selling expenses	199,243	255,727	213,184
Exploration and evaluation assets, mining properties and construction-in-progress	3,151	4,196	10,486
Translation adjustment on the financial statements	197,625	58,588	7,615
	2,348,550	**1,667,108**	**1,688,597**

Construction-in-progress represents projects that have not been completed at the date of the consolidated statements of financial position. Construction-in-progress as at 31 December 2017 and 2016 mainly comprised extension of coal handling facilities at Tanjung Enim, East Halmahera Ferronickel Plant Project, mining facilities and development in Pomalaa and Pongkor, building and production equipment in Timah and diversification product project at Kuala Tanjung smelter. Those projects are estimated to be completed between 2017 and 2019 with the current percentage of completion being between 20.00% - 99.70%.

Construction-in-progress as at 31 December 2015 mainly comprised extension of coal handling facilities at Tanjung Enim, East Halmahera Ferronickel Plant Project, Pomala Ferronickel Plant and Expansion Project, mining facilities and development in Pomalaa and Pongkor, building and production equipment in Timah and diversification product project at Kuala Tanjung smelter. Those projects are estimated to be completed between 2016 and 2017 with the current percentage of completion being between 17.5% - 99.5%.

During the year ended 31 December 2017, the Group capitalised borrowing costs amounting to Rp10,535 (2016: Rp167,801 and 2015: Rp243,254), on qualifying assets. Borrowing costs were capitalised at the weighted-average rate of its general borrowings of 3.50% (2016: 0.94% and 2015: 12.98%).

As at 31 December 2017, 2016 and 2015, management believes that provision for impairment in the value of the fixed assets is adequate.

Except for land and buildings, management believes that there is no significant difference between the fair value of fixed assets and their carrying value. As at 31 December 2017, 2016 and 2015, the fair value of the land and buildings owned by the Group based on the applied tax value (or *Nilai Jual Objek Pajak*) exceeded its net carrying value.

*) As restated, (refer to Note 4)

17. INVESTMENT PROPERTIES

Investment properties pertain to land rights of 160.3 ha in Kota Legenda Mustikasari, Bekasi which were acquired as settlement of promissory notes from Bahana Pembinaan Usaha Indonesia owned by Timah. Timah has decided to discontinue the joint cooperation with a third party contractor on the commercial development of these land rights as initially planned. In addition, investment properties also include land and buildings covering an area of 0.7 ha in Dago, Bandung.

As at 31 December 2017, 2016 and 2015, the fair value of the investment property in Kota Legenda Mustikasari and Dago were recognised based on the results of valuations carried out by Felix Sutandar and Rekan ("FSR") in accordance with their report dated 18 January 2018, 10 January 2017, and 9 February 2016, respectively using sales comparison approach, showing a fair value of Rp820,936 (31 December 2016: Rp794,539 and 31 December 2015: Rp738,630) and Rp91,743 (31 December 2016: Rp88,168 and 31 December 2015: Rp83,321), respectively. FSR is independent appraiser with no relation to the Group.

For the year ended 31 December 2017, the gain earned by the Group from difference in the fair value of investment properties amounting to Rp105,081 (2016: Rp60,756 and 2015: Rp183,358) are presented as part of "other income/(expenses), net" in profit or loss. (Note 39).

18. MINING PROPERTIES

	Acquisition of mining rights	Mines under development	Mines in production	Total
Carrying value at 1 January 2015*)	**59,770**	**1,378,635**	**1,151,170**	**2,589,575**
Addition	-	21,470	63,012	84,482
Acquisition of subsidiary	-	-	175,335	175,335
Transfer	-	(3,217)	3,217	-
Reclassified from assets of disposal group classified as held for sale	-	-	145	145
Amortisation during the year	(13,122)	-	(128,248)	(141,370)
Carrying value at 31 December 2015*)	**46,648**	**1,396,888**	**1,264,631**	**2,708,167**
Additions	-	1,348	81,389	82,737
Transfer	-	(23,805)	23,805	-
Reclassified to assets of disposal group classified as held for sale	-	-	(191,697)	(191,697)
Amortisation during the year	(19,157)	-	(135,902)	(155,059)
Carrying value at 31 December 2016	**27,491**	**1,374,431**	**1,042,226**	**2,444,148**
Additions	-	43,596	33,897	77,493
Transfer	-	(98,136)	126,977	28,841
Amortisation during the year	(19,157)	-	(122,227)	(141,384)
Reclassified to assets of disposal group classified as held for sale	-	-	(347)	(347)
Impairment during the year	-	(42,552)	-	(42,552)
Carrying value at 31 December 2017	**8,334**	**1,277,339**	**1,080,526**	**2,366,199**

During the year ended 31 December 2017, borrowing costs amounting to Rp12,960 (2016: Rp10,596 and 2015: Rp20,275) were capitalised to mining properties.

*) As restated, (refer to Note 4)

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

19. GOODWILL

	31 December 2017 and 2016		
	Beginning balances	Addition	Ending balances
Cost:			
SBS	102,077	-	102,077
CTSP	83,614	-	83,614
APN	44,659	-	44,659
BEI	32,440	-	32,440
MCU	19,690	-	19,690
GK	16,307	-	16,307
	298,787	-	298,787
Accumulated impairment:			
CTSP	(83,614)	-	(83,614)
APN	(4,652)	-	(4,652)
BEI	(4,111)	-	(4,111)
MCU	(2,574)	-	(2,574)
	(94,951)	-	(94,951)
Net book value of goodwill	**203,836**	**-**	**203,836**

	31 December 2015*)		
	Beginning balances	Addition	Ending balances
Cost:			
SBS	102,077	-	102,077
CTSP	83,614	-	83,614
APN	44,659	-	44,659
BEI	32,440	-	32,440
MCU	19,690	-	19,690
GK	16,307	-	16,307
	298,787	-	298,787
Accumulated impairment:			
CTSP	(51,722)	(31,892)	(83,614)
APN	(4,652)	-	(4,652)
BEI	(4,111)	-	(4,111)
MCU	(2,574)	-	(2,574)
	(63,059)	(31,892)	(94,951)
Net book value of goodwill	**235,728**	**(31,892)**	**203,836**

*) As restated, (refer to Note 4)

19. GOODWILL (continued)

Goodwill is tested for impairment annually (as at 31 December) or when circumstances indicate that the carrying value may be impaired. The Group's impairment test for goodwill is based on a fair value less costs to sell calculation that uses a discounted cash flow model, which is classified as fair value level 3 in the fair value hierarchy.

During 2017 and 2016, there was no impairment of goodwill. As at 31 December 2015, impairment of goodwill of CTSP has been fully booked.

The key assumptions used in the impairment test as at 31 December 2017, 2016 and 2015 are as follows:

	SBS	APN	BEI	MCU	GK
31 December 2017					
Cash flow period	2018-2023	2018-2047	2017-2056	2018-2039	2017-2032
Discount rate	13.69%	10.12%	8.76%	8.76%	8.76%
Growth rate	5.00%	2.50%	2.50%	2.50%	2.50%
31 December 2016					
Cash flow period	2018-2023	2016-2046	2016-2046	2016-2036	2016-2031
Discount rate	13.69%	10.36%	7.99%	7.99%	7.99%
Growth rate	5.00%	2.50%	2.50%	2.50%	2.50%
31 December 2015*)					
Cash flow period	2018-2023	2016-2046	2016-2046	2016-2036	2016-2031
Discount rate	13.69%	10.46%	9.98%	9.98%	9.98%
Growth rate	5.00%	2.50%	2.50%	2.50%	2.50%

*) As restated, (refer to Note 4)

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

20. TAXATION

a. Prepaid taxes

	31 December 2017	31 December 2016	31 December 2015*)
VAT	1,697,131	1,336,922	1,748,921
Land and Buildings Tax ("PBB")	241,630	236,125	262,090
Income taxes:			
- Article 4(2)	-	-	393
- Article 22	25,169	-	-
- Article 23/26	16,584	95,872	99,555
- Article 25	81,174	-	-
- Article 28	519,266	832,678	939,446
Total prepaid taxes	**2,580,954**	**2,501,597**	**3,050,405**
Less:			
Current portion	**(1,698,548)**	**(1,585,375)**	**(2,384,157)**
Non-current portion	**882,406**	**916,222**	**666,248**

b. Taxes payable

	31 December 2017	31 December 2016	31 December 2015*)
VAT	74,829	140,983	134,896
Income taxes:			
Article 4(2)	166	128	330
Article 15	522	144	192
Article 21	192,711	67,047	102,946
Article 22	17,791	623	3,176
Article 23	36,994	48,540	16,891
Article 25	52,450	15,828	22,572
Article 26	438	1,291	1,363
Article 29	667,383	155,306	57,893
PBB	6,079	3,173	-
Total taxes payable	**1,049,363**	**433,063**	**340,259**

c. Income tax expenses/(benefit)

	31 December 2017	31 December 2016	31 December 2015*)
Current tax	2,086,909	990,483	882,387
Deferred tax	284,225	(1,117,538)	(109,690)
Adjustment in respect of prior year deferred tax expenses	87,316	83,383	-
Adjustment in respect of prior year current tax expenses	15,935	42,497	23,503
Income tax expenses/(benefit)	**2,474,385**	**(1,175)**	**796,200**

*) As restated, (refer to Note 4)

20. TAXATION (continued)

c. Income tax expenses/(benefit) (continued)

The tax on the Group's profit before income tax differs from the theoretical amount that would arise using the tax rate applicable to profits on the consolidated entities as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Consolidated profit before income tax	9,286,039	4,469,176	2,552,637
Tax calculated at applicable tax rates	2,321,510	1,117,294	638,159
Income tax effects of:			
- Share of loss of associates and joint ventures	88,669	32,072	88,973
- Non-taxable income	(153,261)	(55,673)	(73,619)
- Expenses not deductible for tax purposes	95,703	85,395	126,290
- Gain from revaluation of investment properties	(26,270)	(15,189)	(45,840)
- Fiscal losses utilisation	22,070	38,675	18,329
- Unrealised profit from transactions within Group	(21,561)	19,924	6,054
- Deferred tax assets adjustment from prior year	87,316	83,383	-
- Unrecognised deferred tax assets	44,274	17,393	14,351
- Recovery of impairment for fixed assets	-	(12,442)	-
- Adjustment in respect of prior year tax expense	15,935	42,497	23,503
- Deferred tax assets arising from gain on revaluation of tax fixed assets	-	(1,354,504)	-
Income tax expense/(benefit)	**2,474,385**	**(1,175)**	**796,200**

The reconciliation between profit before income tax as shown in profit or loss and estimated fiscal income of the Company for the years ended 31 December 2017, 2016 and 2015 is as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Consolidated profit before income tax	9,286,039	4,469,176	2,552,637
Profit before income tax - subsidiaries	(7,238,389)	(3,349,178)	(1,163,186)
Profit before income tax - the Company	2,047,650	1,119,998	1,389,451
Fiscal adjustments:			
Depreciation of fixed assets	(1,076,528)	(917,803)	(612,951)
Provision for land remediation	(96,661)	(38,324)	-
Performance incentive	14,190	(7,700)	(49,135)
Amortisation of deferred charges	(1,487)	(4,640)	(5,952)
Provision for impairment of inventories	(790)	(2,764)	-
Payment of taxes related to asset revaluation	-	210,072	-
Post-employment benefits	2,218	9,391	(2,409)
Other provisions	189,487	-	-
Non-deductible expenses	51,420	31,757	24,797
Interest income subject to final tax	(159,449)	(79,319)	(90,910)
Estimated fiscal income of the Company	970,050	320,668	652,891
Computation of corporate income tax (at 25% tax rate)	242,513	80,167	163,223

*) As restated, (refer to Note 4)

20. TAXATION (continued)

c. Income tax expenses/(benefit) (continued)

	31 December 2017	31 December 2016	31 December 2015*)
Prepayments of income tax:			
Article 22	57,590	76,924	68,784
Article 23	65,161	231	23
Article 25	50,583	85,952	375,830
Total	173,334	163,107	444,637
Overpayment of corporate income tax - the Company	-	(82,940)	(281,414)
Overpayment of corporate income tax - the Company - previous years	(82,940)	(281,414)	(23,965)
Overpayment of corporate income tax - the subsidiaries	(436,326)	(468,324)	(634,067)
Overpayment of corporate income tax - consolidated	(519,266)	(832,678)	(939,446)
Underpayment of corporate income tax - the Company	69,179	-	-
Underpayment of corporate income tax - the subsidiaries	598,204	155,306	57,893
Underpayment of corporate income tax - consolidated	667,383	155,306	57,893

*) As restated, (refer to Note 4)

20. TAXATION (continued)

d. Deferred tax assets/(liabilities)

	31 December 2017				
	Beginning balance	Credited/ (charged) to profit or loss	Credited to other comprehensive income	Reclassification	Ending balance
Deferred tax assets					
Post-employment benefits obligation	737,613	48,714	247,525	-	1,033,852
Tax loss carry forward	339,880	(185,100)	-	-	154,780
Provision for impairment loss of other assets	95,890	15,664	-	-	111,554
Provision for impairment trade receivable	34,138	53,161	-	-	87,299
Provision for environmental reclamation and remediation and closure	115,439	(28,743)	-	-	86,696
Accrued interest	25,558	10,072	-	-	35,630
Provision for impairment of inventory	18,108	15,665	-	-	33,773
Short-term employee benefit liabilities	18,122	6,066	-	-	24,188
Goodwill impairment	20,904	-	-	-	20,904
Other provisions	24,934	70,682	-	-	95,616
Difference between commercial and tax on net book value of fixed assets	1,564,506	(376,607)	-	-	1,187,899
Amortisation of mining properties	(144,801)	(848)	-	-	(145,649)
Financial lease payment	3,638	(15,765)	-	-	(12,127)
Difference between commercial and tax on net book value of plantations	(62,829)	15,498	-	47,331	-
Total deferred tax assets	**2,791,100**	**(371,541)**	**247,525**	**47,331**	**2,714,415**
Deferred tax liabilities					
Difference between commercial and tax on net book value of plantations	-	-	-	(47,331)	(47,331)
Total deferred tax liabilities	**-**	**-**	**-**	**(47,331)**	**(47,331)**

	31 December 2016				
	Beginning balance	(Charged)/ credited to profit or loss	Credited to other comprehensive income	Reclassification	Ending balance
Deferred tax assets					
Post-employment benefits obligation	654,318	(12,126)	95,421	-	737,613
Tax loss carry forward	418,210	(78,330)	-	-	339,880
Provision for impairment loss of other assets	76,722	19,168	-	-	95,890
Provision for impairment trade receivable	24,652	9,486	-	-	34,138
Provision for environmental reclamation and remediation and closure	129,049	(13,610)	-	-	115,439
Accrued interest	21,185	4,373	-	-	25,558
Provision for impairment of inventory	34,696	(16,588)	-	-	18,108
Short-term employee benefit liabilities	18,191	(69)	-	-	18,122
Goodwill impairment	20,904	-	-	-	20,904
Other provisions	1,441	23,493	-	-	24,934
Difference between commercial and tax on net book value of fixed assets	476,019	1,088,487	-	-	1,564,506
Amortisation of mining properties	(150,019)	5,218	-	-	(144,801)
Financial lease payment	(4,382)	8,020	-	-	3,638
Difference between commercial and tax on net book value of plantations	(59,462)	(3,367)	-	-	(62,829)
Total deferred tax assets	**1,661,524**	**1,034,155**	**95,421**	**-**	**2,791,100**
Deferred tax liabilities					
Amortisation of mining properties	(42,929)	-	-	42,929	-
Total deferred tax liabilities	**(42,929)**	**-**	**-**	**42,929**	**-**

20. TAXATION (continued)

d. Deferred tax assets/(liabilities) (continued)

	31 December 2015*)				
	Beginning balance	(Charged)/ credited to profit or loss	Credited to other comprehensive income	Acquisitions	Ending balance
Deferred tax assets					
Post-employment benefits obligation	591,101	(10,058)	73,275	-	654,318
Tax loss carry forward	88,563	242,336	-	87,311	418,210
Provision for impairment loss of other assets	82,107	(5,385)	-	-	76,722
Provision for impairment trade receivables	19,197	5,455	-	-	24,652
Provision for environmental reclamation and remediation and closure	123,881	5,168	-	-	129,049
Accrued interest	13,396	7,789	-	-	21,185
Provision for impairment inventory	15,789	18,907	-	-	34,696
Short-term employee benefit liabilities	33,688	(15,497)	-	-	18,191
Goodwill impairment	12,931	7,973	-	-	20,904
Other provisions	5,037	4,741	-	(8,337)	1,441
Difference between commercial and tax on net book value of fixed assets	633,020	(147,188)	-	(9,813)	476,019
Amortisation of mining properties	(148,891)	(1,128)	-	-	(150,019)
Financial lease payment	-	(1,095)	-	(3,287)	(4,382)
Difference between commercial and tax net book value of plantations	(57,134)	(2,328)	-	-	(59,462)
Total deferred tax assets	**1,412,685**	**109,690**	**73,275**	**65,874**	**1,661,524**
Deferred tax liabilities					
Amortisation of mining properties	-	-	-	(42,929)	(42,929)
Total deferred tax liabilities	**-**	**-**	**-**	**(42,929)**	**(42,929)**

The deferred tax assets include an amount which relates to tax loss carried forward of the subsidiaries within the group. The Group has concluded that the deferred tax assets will be recoverable using the estimated future taxable income based on the approved business plans and budgets for the Group.

Management believes that the deferred tax assets that resulted from the temporary differences are realisable in future years.

e. Tax assesment letters

The Company

On 5 April 2016 and 27 July 2016, the Company received an underpayment tax assessment letter ("SKPKB") for corporate income tax for the 2013 and 2014 fiscal years amounting to US$1,931,456 or equivalent to Rp25,360 and US$34,429 or equivalent to Rp452, respectively. The Company has paid those tax underpayments. The Company agreed with the SKPKBs and the amount has been recorded as recognition of current income tax from previous years in income tax expense.

On 18 April 2017, the Company received overpayment tax assessment letter ("SKPLB") for corporate income tax for the 2015 fiscal year amounting to US$20,457,666 or equivalent to Rp282,214. The Company has received restitution for those tax overpayments. Meanwhile, tax corrections amounting to US$538,117 or equivalent to Rp7,243 have been recorded as recognition of current income tax from previous years in income tax expense.

On 24 April 2018, the Company received SKPLB regarding corporate income tax covering fiscal year 2016 amounting to US$4,919,935 or equivalent to Rp67,748. The Company has received restitution for those tax overpayments. Meanwhile, the differences between prepaid tax and SKPLB have been recorded as recognition of current income tax from previous years in income tax expense of the 2018 interim consolidated financial statements.

*) As restated, (refer to Note 4)

20. TAXATION (continued)

e. Tax assesment letters (continued)

The subsidiaries

For the year ended 31 December 2017, Antam received the following SKPLB as follows:

- SKPLB regarding corporate income tax covering fiscal year 2015 amounting to Rp142,446. Antam received the tax refund in July 2017.

- SKPLB regarding VAT covering fiscal period July until December 2015 amounting to Rp98,254. Antam received the VAT refund in September 2017.

The difference between the amount claimed by Antam and the amount refunded by the Tax Office was recognised in profit or loss.

During 2018, Timah received SKPKB related to corporate income tax covering fiscal year 2013 amounting to Rp19,499 which still in objection process. Timah also received tax refund amounting to Rp11,022 for TAJ.

Bukit Asam has PBB disputes for years of 2004-2017 with tax authorities i.e., Prabumulih and Lahat tax offices as a result of the SKPKB and notification of tax due issued. The tax disputes are at various stages, such as objection, appeal or judicial review. Based on those disputes, Bukit Asam has made payments for the PBB underpayments and recorded as expenses in the year payment was made, however, for certain portions of payments made by Bukit Asam, where Bukit Asam believes that the tax authorities was not supposed to issue the underpayment, the payment has been recorded as part of prepaid taxes. As at 30 June 2018, total payment made and recorded as part of prepaid taxes was accounting to Rp154,530 (31 December 2017:Rp241,630). During 2018, Bukit Asam has received PBB refund from Tax office for the years of 2009 to 2010 amounting to Rp82,003 and for the year of 2016 amounting to Rp6,069.

f. Administration

Under the taxation laws of Indonesia, companies which are domiciled in Indonesia calculate and pay tax on the basis of self assessment. The DGT may assess or amend tax liabilities within five years of the time the tax becomes due.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

21. OTHER TAX RECEIVABLES

	31 December 2017	31 December 2016	31 December 2015*)
Payment of Surface Water Tax ("SWT") appeal	**536,058**	**516,831**	**334,353**

Until 31 December 2017, Local Revenue Offices ("DISPENDA") had issued Local Tax Assessment Letters ("SKPD") for the period November 2013 to November 2017 for Tanjung, Sipare-pare, Simanimbo, Asahan river (SWT non-industry) and Asahan river where the water is used for the aluminium smelter.

Especially for the use of Asahan river water by the Hydroelectric Power Plant ("PLTA") for the aluminium ingot smelter, the Company has paid tax obligations for the period November 2013 - August 2017 using the tax rates of surface water for power plants (PLN) of Rp75/Kwh based on the North Sumatra Governor Decree No. 24 of 2011 dated 8 April 2011 and for the period September - April 2018 using Ministrial Regulation No. 15/PRT/M/2017 regarding Guidance on Calculation of Surface Water Acquisition Value ("NPAP") year 2017 dated 30 August 2017 and Ministry Decision No. 568/KPTS/M/2017 regarding Determination of Surface Water Price Base year 2017 dated 31 August 2017 amounting to Rp129,512. On the other hand, the SKPD's issued by DISPENDA use industrial water rates based on cubication water (m^3) (SWT industry) with progressive rates from Rp123.4/m^3 - Rp144.4/m^3 amounting to Rp2,492,654 for the period of November 2013 to July 2018.

The Governor Decree does not state the tariff for PLTA non-PLN. The Company disagreed with DISPENDA on the interpretation of North Sumatra Governor Decree No. 24 of 2011 for Asahan River which was used by the Company as PLTA.

Regarding the above difference in interpretation, the Company submitted an objection letter for SKPD which has been received by the Governor of North Sumatra as follows:

Period	Date of submission of objection letter	Status of objection letter
November 2013 - September 2014	24 December 2014	Rejected
October - November 2014	9 September 2015	Rejected
December 2014 - April 2015	3 September 2015	Rejected
May - June 2015	1 October 2015	Rejected
July 2015	30 December 2015	Rejected
August 2015	25 January 2016	Rejected
September 2015	17 February 2016	Rejected
October - November 2015	30 March 2016	Rejected
December 2015	26 April 2016	Rejected
January 2016	8 June 2016	Rejected
February 2016	27 June 2016	Rejected
March 2016	5 September 2016	Rejected
April - October 2016	17 February 2017	Rejected
November 2016	9 March 2017	Rejected
December 2016	19 April 2017	Rejected
January 2017	8 May 2017	Rejected
February 2017	13 June 2017	Rejected
March 2017	10 July 2017	Rejected
April 2017	9 August 2017	Rejected
May - June 2017	2 October 2017	Rejected
July - August 2017	15 January 2018	Rejected
September 2017	29 January 2018	Rejected
October - November 2017	9 February 2018	Rejected
December 2017	12 April 2018	Rejected
January 2018	3 May 2018	Rejected
February 2018	1 July 2018	Awaiting decision
March 2018	16 August 2018	Awaiting decision
April 2018	16 August 2018	Awaiting decision

*) As restated, (refer to Note 4)

21. OTHER TAX RECEIVABLES (continued)

The Company submitted an appeal to the Tax Court on the rejected objection letters of SKPD of Asahan River regarding water usage for the aluminium smelter. Until 31 December 2017, the Company had also paid for the November 2013 - March 2016 periods to the amount of 50% from the calculation in the SKPD amounting to Rp536,058 (31 December 2016: Rp516,831 and 31 December 2015: Rp334,353). Payment made by the Company has been recorded as other tax receivables in the consolidated statements of financial position due to the fact that management believes that the SKPD received were without merit.

Starting from March 2017, the Company has decided not to pay 50% from the calculation in the SKPD. This decision has been made based on further analysis made by management considering developments of the appeal process in the Tax Court and further research in the prevailing tax regulations.

On 30 August 2017, Ministry of General Work and Public Housing ("KPUPR") issued Ministrial Regulation No. 15/PRT/M/2017 regarding Guidance on Calculation of NPAP. Based on this Ministrial Regulation, the NPAP should consist of: (a) price base of surface water (b) region economic factor (c) surface water value factor and (d) group of surface water user factor, where the NPAP value will be determined by the Governor as basis of surface water tax base. On 31 August 2017, KPUPR issued Ministry Decision No. 568/KPTS/M/2017 regarding Determination of Surface Water Price Base which regulates Surface Water Price Base in each Province in Indonesia on the basis of NPAP calculation. Since these regulations were issued, the Company has paid Surface Water tax obligation based on the formula as stipulated in these regulations.

The following is the status of the appeals and the relevant payments made by the Company:

Period	Submission date of appeal letters	Amount paid on appeal until 31 December 2017	2016	2015	Status
November 2013 - April 2015	14 December 2015	334,353	334,353	334,353	Appeal
May - June 2015	26 January 2016	35,343	35,343	-	Appeal
July - September 2015	7 June 2016	56,179	56,179	-	Appeal
October 2015	27 June 2016	18,991	18,991	-	Appeal
November 2015	18 July 2016	17,400	17,400	-	Appeal
December 2015	9 September 2016	18,333	18,333	-	Appeal
January 2016	20 September 2016	18,829	18,829	-	Appeal
February 2016	1 November 2016	17,417	17,403	-	Appeal
March 2016	5 January 2017	19,213	-	-	Appeal
April - November 2016	30 March 2017	-	-	-	Appeal
December 2016 - April 2017	23 January 2018	-	-	-	Appeal
May - November 2017	14 May 2018	-	-	-	Appeal
	Total	**536,058**	**516,831**	**334,353**	

As at the date of issuance of these consolidated financial statements, decisions on the above appeals have not been issued.

22. TRADE PAYABLES

Trade payables consist of the following:

	31 December 2017	31 December 2016	31 December 2015*)
Third parties	1,809,195	1,864,920	2,329,721
Related parties (Note 42a)	715,965	312,263	347,770
Total trade payables	**2,525,160**	**2,177,183**	**2,677,491**

Trade payables based on currencies consist of the following:

	31 December 2017	31 December 2016	31 December 2015*)
Rupiah	2,246,169	1,614,684	1,351,034
US Dollar	242,910	483,555	1,253,016
Other foreign currencies	36,081	78,944	73,441
Total trade payables	**2,525,160**	**2,177,183**	**2,677,491**

23. ACCRUALS

	31 December 2017	31 December 2016	31 December 2015*)
Construction-in-progress	713,368	490,583	762,087
Mining services	402,419	871,489	462,568
Regional taxes and other government charges	394,367	218,300	166,568
Repair and maintenances	361,152	97,334	65,757
Coal railway services	188,992	318,462	270,766
Heavy equipment rental	123,935	55,353	36,595
Others (each below Rp100,000)	530,822	554,250	602,725
Total accruals	**2,715,055**	**2,605,771**	**2,367,066**

24. SHORT-TERM EMPLOYEE BENEFITS LIABILITIES

Short-term employee benefits liabilities consist of the following:

	31 December 2017	31 December 2016	31 December 2015*)
Employee bonus and *tantiem*	921,738	440,559	329,327
Short-term post-employment benefits (Note 30)	342,142	145,224	181,333
Total short-term employee benefits liabilities	**1,263,880**	**585,783**	**510,660**

*) As restated, (refer to Note 4)

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

25. SHORT-TERM BANK BORROWINGS

	31 December 2017	31 December 2016	31 December 2015*)
Mandiri	2,327,732	2,994,650	2,804,634
BRI	1,377,884	1,665,219	508,689
Bank of Tokyo-Mitsubishi UFJ, Ltd. ("BTMU")	1,300,000	701,540	896,675
PT Bank DBS Indonesia ("DBS")	100,000	-	-
PT Bank Pan Indonesia Tbk ("Panin")	6,020	-	-
BNI	4,038	16,586	43,041
PT Bank Central Asia Tbk ("BCA")	-	-	1,379,500
PT Bank UOB Indonesia ("UOB")	-	-	29,100
Total short-term bank borrowings	**5,115,674**	**5,377,995**	**5,661,639**

The fair value of short-term bank borrowings approximate their carrying amount, since the maturity of the borrowings are less than one year.

a. Mandiri

As at 31 December 2017, 2016 and 2015, the Group (through its subsidiaries) has working capital loan facilities from Mandiri. The total available facilities are US$195,000,000 with ranging of interest rate between 1.35% and 3.0% and Rp500,000 with interest rate of 8.75%. The working capital loans are due on 20 March 2018 and 28 June 2018 (subsequently extended to 28 June 2019). At 20 March 2018, the Group has mad repayment of the working capital loan on its due date.

During 2018, the Group has made additional loan drawdown amounting to US$200,000,000 and made repayment amounting to US$50,000,000. Remaining loan balance will be due on 10 October 2018 and 19 October 2018.

In addition, the Group also has letter of credit, treasury lines and supplier financing facilities totalling US$259,125,000 which are due on 28 June 2018 (subsequently extended to 28 June 2019).

As specified by the loan agreements, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 31 December 2017, 2016 and 2015, the Group has complied with the covenants in the borrowing agreement.

b. BRI

As at 31 December 2017, 2016 and 2015, the Group (through its subsidiaries) has working capital loan facilities from BRI. The total available facilities are US$150,000,000 with interest rate of 1.45% and Rp503,000 with ranging of interest rate between 7.68% - 9.25%. The working capital loans are due on 20 January 2018 and 15 November 2018. At 20 January 2018, the Group has made repayment of the working capital loan on its due date.

During 2018, the Group has made several additional loan drawdown from the outstanding facilities. Remaining loan balance will be due on 15 September 2018 (subsequently extended to 15 December 2018) and 15 November 2019.

*) As restated, (refer to Note 4)

25. SHORT-TERM BANK BORROWINGS (continued)

b. BRI (continued)

In addition, the Group also has letter of credit facilities amounting to US$200,000,000 which has expired on 15 July 2018.

As specified by the loan agreements, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 31 December 2017, 2016 and 2015 the Group has complied with the covenants in the borrowing agreement.

c. BTMU

As at 31 December 2017, 2016 and 2015, the Group (through its subsidiaries) has working capital loan facilities from BTMU. The total available facilities is Rp1,300,000 with interest rate of Certificate of Bank Indonesia ("SBI") + 1% (IDR) and/or Cost of Fund ("COF") + 1% (US$). The working capital loan are due on 31 August 2018 and has been extended until 31 August 2019.

As specified by the loan agreements, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 31 December 2017, 2016 and 2015, the Group has complied with the covenants stipulated in the borrowing agreement.

d. DBS

The Group (through its subsidiaries) obtained bank loan facility from DBS in the form of uncommitted revolving credit sub-facility with a maximum facility of US$10,000,000 and/or equivalent with Rp100,000 with the applicable rate at the COF + 1.00% per annum. The loan facility can be withdrawn in Rupiah and/or US Dollars currency. This facility expired on 5 March 2018 and was extended until 15 March 2019. The Group has made full repayment for this loan at 2018.

As specified by the loan agreements, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 31 December 2017 and 2016, the Group has complied with the covenants stipulated in the borrowing agreement.

e. Panin

As at 31 December 2017, the Group (through its subsidiaries) has working capital loan facilities from Panin. The total available facilities is Rp50,000 with interest rate of reference rate + 3%. The working capital loan will be due on 19 September 2018.

As specified by the loan agreements, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 31 December 2017 and 2016, the Group has complied with the covenants stipulated in the borrowing agreement.

The Group has made full repayment for this loan on 2018.

25. SHORT-TERM BANK BORROWINGS (continued)

f. BNI

As at 31 December 2017, 2016 and 2015, the Group (through its subsidiaries) has working capital loan facilities from BNI. The total available facilities is Rp105,000 with ranging of interest rate between 11.00% - 11.50%. The working capital loans are due on 19 January 2018 and 20 December 2018. At 19 January 2018, the Group has made repayment of the working capital loans on its due date.

As specified by the loan agreements, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 31 December 2017, 2016 and 2015, the Group has complied with the covenants stipulated in the borrowing agreement.

g. BCA

As at 31 December 2015, the Group (through its subsidiaries) has working capital loan facilities from BCA. The loan available facilities is US$100,000,000 with interest rate 1.65% per annum. The loan was fully paid on 30 March 2016.

As specified by the loan agreements, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 31 December 2015, the Group has complied with the covenants stipulated in the borrowing agreements.

h. UOB

As at 31 December 2015, the Group (through its subsidiaries) has working capital loan facilities from UOB. The loan available facilities is Rp60,000,000 with interest rate based on Deposit Insurance Agency plus 2.75% per annum or JIBOR plus 3.50% per annum whichever is higher. The loan was fully repaid on March 2016.

As specified by the loan agreements, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 31 December 2015, the Group has complied with the covenants stipulated in the borrowing agreements.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

26. LONG-TERM BANK BORROWINGS

	31 December 2017	31 December 2016	31 December 2015*)
Lembaga Pembiayaan Ekspor Indonesia ("LPEI")	1,566,487	1,637,513	1,724,375
PT Bank Maybank Indonesia Tbk ("Maybank")	1,253,190	1,310,010	965,650
Industrial and Commercial Bank of China Ltd. ("ICBC")	438,617	458,504	482,825
PT Bank Sumitomo Mitsui Indonesia ("BSMI")	231,600	295,522	371,013
Bank Mizuho	203,220	529,043	775,969
PT Bank Syariah Mandiri ("BSM")	68,232	92,640	118,946
PT Bank Muamalat Tbk ("Muamalat")	58,009	73,847	95,618
Mandiri	570	-	-
PT Bank ANZ Indonesia ("ANZ")	-	335,899	804,709
PT Bank CIMB Niaga Tbk ("CIMB")	-	146,039	200,953
	3,819,925	4,879,017	5,540,058
Unamortised upfront fees	(6,659)	(9,047)	(12,656)
Total long-term bank borrowings	3,813,266	4,869,970	5,527,402
Less:			
Current portion	**(576,984)**	**(1,049,088)**	**(976,741)**
Non-current portion	**3,236,282**	**3,820,882**	**4,550,661**

The fair value of the long-term bank borrowings at the reporting dates is as follows:

	31 December 2017	31 December 2016	31 December 2015*)
LPEI	1,596,876	1,651,615	1,740,914
Maybank	1,274,572	1,320,006	1,034,681
ICBC	447,125	462,452	487,461
BSMI	238,201	297,047	373,143
Bank Mizuho	206,032	535,436	786,114
BSM	68,232	92,640	118,946
Muamalat	58,009	73,849	95,618
Mandiri	570	-	-
ANZ	-	335,899	804,709
CIMB	-	146,039	200,953
Total	**3,889,617**	**4,914,983**	**5,642,539**

*) As restated, (refer to Note 4)

26. LONG-TERM BANK BORROWINGS (continued)

The fair values of the loans are based on discounted cash flows using a borrowing rate of 5.25% (2016: 5.25% and 2015: 5.25%) and are within level 3 of the fair value hierarchy.

a. LPEI and ICBC

On 23 May 2014, the Group (through its subsidiaries) obtained a loan facility from LPEI to finance capital expenditures. The loan has a maximum credit facility of US$100,000,000 with an interest rate of 5.00% per annum, which was fully drawndown by the Group on 25 September 2014. The loan is payable in quarterly installments, with a two-year grace period on principal repayments.

On 24 March 2015, the Group obtained a second loan facility from LPEI. The loan has a maximum credit facility of US$60,000,000 with an interest rate of 5.00% per annum, which was fully drawndown by the Group in 2015. The loan is payable in quarterly installments, with a one and a half year grace period on the principal repayment.

As at 23 November 2015, LPEI assigned the Group's investment loan amounting to US$35,000,000 to ICBC, based on a Sale and Purchase and Assignment of Debt Agreement which was stated in Notarial Deed No. 63 of Mellyani Noor Shandra S.H. Based on this agreement, there is no change of interest rate, due date and loan covenants required under the credit agreement. This loan will be due in 2024.

As specified by the loan agreements as described above, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 31 December 2017, 2016 and 2015, the Group has complied with the covenants stipulated in the borrowing agreements.

b. Maybank

On 6 November 2015, the Group (through its subsidiaries) obtained a loan facility from Maybank to finance capital expenditures. The loan has a maximum credit facility of US$100,000,000. The interest rate is 5.25% per annum.

The payments of the loans principal are to be made on a quarterly basis, with a nine-month grace period on principal repayments. This loan will be due in 2025.

As specified by the loan agreements as described above, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 31 December 2017, 2016 and 2015, the Group has complied with the covenants stipulated in the borrowing agreement.

26. LONG-TERM BANK BORROWINGS (continued)

c. Bank Mizuho

On 18 April 2013, the Group (through its subsidiaries) entered into a credit agreement with Bank Mizuho whereby Bank Mizuho provided the Group with a credit loan facility amounting to US$75,000,000 which has been fully drawndown. The proceeds of the loan are utilised for the funding of general corporate purpose financing.

The tenor of the loan is five years consisting of a one year grace period and a four years principal repayment period. The interest rate is LIBOR three months +1.80%. Interest payments are due every three months.

As specified by the loan agreements as described above, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 31 December 2017, 2016 and 2015, the Group has complied with the covenants stipulated in the borrowing agreement.

The loan had been fully repaid on 18 April 2018.

d. BSMI

On 21 June 2013, the Group (through its subsidiaries) obtained an investment loan facility with a maximum credit limit amounting to US$75,000,000 from BSMI. The payments of the loan principal are to be made on a semi-annual basis, with a one year grace period on principal repayments. The interest rate is 4.56% per annum. This loan will be due in 2021.

As specified by the loan agreements as described above, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 31 December 2017, 2016 and 2015, the Group has complied with the covenants stipulated in the borrowing agreement.

e. BSM

In June 2010, the Group (through its subsidiaries), entered into a financing agreement for al-Murabahah and al-Ijarah Muntahia Bittamleek, al-Musyarakah and al-Murabahah with BSM.

This agreement has been amended on 30 October 2017 to change the loan period to 20 August 2019.

For this agreement, the Group has handed over some collateral in the form of heavy equipment and supporting equipment, claims to PT Nusantara Termal Coal (“NTC”) with total value of US$27,000,000, inventory located in NTC mining site in the amount of US$300,000, personal guarantee from Tjahyono Imawan (one of SBS's commissioner and shareholder of non-controlling interest) and deposits with total value of US$500,000 on behalf of Tjahyono Imawan.

26. LONG-TERM BANK BORROWINGS (continued)

e. BSM (continued)

Loan facilities	Currency	Total facility (in thousands)	Loan term	Ujrah, nisbah, margin	Payment period
Ijarah Muntahiyaah Bit Tamblik	US Dollar	7,988	28 Oct 2014 - 28 Aug 2019	583,722	Monthly
Musyarakah	US Dollar	2,000	28 Oct 2014 - 28 Aug 2019	0.17% from revenue	Monthly
Murabahah	US Dollar	14,000	28 Oct 2014 - 28 Aug 2019	127,647	Monthly

As specified by the loan agreements as described above, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 31 December 2017, 2016 and 2015, the Group has complied with the covenants stipulated in the borrowing agreement.

f. Muamalat

In 2009, the Group (through its subsidiaries), entered into a financing agreement with Muamalat with total facility amounting to US$15,100,000.

This financing facility will be utilised for funding working capital expenditure. Rate equivalent (nisbah) for profit sharing for this financing is multi nisbah based on projected installment schedule.

The period of principal and profit sharing payment is every month based on installment schedule. Early settlement will not deduct the bank's revenue portion.

On 1 June 2017, Group and Muamalat have agreed to reschedule payment of principal and nisbah profit sharing, that changed repayment period to become 1 June 2017 until 1 June 2019.

For this agreement, the Group has handed over some collateral in the form of heavy equipment and supporting equipment, deposits with total value of Rp4,000,000,000 (full amount), claims to PT Putra Muba Coal and PT Pesona Khatulistiwa Nusantara and personal guarantee.

As specified by the loan agreements as described above, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 31 December 2017, 2016 and 2015, the Group has complied with the covenants stipulated in the borrowing agreement.

26. LONG-TERM BANK BORROWINGS (continued)

g. ANZ

On 14 August 2014, the Group (through its subsidiaries) obtained a credit loan facility with maximum limit amounting to US$100,000,000 from ANZ. The loan facility agreement has been amended as stated on Loan Facility Agreement No. 139/FA/ANZ/AMN-1/X/2016 dated 11 October 2016. The proceeds of the loan will be utilised for to fund working capital expenditure.

The availability of the loan facility is up to 13 August 2017 and annual fixed interest on drawdowns from the facility is 3.0%. The maximum duration of repayment, including interest is three months.

As specified by the loan agreements as described above, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 31 December 2016 and 2015, the Group has complied with the covenants in the borrowing agreement.

On 14 August 2017, the Group's outstanding loan balance has been fully paid.

h. CIMB

On 27 January 2013, the Group (through its subsidiaries) entered into a credit loan facility with CIMB. Based on addendum letter No. 125/S1CBII/138/06/2014 dated 6 June 2014, the maximum limit is in the amount of Rp631,000.

The proceeds of the loan will be utilised for funding of working capital expenditure and for the specific purpose of plantation development.

The availability of the loan facility is from 29 August 2013 until 6 June 2020 with floating market interest rate based on market interest rate.

As specified by the loan agreements as described above, the Group is required to comply with certain covenants, such as financial ratio covenants.

As at 31 December 2016 and 2015, the Group has complied with the covenants in the borrowing agreement.

As at 31 July 2017, the Group's outstanding loan balance has been fully paid.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

27. FINANCE LEASE LIABILITIES

	31 December 2017	31 December 2016	31 December 2015*)
PT Komatsu Astra Finance ("KAF")	609,641	714,140	-
PT Surya Artha Nusantara Finance ("San Finance")	28,176	48,457	62,831
Others	669	-	-
Total finance lease liabilities	**638,486**	**762,597**	**62,831**
Less:			
Current portion	**(141,874)**	**(178,964)**	**(15,851)**
Non-current portion	**496,612**	**583,633**	**46,980**

Future minimum lease payments under finance leases together with the present value of the minimum lease payments were as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Gross finance lease liabilities - minimum lease payments			
No later than 1 year	148,968	188,589	21,413
Later than 1 year and no later than 5 years	546,982	643,882	49,574
	695,950	832,471	70,987
Less :			
Future finance costs on finance leases	(57,464)	(69,874)	(8,156)
Present value of finance lease liabilities	**638,486**	**762,597**	**62,831**

Maturity analysis of present value of finance lease liabilities is as follows:

	31 December 2017	31 December 2016	31 December 2015*)
No later than 1 year	141,874	178,964	15,851
Later than 1 year and no later than 5 years	496,612	583,633	46,980
Total	**638,486**	**762,597**	**62,831**

There is no significant restriction imposed by lease arrangements between lessor and Bukit Asam on use of the assets or maintenance of certain financial performance.

In 2016, SBS, a subsidiary of Bukit Asam and KAF signed several lease agreements with the option to acquire certain capital goods with total amount of US$55,671,353.

The term of each lease is for 60 months whereby at the end of the lease period, the lessee has buy an option in the amount of the residual amount approved which is equal to US$1. During 2016, the Group has notified to exercise its right to purchase capital goods in accordance with the terms and general conditions. The interest rate is set for each of the lease agreements, base rate plus margin 3.50% per annum (floating). Base rate is LIBOR 90 days from BTMU Jakarta branch, two business days prior to the period of the lease payments.

*) As restated, (refer to Note 4)

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

28. BONDS PAYABLE

	31 December 2017	31 December 2016	31 December 2015*)
Principal:			
Antam Continuation Bonds I with Fixed Interest Rate Phase I Year 2011 ("Antam's bonds")	3,000,000	3,000,000	3,000,000
Timah's bond issued in 2017	1,200,000	-	-
Timah's sukuk ijarah issued in 2017	300,000	-	-
Unamortised bonds issuance cost	(3,159)	(4,104)	(4,969)
Total bonds payable	4,496,841	2,995,896	2,995,031
Less:			
Current portion	**(899,594)**	**-**	**-**
Non-current portion	**3,597,247**	**2,995,896**	**2,995,031**

Antam's bonds

On 2 December 2011, Antam issued the Antam's bonds with a total principal amount of Rp3,000,000. Interest is payable quarterly every 14 March, 14 June, 14 September and 14 December. The Antam's bonds series A and series B will mature on 14 December 2018 and 14 December 2021, respectively. The breakdown of the Antam's bonds is as follows:

Series	Coupon rate	Maturities	Principal (Rp)
A	8.38%	7 years	900,000
B	9.05%	10 years	2,100,000
		Total	**3,000,000**

With regard to the Public Offering of Continuation Bonds, PT Bank Permata Tbk ("Permata") acts as the Trustee or the institution that is entrusted to represent the interests of the bond holders following the provisions of the Bonds Trusteeship Agreement Deed No. 48 dated 30 September 2011, Amendment I of Bonds Trusteeship Agreement Deed No. 49 dated 28 October 2011 and Amendment II of Bonds Trusteeship Agreement Deed No. 52 dated 28 November 2011, of Fathiah Helmi, S.H., Notary in Jakarta, between Antam and the Trustee. As a Trustee, Permata has stated firmly that it is not affiliated with Antam, either directly or indirectly.

The Antam's bonds have been rated BBB+ by PT Pemeringkat Efek Indonesia ("Pefindo") in its rating report released on 13 September 2017 and 16 September 2016 and have been rated A- (Negative Outloook) by Pefindo in its rating report released on 10 September 2015.

The Antam's bonds proceeds are used for a routine investment in Antam's business units, renovation and modernisation of ferronickel plant in Pomalaa and for the opening of nickel mines in North Maluku and/or Southeast Sulawesi and/or a bauxite mine in West Kalimantan.

The Antam's bonds are listed on the Indonesia Stock Exchange.

During the term of the bonds, Antam has the obligation to, among other things, meet certain financial ratios and maintain the direct and/or indirect shareholding in Antam by the Government of the Republic of Indonesia at not less than 51% of the number of shares that has been issued and fully paid. Without the written consent of the Trustee, Antam will not conduct a merger or acquisition with another company that does not comply with the intents and purposes of the Company's Article of Association, unless this is required by applicable regulations or court decisions.

*) As restated, (refer to Note 4)

28. BONDS PAYABLE (continued)

Antam's bonds (continued)

Antam will not reduce its authorised capital, issued capital and paid-in capital; pledge assets and provide loans or guarantees to third parties without the written consent of the Trustee. Application for written consent of the Trustee will not be rejected for no apparent or fair reason.

The financial ratios required under the Trusteeship Agreement are as follows:

a) The ratio of total interest-bearing debts (excluding trade payables but including syariah funding) to total equity shall not exceed 3 times;
b) The ratio of the total of EBITDA plus cash on hand and cash in banks to total matured debt and interest shall not be less than 1.25 times;
c) The equity shall be greater than Rp7,000,000.

As at 31 December 2017, 2016 and 2015, management believes that Antam has complied with all the debt covenants.

The fair values of the Antam's bonds payable as at 31 December 2017, 2016 and 2015 amounting to Rp3,022,536, Rp2,995,030 and Rp2,782,330, respectively.

The fair values are based on prices released by Indonesian Bonds Pricing Agency ("IBPA") which are within level 2 of the fair value hierarchy.

Timah's bond and sukuk ijarah

On 28 September 2017, Timah issued bonds Series A amounting to Rp480,000 and Series B amounting to Rp720,000 (the "Timah's Bonds") through listing in BEI, with BNI acting as the Trustee. The interest of Bond Series A is payable quarterly starting from 28 December 2017 until the maturity date. The interest of Bond Series B is payable quarterly starting from 28 December 2017 until the maturity date.

In addition, on 28 September 2017, Timah issued sukuk ijarah Series A amounting to Rp120,000 and Series B amounting to Rp180,000 through listing in BEI, with BNI acting as the Trustee. Bid price is at 100% from par value. The ijarah Series A return was set at Rp10,200 per annum and is payable quarterly starting from 28 December 2017 until the maturity date. The ijarah Series B return was set at Rp15,750 per annum and is payable quarterly starting from 28 December 2017 until the maturity date.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

28. BONDS PAYABLE (continued)

Timah's bond and sukuk ijarah (continued)

Series	Coupon rate	Maturities	Principal (Rp)	Fair value as at 31 December 2017
Bonds - issuance year 2017 - I				
-Seri A	8.50%	3 years	480,000	482,899
-Seri B	8.75%	5 years	720,000	736,272
			1,200,000	1,219,171

Series	Installment of return	Maturities	Principal (Rp)	Fair value as at 31 December 2017
Sukuk ijarah - issuance year 2017 - I				
-Seri A	Rp10,200/year	3 years	120,000	120,723
-Seri B	Rp15,750/year	5 years	180,000	184,068
			300,000	304,791

The fair values are based on prices released by IBPA which are level 2 of the fair value hierarchy.

These Timah's bonds and sukuk ijarah payable were rated as idA+ from Pefindo at 2017. The rating reflects the assessment of the likelihood of timely payment of the principal and interest on the bonds and of the repayment of ijarah.

The Indenture governed that:

- No later than 1 (one) year after the allotment date, Timah may repurchase the obligation at market price.
- Certain covenants, including amongst others: repurchase of the bonds upon a change of control, limitation of liens, limitation of sale and lease back transactions and provision of financial statements and other reports.
- Timah's Bonds and sukuk ijarah are not secured by special collateral, but are collateralised by all of the Timah's assets, either movable or immovable, whether currently existing or which will be exist in the future, for the holders of the bonds and sukuk ijarah.
- Timah complies with the restrictions specified within the agreements with the acting Trustee.
- Timah is required to comply with certain covenants, such as financial ratio covenants. Timah is in compliance with the respective covenants.
- The proceeds from bonds issue, after deducted with its emission costs, are used for capital expenditures and partial refinancing of the short term-loan from Working Capital Credit Facility in Rupiah.
- The proceeds from sukuk ijarah issue, after deducted with its emission costs, are used for reconditioning of production equipment.

29. PROVISION FOR ENVIRONMENTAL RECLAMATION AND REMEDIATION AND MINE CLOSURE

The operations of the Group have been, and may in the future, be affected from time to time in varying degrees by changes in environmental regulations. The Group policy is to meet or, if possible, surpass the requirements of all applicable regulations issued by the Government, by application of technically proven and economically feasible measures.

The Group makes provision for environmental rehabilitation based on Law No. 32/2009 regarding Conservation and Environmental management, GR 78 regarding the Reclamation and Post Mining, and Minister of Energy and Mineral Resources ("MEMR") No. 7/2014 regarding Reclamation and Mining Closure Activity for Mineral and Coal Mine Business.

Analysis of movement in the provision for environmental rehabilitation, is as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Beginning balance	942,111	1,027,135	1,003,006
Addition and changes in assumptions	142,231	78,433	117,246
Utilisation/realisation	(194,964)	(125,934)	(93,117)
Reversal of provision	-	(18,431)	-
	889,378	961,203	1,027,135
Transferred to liabilities of disposal group directly associated with assets classified as held for sale	-	(19,092)	-
Ending balance	889,378	942,111	1,027,135
Less:			
Current portion	**(313,299)**	**(367,975)**	**(161,430)**
Non-current portion	**576,079**	**574,136**	**865,705**

*) As restated, (refer to Note 4)

30. POST-EMPLOYMENT BENEFITS OBLIGATION

The pension and other employment benefits obligations as at 31 December 2017, 2016 and 2015 were calculated in accordance with SFAS 24 "Employee Benefits" by Independent Actuaries.

The details of employee benefit obligations are as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Pension benefits	982,844	573,437	532,839
Post-employment medical benefits	2,652,958	1,922,430	1,694,833
Other post-retirement benefits	347,180	312,546	251,388
Other long-term employment benefits	513,510	468,385	549,684
Total	4,496,492	3,276,798	3,028,744
Less:			
Current portion (Note 24)	**(342,142)**	**(145,224)**	**(181,333)**
Non-current portion	**4,154,350**	**3,131,574**	**2,847,411**

The details of employee benefit costs are as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Pension benefits	92,765	98,341	89,720
Post-employment medical benefits	157,147	187,809	259,357
Other post-retirement benefits	46,184	40,310	53,526
Other long-term employment benefits	119,421	(29,521)	41,199
Total	**415,517**	**296,939**	**443,802**

The employee benefits charged for the years ended 31 December 2017, 2016 and 2015 were allocated as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Cost of revenue	248,043	137,278	205,042
General and administrative expenses	167,474	159,661	238,760
Total	**415,517**	**296,939**	**443,802**

The details of remeasurement of employee benefit obligations are as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Pension benefits	371,487	106,978	104,381
Post-employment medical benefits	615,962	88,881	(802,588)
Other post-retirement benefits	17,856	38,348	1,450
Total	**1,005,305**	**234,207**	**(696,757)**

*) As restated, (refer to Note 4)

30. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

a. Pension benefits

Bukit Asam and Antam as the Company's subsidiaries have each received approval from the Minister of Finance of the Republic of Indonesia to establish a separate pension fund, with detail as follows:

Entity	SK No.	Date of SK	Separate entity established based on the SK
Bukit Asam	SK No. Kep-245/KM.6/2003	21 October 2003	Dana Pensiun Bukit Asam
Antam	SK No. Kep-369/KM.17/1997	15 July 1997	Dana Pensiun Antam

Movement in the defined benefit obligations, expenses recognised in profit or loss and remeasurement recognised as other comprehensive income, during the year is as follows:

	Present value of obligation	Fair value of plan assets	Impact of minimum funding requirement assets ceiling	Total
As at 1 January 2015*)	**2,055,013**	**(1,716,453)**	**203,825**	**542,385**
Recognised in profit or loss:				
- Current service cost	58,825	-	-	58,825
- Past service cost	(1,887)	-	-	(1,887)
- Interest cost/(income)	176,220	(143,438)	-	32,782
	233,158	(143,438)	-	89,720
Remeasurement recognised as other comprehensive income:				
- Changes in financial assumptions	(116,760)	82,074	-	(34,686)
- Changes in demographic assumption	45,975	-	-	45,975
- Experience adjustment	84,503	-	-	84,503
- Return on plan assets	(7,879)	31,557	-	23,678
- Changes in assets ceiling	-	-	(15,089)	(15,089)
	5,839	113,631	(15,089)	104,381
Contributions paid by:				
- The Group	-	(110,465)	-	(110,465)
- Employee	-	(4,393)	-	(4,393)
	-	(114,858)	-	(114,858)
Benefit paid by:				
- The Group	(74,644)	-	-	(74,644)
- Plan assets	(104,030)	89,885	-	(14,145)
	(178,674)	89,885	-	(88,789)
As at 31 December 2015*)	**2,115,336**	**(1,771,233)**	**188,736**	**532,839**

*) As restated, (refer to Note 4)

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

30. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

a. Pension benefits (continued)

	Present value of obligation	Fair value of plan assets	Impact of minimum funding requirement assets ceiling	Total
As at 31 December 2015*)	**2,115,336**	**(1,771,233)**	**188,736**	**532,839**
Recognised in profit or loss:				
- Current service cost	70,743	-	-	70,743
- Past service cost	4,479	-	-	4,479
- Interest cost/(income)	185,798	(162,679)	-	23,119
	261,020	(162,679)	-	98,341
Remeasurement recognised as other comprehensive income:				
- Changes in financial assumptions	99,536	9,053	-	108,589
- Experience adjustment	(63,030)	-	-	(63,030)
- Return on plan assets	(7,975)	68,546	-	60,571
- Changes in assets ceiling	-	-	848	848
	28,531	77,599	848	106,978
Contributions paid by:				
- The Group	-	(102,553)	-	(102,553)
- Employee	-	(4,268)	-	(4,268)
	-	(106,821)	-	(106,821)
Benefit paid by:				
- The Group	(56,342)	-	-	(56,342)
- Plan assets	(96,301)	94,743	-	(1,558)
	(152,643)	94,743	-	(57,900)
As at 31 December 2016	**2,252,244**	**(1,868,391)**	**189,584**	**573,437**
Recognised in profit or loss:				
- Current service cost	69,147	-	-	69,147
- Past service cost	(4,512)	-	-	(4,512)
- Interest cost/(income)	178,922	(150,792)	-	28,130
	243,557	(150,792)	-	92,765
Remeasurement recognised as other comprehensive income:				
- Changes in financial assumptions	79,306	(57,966)	-	21,340
- Experience adjustment	144,130	-	-	144,130
- Return on plan assets	(20,324)	162,579	-	142,255
- Changes in assets ceiling	-	-	63,762	63,762
	203,112	104,613	63,762	371,487
Contributions paid by:				
- The Group	-	(23,530)	-	(23,530)
- Employee	-	(4,176)	-	(4,176)
	-	(27,706)	-	(27,706)
Benefit paid by:				
- The Group	(26,796)	-	-	(26,796)
- Plan assets	(100,327)	99,984	-	(343)
	(127,123)	99,984	-	(27,139)
As at 31 December 2017	**2,571,790**	**(1,842,292)**	**253,346**	**982,844**

*) As restated, (refer to Note 4)

30. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

a. Pension benefits (continued)

The actual return on plan assets during the years ended 31 December 2017, 2016 and 2015, was Rp129,302, Rp120,830 and Rp98,394, respectively.

Plan assets comprise the following:

	31 December 2017		31 December 2016		31 December 2015*)	
	Fair value	%	Fair value	%	Fair value	%
Debt instruments	545,840	30%	449,373	24%	446,047	25%
Property	543,903	30%	511,708	27%	493,806	28%
Equity instruments	266,998	14%	405,115	22%	482,840	27%
Mutual fund	256,108	14%	151,137	8%	116,385	7%
Others	229,443	12%	351,058	19%	232,155	13%
Total	**1,842,292**	**100%**	**1,868,391**	**100%**	**1,771,233**	**100%**

As at 31 December 2017, 2016 and 2015, the Group's plan assets for pension benefit plan are invested in Antam's shares and bonds that listed in Indonesia Stock Exchange amounting to Rp26,677, Rp30,024 and Rp40,550, respectively.

The Group's plan assets as at 31 December 2017 amounting to Rp513,485 (2016: Rp678,900 and 2015: Rp493,679) represent investments in stocks, government bonds, corporate bonds and mutual funds traded on the PT Bursa Efek Indonesia. Meanwhile, plan assets amounting to Rp183,186 (2016: Rp183,624 and 2015: Rp176,120) represent investments in liquid investments, such as time deposits and deposits on-call.

The principal actuarial assumptions used by actuaries in determining the benefits obligation were as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Discount rate	6.56% - 7.32%	8% - 8.52%	8.90% - 9.25%
Future salary increases	4% - 10%	4% - 10%	4% - 10%
Mortality table - active employees	TMI 3 (2011)	TMI 3 (2011)	TMI 3 (2011)
Mortality table - pensioners	Group Annuity Mortality 1971 [1])	Group Annuity Mortality 1971 [1])	Group Annuity Mortality 1971[1])
Normal retirement age	56 years	56 years	56 years

[1]) Only used by Antam

*) As restated, (refer to Note 4)

30. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

a. Pension benefits (continued)

The effect of 1% movement of discount rate and salaries growth rate in pension benefit obligation is as follows:

31 December 2017	Change in assumptions	Impact on overall liability
Discount rate	Increase by 1%	(46,720)
	Decrease by 1%	52,485
Salaries growth rate	Increase by 1%	51,316
	Decrease by 1%	(46,930)
31 December 2016	**Change in assumptions**	**Impact on overall liability**
Discount rate	Increase by 1%	(58,054)
	Decrease by 1%	63,518
Salaries growth rate	Increase by 1%	64,480
	Decrease by 1%	(60,433)
31 December 2015	**Change in assumptions**	**Impact on overall liability**
Discount rate	Increase by 1%	(138,822)
	Decrease by 1%	171,406
Salaries growth rate	Increase by 1%	48,567
	Decrease by 1%	(46,272)

The sensitivity analyses are based on a change in an assumption while holding all other assumptions constant. In practice, this is unlikely to occur, and changes in some of the assumptions may be correlated. When calculating the sensitivity of the defined benefit obligation to significant actuarial assumptions the same method (present value of the defined benefit obligation calculated with the projected unit credit method at the end of the reporting period) has been applied as when calculating the pension liability recognised within the consolidated statement of financial position.

Expected maturity analysis of undiscounted pension benefits, are as follows:

	Less than a year	Between 1 - 5 years	More than 5 years
Pension benefits	207,333	730,084	6,021,034

*) As restated, (refer to Note 4)

30. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

b. Post-employment medical benefits

Movement in the defined benefit obligation, expenses recognised in profit or loss and remeasurement recognised as other comprehensive income, during the year is as follows:

	Present value of obligation	Fair value of plan assets	Impact of minimum funding requirement assets ceiling	Total
As at 1 January 2015*)	**3,620,887**	**(1,217,304)**	**-**	**2,403,583**
Recognised in profit or loss:				
- Current service cost	30,436	-	-	30,436
- Interest cost/(income)	325,512	(96,591)	-	228,921
	355,948	(96,591)	-	259,357
Remeasurement recognised as other comprehensive income:				
- Changes in financial assumptions	(365,294)	186,702	-	(178,592)
- Changes in demographic assumption	147,468	-	-	147,468
- Experience adjustment	(781,391)	-	-	(781,391)
- Return on plan asset	9,927	-	-	9,927
	(989,290)	186,702	-	(802,588)
Contributions paid by:				
- The Group	-	(57,449)	-	(57,449)
- Employee	-	(1,199)	-	(1,199)
	-	(58,648)	-	(58,648)
Benefit paid by:				
- The Group	(106,871)	-	-	(106,871)
- Plan assets	(57,174)	57,174	-	-
	(164,045)	57,174	-	(106,871)
As at 31 December 2015*)	**2,823,500**	**(1,128,667)**	**-**	**1,694,833**
Recognised in profit or loss:				
- Current service cost	35,561	-	-	35,561
- Interest cost/(income)	254,099	(101,851)	-	152,248
	289,660	(101,851)	-	187,809
Remeasurement recognised as other comprehensive income:				
- Changes in financial assumptions	(1,184,176)	24,225	196,237	(963,714)
- Experience adjustment	1,052,595	-	-	1,052,595
	(131,581)	24,225	196,237	88,881
Contributions paid by:				
- The Group	-	(4,576)	-	(4,576)
- Employee	-	(1,048)	-	(1,048)
	-	(5,624)	-	(5,624)
Benefit paid by:				
- The Group	(43,469)	-	-	(43,469)
- Plan assets	(59,950)	59,950	-	-
	(103,419)	59,950	-	(43,469)
As at 31 December 2016	**2,878,160**	**(1,151,967)**	**196,237**	**1,922,430**

*) As restated, (refer to Note 4)

30. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

b. Post-employment medical benefits (continued)

	Present value of obligation	Fair value of plan assets	Impact of minimum funding requirement assets ceiling	Total
As at 31 December 2016	**2,878,160**	**(1,151,967)**	**196,237**	**1,922,430**
Recognised in profit or loss:				
- Current service cost	41,906	-	-	41,906
- Interest cost/(income)	214,279	(99,038)	-	115,241
	256,185	(99,038)	-	157,147
Remeasurement recognised as other comprehensive income:				
- Changes in financial assumptions	796,158	29,158	(165,224)	660,092
- Experience adjustment	(44,130)	-	-	(44,130)
	752,028	29,158	(165,224)	615,962
Contributions paid by:				
- The Group	-	(2,314)	-	(2,314)
- Employee	-	(1,157)	-	(1,157)
	-	(3,471)	-	(3,471)
Benefit paid by:				
- The Group	(39,110)	-	-	(39,110)
- Plan assets	(68,267)	68,267	-	-
	(107,377)	68,267	-	(39,110)
As at 31 December 2017	**3,778,996**	**(1,157,051)**	**31,013**	**2,652,958**

The actual return on plan assets during the years ended 31 December 2017, 2016 and 2015, was Rp95,967, Rp96,446 and Rp84,900, respectively.

Plan assets comprise the following:

	31 December 2017		31 December 2016		31 December 2015*)	
	Fair value	%	Fair value	%	Fair value	%
Equity instruments	416,337	36%	479,661	42%	480,628	43%
Mutual fund	355,734	31%	177,171	15%	150,553	13%
Others	333,243	29%	406,313	35%	399,151	35%
Debt instruments	51,737	4%	88,822	8%	98,335	9%
Total	**1,157,051**	**100%**	**1,151,967**	**100%**	**1,128,667**	**100%**

*) As restated, (refer to Note 4)

30. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

b. Post-employment medical benefits (continued)

As at 31 December 2017, 2016 and 2015, the Group's plan assets for pension benefit plan are invested in Antam's shares and bonds that listed in PT Bursa Efek Indonesia amounting to Rp12,130, Rp1,025 and Rp6,628, respectively.

The Group's plan assets as at 31 December 2017 amounting to Rp823,020 (2016: Rp762,924 and 2015: Rp729,515) represent investments in stocks, government bonds, corporate bonds and mutual funds traded on the PT Bursa Efek Indonesia. Meanwhile, plan assets amounting to Rp201,900 (2016: Rp251,000 and 2015: Rp288,200) represent investments in liquid investments, such as time deposits and deposits on-call.

The principal assumptions used in determining the benefits were similar to those used for defined pension benefit, except for the following:

	31 December 2017	31 December 2016	31 December 2015*)
Discount rate	6.56% - 7.16%	8.07% - 8.52%	8.90% - 9.52%
Medical cost trend rates	4.5% - 6%	4.24% - 6.5%	4.5%-9%

The effect of 1% movement of discount rate and salaries growth rate in pension benefit obligation is as follows:

31 December 2017	Change in assumptions	Impact on overall liability
Discount rate	Increase by 1%	(446,974)
	Decrease by 1%	567,551
Salaries growth rate	Increase by 1%	625,953
	Decrease by 1%	(493,061)

31 December 2016	Change in assumptions	Impact on overall liability
Discount rate	Increase by 1%	(303,312)
	Decrease by 1%	372,440
Salaries growth rate	Increase by 1%	414,501
	Decrease by 1%	(340,578)

31 December 2015	Change in assumptions	Impact on overall liability
Discount rate	Increase by 1%	(295,672)
	Decrease by 1%	366,411
Salaries growth rate	Increase by 1%	365,777
	Decrease by 1%	(300,555)

The sensitivity analysis are based on a change in an assumption while holding all other assumptions constant. In practice, this is unlikely to occur, and changes in some of the assumptions maybe correlated. When calculating the sensitivity of the defined medical benefit obligation to significant actuarial assumptions the same method (present value of the defined medical benefit obligation calculated with the projected unit credit method at the end of the reporting period) has been applied as when calculating the pension liability recognised within the consolidated statement of financial position.

*) As restated, (refer to Note 4)

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

30. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

b. Post-employment medical benefits (continued)

Expected maturity analysis of undiscounted post-employment medical benefits, are as follows:

	Less than a year	Between 1 - 5 years	More than 5 years
Post-employment medical benefits	225,728	665,904	4,109,850

c. Other post-retirement benefits

Movement in the defined benefit obligation, expenses recognised in profit or loss and remeasurement recognised as other comprehensive income, during the year is as follows:

	Present value of obligation	Fair value of plan assets	Impact of minimum funding requirement assets ceiling	Total
As at 1 January 2015*)	**280,341**	**(31,188)**	**-**	**249,153**
Recognised in profit or loss:				
- Current service cost	20,187	-	-	20,187
- Past service cost	12,748	-	-	12,748
- Interest cost/(income)	23,180	(2,589)	-	20,591
	56,115	(2,589)	-	53,526
Remeasurement recognised as other comprehensive income:				
- Changes in financial assumptions	(29,647)	16,657	-	(12,990)
- Experience adjustment	14,440	-	-	14,440
	(15,207)	16,657	-	1,450
Contributions paid by:				
- Employee	(28,996)	-	-	(28,996)
Benefit paid by:				
- Plan assets	(23,745)	-	-	(23,745)
As at 31 December 2015*)	**268,508**	**(17,120)**	**-**	**251,388**
Recognised in profit or loss:				
- Current service cost	17,558	-	-	17,558
- Interest cost/(income)	23,375	(623)	-	22,752
	40,933	(623)	-	40,310
Remeasurement recognised as other comprehensive income:				
- Changes in financial assumptions	41,119	(2,771)	-	38,348
	41,119	(2,771)	-	38,348
Contributions paid by:				
- Employee	(22,633)	-	-	(22,633)
	(22,633)	-	-	(22,633)
Benefit paid by:				
- The Group	(15,381)	-	-	(15,381)
- Plan assets	-	20,514	-	20,514
	(15,381)	20,514	-	5,133
As at 31 December 2016	**312,546**	**-**	**-**	**312,546**

*) As restated, (refer to Note 4)

30. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

c. Other post-retirement benefits (continued)

	Present value of obligation	Fair value of plan assets	Impact of minimum funding requirement assets ceiling	Total
As at 31 December 2016	**312,546**	**-**	**-**	**312,546**
Recognised in profit or loss:				
- Current service cost	20,762	-	-	20,762
- Past service cost	22	-	-	22
- Interest cost	25,400	-	-	25,400
	46,184	-	-	46,184
Remeasurement recognised as other comprehensive income:				
- Changes in financial assumptions	17,856	-	-	17,856
	17,856	-	-	17,856
Contributions paid by:				
- Employee	(18,412)	-	-	(18,412)
	(18,412)	-	-	(18,412)
Benefit paid by:				
- The Group	(10,994)	-	-	(10,994)
	(10,994)	-	-	(10,994)
As at 31 December 2017	**347,180**	**-**	**-**	**347,180**

Actual contributions to other post-retirement benefits plan during the years ended 31 December 2017, 2016 and 2015, was Rp2,315, Rp4,578 and Rp28,996, respectively.

30. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

c. Other post-retirement benefits (continued)

The principal assumptions used in determining the benefits were similar to those used for defined pension benefit, except for the following:

	31 December 2017	31 December 2016	31 December 2015*)
Discount rate	7.08% - 7.16%	8.36% - 8.46%	9.07% - 9.17%

The effect of 1% movement of discount rate and salaries growth rate in pension benefit obligation is as follows:

31 December 2017	Change in assumptions	Impact on overall liability
Discount rate	Increase by 1%	(16,649)
	Decrease by 1%	18,704
31 December 2016	**Change in assumptions**	**Impact on overall liability**
Discount rate	Increase by 1%	(13,706)
	Decrease by 1%	15,298
31 December 2015	**Change in assumptions**	**Impact on overall liability**
Discount rate	Increase by 1%	(13,436)
	Decrease by 1%	15,099

The sensitivity analysis are based on a change in an assumption while holding all other assumptions constant. In practice, this is unlikely to occur, and changes in some of the assumptions maybe correlated. When calculating the sensitivity of the defined benefit obligation to significant actuarial assumptions the same method (present value of the defined benefit obligation calculated with the projected unit credit method at the end of the reporting period) has been applied as when calculating the pension liability recognised within the consolidated statement of financial position.

Expected maturity analysis of undiscounted other post-retirement benefits, are as follows:

	Less than a year	Between 1 - 5 years	More than 5 years
Other post-retirement benefits	5,509	19,747	831,361

*) As restated, (refer to Note 4)

30. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

d. Other long-term employment benefits

Movement in the defined benefit obligation, expenses recognised in profit or loss and remeasurement recognised as other comprehensive income, during the year is as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Beginning balance	468,385	549,684	561,039
Recognised in profit or loss:			
- Current service cost	32,638	26,079	25,016
- Past service cost	(299)	-	-
- Interest expense	37,599	49,340	43,011
- Change in financial assumptions	32,449	13,704	(32,943)
- Experience adjustment on obligation	17,034	(118,644)	6,115
	119,421	(29,521)	41,199
Benefit payments	(74,296)	(51,778)	(52,554)
Ending balance	**513,510**	**468,385**	**549,684**

The principal assumptions used in determining the benefits were similar to those used for pension benefit, except for the following:

	31 December 2017	31 December 2016	31 December 2015*)
Discount rate	6.56% - 7.57%	8.36% - 8.46%	8.90% - 9.18%
Future salary increase	8% - 10%	4% - 10%	7% - 10%

The effect of 1% movement of discount rate in pension benefit obligation is as follows:

31 December 2017	Change in assumptions	Impact on overall liability
Discount rate	Increase by 1%	(23,580)
	Decrease by 1%	27,264
31 December 2016	**Change in assumptions**	**Impact on overall liability**
Discount rate	Increase by 1%	(23,492)
	Decrease by 1%	26,011
31 December 2015	**Change in assumptions**	**Impact on overall liability**
Discount rate	Increase by 1%	(14,473)
	Decrease by 1%	28,024

Expected maturity analysis of undiscounted other long-term employment benefits, are as follows:

	Less than a year	Between 1 - 5 years	More than 5 years
Other long-term employment benefits	47,229	171,404	716,236

*) As restated, (refer to Note 4)

30. POST-EMPLOYMENT BENEFITS OBLIGATION (continued)

d. Other long-term employment benefits (continued)

The sensitivity analysis are based on a change in an assumption while holding all other assumptions constant. In practice, this is unlikely to occur, and changes in some of the assumptions maybe correlated. When calculating the sensitivity of other long-term employment benefits obligation to significant actuarial assumptions the same method (present value of the other long-term employment benefits obligation calculated with the projected unit credit method at the end of the reporting period) has been applied as when calculating the pension liability recognised within the consolidated statement of financial position.

31. OTHER LIABILITIES

	31 December 2017	31 December 2016	31 December 2015*)
Advance from customers	183,677	404,925	70,921
Payable related to acquisition of TBBE	34,200	35,000	35,000
Employee contribution	33,092	46,471	39,953
Insurance	10,721	31,775	10,873
Contingent liability from investment in NHM (Note 43f)	-	-	194,410
Others	171,633	210,671	177,157
Total other liabilities	**433,323**	**728,842**	**528,314**
Less:			
Current portion	**(429,561)**	**(725,143)**	**(329,953)**
Non-current portion	**3,762**	**3,699**	**198,361**

32. SHARE CAPITAL

The Company's shareholder is as follows:

	31 December 2017		
Shareholder	Number of isued and fully paid shares	Percentage of ownership	Total
Government of the Republic of Indonesia	130,549,256	100%	54,177,941

	31 December 2016 and 2015		
Shareholder	Number of isued and fully paid shares	Percentage of ownership	Total
Government of the Republic of Indonesia	920,476	100%	381,998

*) As restated, (refer to Note 4)

32. SHARE CAPITAL (continued)

Based on a shareholder decision, the Company has changed the Articles of Association which have been notarised under Notarial Deed No. 59 dated 27 November 2017 of Notary Liestiani Wang, S.H., M.Kn. as follows:

1) Approving increase in the Company's share capital from Rp381,998 to Rp216,711,765 with par value of Rp415,000 (full amount).

2) Approving issuance/placement of portepel shares totaling 129,628,780 shares (full amount), with par value of Rp415,000 (full amount) and with total value of Rp53,795,943 which has been taken by the Government of Republic of Indonesia.

3) Approving additional state equity participation to the Company's share capital amounting to Rp53,795,943 through the following:

   a) Transferring Series B shares owned by the Government of Republic of Indonesia on 65% of Antam amounting to Rp16,902,338, 65% of Timah amounting to Rp6,241,547, 65.02% of Bukit Asam amounting to Rp18,347,366, respectively, and 9.36% of shares owned by the Government of Republic of Indonesia in PTFI amounting to Rp7,255,450.

   b) Of Rp5,049,242 from State Budget Year 2016 in form of land assets on Otorita Pengembangan Proyek Asahan of 1,211.10 Ha in accordance with GR 76/2016.

   c) Of Rp233,156 (full amount) from capitalisation of the Company's retained earnings.

Therefore, as at 31 December 2017, the Company's share capital is Rp216,711,765 divided into 522,197,024 (full amount) shares, par value of Rp415,000 (full amount) and issued and fully paid by the Government of Republic of Indonesia 130,549,256 (full amount) shares or amounting to Rp54,177,941.

33. REVENUE

	31 December 2017	31 December 2016	31 December 2015*)
Products:			
Coal	19,133,457	13,785,363	13,801,012
Tin metal and tin solder	8,481,705	6,629,822	6,548,403
Gold	7,375,497	5,543,627	7,314,724
Aluminium	5,744,335	5,576,378	6,237,992
Ferronickel	3,222,630	2,782,364	2,718,085
Nickel ore	1,369,762	295,165	10,907
Others	1,381,550	817,850	696,653
	46,708,936	35,430,569	37,327,776
Services:			
Purification of precious metals and other services	475,347	473,889	493,582
Total revenue	**47,184,283**	**35,904,458**	**37,821,358**

*) As restated, (refer to Note 4)

33. REVENUE (continued)

Details of revenue based on the customer's geographical location are as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Export - third parties	25,083,647	13,848,714	19,428,749
Local			
- Related parties (Note 42a)	11,062,318	8,163,061	7,155,264
- Third parties	11,038,318	13,892,683	11,237,345
Total revenue	**47,184,283**	**35,904,458**	**37,821,358**

34. COST OF REVENUE

	31 December 2017	31 December 2016	31 December 2015*)
Production costs:			
Raw material used	7,860,878	6,542,281	6,726,942
Transportation, barging and ore mining fees	6,806,064	6,605,563	6,695,614
Purchases of precious metals	6,202,683	4,556,037	6,413,473
Salaries, wages, and employee benefits	3,007,031	2,310,318	2,101,107
Royalties, tax, and other government charges	2,150,345	1,375,843	1,451,894
Depreciation and amortisation	2,037,584	1,568,831	1,619,990
Usage of fuel	1,841,580	1,259,951	1,622,816
Rent	698,484	364,228	672,854
Spare parts used	754,032	649,768	596,234
Repairs and maintenance	455,057	429,110	430,862
Third-party services	514,126	307,098	423,890
Environmental reclamation and mine closure	166,068	72,282	96,062
Insurance	129,689	114,794	97,625
Other (each below Rp100,000)	817,112	589,748	675,706
	33,440,733	26,745,852	29,625,069
Work in progress:			
At beginning of year	1,962,679	1,997,896	2,103,374
Transferred to fixed assets	(80,010)	(87,951)	-
At end of year	(2,307,497)	(1,962,679)	(1,997,896)
	33,015,905	26,693,118	29,730,547
Finished goods:			
At beginning of year	3,180,732	3,706,548	4,026,943
Purchase of tin metals	342,516	381,949	775,915
Transfer of raw materials to finished goods	-	152,459	-
Provision for impairment of inventories, net	(9,876)	(60,035)	69,051
At end of year	(3,252,838)	(3,180,732)	(3,706,548)
Total cost of revenue	**33,276,439**	**27,693,307**	**30,895,908**

*) As restated, (refer to Note 4)

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

35. GENERAL AND ADMINISTRATIVE EXPENSES

	31 December 2017	31 December 2016	31 December 2015*)
Salaries, wages, bonuses and employee benefits	1,622,650	1,216,437	1,250,207
Third-party services	240,698	200,530	195,528
Business travel and education	230,872	182,818	181,531
Corporate social responsibilities program	224,322	302,570	206,678
Rent	112,927	132,447	88,344
Depreciation and amortisation	106,785	115,114	90,157
Repairs and maintenance	101,676	81,540	66,570
Others (each below Rp100,000)	699,068	589,469	660,245
Total general and administrative expenses	**3,338,998**	**2,820,925**	**2,739,260**

36. SELLING AND MARKETING EXPENSES

	31 December 2017	31 December 2016	31 December 2015*)
Freight and insurance	466,415	393,392	402,179
Salaries, wages, bonuses and employee benefits	279,782	172,910	182,858
Depreciation and amortisation	169,637	151,643	123,027
Third-party services	116,043	62,432	48,433
Others (each below Rp100,000)	290,702	227,601	246,944
Total selling and marketing expenses	**1,322,579**	**1,007,978**	**1,003,441**

37. FINANCE INCOME

	31 December 2017	31 December 2016	31 December 2015*)
Interest income from cash in banks and time deposits	567,175	566,811	471,287
Interest income from available-for-sale financial assets	62,685	69,089	32,600
Total finance income	**629,860**	**635,900**	**503,887**

*) As restated, (refer to Note 4)

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

38. FINANCE COSTS

	31 December 2017	31 December 2016	31 December 2015*)
Interest expenses from bank borrowings and finance lease	574,353	287,610	1,231,758
Interest expenses from bonds payable	298,806	266,291	266,218
Interest expenses on receivables – discounting impact	121,726	-	-
Bank charges	2,782	5,100	4,731
Less:			
Amount capitalised on qualifying assets	(23,495)	(193,325)	(265,253)
Total finance costs	**974,172**	**365,676**	**1,237,454**

39. OTHER INCOME/(EXPENSES), NET

	31 December 2017	31 December 2016	31 December 2015*)
Gain from sales of investment (Note 43d)	776,430	-	-
Dividend income (Note 10)	427,587	-	-
Gain from revaluation of investment properties (Note 17)	105,081	60,756	183,358
Income from liquidated damaged compensation	99,710	-	-
Income from insurance claim	57,699	111,856	68,975
Provision for other tax	(135,140)	-	-
Loss from precious metal refinery contract	(111,607)	-	-
(Loss)/gain on foreign exchange, net	(24,449)	(143,581)	382,747
Others	(456,552)	(84,037)	(175,732)
Total other income/(expenses), net	**738,759**	**(55,006)**	**459,348**

40. BASIC AND DILUTED EARNINGS PER SHARE

Basic earnings per share is calculated by dividing the profit attributable to the owner of the parent by the number of the ordinary shares outstanding as at 31 December 2017 after the transactions with entities under common control (Note 4).

	31 December 2017	31 December 2016	31 December 2015*)
Profit after tax attributable to owner of the parent	4,944,899	3,608,330	1,511,841
The number of ordinary shares outstanding (in full amount)	130,549,256	130,549,256	130,549,256
Basic earnings per share (in full amount)	**37,878**	**27,640**	**11,581**

As at 31 December 2017, 2016 and 2015, there was no dilution to the basic earnings per share.

*) As restated, (refer to Note 4)

41. DIVIDENDS AND APPROPRIATED RETAINED EARNINGS

Based on the Annual General Meeting Shareholders ("AGMS") No. RIS-43/D2.MBU/05/2015 dated 13 May 2015, the Company's shareholders appropriated retained earnings amounting to USS$15,000,000 or equivalent to Rp153,634.

Based on AGMS decisions No. RIS-02/RUPS/2016 dated 26 May 2016, the shareholders approved a cash dividend distribution amounting to Rp327,142 or equivalent to US$23,714,542 or US$26/share. The dividend was paid on 24 June 2016. In addition, the Company's shareholders appropriated retained earnings in accordance with Article 70 No. 40 Year 2007 regarding Limited Company Law amounting to US$10,000,000 or equivalent to Rp133,071.

Based on the AGMS decisions No. RIS-02/RUPS/2017 dated 5 May 2017, the shareholder approved a cash dividend distribution amounting to Rp267,811 or equivalent to US$19,932,278 or US$22/share. The dividend was paid on 23 May 2017. In addition, the Company's shareholders appropriated retained earnings in accordance with Article 70 Law No. 40 Year 2007 regarding Limited Company Law amounting to US$10,000,000 or equivalent to Rp133,835.

Based on the AGMS decisions No. RIS-10/D3.MBU/06/2018 dated 7 June 2018, the shareholder approved a cash dividend distribution amounting to Rp1,919,750 or equivalent to US$133,278,950 or US$1.02/share. As at 30 June 2018, the cash dividend has not been paid to the shareholder and being recorded as "Dividend payable" in the interim consolidated statements of financial position. At 6 July 2018, the Company has made full payment of the dividends to the Government of the Republic of Indonesia.

42. RELATED PARTIES INFORMATION

a. Transactions and balances with related parties

The Company is controlled by the Government of Republic of Indonesia. Transaction and balances with related parties which have not yet been presented and disclosed in the respective notes to the consolidated financial statements are as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Revenue			
PTIP	6,331,402	4,540,839	2,134,193
PLN	3,374,167	2,405,057	4,075,002
PT Pegadaian (Persero)	671,474	701,771	369,794
PT Semen Baturaja (Persero) Tbk	176,226	111,369	106,784
BSM	125,169	84,295	32,600
PT Pupuk Sriwijaya	97,130	-	-
BPI	84,359	43,383	159,703
Others	202,391	276,347	277,188
	11,062,318	**8,163,061**	**7,155,264**

Other transactions mostly represent transaction with entity related with the Government of Republic of Indonesia and other related entities with Group such as ICA and PT Wijaya Karya (Persero) Tbk ("WIKA").

*) As restated, (refer to Note 4)

42. RELATED PARTIES INFORMATION (continued)

a. Transactions and balances with related parties (continued)

	31 December 2017	31 December 2016	31 December 2015*)
Purchases of goods and services			
PT Kereta Api Indonesia (Persero) ("KAI")	4,043,470	3,245,815	2,971,469
PT Pertamina (Persero) ("Pertamina")	1,071,168	709,853	967,169
WIKA	1,029,095	-	-
Others	250,115	232,174	214,730
	6,393,848	**4,187,842**	**4,153,368**

Other transactions mostly represent transaction with entity related with the Government of Republic of Indonesia and other related entities with Group such as Koperasi Karyawan and Pensiunan Antam, Perum Jasa Tirta and Jasindo.

	31 December 2017	31 December 2016	31 December 2015*)
Finance income			
Mandiri, BTN, BRI, BNI PT Bank Pembangunan Daerah Sumatera Selatan & Bangka Belitung ("BPD Sumsel Babel"), PT Bank BNI Syariah (Persero) Tbk ("BNI Syariah"), PT Bank Syariah Mandiri ("BSM"), PT Bank Pembangunan Daerah Kalimantan Timur ("BPD Kaltim"), Bank Riau Kepri, PT Bank Pembangunan Daerah Sulawesi Tenggara ("BPD Sultra"), PT Bank Pembangunan Daerah Kalimantan Barat ("BPD Kalbar")	205,175	139,487	266,687
Finance costs			
Mandiri, BTN, BRI, BNI, BPD Sumsel Babel, BNI Syariah, BSM, BPD Kaltim, BPD Sultra, BPD Kalbar	108,439	149,141	180,323

*) As restated, (refer to Note 4)

42. RELATED PARTIES INFORMATION (continued)

a. Transactions and balances with related parties (continued)

	31 December 2017	31 December 2016	31 December 2015*)
Pension fund contribution payment			
Dana Pensiun Bukit Asam ("DPBA")	20,952	85,557	141,970
Jiwasraya	10,721	31,775	78,704
Dana Pensiun Antam	5,795	10,878	71,020
Yakespen Antam	2,315	4,578	112,500
	39,783	132,788	404,194
Other receivables			
Current portion			
US Dollar:			
PT PAL	12,268	14,655	10,221
Rupiah			
PT Bhanda Graha Reksa (Persero)	2,065	3,188	7,627
PT Pelabuhan Indonesia	1,341	-	-
PT Industri Nuklir Indonesia (Persero) ("PT Inuki")	-	26,565	-
Total other receivables - current portion	**15,674**	**44,408**	**17,848**
Non-current portion			
Rupiah:			
ICA	1,366,688	463,960	223,654
MJIS	54,793	50,401	40,332
Others	107,871	78,313	296,947
US Dollar:			
PT PAL	70,263	75,212	89,714
Provision for impairment	(41,704)	(41,155)	(43,718)
Total other receivables - non-current portion	**1,557,911**	**626,731**	**606,929**
Total other receivables, net	**1,573,585**	**671,139**	**624,777**

Other balances mostly represent balance to entity related with the Government of Republic of Indonesia and other related entities with Group such as HBAP, PT Sarana Karya (Persero) and PT Inuki.

*) As restated, (refer to Note 4)

42. RELATED PARTIES INFORMATION (continued)

a. Transactions and balances with related parties (continued)

	31 December 2017	31 December 2016	31 December 2015*)
Cash in banks			
Rupiah			
Mandiri	718,566	445,696	3,822,601
BRI	694,527	166,322	223,636
BNI	155,416	51,988	74,343
BPD Sumsel Babel	24,007	1,431	1,782
BNI Syariah	7,937	171,663	100,000
BTN	3,949	318,154	144,042
BSM	2,402	6,476	3,373
BPD Kaltim	351	583	175
PT Bank Riau Kepri	162	22	118
BPD Sultra	48	35	35
BPD Kalbar	5	4	2
	1,607,370	1,162,374	4,370,107
US Dollar			
Mandiri	1,087,235	1,423,729	1,277,381
BNI	86,003	41,047	432,334
BRI	18,715	949,047	1,146,363
BSM	-	273	258
	1,191,953	2,414,096	2,856,336
Australian Dollar			
Mandiri	11,487	6,365	50,788
British Pound Sterling			
BNI	376	162	171
Singapore Dollar			
BNI	298	82	786
Japanese Yen			
BNI	-	-	256
Total cash in banks	2,811,484	3,583,079	7,278,444

*) As restated, (refer to Note 4)

42. RELATED PARTIES INFORMATION (continued)

a. Transactions and balances with related parties (continued)

	31 December 2017	31 December 2016	31 December 2015*)
Short-term time deposits			
Rupiah			
BRI	4,020,700	4,447,894	1,038,553
Mandiri	1,707,250	2,606,015	427,945
BNI	880,700	745,500	1,295,500
BPD Sumsel Babel	530,000	250,000	355,000
BTN	514,641	207,234	412,570
BTN Syariah	160,000	-	-
PT Bank Pembangunan Daerah Jawa Barat dan Banten Tbk	120,000	-	-
PT Bank Jateng Syariah	80,000	-	-
PT Bank Pembangunan Daerah Sumatera Utara	20,000	-	-
BSM	18,240	-	-
PT Bank Pembangunan Daerah Sumatera Selatan & Bangka Belitung Syariah ("BPD Sumsel Babel Syariah")	-	80,000	60,000
PT Bank BRI Syariah ("BRI Syariah")	-	-	147,500
	8,051,531	8,336,643	3,737,068
US Dollar			
BRI	3,190,554	2,384,890	3,207,338
BNI	1,110,936	806,160	462,133
Mandiri	13,548	-	1,227,755
	4,315,038	3,191,050	4,897,226
Australian Dollar			
Mandiri	-	48,622	-
Total short-term time deposits	12,366,569	11,576,315	8,634,294
Total cash and cash equivalents	**15,058,053**	**15,159,394**	**15,912,738**

*) As restated, (refer to Note 4)

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

42. RELATED PARTIES INFORMATION (continued)

a. Transactions and balances with related parties (continued)

	31 December 2017	31 December 2016	31 December 2015*)
Restricted cash			
BRI	29,023	1,208	-
Mandiri	673	908	885
	29,696	**2,116**	**885**
Available-for-sale financial assets			
Mutual funds			
Rupiah:			
Reksadana Pendapatan Tetap ("RDPT") Pemodalan Nasional Madani ("PMN") Perumnas	107,151	106,945	107,030
RDPT Danareksa BUMN Fund 2016 Properti III	51,630	51,607	-
RDPT Danareksa BUMN Fund 2015 Properti II	50,949	50,993	50,932
RDPT Danareksa BUMN Fund 2014 Properti I	35,769	35,754	35,721
Reksadana Danareksa Gebyar Dana Likuid	-	126,974	-
Reksadana Danareksa Proteksi 33	-	101,433	-
RDPT PNM Pembiayaan Mikro BUMN 2015	-	51,154	51,139
RDPT PNM Properti Syariah	-	30,026	30,000
RDPT Pembiayaan Mikro BUMN 2015 Seri II	-	20,209	20,219
RDPT Danareksa BUMN Fund 2013 Infrastruktur 3	-	7,487	7,488
Obligasi berkelanjutan I Danareksa tahap II tahun 2014 seri A	-	-	100,000
Medium Term Notes Danareksa Tahun 2015	-	-	100,000
	245,499	582,582	502,529
Corporate bonds			
US Dollar:			
Obligasi Pertamina	163,166	136,375	121,350
	408,665	**718,957**	**623,879**
Trade payables			
Rupiah:			
WIKA	398,818	144,357	124,269
KAI	100,935	-	-
Pertamina	89,601	45,092	56,892
Others	80,256	92,529	131,878
US Dollar:			
KAI	46,355	-	-
Jasindo	-	30,285	34,731
	715,965	**312,263**	**347,770**

Other balances mostly represent balances to entity related with the Government of Republic of Indonesia and other related entities with Group such as PT Dahana (Persero), PT Nindya Karya (Persero) and PT Krakatau Engineering.

*) As restated, (refer to Note 4)

42. RELATED PARTIES INFORMATION (continued)

a. Transactions and balances with related parties (continued)

	31 December 2017	31 December 2016	31 December 2015*)
Accruals			
KAI	188,992	318,462	270,766
WIKA	16,418	207,596	461,438
Others	79,921	136,170	158,812
	285,331	**662,228**	**891,016**

Other balances mostly represent balances to entity related with the Government of Republic of Indonesia and other related entities with Group such as HBAP, PT Krakatau Engineering and Perum Jasa Tirta.

	31 December 2017	31 December 2016	31 December 2015*)
Bank borrowings			
Short-term borrowing			
Rupiah:			
Mandiri	222,830	1,449,510	1,139,922
BRI	23,084	321,619	508,689
BNI	4,038	16,586	43,041
US Dollar:			
Mandiri	2,104,902	1,545,140	1,664,712
BRI	1,354,800	1,343,600	-
Long-term borrowing			
Rupiah:			
Mandiri	570	-	-
US Dollar:			
BSM	68,232	92,640	118,946
	3,778,456	**4,769,095**	**3,475,310**

b. Key management compensation

For the years ended 31 December 2017, 2016 and 2015, salaries and other short-term benefits and post-employment benefits provided to the Group Boards of Commissioners, Directors and other key management personnel were totaling to Rp124,292 (2016: Rp148,527 and 2015: Rp131,204).

*) As restated, (refer to Note 4)

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

42. RELATED PARTIES INFORMATION (continued)

c. The nature of the relationships

Related parties	Relationships	Nature of transactions
Boards of Commissioners and Directors and other key management personnels	Key management personnel	Salaries and employee benefits
BNI, BRI, Mandiri, BPD Sumsel Babel, BNI Syariah, BTN, BSM, BPD Kaltim, PT Bank Riau Kepri, BPD Sultra, BPD Kalbar, BTN Syariah, PT Bank Jateng Syariah, Bank Sumut, BPD Sumsel Babel Syariah	Entity related with the Government of Republic of Indonesia	Cash in banks, time deposits, customer of precious metal, and bank borrowings
Jasindo and Jiwasraya	Entity related with the Government of Republic of Indonesia	Insurance services
PLN	Entity related with the Government of Republic of Indonesia	Coal sales and electricity usage
Pertamina	Entity related with the Government of Republic of Indonesia	Purchases of goods and services for production activities, customer of precious metal and placement on bonds
WIKA	Entity related with the Government of Republic of Indonesia	Purchases of goods for production activities and construction services and sales of aluminium ingot
PT Pegadaian (Persero), PT Pupuk Sriwijaya	Entity related with the Government of Republic of Indonesia	Customer of precious metal
Dana Pensiun Antam and DPBA	Entity related with the Government of Republic of Indonesia	Pension fund management
Yakespen Antam	Entity related with the Government of Republic of Indonesia	Post-retirement healthcare benefit plan services
Koperasi Karyawan and Pensiunan Antam	Entity related with the Government of Republic of Indonesia	Non-permanent labour provider

42. RELATED PARTIES INFORMATION (continued)

c. The nature of the relationships (continued)

Related parties	Relationships	Nature of transactions
PT Adhi Karya (Persero) Tbk	Entity related with the Government of Republic of Indonesia	Construction services
PT PAL	Entity related with the Government of Republic of Indonesia	DAK partner in building Chemical Tanker Hull 242
KAI	Entity related with the Government of Republic of Indonesia	Coal transportation
PTIP	Entity related with the Government of Republic of Indonesia	Coal sales
PT Semen Baturaja (Persero) Tbk	Entity related with the Government of Republic of Indonesia	Coal sales
BPI	A joint venture of Bukit Asam	Coal sales
ICA	A joint venture of Antam	Customer of bauxite
Danareksa, PNM	Entity related with the Government of Republic of Indonesia	Placement of mutual fund
NHM	An associate of Antam	Customer of precious metal
AJTM	An associate of Timah	Insurance services
MJIS	An associate of Antam	Interest bearing loan to related party
HBAP	A joint venture of Bukit Asam	Other receivables

43. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES

a. Sales agreements

The Group has various commitments to sell its products to various customers at specified agreed quantities based on the agreements signed by the Group with those customers. Generally, selling price agreed with customers is based on several indices as adjusted with certain factors. The selling price adjustments vary between customers, which depend on factors like the specification of requested product, handling cost, freight differential, terms of payment, etc. The products will be periodically delivered for periods as agreed with both parties.

b. Fuel purchase agreement with Pertamina

On 1 June 2017, Antam entered into a fuel purchase agreement with Pertamina for the covered period 1 June 2017 to 31 May 2020. The fuel price was based on the price published at the date of the fuel handover from Pertamina to the Company. For the year ended 31 December 2017, the fuel purchased from Pertamina amounted to Rp591,892 (2016: Rp599,474 and 2015: Rp779,580).

43. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

c. Coal sales agreements

As at 31 December 2017, the Group through Bukit Asam, a subsidiary, has sales commitments to several customers as follows:

Customer name	Contract date	Expiry date	Total sales 2017	Total sales 2016	Total sales 2015
BPI	7 December 2011	14 June 2044	84,359	43,383	159,703
PTIP - PLTU Suralaya	28 January 2013	31 December 2022	2,900,000	2,600,000	2,380,000
PLN - PLTU Bukit Asam	14 October 2004	31 December 2023	184,000	205,300	367,400
PLN - PLTU Tarahan	29 September 2004	31 December 2031	348,010	350,600	432,200
PLN - 15 PLTU di/in Indonesia	28 December 2012	28 December 2032	3,200,000	2,100,000	2,552,600

d. Ownership in joint mining entities

Antam has ownership interests in joint mining entities without any cash contributions ("free carried") as follows:

	Percentage of ownership (%)	Status as at 31 December 2017
PT Sorikmas Mining	25	Exploration
PT Galuh Cempaka	20	Production*
PT Gorontalo Minerals	20	Development
PT Sumbawa Timur Mining	20	Exploration
PT Pelsart Tambang Kencana	15	Exploration
PT Weda Bay Nickel	10	Construction

* Production phase is suspended due to reassessment of the value of reserves.

Antam will only contribute funds for the operations of the above companies in accordance with Antam's ownership interest if they have entered the production stage.

Those mining entities hold a Contract of Work ("CoW") with the Government of the Republic of Indonesia.

On 29 December 2017, Antam divested 20% shares ownership in PT Dairi Prima Minerals ("DPM") to PT Bumi Resources Minerals, Tbk. ("BRM"). The divestment of share ownership was related to the plan of China Nonferrous Metal Industry's Foreign Engineering and Construction Co., Ltd ("NFC") to acquire majority shares of DPM. The Group recognised gain of Rp776,430 from this divestment (Note 39). The Group receives proceeds from this divestment shares of DPM upon payment from NFC to BRM. The receivable was booked as part of Other receivables – third parties.

43. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

e. Agreement for feasibility study and/or establishment of joint mining entities to undertake exploration, evaluation and development work

Antam has entered into a joint agreement with Herald Mining Antam ("HMG") to undertake exploration, evaluation and development work in relation to IUP held by an affiliate of HMG, covering the following areas located in North Sumatra, as follows:

IUP number	Location	Percentage of ownership (%)
KW99JLP005	Kendit	20
KW98APP035	Parongil	20

Based on the Decision Letter No. 039/40.00/OJG/2002 on April 2002 by the Director General of Geology and Mineral Resources regarding the extension of the CoW area during the exploration stage of DPM, another affiliate of HMG, both mining rights in Kendit and Parongil were merged with those of DPM.

On 29 December 2017, Antam divested 20% shares ownership in DPM to BRM.

f. Acquiring interest in NHM

On 20 December 2012, Antam acquired a 7.5% additional interest in NHM, increasing the total interest held to 25%. Based on the Conditional Sale and Purchase Agreement, the consideration for the additional interest acquired was US$130,000,000 with an additional US$30,000,000 (contingent purchase price), payable subject to a further 1 million ounces (unaudited) of additional gold resources (indicated and/or measured) being defined up to 31 December 2017, based on the JORC report issued by an independent consultant.

As at 31 December 2013, Antam has reassessed the probability of additional gold resources being defined for NHM through an assessment by a Competent Person based on the JORC code. Based on the assessment, there is at least a potential 500,000 ounces (unaudited) of additional gold resources in NHM concession areas. Based on such estimate, Antam has recognised a contingent purchase price amounting to US$15,000,000 or equivalent to Rp182,835.

On 30 March 2015, as stated by Newcrest Singapore Holdings Pte., Ltd the potential of additional gold resources in NHM concession area as at 31 December 2014 was 480,000 ounces (unaudited). Antam recognised the decline in the contingent liability so that as at 31 December 2015, the recorded contingent liability became US$14,400,000 or equivalent to Rp194,410 (Note 31).

On 30 July 2015, Antam has reassessed the probability of additional gold resources (measured and/or indicated) in NHM's concession area by considering cut-off grade factors and concluded that potential additional gold resources in the concession areas of NHM is 430,000 ounces (unaudited) of indicated gold resources.

On 30 March 2016, Antam has entered into an amendment of Conditional Sale and Purchase Agreement. Based on the amendment of the agreement, contingent purchase price was amended to US$20,000,000 payable subject to a further 2.445 million ounces (unaudited) of additional gold resources (indicated and/or measured), based on the JORC report issued by an independent consultant.

43. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

f. Acquiring interest in NHM (continued)

Changes in the contingent purchase price based on the amendment of the Conditional Sale and Purchase Agreement are as follows:

- Year 2012: US$30/ounces
- Year 2013: US$22.5/ounces
- Year 2014: US$22.5/ounces
- Year 2015: US$20/ounces
- Year 2016: US$5/ounces
- Year 2017: US$5/ounces

Based on the amendment of the Conditional Sale and Purchase Agreement, Antam recognised a decline in the contingent liability to US$9,675,000 or equivalent to Rp127,807 based on potential additional gold resources in the concession area of NHM amounting to 430,000 ounces (unaudited) which were discovered in year 2014 and has been fully settled on 29 April 2016. As at 31 December 2017, Antam is still evaluating gold resources in the concession areas of NHM.

g. Alumina project and joint venture agreement

JVA

On 31 March 2006, Antam entered into a JVA with SDK, Straits Trading Amalgamated Resources Private Limited ("STAR") and Marubeni Corporation ("Marubeni") to form ICA, a foreign investment limited liability Antam ("JVCO"). The JVCO shall exploit and mine bauxite and process and sell the product which is known as chemical grade alumina and/or other products as may be mutually agreed upon by the Parties in the future. On 26 February 2007, Antam and the Parties established ICA (Note 14).

As acknowledged and agreed upon by the shareholders, as at the date of the JVA, the estimated total Project Cost was approximately US$257,000,000. The JVA contained a time limit up to 31 December 2007 for ICA to meet certain conditions, among others, the Project Cost cannot be more than US$450,000,000, to obtain the lenders' agreement to fund the Project Cost and enter into all Ancillary Agreements.

As at 31 December 2007, ICA failed to comply with several condition in the JVA. Among others, ICA has not yet entered into a loan agreement for project funding and the Engineering, Procurement and Construction ("EPC") agreement. As result of these conditions, STAR and Marubeni withdrew their equity from ICA's share capital on 12 August 2008 and 30 July 2010, respectively. On 31 August 2010, the JVA was amended and restated. Where the parties of ICA only consist of Antam with 80% interest and SDK with 20% interest.

The construction of ICA's chemical grade alumina plant has been completed in 2014.

Conditional Share Sale and Purchase Agreement ("CSPA")

On 29 May 2018, Antam, SDK and ICA entered into a CSPA which agreed that SDK would divest all of its shares in ICA to Antam with certain terms and obligations, among others the approvals of each shareholder, Ministry of Energy and Mineral Resources, Ministry of Law and Human Right, Investment Coordinating Board and ICA's lenders. The expected long stop completion date is 31 March 2019.

As at the completion of these consolidated financial statements, Antam and SDK are still in the process of completing the requirement in the CSPA.

43. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

g. Alumina project and joint venture agreement (continued)

Common Terms Agreement ("CTA")

On 13 June 2011, ICA entered into a CTA with JBIC for a JBIC Loan Facility and Mizuho Ltd. and Sumitomo Ltd. for a Commercial Loan Facility. The total amount of the JBIC Loan Facility and Commercial Loan Facility is JPY15,795,000,000 and JPY10,530,000,000, respectively. ICA is required to repay all loan facilities commencing on 15 December 2014 up to 15 December 2020. Antam and SDK provided a guarantee for repayment of ICA's loan. As at 31 December 2017, ICA has made a full drawdown from these loan facilities and the outstanding loans amount to JPY13,167,765,000.

On 28 September 2011, ICA entered into a Pledge of Shares Agreement with Antam and Bank Mizuho, whereby Antam agreed to, among others, pledge all of its shares in ICA for the interest of Bank Mizuho, for and on behalf of the Finance Parties, as security for the full payment of the Secured Obligations.

Agreement regarding entrustment of guarantee commitment

On 13 June 2011, Antam, SDK and Japan Oil, Gas and Metal National Corporation ("JOGMEC") entered into a Guarantee Agreement, whereby JOGMEC agreed to guarantee the payment of 80% of loans from the Commercial Loan Facility. As a result of the JOGMEC guarantee, Antam and SDK as a guarantor has to, among others:

(i) Make sure that the Guarantee Agreement does not breach all applicable laws and regulations including environmental regulations;
(ii) Guarantee not to amend, terminate, cancel and suspend the Offtake Agreement, the Sale and Purchase Agreement for Washed Bauxite ("WBX") and the Manufacturing, Technology and Technical and Operational Agreement;
(iii) Maintain the credit rating and financial ratios required.

Priority agreement

On 28 September 2011, ICA entered into a Priority Agreement with JOGMEC, Mizuho, Antam and SDK which contains the following significant provisions:

- Until the date on which the payment obligations of all sums of principal, interest and any other amounts payable by ICA to the Finance Parties pursuant to the Finance Documents have been fully paid, JOGMEC may not demand or receive payment from ICA or its shareholders relating to any claims, and any default interest due and owing to JOGMEC under the JOGMEC Guarantee Entrustment Agreement ("JOGMEC Subordinated Guarantee Default Interest"), that is of a higher rate than the highest default interest rate charged to ICA under the CTA.

- JOGMEC acknowledges that the JOGMEC Subordinated Guarantee Default Interest shall be subordinated to all other rights of the Finance Parties under the Finance Documents.

43. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

g. Alumina project and joint venture agreement (continued)

Sales and purchase agreement for washed bauxite

On 1 December 2010, ICA entered into a Sales and Purchase Agreement with Antam, whereby Antam agreed to sell WBX exclusively to the ICA from its mining site in quantities equal to at least 37.8 million wet metric tonnes ("wmt") of WBX at such times and in such quantities as requested by ICA in accordance with a relevant work program and budget.

During the year ended 31 December 2017, ICA has purchased 71,097 wmt (2016: 298,012 wmt and 2015: 182,624 wmt) of WBX from Antam amounting to US$1,919,133 (2016: US$7,845,687 and 2015: US$4,930,848).

Offtake agreement

On 1 December 2010, ICA entered into an Offtake Agreement with Antam and SDK, whereby Antam will distribute Commodity Grade Alumina product to the entire world excluding Japan with a quantity of 25,000 metric tonnes per quarter and SDK will distribute Speciality Grade Alumina product to the entire world and Commodity Grade Alumina product to Japan in the quantity of 50,000 metric tonnes. During the year ended 31 December 2017, ICA has sold alumina products through Antam amounting to US$5,073,806 (2016: US$9,784,955 and 2015: US$5,349,849).

Performance support facility agreement

On 11 December 2015, Antam entered into a Performance Support Facility Agreement with ICA, whereby Antam agreed to provide loan facility to ICA with maximum credit of US$65,000,000. From 11 December 2015 until 31 December 2017, ICA has drawdown totaling to US$84,544,908 from the loan facility. Based on this agreement, ICA will make payments of loan principal from 30 June 2021 to 31 December 2025. Interest on the loans is payable from 31 December 2015 to the end of principal payment. The rate of the loan interest is US$ LIBOR + Margin (3.25%) per annum. Subsequent to the balance sheet date (i.e. 31 December 2017), ICA has made additional drawdown amounting to US$16,919,448.

ICA also entered into Shareholder Loan Facility Agreement with SDK. From 27 November 2015 until 31 December 2017, ICA has drawdown a total amount of US$67,636,227 from the loan facility. Based on this agreement, ICA will make payments of loan principal from 30 June 2021 to 31 December 2025. Interest on the loans is payable from 31 December 2015 to the end of principal payment. The rate of the loan interest is US$ LIBOR + Margin (2%) per annum. Subsequent to the balance sheet date (i.e. 31 December 2017), ICA has made additional drawdown amounting to US$5,339,575.

h. North Halmahera Ferronickel Plant Construction Project ("P3FH")

Antam has entered into agreement related to the P3FH project to increase the efficiency of the ferronickel plant with the following details:

On 21 December 2016, Antam with the Unincorporated Consortium of WIKA and Kawasaki Heavy Industries, Ltd. entered into an agreement for the letter related to engineering, procurement and construction of North Halmahera Ferronickel Plant phase I with production capacity 13,500 tonnage/year with the contract amount Rp3,421,425. The agreement is effective from 31 January 2017.

43. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

i. Pomalaa Ferronickel Plant Expansion Project ("P3FP")

Antam has entered into several agreements related to the P3FP project to increase the efficiency of the ferronickel plant with the following details:

On 17 January 2012, Antam and PT Wika Industri & Konstruksi entered into an agreement for the letter to procure and install a belt conveyor with a contract value of US$13,500,000. The agreement is valid until 17 April 2013. The extension of the contract was not accepted and the Commercial Operation Date ("COD") remained effective on 17 April 2013. Because of that, fines due to late completion of work started to occur based on the contract (six weeks after COD). As at 31 December 2017, Antam and WIKA are still in the process of negotiating liquidated damage calculation.

On 26 March 2012, Antam and PT Adhi Karya (Persero) Tbk entered into an agreement for the letter to procure and install a jetty and facilities with a contract value of US$32,874,083. The agreement is valid until 26 June 2013. Antam and PT Adhi Karya (Persero) Tbk have agreed on a contract extension which is valid until 15 August 2013.

As at 31 December 2013, PT Adhi Karya (Persero) Tbk has not completed the project and Antam did not approve the second amendment to the contract so the target date was still 15 August 2013. Because of that, Antam has the right to impose fines due to late completion of work and started occur based on contract (six weeks after target date). As at the date of these consolidated financial statements, Antam and PT Adhi Karya (Persero) Tbk are still in the process of negotiating liquidated damage calculation.

On 28 March 2012, Antam and WIKA entered into an agreement for the latter to procure and install Refining-3 with a contract value of US$35,475,000. The agreement was valid until 28 January 2014. On 2 December 2013 Antam and WIKA have agreed on a contract extension. As at the date of these consolidated financial statements, construction of Refining-3 has been completed and Antam is still in the process of negotiating liquidated damage calculation.

On 10 December 2012, Antam and Sumitomo Corporation entered into an agreement related to the construction of the PLTU Pomalaa with total contract values of US$57,275,290, JPY3,439,137,022 and Rp412,748,103.

43. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

i. Pomalaa Ferronickel Plant Expansion Project ("P3FP") (continued)

On 17 May 2013, Antam and Sumitomo Corporation entered into a Notice to Proceed to start construction of the PLTU which is expected to be completed on or before the date falling 25 months and 28 months after the date of the Notice to Proceed for Unit 1 and Unit 2, respectively. On 15 April 2013, Antam and Sumitomo Corporation signed a first amendment of the agreement to amend the provisions on the standby letter of credit stated under the contract signed on 10 December 2012. As at 31 December 2017, construction of PLTU has been completed, however there was delay in the completion of the work which has caused losses by Antam for not being able to operate with a more efficient energy cost. To compensate Antam's losses, Sumitomo Corporation have agreed liquidated damage compensation amounting to US$7,303,370, which has been recorded as "Other income/expenses, net" in consolidated statement of profit or loss (Note 39).

On 6 February 2013, Antam entered into a Construction of Ore Preparation Line-4 for P3FP Project Agreement with the Unincorporated Consortium of Kawasaki Heavy Industries, Ltd. and Wika with an aggregate contract value of US$66,899,880 and JPY2,914,808,200. Construction of Ore Preparation Line-4 is expected to be completed on 31 July 2015. On 28 June 2013, Antam and the Unincorporated Consortium of Kawasaki Heavy Industries, Ltd. and Wika signed an amendment to the contract, in order to change the project name from "Modernisation-Optimisation of Pomalaa Ferronickel Smelters Project" to "Proyek Perluasan Pabrik Feronikel Pomalaa". The construction of ore preparation Line-4 has been completed in 2016. As at the date of these consolidated financial statements, Wika had partially agreed liquidated damage compensation amounting to US$2,363,315 (or equivalent to Rp33,007).

Antam started a new construction of the Oxygen Plant-5 project in 2013. Antam entered into contracts with Daesung Industrial Gases Co, Ltd. on 11 December 2013 with a contract value of US$11,000,000 (equal to Rp132,055). As at 31 December 2017, construction of Oxygent Plant-5 has been completed.

j. Coal delivery agreements with KAI

The Group through a subsidiary (i.e., Bukit Asam) entered into a coal delivery agreement with KAI whereby KAI agreed to deliver Bukit Asam's coal from Bukit Asam's train loading station in Tanjung Enim to the following ports:

Port names	Contract date	Expiry date	Total coal delivery expenses 31 December 2017	Total coal delivery expenses 31 December 2016	Total coal delivery expenses 31 December 2015
Tarahan, Lampung	9 June 2017	31 December 2021	3,700,000	2,900,000	2,812,000
Kertapati, Palembang	9 June 2017	31 December 2021	330,000	315,000	245,500

k. Mining Service Agreements in Muara Tiga Besar Utara ("MTBU"), Muara Tiga Besar Selatan ("MTBS") and Tambang Air Laya ("TAL") Extension

On 17 November 2011, Bukit Asam entered into an agreement for top soil stripping services and rental of heavy equipment and dump trucks for the coal excavation and transportation area in TAL and MTB (Package 10-200.R.2) with PT Pamapersada Nusantara ("Pama") by agreement No. 077/PJJ/EKS/0500/HK.03/2011 for the period 1 August 2011 to 31 July 2016. The production targets which have to be achieved on schedule are 145,987,500 BCM for soil with an average distance of 4.5 km and 39,850,000 tonages for coal with an average distance of 3.0 km. The total mining cost is US$282.92 million and Rp3.160 trillion (full amount) (including VAT).

43. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

k. Mining Service Agreements in Muara Tiga Besar Utara ("MTBU"), Muara Tiga Besar Selatan ("MTBS") and Tambang Air Laya ("TAL") Extension (continued)

Based on addendum I No. 017/ADD/EKS- 0500/HK.03/2014 dated 4 April 2014, service period for package 10-200.R.2 is extended to 31 December 2018 with target production of 220,034,971 BCM for soil with average distance of 4.5 km and 53,650,186 tons for coal with an average distance of 3 km. The total mining cost is US$388.98 million and Rp6.635 trillion (full amount) (including VAT).

On 11 April 2014, Bukit Asam entered into an additional agreement for top soil stripping services and rental of heavy equipment and dump trucks for coal excavation and transportation in TAL and MTB (Package 13-025.R.2) with Pama by agreement No.019/PJJ/Eks-0100/HK.03/2014 for the period 1 February 2014 to 31 January 2019. The production targets which have to be achieved on schedule are 165,638,000 BCM for soil with an average distance of 4.5 km and 40,800,000 tons for coal with an average distance of 3.5 km. Total mining cost is US$293.26 million and Rp5.04 trillion (full amount) (including VAT).

Related stripping and coal mining expenses for the year ended 31 December 2017, 2016 and 2015 amounting to Rp1.51 trillion (full amount), Rp2.58 trillion (full amount), Rp3.12 trillion (full amount) respectively.

l. Mining Law

On 12 January 2009, the Government of the Republic of Indonesia issued a Mining Law containing certain provisions relating to the obligation to supply the domestic markets, limitations in the mining exploration area and production activities and the requirement to build processing and refinery facilities within five years or up to 2014.

On 1 February 2010, the Government of the Republic of Indonesia issued the GR No. 23 Year 2010, as lastly amended by GR No. 1 Year 2017, regarding the Implementation of Mineral and Coal Business Activities ("GR No. 1/2017") and GR No. 8 Year 2018, regarding the implementation of Mineral and Coal Business Activities ("GR No. 8/2018").

GR No. 1/2017 among others regulates the following matters:

- Change the period for IUP and Special Mining Business Permit ("IUPK") extensions to become five years prior to expiration of the IUP/IUPK;
- Change the provision regarding share divestment in stages up to 51%;
- Regulates the determination of benchmark prices in the sales of minerals and coal;
- Removes the provision which allow the CoW holders performing smelting activities to export their products in certain quantities and period; and
- Stipulates that provisions for increasing added value of minerals and export sales of minerals shall be governed by Regulation of the Minister.

The Government has issued the MEMR Regulation No. 25 of 2018 concerning Mineral and Coal Mining Business ("MEMR Regulation No. 25/2018") which revokes the MEMR Regulation No. 5 of 2017 ("MEMR Regulation No. 5/2017"), as lastly amended by the MEMR Regulation No. 28 of 2017 ("MEMR Regulation No. 28/2017") dated 30 March 2017 on "Increasing Added Value Through Domestic Processing and Refining of Minerals", and the MEMR Regulation No. 6 of 2017 ("MEMR Regulation No. 6/2017"), as lastly amended by the MEMR Regulation No. 35 of 2017 ("MEMR Regulation No. 35/2017") dated 15 May 2017 on "Procedures and Requirements to Obtain Recommendations for Export Sale of Minerals Resulting from Processing and Refining" have been issued.

43. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

l. Mining Law (continued)

On 19 February 2018, MEMR revoked Ministerial Regulation No. 15/2017 and issued Ministerial Regulation No. 11/2018 regarding the Procedures for the Granting of Area, Licensing and Reporting in the Business Activity of Mineral and Coal Mining. On 16 April 2018, MEMR issued Ministerial Regulation No. 22/2018 regarding Amendment to Ministerial Regulation No. 11/2018.

Management is closely monitoring the progress of implementing regulations for the Mining Law and is in the process of analysing the impact, if any, of the Mining Law on the Group when these implementing regulations are issued.

m. MEMR Regulation No. 7/2017

On 11 January 2017, MEMR No. 7/2017 was issued as an amendment to MEMR Regulation No. 17/2010.

MEMR Regulation No. 07/2017 stipulates that the Metal Mineral Benchmark Prices ("HPM") and the Coal Benchmark Prices ("HPB") should be used a reference by holders of IUP/IUPK and also parties to the CoW and CCoW for the sales of produced mineral/coal (including the sale to affiliates) both for export and domestic sales.

HPM and HPB are determined by the Director General on a monthly basis pursuant to market mechanisms or in accordance with prices generally applicable in the international market which represent floor price in the calculation of royalty obligation.

Based on MEMR Regulation No. 7/2017, HPM and HPB are calculated in Rupiah or US Dollar. The determination of HPM and HPB follows the formula of HPM and HPB which consider various factors, including but not limited to Mineral Prices Reference ("HMA") and Coal Prices Reference ("HBA"). If the HMA and HBA have not been determined on the current month, the sales are made based on HMA and HBA of the preceeding month.

Management believes that the MEMR Regulation No. 7/2017 will not have a significant impact to the Group's business operations.

n. Regulation of increase in value-add from minerals

On 30 April 2018, MEMR Regulation No. 25/2018, was issued as an implementation regulation of GR No. 1/2017.

Several key provisions of this regulation among others are as follows:

- Holders of IUP Operation Production ("IUP OP"), IUPK OP, IUP OP specially for processing and refinery are required to carry out the processing and refining of mining products within the minimum limits of processing and/or refinery.
- The processing and refining process can be done independently or in cooperation with other parties.
- Holders of IUP OP or IUPK OP can sell <1.7% nickel or bauxite which has been washed with a level of Al2O3 > 42% abroad in a certain amount no later than 11 January 2022, under the condition:
  a. Has built a purification facility
  b. Pay the export duty
- Holders of Mineral CoW, IUP OP, IUPK OP, IUP OP specially for processing and/or refinery can export concentrate for a period of 5 years from 11 January 2017 if they meet certain requirements, as follows: willing to change the form of their mining business from CoW into IUPK OP (specific requirement for CoW holders), provide commitment to build refining facility and pay export duties under the prevailing laws and regulation.
- Export can only be done after an export recommendation from the MEMR is obtained.

43. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

n. Regulation of increase in value-add from minerals (contined)

The processing and refining process can be done independently or in cooperation with other parties.

Management has assessed the provisions in the MEMR Regulation No. 25/2018 and is of the opinion that this regulation will have a positive impact to the financial performance of the Group because, based on management's assessment, the Group will be able to meet the requirements stipulated in the MEMR Regulation No. 25/2018.

o. Mine reclamation and mine closure

On 20 December 2010, the Government of the Republic of Indonesia issued GR No. 78 which deals with reclamation and post-mining activities for both IUP Exploration and IUP OP holders. This regulation updates PerMen No. 18/2008. An IUP Exploration holder must, among other requirements, include a reclamation plan in its exploration work plan and budget and provide a reclamation guarantee in the form of a time deposit placed at a state-owned bank.

On 2 May 2018, the Government of the Republic of Indonesia issued Ministerial Regulation No. 26/2018 ("PerMen 26/2018) concerning the Rules for the Implementation of Good Mining and Supervision of Mineral and Coal Mining, which among others regulates reclamation and post-mining activities for coal and mineral mining companies. Subsequently, the Government of the Republic of Indonesia issued MEMR Decree No.1827K/30/ MEM/2008 concerning Guidelines for the Practice of Good Mining Practices.

Ministerial Regulation No. 26/2018 stipulates that an IUP OP holder is required to provide a reclamation guarantee which may be in the form of a joint account or time deposit placed at a state-owned bank, a bank guarantee or an accounting reserve (if eligible). Reclamation guarantee in the form of an accounting reserve can be provided by a mining company if the following criteria are met:

- Registered on PT Bursa Efek Indonesia and has placed more than 40% from total owned stock;
- Has an issued share capital of not less than US$50,000,000 as stated in the Notarial Deed and/or authorised by the notary.

The requirement to provide reclamation and post-mine guarantees does not release the IUP holder from the requirement to perform reclamation and post-mine activities.

Based on this regulation, Antam is no longer eligible to provide a reclamation guarantee in the form of an accounting reserve.

As at 31 December 2017, the Group's subsidiaries has placed reclamation guarantees in the form of bank guarantees, as required by Ministerial Regulation No. 7/2014.

43. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

p. Forestry regulation

On 8 June 2016, the Ministry of Forestry issued Ministerial Regulation No. P.50/Menlhk /Setjen/Kum.1/6/2016 regarding Lease Guidelines of Forest Area. Pursuant to this regulation, the Group may be given a forestry permit to use a forest area for two years for exploration activities and the maximum equals to a Company mining permits to conduct non-forestry activities subject to a number of preconditions. One of the most significant preconditions under this regulation, depending on the location and the purpose of the activities to be conducted in the forest area, is for a Company to be required to provide compensation land or be obliged to pay Non-Tax State Revenue ("PNBP").

As at 31 December 2017, the Group has implemented the requirements of this regulation and management believes that this regulation will have no significant impact to the Group's operations.

q. Coal selling price for electricity supply for public interest

On 9 March 2018, Ministry of Energy and Resources Mineral, determined coal price for national electricity through decision of MEMR No. 1395K/30/MEM/2018 as latest amended by decision of MEMR No. 1925K/30/MEM/2018 dated 7 August 2018 regarding Coal Price for Electricity Supply for Public Interest.

Government determined that coal sales price for local PLTU is US$70 per ton for calories value of 6,322 GAR or using Coal Benchmark Price ("HBA") if the HBA below US$70 per ton. For coal price with other calories, will be converted to the coal price calories of 6,322 GAR based on applicable calculation guidance.

The special price determination is effective from 12 March 2018 to 31 December 2019.

MEMR determine that maximum volume for coal purchasing for power plant companies is 100 million ton per annum or as needed. Royalty and tax calculated based on transactional prices.

The companies who meet the minimum requirement for coal domestic sales and sales price regulation above mentioned could be granted with the additional production altogether until the national production increase by 100 million MT, subject to certain terms and conditions.

Price determination is only for national electricity sales. Meanwhile, price determination for outside electricity sales will be determined independently by the Company and buyer.

r. Divestment share of PTFI

The Company was assigned to acquire PTFI's divestment shares based on a letter from Ministry of State Owned Enterprise No. S-715/MBU/12/2017 dated 18 December 2017. Pursuant with the CoW which has been converted into IUPK, Freeport McMoran ("FCX") as the majority shareholder of PTFI has the obligation to divest its shares to Indonesia parties, with priority in sequence, to Government of Republic of Indonesia, Provincial Government, BUMN, Regional-Owned Enterprise ("BUMD") and national private companies.

FCX willingness to divest its shares in PTFI represents one of the five agreements on 27 August 2017 between the Government of Republic of Indonesia in this case through MEMR, Minister of State Owned Enterprise and CEO of FCX. The agreements are as follow:

1. PTFI to convert KK into IUPK and obtain operational guarantee.
2. Government provide fiscal and regulation guarantees for PTFI operational.
3. PTFI to build smelter within five years.
4. FCX willing to reduce its ownership in PTFI so that Indonesian entities have 51% of PTFI shares.
5. After those four points above have been executed, then PTFI will obtain extension on its operation period until 2041.

43. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

r. Divestment share of PTFI (continued)

Agreement between the Government of Indonesia, Provincial Government of Papua and the Regency of Mimika

On 12 January 2018, the Government of Indonesia, the Provincial Government of Papua (the "Papua Government") and the Regency of Mimika (the "Mimika Regency") entered into an agreement relating to the planned PTFI Share Acquisition and the equity interests in PTFI each entity would hold following the completion of the PTFI Acquisition (the "Goverment of Indonesia, Papua Government and Mimika Regency Agreement"). The Goverment of Indonesia, the Papua Government and the Mimika Regency are stakeholders in the Grasberg Mine, with the Goverment of Indonesia being the holder of the mining concession for the Grasberg Mine, and the Grasberg Mine being situated in the province of Papua and in the province's Mimika Regency.

Pursuant to the Goverment of Indonesia, Papua Government and Mimika Regency Agreement, the Goverment of Indonesia has agreed to procure, and the Papua Government and the Mimika Regency have agreed to subscribe for shares in an entity nominated by the Goverment of Indonesia that would result in, the Papua Government and the Mimika Regency indirectly holding 3.0% and 7.0% of the shares of PTFI, respectively, following the completion of the PTFI Share Acquisition. The subscription price for the aforementioned shares to be paid by the Papua Government and the Mimika Regency, respectively, will be equivalent to the value of their respective indirect stakes in PTFI, calculated on the same basis the Goverment of Indonesia, through the Company, would have paid for its shares in PTFI in the PTFI Share Acquisition.

Under the Goverment of Indonesia, Papua Government and Mimika Regency Agreement, the Goverment of Indonesia, through the Company, would loan to the Papua Government and the Mimika Regency the funds required to subscribe for the shares in such nominated entity (currently contemplated to be PTII), and such loan will be secured by the same shares. The Papua Government and the Mimika Regency have also agreed (i) not to transfer or sell these shares to any party, other than the Goverment of Indonesia, (ii) to assign all voting rights relating to these shares to us and (ii) to transfer all dividends paid on such shares to us, until the loan is fully repaid.

Heads of Agreement

On 12 July 2018, the Company signed Heads of Agreement ("HoA") with FCX, PTFI, Rio Tinto Indonesia Holdings Limited, Rio Tinto Nominees Limited and PT Rio Tinto Indonesia ("PTRTI"), before PTFI Divestment Agreement is being issued. See Note 50 for details of the PTFI Divestment Agreement.

s. Production facility under development

On 14 April 2016, as amended per 28 November 2017, the Company entered into a joint venture agreement (the "Mempawah SGA Agreement") with Antam to construct a production plant to process bauxite ore into smelter grade alumina (the "Mempawah Smelter Grade Alumina Refinery Plant"), in Mempawah, West Kalimantan, Indonesia. The Company and Antam will have 60% and 40% interest, respectively, in this project.

As at the completion of these consolidated financial statements, the Mempawah Smelter Grade Alumina Refinery Plant is still in the process to commence their construction.

43. SIGNIFICANT AGREEMENTS, COMMITMENTS AND CONTINGENCIES (continued)

t. Calcined Petroleum Coke Plant

On 28 December 2017, the Company entered into a Heads of Agreement ("HoA") with Pertamina, to construct a calcined petroleum coke plant (the "Dumai CPC Plant") in Dumai, Riau. Pursuant to the terms of the HoA, Pertamina will own 75% of the Dumai CPC Plant and the Company will own the remaining 25%. The planned production capacity of the Dumai CPC Plant upon completion of construction is 300 kilo tonnes per annum and the Dumai CPC Plant is expected to supply calcined petroleum coke to the Company's anode plant in Kuala Tanjung as raw material in aluminum production process.

As at the completion of these consolidated financial statements, the Dumai CPC Plant is still in the process to commence their construction.

u. Legal Case with Perto

On 24 February 2017, Antam received a lawsuit with case registration number 116/Pdt.G/2017/PN JKT.SEL, with PT Perusahaan Toradja ("Perto") (formerly NV Perto) as the Plaintiff and Ministry of BUMN, Energy and Mineral Resources Ministry and Finance Ministry as Defendant II, III and IV. The essence of the lawsuit is that Perto claims that the government through PT Nikel Indonesia (now Antam) has taken over the mining business and Perto's assets in Pomalaa, Southeast Sulawesi and has not been fully compensated. The subject of the lawsuit, among others, is the following:

1. Punish Defendants to fulfill the right, to reimburse and/or pay the total of Plaintiff's material losses of Rp107,889,043;
2. Pay the loss amount equivalent to Rp12,000;
3. Declare the security seizures set upon the assets of the First Defendant as legitimate;
4. Punish Defendant I to pay Rp100,000 for the costs incurred in the Case.

Management believes that this case will be won by Antam because the Plaintiff's lawsuit should not be granted due to the following reasons:

1. The case concerning the indemnification request related to the business takeover has been tried before in court proceedings and it has even been executed because the Plantiff's lawsuit cannot be granted (Ne Bis in Indem);
2. Antam's four-decade book which serves as the basis of the Plaintiff's claims states that the Company is defamatory, but it is premature and unfounded.

44. FINANCIAL ASSETS AND FINANCIAL LIABILITIES

As at 31 December 2017, Group has financial assets which are categorised as loans and receivables consist of cash and cash equivalents, time deposits, trade receivables, other receivables and part of other current assets and other non-current assets totaling to Rp29,869,439 (31 December 2016: Rp24,236,620, 31 December 2015: Rp23,683,447) and financial asset categorised as available-for-sale financial assets amounting to Rp7,685,642 (31 December 2016: Rp725,046, 31 December 2015: Rp625,534).

As at 31 December 2017, Group has financial liabilities which are categorised as other financial liabilities at amortised cost consist of trade payables, accruals, short-term bank borrowings, bond payables, long-term bank borrowings, finance lease liabilities, and part of other liabilities totaling to Rp19,522,213 (31 December 2016: Rp19,728,594, 31 December 2015: Rp20,072,433) and financial liability categorised as financial liabilities at fair value through profit or loss consist of other non-current liabilities of Rp198,361 on 31 December 2015.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

45. MONETARY ASSETS AND LIABILITIES DENOMINATED IN FOREIGN CURRENCIES

	31 December 2017		31 December 2016		31 December 2015*)	
	Foreign currency in US$	Rupiah	Foreign currency in US$	Rupiah	Foreign currency in US$	Rupiah
Assets						
Cash and cash equivalent and time deposits	566,926,779	7,680,724	606,166,121	8,144,448	726,132,439	10,016,997
Trade receivables, net	295,971,846	4,009,798	217,707,508	2,925,119	135,972,526	1,875,741
Other receivables	166,033,785	2,249,425	40,328,526	541,854	32,176,078	443,869
Available-for-sale financial assets	12,043,549	163,166	10,149,970	136,375	8,796,665	121,350
	1,040,975,959	14,103,113	874,352,125	11,747,796	903,077,708	12,457,957
Liabilities						
Trade payables	17,929,584	242,910	35,691,984	483,555	90,831,171	1,253,016
Bank borrowings	633,234,224	8,579,057	567,260,966	7,621,718	672,680,726	9,279,631
Accruals	71,550,018	969,360	46,978,970	631,210	114,679	1,582
	722,713,826	9,791,327	649,931,920	8,736,483	763,626,576	10,534,229
Net monetary foreign currency assets	318,262,133	4,311,786	224,420,205	3,011,313	139,451,132	1,923,728

46. FINANCIAL RISK MANAGEMENT

The Group's activities expose it to a variety of financial risks, including the effects of foreign currency exchange rates, commodity prices and interest rates. The Group's overall risk management system focuses on the unpredictability of commodity prices financial markets and seeks to minimise potential adverse effects on the financial performance of the Group.

Risk management is carried out by the task force risk management that is directly responsible to Board of Directors. The Board ensu res the sufficiency of all procedures and methodology of financial risk management, which consists of accuracy of risk identification, measurement, monitoring, and financial risks control.

a. Commodity price risks

Commodity prices are very unstable due to changes in supply and demand from customers. Currently, there is a high risk that prices of the Group products (i.e. coal, gold, tin, aluminium ingot, nickel) will significantly fluctuate. Although the Group has diversified customers and does not depend on a specific market or country, the Group's revenue could be negatively impacted by the decrease in commodity prices.

The Group believes that the fast way to manage commodity price risk is by decreasing the production cost. The Group has plans to continuously reduce their cost by, among others, revitalising its production facilities, commitment to convert their main fuel sources from Industrial Diesel Oil and Marine Fuel Oil to a cheaper fuel sources, such as natural gas, coal, or hydro power. In addition, the Group also uses average prices for certain period for selling some of its products.

*) As restated, (refer to Note 4)

46. FINANCIAL RISK MANAGEMENT (continued)

b. Foreign currency risk

Foreign currency risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates. The Group's exposures to exchange rate fluctuations results primarily from cash and cash equivalents, time deposits, trade receivables, other receivables, other tax receivables, trade payables, other payables, accruals, other payables and bank borrowings.

The linkage of the price fluctuations of the Group's products following the price traded on international markets with the fluctuations in currency exchange rates is considered a natural hedge to reduce the foreign currency risk of Group.

If the Rupiah weakens or strengthens by 5% compared to US Dollar or vice versa, on 31 December 2017 (assuming all other variables remain unchanged), the consolidated profit before tax of the Group for the year ended 31 December 2017 will increase or decrease approximately by Rp318,773 (2016: Rp140,689 and 2015: Rp81,567), mainly as a result of foreign exchange gains or losses on translation of the net assets (liabilities) denominated in foreign currency as at the reporting date.

c. Interest rate risk

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest rates. The Group is exposed to the risk of changes in market interest rates that relates primarily to its cash and cash equivalents and time deposits, bank borrowings, and finance lease liabilities.

Various scenarios are simulated taking into consideration refinancing, renewal of existing positions, alternative financing and hedging if necessary. Based on these scenarios, the Group calculates the impact on profit or loss at a defined interest rate shift.

Sensitivity analysis for interest rate risk

As at 31 December 2017, there is no significant interest rate risk due to most of the interest rate from the borrowings are fix. In addition, the interest rate risk from time deposit is low. This was reflected by return on time deposit during the years ended 2017, 2016 and 2015 which were relatively stable.

d. Credit risk

Credit risk is the risk that counterparty will fail to discharge its contractual obligation.

Group has in place credit policies and procedures to ensure the ongoing credit evaluation and active account monitoring. The Group manages credit risk exposure from its deposits with banks by monitoring reputation, credit ratings and limiting the aggregate risk to any individual counterparty. To manage credit risk related to trade receivables, Group trades only with recognised and creditworthy third parties. It is Group's policy that all customers who wish to trade on credit terms are subject to credit verification procedures and terms of payment either through Surat Kredit Berdokumen Dalam Negeri ("SKBDN") or letter of credit and has clear policies on the selection of customers, legaly binding agreements in place for mineral commodity sales transactional. In addition, receivable balances are monitored on an ongoing basis to reduce the exposure to bad debts.

46. FINANCIAL RISK MANAGEMENT (continued)

d. Credit risk (continued)

The balances of trade receivables and other receivables are as follows:

	Neither past due nor impaired	Past due but not impaired	Impaired	Total
31 December 2017				
Trade receivables	7,092,685	1,198,205	371,267	8,662,157
Other receivables				
- Related parties	162,985	1,410,600	41,704	1,615,289
- Third parties	476,471	578,856	-	1,055,327
Total	**7,732,141**	**3,187,661**	**412,971**	**11,332,773**
31 December 2016				
Trade receivables	3,928,349	810,767	351,522	5,090,638
Other receivables				
- Related parties	44,408	626,731	41,155	712,294
- Third parties	354,754	6,445	-	361,199
Total	**4,327,511**	**1,443,943**	**392,677**	**6,164,131**
31 December 2015*)				
Trade receivables	2,792,110	528,720	272,725	3,593,555
Other receivables				
- Related parties	17,848	606,929	43,718	668,495
- Third parties	218,603	1,887	-	220,490
Total	**3,028,561**	**1,137,536**	**316,443**	**4,482,540**

e. Liquidity risk

Liquidity risk is the risk that the Group is unable to meet its obligations when they are due. The Group has reviewed, monitored and set the policy of terms of payments in accordance with the proceeds from sales of the Group. In general, funding to pay due obligations comes from the settlements of trade receivable from customers, cash and cash equivalents as well as time deposits of the Group and flexibility through bank loans and other borrowings.

*) As restated, (refer to Note 4)

46. FINANCIAL RISK MANAGEMENT (continued)

e. Liquidity risk (continued)

The table below summarises the maturity profile of the Group financial liabilities based on contractual payment maturities.

	Less than 3 months	3 months - 1 year	1 - 5 years	More than 5 years	Total
31 December 2017					
Trade payables	2,525,160	-	-	-	2,525,160
Accruals	2,715,055	-	-	-	2,715,055
Short-term employee benefit liabilities	921,738	-	-	-	921,738
Financial lease liabilities	-	148,968	546,982	-	695,950
Bank borrowings	2,908,155	2,883,513	2,252,424	1,658,527	9,702,619
Bonds payable	99,043	1,194,004	6,183,378	-	7,476,425
Other current liabilities	287,679	643	-	-	288,322
Other non-current liabilities	-	-	3,762	-	3,762
Total	**9,456,830**	**4,227,128**	**8,986,546**	**1,658,527**	**24,329,031**
31 December 2016					
Trade payables	2,177,183	-	-	-	2,177,183
Accruals	2,605,771	-	-	-	2,605,771
Short-term employee benefit liabilities	440,559	-	-	-	440,559
Financial lease liabilities	-	188,589	643,882	-	832,471
Bank borrowings	2,793,564	3,860,549	2,444,122	2,206,632	11,304,867
Bonds payable	66,356	199,069	4,336,437	-	4,601,862
Other current liabilities	201,804	345,343	-	-	547,147
Other non-current liabilities	-	-	3,699	-	3,699
Total	**8,285,237**	**4,593,550**	**7,428,140**	**2,206,632**	**22,513,559**
31 December 2015*)					
Trade payables	2,677,491	-	-	-	2,677,491
Accruals	2,367,066	-	-	-	2,367,066
Short-term employee benefit liabilities	329,327	-	-	-	329,327
Financial lease liabilities	-	21,413	49,574	-	70,987
Bank borrowings	946,962	3,150,327	3,189,011	890,293	8,176,593
Bonds payable	199,725	267,012	2,604,710	2,282,890	5,354,337
Other current liabilities	209,875	-	-	-	209,875
Other non-current liabilities	-	-	198,361	-	198,361
Total	**6,730,446**	**3,438,752**	**6,041,656**	**3,173,183**	**19,384,037**

f. Capital management

The Group aims to achieve an optimal capital structure in pursuit of its business objectives, which include maintaining healthy capital ratios and maximising shareholder value.

The directors of the Group periodically reviews the Group's capital structure. As part of this review, the Directors consider the cost of capital and related risks and direction from shareholders.

Consistent with other entities in the industry, the Group monitors capital on the basis of the debt-to-equity ratio. This ratio is calculated as debt divided by total capital. Debt is calculated as total liabilities as shown in the consolidated statements of financial position. Total capital is equity as shown in the consolidated statements of financial position.

The debt-to-equity ratio at the Group are as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Total liabilities	27,237,455	24,710,590	24,588,168
Total equity	66,007,274	48,391,112	45,254,163
Debt-to-equity ratio	**0.41:1**	**0.51:1**	**0.54 :1**

*) As restated, (refer to Note 4)

46. FINANCIAL RISK MANAGEMENT (continued)

g. Fair value estimation

Fair value is the amount for which an asset could be exchanged or liability settled between knowledgeable and willing parties in an arm's length transaction.

The disclosure of fair value measurements by level of fair value measurement hierarchy are as follows:

- Level 1: quoted prices (unadjusted) in active markets for identical liabilities.
- Level 2: inputs other than quoted prices included within level 1 that are observable for the liability, either directly (as prices) or indirectly (derived from prices).
- Level 3: inputs for liabilities that are not based on observable market data (unobservable inputs).

Management considers that the carrying amounts of current financial asset and financial liabilities recorded at amortised cost in the consolidated financial statements approximate their fair values because of their short-term maturities. The information related to fair value of non-current assets and liabilities has been explained in the respective notes to the consolidated financial statements.

47. NON-CASH TRANSACTIONS

The Group's non-cash transaction during the years is as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Issuance of new shares related to business combination of entities under common control	41,491,252	-	-
Addition of financial assets available-for-sale through additional paid-up share capital	7,255,450	-	-
Fixed asset addition through additional paid-up share capital	5,049,241	-	-
Acquisition of fixed assets through increase of payables, accruals and capital lease	811,091	668,460	1,649,601
Capitalisation of borrowing cost to fixed assets, mining properties and exploration and evaluation assets	23,495	193,325	265,253
Decrease in long-term contingent liabilities through decrease in dividend receivables	-	127,807	-
Decrease of investment in associate through dividend receivables	-	-	217,978
Acquisition of fixed assets through business combination (Note 5)	-	-	175,359
Acquisition of mining properties through business combination (Note 5)	-	-	175,335
	54,630,529	**989,592**	**2,483,526**

*) As restated, (refer to Note 4)

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

48. NON-CONTROLLING INTERESTS

As at 31 December 2017, 2016 and 2015, non-controlling interests of Bukit Asam, Timah and Antam are as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Antam	5,655,924	5,627,363	5,595,138
Bukit Asam	4,952,002	3,776,453	3,322,160
Timah	2,121,651	1,978,928	1,879,923
Total	**12,729,577**	**11,382,744**	**10,797,221**

Summarised statements of financial position as at 31 December 2017, 2016 and 2015 is as follows:

	2017				
	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets
Bukit Asam	11,117,745	10,869,737	(4,513,226)	(3,674,261)	13,799,995
Timah	6,996,966	4,879,343	(3,402,526)	(2,412,290)	6,061,493
Antam	9,001,939	21,012,335	(5,552,462)	(5,971,408)	18,490,404
Total	**27,116,650**	**36,761,415**	**(13,468,214)**	**(12,057,959)**	**38,351,892**

	2016				
	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets
Bukit Asam	8,349,927	10,226,,847	(5,042,747)	(2,981,622)	10,552,405
Timah	5,237,907	4,310,724	(3,061,232)	(833,714)	5,653,685
Antam	10,630,222	19,351,314	(4,352,313)	(7,220,427)	18,408,796
Total	**24,218,056**	**33,888,885**	**(12,456,292)**	**(11,035,763)**	**34,614,886**

	2015*)				
	Current assets	Non-current assets	Current liabilities	Non-current liabilities	Net assets
Bukit Asam	7,598,476	9,295,567	(4,922,733)	(2,683,763)	9,287,547
Timah	5,444,199	3,835,484	(2,998,953)	(909,662)	5,371,068
Antam	11,252,827	19,104,024	(4,339,330)	(7,700,802)	18,316,719
Total	**24,295,502**	**32,235,885**	**(12,261,016)**	**(11,294,227)**	**32,975,334**

*) As restated, (refer to Note 4)

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

48. NON-CONTROLLING INTERESTS (continued)

Summarised statements of profit or loss and other comprehensive income for the years ended 31 December 2017, 2016 and 2015 is as follows:

	2017					
	Net revenue	Profit for the year	Other comprehensive loss for the year	Total comprehensive income for the year	Comprehensive income allocated to non-controlling interest	Dividends paid to non-controlling interest[a)]
Bukit Asam	19,471,030	4,547,232	(687,830)	3,859,402	1,396,045	-
Timah	9,217,160	502,417	(19,059)	483,358	169,166	-
Antam	12,653,619	136,503	(54,895)	81,608	28,560	-
Total	**41,341,809**	**5,186,152**	**(761,784)**	**4,424,368**	**1,593,771**	**-**

	2016					
	Net revenue	Profit for the year	Other comprehensive (loss)/income for the year	Total comprehensive income for the year	Comprehensive income allocated to non-controlling interest	Dividends paid to non-controlling interest[a)]
Bukit Asam	14,058,869	2,024,405	(148,774)	1,875,631	668,040	-
Timah	6,968,294	251,969	61,124	313,093	109,574	-
Antam	9,106,261	64,806	27,270	92,076	32,224	-
Total	**30,133,424**	**2,341,180**	**(60,380)**	**2,280,800**	**809,838**	**-**

	2015*)					
	Net revenue	Profit/(loss) for the year	Other comprehensive (loss)/income for the year	Total comprehensive income for the year	Comprehensive income/(loss) allocated to non-controlling interest	Dividends paid to non-controlling interest[a)]
Bukit Asam	13,845,199	2,037,111	(161,178)	1,875,933	656,982	9,966
Timah	6,874,192	101,561	961,096	1,062,657	371,766	-
Antam	10,531,505	(1,440,853)	2,353,409	912,556	(496,185)	-
Total	**31,250,896**	**697,819**	**3,153,327**	**3,851,146**	**532,563**	**9,966**

a) Represent actual dividend payments made by each subsidiaries to the non-controlling interests for respective years, before taking into account the pooling-of-interests adjustment (Note 4).

Summarised statements of cash flows of Bukit Asam for the years ended 31 December 2017, 2016 and 2015 is as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Net cash received from operating activities	2,415,444	1,928,346	1,897,771
Net cash used in investing activities	(536,264)	(315,119)	(1,113,356)
Net cash used in financing activities	(2,006,843)	(1,011,134)	(1,794,992)
Net (decrease)/increase in cash and cash equivalents	(127,663)	602,093	(1,010,577)
Cash and cash equivalents at the beginning of the year	3,674,687	3,115,337	4,039,267
Effects of exchange rate changes on cash and cash equivalents	8,382	(42,743)	86,647
Cash and cash equivalents at the end of the year	**3,555,406**	**3,674,687**	**3,115,337**

*) As restated, (refer to Note 4)

48. NON-CONTROLLING INTERESTS (continued)

Summarised statements of cash flows of Timah for the years ended 31 December 2017, 2016 and 2015 is as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Net cash (used in)/received from operating activities	(152,027)	1,090,381	1,290,229
Net cash used in investing activities	(806,172)	(548,217)	(687,834)
Net cash received from/ (used in) financing activities	1,758,141	(467,505)	(473,979)
Net increase in cash and cash equivalents	799,942	74,659	128,416
Cash and cash equivalents at the beginning of the year	563,804	497,472	346,495
Reclassified (to)/from held for sale	(4,376)	1,508	4,286
Effects of exchange rate changes on cash and cash equivalents	(1,880)	(9,835)	18,275
Cash and cash equivalents at the end of the year	**1,357,490**	**563,804**	**497,472**

Summarised statements of cash flow of Antam for the years ended 31 December 2017, 2016 and 2015 is as follows:

	31 December 2017	31 December 2016	31 December 2015*)
Net cash received from operating activities	1,379,176	1,015,392	488,905
Net cash used in investing activities	(2,890,561)	(1,382,046)	(2,103,885)
Net cash (used in)/received from financing activities	(568,358)	(26,840)	6,887,376
Net (decrease)/increase in cash and cash equivalents	(2,079,743)	(393,494)	5,272,396
Cash and cash equivalents at the beginning of the year	7,623,385	8,086,634	2,618,910
Effects of exchange rate changes on cash and cash equivalents	7,035	(69,754)	195,328
Cash and cash equivalents at the end of the year	**5,550,677**	**7,623,386**	**8,086,634**

*) As restated, (refer to Note 4)

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

49. OPERATING SEGMENT INFORMATION

Management has determined the operating segments based on reports reviewed by the Board of Directors that are used to make strategic decisions. The Board of Directors considers the business operations from both the business type and geographical perspective. The Group's business segments can be identified as six major business operations, consisting of (a) Coal; (b) Gold and other precious metals; (c) Aluminium; (d) Tin metals and solder; (e) Nickel and ferronickel and (f) Purification of precious metals and other service segments. The other segments is primarily consist of trading, purification of metals, contruction, mining services and plantation business services. All transactions between segments have been eliminated.

The Board of Directors uses a measure of net sales to assess the performance of the operating segments.

Information concerning the segments for the years ended 31 December 2017, 2016 and 2015, is as follows:

	31 December 2017								
Segment	Coal	Gold and other precious metals	Aluminium	Tin metals and solder	Nickel and ferronickel	Purification of precious metals and other services	Home office	Elimination	Total
Net sales	19,720,150	8,844,511	5,842,474	16,287,414	4,847,454	2,692,466	-	(11,050,186)	47,184,283
Operating profit/(loss)	5,965,536	107,360	1,653,452	817,191	1,065,944	76,684	(531,299)	91,399	9,246,267
Finance income	179,544	5,337	160,472	24,646	1,788	7,646	250,427	-	629,860
Finance cost	(40,143)	-	-	(200,412)	-	(106,183)	(669,960)	42,526	(974,172)
Other income/ (expenses), net	(284,420)	(110,718)	233,726	154,524	(25,858)	5,228	236,298	168,807	377,587
Income tax (expense)/ benefit	(5,923)	-	(428,644)	(207,297)	-	(29,050)	(317,893)	(1,485,578)	(2,474,385)
Profit/(loss) for the period	5,814,594	1,979	1,619,006	588,652	1,041,874	(45,675)	(1,032,427)	(1,182,846)	6,805,157
Segment assets	23,446,716	1,624,460	24,579,517	14,029,196	10,999,807	7,467,337	22,769,383	(11,671,687)	93,244,729
Segment liabilities	7,734,481	718,369	1,848,914	7,293,522	794,958	4,051,090	10,432,866	(5,636,745)	27,237,455
Capital expenditures	1,080,553	254,074	6,751,900	654,438	323,793	170,232	1,286,267	-	10,521,257
Depreciation and amortisation	526,744	370,811	478,625	459,692	422,292	241,144	5,245	-	2,504,553

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

49. OPERATING SEGMENT INFORMATION (continued)

Information concerning the segments for the years ended 31 December 2017, 2016 and 2015, is as follows: (continued)

	31 December 2016								
Segment	Coal	Gold and other precious metals	Aluminium	Tin metals and solder	Nickel and ferronickel	Purification of precious metals and other services	Home office	Elimination	Total
Net sales	13,452,808	7,072,472	5,771,035	12,272,348	3,313,105	2,315,002	-	(8,292,312)	35,904,458
Operating profit/(loss)	2,440,197	225,125	1,281,670	694,548	470,715	(248,454)	(465,061)	(16,492)	4,382,248
Finance income	195,057	5,209	80,943	10,080	498	11,311	332,802	-	635,900
Finance cost	(103,040)	(35,086)	-	(118,240)	-	(48,341)	(94,946)	33,977	(365,676)
Other income/ (expenses), net	51,762	61,013	(242,615)	(5,736)	199,109	24,336	33,860	(336,105)	(214,376)
Income tax (expense)/ benefit	(645,696)	-	978,092	(131,921)	-	(26,815)	(172,485)	-	1,175
Profit/(loss) for the period	1,938,280	256,261	2,098,090	448,731	670,322	(287,963)	(365,830)	(318,620)	4,439,271
Segment assets	19,449,687	1,807,309	17,325,416	12,044,270	6,161,680	7,453,964	20,299,368	(11,439,992)	73,101,702
Segment liabilities	8,013,753	666,064	1,218,535	5,782,373	529,094	3,983,189	10,797,496	(6,279,914)	24,710,590
Capital expenditures	728,921	293,670	1,127,462	472,658	341,365	236,357	635,301	-	3,835,734
Depreciation and amortisation	312,071	392,436	222,594	479,059	221,346	117,660	5,204	-	1,750,370

	31 December 2015								
Segment	Coal	Gold and other precious metals	Aluminium	Tin metals and solder	Nickel and ferronickel	Purification of precious metals and other services	Home office	Elimination	Total
Net sales	13,557,505	8,717,299	6,570,462	12,300,608	3,069,459	1,775,702	-	(8,169,677)	37,821,358
Operating profit/(loss)	2,510,908	556,783	1,274,859	211,728	(282,233)	(271,780)	(524,208)	(293,308)	3,182,749
Finance income	290,973	3,639	116,587	8,673	435	20,515	63,065	-	503,887
Finance cost	(108,957)	(33,029)	-	(129,296)	-	(49,632)	(946,792)	30,252	(1,237,454)
Other income/ (expenses), net	72,772	37,780	(1,995)	207,289	(12,331)	21,517	(183,619)	(37,958)	103,455
Income tax (expense)/ benefit	(645,470)	-	(330,834)	(66,602)	-	18,785	227,921	-	(796,200)
Profit/(loss) for the period	2,120,226	565,173	1,058,617	231,792	(294,129)	(260,595)	(1,363,633)	(301,014)	1,756,437
Segment assets	18,324,349	2,044,025	15,642,410	9,917,582	4,391,705	7,338,419	22,212,820	(10,028,979)	69,842,331
Segment liabilities	7,539,262	602,324	1,032,925	4,581,680	435,341	3,570,800	11,349,476	(4,523,640)	24,588,168
Capital expenditures	1,167,146	296,775	392,722	437,613	159,728	824,285	1,443,759	-	4,722,028
Depreciation and amortisation	278,201	379,617	260,699	416,326	328,098	161,387	5,791	13,121	1,843,240

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
31 DECEMBER 2017, 2016 AND 2015
(Expressed in millions of Rupiah, unless otherwise stated)

50. EVENTS AFTER THE REPORTING DATE

a. Dividend from PTFI

The Company received dividend income from their investment in available-for-sale financial assets at PTFI during February, May, and June 2018 amounting to US$79,555,500 - full amount (equivalent to Rp1,093,888), US$39,831,000 (equivalent to Rp547,676) and US$28,116,000 (equivalent to Rp386,595), respectively.

b. Changes in the Company's Board of Commissioners and Directors

Based on Notarial Deed No. 17 dated 25 April 2018 of Notary Aryanti Artisari, S.H., M.Kn, and Ministry of BUMN Decision Letter No. SK-225/MBU/08/2018 dated 6 August 2018, the composition of the Company's Boards of Commissioners and Directors are as follows:

Board of Commissioners

President Commissioner	:	Fajar Harry Sampurno
Commissioner	:	Agus Tjahajana Wirakusumah
Commissioner	:	Purbaya Yudhi Sadewa
Commissioner	:	Muhammad Munir
Commissioner	:	Bambang Gatot Ariyono

Board of Directors

President Director	:	Budi Gunadi Sadikin
Director	:	Sahala Hasoloan Sijabat
Director	:	Oggy Achmad Kosasih
Director	:	Carry Mumbunan
Director	:	Orias Petrus Moedak
Director	:	Ogi Prastomiyono

c. Changes in the Company's Audit Committee

Based on Board of Commissioners Decision No. PC-02/04/2018 dated 2 April 2018, the composition of the Company's Audit Committee are as follows

Chairman	:	Agus Tjahajana Wirakusumah
Member	:	Hary Noegroho Soelistianto
Member	:	Togu Sihombing

d. Bank Loans

In 2018, the Group (through its subsidiary) obtained working capital loan from CIMB with a maximum credit facility of Rp300,000 with an interest rate per annum is COF. The group has drawdown the loan amounting to Rp300,000. This loan facility will expire on 12 April 2019.

On 19 February 2018, the Group (through its subsidiary) made a loan drawdown amounting to US$65,000,000 based on syndicated investment loans agreement with ICBC and BCA which was signed on 28 December 2017. The tenor of the loan is three years with a maximum extension option of 48 months. The loan-principal payments are scheduled to be made in every six-months (semester) and the loan interests are due in every three months (quarterly). Interest rate is floating rate of three month LIBOR plus margin. On 26 March 2018, the Group entered into a interest rate swap agreement with ICBA and BCA. Based on the interest swap agreement, the Group will swap the floating rate to fixed rate in order to manage interest risk.

50. EVENTS AFTER THE REPORTING DATE (continued)

e. Street Lighting Tax ("PPJ")

On 31 July 2018, DISPENDA issued underpayment of SKPD No. 973/5107 regarding PPJ as amended by SKPD No. 973/6180/2018 on 17 September 2018 for the period November 2013 to December 2017 amounting to Rp209.7 billion (including penalty). Management believed that the SKPD was issued without merit as the Company has paid the PPJ using agreed rate with the DISPENDA. Management is in the process to discuss the SKPD with DISPENDA and believe that provision is not necessary to be provided at this point.

f. Additional investment in HBAP

On 21 September 2018, Bukit Asam subscribed for additional share capital to HBAP, a joint venture entity amounting to USD38,250,000 or equivalent to Rp349,796,250,000 (full amount) from the total share capital to be issued amounting to USD189,112,500 until 2022. This additional share capital is used to build extension of transmission lines from 2.5 km to 45 km for Mine Mouth Power Plant South Sumatera 8 owned by HBAP.

g. PTFI Divestment Agreement

On 27 September 2018, the Company entered into an agreement relating to the Company's acquisition of an increased equity stake in PTFI (the "PTFI Divestment Agreement") with PTFI, Freeport-McMoran Inc. ("FCX"), International Support LLC ("International Support"), PT Indocopper Investama ("PTII"), pursuant to which, and subject to the provisions and conditions precedent stipulated in the PTFI Divestment Agreement:

(i) the Company, PTFI and PTII will enter into an agreement (the "PTFI Share Subscription Agreement", refer to below description), through which the Company and PTII will subscribe for, and PTFI will issue to the Company and PTII, shares in PTFI, representing 20.6% and 19.4% of the outstanding ordinary shares of PTFI immediately following the completion of the PTFI Share Acquisition;

(ii) the Company, Rio Tinto International Holdings Limited ("Rio Tinto International"), Rio Tinto Nominees Limited ("Rio Tinto Nominees") and Rio Tinto Indonesian Holdings Limited ("Rio Tinto Indonesian Holding", together with Rio Tinto Nominees, the "PTRTI sellers") will enter into an agreement (the "PTRTI Buyout Agreement", refer to below description), relating to the Company or PTFI acquiring all of the outstanding shares of PTRTI;

(iii) PTFI and PTRTI will enter into a merger deed, which will effect the merger of PTRTI into PTFI (the "PTFI and PTRTI Merger"); and

(iv) the Company will purchase, and FCX and International Support will sell to the Company, all of their shares in PTII for a consideration of US$350.0 million, which is required to be paid in cash at the completion of the PTFI Share Acquisition (the "PTII Share Acquisition").

50. EVENTS AFTER THE REPORTING DATE (continued)

g. PTFI Divestment Agreement (continued)

The PTFI Divestment Agreement contains representations, warranties, covenants and indemnifications of the parties to the agreement that are customary for transactions of this nature. The conditions precedent contained in the PTFI Divestment Agreement include, among others, the following: (i) the extension and stability of PTFI's long-term mining rights (in the form of a new IUPK or otherwise) through 2041 in a form acceptable to us and FCX, (ii) the resolution of environmental regulatory matters satisfactory to the Indonesian government, including the Ministry of Environment and Forestry issuing a decree approving the environmental compliance road map proposed by PTFI in relation to prospective mining operations at the Grasberg Mine, (iii) the completion of various other Indonesian regulatory actions and receipt of various other Indonesian regulatory approvals, including the Indonesian Tax Office approving the merger of PTFI and PTRTI, and determining the transfer of relevant assets relating to the same to be, on a tax-neutral basis, and the Indonesian State Auditor and the Indonesian Attorney General, respectively, issuing its review report and legal opinion, in respect of the transactions contemplated under the PTFI Divestment Agreement; (iv) receipt of customary approvals from international competition authorities; and (v) we and FCX having agreed on the six members of the board of commissioners and directors of PTFI, each of which will take office from the closing of the transactions under the PTFI Divestment Agreement.

The Divestment Agreement also provides the Company and FCX with the right to terminate, in certain circumstances, including if the transaction is not consummated on or before 31 December 2018, subject to a six month extension if needed to obtain approvals from Indonesian regulatory authorities and/or international competition authorities; or if the consummation of the divestment transaction would violate any non-appealable final order, decree or judgment of any governmental authority having competent jurisdiction.

PTFI Share Subscription Agreement

On 27 September 2018, the Company entered into the PTFI Share Subscription Agreement with PTFI and PTII, pursuant to which, the Company and PTII will subscribe for, and PTFI will issue to the Company and PTII, shares in PTFI, representing 20.6% and 19.4% of the outstanding ordinary shares of PTFI immediately following the completion of the PTFI Share Acquisition. Under the agreement, the Company and PTII are each required to pay US$1,802.5 million and US$1,697.5 million, respectively, for such shares in PTFI.

Closing of the transactions contemplated under the PTFI Share Subscription Agreement are subject to the satisfaction or waiver of the conditions precedent under the PTFI Divestment Agreement. The PTFI Share Subscription Agreement will automatically terminate upon the termination of the PTFI Divestment Agreement.

50. EVENTS AFTER THE REPORTING DATE (continued)

g. PTFI Divestment Agreement (continued)

PTRTI Buyout Agreement

On 28 September 2018, the Company entered into the PTRTI Buyout Agreement with Rio Tinto PTRTI sellers, pursuant to which the Company has agreed to purchase and the PTRTI sellers have agreed to sell to the Company all the outstanding shares of PTRTI (the "PTRTI Shares") for a consideration of US$3.5 billion, required to be paid in cash at the completion of such sale and purchase of shares. Under this agreement, the Company is permitted to, and the Company intend to, nominate PTFI as the purchaser of the PTRTI Shares, in which case, the Company will procure PTFI to pay the aforementioned cash consideration.

The obligations of the parties with respect to closing under the PTRTI Buyout Agreement is subject to the satisfaction or waiver of the following conditions precedent: (i) receipt by PTRTI of written approval from the MEMR for the transfer of the PTRTI Shares from the PTRTI sellers to the Company or, if the Company nominate PTFI as purchaser, to PTFI; (ii) receipt by the PTRTI sellers of a valid tax ruling or clearance issued by the Indonesian Tax Authority in a form and substance satisfactory to the PTRTI sellers; (iii) termination of intercompany agreements between PTRTI and other members of the Rio Tinto Group; (vi) satisfaction or waiver of the conditions precedent under the PTFI Divestment Agreement and PTFI Share Subscription Agreement, see "PTFI Divestment Agreement" and "PTFI Share Subscription Agreement"; and (vii) issuance of a document which sets out the environmental management and monitoring procedure as part of the environmental audit process imposed on licensed businesses and/or activities and resolution of environmental matters which could result in environmental liabilities to the Company or, if nominated by the Company as purchaser of the PTRTI Shares, PTFI's satisfaction.

Under the terms of the PTRTI Buyout Agreement, no party is entitled to rescind or terminate the PTRTI Buyout Agreement, except in the event that the conditions precedent are not satisfied or waived on or before 31 December 2018, or within six months from 31 December 2018, if such period for the fulfilment of the conditions precedent has been extended by any party to the agreement by way of notice. In addition, following the closing of the transactions under the PTRTI Buyout Agreement, the PTRTI sellers have agreed to indemnify the Company with respect to any amount of tax payable by PTRTI, to the extent that such tax arises from or relates to an event or omission at or before completion of the sale and purchase of the PTRTI Shares, or any income, profit or gain earned before the closing of the transactions contemplated under the PTRTI Buyout Agreement.

Economic interests in the Grasberg Mine

Pursuant to a shareholders agreement to be entered into between the Company, PTII, PTFI and FCX (or a subsidiary of FCX), upon completion of the PTFI Share Acquisition, it is contemplated that, between the completion of the PTFI Share Acquisition and the earlier of (i) 31 December 2022 or (ii) PTFI's cumulative production and sales of gold and copper exceeding predetermined amounts (the "Initial Period"), the Company and FCX will retain the economics of revenue and cost sharing arrangements in relation to PTFI in the same manner as though PTFI's joint venture with PTRTI was still in place. Following the Initial Period, it is intended that the economics of revenue and cost sharing arrangements in relation to PTFI will reflect the Company and FCX's respective equity interest in PTFI.

As at the date of these consolidated financial statements, management is still working to complete the conditions precedent.

PT INDONESIA ASAHAN ALUMINIUM (PERSERO) AND SUBSIDIARIES

PRO FORMA CONSOLIDATED FINANCIAL INFORMATION

AS AT AND FOR THE SIX-MONTH PERIOD ENDED 30 JUNE 2018 AND FOR THE YEAR ENDED 31 DECEMBER 2017

PT INDONESIA ASAHAN ALUMINIUM (Persero)

DIRECTORS' STATEMENT REGARDING

THE RESPONSIBILITY FOR PRO FORMA CONSOLIDATED FINANCIAL INFORMATION AS AT AND FOR THE SIX-MONTH PERIOD ENDED 30 JUNE 2018 AND FOR THE YEAR ENDED 31 DECEMBER 2017

PT INDONESIA ASAHAN ALUMINIUM (PERSERO) AND SUBSIDIARIES

On behalf of the Board of Directors, we, the undersigned:

1. Name : Budi Gunadi Sadikin
   Office address : Kuala Tanjung, Kecamatan Sei Suka, 21257 Kabupatan Batu Bara, Sumatara Utara
   Position : President Director

2. Name : Orias Petrus Moedak
   Office address : Kuala Tanjung, Kecamatan Sei Suka, 21257
   Position : Finance Director

declare that:

1. We are responsible for the preparation and presentation of the pro forma consolidated financial information of PT Indonesia Asahan Aluminium (Persero) and subsidiaries (the "Group")
2. We are responsible for compiling the pro forma financial information on the basis as outlined in Notes 1, 2 and 3;
3. All information has been fully and correctly disclosed in the Group's pro forma consolidated financial information, including management's assumptions as described in Note 3 to the pro forma combined financial information.
4. We are responsible for the Group's internal control systems.

This statement is confirmed to the best of our knowledge and belief.

Kuala Tanjung
23 October 2018

For and on behalf of the Board of Director

Budi Gunadi Sadikin
President Director

Orias Petrus Moedak
Finance Director

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INDEPENDENT PRACTITIONER'S ASSURANCE REPORT ON THE PRO FORMA CONSOLIDATED FINANCIAL INFORMATION TO THE SHAREHOLDER OF

PT INDONESIA ASAHAN ALUMINIUM (PERSERO)

Report on pro forma consolidated financial information

We have completed our assurance engagement to report on the pro forma consolidated financial information of PT Indonesia Asahan Aluminium (the "Company") and subsidiaries (together as the "Group") prepared by the management of the Company ("management"). The pro forma consolidated financial information consists of the pro forma consolidated statement of financial position as at 30 June 2018 and the pro forma consolidated statements of profit or loss for the six-month period ended 30 June 2018 and for the year ended 31 December 2017 and related notes. The applicable criteria on the basis of which management has compiled the pro forma consolidated financial information are outlined in Notes 1, 2, and 3.

The pro forma consolidated financial information has been compiled by management to illustrate impact of a transaction set out in Note 1 on the Group's consolidated financial position as at 30 June 2018 and the Group's consolidated statements of profit or loss and other comprehensive income for the six-month period ended 30 June 2018 and for the year ended 31 December 2017 as if the transaction had taken place at 1 January 2017 for the Group's pro forma consolidated statements of profit or loss and other comprehensive income and at 30 June 2018 for the Group's pro forma consolidated statement of financial position. As part of this process, information about the Group's consolidated financial position and consolidated financial performance has been extracted by management from the Group's consolidated financial statements for the six-month period ended 30 June 2018 and for the year ended 31 December 2017 in which review and audit reports have been published, respectively.

Management's responsibility for the pro forma financial information

Management is responsible for compiling the pro forma financial information on the basis as outlined in Notes 1, 2, and 3.

Practitioner's responsibilities

Our responsibility is to express an opinion about whether the pro forma consolidated financial information has been compiled, in all material respects, by management on the basis as set out in Notes 1, 2, and 3.

We conducted our engagement in accordance with the Standard on Assurance Engagements 3420, "Assurance engagements to report on the compilation of pro forma financial information included in a prospectus", issued by the Indonesian Institute of Certified Public Accountant. This standard requires that the practitioner complies with ethical requirements and plan and perform procedures to obtain reasonable assurance about whether management has compiled, in all material respects, the pro forma consolidated financial information on the basis as set out in Notes 1, 2, and 3.

For purpose of this engagement, we are not responsible for updating or reissuing any reports or opinions on any historical financial information used in compiling the pro forma consolidated financial information, nor have we, in the course of this engagement, performed an audit or review of the financial information used in compiling the pro forma consolidated financial information.

The purpose of pro forma consolidated financial information is solely to illustrate the impact of a significant event or transaction in unadjusted financial information of the entity as if the event had occurred or the transaction had been undertaken at an earlier date selected for purpose of the illustration. Accordingly, we do not provide any assurance that the actual outcome of the event or transaction would have been as presented.

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N20181023003/DC2/YSR/2018

A reasonable assurance engagement to report on whether the pro forma consolidated financial information has been compiled, in all material respects, on the basis of applicable criteria involves performing procedures to assess whether the applicable criteria used by management in the compilation of the pro forma consolidated financial information provide a reasonable basis for presenting the significant effects directly attributable to the event or transaction, and to obtain sufficient appropriate evidence about whether:

- the related pro forma adjustments give appropriate effect to those criteria; and
- the pro forma consolidated financial information reflects the proper application of those adjustments to the unadjusted financial information.

The procedures selected depend on the practitioner's judgement, having regard to the practitioner's understanding of the nature of the Group, the event or the transaction in respect of which the pro forma consolidated financial information has been compiled, and other relevant engagement circumstances.

The engagement also involves evaluating the overall presentation of the pro forma consolidated financial information.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Opinion

In our opinion, the pro forma consolidated financial information has been compiled, in all material respects, on the basis as set out in Notes 1, 2, and 3 to the pro forma consolidated financial information.

Restriction of use

Without modifying our opinion, we put attention on Notes 2 and 3 to the pro forma consolidated financial information which explain the basis of preparation. The pro forma consolidated financial information is prepared with purpose of the Company's planned acquisition as explained in Note 1 to the pro forma consolidated financial information and this report has been prepared solely for inclusion in the offering memorandum in connection with the purpose disclosed in Note 2 to the pro forma consolidated financial information. As a result, this pro forma consolidated financial information is not appropriate for any other purpose.

It should also be noted that the pro forma consolidated financial information was not prepared in connection with an offering registered with the United States Securities and Exchange Commission ("SEC") under the Securities Act and consequently is not compliant with the SEC's rules on presentation of financial information. Furthermore, our work has not been carried out in accordance with auditing or attestation standards generally accepted in the United States of America and, accordingly, should not be relied upon as if it had been carried out in accordance with those standards. As such, the United States investors should not place reliance on the report on the pro forma consolidated financial information included in the offering memorandum.

JAKARTA
23 October 2018

Yusron, S.E., Ak., CPA
License of Public Accountant No. AP. 0243

N20181023003/DC2/YSR/2018

PRO FORMA CONSOLIDATED STATEMENT OF FINANCIAL POSITION
30 JUNE 2018
(Expressed in millions of Rupiah)

	Historical 30 June 2018 PT Indonesia Asahan Aluminium (Persero) and subsidiaries [1]	Historical 30 June 2018 PT Indocopper Investama [2]	Transaction related adjustments	Pro forma 30 June 2018
ASSETS				
CURRENT ASSETS				
Cash and cash equivalents	20,874,842	520,086	2,160,600 a)	23,555,528
Time deposits	2,238,166	-	-	2,238,166
Trade receivables	6,807,132	-	-	6,807,132
Other receivables				
- Third parties	713,689	-	-	713,689
- Related parties	17,555	-	-	17,555
Inventories	8,682,327	-	-	8,682,327
Prepaid taxes	2,192,830	-	-	2,192,830
Available-for-sale financial assets	383,882	-	-	383,882
Other current assets	852,305	-	-	852,305
Assets of disposal group classified as held for sale	353,925	-	-	353,925
Total current assets	43,116,653	520,086	2,160,600	45,797,339
NON-CURRENT ASSETS				
Other receivables				
- Third parties	396,253	-	-	396,253
- Related parties	1,874,223	-	-	1,874,223
Inventories	495,038	-	-	495,038
Available-for-sale financial assets	7,255,450	6,183,315	(13,437,468) b)	1,297
Advances for investments	-	-	50,414,000 c)	50,414,000
Investment in associates	1,704,919		11,987,189 d)	13,692,108
Investment in joint ventures	2,177,422	-	-	2,177,422
Exploration and evaluation assets	673,144	-	-	673,144
Fixed assets	33,816,259	-	-	33,816,259
Investment properties	961,925	-	-	961,925
Mining properties	2,311,453	-	-	2,311,453
Goodwill	203,836	-	-	203,836
Prepaid taxes	628,929	-	-	628,929
Deferred tax assets	2,504,616	-	-	2,504,616
Other tax receivables	536,058	-	-	536,058
Other non-current assets	1,313,865	-	-	1,313,865
Total non-current assets	56,853,390	6,183,315	48,963,721	112,000,426
TOTAL ASSETS	**99,970,043**	**6,703,401**	**51,124,321**	**157,797,765**

PRO FORMA CONSOLIDATED STATEMENT OF FINANCIAL POSITION
30 JUNE 2018
(Expressed in millions of Rupiah)

	Historical 30 June 2018 PT Indonesia Asahan Aluminium (Persero) and subsidiaries [1]	Historical 30 June 2018 PT Indocopper Investama [2]	Transaction related adjustments	Pro forma 30 June 2018
LIABILITIES				
CURRENT LIABILITIES				
Trade payables	2,745,498	-	-	2,745,498
Accruals	3,185,841	-	-	3,185,841
Short-term employee benefit liabilities	730,774	-	-	730,774
Short-term bank borrowings	5,616,307	-	-	5,616,307
Taxes payable	744,976	211,722	-	956,698
Current maturities of long-term bank borrowings	488,552	-	-	488,552
Current maturities of finance lease liabilities	133,054	-	-	133,054
Current maturities of bonds payable	899,784	-	-	899,784
Current maturities of provision for environmental reclamation and remediation and mine closure	250,038	-	-	250,038
Dividend payable	1,919,750	-	-	1,919,750
Other current liabilities	441,080	-	-	441,080
Liabilities of disposal group directly associated with assets classified as held for sale	100,825	-	-	100,825
Total current liabilities	17,256,479	211,722	-	17,468,201
NON-CURRENT LIABILITIES				
Long-term bank borrowings, net of current maturities	4,075,227	-	57,616,000 [e]	61,691,227
Finance lease liabilities, net of current maturities	456,313	-	-	456,313
Bonds payable, net of current maturities	3,597,561	-	-	3,597,561
Provision for environmental reclamation and remediation and mine closure, net of current maturities	636,364	-	-	636,364
Post-employment benefits obligation	3,567,859	-	-	3,567,859
Other non-current liabilities	3,988	-	-	3,988
Total non-current liabilities	12,337,312	-	57,616,000	69,953,312
TOTAL LIABILITIES	**29,593,791**	**211,722**	**57,616,000**	**87,421,513**

PRO FORMA CONSOLIDATED STATEMENT OF FINANCIAL POSITION
30 JUNE 2018
(Expressed in millions of Rupiah)

	Historical 30 June 2018 PT Indonesia Asahan Aluminium (Persero) and subsidiaries [1]	Historical 30 June 2018 PT Indocopper Investama [2]	Transaction related adjustments	Pro forma 30 June 2018
EQUITY ATTRIBUTABLE TO OWNER OF THE PARENT				
Share capital	54,177,941	149,660	(149,660) f)	54,177,941
Additional paid-in capital	(18,199,606)	6,031,290	(6,031,290) f)	(18,199,606)
Retained earnings				
- Appropriated	601,440	-		601,440
- Unappropriated	6,667,440	310,729	(310,729) f)	6,667,440
Currency differences from translation of the Group's entity financial statements	14,323,296	-	-	14,323,296
Total equity attributable to owner of the parent	**57,570,511**	**6,491,679**	**(6,491,679)**	**57,570,511**
Non-controlling interests	12,805,741	-	-	12,805,741
TOTAL EQUITY	**70,376,252**	**6,491,679**	**(6,491,679)**	**70,376,252**
TOTAL LIABILITIES AND EQUITY	**99,970,043**	**6,703,401**	**51,124,321**	**157,797,765**

Notes:

(1) Historical financial information of PT Indonesia Asahan Aluminium (Persero) (the "Company") and subsidiaries (the "Group") was based on the Group's reviewed consolidated financial statements as at 30 June 2018.
(2) Historical financial information of PT Indocopper Investama ("PTII") was based on PTII's unaudited financial statements as at 30 June 2018. PTII's functional and reporting currency are in US Dollars ("US$") and for this pro forma consolidated financial information, the PTII financial statements have been translated using the exchange rate of US$1: IDR14,404, which was the middle exchange rate announced by Bank Indonesia at 30 June 2018.
(a) Adjustments with respect to cash received from financings from third parties amounting to IDR57,616,000 (see Note 3, paragraph 3, below), payment to Freeport-McMoran Inc. ("FCX") and International Support LLC ("International Support") for acquisition of PTII shares amounting to US$350 million or equivalent to IDR5,041,400, payment to PT Freeport Indonesia ("PTFI") for 40% of PTFI shares subscription amounting to US$3.5 billion or equivalent to IDR50,414,000.
(b) Adjustments with respect to reclassification from Available-for-sale financial assets to Investment in associates.
(c) Adjustments with respect to advances for share subscription in 40% of the share capital of PTFI (See Note 3, paragraph 5, below.) Balances in the line item "Advances for investments" will be classified as "Investment in associate" after the expiration of the Initial Period (as defined and described in Note 1, below, under the caption "Economic interests in the Grasberg Mine").
(d) Adjustments with respect to reclassification from Available-for-sale financial assets of IDR11,987,189 (net with adjustment in net assets of PTII amounting to IDR1,450,279 to reflect cash consideration).
(e) Adjustment with respect to financings from third parties (see Note 3, paragraph 3, below).
(f) Elimination adjustments.

PRO FORMA CONSOLIDATED
STATEMENTS OF PROFIT OR LOSS AND OTHER COMPREHENSIVE INCOME
FOR THE SIX-MONTH PERIOD ENDED 30 JUNE 2018 AND
FOR THE YEAR ENDED 31 DECEMBER 2017
(Expressed in millions of Rupiah)

	Historical 30 June 2018 PT Indonesia Asahan Aluminium (Persero) and subsidiaries [1]	Historical 30 June 2018 PT Indocopper Investama [2]	Transaction related adjustments	Pro forma 30 June 2018
Revenue	29,855,570	2,124,626	(2,124,626) g)	29,855,570
Cost of revenue	(21,901,542)	-	-	(21,901,542)
Gross profit	**7,954,028**	**2,124,626**	**(2,124,626)**	**7,954,028**
General and administrative expenses	(1,608,883)	(32)	-	(1,608,915)
Selling and marketing expenses	(709,575)	-	-	(709,575)
Operating profit	**5,635,570**	**2,124,594**	**(2,124,626)**	**5,635,538**
Finance income	343,349	6,514	-	349,863
Finance costs	(965,877)	-	(1,584,440) h)	(2,550,317)
Share in net (loss)/profit of associates	(64,261)	-	3,155,976 i)	3,091,715
Share in net loss of joint ventures	(49,128)	-	-	(49,128)
Other income/(expenses), net	2,347,985	(26,142)	(2,028,159) g)	293,684
Profit before income tax	**7,247,638**	**2,104,966**	**(2,581,249)**	**6,771,355**
Income tax (expenses)/benefit	(1,820,372)	(531,157)	645,312 j)	(1,706,217)
Profit for the period from continuing operations	**5,427,266**	**1,573,809**	**(1,935,937)**	**5,065,138**
Loss for the period from discontinued operations	(4,399)	-	-	(4,399)
Profit for the period	**5,422,867**	**1,573,809**	**(1,935,937)**	**5,060,739**
Other comprehensive income				
Items that will not be reclassified to profit or loss	536,994	-	-	536,994
Items that will be reclassified to profit or loss	1,581,535	-	7,272 k)	1,588,807
Other comprehensive income for the period, net of tax	**2,118,529**	**-**	**7,272**	**2,125,801**
Total comprehensive income for the period	**7,541,396**	**1,573,809**	**(1,928,665)**	**7,186,540**

PRO FORMA CONSOLIDATED
STATEMENTS OF PROFIT OR LOSS AND OTHER COMPREHENSIVE INCOME
FOR THE SIX-MONTH PERIOD ENDED 30 JUNE 2018 AND
FOR THE YEAR ENDED 31 DECEMBER 2017
(Expressed in millions of Rupiah)

	Historical 31 December 2017 PT Indonesia Asahan Aluminium (Persero) and subsidiaries [3]	Historical 31 December 2017 PT Indocopper Investama [4]	Transaction related adjustments	Pro forma 31 December 2017
Revenue	47,184,283	1,945,145	(1,945,145) g)	47,184,283
Cost of revenue	(33,276,439)	-	-	(33,276,439)
Gross profit	**13,907,844**	**1,945,145**	**(1,945,145)**	**13,907,844**
General and administrative expenses	(3,338,998)	(225)	-	(3,339,223)
Selling and marketing expenses	(1,322,579)	-	-	(1,322,579)
Operating profit	**9,246,267**	**1,944,920**	**(1,945,145)**	**9,246,042**
Finance income	629,860	691	-	630,551
Finance costs	(974,172)	-	(3,168,880) h)	(4,143,052)
Share in net (loss)/profit of associates	(196,773)	-	3,459,122 i)	3,262,349
Share in net loss of joint ventures	(157,902)	-	-	(157,902)
Other income/(expenses), net	738,759	(47)	(427,587) g)	311,125
Profit before income tax	**9,286,039**	**1,945,564**	**(2,082,490)**	**9,149,113**
Income tax expenses	(2,474,385)	(486,002)	520,623 j)	(2,439,764)
Profit for the year from continuing operations	**6,811,654**	**1,459,562**	**(1,561,867)**	**6,709,349**
Loss for the year from discontinued operations	(6,497)	-	-	(6,497)
Profit for the year	**6,805,157**	**1,459,562**	**(1,561,867)**	**6,702,852**
Other comprehensive income/(loss)				
Items that will not be reclassified to profit or loss	(757,780)	-	-	(757,780)
Items that will be reclassified to profit or loss	219,278	-	22,146 k)	241,424
Other comprehensive (loss)/income for the year, net of tax	**(538,502)**	**-**	**22,146**	**(516,356)**
Total comprehensive income for the year	**6,266,655**	**1,459,562**	**(1,539,721)**	**6,186,496**

PRO FORMA CONSOLIDATED
STATEMENTS OF PROFIT OR LOSS AND OTHER COMPREHENSIVE INCOME
FOR THE SIX-MONTH PERIOD ENDED 30 JUNE 2018 AND
FOR THE YEAR ENDED 31 DECEMBER 2017
(Expressed in millions of Rupiah)

Notes:

(1) Historical financial information of PT Indonesia Asahan Aluminium (Persero) (the "Company") and subsidiaries (the "Group") was based on the Group's reviewed consolidated financial statements for the six-month period ended 30 June 2018.
(2) Historical financial information of PT Indocopper Investama ("PTII") was based on PTII's unaudited financial statements for the year ended 30 June 2018. The PTII functional and reporting currency are in US Dollars ("US$") and for this pro forma consolidated financial information, the PTII financial statements have been translated using foreign exchange rate US$1: IDR14,404, which was the middle exchange rate announced by Bank Indonesia as at 30 June 2018.
(3) Historical financial information of the Group was based on the Group's audited consolidated financial statements for the year ended 31 December 2017.
(4) Historical financial information of PT Indocopper Investama ("PTII") was based on PTII's audited financial statements for the year ended 31 December 2017. The PTII functional and reporting currency are in US Dollars ("US$") and for this pro forma consolidated financial information, the PTII financial statements have been translated using foreign exchange rate US$1: IDR14,404, which was the middle exchange rate announced by Bank Indonesia at 30 June 2018.

(g) Adjustments to reverse the dividend income previously recognised in other income (by the Company) and revenue (by PTII) due to application of equity accounting method in investment in associates as a result of reclassification of Investment from Available-for-sale to investment in associates (see Notes (c) and (d), above).
(h) Adjustment with respect to finance costs from financings from third parties.
(i) Adjustments to record the 18.72% share in net profit of PTFI.
(j) Adjustment with respect to tax impact from the transaction related adjustments.
(k) Adjustments with respect to share in net profit of PTFI (other comprehensive income).

NOTES TO THE PRO FORMA CONSOLIDATED FINANCIAL INFORMATION AS AT AND FOR THE SIX-MONTH PERIOD ENDED 30 JUNE 2018 AND FOR THE YEAR ENDED 31 DECEMBER 2017
(Expressed in millions of Rupiah)

1. GENERAL INFORMATION AND BACKGROUND OF PLANNED TRANSACTION

PT Indonesia Asahan Aluminium (Persero) (the "Company") is a state-owned limited liability company incorporated in Indonesia under the Deed of Limited Liability Company of PT Indonesia Asahan Aluminium No. 2 dated 6 January 1976, made before Juliaan Nimrod Siregar, S.H., Notary in Jakarta, and ratified by the Minister of Law and Human Rights under Decree No. Y.A.5/12/20 dated 10 January 1976.

The Company commenced business operations in 1979 as an aluminum smelter. Concurrent with the Government of Indonesia's ("GOI") transfer of its 65.0% equity interests in PT Aneka Tambang Tbk, PT Bukit Asam Tbk and PT Timah Tbk, the GOI also transferred its 9.36% equity interests in PTFI to the Company in November 2017. Together with the Papua Provincial Government and the Mimika Regency, the Company plans to increase its stake in PTFI. To effect the planned acquisition, the Company has entered into a series of agreements as follows:

PTFI Divestment Agreement

On 27 September 2018, the Company entered into an agreement relating to the Company's acquisition of an increased equity stake in PTFI (the "PTFI Divestment Agreement") with PTFI, FCX, International Support, PTII, pursuant to which, and subject to the provisions and conditions precedent stipulated in the PTFI Divestment Agreement:

(i) the Company, PTFI and PTII will enter into the PTFI Share Subscription Agreement (refer to below description), through which the Company and PTII will subscribe for, and PTFI will issue to the Company and PTII, shares in PTFI, each representing 20.6% and 19.4% of the new ordinary shares of PTFI immediately following the completion of the PTFI Share Acquisition;

(ii) the Company, Rio Tinto International Holdings Limited ("Rio Tinto International"), Rio Tinto Nominees Limited ("Rio Tinto Nominees") and Rio Tinto Indonesian Holdings Limited ("Rio Tinto Indonesian Holding", together with Rio Tinto Nominees, the "PTRTI sellers") will enter into an agreement (the "PTRTI Buyout Agreement", refer to below description), relating to the Company or PTFI acquiring all of the outstanding shares of PTRTI;

(iii) PTFI and PTRTI will enter into a merger deed, which will effect the merger of PTRTI into PTFI; and

(iv) the Company will purchase from FCX and International Support all of their shares in PTII for a consideration of US$350,000,000, which is required to be paid in cash at the completion of the PTFI Share Acquisition.

PTFI Share Subscription Agreement

On 27 September 2018, the Company entered into the PTFI Share Subscription Agreement with PTFI and PTII, pursuant to which the Company and PTII will subscribe for, and PTFI will issue to the Company and PTII, shares in PTFI, representing 20.6% and 19.4% of the new ordinary shares of PTFI immediately following the completion of the PTFI Share Acquisition. Under the agreement, the Company and PTII are each required to pay US$1,802,500,000 and US$1,697,500,000, respectively, for such shares in PTFI.

Closing of the transactions contemplated under the PTFI Share Subscription Agreement are subject to the satisfaction or waiver of the conditions precedent under the PTFI Divestment Agreement. The PTFI Share Subscription Agreement will automatically terminate upon the termination of the PTFI Divestment Agreement.

NOTES TO THE PRO FORMA CONSOLIDATED FINANCIAL INFORMATION AS AT AND FOR THE SIX-MONTH PERIOD ENDED 30 JUNE 2018 AND FOR THE YEAR ENDED 31 DECEMBER 2017
(Expressed in millions of Rupiah)

1. GENERAL INFORMATION AND BACKGROUND OF PLANNED TRANSACTION (continued)

PTRTI Buyout Agreement

On 28 September 2018, the Company entered into the PTRTI Buyout Agreement with Rio Tinto PTRTI sellers, pursuant to which the Company has agreed to purchase and the PTRTI sellers have agreed to sell to the Company all the outstanding shares of PTRTI (the "PTRTI Shares") for a consideration of US$3,500,000,000, required to be paid in cash at the completion of such sale and purchase of shares. Under this agreement, the Company is permitted to, and the Company intend to, nominate PTFI as the purchaser of the PTRTI Shares, in which case, the Company will procure PTFI to pay the aforementioned cash consideration.

The obligations of the parties with respect to closing under the PTRTI Buyout Agreement is subject to the satisfaction or waiver of the conditions precedent as stipulated under PTRTI Buyout Agreement.

Economic interests in the Grasberg Mine

Pursuant to a shareholders agreement to be entered into between the Company, PTII, PTFI and FCX (or a subsidiary of FCX), upon completion of the PTFI Share Acquisition, it is contemplated that, between the completion of the PTFI Share Acquisition and the earlier of (i) 31 December 2022 or (ii) PTFI's cumulative production and sales of gold and copper exceeding predetermined amounts (the "Initial Period"), the Company and FCX will retain the economics of revenue and cost sharing arrangements in relation to PTFI in the same manner as though PTFI's joint venture with PTRTI was still in place.

Agreement between the GOI, Provincial Government of Papua and the Regency of Mimika

On 12 January 2018, the GOI, the Provincial Government of Papua (the "Papua Government") and the Regency of Mimika (the "Mimika Regency") entered into an agreement relating to the planned PTFI Share Acquisition and the equity interests in PTFI each entity would hold following the completion of the PTFI Share Acquisition (the "GOI, Papua Government and Mimika Regency Agreement"). The GOI, the Papua Government and the Mimika Regency are stakeholders in the Grasberg Mine, with the Government of Indonesia being the holder of the mining concession for the Grasberg Mine, and the Grasberg Mine being situated in the province of Papua and in the province's Mimika Regency.

Pursuant to the GOI, Papua Government and Mimika Regency Agreement, the GOI has agreed to procure, and the Papua Government and the Mimika Regency have agreed to subscribe for shares in an entity nominated by the GOI that would result in, the Papua Government and the Mimika Regency indirectly holding 3.0% and 7.0% of the shares of PTFI, respectively, following the completion of the PTFI Share Acquisition. The subscription price for the aforementioned shares to be paid by the Papua Government and the Mimika Regency, respectively, will be equivalent to the value of their respective indirect stakes in PTFI, calculated on the same basis the GOI, through the Company, would have paid for its shares in PTFI in the PTFI Share Acquisition.

**NOTES TO THE PRO FORMA CONSOLIDATED FINANCIAL INFORMATION
AS AT AND FOR THE SIX-MONTH PERIOD ENDED 30 JUNE 2018 AND
FOR THE YEAR ENDED 31 DECEMBER 2017**
(Expressed in millions of Rupiah)

2. BASIS OF PREPARATION OF PRO FORMA CONSOLIDATED FINANCIAL INFORMATION

The pro forma consolidated financial information was prepared and authorised by the Company's Directors on 23 October 2018 to give effect to the planned acquisition of an additional stake in PTFI as if it occurred on 1 January 2017 for the purpose of the consolidated statements of profit or loss and other comprehensive income for the six-month period ended 30 June 2018 and for the year ended 31 December 2017. For the purpose of the pro forma consolidated statement of financial position, the planned acquisition of the additional stake in PTFI was assumed to occur on 30 June 2018. The pro forma consolidated financial information were prepared for the purpose of an offering of debt securities of the Company inside and outside the United States of America, in reliance on Rule 144A and Regulation S, respectively, of the United States Securities Act of 1993, as amended.

Information about the Group's historical statements of profit or loss and other comprehensive income has been extracted by the Company's Directors from the Group's consolidated financial statements for the year ended 31 December 2017 which was prepared in accordance with Indonesian Financial Accounting Standards and was audited by KAP Tanudiredja, Wibisana, Rintis & Rekan in its audit report No. A181022004/DC2/YSR/2018 dated 22 October 2018. Meanwhile, the Group's consolidated financial statements as at and for the six-month period ended 30 June 2018 was reviewed by by KAP Tanudiredja, Wibisana, Rintis & Rekan in its review report No. N20181022003/DC2/YSR/2018 dated 22 October 2018.

Historical financial information of PTII was based on the unaudited financial statements of PTII as at and for the six-month period ended 30 June 2018 which was prepared by PTII's management in accordance with Indonesian Financial Accounting Standards for the purpose of the planned acquisition of an increased interest in PTFI by the Company as described in Note 1 and on the audited statements of profit or loss and other comprehensive income of PTII for the year ended 31 December 2017 which was audited by other independent auditors dated 16 March 2018.

Under PSAK 65, 'Consolidated financial statements', the Group controls an entity when the Group is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. The standard provides guidance in determining when control exists as facts and circumstances, such as the existence of contractual arrangements and rights held by other parties, will affect the analysis in assessing control. Consolidation is required if the Group controls the entity.

Under PSAK 15, 'Investments in associates and joint ventures', interests in associates are accounted for using the equity method of accounting. An associate is an entity in which the Group has significant influence. Significant influence is the power to participate in the financial and operating policy decision of an entity, but not to control those policies. Under the equity method, the investment in associates related to PTFI is initially recognised at cost and adjusted thereafter to recognise the Group's share of the post-acquisition profits or losses of the investee in profit or loss, and its share of movements in other comprehensive income of the investee. For acquisition of associates in stages, the Group accumulates the cost of all purchases (including transaction costs), to determine the amount of the investment.

The pro forma consolidated financial information only presents the consolidated statement of financial position and the consolidated statements of profit or loss and other comprehensive income considering management believes that the substantial impact of transaction as explained in Note 1 are limited to the accounts within the consolidated statement of financial position and statements of profit or loss and other comprehensive income.

**NOTES TO THE PRO FORMA CONSOLIDATED FINANCIAL INFORMATION
AS AT AND FOR THE SIX-MONTH PERIOD ENDED 30 JUNE 2018 AND
FOR THE YEAR ENDED 31 DECEMBER 2017**
(Expressed in millions of Rupiah)

3. SIGNIFICANT ASSUMPTIONS USED AS THE BASIS FOR THE PRO FORMA ADJUSTMENTS

The pro forma consolidated financial information is prepared based on a number of good faith assumptions and estimates made by management and currently available information, and is provided for illustrative purposes only. Accordingly, it is not necessarily indicative of the results of operations and financial position that would have been achieved had the proposed acquisition of an additional stake in PTFI been consummated on the dates indicated, nor is it necessarily indicative of the future operating results of the consolidated Group.

The following are significant assumptions applied in the preparation of the pro forma consolidated financial information:

1. Before acquiring an additional stake in PTFI, the Company and PTII each has 9.36% ownership in PTFI shares. The economic ownership is similar with the share ownership. The share ownership of the Company and PTII will be diluted to 5.62% (i.e. 9.36% multiply by the 60% effective ownership in PTFI from previously issued shares) each following their subscription to PTFI's issuance of new shares (see PTFI Shares Subscription Agreement).

2. Management assumed that the conditions precedent stipulated in the PTFI Divestment Agreement have been satisfied as at 1 January 2017 for the purpose of preparation pro forma consolidated statements of profit or loss and other comperehensive income for the six-month period ended 30 June 2018 and for the year ended 31 December 2017 and as at 30 June 2018 for pro forma consolidated statement of financial position ("Completion of the PTFI Share Acquisition").

3. For the purpose of the presentation of the pro forma consolidated financial information, management assumed that the financing for the acquisition of an additional stake in PTFI is fulfilled by financings from third parties, in the form of loans and/or bonds. The period of the financings is more than one year. The initial value of the financings is considered to approximate its fair value as the financings bear interest. Management assumed that financings from third parties amounting to US$4,000,000,000 with an assumed blended rate of 5.5% per annum is received at the Completion of the PTFI Share Acquisition. Management assumed that there is no transaction costs (other than financing costs) for this financing.

   Management also assumed that at the Completion of the PTFI Share Acquisition, the Company provided loan to PTII amounting to US$1,697,500,000 for the purpose of acquiring the 19.4% of PTFI's new shares. The loan of US$1,697,500,000 provided to PTII has been eliminated in this pro forma consolidated financial information as PTII is assumed to be a consolidated subsidiary of the Company based on the transaction described in 4, below.

4. Management assumed that at the Completion of the PTFI Share Acquisition, the Company has paid an amount of US$350,000,000 to FCX and International Support in respect of the sale and purchase of the 100% of PTII shares and the consideration paid reflects the fair value of the net asset acquired. Therefore, no gain from a bargain purchase is recorded in this pro-forma consolidated financial information.

**NOTES TO THE PRO FORMA CONSOLIDATED FINANCIAL INFORMATION
AS AT AND FOR THE SIX-MONTH PERIOD ENDED 30 JUNE 2018 AND
FOR THE YEAR ENDED 31 DECEMBER 2017**
(Expressed in millions of Rupiah)

3. SIGNIFICANT ASSUMPTIONS USED AS THE BASIS FOR THE PRO FORMA ADJUSTMENTS (continued)

5. Management assumed that at the Completion of the PTFI Share Acquisition, the Company and PTII subscribe 20.6% and 19.4% of the PTFI's newly issued shares with subscription price of US$1,802,500,000 and US$1,697,500,000, respectively.

   Pursuant to a shareholders agreement to be entered into between the Company, PTII, PTFI and FCX (or a subsidiary of FCX), it is agreed that PTFI shall make payment of dividends directly to the holders of the PTFI shares before the Company and PTII acquire an additional stake in PTFI. Therefore, the Company effectively owns 18.72% of economic ownership in PTFI (through existing ownership and through ownership in PTII). Following the acquisition of an additional stake in PTFI, management assumed that at the Completion of the PTFI Share Acquisition, the Company and PTII have significant influence through representation of the Board of Directors and Commisioners and participation in the policy making process. Under PSAK 15 "Investment in associates and joint ventures", despite only holding less than 20%, the existence of respresentation of the Board of Directors and Board of Commisioners and participation in the policy making process are evidences of significant influence and therefore equity accounting applies. Meanwhile, the 40% share ownership in PTFI has no economic ownership and does not constitute control and it is recorded as "Advances for investments" up to the expiration of the Initial Period. Subsequent to the Initial Period, balances in the line item "Advances for investments" will be reclassified to "Investment in associates".

6. For the purpose of preparation of pro forma statements of profit or loss and other comprehensive income, management assumed that the transfer of 9.36% shares on PTFI from GOI happens within the same day on 1 January 2017.

7. The pro forma consolidated financial information did not include the following:

   - Impact of the transactions under the PTRTI Buyout Agreement which has not yet been finalised at the date of this report.
   - Impact of the transactions under Agreement between the GOI, Provincial Government of Papua and the Regency of Mimika which has not yet been finalised at the date of this report.
   - Contingent liabilities with respect to environmental provision and others as no detail quantification is available.
   - Future commitments and indemnification as a result of the acquisition of an additional stake in PTFI as this will be subject to significant forecast and estimate.
   - Estimated fees and expenses associated with this acquisition process, including underwriting fees, advisory fees and other transaction costs and professional fees.

PT FREEPORT INDONESIA AND SUBSIDIARIES

Unaudited interim condensed consolidated financial statements
as of June 30, 2018 and for the six months ended June 30, 2018 and 2017
with report on review of interim financial information
(amounts in United States dollars)

PT FREEPORT INDONESIA AND SUBSIDIARIES
CONSOLIDATED FINANCIAL STATEMENTS
AS OF JUNE 30, 2018 AND FOR THE SIX MONTHS ENDED JUNE 30, 2018 AND 2017
WITH REPORT ON REVIEW OF INTERIM FINANCIAL INFORMATION

Table of Contents

	Page
Report on Review of Interim Financial Information	
Interim Condensed Consolidated Statement of Financial Position	1-2
Interim Condensed Consolidated Statement of Profit or Loss and Other Comprehensive Income	3
Interim Condensed Consolidated Statement of Changes in Equity	4
Interim Condensed Consolidated Statement of Cash Flows	5
Notes to Interim Condensed Consolidated Financial Statements	6-14

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Report on Review of Interim Financial Information

Report No. RPC-8053/PSS/2018

The Shareholders and the Boards of Commissioners and Directors
PT Freeport Indonesia

Introduction

We have reviewed the accompanying interim condensed consolidated financial statements of PT Freeport Indonesia (the "Company") and its subsidiaries, which comprise the interim condensed consolidated statement of financial position as of June 30, 2018, and the interim condensed consolidated statements of profit or loss and other comprehensive income, changes in equity, and cash flows for the six-month periods ended June 30, 2018 and 2017, and a summary of significant accounting policies and other explanatory information. Management is responsible for the preparation and fair presentation of these interim condensed consolidated financial statements in accordance with Indonesian Statement of Financial Accounting Standards 3, "Interim Financial Statements". Our responsibility is to express a conclusion on these interim condensed consolidated financial statements based on our reviews.

Scope of review

We conducted our reviews in accordance with Standard on Review Engagements 2410, "Review of Financial Information Performed by the Independent Auditor of the Entity", established by the Indonesian Institute of Certified Public Accountants. A review of interim financial information consists of making inquiries, primarily of persons responsible for financial and accounting matters, and applying analytical and other review procedures. A review is substantially less in scope than an audit conducted in accordance with Standards on Auditing established by the Indonesian Institute of Certified Public Accountants, and consequently, does not enable us to obtain assurance that we would become aware of all significant matters that might be identified in an audit. Accordingly, we do not express an audit opinion.

Conclusion

Based on our reviews, nothing has come to our attention that causes us to believe that the accompanying interim condensed consolidated financial statements do not present fairly, in all material respects, the consolidated financial position of PT Freeport Indonesia and its subsidiaries as of June 30, 2018, and their consolidated financial performance and cash flows for the six-month periods ended June 30, 2018 and 2017, in accordance with Indonesian Statement of Financial Accounting Standards 3, "Interim Financial Statements".

Report on Review of Financial Information (continued)

Report No. RPC-8053/PSS/2018 (continued)

Other matter

This report is prepared solely for inclusion in the offering document in connection with the proposed offering of the debt securities of PT Indonesia Asahan Aluminium (Persero) (the investor of the Company) in the United States of America and outside of the United States of America in reliance on Rule 144A and Regulation S, respectively, under the United States Securities Act of 1933, and is not intended to be, and should not be, used for any other purposes.

KAP Purwantono, Sungkoro & Surja

Feniwati Chendana, CPA
Public Accountant Registration No. AP.0694

October 4, 2018

PT FREEPORT INDONESIA AND SUBSIDIARIES
INTERIM CONDENSED CONSOLIDATED STATEMENT OF FINANCIAL POSITION
AS OF JUNE 30, 2018
(Expressed in thousand United States dollars)

	Notes	June 30, 2018 Unaudited US$	December 31, 2017 Audited US$
ASSETS			
Current assets:			
Cash and cash equivalents		87,919	104,473
Restricted cash		118,633	51,496
Trade receivables			
Third parties		206,602	387,834
Related parties		377,980	307,815
Other receivables			
Third parties		26,530	16,595
Related parties		57,199	46,073
Inventories, net of allowance for obsolescence of US$23,934 as of June 30, 2018, and US$26,732 as of December 31, 2017		803,916	758,015
Prepaid taxes		68,321	178,690
Prepaid expenses and other		19,091	22,792
Total current assets		1,766,191	1,873,783
Non-current assets:			
Investment in PT Smelting - associated company		44,257	61,121
Property, plant and equipment, net of accumulated depreciation of US$4,759,486 as of June 30, 2018, and US$4,384,281 as of December 31, 2017	3	5,184,811	6,003,144
Exploration and evaluation assets		97,956	97,682
Mine properties, net of accumulated amortization of US$1,021,542 as of June 30, 2018, and US$998,318 as of December 31, 2017	3	2,670,844	1,877,571
Deferred stripping costs, net		21,496	59,641
Long-term notes and accounts receivable			
Third parties		557,396	529,549
Related parties		4,684	4,827
Other assets		145,133	154,359
Total non-current assets		8,726,577	8,787,894
Total assets		10,492,768	10,661,677

The accompanying notes form an integral part of these interim condensed consolidated financial statements.

	Notes	June 30, 2018 Unaudited US$	December 31, 2017 Audited US$
LIABILITIES AND EQUITY			
Current liabilities:			
Trade payables			
Third parties		286,215	214,023
Related parties		4,191	6,669
Accrued liabilities			
Third parties		259,095	176,681
Related parties		105,076	96,691
Taxes payable		556,268	421,230
Unearned customer receipts			
Third parties		19,982	78,125
Related parties		959	-
Royalties payable		72,649	66,246
Current portion of asset retirement obligations		120,698	90,596
Total current liabilities		1,425,133	1,150,261
Non-current liabilities:			
Deferred income taxes		1,917,559	1,897,319
Asset retirement obligations		1,146,492	1,201,884
Provision for employee benefits		22,520	20,541
Other non-current liabilities		78,436	86,014
Total non-current liabilities		3,165,007	3,205,758
Total liabilities		4,590,140	4,356,019
Equity:			
Share capital, US$100 par value (full amount) for all periods; 300,000 shares (full amount) authorized for all periods; 227,490 shares (full amount) issued and fully paid for all periods		22,749	22,749
Additional paid in capital		316,709	317,496
Retained earnings		5,606,219	6,011,159
Remeasurement losses on defined benefit plans		(43,049)	(45,746)
Net equity		5,902,628	6,305,658
Total liabilities and equity		10,492,768	10,661,677

The accompanying notes form an integral part of these interim condensed consolidated financial statements.

PT FREEPORT INDONESIA AND SUBSIDIARIES
INTERIM CONDENSED CONSOLIDATED STATEMENT OF PROFIT OR LOSS AND OTHER COMPREHENSIVE INCOME
FOR THE SIX MONTHS ENDED JUNE 30, 2018 AND 2017
(Expressed in thousand United States dollars)

	Notes	Six Months Ended June 30, 2018	Six Months Ended June 30, 2017
		Unaudited	
		US$	US$
Net revenues	2c,10	3,213,081	1,598,736
Cost of sales		1,350,415	1,041,557
Gross profit		1,862,666	557,179
Expenses:			
General and administrative expenses		66,313	59,792
Selling and marketing expenses		1,084	934
Other expense (income), net		11,970	(4,738)
Operating profit		1,783,299	501,191
Interest income		29,274	2,382
Equity in associated company's net earnings		746	2,849
Profit before income tax expense		1,813,319	506,422
Income tax expense			
Current		(618,901)	(134,864)
Deferred		(23,990)	(39,293)
Net profit		1,170,428	332,265
Other comprehensive income:			
Other comprehensive income not to be reclassified to profit or loss in subsequent periods			
Remeasurement gains on pension plans		53	14,993
Tax recognized		-	(5,232)
Foreign exchange impact		2,644	(467)
Net other comprehensive income not to be reclassified to profit or loss in subsequent periods		2,697	9,294
Total comprehensive income attributable to stockholders		1,173,125	341,559
Basic earnings per share attributable to stockholders (full amount)		5,144.97	1,460.57
Average shares outstanding (full amount)		227,490	227,490
Dividends declared and paid per share of common stock (full amount)		6,925.00	-

The accompanying notes form an integral part of these interim condensed consolidated financial statements.

PT FREEPORT INDONESIA AND SUBSIDIARIES
INTERIM CONDENSED CONSOLIDATED STATEMENT OF CHANGES IN EQUITY
FOR THE SIX MONTHS ENDED JUNE 30, 2018 AND 2017
(Expressed in thousand United States dollars)

	Notes	Issued and Fully Paid Share Capital	Additional Paid-In Capital	Retained Earnings	Remeasurement losses on pension plans	Equity
				Unaudited		
		US$	US$	US$	US$	US$
Balance at December 31, 2016		**22,749**	**316,373**	**6,170,593**	**(53,959)**	**6,455,756**
Net profit		-	-	332,265	-	332,265
Remeasurement gains on pension plans		-	-	-	14,993	14,993
Tax recognized		-	-	-	(5,232)	(5,232)
Foreign exchange impact		-	-	-	(467)	(467)
Distributions for exercised/vested parent company (FCX) equity awards to employees		-	(1,728)	-	-	(1,728)
Amortization of parent company (FCX) equity awards to employees		-	1,672	-	-	1,672
Balance at June 30, 2017		**22,749**	**316,317**	**6,502,858**	**(44,665)**	**6,797,259**
Balance at December 31, 2017		**22,749**	**317,496**	**6,011,159**	**(45,746)**	**6,305,658**
Net profit		-	-	1,170,428	-	1,170,428
Dividends declared and paid	9	-	-	(1,575,368)	-	(1,575,368)
Remeasurement gains on pension plans		-	-	-	53	53
Foreign exchange impact		-	-	-	2,644	2,644
Distributions for exercised/vested parent company (FCX) equity awards to employees		-	(3,346)	-	-	(3,346)
Amortization of parent company (FCX) equity awards to employees		-	2,559	-	-	2,559
Balance at June 30, 2018		**22,749**	**316,709**	**5,606,219**	**(43,049)**	**5,902,628**

The accompanying notes form an integral part of these interim condensed consolidated financial statements.

PT FREEPORT INDONESIA AND SUBSIDIARIES
INTERIM CONDENSED CONSOLIDATED STATEMENT OF CASH FLOWS
FOR THE SIX MONTHS ENDED JUNE 30, 2018 AND 2017
(Expressed in thousand United States dollars)

	Notes	Six Months Ended June 30, 2018	Six Months Ended June 30, 2017
		Unaudited	
		US$	US$
Cash flow from operating activities:			
Receipts from sales to third party customers		2,461,830	984,445
Receipts from sales to related parties		1,365,061	940,787
Other cash receipts from third parties for operational funding		435	2,073
Other cash receipts from related parties for operational funding		-	741
Cash paid to or on the behalf of joint venture partner, net of receipts		(97,302)	(1,370)
Cash paid to third parties as sales customer settlement		(46,923)	(21,775)
Cash paid to related parties as sales customer settlement		-	(25)
Cash paid for asset retirement obligation costs		(30,422)	(21,171)
Cash paid for materials, supplies, contract services and other		(609,783)	(552,988)
Cash paid for salaries, benefits and contract labor		(204,974)	(244,993)
Cash paid for restructuring costs		(3,212)	(101,495)
Cash paid to related parties for management and technical services		(78,935)	(68,978)
Cash paid to parent company (FCX) for equity awards		(19,584)	(9,478)
Cash paid for royalties		(142,627)	(64,215)
Cash paid for export duties		(113,950)	(43,484)
Cash paid to partnership fund		(34,377)	(16,811)
Cash paid for income taxes, net of refunds and receipt from refunds, net of payments		(460,546)	73,056
Net cash provided by operating activities		1,984,691	854,319
Cash flow from investing activities:			
Capital expenditures for property, plant and equipment additions		(391,695)	(396,196)
Capital expenditures for exploration and evaluation assets and mine properties		(13,923)	(8,703)
Cash proceeds from asset sales		3,144	11,056
Cash outflow for restricted cash		(18,500)	(6,133)
Other investing, net		137	(867)
Net cash used in investing activities		(420,837)	(400,843)
Cash flow from financing activities:			
Net repayment of parent company (FCX) loan		-	(88,000)
Repayments of finance lease obligation		-	(11,109)
Common dividends paid		(1,575,368)	-
Distributions for exercised/vested parent company (FCX) equity awards to employees		(3,347)	(1,728)
Other financing costs		(1,693)	-
Net cash used in financing activities		(1,580,408)	(100,837)
Net (decrease) increase in cash and cash equivalents		(16,554)	352,639
Cash and cash equivalents at beginning of year		104,473	6,854
Cash and cash equivalents at end of period		87,919	359,493

The accompanying notes form an integral part of these interim condensed consolidated financial statements.

1. GENERAL

The management of PT Freeport Indonesia and its subsidiaries (the Company) is responsible for the preparation of the interim condensed consolidated financial statements for the six months ended June 30, 2018, that were authorized for issue by the management of the Company on October 3, 2018.

The Company is a limited liability company organized under the laws of the Republic of Indonesia. The Company's principal office is located at Plaza 89, 5th Floor, Jl. HR. Rasuna Said Kav. X-7 No. 6, Jakarta, Indonesia, with its primary operations office at Office Building I, Jl. Mandala Raya Selatan No. 1, Kuala Kencana, Timika, Indonesia.

Production, Sales and Average Realized Prices (unaudited)

	Six Months Ended June 30,	
	2018	2017
Operating Data, Net of Rio Tinto's Joint Venture Interest		
Copper (millions of recoverable pounds)		
Production	658	354
Sales	635	372
Average realized price per pound	$ 3.07	$ 2.64
Gold (thousands of recoverable ounces)		
Production	1,335	580
Sales	1,274	604
Average realized price per ounce	$ 1,290.58	$ 1,242.31
Silver (thousands of recoverable ounces)		
Production	2,354	1,205
Sales	2,281	1,255
Average realized price per ounce	$ 15.93	$ 16.66
100% Operating Data		
Copper (millions of recoverable pounds)		
Production	693	393
Sales	667	411
Gold (thousands of recoverable ounces)		
Production	1,489	588
Sales	1,417	613
Silver (thousands of recoverable ounces)		
Production	2,354	1,205
Sales	2,282	1,255

2. BASIS OF PREPARATION AND CHANGES TO THE COMPANY'S ACCOUNTING POLICIES

a. Basis of Preparation of the Interim Condensed Consolidated Financial Statements

The interim condensed consolidated financial statements for the six months ended June 30, 2018, have been prepared in accordance with Indonesian Statement of Financial Accounting Standards 3, "Interim Financial Statements" (PSAK 3), issued by the Indonesian Financial Accounting Standards Board (DSAK).

The interim condensed consolidated financial statements do not include all the information and disclosures required in the annual financial statements. Therefore, this information should be read in conjunction with the Company's audited annual consolidated financial statements as of and for the year ended December 31, 2017.

The subsidiaries' financial statements are prepared for the same reporting period as the Company, using consistent accounting policies.

The rates of exchange used for one US$ for the most significant currencies used by the Company other than US$ were as follows (full amount):

		June 30,	
	Source	2018	2017
Rupiah (Rp) (Rp/$)	Bank Indonesia	14,332	13,252
Australian dollar (AUD/$)	Bank of America	1.35	1.30

b. Purpose of Preparation and Issuance of the Interim Condensed Consolidated Financial Statements

These interim condensed consolidated financial statements have been prepared solely for inclusion in the offering document in connection with the proposed offering of the debt securities of PT Indonesia Asahan Aluminium (Persero) (PT Inalum) in the United States of America and outside of the United States of America in reliance on Rule 144A and Regulation S, respectively, under the United States Securities Act of 1933.

c. Changes to PSAKs

The adoption of the new standards, amendments and interpretations issued and effective for the financial year beginning January 1, 2018, did not have a material impact to the interim condensed consolidated financial statements of the Company, and are as follows:

- Amendments to PSAK No. 2, "Statement of Cash Flows," from the disclosures initiative, were adopted from amendments to International Accounting Standards (IAS) No. 7. These amendments require entities to provide disclosures that enable the financial statements users to evaluate the changes in liabilities arising from financing activities, including changes from cash flows and non-cash transactions.
- PSAK No. 15 (2017 Improvement), "Investments in Associates and Joint Ventures," was adopted from amendements to IAS No. 28. This improvement clarifies that at initial recognition an entity may elect to measure its investment in an investee at fair value on an investment-by-investment basis.
- Amendments to PSAK No. 46, "Income Taxes," primarily associated with the recognition of deferred tax assets for unrealized losses, were adopted from amendments to IAS No. 12. These amendments clarify that in determining whether sufficient taxable income will be available so that deductible temporary differences can be utilized, estimated probable future taxable income may include the recovery of some of an entity's assets for more than their carrying amount if there is sufficient evidence that it is probable that the entity will achieve this.
- PSAK No. 72, "Revenue from Contracts with Customers," was adopted from International Financial Reporting Standards (IFRS) No. 15. The standard establishes a five step revenue recognition model, which replaces most existing revenue guidance.

2. BASIS OF PREPARATION AND CHANGES TO THE COMPANY'S ACCOUNTING POLICIES (continued)

c. Changes to PSAKs (continued)

Revenue Recognition

The Company early adopted PSAK No. 72 effective January 1, 2018, under the modified retrospective approach applied to contracts that remain in force at the adoption date. The adoption of this standard did not result in any financial statement impacts or changes to the Company's revenue recognition policies or processes as revenue is primarily derived from arrangements in which the transfer of control coincides with the fulfillment of performance obligations (refer to Note 2 of the Company's audited annual consolidated financial statements as of and for the year ended December 31, 2017, for disclosure of the Company's revenue recognition policy).

The Company recognizes revenue for all of its products upon transfer of control in an amount that reflects the consideration it expects to receive in exchange for those products. Transfer of control is in accordance with the terms of customer contracts, which is upon shipment of the product. While payment terms vary by contract, terms generally include payment to be made within 30 days, but not longer than 60 days. The Company's concentrate sales contracts also provide for provisional pricing, which is accounted for as an embedded derivative (refer to Note 8 for further discussion). For provisionally priced sales, 90 percent to 100 percent of the provisional payment is made upon shipment or within 20 days, and final balances are settled in a contractually specified future month (generally the first, second or third month after the month of arrival at the customer's facility) based on quoted monthly average copper settlement prices on the London Metal Exchange (LME) and quoted monthly average London Bullion Market Association (LBMA) gold settlement prices. The Company's product revenues are also recorded net of treatment charges, royalties and export duties. Refer to Note 9 for a summary of revenue by product type.

3. PROPERTY, PLANT AND EQUIPMENT, NET AND MINE PROPERTIES

During the first six months of 2018, additions to property, plant and equipment totaled US$395.2 million (primarily for underground development), which were offset by transfers to mine properties totaling US$804.2 million, and depreciation and amortization expense totaling US$406.4 million.

During the first six months of 2018, additions to mine properties totaled US$817.9 million (primarily because of transfers from property, plant and equipment for assets placed in service), partially offset by depreciation and amortization expense totaling US$23.8 million.

4. LONG-TERM DEBT

Revolving Credit Facility

In April 2018, Freeport-McMoRan Inc. (FCX, the Company's ultimate parent), the Company and Freeport-McMoRan Oil & Gas LLC (FM O&G LLC, a wholly owned subsidiary of FCX) entered into a new 3.5 billion United States dollars (US$), five-year, unsecured revolving credit facility, which replaced the prior revolving credit facility (scheduled to mature on May 31, 2019). The new revolving credit facility is available until April 20, 2023, with US$500 million available to the Company in the form of borrowings or letters of credit, and has a substantially similar structure and terms as the prior revolving credit facility. Interest on loans made under the new revolving credit facility will, at the option of FCX, be determined based on the adjusted London Interbank Offered rate or the alternate base rate (each as defined in the new revolving credit facility) plus a spread to be determined by reference to FCX's credit ratings. The new revolving credit facility also contains financial ratios governing maximum total leverage and minimum interest expense coverage.

At June 30, 2018, there were no borrowings and US$12.7 million of letters of credit outstanding under the revolving credit facility, and the Company had US$500 million available to it.

5. TAXATION

There were no significant updates to previously reported Indonesia tax matters included in Note 19 of Company's audited annual consolidated financial statements for the year ended December 31, 2017, other than the matter below.

The Company has received assessments from the local regional tax authority in Papua, Indonesia, for additional taxes and penalties related to surface water taxes for the period from January 2011 through June 2018. The Company has filed or will file appeals of these assessments with the Indonesia Tax Court. During the first half of 2018, the Indonesia Tax Court ruled partially in favor of the Company with respect to assessments for the period January 2016 through April 2016 by reducing these assessments that amounted to US$20.1 million, including penalties, to US$12.0 million, including penalties (based on the exchange rate at June 30, 2018), or an approximate 40 percent reduction. Hearings in the Indonesia Tax Court related to assessments for the period from May 2016 through April 2017 have concluded with no decisions issued.

During 2017, the Company filed reconsideration request petitions to the Indonesia Supreme Court with respect to assessments for the period from January 2011 through December 2015; and in second-quarter 2018, filed reconsideration request petitions with respect to the Indonesia Tax Court decisions related to the assessments for the period from January 2016 through April 2016. In second-quarter 2018, the Indonesia Supreme Court issued favorable decisions relating to surface water tax assessments of US$175.5 million (based on the exchange rate at June 30, 2018) for the period January 2011 through July 2015. The Indonesia Supreme Court ruling concluded that the Company and the Indonesian government are bound by the Company's Contract of Work (COW), which is lex specialis, and prevails as the law for the parties to the COW that should be carried out in good faith.

The aggregate amount of assessments received for July 2018 and August 2018 was an additional US$5.1 million (based on the exchange rate at August 31, 2018). As a result, the Company estimates the total amount of the assessments, including penalties, (based on the exchange rate at August 31, 2018) for the period from August 2015 through August 2018 totals US$175.7 million, including US$87.8 million in penalties. As of June 30, 2018, no charges have been recorded for these assessments because the Company believes its COW exempts it from these payments, and the Company has not paid and does not intend to pay these assessments.

6. RESTRUCTURING CHARGES

As a result of the first-quarter 2017 regulatory restrictions and uncertainties regarding long-term investment stability, the Company took actions to adjust its cost structure, reduce its workforce and slow investments in its underground development projects and new smelter. These actions included workforce reductions through furlough and voluntary retirement programs. Following the furlough and voluntary retirement programs, a significant number of employees and contractors elected to participate in an illegal strike action beginning in May 2017, and were subsequently deemed to have voluntarily resigned under existing Indonesian laws and regulations. As a result, the Company recorded charges for the first six months of 2017 to cost of sales of US$98.0 million, and selling, general and administrative costs of US$5.8 million for employee severance and related costs, and a pension settlement gain of US$61.4 million included in cost of sales.

7. COMMITMENTS AND CONTINGENCIES

The following is the latest information related to the status of environmental matters and the Company's COW (refer to Note 23 of the Company's audited annual consolidated financial statements as of and for the year ended December 31, 2017, for further discussion).

7. COMMITMENTS AND CONTINGENCIES (continued)

Environmental Matters

In October 2017, Indonesia's Ministry of Environment and Forestry (the Ministry) notified the Company of administrative sanctions related to certain activities the Ministry indicated are not reflected in its environmental permit. The Ministry also notified the Company that certain operational activities were inconsistent with factors set forth in its environmental permitting studies and that additional monitoring and improvements need to be undertaken related to air quality, water drainage, treatment and handling of certain wastes, and tailings management. The Company has been engaged in a process to update its permits through submissions and dialogue with the Ministry that began in late 2014, and the Company believes that it has submitted the required documentation to update such permits. In April 2018, the Ministry issued decrees imposing unattainable environmental standards related to the Company's controlled riverine tailings management system that must be complied with by October 2018. The decrees, which the Company believes are contrary to the Indonesian government's obligations under its COW, conflict with the Company's approved environmental management programs and existing environmental permits. If these unattainable environmental standards are not modified or delayed, the Company could be adversely affected, including possible shutdown of its operations. The Company is currently engaged in constructive discussions with the Ministry in working toward a resolution of these issues.

Regulatory Matters

The Company and the Indonesian government have been engaged in negotiation and documentation of a special mining license (IUPK) and accompanying documentation for assurances on legal and fiscal terms to provide the Company with long-term mining rights through 2041. In addition, the IUPK would provide that the Company construct a smelter within five years of reaching definitive agreements and include agreement for the divestment of 51 percent of the project area interests to Indonesian participants at fair market value.

In late 2017, the Indonesian government (including the regional government of Papua Province and Mimika Regency) and PT Inalum, a state-owned enterprise, which leads the Indonesian government's consortium of investors, formed a special purpose company to acquire Grasberg project area interests. PT Inalum is wholly owned by the Indonesian government and currently holds 9.36 percent of the Company's outstanding common stock.

In July 2018, FCX and the Company entered into a Heads of Agreement with PT Inalum and the Company's joint venture partner Rio Tinto plc (Rio Tinto). Under the terms of the non-binding agreement, PT Inalum would acquire for aggregate cash consideration of US$3.85 billion all of Rio Tinto's interests associated with its joint venture with the Company (Joint Venture) and all of FCX's interests in PT Indocopper Investama, which owns 9.36 percent of the Company.

In September 2018, FCX and the Company entered into a Divestment Agreement on previously agreed economic terms with PT Inalum in connection with PT Inalum's acquisition of shares of the Company. Under the terms of the Divestment Agreement, Rio Tinto's interest will be merged into the Company concurrent with PT Inalum's acquisition in exchange for a 40 percent share ownership in the Company. The arrangements provide for FCX and existing Company shareholders to retain the economics of the revenue and cost sharing arrangements under the Joint Venture. Following completion of the transactions, the Company will have an expanded asset base to include the Rio Tinto interests and PT Inalum's share ownership will be 51.2 percent of the Company (subject to a dividend assignment mechanism to replicate the Joint Venture economics), and FCX's ownership will be 48.8 percent. FCX would continue to manage the Company's operations.

At closing, Rio Tinto would receive US$3.5 billion and FCX would receive US$350 million in cash proceeds from PT Inalum.

The transaction, which is expected to close by the first quarter of 2019, is subject to certain conditions, including the extension and stability of the Company's long-term mining rights through 2041 in a form acceptable to FCX and PT Inalum; resolution of environmental regulatory matters pending before the Ministry satisfactory to the Indonesian government, FCX and PT Inalum; various other Indonesian regulatory actions and approvals; and customary approvals from international competition authorities. The terms of these agreements will be subject to approval by the FCX Board of Directors, and will require modification or revocation of current regulations and the implementation of new regulations by the Indonesian government.

7. COMMITMENTS AND CONTINGENCIES (continued)

Regulatory Matters (continued)

The Company's export license is effective through February 15, 2019. In September 2018, the Company's temporary IUPK was extended to October 31, 2018, and the Company will continue to seek extensions to its temporary IUPK until definitive agreements are complete. On February 28, 2018, PT Smelting (the Company's 25 percent-owned smelter and refinery in Indonesia) received an extension of its anode slimes export license through February 26, 2019.

The Company cannot predict whether it will be successful in reaching satisfactory definitive agreements on the terms of its long-term mining rights. Until definitive agreements are reached, the Company has reserved all rights under its COW, including pursuing arbitration under the dispute resolution procedures.

Capital Expenditures and Other Commitments

The Company has aggregate commitments for capital expenditures and purchases of materials and supplies to be used in its operations during the second half of 2018 totaling US$369.3 million as of June 30, 2018.

Restricted Cash

As of June 30, 2018, the Company had US$118.6 million of time deposits that were legally restricted in connection with (a) mine closure (US$89.0 million), (b) export duties (US$18.4 million) and (c) the Company's GOI-required reclamation costs (US$11.2 million) for years 2006 through 2018 that have not yet been incurred.

8. FINANCIAL RISH MANAGEMENT OBJECTIVES AND POLICIES, AND FINANCIAL AND DERIVATIVE INSTRUMENTS

Risk Concentrations

Substantially all of the Company's assets are located in Indonesia. Over the last several years, the Indonesian economy posted economic gains and reported reduced inflation rates. Indonesia continues to face political, economic and social uncertainties, including the potential of terrorist attacks and ethnic and religious strife, as well as a low-level separatist movement in Papua province.

Market Risk

The Company's use of financial instruments to manage market risks is conducted by designated personnel in accordance with approved policies, with management oversight. The Company does not purchase, hold or sell derivative financial instruments unless there is an existing asset or obligation or it anticipates a future activity that is likely to occur and will result in exposure to market risks that the Company intends to offset or mitigate. The Company does not enter into any derivative instruments for speculative purposes, but has entered into derivative instruments in limited instances to achieve specific objectives. These objectives principally relate to managing commodity price risk. The fair values of the Company's derivative instruments are based on widely published market closing prices. At June 30, 2018, and December 31, 2017, the Company's only outstanding derivative instruments were its embedded derivatives (see following discussion).

Commodity Price Risk

The Company's concentrate sales contracts generally provide for provisional pricing at the time of shipment with final pricing determined in a future period based on market prices. These contract terms create embedded derivatives that must be bifurcated from the host contract and marked to fair value through earnings. Also, from time to time, the Company has entered into copper forward sales contracts to hedge the market risk associated with fluctuations in the prices of commodities it sells. Derivative instruments used by the Company to manage its risks do not contain credit risk-related contingent provisions. The Company had no price protection contracts relating to its mine production for any period presented in these interim condensed consolidated financial statements.

8. FINANCIAL RISK MANAGEMENT OBJECTIVES AND POLICIES, AND FINANCIAL AND DERIVATIVE INSTRUMENTS (continued)

Financial Credit Risk

The Company is exposed to credit loss when financial institutions with which it has entered into commodity contracts, such as copper forward contracts, are unable to pay. To minimize the risk of such losses, the Company uses counterparties that meet certain requirements and periodically reviews the creditworthiness of these counterparties. The Company does not anticipate that any of the counterparties it deals with will default on their obligations. The Company did not have any outstanding commodity contracts with financial institutions for any period presented in these interim condensed consolidated financial statements and, therefore, did not have any credit exposure associated with commodity contracts.

The Company is also exposed to credit loss when its trade receivables become uncollectible. However, because the Company's sales contracts generally require a provisional payment of at least 90 percent of the invoice amount upon shipment, the risk of loss is minimal.

Liquidity Risk

Liquidity risk is defined as the risk that the short-term revenues are not enough to cover short-term expenditures.

The Company's liquidity requirements have arisen from the need to finance its operations. In the management of liquidity risk, the Company monitors and maintains a level of liquidity adequate to finance the Company's operations and to mitigate the effects of fluctuations in cash flows.

The current financial liabilities, including trade payables, accrued liabilities, unearned customer receipts and royalties payable, will mature in less than one year. Non-current financial liabilities will mature beyond one year.

Currency Exchange Risk

The Company conducts the majority of its operations in Indonesia where its functional currency is the US$. All of the Company's revenues and the majority of its costs and expenses are denominated in US$; however, some costs and certain assets and liabilities are denominated in Indonesian Rupiah, Australian dollars and other currencies. Generally, the Company's results are adversely affected when the US$ strengthens against these currencies and positively affected when the US$ weakens against these currencies because of the Company's current net position of assets denominated in these currencies exceeding liabilities denominated in these currencies.

The Company recorded loss on foreign exchange totaling US$8.2 million for the first six months of 2018 and recorded gains on foreign exchange totaling US$29.4 million for the first six months of 2017 related to currency transactions, primarily related to revaluation of Rupiah-denominated assets and liabilities. At June 30, 2018, the Company's most significant Rupiah-denominated assets include cash and cash equivalents of US$47.8 million, VAT receivables of US$50.3 million, employee receivables of US$18.9 million and non-income tax receivables of US$31.1 million, partially offset by Rupiah-denominated payables and pension liabilities of US$27.7 million, all of which were recorded at an exchange rate of 14,332 Indonesian Rupiah to one US$.

8. FINANCIAL RISK MANAGEMENT OBJECTIVES AND POLICIES, AND FINANCIAL AND DERIVATIVE INSTRUMENTS (continued)

Embedded Derivatives

As disclosed in "Commodity Price Risk," the Company's copper concentrate sales agreements, including its sales to Atlantic Copper, S.L.U. (Atlantic Copper, a wholly owned subsidiary of FCX involved in the smelting and refining business in Spain) and PT Smelting, are provisionally priced at the time of shipment. The provisional prices are finalized in a specified future month (generally the first, second or third month after the month of arrival at the customer's facility) based on quoted monthly average copper settlement prices on the LME and quoted monthly average LBMA gold settlement prices. The Company receives market prices based on prices in the specified month, which results in price fluctuations until the date of settlement. Sales with a provisional sales price contain an embedded derivative (i.e., the price settlement mechanism that is settled after the time of delivery) that is required to be bifurcated from the host contract. The host contract is the sale of the metals contained in the concentrate at the then-current metal price as defined in the contract. The embedded derivative does not qualify for hedge accounting treatment and fair value fluctuations in the value of embedded derivatives are recorded in revenues.

A summary of aggregate embedded derivatives at June 30, 2018, follows:

	Open Positions	Average Price Per Unit (US$)		Maturities Through
		Contract	Market	
Embedded derivatives in concentrate sales contracts:				
Copper (millions of pounds)	249	3.11	3.01	October 2018
Gold (thousands of ounces)	308	1,296	1,255	September 2018

The embedded copper derivatives as of June 30, 2018, are expected to be finally priced over the next four months. A two-cent movement in the average copper price used for these derivatives will have an approximate US$3.1 million impact on the Company's 2018 total comprehensive income.

The embedded gold derivatives as of June 30, 2018, are expected to be finally priced over the next three months. A US$25 movement in the average price used for these derivatives will have an approximate US$4.5 million impact on the Company's 2018 total comprehensive income.

The Company's embedded derivatives on provisional copper and gold sales are valued using quoted monthly LME copper forward prices and the adjusted LBMA gold prices. Realized and unrealized (losses) gains recognized in revenues for embedded derivatives in concentrate sales contracts totaled US$(76.8) million for the first six months of 2018 and US$89.0 million for the first six months of 2017. The Company's outstanding embedded derivatives are recorded at fair value and are included in trade receivables and/or trade payables. Embedded derivatives' net liability position was US$39.0 million at June 30, 2018, and the net asset position was US$88.7 million at December 31, 2017.

Other Financial Instruments

Other financial instruments include cash and cash equivalents, restricted cash, trade receivables, other receivables, long-term notes and accounts receivable, trade payables, accrued liabilities, unearned customer receipts and royalties payable. The financial statement amount for each of these items is a reasonable estimate of the fair value because of the short-term nature of these instruments and generally negligible credit losses.

8. FINANCIAL RISK MANAGEMENT OBJECTIVES AND POLICIES, AND FINANCIAL AND DERIVATIVE INSTRUMENTS (continued)

Fair Value Measurement

Fair value accounting guidance includes a hierarchy that prioritizes the inputs to valuation techniques used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3).

Level 1: Quoted (unadjusted) prices in active markets for identical assets or liabilities;

Level 2: Other techniques for which all inputs that have a significant effect on the recorded fair value are observable, either directly or indirectly; and

Level 3: Techniques that use inputs that have a significant effect on the recorded fair value that are not based on observable market data.

The Company's embedded derivatives on provisional sales are valued using quoted monthly LME copper forward prices and the adjusted LBMA gold prices at each reporting date based on the month of maturity; however, the Company's contracts themselves are not traded on an exchange. As a result, these derivatives are classified within Level 2 of the fair value hierarchy.

The Company did not have any transfers between fair value levels during the reporting periods.

9. DIVIDENDS

During the first six months of 2018, the Company's Board of Directors declared and the Company paid total dividends of US$1.6 billion (US$6,925 per share). No dividends were declared or paid during the first six months of 2017.

10. NET REVENUES

The Company's consolidated net revenues attributable to the products it sold follow:

	Six Months Ended June 30,	
	2018	2017
Copper in concentrate	1,984,572	948,906
Gold in concentrate	1,667,908	743,742
Silver in concentrate	36,606	20,938
Price participation	1,585	(66)
Adjustments to revenue		
Treatment charges	(161,201)	(99,851)
Royalties:		
Copper	(72,901)	(33,730)
Gold	(64,018)	(28,108)
Silver	(1,253)	(700)
Export duties	(101,464)	(41,351)
Revenue from contracts with customers	3,289,834	1,509,780
Embedded derivatives (Note 8)	(76,753)	88,956
Total consolidated net revenues	3,213,081	1,598,736

11. SUBSEQUENT EVENT

In August 2018, the Indonesian Tax Court read its verdict on the Company's 2012 corporate income tax appeal that reduced the Company's overpayment for that year from US$302.9 million to US$178.7 million. The Company plans to appeal this verdict to the Indonesia Supreme Court and believes it is more likely than not that it will prevail.

PT FREEPORT INDONESIA
Affiliate of Freeport-McMoRan

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PT FREEPORT INDONESIA AND SUBSIDIARIES

Consolidated financial statements
As of December 31, 2017, 2016, and 2015 and for the years then ended
with independent auditors' report
(amounts in United States dollars)

PT FREEPORT INDONESIA AND SUBSIDIARIES
CONSOLIDATED FINANCIAL STATEMENTS
AS OF DECEMBER 31, 2017, 2016 AND 2015, AND FOR THE YEARS THEN ENDED
WITH INDEPENDENT AUDITORS' REPORT

Table of Contents

	Page
Independent Auditors' Report	
Consolidated Statement of Financial Position	1-2
Consolidated Statement of Profit or Loss and Other Comprehensive Income	3
Consolidated Statement of Changes in Equity	4
Consolidated Statement of Cash Flows	5
Notes to Consolidated Financial Statements	6-71

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Independent Auditors' Report

Report No. RPC-8054/PSS/2018

The Shareholders and the Boards of Commissioners and Directors
PT Freeport Indonesia

We have audited the accompanying consolidated financial statements of PT Freeport Indonesia (the "Company") and its subsidiaries, which comprise the consolidated statements of financial position as of December 31, 2017, 2016, and 2015, and the consolidated statements of profit or loss and other comprehensive income, changes in equity, and cash flows for the years then ended, and a summary of significant accounting policies and other explanatory information.

Management's responsibility for the financial statements

Management is responsible for the preparation and fair presentation of such consolidated financial statements in accordance with Indonesian Financial Accounting Standards, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' responsibility

Our responsibility is to express an opinion on such consolidated financial statements based on our audits. We conducted our audits in accordance with Standards on Auditing established by the Indonesian Institute of Certified Public Accountants. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether such consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, the auditors consider internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of PT Freeport Indonesia and its subsidiaries as of December 31, 2017, 2016, and 2015, and their consolidated financial performance and cash flows for the years then ended, in accordance with Indonesian Financial Accounting Standards.

Other matter

This report is prepared solely for inclusion in the offering document in connection with the proposed offering of the debt securities of PT Indonesia Asahan Aluminium (Persero) (the investor of the Company) in the United States of America and outside of the United States of America in reliance on Rule 144A and Regulation S, respectively, under the United States Securities Act of 1933, and is not intended to be, and should not be, used for any other purposes.

Purwantono, Sungkoro & Surja

Feniwati Chendana, CPA
Public Accountant Registration No. AP.0694

October 4, 2018

PT FREEPORT INDONESIA AND SUBSIDIARIES
CONSOLIDATED STATEMENT OF FINANCIAL POSITION
AS OF DECEMBER 31, 2017, 2016 AND 2015
(Expressed in thousand United States dollars)

	Notes	As of December 31, 2017	2016	2015
		US$	US$	US$
ASSETS				
Current assets:				
Cash and cash equivalents	2d,3	104,473	6,854	8,203
Restricted cash	2m,21,23	51,496	27,167	28,154
Trade receivables				
Third parties	4	387,834	231,284	68,029
Related parties	2j,4,5	307,815	283,197	163,503
Other receivables				
Third parties		16,595	48,444	81,748
Related parties	2j,5	46,073	37,978	33,000
Inventories, net of allowance for obsolescence of US$26,732 as of December 31, 2017, US$27,467 as of December 31, 2016, and US$21,947 as of December 31, 2015	2e,6	758,015	643,058	481,840
Prepaid taxes	2q,19	178,690	323,446	646,250
Prepaid expenses and other		22,792	13,811	24,505
Total current assets		1,873,783	1,615,239	1,535,232
Non-current assets:				
Investment in PT Smelting - associated company	2b,7	61,121	82,806	112,432
Property, plant and equipment, net of accumulated depreciation of US$4,384,281 as of December 31, 2017, US$3,876,927 as of December 31, 2016, and US$3,569,521 as of December 31, 2015	2f,2k,8	6,003,144	6,243,697	6,109,965
Exploration and evaluation assets	2g,9	97,682	96,665	95,393
Mine properties, net of accumulated amortization of US$998,318 as of December 31, 2017, US$953,945 as of December 31, 2016, and US$902,549 as of December 31, 2015	2g,9	1,877,571	1,518,383	836,982
Deferred stripping costs, net	2h,10	59,641	130,475	254,409
Long-term notes and accounts receivable				
Third parties	11,19	529,549	563,575	397,227
Related parties	2j,5,11	4,827	5,019	6,413
Long-term inventory	2e,6	20,941	130,309	97,353
Other assets	12,21,23	133,418	149,696	149,072
Total non-current assets		8,787,894	8,920,625	8,059,246
Total assets		10,661,677	10,535,864	9,594,478

The accompanying notes form an integral part of these consolidated financial statements.

PT FREEPORT INDONESIA AND SUBSIDIARIES
CONSOLIDATED STATEMENT OF FINANCIAL POSITION (continued)
AS OF DECEMBER 31, 2017, 2016 AND 2015
(Expressed in thousand United States dollars)

	Notes	As of December 31, 2017	2016	2015
		US$	US$	US$
LIABILITIES AND EQUITY				
Current liabilities:				
Trade payables				
Third parties	13	214,023	263,505	232,901
Related parties	2j,5,13	6,669	5,076	364
Accrued liabilities				
Third parties	14	176,681	173,783	166,055
Related parties	2j,5,14	96,691	87,561	140,773
Taxes payable	2q,19	421,230	65,357	49,859
Unearned customer receipts				
Third parties	15	78,125	57,969	2,747
Related parties	2j,5,15	-	-	211
Royalties payable	2n,16	66,246	43,242	28,428
Current portion of asset retirement obligations	21	90,596	107,514	86,605
Current portion of finance lease obligation	2k,5,17	-	17,837	15,826
Total current liabilities		1,150,261	821,844	723,769
Non-current liabilities:				
Deferred income taxes	2q,19	1,897,319	1,781,203	1,544,525
Long-term debt	2j,2r,5,18	-	88,000	310,000
Finance lease obligation, less current portion	2k,5,17	-	-	17,837
Asset retirement obligations	21	1,201,884	1,201,942	907,840
Provision for employee benefits	2o,20	20,541	100,050	122,645
Other non-current liabilities	22	86,014	87,069	108,259
Total non-current liabilities		3,205,758	3,258,264	3,011,106
Total liabilities		4,356,019	4,080,108	3,734,875
Equity:				
Share capital, US$100 par value (full amount) for all years; 300,000 shares (full amount) authorized for all years; 227,490 shares (full amount) issued and fully paid for all years	25	22,749	22,749	22,749
Additional paid in capital		317,496	316,373	313,470
Retained earnings		6,011,159	6,170,593	5,591,518
Remeasurement losses on defined benefit plans	2o,20	(45,746)	(53,959)	(68,134)
Net equity		6,305,658	6,455,756	5,859,603
Total liabilities and equity		10,661,677	10,535,864	9,594,478

The accompanying notes form an integral part of these consolidated financial statements.

PT FREEPORT INDONESIA AND SUBSIDIARIES
CONSOLIDATED STATEMENT OF PROFIT OR LOSS AND OTHER COMPREHENSIVE INCOME
FOR THE YEARS ENDED DECEMBER 31, 2017, 2016 AND 2015
(Expressed in thousand United States dollars)

	Notes	Years Ended December 31. 2017	2016	2015
		US$	US$	US$
Net revenues	2j,2n,5,24,26	4,445,043	3,294,345	2,652,790
Cost of sales	2j,5,27	2,349,713	2,338,120	2,200,909
Gross profit		2,095,330	956,225	451,881
Expenses:				
General and administrative expenses	2j,5,27	123,641	87,391	99,911
Selling and marketing expenses	2j,5,27	2,142	1,883	2,096
Other expense (income), net		159	(21,355)	30,766
Operating profit		1,969,388	888,306	319,108
Interest income	2r,5	5,678	3,419	4,881
Equity in associated company's net earnings (losses)	7	9,720	8,303	(4,925)
Profit before income tax expense		1,984,786	900,028	319,064
Income tax expense	2q,19			
Current		(574,470)	(70,770)	(14,998)
Deferred		(127,463)	(250,183)	(106,307)
Net profit		1,282,853	579,075	197,759
Other comprehensive income (loss):				
Other comprehensive income (loss) not to be reclassified to profit or loss in subsequent periods				
Remeasurement gains (losses) on pension plans	2o,20	11,967	24,834	(2,349)
Tax recognized	2q	(4,190)	(8,855)	594
Foreign exchange impact		436	(1,804)	7,229
Net other comprehensive income not to be reclassified to profit or loss in subsequent periods		8,213	14,175	5,474
Total comprehensive income attributable to stockholders		1,291,066	593,250	203,233
Basic earnings per share attributable to stockholders (full amount)	2s	5,639.16	2,545.50	869.31
Average shares outstanding (full amount)		227,490	227,490	227,490
Dividends declared and paid per share of common stock (full amount)	25	6,340.00	-	-

The accompanying notes form an integral part of these consolidated financial statements.

PT FREEPORT INDONESIA AND SUBSIDIARIES
CONSOLIDATED STATEMENT OF CHANGES IN EQUITY
FOR THE YEARS ENDED DECEMBER 31, 2017, 2016 AND 2015
(Expressed in thousand United States dollars)

	Notes	Issued and Fully Paid Share Capital	Additional Paid-In Capital	Retained Earnings	Remeasurement losses on pension plans	Equity
		US$	US$	US$	US$	US$
Balance at December 31, 2014		**22,749**	**307,882**	**5,393,759**	**(73,608)**	**5,650,782**
Net profit		-	-	197,759	-	197,759
Remeasurement losses on pension plans	2o,20	-	-	-	(2,349)	(2,349)
Tax recognized	2q	-	-	-	594	594
Foreign exchange impact		-	-	-	7,229	7,229
Distributions for exercised/vested parent company (FCX) equity awards to employees	2j,2p,5	-	(866)	-	-	(866)
Amortization of parent company (FCX) equity awards to employees	2j,2p,5	-	6,454	-	-	6,454
Balance at December 31, 2015		**22,749**	**313,470**	**5,591,518**	**(68,134)**	**5,859,603**
Net profit		-	-	579,075	-	579,075
Remeasurement gains on pension plans	2o,20	-	-	-	24,834	24,834
Tax recognized	2q	-	-	-	(8,855)	(8,855)
Foreign exchange impact		-	-	-	(1,804)	(1,804)
Distributions for exercised/vested parent company (FCX) equity awards to employees	2j,2p,5	-	(1,852)	-	-	(1,852)
Amortization of parent company (FCX) equity awards to employees	2j,2p,5	-	4,755	-	-	4,755
Balance at December 31, 2016		**22,749**	**316,373**	**6,170,593**	**(53,959)**	**6,455,756**
Net profit		-	-	1,282,853	-	1,282,853
Dividends declared and paid	25	-	-	(1,442,287)	-	(1,442,287)
Remeasurement gains on pension plans	2o,20	-	-	-	11,967	11,967
Tax recognized	2q	-	-	-	(4,190)	(4,190)
Foreign exchange impact		-	-	-	436	436
Distributions for exercised/vested parent company (FCX) equity awards to employees	2j,2p,5	-	(1,874)	-	-	(1,874)
Amortization of parent company (FCX) equity awards to employees	2j,2p,5	-	2,997	-	-	2,997
Balance at December 31, 2017		**22,749**	**317,496**	**6,011,159**	**(45,746)**	**6,305,658**

The accompanying notes form an integral part of these consolidated financial statements.

PT FREEPORT INDONESIA AND SUBSIDIARIES
CONSOLIDATED STATEMENT OF CASH FLOWS
FOR THE YEARS ENDED DECEMBER 31, 2017, 2016 AND 2015
(Expressed in thousand United States dollars)

	Notes	Years Ended December 31, 2017	2016	2015
		US$	US$	US$
Cash flow from operating activities:				
Receipts from sales to third party customers		2,537,808	1,988,634	1,505,776
Receipts from sales to related parties		2,092,043	1,405,176	1,341,526
Other cash receipts from third parties for operational funding		3,761	6,481	8,316
Other cash receipts from related parties for operational funding		893	23,531	16,484
Cash receipts from (paid to) joint venture partner, net of distributions		11,305	6,002	(11,875)
Cash paid to third parties as sales customer settlement		(24,996)	(100,229)	(66,685)
Cash paid to related parties as sales customer settlement		(1,120)	(615)	(18,398)
Cash paid for asset retirement obligation costs	21	(39,877)	(54,287)	(37,681)
Cash paid for materials, supplies, contract services and other		(1,009,131)	(1,030,569)	(1,002,539)
Cash paid for salaries, benefits and contract labor		(431,904)	(561,910)	(541,616)
Cash paid for restructuring costs	20	(118,801)	-	-
Cash paid to related parties for management and technical services		(155,221)	(231,702)	(137,061)
Cash (paid to) receipt from parent company (FCX) for equity awards		(13,828)	79	(7,769)
Cash paid for royalties	16	(151,039)	(116,265)	(122,230)
Cash paid for export duties	26	(118,174)	(95,929)	(109,701)
Cash paid to partnership fund		(38,881)	(28,265)	(28,417)
Cash paid for income taxes, net of refunds		(121,215)	(23,479)	(35,069)
Cash paid for interest (net of capitalized interest)		-	(677)	-
Net cash provided by operating activities		2,421,623	1,185,976	753,061
Cash flow from investing activities:				
Capital expenditures for property, plant and equipment additions	8	(742,823)	(924,889)	(828,535)
Capital expenditures for exploration and evaluation assets and mine properties	9	(24,790)	(41,697)	(36,815)
Cash proceeds from asset sales		17,165	2,743	3,917
Cash (outflow) inflow for restricted cash	23	(40,704)	987	(10,707)
Other investing, net		22,212	19,024	3,302
Net cash used in investing activities		(768,940)	(943,832)	(868,838)
Cash flow from financing activities:				
Net (repayment of) proceeds from parent company (FCX) loan		(88,000)	(222,000)	97,000
Repayments of finance lease obligation	17	(22,903)	(20,322)	(18,032)
Common dividends paid	25	(1,442,287)	-	-
Distributions for exercised/vested parent company (FCX) equity awards to employees		(1,874)	(675)	(866)
Other financing costs		-	(496)	(345)
Net cash (used in) provided by financing activities		(1,555,064)	(243,493)	77,757
Net increase (decrease) in cash and cash equivalents		97,619	(1,349)	(38,020)
Cash and cash equivalents at beginning of year		6,854	8,203	46,223
Cash and cash equivalents at end of year	3	104,473	6,854	8,203

The accompanying notes form an integral part of these consolidated financial statements.

1. GENERAL

a. Establishment and General Information

Freeport Indonesia Incorporated, a United States of America (US) company, entered into a contract of work with the Government of the Republic of Indonesia (GOI) in 1967. Commercial production began in 1972. On December 26, 1991, PT Freeport Indonesia Company became the corporate successor to Freeport Indonesia Incorporated. PT Freeport Indonesia Company was established as a limited liability company organized under the laws of the Republic of Indonesia based on notarial deed No. 102 of R. Arie Soetardjo, S.H., and was also domesticated in Delaware, US, until July 15, 2015. The deed of establishment was approved by the Ministry of Justice in decision letter No. C2.8171.HT.01.01.TH.91 dated December 27, 1991, and was published in the State Gazette No. 105 dated December 31, 1991, Supplement No. 5121. On April 26, 2000, the Ministry of Justice in decision letter No. C-9305 HT.01.04-TH.2000 approved, among other matters, the change of the company's name to PT Freeport Indonesia (the Company). The latest amended and restated Articles of Association of the Company to comply with Law No. 40 Year 2007 concerning "Limited Liability Companies" were approved by the Ministry of Law and Human Rights in decision letter No. AHU-61632.AH.01.02.Tahun 2008 dated September 12, 2008. The Company's ultimate parent is Freeport-McMoRan Inc. (FCX), which is listed on the New York Stock Exchange in the US.

In accordance with article 3 of the Company's Articles of Association, the Company is engaged in the exploration for and mining and processing of ore containing copper, gold and silver in Indonesia and in the marketing of concentrate containing such metals.

The Company's principal office is located at Plaza 89, 5th Floor, JL. HR. Rasuna Said Kav. X-7 No. 6, Jakarta, Indonesia, with its primary operations office at Office Building I, JL. Mandala Raya Selatan No. 1, Kuala Kencana, Timika, Indonesia.

Contract of Work

The Company is entitled to mine under its "Contract of Work" or "COW." The Company's original COW was entered into in 1967 by the Company's predecessor (Freeport Indonesia Incorporated) and was replaced by the current COW in 1991. The initial term of the current COW expires in 2021, but can be extended by the Company for two 10-year periods subject to GOI approval, which pursuant to the COW cannot be withheld or delayed unreasonably. The Company's COW provides that the GOI will not nationalize or expropriate the Company's mining operations.

Pursuant to the December 1991 COW, the Company is allowed to conduct exploration, mining and production activities in the 24,700-acre mining area (Block A), which is where all of its proven and probable mineral reserves and all of its current mining operations are located. Under the COW, the Company is also allowed to conduct exploration activities in the Block B area, which originally covered a 6.5 million-acre exploration area (contiguous to Block A) in Papua, Indonesia. The Company has relinquished Block B acreage since 1991 as required under its COW (currently 502,000 acres remain).

Refer to Note 23 for a discussion of recent regulatory matters associated with the Company's COW.

Joint Venture with Rio Tinto

The Company and Rio Tinto plc (Rio Tinto) established an unincorporated joint venture in 1996 pursuant to which Rio Tinto has a 40 percent interest in the Company's COW and the option to participate in 40 percent of any other future exploration projects in Papua, Indonesia. Under the arrangements, Rio Tinto funded 75.0 million US dollars (US$) in 1996 for approved exploration costs in the areas covered by the Company's COW.

Agreed upon exploration costs are generally shared 60 percent by the Company and 40 percent by Rio Tinto. From inception of the joint venture through December 31, 2017, Rio Tinto had funded US$166.6 million, for its share of approved exploration costs, including the US$75.0 million funded in 1996.

1. GENERAL (continued)

a. Establishment and General Information (continued)

Joint Venture with Rio Tinto (continued)

Pursuant to the joint venture agreement, Rio Tinto has a 40 percent interest in certain assets and future production exceeding specified annual amounts of copper, gold and silver through 2022 in Block A, and, after 2022, a 40 percent interest in all production from Block A. The Company receives 100 percent of production and related revenues from reserves established as of December 31, 1994 (27.1 billion pounds of copper, 38.4 million ounces of gold and 75.8 million ounces of silver), divided into annual portions subject to reallocation for events causing changes in the anticipated production schedule. Production and related revenues exceeding those annual amounts (referred to as incremental expansion revenues) are shared 60 percent the Company and 40 percent Rio Tinto. Operating, non-expansion capital and administrative costs are shared 60 percent the Company and 40 percent Rio Tinto based on the ratio of (a) the incremental expansion revenues to (b) total revenues from production from Block A, with the Company responsible for the rest of such costs. The Company will continue to receive 100 percent of the cash flow from specified annual amounts of copper, gold and silver through 2022 calculated by reference to its proven and probable reserves as of December 31, 1994, and 60 percent of all remaining cash flow. Expansion capital costs are shared 60 percent by the Company and 40 percent by Rio Tinto.

As provided in the joint venture Participation Agreement, as amended April 30, 1999, each venturer agreed to pay its proportion of close-down costs, defined as "all costs incurred in or allocable to close-down, including without limitation, rehabilitation of the environment; the removal of buildings, equipment, infrastructure, and other tangible property; costs incurred in terminating equipment, supplies, and service and employment contracts; and costs incurred in terminating and surrendering the COW." The proportion of close-down costs allocated to each venturer shall be based on the value of products sold by or for each of the venturers over the life of the COW to the anticipated close-down date, as stated in section 10.4.2 of the Participation Agreement, as amended. For purposes of the Participation Agreement, "close-down" costs are considered to be equivalent to asset retirement obligation (ARO) costs.

Mineral Reserves (unaudited)

Proven and probable reserves were determined by the use of mapping, drilling, sampling, assaying and evaluation methods generally applied in the mining industry. The term "reserve," as used in the reserve data presented here, means that part of a mineral deposit that can be economically and legally extracted or produced at the time of the reserve determination. The term "proven reserves" means reserves for which (a) quantity is computed from dimensions revealed in outcrops, trenches, workings or drill holes; (b) grade and/or quality are computed from the results of detailed sampling; and (c) the sites for inspection, sampling and measurements are spaced so closely and the geologic character is sufficiently defined that size, shape, depth and mineral content of reserves are well established. The term "probable reserves" means reserves for which quantity and grade are computed from information similar to that used for proven reserves but the sites for sampling are farther apart or are otherwise less adequately spaced. The degree of assurance, although lower than that for proven reserves, is high enough to assume continuity between points of observation.

All of the Company's current aggregate (including Rio Tinto's share) proven and probable reserves, shown below, are located in Block A of the Company's COW. The original term of the COW covering Block A expires at the end of 2021. The Company's reserve amounts reflect estimates of minerals that can be recovered through the end of 2041, and the Company's current mine plan and planned operations are based on the assumption that the Company will receive the two 10-year extensions. As a result, the Company will not mine all of these ore reserves during the initial term of the current COW. Although expected, there can be no assurance that the GOI will approve the extensions. Prior to the end of 2021, under its current mine plan, the Company expects to mine approximately 12 percent of aggregate proven and probable ore at December 31, 2017, representing approximately 18 percent of its share of recoverable copper reserves and approximately 29 percent of its share of recoverable gold reserves at December 31, 2017.

1. GENERAL (continued)

a. Establishment and General Information (continued)

Mineral Reserves (unaudited) (continued)

Estimated recoverable reserves at December 31, 2017, were determined using long-term average prices of US$2.00 per pound for copper, US$1,000 per ounce for gold and US$15 per ounce for silver. For the three-year period ended December 31, 2017, the London Metal Exchange (LME) spot copper prices averaged US$2.50, per pound., the London Bullion Market Association (London) gold prices averaged US$1,223 per ounce and LME spot silver prices averaged US$16.62 per ounce. The recoverable proven and probable reserves in the following table represent the estimated metal quantities from which the Company expects to be paid after application of estimated metallurgical recovery rates and smelter recovery rates, where applicable. Recoverable reserves are that part of a mineral deposit that the Company estimates can be economically and legally extracted or produced at the time of the reserve determination.

	Recoverable Proven and Probable Reserves		
Ore Body Estimates as of December 31, 2017	**Copper (billion pounds)**	**Gold (million ounces)**	**Silver (million ounces)**
Developed and producing mines:			
Grasberg open pit	0.9	2.6	1.8
Deep Ore Zone	0.9	1.6	3.6
Big Gossan	2.6	1.2	15.6
Under development:			
Deep Mill Level Zone	7.7	8.5	39.8
Grasberg Block Cave	18.1	14.5	62.5
Undeveloped:			
Kucing Liar	8.4	5.4	29.3
	38.6	33.8	152.6
Recoverable metal in stockpiles	0.2	0.1	0.5
Total 100% basis	**38.8**	**33.9**	**153.1**
Company's share at December 31:			
2017	**25.1**	**23.2**	**97.0**
2016	**26.9**	**25.8**	**102.4**
2015	**28.0**	**26.8**	**106.7**

1. GENERAL (continued)

a. Establishment and General Information (continued)

Production, Sales and Average Realized Prices, Net of Rio Tinto's Interest (unaudited)

	Years Ended December 31,		
	2017	2016[a]	2015[a]
Copper (thousands of recoverable pounds)			
Production:			
Grasberg open pit	838,655	863,161	567,650
Deep Ore Zone	102,511	148,727	168,672
Deep Mill Level Zone[b]	15,868	28,666	15,178
Grasberg Block Cave[b]	19,226	13,390	-
Big Gossan	7,634	8,462	-
Total production	983,894	1,062,406	751,500
Sales	980,799	1,053,790	744,600
Average realized price per pound	US$3.00	US$2.32	US$2.33
Gold (recoverable ounces)			
Production:			
Grasberg open pit	1,355,523	779,420	921,116
Deep Ore Zone	151,063	223,114	291,087
Deep Mill Level Zone[b]	22,952	40,317	19,997
Grasberg Block Cave[b]	19,468	14,541	-
Big Gossan	4,810	3,964	-
Total production	1,553,816	1,061,356	1,232,200
Sales	1,539,743	1,054,168	1,223,600
Average realized price per ounce	US$1,267.77	US$1,237.07	US$1,129.17
Silver (recoverable ounces)			
Production:			
Grasberg open pit	2,144,819	1,882,975	834,284
Deep Ore Zone	574,413	752,478	1,221,573
Deep Mill Level Zone[b]	68,841	166,530	111,243
Grasberg Block Cave[b]	107,146	61,393	-
Big Gossan	85,867	55,430	-
Total production	2,981,086	2,918,806	2,167,100
Sales	2,964,021	2,908,554	2,134,100
Average realized price per ounce	US$16.56	US$17.09	US$14.81

a. Production volumes did not exceed specified amounts for 2016 and 2015 per the joint venture agreement, as amended; therefore, Rio Tinto did not share in any production volumes for 2016 and 2015, and did not share in any sales volumes for 2016 and 2015.

b. The material processed is from the pre-commercial production that represents ore extracted during the development phase for the purpose of obtaining access to the ore body (Note 2u).

1. GENERAL (continued)

a. Establishment and General Information (continued)

100 Percent Production and Sales, Including Rio Tinto's Interest (unaudited)

	Years Ended December 31,		
	2017	2016	2015
Copper (thousands of recoverable pounds)			
Production:			
Grasberg open pit	849,025	863,161	567,650
Deep Ore Zone	103,779	148,727	168,672
Deep Mill Level Zone[a]	16,065	28,666	15,178
Grasberg Block Cave[a]	19,463	13,390	-
Big Gossan	7,729	8,462	-
Total production	996,061	1,062,406	751,500
Sales	992,661	1,053,790	744,600
Gold (recoverable ounces)			
Production:			
Grasberg open pit	1,355,523	779,420	921,116
Deep Ore Zone	151,063	223,114	291,087
Deep Mill Level Zone[a]	22,952	40,317	19,997
Grasberg Block Cave[a]	19,468	14,541	-
Big Gossan	4,810	3,964	-
Total production	1,553,816	1,061,356	1,232,200
Sales	1,539,743	1,054,168	1,223,700
Silver (recoverable ounces)			
Production:			
Grasberg open pit	2,144,819	1,882,975	834,284
Deep Ore Zone	574,413	752,478	1,221,573
Deep Mill Level Zone[a]	68,841	166,530	111,243
Grasberg Block Cave[a]	107,146	61,393	-
Big Gossan	85,867	55,430	-
Total production	2,981,086	2,918,806	2,167,100
Sales	2,964,021	2,908,554	2,134,400

a. The material processed is from the pre-commercial production that represents ore extracted during the development phase for the purpose of obtaining access to the ore body (Note 2u).

b. Subsidiaries and Associates

As of December 31, 2017, 2016 and 2015, the Company has direct or indirect ownership interests of more than 50 percent in the following subsidiaries, which are included in the consolidated financial statements:

Subsidiaries	Domicile	Percentage of Ownership	Start of Commercial Operations
PT Kencana Infra Nusakarya	Indonesia	100.00000%	1993
PT Kencana Wisata Nusakarya	Indonesia	99.99999%	1994
PT Freeport Management Indonesia	Indonesia	99.99914%	1992
PT Mitradaya Vulkanisindo	Indonesia	100.00000%	2000

1. GENERAL (continued)

b. Subsidiaries and Associates (continued)

PT Kencana Infra Nusakarya leases all of its assets to the Company. The leased assets, all of which are located in the area near the Company's operations, are directly used by the Company's employees and contractors working in its mining and related operations, and include residential apartments, recreation and office buildings, shopping centers, service centers, transportation facility buildings and health facilities. PT Kencana Wisata Nusakarya (KWN) owns a hotel and recreational facility located in the area near the Company's operations, and the Company compensates KWN for providing services associated with the operation of these facilities. PT Freeport Management Indonesia provides management consultation services to the Company (formerly invested in venture capital enterprises in the area near the Company's operations). PT Mitradaya Vulkanisindo provides purchasing and logistics services, event organizing services and property management development services as requested by the Company.

Total assets of the Company's subsidiaries before eliminations are as follows (unaudited):

	December 31,		
	2017	2016	2015
PT Kencana Infra Nusakarya	132,995	133,045	133,385
PT Kencana Wisata Nusakarya	26,204	26,488	26,344
PT Freeport Management Indonesia	892	893	893
PT Mitradaya Vulkanisindo	194	196	215

Information on the Company's associates (in which the Company has direct or indirect ownership interest of less than 50 percent) is as follows:

Associates	Domicile and Year Commercial Operations Started	Business Activities	Percentage of Ownership
PT Smelting	Indonesia, 1999	Copper smelting and refining	25.0%
PT Airfast Aviation Facilities Company (AVCO)	Indonesia, 1995	Operator of Timika airport	25.0%

See Note 7 for a discussion of PT Smelting and AVCO.

1. GENERAL (continued)

c. Boards of Commissioners and Directors, and Employees

The members of the Company's Boards of Commissioners and Directors, who were appointed at the Company's Annual General Meeting of Shareholders for each of the periods shown below, were as follows:

	2017	2016	2015
Commissioners			
Richard Carl Adkerson, President[a]	✓	✓	-
Andi Mattalatta	✓	✓	✓
Craig James Kinnel	✓	✓	-
Dean Thomas Falgoust	✓	✓	✓
Gabrielle Kirk McDonald	✓	✓	✓
James Taylor Wharton	✓	✓	✓
John Gerard Amato	✓	✓	✓
Marzuki Darusman	✓	✓	✓
Michael Joseph Arnold	✓	✓	-
Nabiel Makarim	✓	✓	✓
Thom Beanal	✓	✓	✓
Titus Octovianus Potereyauw	✓	✓	✓
William Russell King	✓	✓	✓
Hoediatmo Hoed[b]	-	✓	✓
Robert D. Atkinson	-	-	✓
Lynne Mura Cooney	-	-	✓
Kathleen Lynne Quirk	-	-	✓
Directors			
Chappy Hakim, President[c]	-	✓	-
Maroef Sjamsoeddin, President[d]	-	-	✓
Achmad Ardianto	✓	✓	-
Brian David Clark	✓	✓	-
Brian Lloyd Esser	✓	✓	✓
Clementino Enrico Navito Lamury	✓	✓	✓
Kathleen Lynne Quirk	✓	✓	-
Robert Charles Schroeder	✓	✓	✓
Sonny Eko Sulaksono Prasetyo	✓	✓	✓
Tony Wenas[e]	✓	-	-
Richard Carl Adkerson[a]	-	-	✓
Richard N. Mohr	-	-	✓

a. Richard Carl Adkerson resigned as Director effective January 15, 2016, and was appointed as President Commissioner effective January 15, 2016.

b. Hoediatmo Hoed resigned as commissioner effective August 1, 2016.

c. Chappy Hakim was appointed President Director effective November 29, 2016, and resigned effective February 17, 2017.

d. Maroef Sjamsoeddin was appointed President Director effective January 7, 2015, and resigned effective January 18, 2016.

e. Tony Wenas was appointed as Director effective May 30, 2017.

1. GENERAL (continued)

c. Boards of Commissioners and Directors, and Employees (continued)

The Company pays fees and other benefits to support the operational duties of the Board of Commissioners. The total direct costs of such benefits are as follows:

	Years Ended December 31,		
	2017	2016	2015
Commissioner fees	450	567	580
Other allowances	4	6	23
Total	454	573	603
As a percentage of total general and administrative expenses	0.37%	0.66%	0.60%

The Company provides compensation and other benefits to support the operational duties of the Board of Directors. The total direct costs of such benefits are as follows:

	Years Ended December 31,		
	2017	2016	2015
Salaries and benefits	2,962	2,743	3,771
Performance incentives and holiday bonus	1,946	1,042	1,379
Total	4,908	3,785	5,150
As a percentage of total general and administrative expenses	3.97%	4.33%	5.15%

The number of direct employees and contract workers follows (full amount, unaudited):

	December 31,		
	2017	2016	2015
Direct employees	7,031	12,184	12,085
Contract workers	478	614	754
Papuans included in total number of direct employees and contract workers	2,893	4,638	4,601

In addition to these direct employees and contract workers, the Company employs contractors that have personnel at its operations totaling approximately 20,591 at December 31, 2017, 20,654 at December 31, 2016, and 19,800 at December 31, 2015.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

a. Basis of Preparation of the Consolidated Financial Statements

The consolidated financial statements have been prepared in accordance with Indonesian Financial Accounting Standards (PSAK), which comprise the Statements and Interpretations of Financial Accounting Standards (ISAK) issued by Indonesian Financial Accounting Standards Board (DSAK). The consolidated financial statements are prepared in accordance with PSAK No. 1 (Revised 2013), "Presentation of Financial Statements."

Except for the consolidated statement of cash flows, the consolidated financial statements are prepared on the accrual basis, using the historical cost concept, except for certain accounts that are measured at fair value as described in the related accounting policies. The consolidated statement of cash flows is prepared using the direct method by classifying cash flows on the basis of operating, investing and financing activities.

Certain accounting principles applied by the Company that conform with PSAK may not conform with generally accepted accounting principles and financial standards in other countries.

The subsidiaries' financial statements are prepared for the same reporting period as the parent company, using consistent accounting policies.

Changes to PSAKs and ISAKs

The adoption of the new standards, amendments and interpretations issued and effective for the financial year beginning January 1, 2017, did not have a material impact to the consolidated financial statements of the Company, and are as follows:

- Amendment to PSAK No. 1 (Revised 2013) was adopted from Amendment to International Accounting Standards (IAS) No. 1. The amendment clarifies, rather than significantly changes, the existing PSAK No. 1 requirements, among others, associated with materiality, flexibility as to the order in which the notes are presented in the financial statements and identification of significant accounting policies.
- PSAK No. 24 (2016 Improvement), "Employee Benefits" was adopted from Annual Improvements to International Financial Reporting Standards (IFRS) 2012-2014 Cycle (IAS No. 19). This improvement clarifies that the market depth of high-quality corporate bonds is assessed based on the currency in which the benefit obligation is denominated, rather than the country where the benefit obligation is located.
- PSAK No. 58 (2016 Improvement), "Non-Current Assets, Held for Sale and Discontinued Operations," was adopted from Annual Improvements to IFRSs 2012-2014 Cycle (IFRS No. 5). This improvement clarifies that a change from one disposal method to another disposal method is considered at the beginning of a sustainable plan and not as a new disposal plan. This improvement also clarifies that the change in the disposal method does not change the date of classification as an asset or disposal group.
- PSAK No. 60 (2016 Improvement), "Financial Instruments: Disclosures," was adopted from Annual Improvements to IFRSs 2012-2014 Cycle (IFRS No. 7). This improvement clarifies that an entity must assess the nature of the service contract benefits to determine whether the entity has a continuing involvement in financial assets and whether the disclosure requirements related to the continuing involvement are met.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

b. Principles of Consolidation and Joint Arrangements

Principles of Consolidation

The Company applies PSAK No. 65, "Consolidated Financial Statements," which among others, requires management to exercise significant judgment to determine which entities are controlled and, therefore, are required to be consolidated.

Control is achieved when the Company is exposed, or has rights, to variable returns from its involvement with the investee and has the ability to affect those returns through its power over the investee. Specifically, the Company controls an investee if, and only if, the Company has all of the following (three elements of control):

a) power over the investee (i.e., existing rights that give it the current ability to direct the relevant activities of the investee);
b) exposure, or rights, to variable returns from its involvement with the investee; and
c) the ability to use its power over the investee to affect the Company's returns.

Generally, there is a presumption that a majority of voting rights result in control. To support this presumption and when the Company has less than a majority of the voting, or similar, rights of an investee, it considers all relevant facts and circumstances in assessing whether it has power over an investee, including:

- the contractual arrangement(s) with the other vote holders of the investee;
- rights arising from other contractual arrangements; and
- the Company's voting rights and potential voting rights.

The Company reassesses whether or not it controls an investee if facts and circumstances indicate that there are changes to one or more of the three elements of control. Consolidation of a subsidiary begins when the Company obtains control over the subsidiary and ceases when the Company loses control of the subsidiary.

All material intercompany transactions and account balances have been eliminated.

The consolidated financial statements include the accounts of the Company and its majority-owned subsidiaries (Note 1b). The Company proportionately consolidates its unincorporated joint venture with Rio Tinto (see Note 1a and the following discussion for Joint Arrangements). References to "aggregate" amounts in these notes mean the total of the Company's share and Rio Tinto's share as the Company's joint venture partner.

Joint Arrangements

The Company applies PSAK No. 66, "Joint Arrangements," which defines joint control and requires an entity that is a party to a joint arrangement to determine the type of joint arrangement in which it is involved by assessing its rights and obligations and to account for those rights and obligations in accordance with the type of joint arrangement. The Company has the following two types of joint arrangements.

Joint Operation

A joint operation is a type of arrangement in which the parties with joint control of the arrangement have rights to the assets and obligations for the liabilities relating to the arrangement. In relation to the Company's joint arrangement with Rio Tinto, the consolidated financial statements include:

- assets, including the Company's share of any assets held jointly;
- liabilities, including the Company's share of any liabilities held jointly;
- revenue from the sale of the Company's share of the output arising from the joint operation; and
- expenses, including any expenses incurred jointly.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

b. Principles of Consolidation and Joint Arrangements (continued)

Joint Ventures

A joint venture is a type of arrangement in which the parties with joint control of the arrangement have rights to the net assets of the arrangement, which is recognized as an investment. The Company applies PSAK No. 15 (Revised 2013), "Investment in Associates and Joint Ventures," which prescribes the accounting for investments in associated companies with respect to the determination of significant influence, accounting method to be applied and whether it is necessary to recognize impairments to the net investment.

The Company's investment in PT Smelting is accounted for using the equity method. Under the equity method, the investment is initially recognized at cost. In subsequent periods, the investment is increased or decreased by the Company's share in net earnings or losses and dividends received from the investee since the date of acquisition. The consolidated statement of profit or loss and other comprehensive income reflects the Company's share of the results of operations of PT Smelting. Unrealized gains and losses resulting from transactions between the Company and an associate are eliminated to the extent of the Company's interest in the associate.

The Company's investment in AVCO is accounted for using the cost method because all of AVCO's costs are charged through to the Company.

Where there has been a change recognized directly in the equity of an associate, the Company recognizes its share of any such changes and discloses this, when applicable, in the consolidated statement of changes in equity.

The Company determines at each reporting date whether there is any objective evidence that the investment in an associate is impaired. If this is the case, the Company calculates the amount of impairment as the difference between the recoverable amount of the investment in the associate and its carrying value, and recognizes the impairment amount in the consolidated statement of profit or loss and other comprehensive income.

c. Foreign Currency Transactions

The Company applies PSAK No. 10 (Revised 2010), "The Effects of Changes in Foreign Exchange Rates," which prescribes how to include foreign currency transactions and foreign operations in the financial statements of an entity and translate financial statements into a presentation currency. The Company considers the primary indicators and other indicators in determining its functional currency. If indicators are mixed and the functional currency is not obvious, management uses its judgment to determine the functional currency that represents the economic effects of the underlying transactions, events and conditions.

The Company has determined its functional currency is the US$, and its reporting currency, as authorized by its COW, is the US$. Transactions in currencies other than the US$ are initially recorded in the functional currency at the respective functional currency exchange rates prevailing at the date of the transaction. Monetary assets and liabilities denominated in such currencies are translated at the spot rate of exchange on the reporting date. All differences are recorded in the consolidated statement of profit or loss and other comprehensive income. Non-monetary items that are measured at historical cost in such currency are translated using the exchange rate at the date of the initial transaction.

The rates of exchange used for one US$ for the most significant currencies used by the Company other than US$ were as follows (full amount):

		December 31,		
	Source	2017	2016	2015
Rupiah (Rp) (Rp/$)	Bank Indonesia	13,480	13,369	13,726
Australian dollar (AUD/$)	Bank of America	1.28	1.39	1.37

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

d. Cash and Cash Equivalents

Cash and cash equivalents consist of cash on hand and in banks, time deposits and all unrestricted investments with original maturities of three months or less.

e. Inventories

Inventories consist of materials and supplies, mine and mill stockpiles, and finished goods (copper concentrate). Inventories are stated at the lower of weighted-average cost or net realizable value and are removed at weighted-average cost. For all periods presented, inventories are stated at weighted-average cost, which includes the costs of purchase and appropriate overhead costs incurred in bringing the inventory to its present location and condition. Net realizable value is the estimate of the selling price in the ordinary course of the business, less the costs of completion and selling expenses. The allowance for obsolescence of materials and supplies is provided to reduce the carrying value of inventories to their net realizable value.

The mine and mill stockpiles represent ores that have been extracted from the ore body that are temporarily stored above ground for processing in future periods. Because it is impracticable to determine copper contained in the mine and mill stockpiles by physical count, reasonable estimation methods are employed. Stockpiles not expected to be processed within 12 months are classified as long-term inventory.

f. Property, Plant and Equipment

The Company applies PSAK No. 16 (Revised 2011), "Property, plant and equipment," which prescribes the accounting treatment for the recognition of the assets, the determination of the carrying amounts and the depreciation charges and impairment losses to be recognized in relation to the assets.

Property, plant and equipment are initially recognized at cost, which comprises purchase price and any costs directly attributable in bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management.

Subsequent to initial recognition, property, plant and equipment are stated at cost less accumulated depreciation and impairment losses. Such cost includes the cost of replacing part of the property, plant and equipment when that cost is incurred, if the recognition criteria are met.

An item of property, plant and equipment is derecognized upon disposal or when no future economic benefits are expected from its use or disposal. Any gain or loss arising on derecognition of the asset (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is included in the consolidated statement of profit or loss and other comprehensive income in the year the asset is derecognized.

Construction in progress represents the accumulated costs of materials and other costs, including attributable capitalized interest costs and currency exchange gains or losses specifically related to financing the construction in progress up to the date when the asset is complete and ready for service, at which time these costs are transferred to the relevant assets. Depreciation for mining and milling life-of-mine assets, infrastructure and other common costs is determined using the unit-of-production (UOP) method based on total estimated recoverable proven and probable copper reserves. Other assets are depreciated on a straight-line basis over the estimated useful lives as follows:

	Years
Machinery and equipment	3 – 20
Mobile equipment	5 – 20

The assets' residual values, useful lives and methods of depreciation are reviewed and adjusted prospectively, if appropriate, at each financial year end unless required more often.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

f. Property, Plant and Equipment (continued)

The Company applies PSAK No. 26 (Revised 2011), "Borrowing Costs," which requires borrowing costs that are attributable to the acquisition, construction or production of a qualifying asset to be capitalized as part of such qualifying asset. Where the funds used to finance a project form part of general borrowings, the amount capitalized is calculated using a weighted average of rates applicable to relevant general borrowings of the Company during the period. All other borrowing costs are recognized as an expense in the period in which they are incurred.

Capitalization of borrowing costs commences when the activities to prepare the qualifying asset for its intended use have started and the expenditures for the qualifying asset and the borrowing costs have been incurred. Capitalization of borrowing costs ceases when all the activities necessary to prepare the qualifying asset for its intended use are substantially completed.

g. Exploration and Evaluation Assets, and Mine Properties

The Company applies PSAK No. 64, "Exploration for and Evaluation of Mineral Resources," which specifies the financial reporting for the exploration and evaluation of mineral resources, and requires an entity to assess exploration assets for impairment in accordance with PSAK No. 48 (Revised 2014), "Impairment of Assets."

Mineral exploration and evaluation costs are capitalized and recognized as "Exploration and evaluation assets" for each potential significant area of interest associated with a mineral deposit where such costs are expected to be recouped through exploitation or sale, or activities have not yet reached a stage that permits a reasonable assessment of the existence of economically recoverable reserves and active and significant exploration of the area of interest is continuing.

Exploration and evaluation activity includes researching and analyzing historical exploration data, gathering exploration data through geophysical studies, exploratory drilling and sampling, determining and examining the volume and grade of the resource, surveying transportation and infrastructure requirements and conducting market and finance studies.

Exploration and evaluation assets are subsequently measured using a cost model and classified as tangible assets, unless they are qualified to be recognized as intangibles.

Exploration and evaluation assets are transferred to "Under development" and "Undeveloped" after the mining properties are determined to be economically viable to be developed.

Development costs are capitalized in "Under development" and "Undeveloped" mining properties beginning after proven and probable reserves have been established. Development costs include costs incurred resulting from mine pre-production activities undertaken to gain access to proven and probable reserves, including adits, drifts, ramps, permanent excavations, infrastructure and removal of overburden. Additionally, interest expense allocable to the cost of developing mining properties is capitalized up to the date when the development activities are substantially complete.

Upon completion of mine development and upon the commencement of commercial production, the "Under development" assets are transferred to the "Developed and producing mines" account, which are stated at cost, less accumulated depreciation and impairment losses. Mines are depreciated using the UOP method based on estimated recoverable proven and probable copper reserves for the ore body benefited.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

h. Deferred Stripping

The Company applies ISAK No. 29, "Stripping Costs in the Production Phase of a Surface Mine," which prescribes the procedures to be applied by an entity to account for overburden waste removal (stripping) costs in the production phase of a surface mine. Costs incurred in undertaking stripping activities are considered to create two possible benefits - the extraction of ore (inventory) in the current period and an improved access to an ore body to be mined in a future period. Surface mining costs associated with the overburden removal at the Company's Grasberg open-pit mine that has been identified as a component of the ore body for which access has been improved (related to ore to be mined in future periods) and can be measured reliably result in a non-current asset ("Deferred stripping costs") on the Company's statement of financial position. The deferred stripping costs are being amortized using the UOP method based on total estimated recoverable proven and probable copper reserves for the Grasberg open-pit mine.

i. Impairment of Non-Financial Assets

The Company applies PSAK No. 48 (Revised 2014), which prescribes the procedures to be applied by an entity to ensure that its assets are carried at no more than their recoverable amount. If an asset is carried at more than the amount to be recovered through use or sale of the asset, the asset is impaired and the entity is required to recognize an impairment loss. This PSAK also specifies when an entity should reverse an impairment loss and the required disclosures.

The Company assesses at each reporting date whether there is an indication that an asset may be impaired. If any such indication exists, the Company makes an estimate of the asset's recoverable amount. An asset's recoverable amount is the higher of its fair value less costs to sell and its value in use, and is determined for an individual asset, unless the asset does not generate cash inflows that are largely independent of those from other assets or groups of assets. Where the carrying amount of an asset exceeds its recoverable amount, the asset is considered impaired and is written down to its recoverable amount. Impairment losses from assets used in continuing operations are recognized in the consolidated statement of profit or loss and other comprehensive income as "impairment losses" in the categories that are consistent with the functions of the impaired assets. In assessing the value in use, the estimated net future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. In determining fair value less costs to sell, recent market transactions are taken into account, if available. If no such transactions can be identified, an appropriate valuation model is used to determine the fair value of the asset. These calculations are corroborated by valuation multiples or other available fair value indicators.

Management believes that there were no indications of potential impairment of non-financial assets as of December 31, 2017, 2016 and 2015.

j. Transactions with Related Parties

The Company applies PSAK No. 7 (Revised 2010), "Related Party Disclosures," which requires disclosure of related party relationships, transactions and outstanding balances, including commitments. All significant transactions and balances with related parties are disclosed in the relevant notes herein.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

k. Leases

The Company applies PSAK No. 30 (Revised 2011), "Leases," which prescribes, for lessees and lessors, the appropriate accounting policies and disclosures to apply in relation to leases that transfer the right to use assets even though substantial services by the lessor may be called for in connection with the operation or maintenance of such assets.

The determination of whether an arrangement is or contains a lease is based on the substance of the arrangement at the inception date and whether the fulfillment of the arrangement is dependent on the use of a specific asset and the arrangement conveys a right to use the asset. Leases that transfer to the lessee substantially all of the risks and rewards incidental to ownership of the leased item are classified as finance leases. Leases that do not transfer substantially all of the risks and rewards incidental to ownership of the leased item are classified as operating leases. Assets under finance leases are recorded based on the present value of the lease payments at the beginning of the lease term plus residual value (option price) to be paid at the end of the lease period. Depreciation is determined using the same methods and lives applied to property, plant and equipment.

l. AROs

The Company records the fair value of estimated AROs associated with tangible long-lived assets in the period incurred. Retirement obligations associated with long-lived assets represent the costs to remove facilities, equipment and other assets and restore related areas for which there is a legal obligation to settle under existing or enacted law, statute, written or oral contract or by legal construction. These obligations, which are initially estimated based on discounted cash flow estimates, are accreted to full value over time through charges to cost of sales. In addition, asset retirement costs are capitalized as part of the related asset's carrying value and are depreciated on a UOP basis over the respective asset's useful life. Reclamation costs for future disturbances are recognized as an ARO and as a related asset retirement cost in the period of the disturbance. The Company's AROs consist of costs associated with mine reclamation, closure and other remediation activities. These activities generally include costs for earthwork, revegetation, water treatment and demolition (Note 21).

m. Reclamation Guarantee

The Company submits five-year reclamation plans of projected ongoing reclamation activities at its operations to the Indonesian Department of Energy and Mineral Resources in compliance with its commitments under its previously approved environmental management plan. The Company's latest plan for projected ongoing reclamation activities from 2014 through 2018 was submitted in 2014. In July 2014, the Ministry of Energy and Mineral Resources issued a new regulation that requires a company to provide a mine closure guarantee in the form of either a joint account with the GOI or a time deposit placed in a state-owned bank in Indonesia, or a bank guarantee issued by a state-owned bank in Indonesia. As a result of the new regulation, the Company elected to provide a bank guarantee (Notes 21 and 23). The bank guarantee must be increased each year for that year's projected reclamation activities and may be reduced upon the Company providing evidence to the government that the reclamation activities have been performed, and the government providing a formal notice releasing the guarantee.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

n. Revenue Recognition

The Company applies PSAK No. 23 (Revised 2010), "Revenue," which identifies the circumstances in which the criteria on revenue recognition will be met, and therefore, revenue may be recognized. It also prescribes the accounting treatment for revenue arising from certain types of transactions and events, and also provides practical guidance on the application of the criteria on revenue recognition.

The Company's sales of copper concentrate (the resulting product from the concentrating process that is composed predominantly of copper sulfide minerals), which also contain significant quantities of gold and silver, are recognized in revenues when the title to the concentrate is transferred to the buyer (which coincides with the transfer of the risk of loss) at the point the copper concentrate is moved over the rail of third-party marine vessels at the Company's port facility at Amamapare, Papua, Indonesia.

Revenues from the Company's copper concentrate sales are initially recorded based on a provisional sales price later adjusted to the final sales price calculated in accordance with the terms specified in the relevant sales contract. Revenues from copper concentrate sales are recorded net of royalties, export duties, treatment and all refining charges (including price participation, if applicable) and the impact of derivative contracts, if any. Moreover, because a portion of the metals contained in copper concentrate is unrecoverable as a result of the smelting process, the Company's revenues from copper concentrate sales are also recorded net of allowances based on the quantity and value of these unrecoverable metals. These allowances are a negotiated term of the Company's contracts and vary by customer. Treatment and refining charges represent payments to smelters and refiners and are either fixed, or in certain cases, vary with the price of copper.

The Company's copper concentrate sales agreements, including its sales to Atlantic Copper, S.L.U. (Atlantic Copper, a wholly owned subsidiary of FCX involved in the smelting and refining business in Spain) and PT Smelting, provide for provisional billings, which are prevalent in the industry, based on world metals prices when shipped, primarily using then-current prices on the LME. Final settlement of the copper portion is generally based on quoted monthly average LME spot copper prices for a specified future month, generally the first, second or third month after the month of arrival at the customer's facility. Final delivery to customers in Asia generally takes up to 25 days and to customers in Europe generally takes up to 55 days.

Under PSAK No. 55 (Revised 2014), "Financial Instruments: Recognition and Measurement," the Company's sales based on a provisional sales price contain an embedded derivative that is required to be bifurcated from the host contract. The host contract is the sale of the metals contained in the concentrate at the then-current spot LME price. The embedded derivative, which does not qualify for hedge accounting, is marked to fair value through earnings each subsequent period until final settlement, using the period-end forward prices for the expected settlement date (Note 24).

Gold sales are priced according to individual contract terms, generally the average London gold price for a specified month near the month of shipment (Note 24).

The copper royalty rate payable by the Company under its COW, prior to modifications discussed in Note 23 as a result of a Memorandum of Understanding (MOU) entered into with the GOI in July 2014, varied from 1.5 percent of copper net revenue at a copper price of US$0.90 or less per pound to 3.5 percent at a copper price of US$1.10 or more per pound. The COW royalty rate for gold and silver sales was at a fixed rate of 1.0 percent. Under the above mentioned MOU, the current royalty rates are 4.0 percent for copper sales, 3.75 percent for gold sales and 3.25 percent for silver sales.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

o. Pension Plan

The Company applies PSAK No. 24 (Revised 2013), which establishes the accounting and disclosures for employee benefits and requires the recognition of a liability and expense when an employee has provided service and the entity receives an economic benefit arising from the service.

The liability recognized in the consolidated statement of financial position in respect of defined benefit plans is the present value of the defined benefit obligation at the statement of financial position date less the fair value of plan assets, adjusted for any effect of the asset ceiling. The defined benefit obligation is calculated annually by an independent actuary using the projected-unit-credit method. The present value of the defined benefit obligation is determined by discounting the estimated future cash outflows using interest rates of Indonesian government bonds that are denominated in the currency in which the benefit will be paid, and that have terms to maturity approximating the terms of the related pension liability. Actuarial gains or losses arising from experience adjustments and changes in actuarial assumptions are charged or credited to equity through other comprehensive income in the period in which they arise.

Past-service costs are recognized immediately in profit or loss. Gains or losses on the curtailment or settlement of a defined benefit plan are recognized in profit or loss when the curtailment or settlement occurs.

The Company is required to provide a minimum amount of pension benefits in accordance with Labor Law No. 13/2003. The Company's pension liability based on the calculation of the benefit obligation performed by the actuary provides that the expected benefits under the Company's pension plan will at least equal the minimum requirements of the Labor Law.

p. Share-Based Payments

The Company does not grant share-based payment awards of its common stock to its employees. Compensation costs for share-based payments related to shares of FCX common stock granted to the Company's employees are measured at fair value and charged to expense over the requisite service period for awards that are expected to vest. The fair value of stock options is determined using the Black-Scholes-Merton option valuation model. The fair value for stock-settled restricted stock units (RSUs) is based on FCX's common stock price on the date of grant. The fair value for liability-classified, cash-settled RSUs is remeasured each reporting period using the FCX common stock price. FCX estimates forfeitures at the time of grant and revises those estimates in subsequent periods if actual forfeitures differ from those estimates through the final vesting date of the awards. See Note 5 for further discussion.

q. Taxes

Income Taxes

The Company applies PSAK No. 46 (Revised 2013), "Income Taxes," which requires the Company to account for the current and future tax consequences of the future recovery (settlement) of the carrying amount of assets (liabilities) that are recognized in the statement of financial position, and transactions and other events of the current period that are recognized in the financial statements. The Company presents interest and penalties for the underpayment/overpayment of income tax, if any, as part of "Income Tax Expense - Current" in the consolidated statement of profit or loss and other comprehensive income.

Current tax expense is provided based on the estimated taxable income for the period. Deferred tax assets and liabilities are recognized for temporary differences between the financial and the tax bases of assets and liabilities at each reporting date. Substantially all these differences relate to property, plant, equipment, exploration and development costs. Future tax benefits, such as the carryforward of unused tax losses, are also recognized to the extent that realization of such benefits is probable. The tax effects for the period are allocated to current operations, except for the tax effects from transactions that are directly charged or credited to equity.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

q. Taxes (continued)

Income Taxes (continued)

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply to the period when the asset is realized or the liability is settled, based on tax rates (and tax laws) that have been enacted or substantively enacted at the statement of financial position dates. Changes in the carrying amount of deferred tax assets and liabilities as a result of a change in tax rates are credited or charged to current operations, except to the extent that they relate to items previously charged or credited to equity.

Adjustments to tax obligations are recorded when an assessment is received or, if appealed by the Company and its subsidiaries, when the result of the appeal is determined.

Value-added Tax (VAT)

Revenues, expenses, assets and liabilities are recognized net of the amount of VAT except:

- where the VAT incurred on a purchase of assets or services is not recoverable from the taxation authority, in which case that VAT is recognized as part of the cost of acquisition of the asset or as part of the expense item, as applicable; and
- when receivables and payable are stated with the amount of VAT included.

The net amount of VAT recoverable from, or payable to, the taxation authority is included as part of prepaid taxes or payables in the consolidated statement of financial position.

r. Financial Instruments

The Company applies PSAK No. 50 (Revised 2014), "Financial Instruments: Presentation," PSAK No. 55 (Revised 2014) and PSAK No. 60 (Revised 2014). PSAK No. 50 (Revised 2014) establishes the principles for presenting financial instruments as liabilities or equity and for offsetting financial assets and liabilities. PSAK No. 55 (Revised 2014) establishes the principles for recognizing and measuring financial assets, financial liabilities and some contracts to buy or sell non-financial items. PSAK No. 60 (Revised 2014) requires disclosures in financial statements that enable users to evaluate the significance of financial instruments for financial position and performance; and the nature and extent of risks arising from financial instruments to which the entity is exposed during the period and at the end of the reporting period, and how the entity manages those risks.

Financial assets are classified as financial assets at fair value through profit or loss, loans and receivables, held-to-maturity investments, available-for-sale financial assets, or as derivatives designated as hedging instruments in an effective hedge, as appropriate. The Company determines the classification of its financial assets at initial recognition.

All financial assets are recognized initially at fair value plus, in the case of investments not recorded at fair value through profit or loss, directly attributable transaction costs.

Purchases or sales of financial assets that require delivery of assets within a time frame established by regulation or convention in the market place (regular way trades) are recognized on the trade date, i.e., the date the Company commits to purchase or sell the asset.

The fair value of financial instruments that are actively traded in organized financial markets is determined by reference to quoted market bid prices at the close of business at the end of the reporting period. For financial instruments where there is no active market, fair value is determined using valuation techniques. Such techniques may include using recent arm's-length market transactions, reference to the current fair value of another instrument that is substantially the same, discounted cash flow analysis or other valuation models.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

r. Financial Instruments (continued)

Financial assets and liabilities are offset and the net amount reported in the consolidated statement of financial position if, and only if, there is a currently enforceable legal right to offset the recognized amounts and there is an intention to settle on a net basis, or to realize the assets and settle the liabilities simultaneously.

Derivative financial instruments are initially recognized at fair value on the date on which a derivative contract is entered into and are subsequently remeasured at fair value. Derivatives are carried as financial assets when the fair value is positive and as financial liabilities when the fair value is negative. Any gains or losses arising from changes in fair value of derivatives during the period that do not qualify for hedge accounting are recognized immediately in the consolidated statement of profit or loss and other comprehensive income.

As described under "Revenue Recognition," certain of the Company's copper concentrate sales contracts allow for final pricing in future periods. The Company applies the normal purchases and normal sales exemption in accordance with derivatives and hedge accounting guidance to the host sales agreements since the contracts do not allow for net settlement and always result in physical delivery. Under PSAK No. 55 (Revised 2014), these pricing terms cause a portion of the contracts to be considered embedded derivatives that are required to be recorded at fair value (Note 24). The recorded value of these embedded derivatives is presented with the related host contract in the consolidated statement of financial position line item that appropriately represents the overall future cash flows for the instrument taken as a whole.

At times, the Company has entered into derivative contracts to manage certain market risks resulting from fluctuations in commodity prices (primarily copper and gold) by creating offsetting market exposures. See Note 24 for a summary of the Company's outstanding derivative instruments and a discussion of the Company's risk management strategies.

Other financial instruments include cash and cash equivalents, restricted cash, trade receivables, other receivables, long-term notes and accounts receivable, which are financial assets classified as loans and receivables. Financial liabilities include trade payables, accrued liabilities, unearned customer receipts, royalties payable, finance lease obligation and long-term debt. These financial instruments are initially recognized at fair value and subsequently measured at amortized cost using the effective interest rate (EIR) method. Interest is recognized in the consolidated statement of profit or loss and other comprehensive income for interest-bearing financial loans and receivables. Gains and losses are recognized in the consolidated statement of profit or loss and other comprehensive income when these financial instruments are derecognized or impaired, as well as through the amortization process. The carrying value of these financial instruments, except for finance lease obligation and long-term debt, approximates fair value. Finance lease obligation and long-term debt are recorded at amortized cost, which does not approximate fair value.

The Company applies PSAK No. 68, "Fair Value Measurement," which provides guidance on how to measure fair value when the fair value is required or permitted. The fair value of an asset or a liability is measured using the assumptions that market participants would use when pricing the asset or liability, assuming that market participants act in their economic best interest. Fair value related disclosures for financial instruments are included in Note 24.

Impairment of financial assets

The Company assesses at the end of each reporting period whether there is any objective evidence that a financial asset or a group of financial assets is impaired.

For loans and receivables carried at amortized cost, the Company first assesses whether objective evidence of impairment exists individually for financial assets that are individually significant, or collectively for financial assets that are not individually significant. If the Company determines that no objective evidence of impairment exists for an individually assessed financial asset, whether significant or not, it includes the asset in a group of financial assets with similar credit-risk characteristics and the group is collectively assessed for impairment. Assets that are individually assessed for impairment and for which an impairment loss is, or continues to be, recognized are not included in a collective assessment of impairment.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

r. Financial Instruments (continued)

Impairment of financial assets (continued)

If there is objective evidence that an impairment loss has occurred, the amount of the loss is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows (excluding future expected credit losses that have not yet been incurred). The present value of the estimated future cash flows is discounted at the financial asset's original EIR. If a loan or receivable has a variable interest rate, the discount rate for measuring impairment loss is the current EIR.

The carrying amount of the asset is reduced through the use of an allowance account and the amount of the loss is recognized in the consolidated statement of profit or loss and other comprehensive income. Interest income continues to be accrued on the reduced carrying amount based on the rate of interest used to discount future cash flows for the purpose of measuring impairment loss. Loans and receivables, together with the associated allowance, are written off when there is no realistic prospect of future recovery and all collateral has been realized or has been transferred to the Company. If, in a subsequent period, the amount of the estimated impairment loss increases or decreases because of an event occurring after the impairment was recognized, the previously recognized impairment loss is increased or reduced by adjusting the allowance account. If a future write-off is later recovered, the recovery is recognized in the consolidated statement of profit or loss and other comprehensive income.

Derecognition of financial assets and liabilities

Financial Assets

A financial asset (or where applicable, a part of a financial asset or part of a group of similar financial assets) is derecognized when: (a) the rights to receive cash flows from the asset have expired; or (b) the Company has transferred its rights to receive cash flows from the asset or has assumed an obligation to pay the received cash flows in full without material delay to a third party under a "pass-through" arrangement and either (i) the Company has transferred substantially all the risks and rewards of the asset, or (ii) the Company has neither transferred nor retained substantially all the risks and rewards of the asset, but has transferred control of the asset.

Financial Liabilities

A financial liability is derecognized when the obligation under the liability is discharged or cancelled or has expired.

When an existing financial liability is replaced by another from the same lender on substantially different terms, or the terms of an existing liability are substantially modified, such an exchange or modification is treated as a derecognition of the original liability and the recognition of a new liability, and the difference in the respective carrying amounts is recognized in the consolidated statement of profit or loss and other comprehensive income.

s. Earnings Per Share

The Company applies PSAK No. 56 (Revised 2011), "Earnings Per Share," which requires the computation of basic earnings per share by dividing net profit by the weighted-average number of shares outstanding during the period. The Company had no dilutive securities for any of the periods presented; therefore, no diluted earnings per share were disclosed.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

t. Segment Information

Segment information is based on PSAK No. 5 (Revised 2009), "Operating Segments," which requires disclosures that will enable users of financial statements to evaluate the nature and financial effects of the business activities in which the entity engages and the economic environments in which it operates. A segment is a distinguishable component of an entity that is engaged either in providing certain products (business segment), or in providing products within a particular economic environment (geographic segment), which is subject to risks and rewards that are different from those of other segments. Based on the information used by management in evaluating the performance of the Company and its subsidiaries, the Company has only one reportable segment (mining exploration, development and production). All of the operational activities of the Company and its subsidiaries are conducted in Indonesia.

u. Source of Estimation Uncertainty

The preparation of the Company's financial statements requires management to make judgments, estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities, and the disclosures of contingent liabilities, at the end of the reporting period that affect the amounts reported in these financial statements and accompanying notes. Uncertainty about these assumptions and estimates could result in outcomes that require a material adjustment to the carrying amount of the asset and liability affected in the future periods. The more significant areas requiring the use of management estimates include mineral reserve estimation; useful asset lives for depreciation and amortization; deferred stripping costs; allowances for obsolete inventory; asset retirement costs; pension, postretirement and other employee benefits; deferred taxes and valuation allowances; and future cash flows associated with assets. Actual results could differ from those estimates.

Judgments

Classification of Financial Assets and Liabilities

The Company determines the classifications of certain assets and liabilities as financial assets and financial liabilities by judging if they meet the definition set forth in PSAK No. 55 (Revised 2014). Accordingly, the financial assets and financial liabilities are accounted for in accordance with the Company's accounting policies disclosed in Note 2r.

Functional Currency

The functional currency for the Company is the currency of the primary economic environment in which the entity operates. The Company has determined the functional currency of each entity is the US$. Determination of functional currency may involve certain judgments to determine the primary economic environment and the Company reconsiders the functional currency of its entities if there is a change in events and conditions that determined the primary economic environment.

Production Start Date

The Company assesses the stage of each mine under construction to determine when a mine moves into the production phase. The pre-commercial production phase starts when ore is extracted during the development activity for the purpose of obtaining access to the ore body, while the production phase starts when the mine is substantially complete and ready for its intended use. The criteria used to assess the start date are determined based on the unique nature, complexity and location of each mine construction project. The Company considers various relevant criteria to assess when the production phase is considered to have commenced. At this point, all related amounts are reclassified from "Under development" to "Developed and producing mines" and/or "Property, plant and equipment." Some of the criteria used to identify the production start date include, but are not limited to:

- level of capital expenditure incurred compared with the original construction cost estimate;
- completion of a reasonable period of testing of the mine plant and equipment;
- ability to produce metal in saleable form (within specifications); and
- ability to sustain ongoing production of metal at mine design capacity.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

u. Source of Estimation Uncertainty (continued)

Judgments (continued)

When a mine development project moves into the production phase, the capitalization of certain mine development costs ceases and costs are either regarded as forming part of the cost of inventory or expensed, except for costs that qualify for capitalization relating to mining asset additions or improvements, underground mine development or mineable reserve development. It is also at this point that depreciation/amortization commences.

Estimates and Assumptions

The key assumptions concerning the future and other key sources of estimation uncertainty at the reporting date that have a significant risk of causing a material adjustment to carrying amounts of assets and liabilities within the next financial year are disclosed below. The Company based its assumptions and estimates on parameters available when the financial statements were prepared. Existing circumstances and assumptions about future developments may change as a result of market changes or circumstances arising beyond the control of the Company. Such changes are reflected in the assumptions when they occur.

Income Taxes

Significant judgment is involved in determining the provision for corporate income tax. There are certain transactions for which the ultimate tax determination is uncertain. The Company recognizes liabilities for expected corporate income tax issues based on estimates of whether additional corporate income tax will be due.

Financial Instruments

The Company carries certain financial assets and liabilities at fair value, which requires the use of accounting estimates. While significant components of fair value measurement were determined using verifiable objective evidence, the amount of changes in fair value could differ if the Company utilized a different valuation methodology. Any changes in fair value of these financial assets and liabilities could directly affect the Company's profit or loss. The carrying amount of financial assets and liabilities carried at fair value in the consolidated statement of financial position is disclosed in Note 24.

When the fair values of non-financial assets need to be determined, (e.g., for the purposes of calculating fair value less cost to sell for impairment testing purposes), fair value is measured using valuation techniques, including the discounted cash flow model. The inputs to these models are taken from observable markets where possible, but where this is not feasible, a degree of judgment is required in establishing fair values. Judgments include considerations of inputs such as liquidity risk, credit risk and volatility. Changes in assumptions about these factors could affect the reported fair value of financial instruments.

Recoverability of Assets

Impairment assessments require the use of estimates and assumptions, such as long-term commodity prices (considering current and historical prices, price trends and related factors), discount rates, operating costs, future capital requirements, closure and rehabilitation costs, exploration potential, reserves and operating performance (which includes production and sales volumes). These estimates and assumptions are subject to risk and uncertainty. Therefore, there is a possibility that changes in circumstances will impact these projections, which may impact the recoverable amount of assets. In such circumstances, some or all of the carrying amount of the assets may be further impaired or the impairment charge reduced with the impact recognized in the consolidated statement of profit or loss and other comprehensive income.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

u. Source of Estimation Uncertainty (continued)

Estimates and Assumptions (continued)

Ore Reserves and Resource Estimates

Ore reserves are estimates of the amount of ore that can be economically and legally extracted from the Company's mining area. The determination of the Company's ore reserves and mineral resources involves numerous uncertainties with respect to the ultimate geology of the ore bodies, including quantities, grades and recovery rates. Estimating the quantity and grade of reserves requires the Company to determine the size, depth and shape of its ore bodies by analyzing geological data, such as samplings of drill holes, tunnels and other underground workings. In addition to the geology of its mine, assumptions are required to determine the economic feasibility of mining these reserves, including estimates of foreign exchange rates, future commodity prices and demand, the mining methods the Company uses and the related costs incurred to develop and mine its reserves. The Company's estimates of ore reserves and mineral resources are prepared by and are the responsibility of its employees, which are reviewed annually and verified by independent experts in mining, geology and reserve determination. Changes in the reserve or mineral resource estimates may have an impact on the carrying value of fixed assets (Note 8), mine properties (Note 9), deferred stripping costs (Note 10), asset retirement costs (Note 21) and recognition of deferred tax assets (Note 19).

Exploration and Evaluation Expenditures (Note 9)

The application of the accounting policy for exploration and evaluation expenditures requires judgment in determining whether future economic benefits are likely either from future exploitation or sale, or where activities have not reached a stage that permits a reasonable assessment of the existence of reserves.

The deferral policy requires management to make certain estimates and assumptions about future events or circumstances, in particular whether an economically viable extraction operation can be established. Estimates and assumptions may change if new information becomes available. If, after an expenditure is capitalized, information becomes available suggesting that the recovery of the expenditure is unlikely, the amount capitalized is written off in the consolidated statement of profit or loss and other comprehensive income in the period when the new information becomes available.

Deferred Stripping Costs (Note 10)

Stripping costs incurred during the production stage of operations, if they meet certain criteria, are deferred. This determination of deferred stripping costs requires the use of judgment and estimates, such as estimates of tonnes of waste to be removed over the life of the mining area and economically recoverable reserves extracted. Changes in these estimates are accounted for prospectively.

Provision for employee benefits (Note 20)

The determination of the Company's obligations and cost for pension, postretirement and other employee benefits is dependent on its selection of certain assumptions used by the independent actuaries in calculating such amounts. Those assumptions include discount rates, future annual salary increases, annual employee turn-over rate, disability rate, retirement age and mortality rate. While the Company believes that its assumptions are reasonable and appropriate, because of the long-term nature of these obligations, such estimates are subject to significant uncertainty.

UOP Depreciation (Note 8)

Estimated economically recoverable copper reserves are used in determining the depreciation and/or amortization of mine specific assets. This results in a depreciation/amortization charge proportional to the depletion of the anticipated remaining life-of-mine production. Each asset's life, which is assessed annually, depends on both its physical life limitations and present assessments of economically recoverable copper reserves of the mine property at which the asset is located. These determinations require the use of estimates and assumptions, including the amount of recoverable copper reserves. Changes in these estimates are accounted for prospectively.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

u. Source of Estimation Uncertainty (continued)

Estimates and Assumptions (continued)

Asset Retirement Costs (Note 21)

The Company estimates its AROs using an expected cash flow approach. The fair value of these obligations is measured as the present value of cash flow estimates after considering inflation and then applying a market-risk premium. The Company applies an estimated long-term inflation rate and discounts the projected cash flows at its estimated risk-free interest rate. After discounting the projected cash flows, a market-risk premium (currently 10 percent) is applied to reflect what a third party might require to assume these AROs. The market-risk premium is based on market-based estimates of rates that a third party would have to pay to insure its exposure to possible future increases in the value of these obligations.

Inventories (Note 6)

Net realizable value tests are performed at each reporting date and represent the estimated future sales price of the product the Company expects to realize when the product is processed and sold, less estimated costs to complete production and bring the product to sale. Where the time value of money is material, these future prices and costs to complete are discounted.

Stockpiles are measured by estimating the number of tonnes added and removed from the stockpile, and the estimated recovery percentage is based on the expected processing method. Stockpile tonnages are verified by monthly surveys.

Contingencies (Note 23)

By their nature, contingencies will only be resolved when one or more uncertain future events occur or fail to occur. The assessment of the existence, and potential amount, of contingencies inherently involves the exercise of significant judgment and the use of estimates regarding the outcome of future events.

v. Current Versus Non-current Classification and Reclassifications

The Company presents assets and liabilities in the consolidated statement of financial position based on current and non-current classification. An asset is current when either (a) it is expected to be realized or intended to be sold or consumed in the normal operating cycle; (b) it is held primarily for the purpose of trading; (c) it is expected to be realized within 12 months after the reporting period; or (d) it is cash or cash equivalent unless restricted from being exchanged or used to settle a liability for at least 12 months after the reporting period. All other assets are classified as non-current. A liability is current when either (a) it is expected to be settled in the normal operating cycle; (b) it is held primarily for the purpose of trading; (c) it is due to be settled within 12 months after the reporting period; or (d) there is no unconditional right to defer the settlement of the liability for at least 12 months after the reporting period. All other liabilities are classified as non-current. Deferred tax assets and liabilities are classified as non-current assets and liabilities.

Certain prior year amounts have been reclassified to conform with the current year presentation.

3. CASH AND CASH EQUIVALENTS

A summary of cash and cash equivalents follows:

	December 31,		
	2017	2016	2015
Cash on hand	298	295	291
Cash in banks:			
US dollar accounts			
JPMorgan Chase Bank, N.A.	31,257	1,016	741
PT Bank CIMB Niaga Tbk	3,161	145	3,310
PT Bank Rakyat Indonesia (PERSERO) Tbk	148	89	135
PT Bank Mandiri (PERSERO) Tbk	31	31	31
Rupiah accounts			
PT Bank CIMB Niaga Tbk	6,782	3,588	2,085
PT Bank Mandiri (PERSERO) Tbk	908	702	1,031
PT Bank Rakyat Indonesia (PERSERO) Tbk	275	383	49
PT Bank Papua	543	262	257
JPMorgan Chase Bank, N.A.	113	72	273
PT Bank Central Asia Tbk	61	19	-
Citibank, N.A.	3	4	-
Total cash in banks	43,282	6,311	7,912
Cash equivalents:			
Time deposits			
Rupiah accounts			
JPMorgan Chase Bank, N.A.	2,893	-	-
US dollar accounts			
PT Bank Rakyat Indonesia (PERSERO) Tbk	-	248	-
Money Market Fund			
US dollar accounts			
JPMorgan Chase Bank, N.A.	58,000	-	-
Total cash equivalents	60,893	248	-
Total cash and cash equivalents	104,473	6,854	8,203

Average annual interest rates applicable to the cash equivalent investments above are as follows:

	December 31,		
	2017	2016	2015
Time deposits			
Rupiah accounts			
JPMorgan Chase Bank, N.A.	3.6%	-	-
US dollar accounts			
PT Bank Rakyat Indonesia (PERSERO) Tbk	-	0.9%	-
Money Market Fund			
US dollar accounts			
JPMorgan Chase Bank, N.A.	1.4 %	-	-

Cash in banks earns interest at floating rates based on daily bank deposit rates.

As of December 31, 2017, there were no cash and cash equivalents with related parties or pledged as collateral for borrowings.

4. TRADE RECEIVABLES

Trade receivables consist of the following:

	December 31,		
	2017	2016	2015
Third parties:			
Mitsubishi Materials Corporation	79,307	10,845	3,544
Pan Pacific Copper Co., Ltd.	56,669	65,395	-
Vedanta Limited - Sterlite Copper	54,616	13,933	-
Philippine Associated Smelting	51,276	13,749	7,082
Sumitomo Metal Mining Co., Ltd.	45,936	25,663	13,435
LS-Nikko Copper Inc.	44,684	10,497	-
Yanggu Xiangguang Copper Co., Ltd.	15,726	1,913	2,028
Hindalco Industries Limited	14,182	56,302	5,097
Jiangxi Copper Company Limited	8,527	10,738	24,165
Jinchuan Group Ltd.	8,310	9,049	1,520
Mercuria Energy Trading S.A.	4,321	-	-
Furukawa Metals & Resources Co., Ltd	4,062	1,845	2,738
Metal Challenge Co., Ltd	-	3,962	-
Freepoint Metals & Concentrates LLC	-	3,637	408
Transamine Trading S.A.	-	1,840	-
Sterlite Industries (India) Limited	-	-	5,122
Dowa Metals & Mining Co., Ltd	-	-	2,720
Other	218	1,916	170
Total for third parties	387,834	231,284	68,029
Related parties (Note 5)	307,815	283,197	163,503
Total	695,649	514,481	231,532

The aging analysis of trade receivables is as follows:

	December 31,		
	2017	2016	2015
0 – 30 days	480,366	324,286	200,983
31 – 60 days	96,995	35,504	7,017
61 – 90 days	75,492	49,759	4,853
> 90 days	42,796	104,932	18,679
Total	695,649	514,481	231,532

All trade receivables are denominated in US$.

Management believes that all trade receivables are current and fully collectable and, therefore, no impairment is considered necessary. As of December 31, 2017, none of the trade receivables have been pledged as collateral or are interest-bearing.

5. SIGNIFICANT BALANCES AND TRANSACTIONS WITH RELATED PARTIES

The nature of transactions and relationships with related parties is as follows:

Related Parties	Relationship with the Related Parties	Transactions
PT Smelting	Associated company	Sales of copper concentrate
AVCO	Associated company	Operates Timika airport
Atlantic Copper	Shareholder's affiliate	Sales of copper concentrate
PT Puncakjaya Power	Shareholder's affiliate	Provider of power and related operation, maintenance and management services
PT Eksplorasi Nusa Jaya	Shareholder's affiliate	Mining consulting services
International Air Capital Inc. (IAC)	Shareholder's affiliate	The Company provides loans for IAC's capital expenditures
International Purveyors Inc.	Shareholder's affiliate	Procurement of materials and supplies and services used in the mining operations
FM Services Company and its wholly owned subsidiary, International Administrative Services Company	Shareholder's affiliate	Provides certain technical, management, administrative, financial and other services on behalf of the Company (Note 28)
FCX	Shareholder	Provides loans (Note 28), and share-based and other incentive compensation benefits to certain of the Company's employees
Dana Pensiun Freeport Indonesia	The Company is the founder of the pension fund. The fund is for the benefit of the Company's employees	Contributions to the defined benefit pension plan (Note 20)

PT Smelting

In the regular course of its business, the Company sells copper concentrate to PT Smelting (see Note 28 for further discussion of the agreement).

AVCO

AVCO operates the Timika airport in the Papua province of Indonesia under a contract with the Company.

Atlantic Copper

In the regular course of its business, the Company sells copper concentrate at market prices to Atlantic Copper, FCX's wholly owned smelting and refining subsidiary in Spain (see Note 28 for further discussion of the agreement).

PT Puncakjaya Power

PT Puncakjaya Power (Puncakjaya Power) is the owner of the assets supplying substantially all of the power needs for the Company's operations, including the 3x65 megawatt coal-fired power facilities located at the Port of Amamapare in Papua, Indonesia. Puncakjaya Power also charges the Company for certain operation, maintenance and management costs associated with the operation of the power facilities. The Company's aggregate payments to Puncakjaya Power totaled US$39.8 million (US$34.6 million net to the Company after Rio Tinto joint venture sharing) in 2017, US$38.7 million (US$33.5 million net to the Company after Rio Tinto joint venture sharing) in 2016 and US$ 37.9 (US$32.7 million net to the Company after Rio Tinto joint venture sharing) in 2015.

The balances of the Company's finance lease obligation to Puncakjaya Power follow:

	December 31,	
	2016	2015
Finance lease obligation (Note 17)	17,837	33,663
Less current portion of finance lease obligation	(17,837)	(15,826)
Finance lease obligation, less current portion	-	17,837

5. SIGNIFICANT BALANCES AND TRANSACTIONS WITH RELATED PARTIES (continued)

PT Eksplorasi Nusa Jaya

PT Eksplorasi Nusa Jaya, a wholly owned subsidiary of FCX, provides general services associated with the Company's mineral exploration activities, including related management/administrative information systems and logistics support. Services performed are charged to the Company at amounts approximating those that would be incurred if such services were performed by its own employees.

International Air Capital Inc.

IAC, a wholly owned subsidiary of FCX, is provided loans from the Company for its capital expenditures.

International Purveyors Inc.

International Purveyors Inc., a wholly owned subsidiary of FM Services Company (FMS), is a purchasing agent in Australia that procures materials and supplies and commodities for the Company's mining and milling operations.

FMS

FMS, a wholly owned subsidiary of FCX, incurs certain technical, management, administrative, financial and other costs on behalf and for the benefit of the Company. Services performed are charged to the Company at cost, which approximates amounts the Company believes would be incurred if such services were performed by its own employees.

FCX

FCX provides loans to the Company from time to time under a US$1.0 billion revolving credit note (see Note 18 for further discussion of the agreement).

FCX has granted stock options and restricted stock units of its common stock (which is publicly traded on the New York Stock Exchange in the US) to certain Company employees as part of its incentive compensation program. A stock option award gives the recipient the right to buy FCX's common stock at a specified price within a certain period or by a specified date, subject to certain vesting requirements. A restricted stock unit is a grant of FCX common stock issued to an individual that is not fully transferable until the vesting requirement is satisfied. FCX charges the related compensation costs in connection with these stock-based awards to the Company. No significant amounts of share-based compensation costs were capitalized during the periods presented. See the following section, "FCX Stock Awards," for additional information regarding compensation costs relating to FCX stock-based awards charged to the Company.

FCX has adopted other employee benefit plans with performance-based award criteria in which employees of the Company and FMS participate. The costs of such plans charged to the Company and recognized currently in exploration costs, production costs, general and administrative expenses, and selling and marketing expenses totaled US$32.0 million in 2017, US$11.0 million in 2016 and US$13.3 million in 2015. The costs of FCX stock-based compensation plans related to FMS employees charged to the Company totaled US$12.1 million in 2017, US$6.2 million in 2016 and US$10.2 million in 2015.

5. SIGNIFICANT BALANCES AND TRANSACTIONS WITH RELATED PARTIES (continued)

Significant statement of financial position amounts involving related parties are as follows:

	December 31,		
	2017	2016	2015
Trade receivables			
PT Smelting	307,815	283,197	159,767
Atlantic Copper	-	-	3,736
Total (Note 4)	307,815	283,197	163,503
As a percentage of total assets	2.89%	2.69%	1.70%
Other receivables			
PT Smelting VAT	45,795	30,829	22,949
IAC (aircraft loans)	278	774	8,336
Puncakjaya Power	-	6,375	1,715
Total	46,073	37,978	33,000
As a percentage of total assets	0.43%	0.36%	0.34%
Long-term notes and accounts receivable			
IAC (aircraft loans) (Note 11)	4,827	5,019	6,413
As a percentage of total assets	0.05%	0.05%	0.07%
Trade payables			
AVCO (Note 13)	6,669	5,076	364
As a percentage of total liabilities	0.15%	0.12%	0.01%
Accrued liabilities			
FMS	85,484	73,209	128,922
Puncakjaya Power	3,996	8,810	4,839
FCX	3,477	1,955	1,441
PT Eksplorasi Nusa Jaya	1,827	2,060	1,542
International Purveyors Inc.	1,433	946	3,019
AVCO	474	581	1,010
Total (Note 14)	96,691	87,561	140,773
As a percentage of total liabilities	2.22%	2.15%	3.77%
Unearned customer receipts			
PT Smelting (Note 15)	-	-	211
As a percentage of total liabilities	-	-	0.01%
Current portion of finance lease obligation			
Puncakjaya Power (Note 17)	-	17,837	15,826
As a percentage of total liabilities	-	0.44%	0.42%
Long-term debt			
FCX (Note 18)	-	88,000	310,000
As a percentage of total liabilities	-	2.16%	8.30%
Finance lease obligation, less current portion			
Puncakjaya Power (Note 17)	-	-	17,837
As a percentage of total liabilities	-	-	0.48%

5. SIGNIFICANT BALANCES AND TRANSACTIONS WITH RELATED PARTIES (continued)

Significant consolidated statement of profit or loss and other comprehensive income amounts involving related parties are as follows:

	Years Ended December 31,		
	2017	2016	2015
Net revenues			
PT Smelting (Note 26)	2,022,828	1,402,247	1,053,751
Atlantic Copper (Note 26)	-	61,641	35,855
Total	2,022,828	1,463,888	1,089,606
As a percentage of total net revenues	45.51%	44.44%	41.07%
Cost of sales			
FCX	65,918	49,862	51,363
Puncakjaya Power	37,615	42,409	38,683
PT Smelting intercompany profit recognized (deferred) (Notes 7 and 27)	28,713	25,397	(10,046)
International Purveyors Inc.	3,943	4,669	4,233
AVCO	3,860	3,896	3,909
Total	140,049	126,233	88,142
As a percentage of total cost of sales	5.96%	5.40%	4.00%
General and administrative expenses			
FCX	42,597	16,135	25,356
FMS	36,230	27,941	32,008
Total	78,827	44,076	57,364
As a percentage of total general and administrative expenses	63.75%	50.44%	57.42%
Selling and marketing expenses			
FMS	1,120	1,042	1,095
FCX	1,022	841	1,001
Total	2,142	1,883	2,096
As a percentage of total selling and marketing expenses	100.00%	100.00%	100.00%
Salaries, benefits, fees and other costs of the Boards of Commissioners and Directors	5,362	4,358	5,753
As a percentage of total employee costs	1.03%	0.68%	0.81%
Interest income			
IAC (aircraft loans)	228	395	732
As a percentage of total interest income	4.02%	11.55%	15.00%

5. SIGNIFICANT BALANCES AND TRANSACTIONS WITH RELATED PARTIES (continued)

FCX Stock Awards

Stock options granted under FCX's plans generally expire 10 years after the date of grant and vest in 25 percent annual increments beginning one year from the date of grant. The award agreements provide that participants will receive the following year's vesting upon retirement. Stock options provide for accelerated vesting only upon certain qualifying terminations of employment within one year of a change in control (as defined in the award agreements).The Company has recognized compensation costs for stock option awards over the vesting period, including accelerating a year of amortization for retirement-eligible employees.

A summary of outstanding FCX stock options activity for the Company's employees during the year ended December 31, 2017, follows:

	Number of Stock Options	Weighted-Average Exercise Price (US$ per option)	Weighted-Average Remaining Contractual Term (years)	Aggregate Intrinsic Value (US$)
Balance as of December 31, 2016	3,417,600	30.71		
Granted	365,000	15.52		
Exercised	(75,456)	4.35		
Transferred/expired/forfeited	45,092[a]	30.95		
Balance as of December 31, 2017	3,752,236	30.00	4.80	9,348
Vested and exercisable at December 31, 2017	2,935,046	34.93	3.86	3,295

a. Included stock options for employees who transferred to or from the Company from or to other FCX subsidiaries.

The fair value of each option award is estimated on the date of grant using the Black-Scholes-Merton option valuation model. Expected volatility is based on implied volatilities from traded options on FCX's publicly traded common stock and historical volatility of FCX's publicly traded common stock. Historical data is used to estimate future option exercises, forfeitures and expected life of the options. When appropriate, separate groups of employees that have similar historical exercise behavior are considered separately for valuation purposes. The expected dividend rate for FCX common stock is calculated using the then-current annual dividend (excluding supplemental dividends) at the date of grant. The risk-free interest rate is based on US Federal Reserve rates in effect for bonds with maturity dates equal to the expected term of the option at the grant date.

The weighted-average assumptions used to value FCX stock option awards to the Company's employees follow:

	Years Ended December 31,		
	2017	2016	2015
Expected volatility	51.4%	71.6%	37.9%
Expected life of options (in years)	5.70	5.34	5.17
Expected dividend rate	-	-	4.5%
Risk-free interest rate	2.0%	1.3%	1.7%

The weighted-average grant-date fair value using the Black-Scholes-Merton model was US$7.61 per option during 2017, US$2.64 per option during 2016 and US$ 4.30 per option during 2015.

5. SIGNIFICANT BALANCES AND TRANSACTIONS WITH RELATED PARTIES (continued)

FCX Stock Awards (continued)

Stock-settled RSUs granted under FCX's plans in 2017 and 2016 generally vest in 33 percent annual increments beginning one year from the date of grant. The award agreements provide for accelerated vesting upon certain qualifying terminations of employment within one year following a change of control (as defined in the award agreements). The fair value of stock-settled RSUs is based on FCX's common stock price on the date of grant. Dividends attributable to stock-settled RSUs accrue beginning on the grant date and are paid if the award vests.

A summary of outstanding stock-settled RSU activity for the Company's employees during the year ended December 31, 2017, follows:

	Number of Stock-Settled RSUs	Aggregate Intrinsic Value (US$)
Balance at December 31, 2016	155,025	
Granted	79,000	
Vested	(82,599)	
Transferred/forfeited	31,601[a]	
Balance at December 31, 2017	183,027	3,470

a. Included RSUs for employees who transferred to or from the Company from or to other FCX subsidiaries.

The total grant-date fair value of stock-settled RSUs was US$1.2 million during 2017, US$0.2 million during 2016 and US$1.3 million during 2015.

Cash-settled RSUs are similar to stock-settled RSUs, but are settled in cash rather than in shares of common stock and are classified as liability awards. These cash-settled RSUs granted under FCX's plans vest in 33 percent annual increments beginning one year from the date of grant. The award agreements for cash-settled RSUs provide for accelerated vesting upon certain qualifying termination of employment within one year following a change of control (as defined in the award agreements). The fair value of these awards is based on FCX's common stock price on the date of grant and is remeasured each reporting period until the vesting dates. Dividends attributable to cash-settled RSUs accrue and are paid if the award vests.

A summary of outstanding cash-settled RSUs activity for the Company's employees during the year ended December 31, 2017, follows:

	Number of Cash-Settled RSUs	Aggregate Intrinsic Value (US$)
Balance at December 31, 2016	173,692	
Granted	108,567	
Vested	(81,935)	
Transferred/forfeited	4,868[a]	
Balance at December 31, 2017	205,192	3,890

a. Included cash settled RSUs for employees who transferred to or from the Company from or to other FCX subsidiaries.

The total grant-date fair value of cash-settled RSUs was US$1.7 million during 2017, US$0.5 million during 2016 and US$2.1 million during 2015. The total accrued liability associated with cash-settled RSUs totaled US$2.4 million at December 31, 2017, US$1.5 million at December 31, 2016, and US$0.4 million at December 31, 2015.

6. INVENTORIES, NET

The components of inventories, net follow:

	December 31,		
	2017	2016	2015
Materials and supplies	503,334	523,204	460,697
Mine and mill stockpiles (current portion)	231,865	107,589	9,565
Finished goods (concentrate)	49,548	39,732	33,525
Total	784,747	670,525	503,787
Allowance for material and supplies inventory obsolescence	(26,732)	(27,467)	(21,947)
Inventories, net	758,015	643,058	481,840

As of December 31, 2017, inventories have not been pledged as collateral. Additionally, as of December 31, 2017, the Company's property, plant and equipment and inventories are covered against certain risks under insurance policies maintained by FCX (see Note 23 for further discussion of the Company's insurance program). The Company's management is of the opinion that the insurance coverage is adequate to cover reasonably possible losses that may arise from such risks.

The changes in the allowance for material and supplies inventory obsolescence follow:

	Years Ended December 31,		
	2017	2016	2015
Balance at beginning of year	27,467	21,947	18,227
Additional provision	11,250	15,000	10,000
Write-off/adjustment	(11,985)	(9,480)	(6,280)
Balance at end of year	26,732	27,467	21,947

Based on the review of the net realizable value of inventories, management believes that the allowance for obsolescence is adequate to cover the reasonably possible losses on obsolete inventories.

Long-term inventories totaled US$20.9 million as of December 31, 2017, US$130.3 million as of December 31, 2016, and US$97.4 million as of December 31, 2015, which is the estimated metals contained in stockpiles that are not expected to be recovered within the next 12 months.

7. INVESTMENTS IN ASSOCIATED COMPANIES

PT Smelting

PT Smelting, an Indonesian company, operates a copper smelter and refinery in Gresik, Indonesia. The Company owns 25 percent of the outstanding PT Smelting common stock. The Company accounts for its investment in PT Smelting under the equity method.

A summary of changes in the investment in PT Smelting follows:

	Years Ended December 31,		
	2017	2016	2015
Balance at beginning of year	82,806	112,432	107,311
Company's share of net earnings (losses)	9,961	8,544	(4,684)
Amortization of excess investment	(241)	(241)	(241)
Dividends	(2,692)	(12,532)	-
Intercompany profit (recognized) deferred (Notes 5 and 27)[a]	(28,713)	(25,397)	10,046
Balance at end of year	61,121	82,806	112,432

a. The Company defers intercompany profits on 25 percent of its sales to PT Smelting until the final sale by PT Smelting to third parties has occurred.

7. INVESTMENTS IN ASSOCIATED COMPANIES (continued)

AVCO

AVCO, an Indonesian company, operates the Timika airport in the Papua province of Indonesia. The Company owns 25 percent of the outstanding AVCO common stock and accounts for its investment under the cost method because the Company reimburses all of AVCO's costs. The Company's investment in AVCO totaled less than US$0.1 million as of December 31, 2017, 2016 and 2015.

8. PROPERTY, PLANT AND EQUIPMENT, NET

Depreciation additions reflected in the following tables were recorded in cost of sales and subjected to inventory impacts accordingly. Construction in progress represents projects that have not been completed as of the consolidated statement of financial position date.

Property, plant and equipment, including assets under finance leases, for the year ended December 31, 2017, follow:

	Year Ended December 31, 2017			
	Beginning Balance	Additions	Transfers, Retirements And Other	Ending Balance
OWNED ASSETS				
Cost				
Buildings, facilities and related assets	2,268,878	23,307	23,531	2,315,716
Machinery and equipment	2,300,441	9,895	105,224	2,415,560
Mobile equipment	1,366,261	23,486	(31,888)	1,357,859
Construction in progress	2,569,151	667,790	(551,624)	2,685,317
Asset retirement costs	1,198,342	8,551	-	1,206,893
Total	9,703,073	733,029	(454,757)	9,981,345
Accumulated Depreciation				
Buildings, facilities and related assets	854,595	39,173	(22,975)	870,793
Machinery and equipment	1,408,858	87,325	(844)	1,495,339
Mobile equipment	975,859	88,234	(44,349)	1,019,744
Asset retirement costs	340,701	365,931	-	706,632
Total	3,580,013	580,663	(68,168)	4,092,508
ASSETS UNDER FINANCE LEASES				
Cost				
Buildings, facilities and related assets	117,514	-	(4,779)	112,735
Machinery and equipment	300,002	-	(6,692)	293,310
Mobile equipment	35	-	-	35
Total	417,551	-	(11,471)	406,080
Accumulated Depreciation				
Buildings, facilities and related assets	74,515	1,974	(3,186)	73,303
Machinery and equipment	222,364	2,327	(6,256)	218,435
Mobile equipment	35	-	-	35
Total	296,914	4,301	(9,442)	291,773
Net book value	6,243,697			6,003,144

8. PROPERTY, PLANT AND EQUIPMENT, NET (continued)

Property, plant and equipment, including assets under finance leases, for the year ended December 31, 2016, follow:

	Year Ended December 31, 2016			
	Beginning Balance	Additions	Transfers, Retirements And Other	Ending Balance
OWNED ASSETS				
Cost				
Buildings, facilities and related assets	1,764,073	57,653	447,152	2,268,878
Machinery and equipment	2,141,147	13,679	145,615	2,300,441
Mobile equipment	1,338,868	22,241	5,152	1,366,261
Construction in progress	3,152,069	834,279	(1,417,197)	2,569,151
Asset retirement costs	865,778	332,564	-	1,198,342
Total	9,261,935	1,260,416	(819,278)	9,703,073
Accumulated Depreciation				
Buildings, facilities and related assets	824,350	43,427	(13,182)	854,595
Machinery and equipment	1,359,202	92,840	(43,184)	1,408,858
Mobile equipment	927,780	90,907	(42,828)	975,859
Asset retirement costs	166,354	174,347	-	340,701
Total	3,277,686	401,521	(99,194)	3,580,013
ASSETS UNDER FINANCE LEASES				
Cost				
Buildings, facilities and related assets	117,514	-	-	117,514
Machinery and equipment	300,002	-	-	300,002
Mobile equipment	35	-	-	35
Total	417,551	-	-	417,551
Accumulated Depreciation				
Buildings, facilities and related assets	72,324	2,191	-	74,515
Machinery and equipment	219,476	2,888	-	222,364
Mobile equipment	35	-	-	35
Total	291,835	5,079	-	296,914
Net book value	6,109,965			6,243,697

8. PROPERTY, PLANT AND EQUIPMENT, NET (continued)

Property, plant and equipment, including assets under finance leases, for the year ended December 31, 2015, follow:

	Year Ended December 31, 2015			
	Beginning Balance	Additions	Transfers, Retirements And Other	Ending Balance
OWNED ASSETS				
Cost				
Buildings, facilities and related assets	1,638,110	22,692	103,271	1,764,073
Machinery and equipment	1,897,888	22,455	220,804	2,141,147
Mobile equipment	1,287,277	23,495	28,096	1,338,868
Construction in progress	2,958,120	748,352	(554,403)	3,152,069
Asset retirement costs	732,373	133,405	-	865,778
Total	8,513,768	950,399	(202,232)	9,261,935
Accumulated Depreciation				
Buildings, facilities and related assets	796,067	32,696	(4,413)	824,350
Machinery and equipment	1,282,856	78,036	(1,690)	1,359,202
Mobile equipment	867,452	89,167	(28,839)	927,780
Asset retirement costs	74,552	91,802	-	166,354
Total	3,020,927	291,701	(34,942)	3,277,686
ASSETS UNDER FINANCE LEASES				
Cost				
Buildings, facilities and related assets	117,514	-	-	117,514
Machinery and equipment	300,487	-	(485)	300,002
Mobile equipment	35	-	-	35
Total	418,036	-	(485)	417,551
Accumulated Depreciation				
Buildings, facilities and related assets	70,304	2,020	-	72,324
Machinery and equipment	215,680	4,281	(485)	219,476
Mobile equipment	35	-	-	35
Total	286,019	6,301	(485)	291,835
Net book value	5,624,858			6,109,965

8. PROPERTY, PLANT AND EQUIPMENT, NET (continued)

The components of construction in progress as of December 31, 2017, follow:

	December 31, 2017		
	Accumulated Costs	Percentage of Completion	Anticipated Completion Date
Development:			
Grasberg Block Cave	1,389,743	85%	2022
Big Gossan	1,214	78%	2022
Deep Mill Level Zone	295,521	86%	2022
Other[a]	133,730		
Total	1,820,208		
Machinery and mobile equipment:			
Grasberg Block Cave	247,181	82%	2022
Big Gossan	18	99%	2022
Deep Mill Level Zone	15,593	73%	2022
Other[a]	232,829		
Total	495,621		
Buildings and infrastructure:			
Grasberg Block Cave	138,014	52%	2022
Big Gossan	776	29%	2022
Deep Mill Level Zone	30,945	72%	2022
Common Infrastructure	1,403	91%	2021
Other[a]	198,350		
Total	369,488		
Total	2,685,317		

a. These projects are at various stages of completion and have various completion dates.

Borrowing costs attributed to qualifying assets and added to construction in progress totaled US$3.4 million in 2017, US$14.6 million in 2016 and US$12.0 million in 2015.

See Note 23 for a discussion of the Company's insurance coverage.

Net non-cash impacts to property, plant and equipment include reductions of US$9.9 million in 2017, and additions of US$335.5 million in 2016 and US$121.9 million in 2015 (primarily related to asset retirement costs, see Note 21).

9. EXPLORATION AND EVALUATION ASSETS, AND MINE PROPERTIES, NET

Exploration and evaluation assets for Block B for the years ended December 31, 2017, 2016 and 2015, follow:

Cost	
As of December 31, 2014	93,215
Additions	2,178
As of December 31, 2015	95,393
Additions	1,272
As of December 31, 2016	96,665
Additions	1,017
As of December 31, 2017	97,682

No impairments were recognized associated with exploration and evaluation assets in 2017, 2016 and 2015. All mine properties associated with relinquished exploration acreage are charged to expense in the period of relinquishment. There were no charges to expense for relinquishments in 2017, 2016 and 2015.

Ongoing negotiations as discussed in Note 23 may result in further relinquishments of the Block B acreage and impairments of the associated exploration and evaluation assets of US$92.5 million.

Mine properties for the years ended December 31, 2017, 2016 and 2015, follow:

	Developed and Producing Mines	Under Development	Undeveloped	Total
Cost				
As of December 31, 2014	1,375,692	143,367	28,655	1,547,714
Additions	11,010	22,746	-	33,756
Transfers, retirements and other	129,984	36,277	(8,200)	158,061
As of December 31, 2015	1,516,686	202,390	20,455	1,739,531
Additions	14,906	25,653	-	40,559
Transfers, retirements and other	4,536	687,502	200	692,238
As of December 31, 2016	1,536,128	915,545	20,655	2,472,328
Additions	2,050	21,723	-	23,773
Transfers, retirements and other	44,252	335,536	-	379,788
As of December 31, 2017	1,582,430	1,272,804	20,655	2,875,889
Accumulated Amortization				
As of December 31, 2014	871,422	-	-	871,422
Charge for the year (Note 27)	38,938	76	-	39,014
Transfers, retirements and other	(8,119)	232	-	(7,887)
As of December 31, 2015	902,241	308	-	902,549
Charge for the year (Note 27)	56,483	1,859	-	58,342
Transfers, retirements and other	(6,946)	-	-	(6,946)
As of December 31, 2016	951,778	2,167	-	953,945
Charge for the year (Note 27)	42,651	1,722	-	44,373
Transfers, retirements and other	(361)	361	-	-
As of December 31, 2017	994,068	4,250	-	998,318
Net book value as of December 31, 2015	614,445	202,082	20,455	836,982
Net book value as of December 31, 2016	584,350	913,378	20,655	1,518,383
Net book value as of December 31, 2017	588,362	1,268,554	20,655	1,877,571

Amortization charges reflected above were recorded in cost of sales and subjected to inventory impacts accordingly.

Amortization charges from Grasberg Block Cave and DMLZ are aligned with the pre-commercial production stage (Note 1a). Both mines will be moved into “Developed and producing mines” when the mine is substantially complete and meets the production start date criteria (Note 2u).

9. EXPLORATION AND EVALUATION ASSETS, AND MINE PROPERTIES, NET (continued)

The details of the Company's mine properties' net book value are as follows:

Ore Body at December 31, 2017	
Developed and producing mines:	
Big Gossan	393,660
Deep Ore Zone	101,004
Grasberg open pit	18,328
Concentrating mill and other infrastructure development	75,368
Under development:	
Grasberg Block Cave	595,069
Deep Mill Level Zone	579,894
Underground Common Infrastructure	93,600
Undeveloped:	
Kucing Liar	20,648
Total	1,877,571

Borrowing costs attributed to qualifying assets and added to mines under construction totaled US$0.9 million in 2015, which equates to a capitalization rate of approximately 4.3 percent.

See Note 23 for a discussion of the Company's insurance coverage.

10. DEFERRED STRIPPING COSTS

Changes in the carrying amount of deferred stripping costs follow:

	Years Ended December 31,		
	2017	2016	2015
Balance at beginning of year	130,475	254,409	357,328
Amortization	(70,834)	(123,934)	(102,919)
Balance at end of year	59,641	130,475	254,409

The overburden waste removal stripping costs incurred that improve access to quantities of material to be mined in future periods are capitalized and amortized using the UOP method based on total estimated recoverable proved and probable copper reserves (component) identified in the Grasberg open-pit mine.

11. LONG-TERM NOTES AND ACCOUNTS RECEIVABLE

Long-term notes and accounts receivable consist of the following:

	December 31,		
	2017	2016	2015
Third parties:			
Disputed tax assessments (Note 19e)	417,023	331,222	209,425
Rio Tinto's share of AROs (Note 21)	67,804	70,575	48,823
Employee and contractor loans	17,814	29,538	26,475
Advances to contract service providers	26,638	23,116	5,757
Long-term receivable for taxes (Note 19e)	-	108,795	106,458
Other	270	329	289
Total for third parties	529,549	563,575	397,227
Related parties (Note 5)	4,827	5,019	6,413
Total	534,376	568,594	403,640

12. OTHER ASSETS

Other assets primarily consist of an assurance bond for the Company's commitment for smelter development in Indonesia (Note 23) and deferred charges associated with a housing loan program for the Company's employees. In addition, other assets at December 31, 2016 and 2015, included a cash fund that was designated to pay mine closure and reclamation costs.

13. TRADE PAYABLES

Trade payables are primarily composed of amounts due to vendors who provide materials and supplies and/or contract services in support of the Company's operations, and are not interest bearing.

Trade payables consist of the following:

	December 31,		
	2017	2016	2015
Third parties	214,023	263,505	232,901
Related parties (Note 5)	6,669	5,076	364
Total	220,692	268,581	233,265

The aging analysis of trade payables is as follows:

	December 31,		
	2017	2016	2015
0 - 30 days	190,494	234,500	185,952
31 - 60 days	16,543	20,103	19,284
> 60 days	13,655	13,978	28,029
Total	220,692	268,581	233,265

Details of trade payables based on the currency in which they are denominated are as follows:

	December 31,		
	2017	2016	2015
US dollars	129,452	163,129	154,030
Rupiah[a]	67,523	76,578	59,845
Australian dollars[b]	21,396	25,273	16,136
Other	2,321	3,601	3,254
Total	220,692	268,581	233,265

a. Rp910,935,451,465 as of December 31, 2017, Rp1,023,866,048,331 as of December 31, 2016, and Rp821,430,421,022 as of December 31, 2015 (full amounts).
b. 27,392,707 Australian dollars as of December 31, 2017, 35,018,733 Australian dollars as of December 31, 2016, and 22,119,296 Australian dollars as of December 31, 2015 (full amounts).

As of December 31, 2017, trade payables are non-interest-bearing and have normal settlement terms.

14. ACCRUED LIABILITIES

Accrued liabilities consist of the following:

	December 31,		
	2017	2016	2015
Third parties:			
Salaries, wages, employee benefits and other compensation	49,829	43,473	39,654
Contract services and other accruals	92,972	99,974	98,705
Rio Tinto's net share of joint venture cash flows	29,900	15,226	10,346
Community development commitments (Note 23)	3,980	15,110	17,350
Total for third parties	176,681	173,783	166,055
Related parties (Note 5)	96,691	87,561	140,773
Total	273,372	261,344	306,828

As of December 31, 2017, accrued liabilities are non-interest-bearing and have normal settlement terms.

15. UNEARNED CUSTOMER RECEIPTS

Unearned customer receipts, which represent payables to customers as a result of adjusting embedded derivatives in provisionally priced sales to market prices at the reporting date and prepayments from customers, consist of the following:

	December 31,		
	2017	2016	2015
Transamine Trading S.A.	57,487	3,864	1,121
Freepoint Metals & Concentrates LLC	20,638	28,888	988
Mercuria Energy Trading S.A.	-	24,036	-
MRI Trading Ag.	-	610	-
Gerald Singapore Pte., Ltd.	-	466	-
Trafigura Ag.	-	105	-
Pan Pacific Copper Co., Ltd.	-	-	319
LS-Nikko Copper Inc.	-	-	319
Total for Third Parties	78,125	57,969	2,747
Related parties (Note 5)	-	-	211
	78,125	57,969	2,958

16. ROYALTIES PAYABLE

The Company pays royalties under its COW (Note 2n). The combined royalties are recorded as a reduction to revenues (Note 26) (net of Rio Tinto's share) and totaled US$172.9 million in 2017, US$131.1 million in 2016 and US$114.2 million in 2015.

The changes in royalties payable follow:

	Years Ended December 31,		
	2017	2016	2015
Balance at beginning of year	43,242	28,428	36,457
Accruals	174,043	131,079	114,201
Payments	(151,039)	(116,265)	(122,230)
Balance at end of year	66,246	43,242	28,428

17. FINANCE LEASE OBLIGATION

The components of the finance lease obligation follow:

	December 31,		
	2017	2016	2015
Infrastructure finance lease obligation, net (related party) (Note 5)	-	17,837	33,663
Less current portion of finance lease obligation	-	(17,837)	(15,826)
Finance lease obligation, less current portion	-	-	17,837

Infrastructure Finance Lease Obligation (Related Party)

The average interest rate in connection with the infrastructure asset financing arrangements with Puncakjaya Power was 12.1 percent in 2016 and 2015. See Notes 5 and 28 for further discussion of this arrangement.

18. LONG-TERM DEBT

The components of long-term debt (related party) follow:

	December 31,		
	2017	2016	2015
FCX revolving credit note (related party) (Note 5)	-	88,000	310,000

Revolving Credit Note (Related Party)

In 2012, the Company entered into an unsecured US$1.0 billion revolving credit note with FCX. Loans shall be payable either on a stated maturity date or on demand as shall be agreed to between FCX and the Company at the time of each loan. The revolving credit note bears interest at a floating or fixed rate per annum equal to such rate as shall be agreed to between FCX and the Company at the time of each loan (the Rate). Any loan that is not paid when due shall bear interest at a rate per annum equal to the Rate agreed above plus two percent, not to exceed the maximum rate permitted by law.

The average interest rate in connection with the revolving credit note with FCX was 3.3 percent in 2017, 3.0 percent in 2016 and 1.9 percent in 2015.

Revolving Credit Facility

FCX, the Company and Freeport-McMoRan Oil & Gas LLC (FM O&G LLC, a wholly owned subsidiary of FCX) have a senior unsecured US$3.5 billion revolving credit facility with JP Morgan Chase Bank, N.A., as administrative agent, and other lenders that matures May 31, 2019, with US$500 million available to the Company. See Note 30 for additional information regarding a new revolving credit facility,

At December 31, 2017, there were no borrowings outstanding and US$12.9 million of letters of credit issued under the revolving credit facility, and the Company had US$500.0 million available to it.

Interest on the revolving credit facility (London Interbank Offered Rate (LIBOR) plus 2.25 percent or an alternate base rate (ABR) plus 1.25 percent at December 31, 2017) is determined by reference to FCX's credit ratings and leverage ratio.

19. TAXATION

a. Prepaid Taxes

Prepaid taxes consist of the following:

	December 31,		
	2017	2016	2015
Claim for corporate income tax refund	24,609	128,366	284,629
VAT	147,976	193,085	361,621
Other	6,105	1,995	-
Total	178,690	323,446	646,250

The claim for corporate income tax refund represents the balance of outstanding income tax overpayments (see Note 19e).

b. Taxes Payable

Taxes payable consist of the following:

	December 31,		
	2017	2016	2015
Income taxes:			
Corporate income taxes - Articles 29 (Note 19c)	365,447	36,004	520
Withholding taxes - Articles 23 and 26	39,477	2,576	7,911
Employee taxes - Article 21	6,968	9,784	1,984
Land and building taxes	1,880	8,029	18,479
Other	7,458	8,964	20,965
Total	421,230	65,357	49,859

19. TAXATION (continued)

c. Income Tax Expense

The reconciliation between consolidated profit before income tax expense per the consolidated statement of profit or loss and other comprehensive income and the estimated taxable profit of the Company is as follows:

	Years Ended December 31,		
	2017	2016	2015
Consolidated profit before income tax expense	1,984,786	900,028	319,064
Less subsidiaries' profit before income tax expense	34,720	34,769	32,508
(Add)/less consolidation eliminations	(27,312)	(23,996)	19,160
Profit before income tax expense - Company	1,977,378	889,255	267,396
Temporary differences:			
Deferred stripping costs	70,834	123,934	102,919
Depreciation and amortization	241,453	38,447	(103,855)
Amortization of parent company equity awards to employees	10,090	1,647	16,113
Block B exploration	(1,902)	(7,054)	(6,662)
Capitalized interest	(3,355)	(14,598)	(12,026)
Infrastructure lease payments	(17,803)	(15,970)	(14,137)
Provision	(151,711)	(100,008)	(33,442)
Development costs	(481,836)	(521,014)	(379,216)
Other	(2,991)	1,054	(2,171)
	(337,221)	(493,562)	(432,477)
Permanent differences:			
Non-deductible costs	19,920	29,335	42,190
Equity in PT Smelting (earnings) losses	(9,720)	(8,303)	4,925
Other	5,243	675	729
	15,443	21,707	47,844
Net operating loss carryforward	-	(170,820)	-
Estimated taxable profit (loss) - Company	1,655,600	246,580	(117,237)
Current income tax expense	579,460	86,303	-[a]
Less prepaid income taxes:			
Article 22	5,945	9,483	10,195
Article 25	206,525	40,974	96,264
Other	1,954	321	-
Corporate income tax payable (estimated claims for tax refund):			
Company	365,036	35,525	(106,459)
Subsidiaries and other	411	479	520
Consolidated Corporate income tax payable (estimated claims for tax refund)	365,447	36,004	(105,939)

a. As a result of the taxable loss in 2015, there was no current income tax expense.

19. TAXATION (continued)

c. Income Tax Expense (continued)

The reconciliation between consolidated income tax expense per the consolidated statement of profit or loss and other comprehensive income and the theoretical tax amount on the Company's profit before income tax expense is as follows:

	Years Ended December 31,		
	2017	2016	2015
Consolidated profit before income tax expense	1,984,786	900,028	319,064
Income tax expense calculated at 35%	694,675	315,010	111,672
Company's equity in subsidiaries' profit before income tax and reversal of intercompany consolidation eliminations	758	(393)	(8,524)
Tax effect on permanent difference:			
Equity in PT Smelting earnings	(3,402)	(2,906)	1,724
Non-deductible costs	6,972	10,268	14,767
Other	2,930	(1,026)	1,666
Consolidated income tax expense	701,933	320,953	121,305
Current income tax expense - Company	579,460	86,303	-
Adjustment to current income tax expense - Company	(8,236)	(18,753)	11,481
Adjusted current income tax expense - Company	571,224	67,550	11,481
Current income tax expense - Subsidiaries	3,246	3,220	3,517
Current income tax expense - Consolidated	574,470	70,770	14,998
Deferred income tax expense - Consolidated	127,463	250,183	106,307

d. Deferred Income Taxes

The components of deferred income taxes follow:

	December 31,		
	2017	2016	2015
Company			
Deferred tax assets:			
Employee benefits	77,755	93,873	102,457
Reclamation costs	426,214	430,628	358,638
Other	25,420	47,249	65,429
Total deferred tax assets	529,389	571,750	526,524
Deferred tax liabilities:			
Property, plant and equipment	(2,318,144)	(2,220,369)	(1,961,451)
Deferred stripping costs	(20,875)	(45,667)	(89,043)
Other	(86,279)	(85,328)	(18,687)
Total deferred tax liabilities	(2,425,298)	(2,351,364)	(2,069,181)
Net deferred tax liabilities	(1,895,909)	(1,779,614)	(1,542,657)
Subsidiaries			
Deferred tax assets:			
Employee benefits	467	628	534
Deferred tax liabilities:			
Property, plant and equipment	(1,877)	(2,216)	(2,402)
Net deferred tax liabilities	(1,410)	(1,588)	(1,868)

19. TAXATION (continued)

d. Deferred Income Taxes (continued)

	December 31,		
	2017	2016	2015
Consolidated			
Deferred tax assets:			
Employee benefits	78,222	94,501	102,991
Reclamation costs	426,214	430,628	358,638
Other	25,420	47,249	65,429
Total deferred tax assets	529,856	572,378	527,058
Deferred tax liabilities:			
Property, plant and equipment	(2,320,021)	(2,222,585)	(1,963,853)
Deferred mining costs	(20,875)	(45,667)	(89,043)
Other	(86,279)	(85,329)	(18,687)
Total deferred tax liabilities	(2,427,175)	(2,353,581)	(2,071,583)
Net deferred tax liabilities	(1,897,319)	(1,781,203)	(1,544,525)

e. General

The Company has received assessments from the Indonesian tax authorities for additional taxes and interest related to various audit exceptions for income taxes and other taxes. The Company has filed objections to the assessments because it believes it has properly determined and paid its taxes. A summary of these assessments follows:

Date of Assessment	Tax Return Year	Tax Assessment	Interest Assessment	Total
October 2010	2005	77,069	36,994	114,063
March 2012	2007	47,470	23,565	71,035
First-quarter 2013	2008	24,623	29,064	53,687
May 2015	2010	3,046	1,462	4,508
Second-quarter 2013	2011	28,188	7,447	35,635
Second-quarter 2014, March 2015	2012	125,037	948	125,985
April 2015, November 2017	2013	160,155	80,218	240,373
March 2016, Second-quarter 2016	2014	159,750	6,603	166,353
Second-quarter 2017	2015	169,271	-	169,271
Total		794,609	186,301	980,910

As of December 31, 2017, the Company had paid US$417.0 million (included in long-term notes and accounts receivables in the consolidated statement of financial position) on disputed tax assessments, which it believes is collectible.

In December 2009, the Company was notified by Indonesian tax authorities that it was obligated to pay value-added taxes on certain goods imported after the year 2000. In December 2014, the Company paid US$268.8 million (Rp3.3 trillion) for value-added taxes for the period from November 2005 through the year 2009 and sought a refund. In March 2016, the Company collected a cash refund of US$195.6 million (Rp2.6 trillion) and US$38.1 million (Rp498.6 billion) was offset against other tax liabilities. The remaining balance of the amount originally paid was reduced by currency exchange and other losses.

19. TAXATION (continued)

e. General (continued)

The Company received assessments from the local regional tax authority in Papua, Indonesia, for additional taxes and penalties related to surface water taxes for the period from January 2011 through December 2017. The Company has filed or will file appeals with the Indonesia Tax Court. During 2017, the Indonesia Tax Court issued rulings against the Company with respect to assessments for additional taxes and penalties for the period from January 2011 through December 2015 in the amount of US$400.3 million (based on the exchange rate as of December 31, 2017, and including US$238.9 million in penalties). The aggregate amount of assessments received from January 2016 through December 2017 was an additional US$129.3 million (based on the exchange rate as of December 31, 2017, and including US$64.7 million in penalties). No charges have been recorded for these assessments as of December 31, 2017, because the Company believes its COW exempts it from these payments and that it has the right to contest these assessments in the Indonesia Tax Court and ultimately the Indonesia Supreme Court. The Company estimates the total exposure based on the exchange rate as of December 31, 2017, totals US$529.6 million, including penalties. As of March 16, 2018, the Company has not paid and does not intend to pay these assessments unless there is a mechanism established to secure a refund for any such payments upon the final court decision. Additionally, the Company is seeking to address this matter in connection with the ongoing negotiations with the Indonesian government to resolve the Company's long-term mining rights. If the local regional tax authority were to force the Company to make these payments through the threat of expropriation of assets or other measures, such amounts may not be recoverable from the local regional tax authority and may result in a charge to operating income. At this time, the Company does not believe that the threat of seizure of the Company assets is imminent. See Note 30 for additional information regarding this matter.

In November 2017, the Company received an Indonesia Supreme Court decision that overturned a Tax Court case previously decided in favor of the Company related to 2005 assessments of less than US$0.5 million for employee withholding taxes. The Company has other pending cases at the Indonesia Supreme Court related to withholding taxes for employees and other service providers for the year 2005 and the year 2007, which total approximately US$66.2 million (based on the December 31, 2017, exchange rate), including penalties and interest. The Company believes the ruling in the case regarding the 2005 assessments is inconsistent with a ruling by the Indonesia Supreme Court in a similar case and is also inconsistent with the Company's COW. The Company plans to continue to defend the outstanding cases and has not recorded charges for those cases because it does not believe a loss is probable. Because of a 2013 Ministry of Finance ruling that definitively defines withholding tax rates for employees and other service providers, and the statute of limitations, the Company does not believe it has exposure in any years after 2007.

20. PROVISION FOR EMPLOYEE BENEFITS

Provision for employee benefits consists of the following:

	December 31,		
	2017	2016	2015
Net defined pension benefits liability	13,947	91,811	115,944
Deferred compensation and other postretirement benefits	4,252	5,349	5,119
Incentive compensation	2,342	2,890	1,582
Total	20,541	100,050	122,645

20. PROVISION FOR EMPLOYEE BENEFITS (continued)

Pension Plans

The Company has a defined benefit pension plan denominated in Rupiah covering substantially all of its Indonesian employees. The Company funds the plan and invests the assets through a separate Indonesian legal entity, Dana Pensiun Freeport Indonesia (DPFI) (Note 5), in accordance with Indonesian pension regulations. DPFI holds the assets for the Company's plan, as well as assets for plans sponsored by PT Eksplorasi Nusa Jaya (related party) and PT Kuala Pelabuhan Indonesia.

The pension obligation was valued at an exchange rate of 13,480 Rupiah to one US$ on December 31, 2017, 13,369 Rupiah to one US$ on December 31, 2016, and 13,726 Rupiah to one US$ on December 31, 2015. The Company's expected rate of return on plan assets is evaluated at least annually, taking into consideration its historical yield and the long-range estimated return for the plan assets. Based on these factors, the Company expects its pension assets will earn an average of 7.75 percent per annum beginning January 1, 2018. The discount rate assumption for the Company's plan is based on the Mercer Indonesian zero coupon bond yield curve derived from the Indonesian Government Security Yield Curve. Changes in the discount rate are reflected in the Company's benefit obligation and, therefore, in future pension costs.

The Company's pension obligations as of December 31, 2017, 2016 and 2015, were based on management's assessment and the actuarial reports of PT Mercer Indonesia, an independent actuary, dated January 30, 2018, January 26, 2017, and January 26, 2016, respectively. The Company's pension obligation was calculated using the projected-unit-credit method with the following principal assumptions:

	December 31,		
	2017	2016	2015
Weighted-average assumptions used to determine benefit obligations:			
Discount rate	6.75%	8.25%	9.00%
Rate of compensation increase[a]	4.00%	8.00%	8.00%
Weighted-average assumptions used to determine periodic benefit cost for the year:			
Discount rate	8.25%	9.00%	8.25%
Rate of compensation increase[a]	8.00%	9.40%	8.00%

a. The rate of compensation increase shown relates to staff employees and non-staff employees.

The Company's pension benefit obligation includes employee service entitlements in accordance with Indonesian Labor Law No. 13/2003, issued in March 2003, which requires that companies provide a minimum level of benefits to employees upon employment termination based on the reason for termination and the employee's years of service.

20. PROVISION FOR EMPLOYEE BENEFITS (continued)

Pension Plans (continued)

A summary of the components of the Company's pension benefit obligation follows:

	December 31,		
	2017	2016	2015
Change in benefit obligation:			
Benefit obligation at beginning of year	376,087	320,449	320,172
Service cost	20,170	26,735	25,789
Interest cost	23,047	28,976	23,656
Benefits paid, including settlements	(51,873)	(9,606)	(10,320)
Net settlement gain	(61,375)	-	-
Remeasurements	(61,866)	1,423	(6,447)
Foreign exchange (gains) losses	(2,245)	8,110	(32,401)
Benefit obligation at end of year	241,945	376,087	320,449
Change in plan assets:			
Fair value of plan assets at beginning of year	284,276	204,505	185,579
Interest income	21,245	19,916	15,073
Employer contributions[a]	27,645	37,757	41,739
Benefits paid	(18,564)	(9,606)	(10,320)
Remeasurements	(10,457)	26,707	(8,202)
Foreign exchange (losses) gains	(35,265)	4,997	(19,364)
Fair value of plan assets at end of year	268,880	284,276	204,505
Funded status	(26,935)	91,811	115,944
Effect of asset ceiling	40,882	-	-
Net defined pension benefits liability	13,947	91,811	115,944

a. As of December 31, 2017, employer contributions for 2018 are expected to approximate US$17.5 million based on a December 31, 2017, exchange rate of 13,480 Rupiah to one US$.

To calculate its pension benefit obligation, the Company used 150 percent of the 2011 Indonesian Mortality Table for the years ended December 31, 2017, 2016 and 2015.

The components of the net periodic benefit cost for the Company's plan follow:

	Years Ended December 31,		
	2017	2016	2015
Service cost	20,170	26,735	25,789
Interest cost	3,490	9,060	8,583
Net settlement gain	(61,375)	-	-
Net periodic benefit cost	(37,715)	35,795	34,372

DPFI's weighted-average asset allocation for its plan assets, which comply with DPFI's investment guidelines, follows (in percentages):

	December 31,		
	2017	2016	2015
Unquoted investments:			
Bank time deposits	33%	39%	51%
Investments quoted in active markets:			
Equity securities	36	32	28
Debt securities	31	29	21
Total	100%	100%	100%

20. PROVISION FOR EMPLOYEE BENEFITS (continued)

Pension Plans (continued)

As of December 31, 2017, the Rupiah benefit payments that are expected to be paid for the Company's pension plan (based on a December 31, 2017, exchange rate of 13,480 Rupiah to one US$) total US$48.4 million in 2018, US$8.5 million in 2019, US$15.3 million in 2020, US$20.1 million in 2021, US$23.3 million in 2022 and US$167.4 million for 2023 through 2027.

As of December 31, 2017, if the discount rate increased by 25 basis points, with all other variables held constant, the pension benefit obligation would decrease by approximately US$3.8 million, while a decrease in the discount rate of 25 basis points would increase the pension benefit obligation by approximately US$3.9 million.

Restructuring Charges

As a result of the first-quarter 2017 regulatory restrictions and uncertainties regarding long-term investment stability, the Company took actions to adjust its cost structure, reduce its workforce and slow investments in its underground development projects and new smelter (Note 23). These actions included workforce reductions through furlough and voluntary retirement programs. Following the furlough and voluntary retirement programs, a significant number of employees and contractors elected to participate in an illegal strike action beginning in May 2017, and were subsequently deemed to have voluntarily resigned under the existing Indonesian laws and regulations. As a result, the Company recorded charges in 2017 to production costs of US$115.0 million, and selling, general and administrative costs of US$6.1 million for employee severance and related costs, and a pension settlement gain of US$61.4 million included in production costs (Note 27).

21. AROs

The ultimate nature and amount of ARO costs to be incurred at the Company's mining operations will be determined based on applicable laws and regulations and the Company's assessment of appropriate remedial activities in the circumstances, after consultation with governmental authorities, affected local residents and other affected parties, and cannot currently be projected with precision. Estimates of the ultimate reclamation and closure costs the Company will incur in the future involve complex issues requiring integrated assessments over a period of many years and are subject to revision over time as more complete studies are performed and, based on updated data and assumptions, improved ARO estimates are utilized. Some interim closure and reclamation costs will be incurred during mining activities, while final closure costs and the remaining reclamation costs will be incurred at the cessation of all mining activities, which are currently estimated to continue for approximately 24 years.

The Company estimated its AROs using an expected cash flow approach. To calculate the fair value of these obligations, the Company applied an estimated long-term inflation rate and discounted the projected cash flows at the Company's estimated risk-free interest rates. After discounting the projected cash flows, a market risk premium of 10 percent was applied to the total to reflect what a third party might require to assume these AROs. The market risk premium was based on market-based estimates of rates that a third party would have to pay to insure its exposure to possible future increases in the value of these obligations. The Company estimated these aggregate undiscounted obligations, including those before 2042, to be approximately US$1.32 billion at December 31, 2017, US$1.36 billion at December 31, 2016, and US$1.0 billion at December 31, 2015.

21. AROs (continued)

Changes in the Company's aggregate discounted AROs for Block A of its COW follow:

	December 31,		
	2017	2016	2015
Balance at beginning of year	1,309,456	994,445	883,525
Revisions to cash flow estimates, liabilities incurred and discount rates	5,914	359,426	135,338
Accretion expense	16,987	9,872	13,263
Payments	(39,877)	(54,287)	(37,681)
Balance at end of year	1,292,480	1,309,456	994,445
Less current portion of AROs	(90,596)	(107,514)	(86,605)
Long-term portion of AROs	1,201,884	1,201,942	907,840

As of December 31, 2017, the Company's total AROs included US$395.1 million for mine closure activities, US$67.1 million for mine reclamation activities and US$830.3 million for other remediation activities.

Mine closure activities are those activities that the Company intends to perform in order to permanently and properly shut down and close mining operations. In December 2010, the Indonesian government issued a regulation regarding mine reclamation and closure, which requires a company to provide a mine closure guarantee in the form of a time deposit placed in a state-owned bank in Indonesia. In accordance with its COW, the Company is working with the Department of Energy and Mineral Resources to review these requirements, including discussion of other options for the mine closure guarantee.

Mine reclamation activities are those activities that occur during the life of mining operations that the Company performs to comply with Indonesian mining law and reclamation plans filed with the Ministry of Energy and Mineral Resource. The Company provided US$22.3 million for mine closure guarantees and US$7.1 million for reclamation guarantees (see Note 23). As of January 2018, the Company provided additional mine closure guarantees and reclamation guarantees totaling US$66.2 million and US$4.1 million, respectively.

Other remediation activities are those activities, primarily restoration and remediation of overburden stockpiles, that fulfill the Company's overall mine closure and reclamation obligations and commitments.

The Company has no AROs for Block B.

The Company has a receivable for Rio Tinto's joint venture share of the AROs totaling US$75.0 million as of December 31, 2017, US$79.1 million as of December 31, 2016, and US$56.2 million as of December 31, 2015.

In October 2017, Indonesia's Ministry of Environment and Forestry (the Ministry) notified the Company of administrative sanctions related to certain activities the Ministry indicated are not reflected in its environmental permit. The Ministry also notified the Company that certain operational activities were inconsistent with factors set forth in its environmental permitting studies and that additional monitoring and improvements need to be undertaken related to air quality, water drainage, treatment and handling of certain wastes, and tailings management. The Company has been engaged in a process to update its permits through submissions and dialogue with the Ministry, which began in late 2014. The Company believes that it has submitted the required documentation to update its permits and is in the process of addressing other points raised by the Ministry.

22. OTHER NON-CURRENT LIABILITIES

Other non-current liabilities primarily consist of VAT and withholding tax reserves, and contract services obligations.

23. COMMITMENTS AND CONTINGENCIES

Environmental

The Company has an environmental policy committing it not only to compliance with central, provincial and local environmental statutes and regulations, but also to continuous improvement of its environmental performance at every operational site. The Company believes that its operations are being conducted pursuant to applicable permits and are in compliance in all material respects with applicable environmental laws, rules and regulations.

Social and Economic Development Programs

The Company has a Social, Employment, and Human Rights Policy to ensure that its operations are conducted in a manner that respects basic human rights, the laws and regulations of the host country and the culture of the people who are indigenous to the areas in which it operates. In 1996, the Company established the Freeport Partnership Fund for Community Development, which was previously called the Freeport Fund for Irian Jaya Development, through which the Company has made available funding and technical assistance to support community development initiatives in areas of health, education and economic development of the area. The Company has committed through 2018 to provide one percent of its annual net revenue for the development of the local people in its area of operations through the Freeport Partnership Fund for Community Development. The Company charged US$44.4 million in 2017, US$33.4 million in 2016 and US$28.0 million in 2015 to cost of sales for this commitment (Note 27). In addition, the Company has other community development commitments in its area of operations to assist with local infrastructure and related services; the Company incurred US$1.2 million in 2017, US$5.8 million in 2016 and US$13.1 million in 2015 for these commitments.

Commitments and Operating Leases

The Company has aggregate commitments for capital expenditures and purchases of materials and supplies to be used in its operations in 2018 totaling US$275.8 million as of December 31, 2017. As of December 31, 2017, the Company's aggregate minimum annual contractual payments under noncancelable long-term operating leases are not material.

Restricted Cash

As of December 31, 2017, the Company had US$51.5 million of time deposits that were legally restricted in connection with (a) mine closure (US$22.3 million), (b) export duties (US$22.1 million) and (c) the Company's GOI-required reclamation costs (US$7.1 million) for years 2006 through 2017 that have not yet been incurred.

Insurance

The Company has property damage and business interruption insurance coverage under insurance policies maintained by FCX. These insurance policies have specified deductible amounts or self-insured retentions and policy limits for each of FCX's mining operations and for the consolidated FCX mining business as a whole. In this regard, FCX has established coverage for the Company with a self-insured deductible of up to US$200 million per occurrence for combined property damage and business interruption risk with coverage of up to a maximum US$1 billion limit for all of FCX's mining operations. Certain specific sub-limits are imposed for losses resulting from underground operations as well as price caps on commodities for business interruption coverage determination. Management considers this to be an adequate insurance program to cover reasonably possible losses that may arise from such risk.

23. COMMITMENTS AND CONTINGENCIES (continued)

Regulatory Matters

The Company's COW expires in 2021 but can be extended by the Company for two 10-year periods subject to Indonesian government approval, which pursuant to the COW cannot be withheld or delayed unreasonably.

In January 2014, the Indonesian government published regulations pursuant to the 2009 mining law that, among other things, imposed a progressive export duty on copper concentrate and restricted exports of copper concentrate and anode slimes (a by-product of the refining process containing metals, including gold) after January 12, 2017. The Company's COW authorizes it to export concentrate and specifies the taxes and other fiscal terms available to its operations. The COW states that the Company shall not be subject to taxes, duties or fees subsequently imposed or approved by the Indonesian government except as expressly provided in the COW. Additionally, the Company complied with the requirements of its COW for local processing by arranging for the construction and commissioning of Indonesia's only copper smelter and refinery, which is owned by PT Smelting (25-percent-owned by the Company).

In July 2014, the Company entered into a MOU with the Indonesian government, under which the Company and the Indonesian government agreed to negotiate an amended COW to extend the Company's operations beyond 2021 on acceptable terms. Subject to concluding an agreement to extend the Company's operations, the Company agreed to: (i) construct new smelter capacity in Indonesia and provide a US$115 million (US$123.1 million, including interest, as of December 31, 2017) assurance bond to support its commitment; (ii) pay export duties until certain smelter development milestones were met (initially set at 7.5 percent, declining to 5.0 percent when smelter development progress exceeds 7.5 percent and eliminated when development progress exceeds 30 percent); (iii) divest an additional 20.64 percent interest in the Company at fair market value to Indonesian participants; (iv) increase the royalty paid on copper to 4.0 percent from 3.5 percent under the COW; and (v) increase the royalty paid on gold to 3.75 percent from 1.0 percent and silver to 3.25 percent from 1.0 percent under the COW. The MOU also anticipated an amendment of the COW within six months to address other matters. In January 2015, the MOU was extended to July 25, 2015, and ultimately expired on that date. Following the expiration of the MOU, the Indonesian government has continued to require the smelter bond, and to impose the increased royalty rates and export duties. The Company's royalties totaled US$172.9 million in 2017, US$131.1 million in 2016 and US$114.2 million in 2015, and export duties totaled US$115.2 million in 2017, US$95.4 million in 2016 and US$109.3 million in 2015 (Note 26).

In October 2015, the Indonesian government provided a letter of assurance to the Company indicating that it would revise regulations allowing it to approve the extension of the Company's operations beyond 2021, and provide the same rights and the same level of legal and fiscal certainty provided under the current COW.

In January and February 2017, the Indonesian government issued new regulations pursuant to the 2009 mining law to address exports of unrefined metals, including copper concentrate and anode slimes, and other matters related to the mining sector. The new regulations permit the continuation of copper concentrate exports for a five-year period through January 2022, subject to various conditions, including conversion from a contract of work to a special mining license (known as an IUPK, which does not provide the same level of fiscal and legal protections as the Company's COW, which remains in effect), a commitment to the completion of smelter construction in five years and payment of export duties to be determined by the Ministry of Finance. In addition, the new regulations enable application for an extension of mining rights five years before expiration of the IUPK and require foreign IUPK holders to divest a 51 percent interest to Indonesian interests no later than the tenth year of production. Export licenses would be valid for one-year periods, subject to review every six months, depending on smelter construction progress.

Following the issuance of the January and February 2017 regulations and discussions with the Indonesian government, the Company advised the government that it was prepared to convert its COW to an IUPK, subject to extension of its long-term mining rights to 2041 and obtaining an investment stability agreement providing contractual rights with the same level of legal and fiscal certainty provided under its COW, and provided that the COW would remain in effect until it is replaced by a mutually satisfactory alternative. The Company also committed to commence construction of a new smelter during a five-year time frame after approval of the extension of its long term mining rights.

23. COMMITMENTS AND CONTINGENCIES (continued)

Regulatory Matters (continued)

On January 12, 2017, the Company suspended exports in response to Indonesian regulations in effect at the time. In addition, as a result of labor disturbances and a delay in the renewal of its export license for anode slimes, PT Smelting's operations were shut down from mid-January 2017 until early March 2017. On February 10, 2017, the Company was forced to suspend production as a result of limited storage capacity at the Company and PT Smelting. On April 21, 2017, the Indonesian government issued a permit to the Company that allowed exports to resume for a six-month period, and the Company commenced export shipments.

In mid-February 2017, pursuant to the COW's dispute resolution provisions, the Company provided formal notice to the Indonesian government of an impending dispute listing the government's breaches and violations of the COW, including, but not limited to, the: (i) imposition of restrictions on the Company's basic right to export mining products in violation of the COW; (ii) imposition of export duties other than those taxes and other charges expressly provided for in the COW; (iii) imposition of surface water taxes in excess of the restrictions imposed by the COW (refer to Note 19 for further discussion of these assessments); (iv) requirement for the Company to build a smelter, when no such requirement was in the COW; (v) unreasonably withholding and delaying the approval of the two successive ten year extensions of the term of the COW; and (vi) imposition of divestment requirements not provided for in the COW. The Company continues to reserve its rights under these provisions.

As a result of the 2017 regulatory restrictions and uncertainties regarding long-term investment stability, the Company took actions to adjust its cost structure, slow investments in its underground development projects and new smelter, and place certain of its workforce on furlough programs.

In late March 2017, the Indonesian government amended the regulations to enable the Company to retain its COW until replaced with an IUPK accompanied by an investment stability agreement, and to grant the Company a temporary IUPK. In April 2017, the Company entered into a Memorandum of Understanding with the Indonesian government (the 2017 MOU) confirming that the COW would continue to be valid and honored until replaced by a mutually agreed IUPK and investment stability agreement. In the 2017 MOU, the Company agreed to continue to pay a 5.0 percent export duty during this period. Subsequently, the Customs Office of the Minister of Finance refused to recognize the 5.0 percent export duty under the 2017 MOU and imposed a 7.5 percent export duty under the Ministry of Finance regulations, which the Company has paid under protest since resuming exports in April 2017. The Company is disputing the incremental 2.5 percent export duty while the matter is pending in Indonesia Tax Court proceedings, and amounts paid are being held in a restricted cash account or in a long-term receivables (US$39.0 million total balance at December 31, 2017, of which US$22.1 million was included in restricted cash and US$16.9 million in long-term notes and accounts receivable in the consolidated statements financial position) that the Company expects to have released or refunded in full once the matter is resolved.

In August 2017, the Company, FCX and the Indonesian government reached an understanding on a framework that would replace the COW while providing the Company with long-term mining rights. This framework includes (i) conversion from the COW to an IUPK providing the Company with long-term mining rights through 2041; (ii) Indonesian government certainty of fiscal and legal terms during the term of the IUPK; (iii) the Company commitment to construct a new smelter in Indonesia within five years of reaching a definitive agreement; and (iv) divestment of 51 percent of the project area interests to Indonesian participants at fair market value, structured so that FCX retains control over operations and governance of the Company. Execution of a definitive agreement will require approval by FCX's Board of Directors and the Company's joint venture partner, Rio Tinto, as well as the modification or revocation of current regulations and the implementation of new regulations by the Indonesian government. The Company cannot currently predict whether there will be any material accounting and tax impacts associated with the divestment.

23. COMMITMENTS AND CONTINGENCIES (continued)

Regulatory Matters (continued)

In late 2017, the Indonesian government (including the regional government of Papua Province and Mimika Regency) and PT Indonesia Asahan Aluminium (Persero) (PT Inalum), a state-owned enterprise, which will lead the government's consortium of investors, agreed to form a special purpose company to acquire Grasberg project area interests.

PT Inalum is wholly owned by the Indonesian government and currently holds 9.36 percent of the Company's outstanding common stock (Note 25). FCX is engaged in discussions with PT Inalum and Rio Tinto regarding potential arrangements that would result in the PT Inalum consortium acquiring interests that would meet the Indonesian government's 51 percent ownership objective in a manner satisfactory to all parties, and in a structure that would provide for continuity of FCX's management of the Company's operations and governance of the business. The parties continue to negotiate documentation on a comprehensive agreement for the Company's extended operations and to reach agreement on timing, process and governance matters relating to the divestment. The parties have a mutual objective of completing negotiations and the required documentation during the first half of 2018.

In December 2017, the Company was granted an extension of its temporary IUPK through June 30, 2018, to enable exports to continue while negotiations on a definitive agreement proceed. In February 2018, the Company received an extension of its export license through February 15, 2019. On February 28, 2018, PT Smelting received an extension of its anode slimes export license through February 26, 2019.

Until a definitive agreement is reached, the Company has reserved all rights under its COW, including dispute resolution procedures. The Company cannot predict whether it will be successful in reaching a satisfactory agreement on the terms of its long-term mining rights. If the Company is unable to reach a definitive agreement with the Indonesian government on its long-term rights, the Company intends to reduce or defer investments significantly in underground development projects and will pursue dispute resolution procedures under the COW.

See Note 30 for additional information related to the Company's COW and its temporary IUPK.

24. FINANCIAL RISK MANAGEMENT OBJECTIVES AND POLICIES, AND FINANCIAL AND DERIVATIVE INSTRUMENTS

Risk Concentrations

Substantially all of the Company's assets are located in Indonesia. Over the last several years, the Indonesian economy posted economic gains and reported reduced inflation rates. Indonesia continues to face political, economic and social uncertainties, including the potential of terrorist attacks and ethnic and religious strife, as well as a low-level separatist movement in Papua province.

Market Risk

The Company's use of financial instruments to manage market risks is conducted by designated personnel in accordance with approved policies, with management oversight. The Company does not purchase, hold or sell derivative financial instruments unless there is an existing asset or obligation or it anticipates a future activity that is likely to occur and will result in exposure to market risks that the Company intends to offset or mitigate. The Company does not enter into any derivative instruments for speculative purposes, but has entered into derivative instruments in limited instances to achieve specific objectives. These objectives principally relate to managing commodity price risk. The fair values of the Company's derivative instruments are based on widely published market closing prices. At December 31, 2017, 2016 and 2015, the Company's only outstanding derivative instruments were its embedded derivatives (see following discussion).

24. FINANCIAL RISK MANAGEMENT OBJECTIVES AND POLICIES, AND FINANCIAL AND DERIVATIVE INSTRUMENTS (continued)

Commodity Price Risk

The Company's concentrate sales contracts generally provide for provisional pricing at the time of shipment with final pricing determined in a future period based on market prices. These contract terms create embedded derivatives that must be bifurcated from the host contract and marked to fair value through earnings. Also, from time to time, the Company has entered into copper forward sales contracts to hedge the market risk associated with fluctuations in the prices of commodities it sells. Derivative instruments used by the Company to manage its risks do not contain credit risk-related contingent provisions. The Company had no price protection contracts relating to its mine production for any period presented in these consolidated financial statements.

Financial Credit Risk

The Company is exposed to credit loss when financial institutions with which it has entered into commodity contracts, such as copper forward contracts, are unable to pay. To minimize the risk of such losses, the Company uses counterparties that meet certain requirements and periodically reviews the creditworthiness of these counterparties. The Company does not anticipate that any of the counterparties it deals with will default on their obligations. The Company did not have any outstanding commodity contracts with financial institutions for any period presented in these consolidated financial statements and, therefore, did not have any credit exposure associated with commodity contracts.

The Company is also exposed to credit loss when its trade receivables become uncollectible. However, because the Company's sales contracts generally require a provisional payment of at least 90 percent of the invoice amount upon shipment, the risk of loss is minimal.

Liquidity Risk

Liquidity risk is defined as the risk that the short-term revenues are not enough to cover short-term expenditures.

The Company's liquidity requirements have arisen from the need to finance its operations. In the management of liquidity risk, the Company monitors and maintains a level of liquidity adequate to finance the Company's operations and to mitigate the effects of fluctuations in cash flows.

The current financial liabilities, including trade payables, accrued liabilities, unearned customer receipts and royalties payable, will mature in less than one year. Non-current financial liabilities will mature beyond one year.

Currency Exchange Risk

The Company conducts the majority of its operations in Indonesia where its functional currency is the US$. All of the Company's revenues and the majority of its costs and expenses are denominated in US$; however, some costs and certain assets and liabilities are denominated in Indonesian Rupiah, Australian dollars and other currencies. Generally, the Company's results are adversely affected when the US$ strengthens against these currencies and positively affected when the US$ weakens against these currencies because of the Company's current net position of Rupiah-denominated assets exceeding Rupiah-denominated liabilities.

The Company recorded gains on foreign exchange totaling US$1.0 million in 2017, US$22.5 million in 2016 and US$31.4 million in 2015 related to currency transactions, primarily related to revaluation of Rupiah-denominated assets and liabilities. At December 31, 2017, the Company's most significant Rupiah-denominated assets include cash and cash equivalents of US$11.6 million, VAT receivables of US$148.0 million, employee receivables of US$22.2 million and non-income tax receivables of US$32.2 million, partially offset by Rupiah-denominated payables and pension liabilities of US$11.0 million, all of which were recorded at an exchange rate of 13,480 Indonesian Rupiah to one US$.

If the Rupiah exchange rate strengthened or weakened by 10 percent as compared to the exchange rate as of December 31, 2017, with other variables held constant, the Company's net monetary Rupiah-denominated assets would be higher by US$22.5 million or lower by US$18.4 million, respectively. There were no significant fluctuations of the Australian dollar against the US$.

24. FINANCIAL RISK MANAGEMENT OBJECTIVES AND POLICIES, AND FINANCIAL AND DERIVATIVE INSTRUMENTS (continued)

Currency Exchange Risk (continued)

Following is a summary of estimated annual payments and the impact of changes in foreign currency rates on the annual operating costs:

	Estimated Annual Payments		10% Change in exchange rate (in millions)[a]	
	in local currency	in millions[b]	Increase	Decrease
Rupiah	9.8 trillion	727	(66)	81
Australian dollar	215 million	168	(15)	19

a. Reflects the estimated impact on annual operating costs assuming a 10 percent increase or decrease in the exchange rate reported at December 31, 2017.

b. Based on December 31, 2017, exchange rates of 13,480 Rupiah to one US$ and 1.28 Australian dollars to one US$.

Embedded Derivatives

As described in Note 2 under "Revenue Recognition," certain of the Company's copper concentrate sales contracts provide for provisional pricing (Notes 2n and 2r) primarily based on the LME copper price and the London gold price at the time of shipment as specified in the contract. Sales with a provisional sales price contain an embedded derivative (i.e., the price settlement mechanism that is settled after the time of delivery) that is required to be bifurcated from the host contract. The host contract is the sale of the metals contained in the concentrate at the then-current LME copper price or the London gold price. The embedded derivative does not qualify for hedge accounting treatment and fair value fluctuations in the value of embedded derivatives are recorded in revenues.

A summary of aggregate embedded derivatives at December 31, 2017, follows:

	Open Positions	Average Price Per Unit (US$)		Maturities Through
		Contract	Market	
Embedded derivatives in concentrate sales contracts:				
Copper (millions of pounds)	351	3.06	3.28	April 2018
Gold (thousands of ounces)	318	1,269	1,300	March 2018

The embedded copper derivatives as of December 31, 2017, are expected to be finally priced over the first four months of 2018. A two-cent movement in the average copper price used for these derivatives will have an approximate US$4.5 million impact on the Company's 2018 total comprehensive income. As of December 31, 2016, the Company had embedded copper derivatives on 301 million pounds at an average market price of US$2.51 per pound. The average market prices were based on then-current forward prices for the expected settlement dates. As of December 31, 2015, the Company had embedded copper derivatives on 254 million pounds at an average market price of US$2.14 per pound. The average market prices were based on then-current forward prices for the expected settlement dates.

The embedded gold derivatives as of December 31, 2017, are expected to be finally priced over the first three months of 2018. A US$25 movement in the average price used for these derivatives will have an approximate US$5.2 million impact on the Company's 2018 total comprehensive income. As of December 31, 2016, the Company had embedded gold derivatives on 207 thousand ounces at an average market price of US$1,161 per ounce. As of December 31, 2015, the Company had embedded gold derivatives on 213 thousand ounces at an average market price of US$1,062 per ounce.

The Company's embedded derivatives on provisional copper and gold sales are valued using quoted market prices based on the forward LME copper price and the London gold price. Realized and unrealized gains (losses) recognized in revenues for embedded derivatives in concentrate sales contracts totaled US$255.5 million in 2017, US$(120.4) million in 2016 and US($185.2) million in 2015. The Company's outstanding embedded derivatives are recorded at fair value and are included in trade receivables and/or trade payables. Embedded derivatives' net asset position was US$88.7 million at December 31, 2017, and the net liability position was US$33.0 million at December 31, 2016, and US$26.0 million at December 31, 2015.

24. FINANCIAL RISK MANAGEMENT OBJECTIVES AND POLICIES, AND FINANCIAL AND DERIVATIVE INSTRUMENTS (continued)

Other Financial Instruments

Other financial instruments include: cash and cash equivalents, restricted cash, trade receivables, other receivables, long-term notes and accounts receivable, trade payables, accrued liabilities, unearned customer receipts and royalties payable. The financial statement amount for each of these items is a reasonable estimate of the fair value because of the short-term nature of these instruments and generally negligible credit losses.

Long-term Debt and Finance Lease Obligation

The financial statement amounts for long-term debt and finance lease obligation represented amortized cost. The fair value of the Company's long-term debt with FCX (related party) was not practicable to estimate (see Note 18 for further discussion). Using a discounted cash flow model and applicable market interest rates, the Company estimated the fair value of its finance lease obligation was US$19.0 million at December 31, 2016, and US$37.4 million at December 31, 2015.

Fair Value Measurement

Fair value accounting guidance includes a hierarchy that prioritizes the inputs to valuation techniques used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3).

- Level 1: Quoted (unadjusted) prices in active markets for identical assets or liabilities;
- Level 2: Other techniques for which all inputs that have a significant effect on the recorded fair value are observable, either directly or indirectly; and
- Level 3: Techniques that use inputs that have a significant effect on the recorded fair value that are not based on observable market data.

The Company's embedded derivatives on provisional sales are valued using quoted monthly LME copper forward prices and the London gold forward prices at each reporting date based on the month of maturity; however, the Company's contracts themselves are not traded on an exchange. As a result, these derivatives are classified within Level 2 of the fair value hierarchy.

The current portion of finance lease obligation was valued using observable inputs as described previously and, as such, was classified within Level 2 of the fair value hierarchy.

The Company did not have any transfers between fair value levels during the reporting periods.

25. SHARE CAPITAL

Shareholders and their ownership interests as of December 31, 2017, were as follows:

	Number of Shares Issued and Fully Paid	Percentage of Ownership	US$ Amount
FCX	184,890	81.28%	18,489
PT Inalum[a]	21,300	9.36	2,130
PT Indocopper Investama	21,300	9.36	2,130
Total	227,490	100.00%	22,749

a. The GOI transferred its ownership interest to PT Inalum in December 2017 (Note 23).

25. SHARE CAPITAL (continued)

Shareholders and their ownership interests as of December 31, 2016 and 2015, were as follows:

	Number of Shares Issued and Fully Paid	Percentage of Ownership	US$ Amount
FCX	184,890	81.28%	18,489
GOI	21,300	9.36	2,130
PT Indocopper Investama	21,300	9.36	2,130
Total	227,490	100.00%	22,749

As of December 31, 2017, 2016 and 2015, FCX owned 100 percent of PT Indocopper Investama.

During 2017, the Company's Board of Directors declared and the Company paid total dividends of US$1.4 billion (US$6,340 per share). No dividends were declared or paid during 2016 and 2015.

The Company's objectives when managing capital are to (i) maintain a strong capital base so as to maintain investor, creditor and market confidence, and (ii) to sustain future development of the business.

The Company regularly reviews and manages its capital structure to optimize the use and earnings potential of the Company's resources and provide returns for its shareholders. The Company takes into consideration the future capital requirements of the Company and projected profitability, operating cash flows, capital expenditures and strategic investment opportunities.

In order to maintain or adjust the Company's capital structure, it may adjust the amount of dividends paid to shareholders or adjust its operating strategy as market conditions change. Management regards total shareholders' equity as shown in the consolidated statement of financial position as capital, for capital management purposes.

No significant changes have been made in the objectives, policies and processes of the Company in 2017, 2016 and 2015.

25. NET REVENUES

Consolidated net revenues attributable to the products the Company produced follow:

	Years Ended December 31,		
	2017	2016	2015
Copper	2,945,201	2,448,169	1,735,450
Gold	1,952,036	1,304,081	1,381,634
Silver	49,088	49,710	31,600
Adjustments to embedded derivatives related to prior year sales (Notes 2n, 2r and 24)	48,319	9,154	(43,019)
Less treatment and refining charges	(261,524)	(290,302)	(229,309)
Less export duties (Note 23)	(115,223)	(95,388)	(109,365)
Less royalties on metals (Note 16):			
Copper	(98,227)	(79,423)	(60,825)
Gold	(72,992)	(49,992)	(52,299)
Silver	(1,635)	(1,664)	(1,077)
Total consolidated revenues, net	4,445,043	3,294,345	2,652,790

26. NET REVENUES (continued)

Net consolidated revenues from sales to third parties and related parties and the corresponding percentages to total consolidated net revenues follow:

	Years Ended December 31,					
	2017		2016		2015	
	Amount	%	Amount	%	Amount	%
Third-party sales[a]	2,422,215	54	1,830,457	56	1,563,184	59
PT Smelting (Note 5)	2,022,828	46	1,402,247	42	1,053,751	40
Atlantic Copper (Note 5)	-	-	61,641	2	35,855	1
Total	4,445,043	100	3,294,345	100	2,652,790	100

a. All of these were export sales, and no single customer accounted for 10 percent or more of sales.

Net consolidated revenues based on the geographical location of the customer follow:

	Years Ended December 31,		
	2017	2016	2015
Domestic:			
Indonesia	2,022,828	1,402,247	1,053,751
International:			
Japan	637,619	397,414	385,234
India	576,969	373,129	435,080
Philippines	378,012	261,287	169,350
China	342,461	360,144	257,542
Switzerland	190,411	216,653	108,884
Korea	147,329	90,827	85,359
United States	128,817	93,499	101,048
Singapore	20,597	37,504	20,687
Spain	-	61,641	35,855
Total	4,445,043	3,294,345	2,652,790

27. COSTS AND EXPENSES

Cost of sales consists of the following:

	Years Ended December 31,		
	2017	2016	2015
Employee costs	445,587	589,040	540,156
Materials and supplies	397,347	525,858	576,359
Energy costs	386,445	387,882	457,481
Depreciation and amortization:			
Property, plant and equipment, including assets under finance leases (Note 8)	584,964	406,600	298,002
Mine properties (Note 9)	44,373	58,342	39,014
Contract and consulting services	270,541	243,040	213,645
Deferred stripping costs (Note 10)	70,834	123,934	102,919
Restructuring charges (Note 20)	53,642	-	-
Delivery and handling costs	56,660	63,707	55,081
Freeport Partnership for Community Development (Note 23)	44,442	33,443	28,028
PT Smelting intercompany profit recognized (deferred) (Notes 5 and 7)	28,713	25,397	(10,046)
Inventory impact	(35,410)	(137,186)	(85,859)
Other	1,575	18,063	(13,871)
Total cost of sales	2,349,713	2,338,120	2,200,909

27. COSTS AND EXPENSES (continued)

General and administrative expenses consist of the following:

	Years Ended December 31,		
	2017	2016	2015
Employee costs	53,941	38,594	48,615
Professional fees and contract services	34,104	22,684	25,041
Rent	8,689	7,758	8,208
Restructuring charges (Note 20)	6,071	-	-
Other (reduced by joint venture partner contributions)	20,836	18,355	18,047
Total general and administrative expenses	123,641	87,391	99,911

Selling and marketing expenses consist of the following:

	Years Ended December 31,		
	2017	2016	2015
Employee costs	1,720	1,519	1,662
Other	422	364	434
Total selling and marketing expenses	2,142	1,883	2,096

28. SIGNIFICANT AGREEMENTS

PT Freeport Indonesia Contract of Work

On December 30, 1991, the Company entered into a COW with the GOI. The COW replaced the original contract of work entered into in 1967 (see Notes 1a and 23 for further discussion).

Rio Tinto Implementation Agreement

FCX entered into an implementation agreement with Rio Tinto dated May 2, 1995 (the Rio Tinto Implementation Agreement). The Rio Tinto Implementation Agreement sets out the steps for collaboration between the parties on certain of FCX's projects in Indonesia, including the exploration and development of the COW area. Under the terms of the Rio Tinto Implementation Agreement, Rio Tinto reimbursed US$40.0 million to the Company for the agreed exploration costs in Block A.

Both FCX and Rio Tinto provided irrevocable guarantees under the terms of the Rio Tinto Implementation Agreement, guaranteeing the performance of their respective subsidiaries. FCX and Rio Tinto also agreed to indemnify the other party against any loss, damage, costs and expenses suffered arising from the breach of its subsidiaries under any contemplated transaction agreement, including the Rio Tinto Participation Agreement.

Rio Tinto Participation Agreement

The Company entered into a participation agreement with Rio Tinto dated October 11, 1996, to govern the rights and obligations of their joint operations, sole risk ventures and other operations relating to the contract area under the COW (see Note 1a for further discussion).

PT Smelting Joint Venture Agreement

The Company, Mitsubishi Materials Corporation, Mitsubishi Corporation Unimetals Ltd. and JX Nippon Mining and Metals Corporation entered into the second amended and restated joint venture agreement and shareholders agreement for PT Smelting dated December 11, 1996. The Company and Mitsubishi Materials, amongst others, formed PT Smelting through a joint venture and shareholders' agreement dated October 25, 1995, to develop, construct and operate a copper smelter and refinery located at Gresik, East Java, Indonesia. The Company has a 25 percent equity ownership interest in PT Smelting (see Note 7 for further discussion).

28. SIGNIFICANT AGREEMENTS (continued)

PT Smelting Concentrate Agreement

The Company entered into a concentrate purchase and sales agreement with PT Smelting dated December 11, 1996, as amended. The Company's contract with PT Smelting provides for the supply of 100 percent of the copper concentrate requirements necessary for PT Smelting to produce 205,000 metric tons of copper annually (essentially the smelter's original design capacity) on a priority basis. For the first 15 years of PT Smelting's commercial operations, beginning December 1998, the Company agreed that the combined treatment and refining charges (processing fees paid to smelters by miners) would approximate market rates, but will not fall below specified minimum rates. The minimum rate, applicable to the period April 27, 2008, to April 30, 2020, is determined annually and must be sufficient to cover PT Smelting's annual cash operating costs (net of credits and including costs of debt service) for 205,000 metric tons of copper. The maximum rate applicable through April 30, 2017, was US$0.30 per pound and the maximum rate applicable for the period May 1, 2017, to April 30, 2020, is (i) a smelting charge of US$110.00 per metric ton and (ii) a payable copper refining charge of US$0.11 per pound. The agreement is an amendment to the long-term sales contract, which was approved by the Department of Energy and Mineral Resources of the GOI. The Company also sells copper concentrate to PT Smelting at market rates, which are not subject to a minimum or maximum rate, for quantities in excess of 205,000 metric tons of copper annually.

Atlantic Copper Concentrate Agreement

The Company entered into a copper concentrate sales agreement dated January 1, 2008 (the Atlantic Copper Concentrate Agreement), with Atlantic Copper to sell and deliver copper concentrate.

The Atlantic Copper Concentrate Agreement is in effect unless and until terminated by either party. Either party may, at its sole option and discretion, terminate this agreement as of the end of any calendar year subject to giving a twelve month written notice to the other party.

Under the terms of the Atlantic Copper Concentrate Agreement, the parties have agreed to sell and purchase between 575,000 and 625,000 metric tons of copper concentrate in each contractual year. For logistical and/or operational considerations, the parties may mutually agree to defer the delivery of a portion of the contractual tonnage to another contractual year. The parties may cancel any such deferred tonnage during the mutually agreed year of delivery. No copper concentrate was sold to Atlantic Copper during 2017, and 38,196 metric tons were sold in 2016 and 31,888 metric tons in 2015.

The purchase price for copper is the price equal to the daily official LME Grade A settlement price quoted in US dollars as published in "Metal Bulletin." The price for gold is equal to the daily average of the London free bullion market "Initial" and "Final" quotations for gold in US dollars as published in "Metal Bulletin." The price for silver is equal to the daily London bullion brokers spot price for silver quoted in US dollars as published in "Metal Bulletin." Under the Atlantic Copper Concentrate Agreement, which is consistent with the terms of third party concentrate sales agreements, the parties deduct the smelting and refining charge from the purchase price of the contractual tonnage. The smelting and refining charge is determined by calculating the weighted average of the combined smelting and refining charge with respect to all quantities of concentrate shipped under all of the Company's and Atlantic Copper's concentrate sales agreements with non-affiliated entities for the contract year for which the determination is being made. The parties also agreed to adjust such calculation by certain factors, including the purity of the concentrate delivered.

PT Puncakjaya Power Sales Agreement (Note 5)

The Company entered into an amended and restated power sales agreement with Puncakjaya Power dated December 18, 1997 (the Puncakjaya Power Sales Agreement), to purchase electricity from certain of Puncakjaya Power's facilities. The initial term of the Puncakjaya Power Sales Agreement was 20 years following the closing date in December 1997. The contract was extended for a 12-month period through December 17, 2018.

Puncakjaya Power is obliged (i) to provide the Company with electric capacity at the target capacity level, as specified under the agreement, (ii) to provide required electricity at a rate not exceeding the target capacity level and (iii) to use commercially reasonable efforts to satisfy any capacity exceeding the target capacity level.

28. SIGNIFICANT AGREEMENTS (continued)

PT Puncakjaya Power Sales Agreement (Note 5) (continued)

The Company supplies diesel fuel to Puncakjaya Power under the terms of the restated services agreement dated December 1997 between the Company and Puncakjaya Power. In addition, the Company supplies coal to Puncakjaya Power under an agreement with PT Kaltim Prima Coal.

Under the terms of the Puncakjaya Power Sales Agreement, the Company is obliged to pay quarterly capacity charges and monthly operating and maintenance charges.

FM Services Company Service Agreement (Note 5)

The Company has a service agreement with FMS. Under the agreement, FMS incurs certain technical, management administrative, financial and other costs on behalf and for the benefit of the Company. These services are charged to the Company at amounts approximating those that would be incurred if such services were performed by its own employees.

FCX Revolving Credit Agreement

The Company entered into an unsecured US$1.0 billion revolving credit agreement, dated October 5, 2012, with FCX (see Note 18 for further discussion).

JPMorgan Credit Agreement

The Company, FCX and FM O&G LLC entered into a revolving credit facility, dated February 14, 2013, (which was modified in May 2014, February and December 2015, and again in February 2016) with JPMorgan Chase Bank, N.A. and certain other financial institutions (see Note 18 for further discussion).

29. ACCOUNTING STANDARDS ISSUED BUT NOT YET EFFECTIVE

The following are accounting standards issued by DSAK that are considered relevant to the financial reporting of the Company but not yet effective for the 2017 financial statements (see Note 30 for additional information regarding the adoption of PSAKs on January 1, 2018):

Effective on or after January 1, 2018:

- Amendments to PSAK No. 2, "Statement of Cash Flows," from the disclosures initiative, were adopted from amendments to IAS No. 7. These amendments require entities to provide disclosures that enable the financial statements users to evaluate the changes in liabilities arising from financing activities, including changes from cash flows and non-cash transactions. This standard must be adopted effective January 1, 2018.
- PSAK No. 15 (2017 Improvement) was adopted from amendements to IAS No. 28. This improvement clarifies that at initial recognition an entity may elect to measure its investee at fair value on the basis of an investment-by-investment. This standard must be adopted effective January 1, 2018.
- Amendments to PSAK No. 46, primarily associated with the recognition of deferred tax assets for unrealized losses, were adopted from amendments to IAS No. 12. These amendments clarify that to determine whether the taxable income will be available so that the deductible temporary differences can be utilized; the estimate of probable future taxable profit may include the recovery of some of an entity's assets for more than their carrying amount if there is sufficient evidence that it is probable that the entity will achieve this. This standard must be adopted effective January 1, 2018.
- PSAK No. 71, "Financial Instruments," was adopted from IFRS No. 9. The standard addresses the classification, measurement and derecognition of financial assets and financial liabilities, introduces new rules for hedge accounting and a new impairment model for financial assets. This standard must be adopted for financial years commencing on or after January 1, 2020, with early adoption permitted.

29. ACCOUNTING STANDARDS ISSUED BUT NOT YET EFFECTIVE (continued)

Effective on or after January 1, 2018 (continued):

- PSAK No. 72, "Revenue from Contracts with Customers," was adopted from IFRS No. 15. The standard establishes a five step revenue recognition model, which replaces most existing revenue guidance. Under this standard, revenue is recognized when control of goods or services has been transferred to customers at an amount that reflects the consideration to which an entity expects to be entitled in exchange for those goods or services. This standard must be adopted for financial years commencing on or after January 1, 2020, with early adoption permitted.
- PSAK No. 73, "Leases," was adopted from IFRS No. 16. The standard will result in almost all leases being recognized on the statement of financial position, as the distinction between operating and finance leases is removed. Under the new standard, an asset (the right to use the leased item) and a financial liability to pay rentals are recognized. The only exceptions are short-term and low-value leases. This standard must be adopted for financial years commencing on or after January 1, 2020. Early adoption is permitted only for entities that adopted PSAK No. 72.
- ISAK No. 34, "Uncertainty over Income Tax Treatments," was adopted from International Financial Reporting Interpretations Committee (IFRIC) No. 23. This interpretation addresses accounting for income taxes whenever tax treatments involve uncertainty that affects the application of PSAK No. 46. This interpretation is applicable to uncertainties related to current and deferred income taxes and interest and penalties that are in the scope of PSAK No. 46. This interpretation defines an uncertain tax treatment as a tax treatment for which there is uncertainty over whether the relevant tax authority will accept that tax treatment according to tax law and tax practice, and is effective January 1, 2019.

The Company is presently evaluating and has not yet determined the impact of these accounting standards on its consolidated financial statements.

30. SUBSEQUENT EVENTS

Dividends Declared and Paid

During 2018, the Company's Board of Directors declared and the Company paid an interim dividend for 2018 of US$1.6 billion (US$6,925 per share).

Revolving Credit Facility

In April 2018, FCX, the Company and FM O&G LLC (a wholly owned subsidiary of FCX) entered into a new US$3.5 billion, five-year, unsecured revolving credit facility, which replaced the prior revolving credit facility (scheduled to mature on May 31, 2019). The new revolving credit facility is available until April 20, 2023, with US$500 million available to the Company in the form of borrowings or letters of credit, and has a substantially similar structure and terms as the prior revolving credit facility. Interest on loans made under the new revolving credit facility will, at the option of FCX, be determined based on the adjusted London Interbank Offered rate or the alternate base rate (each as defined in the new revolving credit facility) plus a spread to be determined by reference to FCX's credit ratings. The new revolving credit facility also contains financial ratios governing maximum total leverage and minimum interest expense coverage.

30. SUBSEQUENT EVENTS (continued)

Taxation

As discussed in Note 19e, the Company received assessments from the local regional tax authority in Papua, Indonesia, for additional taxes and penalties related to surface water taxes for the period from January 2011 through December 2017. During the first half of 2018, the Indonesia Tax Court ruled partially in favor of the Company with respect to assessments for the period January 2016 through April 2016 by reducing these assessments that amounted to US$21 million, including penalties, to US$13 million, including penalties (based on the exchange rate at December 31, 2017), or an approximate 40 percent reduction. Hearings in the Indonesia Tax Court related to assessments for the period from May 2016 through September 2016 have concluded with no decisions issued, and hearings related to assessments for the period from October 2016 through April 2017 are currently underway.

During 2017, the Company filed reconsideration request petitions to the Indonesia Supreme Court with respect to assessments for the period from January 2011 through December 2015; and in second-quarter 2018, filed reconsideration request petitions with respect to the Indonesia Tax Court decisions related to the assessments for the period from January 2016 through April 2016. In second-quarter 2018, the Indonesia Supreme Court issued favorable decisions relating to surface water tax assessments of US$186.6 million (based on the exchange rate at December 31, 2017) for the period January 2011 through July 2015. The Indonesia Supreme Court ruling concluded that the Company and the Indonesian government are bound by the Company's Contract of Work (COW), which is lex specialis, and prevails as the law for the parties to the COW that should be carried out in good faith.

The aggregate amount of assessments received from January 2018 through August 2018 was an additional US$39.6 million (based on the exchange rate at August 31, 2018). The Company estimates the total amount of the assessments, including penalties, (based on the exchange rate at August 31, 2018) for the period from August 2015 through August 2018 totals US$175.7 million, including US$87.8 million in penalties. As of June 30, 2018, no charges have been recorded for these assessments because the Company believes its COW exempts it from these payments, and the Company has not paid and does not intend to pay these assessments.

In August 2018, the Indonesian Tax Court read its verdict on the Company's 2012 corporate income tax appeal that reduced the Company's overpayment for that year from US$302.9 million to US$178.7 million. The Company plans to appeal this verdict to the Indonesia Supreme Court and believes it is more likely than not that it will prevail.

Environmental Matters

As discussed in Note 21, in October 2017, Indonesia's Ministry of Environment and Forestry (the Ministry) notified the Company of administrative sanctions related to certain activities the Ministry indicated are not reflected in its environmental permit. The Ministry also notified the Company that certain operational activities were inconsistent with factors set forth in its environmental permitting studies and that additional monitoring and improvements need to be undertaken related to air quality, water drainage, treatment and handling of certain wastes, and tailings management. In April 2018, the Ministry issued decrees imposing unattainable environmental standards related to the Company's controlled riverine tailings management system that must be complied with by October 2018. The decrees, which the Company believes are contrary to the Indonesian government's obligations under its COW, conflict with the Company's approved environmental management programs and existing environmental permits. If these unattainable environmental standards are not modified or delayed, the Company could be adversely affected, including possible shutdown of its operations. The Company is currently engaged in constructive discussions with the Ministry in working toward a resolution of these issues.

Regulatory Matters

As discussed in Note 23, the Company and the Indonesian government have been engaged in negotiation and documentation of a special mining license (IUPK) and accompanying documentation for assurances on legal and fiscal terms to provide the Company with long-term mining rights through 2041. In addition, the IUPK would provide that the Company construct a smelter within five years of reaching definitive agreements and include agreement for the divestment of 51 percent of the project area interests to Indonesian participants at fair market value.

30. SUBSEQUENT EVENTS (continued)

Regulatory Matters (continued)

In July 2018, FCX and the Company entered into a Heads of Agreement with PT Inalum and the Company's joint venture partner Rio Tinto plc (Rio Tinto). Under the terms of the non-binding agreement, PT Inalum would acquire for aggregate cash consideration of US$3.85 billion all of Rio Tinto's interests associated with its joint venture with the Company (Joint Venture) and all of FCX's interests in PT Indocopper Investama, which owns 9.36 percent of the Company.

In September 2018, FCX and the Company entered into a Divestment Agreement on previously agreed economic terms with PT Inalum in connection with PT Inalum's acquisition of shares of the Company. Under the terms of the Divestment Agreement, Rio Tinto's interest will be merged into the Company concurrent with PT Inalum's acquisition in exchange for a 40 percent share ownership in the Company. The arrangements provide for FCX and existing Company shareholders to retain the economics of the revenue and cost sharing arrangements under the Joint Venture. Following completion of the transactions, the Company will have an expanded asset base to include the Rio Tinto interests and PT Inalum's share ownership will be 51.2 percent of the Company (subject to a dividend assignment mechanism to replicate the Joint Venture economics), and FCX's ownership will be 48.8 percent. FCX would continue to manage the Company's operations.

At closing, Rio Tinto would receive US$3.5 billion and FCX would receive US$350 million in cash proceeds from PT Inalum.

The transaction, which is expected to close by the first quarter of 2019, is subject to certain conditions, including the extension and stability of the Company's long-term mining rights through 2041 in a form acceptable to FCX and PT Inalum; resolution of environmental regulatory matters pending before the Ministry satisfactory to the Indonesian government, FCX and PT Inalum; various other Indonesian regulatory actions and approvals; and customary approvals from international competition authorities. The terms of these agreements will be subject to approval by the FCX Board of Directors, and will require modification or revocation of current regulations and the implementation of new regulations by the Indonesian government.

In September 2018, the Company's temporary IUPK was extended to October 31, 2018, and the Company will continue to seek extensions to its temporary IUPK until definitive agreements are complete.

Adoption of New Accounting Standards

The Company adopted Amendments to PSAK No. 2, PSAK No. 15 (2017 Improvement) and Amendments to PSAK No. 46 effective January 1, 2018, which did not have a material impact. In addition, the Company early adopted PSAK No. 72 effective January 1, 2018, under the modified retrospective approach applied to contracts that remain in force at the adoption date. The adoption of PSAK No. 72 did not result in any financial statement impacts or changes to the Company's revenue recognition policies or processes as revenue is primarily derived from arrangements in which the transfer of control coincides with the fulfillment of performance obligations.

31. PURPOSE OF PREPARATION AND ISSUANCE OF THE CONSOLIDATED FINANCIAL STATEMENT

These consolidated financial statements have been prepared solely for inclusion in the offering document in connection with the purposed offering of debt securities of PT Inalum in the United States of America and outside of the United States of America in reliance on Rule 144A and Regulation S, respectively, under the United States Securities Act of 1933.

32. COMPLETION OF THE CONSOLIDATED FINANCIAL STATEMENTS

The management of the Company is responsible for the preparation of the consolidated financial statements that were authorized for issue by the management of the Company on October 3, 2018.

PT FREEPORT INDONESIA
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APPENDIX A — 2017 COAL RESERVES STATEMENT

Coal Resources & Reserves Balance of PT Bukit Asam Tbk as of December 31, 2017

CONTENTS

DISCLAIMER 2
ABOUT THIS REPORT 3
TANJUNG ENIM COAL MINE 4
IPC – BANTUAS COAL MINE 6
PERANAP COAL MINE 7
OMBILIN COAL MINE 8
IPC – TABALONG COAL MINE 9
COMPETENT PERSON DECLARATION 10
CONSENT 11

DISCLAIMER

The information in this report (the "2017 Report") relating to the Annual Coal Resources and Reserves Balance of PT Bukit Asam Tbk ("PTBA") is based on our internal estimates of coal mined at our coal mining concessions, compiled internally by PTBA's Competent Persons, since the date of the following existing reports:

- in relation to our Tanjung Enim coal mining concessions, the 2015 Resources and Reserves Estimation Report prepared by PT Britmindo, a third-party mining consultant, in accordance with the 2012 JORC Code and 2011 KCMI Code (the "2015 Tanjung Enim JORC Report", attached hereto as Annex I);
- in relation to our Bantuas coal mining concession, the 2016 Resources and Reserves Report prepared based on a feasibility study conducted by in our in-house Competent Persons, Mr. Wisjnoe Adjie (the "2016 Bantuas Report", attached hereto as Annex II);
- in relation to our Peranap coal mining concession, the 2015 Resources and Reserves Estimation Report prepared by International Mining Consultant ("IMC"), a third-party mining consultant, in accordance with the 2012 JORC Code (the "2015 Peranap JORC Report", attached hereto as Annex III);
- in relation to our Ombilin coal mining concession, the 2009 Resources and Reserves Estimation Report prepared by International Mining Consultant ("IMC"), a third-party mining consultant, in accordance with the USGS Code, (the "2009 Ombilin USGS Report", attached hereto as Annex IV); and
- in relation to our Tabalong coal mining concession, the 2013 Coal Project Resources and Reserves Estimation Report prepared by PT Britmindo, in accordance with the 2012 JORC Code (the "2013 Tabalong JORC Report", attached hereto as Annex V), each, an "existing report".

This 2017 Report is neither undertaken, nor intended to supersede the above existing reports. The resources and reserves data set out in this 2017 Report has been calculated by our Competent Persons by (i) referencing the data for the relevant concession area in the respective existing report and (ii) adjusting it by subtracting the amount of PTBA's actual coal production at that concession area since the date of the respective existing report up to December 31, 2017. Consequently, no reliance should be made solely on the content of this 2017 Report and additional review of the original existing reports listed above is recommended.

The contents of this 2017 Report are to be used only with the terms and conditions defined by PTBA. Use of any sections of this 2017 Report or any data contained therein by any third party is prohibited unless authorized directly by PTBA and its nominated representatives. PTBA accepts no liability for any unauthorized use of all or any sections of this 2017 Report by third parties. PTBA shall indemnify its Competent Persons against all and any claims, losses and costs which may be incurred in the future.

ABOUT THIS REPORT

This 2017 Report is the latest update on the coal resources and reserves of PTBA and its subsidiaries and include data valid as of December 31, 2017. The information contained in this report is prepared in reliance on existing resources and reserves report which have been prepared in accordance with the 2012 JORC Code, the 2011 KCMI Code or the USGS Code. The resources and reserves data for mining concessions, at which there have been no production at since the relevant existing resources and reserves report, have replicated the data in such existing resources and reserves report.

As of December 31, 2017, PTBA held a total of 10 coal mining concessions ("IUPs"). As of the date of this 2017 Report, PTBA had active operations at six of these IUPs, including its (i) Tambang Air Laya IUP, Muara Tiga Besar IUP, Banko Barat IUP, Banko Tengah A IUP and Banko Tengah B IUP, which are located within the Tanjung Enim coal mine, and (ii) Bantuas IUP. PTBA's Tanjung Enim coal mine previously included the Lahat IUP, which is currently under legal dispute. As of December 31, 2017, PTBA did not have active operations at its remaining four IUPs, including its (i) Ombilin IUP, (ii) Peranap IUP, (iii) Bukit Kendi IUP and (iv) Tabalong IUP. PTBA holds its Bantuas IUP and Tabalong IUP through its subsidiary, PT Internasional Prima Coal and its Bukit Kendi IUP through its subsidiary, PT Batubara Bukit Kendi. PTBA has not measured or classified reserves for its Bukit Kendi IUP.

Each of the Competent Persons have the appropriate professional membership and the relevant experience in relation to the reserves being reported by them to qualify as a Competent Person as defined under the KCMI Code. Each of the Competent Persons has consented to the inclusion of the resources and reserves estimates in the form and context in which it appears in this 2017 Report, excluding with respect to the Lahat IUP currently under dispute. The Competent Persons have no responsibility regarding the resources and reserves data with respect to the Lahat IUP.

When determining the amount of mineable reserves from resources, modifying factors related to aspects of mining such as metallurgical, economic, marketing, legal, environmental, infrastructural, social and governance factors, must be considered. PTBA's in-house Competent Persons team includes Wali Al Hasunah and Wisjnoe Adjie (KCMI certified). They have sufficient experiences and certified as Competent Person Indonesia for coal mining industry, especially in coal mine planning, reserves estimation, due diligence, as well as feasibility studies.

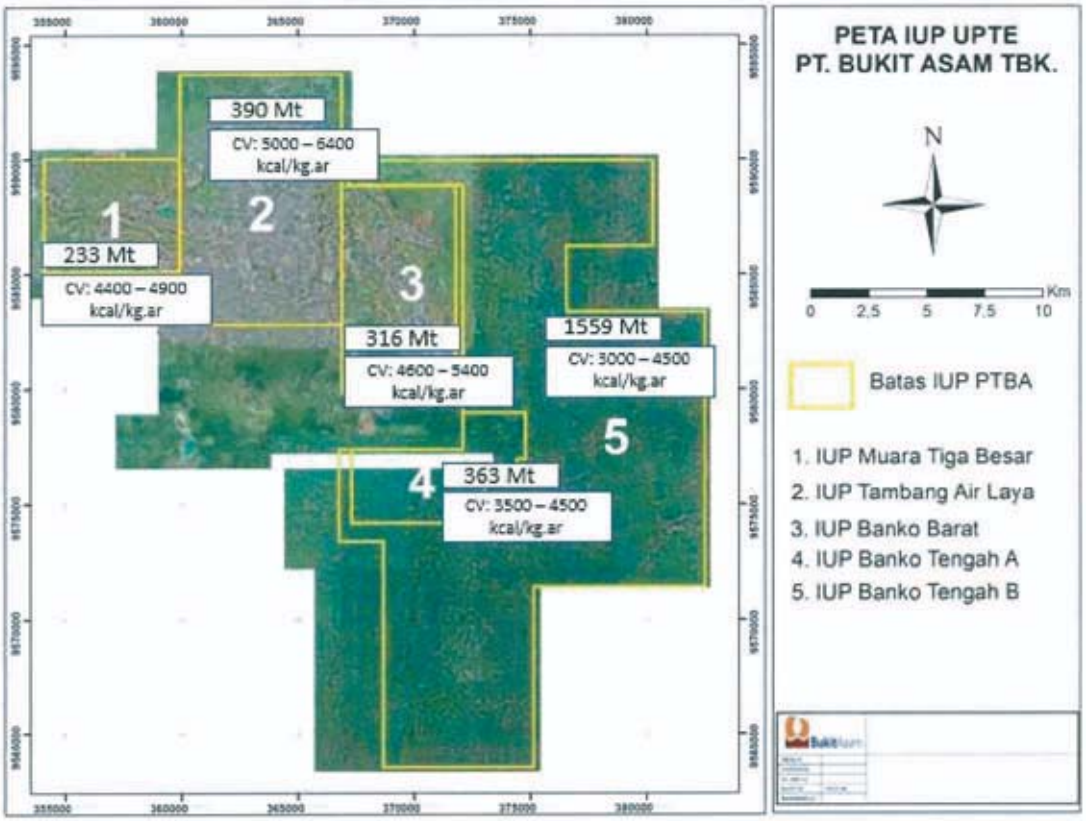
Throughout this 2017 Report, the following abbreviations have the following meaning:

adb	:	air-dried-basis
ar	:	as-received
CV kcal/kg	:	calorific value, in kilo calories per kilogram
JORC	:	Joint Ore Reserve Committee
KCMI	:	Komite Cadangan Mineral Indonesia
Mt	:	million tonnes
USGS	:	United States Geological Survey

TANJUNG ENIM COAL MINE

PTBA's main and largest active mine is located in Tanjung Enim, South Sumatera Province, Indonesia with a total covered area of 40,781 hectares (excluded Bukit Kendi 882 hectares). The Tanjung Enim coal mine contains 5 operation-production IUPs, including (1) Tambang Air Laya, (2) Muara Tiga Besar, (3) Banko Barat, (4) Banko Tengah A, and (5) Banko Tengah B. The first three IUPs mentioned above are the existing active mine area, while the remaining two are still being developed for large-scale mining. All of the mines within the Tanjung Enim coal mine are classified as open cut mine. In 2016 and 2017, total coal mine production at the Tanjung Enim coal mine was 18.8 million tonnes and 23.4 million tonnes, respectively.

Figure 1. Map of Tanjung Enim IUPs in Muara Enim and Lahat Regency, South Sumatera Province, Indonesia.



The coal resources and reserves estimation for the Tanjung Enim coal mine as of December 31, 2017, provided in Table 1 and Table 2 below have been prepared internally by PTBA's in-house Competent Persons, Mr. Wali Al Hasunah and Mr. Wisjnoe Adjie, both of whom are KCMI certified by Perhapi. The estimation is determined by reference to the resources and reserves data in the 2015 JORC/KCMI Tanjung Enim Report and subtracting actual coal production at the Tanjung Enim coal mine since the date of the 2015 JORC Tanjung Enim Report up to December 31, 2017.

Table 1. Coal mineral resources in Tanjung Enim coal mine as of December 31, 2017, in million tonnes.

IUP/Block	Coal Resources (Mt)				CV kcal/kg	
	Measured	Indicated	Inferred	Total	(adb)	(ar)
Tambang Air Laya	182	298	249	**730**	6199	5775
Muara Tiga Besar				**306**		
Muara Tiga Besar Utara	165	57	20	242	5645	4767
Muara Tiga Besar Selatan	45	18	1	64	5845	4667
Banko Barat				**501**		
Banko Barat Pit 1 & 2	290	76	47	417	5926	5151
Banko Barat Pit 3 Timur	5	53	30	88	6048	5167
Banko Tengah A	184	185	2	**371**	5360	4099
Banko Tengah B				**2756**		
Blok Timur dan Utara	73	757	524	1354	5417	4210
Blok Suban Jeriji Utara	13	257	217	487	5044	3919
Blok Suban Jeriji Selatan	17	40	18	75	5914	4846
Blok Selatan	323	246	271	840	4621	3730
Total Tanjung Enim Mine				**4663**		

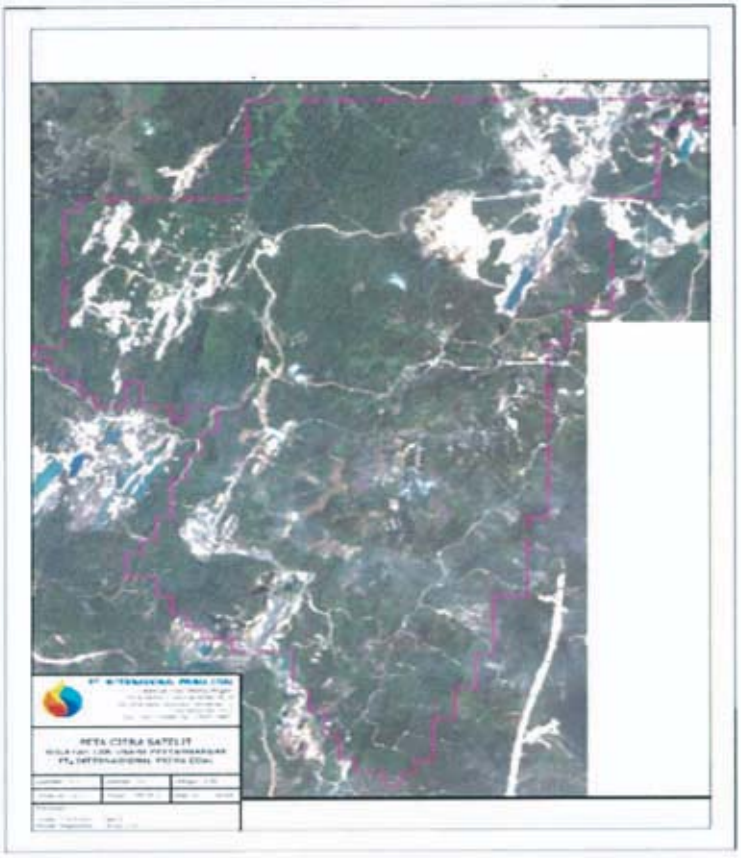
Table 2. Coal mineral reserves in Tanjung Enim coal mine as of December 31, 2017, in million tonnes.

IUP/Block	Coal Reserves (Mt)			CV kcal/kg	
	Proven	Probable	Total	(adb)	(ar)
Tambang Air Laya			**390**		
Eksisting	5	5	10	7469	7141
Townsite & Basecamp	32	2	34	6973	6421
Mahayung	122	224	346	6030	5254
Muara Tiga Besar			**233**		
Muara Tiga Besar Utara	146	26	172	5599	4706
Muara Tiga Besar Selatan	43	18	61	5834	4652
Banko Barat			**316**		
Banko Barat Pit 1 & 2	255	16	271	5932	5135
Banko Barat Pit 3 Timur	5	41	46	5975	5152
Banko Tengah A	181	182	**363**	5359	3922
Banko Tengah B			**1559**		
Blok Timur dan Utara	68	694	762	5347	4029
Blok Suban Jeriji Utara	13	223	236	5028	3909
Blok Suban Jeriji Selatan	11	30	41	5947	4835
Blok Selatan	297	223	520	4619	3718
Total Tanjung Enim Mine			**2861**		

IPC – BANTUAS COAL MINE

The Bantuas IUP, which PTBA holds through its subsidiary, IPC, is located in Samarinda City, East Kalimantan Province, Indonesia, with a total covered area of 3,238 hectares. The Bantuas Mine is classified as an open cut mine. The Bantuas mine is classified as an open cut mine. In 2017, total coal mine production at the Tanjung Enim coal mine was 870.5 thousand tonnes.

Figure 2. Map of Bantuas IUP in Samarinda City, East Kalimantan Province, Indonesia.



The coal resources and reserves estimation for the Bantuas coal mine as of December 31, 2017, provided in Table 3 and Table 4 below have been prepared internally by PTBA's in-house Competent Persons, Mr. Wali Al Hasunah and Mr. Wisjnoe Adjie, both of whom are KCMI certified. The estimation is determined by reference to the resources and reserves data in the 2016 Bantuas Report and subtracting actual coal production at the Tanjung Enim coal mine since the date of the 2016 Bantuas Report up to December 31, 2017.

Table 3. Coal mineral resources in Bantuas IUP as of December 31, 2017, in million tonnes.

IUP/Block	Coal Resources (Mt)				CV kcal/kg	
	Measured	Indicated	Inferred	Total	(adb)	(ar)
Bantuas Samarinda	22	2	1	25	5882	4800

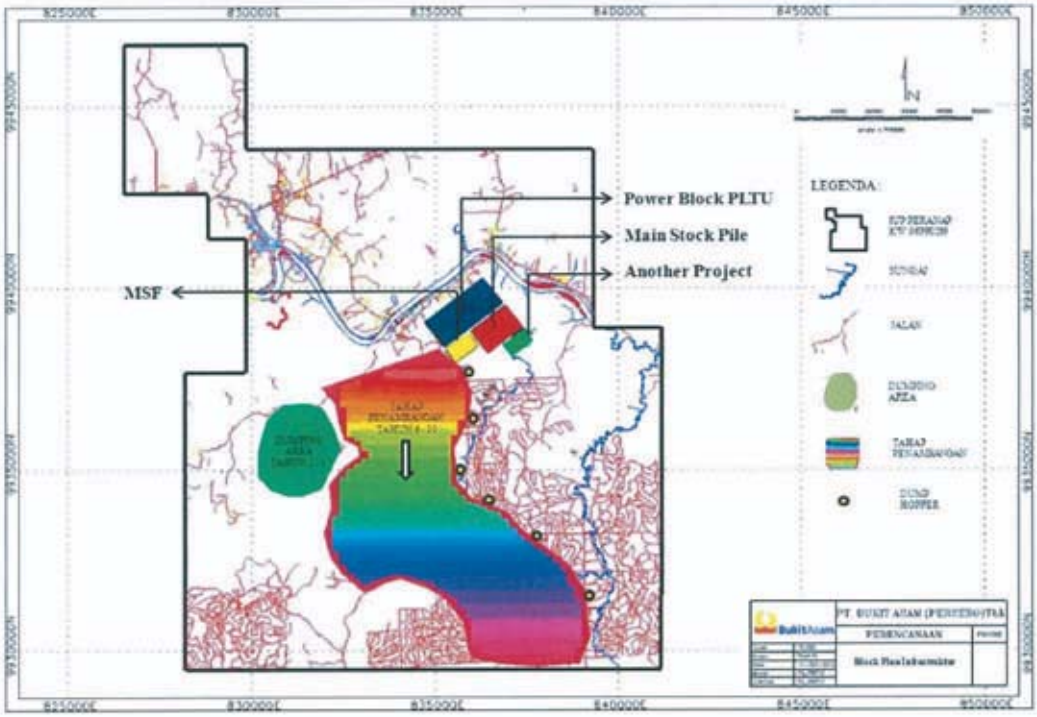
Table 4. Coal mineral reserves in Bantuas IUP as of December 31, 2017, in million tonnes.

IUP/Block	Coal Reserves (Mt)			CV kcal/kg	
	Proven	Probable	Total	(adb)	(ar)
Bantuas Samarinda	5	2	7	6077	4900

PERANAP COAL MINE

PTBA's Peranap IUP is located in Indragiri Hulu Regency, Riau Province, Indonesia with a total covered area 18,230 hectares. Although the Peranap coal mine is held under an operation-production IUP, it is still under the development phase and PTBA did not have active operations at the Peranap coal mine as of the date of this 2017 Report. The Peranap coal mine is classified as an open cut mine.

Figure 3. Map of the Peranap IUP in Indragiri Hulu Regency, Riau Province, Indonesia. The rainbow color shows the location of the Peranap coal mine.



The coal resources and reserves data for the Peranap coal mine as of December 31, 2017, provided in Table 5 and Table 6 replicates the resources and reserves data set forth in the 2015 Peranap JORC Report, as there has been no production at the Peranap coal mine, and therefore no material change in the resources and reserves data, since the date of the 2015 Peranap JORC Report.

Table 5. Coal mineral resources in Peranap IUP as of December 31, 2017, in million tonnes.

IUP/Block	Coal Resources (Mt)				CV kcal/kg	
	Measured	Indicated	Inferred	Total	(adb)	(ar)
Peranap	232	300	139	**671**	4510	2881

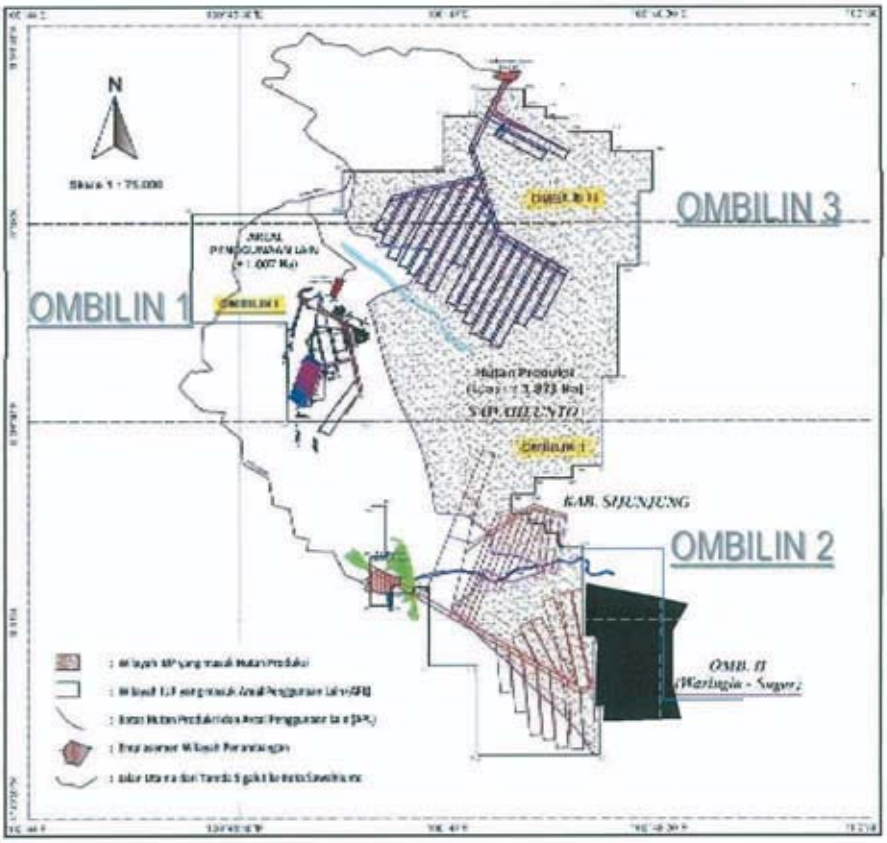
Table 6. Coal mineral reserves in Peranap IUP as of December 31, 2017, in million tonnes.

IUP/Blok	Coal Reserves (Mt)			CV kcal/kg	
	Proven	Probable	Total	(adb)	(ar)
Peranap	167	128	**295**	4723	2796

OMBILIN COAL MINE

PTBA's Ombilin IUP is located in Sawahlunto City, West Sumatera Province, Indonesia with a total covered area of 2,935 hectares. The Ombilin coal mine is the oldest coal mine in Indonesia. The Ombilin Mine is classified as an underground mine. Mine operations at the Ombilin coal mine have been suspended and are still under economic re-evaluation.

Figure 4. Map of the Ombilin IUP in Sawahlunto City, West Sumatera Province, Indonesia.



The coal resources and reserves data for the Ombilin coal mine as of December 31, 2017, provided in Table 7 below replicates the resources and reserves data set forth in the 2009 Ombilin USGS Report by IMC, as there has been no production at the Ombilin coal mine, and therefore no material change in the resources and reserves data, since the date of the 2009 Ombilin USGS Report.

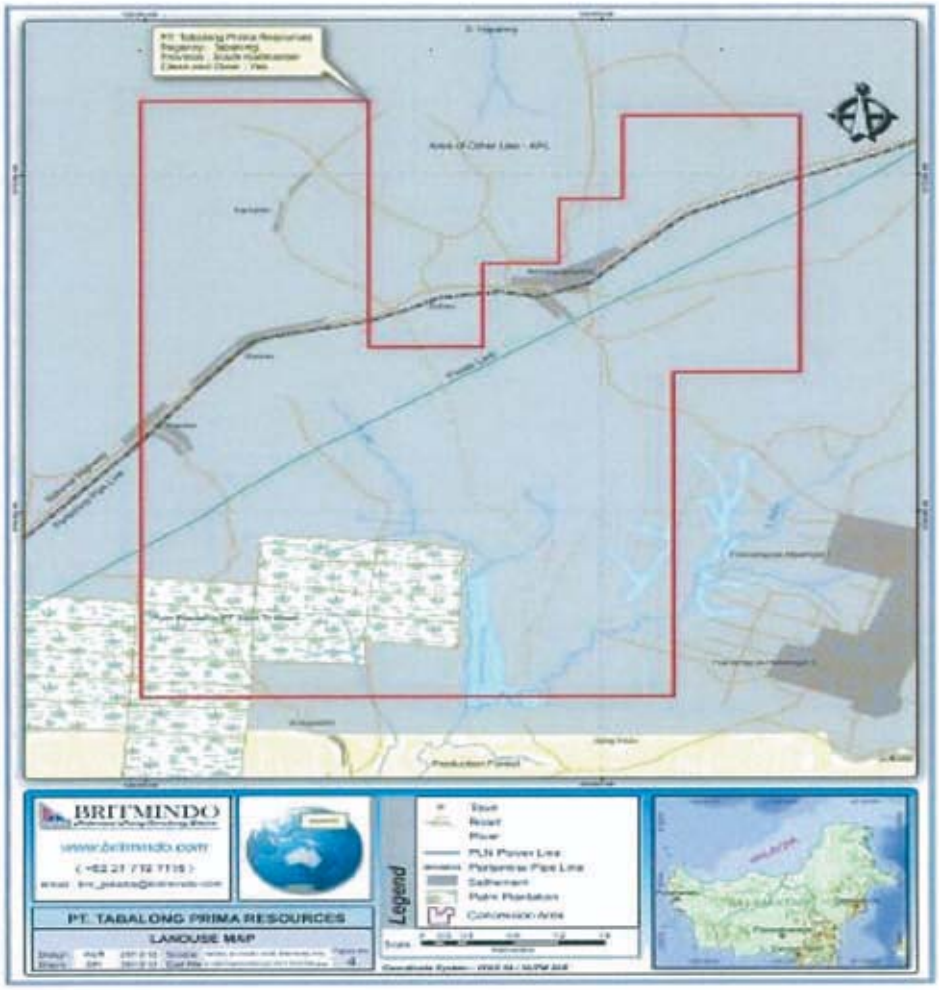
Table 7. Coal mineral resources and reserves in Ombilin IUP as of December 31, 2017, in million tonnes.

IUP/Block	Coal Resources (Mt)	Coal Reserves (Mt)	CV kcal/kg	
			(adb)	(ar)
Ombilin	102	23	7300	7179

IPC – TABALONG COAL MINE

PTBA's subsidiary, IPC, owns 34.17% interests in the Tabalong IUP, which is located in Tabalong Regency, South Kalimantan Province, Indonesia, with a total covered area of 3,145 hectares. As of the date of this report, active operations have not begun at the Tabalong coal mine. The Tabalong mine is classified as an open cut mine.

Figure 5. Map of Tabalong mining business license in Tabalong Regency, South Kalimantan Province, Indonesia.



The coal resources and reserves data for the Tabalong coal mine as of December 31, 2017, provided in Table 8 below replicates the resources and reserves data set forth in the 2013 Tabalong JORC Report, as there has been no production at the Tabalong coal mine, and therefore no material change in the resources and reserves data, since the date of the 2013 Tabalong JORC Report.

Table 8. Coal mineral resources & reserves in Tabalong Mine as of December 31, 2017, in million tonnes.

IUP/Block	Coal Resources (Mt)	Coal Reserves (Mt)	CV kcal/kg	
			(adb)	(ar)
Tabalong	292	109	5507	4052

COMPETENT PERSON DECLARATION

We, the undersigned, as a Competent Person under the KCMI Code declare that:

- We have read and understood the requirements of the 2011 edition of Kode Komite Cadangan Mineral Indonesia (the "2011 KCMI Code"), in accordance to the Exploration Results, Mineral Resources, and Ore Reserves Code, along with SNI 5015 – 2011.
- We have the appropriate professional membership and the relevant experience in relation to the reserves being reported by us to qualify as a Competent Person as defined in the 2011 KCMI Code.
- The coal resources and reserves data in this report for PT Bukit Asam's ("PTBA") active mines, which are stated as of December 31, 2017, have been prepared by calculating actual mining production since the last prepared independent resources and reserves report.
- We are full time employees of PTBA and have been engaged by PTBA to prepare this report as of December 31, 2017.
- We have disclosed to the reporting company the full nature of the relationship between ourselves and the company, including any issue that could be perceived by investors as a conflict of interest.
- We verify that this report is based on, and fairly and accurately reflects in the form and context in which it appears, the information in our supporting documentation relating to PTBA's coal resources and reserves.

Wali Al Hasunah – CP-024/Perhapi	Wisjnoe Adjie – CP-012/Perhapi
Date: 31st December 2017	Date: 31st December 2017

CONSENT

We consent to the release of the report and this consent statement by the directors of:

PT Bukit Asam Tbk

Signature of Competent Person

Wali Al Hasunah – CP-024/Perhapi

Signature of Competent Person

Wisjnoe Adjie – CP-012/Perhapi

Signature of Witness

Suryo Eko Hadianto

Director of Production Operations

Signature of Witness

Fuad Iskandar Zulkarnain Fachroeddin

Director of Business Development

ANNEX I

2015 TANJUNG ENIM JORC REPORT

PT BUKIT ASAM (PERSERO), TBK

OPEN CUT COAL RESERVES ESTIMATION TANJUNG ENIM MINING UNIT (UPTE) SOUTH SUMATERA, INDONESIA REPORTED IN ACCORDANCE WITH JORC CODE 2012 EDITION

(FINAL)
NOVEMBER 2015

PT Britmindo
Jl. Taman Margasatwa Raya No 14, Ragunan, Jakarta 12550, Indonesia
www.britmindo.com

OPEN CUT COAL RESERVES ESTIMATION
TANJUNG ENIM MINING UNIT (UPTE)

LIST OF CONTENTS

GLOSSARY OF TERMS **4**
EXECUTIVE SUMMARY **6**
DISCLAIMER **14**
COMPETENT PERSON'S STATEMENT **15**
RESERVES STATEMENT **16**
PROJECT TEAM **18**
1 INTRODUCTION **20**
1.1 SCOPE OF WORK 20
1.2 LOCATION AND TENURE 21
1.3 SURFACE CONDITIONS 25
1.4 DEMOGRAPHY 27
1.5 LAND USE REVIEW 27
1.6 GENERAL CHRONOLOGY AND HISTORY OF PTBA 29
1.7 PREVIOUS STUDY 30
2 GEOLOGY OVERVIEW **31**
2.1 REGIONAL GEOLOGY OVERVIEW 31
2.1 GEOLOGY OF MUARA ENIM AND LAHAT AREA 34
2.2 COAL SEAMS CORRELATION 36
2.3 EXPLORATION HISTORY 37
2.4 DATA VALIDATION AND GEOLOGICAL MODELING OVERVIEW 38
2.4.1 Original Geological Model 39
2.4.2 Updated Geological Model 39
2.4.3 Coal Seams 39
2.4.1 Seam Structure 41
2.5 IN-SITU COAL QUALITY 41
3 COAL RESOURCES ESTIMATION OVERVIEW **43**
4 MODIFYING FACTORS ASSESSMENT **45**
4.1.1 Mineable Coal Estimation 46
4.1.2 Mining Method Sequence and Equipment 47
4.1.3 Mine Production Schedule 48
4.2 Coal Handling 49
4.2.1 Muara Tiga Besar 49
4.2.2 Tambang Air Laya 49
4.2.3 Banko Barat 50
4.2.4 Banko Tengah A 50
4.2.5 Banko Tengah B 50
4.3 PROJECT INFRASTRUCTURE 51
4.3.1 Coal Hauling Road 51
4.3.2 Barge Loading and Port Facilities 51
4.3.2.1 Kertapati Port 51
4.3.2.2 Tarahan Port 51
4.3.3 Supporting Facilities 52
4.3.3.1 Fuel Storage 52
4.3.3.2 Contractor Office and Workshop 52
4.3.3.3 PTBA Office and Base Camp 52
4.3.3.4 Water Supply 53
4.3.3.5 Electric Generation 53
4.3.3.6 Medical Care 53

4.4 ENVIRONMENTAL AND COMMUNITY DEVELOPMENT 53
4.4.1 Environmental *53*
4.4.2 Community Development *54*
4.5 MARKET ANALYSIS 54
4.6 ECONOMIC ANALYSIS 54
5 COAL RESERVES ASSESSMENT 56
5.1 REFERENCE AND DEFINITIONS 56
5.2 COAL RESERVES IN ACCORDANCE WITH JORC 2012 CODE 56

LIST OF TABLES

Table 1-1 List of UPTE – PTBA IUP 21
Table 2-1 Summary of Drilling Rsult in UPTE Area 38
Table 2-2 Seam Sequence and Thickness in Each IUP 40
Table 2-3 Summary of Coal Quality Range in UPTE Area 41
Table 3-1 Coal Open Cut Resources Summary in the UPTE Area 44
Table 4-1 Mineable Coal Estimation in Final Pit Design 47
Table 4-2 Consolidated Production Scheduling for UPTE total Area 48
Table 5-1 JORC Reserves for Each IUP/Block 57
Table 5-2 Summary Coal Reserves Accordance with JORC 2012 Code in UPTE Area 62

LIST OF FIGURES

Figure 1-1 National Location Map of the PTBA Concession 22
Figure 1-2 Regional Location Map of UPTE PTBA Concessions 23
Figure 1-3 Local Settings of UPTE PTBA Concessions 24
Figure 1-4 Typical Topography of the UPTE Concession Area 26
Figure 1-5 Land Use status within the PTBA Concession Area 28
Figure 2-1 Geological Formations within the UPTE Concession Area 32
Figure 2-2 Regional Stratigraphical Column of the PTBA Concession Area 33
Figure 2-3 Geology Map of UPTE and surrounding area 35
Figure 2-4 Seams Correlation Schematics of the UPTE-PTBA area 37
Figure 4-1 Relationship between Exploration Result, Resources and Reserves 45

LIST OF APPENDICES

Appendix A: Check List of Assessment and Reporting Criteria 63
Appendix B: Reserves Maps UPTE-PTBA 64
Appendix C: List of Previous Study 65

GLOSSARY OF TERMS

The following Abbreviations and Definitions are typical of those in use in the Coal Industry terminology in respect of mining, infrastructure and geotechnical reporting and may be used in this Report.

Other abbreviations, specific to this Report are provided, together with their definitions in the main body of the Report

Abbreviations

45 °	45 degrees
ABA	Acid-Base Accounting
adb	air dried basis
AFT	ash fusion temperature
AMD	Acid Mine Drainage
ANC	Acid Neutralising Capacity
Ash	Ash content
ar	as received basis
bcm	bank cubic metre
BLC	Barge Loading Conveyor
BSP	PT Bumi Sawindo Permata
CAPEX	capital costs
CHF	Coal Handling Facility
CPI	Competent Person Indonesia
CPP	coal process plant
CV	calorific value
DEMR	Directorate General of Minerals and Coal
DMO	Domestic Market Obligation
FC	fixed carbon
FOB	Free on Board (maybe Barge or Vessel, as stated)
FoS	factor of safety
Gar	Gross – As Received
GOI	Goverment of Indonesia
GWL	ground water level
Ha	hectare
HSE	Health Safety and Environment
HGI	hardgrove index
hr	hour
ID	In-situ Density
IM	inherent moisture
IMC	International Mining Consultants
IRR	internal rate of return
IUP	Izin Usaha Pertambangan (Mining Permit)
JORC	Joint Ore Reserves Committee
KAI	Kereta Api Indonesia (State owned Indonesian Railways)
kg	kilogram
kcal/kg	kilocalories per kilogram (unit of energy)
km	kilometer
KP	Kuasa Pertambangan (Mining Permit)
KPI	Key Performance Indicator
KTT	Kepala Tambang Teknik (Statutory Mine Owners Representative)

LOM	Life of Mine
m	metre
m^3	cubic metre
M	million
Mbcm	Million bank cubic metres
Ml	Million litres
MoU	Memorandum of Understanding
MPA	Maximum Potential Acidity
MSDS	Material Safety Data Sheet
Msl	mean sea level
Mt	Million metric tonnes
Mtpa	Million metric tonnes per annum
MV	Mother Vessel
MW	Megawatt
NAF	Non Acid Forming
NAG	Nett Acid Generation
OB (o/b)	overburden
OH	off highway
OLC	Overland Conveyor
OPEX	operating costs
PAF	Potential Acid Forming
PERHAPI	Perhimpunan Ahli Pertambangan Indonesia
PTBA	PT Bukit Asam (Persero) Tbk
RD	Relative Density
ROM	Run of Mine
RMR	Rock Mass Rating
SOP	Standard Operating Procedure
SR	strip ratio of waste material o/b (bcm) to ROM coal (tonne)
SPT	Standard Penetration Test
t	metric tonne
TM	total moisture
tph	tonne per hour
TS	total sulphur
UPTE	Unit Pertambangan Tanjung Enim (Tanjung Enim Mining Unit)
VM	volatile matter

EXECUTIVE SUMMARY

PT Bukit Asam (Persero) Tbk. (PTBA) has commissioned PT Britmindo (Britmindo) to complete an independent report (referred to as the "Statement") of the Open Cut Coal Resources and Reserves of the UPTE PTBA (SPPH 1906-2) within five (5) Coal Concession areas "Unit Pertambangan Tanjung Enim" (UPTE) held by PTBA. They are situated in Tanjung Enim District, Muara Enim Regency and Merapi District, Lahat Regency, South Sumatera Province, Indonesia.

This report is prepared to a sufficient level in compliance with the requirements of the reporting guidelines of the 2012 Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australasian Institute of Geoscientists and Mineral Council of Australia ("The JORC Code") encompassing the following key areas,

LOCATION AND TENURE

This Coal Reserves Assessment applies to the coal deposit located within five (5) coal concession (IUP) production operation areas held by PTBA as listed below.

1. IUP Muara Tiga Besar
2. IUP Air Laya
3. IUP Banko Barat
4. IUP Banko Tengah A
5. IUP Banko Tengah B

The UPTE concession area is situated in the Muara Enim Regency and Lahat Regency, South Sumatera Province, Indonesia. The total concession areas cover approximatelly 40,781 Ha. PTBA coal concession is located approximatelly 210 km southwest of the provincial capital, Palembang.

The ground elevations of the area, which is part of Bukit Barisan, ranges from 50 m to 250 metres above mean sea level with slope ranging from 10% to 40%.

There are four (4) major water course in UPTE PTBA area which are the Enim River, which is the main river that traverses the eastern part of Air Laya and the western part of Banko Barat concession boundaries; the Lawai River which traverse near the boundary of Muara Tiga Besar and Air Laya which also boundary between Muara Enim and Lahat Regency, the Niru River and the Lengi River which traverse the Banko Tengah area. Other minor streams and watercourses also occur elsewhere throughout the concession area.

A Regional Forestry Map shows that UPTE PTBA concession areas are situated as follow:

- In Muara Tiga Besar IUP there is a small proportion of Production Forest around 1% of the total concession area which is located to the south east of the concession.
- In Air Laya IUP around 40% of the concession area is Production Forest.

- In Banko Barat no Forestry area lies within the concession area. The whole concession area is located in Areal Penggunaan Lain (APL) or None Forestry area.
- In Banko Tengah A there is a small proportion of Production Forest in the order of 1% of the total concession area.
- In Banko Tengah B around 40% of the concession area is Production Forest.

GEOLOGY OVERVIEW

This geology overview of UPTE area describes the key aspects related to the regional geology and exploration activity undertaken which are as follows:

Regional Geology Overview

The island of Sumatra lies on the South Eastern edge of the Sunda Continental Crustal (Sunda) Plate and is northeast and parallel to the subduction zone where the Indian Oceanic Plate has collided with, and moved below, the Sunda Plate. Tectonic movement along these plate boundaries in the early Tertiary period resulted in faulting of the pre-Tertiary strata.

This activity formed the South Sumatra Basin, in which the mid to late Tertiary sediments and coal-forming peat of the Muara Enim Formation were deposited.

The Tertiary sediments rock unit overlying the basement rock is comprised of (from bottom to top) Lahat Formation, Talang Akar Formation, Baturaja Formation, Gumai Formation, Air Benakat Formation, Muara Enim Formation and Kasai Formation.

In general terms, the seam structures are trending relativelly northwest – southeast strike line and dips are varying between 5^{o} to 80^{o} almost to southwest direction.

Geology of the Muara Enim and Lahat areas was formed during the Miocene to Pliocene sedimentary rock deposition, which is represented by the Muara Enim Formation and Kasai Formation.

During the Shell Mjinbouw Coal Exploration program in 1978, the stratigraphic column of The Muara Enim Formation was further modified and the horizons have been divided into the following four divisions;

- M1 comprises the lower clastic and coal division corresponding to the Keladi and Merapi coals.
- M2 comprises the middle coal division corresponding to the Petai, Suban, Suban marker and Mangus coals.
- M3 comprises the middle clay, sand and coal division corresponding to the Burung and Benuang coals.
- M4 comprises an upper coal division corresponding to the Kebon, Enim, Jelawatan and Niru coals.

Geological and sedimentary continuity of the coal deposit in Tanjung Enim and Lahat area also be demostrated quantitatively from statistical and geostatistical analysis of seam thickness. Therefore, coal seams correlation locally and regionally can be undertaken easily and with a high confidence level.

Exploration History

Geological exploration activities are recorded as being conducted from 1917 in Air Laya. From the 1970s onwards, drilling activity has been undertaken either by internal PTBA staff or by external consultants, with 108 drill holes being undertaken around the peripheral areas. In reality, only detailed records and geophysical logging are available for boreholes drilled since 1974.

Since then, exploration programmes in UPTE area have been undertaken either by internal PTBA staff or by external consultants such as SHELL, Direktorat Batubara, Kinhill-Otto Gold, Reinbhraun etc. A summary of the drilling results is shown in table below.

Summary of Drilling Rsult in UPTE Area

IUP	No. of Holes	No. of Metres
Muara Tiga Besar	338	48,232
Air Laya	1,329	116,571
Banko Barat	606	63,764
Banko Tengah A	139	16,504
Banko Tengah B	258	30,232
Total	**2,670**	**275,303**

Data Validation and Geological Modeling Overview

Validation of exploration and topography data was performed by Britmindo to assess whether or not the data could be considered for use in the geological modeling process. Details of the validation process is discussed in the following section.

The original geological model was provided by PTBA as a copy of the complete computerised geological model build in MineScape software.

Following a review of all of the available data, Britmindo selected the modeling data sources, which were as follow:

- Full cored holes in which cores were sampled and tested
- Full cored holes which were not sampled or has poor recovery
- Full cored which were geophysically logged
- Boreholes whose coordinates and collars were surveyed by Total Station methods.

From a total of 2,904 drill holes that were drilled in the period from 1974 to 2015, only data from 2,187 drill holes was considered valid for use in geological modeling. The excluded boreholes were stored in different layers within the model.

Original Geological Model

The original geology model used in this Resources estimation has been provided by PTBA in complete geological modeled softcopy which were constructed, based on the exploration data in Minescape-Stratmodel format covering the following deposit blocks:

1. Muara Tiga Besar Utara (MTBU) – Muara Tiga Besar IUP area
2. Muara Tiga Besar Selatan (MTBS) – Muara Tiga Besar IUP area
3. Tambang Air Laya (TAL) – Air Laya IPU area
4. Banko Barat (BBP1&2) – Banko Barat IUP area
5. Banko Barat Pit 3 Timur (BBP3T) – Banko Barat and Banko Tengah B (Suban Jeriji) IUP area
6. Banko Tengah AB (BTAB) – Banko Tengah A and B (East North) IUP area
7. Banko Tengah B Selatan (BTBS) – Banko Tengah B (South) IUP area
8. Banko Tengah B Suban Jeriji Utara (BTBSJU) – Banko Tengah B (North) IUP Area

The original geology models provided by PTBA have been checked by Britmindo to confirm the validity of the data interpretations such that it can be used as the basis for Resouces estimation process. Model intergogation included validation of data used in model, applied paremeters, seam correlation and seam structure interpretations.

As result of the checking, Britmindo found several items which may impact on the confidence level for the constructed geological model and the consequential impact on the result of the Reserves estimation.

Updated Geological Model

Due to issues noted in 2.4.1 above and the possible impact into the Resources estimation, Britmindo has revised the provided original geological models.

The updated geological model is used as the basis for Resources estimation. MineScape-Stratmodel software version 4.119 has been used to construct the geological models.

Coal Seams

Geological modelling within each block area has demonstrated the continuity of coal seams in the whole area from Muara Tiga Besar through to Banko Tengah B Selatan. At least eight (8) main seams occur throughout all the UPTE IUP area. They are, from top to bottom Seam J, Seam EN, Seam A1, Seam A2, Seam B, Seam C, Seam D and Seam E.

The main seam splits into several plies resulting in a total of twenty-nine (29) coal seams.

A small number of other, un-named, seams occur throughout the sequence such as the Suban Marker and Hanging Coal. Since the record of these other seams is insufficient, it has not been possible to correlate these seams or demonstrate their continuity and consequently they are excluded from the model and Resources defined in this Report.

Seam J, EN, D and E are modeled in some area only due to limited data for these seams.

A summary of individual seam thicknesses are shown in table below.

Seam Sequence and Thickness in Each IUP

IUP	Group Seam	Ketebalan (m)		
		Min	Avg	Max
Muara Tiga Besar				
	A1	6.60	8.35	12.55
	A2	11.30	12.63	16.60
	B	12.51	16.94	21.24
	C	6.45	8.43	11.30
Air Laya				
	J	6.00	9.11	12.40
	EN	18.12	20.02	21.80
	A1	1.17	7.60	16.00
	A2	2.40	9.47	20.80
	B	5.30	14.02	26.60
	C	1.40	8.02	14.84
	D	1.50	2.41	3.00
	E	1.75	6.31	8.32
Banko Barat				
	A1	4.52	10.33	17.10
	A2	8.39	11.21	18.10
	B	6.50	16.98	24.45
	C	6.13	10.86	15.70
Banko Tengah A				
	A1	2.28	5.69	9.08
	A2	1.57	5.37	8.85
	B	11.00	18.04	22.57
	C	9.90	12.73	14.14
	D	1.02	1.62	2.24
	E	3.80	7.65	12.20
Banko Tengah B				
	J	5.25	9.18	12.80
	EN	18.40	26.43	31.05
	A1	2.65	8.45	12.55
	A2	3.40	11.32	19.45
	B	10.45	17.32	28.75
	C	6.40	10.50	15.80
	E	3.40	7.08	10.30

Seams Structure

The geometry of the model demonstrates good coal seam continuity in UPTE area, although in some area the seams are split and steeply dipping with anticlinal or synclinal characteristics and /or faults. In other areas the coal seam is discontinued because they are intruded by igneous rock intrutions.

The coal deposit shows seam continuity to the strike starting from MTB to Banko Tengah B Selatan for approximately 16 km in length along the strike and for approximately 5 to 10 km width to down dip, at depths ranging from 3 m to 500 m.

The geological model interpretation has indicated several northeast trending normal faults occuring in the Air Laya and Banko Tengah areas. Vertical displacement of the fault is estimated around 10 m to 100 m. in Banko Tengah area, the faults caused some of the seams, particularly Seam A1 and Seam A2, to be lifted above the topography surface and subsequently be eroded in several areas of the deposit.

Insitu Coal Quality

In general, the coal rank in Tanjung Enim and Lahat varies from lignite to sub-bituminous. However, in particular areas such as in Air Laya and Bukit Kendi, the coal was heated by various igneous rock intrusions, which created a coal rank change from sub-bituminous to bituminous and in certain cases, become anthracite. The rank alteration impacts on calorific value (CV), Volatile Matter (VM) and Moisture of the coals in the area. In general, the coal rank gradually increases the closer the area was to the intrusion.

Britmindo has summarized the coal quality based on the main seam group weighted composite average as shown in the table below.

Summary of Coal Quality Range in UPTE Area

Block		TM % (ar)	Proximate Analysis (adb)				TS % (adb)	CV kcal/kg (adb)	CV kcal/kg (ar)
			IM %	Ash %	VM %	FC %			
MTBU	Min	17.10	8.90	1.20	35.50	32.80	0.09	4934	3987
	Avg	27.95	14.67	5.29	40.20	39.80	0.64	5657	4770
	Max	35.70	22.00	12.20	45.30	45.40	2.83	6310	5419
MTBS	Min	18.50	8.30	1.40	36.90	34.60	0.08	5090	3915
	Avg	26.86	12.18	6.51	41.28	40.03	0.52	5798	4822
	Max	36.27	18.80	17.20	44.10	43.60	2.01	6290	5442
TAL	Min	1.10	0.40	1.00	6.10	36.30	0.07	5415	4455
	Avg	16.19	8.56	4.72	38.38	48.32	0.64	6765	6155
	Max	34.00	21.50	19.30	48.10	88.53	3.80	8474	8258
BBP1&2	Min	14.60	0.80	0.70	29.40	27.30	0.10	4089	3765
	Avg	25.09	13.09	4.95	39.74	42.23	0.66	5973	5157
	Max	33.70	24.20	27.20	49.10	54.40	2.30	6818	6269
BBP3T	Min	14.10	7.60	0.91	28.70	27.46	0.14	4298	4451
	Avg	27.21	13.83	4.47	39.11	40.27	0.60	5991	5153
	Max	33.33	20.10	26.59	44.54	47.74	1.86	6618	6206
BTA	Min	24.80	9.25	1.67	22.62	21.65	0.00	3296	2326
	Avg	35.87	15.95	9.73	36.61	37.72	0.70	5290	4048
	Max	41.76	26.34	44.17	43.96	45.00	3.90	6545	5445
BTBTU	Min	20.70	8.50	0.51	25.20	21.70	0.15	3585	2812
	Avg	31.49	14.27	9.91	37.25	38.50	0.74	5346	4283
	Max	36.00	23.80	39.85	44.10	47.00	2.81	6551	5445
BTBSJ	Min	29.75	12.40	2.80	36.78	31.00	0.12	4519	3283
	Avg	37.29	19.30	6.41	38.94	35.24	0.17	5047	3925
	Max	44.70	22.00	13.20	44.32	40.80	0.37	5373	4352
BTBS	Min	19.17	8.70	1.79	21.83	20.18	0.15	2965	2681
	Avg	37.70	21.31	10.02	36.16	32.07	0.61	4659	3681
	Max	48.30	74.60	28.40	47.20	39.30	3.80	5780	4837

The above statistics do not include mining loss and dilution considerations, which will result in variations to the in-situ results.

COAL RESOURCES ESTIMATION OVERVIEW

In November 2015, Britmindo has published a Statement of Open Cut Coal Resources for the UPTE area deposit Deposit. This report is referenced as "Open Cut Coal Resources Report of Tanjung Enim Mining Unit (UPTE), South Sumatera, Indonesia; Reported in Accordance to JORC Code 2012 Edition. With a report index 020/RP-BM/XI/2015.

The Resources estimate summary is shown in table below. In the table, the estimates have been rounded up to the nearest million tonne, (Mt) as is commensurate with the precision of the estimate.

Coal Open Cut Resources Summary in the UPTE Area

IUP/Block	JORC Resources (Mt)				TM %	Ash %	TS %	CV Kcal/kg	
	Measured	Indicated	Inferred	Total	(ar)	(adb)	(adb)	(adb)	(ar)
Existing									
Muara Tiga Besar									
Muara Tiga Besar Utara	*173*	*56*	*20*	*250*	*28.13*	*5.33*	*0.47*	*5637*	*4755*
Muara Tiga Besar Selatan	*33*	*31*	*2*	*65*	*28.11*	*8.63*	*0.58*	*5853*	*4673*
Total Muara Tiga Besar	**206**	**87**	**22**	**315**					
Air Laya	**256**	**231**	**246**	**733**	19.98	4.98	0.51	6169	5723
Banko Barat									
Blok Pit 1 & 2	*346*	*70*	*19*	*435*	*24.65*	*5.18*	*0.53*	*5918*	*5153*
Blok Pit 3 Timur	*6*	*53*	*30*	*88*	*28.76*	*8.30*	*0.50*	*5713*	*5208*
Total Banko Barat	**352**	**122**	**49**	**523**					
Total Existing	**815**	**440**	**317**	**1,571**					
Development									
Banko Tengah A	**299**	**69**	**5**	**374**	34.43	8.52	0.54	5360	4098
Banko Tengah B									
Blok Timur & Utara	*151*	*375*	*827*	*1,353*	*33.04*	*8.14*	*0.52*	*5410*	*4183*
Blok Suban Jeriji Utara	*13*	*176*	*298*	*487*	*37.51*	*6.53*	*0.18*	*5044*	*3919*
Blok Suban Jeriji Selatan	*17*	*40*	*18*	*75*	*30.75*	*3.41*	*0.54*	*5915*	*4847*
Blok Selatan	*384*	*253*	*203*	*839*	*37.79*	*9.49*	*0.42*	*4618*	*3731*
Total Banko Tengah B	**564**	**844**	**1,347**	**2,754**					
Total Development	**863**	**913**	**1,352**	**3,128**					
Total UPTE PTBA	**1,678**	**1,352**	**1,669**	**4,699**					

MODIFYING FACTORS AND COAL RESERVES ASSESSMENT

In reference to the JORC Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code) 2012 Edition, Clause 12, *'Modifying Factors' are considerations used to convert Mineral Resources to Ore Reserves. These include, but are not restricted to mining, processing, Metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors.*

In November 2015, Britmindo published a Life of Mine Plan Study for the UPTE Deposit. The Report is referenced as "Life of Mine Plan Study Report for Open Cut Coal Mine of Tanjung Enim Mining Unit (UPTE) at South Sumatera, Indonesia", and referenced by the index 021/RP-BM/XI/2015. Modifying Factors, which were considered related to Mining, Processing, Infrastructure, Economic, Marketing, Legal, Environment, Social and Government aspects.

This study and the application of relevant Modifying Factors, has demonstrated that, at the time of reporting, extraction could reasonably be justified. Therefore, JORC compliant Reserves can be assessed by determining the mineable tonnage generated from final pit design.

Reserves that fall inside the Measured Resources are reported as Proved Reserves and those that occur inside the Indicated Resources are reported as Probable Reserves.

The Reserves for each category in accordance with the JORC Code 2012 Edition are as shown in TABLE below. In the table, the total estimates have been rounded up to the nearest million tonne, (Mt) as is commensurate with the precision of the estimate.

Summary Coal Reserves Accordance with JORC 2012 Code in UPTE Area

IUP/Blok	Coal Reserves (Mt)			TM %	Ash%	TS %	CV Kcal/kg	
	Proved	Probable	Total	(ar)	(adb)	(adb)	(adb)	(ar)
Existing								
Muara Tiga Besar								
Muara Tiga Besar Utara	151	25	**176**	28.29	5.72	0.49	5593	4697
Muara Tiga Besar Selatan	31	29	**60**	28.16	8.98	0.57	4646	5834
Total Muara Tiga Besar	**182**	**54**	**236**					
Air Laya								
Basecamp	35	0	**35**	13.84	7.60	0.54	6977	6424
Existing	19	0	**19**	7.22	6.61	0.89	7469	7140
Mahayung	158	188	**346**	21.64	5.30	0.47	5894	5480
Total Air Laya	**212**	**188**	**400**					
Banko Barat								
Blok Pit 1 & 2	276	3	**278**	24.76	5.32	0.54	5928	5132
Blok Pit 3 Timur	6	48	**54**	27.89	4.28	0.46	5990	5144
Total Banko Barat	**281**	**51**	**332**					
Total Existing	**676**	**293**	**969**					
Development								
Banko Tengah A	**284**	**61**	**345**	33.12	8.46	0.54	5362	3923
Banko Tengah B								
Banko Tengah B Timur & Utara	137	264	**402**	32.35	8.21	0.51	5359	4041
Banko Tengah B - Suban Jeriji Utara	13	166	**179**	37.65	19.20	6.95	39	35
Banko Tengah B - Suban Jeriji Selatan	11	29	**40**	30.76	3.10	0.55	5947	4835
Banko Tengah B Selatan	353	217	**570**	37.73	9.59	0.40	4606	3722
Total Banko Tengah B	**514**	**677**	**1,190**					
Total Development	**798**	**737**	**1,535**					
Total UPTE PTBA Open Pit	**1,474**	**1,030**	**2,504**					

DISCLAIMER

This report has been prepared by PT Britmindo (Britmindo) for the sole use of PT Bukit Asam (Persero) Tbk. (PTBA). The assessments and assumptions stated in this report have been prepared in a professional manner and comply with accepted geological and engineering evaluations of coal mines and deposits. Data relating to operating and overhead costs has been provided by PTBA and has been reviewed by Britmindo. In time, such costs may vary from those quoted in this Report. Additionally, coal prices quoted in this Report are based on forward projections and may ultimately be at variance with values noted in this Report. Britmindo will not be held accountable or liable for any variations or changes in costs or coal revenue in the future which may materially affect the financial performance of this Mine.

Additionally, this Report is not intended to represent the long term performance or commercial potential of the Mine. Consequently, any decision to invest in this Mine should not be made solely on the contents of this Report and should be fully supported by additional verification of the Mine potential in order to satisfy confidence in the economic viability of the Mine.

The contents of the report are confidential and are to be used only by PTBA, its officers and staff. Use of any sections of this report or any data contained therein by any third party is prohibited unless authorised directly by PTBA or its nominated representatives.

Britmindo, its directors and staff, accept no liability for any unauthorized use of all or any sections of this report by third parties.

COMPETENT PERSON'S STATEMENT

The information in this Report, to which this Statement is included and relating to the Open Cut Coal Reserves Estimation for the Tanjung Enim Mining Unit (refered as UPTE) coal deposit held by PT Bukit Asam (Persero) Tbk. (PTBA), is based on information compiled and reported by:

1. Achmad Hawadi, who is a Fellow of the Australasian Institute of Mining and Metallurgy and who works as an associate consultant to PT Britmindo (Britmindo).

   Mr. Hawadi, signing on behalf of Britmindo, has 29 years of Indonesian coal industry experience in the field of coal exploration, geological modelling, mine planning, Resources and Reserves assessment.

2. Terry Gray, who is a Member of the Australasian Institute of Mining and Metallurgy and who works as an associate consultant to PT Britmindo (Britmindo).

   Mr. Gray, signing on behalf of Britmindo, has over 40 years of experience in surface coal mining operations, of which nearly 20 years has been achieved in the of Indonesian coal mining industry.

Both the above mentioned persons have sufficient experience, relevant to the nature and type of deposit under consideration and to the activity they are undertaking, to qualify them as a Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, the JORC Code.

The above noted persons have no interest whatsoever in the mining assets reviewed and will gain no reward for the provision of this Reserves Statement. Britmindo will receive a professional fee for the preparation of this Reserves Statement.

_____

Achmad Hawadi, (Geology), Bachelor Degree, Fellow AusIMM No. 229862.

_____

Terry Gray, (Engineering), Diploma in Engineering, Member AusIMM No. 309368.

RESERVES STATEMENT

Open Cut Coal Reserves Category Parameters for UPTE-PTBA Area

JORC Coal Reserves
Proved (Derived from Measured Resources)
- Modifying Factor requirements achieved - Quality in accordance with market requirements and targets - Scheduled for mining or produce until life of mine - Subject to detail mine planning - Positive Economic Feasibility. - Geological losses 3% - Mining Losses 0.10m. - Mining Dilution 0.025. - Minimum seam thickness of 0.50m applied. - Parting thickness ≤ 0.30m included as coal tonnage
Probable (Derived from Indicated Resources)
- One or more of Modifying Factor requirements may not yet achieved - Quality in accordance with market requirements and targets - Scheduled for mining or produce until life of mine - Subject to mine planning - Positive Economic Feasibility - Geological losses 3% - Mining Losses 0.10m. - Mining Dilution 0.025. - Minimum seam thickness of 0.50m applied. - Parting thickness ≤ 0.30m included as coal tonnage

Table A-1 Coal Mineable Reserves for Each Category in Accordance with the JORC 2012 Code

IUP/Blok	Coal Reserves (Mt)			TM %	Ash%	TS %	CV Kcal/kg	
	Proved	Probable	Total	(ar)	(adb)	(adb)	(adb)	(ar)
Existing								
Muara Tiga Besar								
Muara Tiga Besar Utara	151	25	**176**	28.29	5.72	0.49	5593	4697
Muara Tiga Besar Selatan	31	29	**60**	28.16	8.98	0.57	4646	5834
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Mahayung	158	188	**346**	21.64	5.30	0.47	5894	5480
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Total Existing	**676**	**293**	**969**					
Development								
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Banko Tengah B								
Banko Tengah B Timur & Utara	137	264	**402**	32.35	8.21	0.51	5359	4041
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Total Banko Tengah B	**514**	**677**	**1,190**					
Total Development	**798**	**737**	**1,535**					
Total UPTE PTBA Open Pit	**1,474**	**1,030**	**2,504**					

The estimate of Open Cut Coal Reserves presented in this statement has been reported in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, The JORC Code, 2012 Edition.

PROJECT TEAM

Achmad Hawadi – Project Leader and Competent Person

Achmad Hawadi has been working in the Indonesian Coal Mining industry for over 28 years and has significant experience in the field of Geology and Mine Planning. Having worked for PT Berau Coal and PT Arutmin Indonesia, Mr. Hawadi is recognised as being a leading authority in the use of Mincom Systems and managed PT Mincom Indoservices in Kalimantan where he has provided a range services to most of the leading coal mining companies in Indonesia.

During this time, he has either managed or contributed significantly to numerous due diligences, mining studies related to geological modelling, estimation, assessment, evaluation, mine planning and reporting in accordance with the JORC Code for numerous Indonesian coal mining companies.

Mr. Hawadi graduated from Padjadjaran University, Bandung, Indonesia, majoring in geology and is a Fellow of the Australasian Institute of Mining and Metallurgy (FAusIMM) and an Indonesian Competent Person (CPI) – IAGI.

Terry Gray – Project Reviewer and Competent Person

Terry Gray has worked extensively in the Coal Industry in the UK, Australia and Indonesia over a period of 40 years. Mr Gray has been associated with the Britmindo Group since May 2006 and has been resident in Indonesia since 1994.

Mr. Gray previously worked in Indonesia for a major international contract mining service provider and was involved in all of their major mining operations in his 10 years service. During that period, he held a number of key senior roles, including Mining Operations Manager. Mr. Gray has an intimate knowledge of the local mining industry and has dealt closely with major international mining companies operating in Indonesia and Australia. He has conducted a substantial amount of technical and operational studies at both large and small Indonesian Coal Mines.

Since 2006 Mr. Gray has been significantly involved in the compilation of JORC Compliant Reserves Reports on Indonesian Coal Deposits.

Mr. Gray holds a Diploma in Engineering from Doncaster College of Mines, UK and is a Member of the Australasian Institute of Mining and Metallurgy (MAusIMM).

Riandi Rachmawan – Project Manager Assistance and Competent Person

Riandi Rachmawan has been working in the Indonesian Mining industry for over 6 years. He has significant experience in the field of Mine Planning and Mine Operations. He previously worked for Geo-mechanics Laboratory Bandung Institute of Technology, PT Arutmin

Indonesia and PT Britmindo. He also has experience in blasting at PT Newmont Nusa Tenggara, a copper and gold mine in Indonesia.

During his career, he has contributed significantly to numerous major mining technical study projects, mine planning projects, undertaken mining economical evaluations and JORC reserves assessments. He is experienced in the use of most major pit optimisation, mine planning and scheduling systems.

Mr. Rachmawan graduated from Bandung Institute of Technology, Bandung, Indonesia, majoring in Mining Engineering and is a Member of the Australasian Institute of Mining and Metallurgy (MAusIMM). He is an Indonesian Competent Person of "Perhimpunan Ahli Pertambangan Indonesia" (CPI-PERHAPI).

Saja Gustia – Mining Software Operator

Saja Gustia has been working in the Indonesian and Australian Coal Mining industry for over 10 years. He has significant experience in the field of Mine Planning and has worked for PT Thiess Contractors Indonesia, PT Runge Indonesia, Thiess Australia Pty Ltd in Brisbane, Queensland and PT Britmindo.

During this time he has managed or contributed significantly to numerous major mine design projects, mine scheduling and evaluations of coal reserves for many companies. He is experienced in the use of most major major pit optimisation, mine planning and scheduling systems.

Mr. Gustia graduated from Institute Technology Bandung, Bandung, Indonesia, majoring in Mining Engineering, and is a Member of the Australasian Institute of Mining and Metallurgy (MAusIMM)

1 INTRODUCTION

PT Bukit Asam (Persero) Tbk. (PTBA) has commissioned PT Britmindo (Britmindo) to complete an independent report (referred to as the "Statement") of the Open Cut Coal Resources and Reserves of the UPTE PTBA (SPPH 1906-2) within five (5) Coal Concession areas "Unit Pertambangan Tanjung Enim" (UPTE) held by PTBA, situated in Tanjung Enim District, Muara Enim Regency and Merapi District, Lahat Regency, South Sumatera Province, Indonesia. The concessions are as follow:

1. IUP Muara Tiga Besar
2. IUP Air Laya
3. IUP Banko Barat
4. IUP Banko Tengah A
5. IUP Banko Tengah B

Britmindo is a well-established and professional Jakarta based Company that provides mining consultancy to the Indonesian Coal Mining Industry, including foreign and local investors, coal buyers, mine owners, mining contractors and major supply companies.

Britmindo has considerable experience in Exploration Management, Geological Modeling, Resource and Reserve Estimations in accordance with JORC 2012 Code, Mine Planning, Due Diligence and Feasibility Studies.

1.1 SCOPE OF WORK

This Report is published in order to complete a part of Estimation and Reporting of Coal Reserves work, which is prepared to a sufficient level of compliance with the requirements of the reporting guidelines of the 2012 Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australasian Institute of Geoscientists and Mineral Council of Australia ("The JORC Code") encompassing the following key areas,

1. Project Overview
2. Geology Overview
3. Resources Estimation Overview
4. Modifying Factors Confidence Assessment
5. Coal Reserves Assessment

This report is a continuation of "Open Cut Coal Resources Report of Tanjung Enim Mining Unit (UPTE), South Sumatera, Indonesia; Reported in Accordance to JORC Code 2012 Edition" (referered as the 'Resources Report'), which is part of Estimation and Reporting of Coal Resources.

The information presented in the report is based on data relating to geology and was derived from the various exploration programmes which were undertaken within the UPTE area. All

data in respect of aspects of the study has been provided by PTBA and where possible, has been physically inspected by the study team during March 2015.

1.2 LOCATION AND TENURE

This Coal Resources Assessment applies to the coal deposit located within five (5) coal concession (IUP) production operation areas held by PTBA in accordance with the Decree as listed below.

Table 1-1 List of UPTE – PTBA IUP

IUP Name	No.	No. and Date of Decree	Area (Ha)	Validity	Status
Muara Tiga Besar	KW.02.SS.2010	No.304/KPTS/DISTAMBEN/ 2010 Tgl. 30 April 2010	3,300	7 years to 4/30/2019	Initial (4 years remaining)
Air Laya	KW.01.SS.2010	No.751/KPTS/DISPERTAM BEN/2010 Tgl. 29 Okt 2010	7,621	1/4/2011 to 31 Dec 2020	Extension I (5 yrs 10 mth remaining)
Banko Barat	KW.ME.01.ET.011	No. 2866 K/30/MEM/2014	4,500	13 April to 10/13/2025	(9 yrs 10 mth remaining)
Banko Tengah A	KW.ME.01.ET.002 A	No.391/KPTS/TAMBEN/ 2010 Tgl. 13 April 2010	2,423	25 yrs 5 mth to 9/13/2035	Initial (20 years remaining)
Banko Tengah B	KW.ME.01.ET.002 B	No.389/KPTS/TAMBEN/ 2010 Tgl. 13 April 2010	22,937	25 yrs 5 mth to 9/13/2035	Initial (20 years remaining)

The above IUP documents are well documented and are available for audit purpose.

Based on information from PTBA and supported by Clean and Clear (CNC) reporting from the Directorate General of Minerals and Coal (DEMR), all concessions are CNC of overlapping and or licensing issues.

The concession area is situated in the Tanjung Enim and Merapi District, Muara Enim and Lahat Regency, South Sumatera Province, Indonesia and covers approximately 40,781 Ha.

PTBA is located approximately 210 km southwest of the provincial capital, Palembang and the concession is accessible by regular scheduled flights from Jakarta to Palembang, the Provincial Capital; then by car from Palembang to city of Tanjung Enim, which is a six (6) hour drive.

Figure 1-1 below shows the National Location of the PTBA Concession area

Figure 1-1 National Location Map of the PTBA Concession

Figure 1-2 below shows the Regional Location of the UPTE-PTBA concessions in South Sumatera. The map also shows the Kereta Api Indonesia (KAI) railway system to Kertapati Port at Palembang and Tarahan Port at Lampung.

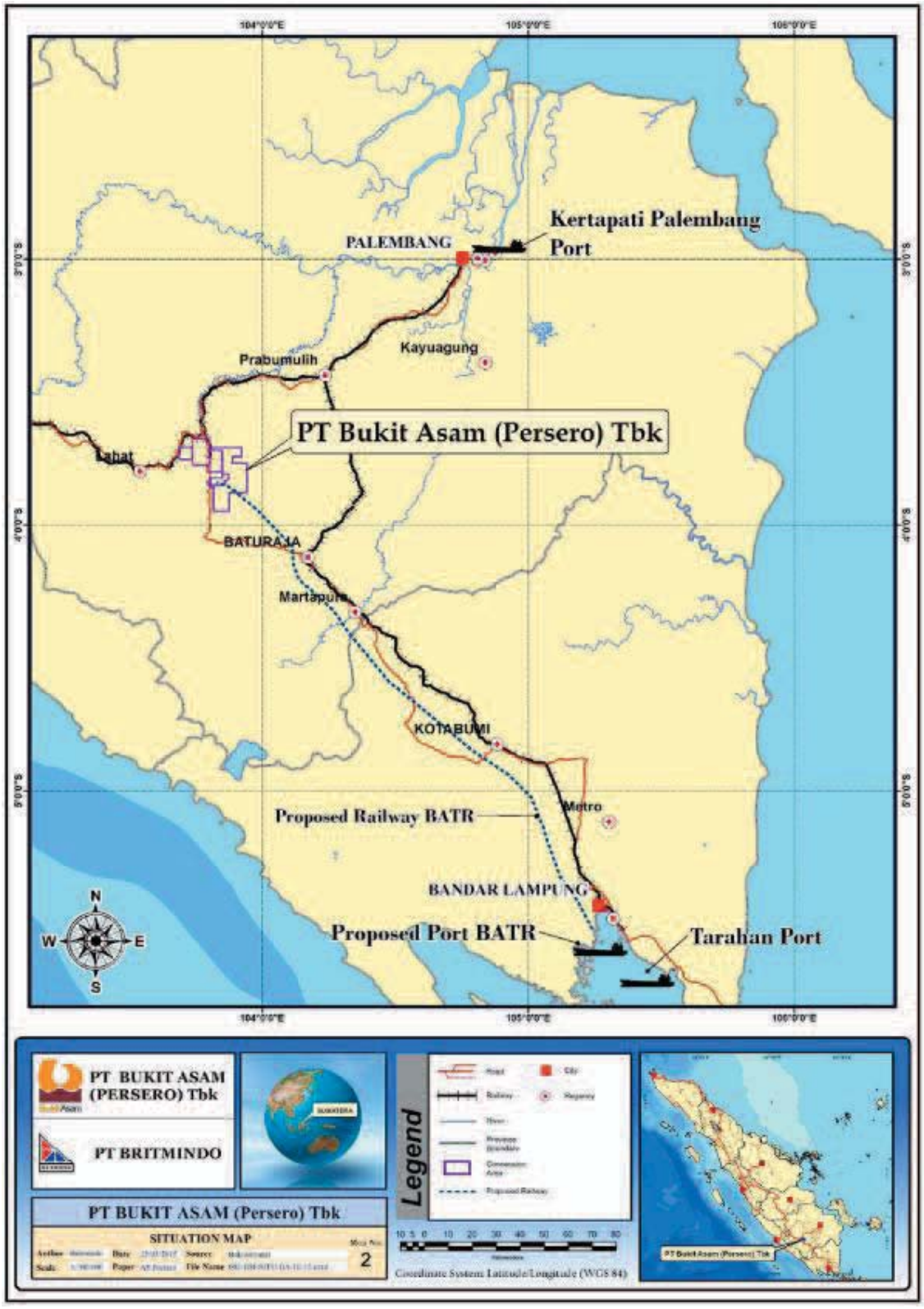


Figure 1-2 Regional Location Map of UPTE PTBA Concessions

Figure 1-3 below shows the Local Settings of the UPTE-PTBA concessions.

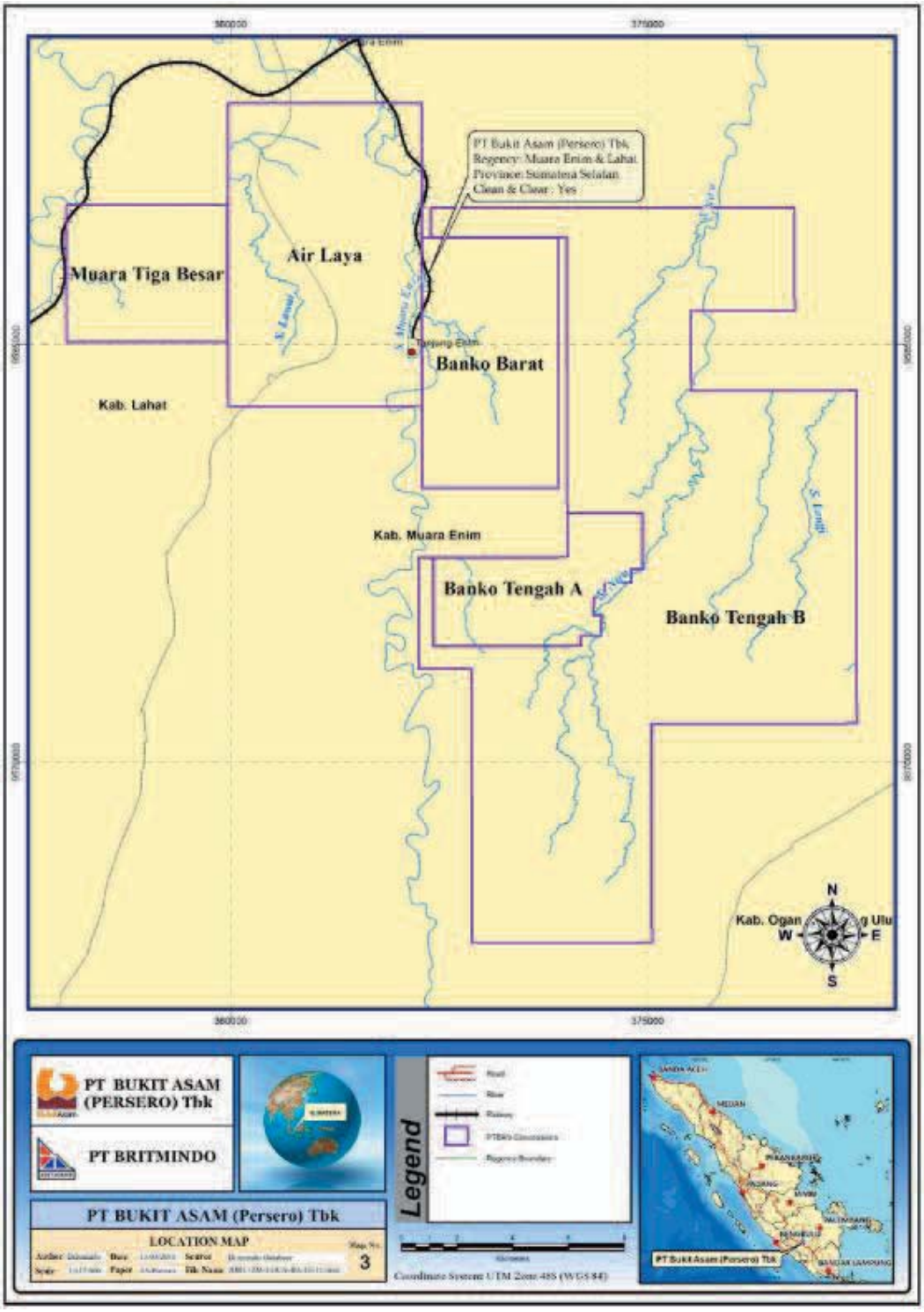


Figure 1-3 Local Settings of UPTE PTBA Concessions

1.3 SURFACE CONDITIONS

UPTE area comprises of two (2) types of morphology, which are a series of undulating hills with moderate to high relief morphology and aluvial plain. The ground elevation of the area, which is part of Bukit Barisan, ranges from 50 to 250 metres (m) above mean sea level with general slopes ranging from 10% to 40%. These two morphology types are distinctive from contour pattern, hill and valley forms.

There are four (4) major water courses in the UPTE PTBA area. They are the Enim River, which is the primary river which traverses the eastern part of Air Laya and the western part of Banko Barat concession boundaries. Lawai River traverses near the boundary of Muara Tiga Besar and Air Laya, which also has a boundary between Muara Enim and Lahat Regency. Lengi River and Niru River traverse the Banko Tengah area. Other minor streams and watercourses also occur elsewhere throughout the concession area.

Figure 1-4 below shows the typical view of the topography of the concession area.

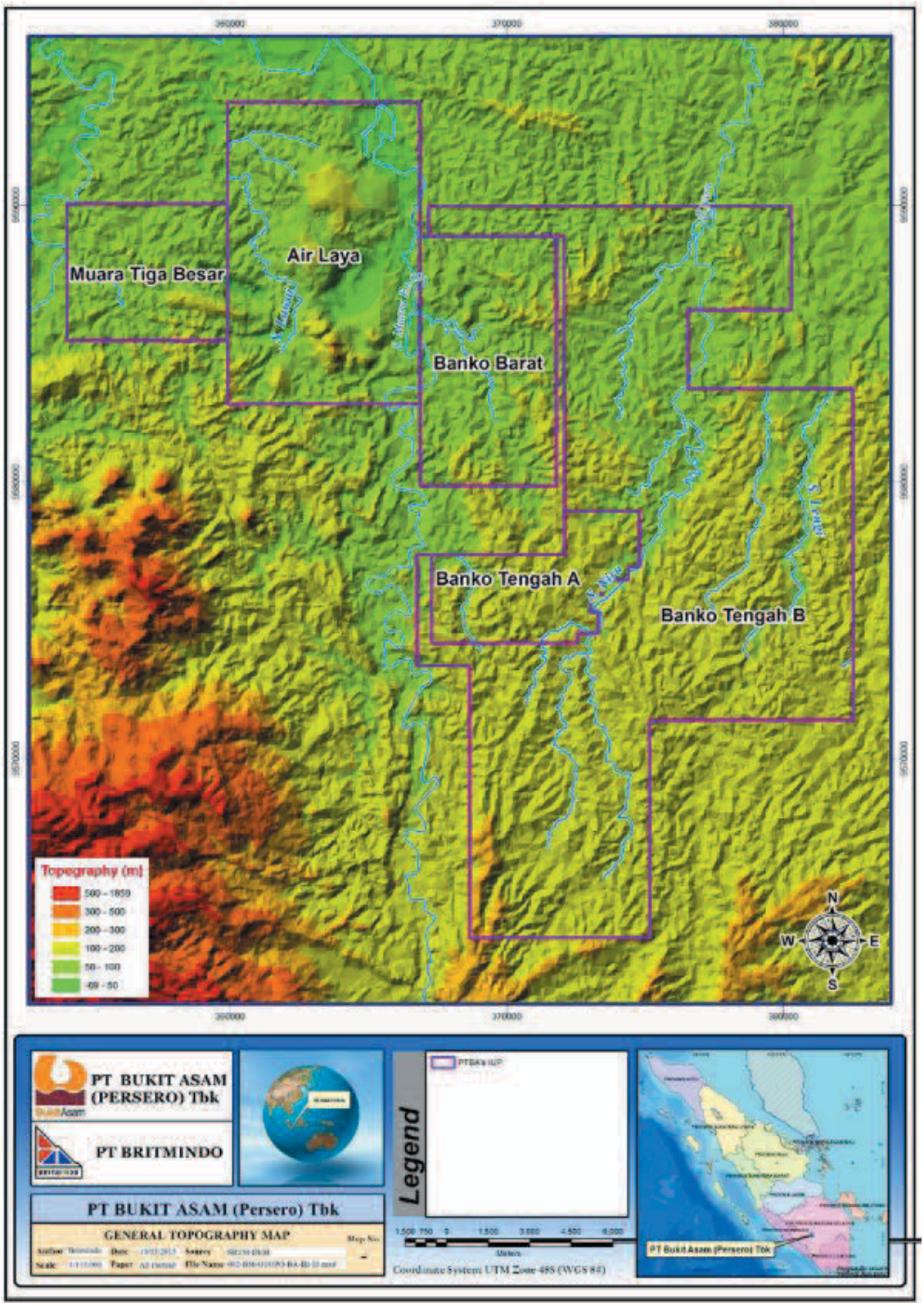


Figure 1-4 Typical Topography of the UPTE Concession Area

1.4 DEMOGRAPHY

Tanjung Enim District is mainly occupied by the Tanjung Enim native population which comprises around 60% of the population with the remaining 40% being indigenous immigrants mainly from Java. The main income source is derived mostly of mine workers, civil servants, traders and with some palm oil farmers or other plantation workers.

Around 90% of the local population is of muslim religion. Education levels range from basic education to tertiary degrees.

1.5 LAND USE REVIEW

The majority of the land is rain forest with mostly wild secondary bush. A significant part of the land is owned by state or private forestry companies with some land owned or farmed by the local population. Some of the area is palm oil plantations and informal rubber plantations. Tanjung Enim exhibits a tropical climate, with annual temperatures ranging between 20 and 34°C with an average annual temperature of approximately 27°C with heavy rainfall. Access to the UPTE area is by mine road which is regularly maintained in good condition, except for some locations where mining has yet to commence.

Britmindo has prepared a Regional Forestry Map derived from the Britmindo database. The resulting map shows the following:

- In Muara Tiga Besar IUP there is around 1% of Production Forest within the total concession area, which is located to the south east corner of the concession.
- In Air Laya IUP, around 40% of the concession area is production Forest.
- In Banko Barat no Forestry area is observed within the concession area. The whole concession area is located in what is termed Areal Penggunaan Lain (APL) or None Forestry area.
- In Banko Tengah A there is a small proportion of Production Forest to the south east which constitutes around 1% of the total concession area.
- In Banko Tengah B around 40% of the concession area is Production Forest.

Government Regulation No. 24 of 2010 and Ministry of Forestry Regulation No P.43/Menhut-II/2008 stipulates that mining companies may only conduct mining actives in forestry areas subject to certain exceptions, in most cases, companies require a “borrow to use permit” (Ijin Pinjam Pakai Kawasan Hutan - IPPKH).

At the time of reporting, PTBA has an IPPKH permit from the Ministry of Forestry based on the Minister Decree No. SK. 396/Menhut-II/2008, for Air Laya area. This area covers 3,453.5 Ha. The Banko Tengah area is still work in process. However, the permit to use the Forestry area of around 5,621 Ha has been approved, based on the Minister Decree Surat No. S.446/Menhut-VII/2014 which was issued on 26 September 2014.

Figure 1-5 below shows the land use status within the PTBA Concession Area.

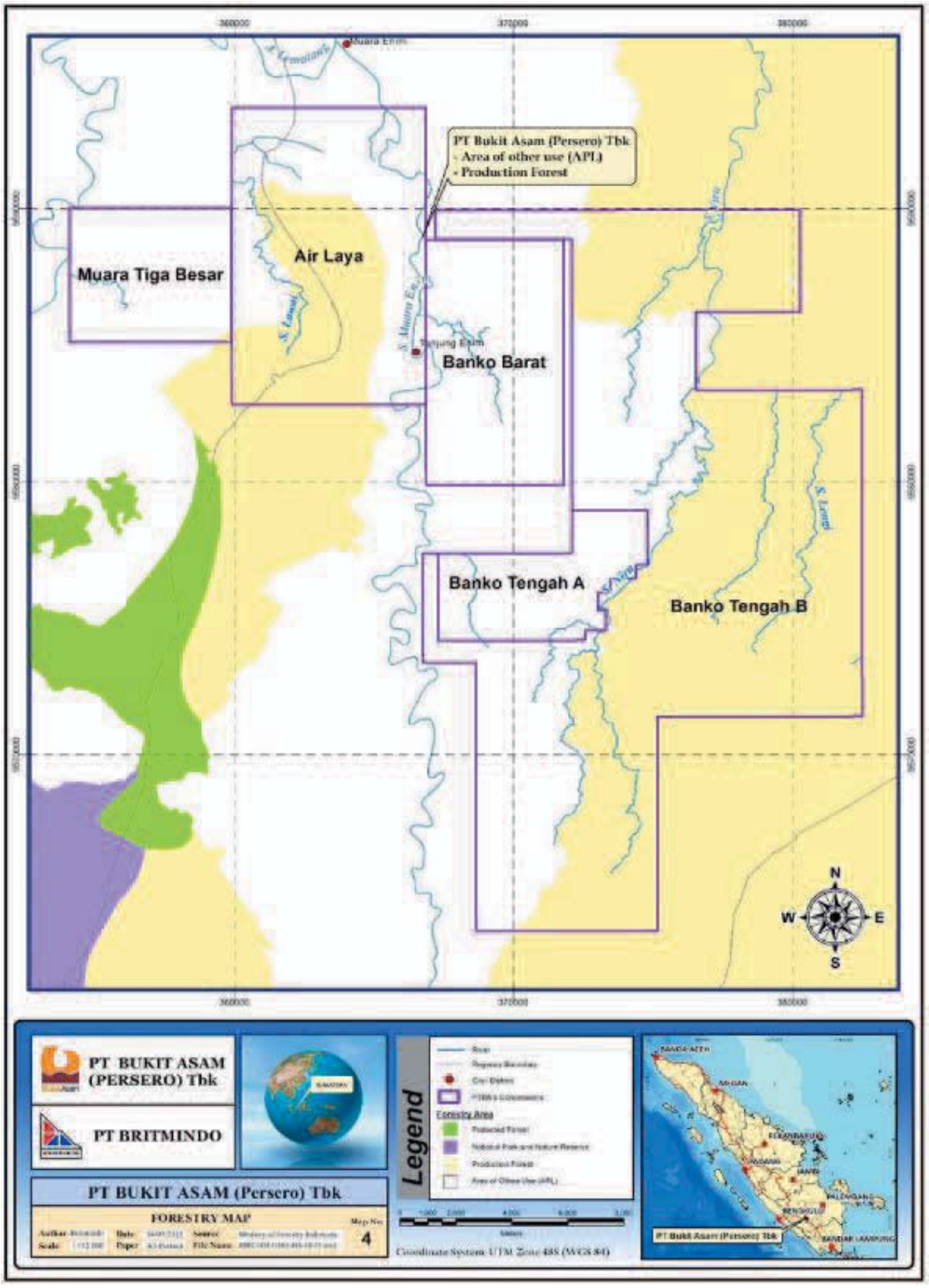


Figure 1-5 Land Use status within the PTBA Concession Area

1.6 GENERAL CHRONOLOGY AND HISTORY OF PTBA

PT Bukit Asam (persero) Tbk was established on 2nd March 1981 in line with the Government Regulation No. 42 Tahun 1980. This incorporation was subsequently changed by way of Notary Certificate No.5, dated 6 March 1984 and certificate No.51, dated 29 May 1985.

The establishment and ammendment was approved by the Minister of Justice and in accordance with decree No. C2-7553-HT.01.04.TH.85, dated 28 November 1985. This amendment was further amended by way of an announcement on State News No. 33, Additional No. 550 dated 25 April 1986.

The Articles of Association of PTBA have been amended several times, most recently by Notary Certificate No. 3 dated 7th June 2005. This was in connection with a change in Article 4 of the Company's Capital Structure. This article was approved by the Ministry of Justice and Human Rights by it's subsequent decree No. C-16 075 HT.01.04.TH.2005 dated 10th June 2005 and was published in the State News of the Republic of Indonesia on 8th June 2005 No. 54. This has been accepted and recorded in the database "Sisminbakun" Directorate General of Law Administration of the Department of Justice and Human Rights of Indonesia.

PTBA was established with the aim to support and implement the government's policies and programme in developing national coal mining. Both the purpose and objective was then incorporated into the company business activities, in accordance with the Articles of Association of the Company. The business activities included general investigation, exploration, exploitation, processing, coal washing, transportation and trade. The Company was also seeking further processing of minerals from deposits, especially coal and trade in the commodity, either by way of own production or by the results of third parties. The business activities of the company at that time were operation of the jetty and coal terminal, either for internal consumption or by third parties; also to operate a steam driven power plant as well as providing consulting services in the field of general mining industry.

On 23rd December, 2002 the company became a public listed company through an Initial Public Offering at the Jakarta Stock Exchange (JSX) with the listing code PTBA. The main business activities at that time was coal mining and exploitation of briquettes. Coal mining is very much the core of the company business and contributes around 98% of the total revenue.

PTBA currently has two (2) mining units. First unit is known as Tanjung Enim Mining Unit (UPTE) and is located in Tanjung Enim and Lahat, South Sumatera. This mine undertakes Open Cut Mining. The second unit is located at Ombilin Mining Unit in Sawahlunto, West Sumatera. This unit undertakes Underground Coal Mining.

Air Laya is the first mine to extract coal on a commercial basis in Tanjung Enim area. Mining activities started in 1919 with the development of a small open pit mine operated by the Dutch government. Underground mining started in 1923 and continued until the 1940s. Production began in 1938 at two locations, with sub-bituminous coals being mined at East Air Laya and semi-anthracite coals at Pit Suban.

The other concession areas are Muara Tiga Besar and Banko Barat which have been in production since 1997 Banko Tengah A has been in production since 2014, whereas Banko Tengah B is still in the mining development stage.

The total production of coal in the UPTE PTBA mine in 2014 was 15.50 Mt. Most of this coal was transported by rail to either the port facility in Kertapati near Palembang or to the Tarahan Port near Bandar Lampung.

Coal production from Tanjung Enim Mining Unit is not only marketed domestically, but is also exported to international markets through the Ports of Tarahan and Kertapati.

The Tarahan Port covers an area of 42.5 Ha with a storage capability of 12.5 Mtpa. It can accommodate ships with a maximum capacity of 60,000 DWT. Kertapati barge loading port in Palembang covers an area of approximately 1.5 Ha with a capacity to handle around 2.7 Mtpa. This port can only be utilized by barges with a maximum capacity of 8,000 DWT. From both port and terminal, the coal is supplied to domestic and international markets.

1.7 PREVIOUS STUDY

Several studies have been undertaken by a number of institutions for the UPTE area. These reports cover Exploration, Geotechnical Studies, Feasibility Studies, Environmental etc. These reports were provided by PTBA for review during the course of this study on Resources.

The list of the studies reviewed for compilation of this report are noted in Appendix C of this Report.

2 GEOLOGY OVERVIEW

This geology overview of UPTE area describes the key aspects related to the exploration activity undertaken which are as follows:

1. Regional Geology Overview
2. Geology of Muara Enim and Lahat
3. Seam Corellation
4. Exploration History
5. Geological Model Overview
6. Coal In-Situ Quality Overview

The description is limited to giving a better understanding for Resources to Reserves conversion purposes. The detailed assessment results can be sighted in "Open Cut Coal Resources Report of Tanjung Enim Mining Unit (UPTE), South Sumatera, Indonesia; Reported in Accordance to JORC Code 2012 Edition" report. The main abstract of information from the Statement is described in the following sections.

2.1 REGIONAL GEOLOGY OVERVIEW

The UPTE Concession area is located in the South Sumatra Basin in which the mid to late Tertiary sediments and coal-forming peat of the Muara Enim Formation were deposited.

The Tertiary sediments rock unit, overlying the basement rock is comprised of (from bottom to top) Lahat Formation, Talang Akar Formation, Baturaja Formation, Gumai Formation, Air Benakat Formation, Muara Enim Formation and Kasai Formation.

Based on the Lahat Sheet Regional Geology Map, published by the Directorate General of Geology and Mineral Resources, the UPTE Concession is dominated by the Muara Enim Formation (Tmpm), whilst near the anticline axis, some areas of the Air Benakat Formation (Tma) and Kasai Formation (QTk) occur in small proportions.

Figure 2-1 below shows the Local Geological outline of the UPTE PTBA Concession Area.

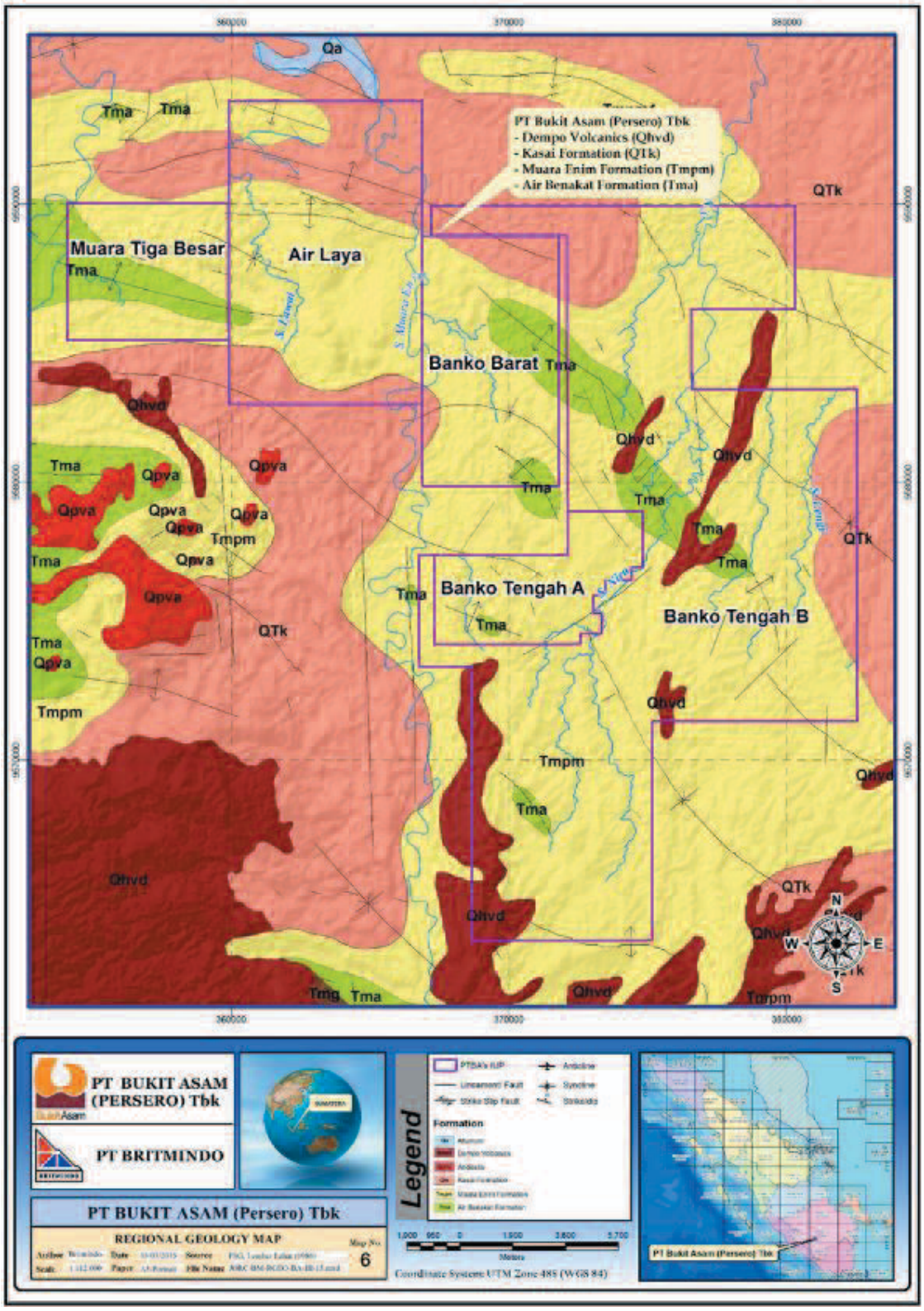


Figure 2-1 Geological Formations within the UPTE Concession Area

Figure 2-2 below shows the Regional Stratigraphical Column of the PTBA Concession Area.

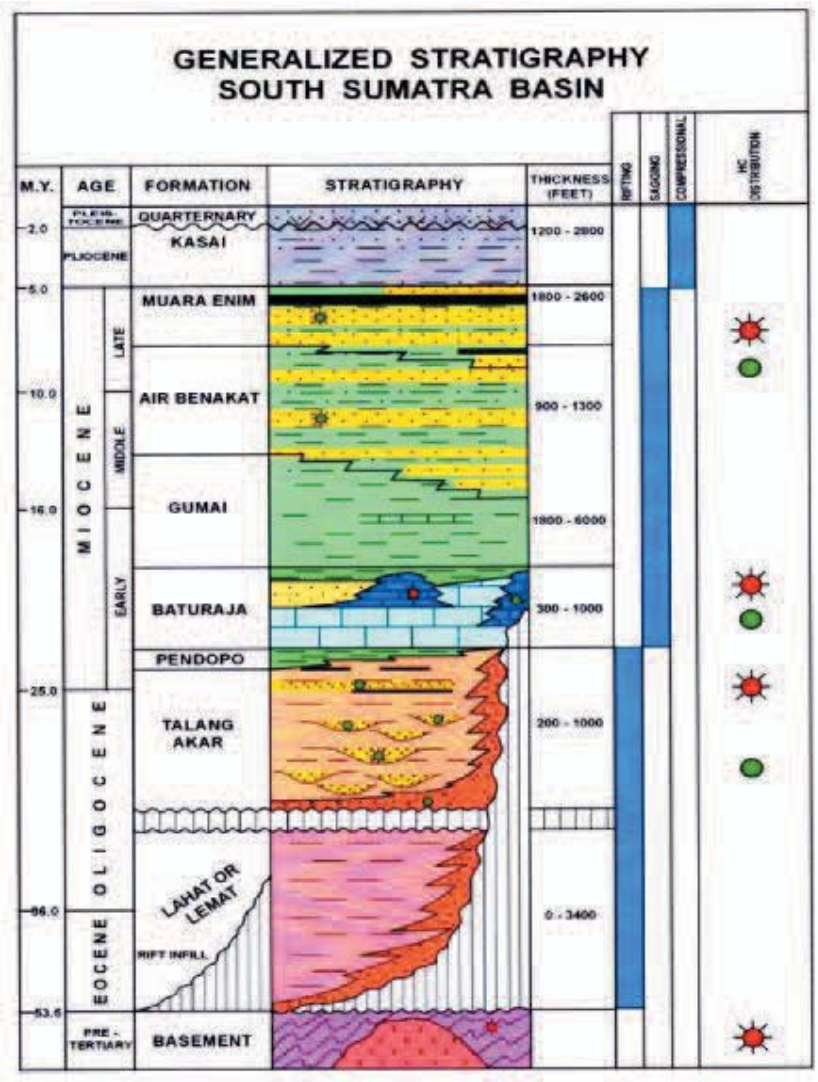


Figure 2-2 Regional Stratigraphical Column of the PTBA Concession Area

In respect of the structure and tectonics observed in the South Sumatera Basin region, its presence is closely related to the geological processes that occured during the collision between the Indian Ocean plate and the Eurasian Continental plate.

Several tectonic elements are defined by the presence of several highs and lows in the surface of the bedrock.

As the sedimentation in South Sumatera basin is subjected to tectonic activities along Tertiary and Quaternary, which resulted in Anticlinorium Muara Enim, the UPTE area is also noted as being part of this anticlinorium. There is therefore, a presence of a series of folds- both syncline and anticline within the deposit.

2.1 GEOLOGY OF MUARA ENIM AND LAHAT AREA

Geology of the Muara Enim and Lahat areas was formed during the Miocene to Pliocene sedimentary rock deposition, which is represented by the Muara Enim Formation and Kasai Formation. These sedimentary rocks exhibit weakly to medium folded horizons with the axis folding alignment generally West-East to Northwest-Southeast and in some area intruded by andesit igneous rock such as in Bukit Asam, Bukit Tapuan and Bukit Kendi.

During the Shell Mjinbouw Coal Exploration program in 1978, the stratigraphic column of The Muara Enim Formation was further modified and the horizons have been divided into the following four divisions;

1. M1 with thickness around 190m comprises the lower clastic and coal division corresponding to the Keladi and Merapi coals.
2. M2 with thickness around 120m comprises the middle coal division corresponding to the Petai, Suban, Suban marker and Mangus coals.
3. M3 with thickness around 150m comprises the middle clay, sand and coal division corresponding to the Burung and Benuang coals which refeered as “Hanging Coals”.
4. M4 with thickness around 190 m comprises an upper coal division corresponding to the Kebon, Enim, Jelawatan and Niru coals.

These divisions can be recognised throughout most of the South Sumatera Basin. Shell Mjinbouw (1978) reported that the coal seams of the middle and lower divisions are more widespread and thinner than the seams of the upper division due to shallow marine influence during sedimentation.

The Geology of the Muara Enim and Lahat area is shown in Figure 2-3 below.

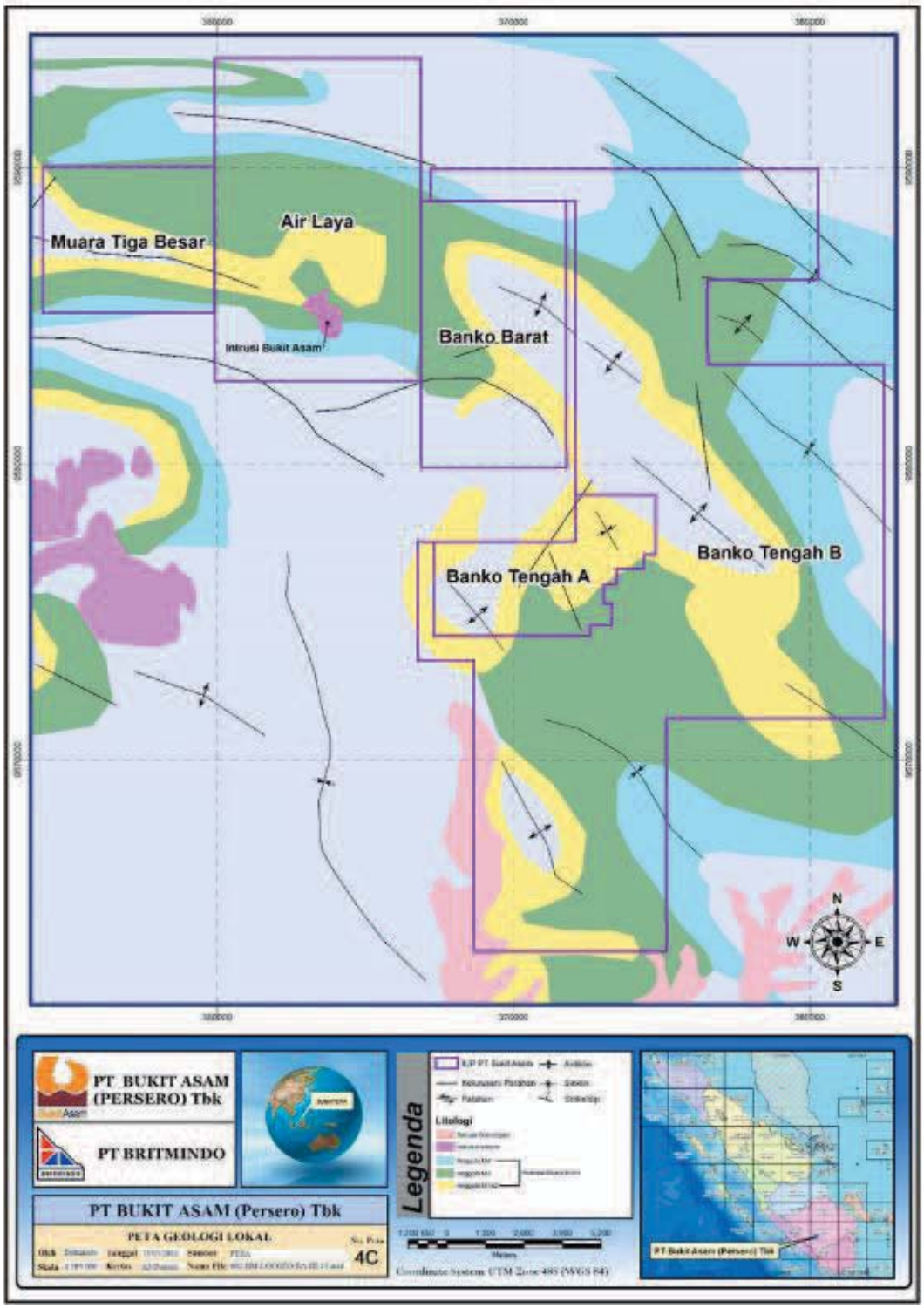


Figure 2-3 Geology Map of UPTE and surrounding area

2.2 COAL SEAMS CORRELATION

There are a number of identified markers in the coal deposit at Muara Enim and Lahat areas, the seams correlations can be undertaken easily and directly during the exploration programme.

Below is the identified markers with regard to the coal seams corellation:

1. The first marker is the sedimentary rock associations between Seam C and Seam B, which is the sandstone layers with "flasser bedding" structure, "cross lamination", and "lenticular bedding" with laminated mudstone/shale.
2. he second marker is a thin coal seam within the interburden rock between Seam B1 and Seam A2 which occurs continuously in the Tanjung Enim and Lahat Areas.
3. The third marker is the tuffaceous sandstone layer and white tuffaceous mudstone layer between seam A2 and A1;
4. The fourth marker is three partings in the form of white bands at the top and the middle of Seam A1 that consistently are observed over the whole UPTE area.

In Muara Enim and Lahat, most of the coal seams within M2 Member stratigraphically can be easily recognised and demonstrate continuity for some tens of kilometres. Additionally, in some places the continuity of the seams, disturbed by the presence of andesite igneous intrusions and geological structures, have correlations which can provide inputs for geological modeling, thus seam continuity interpretation can be undertaken with confidence.

Figure 2-4 below shows seam correlations.

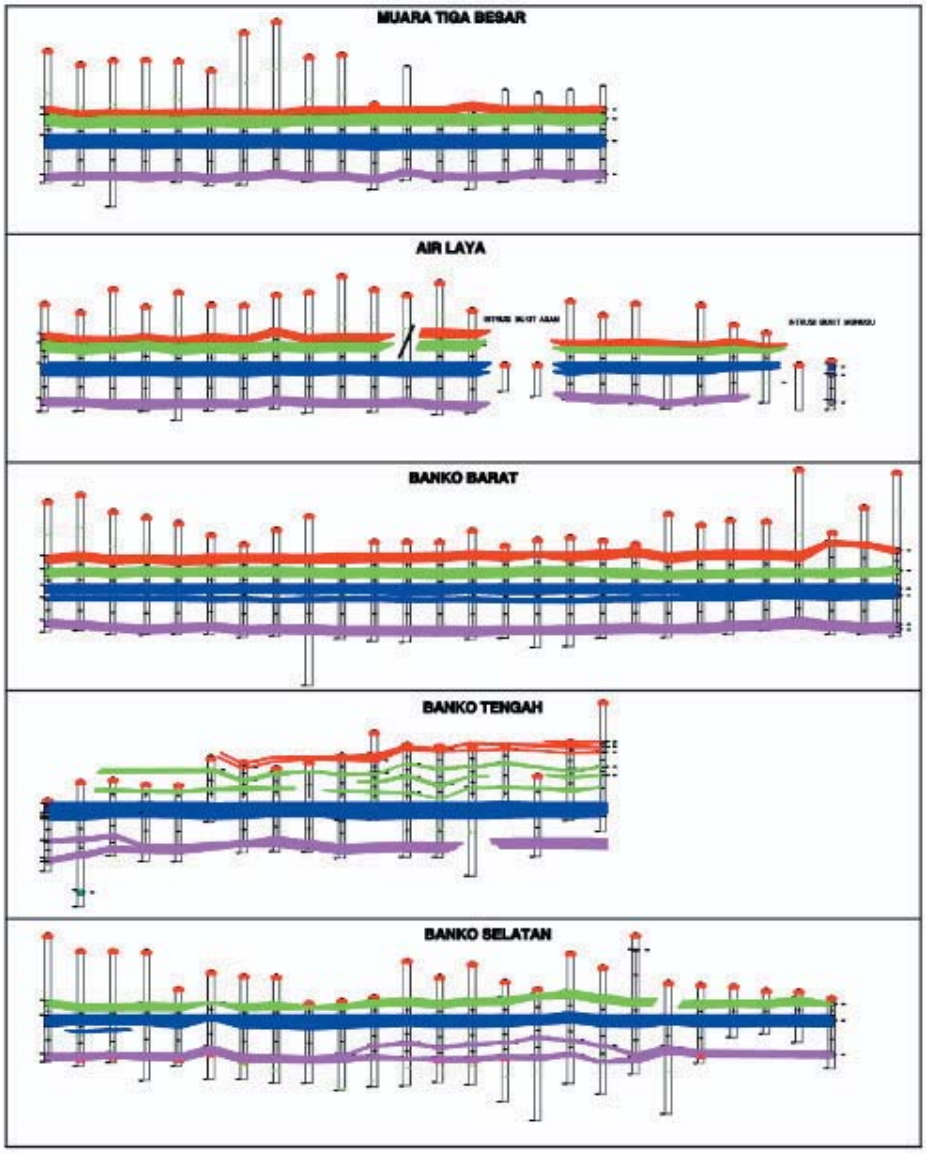


Figure 2-4 Seams Correlation Schematics of the UPTE-PTBA area

Geological and sedimentary continuity of the coal deposit in Tanjung Enim and Lahat area can also be demonstrated quantitatively from statistical and geostatistical analysis of seam thickness. Therefore, coal seam correlation locally and regionally can be undertaken easily and with a high confidence level.

2.3 EXPLORATION HISTORY

Geological exploration activities are recorded as being conducted from 1917 in Air Laya. From the 1970s onwards, drilling activity has been undertaken either by internal PTBA staff or by external consultants, with 108 drill holes being undertaken around the peripheral areas. In

reality, only detailed records and geophysical logging are available for boreholes drilled since 1974.

Investigations of the Muara Tiga Besar deposit commenced in early 1942. This work was undertaken by Bataafche Petroleum Maatshappij (BPM). The Muara Tiga Besar area is divided into two blocks, the areas which are known as Muara Tiga Besar Utara and Muara Tiga Besar Selatan.

Since then, exploration programmes in UPTE area have been undertaken either by internal PTBA staff or by external consultants such as SHELL, Direktorat Batubara, Kinhill-Otto Gold, Reinbhraun etc. A summary of the drilling results is shown in Table 2-1 below.

Table 2-1 Summary of Drilling Rsult in UPTE Area

IUP	No. of Holes	No. of Metres
Muara Tiga Besar	338	48,232
Air Laya	1,329	116,571
Banko Barat	606	63,764
Banko Tengah A	139	16,504
Banko Tengah B	258	30,232
Total	**2,670**	**275,303**

2.4 DATA VALIDATION AND GEOLOGICAL MODELING OVERVIEW

Validation of exploration and topography data was performed by Britmindo to assess whether or not the data could be considered for use in the geological modeling process. Details of the validation process is discussed in the following section.

The original geological model was provided by PTBA as a copy of the complete computerised geological model build in MineScape software.

Following a review of all of the available data, Britmindo selected the modeling data sources, which were as follow:

- Full cored holes in which cores were sampled and tested
- Full cored holes which were not sampled and tested
- Full cored which were geophysically logged
- Boreholes whose coordinates and collars were surveyed by Total Station methods.

From a total of 2,904 drill holes that were drilled in the period from 1974 to 2015, only data from 2,187 drill holes was considered valid for use in geological modeling. The excluded boreholes were stored in different layers within the model.

2.4.1 Original Geological Model

The original geology model used in the Resources estimation was provided by PTBA in complete geological modeled softcopy, which was constructed, based on the exploration data in Minescape-Stratmodel format covering the following deposit blocks:

1. Muara Tiga Besar Utara (MTBU) – Muara Tiga Besar IUP area
2. Muara Tiga Besar Selatan (MTBS) – Muara Tiga Besar IUP area
3. Tambang Air Laya (TAL) – Air Laya IPU area
4. Banko Barat (BB) – Banko Barat IUP area
5. Banko Barat Pit 3 Timur (BBP3T) – Banko Barat and Banko Tengah B IUP area
6. Banko Tengah AB (BTAB) – Banko Tengah A and B (East North) IUP area
7. Banko Tengah B Selatan (BTBS) – Banko Tengah B (South) IUP area
8. Banko Tengah B Suban Jeriji Utara (BTBSJU) – Banko Tengah B (North) IUP Area

The original geology models provided by PTBA have been checked by Britmindo to confirm the validity of the data interpretations such that it can be used as the basis for Resouces estimation process. Model intergogation included validation of data used in model, applied paremeters, seam correlation and seam structure interpretations.

As result of the checking, Britmindo found several occurances which may impact on the confidence level for the constructed geological model and the consequential impact on the result of the Resources and Reserves estimation.

2.4.2 Updated Geological Model

Due to issues noted in 2.4.1 above and the possible impact into the Resources estimation, Britmindo has revised the provided original geological models.

The updated geological model is used as the basis for Resources estimation. MineScape-Stratmodel software version 4.119 has been used to construct the geological models.

2.4.3 Coal Seams

Geological modelling within each block area has demonstrated the continuity of coal seams in the whole area from Muara Tiga Besar through to Banko Tengah B Selatan. At least eight (8) main seams occur throughout all the UPTE IUP area. They are, from top to bottom Seam J, Seam EN, Seam A1, Seam A2, Seam B, Seam C, Seam D and Seam E.

Therefore, as noted earlier in this report, combining the geological models was important to have a better overall understanding of the deposit. The main seam splits into several plies resulting in a total of twenty-nine (29) coal seams.

A small number of other, un-named, seams occur throughout the sequence such as the Suban Marker and Hanging Coal. Since the record of these other seams is insufficient, it has not been possible to correlate these seams or nor demonstrate their continuity and consequently they are excluded from the model and Resources defined.

Seam J, EN, D and E are modeled in some area only due to limited data for these seams. Table 2-2 below shows the seam sequences and thicknesses noted.

Table 2-2 Seam Sequence and Thickness in Each IUP

IUP	Group Seam	Ketebalan (m)		
		Min	Avg	Max
Muara Tiga Besar				
	A1	6.60	8.35	12.55
	A2	11.30	12.63	16.60
	B	12.51	16.94	21.24
	C	6.45	8.43	11.30
Air Laya				
	J	6.00	9.11	12.40
	EN	18.12	20.02	21.80
	A1	1.17	7.60	16.00
	A2	2.40	9.47	20.80
	B	5.30	14.02	26.60
	C	1.40	8.02	14.84
	D	1.50	2.41	3.00
	E	1.75	6.31	8.32
Banko Barat				
	A1	4.52	10.33	17.10
	A2	8.39	11.21	18.10
	B	6.50	16.98	24.45
	C	6.13	10.86	15.70
Banko Tengah A				
	A1	2.28	5.69	9.08
	A2	1.57	5.37	8.85
	B	11.00	18.04	22.57
	C	9.90	12.73	14.14
	D	1.02	1.62	2.24
	E	3.80	7.65	12.20
Banko Tengah B				
	J	5.25	9.18	12.80
	EN	18.40	26.43	31.05
	A1	2.65	8.45	12.55
	A2	3.40	11.32	19.45
	B	10.45	17.32	28.75
	C	6.40	10.50	15.80
	E	3.40	7.08	10.30

2.4.1 Seam Structure

The geometry of the model demonstrates good coal seam continuity in UPTE area, although in some area the seams are split and steeply dipping with anticlinal or synclinal characteristics and /or faults. In other areas the coal seam is discontinued because they are intruded by igneous rock intrutions.

The coal deposit shows seam continuity to the strike starting from MTB to Banko Tengah B Selatan for approximately 16 km in length along the strike and for approximately 5 to 10 km width to down dip, at depths ranging from 3 m to 500 m. Overall seam structure is a series of folding synclines and anticlines which formed as a result of the impact of the intrution.

Dip of the seams varies from flat around 5 ° to steep at around 80 °. Dips in general are flat to medium, steeply dipping occur near heavily folded anticlines in the eastern part of MTBS near the boundary with Air Laya and in Banko Barat Pit 3 East.

The geological model interpretation has indicated several northeast trending normal faults occuring in the Air Laya and Banko Tengah areas. Vertical displacement of the fault is estimated around 10 m to 100 m. in Banko Tengah area, the faults caused some of the seams, particularly Seam A1 and Seam A2, to be lifted above the topography surface and subsequently be eroded in several areas of the deposit.

2.5 IN-SITU COAL QUALITY

In general, the coal rank in Tanjung Enim and Lahat varies from lignite to sub-bituminous. However, in particular areas such as in Air Laya and Bukit Kendi, the coal was heated by various igneous rock intrusions, which created a coal rank change from sub-bituminous to bituminous and in certain cases, become anthracite. The rank alteration impacts on calorific value (CV), Volatile Matter (VM) and Moisture of the coals in the area. In general, the coal rank gradually increases the closer the area was to the intrusion.

Britmindo has summarized the coal quality based on the main seam group weighted composite average as shown in the Table 2-3 below.

Table 2-3 Summary of Coal Quality Range in UPTE Area

Block		TM %	Proximate Analysis (adb)				TS %	CV kcal/kg	
		(ar)	IM %	Ash %	VM %	FC %	(adb)	(adb)	(ar)
MTBU	Min	17.10	8.90	1.20	35.50	32.80	0.09	4934	3987
	Avg	27.95	14.67	5.29	40.20	39.80	0.64	5657	4770
	Max	35.70	22.00	12.20	45.30	45.40	2.83	6310	5419
MTBS	Min	18.50	8.30	1.40	36.90	34.60	0.08	5090	3915
	Avg	26.86	12.18	6.51	41.28	40.03	0.52	5798	4822
	Max	36.27	18.80	17.20	44.10	43.60	2.01	6290	5442
TAL	Min	1.10	0.40	1.00	6.10	36.30	0.07	5415	4455
	Avg	16.19	8.56	4.72	38.38	48.32	0.64	6765	6155
	Max	34.00	21.50	19.30	48.10	88.53	3.80	8474	8258
BBP1&2	Min	14.60	0.80	0.70	29.40	27.30	0.10	4089	3765

Block		TM % (ar)	Proximate Analysis (adb)				TS % (adb)	CV kcal/kg	
			IM %	Ash %	VM %	FC %		(adb)	(ar)
	Avg	25.09	13.09	4.95	39.74	42.23	0.66	5973	5157
	Max	33.70	24.20	27.20	49.10	54.40	2.30	6818	6269
BBP3T	Min	14.10	7.60	0.91	28.70	27.46	0.14	4298	4451
	Avg	27.21	13.83	4.47	39.11	40.27	0.60	5991	5153
	Max	33.33	20.10	26.59	44.54	47.74	1.86	6618	6206
BTA	Min	24.80	9.25	1.67	22.62	21.65	0.00	3296	2326
	Avg	35.87	15.95	9.73	36.61	37.72	0.70	5290	4048
	Max	41.76	26.34	44.17	43.96	45.00	3.90	6545	5445
BTBTU	Min	20.70	8.50	0.51	25.20	21.70	0.15	3585	2812
	Avg	31.49	14.27	9.91	37.25	38.50	0.74	5346	4283
	Max	36.00	23.80	39.85	44.10	47.00	2.81	6551	5445
BTBSJ	Min	29.75	12.40	2.80	36.78	31.00	0.12	4519	3283
	Avg	37.29	19.30	6.41	38.94	35.24	0.17	5047	3925
	Max	44.70	22.00	13.20	44.32	40.80	0.37	5373	4352
BTBS	Min	19.17	8.70	1.79	21.83	20.18	0.15	2965	2681
	Avg	37.70	21.31	10.02	36.16	32.07	0.61	4659	3681
	Max	48.30	74.60	28.40	47.20	39.30	3.80	5780	4837

The above statistics do not include mining loss and dilution considerations, which will result in variations to the in-situ results.

3 COAL RESOURCES ESTIMATION OVERVIEW

In November 2015, Britmindo has published a Statement of Open Cut Coal Resources for the UPTE area deposit Deposit. This report is referenced as "Open Cut Coal Resources Report of Tanjung Enim Mining Unit (UPTE), South Sumatera, Indonesia; Reported in Accordance to JORC Code 2012 Edition. With a report index 020/RP-BM/XI/2015.

Information described in the following sections is summirised from the mentioned report, Chapter 7, Coal Resources. The detailed assessment results can be sighted in this document. The main abstract of information from the Statement is described in the following sections.

1. Resource Estimation at the UPTE area deposit is based on the three JORC levels of confidence, which are Measured, Indicated and Inferred.
2. Pit optimisation was undertaken to generate pit shells, reflecting various strip ratios to determine potential in-situ tonnage in the concession area, using Minex Optimiser software. The optimiser was run to select the pit shell at BESR of revenue against mine operating costs.
3. Coal price and operational costs are based on information provide by PTBA
4. Overall high wall slope is defined 21° in all areas based on geotechnical study recommendations.
5. Coal Resource polygon areas were constructed using information gathered from the Points of Observation. The Points of Observation used to define the Coal Resources at the Concession Area are those fully cored drill holes; geophysically logged and which have been surveyed by Total Station methods.
6. Upon completion of the Resource polygon areas, the area was defined by the intersection with the selected pit shell derived from the pit optimisation outcomes.
7. A coal thickness of 0.50 m has been used as the minimum cut-off for Resources estimation.
8. Partings less than 0.10 to 0.30 m in thickness are included as coal interval depending of the coal thickness.

   No complete Relative Desity (RD) analysis was available for each seam at each IUP. Therefore, in estimating the coal tonnage, Britmindo has used 'default In-situ density" assumption as shown below.

Default Densities at each area.

IUP/Block	Deafult Density
MTBU	1.28
MTBS	1.28
TAL	1.28
BBP1&2	1.28
BBP3T	1.28
BTA	1.26
BTBTU	1.26
BTBSJ	1.26
BTBS	1.26

- Only coal quantity and quality within resources polygons that are located within the selected pit shell limit were defined as being in compliance with Measured, Indicated and Inferred resource categories. Coal quantity and quality outside the inferred boundary, but still located within within the selected pit shell limit, is classified as Exploration Target.

The Resources estimate summary is shown in Table 3-2 below. In the table, the estimates have been rounded up to the nearest million tonne, (Mt) as is commensurate with the precision of the estimate.

Table 3-1 Coal Open Cut Resources Summary in the UPTE Area

IUP/Block	JORC Resources (Mt)				TM %	Ash %	TS %	CV Kcal/kg	
	Measured	Indicated	Inferred	Total	(ar)	(adb)	(adb)	(adb)	(ar)
Existing									
Muara Tiga Besar									
Muara Tiga Besar Utara	*173*	*56*	*20*	*250*	*28.13*	*5.33*	*0.47*	*5637*	*4755*
Muara Tiga Besar Selatan	*33*	*31*	*2*	*65*	*28.11*	*8.63*	*0.58*	*5853*	*4673*
Total Muara Tiga Besar	**206**	**87**	**22**	**315**					
Air Laya	**256**	**231**	**246**	**733**	19.98	4.98	0.51	6169	5723
Banko Barat									
Blok Pit 1 & 2	*346*	*70*	*19*	*435*	*24.65*	*5.18*	*0.53*	*5918*	*5153*
Blok Pit 3 Timur	*6*	*53*	*30*	*88*	*28.76*	*8.30*	*0.50*	*5713*	*5208*
Total Banko Barat	**352**	**122**	**49**	**523**					
Total Existing	**815**	**440**	**317**	**1,571**					
Development									
Banko Tengah A	**299**	**69**	**5**	**374**	34.43	8.52	0.54	5360	4098
Banko Tengah B									
Blok Timur & Utara	*151*	*375*	*827*	*1,353*	*33.04*	*8.14*	*0.52*	*5410*	*4183*
Blok Suban Jeriji Utara	*13*	*176*	*298*	*487*	*37.51*	*6.53*	*0.18*	*5044*	*3919*
Blok Suban Jeriji Selatan	*17*	*40*	*18*	*75*	*30.75*	*3.41*	*0.54*	*5915*	*4847*
Blok Selatan	*384*	*253*	*203*	*839*	*37.79*	*9.49*	*0.42*	*4618*	*3731*
Total Banko Tengah B	**564**	**844**	**1,347**	**2,754**					
Total Development	**863**	**913**	**1,352**	**3,128**					
Total UPTE PTBA	**1,678**	**1,352**	**1,669**	**4,699**					

4 MODIFYING FACTORS ASSESSMENT

In reference to the JORC Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code) 2012 Edition, Clause 12, *'Modifying Factors' are considerations used to convert Mineral Resources to Ore Reserves. These include, but are not restricted to mining, processing, Metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors.*

Measured Coal Resources may be converted to either Proved Coal Reserves or Probable Coal Reserves. The Competent Person may convert Measured Coal Resources to Probable Coal Reserves because of uncertainties associated with some or all of the Modifying Factors which are taken into account in the conversion from Coal Resources to Coal Reserves.

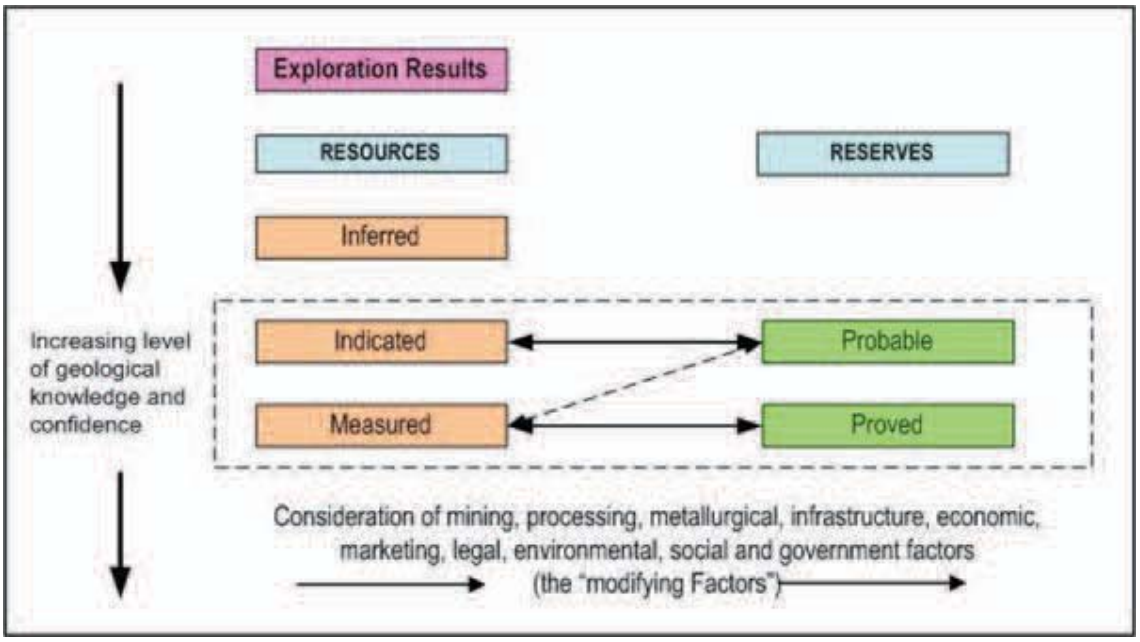


Figure 4-1 Relationship between Exploration Result, Resources and Reserves

In November 2015, Britmindo published a Life of Mine Plan Study for the UPTE Deposit. The Report is referenced as "Life of Mine Plan Study Report for Open Cut Coal Mine of Tanjung Enim Mining Unit (UPTE) at South Sumatera, Indonesia", and referenced by the index 021/RP-BM/XI/2015.

The key outcomes from this Report which are related to Modifying Factor assessments are described in the following sections.

4.1 MINE PLANNING

As part of the assessment, Britmindo has undertaken a Mineable Coal Estimation and prepared a Life of Mine Plan.

4.1.1 Mineable Coal Estimation

For the purpose of the Mineable Coal Estimation, a final pit design has been generated based on a nominated economical pit shell together with geotechnical slope stability assumptions. The pit limit was determined to a maximum elevation of -200 m to -250m from Mean Sea Level (msl) or about 300 m depth from surface topography.

Based on the generated final pit design, mineable tonnage was estimated within the final pit design using the following assumptions:

- A coal thickness of 0.50 m has been used as the minimum cut-off for the estimation.
- Partings less than 0.10 to 0.30 m in thickness are included as coal interval depending of the coal thickness.
- A total of 0.10 m mining losses from the top and the bottom of each seam have been allowed.
- A total of 0.025 m mining dilutions from the floor of each seam have been allowed.
- Geological Loss of 3% applied to absorb the persision of seam thickness determination and loss in fault or intrusion zones.
- No complete Relative Desity (RD) analysis available for each seam at each IUP. Therefore, in estimating the coal tonnage, Britmindo has used 'default In-situ density" assumption as shown below.

Default Densities at each area.

IUP/Block	Deafult Density
MTBU	1.28
MTBS	1.28
TAL	1.28
BBP1&2	1.28
BBP3T	1.28
BTA	1.26
BTBTU	1.26
BTBSJ	1.26
BTBS	1.26

The Mineable Coal Estimation is shown in Table 4-1 below. In the table, the total estimates have been rounded up to the nearest two (2) decimal points of million tonne as is commensurate with the precision of the estimate.

Table 4-1 Mineable Coal Estimation in Final Pit Design

IUP/Block	Batubara (Jt)	Waste (Jbcm)	SR (bcm/t)	TM % (ar)	Ash% (adb)	TS % (adb)	CV Kcal/kg (adb)	CV Kcal/kg (ar)
Existing								
Muara Tiga Besar								
Muara Tiga Besar Utara	*184*	*747*	*4.06*	*28.22*	*5.77*	*0.52*	*5598*	*4705*
Muara Tiga Besar Selatan	*63*	*241*	*3.83*	*28.07*	*8.90*	*0.58*	*5834*	*4655*
Total Muara Tiga Besar	**247**	**988**	**4.00**					
Air Laya								
Basecamp	*36*	*227*	*6.37*	*13.83*	*7.63*	*0.54*	*6975*	*6423*
Existing	*19*	*100*	*5.24*	*7.22*	*6.60*	*0.89*	*7468*	*7139*
Mahayung	*425*	*2,147*	*5.05*	*21.38*	*5.29*	*0.48*	*5918*	*5513*
Total Air Laya	**480**	**2,474**	**5.15**					
Banko Barat								
Blok Pit 1 & 2	*287*	*911*	*3.17*	*24.76*	*5.31*	*0.55*	*5933*	*5134*
Blok Pit 3 Timur	*57*	*291*	*5.14*	*27.80*	*4.14*	*0.46*	*5999*	*5148*
Total Banko Barat	**344**	**1,202**	**3.50**					
Total Existing	**1,071**	**4,664**	**4.35**					
Development								
Banko Tengah A	**373**	**803**	**2.15**	33.11	8.55	0.54	5359	3919
Banko Tengah B								
Blok Timur & Utara	*925*	*2,587*	*2.80*	*32.65*	*8.74*	*0.50*	*5329*	*3976*
Banko Tengah B - Suban Jeriji Utara	*382*	*1,222*	*3.20*	*37.37*	*6.92*	*0.19*	*5024*	*3898*
Banko Tengah B - Suban Jeriji Selatan	*43*	*177*	*4.07*	*30.70*	*3.09*	*0.56*	*5948*	*4843*
Blok Selatan	*608*	*2,068*	*3.40*	*37.69*	*9.56*	*0.40*	*4595*	*3726*
Total Banko Tengah B	**1,958**	**6,054**	**3.09**					
Total Development	**2,331**	**6,857**	**2.94**					
Total UPTE PTBA	**3,402**	**11,521**	**3.39**					

The above estimate represents ROM coal tonnages and quality within the final pit design. The reserves for each category are in accordance with the JORC Code 2012 Edition, showing Proved and Probable are as shown in the Section 5-2 of this Report.

4.1.2 Mining Method Sequence and Equipment

The mining conditions at UPTE area are typical of many Indonesian mining operations, where small to medium sized hydraulic excavators and rigid dump trucks are used. PTBA uses a specialised mining contractor particularly in waste removal activities, which significantly reduces the initial capital expenditure, manpower and infrastructure requirements.

Initial mining operations commenced by developing a “box cut“ with the overburden being dumped out of pit. Thereafter, progressive mine advance and overburden backfilling occurs directly into the mined out void; thus reducing the overburden haul distances. As mining advances the backfilled pit will be rehabilitated, minimising the area of disturbed land.

Generally, the Run of Mine (ROM) coal is transported by truck from the mine to the Dump Hopper or Temporary Stockpile near mine area. Thereafter transported using a mobile conveyor to a dedicated Stocppile (SP1 or SP2), then from the Stockpile the coal transferd to the Train Loading Station (TLS). From TLS caol are ready to transport by train to the Barge

Loading Port at Kertapati, Palembang and to the Transhipment Port at Tarahan, Bandar Lampung, Sumatera.

Britmindo has estimated the equipment requirements at UPTE-PTBA. UPTE-PTBA will utilise excavators in the range of 40 t to 200 t class matched with dump trucks in the range of 30 to 100 t class for overburden and top soil removal. For coaling, 40 to 80 t class excavators will be matched with rigid dump trucks in the range of 30 to 40t class.

Re-vegetation of mined out areas will be carried out sequentially by PTBA. Preparation of re-vegetated areas is undertaken by ripping or scarifying of prepared areas prior to planting. This facilitates good hydration and oxidation of planted trees and foliage which assists sustainable and proper growth.

PTBA have developed a nursery department which both propagates and nurtures plants and species for replanting. At the nursery, plants and trees are grown from seedlings and nurtured until fully developed, prior to planting in prepared re-contoured areas.

As areas of the mine are completed, the ground profiles will be achieved through both filling and grading. After this process, areas are prepared for final top soiling and replanting.

Additionally, PTBA also provide a comprehensive and integrated plan in respect of a mine closure strategy.

4.1.3 Mine Production Schedule

The Production Scheduling set out in this Report is in reference to the Production Plan for the Export and Mine Mouth Power Plan (MMPP) Project.

The Production Schedule within this UPTE Deposit comprises a coal requirement of seventy-three (73) years Life of Mine Plan at maximum around 100 Mt per annum: with an average SR of 3.4 to 1.0. The production schedule of the total UPTE area is shown in Table 4-2 below.

Table 4-2 Consolidated Production Scheduling for UPTE total Area

Item	Unit	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Waste	Jbcm	155	160	160	133	260	350	331	345	360	366
Batubara	Jt	23	25	27	26	57	67	65	73	75	83
Strip Ratio	bcm/t	6.8	6.5	6.0	5.1	4.6	5.2	5.1	4.7	4.8	4.4
Item	Unit	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Waste	Jbcm	371	371	330	250	313	314	337	336	326	268
Batubara	Jt	81	86	84	88	94	81	99	100	96	96
Strip Ratio	bcm/t	4.6	4.3	3.9	2.9	3.3	3.9	3.4	3.3	3.4	2.8
Item	Unit	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Waste	Jbcm	264	274	262	244	295	292	310	310	280	216
Batubara	Jt	104	101	98	90	96	86	88	86	87	87
Strip Ratio	bcm/t	2.5	2.7	2.7	2.7	3.1	3.4	3.5	3.6	3.2	2.5
Item	Unit	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055

Waste	**Jbcm**	185	184	184	194	237	204	204	164	119	78
Batubara	**Jt**	73	72	72	72	55	52	51	52	52	42
Strip Ratio	**bcm/t**	2.6	2.5	2.6	2.7	4.3	3.9	4.0	3.2	2.3	1.9
Item	**Unit**	**2056**	**2057**	**2058**	**2059**	**2060**	**2061**	**2062**	**2063**	**2064**	**2065**
Waste	**Jbcm**	80	83	82	81	58	57	57	47	39	17
Batubara	**Jt**	40	30	31	30	27	27	27	27	23	6
Strip Ratio	**bcm/t**	2.0	2.7	2.7	2.7	2.2	2.1	2.1	1.8	1.7	3.0
Item	**Unit**	**2066**	**2067**	**2068**	**2069**	**2070**	**2071**	**2072**	**2073**	**2074**	**2075**
Waste	**Jbcm**	15	15	15	15	15	14	14	14	14	32
Batubara	**Jt**	6	6	6	6	6	6	6	6	6	11
Strip Ratio	**bcm/t**	2.7	2.7	2.7	2.7	2.7	2.5	2.5	2.5	2.5	3.0
Item	**Unit**	**2076**	**2077**	**2078**	**2079**	**2080**	**2081**	**2082**	**2083**	**2084**	**2085**
Waste	**Jbcm**	32	32	32	32	32	36	36	36	36	36
Batubara	**Jt**	11	11	11	11	11	11	11	11	11	11
Strip Ratio	**bcm/t**	2.9	2.9	2.9	2.9	2.9	3.3	3.3	3.3	3.3	3.3
Item	**Unit**	**2086**	**2087**	**2088**							**Total**
Waste	**Jbcm**	36	34	15							**11,521**
Batubara	**Jt**	11	11	4							**3,402**
Strip Ratio	**bcm/t**	3.3	3.1	3.4							**3.4**

4.2 Coal Handling

4.2.1 Muara Tiga Besar

Production targets set by PTBA for IUP Muara Tiga Besar mine are set at 7 Mtpa. Coal from the mine is transported by truck to a temporary stockpile or directly fed to a Dump Hopper which is located in the mine area. The Dump Hopper is equipped with a feeder breaker with a rated capacity of 850 tph by each of the two units.

Prior to the unloading at the dump hopper and temporary stockpile, all trucks are required to be weighed at a registered weighbridge.

From the Dump Hopper, coal is transported to Stockpile 1 (SP1) or Stockpile 2 (SP2) using a conveyor system which has a capacity of around 1,700 tph. The distance from the Dump Hopper to SP1 is approximately 3.75 km through a Conveyor Distribution Point (CDP); whilst the distance from Dump Hopper SP2 is approximately 2.00 km.

From SP1, coal can be transferred to TLS 1 (Train Loading Station 1) or to the Bukit Asam Power Plant (2 x 60 MW). Before entering Bukit Asam Power Plant, the coal must go undergo a crushing process, using a unit rated at 2,000 tph. At the TLS 1 station, coal is made ready to transport by train to the port in Kertapati or coal terminal in Tarahan. 1 TLS 1 capacity is 2,800 tph.

4.2.2 Tambang Air Laya

The Production Target set by PTBA for Air Laya is 12 mtpa. Coal from the mine is conveyed by truck to a temporary stockpile in the mine area or is directly transported to SP1.

Coal is transported, using a conveyor belt from the temporary stockpile, to SP 1 through CDP (conveyor Distribution Point). The conveyor length from temporary stockpile to SP1 is approximately 1.75 km.

Loading from the Temporary Stockpile to the Conveyor Belt is undertaken by using a converted Bucket Wheel Excavator (BWE) which is utilised as a reclaimer.

The conveyor capacity from SP1 to CDP is 2,400 tph, whilst the conveyor capacity from CDP to ST 1 is 5,300 tph.

From SP1, coal can be transferred to TLS 1 or Bukit Asam Power Plant as required. From TLS 1, coal is made ready for delivery to Kertapati Port in Palembang or Tarahan Coal Terminal in Lampung.

4.2.3 Banko Barat

The Production Target set by PTBA for IUP Banko Barat mine is 12 mtpa. Coal from the mine is transported by truck to a temporary stockpile or directly feed into the Dump Hopper, which is located in the mine area. The Dump Hopper is equipped with a feeder breaker with a capacity of 750 tph over two units.

Prior to the unloading at the dump hopper and temporary stockpile, all trucks are required to be weighed at a registered weighbridge.

From Dump Hopper or Temporary Stockpile, coal is transported to Stockpile 3 (SP3) or is directly taken to TLS 3, utilizing a conveyor system which has a capacity of 1,500 tph. Distance from the Dump Hopper to SP 3 is approximately 0.65 km. The distance of the conveyor from SP 3 to TLS 3 is approximately 3.50 km with a capacity of 1,500 tph.

In addition to possible deliveries to the Kertapati and Tarahan ports, coal products from Banko Barat will also be transported to either the Banko Power Plant (3 x 10 MW) or to the Briquette Plant.

4.2.4 Banko Tengah A

At the moment there has been no mining activities carried out. However, PTBA has targeted a Production Capacity of 15 million tph.
The production is planned to supply a Mine Mouth Power Plant at the rate of 13.5 mtpa, whilst the other 1.5 mtpa is earmarked for other market requirements.

4.2.5 Banko Tengah B

At the moment there has been no mining activities at this location. However, PTBA has targeted a production capacity of 50 Mtpa.
The production is planned to supply the Bukit Asam Transpacific Railway Project (BATR) at 25 mtpa, Indonesian Railway (PT KAI) development at 13 Mtpa and other market requirements at 12 Mtpa.

4.3 PROJECT INFRASTRUCTURE

The purpose of this review was to describe the entire infrastructure associated with the winning of coals from the mine and the efficient processing and transportation of coals to the customer.

During observations in the field, existing infrastructure facilities currently at the mine site are stockpiles where coal is transported to the stockpile by truck or conveyor . For transport from the stockpiles to the port in Kertapati in Palembang or Tarahan in Lampung, facilities are provided by PT Kereta Api Indonesia (KAI)

4.3.1 Coal Hauling Road

PTBA UPTE mining utilises a bucket wheel continuous mining system, whilst also using conventional truck and shovel methods. By the use of these methods, a the coal haul road is mandatory to transport coal from the mine to a stockpile.

The PTBA haul road has been designed to accommodate trucks with a 90 t payload using two lane traffic.

4.3.2 Barge Loading and Port Facilities

4.3.2.1 Kertapati Port

Kertapati port is located in the Kemas Rindo, Kertapati District, Palembang, South Sumatera Province with an area of 1.5 ha. The distance from Tanjung Enim to Kertapati is aproximately 200 km.

The UPTE – PTBA coal production is partly accommodated at Kertapati port with the current production target is 2.7 Mtpa. Future planning suggests an increase to 5.0 Mtpa.

4.3.2.2 Tarahan Port

Tarahan Coal Terimanal is located in the Serempah Village, Panjang District, Bandar Lampung City, Lampung Province with an area of 42.5 ha. Distance from Tanjung Enim to Tarahan Coal Terminal is aproximately 420 km.

Current Production Target is 18 Mtpa and is planned to accommodate coal production of 25 mtpa in the near future.

The Production Target of 25 Mtpa can be achieved at Tarahan with existing equipment facilities, subject to the coal transport from Tanjung Enim by train meeting the production requirement.

4.3.3 Supporting Facilities

4.3.3.1 Fuel Storage

The main fuel storage proposed for the PTBA Operation is located at a secure area within the Mine Surface Facility (MSF). As the majority of the fuel consumption will be by mining and hauling equipment, the major fuel storage at the mine site will be located at the mining workshops and fuel farm facility. From there, the fuel will be transferred to smaller fuel tankers for efficient distribution to the major mining equipment.

4.3.3.2 Contractor Office and Workshop

The workshop heavy equipment contractor facility at the mine site had been inspected. The workshop was built with the aim to accommodate dump trucks up to a capacity of 90 tonnes. Adequate servicing space is available. Repairs and servicing of heavy/large excavators, dumptrucks and dozers is undertaken in the workshop, as is the repair of small/light vehicles. Occasionally, maintenance and minor repairs are undertaken outside the workshop area; however, standards and procedures must be present at the workshop to reduce the loss of hydrocarbons and other waste products at the location.

4.3.3.3 PTBA Office and Base Camp

The mine office building should be sufficient for the type of mining operations which are taking place. All administrative departments including operations management, finance, procurement, safety and environment are to be housed in the main building.

Communications such as landline, fax, e-mail and internet will be accessible to the offices and workshops.

Residential units were built for selected employees and families. This facility comprises the following:

1. Class 1 Residential (including 1 units for guest house)
2. Class 2 Residential
3. Class 3 Residential
4. Employee Mess Facility

Other Public Facilities comprising one unit (1) of mosque, sports and recreation facilities such as tennis field, volley field, minor sports centre and recreation facilities are provided as part of this infrastructure.

4.3.3.4 Water Supply

A source of clean water will be pumped from deep wells, where it will be initially processed in a purpose designed *Water Treatment Plant*, after which the water will be distributed to the various production facilities inside mine site. Treated water will also be provided for employee housing complexes.

4.3.3.5 Electric Generation

PTBA has constructed two (2) Coal Fired Power Plant Units, which are in Tanjung Enim (3x10 MW) and Tarahan (2x8 MW) respectively. Both self-owned power plants are built to meet all the needs in respect of electrical power for the operation of the mine, together with the entire Company's facilities in Tanjung Enim and operations at the Port Tarahan. This will ultimately replace the supply of electricity from PLN. In addition to lowering power costs within the operating cost structure significantly, the power plant also uses low rank quality coal that is currently not economically viable to mine and sell.

4.3.3.6 Medical Care

A medical hospital facility is available which serves as a First Aid Centre for possible mine accidents, as well as for chronic disease treatment.

The Clinic will provide qualified doctors and nurses on station every day. The Facility will be equipped with a site accessible ambulances and will also have a properly stocked medical pharmacy.

4.4 ENVIRONMENTAL AND COMMUNITY DEVELOPMENT

Aspects of Environmental and Community Development Plans were reviewed by Britmindo as part of the study.

4.4.1 Environmental

UPTE PTBA will develop an Environmental Plan which covers all aspects of mining operational requirements, hazardous materials storage and management, topsoil management, water treatment and management, water emission from site and environmental nuisance safeguards.

Topsoil dump locations should be selected off the planned coaling limits and where soil dumps are to be constructed; they will be maintained and contoured to ensure that they are available for soils replacement when certain sections of the mining are complete. Where long term waste dumps are planned, they should be selectively profiled and shaped to provide aesthetic design contours against the local topographical backdrop. This will also demonstrate PTBA compliance with any statutory environmental requirements.

Elements of erosion controls will be designed and implemented to ensure that ditch and watercourse erosion does not take place. Settling ponds will be designed such that they comprise a number of smaller compartments which allow sufficient time frame for water inflows to be properly treated to demonstrate better enhancement of treated or pumped water.

Preparation of re-vegetated areas will be undertaken by ripping or scarifying of prepared areas prior to planting. This facilitates good hydration and oxidation of planted trees and foliage which assists good and proper growth. As areas of the mine are completed, the ground profiles will be achieved through both filling and grading. After this process, areas will be prepared for final top soiling of replanting.

4.4.2 Community Development

As a responsible mining company, operating in Indonesia, PTBA fully understands to need to work with local communities and selectively contribute value adding budget necessary to develop community programs which benefit all stakeholders in the surrounding areas.

PTBA is currently compiling their Corporate Social Responsibility Plan which has been developed in conjunction with both the local stakeholders and local government in specific aspects of sustainable development and investments.

4.5 MARKET ANALYSIS

The market analysis has been carried out by examining the following:

1. Competitor Review
2. Overview of Coal Inventory and Demands
3. Estimated Demand
4. Thermal Coal Long Term Overview
5. Coal Price
6. Market Growth Opportunities

4.6 ECONOMIC ANALYSIS

An economic evaluation of PTBA mining operations has been prepared based on a mine life of 73 years, where the production of 100 mtpa is considered achieveable in 17th year taking into account existing reserves, domestic and international market needs, operational constraints and transport. The amount of economic value that is used in this study is based on economic conditions as at March 2015, including the applicable regulations.

The economic evaluation method uses Discounted Cash Flow. The economic model is based on standard conventional financing system which includes a series of worksheets that contain related parameters. The models have included the quantity in mining activities, the cost of capital and operating costs, including the obligation to pay royalties and taxes to the government.

The criteria taken is the NPV on a discount factor WACC.

The model also includes a sensitivity analysis on several variables to check the stability of the project. The main sensitivity is the increase in operating expenses and a decrease in the price of coal.

5 COAL RESERVES ASSESSMENT

The Reserves of the UPTE Deposit were previously estimated by various organisations in accordance with United States Geological Survey Circular 891- Coal Resource Classification System of the U.S. Geological Survey. This is in line with principles of the system accepted at that time in Indonesia.

The standard adopted by Britmindo for the reporting of the Reserves and Resources presented in this report is that defined by the terms and definitions given in "The JORC Code 2012 - Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves" ("JORC Code") as published by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia ("JORC").

5.1 REFERENCE AND DEFINITIONS

In reference to the JORC Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code) 2012 Edition, Clause 20, *A Coal Reserve' is the economically mineable part of a Measured and/or Indicated Coal Resource. It is including diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified.*

Coal Reserves are sub-divided in order of increasing confidence into Probable Coal Reserves and Proved Coal Reserves.

A 'Probable Coal Reserve' is the economically mineable part of an Indicated, and in some circumstances, a Measured Coal Resource. The confidence in the Modifying Factors applying to a Probable Coal Reserve is lower than that applying to a Proved Coal Reserve.

A Probable Coal Reserve has a lower level of confidence than a Proved Coal Reserve but is of sufficient quality to serve as the basis for a decision on the development of the deposit.

A 'Proved Coal Reserve' is the economically mineable part of a Measured Mineral Resource. A Proved Coal Reserve implies a high degree of confidence in the Modifying Factors.

5.2 COAL RESERVES IN ACCORDANCE WITH JORC 2012 CODE

In November 2015, Britmindo has undertaken a Life of Mine Plan Study in respect of the UPTE Project at Pre-Feasibility Study level. Modifying Factors, which were considered related to Mining, Processing, Infrastructure, Economic, Marketing, Legal, Environment, Social and Government aspects.

This study and the application of relevant Modifying Factors, has demonstrated that, at the time of reporting, extraction could reasonably be justified. Therefore, JORC compliant Reserves can be assessed by determining the mineable tonnage generated from final pit design.

Reserves that fall inside the Measured Resources are reported as Proved Reserves and those that occur inside the Indicated Resources are reported as Probable Reserves.

The Reserves for each category in accordance with the JORC Code 2012 Edition are as shown in Table 5-1 below. In the table, the total estimates have been rounded up to the nearest million tonne, (Mt) as is commensurate with the precision of the estimate.

Table 5-1 JORC Reserves for Each IUP/Block

Muara Tiga Besar Utara

Reserve Category	Seam Group	Coal (Jt)	TM % (ar)	Ash% (adb)	TS % (adb)	CV Kcal/kg	
						(adb)	(ar)
Proved	**A1**	25.92	28.46	6.13	1.06	5481	4621
	A2	43.07	29.15	4.89	0.23	5576	4629
	B	59.64	27.94	5.78	0.23	5645	4745
	C	22.28	27.21	6.38	1.06	5681	4830
Subtotal		**150.90**	**28.27**	**5.67**	**0.50**	**5602**	**4703**
Probable	**A1**	4.95	28.76	7.07	1.25	5406	4548
	A2	7.36	29.72	5.23	0.23	5500	4561
	B	11.22	27.89	6.02	0.22	5592	4733
	C	1.82	25.88	6.39	0.94	5724	4945
Subtotal		**25.34**	**28.45**	**6.02**	**0.48**	**5538**	**4662**
Total		**176**	**28.29**	**5.72**	**0.49**	**5593**	**4697**

Muara Tiga Besar Selatan

Reserve Category	Seam Group	Coal (Mt)	TM % (ar)	Ash% (adb)	TS % (adb)	CV Kcal/kg	
						(adb)	(ar)
Proved	**A1**	4.61	28.96	12.58	0.83	4347	5545
	A2	8.32	30.34	8.54	0.34	4498	5812
	B	13.07	29	8.06	0.28	4610	5885
	C	5.28	27.33	7.49	1.19	4913	6080
Subtotal		**31.29**	**29.07**	**8.76**	**0.53**	**4593**	**5848**
Probable	**A1**	3.43	27.16	12.2	0.68	4508	5589
	A2	5.23	28.4	9.13	0.3	4564	5745
	B	10.90	27.19	9.52	0.29	4656	5759
	C	9.32	26.46	7.81	1.12	4912	6014
Subtotal		**28.87**	**27.17**	**9.22**	**0.61**	**4704**	**5819**
Total		**60**	**28.16**	**8.98**	**0.57**	**4646**	**5834**

Air Laya

Reserve Category	Seam Group	Coal (Mt)	TM % (ar)	Ash% (adb)	TS % (adb)	CV Kcal/kg	
						(adb)	(ar)
Basecamp							
Proved	**A1**	9.94	15.1	6.55	0.69	6966	6216
	A2	10.34	13.39	4.96	0.48	7255	6542
	B	14.86	13.31	10.15	0.48	6790	6480
	C	0.00					
Subtotal		**35.13**	**13.84**	**7.60**	**0.54**	**6977**	**6424**
Probable	**A1**	0.09	13.41	6.57	0.61	7099	6393
	A2	0.09	12.54	5.08	0.49	7341	6645
	B	0.04	15.14	14.42	0.54	6426	6271
	C	0.00					
Subtotal		**0.22**	**13.34**	**7.28**	**0.55**	**7086**	**6477**
Total		**35**	**13.84**	**7.60**	**0.54**	**6977**	**6424**
Existing							
Proved	**A1**	2.00	7.32	6.41	0.59	7460	7141
	A2	2.66	7.5	4.86	0.5	7663	7291
	B	6.42	6.54	8.61	0.63	7543	7249
	C	7.87	7.65	5.65	1.3	7345	7001
Subtotal		**18.95**	**7.22**	**6.62**	**0.89**	**7469**	**7141**
Probable	**A1**	0.00	8.08	5.73	0.57	7454	7084
	A2	0.00					
	B	0.00					
	C	0.11	7.06	5.09	1.33	7447	7111
Subtotal		**0.11**	**7.06**	**5.09**	**1.33**	**7447**	**7111**
Total		**19**	**7.22**	**6.61**	**0.89**	**7469**	**7140**
Mahayung							
Proved	**A1**	40.64	21.78	6.54	0.57	5656	5379
	A2	54.11	22.28	3.86	0.31	6083	5470
	B	54.69	20.93	5.17	0.45	6148	5574
	C	8.90	15.69	5.99	0.71	6566	6073
Subtotal		**158.33**	**21.31**	**5.12**	**0.45**	**6023**	**5516**
Probable	**A1**	53.55	21.62	8.28	0.91	5472	5307
	A2	79.30	22.32	3.67	0.25	5877	5500
	B	54.64	21.63	5.25	0.45	5956	5512
	C	0.09	19.87	4.22	1.01	6364	5675
Subtotal		**187.58**	**21.92**	**5.45**	**0.50**	**5785**	**5448**
Total		**346**	**21.64**	**5.30**	**0.47**	**5894**	**5480**
Grand Total		**400**					

Banko Barat Pit 1 & 2

Reserve Category	Seam Group	Coal (Mt)	TM % (ar)	Ash% (adb)	TS % (adb)	CV Kcal/kg (adb)	CV Kcal/kg (ar)
Proved	**A1**	50.12	24.3	6.39	0.5	5768	5062
	A2	56.22	24.66	4.58	0.26	5929	5144
	B1	73.27	25.02	4.75	0.3	5937	5144
	B2	27.49	25.37	6.77	0.92	5826	5002
	C	68.59	24.69	5.16	0.89	6079	5212
Subtotal		**275.69**	**24.77**	**5.32**	**0.54**	**5929**	**5132**
Probable	**A1**	0.88	24.29	6.13	0.5	5749	5065
	A2	0.62	24.46	4.46	0.26	5883	5149
	B1	0.63	24.81	4.86	0.33	5877	5138
	B2	0.09	24.01	7.52	0.91	5733	5029
	C	0.45	23.58	4.82	1.02	6179	5346
Subtotal		**2.67**	**24.32**	**5.27**	**0.51**	**5883**	**5148**
Total		**278**	**24.76**	**5.32**	**0.54**	**5928**	**5132**

Banko Barat Pit 3 Timur

Reserve Category	Seam Group	Coal (Mt)	TM % (ar)	Ash% (adb)	TS % (adb)	CV Kcal/kg (adb)	CV Kcal/kg (ar)
Proved	**A1**	0.00					
	A2	0.00					
	B1	5.80	28.76	8.28	0.5	5713	5207
	B2	0.00					
	C	0.00					
Subtotal		**5.80**	**28.76**	**8.28**	**0.50**	**5713**	**5207**
Probable	**A1**	9.74	29.85	2.17	0.56	6073	4961
	A2	14.24	27.03	1.98	0.4	6103	5174
	B1	16.14	27.56	6.82	0.33	5812	5181
	B2	4.77	27.43	3.26	0.7	6142	5112
	C	3.14	26.43	2.34	0.67	6424	5311
Subtotal		**48.03**	**27.78**	**3.80**	**0.46**	**6024**	**5136**
Total		**54**	**27.89**	**4.28**	**0.46**	**5990**	**5144**

Banko Tengah A

Reserve Category	Seam Group	Coal (Mt)	TM % (ar)	Ash% (adb)	TS % (adb)	CV Kcal/kg (adb)	CV Kcal/kg (ar)
Proved	A1U	0.00					
	A1L	0.31	35.78	10.68	1.56	5051	3596
	A2U	6.22	34.38	11.53	0.28	5211	3722
	A2L	4.09	33.03	11.91	0.43	5147	3553
	SOMS	1.97	33.25	13.22	1.97	5019	3469
	B	144.91	33.53	7.78	0.35	5380	3960
	C	126.70	32.6	8.63	0.7	5384	3926
Subtotal		**284.19**	**33.13**	**8.34**	**0.52**	**5372**	**3930**
Probable	A1U	0.93	33.51	12.22	0.83	5008	3655
	A1L	0.59	33.86	28.79	1.47	4134	3653
	A2U	2.83	33.83	13.32	0.3	5021	3671
	A2L	2.89	32.95	8.73	0.41	5301	3599
	SOMS	1.64	32.88	11.27	1.86	4972	3447
	B	19.81	33.55	7.93	0.33	5367	3952
	C	31.84	32.76	8.73	0.78	5362	3934
Subtotal		**60.53**	**33.10**	**9.00**	**0.63**	**5317**	**3891**
Total		**345**	**33.12**	**8.46**	**0.54**	**5362**	**3923**

Banko Tengah B – Timur Utara

Reserve Category	Seam Group	Coal (Mt)	TM % (ar)	Ash% (adb)	TS % (adb)	CV Kcal/kg (adb)	CV Kcal/kg (ar)
Proved	A1U	0.00					
	A1L	0.00					
	A2U	0.00					
	A2L	5.87	32.27	12.19	0.47	4845	3712
	SOMS	1.99	33.01	15.85	1.41	4942	3485
	B	74.23	32.85	8.57	0.37	5315	3972
	C	55.29	32.53	6.92	0.68	5479	4107
Subtotal		**137.38**	**32.70**	**8.17**	**0.51**	**5355**	**4008**
Probable	A1U	21.82	33.2	11.47	0.71	5225	3606
	A1L	3.01	33.23	27.05	1.36	4233	3605
	A2U	13.73	32.24	14.81	0.36	4923	3791
	A2L	19.88	32.33	13.48	0.46	4861	3414
	SOMS	1.74	32.83	13.08	1.57	5087	3463
	B	122.82	31.73	6.66	0.36	5478	4211
	C	81.20	32.46	6.56	0.65	5464	4183
Subtotal		**264.19**	**32.17**	**8.24**	**0.50**	**5361**	**4059**
Total		**402**	**32.35**	**8.21**	**0.51**	**5359**	**4041**

Banko Tengah B – Suban Jeriji

Reserve Category	Seam Group	Coal (Mt)	TM % (ar)	Ash% (adb)	TS % (adb)	CV Kcal/kg (adb)	CV Kcal/kg (ar)
Utara							
Proved	**JE**	0.00					
	EN	12.79	37.38	17.84	6.03	39.89	36.22
Subtotal		**12.79**	**37.38**	**17.84**	**6.03**	**40**	**36**
Probable	**JE**	33.66	38.67	19.14	9.09	37.82	33.92
	EN	132.50	37.42	19.35	6.5	38.87	35.05
Subtotal		**166.16**	**37.67**	**19.31**	**7.02**	**39**	**35**
Total		**179**	**37.65**	**19.20**	**6.95**	**39**	**35**
Selatan							
Proved	**A1**	2.29	32.18	4.76	0.74	5783	4640
	A2	2.73	32.37	2.41	0.24	5775	4649
	B1	4.87	30.49	3.33	0.35	5983	4899
	B2	0.44	29.22	5.42	0.69	5795	4928
	C	0.46	31.05	2.11	0.7	6192	4944
Subtotal		**10.80**	**31.30**	**3.43**	**0.43**	**5889**	**4784**
Probable	**A1**	8.60	31.15	2.43	0.82	5937	4810
	A2	9.21	30.7	2.96	0.4	5906	4812
	B1	5.73	30.26	2.97	0.36	6022	4908
	B2	2.15	29.74	6.17	0.81	5794	4767
	C	3.72	29.76	2.4	0.81	6212	5026
Subtotal		**29.41**	**30.56**	**2.97**	**0.60**	**5968**	**4854**
Total		**40**	**30.76**	**3.10**	**0.55**	**5947**	**4835**
Grand Total		**219**					

Banko Tengah B – Selatan

Reserve Category	Seam Group	Coal (Mt)	TM % (ar)	Ash% (adb)	TS % (adb)	CV Kcal/kg (adb)	CV Kcal/kg (ar)
Proved	**A2**	91.98	38.11	10.05	0.3	4647	3641
	B1	181.94	38.03	8.99	0.26	4673	3741
	B2	4.87	37.69	12.18	0.35	4213	3495
	C	74.06	36.76	10.17	0.82	4515	3777
Subtotal		**352.84**	**37.78**	**9.56**	**0.39**	**4627**	**3719**
Probable	**A2**	56.34	37.92	9.82	0.29	4580	3666
	B1	96.44	37.92	8.88	0.26	4641	3754
	B2	1.31	38.6	7.73	0.34	4215	3657
	C	62.70	36.94	10.65	0.79	4467	3738
Subtotal		**216.79**	**37.64**	**9.63**	**0.42**	**4572**	**3726**
Total		**570**	**37.73**	**9.59**	**0.40**	**4606**	**3722**

Table 5-2 Summary Coal Reserves Accordance with JORC 2012 Code in UPTE Area

IUP/Blok	Coal Reserves (Mt)			TM %	Ash%	TS %	CV Kcal/kg	
	Proved	Probable	Total	(ar)	(adb)	(adb)	(adb)	(ar)
Existing								
Muara Tiga Besar								
Muara Tiga Besar Utara	151	25	**176**	28.29	5.72	0.49	5593	4697
Muara Tiga Besar Selatan	31	29	**60**	28.16	8.98	0.57	4646	5834
Total Muara Tiga Besar	**182**	**54**	**236**					
Air Laya								
Basecamp	35	0	**35**	13.84	7.60	0.54	6977	6424
Existing	19	0	**19**	7.22	6.61	0.89	7469	7140
Mahayung	158	188	**346**	21.64	5.30	0.47	5894	5480
Total Air Laya	**212**	**188**	**400**					
Banko Barat								
Blok Pit 1 & 2	276	3	**278**	24.76	5.32	0.54	5928	5132
Blok Pit 3 Timur	6	48	**54**	27.89	4.28	0.46	5990	5144
Total Banko Barat	**281**	**51**	**332**					
Total Existing	**676**	**293**	**969**					
Development								
Banko Tengah A	**284**	**61**	**345**	33.12	8.46	0.54	5362	3923
Banko Tengah B								
Banko Tengah B Timur & Utara	137	264	**402**	32.35	8.21	0.51	5359	4041
Banko Tengah B - Suban Jeriji Utara	13	166	**179**	37.65	19.20	6.95	39	35
Banko Tengah B - Suban Jeriji Selatan	11	29	**40**	30.76	3.10	0.55	5947	4835
Banko Tengah B Selatan	353	217	**570**	37.73	9.59	0.40	4606	3722
Total Banko Tengah B	**514**	**677**	**1,190**					
Total Development	**798**	**737**	**1,535**					
Total UPTE PTBA Open Pit	**1,474**	**1,030**	**2,504**					

The Reserves reported in the above table, indicate a total mineable reserves of 2,562 Mt. This total is less of that reported as Mineable Coal from final pit design in the Life of Mine Plan Study Report.

This is due to the inclusion of 840 Mt of Inferred Coal within the pit design, of which 703 Mt is located in Banko Tengah B IUP. The Inferred Coal Status of this additional coal is as a result only of limited quality drill hole data and it is therefore reasonable to include this tonnage in the Pit Design at this moment of time since mainly the area is scheduled to be mined after year 2020. This will give enough time for PTBA to undertake additional quality drilling in the Inferred Resources area prior to mining operations reaching this area to confirm the tonnage and increase the level of confidence.

ANNEX II

2016 BANTUAS REPORT

COMPETENT PERSON STATEMENT

This Feasibility Study Report (FS), including the statement in it, is the result of studies conducted and prepared by PT. Internasional Prima Coal (IPC) and has been examined by:

Wisjnoe Adjie, who is a member of PERHAPI and registered as PERHAPI's Competent Person Indonesia (CPI) number 1203127.020. In this case, he has had experience working in state-owned coal mining PT. Bukit Asam (Persero), Tbk, for 26 years with Employee Number 6388130238. and currently still working actively.

As a person who signs in this Feasibility Study Report, I do not have a conflict of interest over mining assets which become the object and still act as the CPI PERHAPI which prioritizes the principle of independence, transparency, and states that the data used in this report is sufficient.

Several points which has been reviewed are:

1. Exploration activities

   In addition to drilling activities, exploration is also conducted to investigate the direction of coal continuity (by trench sampling) using excavator. Knowing that the dip of the coal is quite steep, then to look for the true thickness is by perform a directional drilling with an angle being adjusted to the dip of the coal seams.

   For drilling spaces with a distance of 250-400 meters, it is appropriate for the purpose of estimating the resources in the 'measured' category, so that technically this exploration application is in accordance with the provisions of the Indonesian National Standard (SNI).

2. Geological conditions and estimated reserves

   In accordance to the form of the reserve and the existing structure, the geological condition of Bantuas Mine is categorized as Moderate.

Parameter of Geological Condition	Simple	Moderate	Complex
IA. Sedimentology Aspect			
1. Thickness Variation	limited variation	varies	varies greatly
2. Continuity	thousands of meters	hundreds of meters	tens of meters
3. Branching	nearly absent	small number	large number
IB. Tectonic Aspect			
1. Fault	nearly absent	infrequent	tight
2. Fold	minor folded	moderately folded	heavily folded
3. Intrusion	not influenced	moderately influenced	greatly influenced
4. Dip	gentle	moderate	steep
II. Quality Variation	limited variation	varies	varies greatly

The drilling spacing is carried out systematically with spaces between drilling lines (in the direction of the strike) of 250-400 meters and spacing parallel to drilling (perpendicular to the strike) 100 meters.

Drilling has been undertaken with an angle of 45° and depth between 120 and 150 meters. Following that process, geophysical logging has been undertaken as an effort to justify thickness and depth of the coal seams; and determine the result of the coring. The average of core recovery is 95%.

3. Resources

The results of the resource calculation are as follows:

Resources (x1000 Mt)			
Measured	**Indicated**	**Inferred**	**Hypothetical**
11,466	1,387	998	
4,916	857	30	
1,715	61		
			2,925
1,166	693	692	4,154
19,264	**2,998**	**1,720**	**7,079**

The parameters used in this resources estimation are:

- The thickness of the seam calculated ≥ 2.5 meters
- The classification calculation area for measured has a 200 m radius from the information point.
- The designated classification area for indicated has a radius of 200 < x <400 m from the point information.
- The designated classification area for inferred has a radius of 400 < x <600 m from the information point.

Each sample from the drilling results is put into a plastic bag that is impermeable to the influence of water and air from the outside. All coal samples were analyzed at the Laboratory of PT. Geo Service, Samarinda Branch, East Kalimantan.

The parameters which being analyzed were Total Moisture (%), Inherent Moisture (%), Ash (%), Volatile Matter (%), Fixed Carbon (%), Total Sulphur (%), Calorific Value (Cal / gr). Hard Ground Index (HGI) and Relative Density (RD).

The drilling, which has been done, is in line with the calculation of reserves that will be carried out with the provisions issued by SNI, in accordance with the following table:

Kondisi Geologi	Kriteria	Sumberdaya			
		Hypotethical	Inferred	Indicated	Measured
Simple	information of point distance (meter)	unlimited	1000 < X ≤ 1500	500 < X ≤ 1000	X ≤ 500
Moderate	information of point distance (meter)	unlimited	500 < X ≤ 1000	250 < X ≤ 500	X ≤ 250
Complex	information of point distance (meter)	unlimited	200 < X ≤ 400	100 < X ≤ 200	X ≤ 100

4. Mining

Based on the ownership of the mining concession, then the security of the production of the company's long-term plan is relatively safe, this is because 80% of the mining land in the IUP has been carried out by the company by the SKMHT (Letter for Remarks Releasing Land Rights).

Mining operator Contractor by PT Madhani Talatah Nusantara (MTN), Mining Services Business License (IUJP) No: 021 / T / Pertambangan / Perdagangan / PU / 2005 and self-managed by PT IPC. The mining equipment used consists of excavators, bulldozers, wheel loaders, Haul dump truck, supporting equipmcnts, and etc.

According to the regulation, PT IPC has complied with the mining regulations, namely “Undang-Undang Minerba No.4 tahun 2009”, about Mineral and Coal Mining; and Government Regulation No. 23 of 2010 concerning the Implementation of Mineral and Coal Mining Business Activities.

The mine designs that have been studied are:

Level height: 10m

Level Width: 5.3 m

Individual slope: 47 °

Overall slope: 35 °

With the mine design details stated above, the Safety Factor (FoS) obtained is 1.6 (stable). So that technically this study has implemented a good mining practice and meets the geotechnical standard.

5. Long-Term Mining Production

It is planned that future production is targeted at an average of 1 million tonnes/year for 9 (nine) years (up to 2024). Therefore, in terms of resources that have been calculated (measured), the continuity of production will still be maintained.

MINE	MATERIAL	TAHUN									TOTAL
		2016	2017	2018	2019	2020	2021	2022	2023	2024	
Eagle 1	Waste (Mbcm)	3,000,000	3,350,000	3,350,000	3,300,000	3,300,000	4,602,452	-	-	-	20,902,452
	Coal (Mt)	500,000	3,350,000	500,000	500,000	500,000	711,227	-	-	-	3,211,227
	SR (t/bcm)	6.00	3,350,000	6.70	6.60	6.60	6.47	-	-	-	6.51
Eagle 2	Waste (Mbcm)	2,592,000	3,573,888	4,035,000	4,085,000	4,090,000	2,798,210	7,050,000	7,050,000	1,406,861	36,680,958
	Coal (Mt)	320,000	445	500,000	500,000	500,000	288,773	1,000,000	1,000,000	200,407	4,754,247
	SR (t/bcm)	8.10	8.03	8.07	8.17	8.18	9.69	7.05	7.05	7.02	7.20
Eagle 3	Waste (Mbcm)	1,436,400	459,571	-	-	-	-	-	-	-	**1895971**
	Coal (Mt)	180,000	54,933	-	-	-	-	-	-	-	**234933**
	SR (t/bcm)	7.98	8.37	-	-	-	-	-	-	-	**8.07**
Total	Waste (Mbcm)	**7,028,400**	**7,383,459**	**7,385,000**	**7,385,000**	**7,390,000**	**7,400,661**	**7,050,000**	**1,406,861**	**59,479,381**	**59,479,381**
	Coal (Mt)	**1,000,000**	**1,000,000**	**1,000,000**	**1,000,000**	**1,000,000**	**1,000,000**	**1,000,000**	**1,000,000**	**200,407**	**8,200,407**
	SR (t/bcm)	**7.03**	**7.38**	**7.39**	**7.39**	**7.39**	**7.40**	**7.05**	**7.05**	**7.02**	**7.25**

6. Maintenance of Mining Environment

PT. IPC has submitted an AMDAL document with approval No.660/006 / KOMDAL / KS / VI2010, dated June 21, 2010 by Mayor of Samarinda. The Company has also placed reclamation guarantees for the period 2015 to 2019, in accordance with the Reclamation Plan No. 503/1647 / RR / BPPMD-PTSP / X / 2015, by the Head of the Regional Working Permit and Investment Board dated October 19, 2015. Some of the things the company has done in its commitment to the Environmental Management Plan (RKL) which are:

- Making buffer zones around the mine, coal processing and mine roads which are bordering with the population.
- Do watering, road hardening and road safety
- Require employees to use personal protective equipment (PPE) in vulnerable or areas.
- Making mud settling ponds and liming to reduce acid mine drainage.

- Make and maintain dust control facilities and air quality at the pier / TUKS (dust catcher and water spray nets).
- Arranging land for erosion control at disposal and excavation sites
- Community development around company activities.

Some of the things that the company has been done as its commitment to the Environmental Monitoring Plan (RPL) are:

- Monitoring air quality.
- Monitoring emissions from immovable sources,
- Monitoring water quality and soil quality.

The RKTTL (Annual Technical and Environmental Working Plan) is carried out annually approved by the Provincial Mining Office with reference to RKL and RPL.

7. CSR Program

The applied pattern is that the company cooperates with the LPM (Community Empowerment Institution), which is appointed by the Mayor of Samarinda, then conducting community development programs that are aligned with the needs of the community and avoid the overlapping with the Government's programs.

Allocation of funds provided can be grouped into the fields of activity, namely:

1. Infrastructure Development Sector

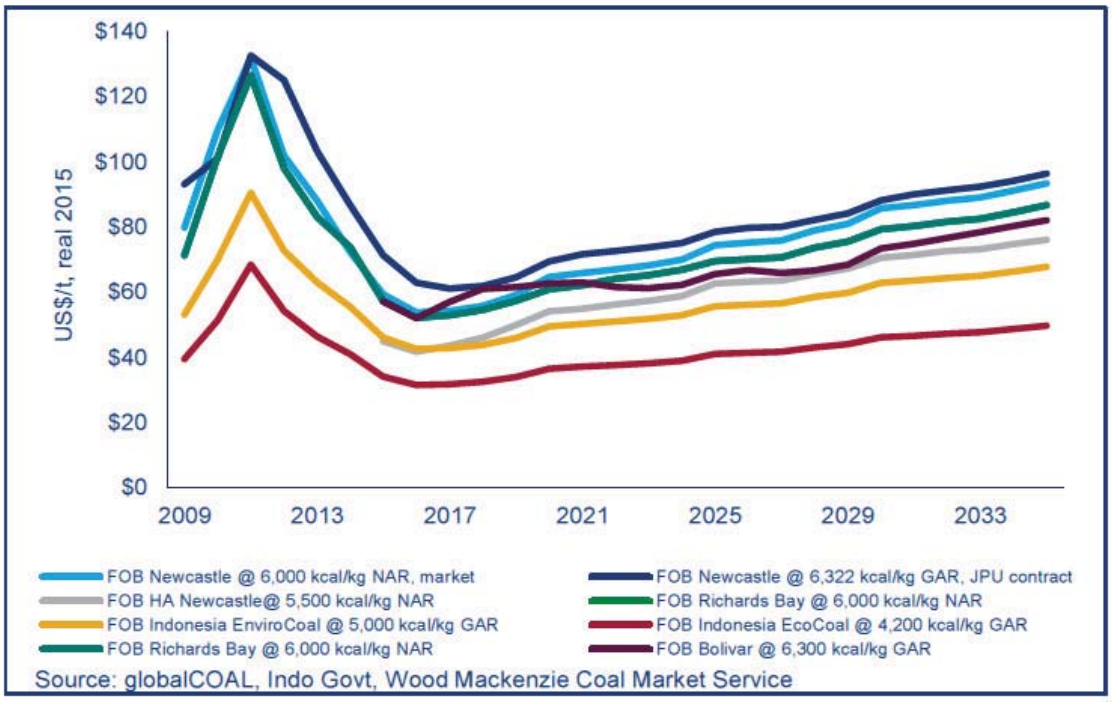
2. Health Sector

3. Education Sector

4. Fields of economy, environment. Social and Welfare

5. Agricultural, Plantation & Fisheries Sector

Thermal coal price forecast, FOB (US$/t, real 2015)



In this study the positive figures of profit are obtained so that it can be said that technically and economically a long-term production of the corporate plan will provide benefits.

Conclusion:

From the overall of this study, as a CPI member in Perhapi, I stated that this study has fulfilled some of the rules of KCMI and SNI in calculating of its resources and reserves.

Tanjung Enim, 16 Mei 2016

Wisjnoe Adjie

S1 Tambang, CPI No. **1203127.020**

ANNEX III

2015 PERANAP JORC REPORT

Report

On

Coal Resources of the Peranap Coal Deposit South Sumatra, Indonesia

June 2015

On behalf of

PTBA PT PLN TNB

By

IMC Group Consulting Limited

Document Ref.: B58-R-111

Report Details

Project Details			
Report Title:	Coal Resources of the Peranap Coal Deposit		
Report Number:	B58-R-111	Revision:	R1
Client:	PT Tambang Batubara Bukit Asam (PTBA)		
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Table of Contents

1 INTRODUCTION 4
1.1 Approach & Methodology 4
1.2 Location 5
1.3 Licencing Conditions 6
1.3.1 Southern Extension 7
1.4 Physiographic Setting 8
1.5 Access 9
1.6 Climate 10
2 PREVIOUS WORK 11
3 REGIONAL GEOLOGY 11
3.1 Structural Setting 11
3.2 Central Sumatra Basin 13
3.3 Stratigraphy 14
4 LOCAL GEOLOGICAL STRUCTURE 15
5 COAL SEAM CHARACTERISTICS 16
5.1 Coal Quality 19
6 DEPOSIT TYPE 21
7 COAL RESOURCES 22
7.1 Reporting Criteria for Resources under JORC 22
7.1.1 Previous Assessments 22
7.1.2 IMC (2009) 22
7.1.3 PTBA (2011) 23
7.1.4 Mapping, Surveying & Topography 23
7.1.5 Borehole Drilling – Historical 24
7.1.6 Borehole Drilling – 2014 Campaign 28
7.1.7 Geological Modelling 37
7.1.8 Data Status & Database Integrity 42
7.1.9 Data Points & Spacing 43
7.1.10 Orientation of Data in relation to Geological Structure 44
7.1.11 Seam Picking, Correlation & Overall Geometry 44
7.1.12 Geological Database & Geological Interpretation 44
7.2 Estimation of Resources 45
7.2.1 Coal Seams Assessed 45

7.2.2 Considerations 47
7.2.3 Assumptions 50
7.2.4 Resource Categories & Confidence 51
7.2.5 Reviews & Audits 53
7.2.6 Resource Statement 53
7.3 Risk Analysis 57
7.4 Conclusions 57
7.5 Further Work 58

Table of Figures

Figure 1-1 Location Map 6
Figure 1-2 Peranap concession 7
Figure 1-3 Sub-block locations within Peranap Concession 8
Figure 1-4 Physiography of the area 9
Figure 1-5 Road access from Pekanbaru 10
Figure 3-1 Regional geological and tectonic map 13
Figure 3-2 Central Sumatra Basin stratigraphy 14
Figure 4-1 Peranap geology 15
Figure 5-1 Peranap Coal seam succession 17
Figure 7-1 Historical drillholes in Southern Extension 27
Figure 7-2 Validation drillhole locations 30
Figure 7-3 Drillhole depth validation process tree 32
Figure 7-4 Minex modelling procedure 41
Figure 7-5 Target area 46
Figure 7-6 Resource boundary 47
Figure 7-7 Isolated and detached resource areas 49
Figure 7-8 Relationship between Exploration Results, Mineral Resources & Ore Reserves 52

List of Tables

Table 1-1 Data provided by PTBA 4
Table 1-2 Peranap concession boundary points 6
Table 2-1 Previously prepared reports 11
Table 5-1 Peranap Coal Seam Succession 18
Table 5-2 Quality of coal seams 19
Table 7-1 IMC resource estimate (2009) 23
Table 7-2 PTBA resource estimate (2012) 23

Table 7-3 Cerenti block – historical drilling 25
Table 7-4 Southern Extension – historical drilling 25
Table 7-5 2011 drilling summary 26
Table 7-6 2014 drilling summary 29
Table 7-7 History of topographic survey 33
Table 7-8 Comparison of elevation differences 34
Table 7-9 Sampling procedure 37
Table 7-10 Geological database structure 38
Table 7-11 Ranges of influence following variogram analysis 39
Table 7-12 Point of observation criteria for structure, thickness and quality modelling based on Geostatistical studies 39
Table 7-13 Validation of historic seam and quality information 43
Table 7-14 Relative densities 48
Table 7-15 Point of observation criteria for structure, thickness and quality modelling 50
Table 7-16 Coal Resources for Peranap (0-100 m) – 2nd February 2015 54
Table 7-17 Coal Resources for Peranap (100-150 m) – 2nd February 2015 55
Table 7-18 Mean coal quality data 56
Table 7-19 Summarised Coal Resources – 2nd February 2015 56

List of Appendices

Appendix A ..... TERMS & ABBREVIATIONS
Appendix B ..... IUP DOCUMENT OF THE CONCESSION
Appendix C ..... HISTORICAL BOREHOLES
Appendix C (I) ..... DETAILS OF HISTORICAL BOREHOLES
Appendix C (II) ..... SUMMARIZED DATA OF HISTORICAL BOREHOLES (AS RECEIVED FROM CLIENT)
Appendix C (III) ..... LIST OF HISTORICAL BOREHOLES USED IN GEOLOGICAL MODEL
Appendix C (IV) ..... DETAILS OF HISTORICAL BOREHOLES USED IN GEOLOGICAL MODEL
Appendix D ..... BOREHOLES DRILLED UNDER SUPERVISION OF IMC
Appendix D (I) ..... DETAILS OF BOREHOLES DRILLED UNDER SUPERVISION OF IMC
Appendix D (II) ..... LITHOLOGICAL DETAILS OF BOREHOLES DRILLED UNDER SUPERVISION OF IMC
Appendix D (III)-A ..... GRAPHICAL LOGS OF 5 TWIN BOREHOLES (VALIDATION AND HISTORICAL) ALONG WITH GEOPHYSICAL LOGS OF VALIDATORY BOREHOLES
Appendix D (III)-B ..... GRAPHICAL LOGS OF 7 INFILLING BOREHOLES DRILLED UNDER SUPERVISION OF IMC ALONG WITH GEOPHYSICAL LOGS
Appendix E SUMMARIZED ANALYTICAL RESULTS OF COAL SEAMS FROM BOREHOLES DRILLED UNDER SUPERVISION OF IMC

Appendix E (I) ..... SUMMARIZED ANALYTICAL RESULTS OF COAL SEAMS
Appendix E (II) .....RESULTS OF SPECIAL ANALYTICAL TEST
Appendix E (III).....QA/ QC ANALYSIS IN RESPECT OF ANALYTICAL RESULTS
Appendix F ..... GEOSTATISTICAL STUDIES FOR OPTIMIZATION OF RESOURCE CATEGORIZATION
Appendix F (I) ..... VARIOGRAM FOR RADIUS OF INFLUENCE FROM POINTS OF OBSERVATION
Appendix F (II) .....VALIDATION OF OBTAINED RANGE OF INFLUENCE USING KRIGING
Appendix G.....SEAM FLOOR CONTOUR PLANS
Appendix H.....GEOLOGICAL CROSS SECTION
Appendix I (1).....SEAM WISE RESOURCE AREA UNDER MEASURED, INDICATED AND INFERRED CATEGORIES
Appendix I(2).....COAL SEAM THICKNESS CONTOUR MAP
Appendix J ..... ISO CONTOUR MAP OF VARIOUS SEAM ATTRIBUTES
Appendix K ..... COAL SEAM DESCRIPTION
Appendix L.....JORC CODE 2012- TABLE 1

Executive Summary

PT Tambang Batubara Bukit Asam ("**PTBA**" or "**the Client**") is an Indonesian based mining company that is listed on the Jakarta Stock Exchange. The majority shareholding is held by the State.

The Peranap Coal Project ("**the Project**") is located in the Raft Kulim and Kelayang Districts within the Hulu Regency, Riau Province, Central Sumatra, Indonesia.

IMC Group Consulting Limited ("**IMC**" or "**the Consultant**") was appointed to prepare an independent Coal Resource estimate of PTBA's Peranap Project. The standard adopted by IMC for the reporting of the Reserves and Resources presented in this report is that defined by the terms and definitions given in "The JORC Code 2012 - Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves" ("JORC Code") as published by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia ("JORC").

The rocks at Peranap are part of the eastern extension of the Cerenti area and generally strike in a NNW-SSE direction, with gentle dips of 2-3° to the south.

Coals are found in the coal-bearing Korinci Formation. Six to eight coal seams are developed in the upper section of the Korinci Formation. All these seams are affected by rapid lateral thickness variation and splitting. The lowest seam, Seam R is not workable due to the incremental overburden ratio to the overlying Lower Q Seam (up to 70 m).

Coal seams at Peranap are categorised as lignite.

Recorded exploration has been carried out in phases at Peranap since 1986 and has consisted of mapping, aerial photography, trenching, drilling and downhole geophysics. Prior to 2014, the last drilling campaign was conducted by PTBA in 2011.

In order to comply with international best practice and in order to cross check the historical drilling data, IMC supervised a 12-hole drilling programme at Peranap in 2014. The 12 holes (approximately 1,200 m of drilling in total) were used to validate existing information (twinned holes) and increase drillhole density (infill holes). All holes were fully cored, geophysically surveyed and the collar positions were surveyed. IMC geologists were on site to supervise the drilling, logging, photographing, sampling and sample dispatch.

IMC carried out standard validation procedures on both the historical and current drillhole databases. The databases were then combined and imported into Geovia Minex for modelling.

The table below shows the summarised mean quality data for each seam as derived from coal core analysis.

Coal Quality for Peranap

Seam Name	TM % (ar)	IM % (adb)	Ash % (adb)	VM % (adb)	TS % (adb)	GCV (adb) in Kcal/Kg
P2	47.24	14.98	16.93	34.8	0.3	4,132
P1	50.35	17.22	12.66	38.4	0.44	4,531
P1U	51.13	16.03	15.27	37.11	0.19	4,438
P1L	53.09	14.28	11.79	38.45	0.82	4,786
LP	50.44	18.61	8.66	39.08	0.17	4,701
LPU	52.17	17.65	8.33	38.52	0.58	4,773
LPL	52.56	19.19	6.83	39.4	0.21	4,834
Q4	51.44	18.64	7.76	38.95	0.36	4,795
Q4U	52.96	16.81	8.92	38.40	1.35	4,827
Q4L	53.98	16.68	9.41	38.54	0.6	4,791
Q43	46.17	19.7	8	38.23	0.27	4,673
Q3	51.68	17.86	7.36	39.22	0.39	4,860
Q3U	50.26	17.25	9	36.71	0.5	4,708
Q3L	47.4	12.812	16.2	40.76	0.2	4,789
Q2	50.60	17.26	9.24	38.48	0.22	4,790
Q2U	52.6	20.52	8.77	36.56	0.4	4,500
Q2L	52.27	19.79	8.53	36.23	0.23	4,602
Q12	51.51	16.09	6.78	40.30	0.07	5,018
Q1	51.79	17.91	7.05	38.86	0.19	4,910
Q1U	50	14.58	7.9	41.40	0.26	5,105
LQ	50.81	17.48	8.19	38.63	0.19	4,854

Resources estimated up to depth of 150m in compliance with the recommendations of and in accordance with the criteria of JORC Code are given below, with an average calorific value ("**CV**") of 4700 Kcal/Kg.

Coal Resources for Peranap – 2nd February 2015

Category	Net Insitu Tonnage (Mt)	
	Up to 100 m depth	**100 – 150 m depth**
Measured	204.2	28.1
Indicated	221.9	78.2
Inferred	89.6	49.5
Total (Measured + Indicated)	**426.1**	**106.3**
Total (M + I + I)	**671.5**	

Resource table notes

- Resource area of 63 km^2
- Minimum coal thickness of 0.5 m

- 100 m and 150 m depth cut offs
- Maximum depth of 150m from surface
- Radii of influence from validated drillholes: 400 m (Measured) 800 m (Indicated)
- 6 m base of weathering

1 INTRODUCTION

1.1 Approach & Methodology

PT Tambang Batubara Bukit Asam ("**PTBA**" or "**the Client**") is an Indonesian based mining company that is listed on the Jakarta Stock Exchange. The majority shareholding is held by the State.

PTBA's operational focus is in Southern Sumatra, but the Company has a strategy to develop and expand its business through partnership, or in consortium with, power plant operators and electrical power transmission companies.

IMC Group Consulting Limited ("**IMC**" or "**the Consultant**") was appointed to prepare an independent Coal Resource estimate of PTBA's Peranap Project.

IMC is in the process of preparing a Definitive Feasibility Study ("**DFS**") for the project also.

The Coal Resource estimate presented in this report has been prepared using the minimum standards, recommendations and guidelines for public reporting as detailed in the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves ("**the JORC Code**") 2012.

PTBA, as one of the owners, has internally developed a feasibility study for the Peranap Mine. This study has indicated that the deposit is amenable to open-pit mining techniques.

Through site visits and electronic data transfer, IMC has been presented with a substantial amount of existing technical information relating to the Project.

As part of the preparation work for the Feasibility Study, IMC has reviewed all of this technical information and opined on its suitability and completeness.

In summary, the information provided to IMC by PTBA consists of:

Table 1-1 Data provided by PTBA

Document	Type	Contents
Internal Feasibility Report	MS Office	Report
Concession (IUP)	CAD	IUP boundary
Regional Geological Structure	Image	Regional Geological Map
Topo_blockSE	CAD	Topographical map of SE region
Peranap Topography	CAD	Topographical map of the entire area
MODEL_BOW_WGS.grd	Minex grid	Seam floor, Seam thickness and topography
Peranap.GM3	Minex	Drawing data of Mine

Document	Type	Contents
Geophysical logs	pdf	SK01,02,03,04,05,06,07,08,09,10,11,12,13,14,15,18,19, 24 and SI01,02,03,04,05,06,07,08,10,14,15,16,17,18,19,20,22, 23,24,25,26,27,28,29,30,31,32,33,34 = Total 47 boreholes
Photographs of borehole cores	Image	SI01,02,03,04,05,06,07,08,09,10,11,12,13,14,15,16,17, 18,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34
Collar data	excel	Collar data of 166 boreholes out of 167 drilled in the SE block
Seam Data	excel	Seam data for 166 boreholes out of 167 drilled in the SE block
Quality data	excel	Quality data for 93 boreholes

As part of this project, to date, IMC has undertaken the following:

- Planning of validation drill programme, 2014
- Supervision of validation drill programme, 2014- logging, downhole geophysics and coal sampling
- Arranged lab testing of validation drillhole samples
- Review of historical data
- Validated the exploration database
- Built a new seam and quality model using Geovia Minex software
- Prepared a preliminary Coal Resource and Reserve statement

A site visit was undertaken by Mr P. Kumar, IMC's Principal Coal Geologist and Competent Person ("**CP**") for this report from the 7th – 8th May 2014.

During this visit, Mr Kumar inspected the drill sites of drillholes D5 and D7, drilled as part of the 2014 verification drilling programme, which was in turn supervised by IMC geologists.

Mr Kumar also inspected the drill core and witnessed core logging. An IMC geologist was on site in Indonesia for the duration of the validation drilling programme to supervise all aspects including drilling, logging, photographing, downhole surveying sampling and sample dispatch.

1.2 Location

The Peranap Project, located in Central Sumatra, is a part of the Joint Development Agreement between PTBA, PLN, and TNB, which will be integrated with power plant and transmission line projects that will interconnect Sumatra and the Malaysia Peninsular.

The location of the mine is in Indragiri Hulu Regency, Riau Provincial Administration which is approximately 250 km from Pekanbaru, the capital city of the Riau Province.

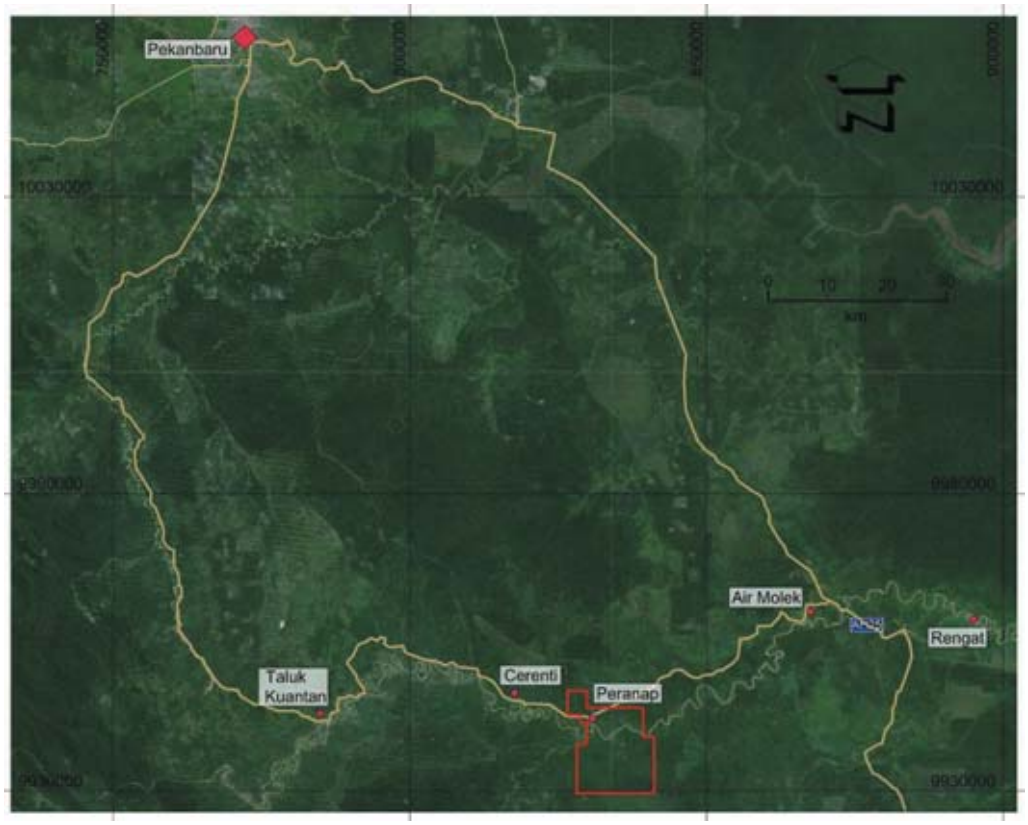


Figure 1-5 Road access from Pekanbaru

1.6 Climate

Central Sumatra exhibits a tropical climate with distinct wet and dry seasons. Annual temperatures range between 26 and 32°C with an average annual temperature of approximately 27°C.

Rainfall is highest in the months October through to May with the lowest rainfall period occurring from June through to September. Average rainfall is 2,430 mm/year.

2 PREVIOUS WORK

IMC is aware that these reports have been prepared but their content has not been used in the preparation of this report.

Table 2-1 Previously prepared reports

Report	Prepared by	Year	Remarks
Report on Semi detail Exploration Vol I B	NEDO - Japan	1988	
Report on Semi detail Exploration Appendix II Geophysical Logs	NEDO - Japan	1988	
Report on Semi detail Exploration Appendix II Geophysical Logs	NEDO - Japan	1989	
Report on Semi detail Exploration Appendix III	NEDO - Japan	1990	
Report on Exploration of Central Sumatra Coal Exploration Project (May 1990)	NEDO	1990	
Feasibility Study of Cerenti Area	NEDO	1991	
Rencana Induk Wilayah Penambangan (RIWP) Cerenti Kabupaten Dati II Indragiri Hulu Propinsi Dati I Riau	PT. Diagonal Pratama	1997	Master plan study layout of Cerenti area
Aerial Photograph and topographic mapping Cerenti	PT. Mapindo Parama	1998	Aerial Photograph and topographic mapping
Feasibility of Cerenti Area	NEDO	1991	Feasibility Study
Laporan Kemajuan Studi Amdal Rencana Penambangan Batubara Daerah Cerenti, Kab. Indragiri Hulu Prop. Riau.	LPKM ITB	1998	Impact Analysis Study
Telaah kelayakan Penambangan Batubara di Cerenti, Kab Indragiri Hulu Prop Riau	LPM ITB	1999	Feasibility Report

3 REGIONAL GEOLOGY

3.1 Structural Setting

Sumatra Island is the northwest oriented physiographic expression above sea level, which lies on the western edge of Sundaland, a southern extension of the Eruasian Continental Plate.

The island has an area of about 435,000km^2, measuring 1,650km from Banda Aceh in the north to Tanjungkarang in the south. Its width is between 100km and 200km in the northern part and about 350km in the southern part.

The main geographical trend lines of the island are rather simple: its backbone is formed by the Barisan Range which runs along the western side. This region divides the west and the east coast.

The slope towards the Indian Ocean is generally steep, consequently the west belt is mostly mountainous, with the exception of two lowland areas in north Sumatra which are about 20 km wide.

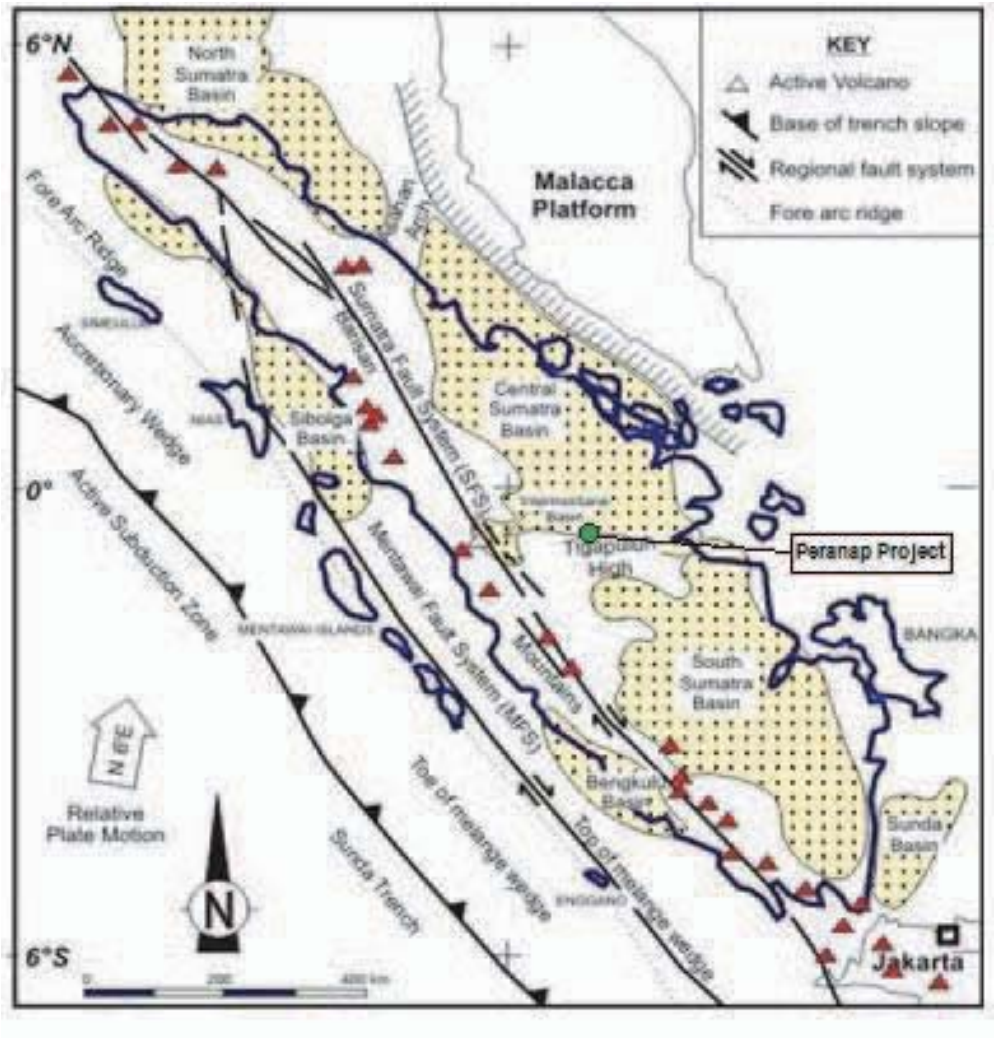
The eastern side of the island is covered by broad, hilly tracts of Tertiary formations and alluvium lowlands. At Diamond Point in Aceh, this low eastern belt has a width of about 30 km; its width increases to 150-200 km in central and south Sumatra.

The Sumatra island is interpreted to be constructed by collision and suturing of discrete micro-continents in late Pre-Tertiary times (Pulunggono and Cameron 1984, Barber 1985). At the present-day, the Indian Ocean plate is being sub-ducted beneath the Eurasian continental plate in a N20°E direction at a rate of between 6 and 7 cm/yr. This zone of oblique convergence is marked by the active Sunda Arc-Trench system which extends for more than 5,000 km, from Burma in the north to where the Australian plate is in collision with Eastern Indonesia in the south (Hamilton 1979).

The basinal structure of Sumatra is directly related to the presence of the subduction-induced non-volcanic forearc and the volcano-plutonic backarc, the morpho-structural backbone of the Island.

In general the region can be divided into five regions:

- Sunda outer-arc ridge located along the active margin of the Sunda forearc basin and separate it from the trench slope.
- Sunda forearc basin, lying between the accreting non-volcanic outer-arc ridge with submerged segments and the volcanic back arc of Sumatra.
- Sumatra back arc basins including North, Central and South Sumatra basin. The system developed as distinct depressions at the foot of the Barisan range.
- Barisan mountain range, occupying the axial part of the island and is composed mainly of Permo-Carboniferous to Mesozoic rocks.
- Sumatra intra-arc or intermontane basin, separated by subsequent uplift and erosion from this former depositional area, thus with similar lithologies to the fore- and backarc basins.



Source: PTBA internal Feasibility Study

Figure 3-1 Regional geological and tectonic map

3.2 Central Sumatra Basin

The Central Sumatra basin configuration is directly related to the presence of subduction induced non volcanic fore arcs and volcano plutonic back arcs. Geological structure of Central Sumatra Basin area has a pattern similar to the South Sumatra basin, in that the main structural patterns are developed in Northwest- Southeast and North-South directions (Eubank et al., 1981 in Wibowo, 1995).

However, the north-south trending structures are much more dominant. Tectonic elements on the Central Sumatra Basin configuration influenced the presence of high-low land morphology on top of pre-Tertiary basement rocks. These structures also influenced the Central Sumatra Basin configuration, including the creation of grabens and half grabens. Northwest-Southeast basement lineation is clearly visible in this area and can be traced along the Central Sumatra Basin. This lineation has been

reactivated by most young tectonic movements (Plio-Pleistocene tectonic). However, basement lineations can still be observed as the component that affects the formation of the Palaeogene age basin in the Central Sumatra Basin.

Tertiary sedimentation in the Central Sumatra Basin can be divided into three parts:

- the West Coast Basin islands located in the western part of Sumatra Island
- the Central Intra-montan Basin; and
- the Eastern Central Sumatra Basin.

Some experts are of the opinion that the Central Sumatra Basin is in fact the same basin as South Sumatra Basin and that the two basins are separated by a chain of mountains trending NNE – SSW, known as the Thirty Mountains.

Sedimentary rocks that fill the Central Sumatra Basin consist of Keleasa, Lakat, Tualang and Telisa Formations from the Lower - Middle Miocene.

3.3 Stratigraphy

The most important coal development in the Central Sumatra Basin, and the principal coal producer, is the Ombilin Coalfield which occurs within Eocene to Miocene age sedimentary rocks.

To the east of Ombilin, Neogene coals are present in the Cerenti area. Here the coal-bearing Mio-Pliocene Korinci Formation contains six seams ranging from 1.6 to 14.0m in thickness. Peranap is part of the Cerenti area and as such coal there is part of the Korinci Formation.

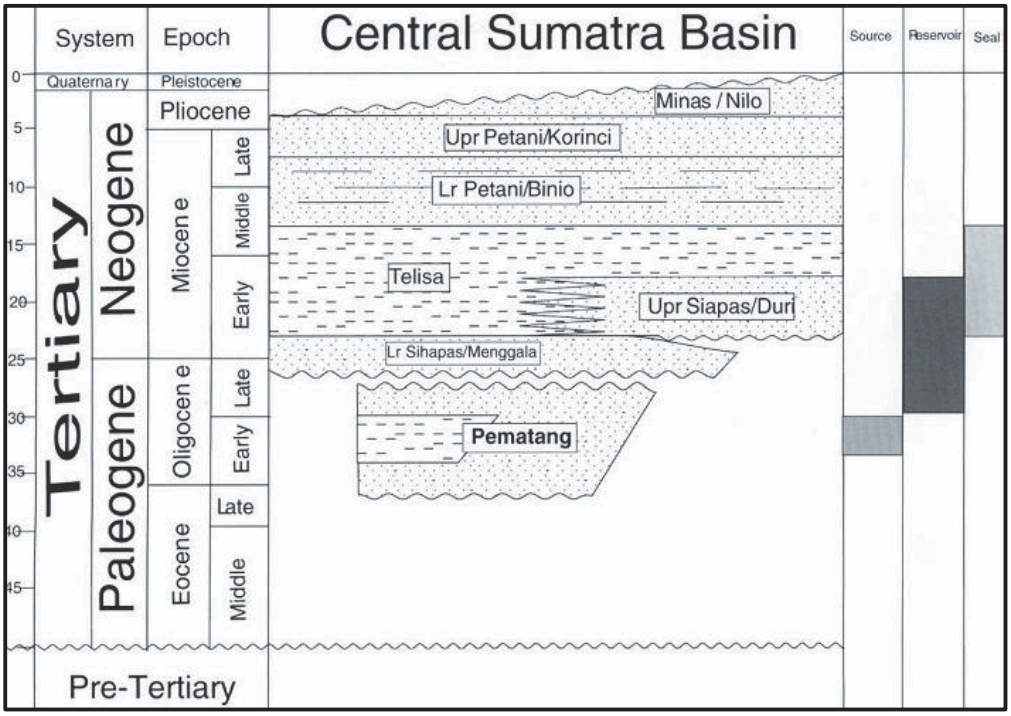


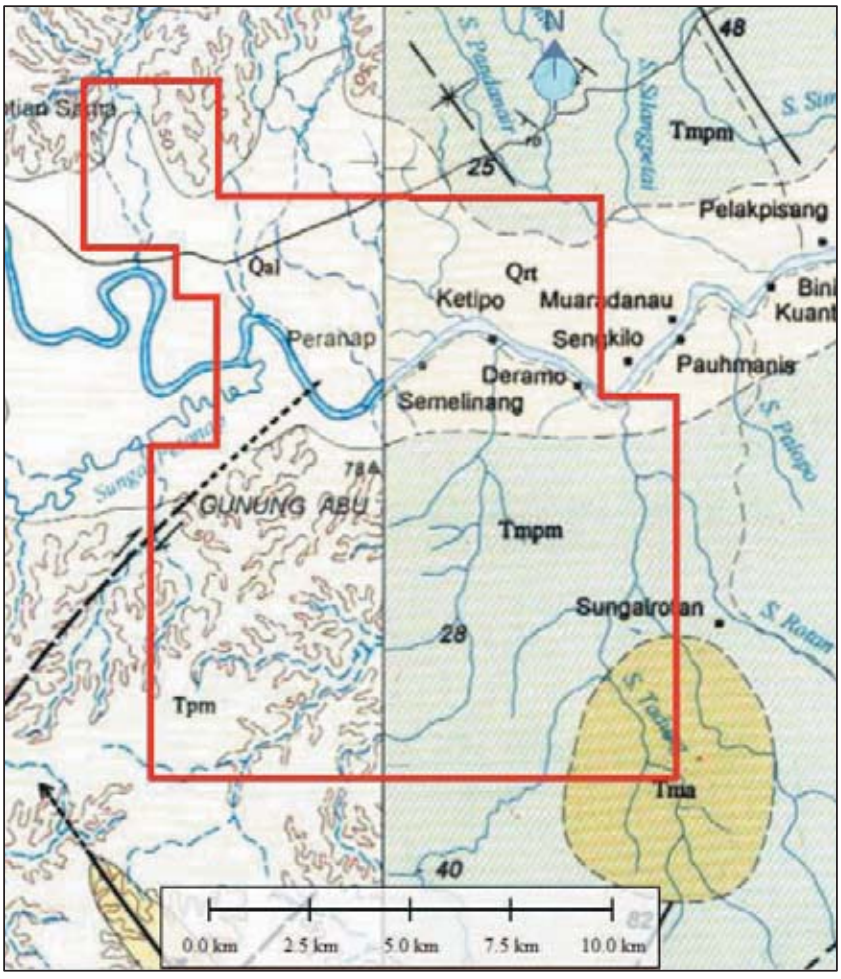
Figure 3-2 Central Sumatra Basin stratigraphy

4 LOCAL GEOLOGICAL STRUCTURE

The strata at Peranap are part of the eastern extension of the Cerenti area and generally strike in a NNW-SSE direction, with gentle dips of 2-3° to the south. Studies indicate the presence of multiple flexures resulting in locally variable dips, both in direction and magnitude. In addition to this, local steepening and flattening is also noticed.

The local structure as interpreted by IMC is derived from analysis of satellite imagery and regional geological maps (Solok Quadrangle, Sumatera, No: 815 and Rengat Quadrangle. Sumatera, No: 915), where the presence of synclines and anticlines have been interpreted.

Floor contour maps of the major coal seams at Peranap are given in Appendix G and geological cross sections are given in Appendix H.



Source: P.H Silitonga and Kastowo- Geological map Solok quadrangle (0815), Sumatra, 2nd Edition, Published by Geological Research and Development Centre, Bandung, Indonesia

Figure 4-1 Peranap geology

5 COAL SEAM CHARACTERISTICS

Coals seams are found in the coal-bearing Korinci Formation which is of Pliocene age. Eight coal seams are variously developed in the upper section of the Korinci Formation. All these seams are affected by rapid lateral thickness variation and splitting. These are shown in the diagrammatic stratigraphic sections below. The lowest seam, Seam R is not considered workable due to its incremental overburden ratio to the overlying Lower Q Seam (up to 70 m interval between the seams).

The stratigraphy of the coal seams as established by exploration is given below.

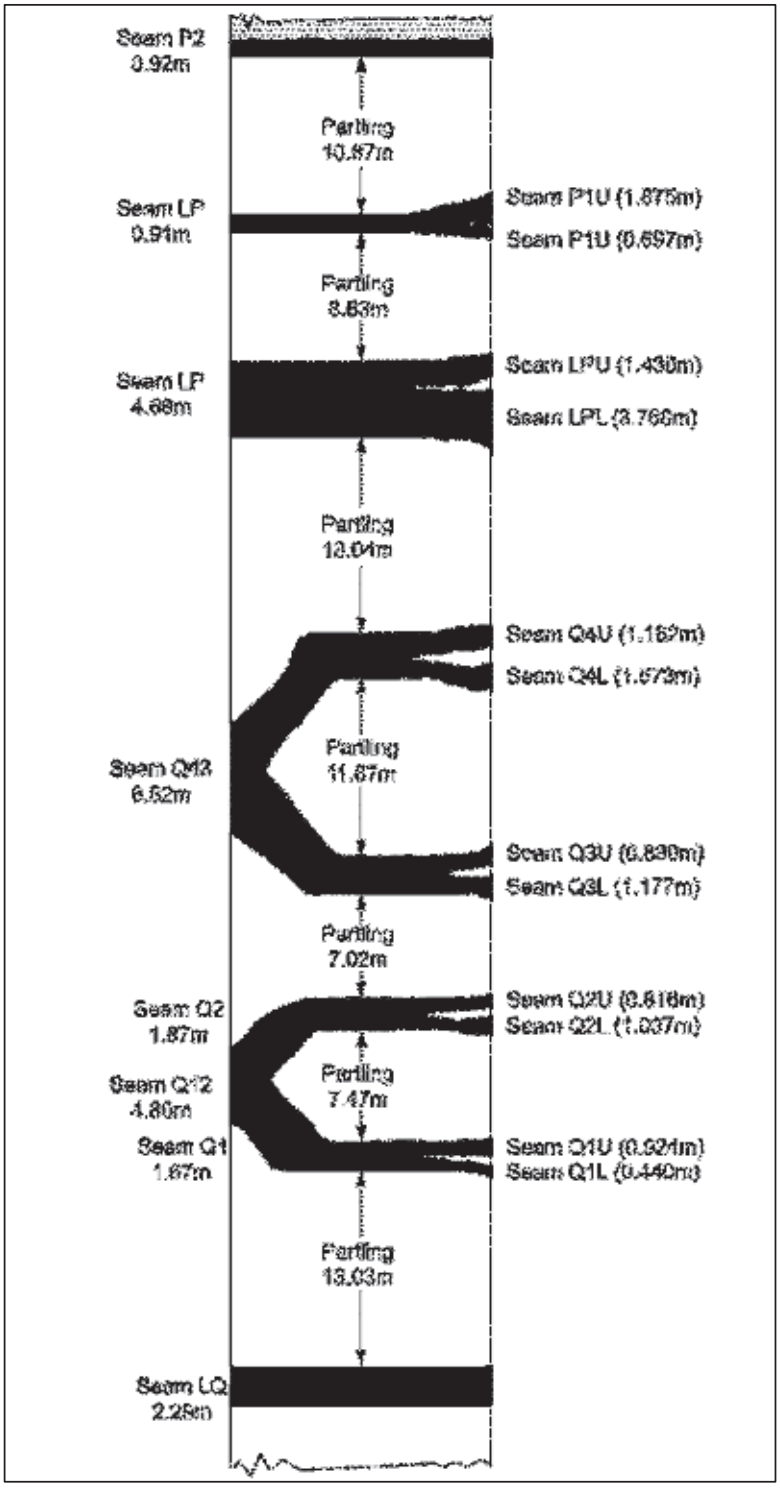


Figure 5-1 Peranap Coal seam succession

Table 5-1 Peranap Coal Seam Succession

Seam / Parting	Splits / Merging	Minimum Thickness (m)	Maximum Thickness (m)	Average Thickness (m)	No of Borehole Intersection
Parting		6.00	128.90	39.28	
P2		0.20	3.50	0.94	50
Parting		2.70	24.2	10.49	
P1		0.10	3.00	0.91	63
	P1U	0.60	3.60	1.87	11
	P1L	0.30	1.00	0.60	11*
Parting		1.05	27.65	8.63	
LP		0.80	7.50	4.68	80**
	LPU	0.48	3.60	1.43	20
	LPL	0.55	6.10	3.74	20
Parting		4.20	35.40	13.04	
Q4		0.45	6.04	2.79	96
	Q4U	0.40	2.10	1.18	16
	Q4L	0.80	2.98	1.57	16
	Q43	5.55	9.10	6.82	6
Parting		0.50	39.35	11.67	
Q3		0.25	5.20	2.22	140
	Q3U	0.50	1.14	0.83	3
	Q3L	0.67	1.85	1.18	3
Parting		0.45	28.20	7.03	
Q2		0.10	4.25	1.87	119
	Q2U	0.35	1.00	0.62	15
	Q2L	0.70	2.12	1.03	15
	Q12	4.00	5.55	4.79	12
Parting		0.60	22.95	7.47	
Q1		0.15	5.18	1.67	129
	Q1U	0.50	1.27	0.92	5
	Q1L	0.35	0.55	0.44	5
Parting		4.10	30.00	13.03	
LQ		0.20	4.50	2.29	107

5.1 Coal Quality

The seams from the concession area have typical thermal coal characteristics. Based on the historical and newly drilled borehole results, the ash content for the coal seams varies from 3.8% to 23.0% within the license area. The ash content displays a uniform trend across the field for Seam LPL (4-11%), LQ (5-9%), Q1U (4-10%) and Q4U (4-11%) with isolated areas of higher ash content up to 23%.

Calorific values similarly reflect the variation as a function of ash distribution ranging from 4045 Kcal/kg to 5576 Kcal/kg on air dried basis within the area.

The sulphur content of the seams ranges from about 0.03 to about 3.3% and displays a uniform trend across the field for Seam LPL (0.06-0.53%), LQ (0.06-0.55%) and Q1U (0.03-0.4%) with the exception of Q4U (0.14-3.3%).

Due to time constraints and the study scope, IMC has not looked into slagging and fouling characteristics of the seam ash in detail. However, IMC recommends that such studies are carried out in the future as the results are important features in any coal marketing exercise. In low rank coals like Peranap, fowling and also slagging tendencies are possible. Therefore further investigation is needed to establish the ash performance characteristics of the coal.

Average coal quality characteristics for the coal seams derived from core analysis are given in Table 5-2 whilst the trends of each coal quality parameter such as volatile matter, ash, calorific value, sulphur, and moisture are given in Appendix- E and K.

The ultimate analysis (Appendix E2) indicates that the Dry, Mineral-Matter Free Basis ("**dmmf**") carbon content is less than 75%, whereas dmmf oxygen is more than 20%. Results in this range normally indicate lignite rank material. The coal rank as per ASTM classification is "Lignite A". The table below summarises the mean quality data for each seam as derived from coal core analysis.

Table 5-2 Quality of coal seams

Seam Name	TM % (ar)	IM % (adb)	Ash % (adb)	VM % (adb)	TS % (adb)	GCV (adb) Kcal/Kg
P2	47.24	14.98	16.93	34.8	0.30	4,132
P1	50.35	17.22	12.66	38.4	0.44	4,531
P1U	51.13	16.03	15.27	37.11	0.19	4,438
P1L	53.09	14.28	11.79	38.45	0.82	4,786
LP	50.44	18.61	8.66	39.08	0.17	4,701
LPU	52.17	17.65	8.33	38.52	0.58	4,773
LPL	52.56	19.19	6.83	39.4	0.21	4,834
Q4	51.44	18.64	7.76	38.95	0.36	4,795
Q4U	52.96	16.81	8.92	38.40	1.35	4,827
Q4L	53.98	16.68	9.41	38.54	0.6	4,791
Q43	46.17	19.7	8	38.23	0.27	4,673

Seam Name	TM % (ar)	IM % (adb)	Ash % (adb)	VM % (adb)	TS % (adb)	GCV (adb) Kcal/Kg
Q3	51.68	17.86	7.36	39.22	0.39	4,860
Q3U	50.26	17.25	9	36.71	0.5	4,708
Q3L	47.4	12.812	16.2	40.76	0.2	4,789
Q2	50.60	17.26	9.24	38.48	0.22	4,790
Q2U	52.6	20.52	8.77	36.56	0.4	4,500
Q2L	52.27	19.79	8.53	36.23	0.23	4,602
Q12	51.51	16.09	6.78	40.30	0.07	5,018
Q1	51.79	17.91	7.05	38.86	0.19	4,910
Q1U	50	14.58	7.9	41.40	0.26	5,105
LQ	50.81	17.48	8.19	38.63	0.19	4,854

6 DEPOSIT TYPE

A fundamental concept in coal resource classification is fully understanding the level of geological complexity of a deposit due to the plastic nature of the coal seams as well as the governing sedimentological and tectonic conditions in the past. The level of complexity impacts on a number of related factors including:

- Confidence in seam continuity;
- Exploitation feasibility;
- Proposed mining method; and
- Requirement for coal washing/processing.

Complexity factors may have been introduced into the deposit either at the depositional stage (e.g. washouts, seam splits and merges) or post-depositional (e.g. folding and faulting).

The Peranap coal deposit is a multi-seam stratified deposit with eight major coal seams as discussed earlier. Based on previous studies carried out and information gained from the drillhole programmes, it is interpreted that the deposit has a low to medium structural complexity.

7 COAL RESOURCES

The resources of the Peranap Coal Deposit were previously estimated by various organisations in line with principles of the system accepted at the time in Indonesia.

The standard adopted by IMC for the reporting of the Resources and Reserves presented in this report is that defined by the terms and definitions given in "The JORC Code 2012 - Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves" ("JORC Code") as published by the Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia ("JORC").

A key objective of the current report is to re-estimate the resources on the basis of historical data and newly acquired data from the recent exploration campaign according to the JORC system for public reporting.

7.1 Reporting Criteria for Resources under JORC

In the context of complying with the Principles of the JORC Code, comments on the relevant sections of "Table 1 – Checklist of Assessment and Reporting Criteria" of the Code should be provided. Any items listed in "Table 1" of the Code not covered in detail or not covered at all, should also be mentioned on an 'if not, why not' basis within the Competent Person's documentation and must be provided where required according to the specific requirements of Clauses 19, 27 and 35 for significant projects in the Public Report (Appendix L).

This is to ensure that it is clear to the reader whether items have been considered and deemed of low consequence or have yet to be addressed or resolved. As always, relevance and materiality are overriding principles that determine what information should be publicly reported and the Competent Person must provide sufficient comment on all matters that might materially affect a reader's understanding or interpretation of the results or estimates being reported.

This is particularly important where inadequate or uncertain data affect the reliability of, or confidence in, a statement of Exploration Results or an estimate of Mineral Resources or Ore Reserves. The order and grouping of criteria in Table 1 reflects the normal systematic approach to exploration and evaluation. IMC has completed the required fields of Table 1 for the Peranap project and it is presented in Appendix N of this report.

In the following sections, relevant comments and explanations are given to address the reporting criteria.

7.1.1 Previous Assessments

7.1.2 IMC (2009)

As part of a PTBA companywide Resource and Reserve audit in 2009, IMC prepared a resource estimate for the Peranap deposit.

This resource statement was prepared in accordance with the United States Geological Survey Circular 891 – Coal Resource Classification System of the U.S. Geological Survey. As such, the figures quoted in Table 7-1 below are not directly comparable with those used in IMC's 2014 resource estimate, contained in this report, neither are the terminology and definitions used comparable with those in JORC 2012.

Table 7-1 IMC resource estimate (2009)

Category	Coal Mt
'Measured Resource'	393
'Indicated Resources'	399
'Total Resource Base'	**792**

7.1.3 PTBA (2011)

As part of their internal feasibility study completed in 2012, PTBA prepared a resource statement for the Peranap deposit.

This resource statement was prepared in accordance with the United States Geological Survey Circular 891 – Coal Resource Classification System of the U.S. Geological Survey. As such, the figures quoted in Table 7-2 below are not directly comparable with those used in IMC's 2014 resource estimate or the terminology and definitions used in JORC 2012. The figures are however comparable to those quoted by IMC in their 2009 estimate.

Table 7-2 PTBA resource estimate (2012)

Category	Coal Mt
'Measured Resource'	486
'Indicated Resources'	426
'Total Resource Base'	**912**

The increase in coal resources estimated by PTBA is not clear to IMC, however, IMC notes the following:

- Resource area of 44.5km^2 (exact coordinates not specified)
- The tabulated statement on coal quality taken from PTBA's Feasibility Study appears not to conform with the quality data provided to IMC.
- Discrepancies are noted in total sulphur readings where the sample value was >10%
- It is not clear whether PTBA has correctly followed the guidelines in accordance with USGS Circular 891.

7.1.4 Mapping, Surveying & Topography

IMC is aware from historical information that geological mapping has been undertaken at Peranap. However, no material relating to this work has been made available to IMC as part of this project.

IMC is not aware of any airborne geophysics, 2D or 3D seismic surveys that have been undertaken at Peranap. Downhole geophysics has been undertaken as part of historical and recent drilling programmes and is discussed separately in Section 7.1.6.3.

PTBA advised IMC to use the topographic surface projected in the incomplete Minex Model that has been developed by PTBA and provided to IMC.

This topographic map available for the whole concession was used as the base data. This was supplied by the client and is consistent with the data used in the earlier studies undertaken by IMC.

It is presumed that the survey of historical boreholes was carried out during 1985-1990 when these were drilled however the topographical survey were carried out in 1997, by which point the collar locations of boreholes were lost. Thus borehole elevation of historical boreholes and topographic contours appear to be independent of each other. Further information is available in subsequent sections of this Report.

7.1.5 Borehole Drilling – Historical

7.1.5.1 1986-1990

The Peranap project is part of the larger Cerenti coal deposit, in which 6-8 major coal seams have been identified.

Exploration within the Cerenti deposit began in 1986/87.

A four year exploration programme commenced in 1986, and was carried out in three stages. Preliminary exploration in 1986/87, consisting of aerial photography, reconnaissance mapping and a total of 11 boreholes identified the most suitable areas for a second phase. This activity was undertaken in four target areas, namely Rokan, Logas, Sinamar and Cerenti. During this stage at Cerenti, an area 300 km^2 was reconnaissance mapped, and 11 boreholes completed. Part of this Cerenti area is the one which is the focus of this study.

The second phase of “semi-detailed” exploration was undertaken in 1987/88, and was focussed on the Cerenti deposit, which was sub-divided into three blocks, Block A, Block B and the Southern Extension. During this stage, an area 280 km^2 was mapped in detail, 10 trenches excavated, and 51 boreholes were completed, of which 45 were geophysically logged.

Further detailed exploration was undertaken between 1988 and 1990, and involved additional mapping of the Southern Extension, and drilling a total of 40 boreholes in Block A, 17 boreholes in Block B, and 119 deep boreholes in the Southern Extension. 156 of these boreholes were geophysically logged. A further 73 shallow boreholes (average 10 m depth) were also completed during this stage. In total, during the period 1988 to 1990, 249 boreholes, as detailed in Table 4-5, were completed for the overall Cerenti prospect area comprising to 182.30 km^2. No breakdown of these boreholes by year and series is available.

During the three exploration phases, a total of 1,102 coal samples were taken and analysed for quality data. Further limited exploration including a hydrogeological investigation continued until 1991.

Of the total Peranap area, PTBA has focused on the South Extension. Historical studies undertaken on the Cerenti and Peranap area include the Feasibility Study done in 1991 by the New Energy and Industrial Technology Development Organisation of Japan ("**NEDO**") which highlighted the Peranap Area (the South Extension area) and the LPM-ITB Feasibility Report which was completed in 1999.

The table below summarises the exploration history of the Cerenti deposit.

Table 7-3 Cerenti block – historical drilling

Period	Exploration Activity	Notes
1986-1987	• Reconnaissance mapping • Aerial photography • *11 drillholes	
1987-1988	• 280 km^2 mapping • 10 trenches • *51 drillholes (of which 45 were logged geophysically)	The Peranap concession having an area of 182.30 km^2 have been carved out from of Cerenti deposit (280km^2). Peranap concession is further divided into Block A, Block B and South- Extension.
1988-1990	• Mapping of the Southern Extension • 40 drillholes in Block A • 17 drillholes in Block B • 119 drillholes in Southern Extension • 156 drillholes were geophysically logged • 73 shallow drillholes (<10 m depth)	
Total drilling since 1988	249 boreholes were drilled from 1988 onwards	

* Not part of 249 boreholes drilled within a period of 1988- 1990.

Including boreholes drilled from 1986-1988, 119 boreholes are located in the South Extension block and have been used by IMC for study. The series wise distribution of 119 boreholes along with related details is given below.

Table 7-4 Southern Extension – historical drilling

Drill Series	No. of Boreholes	Total Depth (m)	Details
DN	3	368.45	Geologically logged
SK	25	3,345.85	Geologically and Geophysically logged
NP	94	9,956.05	Geologically and Geophysically logged
BRA*	3	150.39	Geologically logged
PLG	8	409.00	Geologically logged
TOTAL	**133**	**14,229.74**	

* BRA probably refers to BH series of drillholes for which records are available

Further to the above, 34 boreholes were subsequently drilled by PTBA in 2011.

7.1.5.2 2011

In 2011, PTBA carried out a diamond core drilling programme comprising 34 drillholes.

Table 7-5 2011 drilling summary

Drill Series	No. of Boreholes	Total meterage (m)	Details
SI	34	2,224.50	Geologically and Geophysically logged

All boreholes were geophysically logged. The following downhole sondes were run:

- Long spacing density;
- Short spacing density;
- Single arm calliper; and
- Natural Gamma.

The drilled lithology, coal core recovery and also the sampled depth have been graphically depicted and are presented in Appendix G.

The green outline in the figure below denotes the resource boundary as used to estimate resources and reserves in this report. Applying a 'buffer zone' of 400 m from drillholes NP-04, SI-04, SI-05 and SI-11 along the River Kuantan boundary to the north creates the resource boundary. The eastern boundary is defined by either the incrop position of the respective seam or the Senkilo River, whichever is encountered first. The resource area is 63 km^2.

Based on the data of 167 boreholes (133 historic boreholes and 34 boreholes drilled subsequently by PTBA) eight coal seams have been interpreted.

7.1.6 Borehole Drilling – 2014 Campaign

7.1.6.1 Validation Boreholes

IMC planned and supervised approximately 1,200 m of validation and infill drilling to be undertaken at Peranap, with a focus to:

- Validate historic drillholes which have intercepted the major coal seams and which have historic quality data available ("**twinning**") – five boreholes;
- Create an even distribution of validation drillholes across the project area ("**infilling**") – seven boreholes; and
- Collect downhole geophysical data and coal samples from all validation drillholes.

The drilling meterage of 1,193 m was split between 12 drillholes with total depths ranging from 30.60 m to 139.80 m. All drillholes were drilled vertically.

All of the validation and infill drilling has been completed along with site visits by both the IMC geological and mining teams, including IMC's Competent Person ("**CP**") for resource reporting. The core samples were sent to an accredited laboratory for quality analysis.

PT Mucoindo Prakarsa was engaged to undertake the validation drilling. Cored drilling was carried out from 13th April - 19th May 2014 by deploying 3 Jacro 200 drill rigs, each with a capacity to drill to a depth of 200m with HQ size (63.5mm), double tube coring equipment. Cores were drilled using HQ size and hoisted by wireline.

Drilling in borehole D12 was restricted to 30.6m due to sudden water blow-back.

7.1.6.2 Selection of Drillhole Locations

Where a new drillhole was being used to validate an historic drillhole, IMC aimed to "twin" the new hole by drilling within 3-5 m of the collar position of the historic hole. However, IMC noted in the field that the collar positions of many of the historic holes had been lost and that the position of the validation hole was based only on the coordinates recorded for that hole. There is therefore a strong possibility that in some cases the new twinned hole is located at a greater distance than would have been possible if visual recognition of the old collar positions could have been made.

Nevertheless, IMC considers that the twinned holes are sufficiently close to provide an acceptable level of validation of the historical data.

Where a new drillhole was being used to improve data density, such drillholes were placed between existing holes where the distance between the historic holes was >500 m.

All of the validation and infill drillholes have been geologically and geophysically logged and sampled.

The drilling details are summarised below:

7.1.6.3 Geophysical Logging

In line with the standard operating procedure ("**SOP**") of IMC, geophysical logging of each drillhole was mandatory.

Multi-parameter geophysical logging employing single run compensated formation density probe was carried out in all 12 boreholes.

Field data acquisition and raw data processing was carried out by PT RecSalog Geoprima. The following Downhole sondes were run:

- Long spacing density: sensor and source (Cs137) spacing 37cm.
- Short space density: sensor and source spacing 17cm
- Single arm caliper
- Natural gamma

Electrical resistivity and self-potential logs were carried out in only nine drillholes to the extent possible because of the collapse of drillholes owing to strata conditions. The radiation logs were conducted through drill rods/ casings in most of the drillholes. A motorised winch with 3/16" diameter four-core steel armoured cable was deployed for lowering, hoisting and data acquisition at a rate of 4-6 m/min.

PT RecSalog Geoprima supplied the processed data to IMC in LAS format. These data were then imported into WellCAD Ver. 4.3 for interpretation. IMC subsequently used the geophysical logs to modify seam boundary positions, depth correction assistance during sampling and in the creation of the Minex model. The borehole wise depth of geophysical logging is given in the Appendix D1.

7.1.6.4 Core Recovery

7.1.6.4.1 Core Markup

Once core was recovered at surface, it was first carefully cleaned to remove extraneous material. The broken coal was pieced together. Drillers' tags were placed at regular intervals and the core was photographed.

7.1.6.4.2 Core Logging

The standardised core logging sheet used by IMC was part of the SOP and all logging data was recorded on this template. The coal cores were then sealed in plastic bags, to retain their moisture, and transported to the exploration camp.

The logging has been inspected by IMC's Competent Person and it is considered that drill core from the validation drilling programme has been logged to a level of detail necessary to support appropriate mineral resource estimation under JORC.

7.1.6.4.3 Core Recovery

The average recovery of coal-bearing core in drillholes drilled under the supervision of IMC for the 2014 validation drilling programme was above 95%. This is deemed an acceptable level of average coal core recovery by IMC.

7.1.6.5 Depth Validation

At the exploration camp, the cores were examined by IMC's geologist and measured lengths and core losses were checked against thicknesses obtained from the downhole geophysical logs. All intervals selected for sampling were depth corrected to within 0.1m of coal seam intervals picked from the geophysical logs.

For the purposes of geological modelling, the depths of coal seams as corrected using geophysical logging have been considered.

Figure 7-4 illustrates the depth validation process.

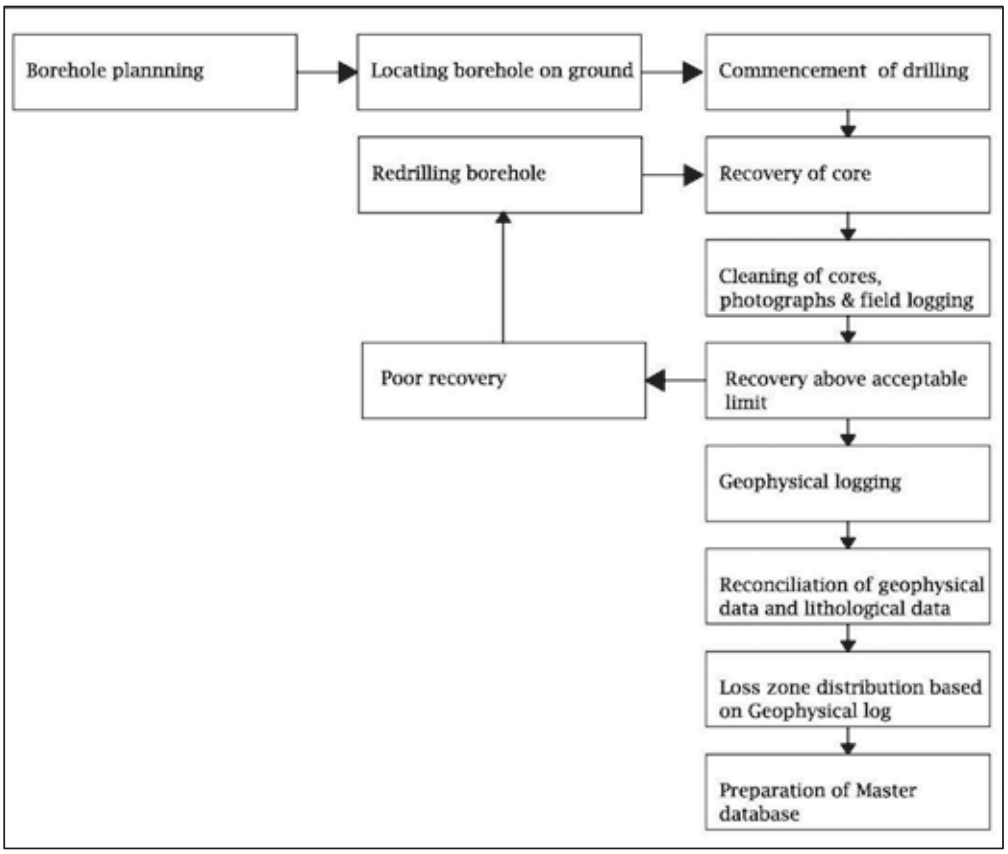


Figure 7-3 Drillhole depth validation process tree

7.1.6.6 Collar Surveys

Pt. Mucoindo Prakarsa was engaged to complete the collar survey for the 12 validation drillholes.

The survey was conducted using three geodetic global-positioning systems (LEICA 1200) and one total station. Field acquisition was completed between 17th May and 8th June 2014.

Reference Bench Marks

The national bench mark No TTG.0816.1188 (coordinates latitude 0o24'4.6869"N, latitude 101o51'29.4824"E, elevation 13.827m) located at Langgam, Pangkalan

Kerinci in Riau province was taken as the reference bench mark for calibration of the Geodetic GPS.

Survey Accuracy Level & Error Correction

All of the drillhole collar data were captured using geodetic GPS. The accuracy of GPS and photogrammetric surveys, being less distance dependent, is defined at a 95% confidence level, a circle for horizontal and linear value for vertical uncertainty. The reporting standard for horizontal component is the circle of uncertainty which means that the true location of the point falls within this circle 95% of the times. For vertical uncertainty a linear distance is given which means that the true location of the point falls within +/- of that linear uncertainty value 95% of the time. IMC notes that acceptable accuracy levels were achieved.

Within the vicinity of the validation drillhole collars, the topography was adjusted to match the collar elevation of these holes as the surveyed GPS points of these 2014 holes were deemed to be more accurate by IMC.

7.1.6.7 Outcome of Validation Boreholes

The current geological interpretation is largely based on data gained from the historical drillholes and the 12 holes drilled in 2014. The presence and nature of dirt bands and also the coal core recovery are not recorded in the historical boreholes. However, during the validation drilling it was observed that the coal seams correlated well both in terms of relative position and thickness. The coal qualities in historical boreholes were largely analogous with the quality data obtained from validation drillholes. As such, the historical drillhole dataset is considered to be acceptable for use in resource estimation.

IMC is satisfied that the 2014 validation drilling programme as well as all associated logging, sampling and downhole surveying has been completed to an acceptable industry standard.

All logged coal seam interval depths and final hole depths have been checked against the corresponding geophysical profiles and the recovery of coal core has been >95% in all instances.

IMC considers that both twinned and infilled holes drilled under validation programme are sufficiently close to historical drillhole locations to provide an acceptable level of validation of the historical data.

IMC is aware from historical information that topographical survey has been undertaken at Peranap and the survey details are given below:

Table 7-7 History of topographic survey

#	Item	Peranap
1	Period of field work	1997
2	Surveyor	PT. Mapindo
3	Purposes	1997 : Topography
		Air Borne Survey (Photogrametry)

#	Item	Peranap
		2014 : Terestris Survey
		(Topography suggested by IMC)
4	Accuracy Level	1997 : under 3 m (Photogrametry)
		2014 : Under 10 cm (Terestris)
5	Report availability	Available
6	Application in the model	Yes (Photogrametry & Terestris)

PTBA advised IMC to use the topographic surface projected in the incomplete Minex Model developed by PTBA.

The topographic map provided by PTBA was validated by 7 out of 12 validation boreholes drilled and surveyed in 2014 under the supervision of IMC. The collar elevation of validation boreholes and the topographic contour at X, Y coordinates of the boreholes are given (Table 7-8). The differences in elevation observed in five boreholes (D1, D4, D6, D7 and D12) may be due to change in topography created through human activity and surface erosion as the project area is subject to intensive agriculture activity, rubber plantation, human settlement and road construction. Such discrepancies can be possible as the boreholes were drilled and surveyed in batches over three decades and the topography survey provided was done at a different time.

Table 7-8 Comparison of elevation differences

Borehole Name	Elevation as per PTBA GRID	Elevation (m)-Surveyed by External Agency	Elevation in Difference (m)
D1	61	66.954	5.954
D2	56	58.728	2.72
D3	46	46.289	0.289
D4	45	48.401	3.401
D5	59	59.388	0.388
D6	52	57.053	5.053
D7	55	48.844	-6.156
D8	57	57.278	0.278
D9	50	50.294	0.294
D10	50	49.81	0.19
D11	38	37.357	-0.643
D12	36	40.605	4.605

Therefore, IMC considers that the topographic map given by the client is acceptable as coal seams being correlated well both in terms of disposition and thickness despite the differences observed in elevation, as is explained in greater detail in the following section.

The map for the whole concession was used as the base data ignoring the elevation collar data for historical boreholes as they showed wide variation - both above and below the surface.

In addition, a further validation exercise was undertaken in order to understand the disparity. This also demonstrated that the accuracy of the survey values from the past studies was acceptable for resource estimation. The details are as below:

As the exact whereabouts of the borehole collars are unknown on the ground, the option of re-drilling all the boreholes and combining with fresh topography survey was not a viable option. Therefore two options were available to IMC:

- Accept the topo grid provided by the client as correct or
- Accept the collar data of all the boreholes as true for creating a fresh topographical grid.

It is quite evident from the Table 7-7 that PTBA has undertaken a topographical survey but details in reference to borehole collar survey are still unavailable. It was felt that the option selected would depend on the margin of error. A detailed exercise was carried out for this purpose by IMC and the following procedure was adopted to develop the topographical grid:

1) Creating a modified topography grid after incorporating the elevation of the 12 validation boreholes, where ever possible, in the contour map generated from the topography grid provided by PTBA;
2) Modifying the collar levels of all the boreholes by draping over the modified topography; and
3) Creating topography by using the borehole collar data.

While choosing the viable option, variances and impacts on mining were also considered. Various case studies were undertaken by IMC:

Case 1

- Base datum plane made for the roof of top persistent seam which was created by using the collar data of boreholes provided by PTBA
- Topography surface grid created from the topography contours provided by PTBA and from the available collar data of the boreholes.
- Volume of overburden between the base datum and top datum was estimated for the two topographies and the variation in volume was found to be about 15%. Due to significant variation in volume, this case was rejected.

Case 2

- Topography created using the borehole collar data and topography modified by IMC by draping of boreholes considered as second option
- Roof of top persistent seam created by considering the borehole collar data
- Volume of overburden was estimated for these two options and the variation in volume was found to be 4.8%. Due to very low borehole density available for the assessment, this case, however, has been rejected.

Case 3

- Top surface or the topography grid provided by PTBA considered as the fixed datum plane
- The seam floor of bottom most seam created by using the original collar data was considered for floor datum and the modified data as per the draped holes was used for defining the bottom datum of the seam floor of bottom most seam.
- The variation in stripping ratio is estimated to be 4.67%.
- This was considered as acceptable.

In Case 3, it was observed that the percentage difference in stripping ratio when comparing the use of the two different topographic profiles was 4.67%. This can be treated as a tolerable error limit and the model created by IMC is considered appropriate for mine planning.

7.1.6.8 Sample Preparation, Analyses & Security

7.1.6.8.1 Sample Security

The coal cores, after retrieval from the drillholes, were photographed, logged and sealed into double plastic bags and thereafter brought to the base camp for secure storage. After subsampling at the base camp, the coal cores were again sealed in double plastic bags in order to maintain natural moisture levels. The samples were sent securely to the laboratory soon after completion of the drillhole.

7.1.6.8.2 Sampling

The entire coal core length was sampled and sub sampled as per industry best practise by the site geologists and a representative number of random samples were checked by IMC's Competent Person.

The 12 drillholes drilled under the supervision of IMC were subject to ply-by-ply and 'weight averaged' sample analysis.

Due to variations in coal quality within the coal seams, it was possible to separate the higher density inferior coal and dirt bands for analysis.

Non-coal partings, greater than 0.1m in thickness within the coal seams, were sampled separately. All samples for analysis were labelled, double sealed in plastic bags to preserve natural moisture levels and dispatched to Laboratorium Pengujian tekMIRA in Bandung for analysis.

No composite samples were prepared on site or by the laboratory.

The IMC Competent Person oversaw the sampling procedure at the exploration site and was content that the procedures being used complied with industry best practice.

IMC is satisfied that the density of sampling data, inclusive of historical data and data already available from the validation drilling, is sufficient to represent the variation in coal quality of the deposit and provides an acceptable database for resource estimation.

7.1.6.8.3 Lab Analyses

The analysis procedures adopted at the laboratory are detailed in the table below.

Table 7-9 Sampling procedure

Procedure	Included analysis
Milling of prepared sample	
Total moisture (as received)	
Proximate analysis (adb)	Moisture (adb)
	Ash (adb)
	Volatile Matter (adb)
	Fixed carbon (adb)
Sulphur content (adb)	
Relative density (adb)	
Calorific value (adb) Calorific value (as received)	
Selected samples only	
Ash fusion analysis	
Ash analysis	
Hardgrove Grindability Index ("**HGI**")	
Ultimate analysis	

The analysis procedures were checked by IMC's Competent Person during visits to the laboratory and were found to be satisfactory.

Histograms and cross plots of quality data have been prepared to ensure that analytical data are within range (Appendix-K).

Chemical analyses of all coal core samples from both the historical and validation drill programmes have been performed to American Society for Testing and Materials ("**ASTM**") standards.

IMC is satisfied that the sampling procedures on site, the sample dispatch and laboratory analyses of the samples obtained from the 2014 validation drilling programme have been completed to an acceptable industry standard to allow the data to be used in the estimation of Mineral Resources.

7.1.7 Geological Modelling

The geological modelling of the deposit was undertaken by IMC using Geovia Minex 6.2, an industry recognised computer modelling package specifically designed for coal and stratified deposits.

The software requires the input of exploration data in a predefined format to create a geological database for its further processing. These data are grouped into Collar, Seam Structure, Litho, and Assay files.

Table 7-10 Geological database structure

Minex Table	Description
Collar	The drillhole locations are in UTM coordinates with longitude and latitude represented by X & Y respectively. Z is elevation above MSL. (Overall, it shows the borehole depth and borehole path).
Seam Structure	Comprises borehole ID, seam name, depth & thickness of coal
Litho	Includes borehole ID and lithological interval.
Quality	Includes drillhole ID, sample number, quality interval, quality data of coal

7.1.7.1 Topography

Surveyed topographical map data provided by PTBA, and is discussed in detail in Section 7.1.6 of this report, was used to generate a 25m x 25m mesh topography grid of the concession area in Minex.

7.1.7.2 Base of Weathering

The base of weathering surface has been interpreted from a combination of information gathered from the validation programme drillholes and geological observations made on site by the project geologist.

The base of the weathering has been assumed uniformly as 6 m below topography and was generated using a 25m x 25m mesh grid.

7.1.7.3 Stratigraphic Sequence

The stratigraphic sequence was established on the basis of seam floor depth and seam thickness data. IMC re-correlated the coal seams in the deposit as part of the development of the geological model and subsequent resource estimation.

7.1.7.4 Area of Influence

7.1.7.4.1 Geostatistics

JORC does not define areas of influence from known data points on which to categorise resources under the three main categories (Measured, Indicated and Inferred). Instead, this decision is made by the Competent Person based upon their knowledge and understanding of the deposit and experience gained from studying similar deposit types.

In order to assist with the exercise of defining reasonable resource boundary limits, geostatistical analysis of the structural and quality datasets has been performed.

The dataset was first analysed for consistency and any erroneous data points ("**outliers**") were discarded.

7.1.7.4.2 Semi-Variogram Analysis

The available data were studied for spatial variations by constructing variograms for Seam Thickness, Total Moisture, Ash and Calorific Value (on an air dried basis). The variogram fitting was done with respect to matching the best fit for the variation. The

range values are shown in the following table and example variograms are given in Appendix F1

Table 7-11 Ranges of influence following variogram analysis

Seam	Thickness m	Total Moisture m	Ash m	CV m
LP	420.36	386.82	403.54	403.17
LQ	412.60	404.64	402.39	399.46
Q4	392.15	408.17	444.57	396.01
Q3	-	401.28	415.01	432.23
Q2	-	400.14	404.64	401.20
Q1	408.34	399.25	411.25	411.71

7.1.7.4.3 Kriging

To further validate the range values obtained during variogram modelling, Ordinary Kriging ("**OK**") has been applied to seam thickness using Lagrange multiplier.

The validation process justifies the obtained results within the tolerance value, set at 95% within the Measured Resource area and 70% within the Indicated Resource area.

The predicted values are either close to, or within the acceptable variance estimation error, of the laboratory analysed values. The calculation procedure is presented in Appendix F2.

7.1.7.4 Inference of Geostatistical Analysis

Table 7-12 shows that the range of influence for the parameters varies from 392.15 m to 444.37 m. Accordingly for resource estimation, the range of influence for each of the seams from a valid drillhole, taking into account the geological conditions, adopted by IMC, is 400 m for Measured Resources and 800 m for Indicated Resources.

Table 7-12 Point of observation criteria for structure, thickness and quality modelling based on Geostatistical studies

Parameter	Unit / Tolerance	Comment
Analysis	Proximate analysis required	
Measured Resources	400m	Radius
Indicated Resources	800m	Radius

The 'points of observation' criteria stated above take into account the thickness and quality of the coal seams.

7.1.7.4.1 Geological Consideration

In Sections 4 and 6 of this report, it is evident that deposit depicts fairly consistent trend with no structural discontinuity being postulated. Accordingly, the inference obtained from geostatistical studies can be adopted for defining area of influence.

Applying geological consideration, which is adequately supported by geostatistical studies, the point of observation considered for categorization of resource is tabulated below:

Resource Category	Area of Influence	Comment
Measured	400m	Radius
Indicated	800m	Radius
Inferred	1500m	Radius

IMC deems that the Area of Influence estimated using geostatistics is supported by the geological characteristics of the deposit.

7.1.7.5 Seam Interpolation

By using the 'Missing Seam Interpolator' tool within Minex, it is possible to accurately project seam locations in boreholes where no seam was recorded during logging.

In order that these records remain distinguishable from the raw data in the model, Minex stores all seam data with a tag in order to identify its source as follows:

- Input: Actual data value from the database
- Estimated: As determined by the Minex user
- Interpolated: As determined by the software interpolator.

By using this tool, it is possible to interpolate where seams should have occurred within a drillhole or above/below any given drillhole. Minex uses the 'Input' data to best estimate the seam position in a neighbouring borehole.

In boreholes where a seam has been interpolated, the thickness has been set to zero so that its effects on seam thickness, and thus volume, within the model are negligible.

7.1.7.6 Gridding (Modelling)

In order to create roof, floor, thickness and quality grids in Minex, the grid area has to be defined along with the mesh size and grid rotation. These definitions are saved in grid parameter files so that they can be reused for any number of grids that are created.

The grids in Minex are saved as "DD files". These files have to be defined, allowing for the creation of folders with the suffix "<Name>.grd".

Every structural and quality grid has an individual name, for example "<Seam Name>ST.grid" for seam thickness, "<Seam Name>SF.grid" for seam floor and "<Seam Name>ASH.grid" for ash data. The seam thickness contour maps, generated in Minex, are presented in Appendix I.

Although seven coal quality attributes were recorded through laboratory testing, only four quality parameters namely Total Moisture %, Ash %, Total Sulphur % and Gross CV have been used to create quality grids within the Minex.

The gridded quality parameters are:

- Total Moisture ("**TM**") on an 'as received' basis

- Ash ("Ash") on an 'air dried' basis
- Total Sulphur ("**TS**") on an 'air dried' basis
- Gross Calorific Value ("**GCV**" or "**CV**") on an 'air dried' basis

The modelling geologist has the ability within the Minex tools to infer the position and offset of faults. However, no significant faulting has been observed based on the data collected to date from the Peranap deposit.

Once created, all grids were then truncated by the weathering surface to get the incrop position of all coal seams.

The figure below illustrates the typical workflows used when modelling in Minex. The processes within the red outline are those used in the creation of the Peranap model.

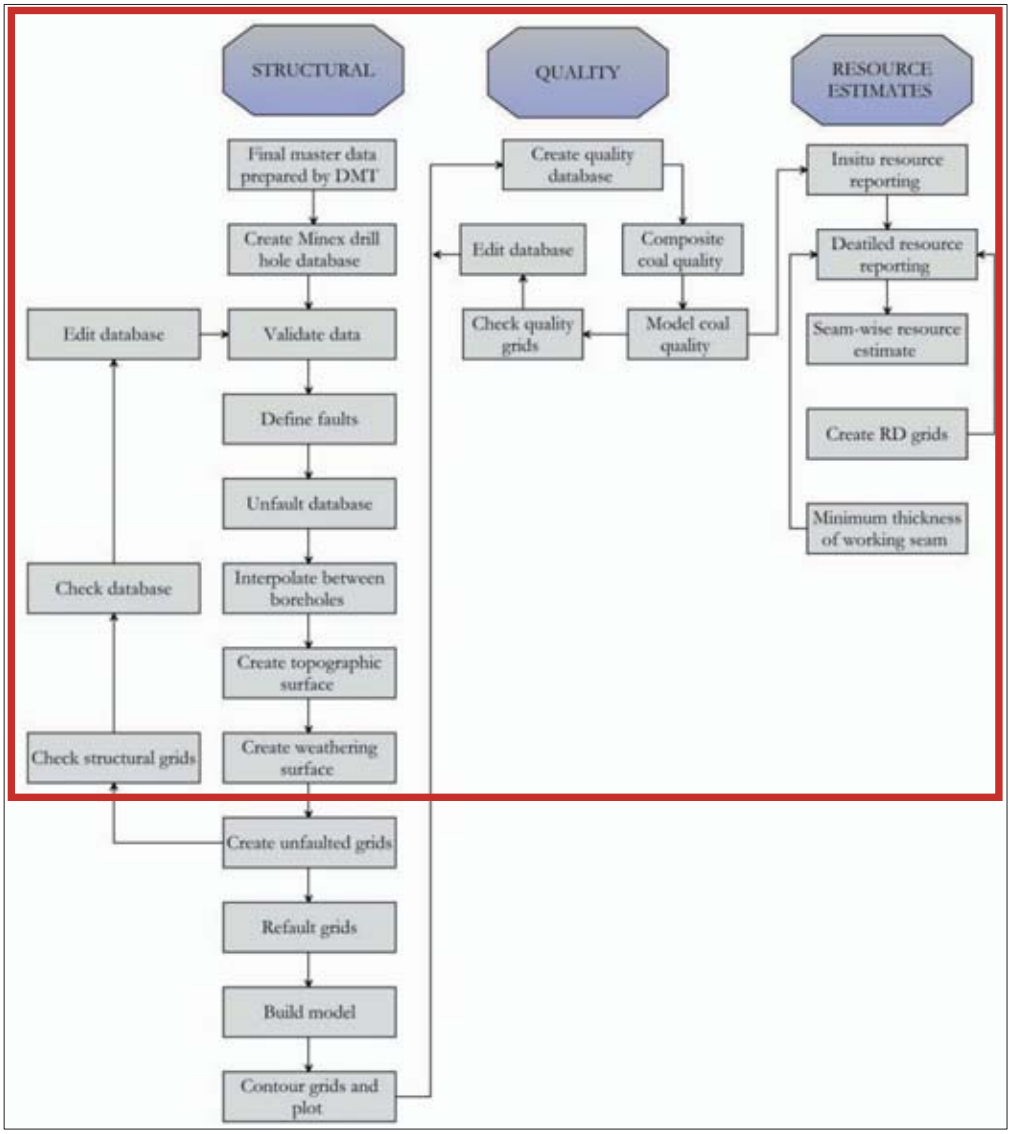


Figure 7-4 Minex modelling procedure

Detailed seam-by seam statistics are presented in Appendix K

7.1.8 Data Status & Database Integrity

The PTBA team has collated all the available information for the boreholes and coal quality data collected over the years into an electronic database.

The plans, maps as well as cross sections from the previous studies were digitised and stored as picture files and utilised as rasters in AutoCAD environment if necessary. Some of the data also is available for storage purpose in spreadsheet format.

The Peranap geological database contains:

- Out of 179 drill holes (167 historical and 12 validation drillholes), data of 178 drillholes have been considered for preparation of geological database as one historical borehole did not encounter any coal seam.
- Geophysical data for 88 drillholes;
- Quality data for 105 drillholes, including all 12 validation drillholes drilled under supervision of IMC, comprising 214 samples;

IMC deems the processes by which the data above have been generated, comply with industry standard QA/QC procedures [Appendix E (III)].

7.1.8.1 Validation Process

The data used were in good order and the hard copies examined were all readable and well preserved. All the relevant data was transmitted into the cross sections, plans, maps and reports which were prepared for internal use and third parties outside the company.

The drillhole validation process involved checks on the accuracy of information and identifying errors. In this respect, the following validation processes have been applied to the data from drillholes supervised by IMC:

- Checking collar surveys against the topographic surface;
- Ensuring that total drillhole depth and geological depth match;
- Validating seam depths using lithological and geophysical logs;
- Validation of the base of weathering;
- Checking coal quality sample test intervals against seam depth.

For 167 historical drillholes, the validation process included the following:

- Relative levels of the drillhole collars and topography were taken from the mine model provided by the client.
- Drillholes with seam data were checked and erroneous data discarded.
- The spatial distribution of data points were observed by drawing iso contours and histograms for seam parameters. Inconsistent data (outliers) in respect of specific seams were discarded. The validated database was then merged with the available results from the validation drilling programme.

- The seam (structural) data for the 166 historical drillholes were investigated by IMC and coal seams were re-correlated.
- This was followed by a study of quality data for 93 drillholes which were made available to IMC to establish their spatial coherence using iso-maps. This exercise identified outliers which were then discarded. The results of the exercise are presented in the table below and detailed in Appendices C (III) and C(IV).

Table 7-13 Validation of historic seam and quality information

Seam	Quality data provided by client	Quality data used in the model
P2	21	13
P1	24	22
LP	52	45
Q4	60	53
Q3	83	71
Q2	87	71
Q1	88	72
LQ	65	58

The data provided by the Client have been detailed in Appendices C- I to C- IV.

Once validation was complete, IMC merged the historical and recent databases to create one master database to import to Minex.

In general, the data obtained from the recently drilled drillholes were found to a large extent to be harmonious with the corresponding historical drillholes. In cases where the datasets did not correlate, the data from the validation drillholes was used. IMC is confident that the validated database is suitable for geological modelling and resource estimation.

7.1.9 Data Points & Spacing

According to the PTBA technical team, the locations of data points in the past were determined based on the geological information obtained from the known surface geological structures as well as the existing borehole information. This formed the existing distribution of the boreholes present at the deposit.

The confirmatory borehole campaign in 2014 supervised by IMC confirmed the reliability of information obtained from the boreholes in the past.

In the context of resource modelling and estimation for Peranap, IMC deems the following as Data Points ("**DP**") for use in the geological model and resource estimation:

- Data from historical boreholes which have undergone the validation process and for which proximate analyses data are available. However, drillholes which have undergone the validation process but do not have proximate analysis were used for structural modelling only.

- 12 cored drillholes from the 2014 validation drilling programme.

7.1.10 Orientation of Data in relation to Geological Structure

It is possible that uncertainties may still exist in relation to the data orientation due to existing borehole spacing not being dense enough to delineate the trends in coal quality and seam morphology.

It is understood that all boreholes were drilled vertically with no predetermined orientation or drilling angle. Precise details regarding verticality are unknown, however for the purpose of computer modelling, all the boreholes were assumed to be vertical in IMC's geological modelling.

7.1.11 Seam Picking, Correlation & Overall Geometry

The PTBA concession is part of a multi-seam deposit where a number of seams is wedging as well as splitting. This makes it challenging to correlate and identify the seams. Furthermore, the interburden thicknesses variation between the seams further complicated the correlation task. Relatively more consistent seams, as well as marker horizons assisted the overall correlation exercise.

The other comparative analysis included interburden thickness between seams, seam thickness, seam grouping, lithological characteristics of rocks between seams, contour data of the coal seams against the known structure of the deposit.

However, the database check exercise by IMC revealed that some of the seam correlation in the past was not correct for certain seams. IMC geological team has reworked the logs and corrected these horizons accordingly based on the overall geometry in the geological model and the data obtained from the new boreholes. The details of re-correlated seam names in the relevant boreholes are given in Appendix C (IV).

7.1.12 Geological Database & Geological Interpretation

IMC confirms that the data from all of the boreholes and surface mapping data available for this property were used to develop the maps, plans and cross sections.

Coal seam correlation was determined from the general seam morphological characteristics as well as other marker horizons present at stratigraphic column. The structural interpretation was done by integrating the seam correlations with bedding to core angles logged in drill core as well as bedding dips observed at surface.

It appears that the data provided was sufficient to correlate coal seams.

The coal seams were defined at 1:10,000 scale maps. From these blocks an average seam thickness and specific gravity for the block area were used to estimate the in-situ tonnage of coal.

It should be noted that the mineability of a given seam is not simply tied to its individual seam thickness, but also to its quality, and the number and thickness of seams and partings immediately adjacent to it. Furthermore, mineability is greatly determined by

mining methodology and equipment selection. The larger the equipment, the more difficult it becomes to mine selectively.

7.2 Estimation of Resources

7.2.1 Coal Seams Assessed

In this report, following group seams were assessed for resource estimation.

- P2
- P1U
- P1L
- LPU
- LPL
- Q4U
- Q4L
- Q3U
- Q3L
- Q2U
- Q2L
- Q1U
- Q1L
- LQ

Their seam thickness and various seam attributes in contour plans are given in Appendix I and Appendix J respectively.

The resources for PTBA's concession were assessed in accordance with 2012 Edition of the "Australian Code for Reporting of Exploration Results, Mineral Resource and Ore Resources (JORC Code)."

In addition, "Australian Guidelines for the Estimation and Classification of Coal Resources" published by Guidelines Review Committee on behalf of the Coalfields Geology Council of New South Wales and the Queensland Resources Council, Australia in November, 2014 was utilised in estimation process.

7.2.1.1 Resource Boundary

Of the total 182.3 km^2 Peranap concession area, the target are is confined to the Southern Extension area, bound to the north by the River Kuantan, in the east by the Senkilo River, to the south by the concession boundary and in the west by a delimiting line defined by a 400 m influence west of the last series of drillholes for which coal quality information is available (NP-10, NP-11, NP-50, NP-52, SK-16 and SK-17). The area amounts to 76.79 km^2.

- Insitu Relative density ("**RD**") has been used. Air dried (ad) RD has been converted to in situ basis ("**ID**") using the Preston-Sanders equation, which is stated below.

$$ID = \frac{RD(ad).[100 - IM(ad)]}{[100 + [RD(ad).(TM(ins) - IM(ad))] - TM(ins)]}$$

- Where
- ID = In-situ Density
- RD (ad) = Relative Density (adb)
- IM (ad) = Inherent Moisture (adb)
- TM (ins) = Total Moisture (ar)
- Relative density data of coal seams from historical boreholes are not available. Such values for IMC boreholes are widely spaced (12 boreholes spread over about 63 km^2) hence seam wise density values have been averaged and used for resource estimation. In view of the limited data, the RD of the parent seams and their splits have been amalgamated. The relative density of various seams are tabulated below:

Table 7-14 Relative densities

Seam	RD	ID
P2	1.49	1.25
P1	1.29	1.15
LP	1.32	1.17
Q4	1.33	1.17
Q3	1.31	1.16
Q2	1.33	1.17
Q1	1.32	1.17
LQ	1.34	1.19

- Through statistical analysis of the seam parameters, which included variogram modelling and estimation by Kriging and on geological considerations Measured and Indicated Resource categories have been assigned 400 m and 800 m radii of influence from validated drillholes respectively. Limit for inferred resource has been taken as 1500m.
- In several historical boreholes, not all coal seam intercepts were analysed. As a result of this, coal seams and even their splits have differing areas under measured, indicated and inferred category.
- Isolated resource areas under both Measured and Indicated categories have been included in the larger category of resource when located within it. However, all

together detached areas have been excluded from the resource estimation, as shown in the Figure 7-8.

- Based on drillhole data as well as field observations, the base of weathering surface has been considered as 6 m below topography;
- A global reduction of 7.5% has been made to the resource to account for 'unforeseen geological situations'.
- All resource figures are rounded to two decimal places.

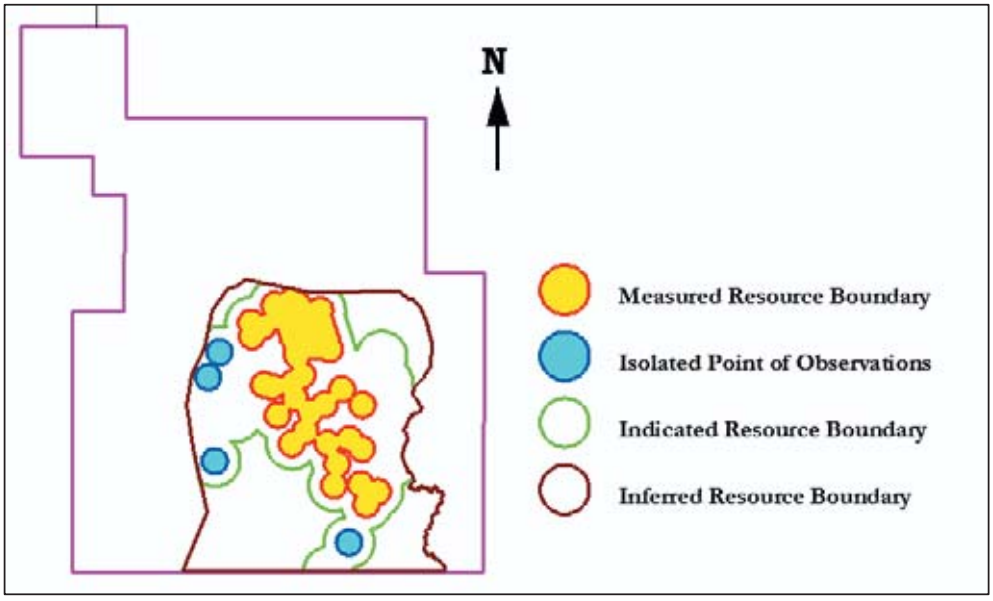


Figure 7-7 Isolated and detached resource areas

IMC confirms that the magnitude of error associated with an estimate of the quantity of resource was evaluated in this study. Geostatistics allows calculation of the variance of errors, and thus confidence levels, and is a potentially valuable tool for classifying resources on the basis of geological assurances.

Assessment of resource is based on "area", "thickness", and "specific gravity". Out of these, concession area is a fixed quantity and specific gravity is dependent on ash.

The confidence of the resource thus relies wholly on the quality of the datasets of thickness and ash. These data sets have been validated using geo-statistical tool of Kriging (see also section 7.1.7 "Geological Modelling"). The estimates conform to the spatial position of the predicted values.

Radii of influence are used in Point of Observations' maps for structure and quality. The radii of influence were determined by consideration of the perceived and observed variability in thickness and coal quality for seams, and by examining histograms and statistics of ash content of seams.

As a result of geological consideration and statistical analysis of seam parameters which include Semi- variograms and validation by Kriging, measured, indicated and

inferred resource categories have been computed on the basis of 400m, 800m and 1500m radii of influence from the Points of Observations respectively.

Resources are classified according to following parameters:

Table 7-15 Point of observation criteria for structure, thickness and quality modelling

Parameter	Unit / Tolerance	Comment
Measured Resources	400m	Radius
Indicated Resources	800m	Radius
Inferred Resources	1,500m	Radius

Areas of confidence (low, medium, high) are produced from these plots and these are finally combined to produce areas of Measured, Indicated and Inferred which are used to subdivide the resource tonnage estimates.

The Competent Person is satisfied that the stated Mineral Resource classification reflects the geological controls interpreted and the estimation constraints of the deposits.

7.2.3 Assumptions

7.2.3.1 Mining & Infrastructure

IMC considers that the coal resource estimation was made under assumed and justifiable technical, economic and development conditions at which the deposit is expected to become economically extractable in the short term as the coal resources from this project will be used to supply a mine mouth power plant and as such is a captive market.

Considering the depth for the most suitable economic seams, the deposit is assumed to be suitable for an opencast operation under the present economic and technical conditions to extract such seams.

It is assumed that mining will be undertaken using a truck and shovel operation. The minimum extractable seam thickness is 0.5 m.

IMC also considers that the geotechnical and hydrogeological issues that will be encountered will be the common ones typical to this type of coal deposit although this aspect especially the impact of three rivers needs further study.

In addition, IMC considers that the concession area is situated in a reasonable location where relevant infrastructure and potential development in a reasonable timeframe may be justified.

7.2.3.2 Beneficiation

IMC considers that the coal extracted from the deposit will be a thermal one and will not be processed or washed due to its technical characteristics described in the preceding sections. Instead, it is expected that the raw coal will be mined, and be transported to a stockpile and then be transferred directly to the power station.

However, further investigation will still be necessary to characterise the coal further for its suitability for power station usage and for appropriate boiler design.

7.2.3.3 Environmental & Social

Land to the north and east of the current target area is protected forest and as such this is excluded as an area of interest.

During this assessment, no environmental and social impact assessment was undertaken at the concession, therefore, IMC cannot comment on any environmental and social matters that could prevent the development of the available resources yet. However, at this stage, IMC considers that no environmental or social restrictions or issues will be encountered within the Concession area.

7.2.4 Resource Categories & Confidence

7.2.4.1 JORC 2012

The JORC Code 2012 sets out minimum standards, recommendations and guidelines for the public reporting of Mineral Resources and Ore Reserves.

According to the JORC Code a **Mineral Resource** is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade (or quality), and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade (or quality), continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling. Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories.

Inferred Resources

An 'Inferred Mineral Resource' is that part of a Mineral Resource for which quantity and grade (or quality) are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade (or quality) continuity. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to an Ore Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

Indicated Resources

An Indicated Mineral Resource is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit.

Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing gathered through appropriate techniques from locations such as

outcrops, trenches, pits, workings and drill holes, and is sufficient to assume geological and grade (or quality) continuity between points of observation where data and samples are gathered.

An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Ore Reserve.

Measured Resources

A Measured Mineral Resource is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit.

Geological evidence is derived from detailed and reliable exploration, sampling and testing gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes, and is sufficient to confirm geological and grade (or quality) continuity between points of observation where data and samples are gathered.

A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proved Ore Reserve or under certain circumstances to a Probable Ore Reserve.

Ore (or Coal) Reserves

Although Ore Reserves are not being reported as part of this study, the relationship between them and Mineral Resources is illustrated in the figure below.

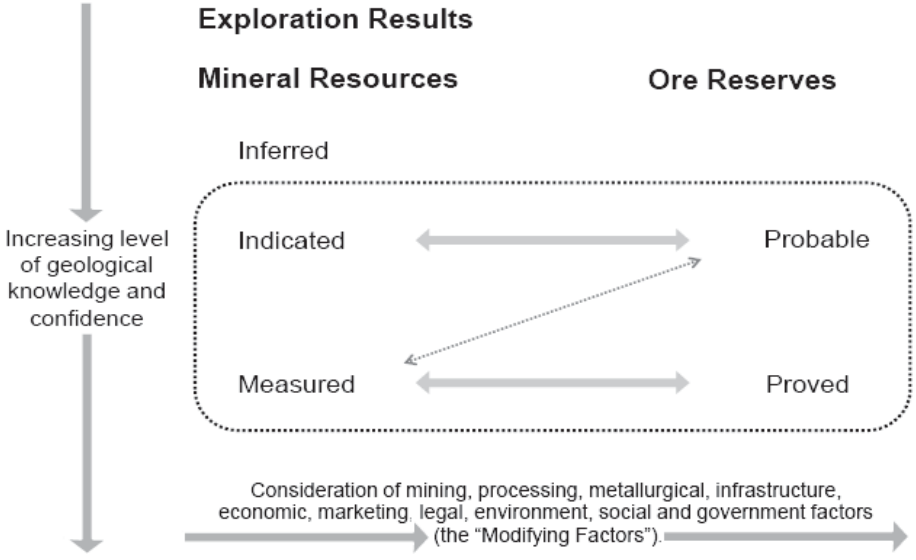


Figure 7-8 Relationship between Exploration Results, Mineral Resources & Ore Reserves

7.2.5 Reviews & Audits

Adequate reviews by internal IMC teams were undertaken before reporting of resources for Peranap.

7.2.6 Resource Statement

IMC confirms that the location, quantity, grade (or quality), continuity and other geological characteristics of the coal resources at PTBA's Peranap Deposit are known, estimated and interpreted from specific geological evidence and knowledge, including sampling; and there are reasonable prospects for their eventual economic extraction within the next 30-40 years.

Using the cut off limits and the criteria described above, the resources in the seams of interest to PTBA are stated in the tables below in accordance with 2012 Edition of the "Australian Code for Reporting of Exploration Results, Mineral Resource and Ore Resources (JORC Code)".

Table 7-16 Coal Resources for Peranap (0-100 m) – 2nd February 2015

Seam	MEASURED RESOURCE UP TO 100m						INDICATED RESOURCE UP TO 100m						INFERRED RESOURCES UP TO 100M					
	Area ('000 m^2)	Seam Thickness (m)	Volume ('000 m^3)	In-situ Density	Gross In-situ Tonnes (MT)	Net In-situ Tonnage (MT) 7.5% of Gross	Area ('000 m^2)	Seam Thickness (m)	Volume ('000 m^3)	In-situ Density	Gross In-situ Tonnes (MT)	Net In-situ Tonnage (MT) 7.5% of Gross	Area ('000 m^2)	Seam Thickness (m)	Volume ('000 m^3)	In-situ Density	Gross In-situ Tonnes (MT)	Net In-situ Tonnage (MT) 7.5%% of Gross
P2	2,453	1.11	2,846	1.25	3.557	3.290	3,631	0.97	3,067	1.25	3.834	3.546	10,823	0.9	9,241	1.25	11.551	10.685
P1U	149	0.64	96	1.15	0.11	0.10	2,558	0.94	2,449	1.15	2.816	2.605	111	0.93	58	1.15	0.067	0.062
P1L	4,312	0.825	3,298	1.15	3.793	3.509	6,139	0.79	4,995	1.15	5.744	5.313	2,837	0.8	2,387	1.15	2.745	2.540
LPU	11,554	1.49	17,233	1.17	20.162	18.650	12,862	1.47	18,625	1.17	21.791	20.157	5,187	1.43	6,366	1.17	7.449	6.891
LPL	11,276	3.52	39,693	1.17	46.441	42.958	13,913	3.39	45,663	1.17	53.426	49.419	6,326	3.23	16,535	1.17	19.346	17.896
Q4U	12,069	1.62	19,599	1.17	22.931	21.211	12,389	1.64	20,395	1.17	23.862	22.072	2,342	1.62	3,561	1.17	4.166	3.854
Q4L	12,145	1.59	19,286	1.17	22.565	20.873	11,547	1.59	18,344	1.17	21.463	19.853	2,142	1.58	3,158	1.17	3.694	3.417
Q3U	13,641	1.48	20,237	1.16	23.475	21.714	14,121	1.55	22,664	1.16	26.29	24.318	6,641	1.55	10,427	1.16	12.096	11.189
Q3L	12,214	0.73	8,976	1.16	10.412	9.631	12,170	0.8	10,534	1.16	12.219	11.303	4,968	0.84	5,067	1.16	5.878	5.438
Q2U	10,761	1.12	12,052	1.17	14.101	13.043	13,646	1.08	14,196	1.17	16.61	15.364	5,277	1.06	5,289	1.17	6.188	5.724
Q2L	9,606	0.79	7,623	1.17	8.919	8.250	11,923	0.76	8,637	1.17	10.106	9.348	5,778	0.81	5,976	1.17	6.992	6.642
Q1U	10,996	0.72	8,373	1.17	9.796	9.061	7,186	0.74	5,038	1.17	5.895	5.453	1,877	0.74	1,507	1.17	1.763	1.674
Q1L	12,633	1.11	14,522	1.17	16.991	15.717	12,797	1.09	13,137	1.17	15.37	14.217	2,947	1.1	3,568	1.17	4.174	3.861
LQ	7,263	1.7375	14,706	1.19	17.5	16.188	11,750	1.68	17,176	1.19	20.439	18.906	6,992	1.57	9,010	1.19	10.722	9.918
	Total Measured					**204.197**	**Total Indicated**					**221.875**	**Total Inferred**					**89.569**

Table 7-17 Coal Resources for Peranap (100-150 m) – 2nd February 2015

Seam	MEASURED RESOURCE 100- 150m Depth						INDICATED RESOURCE UP TO 100- 150m Depth						INFERRED RESOURCES UP TO 100-150m Depth					
	Area ('000 m^2)	Seam Thickness (m)	Volume ('000 m^3)	Insitu Density	Gross Insitu Tonnes (MT)	Net Insitu Tonnage (MT) 7.5% of Gross	Area ('000 m^2)	Seam Thickness (m)	Volume ('000 m^3)	Insitu Density	Gross Insitu Tonnes (MT)	Net Insitu Tonnage (MT) 7.5% of Gross	Area ('000 m^2)	Seam Thickness (m)	Volume ('000 m^3)	Insitu Density	Gross Insitu Tonnes (MT)	Net Insitu Tonnage (MT) 7.5% of Gross
P2	-	1.11	-	1.25	0	0.000	-	0.97	-	1.25	0	0.000	1,949	0.88	1,524	1.25	1.91	1.77
P1U	-	0.64	-	1.15	0	0.000	-	0.94	-	1.15	0	0	-	0.92	-	1.15	-	-
P1L	42	0.82	24	1.15	0.028	0.026	46	0.79	25	1.15	0.028	0.0259	45	0.8	25	1.15	0.03	0.03
LPU	590	1.51	1,091	1.17	1.277	1.181	3,624	1.5	5,908	1.17	6.913	6.394	1,178	1.46	1,850	1.17	2.16	2.00
LPL	659	3.58	2,987	1.17	3.495	3.233	3,701	3.47	14,285	1.17	16.713	15.459	1,248	3.34	4,739	1.17	5.54	5.13
Q4U	1,609	1.66	3,094	1.17	3.619	3.348	4,805	1.62	6,929	1.17	8.107	7.498	1,720	1.59	1,794	1.17	2.10	1.95
Q4L	1,663	1.62	3,038	1.17	3.555	3.288	4,882	1.57	6,739	1.17	7.884	7.292	1,693	1.53	1,648	1.17	1.93	1.79
Q3U	1,515	1.51	2,700	1.16	3.132	2.897	4,029	1.58	6,903	1.16	8.007	7.406	4,802	1.62	9,635	1.16	11.18	10.35
Q3L	1,467	0.75	1,263	1.16	1.465	1.355	3,422	0.82	3,088	1.16	3.582	3.313	5,244	0.87	5,473	1.16	6.35	5.88
Q2U	1,950	1.12	2,074	1.17	2.426	2.244	5,842	1.07	6,155	1.17	7.201	6.660	1,368	1.05	1,146	1.17	1.34	1.24
Q2L	1,870	0.75	1,334	1.17	1.561	1.444	5,514	0.75	4,034	1.17	4.72	4.366	2,054	0.79	1,440	1.17	1.68	1.56
Q1U	420	0.72	322	1.17	0.376	0.348	1,430	0.73	877	1.17	1.026	0.9490	2,349	0.72	1,305	1.17	1.53	1.42
Q1L	685	1.11	797	1.17	0.933	0.863	5,475	1.04	4,484	1.17	5.246	4.8525	6,638	1.02	5,546	1.17	6.49	6.01
LQ	2,422	1.88	7,150	1.19	8.509	7.871	5,544	1.92	12,685	1.19	15.095	13.962	6,948	1.71	9,376	1.19	11.16	10.33
	Total Measured					**28.098**	**Total Indicated**					**78.182**	**Total Inferred**					**49.46**

The summarized mean coal quality data of each seam is tabulated below:

Table 7-18 Mean coal quality data

Seam Name	TM % (ar)	IM % (adb)	Ash % (adb)	VM % (adb)	TS % (adb)	GCV (adb) in Kcal/Kg
P2	47.24	14.98	16.93	34.8	0.3	4,132
P1	50.35	17.22	12.66	38.4	0.44	4,531
P1U	51.13	16.03	15.27	37.11	0.19	4,438
P1L	53.09	14.28	11.79	38.45	0.82	4,786
LP	50.44	18.61	8.66	39.08	0.17	4,701
LPU	52.17	17.65	8.33	38.52	0.58	4,773
LPL	52.56	19.19	6.83	39.4	0.21	4,834
Q4	51.44	18.64	7.76	38.95	0.36	4,795
Q4U	52.96	16.81	8.92	38.40	1.35	4,827
Q4L	53.98	16.68	9.41	38.54	0.6	4,791
Q43	46.17	19.7	8	38.23	0.27	4,673
Q3	51.68	17.86	7.36	39.22	0.39	4,860
Q3U	50.26	17.25	9	36.71	0.5	4,708
Q3L	47.4	12.812	16.2	40.76	0.2	4,789
Q2	50.60	17.26	9.24	38.48	0.22	4,790
Q2U	52.6	20.52	8.77	36.56	0.4	4,500
Q2L	52.27	19.79	8.53	36.23	0.23	4,602
Q12	51.51	16.09	6.78	40.30	0.07	5,018
Q1	51.79	17.91	7.05	38.86	0.19	4,910
Q1U	50	14.58	7.9	41.40	0.26	5,105
LQ	50.81	17.48	8.19	38.63	0.19	4,854

Table 7-19 Summarised Coal Resources – 2nd February 2015

Category	Net Insitu Tonnage (Mt)	
	Up to 100 m depth	100 – 150 m depth
	Up to 100 m depth	**100 – 150 m depth**
Measured	204.2	28.1
Indicated	221.9	78.2
Inferred	89.6	49.5
Total (Measured + Indicated)	**426.1**	**106.3**
Total (M + I + I)	**671.5**	

Resource table notes

- Resource area of 63 km^2
- Minimum coal thickness of 0.5 m

- 100 m and 150 m depth cut offs
- Maximum depth of 150m from surface
- Radii of influence from validated drillholes: 400 m (Measured) 800 m (Indicated)
- 6 m base of weathering

7.3 Risk Analysis

Even though the deposit is characterised by relatively simple geo-mining conditions, IMC notes the following:

- Mismatch in borehole elevation and topographic contour provided by PTBA might lead to incorrect assessment of strip ratio. Since the elevation of the validation boreholes drilled under supervision of IMC have validated the topographic map to an acceptable level, the collar data of draped boreholes have been used for modelling. This might impact the estimation of strip ratio. It, therefore, is needed to be mitigated by fresh survey.
- The borehole density of 2.68 boreholes/ km2 is slightly on lower side. To mitigate and optimize the influence of data point for categorization of resource under major, indicated and inferred categories, support of geo-statistical studies were taken. To mitigate the uncertainties on this count, the resource have been discounted to the extent of 7.5%.
- In low rank coals like Peranap, fowling and slagging tendencies in coal ash are possible. The data generated in terms of ash analysis/ ash fusion range is limited to only one analysis for each of the seam. Further investigation will be necessary to characterize coal ash further for its suitability at power station usages and appropriate boiler design.
- The impact of three rivers namely Kuantan and Ketipo surrounding the prospect to the north and east and Senkilo flowing right within the block need to be estimated by an appropriate hydrogeological study.

7.4 Conclusions

IMC was engaged to prepare an independent coal resource estimate for PTBA Peranap project located in the Raft Kulim and Kelayang Districts within Hulu regency Riau Province, Indonesia. Accordingly, IMC synthesized data from 179 drillholes (167-historical and 12-validation) and quality from 105 drillholes. IMC deems the process by which data above have been generated, comply with the industry standard Quality Assurance and Quality Control (QA/QC) procedure.

The Peranap coal deposit is a multi-seam deposit with eight major coal seams. It is interpreted the deposit has on an average low to medium structure complexity. The strike is NNW-SSE with gentle dips of 2-3º to the south. Presences of faults have not been postulated. The geo-mining conditions are predicted to be congenial.

Total coal resources have been estimated to a depth of 150 m in accordance with the criteria JORC code and amounts to approximately 671.5 Mt with average calorific value of 4700 Kcal/Kg on ADB.

7.5 Further Work

- A new topography survey is recommended to confirm the surface levels used in this study.
- Since coal from Peranap project is linked to mine mouth power station, additional data is required for full characterisation of coal ash. For this purpose around 15 boreholes need to be drilled.

Competent Person's Consent Form

IMC Group Consulting Limited

Pure Offices
Lake View Drive, Sherwood Park
Nottingham, NG15 0DT
United Kingdom

Email: mining@imcgcl.com
Web: www.imcgcl.com

Competent Person's Consent Form

Pursuant to the requirements of ASX Listing Rules 5.6, 5.22 and 5.24 and Clause 9 of the JORC Code 2012 Edition (Written Consent Statement)

Report name

Coal Resource Estimate of the Peranap Coal Deposit

(insert name or heading of Report to be publicly released ("Report"))

IMC Group Consulting Limited

(insert name of company releasing the Report)

Peranap

(insert name of the deposit to which the Report refers)

26th June 2015

(Date of Report)

Statement

I/~~We~~

Pradeep Kumar

(insert full name(s))

confirm that I am the Competent Person for the Report and:

- I have read and understood the requirements of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition).
- I am a Competent Person as defined by the JORC Code 2012 Edition, having five years' experience that is relevant to the style of mineralisation and type of deposit described in the Report, and to the activity for which I am accepting responsibility.
- I am a Member or Fellow of The Australasian Institute of Mining and Metallurgy or the Australian Institute of Geoscientists or a 'Recognised Professional Organisation' (RPO) included in a list promulgated by ASX from time to time.
- I have reviewed the Report to which this Consent Statement applies.

I/~~We~~ am a full time employee of

IMC

(insert company name)

and have been engaged by

PT Tambang Batubara Bukit Asam (PTBA)

(insert company name)

To prepare the documentation for

Peranap

(insert deposit name)

On which the Report is based, for the period ended

2nd February 2015

(Insert date of Resource statement)

I have disclosed to the reporting company the full nature of the relationship between myself and the company, including any issue that could be perceived by investors as a conflict of interest.

I verify that the Report is based on and fairly and accurately reflects in the form and context in which it appears, the information in my supporting documentation relating to Mineral Resources.

I consent to the release of the Report and this Consent Stateme

IMC Group Consulting Limited

(insert reporting company name)

26th June 2015

Signature of Competent Person

Date

AusIMM

317269

Professional Membership
(insert organisation name)

Membership Number

Vassilis Roubos – Nottingham, UK

Signature of Witness

Print Witness Name and Residence
(e.g. town/suburb)

ANNEX IV

2009 OMBILIN USGS REPORT

Update of Reserves

for

P.T Tambang Batubara Bukit Asam (PTBA)

Tanjung Enim Region
Sumatra, Indonesia

Submitted by

IMC Group Consulting Limited

March 2009

3.6.3 Stratigraphy and Coal Seams 61
3.6.4 Quality 63
3.6.5 Reserve Base 63
3.6.6 Reserve 63
3.7 KUNGKILAN 64
3.7.1 Nature of the Evidence 64
3.7.2 Geological Structure 64
3.7.3 Stratigraphy and Coal Seams 65
3.7.4 Quality 65
3.7.5 Reserve Base 65
3.7.6 Reserve 65
4 OMBILIN REGION 66
4.1 OMBILIN DEPOSIT 66
4.1.1 Nature of the Evidence 66
4.1.2 Geological Structure 67
4.1.3 Stratigraphy and Coal Seams 67
4.1.4 Quality 68
4.1.5 Reserves Base 69
4.1.6 Reserves 70
5 PERANAP REGION 72
5.1 PERANAP DEPOSIT 72
5.1.1 Nature of the Evidence 72
5.1.2 Geological Structure 73
5.1.3 Stratigraphy and Coal Seams 74
5.1.4 Quality 74
5.1.5 Reserve Base 75
5.1.6 Reserves 75
6 IPC DEPOSIT 77
6.1.1 Nature of the Evidence 77
6.1.2 Geological Structure 78
6.1.3 Stratigraphy and Coal Seams 78
6.1.4 Quality 79
6.1.5 Reserve Base 79
6.1.6 Reserves 80

Table 3-15 Air Serelo - Indicated Reserve Base as at 1st January 2009 58
Table 3-16 Banjarsari - Exploration History 58
Table 3-17 Banjarsari - Historical Studies and Documentation 59
Table 3-18 Banjarsari - Measured Reserve Base as at 1st January 2009 59
Table 3-19 Banjarsari - Indicated Reserve Base as at 1st January 2009 60
Table 3-20 Bukit Bunian - Exploration History 60
Table 3-21 Bukit Bunian - Historical Studies and Documentation 61
Table 3-22 Seam Thicknesses at the Bukit Bunian Deposit 61
Table 3-23 Bukit Bunian - Measured Reserve Base as at 1st January 2009 63
Table 3-24 Bukit Bunian - Indicated Reserve Base as at 1st January 2009 63
Table 3-25 Kungkilan – Exploration History 64
Table 3-26 Kungkilan - Historical Studies and Documentation 64
Table 3-27 Kungkilan - Measured Reserve Base as at 1st January 2009 65
Table 3-28 Kungkilan - Indicated Reserve Base as at 1st January 2009 65
Table 4-1: Exploration History 66
Table 4-2 Weighted Average Coal Quality for Ombilin III 69
Table 4-3 Reserve Base for the Ombilin Deposit as at June 2002 – (Source PTBA) 69
Table 4-4 Ombilin 1 Reserve Base as at 1st January 2009 69
Table 4-5 Ombilin II Reserve Base as at 1st January 2009 70
Table 4-6 Ombilin III Reserve Base as at 1st January 2009 70
Table 4-7 Summary Reserve Base for the Ombilin Deposit as at 1st January 2009 70
Table 4-8 Ombilin I Recoverable Reserves as at 1st January 2009 70
Table 4-9 Ombilin II Marginal Recoverable Reserves as at 1st January 2009 71
Table 4-10 Ombilin III Recoverable Reserves as at 1st January 2009 71
Table 4-11 Summary of Recoverable Reserves at Ombilin as at 1st January 2009 71
Table 5-1 Peranap - Historical Studies and Documentation 73
Table 5-2 Average Quality of the Peranap Area 74
Table 5-3 Peranap - Measured Reserve Base 75
Table 5-4 Peranap - Indicated Reserve Base 75
Table 5-5 Peranap – Recoverable Reserve as at 1st January 2009 75
Table 6-1 Exploration at the IPC Concession – Source PTBA 78
Table 6-2 Generalised Coal Qualities for the IPC Concession 79
Table 6-3 Reserve Base for IPC 79
Table 6-4 Eagle 1 Recoverable Reserves to 80 m Depth as at 1st January 2009 80

1 OVERVIEW

1.1 INTRODUCTION

IMC Group Consulting Limited ("IMC" or "the Consultant") has been invited by PT Tambang Batubara Bukit Asam (PTBA or the Company) to undertake a revalidation of PTBA's coal reserves and resources within its licensed areas in Sumatra. This review will be used not only for the PTBA Annual Report but also for PTBA's Publish Capital Market.

In order to comply with this request IMC prepared proposals which were accepted by PTBA and the IMC Team departed the UK on 11th January 2009 arriving at the PTBA HQ on the morning of the 13th January 2009 with one member of the team arriving at the Ombilin Mine at a similar time.

The focus of the project was to examine the reserve calculations prepared by PTBA for its operations in Sumatra located at Tanjung Enim, Ombilin and Peranap and comment and adjust these accordingly. However, this portfolio was extended when IMC was informed that a further newly acquired operation in East Kalimantan, (IPC), was also to be included within the review.

The IMC team consisted of one underground mining engineer, one opencast mining engineer, two coal mining geologists, one financial analyst and one assistant geologist. This team was under the direction of Mr. John Warwick, Managing Director of IMC, who also acted as the underground mining engineer, and was project managed by Mr. David Foster, Principal Geologist IMC

1.4 SUMMARY OF USGS

The USGS classification system employs a concept by which coal is classified into resource/reserve base/reserve categories on the basis of the geologic assurance of the existence of those categories and on the economic feasibility of their recovery. Categories are also provided for resources/reserve base/reserves that are restricted because of legal, environmental, or technologic constraints.

Geologic assurance is related to the distance from points where coal is measured or sampled; thicknesses of coal and overburden; knowledge of the rank, quality, depositional history, areal extent, and correlations of coal beds and enclosing strata; and knowledge of the geologic structure.

Economic feasibility of recovery is affected not only by such physical and chemical factors as thicknesses of coal and overburden, quality of coal, and rank of coal, but also by economic variables such as price of coal, cost of equipment, mining, labour, processing, transportation, taxes, and interest rates, demand for and supply of coal, and by environmental laws, restrictions, and judicial rulings.

The classification system is designed to quantify the total amounts of coal in the ground before mining began (original resources) and after any mining (remaining resources). It is also designed to quantify the amounts of coal that are known (identified resources) and the amounts of coal that remain to be discovered (undiscovered resources).

The system also provides for recognizing amounts of coal that are

(1) standard distances from points of thickness measurements - measured, indicated, inferred, and hypothetical;

(2) similar to coal currently being mined (reserve base and inferred reserve base);

(3) economically recoverable currently (reserves and inferred reserves);

(4) potentially recoverable with a favourable change in economics (marginal reserves and inferred marginal reserves); and

(5) sub-economic because of being too thin, too deeply buried, or lost-in-mining.

The derivation of the Reserves base is shown in Figure 1-1. The reserve base is identified coal defined only by physical and chemical criteria such as thicknesses of coal and overburden, quality, heat value, rank, and distance from points of measurement. The criteria for thickness of coal and for overburden have been selected so that the reserve base includes some currently sub-economic coal.

The concept of the reserve base is to define a quantity of in-place coal, any part of which is or may become economic depending upon the method of mining and the economic assumptions that are or will be used. An additional purpose is to aid in long-range public and commercial planning by identifying coal suitable for economic recovery. Thus, resource specialists need not expend their time identifying the component parts of coal deposits that are currently economically recoverable (reserves) because the reserve base category contains much of the coal that will be classed as reserves in the foreseeable future.

Those required to classify coal as being economically recoverable, marginally recoverable, or sub-economic can examine reserve base estimates to locate such coal.

The Reserve Base for all the PTBA mines and deposits has been defined according to the above, the Coal Resource Classification System of the US Geological Survey (USGS), 1986. PTBA have not determined the coal resources available to them but have been realistic and only estimated and assessed the Reserves Base based on the criteria laid down in the USGS documentation.

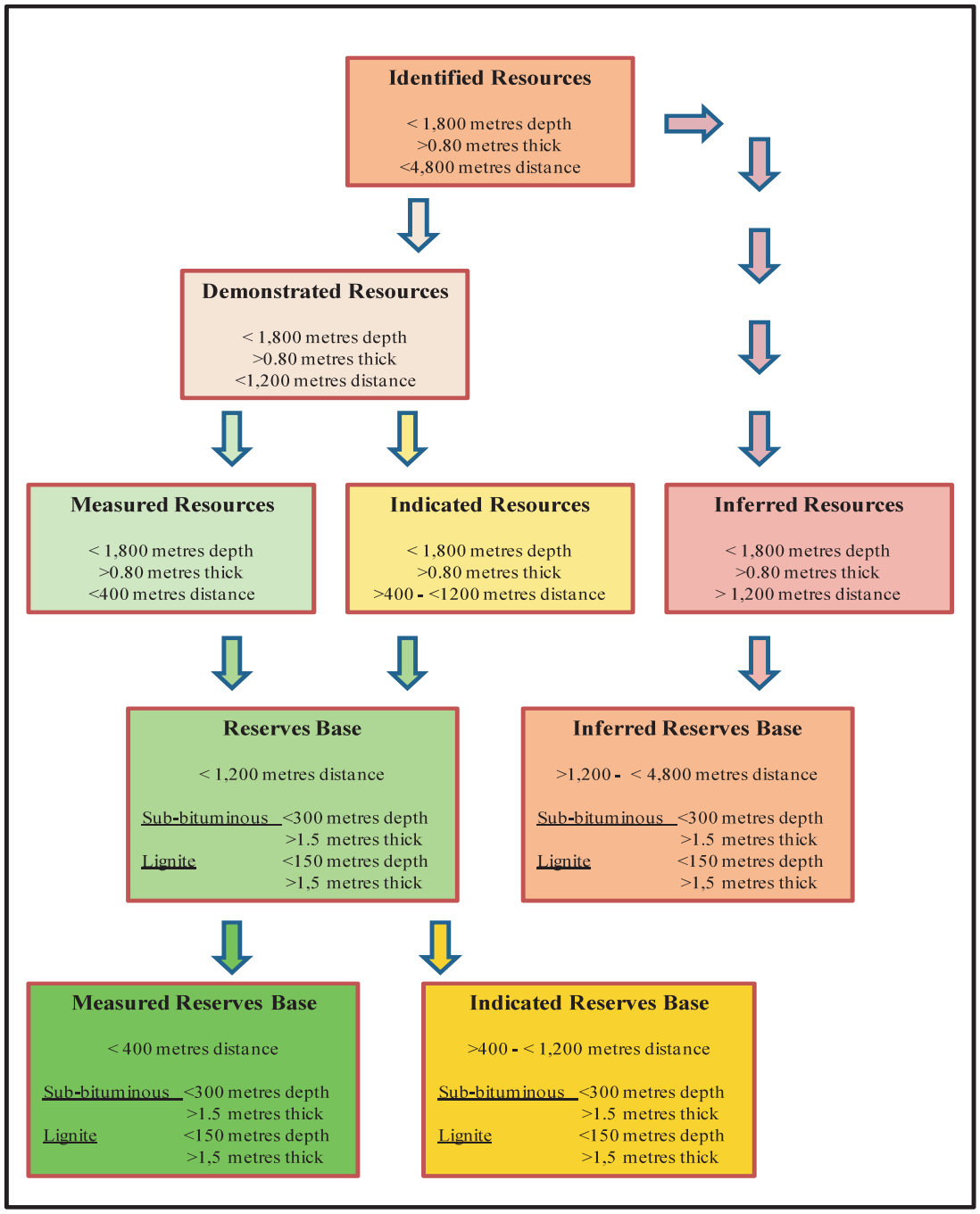


Figure 1-1 USGS Reserve Base Classification used at PTBA

The three main definitions used in the system are shown below:

- **Resource**: A naturally occurring concentration or deposit of coal in the Earth's crust, in such forms and amounts that economic extraction is currently or potentially feasible.
- **Reserve Base**: Those parts of the identified Resources that meet specified minimum physical and chemical criteria related to current mining and production practices, including quality, depth, thickness, rank, and distance from point of measurement. The *Reserve Base* is the in-situ demonstrated (measured

plus indicated) resource from which the Reserve is estimated. The *Reserve Base* may include Resources which have a reasonable potential for becoming economically exploited by methods not currently proved.

- **Reserve**: Virgin and/or accessed parts of the *Reserve Base* which could be economically extracted or produced at the time of determination, taking account of environmental, legal and technological constraints. The term '*Reserve*' need not signify that extraction facilities are in place or in operation. The *Reserve* is restricted to recoverable coal only.

Attached to these three main categories are qualifiers that relate to either geological assurance that are dependent on the level of exploration or relate to external aspects such as the market or financial studies that are applied to the deposit. These qualifiers are defined below:

- **Measured**: The category of virgin Reserve or Reserve Base having the highest degree of geological assurance.
- **Indicated:** The category of virgin Reserve or Reserve Base having a moderate degree of geological assurance.
- **Inferred:** The category of virgin Reserve or Reserve Base having a low degree of geological assurance.
- **Marginal/Potential:** The portion of a Reserve Base which could be extracted from a deposit by the development of a mine dedicated to supply a local secure market. Estimates incorporate planned pit geometry as defined by a Feasibility Study or subsequent detailed mine design. With the establishment of a guaranteed market, a Marginal/Potential Reserve would automatically become a Reserve.
- **Demonstrated**: A term used to qualify Reserve or Resource, and is the sum of the Measured and Indicated categories.

1.5 PTBA METHODOLOGY AND CRITERIA

The Resources and Reserve Base for all the PTBA mines and deposits has been defined according to the Coal Resource Classification System of the US Geological Survey (USGS), 1986. Definitions of the principal terminology are given above or are included in the Glossary of Terms in Annex A of this report. The application of the USGS system to the Tanjung Enim deposits and in particular the global criteria used in the estimations are shown in Table 1-6 below:

Table 1-6 USGS Reserve Base Criteria as used and defined by PTBA

Criterion	Bituminous		Sub-bituminous		Lignite	
	Measured	Indicated	Measured	Indicated	Measured	Indicated
Depth of Cover (m)	<650	<650	<300	<300	<150	<150
Minimum Seam Thickness (m)	1.5	1.5	1.5	1.5	1.5	1.5
Distance to Measurement Point (m)	<400	>400<1200	<400	>400<1200	<400	>400<1200
Specific Gravity (kg/m^3)	1.3	1.3	1.3	1.3	1.3	1.3

The coal at Tanjung Enim is largely sub-bituminous or lignite in rank with lesser amounts of bituminous coal. The coal at Peranap is lignite, at Ombilin is bituminous and at IPC is mainly sub-bituminous and partly bituminous. Bituminous coal in the Tanjung Enim area is treated as sub-bituminous for the purposes of the criteria used.

In most cases for the Ombilin area a specific gravity of 1.3 has been used to calculate reserve base. However in the case of Ombilin II, a specific gravity of 1.45 was used by Norwest and a minimum seam thickness of 1.00 m used in the calculations.

The PTBA deposits are at four stages of planning and development:

- Producing mines which have firmly defined boundaries and depth limits, together with licensed extraction areas and which are operating to an agreed mining plan. For these mines the Reserve can be reliably determined as the amount of coal remaining to be extracted within the proposed mine development limits.
- Future prospects or extensions to current mines for which a firm mining plan and boundary and a licence area have been established. Both the Reserve Base and Reserve has been calculated for these deposits.

Similar reports also exist at Tanjung Enim for the Ombilin mine and Peranap deposit but at present, little information is available for the IPC deposit. Only reports done by external consultants for the purchase of IPC by PTBA were available. Reports on the Ombilin mine are also available at the mine.

1.6.4 The Geological Database and Data Room

PTBA in 1997 and 1998 decided to rationalise the geology and mine planning departments at Tanjung Enim. As part of this rationalisation it was decided to establish a geological data room and all geological data was transferred from various locations around the Tanjung Enim area into this location at the PTBA HQ. These documents were catalogued into a computer database, labelled and then stored in the data room. Spare copies were stored on the mezzanine of the data room. Geological graphic logs, plans and maps along with mine planning maps were also catalogued and stored in purpose built plan cabinets. IMC was given unrestricted access to all geological data held in the data room during the course of this review and considers the system to be efficient.

Also as part of the rationalisation, base data from the borehole logs as well as seam qualities from laboratory analysis were compiled into a series of computer databases. These databases were designed as simply as possible for ease of use and fell into two major categories, geological (stratigraphy) databases and quality (seam analysis) databases. The number of geological databases was dependent on seam grouping, and the quality databases on the type of analysis.

All data input to these databases were checked and validated as far as possible by detailing the data sources and by performing simple modelling on the data. This allowed a check for errors such as transcription errors which formed the major component of all mistakes made on input. The databases were to be used for transfer of data to the geological and modelling systems and therefore reliability was of critical importance. The systems used by PTBA were previously only Minescape (part of the Mincom systems) but PTBA currently use Minex (from Gemcom) for current mines along with Minescape for some of the future deposits. Mine planning is still done using Minescape, particularly for the scheduling but PTBA are currently converting these to Minex.

The exercise of data input took approximately one year to complete and IMC notes that the same data room and databases are still currently in use and are well maintained.

The Peranap data is now input into a separate database for similar use and is located at the PTBA HQ. However the Ombilin databases which have a similar structure are located at the mine.

The format of the IPC data is not known apart from that this data has been input into Minescape and presumably will be incorporated into the system at PTBA although will be located at the mine site in Kalimantan.

1.6.5 Coal Quality and Analytical Procedures

Coal seam samples from exploration boreholes as well as bulk samples from the working mines, the coal stock pile and the loaded railway wagons are routinely analysed by PTBA's in-house laboratory facilities. Periodically, check samples are sent to three independent scientific agencies namely:

- Sukofindo, Jakarta
- Geosurface, Bandung
- Tekmira, Bandung

Construction of a new purpose-designed analytical laboratory has been completed adjacent to the Air Laya mine site, and is expected to come into full operation in March 2009. At the current time, analyses are continued to be carried out at the old laboratory near the PTBA main office block at Tanjung Enim. Some scientific apparatus will be transferred to the new location, and will be supplemented by the acquisition of new equipment.

The laboratory is registered with the Kamite Akreditas National (KAN) and undertakes analytical work in accordance with ISO/IEC 17025-2005. The current registration expires in March 2009, but will be renewed for a further year.

A total of 40 PTBA staff is employed in the analytical laboratory, including six graduate chemists. An average of 280 coal samples per week is analysed by the laboratory, with each sample requiring 40 hours to complete the full suite of analyses.

On arrival at the laboratory, the coal samples are reduced to a size of 0.2 mm by a series of crushers in a preparation room. Thereafter they are transferred to the laboratory for the analytical test work. Standard analyses and tests include:

- Proximate analysis for Total Moisture, Inherent Moisture, Ash Content, Volatile Matter and Fixed Carbon
- The determination of sulphur content is carried out according to both the ASTM and British standards.
- In addition, the Calorific Value (CV) of the coal is determined using bomb calorimeters.
- Measurements of the Ash Fusion Temperature of the coal are also carried out.
- Ash analysis for trace elemental coal constituents is undertaken by modern spectrometers.

When the new laboratory facility is fully established, PTBA intends to offer analytical services to non-PTBA coal mining companies in Indonesia on a contract basis.

Both the new and old laboratories were inspected by IMC, and it is considered that the procedures observed are professionally managed, and utilise modern, well-maintained and regularly calibrated equipment.

1.6.6 Validation of the Reserve Base and Reserves

IMC has reviewed the methods used by PTBA for geological data collection and management for the estimation of the reserve base and the mine planning procedures to delimit coal reserves for production scheduling. IMC has undertaken several check estimations on the reserve base, particularly at the operating mines using the same data and criteria that are employed by PTBA. In most cases IMC has obtained very close agreement with the PTBA estimates.

Further confidence is gained from the numerous estimates made by other external consultants in Feasibility and Pre-feasibility Studies carried out since the mid-1980's and which also support the PTBA estimates.

IMC considers that the recoverable tonnes of coal within the planned mine areas can support the current production schedules, and form a Reserve as defined by internationally accepted standards. There is high confidence that current production levels can be sustained.

1.7 General Aspects of the Mining and Mine Planning

1.7.1 Mining

In general, coal and waste are excavated using up to 70 tonne backhoe shovels with 3.2 to 4.0 m^3 buckets and 18 tonne construction type dump trucks. The coal trucks have larger skips than the waste trucks. Where the waste is hard, the rock is ripped whereas the coal is always ripped.

Some general comments on the mining are given below:

- At Air Laya, bucket wheel excavators (BWE) are used to excavate coal and overburden as well as shovel and dump truck. Air Laya is the only mine at present where BWE's are currently employed.
- The mining fleet is operated by contractors or it is rented and managed by PTBA.
- Drilling and blasting operations are at Air Laya and Bukit Kendi Southern Pit.
- There are slope stability problems at Bukit Kendi Southern pit and at MTBU.

1.7.2 Mine Planning

The 2004 – 08 total waste and coal production figures show that targets have not been achieved and the coal that has been excavated has been at a stripping ratio that is lower than the schedule.

All planning is done by computer using Minex and Minescape software. It is planned to do the mine scheduling using Minex. At present however, volumes and tonnages are calculated using Minescape and scheduling is completed using a spreadsheet. The mines in general are also optimised using Lerchs-Grossman pit optimisation algorithms.

Regarding the 2009 to 2018 schedule:

- From the plant list supplied, extra plant will be required in order to achieve the targets.
- The stripping ratios are higher in the next ten years as compared to the previous five years.
- There are significant increases in production of coal and waste over the next ten years.

4 OMBILIN REGION

4.1 OMBILIN DEPOSIT

The Ombilin Basin, containing the coal deposit is situated in the Bukit Barisan Range of mountains in West Sumatra. It is, in general about 25 km wide and 50 km long, trending northwest to southeast. This basin is a graben-like extensional structure (pull apart) resulting from early Tertiary age tensional tectonics associated with strike slip movement along the Great Sumatran Fault Zone. This basin structure has been well documented and it is not intended to give more than a précis of the deposit within this document with the coal bearing formation being described in more detail.

4.1.1 Nature of the Evidence

4.1.1.1 Exploration History

The coals were discovered in 1868 and exploration has been undertaken on the deposit since then with exploitation since 1892. Exploration on a regional basis of the Ombilin Area was conducted in the first half of the 20th Century and from old records it is clear the much of this was dedicated to coal, but this exploration declined subsequent to 1945 when the markets for coal were limited.

Exploration recommenced in the 1950's but no records are available for work concerning the coalfield until 1969. There is some indication that exploration may have been undertaken by Polish Technicians between 1961 and 1969 and this is the first recorded drilling noted by PTBA at Ombilin. Systematic exploration of the deposits started in the early 1970's and has continued since that date with the last exploration being in 1998.

This exploration has been carried out by different contractors, consulting companies and research institutes, with the inevitable result that standards of drilling, sampling, examination and reporting have varied considerably over the years.

Table 4-1 indicates the boreholes drilled for each area in the deposit upon which the reserve and resources are based. It also shows the state of the present electronic database.

Table 4-1: Exploration History

Deposit	Date	BH Series	No. on Electronic Database	No. listed by PTBA-UPO
Ombilin I Underground				
Sawahluhung	1971	DH	3	2
Sawahluhung	1980-1996	SL	81 (26 Duplicated but different co-ordinates)	55
Sawahluhung	1992-2002	SLE	30 (20 with No Data)	15
Sawah Rasau	1975-1996	SR	76 (25 with no co-ordinates)	70
Sawah Rasau	1986-1989	SRE	14	14
Ombilin II Underground				
Waringin	1970-1971	DH	2	2
Waringin	1978-1994	W	33	33
Sugar	1970-1971	DH	1	1
Sugar	1975-1985	S	21	21
Ombilin III Underground				
Sigalut	1991-1995	SG	25	25
TOTAL			**546 (including some duplicates)**	**503**

4.1.1.2 Data Evaluation

To delineate the deposit and the structure of the area, the Company had the usual suite of geological data available. Most of the evidence for the geological data at Ombilin is in the form of hard copy, both plans and borehole strip logs. No written logs or geological sections were available for the underground sites.

A certain number of the more recently drilled surface boreholes had a suite of geophysical logs run to check against the measured thicknesses and the core recoveries. However this was not the case for those holes drilled underground as no underground logging equipment is available to the mine.

However on the previous visit to Ombilin in 2002 IMC examined a selection of cores to inspect the state of core recovery from the boreholes. These were found to be adequate and reflected the state of the recording in the logs.

Validation checks were made on the layout plans to assess the tonnages available to the mine. The results of the check of the base data showed that the borehole strip logs and the plans were constructed to a high standard.

4.1.1.3 Data Storage

Most data is stored in the form of hard copy plans, maps and drill hole log sections at the Ombilin Exploration Office. These plans are stored by area in separate plan cabinets and chests with the base drillhole data being again stored by area. However some of this data has also been transferred to computer.

In 1997, a computerised database containing all geological and coal quality data was established at Tanjung Enim and the electronic files that form the basis for this database have been copied and sent to the Ombilin geological department. Data has been established in this database but it has been noted that duplicate records with conflicting co-ordinates have been input (refer to Table 4-1). Also, doubt exists as to the validity of some of the information input for some boreholes

4.1.2 Geological Structure

The general structure of the deposit is synclinal, plunging to the south east with the axis of the syncline running north east of the surface position of the Ombilin River. Dips on the synclinal limbs vary. On the south limb, the dips are generally less than 20^o but on the northern limb the dips reach approximately 45^o as seen in the drivages being driven for access to Ombilin III. However in the centre of the syncline the dips are very low, in the order 3^o to 6^o.

Faulting is present in the deposit. One of the main structural features, the Tanjung Ampalu Fault, a strike slip fault with a downthrow to the east, forms the eastern boundary to the deposit, although in actuality an arbitrary 650 m depth of cover line is taken as the limit of working. Coal is present to the east of this fault but the depth is much greater than in the present working areas.

The general trend of the major faulting is in a north south direction and this direction is postulated for major faulting in the Ombilin II and Ombilin III areas. However the Ombilin III area has had a total of 25.42 km of surface seismic survey shot to help delineate the structure. This has shown that although some of the faults do trend in the general direction of north-south, in the north east part of the area faulting is postulated as being essentially east west in direction.

Minor faulting seen in the workings of Ombilin I was not as intense as was expected with the minor faulting generally limited to throws of less than 2.5 m. The areas of Ombilin II and III have borehole spacings that make it entirely probable that minor faulting could be encountered in any working of the deposit in these areas. However taking into account that Ombilin I did not encounter many minor faults in the working of the longwall faces, it is probable that a similar intensity may be encountered in the other underground areas. However it must be stated that the risk of minor face stopping faults is very real and there is little that can be done to predict this minor faulting until the areas are accessed by drivages.

4.1.3 Stratigraphy and Coal Seams

The Tertiary strata of the Ombilin Basin overlie pre-Tertiary granitic rocks that are exposed on the perimeter and in the north central part of the basin. The sequence contains mainly freshwater deposits that grade upwards into marine sediments of early Miocene age.

The general sequence of the Tertiary strata within the basin is given below:

The Ombilin Formation:	1400 m thick
The Sawahtambang Formation:	550-610 m
The Sawahlunto Formation:	100-130 m
The Sangkarewang and Brani Formations.	

The formation of interest is the Sawahlunto Formation.

4.1.3.1 The Sawahlunto Formation

Within the area of the Ombilin Mine of PTBA, the coals that are considered workable are of Eocene age and lie towards the base of the sequence of Tertiary deposits that form the basin.

The Sawahlunto Formation is coal bearing and has an approximate average thickness of 120 to 130 m. In general it consists of claystone, micaceous siltstone, alternations of siltstone and fine bedded sandstone, fine to medium grained sandstones and the economically important coal seams.

Three workable coal seams exist in the Ombilin Area. These are Seam A, Seam, B and Seam C, and are named in descending order. Both Seam A and Seam C are developed to mineable thickness over the area. All seams are variable in thickness with the lowest seam, Seam C being extremely variable ranging from less than 0.5 m to over 18.0 m in the Ombilin II area.

Seam A

This seam is the uppermost and most consistent and extensively worked of the coals in the Sawahlunto Formation. The seam structure is relatively simple over the area with a dirt parting seen in the seam. This dirt parting is generally 0.70 to 0.80 m below the top of the seam and is consistent over the area where the seam is developed. The seam thickness varies between less than 0.50 m up to 3.50 m. In the areas considered workable by underground methods in Ombilin I, II and III, the average thickness of the seam is approximately 2.00 to 2.40 m.

Seam continuity has also been extensively proved and there is little doubt that the seam is present in areas delineated as being possible to mine by underground means.

The roof of the seam tends to consist of grey and dark grey claystone with intercalations of coaly shale. This immediate roof is very weak. The floor measures consist generally of carbonaceous claystone and in places siltstone or sandstone. The roof and floor contacts with Seam A tend to be very sharp.

Seam B

Seam B occurs approximately 20 m below Seam A and is usually as a single leaf seam that splits into two leaves in places. However the seam is generally thin, at approximately 0.50 to 0.85 m in thickness and only locally attains a workable thickness.

The roof and floor of the seam tend to be composed of claystones, but sandstone is recorded in some boreholes and in the area of Ombilin III some boreholes are postulated as having Seam B washed out.

Correlation of the seam is established in the areas and this has shown that in general the seam is too thin to be worked by underground methods.

Seam C

Seam C has only been worked in the area of the old mine workings at Ombilin and in the open cut sites at the outcrop. It occurs some 20 to 30 m below Seam B and markedly varies in thickness in Ombilin I and II from 0.5 m to upwards of 18 m with the average seam thickness being in the order of 6 m in the areas classed as workable be underground methods. However in Ombilin III the average thickness of the seam is much less with the maximum attained thickness being in the order of 5.43 m (seen in borehole SG12) and the average seam thickness in the order of 2.50 to 2.70 m in the areas considered workable by underground methods. The seam structure is complex with some thin inconsistent dirt partings.

The roof of the seam is generally carbonaceous claystone or siltstone and the immediate floor consists of claystone seatearth. Both the roof and floor contacts appear to be sharp when examined.

4.1.4 Quality

Very little seam quality data was available for inspection at Ombilin. Upon the request of IMC for sight of seam quality plans, IMC was informed that these were not available, as they were not constructed. It was stated that these qualities did not vary from the opencast sites or the underground mines. IMC cannot confirm whether this is the case.

What quality data was available was from the analysis of the washed coal from the washing plant located at the mine site. This data was for the product of output from the mines and from a mixture of all seams. What limited data is available on the seam quality is given in the feasibility reports on Ombilin II and Ombilin III.

The quality data for Ombilin II was in a volume of the report that was not available at the time this study was being compiled so this data was not able to be examined.

The data that was examined shows the seams to be very similar in quality in nearly all parameters measured. Table 4-2 from the Ombilin III report shows these parameters for each of the seams in the sequence.

Table 4-2 Weighted Average Coal Quality for Ombilin III

Parameter	Seam A	Seam B	Seam C
Inherent Moisture %	4.12	3.31	4.16
Ash %	10.58	26.71	10.43
Volatile Matter %	36.78	30.73	36.09
Fixed Carbon %	48.52	39.25	49.32
Calorific Value (kcal/kg)	6,918	5,612	6,734
Total Sulphur %	0.71	0.64	0.41

4.1.5 Reserves Base

The reserve base in the IPO report of 2002 was given as:

Table 4-3 Reserve Base for the Ombilin Deposit as at June 2002 – (Source PTBA)

Mine /Deposit	Measured Reserve Base (Mt)	Indicated Reserve Base (Mt)	Reserve Base (Mt)
Open Pit			
1. Kandi	0.249		0.249
2. Sapan Dalam	3.045		3.045
3. Langkok	1.775		1.775
Total	**5.069**		**5.069**
Underground			
1. Ombilin I	2.316		2.316
2. Ombilin II (Norwest)*	42.400	2.200	44.600
3. Ombilin III (DGM NEDO)**	29.474	14.598	44.072
4. Tanah Hitam II/Kandi II	5.513		5.513
Total	**79.703**	**16.798**	**96.501**
Grand Total	**85.383**	**16.798**	**102.181**

* Based on a 1.45 Specific Gravity and the figures calculated by Norwest and taken from the Norwest Report.
** Figures taken from the DGM NEDO Report on Ombilin III

All the Open Pits have now been closed down (due to illegal mining activities) and no further mining by open pit methods is planned. Hence the tonnage available for the open pits can now be deducted from the reserve base and are not reported here.

The areas of Tanah Hitam II and Kandi II can also be deducted, Tanah Hitam II and Kandi II being underground extensions of the open pits and are now outside the new concession area boundary.

Also since 2002 some 54,000 tonnes mined from Ombilin I and developments for the other areas can also be deducted mainly from Ombilin I.

Therefore the Reserve Base as at 1st January 2009 taking into account the above is given as:

Table 4-4 Ombilin 1 Reserve Base as at 1st January 2009

Mine / Seam	Measured Reserve Base (tonnes)	Indicated Reserve Base (tonnes)	Reserve Base (tonnes)
Ombilin I Underground			
Seam A			
Seam C			
Total	**2,262,000**	**0**	**2,262,000**

The Ombilin II area has had the reserve base calculated in 1986 by NorWest and then again in 1994 by CdF International. However the CdF assessment shows no provenance and cannot be verified or checked. Therefore as happened in 2002 IMC has again taken the NorWest assessment for the reserve base.

The criteria used was a total depth of 650 m limit

Table 4-5 Ombilin II Reserve Base as at 1st January 2009

Mine / Seam	Measured Reserve Base (tonnes)	Indicated Reserve Base (tonnes)	Reserve Base (tonnes)
Ombilin II Underground			
Seam A	18,587,000	3,315,000	21,902,000
Seam C	37,563,000	2,011,000	39,574,000
Total	**56,150,000**	**5,326,000**	**61,476,000**

It should be noted that this differs from the 2002 assessment of the reserve base for Ombilin II. It should also be noted that the CdF International total reserve base tonnage was given as 62.605 Mt which is very similar. The reason for the discrepancy with the 2002 reserve base is not known.

The Ombilin III area has had the reserve base calculated in 1996 by DGM-NEDO. This assessment was based on the USGS System and has been checked by IMC.

Table 4-6 Ombilin III Reserve Base as at 1st January 2009

Seam	Measured		Indicated		Total	
	Area (Ha)	Reserve Base (tonnes)	Area (Ha)	Reserve Base (tonnes)	Area (Ha)	Reserve Base (tonnes)
Ombilin III Underground						
A	603.50	16,393,975	247.60	6,315,270	851.10	22,709,245
C	383.00	10,930,400	172.10	4,619,225	555.10	15,549,625
Total	**986.50**	**27,324,375**	**419.70**	**10,934,495**	**1406.20**	**38,258,870**

Therefore the summary reserve base is shown below:

Table 4-7 Summary Reserve Base for the Ombilin Deposit as at 1st January 2009

Mine /Deposit	Measured Reserve Base (Mt)	Indicated Reserve Base (Mt)	Reserve Base (Mt)
1. Ombilin I	2,262,000	0	2,262,000
2. Ombilin II (Norwest)*	56,150,000	5,326,000	61,476,000
3. Ombilin III (DGM NEDO)**	27,324,375	10,934,495	38,258,870
Total	**85,736,375**	**16,260,495**	**101,996,870**

* Based on a 1.45 Specific Gravity and minimum seam thickness of 1.0 m as calculated by Norwest in their Feasibility Report.
** Figures taken from the DGM NEDO Report on Ombilin III

4.1.6 Reserves

4.1.6.1 Ombilin I

Ombilin I recoverable reserves are very finite. There are small patches of coal left that can be recovered from Seam A and Seam C. The tonnages planned to be recovered are:

Table 4-8 Ombilin I Recoverable Reserves as at 1st January 2009

Mine / Seam	Reserve Base (tonnes)	Recoverable Reserve (tonnes)	Comment
Ombilin I Underground			
Seam A	No Information	61,200	Based on Room and Pillar
Seam C	No Information	214,560	Based on Room and Pillar
Total	**2,262,000**	**275,760**	

4.1.6.2 Ombilin II

The Ombilin II reserves are as given below:

Table 4-9 Ombilin II Marginal Recoverable Reserves as at 1st January 2009

Mine / Seam	Reserve Base (tonnes)	Recoverable Reserve (tonnes)	Comment
Ombilin II Underground			
Seam A	21,902,000	2,518,560	Based on CdF International Plan
Seam C	39,574,000	12,739,680	Based on CdF International Plan
Total	**61,476,000**	**15,258,240**	

At Present Ombilin II does not have a working plan to access within the life of the Business Plan. Therefore IMC propose to designate the recoverable reserves at the Ombilin II sector of the mine as Marginally Recoverable until such time as a definitive plan and working method is devised.

IMC also think that until the soutirage system that is shown as planned is proved to work at Ombilin and that longwall in the C seam is successful if that is the system of choice, then the maximum working thickness for recoverable reserves should be held at 3.0 m. This allows then for other systems like continuous miners to operate if required. IMC has therefore reduced the tonnages from the C seam accordingly. IMC also has used in the calculation a RD of 1.35 to standardise the densities used in Ombilin as CdF International used an RD of 1.45 in their calculations.

4.1.6.3 Ombilin III

Ombilin III is at present being accessed by drifts and is the next sector to be mined. Therefore the reserves available in the plan can be designated as recoverable.

Table 4-10 Ombilin III Recoverable Reserves as at 1st January 2009

Mine / Seam	Reserve Base (tonnes)	Recoverable Reserve (tonnes)	Comment
Ombilin III Underground			
Seam A	22,709,245	7,521,483	Based on PTBA layout for Seam A
Seam C	15,549,625	0	No Mining Plans as yet for Seam C
Total	**38,258,870**	**7,521,483**	

4.1.6.4 Ombilin Summary

A summary of the Recoverable and Marginally Recoverable Reserves are shown in the table below:

Table 4-11 Summary of Recoverable Reserves at Ombilin as at 1st January 2009

Mine Sector	Recoverable Reserve (tonnes)	Marginally Recoverable Reserves (tonnes)	Total Reserves (tonnes)
Ombilin I	275,760	0	275,760
Ombilin II	0	15,258,240	15,258,240
Ombilin III	7,521,483	0	7,521,483
Total	**7,797,243**	**15,258,240**	**23,055,483**

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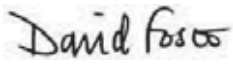
Production:		**David Foster** **Project Manager**
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Date: 16th March 2009

Annex A

GLOSSARY OF TERMS

Glossary of Terms

Air Dried Basis (ADB)	Air Dried Basis. Analysis of coal whereby coal is air dried at ambient temperatures leaving the inherent moisture within the coal.
ADT	Articulated Dump Trucks
Andesite	A class of fine-grained rock, of volcanic origin, containing mostly plagioclase and feldspar.
Anthracite or Anthracitic	A rank class of coal having more than 86% fixed carbon and less than 14% volatile matter on a dry, mineral-matter-free basis (as defined by ASTM). This class of coal is sub-divided into semi-anthracite, anthracite and meta-anthracite on the basis of increasing fixed carbon and decreasing volatile matter.
Anticline	A fold with an arch-like shape in which the limbs dip away from the hinge
Areal Extent	The area covered by a deposit
Ash	The incombustible residue from mineral matter contained as either contamination (rocks) or inherent within the coal. On combustion the mineral matter is reduced to ash the refractory component of mineral matter. Some minerals dissociate on heating to release carbon dioxide or moisture.
Ash content	The inert percentage of a laboratory sample of coal remaining after incineration to a constant weight under standard conditions.
Ash Fusion Temperature	The temperature at which a test cone made from particles of ash obtained from the coal will (1) begin to deform or (2)completely deform or fuse
ASTM	American Society for Testing and Materials
Backfill	Waste material used to fill the void created by mining an orebody
Backhoe Excavator/Shovel	A diesel-powered, caterpillar tracked excavator with a back-acting bucket, primarily designed to excavate material from below the level upon which the machine is situated.
Bank Cubic Metres (bcm)	Represents 1 cubic metre of rock in-situ i.e. before drilling and blasting
Batter	The slope between the top and bottom of a rock face, cutting or dump pile
Bench	A near horizontal working area in a mine at least one side of which is defined by a significant vertical drop.
Bituminous	An intermediate ranked coal with a high carbon content and low moisture content
Blast/Blasting	The fragmentation of rock using explosives
Borehole or drillhole	A hole made with a drill, auger or other tool for exploring strata in search of minerals.
Bucket Wheel Excavator (BWE)	Bucket Wheel Excavator. Large machine with a rotating wheel onto which buckets are attached that cut into the coal seam.
Calorific value (CV)	The heat value of coal per unit weight. This is normally reported in kilocalories per kilogram, (kcal/kg).
Capital Expenditure (capex)	Money spent to purchase new or upgrade existing physical assets such as equipment or property.
Capital Investment	Expenditure made to purchase a capital asset.
Coal	A readily combustible rock containing more than 50% by weight and 70% by volume of carbonaceous material, including inherent moisture. It is formed from plant remains that have been compacted, indurated, chemically altered and metamorphosed by heat and pressure during geological time.
Coaling	The act of removing coal
Coal Resource Classification System	Report issued by the US Geological Survey (USGS) as Circular 891. Provides guidelines for assessing coal reserves and resources.
Concession	A contract granting the right to explore or exploit for coal
Contractors	A subsidiary company brought in by the parent company and paid to carry out mining/processing/maintenance etc…
Conveyor	A rubberised belt running on rollers transporting the coal or other material from the faces to the endpoints. They can be reversed and used for man riding (carrying personnel to their working places).
Core	A cylindrical sample taken using a diamond drill.
Correlation	The association between two variables
Crush, Crushing, Crushed	A mechanical method of reducing the size of rock
CV	See Calorific Value.

Database	A collection of organised data e.g. drill hole and geophysical logs
Decoaled	An area from which coal has been extracted
Deposit/Deposits	An area of coal resources or reserves identified by surface mapping, drilling or development.
Development	1) The initial stages of opening up a new mine, and/or 2) Removal of overburden, or tunnelling to prove the location and value, and allow the extraction of ore.
Diamond Drilling or Core Drilling	A drilling method, where the rock is cut with a diamond bit, attached to hollow rods. It cuts a core of rock, recovered in cylindrical sections for geological analysis.
Dilution	The contamination during the mining process of excavated coal by non-coal material from the roof, floor or in-seam partings.
Dip (Geology)	The angle that a structural surface, i.e. a bedding or fault plane makes with the horizontal measured perpendicular to the strike of the structure.
Disposal Point	A site at which the coal produced from several mines is collected and then distributed further.
Dirt	Valueless rock (e.g. shale or sandstone) present within the coal seam or broken from the bottom or top of the seam during coal mining.
Downthrow	See 'Throw'
Dump	A site used to dispose of solid wastes without environmental controls.
Dump Hopper	A storage facility for coal allowing for rapid withdrawal
Dump Truck	A large open backed vehicle used to transport coal or waste
Drilling and Blasting	The process by which holes are drilled into rock, charged with explosives and then detonated in order to fragment the rock.
Enclosing Strata	The waste rock that is above and below the coal seam
Environment	The sum of all external conditions affecting the life, development, and survival of an organism.
Excavator	A machine used for excavating
Exploit	Make use of and derive benefit from a resource.
Exploitation	Method of deriving benefit from a resource.
Exploration	Prospecting, sampling, mapping, diamond drilling and other work involved in the search for mineralisation.
Face Shovel	An excavating machine with an arm at the front, onto which a bucket is attached. The bucket is scraped up the working face and then emptied into a truck or onto a conveyor
Fault	A structural discontinuity in the earth's crust formed by movement between adjacent blocks resulting from tectonic forces.
Fault Throw	The amount of vertical displacement in an upward or downward direction produced by a fault.
Feasibility Study	A comprehensive engineering estimate of all costs, revenues, equipment requirements and production levels likely to be achieved if a mine is developed. The study is used to define the technical and economic viability of a project and to support the search for project financing.
Feedstock	The supply of coal to a stockpile or rail loading point
Fixed Carbon (FC)	The carbon in the material which is left after volatile materials are driven off
Floor (seam)	The bottom of the seam
Fold	Any bending or wrinkling of rock strata
Fractured (geology)	Breaks in rock formations due to intense faulting or folding.
Front End Loader	Machine with a front mounted bucket used to load coal or waste into trucks
Geological Model	A computer generated model that displays the geology and mineralisation of a site in 3D. It can be further altered if the input information is updated or expanded.
Geophysics	The study of the physics of the earth, rocks and minerals
Grade	The classification or value of coal. The relative quality.
Grader	A rubber-tired, diesel driven, mobile machine with an under-slung blade used for regulating the surface of dirt and haul roads.
Haulage	The movement of men and machinery by train, endless rope or free steering vehicle (FSV). Coal and waste are normally transported by conveyor.
Haul Road	A cleared pathway up and down which vehicles can pass carrying men, machinery, coal or waste etc…
Highwall	The wall of the pit at which work is in progress
Hopper	Large cylinder used to store coal, normally prior to rapid loading i.e. into train wagons.
Igneous	Rocks that are formed from molten material/magma
Inherent Moisture	Moisture that exists as an integral part of the coal seam in its natural state

In Pit Dumping	Involves the dumping of waste inside the confines of a working pit. The dumping area has normally been exhausted of coal. See backfilling.
In Situ	In place, i.e. unbroken/unmoved rock.
Interbedded	Occurring within a coal seam
Interburden	Sterile soil and rock material lying between coal seams.
IPO	Initial public offering. A document complied when a company issues common stock or shares to the public for the first time.
ISO	International Standards Organisation
Joints (geology)	A fracture or parting that cuts through and abruptly interrupts the physical continuity of a rock mass.
Kcal/kg	Kilocalories per kilogram
Kg/m^3	Kilograms per cubic metre. Measure of density or specific gravity.
KJ/kg	Kilojoules per kilogram. The measure of the energy content of coal used in countries that conform to SI units.
km / km^2	Kilometre (1 thousand metres) / square kilometres
kV	Kilovolt (1 thousand volts)
kW	Kilowatt (1 thousand watts)
Leaf	Refers to an individual coal seam
Lease	Contract between two parties enabling one to search for and/or produce minerals from the other's property.
License	A legally binding document that allows the mining party to extract
Log	1) A graphical or numerical representation of a rock sequence or its properties as recovered from a borehole 2) A record of the rock types and thicknesses observed in a vertical outcrop
LOM	Life Of Mine. Taken from the current mine plans, it is the number of years that a mine is expected to remain operational for.
Lignite	Brown coal, the lowest rank of coal and used as fuel for steam-electric power generation
Losses (Geology)	Ore lost due to unpredictable geological phenomena.
Losses (Mining)	Ore lost due to less than perfect mining operations.
LTIFR	Lost Time Injury Frequency Rate. Usually measured per 100,000 man-shifts or one million man-hours.
M	Million
m	Metres
m^3	A unit of volume defined as one metre length times one metre width times one metre height
m^3/h	Cubic metres per hour
MER	See Mineral Experts Report
Mine	Any operation where mineral is extracted from the ground. This may be by opencast or underground mining methods.
Mineable	Capable of being mined under current mining technology, economic conditions and environmental and legal restrictions, rules and regulations.
Mine Model	Computer generated model of the mine design
Mineral Deposit	A mineral occurrence of sufficient size and grade to have potential or existing commercial value; sometimes referred to as mineralisation.
Mineral Experts Report	Mineral Expert's Report as denoted by the EU. Accepted to be equivalent to a Competent Person's Report (CPR).
Minescape	Geological/mine modelling software from Mincom
Minex	Geological/mine modelling software from Gemcom
Mining Licence	Permission to mine minerals from a Mineral Rights area
Mining Permit	Permission to mine minerals from a Mineral Rights area
Miocene	Geological period from 23 to 5 million years ago
Mt	Million metric tonnes
Mtpa	Million metric tons per annum
Mudstone	A fine grained sedimentary rock consisting mainly of hardened clay particles
MW	Megawatts
No.	Number
Nos.	Numbers

Opencast	Method of extracting coal where the overburden is completely removed before extracting the coal or lignite, also known as and Open Pit.
Orogeny/Orogenic	A geologic process which results in the formation of mountain belts.
Overburden	Sterile soil and rock material overlying the coal.
Parting	A layer or stratum of non-coal material in a coal bed which does not exceed the thickness of coal in either the directly underlying or overlying leaves.
Permit	An authorisation, license, or equivalent control document issued by an approved agency to implement the requirements of an environmental regulation; e.g., a permit to operate a wastewater treatment plant or to operate a facility that may generate harmful emissions.
Pit	A hole in the ground – an excavation below original ground level – a surface mine may comprise one or more pits.
Pit (mining)	Abbreviation of Open Pit Mine
Plant	Fixed or moveable equipment required in the process of winning or processing the ore or mineral.
Pleistocene	Geological period from 1.7 million to 11,000 years ago
Pliocene	Geological period from 5.3 to 1.7 million years ago
PSF	Power Station Fuel
PSI	Pounds per Square Inch (imperial units of pressure)
PWC	Price Waterhouse Coopers. The world's largest professional services firm.
Rail Load Tippler	A coal wagon that is allowed to pivot along its long axis allowing for rapid coal offloading
Rank	Scale on which coal is assessed depending on several chemical and physical properties
Reclaimer	A machine that is used to recover stockpiled material
Recovery	The amount of coal/ore recovered from a particular seam, often expressed as a percentage of the total coal/ore available.
Reserve(s)	Refer to the assets review report included in Appendix A of this prospectus, prepared by IMC, for definitions.
Resource(s)	Refer to the assets review report included in Appendix A of this prospectus, prepared by IMC, for definitions.
Revoke	Remove or restrict the ability of a company to explore or exploit coal deposits
Rights (Surface)	The ownership of the surface land under which minerals occur
Ripping and Dozing	A process by which coal is liberated. A ripping spike is lowered into the coal from the back of a bulldozer and pulled through the coal to loosen it. The bulldozer then pushes the loose coal into piles, ready to be loaded into trucks.
ROM	Run of mine
Roof of the seam	The top of the seam
Royalty	A percentage interest in the value of production from a lease that is retained and paid to the mineral rights owner.
Run-of-Mine (ROM)	The grade and tonnage of material produced at the pit rim or shaft collar, stated on a dry basis.
Rupiah (Rp)	The currency of Indonesia
Sample	A representative fraction of a coal seam collected by approved methods, guarded against contamination, and analysed to determine the nature, chemical, mineralogical or petrographic composition, percentage content of specified constituents, and heat value.
Sampling	Taking small pieces of rock at intervals along exposed mineralisation for assay (to determine the mineral content).
Sandstone	A sedimentary rock consisting of sand sized particles held together by natural cement
Seam	A layer or bed of coal or lignite. Correlated seams of coal are normally assigned a name, letter or number. A single seam can contain one or more non-coal partings resulting in a sub-division into leaves.
Seam outcrop	A manifestation of a coal seam at the Earth's surface
Seam splitting	When a coal seam splits into two or more leaves or subsidiary seams.
Sedimentary	Formed by the deposition of solid fragmental material that originates from weathering of rocks and is transported from a source to a site of deposition.
Sedimentation	1) Letting solids settle out of wastewater by gravity during wastewater treatment. 2) The settling of sediments in nature (normally under bodies of water) that may later be compacted and cemented and form sedimentary rocks.
Sediments	Soil, sand, and minerals washed from land into water, usually after rain. Sediments pile up in reservoirs, rivers and harbours, causing problems to aquatic flora and fauna. Careless farming,

	mining, and building activities will expose sediment materials, allowing them to be washed off the land after rainfalls.
Seismics	Data that is acquired by reflecting sound from underground strata and is processed to yield a picture of the sub-surface geology of an area.
Slip	Failure of a pit slope or bench resulting in rock fall
Specific Gravity (SG)	Specific Gravity. The ratio of the weight of an object to the weight of an equal volume of water at the same specified temperature.
Shovel	Refers to the machine to which a shovel is attached in order to remove the in-situ coal from the face.
Sill	A tabular (horizontal) mass of magma that has intruded between older layers of sedimentary rock, beds of volcanic lava or tuff
Siltstone	A fine grained sedimentary rock consisting of silt sized particles
Skip (dump truck)	The container on the back of a dump truck that is used to transport coal or waste
Split/Splits	When a dirt band present within a coal seam reaches sufficient thickness that the coal is considered to exist in 2 separate seams, a split has formed.
Spontaneous combustion (sponcom)	The propensity of some types of coal to oxidise rapidly on contact with air. The oxidation reactions produce heat that increases the rate of oxidation to the point that the coal ignites. Low-rank coals are the most prone to spontaneous combustion.
Spreader	These machines are generally crawler mounted and incorporate a conveyor system which transfers waste to an overburden dump or coal to a stockpile.
Stacker	A stacker is large a machine used in mining applications to stack bulk material such as coal or lignite onto a stockpile
Stockpile	An accumulation of ore or mineral
Strata	Layers of sedimentary rock
Stripping Ratio	The ratio of tonnes removed as waste relative to the number of tonnes of ore removed.
Sub Bituminous	Coal with heating values between lignite and bituminous coal. Low fixed carbon and high inherent moisture and volatile material.
Sustaining Capital	Periodic capital expenditures required to replace or overhaul equipment. Also known as replacement capital.
Synform/Syncline	A downwardly convex fold (U-shaped). The fold limbs dip inwards towards the axis.
t or tonne	Metric tonne (1000kg)
Throw (faulting)	The vertical distance between two ends of a seam displaced by faulting. Referred to as downthrow and upthrow
Total Moisture (TM)	The measure of weight loss of coal in an air atmosphere under rigidly controlled conditions of temperature, time and air flow.
tpw/tph or t/h	Metric Tonnes per Week/Metric Tonnes per Hour
Train Loading Station (TLS)	The point at which a train can be loaded with coal from the mine
Trend/Trending (Geology)	The direction in which a structure extends e.g. a fold trends east to west.
Tuffaceous	Has the appearance or texture of consolidated ash from a volcanic eruption
Upthrow	See ‘Throw’
Volatile Matter (VM)	That portion of the coal comprising both gases and liquids that is released following heating it from 105°C to 800°C. The amount of volatile matter in a coal is a function of the rank of the coal (thermal maturity) and of the coal type.
Want (fault)	Refers to the area in an offset fault that doesn’t contain any coal seams
Washout	Where a coal seam is intersected by a channel of other sediments that were deposited when a river changed course.
Waste	Rock or material of no commercial value residing within the seam, above the seam or below the seam.
Waste (mining)	Rock or material of no commercial value
Waste Parting	Rock or material of no commercial value residing within the ore horizon/reef.
Wastes	Unwanted materials left over from a manufacturing process or refuse from places of human or animal habitation.
Waste to Coal Ratio	The number of tonnes of waste rock that have to be removed in order to mine 1 tonne of coal.
Workable	See ‘Mineable’

ANNEX V

2013 TABALONG JORC REPORT

PT TABALONG PRIMA RESOURCES

TABALONG COAL PROJECT
RESOURCES AND RESERVES ESTIMATION REPORTED IN ACCORDANCE WITH JORC CODE

(FINAL REPORT)

FEBRUARY 2013

009/RP-BM/I/2013

PT BRITMINDO

PT TABALONG PRIMA RESOURCES

TABALONG COAL PROJECT
RESOURCES AND RESERVES ESTIMATION REPORTED IN ACCORDANCE WITH THE JORC CODE

FINAL REPORT

FEBRUARY 2013

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TABALONG COAL PROJECT
LIST OF CONTENTS

GLOSSARY OF TERMS **5**
EXECUTIVE SUMMARY **6**
COMPETENT PERSON'S STATEMENT **19**
RESOURCES STATEMENT **20**
PROJECT TEAM **22**
1 INTRODUCTION **25**
1.1 Location and Tenure 25
1.2 Surface Conditions 29
1.3 Land Use 29
2 REGIONAL GEOLOGY OVERVIEW **31**
3 EXPLORATION HISTORY **33**
3.1 Initial Exploration 33
3.2 Further Detailed Exploration 34
3.2.1 Drilling Procedure 35
3.2.2 Sampling Procedure 37
3.2.3 Bench Mark and Drill Hole Collar Surveying 37
4 GEOLOGICAL MODELING **39**
4.1 Modeling Data Sources 39
4.2 Data Input and Validation 39
4.3 Geological Modeling Process 40
4.4 Coal Seams 41
4.4.1 Block A 41
4.4.2 Block B 44
5 INSITU COAL QUALITY **48**
5.1.1 In situ Analytical Data 54
5.1.2 Other Analysis Result 60
6 COAL RESOURCES **65**
6.1 Resources Estimation 66
7 MINE DESIGN AND RESERVES **70**
7.1 Geotechnical Recommendations 70
7.2 Pit OptimiSation 73
7.3 Final Pit Design 74
7.4 Out of Pit Waste Dump Design 75
7.5 Reserves Estimation 76
7.6 ROM Coal Quality 78
8 MINE PLANNING AND PRODUCTION SCHEDULE **80**
9 ANTICIPATED MINE DEVELOPMENT **82**
9.1 Overview 82
9.2 Rom Stockpile and CPP Requirements 82
9.3 Mine Infrastructure and Ancillary 83
9.4 Coal Haul Road 83
9.5 Barge Loading Port 83
9.6 Barging 84
9.7 Environmental Plan 84
9.8 Community Development Plan 85
10 ECONOMIC EVALUATION **86**
10.1 Capital Costs 86
10.2 Operating Costs 87
10.3 Coal Revenues applied 89
10.4 Economic Model 89
11 CHECK LIST OF ASSESSMENT AND REPORTING CRITERIA **90**

LIST OF TABLES

Table 3-1 Historic Drilling Statistics of Initial Exploration 33
Table 3-2 Drilling Statistics of the 2012 Exploration Programme 36
Table 4-1 List of Data used in the Geological Model 39
Table 4-2 Seam Thickness Summary Block A 43
Table 4-3 Seam Thickness Summary Block B 46
Table 5-1 Type and Number of samples taken - Block A and Block B 48
Table 5-2 Summary of Coal In-situ Quality of Block A 48
Table 5-3 Coal In-situ Quality by Seam Block A 50
Table 5-4 Summary of Coal In-situ Quality of Block B 50
Table 5-5 Coal In-situ Quality by Seam Block B 54
Table 5-6 Core Recovery at Blocks A and B 55
Table 5-7 HGI, EQM and Ultimate Analysis Result 60
Table 5-8 AFT Analysis Result 61
Table 5-9 Ash Analysis Result 62
Table 5-10 Trace Element Analysis Result 63
Table 6-1 Resources Estimate Summary - Block A 67
Table 6-2 Resources Estimate Summary - Block B 68
Table 6-3 Total Resources Block A and Block B 68
Table 7-1 High Wall Slope Recommendation for Saturated Condition Block A 71
Table 7-2 High Wall Slope Recommendation for Saturated Condition Block B 72
Table 7-3 High Wall Slope Recommendation for 50% Dewatering Condition Block A 72
Table 7-4 High Wall Slope Recommendation for 50% Dewatering Condition Block B 73
Table 7-5 Potential Coal Tonnes V's Strip Ratio – Block A 73
Table 7-6 Potential Coal Tonnes VS Strip Ratio Block B 74
Table 7-7 Total Potential Coal Tonnes 74
Table 7-8 Reserves in Final Pit Design Block A 77
Table 7-9 Reserves in Final Pit Design Block B 77
Table 7-10 Total Reserves in Final Pit Design 77
Table 7-11 Proved and Probable Reserves Block A 78
Table 7-12 Proved and Probable Reserves Block B 78
Table 7-13 Total Proved and Probable Reserves 78
Table 7-14 ROM Coal Quality Block A 79
Table 7-15 ROM Coal Quality Block B 79
Table 8-1 Production Schedule of Block A 80
Table 8-2 Production Schedule of Block B 81
Table 10-1 Estimated Capital Costs 86
Table 10-2 Estimated Operating Costs for Block A 88
Table 10-3 Estimated Operating Costs for Block B 88

LIST OF FIGURES

Figure 1-1 Project Location of TPR 27
Figure 1-2 Prospect Area of TPR 28
Figure 1-3 Land Use within the TPR Concession Area 30
Figure 2-1 Regional Geology Outline of the Concession Area 32
Figure 3-1 Typical Drilling Operation at TPR 35
Figure 3-2 Typical Geophysical Logging Operation 36
Figure 3-3 Typical Section of Coal Core 37
Figure 3-4 Benchmark and Drill Hole Collar Surveying 38
Figure 4-1 Schematic Stratigraphic Column Block A 42
Figure 4-2 Schematic Stratigraphic Column Block B 45
Figure 9-1 Existing Port Overview 84

LIST OF APPENDICES

Appendix A : Plans of Tabalong Coal Project 96
Appendix B : Economic Model 97
Appendix C : IUP Documents 98
Appendix D : AMDAL Approval Documents 99

GLOSSARY OF TERMS

The following Abbreviations and Definitions are typical of those in use in the Coal Industry and made be used in this Report.

Other abbreviations, specific to this Report are provided, together with their definitions in the main body of the Report

Abbreviations

45 °	45 degrees
adb	air dried basis
AFT	ash fusion temperature
ar	as received basis
bcm	bank cubic metre
CAPEX	capital costs
cu.m	cubic metre
CCoW	Coal Contract of Work
CPP	coal process plant
CV	calorific value
FC	fixed carbon
FOB	Free on Board (maybe Barge or Vessel, as stated)
Ha	hectare
HGI	hardgrove index
hr	hour
IM	inherent moisture
IRR	internal rate of return
IUP	Izin Usaha Pertambangan (Mining Permit)
JORC	Joint Ore Reserves Committee (Australasian Institute of Mining and Metallurgy)
kg	kilogram
kcal/kg	kilocalories per kilogram (unit of energy)
km	kilometre
m	metre
M	million
Mbcm	Million bank cubic metres
Mt	Million tonnes
Mtpa	Million tonnes per annum
MW	Megawatt
OB (o/b)	overburden
OH	off highway
OPEX	operating costs
ROM	Run of Mine
SR	strip ratio of waste material o/b (bcm) to ROM coal (tonne)
t	tonne
TM	total moisture
tph	tonne per hour
TS	total sulphur
VM	volatile matter

EXECUTIVE SUMMARY

PT Tabalong Prima Resources (TPR) has commissioned PT Britmindo (Britmindo) to complete an independent estimate (referred to as the "Statement") of the Coal Resources and Reserves within a coal concession situated in Tabalong Regency, South Kalimantan, Indonesia (referred to as the "Project").

The Project area covers approximately 3,145 hectares. The area consists of two separate prospect areas, which are Block A and Block B.

The concession area can be accessed from Jakarta to Banjarmasin by regular airline. From Banjarmasin to Tanjung, access is achieved by light vehicle via the provincial road. From thereon, the journey continues to the site by light vehicle via the provincial road to Balikpapan, for approximately 5 km. The concession is approximately 232 km to the northeast of Banjarmasin.

This report is prepared to a sufficient level in compliance with the requirements of the reporting guidelines of the 2004 Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australasian Institute of Geoscientists and Mineral Council of Australia ("The JORC Code") encompassing the following key areas:

REGIONAL GEOLOGY OVERVIEW

Based on the Sampanahan Sheet Regional Geology Map, published by the Directorate General of Geology and Mineral Resources, the TPR coal concession area is part of the Barito Basin of South Kalimantan.

The identified coal resources occur in the Warukin Formation of the Middle Miocene Age of the Tertiary Period. The Warukin Formation is a coal bearing formation comprising quartz sandstone laminations, claystone, shale and limestone. Coal seams which occur in the Warukin Formation are typically medium rank coals with high moisture. This formation conformably overlies the Berai Formation.

EXPLORATION HISTORY

Initial Exploration

Initial exploration in the project area was commenced in 2009 within the two prospect areas noted as Block A in the east and Block B in the west. The survey focused on identifying and observing coal outcrops in the area.

Additionally, the exploration also included general drilling. A total of fifty two (52) drill holes were drilled in Block A and a total of twenty seven (27) drill holes were drilled in Block B. The drill holes were approximately 300 to 1,000 m apart. Drill hole depths typically were in the range of 5 m to 55 m.

In 2010, an additional exploration programme was undertaken in Block A and Block B. The exploration activities included semi detailed drilling, sampling, analysis, collar and topography surveying.

A total of ninety seven (97) holes were drilled in Block A and a total of eighteen (18) holes were drilled in Block B. The drill holes are approximately 300 to 1,000 m apart. Drill hole depths typically were in the range of 10 m to 120 m.

Topography was surveyed by qualified surveyors from PT Airbone Informatics using an airborne light detection and ranging (LIDAR) survey method. The topography survey area covers designated pit and dumping area.

Further Detailed Exploration

In the period from March to November 2012, a further detailed exploration programme was undertaken within Block A and Block B. The programme was designed and supervised in the field by Britmindo. The detailed exploration programme comprised partial cored and open hole drilling, geotechnical fully cored hole drilling, down hole geophysical logging, analysis of coal samples and some immediate coal seam roof and floor samples, benchmark and borehole collars surveying.

The drilling operation was undertaken by three subcontractors being PT Asia Drill, PT Eksplorindo Sukses Unggul and PT Geoxp. The companies provided a range of differing drilling machine types.

A total of one hundred and seventy three (173) holes were drilled in the Project area, including cored, non-cored and geotechnical holes. The drill holes were approximately 400 m apart along the strike line and 250m to 300m apart down dip. In most cases at least three holes per line intersected each seam, resulting in reasonably well established seam continuation and correlation along strike and down-dip. Depending on the geological conditions, a closer spacing of 100m to 200m was undertaken in faulted areas or within seam pinch out areas. Drill hole depths typically were in the range of 17.0 m to 288.0 m.

The down hole geophysical logging was carried out under contract by PT Geoxp using Auslog equipment.

The collars of all drill holes and bench mark were surveyed by qualified surveyors from PT Pondok Surveyor.

GEOLOGICAL MODELING

Following a review of all of the available data, Britmindo selected the modeling data sources from 2010 and the 2012 exploration programmes only.

Only cored and open holes were used in the modeling. Pilot holes next to the cored holes or conflict/doubt holes are excluded from the model and stored in different layers in the model. They are used for display only.

Block A

The detailed exploration programme in Block A has demonstrated the presence of at least ten (10) coal seams. Of these, only seven (7) coal seams are included in the Resources and Reserves estimation. Named from top to bottom, the seams are A1, A2, B1, B2, B3, C and CL.

The seam thickness statistics are shown in the table below.

Seam Thickness Summary Block A

Seam		No. of	Vertical Thickness (m)		
Parent	Split	Data	Min	Avg	Max
A1		31	0.12	8.63	18.40
	A2A	4	1.05	2.96	7.18
A2		31	5.05	11.90	21.28
	A2B	4	11.80	13.00	14.82
B1		10	0.34	1.51	3.70
B2		7	0.58	1.32	2.05
B3		10	0.30	4.12	8.50
C		57	11.85	18.38	24.97
CL		20	0.32	2.73	9.30

The Block A seams have relatively moderate structure with folding into a north trending syncline structure. In general the seam structures are trending on a north - south strike line with moderate dipping, ranging from 20 to 30 °.

The syncline is understood and broadens to the deepest to the southeast. The drilling has demonstrated that the main seams occur approximately 4.0 kilometres (km) in strike and for approximately 1.0 km along dip, at depths ranging from 3.0 to 350.0 m.

The geological model interpretation has indicated that three (3) northeast-southwest trending reverse faults occur in the west and east part of the deposit. These faults are named Reverse_01, Reverse_02 and Reverse_03. Vertical displacement of the fault is estimated around 25 m for Reverse_01, 35 m for Reverse_02 and 100 m for Reverse_03.

Also there are three (3) west-east trending normal faults which occur in the northern part of the deposit. They are named Normal_01, Normal_02 and Normal_03. Vertical displacement of the faults is estimated at around 35 m at Normal_01, 35 m at Normal_02 and 60 m at Normal_03.

Block B

The detailed exploration programme in Block B has demonstrated the presence of at least nine (9) coal seams. Of these, only seven (7) coal seams are included in the Resources and Reserves estimation. Named from top to bottom, the seams are SB1, SB2, SB3, SB4, D, E, F, and G.

The seam thickness statistics are shown in the table below.

Seam Thickness Summary Block B

Seam		No. of	Vertical Thickness (m)		
Parent	Split	Data	Min	Avg	Max
BS1		6	0.60	1.30	1.60
BS2		11	0.35	1.76	3.07
BS3		12	0.95	3.63	5.38
BS4		21	0.10	2.21	4.10
D	D1	17	0.93	7.74	19.45
		34	0.10	7.91	17.15
	D2	18	0.35	5.42	15.40
E		57	0.68	2.51	7.50
F		46	0.35	1.55	4.20
G	G1	23	0.41	3.75	7.22
		33	2.15	6.15	11.97
	G2	24	0.40	2.27	6.60

A small number of other un-named seams occur throughout the sequence but they are thin and generally less than 1.0 m in thickness. It has not been possible to correlate these thinner seams nor demonstrate their continuity and they are excluded from the Resources and Reserves defined in this Report.

The Block B seams have relatively simple structure with folding into a north trending syncline structure. In general the seam structures are trending on a north - south strike line with flat to moderate dipping, ranging from 5 to 20 °.

Drilling has demonstrated that seams occur approximately 5.5 km along strike and for approximately 2.0 km along the dip, at depths ranging from 3.0 to 300.0 m. The seams are believed to continue further to the north for approximately 1.5 km. However no drilling has been undertaken to prove the continuity in this area.

COAL IN SITU QUALITY

As at November 2012, a total of 1,238 core samples of coal, parting, roof and floor from the 2012 exploration programme have been sent for analysis at PT Geoservices laboratory in Banjarbaru. The tests were undertaken to ASTM standard.

The table below shows the summary of composite coal insitu quality by seam basis from the further exploration programme for Blocks A and B.

Coal In-situ Quality by Seam Block A

Seam	Thick m	TM % (ar)	Proximate Analysis (adb)				TS % (adb)	CV kcal/kg (adb)	CV kcal/kg (ar)	RD (adb)	ID
			IM %	Ash %	VM %	FC %					
A1	11.07	38.75	14.06	4.24	42.70	39.01	0.29	5533	3939	1.39	1.25
A2	11.44	38.12	15.02	4.37	42.39	38.22	0.43	5519	4020	1.37	1.24
B1	0.97	37.05	16.22	11.27	40.58	31.93	2.41	4872	3656	1.45	1.31
B2	1.34	36.69	13.09	13.70	39.07	34.14	2.48	4919	3547	1.47	1.31
B3	3.14	36.21	13.42	11.38	41.36	33.83	0.71	5103	3758	1.33	1.22
C	17.76	35.50	13.59	3.29	43.80	39.32	0.14	5694	4250	1.35	1.24
CL	3.14	34.18	12.48	7.92	43.43	36.17	0.18	5507	4139	1.38	1.26

Coal In-situ Quality by Seam Block B

Seam	Thick (m)	TM % (ar)	Proximate Analysis (adb)				TS % (adb)	CV kcal/kg (adb)	CV kcal/kg (ar)	RD (adb)	ID
			IM %	Ash %	VM %	FC %					
BS2	1.71	45.87	12.15	4.04	45.90	37.91	0.87	5680	3497	1.38	1.20
BS3	3.80	44.34	11.29	6.72	45.90	36.09	0.84	5624	3529	1.39	1.21
BS4	2.76	43.63	12.91	9.75	40.32	37.02	0.27	5141	3308	1.44	1.25
D	6.60	42.17	15.40	5.60	42.50	36.50	0.56	5334	3647	1.37	1.23
E	2.20	41.41	13.75	10.01	42.25	33.99	1.20	5200	3529	1.42	1.25
F	1.45	41.81	15.36	11.05	40.28	33.31	0.88	4948	3390	1.43	1.26
G	4.83	42.32	14.97	7.15	42.45	35.42	0.27	5268	3567	1.39	1.23

COAL RESOURCES

The Resources in the concession area have been estimated using information gathered from the Points of Observation.

The resources estimate summary is shown in the table below.

Area	Coal Resources (Mt)			
	Measured	Indicated	Inferred	Total
Block A	89	26	11	126
Block B	112	30	24	166
Total	**201**	**56**	**35**	**292**

The above resources cover an area of about 60% of the Concession Area.

Resources at the northern part of Block A and at the northern part of Block B are not yet estimated at this time as they are based on insufficient initial drilling information. An additional drilling programme will be required to determine the resources in this area.

MINE DESIGN AND RESERVES

For the purpose of Reserves estimation an initial mine design has been generated incorporating the geotechnical study outcomes. The pit limit was determined based on a pit optimization exercise to a maximum depth of 250m and pit geometry was generated based on the slope stability recommendations.

Pit Optimisation

Economic pit shell and potential reserves in the project area were identified using Minex Optimiser software which utilizes the Lerchs Grossman algorithm. This method is widely accepted in the coal mining industry. The optimiser was run to determine pit limit at breakeven strip ratio revenue against mine operating costs which were agreed between TPR and Britmindo.

The tables below show the relationship of potential coal tonnes v's strip ratio as a result of the pit optimization.

Potential Coal Tonnes VS Strip Ratio Block A

SR (Bcm/t)	Coal (Mt)
4.62	107.95
4.49	106.71
4.36	105.01
4.12	100.91
3.96	97.90
3.28	80.12
2.69	59.09
2.32	49.24

Potential Coal Tonnes VS Strip Ratio Block B

SR (bcm/t)	Coal (Mt)
5.4	131.97
5.1	118.29
4.6	101.71
3.6	65.09
3.0	43.97
2.6	33.00
2.0	19.31
1.6	12.30

The above values indicate the potential in-situ coal tonnages which technically are achievable by open cut mining. No mining losses, dilution and confidence levels were determined for mineable proved and probable reserves categories.

Practical final pit design and life of mine planning which includes the consideration of "Modifying Factors" i.e. mining, processing, economic, marketing, legal, environment, social and government factors must be undertaken to define JORC mineable reserves which are economically viable over the life of mine plan.

Final Pit Design

Based on the economic evaluation, the following average strip ratio cut-off has been selected for the final pit design:

- Block A at strip ratio option of 3.96 to 1
- Block B at strip ratio option of 2.00 to 1

Britmindo has used an average overall high wall slope of 25 ° in Block A to 250m depth and 36 ° in Block B to 80m depth at the saturated conditions. The overall high wall slope may be greater if a dewatering programme is implemented during the mining operation.

Out of Pit Waste Dump Design

Two out of pit dump designs have been generated, which are as follow:

Out of Pit Dump for Block A is located to the northwest part of the pit covering an area of 80 Ha with capacity in the order of 61 Mbcm. Maximum elevation is +150m above sea level.

Out of Pit Dump for Block B is located to the northwest part of the pit covering an area of 40 Ha with capacity in the order of 25 Mbcm. Maximum elevation is +150m above sea level.

Reserves Estimation

Based on the generated final pit design, Reserves were estimated within each final pit design. The Reserves estimation is shown in the tables below.

Reserves in Final Pit Design Block A

Seam	Coal (Mt)	Waste (Mbcm)	SR (bcm/t)
A1	13.28	184.04	13.86
A2	25.25	78.24	3.10
B1	0.78	3.03	3.87
B2	0.52	1.25	2.38
B3	3.27	6.25	1.91
C	39.31	110.31	2.81
CL	2.53	9.89	3.90
Total	**84.94**	**393.01**	**4.63**

Reserves in Final Pit Design Block B

Seam	Coal (Mt)	Waste (Mbcm)	SR (bcm/t)
BS4	0.27	2.83	10.36
D	10.86	23.66	2.18
E	2.62	4.81	1.84
F	1.73	4.69	2.71
G	7.71	10.96	1.42
TOTAL	**23.20**	**46.96**	**2.02**

Total Reserves in Final Pit Design

Area	Coal (Mt)	Waste (Mbcm)	SR (bcm/t)
Block A	85	393	4.63
Block B	23	47	2.02
Total	**108**	**440**	**4.07**

Note: Total tonnages have been rounded to nearest 1 Mt, commensurate with the precision of the estimate

The above Reserves figures represent coal tonnage within the final pit design. The reserves for each category, in accordance with the JORC Code, are as shown in the tables below.

Proved and Probable Reserves Block A

Seam	Mineable Reserves (Mt)		
	Proved	Probable	Total
A1	9.33	4.10	13.43
A2	22.12	3.28	25.40
B1	0.61	0.21	0.82
B2	0.54	0.06	0.60
B3	3.06	0.15	3.21
C	38.52	1.74	40.26
CL	1.80	0.85	2.65
Total	**75.98**	**10.39**	**86.37**

Proved and Probable Reserves Block B

Seam	Mineable Reserves (Mt)		
	Proved	Probable	Total
BS4	0.07	0.09	0.16
D	10.57	0.27	10.84
E	2.39	0.22	2.61
F	1.59	0.00	1.59
G	7.25	0.47	7.72
TOTAL	**21.88**	**1.04**	**22.92**

Total Proved and Probable Reserves

Area	Mineable Reserves (Mt)		
	Proved	Probable	Total
Block A	76	10	87
Block B	22	1	23
Total	**98**	**11**	**109**

Note: Total tonnages have been rounded to nearest 1 Mt, commensurate with the precision of the estimate

Total Proved and Probable Reserves relate to around 46% from the total potential coal tonnes of **240 Mt** in Block A and Block B.

The above Reserves represent ROM mineable tonnage and no global losses have been applied in the calculation. Global losses of 3% have been applied to the economic model to determine the marketable product quantity.

ROM Coal Quality

The ROM quality has been simulated by adding 0.05 m dilution. The ROM quality expectation at Blocks A and B is shown in the respective tables below.

ROM Coal Quality Block A

Seam	Coal (Mt)	TM% (ar)	IM% (adb)	Ash% (adb)	TS% (adb)	CV kcal/kg	
						(adb)	(ar)
A1	12.87	38.43	13.91	5.38	0.31	5458	3887
A2	24.93	37.90	14.91	5.15	0.44	5464	3981
B1	0.76	34.20	14.43	21.27	2.10	4272	3216
B2	0.52	35.00	12.47	18.64	2.43	4585	3324
B3	3.26	35.44	13.03	14.25	0.74	4913	3623
C	39.30	35.29	13.50	4.02	0.14	5648	4217
CL	2.52	33.37	12.04	10.99	0.18	5311	3998
Total	**84.17**	**36.48**	**13.92**	**5.42**	**0.31**	**5507**	**4052**

ROM Coal Quality Block B

Seam	Coal (Mt)	TM% (ar)	IM% (adb)	Ash% (adb)	TS% (adb)	CV kcal/kg	
						(adb)	(ar)
BS4	0.16	42.41	12.35	13.51	0.32	4889	3151
D	10.84	41.66	15.08	7.41	0.57	5215	3567
E	2.61	40.43	13.13	14.08	1.34	4928	3351
F	1.59	39.91	14.23	17.42	0.82	4570	3140
G	7.72	41.58	14.59	9.57	0.26	5123	3472
Total	**22.92**	**41.38**	**14.62**	**9.63**	**0.57**	**5104**	**3478**

MINE PLANNING AND PRODUCTION SCHEDULE

Mining will be commencing in Block A in Year 2015 with development of a “box cut“. The overburden will initially be dumped out of pit in the northern part of Pit A. Thereafter, progressive mine advance will be undertaken with overburden being backfilled directly into the mined out voids, thus reducing the overburden haul distance. As mining advances the backfilled pit will be rehabilitated, minimising the area of disturbed land.

The mining at Block B will commence in year 2018 with development of a “box cut“. The overburden will be dumped out of pit in the northern part of Pit B.

In Block A, the production schedule covers a 20 Year Life of Mine Plan at a strip ratio of 4.63 to 1 bcm/t. The annual target production is as shown in table below. The plan schedules the annual quantities of coal and waste volume to be removed from the pits and target SR’s.

The plan demonstrates an initial production of 1.0Mt commencing in year 2015, increasing production to 4.0Mt at commencement of year 2017; thereafter with "steady state" production of 5.0Mt in year 2018 continuing until year 2032, with the residual being mined in 2033 and 2034.

In Block B the production schedule covers a 13 years Life of Mine Plan at strip ratio of 2.02 to 1 bcm/t. The annual target production is as shown in table below. The plan schedules the annual quantities of coal and waste volume to be removed from the pits and target SR's. The plan demonstrates an initial production of 1.0Mt commencing in year 2018, increasing with "steady state" production of 2Mt in year 2019 continuing until year 2029.

The following tables show the Production Schedule for Blocks A and B respectively.

Production Schedule of Block A

Item	2015	2016	2017	2018	2019	2020	2021
Coal (Mt)	1.00	2.00	4.00	5.00	5.00	5.00	5.00
Waste (Mbcm)	4.72	9.43	18.87	23.58	23.58	23.58	23.58
SR (t/bcm)	4.72	4.72	4.72	4.72	4.72	4.72	4.72
Item	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Coal (Mt)	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Waste (Mbcm)	23.58	23.58	23.58	23.58	23.58	23.58	23.58
SR (t/bcm)	4.72	4.72	4.72	4.72	4.72	4.72	4.72
Item	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total**
Coal (Mt)	5.00	5.00	5.00	5.00	3.00	2.16	**87.16**
Waste (Mbcm)	23.58	23.58	23.58	23.58	14.15	10.19	**411.08**
SR (t/bcm)	4.72	4.72	4.72	4.72	4.72	4.72	**4.72**

Production Schedule of Block B

Item	2015	2016	2017	2018	2019	2020	2021
Coal (Mt)				1.00	2.00	2.00	2.00
Waste (Mbcm)				2.02	4.05	4.05	4.05
SR (t/bcm)				2.02	2.02	2.02	2.02
Item	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
Coal (Mt)	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Waste (Mbcm)	4.05	4.05	4.05	4.05	4.05	4.05	4.05
SR (t/bcm)	2.02	2.02	2.02	2.02	2.02	2.02	2.02
Item	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**Total**
Coal (Mt)	2.20						**23.20**
Waste (Mbcm)	4.46						**46.96**
SR (t/bcm)	2.02						**2.02**

ANTICIPATED MINE DEVELOPMENT

The mining conditions will be similar to other Indonesian mining operations where mining contractors will be used.

Typical equipment size will be up to a maximum of 250 tonne excavators and 100 tonne capacity dump trucks.

The mining operation will be commencing from the northern part of the Block A where there is adequate land area available for out-of-pit waste dumps. Mining will progress to the south with direct back-filling taking place once the "box cut" excavation is substantially completed and backfilling of the mined out areas is permitted.

It is likely at the initial mining stage that the public road, traversing the initial mine area, will require some realignment. During the latter years, when mining advance to the south, a river diversion will be required.

Coal will be extracted and hauled from the mine operation area to the ROM stockpile and CPP adjacent the Mine for processing and thereafter haulage to a barge loading port, located on the Barito River.

A dedicated coal haul road of approximately 82.5 kms in length will be constructed. This haul road has to be capable of handling coal truck with minimum 25-30 tonne haulage truck capacity. With the construction of bridges and underpasses, this road will allow for the uninterrupted flow of coal to the barge loading port.

The barge loading port is located in Damparan Village on the Barito River. At the port, the coal will be blended as required, and stockpiled for subsequent loading to the barge. From here, coal will be barged to transshipment location in Tabaneo.

ECONOMIC EVALUATION

An indicative economic evaluation of the Capital and Operating costs required for the development of the Tabalong Project has been based upon certain assumptions and parameters.

Capital Costs

The Capital Costs are estimated to be US$66.7M for an annualised production of 7.0 Mtpa.

Capital costs include the cost of contractor establishment and all the permanent facilities at the mine, the construction of the coal haul road and some port infrastructure. No allowances have been made for land compensation costs.

Operating Costs

The operating cost assumptions are based upon the use of contractors for mining, with use of the port provided by a third party and transportation of coal by barges to the mother vessel.

The Operating Costs at Block A are estimated at US$ 38.30 per tonne, at a SR of 4.63 to 1. The Operating Costs at Block B are estimated at US$28.14 per tonne at a SR of 2.02 to 1. For purposes of revenues, Britmindo has used US$45.00 at Block A and US$30.00 at Block B.

Environmental Requirements

The Environmental and Social Study (AMDAL) has been approved in accordance with Keputusan Bupati Tabalong No. 188.45/402/2010.

The Environmental Management Plan will cover all aspects of mining requirements which include topsoil management, waste dump construction, erosion control, settlement lagoons, water treatment and tailings, re-vegetation and final reclamation.

As an operational mining company in Indonesia, TPR will acknowledge key partner stakeholders are the local communities. TPR will allocate and contribute budget, as necessary, to develop relevant community programs in coordination with the local government. The major local settlements comprise Desa Kasiau, Desa Kembang Kuning, Transmigrasi Masingai I and Transmigrasi Masigai II.

Economic Model

Indicative economic modeling was undertaken by Britmindo for Block A and Block B mine production. The modeling was undertaken using a standard conventional costing system, which comprises a series of linked spreadsheets pertaining to the various inputs parameters. The system has inputs for the physical mined quantities, capital and operating costs.

The cost model was subjected to a number of sensitivity analyses over a number of variables to check the robustness of the project. Main sensitivities, would be, as expected, increased overburden costs and reduced selling prices.

Disclaimer

This report has been prepared by Britmindo for the sole use of PT Tabalong Prima Resources (TPR). The assessments and assumptions stated in this report have been prepared in a professional manner and comply with accepted geological and engineering evaluations of coal deposits.

This Report is not intended to represent the long term performance or commercial potential of the Project. Consequently, any commercial decision to invest in this Project should not be made solely on the content of this Report and should be fully supported by additional verification of the Project potential in order to considerably increase confidence in the economic viability of the Project.

The contents of the report are confidential and are to be used only by TPR, its officers and staff. Use of any sections of this report or any data contained therein by any third party is prohibited unless authorised directly by TPR or its nominated representatives. Britmindo accepts no liability for any unauthorized use of all or any sections of this report by third parties.

COMPETENT PERSON'S STATEMENT

The information in the Report, to which this statement is included and relating to the Coal Resources and Reserves Estimation of the Tabalong Coal Deposit, is based on information compiled and reviewed by Mr. Achmad Hawadi and Mr. Terry Gray. Both Mr. Hawadi and Mr. Gray are members of the Australasian Institute of Mining and Metallurgy and work full time for PT Britmindo.

Mr. Hawadi, signing on behalf of PT Britmindo, has 26 years of Indonesian coal industry experience in the field of coal exploration, geological modeling and mine planning.

He has sufficient experience relevant to the nature and type of deposit under consideration and to the activity he is undertaking, to qualify him as a Competent Person as defined in the 2004 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, the JORC Code.

Mr. Gray, signing on behalf of PT Britmindo, has almost 40 years of experience in surface coal mining operations, of which 18 years has been achieved in the of Indonesian coal industry.

He has sufficient experience relevant to the nature and type of deposit under consideration and to the activity he is undertaking, to qualify him as a Competent Person as defined in the 2004 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, the JORC Code.

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Achmad Hawadi, (Geology), Bachelor Degree, Member Aus IMM No. 229862.

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Terry Gray, (Engineering), Diploma in Engineering, Member Aus IMM No. 309368.

RESOURCES STATEMENT

Coal Resources and Mineable Reserves Category Parameters

Coal Resources	Mineable Reserves
Measured	**Proved (within Measured Resources Area)**
- Estimated based on circular polygon radius from Points of Observation at minimum 3 points of intersection. - Points of Observation are boreholes that have been geophysically logged, sampling and tested at a core recovery >= 90% - Within 500 m **inside** of drilling or maximum 250 m **outside** of drilling grid depending on geological structure conditions. - Geological losses applied - Geological continuity known. - Thickness and Quality continuity is demonstrated - At maximum 250m depth from the surface depending on boreholes depth. - ->0.50m seam thickness - -<0.20m parting thickness - No quality cut-off has been applied.	- Subject to land used status and permit - Subject to existing public infrastructure and settlements. - Within pit design based on the proven geotechnical parameters. - Scheduled for mining - Subject to mine plan and mining methodology - Subject of positive economic feasibility - Stripping Ratio (Price Dependent) - Mining Losses 0.10m at top and 0.10 at bottom - Mining Dilution 0.05m at roof and 0.05m at floor - ->0.50m seam thickness - -<0.20m parting thickness - Quality cut-off may be applied
Indicated	**Probable (within Indicated Resources area)**
- Estimated based on circular polygon radius from Points of Observation at minimum 3 points of intersection. - Points of Observation are boreholes that have been geophysically logged and/or sampling and tested at a core recovery >= 90% - Within 1,000 m **inside** of drilling or maximum 500 m **outside** of drilling grid depending on geological structure conditions. - Geological losses predicted - Geological continuity interpreted. - Thickness and Quality continuity is predicted - At maximum 250m depth from the surface depending on boreholes depth. - ->0.50m seam Thickness - -<0.20m parting Thickness - No quality cut-off has been applied.	- Subject to land used status and permit - Subject to existing public infrastructure and settlements. - Within pit design based on the proven geotechnical parameters. - Scheduled for mining - Subject to mine plan and mining methodology - Subject of positive economic feasibility - Stripping Ratio (Price Dependent) - Mining Losses 0.10m at top and 0.10 at bottom - Mining Dilution 0.05m at roof and 0.05m at floor - ->0.50m to 1.0m seam thickness depending on coal quality type. - -<0.20m parting thickness - Quality cut-off may be applied
Inferred	
- Estimated based on circular polygon radius from Points of Observation at minimum 3 points of intersection. - Points of Observation are boreholes that have been geophysically logged and/or sampling and tested at a core recovery >= 90%. - Within 2,000 m **inside** of drilling or maximum 1,000 m **outside** of drilling grid. - Geological losses unknown - Geological continuity predictable - Thickness and Quality continuity is inferred - At maximum 250m depth from the surface depending on boreholes depth. - ->0.50m seam Thickness - -<0.20m parting Thickness - No quality cut-off has been applied.	

Table A-1 Coal Resources and Reserves Figures for Each Category

Coal Resources (JORC)	Mineable Reserve (JORC)
Measured	**Proved**
Block A = 89 Mt **Block B = 112 Mt**	**Block A = 75.98 Mt** **Block B = 21.88 Mt**
Indicated	**Probable**
Block A = 26 Mt **Block B = 30 Mt**	**Block A = 10.39 Mt** **Block B = 1.04 Mt**
Inferred	
Block A = 11 Mt **Block B = 24 Mt**	-
Total	**Total**
292 Mt	**109.29 Mt**

The estimate of Coal Resources and Reserves presented in this statement has been estimated based on the Australian Guidelines for Estimating and Reporting of Inventory Coal, Coal Resources and Coal Reserves' 2003 edition and reported in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, The JORC Code, 2004 Edition.

PROJECT TEAM

Achmad Hawadi – Project Leader and Competent Person

Achmad Hawadi has been working in the Indonesian Coal Mining industry for over 25 years and has significant experience in the field of Geology and Mine Planning. Having worked for PT Berau Coal and PT Arutmin Indonesia and managed PT Mincom Indoservices in Kalimantan where he has provided a range services to most of the leading coal mining companies in Indonesia.

During this time he has either managed or contributed significantly to numerous due diligences, and mining studies related to the geological modeling, estimation, assessment, evaluation, mine planning and report accordance with JORC Code for numerous Indonesian coal mining companies.

Mr. Hawadi graduated from Padjadjaran University, Bandung, Indonesia, majoring in geology and a Member of the Australasian Institute of Mining and Metallurgy (MAusIMM).

Terry Gray – Project Reviewer and Competent Person

Terry Gray has worked extensively in the Coal Industry in the UK, Australia and Indonesia over a period of 40 years. Terry has worked with Britmindo since May 2006 and has been resident in Indonesia since 1994.

Mr. Gray previously worked in Indonesia for a major international contract mining service provider and was involved in all of their major mining operations in his 10 year service. During that period he held a number of key senior roles, including Mining Operations Manager. Mr. Gray has an intimate knowledge of the local mining industry and has dealt closely with major international mining companies operating in Indonesia and Australia. He has conducted a substantial amount of technical and operational studies at both large and small Indonesian Coal Mines.

Since 2006 Mr Gray has been significantly involved in the compilation of JORC Compliant Reserves Reports on Indonesian Coal Deposits.

Mr. Gray holds a Diploma in Engineering from Doncaster College of Mines, UK and is a Member of the Australasian Institute of Mining and Metallurgy (MAusIMM).

Muhamad Harun – Project Geology Manager

Muhamad Harun is a full time employee of PT Britmindo and has been working in the Indonesian Coal Mining industry for over 20 years. He has significant experience in the field of Coal Exploration and Resources Assessment and has worked for PT Arutmin Indonesia and PT BHP Maruwai. During this time he has either managed or contributed significantly to numerous exploration programs, estimations, assessments and evaluations of coal resources for a number of companies.

Mr. Harun graduated from Padjadjaran University, Bandung, Indonesia, majoring in Geology and is a Member of the Australasian Institute of Mining and Metallurgy (MAusIMM).

Asep Kadarisman – Project Exploration Coordinator
Asep Kadarisman has been working in the Indonesian Coal Mining industry for over 14 years and has significant experience in the field of Exploration and Resources Assessment having previously worked for PT Sari Andara, Coeclerici and PT Sari Putra Perdana

During this time he has either managed or contributed significantly to numerous exploration programs, estimations, assessments and evaluations of coal resources for many companies.

Mr. Kadarisman graduated from Padjadjaran University, Bandung, Indonesia, majoring in geology.

Hendrik A Saputro - Project Mine Planning Manager
Hendrik Saputro is a full time employee of PT Britmindo and has been working in the Indonesian Coal Mining industry for over 7 years. He has significant experience in the field of Mine Planning and has worked for PT Kaltim Prima Coal and PT Thiess Contractors Indonesia. During this time he has managed or contributed significantly to numerous major mine design projects, mine scheduling and evaluations of coal reserves for many companies. He is experienced in the use of most major mine planning and scheduling systems.

Mr. Saputro graduated from Institute Technology Bandung, Bandung, Indonesia, majoring in mining and is a Member of the Australasian Institute of Mining and Metallurgy (MAusIMM).

La Ode Sapta Akhirudin – Project Modeling Geologist
La Ode Sapta Akhirudin is a full time employee of PT Britmindo and has been working in the Indonesian Coal Mining industry for over 6 years and has significant experience in the field of Exploration and Resources Assessment. He previously worked for PT Perkasa Inaka Kerta, PT Thiess Contractors Indonesia and PT Asmin Koalindo Tuhup.

During this time he has either managed or contributed significantly to numerous exploration programs, coal mapping, well site, geological modeling, estimations and evaluations of coal resources for the companies.

Mr. Akhirudin graduated from University of National Development “Veteran”, Yogyakarta, Indonesia, majoring in geology and is a Member of the Australasian Institute of Mining and Metallurgy (MAusIMM).

Riandi Rachmawan – Project Mine Plan Engineer
Riandi Rachmawan has been working in the Indonesian Coal Mining industry for over 4 years and has significant experience in the field of Mine Planning and Mine Operation. He previously worked for PT Arutmin Indonesia as Senior Mining Engineer and at Geomechanics Laboratory Bandung Institute of Technology.

Mr. Rachmawan graduated from Bandung Institute of Technology, Bandung, Indonesia, majoring in Mining Engineering

Ruly Frans Satrio – Project Mine Plan Engineer
Ruly Frans Satrio has been working in the Indonesian Coal Mining industry for over 2 years and has significant experience in the field of Mine Planning and has worked for PT Titan Mining Indonesia.

Mr. Satrio graduated from Institute of Technology, Bandung (ITB), Bandung, Indonesia, majoring in mining.

1 INTRODUCTION

PT Tabalong Prima Resources (TPR) has commissioned PT Britmindo (Britmindo) to complete an independent estimate (referred to as the "Statement") of the Coal Resources and Reserves within a coal concession situated in Tabalong Regency, South Kalimantan, Indonesia (referred to as the "Project").

Britmindo is a well established and professional Jakarta based Company that provides mining consultancy to the Indonesian Coal Mining Industry, including foreign and local investors, coal buyers, mine owners, mining contractors and major supply companies.

Britmindo has considerable experience in Exploration, Geological Modeling, Resource and Reserve Estimations, Mine Planning, Mine Management, Training, Due Diligence and Feasibility Studies.

This report is prepared to a sufficient level in compliance with the requirements of the reporting guidelines of the 2004 Joint Ore Reserves Committee of the Australasian Institute of Mining and Metallurgy, Australasian Institute of Geoscientists and Mineral Council of Australia ("The JORC Code") encompassing the following key areas:

1. Project Overview.
2. Regional Geology Overview.
3. Exploration History.
4. Geological Modeling.
5. Coal Quality.
6. Coal Resources.
7. Mine Design and Reserves.
8. Production Schedule.
9. Anticipated Mine Development.
10. Economic Evaluation.

The information presented in the report is based on data relating to geology derived from the exploration programme in two prospect blocks within the concession area. These areas are named Block A in Kembang Kuning and Block B in Kasiau.

1.1 LOCATION AND TENURE

This Resources and Reserves Statement applies to the coal deposit located within a coal concession (IUP) Production Operation area held by PT Tabalong Prima Resources (TPR) in accordance with Keputusan Bupati Tabalong No. 188.45/404/2010. These documents are included in Appendix C of this Report. The area is situated at Kasiau Village, Murung Pudak District, Tabalong Regency, South Kalimantan Province and covers approximately 3,145Ha.

The area consists of two separate prospect areas which are Block A and Block B.

The concession area can be accessed from Jakarta to Banjarmasin by regular airline. From Banjarmasin to Tanjung, access is achieved by light vehicle via the provincial road and the concession is approximately 232 km to the northeast of Banjarmasin. From thereon, the journey continues to the site by light vehicle via the provincial road to Balikpapan, for approximately 5 km. The Project location is shown in Figure 1-1 and the prospect area layout is shown in Figure 1-2 below.

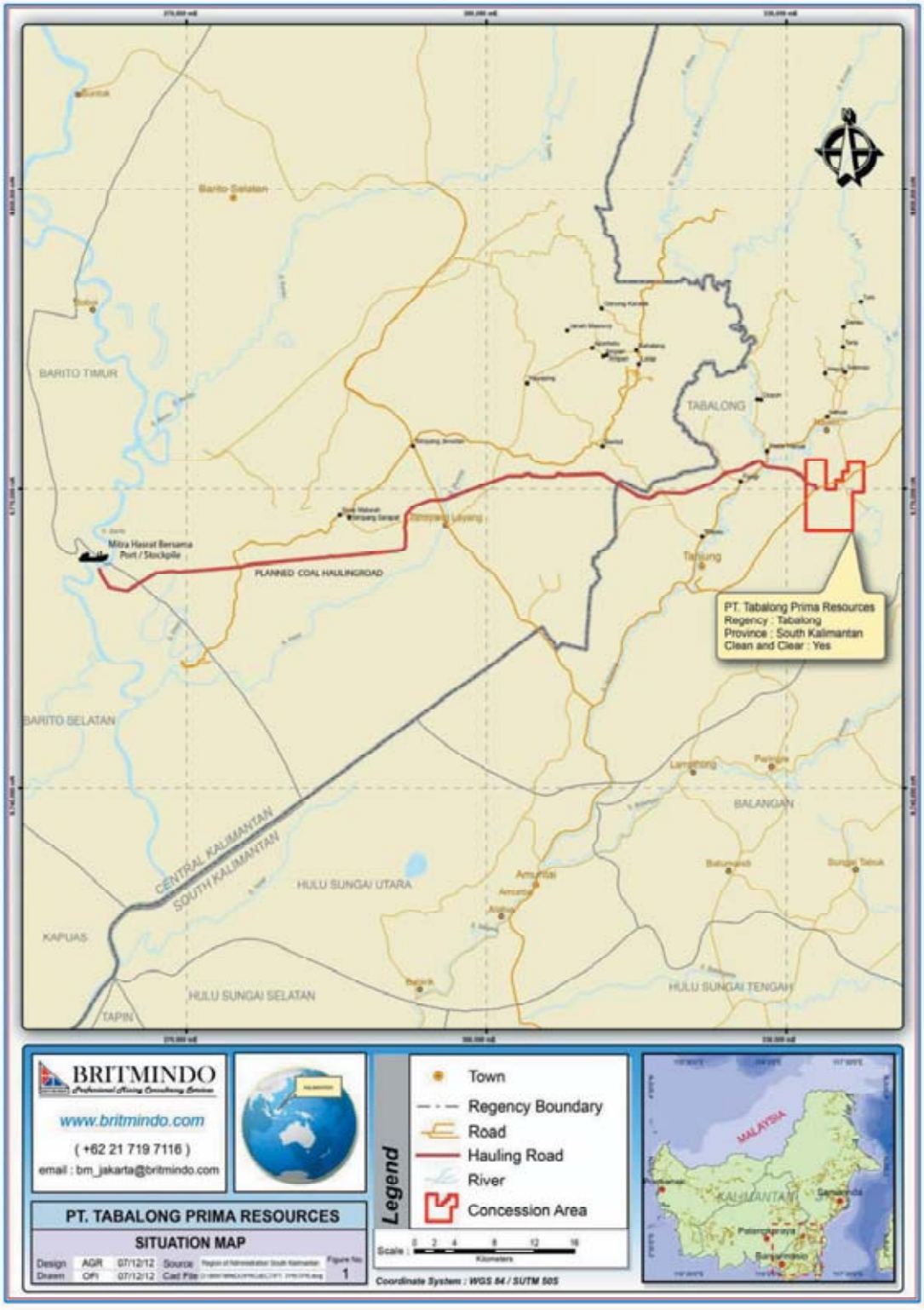


Figure 1-1 Project Location of TPR

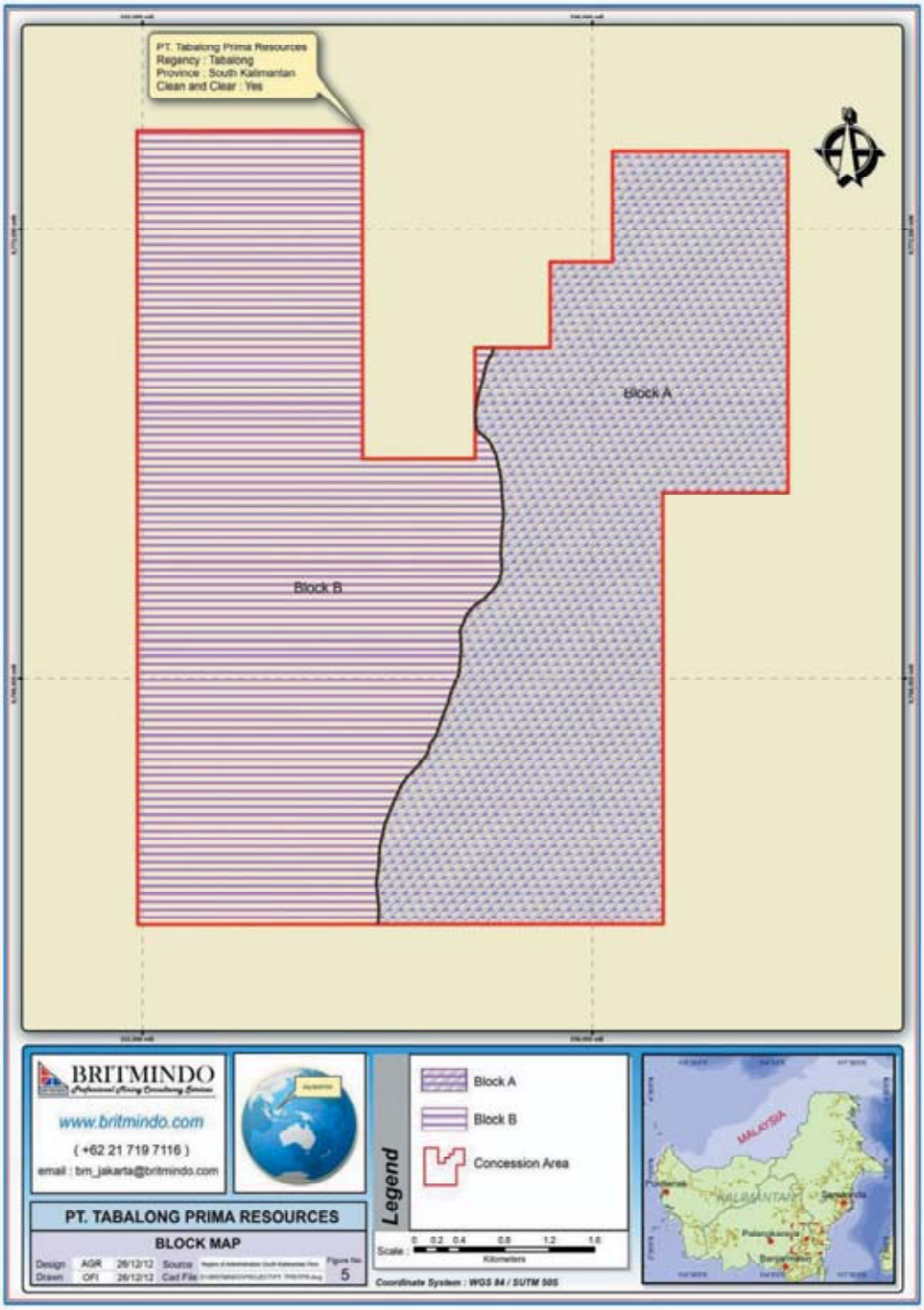


Figure 1-2 Prospect Area of TPR

1.2 SURFACE CONDITIONS

The deposit area generally is hilly topography with moderate relief. The ground elevation ranges from 72 metres (m) to 136 m above sea level. There are two water courses which traverse the area, being a tributary of the Ulin River in the centre of the concession area and a tributary of the Baruh River to the south east. These water courses are approximately 3.0 m width. Other minor streams and watercourses also occur elsewhere throughout the concession area.

1.3 LAND USE

The majority of the land is owned or farmed by the local population, however some land areas are owned by private forestry companies. The area is mainly informal rubber and palm oil plantations. The physical condition of the land is mostly wild secondary bush with some well planned palm oil plantations, which have been in production for some time. The secondary bush conditions occur as a consequence of the villager's tradition of cultivating land, where, before planting, they slash and burn the terrain. Afterwards, when the harvest has been recovered, the land is left for several years. When the bush re-grows, planting occurs in a cyclic fashion.

When referenced to the Forestry Maps, held in the Britmindo data base, the TPR Concession Area does not appear to be in conflict with any forestry areas. On that basis, the Pinjam Pakai permit (i.e. permit for use of the area), which is required for mining activity in the non forestry area, would not be required.

Figure 1-3 below, shows the land use within the TPR Concession Area.

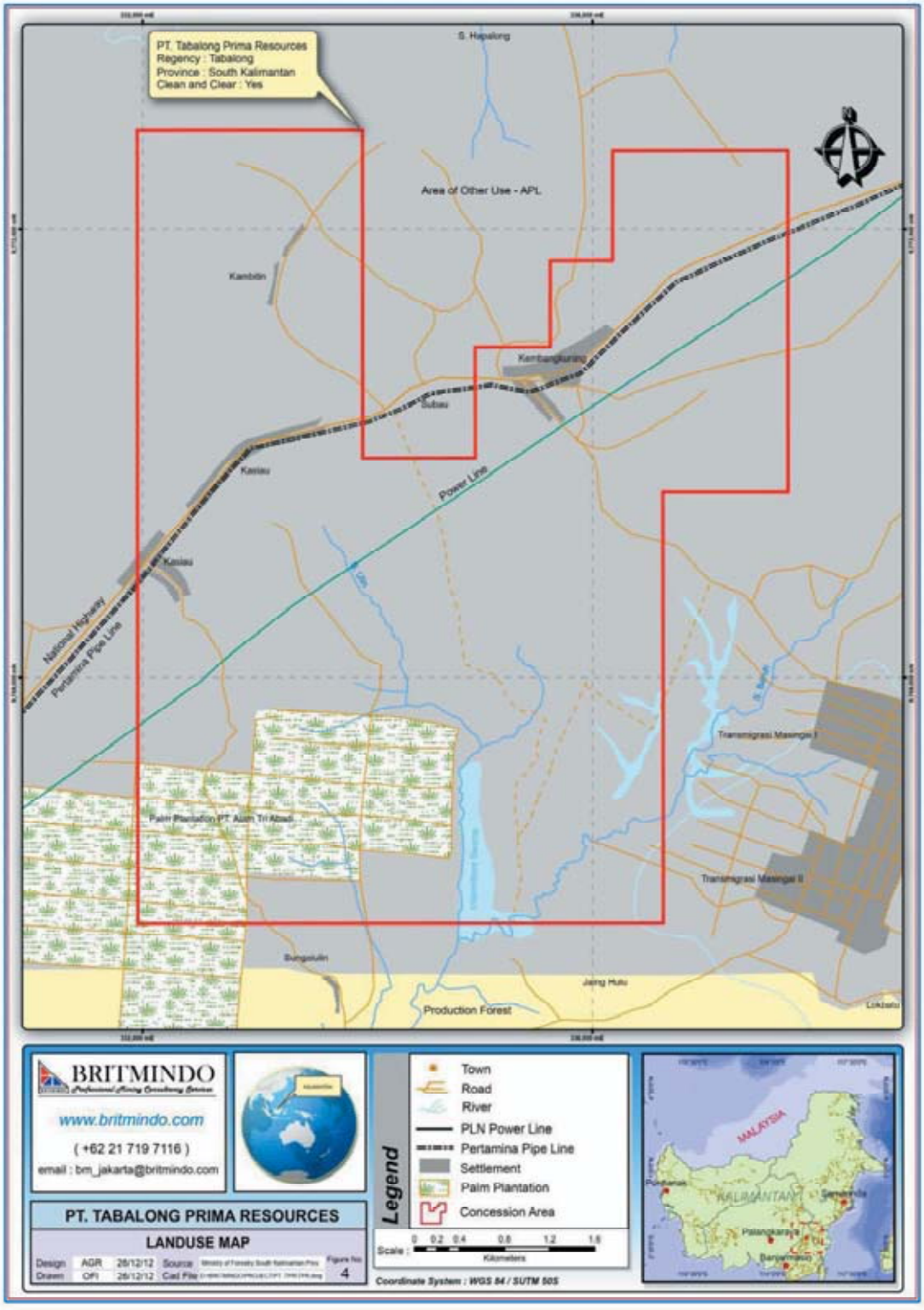


Figure 1-3 Land Use within the TPR Concession Area

2 REGIONAL GEOLOGY OVERVIEW

Based on the Sampanahan Sheet Regional Geology Map, published by the Directorate General of Geology and Mineral Resources, the TPR Coal Concession area is part of the Barito Basin of South Kalimantan.

The identified coal resources occur in the Warukin Formation of the Middle Miocene Age of the Tertiary Period. The Warukin Formation is a coal bearing formation comprising quartz sandstone laminations, claystone, shale and limestone. Coal seams which occur in the Warukin Formation are typically medium rank coals with high moisture. This formation conformably overlies the Berai Formation.

The dominant structural trends in the region are northwest-southeast open folding. The area exhibits a series of synclines and anticlines. The project area is in a shallow northwest-southeast trending syncline, gently widening to the northwest. Seam dips are flat to steep, in the order of 4 to 35 °.

The Regional Geology outline of the area is shown in Figure 2-1 below.

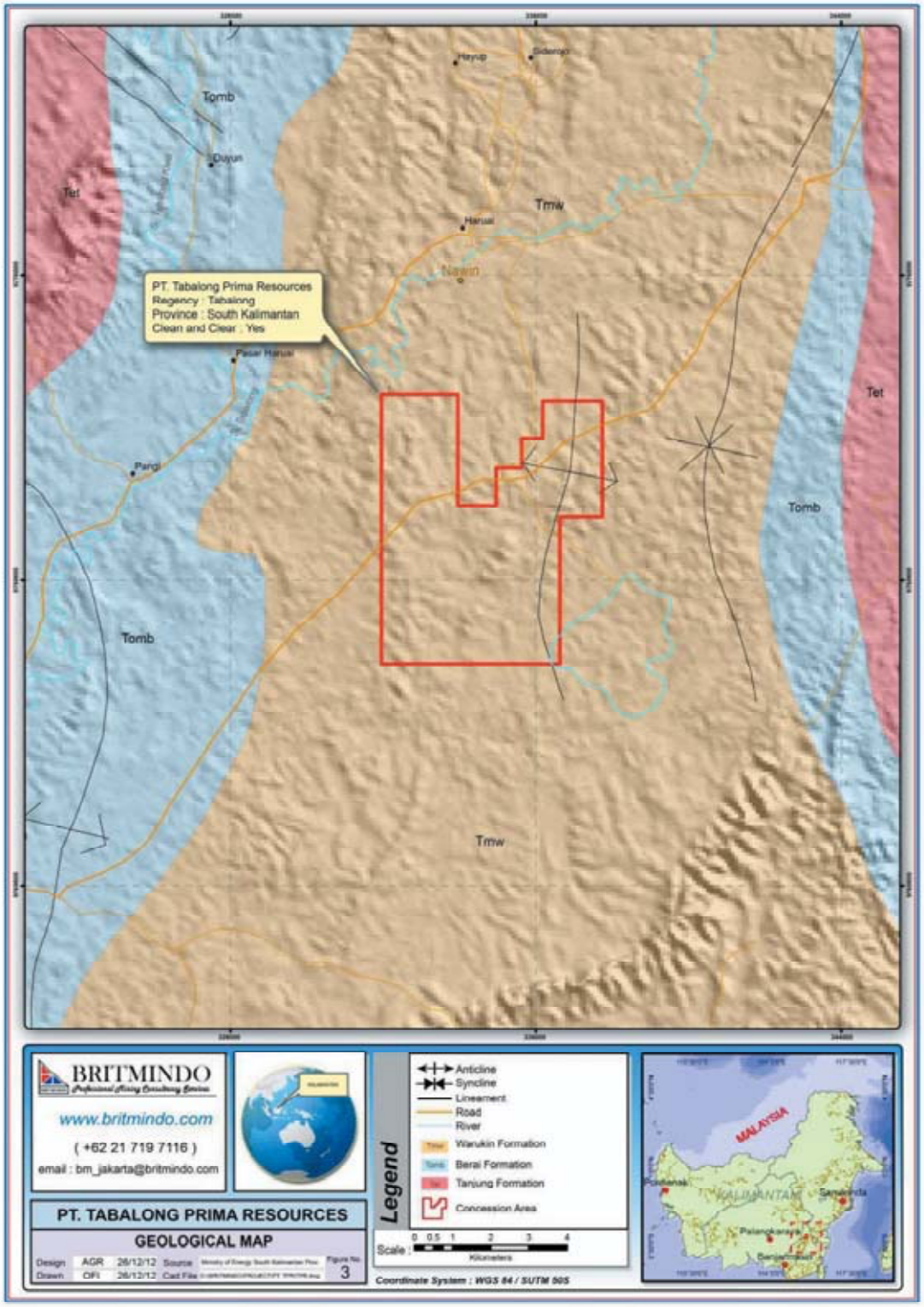


Figure 2-1 Regional Geology Outline of the Concession Area

3 EXPLORATION HISTORY

3.1 INITIAL EXPLORATION

Initial exploration in the project area was commenced in 2009 within the two prospect areas noted as Block A in the east and Block B in the west.

The survey focused on identifying and observing coal outcrops in the area. A total of nine (9) coal outcrops were located with thicknesses ranging from 2.0 to 18.0 metres (m). Generally coal outcrops have a strike following a north – south direction with dips ranging from 5 to 20 °.

The exploration also included general drilling. No geophysical logging was undertaken during this exploration drilling. A total of fifty two (52) drill holes were drilled in Block A and a total of twenty seven (27) drill holes were drilled in Block B. The drill holes were approximately 300 to 1,000 m apart. Drill hole depths typically were in the range of 5 m to 55 m.

In 2010, an additional exploration programme was undertaken in Block A and Block B. The exploration activities included semi detailed drilling, sampling, analysis, collar and topography surveying. No geophysical logging was undertaken during this exploration drilling.

A total of ninety seven (97) holes were drilled in Block A and a total of eighteen (18) holes were drilled in Block B. The drill holes are approximately 300 to 1,000 m apart. Drill hole depths typically were in the range of 10 m to 120 m.

Table 3-1 below shows the historical statistics for the exploration drilling in 2010.

Table 3-1 Historic Drilling Statistics of Initial Exploration

Type of Drilling	Block A	Block B
Number of cored holes drilled	97	18
Number of open holes drilled	None	None
Total metres drilled	2,294	
Number of Boreholes Geophysically Logged	None	None

The topography of the area was surveyed by qualified surveyors from PT Airbone Informatics using an airborne light detection and ranging (LIDAR) survey method at accuracy of 0.20m. The topography survey area covers the designated pit and dumping area.

3.2 FURTHER DETAILED EXPLORATION

In the period from March to November 2012, a further detailed exploration programme was undertaken within Block A and Block B. The programme was both designed and supervised in the field by Britmindo.

The detailed exploration programme comprised five main elements:

1. Exploration by partial cored and open hole drilling.
2. Drilling of geotechnical fully cored holes
3. Downhole geophysical logging.
4. Analysis of coal samples and some immediate coal seam roof and floor samples.
5. Benchmark and borehole collars surveying

Drilling operation were undertaken by three (3) drilling contractors who were:

1. Asia Drill, a reputable international standard drilling company.

   One (1) track mounted AD150 type drilling rig was used, having depth capacity to a maximum 300m. This rig was used predominantly on the deeper holes.
2. PT Eksplorindo Sukses Unggul (ESU), a local drilling company.

   Four (4) Jacro 300 type drilling rigs were used, having depth capacities to maximum 200m; one (1) Jacro 200 type drilling rig, having depth capacity to maximum 100m was used and two (2) Jacro 175 type drilling rigs, having depth capacities to maximum 60m, were used.
3. PT Geoxp, a local drilling company.

   Two (2) Jacro 200 type drilling rig was utilized, having depth capacities to maximum 100m.

A typical drilling operation at TPR is shown in Figure 3-1 below.

Figure 3-1 Typical Drilling Operation at TPR

3.2.1 Drilling Procedure

For coal sampling, the partial cored method was undertaken. Boreholes were initially drilled by rotary open hole until approximately 2.0 metres above the top of the coal and then cores through the coal were recovered for sampling. Down hole geophysical logging was undertaken in these partial cored holes to prove seam thickness and as a check on core recoveries.

In some cases initial (pilot) boreholes were drilled by rotary open hole methods and then geophysically logged to prove seam depths. The rigs were then moved approximately 5.0 m to an adjacent location where another hole was drilled. Partial cores were taken over the coal seam intervals. Down hole geophysical logging was also used in these holes to prove seam thickness and as a check on core recoveries. All cores taken were HQ (63.5 mm diameter) size.

The down hole geophysical logging was carried out, under contract, by PT Reksa Log using Auslog equipment. Boreholes were routinely logged by skilled operatives and digital print-out logs were obtained for calliper (hole diameter), natural gamma radiation and (gamma-gamma) strata density (expressed as "Long Spaced Resolution" and "Short Spaced Resolution") Density logs. Comparison of coal core thicknesses recovered and the thicknesses interpreted from the geophysical logs can therefore be used to determine percentage core

recoveries. This is important, especially as coal quality data from coal seam cores with less than 95% core recovery has normally to be excluded when working to JORC standards.

A typical geophysical logging operation is shown in Figure 3-2 below.

Figure 3-2 Typical Geophysical Logging Operation

A total of one hundred and seventy three (173) holes were drilled in the Project area, including cored, non-cored and geotechnical holes. The drill holes were approximately 400 m apart along the strike line and 250m to 300m apart down dip. In most cases at least three holes per line intersected each seam, resulting in reasonably well established seam continuation and correlation along strike and down-dip. Depending on the geological conditions, a closer spacing of 100m to 200m was undertaken in faulted areas or within seam pinch out areas. Drill hole depths typically were in the range of 17.0 m to 288.0 m.

Table 3-2 below shows the historical statistics for the exploration drilling in 2012

Table 3-2 Drilling Statistics of the 2012 Exploration Programme

Type of Drilling	Block A	Block B
Number of total holes drilled	72	101
Number of cored holes drilled	34	78
Number of open holes drilled	29	18
Number of geotechnical holes drilled	9	5
Metres of cored holes	4,000	6,735
Metres of open holes	2,572	2,374
Metres from geotechnical holes	1,252	674
Number of Boreholes geophysically logged	69	100
Number of Boreholes not geophysically logged	3	1
Depth of the holes typically (m)	17 - 288	19 - 203

3.2.2 Sampling Procedure

When the core was recovered on the surface, it was carefully cleaned of drilling fluid and any other extraneous debris: measured and recorded by the rig geologist and any potential core loss noted. The cores were then sealed in plastic and transferred to core boxes for transportation to the base camp and storage facilities at Tabalong. At the base camp, the coal cores were examined by the Britmindo Senior Geologist and measured lengths/core losses were checked against the thickness estimates from the down hole geophysical logs.

The Senior Geologist then made a visual inspection of the seam core and selected the sample intervals for analysis.

A typical section of coal core prepared for examination by the Senior Geologist is shown in Figure 3-3 below.

Figure 3-3 Typical Section of Coal Core

As is normal practice in coal exploration, the entire seam was sent for analysis. On occasions, this may have been split into a number of horizontal subsections or plies, especially where the coal was thick or was in layers of different appearance. Non coal partings, thicker than 0.20 m within the main thick seams and thicker than 0.10 m within the minor seams, were sampled separately. All samples for analysis were then labeled, double sealed in plastic bags (to preserve natural moisture levels) and dispatched for analysis. Samples of the immediate seam roof and floor were also taken to investigate the potential effects of dilution during future mining operations.

3.2.3 Bench Mark and Drill Hole Collar Surveying

The collars of all drill holes and bench mark were surveyed by qualified surveyors from PT Pondok Surveyor.

A typical survey and drill hole collar location is show in Figure 3-4 below.

Figure 3-4 Benchmark and Drill Hole Collar Surveying

A site inspection to review all the aspects of the exploration process was undertaken by Mr. Hawadi in July 2012.

4 GEOLOGICAL MODELING

4.1 MODELING DATA SOURCES

Following a review of all of the available data, Britmindo selected the modeling data sources using the following criteria

The TPR initial drill hole data from the 2009 exploration programme was found to be inconsistent with the latter data of 2012 in term seam thickness. Therefore this data was excluded from modeling and stored in different layers from the other drill hole data in the model. The 2009 data was used for display only.

The TPRs additional drill holes cored data, derived from the 2010 exploration programme was deemed to be consistent with the latter data of 2012 in terms of seam thickness and quality. However since no geophysical logging was undertaken in 2010, data derived from this drilling programme was used only as interpretative data for thickness and structure modeling only.

All data used in the construction of the geological model was prepared by Britmindo using the results of the 2010 and 2012 exploration programmes.

Only cored and open holes were used in the modeling. Pilot holes adjacent to the cored holes or conflict/doubt holes were excluded from the model and stored in different layers within the model. They were used only for display purposes.

Table 4-1 below lists the geological modeling data used.

Table 4-1 List of Data used in the Geological Model

No	Type of Data	Block A	Block B
1	Number of Total Holes Modeled	121	73
2	Number Cored hole Data	28	58
3	Number Open Hole Data	26	10
4	Number Geotechnical Hole Data	5	5
5	Number of Interpretative Data	62	-
6	Coal Analysis Results ply by ply	338	741
7	Topography	LIDAR Survey	LIDAR Survey

4.2 DATA INPUT AND VALIDATION

The exploration data was prepared by Britmindo for documentation purposes, as described below.

- The basic drill hole information was manually inputted to LogCheck software, which is currently used as the geological database. For each hole, this records the collar details and lithology log.
- Geophysical logging data was stored in a hardcopy print out and the LAS file was further processed in the LogCheck software for graphical log output.
- Initial seam correlation was undertaken with the aid of the relevant geophysical log.
- The coal analysis result was manually inputted to an Excel spreadsheet. For each sample, this records the interval details and laboratory analysis result.
- LIDAR topography was prepared in contours DXF format and ASCII format containing Easting, Northing and Elevation information of each surveyed points.

Based on the exploration database, a modeling sources database has been validated and prepared by Britmindo for further processing within geological modeling as described below:

- The basic drill hole information was exported to an ASCII format, and imported into MineScape Design File as a drill hole database. For each hole, this stores the collar details and lithology intersections.
- Lithology intersections were recorded for coal and parting intervals. Each lithology type was coded in the database: the type was referred to as CO for coal and PA for parting.
- Base of lithology weathering was recorded in drill hole data based on the drill log.
- The quality information on a ply by ply basis was exported to an ASCII format, and imported into the MineScape file as a quality database.
- LIDAR topography was imported into MineScape Design File and stored as graphic contours.

4.3 GEOLOGICAL MODELING PROCESS

A geological model was generated for Resources and Reserves estimation purposes. The MineScape-Stratmodel Software version 4.119 was used for generating the computerised geological model, and the stages undertaken are summarized below:

1. A first pass geological modeling exercise and further validation of the drill holes data was undertaken, covering the following aspects:
    a. Topography data has been modeled as a three dimensional grid surface.
    b. Base of lithology weathering has been modeled as a surface below the topographical surface. All coal seams are cut off against this base of weathering.
    c. Coal seams were modeled as a single conformable sequence underlying the weathering zone. A “pinch out” option was set up for seam modeling, where coal seams will be truncated when no coal intersection is recorded in the drill hole.
    d. Partings less than 0.20 m were included as a coal interval.

e. Further seam correlation was undertaken with the aid of cross sections that were generated from the "First Pass" model.

2. As a follow up to the valid seam correlation, a final model was then generated to be used as a base model in Resources and Reserves estimation.

Model Parameters

The geological model parameters in Minescape are set in a function called "Schema" which controls generated seam structure and correlation. Two Schemas were defined for each prospect area named TPR_A for Block A and TPR_B for Block B.

The Schema parameters used to build the geological model of each prospect area is summarized below.

No	Parameter	Block A	Block B
1	Topography Model Cell Size	10m	10m
2	Geology Model Cell Size	25m	25m
3	Modeling Option	No Burden	No Burden
4	Interpolator Search Radius	5,000m	5,000m
5	Model Extrapolation Distance	2,500m	2,500m
6	Interpolator - Thickness	Planar	Planar
7	Interpolator – Surface	FEM	FEM
8	Interpolator - Trend	Planar	Planar
9	Partings	Yes	Yes
10	Parting Minimum Thickness	0.20m	0.20m
11	Interval Lithology Code	CO,PA	CO,PA
12	Trend Surface	None	None
13	Faults	Yes	None
14	Limit Polygons		
15	Survey Data	None	None

4.4 COAL SEAMS

4.4.1 Block A

The detailed exploration programmes in Block A have demonstrated the presence of at least ten (10) coal seams. Of these, only seven (7) coal seams are included in the Resources and Reserves estimation. Named from top to bottom, the seams are A1, A2, B1, B2, B3, C and CL1.

The vertical disposition of these seams is shown in Figure 4-1 and the seam thickness statistics is shown in Table 4-3 below.

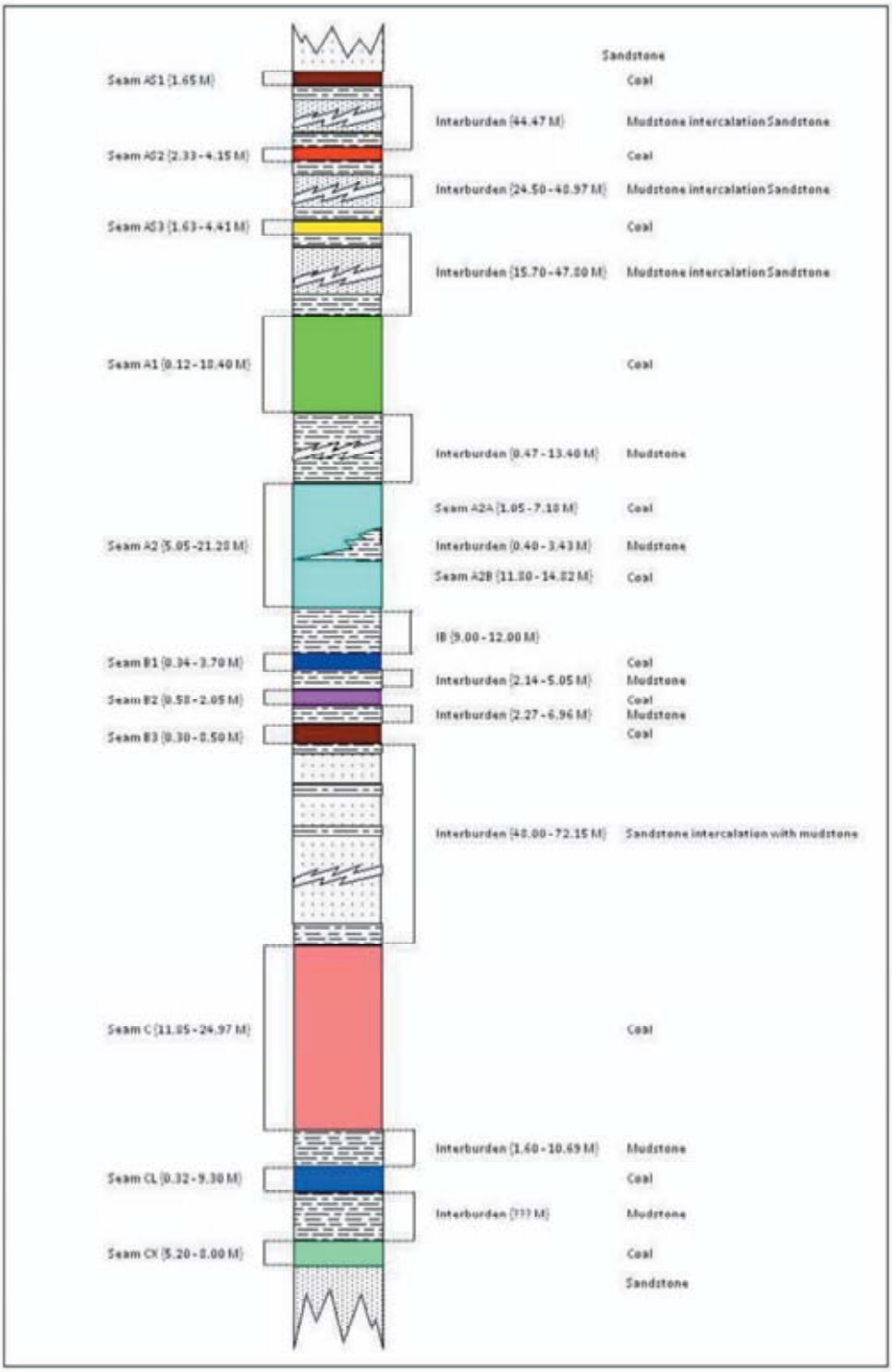


Figure 4-1 Schematic Stratigraphic Column Block A

Table 4-2 Seam Thickness Summary Block A

Seam		No. of	Vertical Thickness (m)		
Parent	Split	Data	Min	Avg	Max
A1		31	0.12	8.63	18.40
	A2A	4	1.05	2.96	7.18
A2		31	5.05	11.90	21.28
	A2B	4	11.80	13.00	14.82
B1		10	0.34	1.51	3.70
B2		7	0.58	1.32	2.05
B3		10	0.30	4.12	8.50
C		57	11.85	18.38	24.97
CL		20	0.32	2.73	9.30

The A1 Seam in general has thicknesses ranging from 0.12 to 18.40 m. In the northern area, seam A1 has pinched-out or is missing.

The A2 Seam in general has thicknesses ranging from 5.05 to 21.28 m. The A2 seam is split into plies named A2A and A2B. The material between the coal plies generally consists of carbonaceous mudstone.

The B1 Seam in general has thickness ranging from 0.34 to 3.70 m. In some areas, seam B1 has pinched-out or is missing.

The B2 Seam in general has thicknesses ranging from 0.58 to 2.05 m. In some areas, seam B2 has pinched-out or is missing.

The B3 Seam in general has thicknesses ranging from 0.30 to 8.50 m. In some areas, seam B3 has pinched-out or is missing.

The C Seam is the thickest seam in the sequence with thicknesses ranging from 11.85 to 24.97m.

The CL Seam in general, has thicknesses ranging from 0.32 to 9.30 m. In some areas, seam CL has pinched-out or is missing.

A small number of other un-named seams occur throughout the sequence. However, they are thin and generally less than 1.0 m in thickness. It has not been possible to correlate these thinner seams nor demonstrate their continuity and they are therefore excluded from the Resources and Reserves defined in this Report.

The Block A seams have relatively moderate structure with folding into a syncline. In general the seam structures are trending on a north - south strike line and then the direction turns to follow a west – east strike line. Dips of the seams are moderate ranging from 20 to 30 °.

The syncline is understood and broadens to the deepest in the southeast. The drilling has demonstrated that the main seams occur approximately 4.0 kilometres (km) in strike and for approximately 1.0 km along dip, at depths ranging from 3.0 to 350.0 m.

The geological model interpretation has indicated that three (3) northeast-southwest trending reverse faults occur in the west and east part of the deposit. These faults are named Reverse_01, Reverse_02 and Reverse_03. Vertical displacement of the faults is estimated at around 25m for Reverse_01, 35m for Reverse_02 and 100m for Reverse_03.

Also, there are three (3) west-east trending normal faults which occur in the northern part of the deposit. These faults are named Normal_01, Normal_02 and Normal_03. Vertical displacement of the faults is estimated at around 35.0 m at Normal_01, 35.0m at Normal_02 and 60.0m at Normal_03.

The typical structure of the seams is shown in Plan AA-2 and Plan AB-2 in Appendix A. Typical cross sections of the deposit is shown in Plan AA-3 and AB-3 in Appendix A.

4.4.2 Block B

The detailed exploration programmes in Block B have demonstrated the presence of at least nine (9) coal seams. Off these, only seven (7) coal seams are included in the Resources and Reserves estimation. Named from top to bottom, the seams are BS2, BS3, BS4, D, E, F, and G.

The vertical disposition of these seams is shown in Figure 4-2 below and the seam thickness statistics are shown in Table 4-3 below.

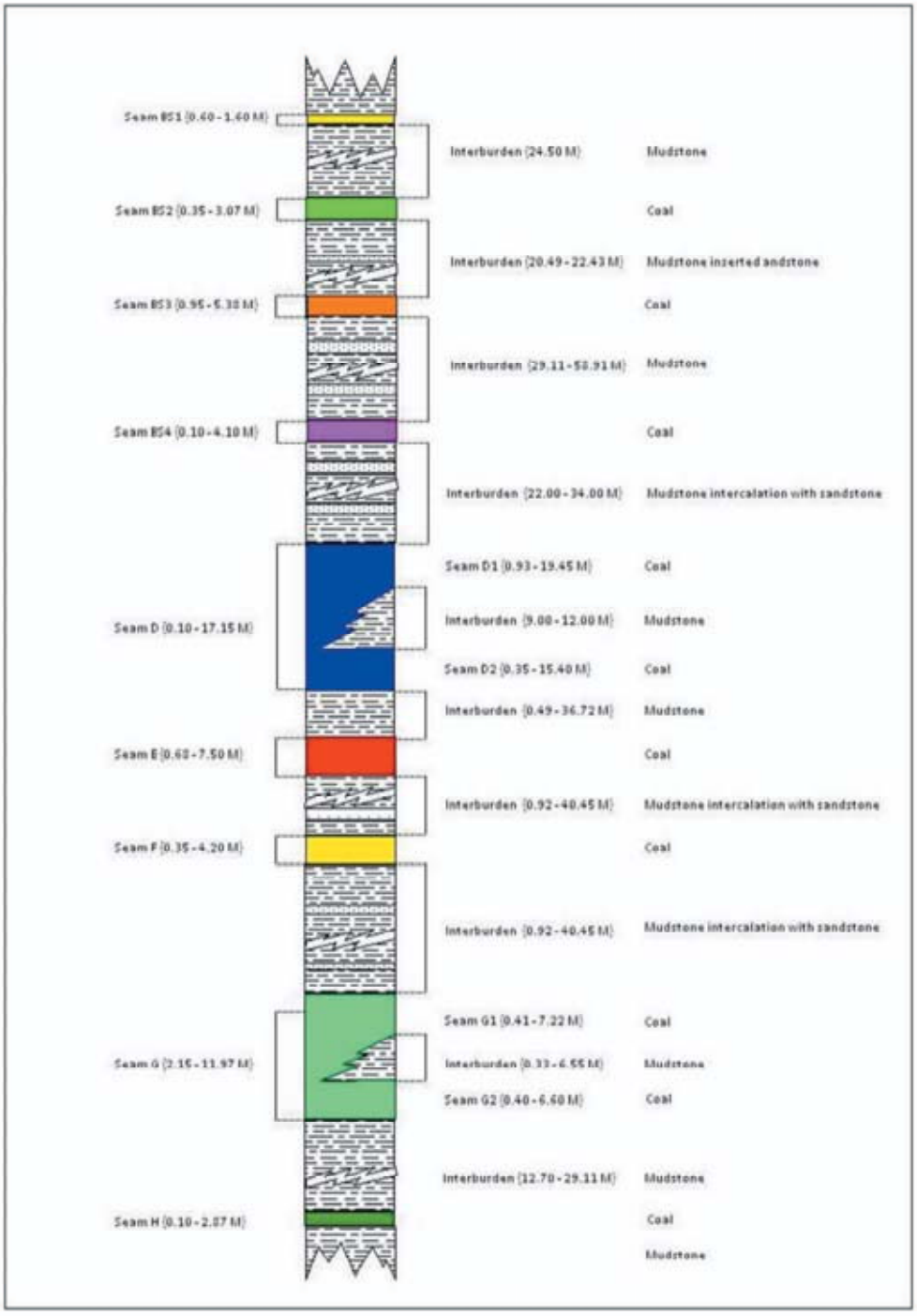


Figure 4-2 Schematic Stratigraphic Column Block B

Table 4-3 Seam Thickness Summary Block B

Seam		No. of	Vertical Thickness (m)		
Parent	Split	Data	Min	Avg	Max
BS2		11	0.35	1.76	3.07
BS3		12	0.95	3.63	5.38
BS4		21	0.10	2.21	4.10
D	D1	17	0.93	7.74	19.45
		34	0.10	7.91	17.15
	D2	18	0.35	5.42	15.40
E		57	0.68	2.51	7.50
F		46	0.35	1.55	4.20
G	G1	23	0.41	3.75	7.22
		33	2.15	6.15	11.97
	G2	24	0.40	2.27	6.60

The BS2 Seam in general has thicknesses ranging from 0.35 to 3.07 m. In some areas, seam BS2 has pinched-out or is missing.

The BS3 Seam in general has thicknesses ranging from 0.95 to 5.38 m. In some areas, seam BS3 has pinched-out or is missing.

The BS4 Seam in general has thicknesses ranging from 0.10 to 4.10 m. In some areas, seam BS4 has pinched-out or is missing.

The D Seam is the thickest seam in the sequence with thicknesses ranging from 0.10 - 17.15 m. The D seam is split into plies named D1 and D2. The material between the coal plies generally consists of carbonaceous mudstone. In the southern part, seam D has pinched-out or is missing.

The E Seam in general has thicknesses ranging from 0.68 to 7.50 m.

The F Seam in general has thicknesses ranging from 0.35 to 4.20 m. In the southern part, seam F has pinched-out or is missing.

The G Seam in general has thicknesses ranging from 2.15 to 11.97 m. The G seam is split into plies named G1 and G2. The material between the coal plies generally consists of carbonaceous mudstone.

A small number of other un-named seams occur throughout the sequence but they are thin and generally less than 1.0 m in thickness. It has not been possible to correlate these thinner seams nor demonstrate their continuity and therefore they are excluded from the Resources and Reserves defined in this Report.

The Block B seams have relatively simple structure with folding into a syncline structure with similar trends as in Block A. In general, the seam structures are trending on a north - south strike line with flat to moderate dipping, ranging from 5° in the northern area to 20 ° in the southern area.

Drilling has demonstrated that seams occur approximately 5.5 kilometres (km) along strike and for approximately 2.0 km along the dip, at depths ranging from 3.0 to 300.0 m. The seams are believed to continue for approximately 1.5 km to the north. However no drilling has been undertaken to prove the continuity in this area.

The typical structure of the seams is shown in Plan AA-2 in Appendix A. A typical cross section of the deposit is shown in Plan AA-3 in Appendix A.

Table 5-6 Core Recovery at Blocks A and B

Block A

CR% Range	Percentage
>95% - 100%	74%
>90% - <95%	26%

Block B

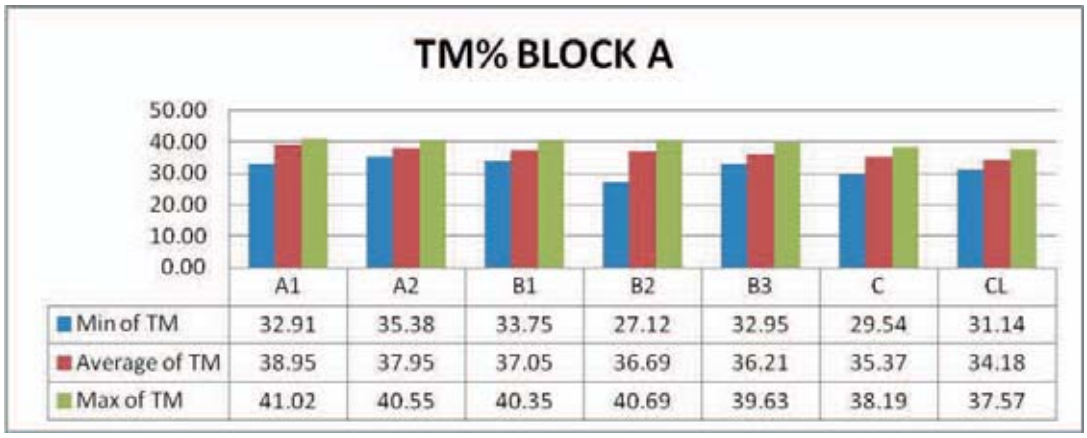
CR% Range	Percentage
>95% - 100%	81%
>90% - <95%	18%

The following tables show the range of qualities in respect of Blocks A and B.

BLOCK A

Total Moisture (ar)

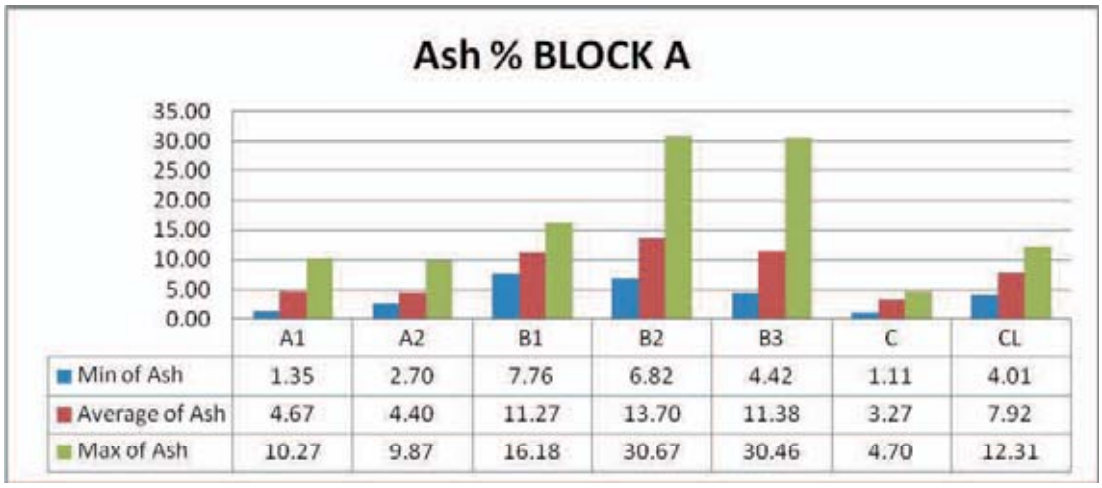
The average Total Moisture value on an As Received (ar) basis shows a small range in variation of moisture from 34% to 39% as shown in the table below.



	A1	A2	B1	B2	B3	C	CL
Min of TM	32.91	35.38	33.75	27.12	32.95	29.54	31.14
Average of TM	38.95	37.95	37.05	36.69	36.21	35.37	34.18
Max of TM	41.02	40.55	40.35	40.69	39.63	38.19	37.57

Ash Content

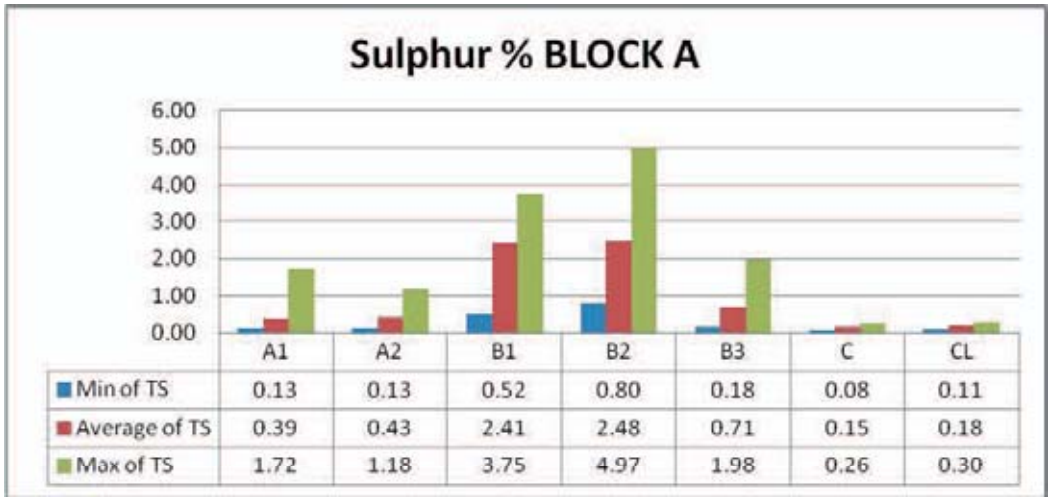
The distribution of average ash content in the main seams is generally low at less than 5%, with the exception of seams B1, B2, B3 and CL where values range from 7.9% to 13.7% (adb). Seams B1, B2 and B3 are a minor proportion being around 5% of the overall total coal quantity and will be suitable to blend with the thick seam production in a suitably phased mining operation to manage and reduce the ash content.



	A1	A2	B1	B2	B3	C	CL
Min of Ash	1.35	2.70	7.76	6.82	4.42	1.11	4.01
Average of Ash	4.67	4.40	11.27	13.70	11.38	3.27	7.92
Max of Ash	10.27	9.87	16.18	30.67	30.46	4.70	12.31

Sulphur Content (TS)

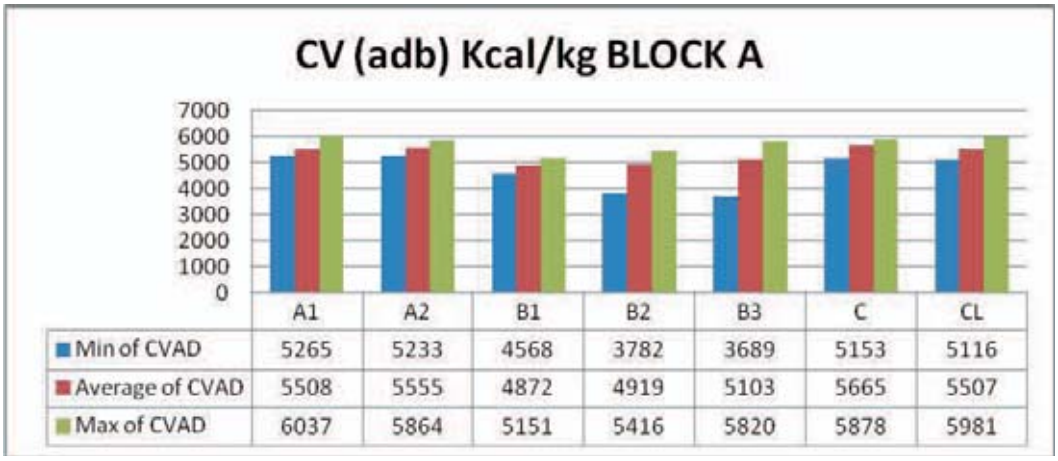
The distribution of the average Total Sulphur content in the main seams is generally low, with less than 0.50%, except in seams B1, B2 and B3, where it ranges from 0.71 to 2.48% (adb). As with ash, the seams B1, B2 and B3 are a minor proportion being around 5% of the overall total coal quantity and will be suitable to blend with the thick seam production in a suitably phased mining operation to reduce the sulphur content.



	A1	A2	B1	B2	B3	C	CL
Min of TS	0.13	0.13	0.52	0.80	0.18	0.08	0.11
Average of TS	0.39	0.43	2.41	2.48	0.71	0.15	0.18
Max of TS	1.72	1.18	3.75	4.97	1.98	0.26	0.30

Calorific Value (adb)

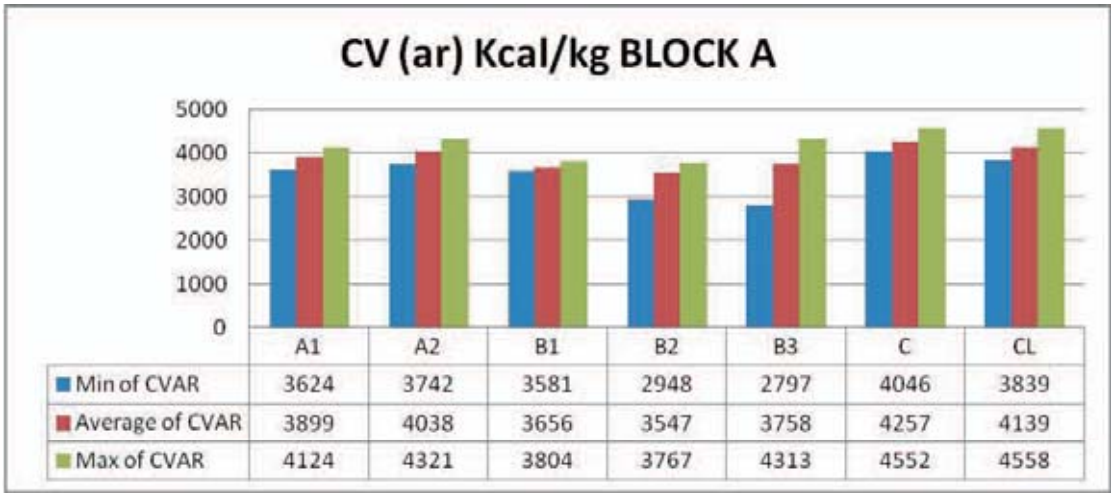
The average calorific value on an Air Dried (ad) basis for the main seams A1, A2 and C shows small variations in medium calorific value from 5,500 Kcal/kg to 5,700 Kcal/kg. However the minor seams B1, B2 and B3 show lesser value, ranging from 4,900 Kcal/kg to 5,100 Kcal/kg.



	A1	A2	B1	B2	B3	C	CL
Min of CVAD	5265	5233	4568	3782	3689	5153	5116
Average of CVAD	5508	5555	4872	4919	5103	5665	5507
Max of CVAD	6037	5864	5151	5416	5820	5878	5981

Calorific Value (gar)

The average calorific value on an Air Received (ar) basis for the main seams A1, A2 and C shows small variations in medium calorific value from 3,900 Kcal/kg to 4,200 Kcal/kg, confirming that the coal is low in rank. The minor seams B1, B2 and B3 show lesser values, ranging from 3,500 Kcal/kg to 3,800 Kcal/kg.

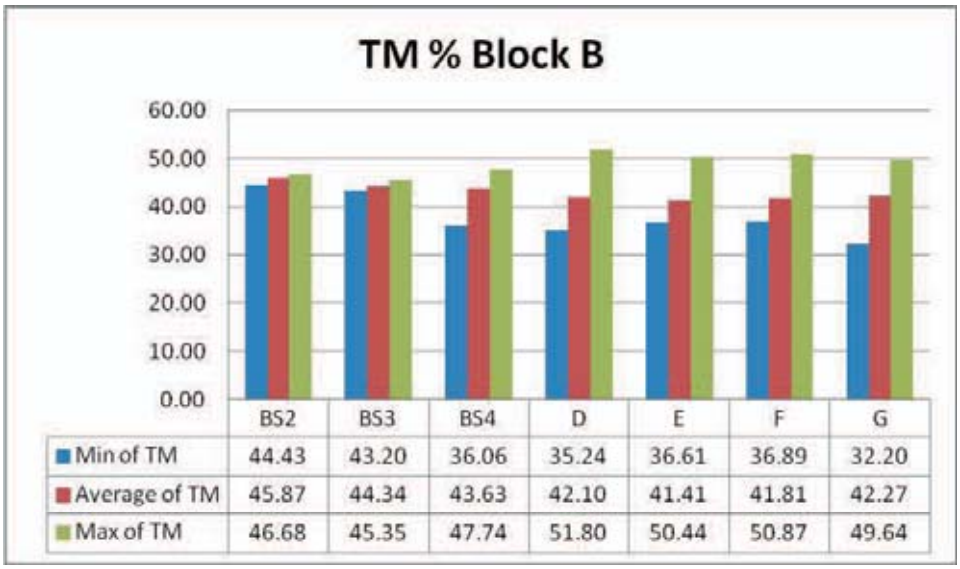


	A1	A2	B1	B2	B3	C	CL
Min of CVAR	3624	3742	3581	2948	2797	4046	3839
Average of CVAR	3899	4038	3656	3547	3758	4257	4139
Max of CVAR	4124	4321	3804	3767	4313	4552	4558

BLOCK B

Total Moisture (ar)

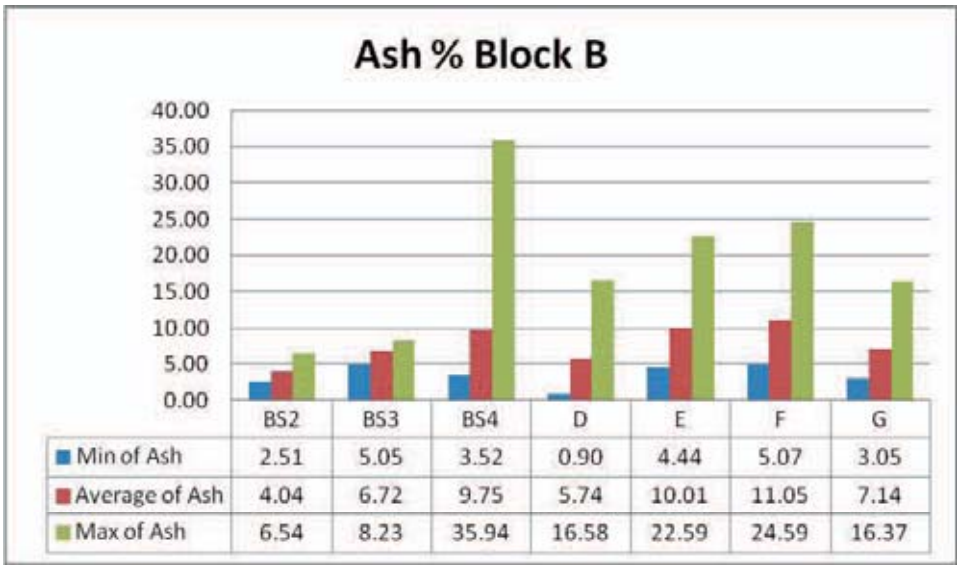
The average total moisture value on an As Received basis shows a small range in variation of high moisture from 41% to 46% as shown in the table below.



	BS2	BS3	BS4	D	E	F	G
Min of TM	44.43	43.20	36.06	35.24	36.61	36.89	32.20
Average of TM	45.87	44.34	43.63	42.10	41.41	41.81	42.27
Max of TM	46.68	45.35	47.74	51.80	50.44	50.87	49.64

Ash Content

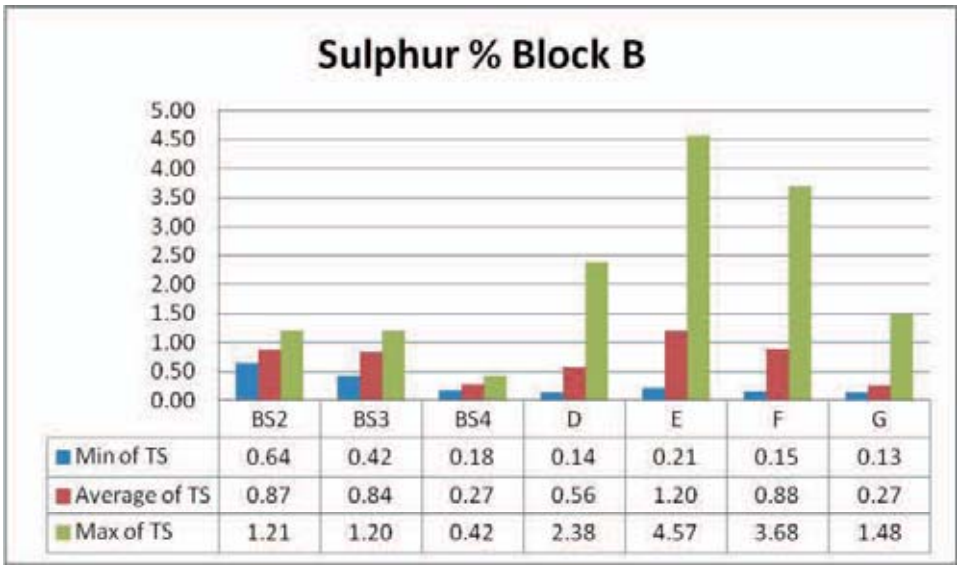
The distribution of average ash content within all the seams is generally low at less than 10%, except for seams E and F, where the values range from 10% to 11% (adb).



	BS2	BS3	BS4	D	E	F	G
Min of Ash	2.51	5.05	3.52	0.90	4.44	5.07	3.05
Average of Ash	4.04	6.72	9.75	5.74	10.01	11.05	7.14
Max of Ash	6.54	8.23	35.94	16.58	22.59	24.59	16.37

Sulphur Content

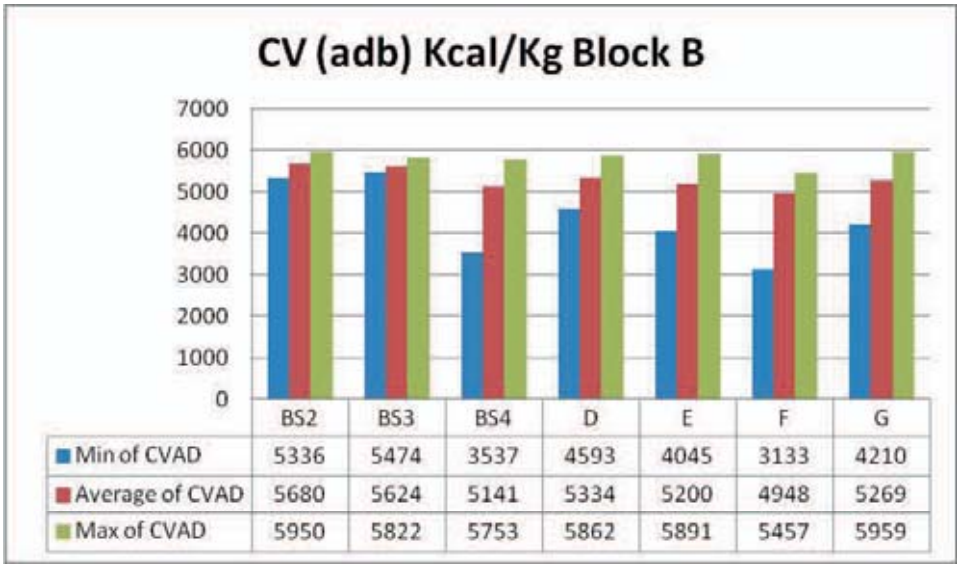
The distribution of average total sulphur content in most seams is generally low with less than 1.0% (adb), except for seam E. Seam E is a minor proportion being around 11% of the overall total coal quantity and will be suitable to blend with the thick seam production in a suitably phased mining operation to reduce the sulphur content.



	BS2	BS3	BS4	D	E	F	G
Min of TS	0.64	0.42	0.18	0.14	0.21	0.15	0.13
Average of TS	0.87	0.84	0.27	0.56	1.20	0.88	0.27
Max of TS	1.21	1.20	0.42	2.38	4.57	3.68	1.48

Calorific Value (adb)

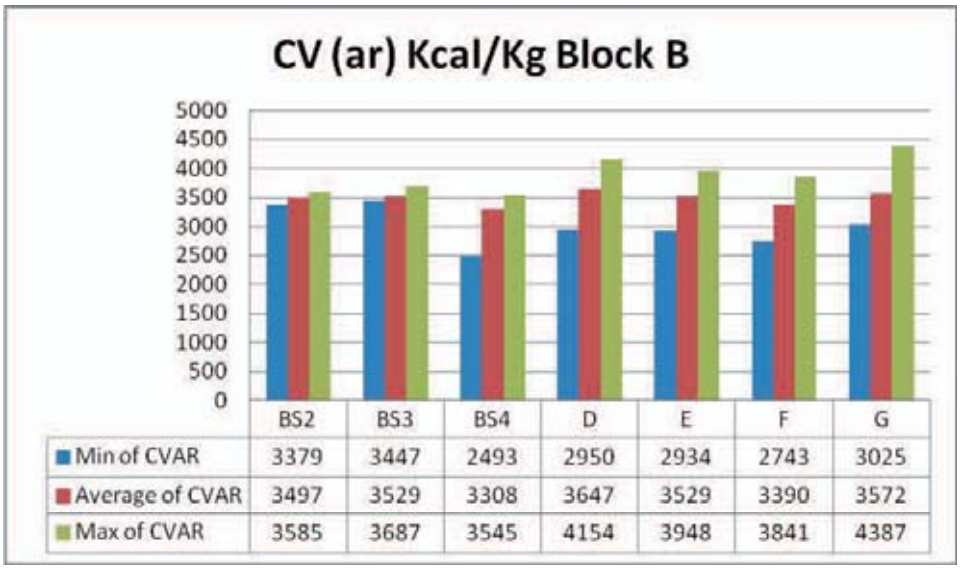
The calorific value on an Air Dried (ad) basis shows relatively medium variations in values, with an average value for Calorific Value ranging from 4,900 Kcal/kg to 5,700 Kcal/Kg.



	BS2	BS3	BS4	D	E	F	G
Min of CVAD	5336	5474	3537	4593	4045	3133	4210
Average of CVAD	5680	5624	5141	5334	5200	4948	5269
Max of CVAD	5950	5822	5753	5862	5891	5457	5959

Calorific Value (gar)

The calorific value on an As Received (ar) basis shows small variations with an average value for calorific value ranging from 3,300 Kcal/kg to 3,600 Kcal/Kg, confirming that the coal is low in rank.



	BS2	BS3	BS4	D	E	F	G
Min of CVAR	3379	3447	2493	2950	2934	2743	3025
Average of CVAR	3497	3529	3308	3647	3529	3390	3572
Max of CVAR	3585	3687	3545	4154	3948	3841	4387

6 COAL RESOURCES

In reference to the JORC Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code) 2004 Edition, Clause 37, "For guidance on the estimation of Coal Resources and Reserves and on statutory reporting not primarily intended for providing information to the investing public, readers are referred to the 2003 edition of the 'Australian Guidelines for Estimating and Reporting of Inventory Coal, Coal Resources and Coal Reserves'. These guidelines do not override the provisions and intentions of the JORC Code for Public Reporting".

Therefore referring to the Australian Guidelines; a Coal Resource is that portion of a deposit in such form and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, quality, geological characteristics and continuity of a Coal Resource are known, estimated or interpreted from specific geological evidence and knowledge. Coal Resources are subdivided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories.

Measured Coal Resource is that part of the total Coal Resources for which the quantity and quality can be estimated with a high level of confidence, based on information gathered from Points of Observation. The Points of Observation are spaced closely enough to confirm geological and/or quality continuity.

Indicated Coal Resource is that part of the total Coal Resources for which the quantity and quality can be estimated with a reasonable level of confidence, based on information gathered from Points of Observation. The Points of Observation are sufficient for continuity to be assumed; but are too widely or inappropriately spaced to confirm geological and/or quality continuity.

Inferred Coal Resource is that part of the total Coal Resources for which the quantity and quality can only be estimated with a low level of confidence. The quantity and quality are inferred using Points of Observation**.** Estimates for this confidence category are likely to change significantly with further exploration.

The Resources in the concession area have been evaluated using information gathered from the Points of Observation.

The Points of Observation used to define the Coal Resources at Tabalong Project are those cored drill holes derived from further detailed exploration which have been geophysically logged, sampled at recovery > 90%, tested and surveyed by a Total Station.

The distance radius of influence from Points of Observations that are used in estimating the Resources are as follows:

- Measured - radius of influence 0 - 250 m from point of observations
- Indicated - radius of influence 250 - 500 m from point of observations
- Inferred - radius of influence 500 - 1,000 m from point of observations

In determining the coal tonnages in each of the Resource categories, the following parameters were used to estimate the Resources:

- A coal thickness of 0.5 m has been used as the minimum cut-off for resource estimation.
- Coal density using in-situ (ins) basis has been used to generate the tonnage present. Air dried (ad) relative density (RD) has been converted to an in situ basis (ID) using the Preston-Sanders equation, as follows:

$$ID = RD\ ad \times (100 - IM\ ad)/(100 + RD\ ad \times (M\ ins - IM\ ad) - M\ ins)$$

Where

ID	=	Insitu Density
RD (ad)	=	Relative Density (adb)
IM (ad)	=	Inherent Moisture (adb)
M ins	=	Total Moisture

- No quality cut-offs have been used.
- Seam depth restriction options are 250m in Block A and 200m in Block B.

6.1 RESOURCES ESTIMATION

Resources estimate summary for Block A is shown in Table 6-1 and the estimate for Block B is shown in Table 6-2 below. The combined values are shown in Table 6-3 below.

Table 6-1 Resources Estimate Summary - Block A

Depth	Seam	Coal Resources (Mt)			Total Incr.	Total Cumm.
		Measured	Indicated	Inferred		
0m - 50m	A1	1.79	1.23	0.62	3.64	
	A2	4.87	0.36	0.60	5.83	
	B1	0.13	0.00	0.00	0.13	
	B2	0.01	0.00	0.00	0.01	
	B3	0.25	0.00	0.00	0.25	
	C	9.80	2.38	0.03	12.21	
	CL	0.25	0.40	0.01	0.65	
Subtotal 0-50m		**17.08**	**4.37**	**1.25**	**22.71**	**22.71**
50m - 100m	A1	2.41	0.76	0.77	3.95	
	A2	5.16	0.45	0.53	6.13	
	B1	0.16	0.00	0.00	0.16	
	B2	0.05	0.00	0.00	0.05	
	B3	0.59	0.00	0.00	0.59	
	C	11.40	1.29	0.00	12.69	
	CL	0.51	0.32	0.04	0.88	
Subtotal 50-100m		**20.28**	**2.82**	**1.34**	**24.44**	**47.15**
100m - 150m	A1	3.81	0.94	0.98	5.74	
	A2	6.73	0.98	0.86	8.56	
	B1	0.23	0.02	0.00	0.26	
	B2	0.11	0.00	0.00	0.11	
	B3	0.85	0.02	0.00	0.87	
	C	8.04	1.44	0.06	9.54	
	CL	0.55	0.24	0.04	0.83	
Subtotal 100-150m		**20.33**	**3.65**	**1.93**	**25.92**	**73.07**
150m - 200m	A1	1.48	1.42	0.95	3.85	
	A2	6.71	1.63	0.96	9.29	
	B1	0.19	0.04	0.00	0.23	
	B2	0.24	0.03	0.00	0.27	
	B3	0.98	0.17	0.00	1.15	
	C	6.79	1.91	0.20	8.91	
	CL	0.57	0.21	0.02	0.80	
Subtotal 150-200m		**16.96**	**5.41**	**2.13**	**24.50**	**97.57**
200m - 250m	A1	0.23	1.16	1.69	3.08	
	A2	4.06	4.61	1.56	10.23	
	B1	0.14	0.04	0.00	0.18	
	B2	0.27	0.10	0.00	0.37	
	B3	0.83	0.45	0.00	1.28	
	C	7.88	3.26	1.19	12.33	
	CL	0.62	0.49	0.06	1.17	
Subtotal 200-250m		**14.03**	**10.11**	**4.50**	**28.64**	**126.21**
Grand Total		**89**	**26**	**11**	**126**	

Note: Total tonnages have been rounded to nearest 1 Mt, commensurate with the precision of the estimate.

Table 6-2 Resources Estimate Summary - Block B

Depth	Seam	Coal Resources (Mt)			Total	Total
		Measured	Indicated	Inferred	Incr.	Cumm.
0m - 50m	BS2	0.49	0.42	1.18	2.09	
	BS3	2.60	0.78	0.04	3.42	
	BS4	1.29	1.19	0.24	2.72	
	D	12.14	0.82	0.75	13.71	
	E	3.38	0.54	0.70	4.62	
	F	2.06	0.31	0.28	2.65	
	G	8.62	0.97	1.09	10.68	
Subtotal 0-50m		**30.59**	**5.01**	**4.30**	**39.90**	**39.90**
50m - 100m	BS2	0.00	0.11	1.56	1.67	
	BS3	0.87	1.26	0.66	2.79	
	BS4	0.78	0.48	0.04	1.30	
	D	12.01	1.38	0.58	13.96	
	E	3.93	0.61	0.42	4.96	
	F	1.07	0.22	0.16	1.44	
	G	11.48	1.48	1.39	14.35	
Subtotal 50-100m		**30.14**	**5.54**	**4.80**	**40.47**	**80.37**
100m - 150m	BS2	0.00	0.00	1.01	1.01	
	BS3	0.00	0.07	0.53	0.60	
	BS4	0.20	0.36	0.46	1.01	
	D	15.69	2.57	0.65	18.91	
	E	3.26	0.52	0.01	3.79	
	F	1.26	0.22	0.00	1.48	
	G	10.63	1.04	0.00	11.67	
Subtotal 100-150m		**31.04**	**4.77**	**2.66**	**38.47**	**118.84**
150m - 200m	BS2	0.00	0.00	0.80	0.80	
	BS3	0.00	0.00	0.03	0.03	
	BS4	0.00	0.00	0.01	0.01	
	D	6.82	9.91	6.58	23.31	
	E	1.87	1.68	2.69	6.23	
	F	1.36	0.54	0.12	2.02	
	G	10.56	2.52	2.12	15.20	
Subtotal 150-200m		**20.61**	**14.65**	**12.34**	**47.60**	**166.43**
Grand Total		**112**	**30**	**24**	**166**	

Note: Total tonnages have been rounded to nearest 1 Mt, commensurate with the precision of the estimate.

Table 6-3 Total Resources Block A and Block B

Area	Coal Resources (Mt)			
	Measured	Indicated	Inferred	Total
Block A	89	26	11	126
Block B	112	30	24	166
Total	**201**	**56**	**35**	**292**

The above resources cover an area comprising about 60% of the Concession Area.

Resources at the northern part of Block A and at the northern part of Block B are not yet estimated at this time as they are based on insufficient initial drilling information. An additional drilling programme will be required to determine the resources in these areas.

7 MINE DESIGN AND RESERVES

Referring to the Australian Guidelines, a Coal Reserve is the economically mineable part of a Measured and/or Indicated Coal Resource. Coal Reserve estimates include diluting materials and are adjusted for losses that may occur when the coal is mined. Appropriate assessments, which may include feasibility studies, have been carried out. These assessments should include proper consideration of all relevant '**Modifying Factors**' such as: mining methods, beneficiation, economic, marketing, legal, environmental, social and governmental factors. These assessments should demonstrate that at the time of reporting, economic extraction could reasonably be justified. Coal Reserves are subdivided in order of increasing confidence into Probable Coal Reserves and Proved Coal Reserves.

An 'Ore Reserve' is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined. Appropriate assessments and studies have been carried out, and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. These assessments demonstrate at the time of reporting that extraction could reasonably be justified. Ore Reserves are sub-divided in order of increasing confidence into Probable Ore Reserves and Proved Ore Reserves.

A Proved Coal Reserve is the economically mineable part of a Measured Coal Resource for which the modifying factors have been satisfied.

A Probable Coal Reserve is the economically mineable part of an Indicated Coal Resource. It can also be the economically mineable part of a Measured Coal Resource if the modifying factors need to be further resolved before the Estimator can confidently place the Coal Reserve in the Proved category.

A Probable Coal Reserve has a lower level of confidence than a Proved Coal Reserve but is of sufficient quality to serve as the basis for a decision on the development of the deposit.

For the purpose of Reserves estimation an initial mine design has been generated incorporating the geotechnical study outcomes. The pit limit is determined based on a pit optimization exercise to a maximum depth of 250m and pit geometry is generated based on the slope stability recommendations.

7.1 GEOTECHNICAL RECOMMENDATIONS

Britmindo in association with PT LAPI-ITB Bandung has completed a geotechnical and hydrogeology study at the Project area during 2012.

The scope of the study was to provide definitive mine design parameters by undertaking the following activities:

- A drilling program comprises of five (5) fully cored geotechnical boreholes along four (4) sections of the Block A deposit and five (5) fully cored geotechnical boreholes along three (3) sections of the Block B deposit.
- Installation of piezometers for groundwater level monitoring over various strata intervals.
- Sampling and geotechnical testing for strata characterisation and strength.
- Stability analyses for pit and dump wall design criteria.
- Provide recommendations for safe wall design.

The high wall slope recommendations for the Tabalong mine design is as shown in Table 7-1 below for saturated conditions for Block A and Table 7-2 below shows saturated conditions for Block B.

Table 7-1 High Wall Slope Recommendation for Saturated Condition Block A

Section	Elevation (m)	Depth (m)	Slope Angle (◦)		SF	
			HW	LW	HW	LW
Line GTA01	RL-170	262.00	23	-	1.317	-
	RL-120	212.00	23	-	1.338	-
	RL-070	170.60	24	-	1.321	-
	RL-020	119.21	30	-	1.309	-
	RL+030	61.00	49	-	1.313	-
Line GTA02	RL-170	-	-	-	-	-
	RL-120	215.16	29	25	1.301	1.379
	RL-070	170.33	32	25	1.311	1.554
	RL-020	118.00	34	25	1.300	1.731
	RL+030	57.91	50	25	1.384	2.049
Line GTA03	RL-170	-	-	-	-	-
	RL-120	208.09	23	28	1.323	1.305
	RL-070	163.00	28	27	1.309	1.501
	RL-020	104.00	38	27	1.308	1.729
	RL+030	61.09	55	27	1.310	2.086
Line GTA04	RL-170	251.85	20	23	1.345	1.292
	RL-120	200.00	22	24	1.303	1.317
	RL-070	152.40	24	24	1.322	1.417
	RL-020	108.19	30	24	1.317	1.578
	RL+030	53.17	45	24	1.345	2.531

Table 7-2 High Wall Slope Recommendation for Saturated Condition Block B

Section	Elevation (m)	Depth (m)	Slope Angle (◦)		SF	
			HW	LW	HW	LW
Line GTB01	RL-050	151.98	30	-	1.300	-
	RL+000	97.21	37	-	1.344	-
	RL+050	55.65	43	-	1.369	-
Line GTB02	RL-100	209.05	23	-	1.323	-
	RL-050	147.61	28	-	1.322	-
	RL 000	104.21	35	-	1.347	-
	RL+050	54.80	53	-	1.323	-
Line GTB03	RL-100	212.68	23	-	1.306	-
	RL-050	135.32	27	-	1.390	-
	RL 000	86.00	37	-	1.332	-
	RL+050	43.72	54	-	1.315	-

For high wall slope recommendations for the Tabalong mine design, Table 7-3 below shows 50% dewatered conditions for Block A and Table 7-4 below shows 50% dewatered conditions for Block B.

Table 7-3 High Wall Slope Recommendation for 50% Dewatering Condition Block A

Section	Elevation (m)	Depth (m)	Slope Angle (◦)		SF	
			HW	LW	HW	LW
Line GTA01	RL-170	262.00	25	-	1.415	-
	RL-120	210.66	28	-	1.343	-
	RL-070	170.54	28	-	1.346	-
	RL-020	116.49	35	-	1.315	-
	RL+030	62.00	55	-	1.347	-
Line GTA02	RL-170	-	-	-	-	-
	RL-120	209.62	33	25	1.327	1.379
	RL-070	171.00	35	25	1.353	1.554
	RL-020	117.00	40	25	1.327	1.731
	RL+030	56.99	60	25	1.354	2.049
Line GTA03	RL-170	-	-	-	-	-
	RL-120	209.17	25	28	1.441	1.305
	RL-070	161.00	33	27	1.320	1.501
	RL-020	104.00	43	27	1.389	1.729
	RL+030	61.80	60	27	1.393	2.086
Line GTA04	RL-170	251.85	20	23	1.345	1.292
	RL-120	200.00	26	24	1.331	1.317
	RL-070	155.46	30	24	1.310	1.417
	RL-020	110.65	35	24	1.357	1.578
	RL+030	51.43	55	24	1.337	2.531

Table 7-4 High Wall Slope Recommendation for 50% Dewatering Condition Block B

Section	Elevation (m)	Depth (m)	Slope Angle (◦)		SF	
			HW	LW	HW	LW
Line GTB01	RL-050	151.00	34	-	1.302	-
	RL+000	92.62	45	-	1.362	-
	RL+050	54.74	50	-	1.328	-
Line GTB02	RL-100	212.04	28	-	1.332	-
	RL-050	143.25	34	-	1.326	-
	RL 000	105.00	40	-	1.339	-
	RL+050	55.39	60	-	1.350	-
Line GTB03	RL-100	208.45	26	-	1.330	-
	RL-050	134.00	32	-	1.372	-
	RL 000	86.81	44	-	1.319	-
	RL+050	44.14	60	-	1.342	-

7.2 PIT OPTIMISATION

Economic pit shell and potential reserves in the Project area were identified using Minex Optimiser software which utilizes the Lerchs Grossman algorithm. This method is widely accepted in the coal mining industry. The optimiser was run to determine the pit limit at breakeven strip ratio revenue against mine operating costs which were agreed between TPR and Britmindo (see Section 10, Economic Evaluation).

Pit high wall slope angle was set to 25 ° overall.

Table 7-5 and Table 7-6 below shows the relationship potential coal tonnes VS strip ratio as a result of pit optimization, for Blocks A and B.

Table 7-5 Potential Coal Tonnes V's Strip Ratio – Block A

SR (Bcm/t)	Coal (Mt)
4.62	107.95
4.49	106.71
4.36	105.01
4.12	100.91
3.96	97.90
3.28	80.12
2.69	59.09
2.32	49.24

Table 7-6 Potential Coal Tonnes VS Strip Ratio Block B

SR (Bcm/t)	Coal (Mt)
5.40	131.97
5.10	118.29
4.60	101.71
3.60	65.09
3.00	43.97
2.60	33.00
2.00	19.31
1.60	12.30

Table 7-7 below shows the combined potential coal tonnes VS strip ratio for Blocks A and B.

Table 7-7 Total Potential Coal Tonnes

Area	SR (Bcm/t)	Coal (Mt)
Block A	4.62	108
Block B	5.40	132
		240

The above values indicate the potential in-situ coal tonnages which technically are achievable by open cut mining. No mining losses, dilution and confidence levels were determined for mineable proved and probable reserves categories.

Practical final pit design and life of mine planning which includes the consideration of "Modifying Factors" i.e. mining, processing, economic, marketing, legal, environment, social and government factors must be undertaken to define JORC mineable reserves which are economically viable over the life of mine plan.

7.3 FINAL PIT DESIGN

Based on the economic evaluation, the following average strip ratio cut-off has been selected for the final pit design:

- Block A at strip ratio option of 3.96 to 1
- Block B at strip ratio option of 2.00 to 1

The following parameters for final pit designs have been set based on the geotechnical recommendations.

Block A

- Individual high wall slope : 55 °
- Benches height : 10 metres
- Berm width : 15 metres

- Overall high wall slope : 25 °
- Overall low wall slope : 25 °
- Ramp width : 25 metres
- Ramp grade : 8 %

The Block A pit design depth varies as follows:

- In the northern part, the pit maximum depth is around 115 m
- In the central and southern part, the pit maximum depth is around 250 m

Block B

- Individual high wall slope : 50 °
- Benches height : 10 metres
- Berm width : 8 metres
- Overall high wall slope : 36 °

The Block B pit design depth varies as follow:

- In the northern part, the pit maximum depth is around 40 m
- In the central part, the pit maximum depth is around 80 m
- In the southern part, the pit maximum depth is around 50 m

Britmindo has used an average overall high wall slope of 25 ° in Block A to 250m depth and 36 ° in Block B to 80m depth at the saturated conditions. The overall high wall slope will be greater if a dewatering programme is implemented during the mining operations.

7.4 OUT OF PIT WASTE DUMP DESIGN

The following parameters for the out-pit waste dump design have been set as follows:

Block A

- Individual dump slope : 35 °
- Benches height : 10 metres
- Berm width : 30 metres
- Overall dump slope : 15 °
- Ramp width : 25 metres
- Ramp grade : 8%

Block B

- Individual dump slope : 35 °
- Benches height : 10 metres
- Berm width : 30 metres
- Overall dump slope : 15 °
- Ramp width : 25 metres
- Ramp grade : 8%

Two out of pit dump designs have been generated, which are as follows:

Out of Pit Dump Block A is located to the northwest and northeast part of the pit A covering an area of 97 Ha with capacity in the order of 23.3 Mbcm in the northwest and an area of 197 Ha with capacity in the order of 76.7 Mbcm in the northeast. Maximum elevation is +170m above sea level in the northwest and +230m above sea level in the northeast.

Out of Pit Dump Block B is located to the northwest part of the pit B covering an area of 65 Ha with capacity in the order of 12 Mbcm. Maximum elevation is +140m above sea level.

The final pit and out of pit dump design layout for Block A and Block B is shown as Plan AA-8 in Appendix A.

7.5 RESERVES ESTIMATION

Based on the generated final pit design, Reserves were estimated within each final pit design using the following assumptions:

- A coal thickness of 0.50 m has been used as the minimum cut-off for Reserves estimation.
- Partings less than 0.20 m in thickness are included as coal interval.
- Mining losses of 0.10 m from the top and 0.10 m from the bottom of each seam have been allowed.
- Additional losses 1.0% for faulted areas or in difficult mining locations.
- Mining dilution of 0.05 m from the roof and 0.05m from the floor of each seam has been allowed.
- Coal density using in-situ (ins) basis has been used to generate the tonnage present. Air dried (ad) relative density (RD) has been converted to an in situ basis (ID) using the Preston-Sanders equation, as follows:

$$ID = RD\ ad \times (100 - IM\ ad)/(100 + RD\ ad \times (M\ ins - IM\ ad) - M\ ins)$$

Where

ID = Insitu Relative Density

RD (ad) = Relative Density (adb)

IM (ad) = Inherent Moisture (adb)
M ins = Total Moisture

The Reserves estimation is shown in Tables 7-8 to 7-10 respectively below.

Table 7-8 Reserves in Final Pit Design Block A

Seam	Coal (Mt)	Waste (Mbcm)	SR (bcm/t)
A1	13.84	184.08	13.30
A2	25.77	81.88	3.18
C	0.82	2.77	3.37
B1	0.60	1.53	2.53
B2	3.21	5.25	1.64
B3	40.26	110.31	2.74
CL	2.65	25.26	9.52
Total	**87.16**	**411.08**	**4.72**

Table 7-9 Reserves in Final Pit Design Block B

Seam	Coal (Mt)	Waste (Mbcm)	SR (bcm/t)
BS4	0.27	2.83	10.36
D	10.86	23.66	2.18
E	2.62	4.81	1.84
F	1.73	4.69	2.71
G	7.71	10.96	1.42
TOTAL	**23.20**	**46.96**	**2.02**

Table 7-10 Total Reserves in Final Pit Design

Area	Coal (Mt)	Waste (Mbcm)	SR (bcm/t)
Block A	87	411	4.72
Block B	23	47	2.02
Total	**110**	**458**	**4.16**

Note: Total tonnages have been rounded to nearest 1 Mt, commensurate with the precision of the estimate

The above Reserves figures represent coal tonnages within the final pit design. The reserves for each category in accordance with the JORC Code, showing Proved and Probable are as shown in the Tables 7-11 to 7-13 below.

Table 7-11 Proved and Probable Reserves Block A

Seam	Mineable Reserves (Mt)		
	Proved	Probable	Total
A1	9.33	4.10	13.43
A2	22.12	3.28	25.40
B1	0.61	0.21	0.82
B2	0.54	0.06	0.60
B3	3.06	0.15	3.21
C	38.52	1.74	40.26
CL1	1.80	0.85	2.65
Total	**75.98**	**10.39**	**86.37**

Table 7-12 Proved and Probable Reserves Block B

Seam	Mineable Reserves (Mt)		
	Proved	Probable	Total
BS4	0.07	0.09	0.16
D	10.57	0.27	10.84
E	2.39	0.22	2.61
F	1.59	0.00	1.59
G	7.25	0.47	7.72
TOTAL	**21.88**	**1.04**	**22.92**

Table 7-13 Total Proved and Probable Reserves

Area	Mineable Reserves (Mt)		
	Proved	Probable	Total
Block A	76	10	87
Block B	22	1	23
Total	**98**	**11**	**109**

Note: Total tonnages have been rounded to nearest 1 Mt, commensurate with the precision of the estimate

Total Proved and Probable Reserves relate to around 46% of the total potential coal tonnes of **240 Mt** in Block A and Block B.

The above Reserves represent ROM mineable tonnage and no global losses have been applied in the calculation. Global losses of 3% are applied in the economic model to determine the marketable product quantity.

7.6 ROM COAL QUALITY

The ROM quality has been simulated by adding 0.05 m dilution. The ROM quality expectation at Block A is shown in Table 7-14 below and at Block B in Table 7-15.

Table 7-14 ROM Coal Quality Block A

Seam	Coal (Mt)	TM% (ar)	IM% (adb)	Ash% (adb)	TS% (adb)	CV Kcal/Kg	
						(adb)	(ar)
A1	13.43	38.43	13.91	5.38	0.31	5,458	3,887
A2	25.40	37.90	14.91	5.15	0.44	5,464	3,981
B1	0.82	34.20	14.43	21.27	2.10	4,272	3,216
B2	0.60	35.00	12.47	18.64	2.43	4,585	3,324
B3	3.21	35.44	13.03	14.25	0.74	4,913	3,623
C	40.26	35.29	13.50	4.02	0.14	5,648	4,217
CL	2.65	33.37	12.04	10.99	0.18	5,311	3,998
Total	**86.37**	**36.48**	**13.92**	**5.42**	**0.31**	**5,506**	**4,052**

Table 7-15 ROM Coal Quality Block B

Seam	Coal (Mt)	TM% (ar)	IM% (adb)	Ash% (adb)	TS% (adb)	CV Kcal/Kg	
						(adb)	(ar)
BS4	0.16	42.41	12.35	13.51	0.32	4889	3151
D	10.84	41.66	15.08	7.41	0.57	5215	3567
E	2.61	40.43	13.13	14.08	1.34	4928	3351
F	1.59	39.91	14.23	17.42	0.82	4570	3140
G	7.72	41.58	14.59	9.57	0.26	5123	3472
Total	**22.92**	**41.38**	**14.62**	**9.63**	**0.57**	**5104**	**3478**

8 MINE PLANNING AND PRODUCTION SCHEDULE

The mining will use open cut strip mining methods, where medium sized hydraulic excavators, supported by rigid or articulated dump trucks are used.

Mining will be commencing in Block A in year 2015 with development of a "box cut". The overburden will initially be dumped out of pit in the northern part of Pit A. Thereafter, progressive mine advance will be undertaken with overburden being backfilled directly into the mined out voids, thus reducing the overburden haul distance. As mining advances the backfilled pit will be rehabilitated, minimising the area of disturbed land.

The mining at Block B will commence in year 2018, again with development of a "box cut". The overburden will be dumped out of pit in the northern part of Pit B.

The mine production schedule and sequence were simulated based on the database derived from the Reserves estimation.

In Block A, the production schedule covers a 20 Year Life of Mine Plan at a strip ratio of 4.63 to 1 bcm/t. The annual target production is as shown in Table 8-1 below. The plan schedules the annual quantities of coal and waste volume to be removed from the pits and target SR's. The plan demonstrates an initial production of 1.0Mt commencing in year 2015, increasing production to 4.0Mt at commencement of year 2017; thereafter with "steady state" production of 5.0Mt in year 2018 continuing until year 2032, with the residual being mined in 2033 and 2034 respectively.

In Block B the production schedule covers a 13 Year Life of Mine Plan at a strip ratio of 2.02 to 1 bcm/t. The annual target production is as shown in Table 8-2 below. The plan schedules the annual quantities of coal and waste volume to be removed from the pits and target SR's. The plan demonstrates an initial production of 1.0Mt commencing in year 2018, increasing with "steady state" production of 2Mt in year 2019 continuing until year 2029.

Table 8-1 Production Schedule of Block A

Item	2015	2016	2017	2018	2019	2020	2021
Coal (Mt)	1.00	2.00	4.00	5.00	5.00	5.00	5.00
Waste (Mbcm)	4.72	9.43	18.87	23.58	23.58	23.58	23.58
SR (t/bcm)	4.72	4.72	4.72	4.72	4.72	4.72	4.72
Item	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
Coal (Mt)	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Waste (Mbcm)	23.58	23.58	23.58	23.58	23.58	23.58	23.58
SR (t/bcm)	4.72	4.72	4.72	4.72	4.72	4.72	4.72
Item	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**Total**
Coal (Mt)	5.00	5.00	5.00	5.00	3.00	2.16	**87.16**
Waste (Mbcm)	23.58	23.58	23.58	23.58	14.15	10.19	**411.08**
SR (t/bcm)	4.72	4.72	4.72	4.72	4.72	4.72	**4.72**

Table 8-2 Production Schedule of Block B

Item	2015	2016	2017	2018	2019	2020	2021
Coal (Mt)				1.00	2.00	2.00	2.00
Waste (Mbcm)				2.02	4.05	4.05	4.05
SR (t/bcm)				2.02	2.02	2.02	2.02
Item	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
Coal (Mt)	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Waste (Mbcm)	4.05	4.05	4.05	4.05	4.05	4.05	4.05
SR (t/bcm)	2.02	2.02	2.02	2.02	2.02	2.02	2.02
Item	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**Total**
Coal (Mt)	2.20						**23.20**
Waste (Mbcm)	4.46						**46.96**
SR (t/bcm)	2.02						**2.02**

The production schedule above indicates a total tonnage of **87.16 Mt** in Block A and **23.20 Mt** in Block B. The schedule is based on reserves in the final pit in excess of that reported as Proved and Probable Reserves in Tables 7-11 and 7-12 in this Report.

This is due to the exclusion from the Reserves Statement of **0.79 Mt** of Inferred Coal in Block A and **0.28 Mt** of Inferred Coal in Block B. Both these tonnages are located within the Production Scheduling Limits.

The Inferred Status of this additional coal is as a result only of limited spacing of the drill holes and it is therefore reasonable to include this tonnage in the Production Schedule at this moment of time. Additional drilling in the inferred area must be undertaken to confirm the tonnage and increase the level of confidence.

9 ANTICIPATED MINE DEVELOPMENT

9.1 OVERVIEW

The mining conditions will be similar to other Indonesian mining operations where a mining contractor will be used.

Typical equipment size will be up to a maximum of 250 tonne excavators and 100 tonne capacity dump trucks.

The mining operation will be commencing from the northern part of the Block A where there is adequate land area available for out-of-pit waste dumps. Mining will progress to the south with direct back-filling taking place once the "box cut" excavation is substantially completed and backfilling of the mined out areas is permitted.

As mining advances the backfilled pit will be rehabilitated minimising the area of disturbed land.

It is likely at the initial mining stage that the public road, traversing the initial mine area, will require some realignment. At the latter years, when mining advance to the south, a river diversion will be required.

Coal will be extracted and hauled from the mine operation area to the ROM stockpile and CPP adjacent to the Mine for processing and thereafter haulage to a barge loading port, located on the Barito River.

A dedicated coal haul road of approximately 82.5 kms in length will be constructed. This haul road has to be capable of handling coal trucks with minimum 25-30 tonne haulage truck capacity. With the construction of bridges and underpasses, this road will allow for the uninterrupted flow of coal to the barge loading port.

The barge loading port is located in Damparan Village on the Barito River. At the port, the coal will be blended as required, and stockpiled for subsequent loading to the barge. From here, coal will be barged to the transshipment location in Tabaneo.

There is currently no requirement for any coal beneficiation of this type of coal.

9.2 ROM STOCKPILE AND CPP REQUIREMENTS

In order to enable continuity of production, the combined ROM and product stockpile should have capacity for one month's coal production i.e. in the case of a 7.0 Mtpa operation, this would be in the order of ± 600,000 tonnes, split between the mine and the port. The proportions will depend on the final infrastructure design requirements. This arrangement would provide a contingency in the event of mining, haulage or barging delays.

A "first-in, first-out" policy must be adopted to minimize coal degradation with time.

Coal will be fed directly to the CPP from trucks hauling coal from the mine or reclaimed from the adjacent stockpile of ROM coal.

It is assumed that all coal will be crushed to a -50mm size using two stage rolls crushers and no washing or beneficiation will be required.

9.3 MINE INFRASTRUCTURE AND ANCILLARY

The mine infrastructure and ancillary construction will likely include the following:

- Mine office
- Camp and Canteen
- Workshop
- Weighbridge
- ROM/product stockpile of up to ~300,000 tonnes
- Crushing Facility
- Fresh water supply
- Power house and generation
- Safety and First Aid facilities

9.4 COAL HAUL ROAD

An 82.5 km dedicated coal haul road will be constructed to accommodate the use of minimum 25-30 tonne haulage truck capacity on an uninterrupted travel cycle to the barge loading port.

A haul road with paved running width of 12 metres is therefore recommended with maximum gradients of 6 %, complete with cambered road surface, edge berms and verge drainage. If available, a local source of crushed road stone should be used to maintain an all weather running surface. Britmindo understands that the final road alignment has already been determined by TPR.

Two underpasses and two bridges will be constructed as required to facilitate coal hauling operations without interaction with public or national highways.

9.5 BARGE LOADING PORT

The barge loading port is in the process of being constructed at Damparan Village, on the Barito River. At completion, the infrastructure will comprise the following facilities:

- Weighbridge (still under construction).
- Receiving hopper.

- ~300,000 t ROM/product stockpile
- Reclaim hopper / Feeder
- 2,000tph barge loading conveyor (this will be upgraded from the existing 1,000t conveyor)
- Dolphins and jetty
- Laboratory (not yet constructed)
- Power supply.
- Office.
- Camp.
- Maintenance workshop.

Figure 9-1 Existing Port Overview

In order to enable continuity of production, the product stockpile at the port has been designed to accommodate around 300,000 t which is equivalent to approximately 50% of one month's coal production. This will provide a contingency in the event of mining or haulage delays.

9.6 BARGING

For barging purposes, it is anticipated that 300 ft barges in the order of 8,000 t capacity will transport the coal to the off-shore trans-shipment anchorage at Tabaneo.

Barges, either towed or self-propelled will convey the coal to dedicated ship loading locations, where floating cranes will transfer the coal to Panamax gearless vessels.

9.7 ENVIRONMENTAL PLAN

TPR will be required to develop an Environmental Management Plan. The plan will generally address the following aspects related to operation of the mine:

1. Topsoil Management

Topsoil dumps will be located within nominated areas within the overall mining plan. The dumps will be constructed, maintained and contoured to ensure that they will be available for soils replacement when sections of the mining are complete.

2. Waste Dump Construction

All long term waste dumps will be designed and selectively profiled and shaped to provide aesthetic design contours against the local topographical backdrop. The design will ensure that drainage is sufficient to accommodate surface run off.

3. Erosion Controls

Elements of erosion controls will be designed to ensure that ditch and watercourse erosion does not take place.

4. Settlement Ponds and Water Treatment Areas

A number of key settlement ponds will be constructed to both retain and treat acid/water which may be contaminated as a result of mining operations.

5. Final Reclamation

Mined out areas will be re-contoured to agreed restoration levels. Top soil will be spread over this area after which trees and plants indigenous to the local area will be planted within the mined out areas.

9.8 COMMUNITY DEVELOPMENT PLAN

As a responsible mine owner in Indonesia, TPR will acknowledge key partner stakeholders are the local communities. TPR will allocate and contribute budget, as necessary, to develop relevant community programs in coordination with the local government.

The Project area is located in the Tabalong Regency. There are four major settlements in the area, together with a number of small holdings which are isolated habitations owned by various individual landowners.

The major local settlements comprise Desa Kasiau, Desa Kembang Kuning, Transmigrasi Masingai I and Transmigrasi Masigai II. The success of the mine will be measured in terms of TPR's ability to endorse the local community at large as a major stakeholder and in line with TPR's statutory obligations, to provide a plan which is seen to add value to the daily lives of the communities in which the mining operations exist over the period of the mine life.

10.3 COAL REVENUES APPLIED

As noted in the above tables, for purposes of Revenue, Britmindo has used the HBA Batubara marker, published by the *"Menteri Energi dan Sumber Daya Mineral, Republic Indonesia*" dated February 2013. A range of specifications are apparent within the HBA, with differing pricing, however Britmindo has selected the floor price of US$45.00 per tonne for Block A and US$30.00 per tonne for Block B.

10.4 ECONOMIC MODEL

Indicative economic modeling was undertaken by Britmindo for Block A and Block B mine production. The modeling was undertaken using a standard conventional costing system, which comprises a series of linked spreadsheets pertaining to the various inputs parameters. The system has inputs for the physical mined quantities, capital and operating costs.

The economic model was generated using the above capital and operating costs and takes account of VAT for contractor's invoice.

The cost model was subjected to a number of sensitivity analyses over a number of variables to check the robustness of the project.

Main sensitivities, would be, as expected, increased overburden costs and reduced selling prices.

The results are contained in Appendix B Economic Model.

11 CHECK LIST OF ASSESSMENT AND REPORTING CRITERIA

Criteria	Explanation
Sampling Techniques and Data	
Sampling techniques	• Coal sampling follows a standard procedure to ensure consistency throughout the sampling process. Sampling is performed to a high standard by trained and fully qualified geologists. Two methods are used based on the nature of the seam intercept however the rules applied are consistent. Samples are taken (i) on a roof, coal body and floor basis or (ii) on a roof, floor and ply-by-ply basis.
Drilling techniques	• Man portable, top drive hydraulic Jacro drilling units (types 175, 200, 300) • Mounted track AD 450 wire line rigs. Capabilities are as follows: - Jacro 175 – Average open holes depth capacity (80m) HQ core capability (60m) - Jacro 200 - Average open holes depth capacity (120m), HQ core capability (80m) - Jacro 300 - Average open holes depth capacity (250m), HQ core capacity (200m) - AD 450 - Average open holes depth capacity (300m), HQ core capacity (300m) • Core diameter for sampling is HQ size, 63.5 mm core diameter. • Drill strings are triple tube and core is not surveyed for down-hole deviation.
Drill sample recovery	• Drilling data is recorded on logging sheets and a digital copy is stored in CSV format. Back-up copies are stored on a sequel server system. • Results are initially assessed by a database geologists and a senior geologist. During a second stage of validation, results are assessed by a modeling geologist and a JORC competent person. • Drilling units are required to reduce drill speed, torque and water pressure when coring through coal seam sections to reduce core loss and preserve recovery. • If the core run ends in coal, an attempt is made to manually push core and splits out of the core barrel to avoid core loss

	which can occur when flushing under water pressure. • 3 m core barrels and splits are used as a minimum length drill string to avoid core loss which tends to occur in smaller 1.5 m core barrels. • The majority of average HGI across the deposit is in the range of 50 to 70. The coal is relatively coherent and bias, due to loss of material, is not seen across the sample population.
Logging	• Cored Section - A well site geologist is present at all times. On the completion of each run the core is photographed with the borehole number, scale bar, from and to measurements and the run number. The core is then logged by the geologist based on changes in lithology. Intervals are measured and recorded in sufficient detail using dictionary codes and core logging sheets. Each run is depth corrected for stick up or stick down adjustments against the drilling depth. Any coal loss identified during drilling is noted by the geologist. Coal sections are wrapped in plastic to preserve in situ seam characteristics and placed in core trays which are transported to camp for sampling. Lithology logs are signed and submitted by the well site geologist and are stored in hard copy and soft copy formats in a project database. • Chip Samples - Cutting samples are collected at 1 m intervals. Photos are taken and samples are recorded on logging sheets. Cuttings are not used for Resource calculations or for coal quality testing. Open holes are used for defining the stratigraphic sequence and selecting targets for coal quality drilling.
Sub-sampling techniques and sample preparation	• Coal sections are sampled as complete HQ sized cored sections (63.5 mm core diameter and 96 mm bore diameter). HQ samples are seen as appropriate in volume to produce a representative sample for seam intercepts. **<u>Quality Control:</u>** • Core recovery is reconciled to the down-hole geophysical trace, only seam sections with ≥ 90% recovery are sampled, this mitigates the risk incorporating data with < 90% recovery into any stages of the modeling process and resource calculation. • A sample mark up is performed and samples numbers are cross checked and recorded on the logging sheets to prevent sample inversion. • The geologist collects all possible coal for each sample interval and makes sure no diluting material from non-coal stone plies are incorporated into top coal, body coal or bottom coal samples.

	• Non-coal stone plies greater than 0.1m or 0.20m depend of coal thicknesses are separated from the coal plies.
Verification of sampling and assaying	• Volumetric recovery is reconciled to laboratory recovery (πr2 x length x density). • If the volumetric recovery is less than <90%, a duplicate test is performed to prevent volumetric bias.
Location of data points	• All boreholes final co-ordinates and collars are surveyed with Total Station Techniques and are tied to existing bench mark elevations. • The concession has complete LIDAR topographic control with a known accuracy of ± 0.2 m. • Boreholes collars must have a tolerance of < 3 m of the topography. Any borehole collars surveys that deviate > 3 m from the topographic surface are re-surveyed.

Criteria	Explanation
Sampling Techniques and Data	
Data spacing and distribution	• Exploration and resource definition drilling is spaced at 400 m centres along strike and 250 m to 300 m centres down dip. A closer spacing of 100m to 200m was undertaken in faulted areas or within seam pinch out areas. Borehole distribution provides full coverage for Measured Resource calculations. • Continuity of seam thickness, quality and structural control of the deposit is well established from the borehole distribution. • Sample compositing has been undertaken from ply by ply sample on a weight average basis and samples are depth corrected to the seam pick interval.
Orientation of data in relation to geological structure	• No study has been undertaken
Audits or reviews	• No external audits were undertaken

Criteria	Explanation
Estimation and Reporting of Coal Resources	
Database integrity	• All data used as the basis for geological model and Resources estimation has been initially recorded in the field by well site geologist from drilling. The coal depth and thickness is then adjusted by geophysical logging. • All data points were surveyed using Total Station • All data used as point of observations are compliant with the requirement of the JORC code.
Geological interpretation	• Geological continuity of the main seam was demonstrated. Non continuity, missing or pinched out seams were identified and interpreted • The resources may vary when a different fault interpretation is undertaken. • The resources were controlled by seam thickness, depth, weathering zone and geological faults. • Some of the seams have exhibit thinning and/or are missing. This may be as a result of or caused by, "facies change" to certain parts of the area.
Dimensions	• In Block A, the main seams occur approximately 4.0 kilometres (km) in strike and for approximately 1.0 km along dip, at depths ranging from 3.0 to 250.0 m. • In Block B, the main seams occur approximately 5.5 kilometres (km) in strike and for approximately 2.0 km along dip, at depths ranging from 3.0 to 200.0 m.
Moisture	• The tonnages were estimated on natural moisture. Total Moisture on an as received basis was assumed as In-situ Moisture
Cut-off parameters	• Minimum seam thickness 0.50m • No quality cut-off was applied.
Mining factors or assumptions	• Mining method will be open cut coal mining with depth restriction to 250m. No assumptions have been applied for mining loss and dilution.
Metallurgical factors or assumptions	• No metallurgical factors or assumptions were undertaken in the Resources Reporting
Bulk density	• Air dried (ad) relative density (RD) has been converted to an in situ basis (ID) using the Preston-Sanders equation that is used to generate the coal tonnages.

Classification	• The classification of Coal Resources is based on radius influence distance from point of observations. • Seam continuity, structure and quality trends have been taken to account based on Competent Person opinion.
Audits or reviews	• No external audits have been undertaken.

Criteria	Explanation
Estimation and Reporting of Coal Reserves	
Mineral Resource estimate for conversion to Ore Reserves	• Only Measured and Indicated Resources were converted to JORC Proved and Probable Reserves. • The Coal Resources are inclusive of Mineable Reserves.
Study status	• A pre-feasibility study that includes consideration of all Modifying Factors was undertaken encompassing mining technical, geotechnical, hydrogeology, coal processing, transportation, port, infrastructure requirement, legal, economic viability, social and environment factors.
Cut-off parameters	• Coal quality was subdivided into two calorific value specification which are CV >4,000 gar and CV 3,500 to 4000 gar.
Mining factors or assumptions	• The Coal Reserves were estimated through the pit optimization process, selection of the economic pit shell and detailed practical final pit generation. • Geotechnical and hydrogeology studies have been undertaken for the pit slope stability and mine water management recommendations. • Major assumptions used in the pit optimization are revenue, cost and pit slope. • Mining dilution of 0.10m is included. Coal loss of 0.20m and additional 1% loss were applied for mining recovery. Also additional 3% loss is applied in determining coal product recovery. Berm width, ramp width and working section were taken to account to allow mining equipment operation and maneuver. • All infrastructure requirements for the mine operations has been taken into account such as Stockpile, CPP, weight bridge, offices, workshops, electric generator etc.

Metallurgical factors or assumptions	• ROM coal will be crushed, sized and blended for the shipment. • No bulk sampling and pilot mining have been undertaken to determine the product quality.
Market assessment	• No market analysis was undertaken for this project.
Other	• A 82.5km dedicated haul road construction must be completed as per production time line. • There are existing infrastructures present which are power line and public road that need to be diverted to ensure the continuity of the mining operation. • An addendum to the existing feasibility study must be undertaken for detailed Life of Mine Plan and permits that in line with the production target.
Classification	• The classification of Coal Reserves is based on Measured and Indicated Resources Confident Level and Competent Person opinion. • Around 40% of the Resources were converted to the Reserves.
Audits or reviews	• No external audits have been undertaken.

Appendix A : Plans of Tabalong Coal Project

Block A

Plan	Name
AA – 1	Borehole Location Block A
AA – 2	Typical Seam Structure Block A
AA – 3	Typical Cross Section of the Deposit at Block A
AA – 4	Resources Area Map of Seam A1
AA – 5	Resources Area Map of Seam A2
AA – 6	Resources Area Map of Seam B
AA – 7	Resources Area Map of Seam C
AA – 8	Resources Area Map of Seam CL
AA – 9	Mine Design Layout Block A and Block B

Block B

Plan	Name
AB – 1	Borehole Location Block B
AB – 2	Typical Seam Structure Block B
AB – 3	Typical Cross Section of the Deposit at Block B
AB – 4	Resources Area Map of Seam BS2
AB – 5	Resources Area Map of Seam BS3
AB – 6	Resources Area Map of Seam BS4
AB – 7	Resources Area Map of Seam D
AB – 8	Resources Area Map of Seam E
AB – 9	Resources Area Map of Seam F
AB – 10	Resources Area Map of Seam G

Appendix B : Economic Model

Item	Name
B – 1	Economic Model of Tabalong Project

Appendix C : IUP Documents

Item	Name
C - 1	Surat Keputusan Bupati Tabalong No. 188.45/404/2010

Appendix D : AMDAL Approval Documents

Item	Name
D – 1	Surat Keputusan Bupati Tabalong No. 188.45/402/2010

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APPENDIX B — 2017 NICKEL, GOLD, SILVER AND BAUXITE RESERVES STATEMENT

ANNUAL MINERAL RESOURCES & ORE RESERVES STATEMENT PT. ANTAM Tbk

As at December, 31th 2017

FOREWORD
STATEMENT OF MINERAL RESOURCES AND ORE RESERVES
AS AT DECEMBER, 31th 2017

This report is the update of the mineral resources and ore reserves as at December 31th, 2017 of PT ANTAM Tbk. The information lists in this statement relates to the Exploration Results, Mineral Resources and Ore Reserves is based on information compiled by Mr. Bronto Sutopo, who is a member of The Australasian Institute of Mining and Metallurgy (MAusIMM) and certified as Competent Person Indonesia (CPI). Mr. Bronto Sutopo is a full time employee of PT ANTAM Tbk.

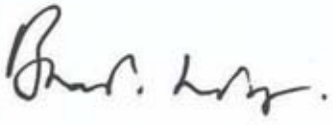
Mr. Bronto Sutopo and ANTAM Competent Person Team has sufficient experiences which is relevant to the style of mineralization and type of deposit under consideration and to the activity which is undertaking to qualify as a Competent Person as defined in the 2012 Edition of The Australian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves (JORC Code) and Komite Cadangan Mineral Indonesia (KCMI) Code 2011. They consent to the inclusion in the report of the matters based on his information in the form and context in which it appears.

PT. ANTAM Tbk is a long established mining company producing various mineral entities. This report focuses on the Mineral Resources and Ore Reserves, which owned by PT. ANTAM Tbk and its subsidiaries. They are supporting the company mining production as well as its advanced projects. Other Mineral Resources and Ore Reserves that subjected to joint venture agreements as well as subject to early stage of exploration projects are excluded from this report. All of Mineral Resources and Ore Reserves are located in Indonesia that have received legal mining license from Indonesian Government.

The Mineral Resources and Ore Reserves are reported in accordance with the Joint Ore Reserve Committee (JORC) Code 2012. PT. ANTAM Tbk has improved this report to JORC Code 2012 and KCMI 2011 since 2014.

All tonnage information has been rounded to reflect the relative uncertainty in the estimate. The measured and indicated resources are reported inclusive of those mineral resources modified to produce the ore reserves. Commodity prices and exchange rates used to estimate the economic viability of Ore Reserves are based on long term forecasts applied at the estimation.

Signed by,
Coordinator of ANTAM Competent Person Team



Bronto Sutopo, PhD

CONTENTS

FOREWORD 1

CONTENTS 2

NICKEL 5

BAUXITE 13

GOLD 18

THE COMPANY SUBSIDIARIES 21

FIGURES

Figure 1 Map of Lalindu-Lasolo, Mandiodo, Tapunopaka and Bahubulu mining area in North Konawe Regency, South East Sulawesi Province, Indonesia 5

Figure 2 Map of Sangaji, Mornopo, Tanjung Buli and Pakal Island mining area in East Halmahera Regency, North Maluku Province, Indonesia 6

Figure 3 Map of Pomalaa mining area in Kolaka, South East Sulawesi Province, Indonesia 6

Figure 4 Map of Tayan mining area in Sanggau Regency, West Kalimantan Province, Indonesia 14

Figure 5 Map of Mempawah (Toho) and Mempawah Hulu (Landak) mining area in West Kalimantan Province, Indonesia..... 15

Figure 6 Map of Pongkor mining area in West Java Province, Indonesia..... 19

Figure 7 Map of PT. Gag Nickel mining area in West Papua Province, Indonesia 23

Figure 8 Map of PT.BEI, PT.MCU, PT.DEK and PT.GK mining area in West Kalimantan Province, Indonesia 27

Figure 9 Map of PT.MCU mining area in West Kalimantan Province, Indonesia 28

Figure 10 Map of Cibaliung mining area in Banten Province, Indonesia..... 30

TABLES

Table 1	List of Nickel Mining Permit	7
Table 2	Nickel mineral resources as at December, 31th 2017	7
Table 3	Total Nickel mineral resources as at December, 31th 2017	10
Table 4	Nickel mineral reserves as at December, 31th 2017	11
Table 5	Total Nickel mineral reserves as at December, 31th 2017	12
Table 6	List of bauxite Mining Permit	16
Table 7	Bauxite resources as at December, 31th 2017	16
Table 8	Bauxite ore reserves as at December, 31th 2017.	17
Table 9	List of Gold Mining Permit	19
Table 10	Gold resources as at December, 31th 2017	20
Table 11	Gold reserves as at December, 31th 2017	20
Table 12	PT. Gag Nickel Mining License	23
Table 13	Nickel Resources of PT. Gag Nickel as at December, 31th 2017	23
Table 14	Nickel reserves of PT. Gag Nickel as at December, 31th 2017.	23
Table 15	PT.BEI, PT.MCU, PT.DEK, PT.GK Mining Permit	25
Table 16	Bauxite resources of PT.BEI, PT.MCU, PT.DEK and PT.GK as at December, 31th 2017	27
Table 17	Cibaliung Mining License	29
Table 18	Mineral Resources of PT. CSD as at November, 30th 2017	30
Table 19	Ore Reserves of PT. CSD as at November, 30th 2017	30
Table 20	List of ANTAM Competent Person & Reporting Contributor Team	31

NICKEL

The majority of the Mineral Resources and Ore Reserves estimate are prepared in accordance with Joint Ore Reserve Committee (JORC) Code of 2012 and Komite Cadangan Mineral Indonesia (KCMI) Code 2011 using geostatistical, plus economic and mining parameters appropriate to each project.

Figure 1, 2, & 3 and Table 1 reflected the validity of Nickel Mining Permit of PT. ANTAM Tbk as at December, 31th 2017.

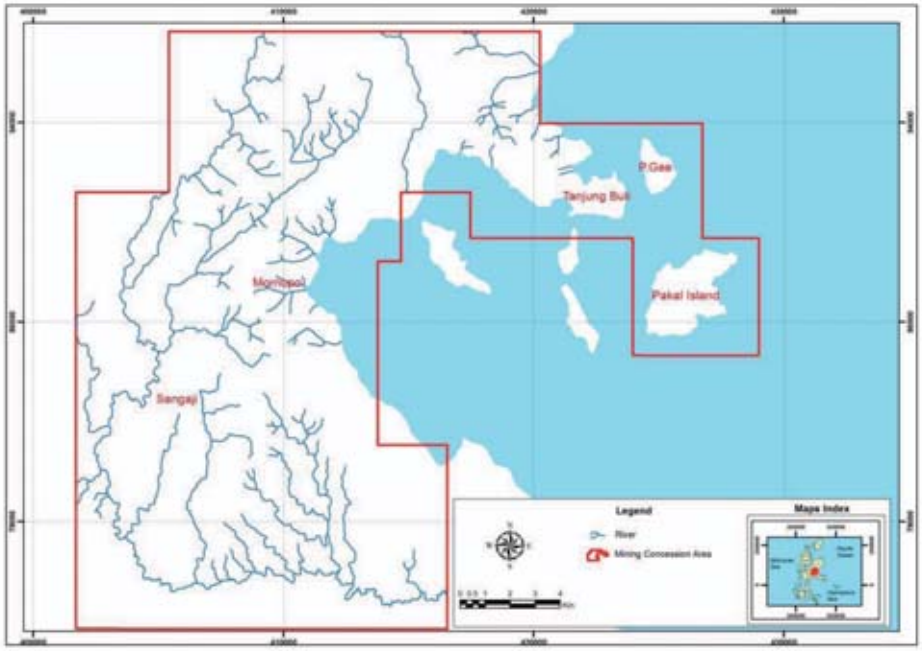


Figure 1. Map of Sangaji, Mornopo, Tanjung Buli, and Pakal Island mining area in East Halmahera Regency, North Maluku Province, Indonesia.

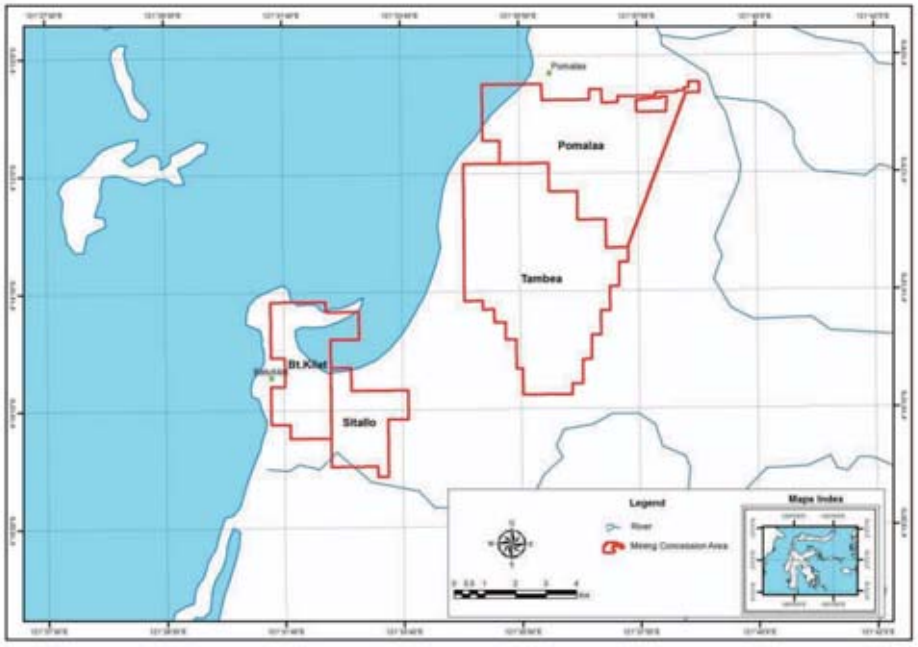


Figure 2. Map of Pomalaa mining area in Kolaka, South East Sulawesi Province, Indonesia.

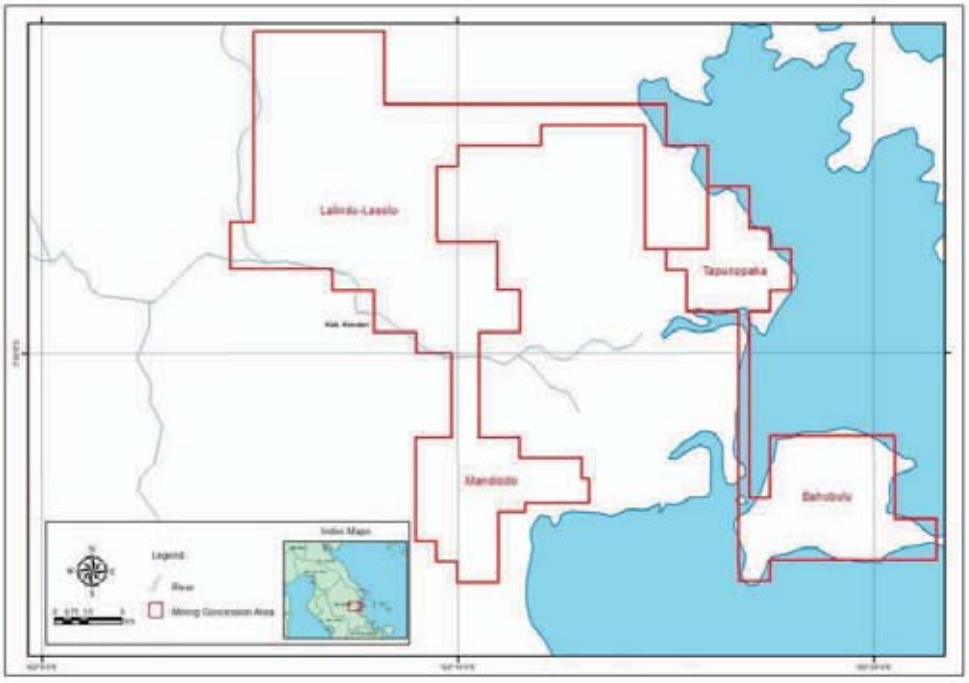


Figure 3. Map of Lalindu-Lasolo, Mandiodo, Tapunopaka and Bahubulu mining area in North Konawe Regency, South East Sulawesi Province, Indonesia.

ANTAM owns Mandiodo IUP but unilaterally by the northern Konawe regent is revoked and given to several companies. In 2014 the Supreme Court's decision to win ANTAM as a legitimate IUP holder and continue to proceed to obtain a Clear and Clean (CnC) certificate. At the end of 2017 the IUP is declared CnC through the 27th CnC announcement.

Table 1. List of Nickel Mining Permit.

No.	Mining Permit Numbers	Location	Name of Concession Area	Area Coverage (Ha)	Validity Period	
					Start	End
1	158 Tahun 2010 (KW 10 APR OP 005)	North Konawe, South East Sulawesi	Asera and Molawe	16,920	29-Apr-2010	29-Apr-2030
2	15 Tahun 2010 (KW 99 STP 057.a)	North Konawe, South East Sulawesi	Lasolo	6,213	11-Jan-2010	27-Jan-2028
3	188.45/540-170/2011 (KW97PP0443)	East Halmahera, North Maluku	Buli Serani	39,040	27-Oct-2011	27-Oct-2040
4	198 Tahun 2010 (WSPM 016)	Kolaka, South East Sulawesi	Pomalaa	1,954	25-Jun-2010	25-Jun-2020
5	199 Tahun 2010 (WSPM 017)	Kolaka, South East Sulawesi	Bt.Kilat	878.2	25-Jun-2010	25-Jun-2020
6	188.45/100/2014 (KW.WSPM.015)	Kolaka, South East Sulawesi	Sitallo	584.3	14-Mar-2014	14-Mar-2024
7	188.45/099/2014 (KW.WSPM.014)	Kolaka, South East Sulawesi	Tambea	2,712	14-Mar-2014	14-Mar-2024

The information in this report relating to mineral resources and ore reserves estimate are based on information compiled and being verified by Mr. M.Riyan Kamil, Mr. Febri E. Prihasto, Mr. Aldino Yulianto, who have sufficient experiences and certified as Competent Person Indonesia for lateritic nickel commodity under supervision of Mr. Bronto Sutopo as the Coordinator of ANTAM Competent Person Team. The lateritic nickel mineral resources and ore reserves of as at December, 31th 2017 is shown in table 2, 3, & 4, all stated in million of tonnes.

ANTAM Nickel Mineral Resources:

Table 2. Nickel mineral resources as at December, 31th 2017.

Area	ZONE	CLASS	Million of Tonnes (WMT)	Ni (%)	Fe (%)	SiO2 (%)	MgO (%)	Co (%)
Pakal	Limonit	Measured	19.39	1.58	40.72	9.45	2.53	0.18
		Indicated	0.61	1.56	37.86	15.11	3.98	0.22
		Inferred	0.15	1.56	39.91	14.12	3.86	0.21
	Total Limonit		**20.15**	**1.57**	**40.63**	**9.65**	**2.58**	**0.18**
	Saprolit	Measured	19.89	2.12	15.43	37.26	21.87	0.05
		Indicated	1.22	2.04	14.78	39.84	22.63	0.05
		Inferred	0.55	2.01	14.29	38.51	25.08	0.05
	Total Saprolit		**21.66**	**2.11**	**15.36**	**37.43**	**22.00**	**0.05**

Area	ZONE	CLASS	Million of Tonnes (WMT)	Ni (%)	Fe (%)	SiO2 (%)	MgO (%)	Co (%)
Tanjung Buli	Limonit	Measured	7.72	1.50	35.74	18.51	5.41	0.16
		Indicated	2.97	1.57	37.03	16.79	5.36	0.16
		Inferred	4.43	1.63	36.08	19.39	5.62	0.16
	Total Limonit		**15.12**	**1.55**	**36.09**	**18.43**	**5.46**	**0.16**
	Saprolit	Measured	16.03	1.95	11.95	41.17	28.10	0.03
		Indicated	9.20	1.99	11.04	41.56	29.13	0.03
		Inferred	19.81	1.98	11.14	41.87	29.98	0.03
	Total Saprolit		**45.04**	**1.97**	**11.41**	**41.55**	**29.14**	**0.03**
Mornopo	Limonit	Measured	13.56	1.39	41.26	13.80	2.72	0.19
		Indicated	2.01	1.38	38.73	16.76	3.13	0.16
		Inferred	0.02	1.41	37.20	18.29	4.20	0.18
	Total Limonit		**15.58**	**1.39**	**40.93**	**14.19**	**2.78**	**0.18**
	Saprolit	Measured	57.01	2.01	10.97	3.35	40.02	0.14
		Indicated	11.11	1.89	11.84	4.91	40.06	0.14
		Inferred	0.22	2.07	12.29	4.41	40.20	0.15
	Total Saprolit		**68.34**	**1.99**	**11.12**	**3.61**	**40.03**	**0.14**
Sangaji	Limonit	Measured	13.12	1.32	41.98	12.76	2.11	0.16
		Indicated	26.13	1.33	42.89	11.66	2.38	0.16
		Inferred	30.40	1.35	42.35	10.80	2.64	0.17
	Total Limonit		**69.66**	**1.34**	**42.48**	**11.49**	**2.44**	**0.17**
	Saprolit	Measured	33.87	1.81	11.55	41.31	27.78	0.03
		Indicated	94.20	1.81	11.96	41.09	27.35	0.03
		Inferred	129.72	1.82	12.67	40.61	27.68	0.04
	Total Saprolit		**257.79**	**1.82**	**12.27**	**40.88**	**27.57**	**0.03**

Area	ZONE	CLASS	Million of Tonnes (WMT)	Ni (%)	Fe (%)	SiO2 (%)	MgO (%)	Co (%)
Pomalaa	Limonit	Measured	4.98	1.44	39.10	17.63	2.95	0.12
		Indicated	9.09	1.39	37.05	20.75	3.48	0.12
		Inferred	12.87	1.39	34.50	22.26	4.33	0.11
	Total Limonit		**26.93**	**1.40**	**36.21**	**20.90**	**3.79**	**0.11**
	Saprolit	Measured	12.45	2.02	15.35	41.03	19.98	0.04
		Indicated	17.01	1.80	13.82	41.84	21.35	0.03
		Inferred	17.77	1.71	11.59	42.49	23.82	0.03
	Total Saprolit		**47.22**	**1.83**	**13.38**	**41.87**	**21.92**	**0.03**
Lasolo Lalindu	Limonit	Measured	0.66	1.45	38.45	14.10	3.46	0.14
		Indicated	15.69	1.40	36.98	14.93	3.95	0.10
		Inferred	4.17	1.39	40.13	13.50	3.81	0.12
	Total Limonit		**20.53**	**1.40**	**37.67**	**14.61**	**3.91**	**0.11**
	Saprolit	Measured	0.35	1.79	14.80	37.69	21.45	0.03
		Indicated	7.38	1.76	14.44	37.41	23.27	0.04
		Inferred	3.36	1.70	14.47	35.87	23.14	0.03
	Total Saprolit		**11.10**	**1.75**	**14.46**	**36.95**	**23.17**	**0.03**
Bahubulu	Limonit	Measured	6.71	1.46	36.99	16.07	3.60	0.16
		Indicated	18.19	1.54	33.67	17.60	3.66	0.10
		Inferred	10.73	1.48	30.79	21.26	4.67	0.09
	Total Limonit		**35.63**	**1.51**	**33.43**	**18.41**	**3.96**	**0.10**
	Saprolit	Measured	15.09	1.63	16.23	36.91	19.42	0.05
		Indicated	77.21	1.54	22.01	30.48	15.45	0.05
		Inferred	97.81	1.47	19.99	33.67	16.01	0.04
	Total Saprolit		**190.10**	**1.51**	**20.51**	**32.63**	**16.05**	**0.05**

Area	ZONE	CLASS	Million of Tonnes (WMT)	Ni (%)	Fe (%)	SiO2 (%)	MgO (%)	Co (%)
Tapunopaka	Limonit	Measured	24.11	1.42	43.75	8.03	1.49	0.18
		Indicated	9.97	1.42	44.64	7.01	1.34	0.16
		Inferred	6.70	1.43	44.49	6.70	1.22	0.20
	Total Limonit		**40.78**	**1.42**	**44.09**	**7.56**	**1.41**	**0.18**
	Saprolit	Measured	30.27	1.56	20.49	31.72	17.30	0.06
		Indicated	17.16	1.50	20.82	31.34	16.77	0.05
		Inferred	11.51	1.45	17.85	34.82	19.11	0.06
	Total Saprolit		**58.93**	**1.52**	**20.07**	**32.22**	**17.50**	**0.06**
Mandiodo	Limonit	Measured	21.77	1.41	43.93	8.86	1.87	0.15
		Indicated	17.07	1.42	43.37	8.66	1.61	0.14
		Inferred	6.22	1.38	43.71	8.48	1.92	0.15
	Total Limonit		**45.06**	**1.41**	**43.69**	**8.73**	**1.78**	**0.15**
	Saprolit	Measured	12.18	1.72	22.00	31.25	16.74	0.06
		Indicated	12.88	1.76	21.14	32.16	16.47	0.05
		Inferred	17.83	1.83	17.48	33.32	19.09	0.04
	Total Saprolit		**42.88**	**1.78**	**19.86**	**32.38**	**17.64**	**0.05**

Table 3. Total Nickel mineral resources in ANTAM as at December, 31th 2017.

Area	ZONE	CLASS	Million of Tonnes (WMT)	Ni (%)	Fe (%)	SiO2 (%)	MgO (%)	Co (%)
Total Nickel Resources of ANTAM	Limonit	Measured	112.01	1.44	41.56	11.36	2.44	0.17
		Indicated	101.72	1.42	39.78	13.35	2.83	0.13
		Inferred	75.70	1.40	39.18	14.34	3.27	0.15
	Total Limonit		**289.43**	**1.42**	**40.31**	**12.84**	**2.80**	**0.15**
	Saprolit	Measured	197.14	1.88	14.71	27.14	26.81	0.07
		Indicated	247.36	1.71	16.51	34.90	22.17	0.05
		Inferred	298.57	1.70	15.62	37.56	22.56	0.04
	Total Saprolit		**743.07**	**1.75**	**15.67**	**33.91**	**23.56**	**0.05**

The previous tables contain details of nickel resources that included Proved and Probable Reserves. This material is defined as Mineral Resources under the JORC Code and KCMI Code. Estimates of such material are mainly based on geological information with only preliminary consideration of mining, economic and other factors.

ANTAM Nickel Ore Reserves:

Table 4. Nickel ore reserves as at December, 31th 2017.

Area	ZONE	CLASS	Million of Tonnes (WMT)	Ni (%)	Fe (%)	SiO2 (%)	MgO (%)	Co (%)
Pakal	Limonit	Proved	8.59	1.70	40.04	9.83	2.67	0.19
		Probable	0.05	1.72	36.67	16.67	5.34	0.26
	Total Limonit		**8.63**	**1.70**	**40.02**	**9.86**	**2.69**	**0.19**
	Saprolit	Proved	14.67	2.06	15.62	36.75	21.93	0.05
		Probable	0.41	1.84	13.88	40.99	23.83	0.05
	Total Saprolit		**15.08**	**2.05**	**15.57**	**36.86**	**21.98**	**0.05**
Tanjung Buli	Limonite	Proved	2.31	1.78	28.10	25.77	12.72	0.13
		Probable	0.50	1.75	30.14	23.14	13.13	0.13
	Total Limonite		**2.81**	**1.78**	**28.46**	**25.31**	**12.79**	**0.13**
	Saprolite	Proved	8.55	1.89	14.25	39.56	26.34	0.05
		Probable	2.74	1.86	13.17	40.34	27.56	0.04
	Total Saprolite		**11.28**	**1.88**	**13.99**	**39.75**	**26.64**	**0.04**
Mornopo	Limonite	Proved	3.91	1.47	40.78	13.93	3.03	0.19
		Probable	0.38	1.60	34.62	21.47	4.49	0.15
	Total Limonite		**4.28**	**1.48**	**40.23**	**14.59**	**3.16**	**0.19**
	Saprolite	Proved	49.44	1.94	10.97	42.07	28.14	0.03
		Probable	8.91	1.83	11.87	43.09	26.42	0.09
	Total Saprolite		**58.35**	**1.93**	**11.11**	**42.23**	**27.87**	**0.04**
Sangaji	Limonite	Proved	0.57	1.58	40.38	14.81	2.74	0.15
		Probable	1.41	1.57	41.15	13.60	2.98	0.16
	Total Limonite		**1.98**	**1.57**	**40.93**	**13.95**	**2.91**	**0.16**
	Saprolite	Proved	25.89	1.78	11.41	41.36	28.01	0.03
		Probable	73.29	1.77	11.71	41.25	27.73	0.03
	Total Saprolite		**99.18**	**1.77**	**11.63**	**41.28**	**27.80**	**0.03**

Area	ZONE	CLASS	Million of Tonnes (WMT)	Ni (%)	Fe (%)	SiO2 (%)	MgO (%)	Co (%)
Pomalaa	Limonite	Proved	1.17	1.67	37.54	19.49	3.50	0.13
		Probable	1.42	1.61	38.22	17.82	3.85	0.13
	Total Limonite		**2.59**	**1.64**	**37.91**	**18.58**	**3.69**	**0.13**
	Saprolite	Proved	9.59	1.96	13.28	43.52	19.14	0.03
		Probable	12.04	1.77	12.71	42.82	20.17	0.03
	Total Saprolite		**21.63**	**1.85**	**12.96**	**43.13**	**19.71**	**0.03**
Bahubulu	Limonite	Proved	5.55	1.43	37.59	15.18	3.53	0.16
		Probable	14.36	1.51	34.55	16.21	3.49	0.10
	Total Limonite		**19.91**	**1.49**	**35.39**	**15.92**	**3.50**	**0.11**
	Saprolite	Proved	8.08	1.76	17.65	35.53	18.22	0.05
		Probable	42.07	1.61	24.42	27.55	14.32	0.05
	Total Saprolite		**50.15**	**1.63**	**23.33**	**28.84**	**14.95**	**0.05**
Tapunopaka	Limonite	Proved	19.07	1.40	43.81	8.00	1.49	0.18
		Probable	7.48	1.39	44.62	7.11	1.34	0.16
	Total Limonite		**26.56**	**1.40**	**44.04**	**7.75**	**1.45**	**0.17**
	Saprolite	Proved	14.76	1.66	22.78	29.51	15.40	0.07
		Probable	7.03	1.61	23.66	28.37	14.58	0.06
	Total Saprolite		**21.79**	**1.65**	**23.07**	**29.14**	**15.14**	**0.07**

Table 5. Total Nickel mineral resources in ANTAM as at December, 31th 2017

Area	ZONE	CLASS	Million of Tonnes (WMT)	Ni (%)	Fe (%)	SiO2 (%)	MgO (%)	Co (%)
Total Nickel Reserves of ANTAM	Limonite	Proved	41.17	1.50	40.79	11.33	2.86	0.17
		Probable	25.60	1.49	37.98	13.71	3.06	0.12
	Total Limonite		**66.77**	**1.50**	**39.71**	**12.24**	**2.94**	**0.15**
	Saprolite	Proved	130.99	1.88	13.71	39.46	24.59	0.04
		Probable	146.48	1.72	16.06	36.92	22.53	0.04
	Total Saprolite		**277.47**	**1.80**	**14.95**	**38.12**	**23.51**	**0.04**

Notes :

- The measured and indicated resources are reported inclusive of those mineral resources modified to produce the ore reserve.

- Updating of ore reserve and mineral resource of Pakal Island, Tanjung Buli, and Mornopo are occurred due to the recommendations of the mining reconciliation.
- Updating of ore reserve and mineral resource of Pomalaa occurred due to Pomalaa had been updated of block model related to the detail drilling activities of exploration development and recommendations of the mining reconciliation.
- The mineral resource of Mandiodo, Bahubulu and Lasolo&Lalindu area are updated using 3D block model and Krigging methods. In the previous year, the method used are IDS and 2D Polygonal methods
- The cut-off grade applied for saprolite resources in all prospect areas are 1.5 % Ni except for Tapunopaka and Bahubulu that are using 1.2 % Ni as cut-off-grade. The cut-off grade applied for limonite resources in all prospect areas are 1.2 % Ni
- The cut-off grade applied for both limonite & saprolite reserves in all prospect areas are 1.5 % Ni, except for Bahubulu and Tapunopaka that are using 1.2 % Ni .For Mornopo cut-off grade that being used for limonite reserves is 1.2 % Ni (used until year 2022) and after 2022 change into 1.5 % Ni.
- Drilling program used a single tube core barrel rotary rig for lateritic nickel exploration, except Pomalaa using triple tube core barrel in 100 m drill spacing.
- Ore were sampled at 1 meter intervals and analyzed using XRF at company's laboratory, and using external laboratory as QAQC sample check.
- The recovery of the core samples are greater than 90 % in average.
- All drill holes used for resource & reserve estimation were drilled vertically.
- Survey by ANTAM was by digital total station theodolite which corresponds well to the independent derived LIDAR topography.
- All locations are surveyed using the references of datum of WGS-84 and using zone 52 North for North Maluku and 51 South for Southeast Sulawesi.
- All Mineral Resources Model estimated by the company's resource geologist (except Sangaji and Gag by Golder Associate) using 3D block model kriging with Variography Geostatistical Methods.
- Resource Classification has been done by drill spacing, ore continuity, and Variography analyzis.
- All Mineral Resources processed by mining engineer to be economically mineable ore reserves. Estimation of Ore Reserves will go through the "modifying factors". In those processes had considered aspects of mining, metallurgical, economic, marketing, legal, environmental, infrastructures, social, and governance.

BAUXITE

The status and validity of bauxite Mining Permit area owned by PT. ANTAM Tbk is shown in the figure 4 & 5 and table 6.

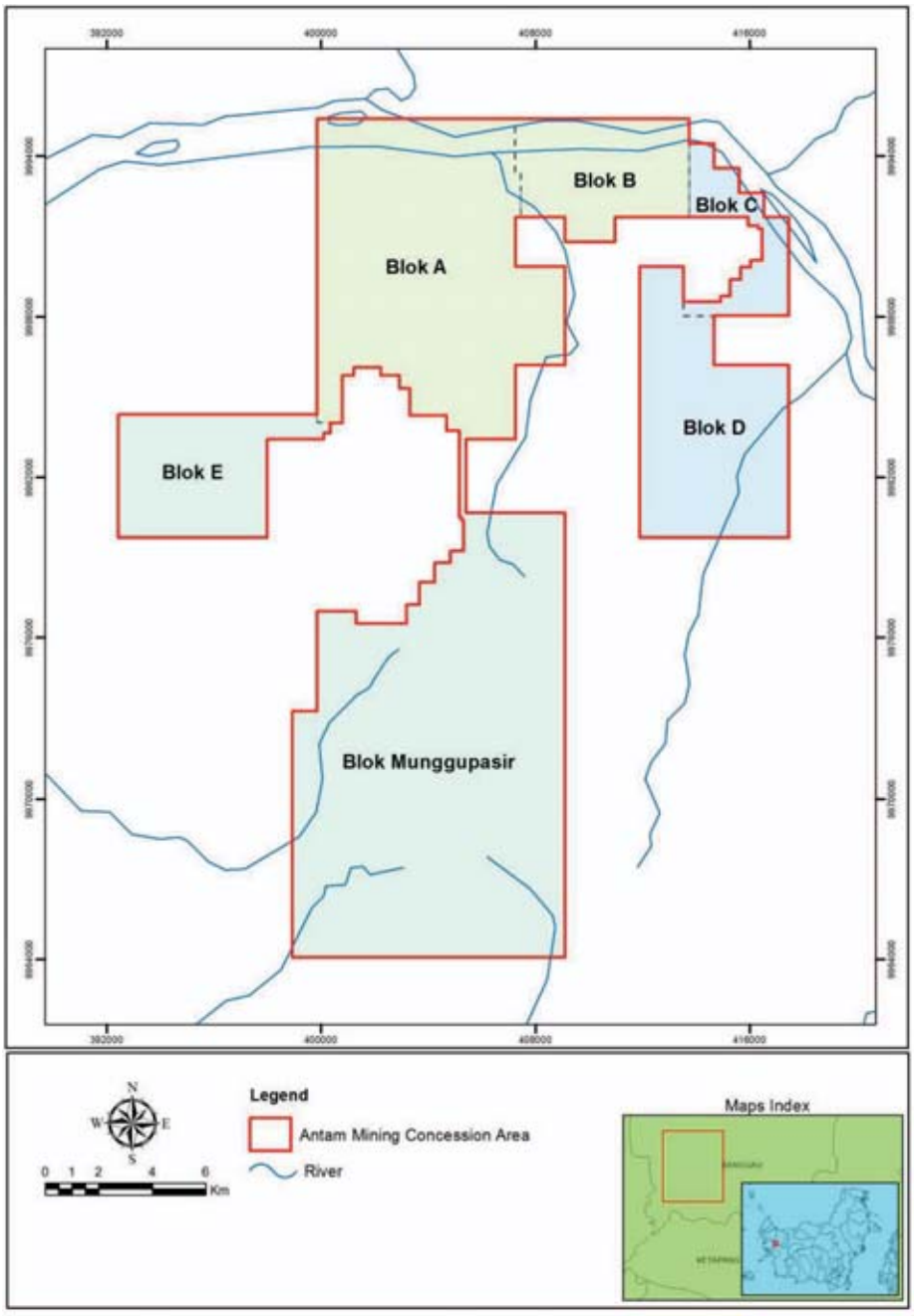


Figure 4. Map of Tayan mining area in Sanggau Regency, West Kalimantan Province, Indonesia.

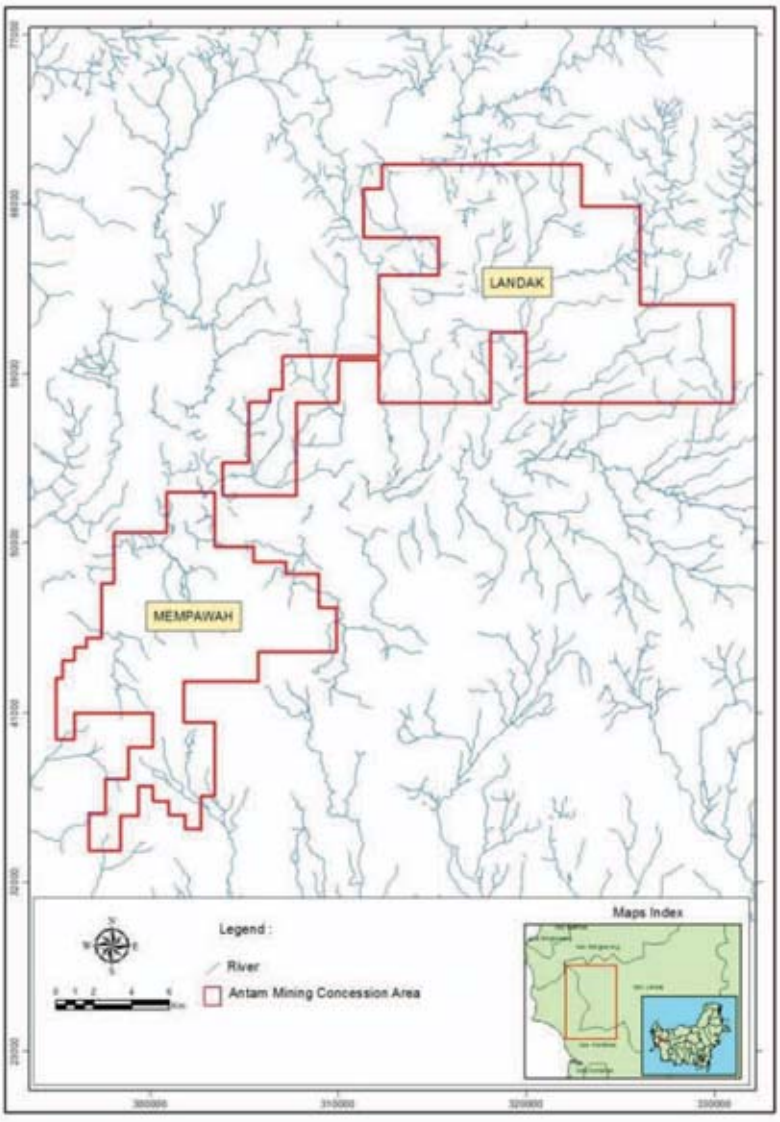


Figure 5. Map of Mempawah (Toho) and Mempawah Hulu (Landak) mining area in West Kalimantan Province, Indonesia.

Table 6. List of bauxite Mining Permit.

No.	Mining Permit Numbers	Location	Name of Concession Area	Area Coverage (Ha)	Validity Period	
					Start	End
1	15/Distamben/2015 (KW 98PPO183)	Sanggau, West Kalimantan	Tayan	34,360	2-Jan-2015	4-Jan-2030
2	221 Tahun 2009	Pontianak, West Kalimantan	Toho/ Mempawah	12,630	15-Nov-2009	1-Jul-2028
3	544.11/330/HK-2014	Landak, West Kalimantan	Mempawah Hulu	20,710	16-Dec-2014	16-Dec-2034

The information in this report that relating to the ANTAM bauxite mineral resources and ore reserves estimate are based on information prepared, compiled and being verified by Mr. Tulus Semedie, Mr. Dedi Sunjaya, Mrs. Tafia Sulistyani Prasojo, and Mr. Arif Hindarto, who have sufficient experiences and certified as Competent Person Indonesia for lateritic bauxite commodity under supervision of Mr. Bronto Sutopo as the Coordinator of ANTAM Competent Person Team.

Lateritic bauxite resources estimate of ANTAM as at December, 31th 2017 all stated in million tonnage of washed bauxite in Wet Metric Tonnes (WMT) and Dry Metric Tonnes (DMT). It is shown in table 7 as follow:

Table 7. Bauxite resources as at December, 31th 2017.

Area/IUP	Prospect	Resource CLASS	Washed Bauxite		CF (%)	Average Grade (%)				
			Million of Tonnes (WMT)	Million of Tonnes (DMT)		Al2O3	R-SiO2	T-SiO2	Fe2O3	TiO2
Tayan	Block AB	Measured	39.31	33.41	52.37	47.61	3.21	15.00	11.99	0.85
		Indicated	29.87	25.39	52.01	46.25	4.08	15.77	13.19	0.95
		Inferred	0.33	0.28	51.30	45.90	5.75	19.26	11.36	0.82
		Total	**69.51**	**59.08**	**52.21**	**47.02**	**3.59**	**15.35**	**12.50**	**0.89**
	Block CDE	Measured	6.29	5.34	54.82	43.20	3.26	20.91	11.30	0.95
		Indicated	12.58	10.69	51.01	44.40	3.68	19.88	12.21	0.94
		Inferred	1.03	0.88	47.98	42.79	3.81	23.96	10.95	0.80
		Total	**19.90**	**16.91**	**51.98**	**43.94**	**3.55**	**20.42**	**11.86**	**0.94**
	Block Munggu Pasir	Measured	44.63	37.93	53.92	47.17	2.58	9.85	15.87	1.11
		Indicated	15.62	13.27	53.89	46.42	2.99	10.17	16.37	1.19
		Inferred	10.68	9.07	51.52	46.07	3.65	14.46	13.38	0.92
		Total	**70.92**	**60.28**	**53.54**	**46.84**	**2.83**	**10.61**	**15.61**	**1.10**

Area/IUP	Prospect	Resource CLASS	Washed Bauxite		CF (%)	Average Grade (%)				
			Million of Tonnes (WMT)	Million of Tonnes (DMT)		Al2O3	R-SiO2	T-SiO2	Fe2O3	TiO2
Mempawah	Toho	Measured	13.11	11.15	48.18	44.64	2.44	19.09	12.76	0.89
		Indicated	4.99	4.24	47.38	42.52	2.75	22.05	13.27	0.89
		Inferred	5.10	4.33	48.24	42.79	2.65	19.76	14.70	0.95
		Total	**23.20**	**19.72**	**48.02**	**43.78**	**2.55**	**19.88**	**13.30**	**0.90**
Landak	Mempawah Hulu	Measured	64.87	55.14	48.41	42.26	3.91	26.42	8.86	0.70
		Indicated	8.73	7.42	49.25	41.93	4.17	26.89	8.87	0.65
		Inferred	4.95	4.21	49.31	43.57	3.84	25.14	8.56	0.57
		Total	**78.56**	**66.78**	**48.56**	**42.31**	**3.94**	**26.39**	**8.84**	**0.68**
Total Bauxite Resources of ANTAM		Measured	168.21	142.98	51.02	45.03	3.26	18.58	11.85	0.87
		Indicated	71.78	61.02	51.59	45.18	3.69	17.06	13.19	0.96
		Inferred	22.09	18.78	50.10	44.60	3.50	18.59	12.46	0.84
		Total	**262.08**	**222.77**	51.09	**45.04**	**3.39**	**18.16**	**12.27**	**0.89**

Table 7 as above contain details of bauxite resources that have a reasonable prospect of being economically extracted in the future. This material is defined as Mineral Resources under the JORC and KCMI Code. Measured and indicated mineral resources model of Tayan Block AB then processed to be economically mineable ore reserves for bauxite ore export purpose until year of 2021 and long term ore supply of Indonesia Chemical Alumina (ICA) Plant in Tayan. In those processes had considered aspects of mining (including recovery and dillution), metallurgical, economic, marketing, legal, environmental, infrastructures, social, and governance.

Table 8. Bauxite ore reserves as at December, 31th 2017.

Area/IUP	Prospect	Reserve CLASS	Washed Bauxite		CF (%)	Average Grade (%)				
			Million of Tonnes (WMT)	Million of Tonnes (DMT)		Al2O3	R-SiO2	T-SiO2	Fe2O3	TiO2
Tayan	Block AB	Proved	29.34	24.94	52.58	48.01	3.50	14.18	12.15	0.85
		Probable	16.62	14.12	53.36	47.50	4.08	13.12	13.47	0.97
		Total	**45.96**	**39.07**	**52.86**	**47.82**	**3.71**	**13.79**	**12.63**	**0.89**

While the other bauxite area and prospect such as block CDE and block Munggu Pasir of Tayan IUP will be converted to ore reserves estimate when there is an increase of sales volume and/or the feasibility study of new refinery plant has been completed to accommodate the utilization of abundance bauxite resources in ANTAM mining concessions. The ore reserve convertion of Mempawah and Landak IUP bauxite resources are also waiting the finalization result of the SGA Mempawah refinery plant bankable feasibility study that targeted to be completed in the first semester of the year 2018.

Notes

- Block CDE and Munggu Pasir of Tayan, previously stated as reserve area, in the end of 2017 are stated back as bauxite resource area regarding the pending/cancelation of SGA Tayan project that previously planned to be built in Tayan to accomodate the bauxite resource of block CDE and Munggu Pasir.

- Cut-off Grade (CoG) T-Al2O3 $\geq$ 40.00% and R-SiO2 <8 % are applied for mineral resources of bauxite in Block AB Tayan, while Block CDE and Munggu Pasir of Tayan IUP only use R-SiO2 < 8% as the CoG parameter.

- R-SiO2 < 8.00% are also used for top CoG of ANTAM Mempawah and Landak area with the bottom CoG of T-Al2O3 are ranging from 30% to 40% based on the statistical data population of each mineralization domain to meet the purposed average grade.

- The regional test pit space is 400 m, reduced to 100-200 m, then 25-50 m, by infill test pit depend on geostatistic each area to improve the geological confidence of bauxite resources estimate classification.

- Test pit is manual digged vertically until basement clay rock (kong) at 10m as maximum depth for safety reason.

- Ore inside test pit is sampled at 2 m intervals then washed on field and analyzed using XRF & Wet Analysis in Geomin's laboratory based on modification from JIS M 8110-1965 (Method for Sampling of Bauxite Ores) & JIS M 8361-1968 (Method for Chemical Analysis of Bauxite Ores) & retested using external laboratory as QAQC.

- All locations are surveyed using datum of WGS-84, Tayan is located in Zone 49 South while Toho-Mempawah and Landak-Mempawah Hulu is located in Zone 49 North.

- Topography survey conducting using LIDAR & digital total station theodolite.

- Block model and Geostatistical Ordinary Kriging method is applied for bauxite resources estimation of Tayan, Mempawah and Landak IUP area of ANTAM.

GOLD

The list of validity and status of PT. ANTAM, Tbk Mining Permit that owned by PT. ANTAM, Tbk is presented on the figure 6 and table 9.

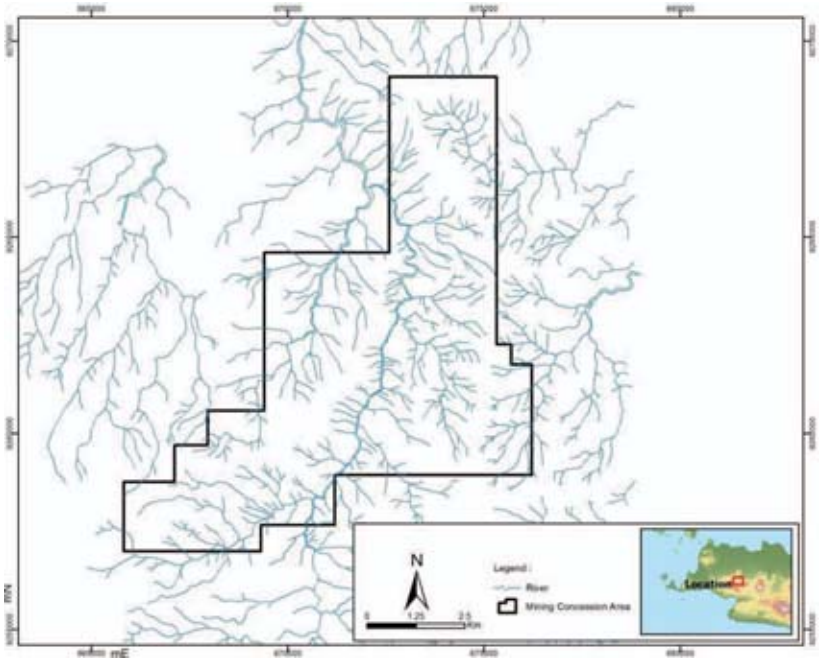


Figure 6. Map of Pongkor mining area in West Java Province, Indonesia.

Table 9. List of Gold Mining Permit.

No.	Mining Permit Number	Location	Name of Concession Area	Area Coverage (Ha)	Validity Period	
					Start	End
1	541.2/005/kpts/ESDM /2010	Bogor, West Java	Pongkor	6,047	9-Mar-1991	9-Mar-2021

The company Gold Resources and Gold Reserves are presented in accordance with the 2012 Australian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves (the JORC Code) and *Komite Cadangan Mineral Indonesia* (KCMI code 2011). Gold Reserves and Gold Resources have been estimated for potentially mineable veins within Mining Permit and limited by major geological and economical boundaries.

The Gold Reserves and Gold Resources figures in the following tables are as at December, 31th 2017. Metric units are used throughout. The figures used to calculate the company share of

reserves are often more precise than the rounded numbers shown in the tables, hence small differences might result if the calculations are repeated using the tabulated figures.

The information in this report relating to mineral resources and ore reserves estimate are based on information compiled by Mr. Andi Kurniawan, Mr. Dwi Margianto, Mr. Halley Rionanda, Mr. Ahmad Raymond, and Mrs. Novi Rusiana Dewi and being verified by Mr. Bronto Sutopo who has enough experience in gold exploration. Mineral resources and ore reserves of Gold as at December, 31th 2017 are shown in table 10 & 11, all stated in thousand ounces of contained metal.

Table 10. Gold resources as at December, 31th 2017.

Location	Resources Classification	Ore Tonnage (K wmt)	Ore Tonnage (K dmt)	Grade		Contained metal	
				Au (g/t)	Ag (g/t)	Au (K oz)	Ag (K oz)
Pongkor	Measured	1,860	1,580	6.55	84	333	4,267
	Indicated	2,000	1,760	5.3	51	300	2,886
	Inferred	340	290	4	44	37	410
Total Resources		4,200	3,570	5.70	65	670	7,563

Table 11. Gold reserves as at December, 31th 2017.

Location	Reserve Classification	Ore Tonnage (K wmt)	Ore Tonnage (K dmt)	Grade		Contained metal	
				Au (g/t)	Ag (g/t)	Au (K oz)	Ag (K oz)
Pongkor	Proved	790	672	5.10	65	90	648
	Probable	177	150	4.8	44	19	99
Total Reserve		967	822	5.1	61	109	748

Notes

- Pongkor gold reserves decline against the previous year due to mine re-design which was influenced by economic, technical, and legal aspect that resulted in part down and turned into a resources status.
- Samples were collected from drill core and pre-production samples on stops. Surveying of drill collars, outcrops and pre-production sample location is carried out using standard surveying techniques and equipment.
- The resource estimates used drill core, outcrop and pre-production samples.
- The cut-off grade of Au used 3.0 gpt for mineral resources and 3.79 gpt for ore reserves.
- Drilling program used a triple tube core barrel rotary rig for gold exploration.
- Ore were sampled at 1 meter intervals and analyzed using Fire Assay for gold and using AAS or ICP for base metal at company laboratory, and using external laboratory as QAQC sample check.
- The recovery of the core samples are greater than 90 % in average.
- Survey by ANTAM was by digital total station theodolite.
- All locations are surveyed using the references of datum of WGS-84.

- All Mineral Resources Model estimated by the company's resource geologist using Inverse Distance Squared in three dimensions of vein in consideration to genesis of vein, statistical and estimation parameter for mineral resources estimations.
- Resource Classification has been done by drill spacing, ore continuity, and variography analyzis. The measured and indicated resources are reported inclusive of those mineral resources modified to produce the ore reserve.
- All Mineral Resources processed by mining engineer to be economically mineable ore reserves. Estimation of Ore Reserves will go through the "modifying factors". In those processes had considered aspects of mining, metallurgical, processing, economic, marketing, legal, environmental, infrastructures, social, and governance.

MINERAL RESOURCES & ORE RESERVES OF PT ANTAM Tbk SUBSIDIARIES

1. PT. GAG NICKEL

PT ANTAM Tbk owns PT. Gag Nickel (Owned 100% indirect ownership share) which has a Contract of Work (CoW) in Gag Island, Raja Ampat Regency, West Papua Province, Indonesia. The location of CoW area is shown in figure 7 and table 12 for the information of mining license.

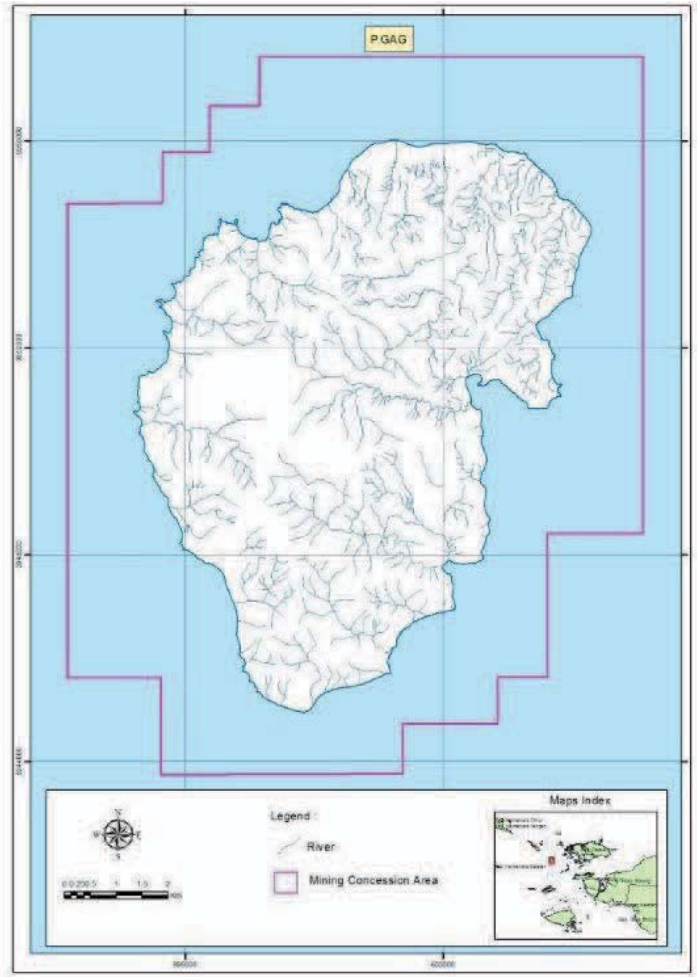


Figure 7. Map of PT. Gag Nickel mining area in West Papua Province, Indonesia.

Table 12. PT Gag Nickel Mining License.

No.	Contract of Work Number	Location	Name of Concession Area	Area Coverage (Ha)	Validity Period Start	Validity Period End
1	735.k/20.01/DJP/1998	Raja Ampat Island, West Papua	PT Gag Nickel	13,136	19-Jan-1998	19-Jan-2031

The information in this report relating to mineral resources and ore reserves estimate are based on information compiled and being verified by Mr. M.Riyan Kamil, Mr. Febri E. Prihasto, Mr. Aldino Yulianto, who have experiences and certified as Competent Person Indonesia for lateritic nickel commodity under supervision of Mr. Bronto Sutopo as the Coordinator of ANTAM Competent Person Team. PT Gag mineral resources and ore reserves of Nickel laterite as at December, 31th 2017 is shown in table 13 & 14 , all stated in million of tonnes.

Table 13. Nickel Mineral Resources of PT. Gag Nickel *as at December, 31th 2017.*

Area	ZONE	CLASS	Million of Tonnes (WMT)	Ni (%)	Fe (%)	SiO2 (%)	MgO (%)	Co (%)
Gag	Limonit	Measured	34.35	1.41	41.95	10.99	1.82	0.15
		Indicated	8.18	1.43	40.58	11.00	1.60	0.15
		Inferred	128.08	1.46	39.38	11.09	1.79	0.15
	Total Limonite		**170.62**	**1.45**	**39.96**	**11.07**	**1.78**	**0.15**
	Saprolit	Measured	45.74	1.88	15.07	38.29	22.11	0.04
		Indicated	11.73	1.85	14.62	38.97	22.21	0.04
		Inferred	95.37	1.82	16.62	38.60	21.31	0.05
	Total Saprolite		**152.84**	**1.84**	**16.00**	**38.53**	**21.62**	**0.04**

Table 14. Nickel ore reserve of PT. Gag Nickel *as at December, 31th 2017.*

Area	ZONE	CLASS	Million of Tonnes (WMT)	Ni (%)	Fe (%)	SiO2 (%)	MgO (%)	Co (%)
Gag	Limonite	Proved	5.07	1.59	41.03	11.23	2.24	0.17
		Probable	1.47	1.60	39.96	11.32	1.83	0.17
	Total Limonite		**6.54**	**1.59**	**40.79**	**11.25**	**2.14**	**0.17**
	Saprolite	Proved	25.30	1.89	14.54	38.60	22.75	0.04
		Probable	6.83	1.84	14.41	38.99	22.55	0.04
	Total Saprolite		**32.13**	**1.88**	**14.51**	**38.68**	**22.71**	**0.04**

Notes:

- The cut-off grade applied for Gag's mineral resources are 1.5 % Ni for saprolite and 1.2 % Ni for limonite.
- The cut-off grade applied for both limonite & saprolite reserves are 1.5 % Ni.
- Drilling program used a single tube core barrel rotary rig for detail nickel exploration program.
- Ore were sampled at 1 meter intervals and analyzed using XRF at company laboratory, and using external laboratory as QAQC sample check.
- Saprolite and Limonite resources are define by domaining that base on lithological zone and geochemistry.
- The recovery of the core samples are greater than 90 % in average.
- All drill holes was by for resource & reserve estimation were drilled vertically.
- Survey by ANTAM was by digital total station theodolite which corresponds well to the independent derived LiDAR topography.
- All locations are surveyed using the references of datum of WGS-84 and using 52 South Zone
- The measured and indicated resources are reported inclusive of those mineral resources modified to produce the ore reserve.
- Mineral Resources Model estimated by Golder Associates (Mr. John Horton FAusIMM) using Ordinary Kriging method. The measured and indicated resources are reported inclusive of those mineral resources modified to produce the ore reserve.
- All Mineral Resources processed by company's mining engineer to be economically mineable ore reserves. Estimation of Ore Reserves will go through the "modifying factors". In those processes had considered aspects of mining, metallurgical, economic, marketing, legal, environmental, infrastructures, social, and governance.

2. PT. BORNEO EDO INTERNATIONAL, PT. MEGA CITRA UTAMA, PT. DWIMITRA ENGGANG KHATULISTIWA AND PT GUNUNG KENDAIK.

PT ANTAM Tbk owns PT. Borneo Edo International (PT. BEI, owned 99.50% direct ownership share), PT. Mega Citra Utama (PT. MCU, owned 99.50% direct ownership share), PT Dwimitra Enggang Khatulistiwa (PT. DEK, owned 99.50% direct ownership share), and PT. Gunung Kendaik (PT. GK, owned 100% indirect ownership share). PT. BEI Operation and Production license area occupies in Landak Regency, while PT. MCU area lies in Sanggau Regency, West Kalimantan. PT. DEK area lies in Landak Regency whereas PT. GK exploration area occupies in Landak Regency, West Kalimantan, Indonesia. The current tenement area are shown in table 15 and figure 8 & 9.

Table 15. PT.BEI, PT.MCU, PT.DEK, PT.GK Mining Permit.

No.	Mining Permit Numbers	Location	Name of Concession Area	Area Coverage (Ha)	Validity Period	
					Start	End
1	544.11/98/HK-2013	Landak, West Kalimantan	Menjalin (PT. BEI)	18,630	22-Apr-13	22-Apr-33
2	544.11/264/HK-2014	Landak, West Kalimantan	Sebadu (PT. BEI)	19,090	16-Sep-14	16-Sep-34
3	444 tahun 2009	Sanggau, West Kalimantan	Meliau (PT. MCU)	10,000	21-Dec-09	21-Dec-28
4	544.2/213/HK-2010	Landak, West Kalimantan	Menjalin (PT. DEK)	4,900	23-Sep-10	23-Sep-16
5	573/DISTAMBEN/2015	Landak, West Kalimantan	Mempawah Hulu/Landak (PT GK)	12,184	25-Mei-15	25-Mei-35

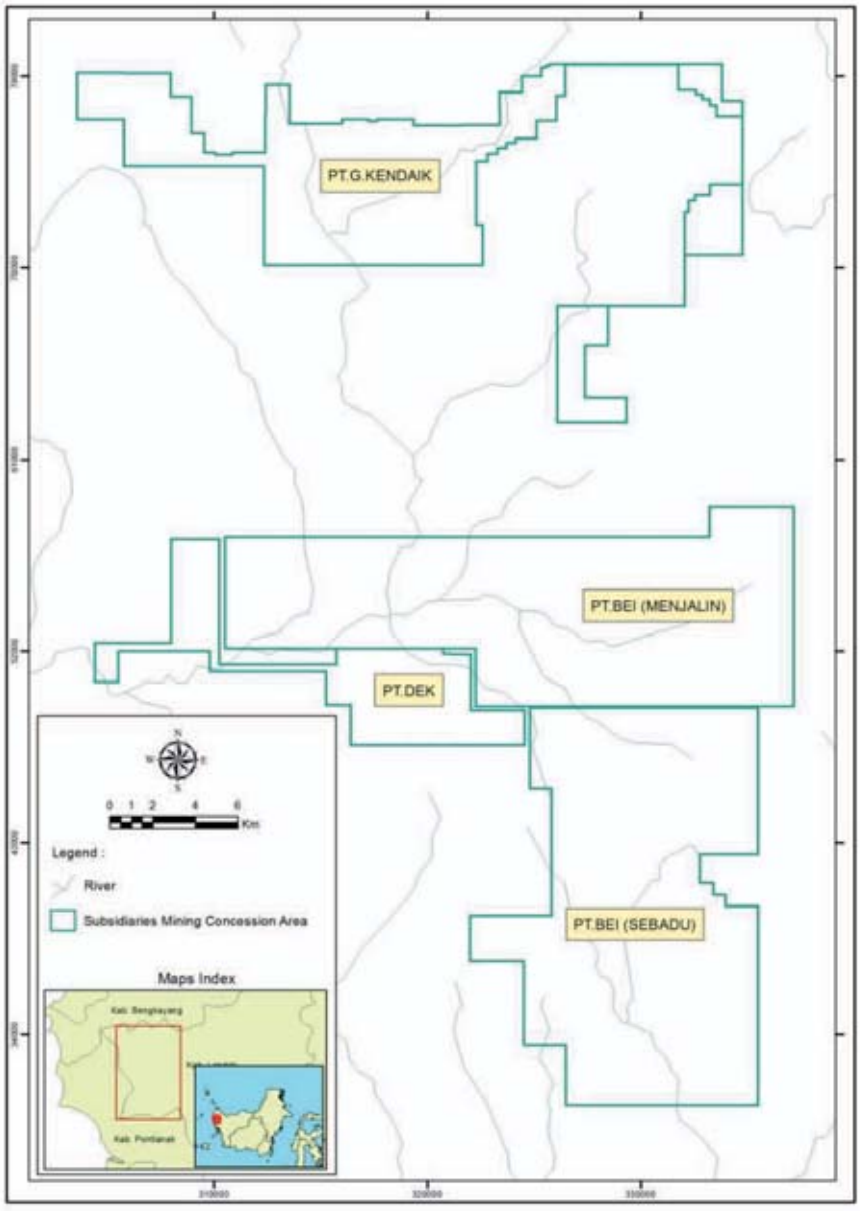


Figure 8. Map of PT.BEI, PT.DEK and PT.GK mining area in West Kalimantan Province, Indonesia.

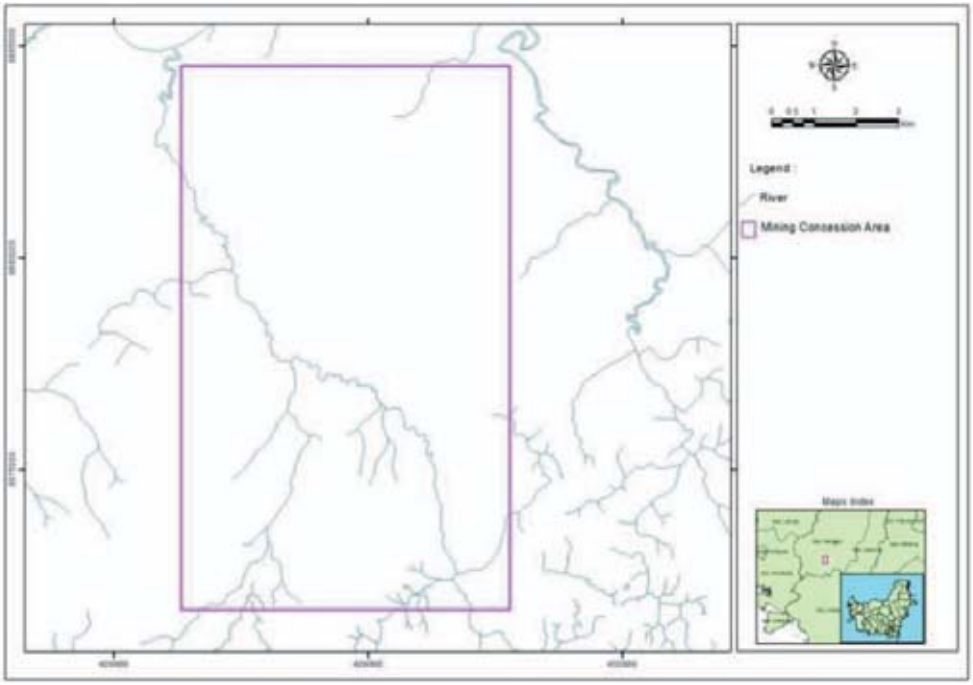


Figure 9. Map of PT. MCU mining area in West Kalimantan Province, Indonesia

Resources Estimation of PT.BEI, PT.MCU, PT.DEK and PT.GK have used a polygonal area of influence method to estimate the resources. The update of mineral resources of PT.BEI, PT.MCU, PT.DEK and PT.GK as at December, 31th 2017 is shown in the table 16.

Table 16. Bauxite resources of PT.BEI, PT.MCU, PT.DEK and PT.GK as at December, 31th 2017

Area/ IUP ANTAM Subsidiaries	Prospect	Resource CLASS	Washed Bauxite		CF (%)	Average Grade (%)				
			Million of Tonnes (WMT)	Million of Tonnes (DMT)		Al2O3	R-SiO2	T-SiO2	Fe2O3	TiO2
Landak/ PT BEI	Menjalin	Measured	13.92	11.84	51.60	43.97	4.35	20.66	10.87	0.68
		Indicated	7.59	6.45	51.85	44.18	4.46	19.94	11.23	0.68
		Inferred	25.04	21.28	51.61	43.36	4.34	21.96	10.45	0.68
		Total	**46.55**	**39.57**	**51.64**	**43.68**	**4.36**	**21.24**	**10.71**	**0.68**
	Sebadu	Measured	9.90	8.41	52.67	43.48	3.90	23.25	10.23	0.64
		Indicated	6.87	5.84	52.67	44.48	4.00	18.43	12.92	0.75
		Inferred	59.34	50.44	48.76	43.64	4.18	22.93	9.93	0.64
		Total	**76.10**	**64.69**	**49.57**	**43.69**	**4.12**	**22.56**	**10.24**	**0.65**

Area/ IUP ANTAM Subsidiaries	Prospect	Resource CLASS	Washed Bauxite		CF (%)	Average Grade (%)				
			Million of Tonnes (WMT)	Million of Tonnes (DMT)		Al2O3	R-SiO2	T-SiO2	Fe2O3	TiO2
Sanggau/ PT MCU	Meliau	Measured	31.84	27.06	48.57	42.16	3.96	27.83	7.56	0.61
		Indicated	14.25	12.11	51.60	42.20	3.80	27.60	7.70	0.60
		Inferred	18.26	15.52	52.83	41.96	3.63	28.49	7.71	0.62
		Total	**64.35**	**54.70**	**50.37**	**42.11**	**3.83**	**27.97**	**7.64**	**0.61**
LANDAK/ PT DEK	Menjalin	Measured	1.80	1.53	51.35	44.29	3.84	21.41	10.27	0.74
		Indicated	-	-	-	-	-	-	-	-
		Inferred	29.50	25.08	53.39	43.28	4.09	24.05	9.56	0.68
		Total	**31.30**	**26.61**	**53.27**	**43.34**	**4.08**	**23.90**	**9.60**	**0.68**
LANDAK/ PT GK	Mempawah Hulu	Measured	-	-	-	-	-	-	-	-
		Indicated	-	-	-	-	-	-	-	-
		Inferred	87.00	73.95	52.00	43.00	4.00	26.00	9.50	0.50
		Total	**87.00**	**73.95**	**52.00**	**43.00**	**4.00**	**26.00**	**9.50**	**0.50**
Total Bauxite Resources of ANTAM Subsidiaries		Measured	57.46	48.84	50.10	42.89	4.04	25.10	8.91	0.64
		Indicated	28.70	24.40	51.92	43.27	4.02	23.38	9.88	0.66
		Inferred	219.14	186.27	51.33	43.17	4.07	24.65	9.59	0.59
		Total	**305.30**	**259.51**	**51.16**	**43.12**	**4.06**	**24.62**	**9.49**	**0.61**

Notes

- R-SiO2 < 8.00% are also used for top CoG of PT BEI, PT MCU, PT DEK and PT GK deposit with the bottom CoG of T-Al2O3 are ranging from 30% to 40% based on the statistical data population of each mineralization domain to meet the requirement grade for alumina plant that being studied for the feasibility study.
- The initial grid spacing of pitting is 400 m by 400 m and then reduced to 25 m by 25 m or 50 m by 50 m by infill pitting depends upon the geostatistical study for each area to increase the definition of the mineral resources estimation.
- PT. ANTAM Tbk used Block model and geostatistical ordinary kriging method for bauxite resources estimation of PT BEI and PT MCU, while a polygonal area of influence method is applied to estimate the bauxite/mineral resources of PT DEK and PT GK.

3. PT. CIBALIUNG SUMBERDAYA

PT. ANTAM , Tbk is owner of PT. Cibaliung Sumberdaya (PT. CSD, owned 99,15% direct ownership share) which has gold Mining Permit in Pandeglang Regency, Banten Province. The mining area location is shown in table 17 and figure 10.

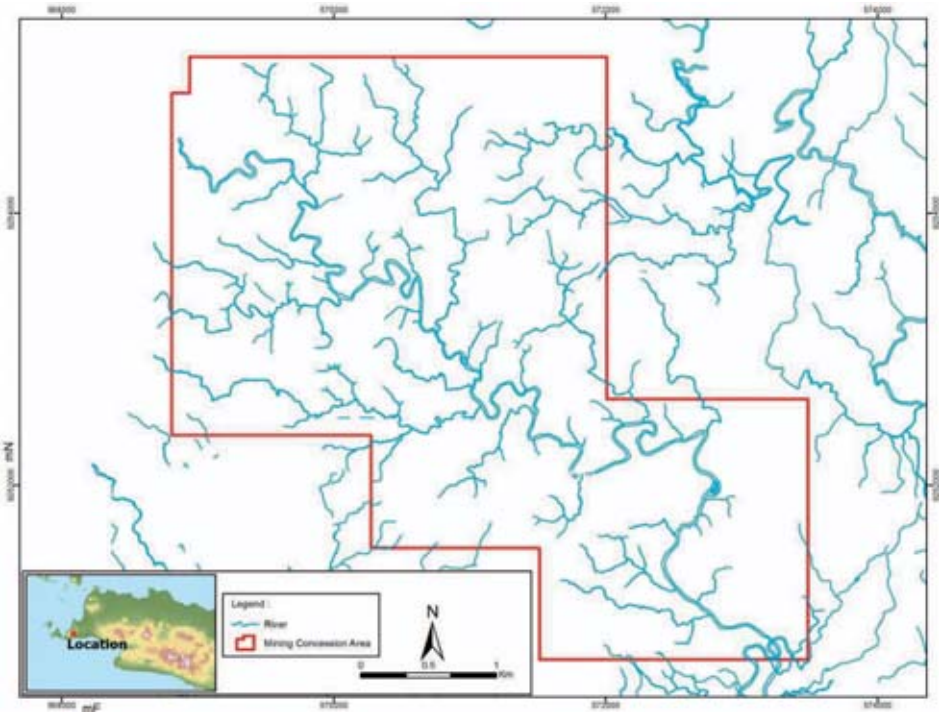


Figure 10. Map of Cibaliung mining area in Banten Province, Indonesia.

Table 17. Cibaliung Mining License

No.	Mining Permit Number	Location	Name of Concession Area	Area Coverage (Ha)	Validity Period	
					Start	End
1	821.13/Kep.1351-BPPT/2014	Pandeglang, Banten	Cibaliung	1,340	28-Jul-2015	27-Jul-2025

Mineral resources and ore reserves of PT. CSD as at November, 30th 2017 is shown in the table 18 & 19.

Table 18. Mineral Resources of PT. CSD as at November, 30th 2017.

Location	Resources Classification	Ore Tonnage (K wmt)	Ore Tonnage (K dmt)	Grade		Contained metal	
				Au (g/t)	Ag (g/t)	Au (K oz)	Ag (K oz)
Cibaliung	Measured	2,200	1,870	7.65	60	460	3,608
	Indicated	560	476	6.70	73	103	1,117
	Inferred	76	64	4.00	43	9	89
Total Resources		2,836	2,410	7.4	62	572	4,814

Table 19. Ore Reserves of PT. CSD as at November, 30th 2017.

Location	Reserve Classification	Ore Tonnage (K wmt)	Ore Tonnage (K dmt)	Grade		Contained metal	
				Au (g/t)	Ag (g/t)	Au (K oz)	Ag (K oz)
Cibaliung	Proved	1,765	1,437	6.98	54	323	2,482
	Probable	485	399	5.8	63	74	811
Total Reserve		2,250	1,836	6.7	56	397	3,293

Notes:

- The decrease in Cibaliung gold reserves against the previous year due to ore depletion (production) and re-estimation of the remaining pillar which has not been mined yet that believed to be mineable in economically and technically aspect.
- Estimation Cut-Off date on 30th November 2017 this year due to financial audit at PT. Cibaliung Sumberdaya.
- Cut-Off grade of gold used 3 gpt for mineral resources and ore reserves.
- All Mineral Resources Model estimated by the company's resource geologist using Inverse Distance Squared in three dimensions of vein in consideration to genesis of vein, statistical and estimation parameter for mineral resources estimations.
- Resources Classification has been done by drill spacing, ore continuity, and variography analyzis. The measured and indicated resources are reported inclusive of those mineral resources modified to produce the ore reserves.
- All Mineral Resources processed by mining engineer to be economically mineable ore reserves. Estimation of Ore Reserves will go through the "modifying factors". In those processes had considered aspects of mining, metallurgical, processing, economic, marketing, legal, environmental, infrastructures, social, and governance.

Table 20. List of ANTAM Competent Person & Reporting Contributor Team.

No.	Name	CPI Certified / Professional Membership	Commodity	Reporting Contribution
1	Bronto Sutopo, Phd	CPI-IAGI (**ER-Gold**), MAusIMM-206315	All	Team Coordinator
2	Febri Estiadi Prihasto	CPI-PERHAPI (**ORE**)	Lateritic Nickel	ORE
3	Aldino Yulianto	CPI-PERHAPI (**ORE**)	Lateritic Nickel	ORE
4	Moh. Riyan Kamil	CPI-IAGI (**MRE**)	Lateritic Nickel	ER, MRE
5	Dedi Sunjaya	CPI-IAGI (**ER**)	Lateritic Bauxite	ER
6	Tulus Semedie	CPI-IAGI (**ER**)	Lateritic Bauxite	ER, MRE
7	Arif Hindarto	CPI-PERHAPI (**ORE**)	Lateritic Bauxite	MRE, ORE
8	Tafia Sulistyani P.	CPI-PERHAPI (**ORE**)	Lateritic Bauxite	ORE
9	Ahmad Raymond T.	CPI-PERHAPI (**ORE**)	Epithermal Gold	ORE
10	Novy Feri Rusiana D.	PERHAPI, IAGI	Epithermal Gold	ORE
11	Dwi Margianto	PERHAPI, IAGI	Epithermal Gold	MRE
12	Andi Kurniawan	IAGI - MGEI	Gold	ER
13	Halley Rionanda	PERHAPI, IAGI	Epithermal Gold	MRE, ORE

Note on competence (CPI) category and reporting contribution:

ER : Exploration Result Reporting

MRE : Mineral Resources Estimation

ORE : Ore Reserves Estimation

Competent Person's Consent Form

Pursuant to the requirements of ASX Listing Rules 5.6, 5.22 and 5.24 and
Clause 9 of the JORC Code 2012 Edition (Written Consent Statement)

Report name

Update of Mineral Resources & Ore Reserves PT. ANTAM Tbk as at December, 31th 2017

(*Insert name or heading of Report to be publicly released*) ('Report')

PT. ANTAM Tbk

(*Insert name of company releasing the Report)*

Lateritic Nickel, Lateritic Bauxite, and Epithermal Gold Vein System

(Insert name of the deposit to which the Report refers)

February 27th 2017

(Date of Report)

Statement

I am,

Bronto Sutopo, PhD, MAusIMM

(*Insert full name(s)*)

confirm that I am the Competent Person for the Report and:

- I have read and understood the requirements of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition) and Komite Cadangan Mineral Indonesia (KCMI) 2011 Code.
- I am a Competent Person as defined by the JORC and KCMI Code, along with the Competent Person Team of ANTAM having more than five years experience that is relevant to the style of mineralization and type of deposit described in the Report, and to the activity for which I am accepting responsibility.
- I am a Member or Fellow of *The Australasian Institute of Mining and Metallurgy* that included in a list promulgated by ASX from time to time.
- I have reviewed the Report to which this Consent Statement applies.

I am a full time employee of

PT.ANTAM Tbk

(Insert company name)

and have been engaged by

PT.ANTAM Tbk

(Insert company name)

to prepare the documentation for

Updating Resource and Reserve report of Lateritic Nickel, Lateritic Bauxite, and Epithermal Gold System Deposit

(Insert deposit name)

on which the Report is based, for the period ended

December 31st 2017

(Insert date of Resource/Reserve statement)

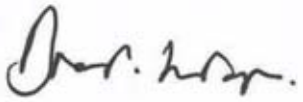
I have disclosed to the reporting company the full nature of the relationship between myself and the company, including any issue that could be perceived by investors as a conflict of interest.

I verify that the Report is based on and fairly and accurately reflects in the form and context in which it appears, the information in my supporting documentation relating to Mineral Resources and Ore Reserves

Consent

I consent to the release of the Report and this Consent Statement by the directors of:

PT.ANTAM Tbk
(Insert reporting company name)



Signature of Competent Person:	February, 27th 2017 Date:
Member of AusIMM	301369
Professional Membership: *(insert organisation name)*	Membership Number:

Hari Widjajanto
Plh Direktur Utama PT.ANTAM Tbk. Jakarta-Indonesia

Signature of Witness:	Print Witness Name and Residence: (eg town/suburb)

APPENDIX C — 2017 TIN RESERVES STATEMENT

ANNUAL REPORT

STATEMENT OF TIN RESOURCES AND RESERVES

PT TIMAH Tbk

AS OF DECEMBER 31, 2017

TIMAH

A JOINT COOPERATION
PT Timah Tbk

With

Fakultas Teknik Pertambangan dan Perminyakan
Institut Teknologi Bandung

FOREWORD
STATEMENT OF TIN RESOURCES AND RESERVES
AS OF DECEMBER 31, 2017

This report is the update of mineral resources and ore reserves statement as of December 31th, 2017 of PT TIMAH Tbk. The list of information in this statement relates to the exploration results, mineral resources and ore reserves is based on reporting information compiled by Mr. Setiawan Raharjo and Mr. Satyogroho Dhian Amertho who are certified as Competent Persons Indonesia (CPI). Mr. Setiawan Raharjo and Mr. Satyogroho Dhian Amertho are employees of PT TIMAH Tbk.

Mr. Setiawan Raharjo and Mr. Satyogroho Dhian Amertho have sufficient professional experiences which are relevant to the type of mineralization and type of tin deposits, and activities to qualify as a Competent Person as defined in the Komite Cadangan Mineral Indonesia (KCMI) code edition 2011. They consent to the inclusion in the report of the matters based on the information in the form and context emerged.

This report is prepared by the PT TIMAH Tbk Team and Evaluator Team from LAPI ITB who have experience in exploring and evaluating the resources and reserves of alluvial and primary tin deposit materials under supervision from the Competent Persons.

Signed by,

Competent Person Coordinator

COMPETENT PERSON APPROVAL FORM

TIN RESOURCES AND RESERVES
PT TIMAH Tbk
AS OF DECEMBER 31, 2017

PT TIMAH Tbk

Alluvial Tin Deposit

26 March 2018

Statement

I,

Setiawan Raharjo

Confirm that I am a *Competent Person* for this Report and:

- I have read and understood the requirements of the Indonesian Report on Exploration Results, Mineral Resources and Ore Reserves *(KCMI Code 2011)*
- I am a Competent Person with the expertise of PHE, ESM, & ECM (Reporting of Exploration Results, Estimation of Resources, and Mineral Reserves) as defined in the 2011 KCMI Code, having more than five years relevant experience to the type of mineralization and type of deposit described in the Report, and activities that I am responsible
- I am a member of *the Indonesian Mining Experts Association* (PERHAPI)
- I have reviewed the Report where this Statement of Agreement applies
- I am an employee of **PT Timah Tbk**

Report based, for the period ending in December 31, 2017

COMPETENT PERSON APPROVAL FORM

TIN RESOURCES AND RESERVES
PT TIMAH Tbk
AS OF DECEMBER 31, 2017

PT TIMAH Tbk

Primary Tin Deposit

26 March 2018

Statement

I,

Satyogroho Dhian Amertho

Confirm that I am a *Competent Person* for this Report and:

- I have read and understood the requirements of the Indonesian Report on Exploration Results, Mineral Resources and Ore Reserves *(KCMI Code 2011)*
- I am a Competent Person with the expertise of PHE & ESM (Reporting Exploration Results and Resource Estimates) as defined by the 2011 KCMI Code, having more than five years relevant experience to the type of mineralization and type of deposit described in the Report, and activities that I am responsible
- I am a member of *the Indonesian Geological Association* (IAGI)
- I have reviewed the Report where this Statement of Agreement applies
- I am an employee of **PT Timah Tbk**

Report based, for the period ending in December 31, 2017

CONSENT

I agree to provide a Report and Statement of Resource Estimation Approval and Tin Reserves:

PT TIMAH Tbk

Setiawan Raharjo
Competent Person

Date: **March 26th, 2018**

Professional Membership
Komite Cadangan Mineral Indonesia: Member Number: 0601892-29

Satyogroho Dhian Amerto
Competent Person

Date: **March 26th, 2018**

Professional Membership
Komite Cadangan Mineral Indonesia: Member Number : CPI-123

Head of Perencanaan & Pengendalian Produksi
PT TIMAH Tbk

Ichwan Azwardi
Head of Estimation Project & Tin Reserves

Pangkalpinang - Bangka

REPORTING TEAM OF EXPLORATION RESULTS
RESOURCE ESTIMATION AND TIN RESERVE 2018
PT TIMAH Tbk

No	Name	Contribution
1	Ichwan Azwardi L	CPI
2	Setiawan Raharjo	CPI
3	Satyogroho Dhian Amerto	CPI
4	Mustiko Aji	CPI
5	Achmad Apriyono	Resource Modelling Expert
6	Erwin Suheri	Reserve Modelling Expert
7	Dyna Dwi Ratna Sari	Geologist
8	Riki Vernandes	Mining Expert
9	Nono Budi Priono	Metallurgist
10	Ndaru Aji Wirastomo	Resource Modelling Estimator
11	Nofhy Gumelar	Resource Modelling Estimator
12	Rahmatin Eka Yulianti	Resource Modelling Estimator
13	Reza Aviandono	Resource Modelling Estimator
14	Pradhana Rastian	Reserve Modelling Estimator
15	Herfani Tri Nurfebri	Reserve Modelling Estimator
16	Haryoko	Reserve Modelling Estimator
17	Anshari	Reserve Modelling Estimator
18	Tiffany Pratiwi	Reserve Modelling Estimator
19	Agustina Listyowati	Reserve Modelling Estimator

TABLE OF CONTENT

TABLE OF CONTENT i

LIST OF FIGURES ii

LIST OF TABLES iii

I. PREFACE 1

1.1 Location 1

1.2 Ownership 2

II. RESOURCES STATEMENT 11

2.1 Alluvial Resources Estimation and Statement 12

a. Estimation Based on Island 14

b. Estimation Based on Mining Permit 19

2.2 Primary Resources Estimation and Statement 51

III. RESERVES STATEMENT 53

3.1 Alluvial Reserves Statement 53

a. Estimation Based on Island 53

b. Estimation Based on Mining Permit 54

3.2 Primary Tin Reserves Statement 65

a. Estimation Based on Island 66

b. Estimation Based on Mining Permit 67

LIST OF FIGURES

Figure 1.1 Location of PT Timah's Mining Permit Area.....1

Figure 2.1 Situation Map of PT Timah's Mining Permit in Bangka 14

Figure 2.2 Situation Map of PT Timah's Mining Permit in Belitung.....16

Figure 2.3 Situation Map of PT Timah's Mining Permit in Karimun Kundur 18

LIST OF TABLES

Table 1.1 Number and Area Size of Mining Permit 2

Tabel 1.2 Mining Permit (IUP) Decree 3

Tabel 2.1 Total Resources in Bangka, Belitung, Karimun and Kundur 12

Tabel 2.2 Total Resources in Bangka Island 15

Tabel 2.3 Total Resources in Belitung Island 17

Tabel 2.4 Total Resources in Karimun Kundur Island 19

Tabel 2.5 Total Resources Per Mining Permit 19

Tabel 2.6 Primary Resources Estimation 51

Tabel 2.7 Primary Resources Estimation Per Mining Permit 52

Tabel 3.1 Total Resources in Bangka, Belitung, Karimun and Kundur 53

Tabel 3.2 Resources Estimation from Bangka Island 53

Tabel 3.3 Reserves Estimation from Belitung Island 54

Tabel 3.4 Reserves Estimation from Karimun Kundur Island 54

Tabel 3.5 Reserves Estimation Result Per Mining Permit 54

Tabel 3.6 Total Reserves in Bangka and Belitung 65

Tabel 3.7 Reserves Estimation from Bangka Island 66

Tabel 3.8 Reserves Estimation from Belitung Island 66

Tabel 3.10 Primary Reserves Estimation Per Mining Permit 67

I. PREFACE

This estimation report of resources as well as alluvial and primary tin reserves has been checked and approved by Competent Person Indonesia (CPI) for alluvial Tin, Setiawan Raharjo and CPI for Primary Tin, Satyogroho Dhian Amertho. The CPIs perform its activity under guidance of Komite Cadangan Mineral Indonesia (KCMI) code 2011 and has conducted field visits and observed all operational aspects inland and offshore which covers exploration methods, mining, processing and smelting techniques conducted by PT TIMAH Tbk.

1.1 Location

Exploration activities are located in Mining Permit Area (WIUP) owned by PT Timah which are in Bangka Belitung Province and in Karimun Regency in Riau Islands Province.

Figure 1.1 Location of PT Timah's Mining Permit Area

1.2 Ownership

PT Timah Tbk has 129 tin licenses which is known as Mining Permit- Operation Production (SK IUP-OP) with a total area of 473,401.48 Ha, which is spread in 3 (three) regions namely Bangka Island, Belitung Island and Kundur-Karimun Islands which includes inland and offshore, with the following details:

Table 1.1 Number and Area Size of Mining Permit

Region	Inland		Offshore	
	Number of IUP	Area (Ha)	Number of IUP	Area (Ha)
Bangka	79	235,692.65	19	108,752.83
Belitung	23	53,036.80	1	30,910.00
Kundur			7	45,009.20
Total	**102**	**288,729.45**	**27**	**184,672.03**

Table 1.2 Mining Permit (IUP) Decree PT Timah Tbk

Num	REGENCY	DU NO	AREA (Ha)			DECREE NO		VALIDITY PERIOD			CNC	CERTIFICATE NUMBER	DATE	DESC
			INLAND	OFFSHORE	TOTAL	PREVIOUS DECREE NUMBER	CURRENT DECREE NUMBER	ISSUANCE DATE	FROM	UP TO				
I	***BANGKA INDUK***													
1	Bubus - Belinyu	1511	495.30	-	495.30	188.45/449/Tamben/2010	188.44/974/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	II	1068/Min/11/2015	30 Juni 2015	CNC Certified
2	Gunung Muda - Belinyu	1512	8,731.00	-	8,731.00	188.45/450/Tamben/2010	188.44/975/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	II	1077/Min/11/2015	1 Juli 2015	CNC Certified
3	S. Sembuang - Belinyu	1513	3,529.00	-	3,529.00	188.45/451/Tamben/2010	188.44/989/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	II	1048/Min/11/2015	19 Juni 2015	CNC Certified
4	A. Parak - Belinyu	1514	52.41	-	52.41	188.45/452/Tamben/2010	188.44/978/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	II	1066/Min/11/2015	30 Juni 2015	CNC Certified
5	S. Simping - Belinyu	1515	385.70	-	385.70	188.45/453/Tamben/2010	188.44/995/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	II	1120/Min/11/2015	9/30/2015	CNC Certified
6	S. Mapur - Belinyu	1516	12,880.00	-	12,880.00	188.45/454/Tamben/2010	188.44/987/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	II	1067/Min/11/2015	30 Juni 2015	CNC Certified
7	S. Lumut - Belinyu	P0218/ eks.1517	25,910.00	-	25,910.00	188.45/455/Tamben/2010	188.44/1009/DPE/2016	25 Okt 2016	25 Okt 2016	21 Juli 2027	XVIII	1321/Min/11/2016	15 Desember 2016	CNC Certified
8	S. Deniang - Sungailiat	1518 A	3,939.00	-	3,939.00	188.45/456/Tamben/2010	188.44/1026/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	XIV	1198/Min/11/2015	17 Desember 2015	CNC Certified
9	S. Deniang - Sungailiat	1518 B	837.60	-	837.60	188.45/456/Tamben/2010	188.44/1025/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025				
10	Parit Padang - Sungailiat	1519	207.00	-	207.00	188.45/457/Tamben/2010		27 Apr 2010	27 Apr 2010	20 Juli 2025	II	1114/Min/11/2015	9/30/2015	CNC Certified
11	Parit Padang - Sungailiat	P0344/ eks.1520	1,266.00	-	1,266.00	188.45/420/Tamben/2011	188.44/984/DPE/2016	25 Okt 2016	25 Okt 2016	17 Ags 2027	II	1119/Min/11/2015	9/30/2015	CNC Certified
12	Rebo Batu Ampar - Sungailiat	1521	2,217.00	-	2,217.00	188.45/459/Tamben/2010	188.44/983/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	XIV	1189/Min/11/2015	17 Desember 2015	CNC Certified
13	Merawang/ Kenanga	1522	558.00	-	558.00	188.45/460/Tamben/2010		27 Apr 2010	27 Apr 2010	20 Juli 2025	II	1052/Min/11/2015	19 Juni 2015	CNC Certified
14	Jurung - Merawang	1523	322.00	-	322.00	188.45/461/Tamben/2010		27 Apr 2010	27 Apr 2010	20 Juli 2025	II	1074/Min/11/2015	1 Juli 2015	CNC Certified
15	Lt. A. Kantung - Sungailiat	*1548*	-	9,919.00	9,919.00	188.45/462/Tamben/2010		27 Apr 2010	27 Apr 2010	20 Juli 2025	II	1057/Min/11/2015	19 Juni 2015	CNC Certified
16	Lt. Deniang - Sungailiat	*1555*	-	6,839.00	6,839.00	188.45/463/Tamben/2010		27 Apr 2010	27 Apr 2010	20 Juli 2025	II	1090/Min/11/2015	10 Juli 2015	CNC Certified
17	Lt. P. Danta - Belinyu	*1559*	-	1,839.00	1,839.00	188.45/464/Tamben/2010		27 Apr 2010	27 Apr 2010	20 Juli 2025	II	1072/Min/11/2015	1 Juli 2015	CNC Certified
18	Lt. S. Belinyu - Belinyu	*1560*	-	446.00	446.00	188.45/465/Tamben/2010		27 Apr 2010	27 Apr 2010	20 Juli 2025	II	1112/Min/11/2015	9/30/2015	CNC Certified
19	Lt. Tg. Terentang Kelabat	*P0265/ eks. 1561*	-	713.00	713.00	188.45/466/Tamben/2010		27 Apr 2010	27 Apr 2010	17 Ags 2027	II	1218/Min/11/2016	5 Februari 2016	CNC Certified
20	A. Pugul - Belinyu	1602	738.00	-	738.00	188.45/467/Tamben/2010		27 Apr 2010	27 Apr 2010	20 Juli 2025	II	1049/Min/11/2015	19 Juni 2015	CNC Certified

Num	REGENCY	DU NO	AREA (Ha)			DECREE NO		VALIDITY PERIIOD			CNC	CERTIFICATE NUMBER	DATE	DESC
			INLAND	OFFSHORE	TOTAL	PREVIOUS DECREE NUMBER	CURRENT DECREE NUMBER	ISSUANCE DATE	FROM	UP TO				
	Total	***20***	***62,068.01***	***19,756.00***	***81,824.01***		***11***							**19**
II	***BANGKA BARAT***													
1	S. Kebiang - Jebus	1484	1,049.00	-	1,049.00	188.45/067/2.03.02/2010	188.44/1030/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	II	1117/Min/11/2015	9/30/2015	CNC Certified
2	S. Buluh Semulut	1485 A 1	77.66	-	77.66	188.45/068/2.03.02/2010	188.44/ /DPE/2016			20 Juli 2025	II	1060/Min/11/2015	19 Juni 2015	CNC Certified
3	S. Buluh Semulut	1485 A 2	6,898.00	-	6,898.00	188.45/068/2.03.02/2010	188.44/1008/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025				
4	S. Buluh Semulut	1485 A 3	2,234.00	-	2,234.00	188.45/068/2.03.02/2010	188.44/1052/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025				
5	S. Buluh Semulut	1485 A 4	296.40	-	296.40	188.45/068/2.03.02/2010	188.44/1001/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025				
6	Penganak - Cupat	1485 B 1	546.70	-	546.70	188.45/069/2.03.02/2010	188.44/1011/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	II	1094/Min/11/2015	10 Juli 2015	CNC Certified
7	Penganak - Cupat	1485 B 2	1,763.00	-	1,763.00	188.45/069/2.03.02/2010	188.44/1007/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025				
8	Penganak - Cupat	1485 B 3	1,248.00	-	1,248.00	188.45/069/2.03.02/2010	188.44/1016/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025				
9	Penganak - Cupat	1485 B 4	470.10	-	470.10	188.45/069/2.03.02/2010	188.44/1015/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025				
10	Penganak - Cupat	1485 B 5	255.80	-	255.80	188.45/069/2.03.02/2010	188.44/1010/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025				
11	Penganak - Cupat	1485 B 6	97.89		97.89	188.45/069/2.03.02/2010	188.44/378.H/ESDM/2017	29 Maret 2017	29 Maret 2017	20 Juli 2025				
12	S. Bembang - Jebus	1486	680.30	-	680.30	188.45/070/2.03.02/2010	188.44/1029/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	II	1115/Min/11/2015	9/30/2015	CNC Certified
13	S. Petar - Jebus	1487	2,567.19	-	2,567.19	188.45/071/2.03.02/2010		28 April 2010	28 April 2010	20 Juli 2025	II	1113/Min/11/2015	9/30/2015	CNC Certified
14	S. Selimbang - Jebus	1488	125.90	-	125.90	188.45/072/2.03.02/2010	188.44/1032/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	II	1055/Min/11/2015	19 Juni 2015	CNC Certified
15	Tg. Pemuja - Jebus	1489	124.90	-	124.90	188.45/073/2.03.02/2010	188.44/1031/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	II	1116/Min/11/2015	9/30/2015	CNC Certified
16	Tg. Berhala - Mentok	1490 A	154.50	-	154.50	188.45/074/2.03.02/2010	188.44/1006/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	II	1061/Min/11/2015	19 Juni 2015	CNC Certified
17	Tg. Berhala - Mentok	1490 B	59.58	-	59.58	188.45/074/2.03.02/2010	188.44/1005/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025				
18	Tg. Berhala - Mentok	1490 C	79.71	-	79.71	188.45/074/2.03.02/2010	188.44/1014/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025				
19	Tg. Berhala - Mentok	1490 D	23.59	-	23.59	188.45/074/2.03.02/2010	188.44/1013/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025				
20	Tg. Berhala - Mentok	1490 E	182.10	-	182.10	188.45/074/2.03.02/2010	188.44/1012/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025				
21	A. Biat - Mentok	1491	1,032.00	-	1,032.00	188.45/597/2.03.01/2014	188.44/973/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	II	1140/Min/11/2015	7 Oktober 2015	CNC Certified
22	S. Bendul - Mentok	1492	921.60	-	921.60	188.45/592/2.03.01/2014	188.44/1042/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	III	1075/Min/11/2015	1 Juli 2015	CNC Certified

Num	REGENCY	DU NO	AREA (Ha)			DECREE NO		VALIDITY PERIIOD			CNC	CERTIFICATE NUMBER	DATE	DESC
			INLAND	OFFSHORE	TOTAL	PREVIOUS DECREE NUMBER	CURRENT DECREE NUMBER	ISSUANCE DATE	FROM	UP TO				
23	A. Sukai - Mentok	1493	1,950.00	-	1,950.00	188.45/077/2.03.02/2010	188.44/1043/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	III	1040/Min/11/2015	19 Juni 2015	CNC Certified
24	Mayang/ A. Rambat - Mentok	1494	3,800.00	-	3,800.00	188.45/078/2.03.02/2010	188.44/1044/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	III	1043/Min/11/2015	19 Juni 2015	CNC Certified
25	S. Remunding - Mentok	1495	657.60	-	657.60	188.45/079/2.03.02/2010	188.44/1046/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	V	1073/Min/11/2015	1 Juli 2015	CNC Certified
26	S. Pelangas - Mentok	1496	391.90	-	391.90	188.45/080/2.03.02/2010	188.44/1048/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	XVIII	1309/Min/11/2016	11/14/2016	CNC Certified
27	S. Berang - Mentok	1497	2,654.88	-	2,654.88	188.45/081/2.03.02/2010		28 April 2010	28 April 2010	20 Juli 2025	XIV	1199/Min/11/2015	17 Desember 2015	CNC Certified
28	S. Menduyung - Mentok	1498	2,709.66	-	2,709.66	188.45/082/2.03.02/2010		28 April 2010	28 April 2010	20 Juli 2025	V	1164/Min/11/2015	11/5/2015	CNC Certified
29	A. Sukal - Mentok	1499	1,112.73	-	1,112.73	188.45/083/2.03.02/2010		28 April 2010	28 April 2010	20 Juli 2025	III	1141/Min/11/2015	7 Oktober 2015	CNC Certified
30	A. Selang - Mentok	1500	908.94	-	908.94	188.45/084/2.03.02/2010		28 April 2010	28 April 2010	20 Juli 2025	III	1045/Min/11/2015	19 Juni 2015	CNC Certified
31	S. Terabik - Mentok	1501	1,695.00	-	1,695.00	188.45/085/2.03.02/2010	188.44/1049/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	III	1146/Min/11/2015	7 Oktober 2015	CNC Certified
32	A. Belo - Mentok	1502	1,419.00	-	1,419.00	188.45/591/2.03.01/2014	188.44/991/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	III	1059/Min/11/2015	19 Juni 2015	CNC Certified
33	S. Gemuruh/ S. Pait - Mentok	1503	150.30	-	150.30	188.45/087/2.03.02/2010	188.44/1037/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	III	1167/Min/11/2015	11/5/2015	CNC Certified
34	S. Daing - Mentok	1504	51.34	-	51.34	188.45/594/2.03.01/2014	188.44/1041/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	XIV	1203/Min/11/2015	17 Desember 2015	CNC Certified
35	S. Ketok - Mentok	1505	617.00	-	617.00	188.45/593/2.03.01/2014	188.44/1040/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	XVIII	1323/Min/11/2016	21 Desember 2016	CNC Certified
36	A. Kundi/ S. Sukal - Mentok	1506	1,870.00	-	1,870.00	188.45/090/2.03.02/2010	188.44/1039/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	III	1139/Min/11/2015	7 Oktober 2015	CNC Certified
37	Medang/ S. Jering - Mentok	P0222/ eks. 1507	1,986.70	-	1,986.70	188.45/091/2.03.02/2010		28 April 2010	28 April 2010	21 Juli 2027	XIV	1194/Min/11/2015	17 Desember 2015	CNC Certified
38	S. Muncung - Kelapa	1508	4,753.27	-	4,753.27	188.45/092/2.03.02/2010		28 April 2010	28 April 2010	20 Juli 2025	III	1076/Min/11/2015	1 Juli 2015	CNC Certified
39	Tempilang - Kelapa	1510	54.60	-	54.60	188.45/094/2.03.02/2010	188.44/1002/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	III	1224/Min/11/2016	5 Februari 2016	CNC Certified
40	Tg. Nyiur - Kelapa	P0220/ eks. 1544	1,115.00	-	1,115.00	188.45/595/2.03.01/2014	188.44/1038/DPE/2016	25 Okt 2016	25 Okt 2016	21 Juli 2027	III	1165/Min/11/2015	11/5/2015	CNC Certified
41	Lt. Tempilang - Kelapa	1545	-	5,383.49	5,383.49	188.45/096/2.03.02/2010		28 April 2010	28 April 2010	20 Juli 2025	III	1047/Min/11/2015	19 Juni 2015	CNC Certified
42	Lt. Kebiang/Penganak - Jebus	1549	-	15,050.00	15,050.00	188.45/097/2.03.02/2010		28 April 2010	28 April 2010	20 Juli 2025	III	1053/Min/11/2015	19 Juni 2015	CNC Certified
43	Lt. Bakit - Jebus	1551	-	1,461.00	1,461.00	188.45/098/2.03.02/2010		28 April 2010	28 April 2010	20 Juli 2025	III	1041/Min/11/2015	19 Juni 2015	CNC Certified
44	Lt. Ranggam/Lt. Belo - Mentok	1553	-	14,570.00	14,570.00	188.45/099/2.03.02/2010		28 April 2010	28 April 2010	20 Juli 2025	III	1143/Min/11/2015	7 Oktober 2015	CNC Certified
45	Lt. Bendul - Mentok	1554	-	4,644.20	4,644.20	188.45/100/2.03.02/2010		28 April 2010	28 April 2010	20 Juli 2025	XVII	1237/Min/11/2016	4/5/2016	CNC Certified

Num	REGENCY	DU NO	AREA (Ha)			DECREE NO		VALIDITY PERIIOD			CNC	CERTIFICATE NUMBER	DATE	DESC
			INLAND	OFFSHORE	TOTAL	PREVIOUS DECREE NUMBER	CURRENT DECREE NUMBER	ISSUANCE DATE	FROM	UP TO				
	Total	**45**	***48,785.84***	***41,108.69***	***89,894.53***		**32**							**34**
III	***BANGKA SELATAN***													
1	Nyelanding/ S. Ulin - Koba	1533	10,660.00	-	10,660.00	188.45/214/DPE/2010		30 April 2010	30 April 2010	20 Juli 2025	XVII	1320/Min/11/2016	15 Desember 2016	CNC Certified
2	Bedengung - Koba	1534	1,307.00	-	1,307.00	188.45/215/DPE/2010		30 April 2010	30 April 2010	20 Juli 2025	XIV	1188/Min/11/2015	17 Desember 2015	CNC Certified
3	Permis - Koba	1535	991.00	-	991.00	188.45/216/DPE/2010	188.44/982/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	XVIII	1308/Min/11/2016	11/14/2016	CNC Certified
4	Paku - Payung	1536	5,199.00	-	5,199.00	188.45/346/DPE/2012		7 Nov 2012	7 Nov 2012	20 Juli 2025	XIV	1201/Min/11/2015	17 Desember 2015	CNC Certified
5	Gadung - Toboali	1537	979.70	-	979.70	188.45/218/DPE/2010		30 April 2010	30 April 2010	20 Juli 2025	XIV	1197/Min/11/2015	17 Desember 2015	CNC Certified
6	Tg. Kubu - Toboali	1538	51.25	-	51.25	188.45/219/DPE/2010	188.44/1089/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	XIV	1192/Min/11/2015	17 Desember 2015	CNC Certified
7	Tg. Kemirai - Toboali	1539 A	322.40	-	322.40	188.45/220/DPE/2010	188.44/1021/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	XIV	1191/Min/11/2015	17 Desember 2015	CNC Certified
8	Tg. Kemirai - Toboali	1539 B	60.77	-	60.77	188.45/220/DPE/2010	188.44/1050/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025				
9	Tg. Kemirai - Toboali	1539 C	272.90	-	272.90	188.45/220/DPE/2010	188.44/1051/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025				
10	S. Kepoh - Koba	1540	3,155.00	-	3,155.00	188.45/221/DPE/2010		30 April 2010	30 April 2010	20 Juli 2025	II	1142/Min/11/2015	7 Oktober 2015	CNC Certified
11	P. Lepar - Pongok	1543	360.00	-	360.00	188.45/222/DPE/2010		30 April 2010	30 April 2010	20 Juli 2025	II	1044/Min/11/2015	19 Juni 2015	CNC Certified
12	Lt. Toboali - Toboali	1546	-	7,607.00	7,607.00	188.45/224/DPE/2010		30 April 2010	30 April 2010	20 Juli 2025	XIV	1193/Min/11/2015	17 Desember 2015	CNC Certified
13	Lt. Tg. Kubu - Toboali	P0221/ eks. 1547	-	4,403.00	4,403.00	188.45/225/DPE/2010		30 April 2010	30 April 2010	20 Juli 2025	II	1144/Min/11/2015	7 Oktober 2015	CNC Certified
14	Kepoh Cina - Toboali	1601	547.80	-	547.80	188.45/347/DPE/2012		7 Nov 2012	7 Nov 2012	20 Juli 2025	XVII	1253/Min/11/2016	4/22/2016	CNC Certified
15	Laut Permis	KP. PERMIS	-	398.42	398.42	188.45/172/DPE/2013		17 Juli 2013	28 Feb 2013	27 Feb 2023	XVII	1243/Min/11/2016	4/5/2016	CNC Certified
16	Laut Permis	KP. PERMIS B	-	199.85	199.85	188.45/227/DPE/2010		30 April 2010	30 April 2010	12 Juni 2025	XVII	1252/Min/11/2016	4/22/2016	CNC Certified
17	Laut Permis	KP. PERMIS C	-	749.70	749.70	188.45/228/DPE/2010		30 April 2010	30 April 2010	12 Juni 2025	XVIII	1307/Min/11/2016	11/14/2016	CNC Certified
18	Laut Permis	KP. PERMIS D	-	1,000.00	1,000.00	188.45/229/DPE/2010		30 April 2010	30 April 2010	22 Mei 2026	XVII	1248/Min/11/2016	4/15/2016	CNC Certified
	Total	***18***	***23,906.82***	***14,357.97***	***38,264.79***		**5**							**16**
IV	***BANGKA TENGAH***													

Num	REGENCY	DU NO	AREA (Ha)			DECREE NO		VALIDITY PERIIOD			CNC	CERTIFICATE NUMBER	DATE	DESC
			INLAND	OFFSHORE	TOTAL	PREVIOUS DECREE NUMBER	CURRENT DECREE NUMBER	ISSUANCE DATE	FROM	UP TO				
1	Pedindang - S. Selan	1526	689.40	-	689.40	188.45/690.a/DPE/2014	188.44/1028/DPE/2016	25 Okt 2016	25 Okt 2016	21 Jul 2025	I	1166/Min/11/2015	11/5/2015	CNC Certified
2	Kerakas/Keretak - S. Selan	1527	4,262.00	-	4,262.00	188.45/690.g/DPE/2014	188.44/1082/DPE/2016	25 Okt 2016	25 Okt 2016	21 Jul 2025	I	1046/Min/11/2015	19 Juni 2015	CNC Certified
3	Sarangmandi - S. Selan	1528	440.00	-	440.00	541.16/052/IUP-OP/DPE/2010		8 Apr 2010	8 Apr 2010	21 Jul 2025	I	1056/Min/11/2015	19 Juni 2015	CNC Certified
4	Cambai - Namang	1530	2,036.00	-	2,036.00	188.45/690.b/DPE/2014	188.44/1047/DPE/2016	25 Okt 2016	25 Okt 2016	21 Jul 2025	XVIII	1316/Min/11/2016	5 Desember 2016	CNC Certified
5	Kulur - Lubuk Besar	1531	10,960.00	-	10,960.00	188.45/690.d/DPE/2014	188.44/997/DPE/2016	25 Okt 2016	25 Okt 2016	21 Jul 2025	I	1322/Min/11/2016	15 Desember 2016	CNC Certified
6	Padang Mulia - Koba	1532	356.80	-	356.80	188.45/690.c/DPE/2014	188.44/999/DPE/2016	25 Okt 2016	25 Okt 2016	21 Jul 2025	XVI	1200/Min/11/2015	17 Desember 2015	CNC Certified
7	Kerakas - S. Selan	1583	3,101.00	-	3,101.00	541.16/056/IUP-OP/DPE/2010	188.44/998/DPE/2016	25 Okt 2016	25 Okt 2016	21 Jul 2025	I	1092/Min/11/2015	10 Juli 2015	CNC Certified
8	Lt. Tg. Beriga - Lubuk Besar	1584	-	5,039.17	5,039.17	541.16/3656/DPE/2011		11 Mei 2011	11 Mei 2011	21 Jul 2025	XIV	1195/Min/11/2015	17 Desember 2015	CNC Certified
	Total	***8***	***21,845.20***	***5,039.17***	***26,884.37***		**5**							**8**
V	***BELITUNG***													
1	A. Sijuk - Sijuk	1605	823.20	-	823.20	104/IUP-OP/DPE/2010	188.44/977/DPE/2016	25 Okt 2016	25 Okt 2016	21 Juli 2025	XIV	1190/Min/11/2015	17 Desember 2015	CNC Certified
2	S.Membalong - Membalong	PO232/Eks 1568 B	3,767.00	-	3,767.00	105/IUP-OP/DPE/2010	188.44/1000/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2026	XVII	1241/Min/11/2016	4/5/2016	CNC Certified
3	A.Sengkeli- Sijuk/Badau	1603	815.70	-	815.70	106/IUP-OP/DPE/2010		26-Apr-10	21 Juli 1995	21 Juli 2025	II	1145/Min/11/2015	7 Oktober 2015	CNC Certified
4	Tg.Arabulan - Membalong	PO266/Eks 1569 A	134.30	-	134.30	107/IUP-OP/DPE/2010	188.44/1019/DPE/2016	25 Okt 2016	25 Okt 2016	21 Juli 2025	XVII	1254/Min/11/2016	4/22/2016	CNC Certified
5	Tg.Arabulan - Membalong	PO266/Eks 1569 B	2,470.00	-	2,470.00	107/IUP-OP/DPE/2010	188.44/1018/DPE/2016	25 Okt 2016	25 Okt 2016	21 Juli 2025				
6	A.Belonsotan - Sijuk	1570	308.70	-	308.70	108/IUP-OP/DPE/2010	188.44/992/DPE/2016	25 Okt 2016	25 Okt 2016	21 Juli 2025	XIV	1208/Min/11/2016	4 Januari 2016	CNC Certified
7	S.Membalong - Membalong	PO232/Eks 1568 A	3,590.00	-	3,590.00	109/IUP-OP/DPE/2010	188.44/1024/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2026	II	1069/Min/11/2015	30 Juni 2015	CNC Certified
8	S.Membalong - Membalong	PO232/Eks 1568 C 1	1,307.00	-	1,307.00	110/IUP-OP/DPE/2010	188.44/1027/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2026	II	1091/Min/11/2015	10 Juli 2015	CNC Certified
9	S.Membalong - Membalong	PO232/Eks 1568 C 2	46.90	-	46.90	110/IUP-OP/DPE/2010	188.44/1020/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2026				
	Total	***9***	***13,262.80***		***13,262.80***		***8***							**7**
VI	***BELITUNG TIMUR***													

Num	REGENCY	DU NO	AREA (Ha)			DECREE NO		VALIDITY PERIIOD			CNC	CERTIFICATE NUMBER	DATE	DESC
			INLAND	OFFSHORE	TOTAL	PREVIOUS DECREE NUMBER	CURRENT DECREE NUMBER	ISSUANCE DATE	FROM	UP TO				
1	S. Pring - Kelapa Kampit	P0228/ eks.1577	1,244.00	-	1,244.00	188.44/907/DPE/2015	188.44/985/DPE/2016	25 Okt 2016	25 Okt 2016	27 Mart 2026	XVIII	1311/Min/11/2016	11/14/2016	CNC Certified
2	S. Manggar - Manggar	P0227/ eks.1576 A	5,915.00	-	5,915.00	503/005/OP-L/BPPT/2011	188.44/1023/DPE/2016	25 Okt 2016	25 Okt 2016	21 Juli 2025	XVII	1251/Min/11/2016	4/22/2016	CNC Certified
3	S. Manggar - Manggar	P0227/ eks.1576 B	6,408.00	-	6,408.00	503/006/OP-L/BPPT/2011	188.44/1004/DPE/2016	25 Okt 2016	25 Okt 2016	21 Juli 2025	XVII	1247/Min/11/2016	4/15/2016	CNC Certified
4	S. Manggar - Manggar	P0227/ eks.1576 C	4,653.00	-	4,653.00	503/007/OP-L/BPPT/2011	188.44/986/DPE/2016	25 Okt 2016	25 Okt 2016	21 Juli 2025	I	1118/Min/11/2015	9/30/2015	CNC Certified
5	S. Manggar - Manggar	P0227/ eks.1576 D	3,389.00	-	3,389.00	503/008/OP-L/BPPT/2011	188.44/1017/DPE/2016	25 Okt 2016	25 Okt 2016	21 Juli 2025	XIV	1202/Min/11/2015	17 Desember 2015	CNC Certified
6	Lt. Manggar - Manggar	1562	-	30,910.00	30,910.00	503/002/OP-L/BPMPT/2015		6 Feb 2015	6 Feb 2015	21 Juli 2025	XVII	1236/Min/11/2016	4/5/2016	CNC Certified
7	A. Kunang - Lenggang	1575	1,286.00	-	1,286.00	188.44/906/DPE/2015		28 Agt 15	28 Agt 15	21 Juli 2025	XVIII	1312/Min/11/2016	11/14/2016	CNC Certified
8	S. Senusa/Pesak - Lenggang	P0226/ eks.1574	7,285.00	-	7,285.00	503/011/OP-L/BPPT/2011	188.44/976/DPE/2016	25 Okt 2016	25 Okt 2016	21 Juli 2025	XIV	1196/Min/11/2015	17 Desember 2015	CNC Certified
9	Lenggang (Hematite)	P0320/ eks.1609	175.00	-	175.00	503/090/OP-L/BPPT/2010		30 Aprl 10	02 Des 1997	27 Mart 2026	XVIII	1310/Min/11/2016	11/14/2016	CNC Certified
10	Bukit Mengkayar Mengkubang	KP Batu Besi	9.50	-	9.50	503/031/OP-L/BPMPT/2014		22 Dec 2014	22 Dec 2014	27 Juli 2015				Not yet Reg CnC
11	Bukit Kemujaan Mengkubang	KP Batu Besi	3.80	-	3.80	503/032/OP-L/BPMPT/2014		22 Dec 2014	22 Dec 2014	27 Juli 2015	XVII	1246/Min/11/2016	4/8/2016	CNC Certified
	Total	***11***	***30,368.30***	***30,910.00***	***61,278.30***		***6***							**10**

VII	***Cross-District***													
1	Penagan - Mendo Barat	1524	10,530.00		10,530.00	188.44/390/DPE/2010	188.44/993/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	I	1058/Min/11/2015	19 Juni 2015	CNC Certified
2	S. Menduk - Mendo Barat	1525	3,479.00		3,479.00	188.44/389/DPE/2010	188.44/996/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	I	1062/Min/11/2015	25 Juni 2015	CNC Certified
	Total 2 IUP (Bangka & Bangka Tengah)		**14,009.00**											
1	Lt Cupat - Belinyu	P0223/eks 1550		19,510.00	19,510.00	188.44/388/DPE/2010		30 Aprl 2010	21 Juli 2009	20 Juli 2025	I	1050/Min/11/2015	19 Juni 2015	CNC Certified
2	Tempilang - Kelapa	1509	4,156.78	-	4,156.78	188.45/093/2.03.02/2010	188.44/1022/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	III	1071/Min/11/2015	1 Juli 2015	CNC Certified
	Total 2 IUP (Bangka & Bangka Barat)			**19,510.00**										

1	Pangkol - Pangkalan Baru	1529	4,382.00		4,382.00	188.44/391/DPE/2010	188.44/990/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	I	1063/Min/11/2015	25 Juni 2015	CNC Certified

C-20

Num	REGENCY	DU NO	AREA (Ha)			DECREE NO		VALIDITY PERIIOD			CNC	CERTIFICATE NUMBER	DATE	DESC
			INLAND	OFFSHORE	TOTAL	PREVIOUS DECREE NUMBER	CURRENT DECREE NUMBER	ISSUANCE DATE	FROM	UP TO				
2	Lt Sampur/Lt Kurau - Koba	1556		8,981.00	8,981.00	188.44/393/DPE/2010		30 Aprl 2010	21 Juli 2009	20 Juli 2025	I	1219/Min/11/2016	5 Februari 2016	CNC Certified
	Total 2 IUP (Bangka Tengah & Pangkalpinang)		**4,382.00**	**8,981.00**										
1	Toboali Selatan - Toboali (Blok A)	1541 blok A	29,629.00		29,629.00	188.44/394/DPE/2010	188.44/988/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	I	1093/Min/11/2015	10 Juli 2015	CNC Certified
	Toboali Selatan - Toboali (Blok B)	1541 blok B	26,910.00		26,910.00									
	Total 1 IUP (Bangka Tengah & Bangka Selatan)		**56,539.00**											
			79,086.78	*28,491.000*	***107,577.78***									
1	S.Cerucuk - Tg.Pandan	P0225/eks.1573	5,954.00		*5,954.00*	188.44/386/DPE/2010	188.44/994/DPE/2016	25 Okt 2016	25 Okt 2016	20 Juli 2025	I	1222/Min/11/2016	5 Februari 2016	CNC Certified
2	S.Buding - Kelapa Kampit	P0230/eks.1578	607.70		*607.70*	188.44/387/DPE/2010	188.44/ /DPE/2016	30 Aprl 2010	21 Juli 2009	20 Juli 2025	I	1051/Min/11/2015	19 Juni 2015	CNC Certified
3	A.Jangkal - Kelapa Kampit	P0299/eks.1579	1,625.00		*1,625.00*	188.44/385/DPE/2010		30 Aprl 2010	21 Juli 2009	20 Juli 2025	I	1054/Min/11/2015	19 Juni 2015	CNC Certified
4	G.Tampong - Kelapa Kampit (Blok A)	P0231/eks.1580	413.30		413.30	188.44/384/DPE/2010		30 Aprl 2010	21 Juli 2009	20 Juli 2025	I	1042/min/11/2015	19 Juni 2015	CNC Certified
	G.Tampong - Kelapa Kampit (Blok B)	P0231/eks.1580	805.70		805.70	188.44/384/DPE/2010								
	Total 4 IUP (Belitung & Belitung Timur)		**9,405.70**											
	Total	**11**	***88,492.48***	***28,491.00***	**116,983.48**		**5**							**10**
	Total IUP Provinsi Kep. Babel	**122**	***288,729.45***	***139,662.83***	**428,392.28**									**104**
VIII	***KARIMUN***													

Num	REGENCY	DU NO	AREA (Ha)			DECREE NO		VALIDITY PERIIOD			CNC	CERTIFICATE NUMBER	DATE	DESC
			INLAND	OFFSHORE	TOTAL	PREVIOUS DECREE NUMBER	CURRENT DECREE NUMBER	ISSUANCE DATE	FROM	UP TO				
1	Lt. Kobil - Kundur	621	-	10,475.00	10,475.00	No. 114 Tahun 2011		11 Mei 2011	11 Mei 2011	20 Juli 2025	XVI	1180/Min/11/2015	11/25/2015	CNC Certified
2	Lt. Pelambung - Karimun	747D	-	2,740.00	2,740.00	No. 115 Tahun 2011		11 Mei 2011	11 Mei 2011	20 Juli 2025	XVI	1179/Min/11/2015	11/25/2015	CNC Certified
3	Lt. Timun Kundur Barat	618 Blok B	-	3,251.00	3,251.00	No. 224 Tahun 2014		06 October 2014	06 October 2014	28 April 2020	XVI	1177/Min/11/2015	11/25/2015	CNC Certified
4	Lt. Timun Kundur Barat	618 Blok C	-	2,409.00	2,409.00	No. 225 Tahun 2014		06 October 2014	06 October 2014	28 April 2020	XVI	1178/Min/11/2015	11/25/2015	CNC Certified
	Total	***4***	***.000***	***18,875.00***	***18,875.00***									4
IX	***KEPULAUAN RIAU***													
1	Lt. Timun - Kundur	618/RIAU	-	3,426.00	3,426.00	No. 1003 Tahun 2014		23 September 2014	23 September 2014	19 March 2018	XV	1229/Min/11/2016	7 Maret 2016	CNC Certified
2	Lt. Kundur Barat	KEPRI	-	3,114.00	3,114.00	No. 1002 Tahun 2014		23 September 2014	23 September 2014	19 March 2018	IV	1104/Min/11/2015	31 Juli 2015	CNC Certified
	Total	***2***	***.00***	***6,540.00***	***6,540.00***									2
X	***CROSS PROVINCE***													
1	Lt. Kundur Barat - Kundur	P0264/ eks. 956	-	19,594.20	19,594.20	2928K/30/MEM/2011		14 Nov 2011	14 Nov 2011	13 Nov 2026				Not yet Reg CnC
	Jml IUP lintas Prov	***1***		***19,594.20***	***19,594.20***									***1***
Total IUP Prov. Kepri and Kab. Karimun		***7***	.00	***45,009.20***	***45,009.20***									**6**
	Total	***129***	***288,729.45***	***184,672.03***	***473,401.48***		72							110

C-22

II. RESOURCES STATEMENT

The classification of tin resources blocks is based on geological knowledge and confidence level which supported by geological modeling comprises search radius, interpolation parameter, drilling grid, surface position, number of drill holes.

Measured Resources : It is a part of mineral resources where tonnage, density, shape, physical characteristics, content, and mineral content can be estimated with a high level of trust. The radius is approximately 2/3 of the homogeneous range

Indicated Resources : It is a part of mineral resources where tonnage, density, shape, physical characteristics, content, and mineral content can be estimated with reasonable levels of trust. Radius spacing is greater than 2/3 and less than the maximum range of semi variogram.

Inferred Resources : It is a part of mineral resources where tonnage, grade, and mineral content can be estimated with a low level of trust. The search radius is larger than the semi-variogram range.

Resources statements for all deposits are summarized in the table as follows:

RESOURCES	VOLUME (m3)	GRADE (kg/m3)	TONNAGE (tonnes)
MEASURED	2,105,102,125	0.214	450,484
INDICATED	938,758,016	0.139	130,711
INFERRED	1,265,630,004	0.170	215,148
TOTAL	**4,309,490,145**	**0.185**	**796,343**

2.1 Alluvial Resources Estimation and Statement

Based on the alluvial tin estimation activity in Bangka and Belitung Island by PT TIMAH Tbk, the following resources are obtained:

Table 2.1 Total Resources in Bangka, Belitung, Karimun and Kundur

RESOURCES	AREA (m2)	DEPTH (m)	VOLUME (m3)	GRADE (kg/m3)	TONNAGE (tonnes)	DESC.
RESOURCES ALLUVIAL TIN						
A.MEASURED						
INLAND	49,082,210	5.42	265,811,449	0.204	54,155	Insitu
	331,405	6.84	2,265,338	0.153	346	Tailing
OFFSHORE	98,266,569	16.73	1,644,071,395	0.201	330,779	Insitu
	12,832,847	14.51	186,217,185	0.208	38,647	Tailing
SUM	**147,348,779**	**12.96**	**1,909,882,844**	**0.202**	**384,934**	Insitu
	13,164,252	**14.32**	**188,482,523**	**0.207**	**38,993**	Tailing
SUBTOTAL	**160,513,031**	**13.07**	**2,098,365,367**	**0.202**	**423,928**	
B.INDICATED						
INLAND	17,102,607	5.60	95,770,224	0.086	8,208	Insitu
	119,341	6.09	727,010	0.092	67	Tailing
OFFSHORE	54,868,640	14.07	772,050,563	0.084	64,850	Insitu
	6,005,357	9.80	58,841,844	0.098	5,792	Tailing
SUM	**71,971,247**	**12.06**	**867,820,787**	**0.084**	**73,058**	Insitu
	6,124,698	**9.73**	**59,568,854**	**0.098**	**5,859**	Tailing
SUBTOTAL	**78,095,945**	**11.88**	**927,389,641**	**0.085**	**78,917**	
C.INFERRED						
INLAND	6,064,281	7.22	43,797,420	0.065	2,846	Insitu
	151,597,113	5.08	770,460,709	0.189	145,320	Tailing
OFFSHORE	31,574,681	12.82	404,766,175	0.072	29,226	Insitu
	3,143,060	8.66	27,205,789	0.111	3,013	Tailing
SUM	**37,638,962**	**11.92**	**448,563,595**	**0.071**	**32,071**	Insitu
	154,740,173	**5.15**	**797,666,498**	**0.186**	**148,332**	Tailing
SUBTOTAL	**192,379,135**	**6.48**	**1,246,230,093**	**0.145**	**180,404**	
ALLUVIAL RESOURCES	**256,958,988**	**36.94**	**3,226,267,226**	**0.357**	**490,064**	Insitu
	174,029,123	**29.20**	**1,045,717,875**	**0.491**	**193,185**	Tailing
TOTAL ALLUVIAL RESOURCES	**430,988,111**	**61.88**	**4,271,985,101**	**0.644**	**683,249**	

Note :

- Interpretation is based on natural cut-off grade of 0.051 kg / m3 for alluvial
- Statistical descriptive analysis is performed to determine the upper limit which limits the influence of extreme levels
- Resources estimation system is based on polygon method (Simple Reserves)
- The classification of insitu tin deposit resources comprises measured, indicated, and inferred resources.
- Resources classification of tin tailings deposited at offshore is categorized as measured, indicated and inferred resources as long as drilling is conducted.
- The classification of tin deposit resources in the open area which based on interpretation of satellite imagery is classified as inferred resources

a. Estimation Based on Island

Bangka Island

Mining permit (IUP) of PT Timah Tbk and total estimation of resources in Bangka Region can be seen in Figure 2.1 and Table 2.2

Figure 2.1 Situation Map of PT Timah's Mining Permit in Bangka

The results of tin resources estimation which based on the island can be seen in the tables below:

Table 2.2 Total Resources in Bangka Island

REGION	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
Total Bangka	Onshore	244,726,238	0.206	50,519	Measured	Insitu
		81,657,956	0.086	7,025	Indicated	
		42,721,810	0.064	2,753	Inferred	
		369,106,004	0.163	60,297	**Subtotal**	
		2,196,743	0.156	343	Measured	Tailing
		679,818	0.095	64	Indicated	
		692,785,814	0.191	132,266	Inferred	
		695,662,375	0.191	132,673	**Subtotal**	
		1,064,768,379	**0.181**	**192,970**	**Total**	
	Offshore	973,031,339	0.194	188,633	Measured	Insitu
		531,028,156	0.087	46,277	Indicated	
		183,567,329	0.061	11,123	Inferred	
		1,687,626,824	0.146	246,032	**Subtotal**	
		157,699,348	0.218	34,411	Measured	Tailing
		37,610,591	0.102	3,843	Indicated	
		21,616,890	0.119	2,569	Inferred	
		216,926,829	0.188	40,823	**Subtotal**	
		1,904,553,653	**0.151**	**286,856**	**Total**	

Belitung Island

Mining Permit (IUP) of PT Timah Tbk and total resources estimation in Belitung Island can be seen in Figure 2.2 and Table 2.3

Figure 2.2 Situation Map of PT Timah's Mining Permit in Belitung

Table 2.3 Total Resources in Belitung Island

DISTRICT	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
Total Belitung	Inland	21,085,211	0.172	3,636	Measured	Insitu
		14,112,268	0.084	1,184	Indicated	
		1,075,610	0.086	93	Inferred	
		36,273,089	0.135	4,912	**Subtotal**	
		68,595	0.055	4	Measured	Tailing
		47,192	0.055	3	Indicated	
		77,674,895	0.168	13,054	Inferred	
		77,790,682	0.168	13,060	**Subtotal**	
		114,063,771	**0.158**	**17,972**	**Total**	
	Offshore	162,782,067	0.259	42,096	Measured	Insitu
		75,360,664	0.094	7,073	Indicated	
		133,103,523	0.084	11,192	Inferred	
		371,246,254	0.163	60,362	**Subtotal**	
		1,695,350	0.184	312	Measured	Tailing
		677,182	0.086	58	Indicated	
		565,358	0.207	117	Inferred	
		2,937,890	0.166	487	**Subtotal**	
		374,184,144	**0.163**	**60,849**	**Total**	

Karimun Kundur Island

Mining permit (IUP) of PT Timah Tbk and total resources estimation in Karimun Kundur Island can be seen in Figure 2.3 and Table 2.4

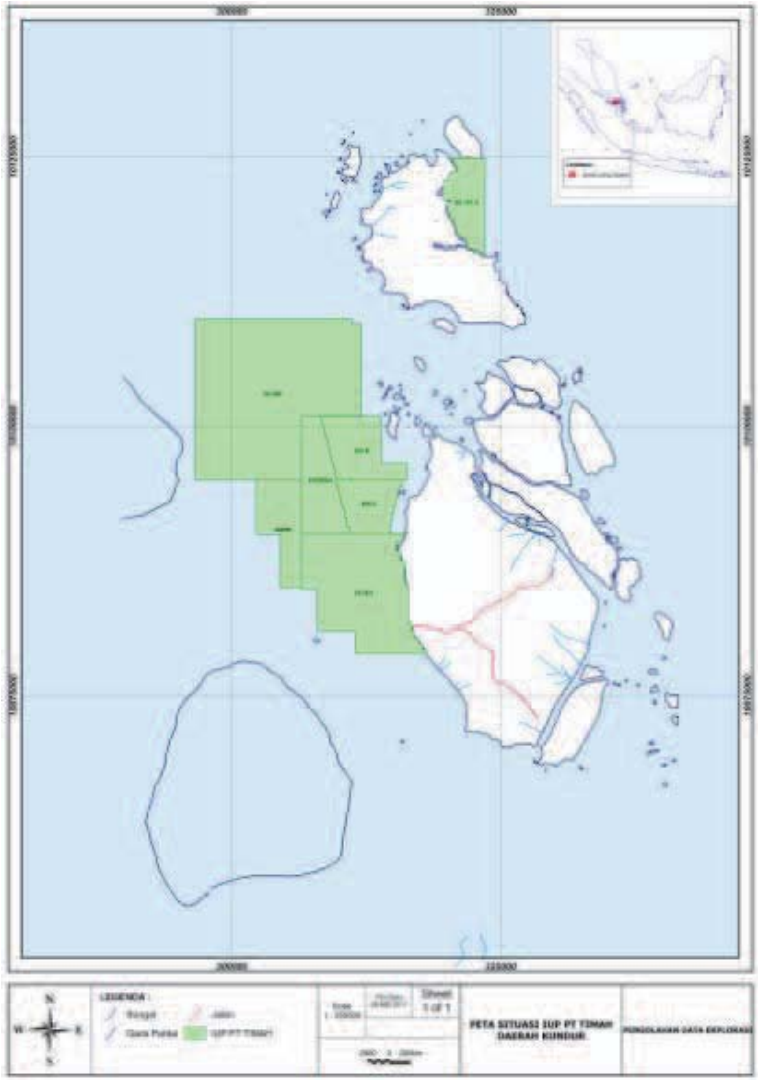


Figure 2.3 Situation Map of Mining Permit PT Timah in Karimun Kundur

Table 2.4 Total Resources of Karimun Kundur Island

REGION	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
Total Karimun Kundur	Offshore	508,257,989	0.197	100,050	Measured	Insitu
		165,661,743	0.069	11,500	Indicated	
		88,095,323	0.078	6,911	Inferred	
		762,015,055	**0.155**	**118,461**	**Subtotal**	
		26,822,487	0.146	3,924	Measured	Tailing
		20,554,071	0.092	1,890	Indicated	
		5,023,541	0.065	326	Inferred	
		52,400,099	**0.117**	**6,141**	**Subtotal**	
		140,495,422	**0.887**	**124,601**	**TOTAL**	

b. Estimation Based on Mining Permit

Tin resources estimation which based on IUP can be seen in the tables below:

Table 2.5 Total Resources Per Mining Permit (IUP)

- **Bangka Island**

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
1	Bubus - Belinyu	1511	390,274	0.219	85	Measured	Insitu
			-	-	-	Indicated	
			29,938	0.019	1	Inferred	
			420,212	0.204	86	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			2,640,559	0.158	418	Inferred	
			2,640,559	0.158	418	**Subtotal**	
			3,060,771	**0.363**	**504**	**Total**	
2	Gunung Muda - Belinyu	1512	8,952,579	0.246	2,200	Measured	Insitu
			2,076,180	0.102	212	Indicated	
			92,956	0.102	9	Inferred	
			11,121,715	0.218	2,421	**Subtotal**	
			22,761	0.099	2	Measured	Tailing
			-	-	-	Indicated	
			50,143,296	0.167	8,397	Inferred	
			50,166,057	0.167	8,400	**Subtotal**	

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			61,287,772	**0.385**	**10,821**	**Total**	
3	S. Sembuang - Belinyu	1513	3,302,108	0.140	463	Measured	Insitu
			645,004	0.121	78	Indicated	
			67,484	0.045	3	Inferred	
			4,014,596	0.136	544	**Subtotal**	
			47,750	0.066	3	Measured	Tailing
			-	-	-	Indicated	
			29,007,215	0.160	4,644	Inferred	
			29,054,965	0.160	4,647	**Subtotal**	
			33,069,561	**0.295**	**5,191**	**Total**	
4	A. Parak - Belinyu	1514	-	-	-	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			4,502	0.486	2	Inferred	
			4,502	0.486	2	**Subtotal**	
			4,502	**0.486**	**2**	**Total**	
5	S. Simping - Belinyu	1515	998,348	0.211	211	Measured	Insitu
			286,074	0.062	18	Indicated	
			147,520	0.046	7	Inferred	
			1,431,942	0.164	235	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			895,287	0.150	135	Inferred	
			895,287	0.150	135	**Subtotal**	
			2,327,229	**0.315**	**370**	**Total**	
6	S. Mapur - Belinyu	1516	2,761,262	0.155	427	Measured	Insitu
			2,393,646	0.079	190	Indicated	
			523,706	0.059	31	Inferred	
			5,678,614	0.114	648	**Subtotal**	
			655,790	0.178	117	Measured	Tailing
			224,086	0.067	15	Indicated	
			48,842,174	0.138	6,717	Inferred	
			49,722,050	0.138	6,849	**Subtotal**	
			55,400,664	**0.252**	**7,497**	**Total**	
7	S. Lumut -	PO218/	27,991,854	0.208	5,820	Measured	Insitu

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
	Belinyu	Eks. 1517	9,806,445	0.093	911	Indicated	
			6,247,286	0.089	556	Inferred	
			44,045,585	0.165	7,288	**Subtotal**	
			783,637	0.152	119	Measured	Tailing
			288,893	0.108	31	Indicated	
			74,667,730	0.170	12,714	Inferred	
			75,740,260	0.170	12,865	**Subtotal**	
			119,785,845	**0.335**	**20,152**	**Total**	
8	S. Deniang - Sungailiat	1518 A	5,727,515	0.172	987	Measured	Insitu
			3,180,054	0.092	291	Indicated	
			108,346	0.063	7	Inferred	
			9,015,915	0.143	1,285	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			37,383,966	0.157	5,861	Inferred	
			37,383,966	0.157	5,861	**Subtotal**	
			46,399,881	**0.299**	**7,146**	**Total**	
9	S. Deniang - Sungailiat	1518 B	495,687	0.164	81	Measured	Insitu
			1,102,149	0.063	69	Indicated	
			65,782	0.040	3	Inferred	
			1,663,618	0.092	153	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			6,844,400	0.134	917	Inferred	
			6,844,400	0.134	917	**Subtotal**	
			8,508,018	**0.226**	**1,071**	**Total**	
10	Parit Padang - Sungailiat	1519	1,592,215	0.208	330	Measured	Insitu
			257,366	0.106	27	Indicated	
			5,680	0.065	0	Inferred	
			1,855,261	0.193	358	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			1,717,091	0.205	352	Inferred	
			1,717,091	0.205	352	**Subtotal**	
			3,572,352	**0.398**	**710**	**Total**	
11	Parit Padang - Sungailiat	PO344/ Eks. 1520	11,123,070	0.229	2,550	Measured	Insitu
			422,018	0.115	49	Indicated	
			197,690	0.098	19	Inferred	

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			11,742,778	0.223	2,618	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			17,366,857	0.247	4,292	Inferred	
			17,366,857	0.247	4,292	**Subtotal**	
			29,109,635	**0.470**	**6,911**	**Total**	
12	Rebo Batu Ampar - Sungailiat	1521	11,838,539	0.211	2,501	Measured	Insitu
			857,801	0.138	119	Indicated	
			177,345	0.064	11	Inferred	
			12,873,685	0.204	2,631	**Subtotal**	
			16,925	0.133	2	Measured	Tailing
			-	-	-	Indicated	
			11,348,940	0.184	2,085	Inferred	
			11,365,865	0.184	2,087	**Subtotal**	
			24,239,550	**0.388**	**4,718**	**Total**	
13	Merawang/ Kenanga	1522	1,376,884	0.186	256	Measured	Insitu
			212,072	0.083	18	Indicated	
			64,893	0.072	5	Inferred	
			1,653,849	0.168	278	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			3,053,395	0.197	601	Inferred	
			3,053,395	0.197	601	**Subtotal**	
			4,707,244	**0.365**	**879**	**Total**	
14	Jurung - Merawang	1523	20,630	0.211	4	Measured	Insitu
			57,958	0.072	4	Indicated	
			27,513	0.018	0	Inferred	
			106,101	0.085	9	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			3,473,269	0.186	646	Inferred	
			3,473,269	0.186	646	**Subtotal**	
			3,579,370	**0.271**	**655**	**Total**	
15	A. Pugul - Belinyu	1602	323,185	0.253	82	Measured	Insitu
			165,066	0.112	18	Indicated	
			-	-	-	Inferred	
			488,251	0.205	100	**Subtotal**	
			-	-	-	Measured	Tailing

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			-	-	-	Indicated	
			341,718	0.180	62	Inferred	
			341,718	0.180	62	**Subtotal**	
			829,969	**0.386**	**162**	**Total**	
16	S. Kebiang - Jebus	1484	130,879	0.263	34	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			130,879	0.263	34	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			2,224,139	0.217	483	Inferred	
			2,224,139	0.217	483	**Subtotal**	
			2,355,018	**0.480**	**517**	**Total**	
17	S. Buluh Semulut	1485 A.1	344,309	0.179	62	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			344,309	0.179	62	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			76,224	0.334	25	Inferred	
			76,224	0.334	25	**Subtotal**	
			420,533	**0.513**	**87**	**Total**	
18	S. Buluh Semulut	1485 A.2	9,665,708	0.215	2,077	Measured	Insitu
			1,131,831	0.104	118	Indicated	
			-	-	-	Inferred	
			10,797,539	0.203	2,195	**Subtotal**	
			-	-	-	Measured	Tailing
			29,082	0.071	2	Indicated	
			22,153,669	0.219	4,842	Inferred	
			22,182,751	0.218	4,844	**Subtotal**	
			32,980,290	**0.422**	**7,039**	**Total**	
19	S. Buluh Semulut	1485 A.3	403,569	0.202	82	Measured	Insitu
			392,709	0.059	23	Indicated	
			-	-	-	Inferred	
			796,278	0.132	105	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			3,786,377	0.221	836	Inferred	

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			3,786,377	0.221	836	**Subtotal**	
			4,582,655	**0.353**	**941**	**Total**	
20	S. Buluh Semulut	1485 A.4	10,330	0.213	2	Measured	Insitu
			96,416	0.049	5	Indicated	
			-	-	-	Inferred	
			106,746	0.065	7	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			443,489	0.406	180	Inferred	
			443,489	0.406	180	**Subtotal**	
			550,235	**0.471**	**187**	**Total**	
21	Penganak - Cupat	1485 B.1	459,020	0.213	98	Measured	Insitu
			33,672	0.029	1	Indicated	
			5,924	0.176	1	Inferred	
			498,616	0.200	100	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			1,338,305	0.350	468	Inferred	
			1,338,305	0.350	468	**Subtotal**	
			1,836,921	**0.550**	**568**	**Total**	
22	Penganak - Cupat	1485 B.2	1,039,926	0.170	177	Measured	Insitu
			33,489	0.126	4	Indicated	
			-	-	-	Inferred	
			1,073,415	0.169	181	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			12,045,323	0.236	2,839	Inferred	
			12,045,323	0.236	2,839	**Subtotal**	
			13,118,738	**0.405**	**3,021**	**Total**	
23	Penganak - Cupat	1485 B.3	1,064,808	0.202	215	Measured	Insitu
			96,279	0.070	7	Indicated	
			-	-	-	Inferred	
			1,161,087	0.191	221	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			4,486,326	0.194	872	Inferred	
			4,486,326	0.194	872	**Subtotal**	
			5,647,413	**0.385**	**1,094**	**Total**	

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
24	Penganak - Cupat	1485 B.4	1,420,484	0.233	331	Measured	Insitu
			54,429	0.073	4	Indicated	
			-	-	-	Inferred	
			1,474,913	0.227	335	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			2,651,579	0.201	532	Inferred	
			2,651,579	0.201	532	**Subtotal**	
			4,126,492	**0.428**	**867**	**Total**	
25	Penganak - Cupat	1485 B.5	126,860	0.266	34	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			126,860	0.266	34	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			89,336	0.182	16	Inferred	
			89,336	0.182	16	**Subtotal**	
			216,196	**0.448**	**50**	**Total**	
26	Penganak - Cupat	1485 B.6	1,069,770	0.289	309	Measured	Insitu
			67,357	0.095	6	Indicated	
			-	-	-	Inferred	
			1,137,127	0.277	316	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			1,137,127	**0.277**	**316**	**Total**	
27	S. Bembang - Jebus	1486	217,990	0.134	29	Measured	Insitu
			55,652	0.081	5	Indicated	
			-	-	-	Inferred	
			273,642	0.123	34	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			1,072,775	0.137	147	Inferred	
			1,072,775	0.137	147	**Subtotal**	
			1,346,417	**0.260**	**181**	**Total**	
28	S. Petar - Jebus	1487	566,155	0.196	111	Measured	Insitu
			64,321	0.090	6	Indicated	

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			-	-	-	Inferred	
			630,476	0.185	117	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			3,349,298	0.212	712	Inferred	
			3,349,298	0.212	712	**Subtotal**	
			3,979,774	**0.398**	**828**	**Total**	
29	S. Selimbang - Jebus	1488	244,836	0.161	39	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			244,836	0.161	39	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			74,490	0.096	7	Inferred	
			74,490	0.096	7	**Subtotal**	
			319,326	**0.257**	**47**	**Total**	
30	Tg. Pemuja - Jebus	1489	77,667	0.167	13	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			77,667	0.167	13	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			123,564	0.247	30	Inferred	
			123,564	0.247	30	**Subtotal**	
			201,231	**0.413**	**43**	**Total**	
31	Tg. Berhala - Mentok	1490 A	5,652	0.333	2	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			5,652	0.333	2	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			382,651	0.209	80	Inferred	
			382,651	0.209	80	**Subtotal**	
			388,303	**0.541**	**82**	**Total**	
32	Tg. Berhala - Mentok	1490 B	3,814	0.067	0	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			3,814	0.067	0	**Subtotal**	

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			141,563	0.145	21	Inferred	
			141,563	0.145	21	**Subtotal**	
			145,377	**0.213**	**21**	**Total**	
33	Tg. Berhala - Mentok	1490 C	9,243	0.170	2	Measured	Insitu
			5,899	0.056	0	Indicated	
			-	-	-	Inferred	
			15,142	0.126	2	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			203,632	0.228	46	Inferred	
			203,632	0.228	46	**Subtotal**	
			218,774	**0.354**	**48**	**Total**	
34	Tg. Berhala - Mentok	1490 D	14,211	0.068	1	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			14,211	0.068	1	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			14,211	**0.068**	**1**	**Total**	
35	Tg. Berhala - Mentok	1490 E	7,471	0.179	1	Measured	Insitu
			1,653	0.211	0	Indicated	
			-	-	-	Inferred	
			9,124	0.184	2	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			891,981	0.162	144	Inferred	
			891,981	0.162	144	**Subtotal**	
			901,105	**0.346**	**146**	**Total**	
36	A. Biat - Mentok	1491	328,034	0.164	54	Measured	Insitu
			20,148	0.046	1	Indicated	
			-	-	-	Inferred	
			348,182	0.157	55	**Subtotal**	
			25,754	0.088	2	Measured	Tailing
			-	-	-	Indicated	

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			3,918,423	0.186	729	Inferred	
			3,944,177	0.185	731	**Subtotal**	
			4,292,359	**0.342**	**786**	**Total**	
37	S. Bendul - Mentok	1492	37,480	0.065	2	Measured	Insitu
			217,825	0.204	44	Indicated	
			-	-	-	Inferred	
			255,305	0.184	47	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			8,283,986	0.230	1,907	Inferred	
			8,283,986	0.230	1,907	**Subtotal**	
			8,539,291	**0.414**	**1,953**	**Total**	
38	A. Sukai - Mentok	1493	1,013,566	0.167	169	Measured	Insitu
			94,464	0.084	8	Indicated	
			-	-	-	Inferred	
			1,108,030	0.160	177	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			4,093,051	0.161	658	Inferred	
			4,093,051	0.161	658	**Subtotal**	
			5,201,081	**0.321**	**835**	**Total**	
39	Mayang/ A. Rambat - Mentok	1494	2,766,185	0.203	562	Measured	Insitu
			1,793,301	0.209	374	Indicated	
			-	-	-	Inferred	
			4,559,486	0.205	937	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			26,499,163	0.208	5,522	Inferred	
			26,499,163	0.208	5,522	**Subtotal**	
			31,058,649	**0.414**	**6,458**	**Total**	
40	S. Remunding - Mentok	1495	13,034	0.057	1	Measured	Insitu
			60,055	0.049	3	Indicated	
			-	-	-	Inferred	
			73,089	0.050	4	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			73,089	**0.050**	**4**	**Total**	
41	S. Pelangas - Mentok	1496	384,677	0.097	37	Measured	Insitu
			46,507	0.125	6	Indicated	
			23,535	0.016	0	Inferred	
			454,719	0.096	43	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			237,749	0.130	31	Inferred	
			237,749	0.130	31	**Subtotal**	
			692,468	**0.226**	**74**	**Total**	
42	S. Berang - Mentok	1497	4,054,861	0.219	887	Measured	Insitu
			36,418	0.047	2	Indicated	
			-	-	-	Inferred	
			4,091,279	0.217	889	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			4,770,943	0.197	938	Inferred	
			4,770,943	0.197	938	**Subtotal**	
			8,862,222	**0.414**	**1,826**	**Total**	
43	S. Menduyung - Mentok	1498	779,809	0.121	95	Measured	Insitu
			453,042	0.105	48	Indicated	
			-	-	-	Inferred	
			1,232,851	0.115	142	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			4,710,307	0.187	880	Inferred	
			4,710,307	0.187	880	**Subtotal**	
			5,943,158	**0.302**	**1,022**	**Total**	
44	A. Sukal - Mentok	1499	344,692	0.125	43	Measured	Insitu
			214,042	0.072	15	Indicated	
			-	-	-	Inferred	
			558,734	0.105	59	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			2,841,490	0.150	426	Inferred	
			2,841,490	0.150	426	**Subtotal**	
			3,400,224	**0.255**	**485**	**Total**	
45	A. Selang -	1500	810,472	0.207	168	Measured	Insitu

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
	Mentok		136,265	0.082	11	Indicated	
			-	-	-	Inferred	
			946,737	0.189	179	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			148,715	0.174	26	Inferred	
			148,715	0.174	26	**Subtotal**	
			1,095,452	**0.364**	**205**	**Total**	
46	S. Terabik - Mentok	1501	7,395,961	0.245	1,810	Measured	Insitu
			581,194	0.075	44	Indicated	
			-	-	-	Inferred	
			7,977,155	0.232	1,854	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			4,538,045	0.275	1,247	Inferred	
			4,538,045	0.275	1,247	**Subtotal**	
			12,515,200	**0.507**	**3,101**	**Total**	
47	A. Belo - Mentok	1502	2,123,232	0.229	486	Measured	Insitu
			61,873	0.063	4	Indicated	
			-	-	-	Inferred	
			2,185,105	0.224	490	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			5,429,421	0.214	1,163	Inferred	
			5,429,421	0.214	1,163	**Subtotal**	
			7,614,526	**0.438**	**1,653**	**Total**	
48	S. Gemuruh/ S. Pait - Mentok	1503	229,686	0.577	133	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			229,686	0.577	133	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			30,407	0.239	7	Inferred	
			30,407	0.239	7	**Subtotal**	
			260,093	**0.817**	**140**	**Total**	
49	S. Daing - Mentok	1504	-	-	-	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			-	-	-	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			-	-	-	**Total**	
50	S. Ketok - Mentok	1505	2,654,923	0.239	635	Measured	Insitu
			165,049	0.063	10	Indicated	
			-	-	-	Inferred	
			2,819,972	0.229	645	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			1,141,036	0.366	418	Inferred	
			1,141,036	0.366	418	**Subtotal**	
			3,961,008	**0.595**	**1,063**	**Total**	
51	A. Kundi/ S. Sukal - Mentok	1506	-	-	-	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			-	-	-	**Total**	
52	Medang/ S. Jering - Mentok	PO222/ Eks. 1507	339,818	0.118	40	Measured	Insitu
			35,957	0.039	1	Indicated	
			-	-	-	Inferred	
			375,775	0.110	42	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			2,840,622	0.154	438	Inferred	
			2,840,622	0.154	438	**Subtotal**	
			3,216,397	**0.265**	**479**	**Total**	
53	S. Muncung - Kelapa	1508	1,268,154	0.114	144	Measured	Insitu
			-	-	-	Indicated	
			33,535	0.092	3	Inferred	
			1,301,689	0.113	147	**Subtotal**	
			-	-	-	Measured	Tailing

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			-	-	-	Indicated	
			3,198,616	0.113	363	Inferred	
			3,198,616	0.113	363	**Subtotal**	
			4,500,305	**0.226**	**510**	**Total**	
54	Tempilang - Kelapa	1509	13,910,862	0.172	2,389	Measured	Insitu
			3,191,193	0.091	290	Indicated	
			592,305	0.119	70	Inferred	
			17,694,360	0.155	2,749	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			15,000,157	0.160	2,395	Inferred	
			15,000,157	0.160	2,395	**Subtotal**	
			32,694,517	**0.315**	**5,144**	**Total**	
55	Tempilang - Kelapa	1510	142,236	0.204	29	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			142,236	0.204	29	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			142,236	**0.204**	**29**	**Total**	
56	Tg. Nyiur - Kelapa	PO220/ Eks. 1544	-	-	-	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			-	-	-	**Total**	
57	Nyelanding/ S. Ulin - Koba	1533	2,247,393	0.162	364	Measured	Insitu
			3,267,869	0.100	327	Indicated	
			3,301,259	0.041	136	Inferred	
			8,816,521	0.094	827	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			7,376,773	0.202	1,489	Inferred	

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			7,376,773	0.202	1,489	**Subtotal**	
			16,193,294	**0.296**	**2,315**	**Total**	
58	Bedengung - Koba	1534	1,765,543	0.238	421	Measured	Insitu
			1,128,202	0.039	44	Indicated	
			80,684	0.029	2	Inferred	
			2,974,429	0.157	467	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			1,340,334	0.411	551	Inferred	
			1,340,334	0.411	551	**Subtotal**	
			4,314,763	**0.568**	**1,018**	**Total**	
59	Permis - Koba	1535	1,320,170	0.124	164	Measured	Insitu
			254,137	0.067	17	Indicated	
			-	-	-	Inferred	
			1,574,307	0.115	181	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			911,793	0.135	123	Inferred	
			911,793	0.135	123	**Subtotal**	
			2,486,100	**0.250**	**304**	**Total**	
60	Paku - Payung	1536	570,301	0.353	201	Measured	Insitu
			305,731	0.049	15	Indicated	
			665,622	0.126	84	Inferred	
			1,541,654	0.194	300	**Subtotal**	
			28,738	0.036	1	Measured	Tailing
			-	-	-	Indicated	
			5,014,643	0.381	1,911	Inferred	
			5,043,381	0.379	1,912	**Subtotal**	
			6,585,035	**0.574**	**2,211**	**Total**	
61	Gadung - Toboali	1537	229,181	0.141	32	Measured	Insitu
			48,875	0.048	2	Indicated	
			-	-	-	Inferred	
			278,056	0.125	35	**Subtotal**	
			116,342	0.171	20	Measured	Tailing
			-	-	-	Indicated	
			6,285,881	0.232	1,456	Inferred	
			6,402,223	0.230	1,476	**Subtotal**	
			6,680,279	**0.355**	**1,510**	**Total**	

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
62	Tg. Kubu - Toboali	1538	-	-	-	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			124,155	0.170	21	Inferred	
			124,155	0.170	21	**Subtotal**	
			124,155	**0.170**	**21**	**Total**	
63	Tg. Kemirai - Toboali	1539 A	-	-	-	Measured	Insitu
			87,082	0.052	5	Indicated	
			269,172	0.033	9	Inferred	
			356,254	0.038	13	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			356,254	**0.038**	**13**	**Total**	
64	Tg. Kemirai - Toboali	1539 B	-	-	-	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			-	**-**	**-**	**Total**	
65	Tg. Kemirai - Toboali	1539 C	-	-	-	Measured	Insitu
			135,033	0.045	6	Indicated	
			43,617	0.008	0	Inferred	
			178,650	0.036	6	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			178,650	**0.036**	**6**	**Total**	
66	S. Kepoh - Koba	1540	-	-	-	Measured	Insitu
			-	-	-	Indicated	

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			-	**-**	**-**	**Total**	
67	P. Lepar - Pongok	1543	-	-	-	Measured	Insitu
			88,192	0.110	10	Indicated	
			-	-	-	Inferred	
			88,192	0.110	10	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			373,810	0.408	153	Inferred	
			373,810	0.408	153	**Subtotal**	
			462,002	**0.519**	**162**	**Total**	
68	Kepoh Cina - Toboali	1601	378,550	0.208	79	Measured	Insitu
			270,205	0.078	21	Indicated	
			-	-	-	Inferred	
			648,755	0.154	100	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			1,838,649	0.214	394	Inferred	
			1,838,649	0.214	394	**Subtotal**	
			2,487,404	**0.368**	**494**	**Total**	
69	Pedindang - S. Selan	1526	980,885	0.271	266	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			980,885	0.271	266	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			5,804,882	0.156	907	Inferred	
			5,804,882	0.156	907	**Subtotal**	
			6,785,767	**0.427**	**1,173**	**Total**	
70	Kerakas/Kereta k - S. Selan	1527	6,067,111	0.182	1,107	Measured	Insitu
			5,404,358	0.064	344	Indicated	
			-	-	-	Inferred	
			11,471,469	0.126	1,451	**Subtotal**	

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			31,081,119	0.187	5,808	Inferred	
			31,081,119	0.187	5,808	**Subtotal**	
			42,552,588	**0.313**	**7,258**	**Total**	
71	Sarangmandi - S. Selan	1528	25,596	0.208	5	Measured	Insitu
			266,235	0.041	11	Indicated	
			175,115	0.017	3	Inferred	
			466,946	0.041	19	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			2,287,010	0.180	412	Inferred	
			2,287,010	0.180	412	**Subtotal**	
			2,753,956	**0.221**	**431**	**Total**	
72	Cambai - Namang	1530	319,854	0.167	54	Measured	Insitu
			529,329	0.050	26	Indicated	
			829,860	0.030	25	Inferred	
			1,679,043	0.062	105	**Subtotal**	
			166,938	0.119	20	Measured	Tailing
			45,209	0.052	2	Indicated	
			3,456,369	0.165	570	Inferred	
			3,668,516	0.161	592	**Subtotal**	
			5,347,559	**0.224**	**696**	**Total**	
73	Kulur - Lubuk Besar	1531	7,492,256	0.153	1,144	Measured	Insitu
			3,701,042	0.079	291	Indicated	
			663,248	0.052	35	Inferred	
			11,856,546	0.124	1,470	**Subtotal**	
			24,095	0.168	4	Measured	Tailing
			92,548	0.149	14	Indicated	
			6,562,436	0.187	1,226	Inferred	
			6,679,079	0.186	1,244	**Subtotal**	
			18,535,625	**0.310**	**2,714**	**Total**	
74	Padang Mulia - Koba	1532	125,071	0.156	20	Measured	Insitu
			144,809	0.109	16	Indicated	
			-	-	-	Inferred	
			269,880	0.131	35	**Subtotal**	
			81,708	0.080	7	Measured	Tailing
			-	-	-	Indicated	

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			1,799,066	0.253	455	Inferred	
			1,880,774	0.245	462	**Subtotal**	
			2,150,654	**0.376**	**497**	**Total**	
75	Kerakas - S. Selan	1583	1,649,238	0.213	352	Measured	Insitu
			1,456,530	0.064	93	Indicated	
			609,421	0.020	12	Inferred	
			3,715,189	0.123	457	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			21,744,598	0.191	4,160	Inferred	
			21,744,598	0.191	4,160	**Subtotal**	
			25,459,787	**0.314**	**4,618**	**Total**	
76	Penagan - Mendo Barat	1524	2,719,720	0.264	718	Measured	Insitu
			1,049,413	0.123	129	Indicated	
			1,308,957	0.038	50	Inferred	
			5,078,090	0.177	896	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			8,604,582	0.247	2,128	Inferred	
			8,604,582	0.247	2,128	**Subtotal**	
			13,682,672	**0.424**	**3,025**	**Total**	
77	S. Menduk - Mendo Barat	1525	1,105,476	0.219	242	Measured	Insitu
			1,017,148	0.086	88	Indicated	
			35,025	0.075	3	Inferred	
			2,157,649	0.154	333	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			13,658,806	0.184	2,509	Inferred	
			13,658,806	0.184	2,509	**Subtotal**	
			15,816,455	**0.338**	**2,841**	**Total**	
78	Pangkol - Pangkalan Baru	1529	22,584,669	0.298	6,722	Measured	Insitu
			2,698,446	0.090	242	Indicated	
			3,923,432	0.108	425	Inferred	
			29,206,547	0.253	7,389	**Subtotal**	
			71,653	0.175	13	Measured	Tailing
			-	-	-	Indicated	
			18,255,216	0.243	4,442	Inferred	
			18,326,869	0.243	4,455	**Subtotal**	

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			47,533,416	**0.496**	**11,844**	**Total**	
79	Toboali Selatan - Toboali (Blok A)	1541 A	38,412,276	0.186	7,152	Measured	Insitu
			19,858,468	0.066	1,321	Indicated	
			13,720,093	0.061	834	Inferred	
			71,990,837	0.129	9,306	**Subtotal**	
			131,010	0.235	31	Measured	Tailing
			-	-	-	Indicated	
			37,767,653	0.212	8,022	Inferred	
			37,898,663	0.212	8,052	**Subtotal**	
			109,889,500	**0.342**	**17,358**	**Total**	
80	Toboali Selatan - Toboali (Blok B)	1541 B	24,358,414	0.171	4,176	Measured	Insitu
			9,343,979	0.104	973	Indicated	
			8,684,867	0.047	409	Inferred	
			42,387,260	0.131	5,558	**Subtotal**	
			23,642	0.086	2	Measured	Tailing
			-	-	-	Indicated	
			87,550,788	0.209	18,258	Inferred	
			87,574,430	0.209	18,260	**Subtotal**	
			129,961,690	**0.340**	**23,818**	**Total**	
81	Lt. A. Kantung - Sungailiat	1548	293,776,695	0.197	57,777	Measured	Insitu
			158,592,212	0.094	14,861	Indicated	
			21,597,517	0.054	1,176	Inferred	
			473,966,424	**0.156**	**73,813**	**Subtotal**	
			103,591,952	0.212	21,965	Measured	Tailing
			1,558,304	0.087	136	Indicated	
			1,644,099	0.494	813	Inferred	
			106,794,355	0.215	22,914	**Subtotal**	
			580,760,779	**0.370**	**96,727**	**Total**	
82	Lt. Deniang - Sungailiat	1555	53,455,081	0.217	11,591	Measured	Insitu
			27,629,001	0.089	2,467	Indicated	
			20,808,117	0.054	1,123	Inferred	
			101,892,199	**0.149**	**15,182**	**Subtotal**	
			-	-	-	Measured	Tailing
			6,435,616	0.111	717	Indicated	
			20,290	0.056	1	Inferred	
			6,455,906	0.111	718	**Subtotal**	
			108,348,105	**0.260**	**15,899**	**Total**	
83	Lt. P. Danta -	1559	16,311,275	0.222	3,620	Measured	Insitu

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
	Belinyu		7,593,449	0.115	870	Indicated	
			2,395,083	0.076	181	Inferred	
			26,299,807	**0.178**	**4,672**	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			26,299,807	**0.178**	**4,672**	**Total**	
84	Lt. S. Belinyu - Belinyu	1560	5,714,503	0.173	986	Measured	Insitu
			5,228,991	0.118	615	Indicated	
			915,943	0.046	42	Inferred	
			11,859,437	0.139	1,644	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			11,859,437	**0.139**	**1,644**	**Total**	
85	Lt. Tg. Terentang Kelabat	P0265-eks. 1561	4,323,947	0.295	1,276	Measured	Insitu
			2,564,146	0.110	282	Indicated	
			1,388,384	0.053	74	Inferred	
			8,276,477	**0.197**	**1,631**	**Subtotal**	
			-	-	-	Measured	Tailing
			15,034	0.111	2	Indicated	
			93,177	0.185	17	Inferred	
			108,211	0.175	19	**Subtotal**	
			8,384,688	**0.372**	**1,650**	**Total**	
86	Lt. Tg. Beriga - Koba	1584	21,291,633	0.148	3,152	Measured	Insitu
			43,112,632	0.073	3,140	Indicated	
			1,020,725	0.047	48	Inferred	
			65,424,990	0.097	6,340	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			65,424,990	**0.097**	**6,340**	**Total**	
87	Lt. Tempilang - Kelapa	1545	55,626,730	0.195	10,824	Measured	Insitu
			17,155,122	0.076	1,306	Indicated	
			9,672,281	0.083	807	Inferred	

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			82,454,133	**0.157**	**12,938**	**Subtotal**	
			2,657,895	0.110	293	Measured	Tailing
			6,224,408	0.067	416	Indicated	
			3,351,448	0.055	184	Inferred	
			12,233,751	**0.073**	**893**	**Subtotal**	
			94,687,884	**0.230**	**13,831**	**Total**	
88	Lt. Kebiang/Penganak - Jebus	1549	96,594,923	0.172	16,602	Measured	Insitu
			29,208,002	0.119	3,487	Indicated	
			20,082,108	0.093	1,869	Inferred	
			145,885,033	**0.151**	**21,959**	**Subtotal**	
			17,023,421	0.304	5,182	Measured	Tailing
			9,174,145	0.102	937	Indicated	
			6,538,548	0.095	624	Inferred	
			32,736,114	**0.206**	**6,743**	**Subtotal**	
			178,621,147	**0.357**	**28,702**	**Total**	
89	Lt. Bakit - Belinyu	1551	26,325,223	0.199	5,235	Measured	Insitu
			10,670,029	0.084	892	Indicated	
			2,961,247	0.061	179	Inferred	
			39,956,499	**0.158**	**6,307**	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			39,956,499	**0.158**	**6,307**	**Total**	
90	Lt. Ranggam/Lt. Belo - Mentok	1553	41,354,250	0.215	8,880	Measured	Insitu
			25,750,193	0.080	2,057	Indicated	
			27,217,976	0.046	1,247	Inferred	
			94,322,419	**0.129**	**12,184**	**Subtotal**	
			454,642	0.139	63	Measured	Tailing
			-	-	-	Indicated	
			120,383	0.051	6	Inferred	
			575,025	**0.121**	**69**	**Subtotal**	
			94,897,444	**0.250**	**12,253**	**Total**	
91	Lt. Bendul - Mentok	1554	5,489,410	0.199	1,092	Measured	Insitu
			6,548,049	0.074	485	Indicated	
			9,200,928	0.038	349	Inferred	
			21,238,387	**0.091**	**1,926**	**Subtotal**	
			-	-	-	Measured	Tailing

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			21,238,387	**0.091**	**1,926**	**Total**	
92	Lt. Toboali - Toboali	1546	38,219,071	0.265	10,110	Measured	Insitu
			44,757,107	0.088	3,951	Indicated	
			15,413,455	0.068	1,054	Inferred	
			98,389,633	**0.154**	**15,115**	**Subtotal**	
			4,175,281	0.242	1,010	Measured	Tailing
			1,721,635	0.281	484	Indicated	
			24,038	0.139	3	Inferred	
			5,920,954	**0.253**	**1,497**	**Subtotal**	
			104,310,587	**0.407**	**16,612**	**Total**	
93	Lt. Tg. Kubu - Toboali	p0221-eks1547	34,098,561	0.213	7,279	Measured	Insitu
			17,328,437	0.088	1,520	Indicated	
			3,273,064	0.131	430	Inferred	
			54,700,062	**0.169**	**9,229**	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			54,700,062	**0.169**	**9,229**	**Total**	
94	Laut Permis	KP PERMIS	1,683,100	0.106	179	Measured	Insitu
			2,121,636	0.065	139	Indicated	
			87,795	0.330	29	Inferred	
			3,892,531	**0.089**	**347**	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			3,892,531	**0.089**	**347**	**Total**	
95	Laut Permis	KP PERMIS B	215,765	0.407	88	Measured	Insitu
			653,884	0.083	54	Indicated	
			105,124	0.056	6	Inferred	
			974,773	**0.152**	**148**	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			-	-	-	**Subtotal**	
			974,773	**0.152**	**148**	**Total**	
96	Laut Permis	KP PERMIS C	26,484,964	0.153	4,043	Measured	Insitu
			6,555,603	0.057	372	Indicated	
			565,446	0.043	24	Inferred	
			33,606,013	**0.132**	**4,439**	**Subtotal**	
			187,932	0.216	41	Measured	Tailing
			113,021	0.050	6	Indicated	
			128,751	0.071	9	Inferred	
			429,704	**0.129**	**55**	**Subtotal**	
			34,035,717	**0.261**	**4,494**	**Total**	
97	Laut Permis	KP PERMIS D	11,348,234	0.109	1,237	Measured	Insitu
			3,757,921	0.050	189	Indicated	
			1,113,658	0.043	48	Inferred	
			16,219,813	**0.091**	**1,474**	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			16,219,813	**0.091**	**1,474**	**Total**	
98	Lt. Cupat - Belinyu	P0223-eks 1550	126,265,841	0.175	22,092	Measured	Insitu
			80,571,847	0.082	6,591	Indicated	
			26,797,352	0.054	1,443	Inferred	
			233,635,040	**0.129**	**30,127**	**Subtotal**	
			17,496,511	0.187	3,273	Measured	Tailing
			10,784,343	0.097	1,042	Indicated	
			7,480,661	0.104	777	Inferred	
			35,761,515	**0.142**	**5,092**	**Subtotal**	
			269,396,555	**0.271**	**35,220**	**Total**	
99	Lt. Sampur/Lt. Kurau - Koba	1556	114,452,133	0.197	22,571	Measured	Insitu
			41,229,895	0.073	2,996	Indicated	
			18,951,126	0.052	993	Inferred	
			174,633,154	**0.152**	**26,560**	**Subtotal**	
			12,111,714	0.213	2,583	Measured	Tailing
			1,584,085	0.066	105	Indicated	
			2,215,495	0.061	134	Inferred	
			15,911,294	**0.177**	**2,823**	**Subtotal**	
			190,544,448	**0.329**	**29,382**	**Total**	

NO	REGENCY	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
Total Bangka			1,217,757,577	0.196	239,152	Measured	Insitu
			612,686,112	0.087	53,302	Indicated	
			226,289,139	0.061	13,876	Inferred	
			2,056,732,828	0.149	306,330	**Subtotal**	
			159,896,091	0.217	34,753	Measured	Tailing
			38,290,409	0.102	3,908	Indicated	
			714,402,704	0.189	134,835	Inferred	
			912,589,204	0.190	173,496	**Subtotal**	
			2,969,322,032	0.162	**479,826**	**Total**	

*** Belitung**

NO	DISTRICT	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
1	A. Sijuk - Sijuk	1605	192,297	0.133	26	Measured	Insitu
			2,361	0.236	1	Indicated	
			65,050	0.125	8	Inferred	
			259,708	0.132	34	**Subtotal**	
			49,803	0.043	2	Measured	Tailing
			-	-	-	Indicated	
			416,733	0.190	79	Inferred	
			466,536	0.174	81	**Subtotal**	
			726,244	**0.306**	**115**	**Total**	
2	A.Sengkeli-Sijuk/Badau	1603	27,112	0.177	5	Measured	Insitu
			-	-	-	Indicated	
			6,313	0.049	0	Inferred	
			33,425	0.153	5	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			374,308	0.223	83	Inferred	
			374,308	0.223	83	**Subtotal**	
			407,733	**0.376**	**88**	**Total**	
3	Tg.Arabulan - Membalong	PO266/ Eks. 1569 A	374,929	0.237	89	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			374,929	0.237	89	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	

NO	DISTRICT	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			294,272	0.103	30	Inferred	
			294,272	0.103	30	**Subtotal**	
			669,201	**0.339**	**119**	**Total**	
4	Tg.Arabulan - Membalong	PO266/ Eks. 1569 B	1,890,121	0.230	435	Measured	Insitu
			1,115,456	0.063	71	Indicated	
			186,781	0.103	19	Inferred	
			3,192,358	0.164	524	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			2,280,799	0.222	507	Inferred	
			2,280,799	0.222	507	**Subtotal**	
			5,473,157	**0.387**	**1,032**	**Total**	
5	A.Belonsotan - Sijuk	1570	-	-	-	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			173,606	0.121	21	Inferred	
			173,606	0.121	21	**Subtotal**	
			173,606	**0.121**	**21**	**Total**	
6	S.Membalong - Membalong	PO232/ Eks. 1568 A	839,103	0.181	152	Measured	Insitu
			350,626	0.103	36	Indicated	
			67,097	0.077	5	Inferred	
			1,256,826	0.154	193	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			7,128,481	0.182	1,296	Inferred	
			7,128,481	0.182	1,296	**Subtotal**	
			8,385,307	**0.336**	**1,489**	**Total**	
7	S.Membalong - Membalong	PO232/ Eks. 1568 B	1,051,316	0.139	146	Measured	Insitu
			1,244,836	0.059	73	Indicated	
			13,661	0.015	0	Inferred	
			2,309,813	0.095	220	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			4,972,001	0.137	681	Inferred	
			4,972,001	0.137	681	**Subtotal**	

NO	DISTRICT	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			7,281,814	**0.232**	**900**	**Total**	
8	S.Membalong - Membalong	PO232/ Eks. 1568 C.1	826,366	0.155	128	Measured	Insitu
			103,123	0.071	7	Indicated	
			65,584	0.049	3	Inferred	
			995,073	0.139	138	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			1,869,924	0.172	321	Inferred	
			1,869,924	0.172	321	**Subtotal**	
			2,864,997	**0.311**	**460**	**Total**	
9	S.Membalong - Membalong	PO232/ Eks. 1568 C.2	80,618	0.140	11	Measured	Insitu
			30,831	0.087	3	Indicated	
			-	-	-	Inferred	
			111,449	0.126	14	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			2,506	0.089	0	Inferred	
			2,506	0.089	0	**Subtotal**	
			113,955	**0.215**	**14**	**Total**	
10	S. Pring - Kelapa Kampit	PO228/ Eks. 1577	353,886	0.121	43	Measured	Insitu
			124,601	0.056	7	Indicated	
			53,749	0.051	3	Inferred	
			532,236	0.099	53	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			709,440	0.159	113	Inferred	
			709,440	0.159	113	**Subtotal**	
			1,241,676	**0.258**	**165**	**Total**	
11	S. Manggar - Manggar	PO227/ Eks. 1576 A	4,959,986	0.153	757	Measured	Insitu
			1,985,518	0.112	223	Indicated	
			129,849	0.052	7	Inferred	
			7,075,353	0.139	987	**Subtotal**	
			-	-	-	Measured	Tailing
			34,900	0.059	2	Indicated	
			14,025,466	0.164	2,299	Inferred	
			14,060,366	0.164	2,301	**Subtotal**	
			21,135,719	**0.303**	**3,288**	**Total**	
12	S. Manggar -	PO227/	963,563	0.267	257	Measured	Insitu

NO	DISTRICT	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
	Manggar	Eks. 1576 B	1,164,676	0.107	125	Indicated	
			114,886	0.164	19	Inferred	
			2,243,125	0.179	400	**Subtotal**	
			18,792	0.087	2	Measured	Tailing
			-	-	-	Indicated	
			4,154,175	0.196	814	Inferred	
			4,172,967	0.195	815	**Subtotal**	
			6,416,092	**0.374**	**1,216**	**Total**	
13	S. Manggar - Manggar	PO227/ Eks. 1576 C	685,074	0.115	79	Measured	Insitu
			354,682	0.077	27	Indicated	
			36,462	0.037	1	Inferred	
			1,076,218	0.100	108	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			4,026,777	0.175	704	Inferred	
			4,026,777	0.175	704	**Subtotal**	
			5,102,995	**0.275**	**812**	**Total**	
14	S. Manggar - Manggar	PO227/ Eks. 1576 D	3,447,003	0.187	646	Measured	Insitu
			3,999,093	0.079	318	Indicated	
			72,391	0.068	5	Inferred	
			7,518,487	0.129	969	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			11,353,430	0.164	1,858	Inferred	
			11,353,430	0.164	1,858	**Subtotal**	
			18,871,917	**0.293**	**2,827**	**Total**	
15	A. Kunang - Lenggang	1575	165,069	0.117	19	Measured	Insitu
			-	-	-	Indicated	
			3,719	0.071	0	Inferred	
			168,788	0.116	20	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			611,327	0.132	81	Inferred	
			611,327	0.132	81	**Subtotal**	
			780,115	**0.248**	**100**	**Total**	
16	S. Senusa/Pesak - Lenggang	PO226/ Eks. 1574	1,197,954	0.178	213	Measured	Insitu
			731,139	0.114	84	Indicated	
			55,318	0.192	11	Inferred	

NO	DISTRICT	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			1,984,411	0.155	308	**Subtotal**	
			-	-	-	Measured	Tailing
			12,292	0.044	1	Indicated	
			18,980,986	0.166	3,153	Inferred	
			18,993,278	0.166	3,154	**Subtotal**	
			20,977,689	**0.321**	**3,461**	**Total**	
17	Lenggang (Hematite)	PO320/ Eks. 1609	58,468	0.250	15	Measured	Insitu
			10,711	0.033	0	Indicated	
			-	-	-	Inferred	
			69,179	0.216	15	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			69,179	**0.216**	**15**	**Total**	
18	Bukit Mengkayar Mengkubang	KP Batu Besi	-	-	-	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			-	-	-	**Total**	
19	Bukit Kemujaan Mengkubang	KP Batu Besi	-	-	-	Measured	Insitu
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			-	-	-	**Total**	
20	S.Cerucuk - Tg.Pandan	PO225/ Eks. 1573	3,545,791	0.158	561	Measured	Insitu
			2,696,639	0.071	192	Indicated	
			78,447	0.071	6	Inferred	
			6,320,877	0.120	759	**Subtotal**	
			-	-	-	Measured	Tailing

NO	DISTRICT	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			-	-	-	Indicated	
			5,151,026	0.167	862	Inferred	
			5,151,026	0.167	862	**Subtotal**	
			11,471,903	**0.287**	**1,620**	**Total**	
21	A.Jangkal - Kelapa Kampit	PO299/ Eks. 1579	113,946	0.201	23	Measured	Insitu
			109,609	0.065	7	Indicated	
			106,371	0.047	5	Inferred	
			329,926	0.106	35	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			435,497	0.135	59	Inferred	
			435,497	0.135	59	**Subtotal**	
			765,423	**0.242**	**94**	**Total**	
22	G.Tampong - Kelapa Kampit (Blok A)	PO231/ Eks. 1580 A	211,960	0.101	21	Measured	Insitu
			17,297	0.030	1	Indicated	
			16,442	0.021	0	Inferred	
			245,699	0.090	22	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			574,410	0.117	67	Inferred	
			574,410	0.117	67	**Subtotal**	
			820,109	**0.207**	**89**	**Total**	
23	G.Tampong - Kelapa Kampit (Blok B)	PO231/ Eks. 1580 B	100,649	0.088	9	Measured	Insitu
			71,070	0.150	11	Indicated	
			3,490	0.030	0	Inferred	
			175,209	0.112	20	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			139,731	0.182	25	Inferred	
			139,731	0.182	25	**Subtotal**	
			314,940	**0.294**	**45**	**Total**	
24	Lt. Manggar - Manggar	1562	162,782,067	0.259	42,096	Measured	Insitu
			75,360,664	0.094	7,073	Indicated	
			133,103,523	0.084	11,192	Inferred	
			371,246,254	**0.163**	**60,362**	**Subtotal**	
			1,695,350	0.184	312	Measured	Tailing
			677,182	0.086	58	Indicated	
			565,358	0.207	117	Inferred	

NO	DISTRICT	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			2,937,890	**0.166**	**487**	**Subtotal**	
			374,184,144	**0.328**	**60,849**	**Total**	
Total Belitung			183,867,278	0.249	45,732	Measured	Insitu
			89,472,932	0.092	8,257	Indicated	
			134,179,133	0.084	11,285	Inferred	
			407,519,343	0.160	65,274	**Subtotal**	
			1,763,945	0.179	316	Measured	Tailing
			724,374	0.084	61	Indicated	
			78,240,253	0.168	13,171	Inferred	
			80,728,572	0.168	13,547	**Subtotal**	
			214,907,705	0.367	**78,821**	**Total**	

*** Pulau Karimun Kundur**

NO	DISTRICT	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
1	Lt. Timun - Kundur	618/RIAU	89,628,180	0.197	17,643	Measured	Insitu
			10,951,584	0.067	733	Indicated	
			3,412,207	0.085	291	Inferred	
			103,991,971	**0.179**	**18,667**	**Subtotal**	
			14,693,817	0.145	2,124	Measured	Tailing
			11,853,750	0.114	1,353	Indicated	
			2,698,718	0.073	198	Inferred	
			29,246,285	**0.126**	**3,675**	**Subtotal**	
			133,238,256	**0.305**	**22,341**	**Total**	
2	Lt. Kundur Barat	KEPRI	17,959,791	0.176	3,152	Measured	Insitu
			5,921,643	0.067	397	Indicated	
			9,880,583	0.061	599	Inferred	
			33,762,017	**0.123**	**4,148**	**Subtotal**	
			-	-	-	Measured	Tailing
			-	-	-	Indicated	
			-	-	-	Inferred	
			-	-	-	**Subtotal**	
			33,762,017	**0.123**	**4,148**	**Total**	
3	Lt. Timun Kundur Barat	618 B	38,486,689	0.130	4,990	Measured	Insitu
			13,311,952	0.064	856	Indicated	
			4,544,518	0.051	233	Inferred	
			56,343,159	**0.108**	**6,079**	**Subtotal**	

NO	DISTRICT	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			7,117,653	0.117	835	Measured	Tailing
			3,643,146	0.061	222	Indicated	
			865,407	0.052	45	Inferred	
			11,626,206	**0.095**	**1,102**	**Subtotal**	
			67,969,365	**0.203**	**7,181**	**Total**	
4	Lt. Timun Kundur Barat	618 C	10,169,497	0.150	1,530	Measured	Insitu
			4,036,674	0.067	269	Indicated	
			2,943,179	0.052	154	Inferred	
			17,149,350	**0.114**	**1,953**	**Subtotal**	
			2,037,864	0.108	220	Measured	Tailing
			2,414,595	0.062	150	Indicated	
			277,657	0.058	16	Inferred	
			4,730,116	**0.082**	**386**	**Subtotal**	
			21,879,466	**0.196**	**2,340**	**Total**	
5	Lt. Kobil - Kundur	DU 621	36,477,771	0.175	6,388	Measured	Insitu
			13,923,078	0.059	824	Indicated	
			10,112,755	0.061	616	Inferred	
			60,513,604	**0.129**	**7,827**	**Subtotal**	
			1,126,998	0.121	137	Measured	Tailing
			334,363	0.077	26	Indicated	
			78,663	0.070	6	Inferred	
			1,540,024	**0.109**	**168**	**Subtotal**	
			62,053,628	**0.238**	**7,995**	**Total**	
6	Lt. Pelambung - Karimun	DU 747 D	55,896,836	0.246	13,743	Measured	Insitu
			18,191,894	0.079	1,443	Indicated	
			5,752,130	0.057	327	Inferred	
			79,840,860	**0.194**	**15,513**	**Subtotal**	
			854,373	0.403	344	Measured	Tailing
			188,083	0.037	7	Indicated	
			-	-	-	Inferred	
			1,042,456	**0.337**	**351**	**Subtotal**	
			80,883,316	**0.531**	**15,863**	**Total**	
7	Lt. Kundur Barat - Kundur	DU 956	259,639,225	0.203	52,604	Measured	Insitu
			99,324,918	0.070	6,978	Indicated	
			51,449,951	0.091	4,692	Inferred	
			410,414,094	**0.157**	**64,274**	**Subtotal**	
			991,782	0.266	264	Measured	Tailing
			2,120,134	0.062	132	Indicated	

NO	DISTRICT	IUP	VOLUME (m^3)	GRADE (kg/m^3)	TONNAGE (tonnes)	CLASS	DESC.
			1,103,096	0.056	62	Inferred	
			4,215,012	**0.109**	**459**	**Subtotal**	
			414,629,106	**0.265**	**64,733**	**Total**	
Total Karimun Kundur			508,257,989	0.197	100,050	Measured	Insitu
			165,661,743	0.069	11,500	Indicated	
			88,095,323	0.078	6,911	Inferred	
			762,015,055	0.155	118,461	**Subtotal**	
			26,822,487	0.146	3,924	Measured	Tailing
			20,554,071	0.092	1,890	Indicated	
			5,023,541	0.065	326	Inferred	
			52,400,099	0.117	6,141	**Subtotal**	
			140,495,422	0.887	**124,601**	**Total**	

2.2. Primary Tin Resources Estimation and Statement

Based on the activities of primary tin estimation in Bangka and Belitung Island by PT TIMAH Tbk, the following resources are obtained:

Table 2.6 Estimation of Primary Resources

RESOURCES	Volume (m^3)	Grade (%)	Tonnage (tonnes)
PRIMARY			
MEASURED	6,736,758	0.143	26,557
INDICATED	11,368,375	0.165	51,793
INFERRED	19,399,911	0.065	34,744
TOTAL	**37,505,044**	**0.109**	**113,094**

Information

- Statistical descriptive analysis was performed to determine the capping grade
- Grade interpolation considers the position of mineralization from geological and geostatistical points of view
- Estimation of the primary tin resources uses block model method

- Micromine is the software used in estimation of the tin resources.
- The classification of tin deposit resources consists of measured, indicated, and inferred mineral resources.
- Cross Validation of data block model is performed on data of layer grade assay

Table 2.7 Estimation of Primary Tin Resources Per IUP

NO	REGENCY	IUP	VOLUME	GRADE	TONNAGE	CLASS
			(m^3)	(%)	(tonnes)	
1	S. Lumut - Belinyu	1517	-		-	Measured
			3,340,564	0.060	5,453	Indicated
			-	-	-	Inferred
			3,340,564	**0.060**	**5,453**	**Subtotal**
2	Rebo Batu Ampar - Sungailiat	1521	-		-	Measured
			-		-	Indicated
			11,129,958	0.095	27,350	Inferred
			11,129,958	**0.095**	**27,350**	**Subtotal**
3	Tempilang - Kelapa	1509	4,950,204	0.014	1,918	Measured
			3,456,265	0.011	1,070	Indicated
			1,135,035	0.015	460	Inferred
			9,541,504	**0.013**	**3,447**	**Subtotal**
4	Paku - Payung	1536	-		-	Measured
			-		-	Indicated
			4,621,966	0.014	1,661	Inferred
			4,621,966	**0.014**	**1,661**	**Subtotal**
5	Pangkol - Pangkalan Baru	1529	-		-	Measured
			-		-	Indicated
			1,102,812	0.006	190	Inferred
			1,102,812	**0.006**	**190**	**Subtotal**
6	Toboali Selatan - Toboali (Blok B)	1541 B	-		-	Measured
			-		-	Indicated
			570,340	0.005	85	Inferred
			570,340	**0.005**	**85**	**Subtotal**
7	S. Manggar - Manggar	1576 A	1,786,554	0.475	24,639	Measured
			4,571,546	0.341	45,270	Indicated
			839,801	0.205	4,999	Inferred
			7,197,901	**0.359**	**74,908**	**Subtotal**

TOTAL ESTIMATION OF PRIMARY TIN RESOURCES	6,736,758	0.146	26,557	Measured
	11,368,375	0.169	51,793	Indicated
	19,399,911	0.066	34,744	Inferred
	37,505,044	**0.112**	**113,094**	**Total**

III. RESERVE STATEMENT

3.1 Alluvial Reserves Statement

Based on alluvial tin estimation activities on Bangka, Belitung and Kundur islands, the reserves is shown in Table 3.1.

Table 3.1 Total Reserves in Bangka, Belitung, Karimun and Kundur

Location	Volume (m^3)	Grade (kg/m^3)	Tonnage (tonnes)	Class
Total Reserves	368,612,175	0.371	136,722	Proven
	604,120,104	0.399	240,872	Probable
	972,732,279	**0.388**	**377,594**	**Total**

a. Estimation Base on Island

The results of reserves estimation which based on the island can be seen in the tables below:

Table 3.2 Reserves Estimation from Bangka Island

Location	Volume (m^3)	Grade (kg/m^3)	Tonnage (tonnes)	Class
Total Bangka	261,697,061	0.337276348	88,264	Proven
	313,324,547	0.325877522	102,105	Probable
	575,021,608	**0.331065221**	**190,370**	**Total**

Table 3.3 Reserves Estimation from Belitung Island

Location	Volume (m^3)	Grade (kg/m^3)	Tonnage (tonnes)	Class
Total Belitung	3,203,176	0.226	723	Proven
	123,021,180	0.300	36,931	Probable
	126,224,356	**0.298**	**37,654**	**Total**

Tabel 3.4 Reserves Estimation from Karimun Kundur Island

Location	Volume (m^3)	Grade (kg/m^3)	Tonnage (tonnes)	Class
Total Karimun - Kundur	96,856,167	0.261	25,325	Proven
	144,504,778	0.343	49,524	Probable
	241,360,945	**0.310**	**74,849**	**Total**

b. Estimation Based on Mining Permit

The result of Reserves Estimate based on per mining permit (IUP) can be seen in table 3.5 below:

Table 3.5 Reserves Estimation Results per Mining Permit

- **Bangka Island**

No	Regency	IUP	Volume (m^3)	Grade (kg/m^3)	Tonnage (tonnes)	Class
1	Bubus - Belinyu	1511	-	-	-	Proven
			204,269	0.352	72	Probable
			204,269	0.352	72	Sub Total
2	Gunung Muda - Belinyu	1512	913,194	0.216	198	Proven
			301,201	0.430	130	Probable
			1,214,395	0.269	327	Sub Total
3	S. Sembuang - Belinyu	1513	189,677	0.249	47	Proven
			863,309	0.319	275	Probable
			1,052,986	0.306	323	Sub Total
4	A. Parak - Belinyu	1514	-	-	-	Proven
			-	-	-	Probable
			-	-	-	Sub Total

No	Regency	IUP	Volume (m^3)	Grade (kg/m^3)	Tonnage (tonnes)	Class
5	S. Simping - Belinyu	1515	82,483	0.340	28	Proven
			30,950	0.823	25	Probable
			113,433	0.472	54	Sub Total
6	S. Mapur - Belinyu	1516	707,435	0.258	182	Proven
			520,665	0.332	173	Probable
			1,228,100	0.289	355	Sub Total
7	S. Lumut - Belinyu	PO218/Eks. 1517	2,505,177	0.227	568	Proven
			6,187,810	0.270	1,668	Probable
			8,692,987	0.257	2,237	Sub Total
8	S. Deniang - Sungailiat	1518 A	68,287	0.450	31	Proven
			487,780	0.265	129	Probable
			556,067	0.287	160	Sub Total
9	S. Deniang - Sungailiat	1518 B	-	-	-	Proven
			132,970	0.431	57	Probable
			132,970	0.431	57	Sub Total
10	Parit Padang - Sungailiat	1519	19,493	0.330	6	Proven
			17,170	0.406	7	Probable
			36,663	0.365	13	Sub Total
11	Parit Padang - Sungailiat	PO344/Eks. 1520	415,305	0.291	121	Proven
			274,683	0.728	200	Probable
			689,988	0.465	321	Sub Total
12	Rebo Batu Ampar - Sungailiat	1521	936,635	0.207	194	Proven
			1,009,945	0.296	299	Probable
			1,946,580	0.253	493	Sub Total
13	Merawang/ Kenanga	1522	45,346	0.253	11	Proven
			280,025	0.164	46	Probable
			325,371	0.176	57	Sub Total
14	Jurung - Merawang	1523	16,939	0.210	4	Proven
			5,733	1.043	6	Probable
			22,672	0.421	10	Sub Total
15	A. Pugul - Belinyu	1602	184,730	0.329	61	Proven
			35,103	0.536	19	Probable
			219,833	0.362	80	Sub Total
16	Pedindang - S. Selan	1526	-	-	-	Proven
			-	-	-	Probable
			-	-	-	Sub Total
17	Kerakas/Keretak - S. Selan	1527	107,191	0.363	39	Proven
			1,188,517	0.499	593	Probable
			1,295,708	0.488	632	Sub Total

No	Regency	IUP	Volume (m^3)	Grade (kg/m^3)	Tonnage (tonnes)	Class
18	Sarangmandi - S. Selan	1528	7,152	0.465	3	Proven
			16,243	0.157	3	Probable
			23,395	0.251	6	Sub Total
19	Cambai - Pangkalan Baru	1530	43,176	0.371	16	Proven
			30,703	0.970	30	Probable
			73,879	0.620	46	Sub Total
20	Kulur - Koba	1531	161,221	0.316	51	Proven
			2,346,055	0.258	605	Probable
			2,507,276	0.262	656	Sub Total
21	Padang Mulia - Koba	1532	-	-	-	Proven
			35,102	0.912	32	Probable
			35,102	0.912	32	Sub Total
22	Kerakas - S. Selan	1583	19,968	0.434	9	Proven
			569,043	0.451	257	Probable
			589,011	0.450	265	Sub Total
23	S. Kebiang - Jebus	1484	-	-	-	Proven
			45,153	0.792	36	Probable
			45,153	0.792	36	Sub Total
24	S. Buluh - Semulut	1485 A.1	26,436	0.341	9	Proven
			-	-	-	Probable
			26,436	0.341	9	Sub Total
25	S. Buluh - Semulut	1485 A.2	293,215	0.267	78	Proven
			1,065,732	0.302	322	Probable
			1,358,947	0.295	401	Sub Total
26	S. Buluh - Semulut	1485 A.3	61,327	0.291	18	Proven
			40,299	0.762	31	Probable
			101,626	0.478	49	Sub Total
27	S. Buluh - Semulut	1485 A.4	-	-	-	Proven
			12,364	0.302	4	Probable
			12,364	0.302	4	Sub Total
28	Penganak Bawah - Jebus	1485 B.1	-	-	-	Proven
			40,949	0.733	30	Probable
			40,949	0.733	30	Sub Total
29	Penganak Bawah - Jebus	1485 B.2	-	-	-	Proven
			127,271	0.426	54	Probable
			127,271	0.426	54	Sub Total
30	Penganak Bawah - Jebus	1485 B.3	99,820	0.255	25	Proven
			502,529	0.345	173	Probable
			602,349	0.330	199	Sub Total

No	Regency	IUP	Volume (m^3)	Grade (kg/m^3)	Tonnage (tonnes)	Class
31	Penganak Bawah - Jebus	1485 B.4	-	-	-	Proven
			721,396	0.348	251	Probable
			721,396	0.348	251	Sub Total
32	Penganak Bawah - Jebus	1485 B.5	-	-	-	Proven
			-	-	-	Probable
			-	-	-	Sub Total
33	Penganak Bawah - Jebus	1485 B.6	626,660	0.277	174	Proven
			-	-	-	Probable
			626,660	0.277	174	Sub Total
34	S. Bembang - Jebus	1486	-	-	-	Proven
			94,503	0.258	24	Probable
			94,503	0.258	24	Sub Total
35	S. Petar - Jebus	1487	45,142	0.241	11	Proven
			47,172	0.198	9	Probable
			92,314	0.219	20	Sub Total
36	S. Selimbang - Jebus	1488	-	-	-	Proven
			189,794	0.213	41	Probable
			189,794	0.213	41	Sub Total
37	Tg. Pemuja - Jebus	1489	-	-	-	Proven
			57,116	0.186	11	Probable
			57,116	0.186	11	Sub Total
38	Tg. Berhala - Mentok	1490 A	1,527	0.630	1	Proven
			-	-	-	Probable
			1,527	0.630	1	Sub Total
39	Tg. Berhala - Mentok	1490 B	-	-	-	Proven
			-	-	-	Probable
			-	-	-	Sub Total
40	Tg. Berhala - Mentok	1490 C	9,452	0.179	2	Proven
			-	-	-	Probable
			9,452	0.179	2	Sub Total
41	Tg. Berhala - Mentok	1490 D	-	-	-	Proven
			-	-	-	Probable
			-	-	-	Sub Total
42	Tg. Berhala - Mentok	1490 E	4,464	0.178	1	Proven
			-	-	-	Probable
			4,464	0.178	1	Sub Total
43	A. Biat - Mentok	1491	153,685	0.202	31	Proven
			2,648	2.628	7	Probable
			156,333	0.244	38	Sub Total

No	Regency	IUP	Volume (m^3)	Grade (kg/m^3)	Tonnage (tonnes)	Class
44	S. Bendul - Mentok	1492	-	-	-	Proven
			218,199	0.210	46	Probable
			218,199	0.210	46	Sub Total
45	A. Sukai - Mentok	1493	-	-	-	Proven
			788,230	0.207	163	Probable
			788,230	0.207	163	Sub Total
46	Mayang/ A. Rambat - Mentok	1494	81,495	0.306	25	Proven
			831,679	0.516	430	Probable
			913,174	0.498	455	Sub Total
47	S. Remunding - Mentok	1495	-	-	-	Proven
			3,046	2.355	7	Probable
			3,046	2.355	7	Sub Total
48	S. Pelangas - Mentok	1496	-	-	-	Proven
			25,352	0.774	20	Probable
			25,352	0.774	20	Sub Total
49	S. Berang - Mentok	1497	157,705	0.248	39	Proven
			2,799,796	0.250	701	Probable
			2,957,501	0.250	740	Sub Total
50	S. Menduyung - Mentok	1498	65,533	0.197	13	Proven
			254,237	0.310	79	Probable
			319,770	0.287	92	Sub Total
51	A. Sukal - Mentok	1499	45,001	0.181	8	Proven
			103,994	0.229	24	Probable
			148,995	0.214	32	Sub Total
52	A. Selang - Mentok	1500	-	-	-	Proven
			729,976	0.242	177	Probable
			729,976	0.242	177	Sub Total
53	S. Terabik - Mentok	1501	68,590	0.310	21	Proven
			5,065,169	0.239	1,209	Probable
			5,133,759	0.240	1,230	Sub Total
54	A. Belo - Mentok	1502	129,165	0.258	33	Proven
			568,991	0.269	153	Probable
			698,156	0.267	186	Sub Total
55	S. Gemuruh/ S. Pait - Mentok	1503	-	-	-	Proven
			-	-	-	Probable
			-	-	-	Sub Total
56	S. Daing - Mentok	1504	-	-	-	Proven
			-	-	-	Probable
			-	-	-	Sub Total

No	Regency	IUP	Volume (m^3)	Grade (kg/m^3)	Tonnage (tonnes)	Class
57	S. Ketok - Mentok	1505	2,627,752	0.238	626	Proven
			12,152	0.662	8	Probable
			2,639,904	0.240	634	Sub Total
58	A. Kundi/ S. Sukal - Mentok	1506	-	-	-	Proven
			-	-	-	Probable
			-	-	-	Sub Total
59	Medang/ S. Jering - Mentok	PO222/Eks. 1507	-	-	-	Proven
			125,071	0.157	20	Probable
			125,071	0.157	20	Sub Total
60	S. Muncung - Kelapa	1508	47,258	0.191	9	Proven
			462,162	0.195	90	Probable
			509,420	0.194	99	Sub Total
61	Tempilang - Kelapa	1509	2,564,238	0.220	565	Proven
			803,341	0.823	662	Probable
			3,367,579	0.364	1,226	Sub Total
62	Tempilang - Kelapa	1510	-	-	-	Proven
			31,121	1.408	44	Probable
			31,121	1.408	44	Sub Total
63	Tg. Nyiur - Kelapa	PO220/Eks. 1544	-	-	-	Proven
			-	-	-	Probable
			-	-	-	Sub Total
64	Nyelanding/ S. Ulin - Koba	1533	366,863	0.267	98	Proven
			701,459	0.644	452	Probable
			1,068,322	0.514	550	Sub Total
65	Bedengung - Koba	1534	475,244	0.276	131	Proven
			79,342	1.722	137	Probable
			554,586	0.483	268	Sub Total
66	Permis - Koba	1535	261,055	0.272	71	Proven
			39,949	0.763	30	Probable
			301,004	0.337	102	Sub Total
67	Paku - Payung	1536	104,797	0.437	46	Proven
			19,712	0.297	6	Probable
			124,509	0.414	52	Sub Total
68	Gadung - Toboali	1537	-	-	-	Proven
			5,740	1.142	7	Probable
			5,740	1.142	7	Sub Total
69	Tg. Kubu - Toboali	1538	-	-	-	Proven
			-	-	-	Probable
			-	-	-	Sub Total

No	Regency	IUP	Volume (m^3)	Grade (kg/m^3)	Tonnage (tonnes)	Class
70	Tg. Kemirai - Toboali	1539 A	-	-	-	Proven
			-	-	-	Probable
			-	-	-	Sub Total
71	Tg. Kemirai - Toboali	1539 B	-	-	-	Proven
			-	-	-	Probable
			-	-	-	Sub Total
72	Tg. Kemirai - Toboali	1539 C	-	-	-	Proven
			-	-	-	Probable
			-	-	-	Sub Total
73	S. Kepoh - Koba	1540	-	-	-	Proven
			-	-	-	Probable
			-	-	-	Sub Total
74	P. Lepar - Pongok	1543	-	-	-	Proven
			-	-	-	Probable
			-	-	-	Sub Total
75	Kepoh Cina - Toboali	1601	-	-	-	Proven
			67,063	0.567	38	Probable
			67,063	0.567	38	Sub Total
76	Penagan – Mendo Barat	1524	517,560	0.423	219	Proven
			167,764	1.056	177	Probable
			685,324	0.578	396	Sub Total
77	S. Menduk -Mendo Barat	1525	95,745	0.239	23	Proven
			263,356	0.367	97	Probable
			359,101	0.333	119	Sub Total
78	Pangkol - Pangkalan Baru	1529	464,679	0.362	168	Proven
			3,122,178	0.444	1,387	Probable
			3,586,857	0.433	1,555	Sub Total
79	Toboali Selatan - Toboali	1541 A	6,560,207	0.214	1,403	Proven
			13,528,151	0.287	3,886	Probable
			20,088,358	0.263	5,289	Sub Total
80	Toboali Selatan - Toboali	1541 B	3,769,432	0.251	947	Proven
			4,118,448	0.444	1,829	Probable
			7,887,880	0.352	2,775	Sub Total
81	Lt. A. Kantung - Sungailiat	1548	102,492,294	0.341	34,930	Proven
			82,817,218	0.291	24,102	Probable
			185,309,512	0.319	59,032	Sub Total
82	Lt. Deniang - Sungailiat	1555	92,090	0.225	21	Proven
			27,652,395	0.290	8,019	Probable
			27,744,485	0.290	8,040	Sub Total

No	Regency	IUP	Volume (m^3)	Grade (kg/m^3)	Tonnage (tonnes)	Class
83	Lt. P. Danta - Belinyu	1559	-	-	-	Proven
			8,698,127	0.387	3,370	Probable
			8,698,127	0.387	3,370	Sub Total
84	Lt. S. Belinyu - Belinyu	1560	-	-	-	Proven
			1,388,766	1.087	1,510	Probable
			1,388,766	1.087	1,510	Sub Total
85	Lt. Tg. Terentang Kelabat	P0265/ eks. 1561	2,903,439	0.311	902	Proven
			357,402	0.866	309	Probable
			3,260,841	0.371	1,211	Sub Total
86	Lt. Tg. Beriga - Koba	1584	-	-	-	Proven
			1,177,333	0.677	797	Probable
			1,177,333	0.677	797	Sub Total
87	Lt. Tempilang - Kelapa	1545	3,967,217	0.642	2,545	Proven
			23,403,499	0.284	6,654	Probable
			27,370,716	0.336	9,199	Sub Total
88	Lt. Kebiang/Penganak - Jebus	1549	27,300,634	0.361	9,850	Proven
			19,138,181	0.338	6,471	Probable
			46,438,815	0.351	16,321	Sub Total
89	Lt. Bakit - Belinyu	1551	-	-	-	Proven
			10,965,195	0.359	3,938	Probable
			10,965,195	0.359	3,938	Sub Total
90	Lt. Ranggam/ Lt. Belo - Mentok	1553	10,100,589	0.335	3,379	Proven
			15,367,586	0.318	4,881	Probable
			25,468,175	0.324	8,259	Sub Total
91	Lt. Bendul - Mentok	1554	1,781,059	0.344	613	Proven
			23,712	0.225	5	Probable
			1,804,771	0.343	619	Sub Total
92	Lt. Toboali - Toboali	1546	5,365,268	0.258	1,384	Proven
			13,304,890	0.553	7,353	Probable
			18,670,158	0.468	8,737	Sub Total
93	Lt. Tg. Kubu - Toboali	P0221/ eks. 1547	20,507,136	0.329	6,750	Proven
			383,266	0.880	337	Probable
			20,890,402	0.339	7,087	Sub Total
94	Laut Permis	KP. PERMIS	222,148	0.237	53	Proven
			50,969	0.311	16	Probable
			273,117	0.251	69	Sub Total
95	Laut Permis	KP. PERMIS B	145,480	0.452	66	Proven
			24,317	0.225	5	Probable
			169,797	0.420	71	Sub Total

No	Regency	IUP	Volume (m^3)	Grade (kg/m^3)	Tonnage (tonnes)	Class
96	Laut Permis	KP. PERMIS C	8,263,202	0.240	1,981	Proven
			284,902	1.193	340	Probable
			8,548,104	0.271	2,321	Sub Total
97	Laut Permis	KP. PERMIS D	677,299	0.265	179	Proven
			88,963	1.055	94	Probable
			766,262	0.356	273	Sub Total
98	Lt. Cupat - Belinyu	P0223/eks 1550	40,214,755	0.343	13,798	Proven
			5,033,308	0.531	2,673	Probable
			45,248,063	0.364	16,472	Sub Total
99	Lt. Sampur/Lt. Kurau - Koba	1556	11,516,995	0.473	5,450	Proven
			50,744,638	0.271	13,738	Probable
			62,261,633	0.308	19,189	Sub Total
Total Reserves Inland of Bangka			**261,697,061**	**0.337**	**88,264**	**Proven**
			313,324,547	**0.326**	**102,105**	**Probable**
			575,021,608	**0.331**	**190,370**	**Total**

- **Belitung Island**

No	Location	IUP	Volume (m^3)	Grade (kg/m^3)	Tonnage (tonnes)	Class
1	S. Membalong - Tg. Pandan	PO232/Eks. 1568 A	80,065	0.198	16	Proven
			119,008	0.347	41	Probable
			199,073	0.287	57	Sub Total
2	S. Membalong - Tg. Pandan	PO232/Eks. 1568 B	-	-	-	Proven
			509,044	0.317	161	Probable
			509,044	0.317	161	Sub Total
3	S. Membalong - Tg. Pandan	PO232/Eks. 1568 C.1	120,617	0.172	21	Proven
			24,453	0.685	17	Probable
			145,070	0.258	37	Sub Total
4	S. Membalong - Tg. Pandan	PO232/Eks. 1568 C.2	21,315	0.214	5	Proven
			7,350	1.098	8	Probable
			28,665	0.440	13	Sub Total
5	Tg. Arabulan - Tg. Pandan	PO266/Eks. 1569 A	-	-	-	Proven
			84,114	0.858	72	Probable
			84,114	0.858	72	Sub Total
6	Tg. Arabulan - Tg. Pandan	PO266/Eks. 1569 B	227,719	0.255	58	Proven
			1,215,252	0.324	393	Probable
			1,442,971	0.313	452	Sub Total
7	A.	1570	-	-	-	Proven

No	Location	IUP	Volume (m^3)	Grade (kg/m^3)	Tonnage (tonnes)	Class
	Belonsotan - Tg. Pandan		-	-	-	Probable
			-	-	-	Sub Total
8	A. Sengkeli - Tg. Pandan	1603	-	-	-	Proven
			8,315	0.249	2	Probable
			8,315	0.249	2	Sub Total
9	A. Sijuk - Tg. Pandan	1605	-	-	-	Proven
			71,398	0.240	17	Probable
			71,398	0.240	17	Sub Total
10	S. Senusa/Pesak - Lenggang	PO226/Eks. 1574	90,366	0.182	16	Proven
			365,229	0.195	71	Probable
			455,595	0.193	88	Sub Total
11	A. Kunang - Lenggang	1575	-	-	-	Proven
			57,640	0.176	10	Probable
			57,640	0.176	10	Sub Total
12	S. Manggar - Manggar	PO227/Eks. 1576 A	938,072	0.216	203	Proven
			214,140	0.705	151	Probable
			1,152,212	0.307	354	Sub Total
13	S. Manggar - Manggar	PO227/Eks. 1576 B	154,121	0.291	45	Proven
			37,923	0.469	18	Probable
			192,044	0.326	63	Sub Total
14	S. Manggar - Manggar	PO227/Eks. 1576 C	30,425	0.172	5	Proven
			9,110	0.189	2	Probable
			39,535	0.176	7	Sub Total
15	S. Manggar - Manggar	PO227/Eks. 1576 D	730,625	0.240	175	Proven
			-	-	-	Probable
			730,625	0.240	175	Sub Total
16	S. Pring - Kelapa Kampit	PO228/Eks. 1577	121,090	0.188	23	Proven
			10,193	1.165	12	Probable
			131,283	0.264	35	Sub Total
17	Lenggang (Hematite)	PO320/Eks. 1609	62,446	0.238	15	Proven
			-	-	-	Probable
			62,446	0.238	15	Sub Total
18	Damar - Mengkubang	KP Batu Besi	-	-	-	Proven
			-	-	-	Probable
			-	-	-	Sub Total
19	Damar - Mengkubang	KP Batu Besi	-	-	-	Proven
			-	-	-	Probable
			-	-	-	Sub Total
20	S. Cerucuk -	PO225/E	622,098	0.226	141	Proven

No	Location	IUP	Volume (m^3)	Grade (kg/m^3)	Tonnage (tonnes)	Class
	Tg. Pandan	ks. 1573	418,866	0.708	297	Probable
			1,040,964	0.420	437	Sub Total
21	A. Jangkal - Kelapa Kampit	PO299/E ks. 1579	4,217	0.152	1	Proven
			71,957	0.292	21	Probable
			76,174	0.284	22	Sub Total
22	G. Tampong - Kelapa Kampit	PO231/E ks. 1580 A	-	-	-	Proven
			73,076	0.159	12	Probable
			73,076	0.159	12	Sub Total
23	G. Tampong - Kelapa Kampit	PO231/E ks. 1580 B	-	-	-	Proven
			52,488	0.192	10	Probable
			52,488	0.192	10	Sub Total
24	Lt. Manggar - Manggar	1562	-	-	-	Proven
			119,671,624	0.298	35,616	Probable
			119,671,624	0.298	35,616	Sub Total
Total Reserves Inland of Belitung			**3,203,176**	**0.226**	**723**	**Proven**
			123,021,180	**0.300**	**36,931**	**Probable**
			126,224,356	**0.298**	**37,654**	**Total**

- **Karimun – Kundur**

No	Location	IUP	Volume (m^3)	Grade (kg/m^3)	Tonnage (tonnes)	Class
1	Lt. Timun - Kundur	618/RIAU	47,485,734	0.261	12,390	Proven
			928,162	0.548	508	Probable
			48,413,896	0.266	12,898	Sub Total
2	Lt. Kundur Barat	KEPRI	10,425,099	0.232	2,421	Proven
			-	-	-	Probable
			10,425,099	0.232	2,421	Sub Total
3	Lt. Timun Kundur Barat	618 B	7,035,425	0.272	1,916	Proven
			1,775,545	1.296	2,301	Probable
			8,810,970	0.479	4,217	Sub Total
4	Lt. Timun Kundur Barat	618 C	1,263,892	0.313	396	Proven
			1,845,430	0.466	859	Probable
			3,109,322	0.404	1,255	Sub Total
5	Lt. Kobil - Kundur	621	17,326,168	0.250	4,338	Proven
			1,442,235	1.648	2,376	Probable
			18,768,403	0.358	6,714	Sub Total
6	Lt.	747D	9,452,101	0.298	2,819	Proven

No	Location	IUP	Volume (m^3)	Grade (kg/m^3)	Tonnage (tonnes)	Class
	Pelambung - Karimun		29,018,885	0.328	9,508	Probable
			38,470,986	0.320	12,327	Sub Total
7	Lt. Kundur Barat - Kundur	P0264/ eks. 956	3,867,748	0.270	1,044	Proven
			109,494,521	0.310	33,972	Probable
			113,362,269	0.309	35,016	Sub Total
Total Reserves Offshore Karimun - Kundur			**96,856,167**	**0.261**	**25,325**	**Proven**
			144,504,778	**0.343**	**49,524**	**Probable**
			241,360,945	**0.310**	**74,849**	**Total**

3.2 Statement of Primary Timah Reserves

Based on the activities of primary tin estimation on Bangka and Belitung Islands, the reserves in Table 3.6.

Table 3.6 Total Reserves in Bangka and Belitung

Location	Volume (m3)	Grade (%)	Tonnage (t)	Class
Bangka-Belitung	6.855.771	0,116	22.410	Proven
	19.070.895	0,137	52.312	Probable
	25.926.666	**0,130**	**74.721**	**Total**

a. The Estimation By Island

The results of reserves estimation which based on the island can be seen in the tables below:

Table 3.7 Reserves Estimation from Bangka Island

Location	Volume (m3)	Grade (%)	Tonnage (t)	Class
Bangka	5.382.132	0,0127	1.845	Proven
	7.686.631	0,0272	5.649	Probable
	13.068.763	**0,0212**	**7.493**	**Total**

Table 3.8 Reserves Estimation from Belitung Island

Location	Volume (m3)	Grade (kg/m3)	Tonnage (t)	Class
Belitung	1.473.639	0,426	20.565	Proven
	11.384.264	0,269	46.663	Probable
	12.857.903	0,304	**67.228**	**Total**

b. Estimation Based on Mining Permit

The result of reserves estimation which based on minig permit can be seen in the tables below:

Table 3.9 Estimated Primary Reserves Per Mining Permit

SITE	IUP	VOLUME ORE	GRADE	TONNAGE	Class
		(m3)	*('%)*	*(Ton)*	
***Bangka**					
PEMALI	PO218/Eks. 1517	-	-	-	Proven
		3.280.439	0,053	4.716	Probable
		3.280.439	0,053	4.716	**Total**
TEMPILANG EX TB.10	1509	5.382.132	0,343	1.845	Proven
		4.406.192	0,212	933	Probable
		9.788.324	0,011	2.778	**Total**
Total Bangka		13.068.763	0,021	7.493	**Total**
*** Belitung**					
BATU BESI BLOK 1	PO227/Eks. 1576 A	915.464	0,395	12.149	Proven
		7.954.596	0,300	23.864	Probable
		8.870.059	0,236	36.013	**Total**
BATU BESI BLOK 3		558.175	0,482	8.416	Proven
		697.161	0,406	8.043	Probable
		1.255.336	0,441	16.459	**Total**
BATU BESI BLOK 4					Proven
		2.732.508	0,200	14.756	Probable
		2.732.508	0,200	14.756	**Total**
Total Belitung		17.056.607	0,304	67.228	**Total**

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APPENDIX D — 2017 GRASBERG COPPER, GOLD AND SILVER RESERVES STATEMENT

REVIEW AND VERIFICATION OF RESERVES

December 31, 2017

Prepared for

P.T. Freeport Indonesia Company

Prepared by

INDEPENDENT
MINING CONSULTANTS, INC.

April 2018

TABLE OF CONTENTS

1.0	**INTRODUCTION**		1-1
2.0	**SUMMARY**		2-1
3.0	**SAMPLING, ASSAYING, AND DATA VERIFICATION**		3-1
	3.1	Diamond Drill Procedures and Exploration Sample Preparation	3-2
	3.2	Assay Methods	3-7
	3.3	Exploration QAQC Results	3-12
	3.4	Composite Procedures.	3-25
	3.5	Grasberg Blast Hole QAQC	3-27
	3.6	Underground Channels vs Nearest Neighbor Diamond Drilling	3-32
	3.7	Pyrite Data Collection.	3-32
4.0	**EESS MODEL**		4-1
	4.1	Data Base	4-2
	4.2	Model Assembly Procedures	4-4
	4.3	Block Model Assembly Checks	4-13
5.0	**EESS MINABLE RESERVES**		5-1
	5.1	DOZ Minable Reserve	5-2
	5.2	DMLZ Reserves	5-9
	5.3	Dom Resource.	5-18
6.0	**BIG GOSSAN MODEL**		6-1
	6.1	Data Base	6-1
	6.2	Geologic Interpretation	6-3
	6.3	Model Assembly Procedures	6-7
	6.4	Block Model Assembly Checks	6-15
7.0	**BIG GOSSAN MINABLE RESERVES**		7-1
	7.1	Determination of Minable Geometry	7-1
	7.2	Checks on the Minable Geometry and Mine Plan	7-5
	7.3	Big Gossan Resources.	7-7

TABLE OF CONTENTS
- Continued –

8.0	**GRASBERG-KUCING LIAR MODELS**		8-1
	8.1	Data Base	8-2
	8.2	Geologic Controls and Estimation Domains . . .	8-5
	8.3	Model Assembly Procedures	8-8
	8.4	Block Model Assembly Checks	8-25
9.0	**KUCING LIAR MINABLE RESERVES**		9-1
10.0	**GRASBERG MINABLE RESERVE**		10-1
	10.1	Open Pit Minable Reserve	10-1
	10.2	Block Cave Minable Reserve	10-7
11.0	**RECONCILIATION**		11-1
12.0	**SARBANES-OXLEY VERIFICATION**		12-1

LIST OF TABLES

Table		
2-1	Statement of Combined Proven and Probable Reserves as of December 31, 2017	2-6
2-2	Changes to Proven and Probable Reserves, P.T. Freeport Indonesia, Co. December 31, 2016 to December 31, 2017	2-7
2-3	AusIMM Definitions, P. T. Freeport Indonesia, Co. PTFI Statement of COW A Reserves and Resources as of Dec 31, 2017	2-8
3-1	Sucofindo Analytical Procedures	3-10
3-2	Sucofindo Duplicate Assay Statistics, June 2016 to August 2017	3-14
3-3	Sucofindo Dulicate Reject Assay Statistics, June 2016 to Aug 2017.	3-14
3-4	Sucofindo Performance on PTFI Submitted Standards	3-16
3-5	Check Assay Results, SFKK vs Geoassay	3-20
3-6	Grasberg Composite Diamond Drill Hole to Nearest Factored Blast Hole, Diamond Drilling Paired to Selected Blast Hole Samples, July 20, 2017	3-30
4-1	Comparison of 2017 Composite Data to 2016 Composite Data	4-2
4-2	Estimation Parameters for DOZ Above the 3115 Elevation	4-6
4-3	Estimation Parameters for DMLZ Below the 3115 Elevation	4-7
4-4	Estimation Parameters for Bulk Density and Bulk Correction Factor DOZ Area, Above and Below the 3115 Elevation	4-9
4-5	Estimation Parameters for Iron Sulfides	4-10
4-6	Undiluted Model vs Composite Statistics Inside 2016 Reserve Outlines	4-14
4-7	September 2017 EESS Model to Composite Check Inside 2016 Minable Envelopes, No Channels used in this Analysis.	4-15
4-8	September 2017 EESS Model to Composite Check on Iron Sulfides Inside 2016 Minable Envelopes	4-16
4-9	Undiluted and Pre-mine 2016 Cave Shapes, Sep17 Versus Aug16 EESS Block Models	4-17
5-1	DOZ Minable Reserves - Proven and Probable Minable Reserves December 31, 2017	5-6
5-2	DOZ Resource – Measured, Indicated, and Inferred Categories, December 31, 2017	5-8

LIST OF TABLES
- Continued –

5-3	DMLZ Block Cave, Minable Reserve, December 21, 2017 Proven and Probable Reserves	5-15
5-4	DMLZ Resource, Measured, Indicated and Inferred Categories December 31, 2017	5-17
6-1	Big Gossan, 2014 Bulk Density Estimation Parameters	6-8
6-2	Big Gossan, 2014 Bulk Density Correction Factor Estimation Parameters	6-8
6-3	Big Gossan, 2014 RQD Estimation Parameters.	6-9
6-4	Big Gossan August 2014 Block Model by PTFI, 2014 Copper Grade Estimation Parameters	6-11
6-5	Big Gossan August 2014 Block Model by PTFI, 2014 Gold Grade Estimation Parameters	6-12
6-6	Big Gossan August 2014 Block Model by PTFI 2014 Silver Grade Estimation Parameters	6-13
6-7	Big Gossan 2014 Composites versus Block Model Checks	6-16
6-8	Composites and Model Grades in Planned Reserve Stopes	6-17
7-1	Big Gossan Cutoff Grade Check by IMC December 31, 2017 Estimate	7-3
7-2	Big Gossan Minable Reserve, December 31, 2017 Proven and Probable Reserves	7-4
7-3	Big Gossan Resource Measured, Indicated and Inferred Categories December 31, 2017	7-7
8-1	Bulk Density Estimation Parameters	8-9
8-2	Bulk Density Correction Factor Estimation Parameters	8-10
8-3	Copper Grade Estimation Parameters.	8-12
8-4	Gold Grade Estimation Parameters	8-13
8-5	Silver Grade Estimation Parameters	8-14
8-6	Blast Hole Grade Estimation Parameters and Blast Hole Indicator Parameters	8-16
8-7	LVA Parameters in GIC	8-20
8-8	Estimation Domains, Pyrite, Pyrrotite, FeS	8-23
8-9	Pyrite + Marcasite, Pyrrotite Estmation Parameters	8-24
8-10	Aug 2017 GRS-KL Model to Composite Check, Kucing Liar Composites and Blocks in 2016 Reserve Shape.	8-26

LIST OF TABLES
- Continued –

8-11 Aug 2017 GRS-KL Model to Composite Check, Grasberg Block Cave Composites and Blocks in 2016 Reserve Shape . . 8-27
8-12 Aug 2017 GRS-KL Model to Composite Check for Pyrite, Grasberg Block Cave Composites and Blocks in 2016 Reserve Shape . . 8-28
8-13 Aug 2017 GRS-KL Model to Composite Check for Pyrite, Grasberg Block Cave Composites and Blocks in 2016 Reserve Shape . . 8-28
8-14 Aug 2017 GRS-KL Block Model, Undiluted Model vs, Composite Statistics Inside 2016 Reserve Outlines 8-29
8-15 Comparison of Undiluted and Pre-mine 2016 Reserve Cave Shapes Aug 2017 Model vs. Aug 2016 GRS-KL Block Models . . .8-30

9-1 Kucing Liar Block Cave Minable Reserve, December 31, 2017, Proven and Probable Reserves 9-6
9-2 KL Resource Measured, Indicated and Inferred Categories, December 31, 2017 9-9

10-1 Grasberg Open Pit, Proven and Probable Reserve, December 31, 2017 10-3
10-2 Grasberg Block Cave, NSR Input, Process Recoveries and Conc. Grade 10-11
10-3 Grasberg Block Cave, Proven and Probable Minable Reserves as of December 31, 2017 10-12
10-4 Grasberg Block Cave Resource, December 31, 2017 Measured, Indicated, and Inferred Categories . . . 10-14

11-1 GRSKL Model Included in Total Models Predicted . . . 11-5
11-2 GRSKL Model Included in Total Models Predicted Mplan 2016 Test 11-6
11-3 GRSKL Model Included in Total Models Predicted, Annual Summary, Total of All Model Production vs Mine Reported Production . 11-8
11-4 GRSKL Model included in Total Models Predicted, Annual Summary, Total of All Model Production vs Mine Reported Production Mplan 2016 Test 11-9
11-5 Simplified Flow Sheet, Reconciled Mine Production and Reconciled Mill Production for 5 Years 11-10

LIST OF FIGURES

Figure		
3-1	Drilling and Drill Core Data Process Control. . . .	3-3
3-2	Sample Preparation Protocol, Diamond Drill Core (FXPRP-DC) .	3-6
3-3	Analytical Protocol – For all types of sample (pulps) . .	3-9
3-4	Summary of Exploration Drilling Duplicate Assay Results from Sucofindo, June 2016 to August 2017 Exploration Drilling .	3-13
3-5	Summary of Exploration Drilling Duplicate Reject Results from Sucofindo, June 2016 to August 2017 Exploration Drilling .	3-15
3-6	SFKK Reported Results of Submitted Standards (CRM) . .	3-17
3-7	Results of Blanks Submitted with June 2016 to August 2017 Exploration Data.	3-19
3-8	Check Assay Summary Results	3-21
3-9	Blast Hole Check Assays	3-28
5-1	DOZ Perspective Views of Block Cave Envelopes, Looking North and Southwest – Provided by PTFI . . .	5-4
5-2	DOZ 2017 Undercut Outline for Reserves	5-5
5-3	Illustration of DMLZ Cave Envelope Provided by PTFI . .	5-10
5-4	DMLZ Undercut Outline on 2590 for Reserve . . .	5-11
5-5	Cross Section Looking NW Block Cave Reserve Areas . .	5-12
5-6	Dom Open Pit and Block Cave Resource Shapes, Looking South .	5-19
6-1	Estimation Domains	6-1
6-1b	1.55 Eqcu Meas+Ind	6-5
6-2	Estimation Domains Left 1.55% Eqcu Right	6-6
8-1	SW-NE Section 38 Bearing, Illustration of Estimation Zones .	8-7
8-2	Simplified and Stylized Bench Plan of the Grasberg Deposit .	8-21
9-1	KL Block Cave Undercut and Drawpoint Layout in 2605 Elevation.	9-2
9-2	KL and Grasberg Minable Envelopes, Perspective View Developed by PTFI, Looking West	9-3
10-1	Grasberg Final Pit for Reserves	10-4
10-2	Block Cave Undercut on 2815 Elevation, 500 m Grid . .	10-8
10-3	Illustration of Grasberg Block Cave	10-9

1.0 INTRODUCTION

P.T. Freeport Indonesia Company (PTFI) requested Independent Mining Consultants, Inc. (IMC) to review and verify the calculation of the December 31, 2017 statement of reserves for PTFI controlled ore deposits located in West Papua, Indonesia. This report summarizes the opinions of IMC regarding the status of ore reserves at PTFI and reports the methods used by PTFI and procedural checks applied by IMC. This report is based on data collected and work completed by IMC during 2017 and draws on previous IMC experience at PTFI prior to 2017.

This report reflects the status of reserves, resources and/or mineralized material on 31 December 2017. IMC understands that PTFI continues negotiation with the Indonesian government regarding the license to export concentrates, term of the contract, and other items. The outcome and potential impact of those negotiations on the reserves and resources are not known at the time of this writing. This report and the PTFI tabulations reflect the conditions as known on 31 December 2017.

The definitions of reserves within this report conform to definitions within the U.S. Securities and Exchange Commission Form S-18 and Industry Guide 7. Additionally, a breakout of reserves is provided in a format consistent with the Joint Ore Reserves Committee (JORC) code recognized by the AusIMM and other jurisdictions. The total of proven and probable reserves at PTFI is identical for both U.S. SEC and JORC tabulations.

This report is written primarily for the use of PTFI personnel and their contractors. As such, it assumes a level of knowledge regarding the deposits and their locations. IMC holds the opinion that the PTFI reserves meet the criteria established by the U.S. SEC as well as the JORC definitions. This report does not however follow the document outline presented in JORC guidelines.

IMC personnel have reviewed the sampling procedures, reserve estimation procedures, mining methods, mine plans, and process recovery information used in the calculation of the PTFI reserves since the late 1980's. This report focuses on the procedures that have changed during 2017 or that were currently in use during 2017. Models and reserves that have not changed are not discussed in detail and earlier reports are referenced for descriptions of those deposit models and methods.

Metric units will be used throughout this report unless specifically stated otherwise. Metric tons will be referred to as tonnes. Copper grades will be expressed in percent by weight (%) and precious metal grades will be in grams per metric tonne (gm/tonne). The term Ktonnes on IMC tables and in text means 1000 metric tons. The abbreviation "eqcu" means equivalent copper and represents the combined value of copper, gold, and silver expressed in terms of copper only. PTFI uses equivalent copper as a mine planning tool in some of the deposits.

A section has been incorporated in this report that addresses the results of the IMC Verification of Ore Reserves Internal Controls with the purpose of meeting the requirements

of the Sarbanes-Oxley act. The purpose of this work is to confirm that there are sufficient controls in place to properly report ore reserves within the Freeport organization.

John Marek of IMC last visited job site during the period of October 6 – 14, 2016. Planned site visits were not possible during 2017 due to security concerns at site. IMC staff met with PTFI staff in their Phoenix, Arizona office on two occasions during 2017 to collect data and understand methods applied to model assembly and determination of reserves.

Information from the mine site was requested by IMC and transferred electronically to IMC in a timely manner.

Many members of the PTFI geology and mine planning staffs were involved in the reserve work. IMC would like to thank all PTFI personnel for the diligent work and assistance in gathering information and providing access to all necessary data for this review.

2.0 SUMMARY

This report summarizes the IMC review and verification of reserves as of 31 December 2017 for P.T. Freeport Indonesia Company (PTFI). This report addresses: 1) data base verification, 2) model and mine plan methods that were applied, and 3) results of independent checks on models and mine plans.

Table 2-1 presents the PTFI tabulation of reserves as of December 31, 2017. The definitions of reserves within the table are consistent with U.S. Securities and Exchange definitions within Industry Guide 7. The operational and ore reserve status of each of the deposits is summarized in the following paragraphs. Table 2-2 presents the PTFI reserves and resources based on AusIMM guidelines (JORC code).

This report reflects the status of reserves, resources and/or mineralized material on 31 December 2017. IMC understands that PTFI continues negotiation with the Indonesian government regarding the license to export concentrates, term of the contract, and other items. The outcome and potential impact of those negotiations on the reserves and resources are not known at the time of this writing. This report and the PTFI tabulations reflect the conditions as known on 31 December 2017.

PTFI has used metal prices of $2.00 /lb copper, $1,000 /troy ounce gold, and $15.00 /troy ounce silver to establish the stated reserves. IMC completed reserve tests at metal prices lower than the PTFI values which resulted in positive project economics. As a result, the stated reserves are robust at the historic three year backward average values and at current market spot prices.

Status of PTFI Ore Reserves

Grasberg Pit

The Grasberg open pit and stockpiles delivered roughly 40.0 million tonnes of ore to the mill during 2017 from a total in-pit material movement of about 60.1 million tonnes including rehandle of in-pit stockpiles. The statement of reserves for December 21, 2017 is based on a block model called an IPM Model that was assembled by PTFI staff during November of 2017 and an updated mine plan. The mine plan currently plans to steepen the pit walls for the final few benches of the pit.

The combined Grasberg pit and stockpile reserve reduced by about 29.2 million tonnes compared with last year. Production from the pit to the mill and to the stockpile combined was about 36.3 million tonnes of ore and low grade. A stockpile strategy is now being employed for the Grasberg pit, and re-mining of the stockpile is included within the reserve plan. The pit will be exhausted of ore, early in 2019. Production from the Grasberg stockpile will continue through 2018 and into early 2019.

IMC has checked the mine production schedule presented by PTFI in support of the reserve. That check indicates that the total reserve tonnage and grade can be produced.

The future reserve in the pit is dependent on the geotechnical response of the rock mass. Pit wall instability could have a negative impact on the production of the remaining reserve.

Grasberg Block Cave

Underground development continued at the Grasberg Block Cave (GBC) producing just about 1.3 million tonnes of ore from development muck.

The statement of reserves for January 1, 2018 is based on a block model assembled by PTFI staff during August of 2017 that incorporates a grade interpolation technique called LVA (local varying anisotropy) along with updates to the mine plan. The reserve reduced slightly compared with last year (0.8 million tonnes) due to minor changes in the mine plan and production schedule.

DOZ Block Cave

The DOZ produced about 11.4 million tonnes of ore during 2017. Mine design changes and premature closures of drawpoints removed about 9.9 million tonnes from the reserve for a net reduction of about 21.3 million tonnes.

Remaining reserves at DOZ are dependent on the geotechnical response of the cave. Some draw points have closed early or must be produced at a reduced rate due to wet muck and local draw point convergence. The reduced production rate could potentially result in a loss of reserves if the underlying DMLZ undercuts the DOZ crusher before completion of all of the planned DOZ block cave.

Deep MLZ Block Cave (DMLZ)

The Deep MLZ block cave continued limited production during 2017 and produced roughly 1.2 million tonnes of combined cave production and development ore. The block model was updated and the mine plan modified slightly. The combined impact on reserves was a net reduction of about 2.4 million tonnes of ore compared to last year.

Kucing Liar

The Kucing Liar (KL) block cave is not in production. The block model was updated during 2017 and the mine schedule modified to interface with the production from the GBC and DMLZ deposits.

The Kucing Liar deposit is scheduled to start initial production in 2025 once the GBC and DMLZ caves are well established. The reserve basis of KL is established by the time period remaining in the contract of work through the end of 2041.

There is also a total production capacity limit at the mills of 240,000 tpd. Changes in the DMLZ and GBC production schedules this year reduced the amount of ore required from KL to fill the process plant to capacity. As a result, there was a reduction of KL reserves of about 47.8 million tonnes.

Without extension to the contract of work, delays that trigger a reduction of the production tonnage at KL could potentially limit the future reserves and future economic viability of the KL deposit.

Big Gossan

The Big Gossan mine production was halted in April of 2017 and then restarted on a limited basis in October of 2017. Total production for the year was roughly 0.22 million tonnes. The Big Gossan block model was not changed during 2017, but the cutoff grade and stope plan was modified to reflect current economic conditions. The modified stope plan and production combined to reduce reserves by about 1.75 million tonnes.

Dom

The Dom open pit and underground material remains as Additional Mineralized Material or resource category during 2018. Sequencing of the district production has moved potential Dom production after 2041.

In summary, PTFI reserves reduced by 103.2 million tonnes during 2017 of which 54.1 million tonnes was due to production.

The process plant recovery estimates for this statement of reserves were updated to reflect current best estimate of planned mill operations and performance. The recovery models were developed by the PTFI process team based on mine production schedules, plant performance history, and extensive metallurgical testing.

Verification

Table 2-1 summarizes the PTFI estimate of reserves as of December 31, 2017. IMC has reviewed the supporting information provided by PTFI and has performed check calculations where possible to confirm procedures and assumptions used by PTFI in their calculations. IMC check calculations do not necessarily match PTFI results exactly. However, the checks are sufficiently close, that IMC has formed the opinion that the PTFI reserve estimates are within the limits of acceptable engineering error and that the estimated reserves conform to the definitions in SEC Form S-18 and Industry Guide 7 for Proven and Probable Reserves.

In forming this opinion, IMC has relied on information provided by PTFI. Much of this information has been confirmed by IMC during corporate office visits and site visits in previous years. IMC has reviewed the following types of data for each deposit:

1) Geologic maps and sections
2) Sampling procedure and assaying methods
3) Statistical evaluations and studies
4) Block model methods, parameters, tabulations, and maps
5) Mining and process costs
6) Mine plans
7) Process recoveries
8) Mine progress to date, as compared to plans.
9) Predicted mining reserves versus realized production

IMC has performed check calculations or comparisons on much of the information provided by PTFI. Where checks and confirmations were not possible, IMC has assumed that all information supplied is complete and reliable within normally accepted limits of error. During the normal course of the review, IMC has not discovered any reason to doubt that assumption.

IMC has developed cash flow calculations for each deposit at lower metal prices to check that the reserves are economically robust. IMC holds the opinion that the PTFI open pit and underground reserves are robust with regard to metal prices that are less than the 3 year historic backward average and less than the current spot prices.

IMC has not specifically reviewed the contract of work for the property. However, PTFI or its predecessor firms have been in production since 1972, and PTFI has informed IMC that PTFI has the legal right to mine, process ore, and produce mineral from the property through 2041. Production since 1972 has required at least one continuation of the PTFI Contract of Work (COW) in Indonesia.

IMC has not reviewed the environmental situation at the property. IMC has assumed that any operating permit and reclamation requirements are properly accounted for in the information supplied by the client, and that planned operations will not be prejudiced by environmental, permitting or related constraints.

IMC has reviewed the methods and procedures used for reserve estimation by PTFI, and has concluded that the process has been performed in a manner consistent with good engineering and geologic practice.

The computer block models used in the calculation of reserves were completed by PTFI with verification and checks by IMC. Where the calculation of minable reserves for December 31, 2017 required estimated production deletions, IMC has confirmed that the calculations properly reflect the volume of material removed from the ground and the block models due to mine production.

Resources

PTFI declares resources on international exchanges. As such, IMC has reviewed and verified the statement of resources on Table 2 and confirms that this material can be considered to have reasonable prospect for eventual economic extraction. Reserve and resource material on Table 2 conforms to guidelines adopted by the AusIMM (JORC) code. It should be noted that the sum of proven and probable reserves shown on Table 2 by JORC guidelines match the combined proven and probable reserves on Table 1 as set by SEC guidelines.

Sarbanes-Oxley Controls Verification

PTFI requested IMC to complete a verification of the process controls regarding the ore reserve process at PTFI. That verification is summarized in Section 13 and the controls checklists were provided to PTFI earlier under separate cover.

Table 2-1

P. T. Freeport Indonesia, Co.

Statement of Combined Proven and Probable Reserves

as of December 31, 2017

Deposit	Ore				Mill Recoveries			Payable Metal		
	Tonnes x 1000	Total Copper %	Gold gm/t	Silver gm/t	Copper %	Gold %	Silver %	Copper Million Pounds	Gold Troy Oz X 1000	Silver Troy Oz X 1000
DOZ Block Cave	78,761	0.54	0.76	2.05	93.3%	84.5%	89.3%	852	1,577	3,568
Deep MLZ Block Cave	437,043	0.91	0.76	4.39	90.1%	82.0%	83.7%	7,658	8,467	39,752
Big Gossan	57,971	2.22	0.93	13.18	94.7%	68.5%	82.8%	2,600	1,156	15,633
Grasberg Pit	33,257	1.29	2.64	3.63	97.5%	93.6%	61.9%	890	2,558	1,848
Grasberg Pit, Stockpiles	25,661	0.58	0.41	1.63	65.0%	34.9%	46.0%	204	113	475
Grasberg Block Cave	963,474	1.01	0.72	3.52	87.5%	66.6%	74.5%	18,121	14,506	62,488
Kucing Liar	359,883	1.25	1.07	6.48	87.6%	45.6%	50.9%	8,401	5,466	29,313
Total Reserves	**1,956,049**	**1.05**	**0.83**	**4.46**	**88.6%**	**66.8%**	**70.9%**	**38,725**	**33,844**	**153,076**

Tonnes means metric tons = 2204.6 pounds
gm/t means grams per metric ton
Calculations on this table may not check precisely
because additional significant figures are stored and not printed.

Mill Recoveries Shown on the Table, are Deposit Average Values and May Reflect Several Ore Types
Royalty calculations are not shown on this table.
Smelter Recoveries Shown Below, Applied to All Deposits

Metal	Smelter Recovery %
Copper	96.5%
Gold	97.0%
Silver	76.9%

Metal Prices Shown Below, Used For Engineering of Final Reserve

Metal Prices for End of Mine Life
$2.00 /lb
$1,000 /troy oz
$15.00 /troy oz

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Table 2-2

Changes to Proven and Probable Reserves, P.T. Freeport Indonesia, Co.
December 31, 2016 to December 31, 2017

Deposit	Change In Status	Ore Tonnage and Grade				Reserve Mill Recovery			Change in Recovered Metal		
		Ore KTonnes	Total Cu%	Gold gm/t	Silver gm/t	Copper %	Gold %	Silver %	Copper Million Lbs	Gold Oz x 1000	Silver Oz x 1000
DOZ Block Cave End 2016		100,050	0.51	0.70	2.10	93.5%	84.5%	87.2%	1,023	1,836	4,532
Production During 2017 from Model		-11,390	0.51	0.54	1.98	93.5%	84.5%	87.2%	-114	-163	-487
Mine Planning Changes		-9,899	0.28	0.37	2.62	93.5%	84.5%	87.2%	-56	-96	-560
Process Recovery Change						-0.1%	0.0%	2.1%	-1	0	83
DOZ Block Cave End 2017		78,761	0.54	0.76	2.05	93.3%	84.5%	89.3%	852	1,577	3,568
Deep MLZ Block Cave, End 2016		439,412	0.90	0.75	4.35	90.1%	81.8%	83.7%	7,578	8,409	39,505
Production During 2017 from Model		-1,184	0.75	0.80	3.56	90.1%	81.8%	83.7%	-17	-24	-87
Net Change to Model and Engr. Adjust.		-1,185	-4.28	-2.06	-11.79	90.1%	81.8%	83.7%	97	62	289
Process Recovery Change						0.0%	0.2%	0.1%	0	20	45
Deep MLZ Block Cave, End 2017		437,043	0.91	0.76	4.39	90.1%	82.0%	83.7%	7,658	8,467	39,752
Big Gossan, End 2016		59,720	2.19	0.97	13.29	94.8%	69.3%	82.8%	2,641	1,257	16,252
Production During 2017		-223	1.92	0.89	12.16	94.8%	69.3%	82.8%	-9	-4	-55
Net Change to Model and Mine Plan		-1,526	1.01	2.51	17.82	94.8%	69.3%	82.8%	-31	-83	-557
Recovery Change						-0.1%	-0.8%	0.0%	-2	-14	-7
Big Gossan, End 2017		57,971	2.22	0.93	13.18	94.7%	68.5%	82.8%	2,600	1,156	15,633
Grasberg Pit, End 2016		55,513	1.26	2.11	3.62	92.2%	89.2%	58.8%	1,370	3,266	2,921
Grasberg Stockpile Reserve End 2016		32,615	0.53	0.33	1.47	68.2%	37.7%	48.0%	251	125	568
Pit Production Deletion 2017		-40,003	1.18	1.39	2.11	92.2%	89.2%	58.8%	-923	-1,549	-1,226
Stockpile Production Deletion		-9,187	0.54	0.35	2.12	68.2%	37.7%	48.0%	-72	-38	-231
Net Change to Mine Plans and Model		17,747	1.13	1.46	0.24	92.2%	89.2%	58.8%	394	723	61
Net Change to Stockpile		2,232	1.11	1.36	5.98	68.2%	37.7%	48.0%	36	36	158
Process Recovery Change									38	108	72
Grasberg Pit, End 2017		33,257	1.29	2.64	3.63	97.5%	93.6%	61.9%	890	2,558	1,848
Grasberg Stockpile Reserve End 2017		25,661	0.58	0.41	1.63	65.0%	34.9%	46.0%	204	113	475
Grasberg Pit + Stockpile, End 2017		58,917	0.98	1.66	2.76	89.2%	87.3%	57.8%	1,094	2,671	2,323
Grasberg Block Cave, End 2016		964,303	1.03	0.78	3.60	87.4%	67.3%	74.0%	18,543	15,690	63,470
Production Deletion 2017		-1,322	0.82	0.60	2.55	87.4%	67.3%	74.0%	-20	-17	-62
Exploration/Mine Plan Changes		493	-44.87	-98.14	-145.11	87.4%	67.3%	74.0%	-412	-1,017	-1,311
Process Recovery Change						0.0%	-0.7%	0.5%	10	-150	391
Grasberg Block Cave, End 2017		963,474	1.01	0.72	3.52	87.5%	66.6%	74.5%	18,121	14,506	62,488
Kucing Liar Block Cave, End 2016		407,643	1.26	1.10	6.37	88.4%	48.0%	51.4%	9,682	6,679	33,018
Model Change and Reso Trasnfer diff		-49,058	1.00	1.17	7.56	88.4%	48.0%	51.4%	-918	-860	-4,718
Mine Design Change		1,298	-11.87	-3.86	81.44	88.4%	48.0%	51.4%	-290	-75	1,344
Process Recovery Change						-0.8%	-2.3%	-0.6%	-73	-278	-331
Kucing Liar Block Cave, End 2017		359,883	1.25	1.07	6.48	87.6%	45.6%	50.9%	8,401	5,466	29,313
Overall Change 2016 to 2017		**-103,208**	**1.20**	**1.43**	**4.80**				**-2,362**	**-3,418**	**-7,190**

Negative means reduction from 2016 to 2017

Smelter recoveries for 31 December 2017 are: 96.5% Cu, 97.0% Au, 76.9% Ag

Table 2-3
AusIMM Definitions
P. T. Freeport Indonesia, Co.
PTFI Statement of COW A Reserves and Resources as of December 31, 2017

Ore Reserves												
Deposit	Proven Reserves				Probable Reserves				Proven + Probable Reserves			
	Ore Tonnes x 1000	Total Cu %	Gold gm/t	Silver gm/t	Tonnes x 1000	Total Cu %	Gold gm/t	Silver gm/t	Tonnes x 1000	Total Cu %	Gold gm/t	Silver gm/t
DOZ Block Cave	24,505	0.56	0.75	2.15	54,256	0.54	0.76	2.01	78,761	0.54	0.76	2.05
Deep MLZ Block Cave	76,535	1.00	0.83	4.70	360,507	0.90	0.74	4.33	437,043	0.91	0.76	4.39
Big Gossan	17,739	2.32	0.98	14.40	40,232	2.18	0.91	12.64	57,971	2.22	0.93	13.18
Grasberg Pit	11,638	1.93	4.69	5.58	21,619	0.95	1.53	2.58	33,257	1.29	2.64	3.63
Grasberg Pit Stockpiles	25,661	0.58	0.41	1.63	0	0.00	0.00	0.00	25,661	0.58	0.41	1.63
Grasberg Block Cave	334,770	1.17	0.90	3.83	628,704	0.93	0.63	3.36	963,474	1.01	0.72	3.52
Kucing Liar	136,331	1.33	1.13	7.14	223,552	1.20	1.03	6.08	359,883	1.25	1.07	6.48
Total Reserves	627,178	1.18	0.99	4.83	1,328,870	0.99	0.76	4.29	**1,956,049**	**1.05**	**0.83**	**4.46**

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Identified Mineral Resources												
Deposit	Measured Resources				Indicated Resources				Inferred Resources			
	Tonnes x 1000	Total Cu %	Gold gm/t	Silver gm/t	Tonnes x 1000	Total Cu %	Gold gm/t	Silver gm/t	Tonnes x 1000	Total Cu %	Gold gm/t	Silver gm/t
Dom Block Cave	8,800	1.37	0.34	8.80	20,049	1.13	0.30	7.24	0	0.00	0.00	0.00
Dom Open Pit + 0.40 Eqcu	7,426	1.71	0.37	10.73	24,731	1.59	0.36	9.64	595	0.86	0.08	2.88
Ertsberg Open Pit	2,242	1.24	0.33	4.56	11,511	0.78	0.29	3.48	0	0.00	0.00	0.00
DOZ Block Cave	5,667	0.33	0.76	0.48	58,422	0.40	0.74	0.65	123	0.53	0.36	0.27
DMLZ BC	16,592	0.61	0.68	3.06	415,360	0.64	0.59	3.24	53,747	0.61	0.49	3.08
Big Gossan	3,232	2.22	0.96	14.13	6,718	1.91	1.16	13.36	0	0.00	0.00	0.00
Grasberg Pit, +0.25% Eqcu	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00
Grasberg Pit HS +0.35 Eqcu	0	0.00	0.00	0.00	0	0.00	0.00	0.00	0	0.00	0.00	0.00
Grasberg 2800 Undercut	17,980	0.46	0.51	4.94	264,813	0.58	0.56	3.28	10,774	0.12	0.26	1.87
Grasberg Deep Cave	70,277	0.71	0.56	2.90	223,368	0.71	0.50	2.73	5,578	0.29	0.24	1.76
Kucing Liar BC	164,600	0.95	0.91	4.11	565,069	0.78	0.76	4.30	11,468	0.47	0.41	1.79
Total Identified Resources	296,818	0.88	0.75	4.16	1,590,041	0.71	0.63	3.65	82,286	0.51	0.43	2.64
Additional Mineralized Material, or Total Measured and Indicated Resources					1,886,858	0.74	0.65	3.73				

3.0 SAMPLING, ASSAYING, AND DATA VERIFICATION

This section addresses the drilling, sampling, sample preparation, assay procedures, and data base management procedures utilized by PTFI for all deposits in the district. Particular emphasis will be placed on the current procedures. IMC staff was not able to visit the project site during 2017 due to security issues. This information reported herein relies on previous site visits and information provided by PTFI and the laboratories on site.

Sample and assay protocols for diamond drill core samples remain similar to prior years. Some minor changes in protocol or departures from SOP's are noted later in this section. Prior to 2003, different sample preparation and analytical methods were employed that have been documented in previous annual IMC reserve verification documents. IMC holds the opinion that it is reasonable and appropriate to commingle recent PTFI drill data with existing (historic) diamond drill hole data.

Selected blast holes from the open pit are used in the assembly of the open pit reserve model and mine plan. The blast hole selection for copper, gold, and silver was completed in June 29, 2017. Blast hole samples from the Grasberg open pit are prepared at the Mill 74 Assay Laboratory. The sample preparation procedures and assay procedures vary from those of the exploration samples. They will be discussed separately in a later subsection.

Drill core from everywhere on the project site is transported down the mountain to a facility in Timika for core logging, storage, and sample preparation. The Timika facility is operated by a subsidiary organization of P.T. Freeport Indonesia.

Sucofindo Kuala Kencana (SFKK) has been the primary assay lab for exploration data for several years. SFKK procedures for assay have not changed materially during the last year and are outlined later in text. The assay finish methods at SFKK all utilize AA (atomic absorption) methods. The check assay lab, PT Geoservices Ltd., GeoAssay Analytical Laboratory in Cikarang, Jakarta uses ICP-OES methods for the third party check assays.

Starting in November 2009 a Data Acquisition and Maintenance check list was developed for the Sarbanes Oxley (SOX) review for PTFI. This SOX checklist incorporates a review of the data acquisition tasks required for the reserve and resource reporting. The SOX verification process is completed by IMC during the technical review presented in this section. The SOX check list has four main components that are summarized in Section 13:

Maintenance of Existing Data Base
Drilling and Transport of Drill Core Samples
Core Shed Handling, Logging, and Sample Preparation
Quality Control / QAQC Procedures

3.1 Diamond Drill Procedures and Exploration Sample Preparation

All exploration and drilling and dewatering drilling used for model assembly at PTFI has utlized diamond core methods since the initial development of the Gunung Bijih deposit. The treatment of the diamond core data as currently practiced at PTFI is summarized in this section. In 2008 the Grasberg open pit model and reserve went back to utilizing selected blast hole data. The blast hole data for model estimation was extracted from the blast hole data base on June 29, 2017. Since mid-2017, an RC drill has been used for some dewatering holes. Those RC holes were not utilized in the model estimation.

Exploration and dewatering drilling used for modeling has been by wire line diamond core methods. Current drilling is generally HQ diameter and may reduce to NQ for extended depth holes. The entire data base at PTFI consists of a mix of drill core sizes from HQ to BQ. Earlier drill programs often collared NQ holes and reduced to BQ for deep drilling. Most of the material estimated with BQ diameter drilling has been mined out by this time.

The drill core is boxed at the rig in metal boxes. Some plastic core boxes have been used recently and continue to be evaluated as a cost savings. The drillers box the core and the project geologist completes a quick geologic logging of the major rock types at the rig. Drill intervals range from 0.5 m to 6.0 m with 3.0 m being the most common occurrence in recent drill programs.

In 2005 PTFI established a core tracking protocol to assure that core is delivered in a timely fashion from the drill rig to the splitting, assaying, and storage facilities. That procedure is still generally in place with some modifications for practicality of logistics and updated software.

Core is transported from the drill sites to the core handling and marshaling facility called Kasuang at Mile 74. Core is collected at Kasuang and loaded into small secured transport containers. Documentation is prepared for the transport to Timika and the containers are delivered to Timika by a dedicated core transport truck. A modified drill hole ID and box number is assigned at Kasuang for transport tracking. The arrival of samples at Timika is confirmed with the paperwork transfer and a web based confirmation system that is incorporated within the acQuire software package.

The core tracking system is contained within the acQuire data base system and constitutes a thorough check list and reporting program to track the sample location and progress through transport, preparation, assay, and incorporation into the data base. Once at Timika, the original drill hole number and box number are used for continued tracking.

Figure 3-1 is a flow sheet of the drilling, core movement sampling and analysis. The data base and QAQC systems are also shown. There are 55, Standard Operating Procedures (SOP) that provide detail instructions to cover all items on Figure 3-1.

A number of processes are completed at the Timika core shed including: core photos, logging, geotech logging, density measurements, magnetic susceptibility recording and core splitting. Split core is sent to SFKK for assays with transfer documentation.

Figure 3-1
Drilling and Drill Core Data Process Control

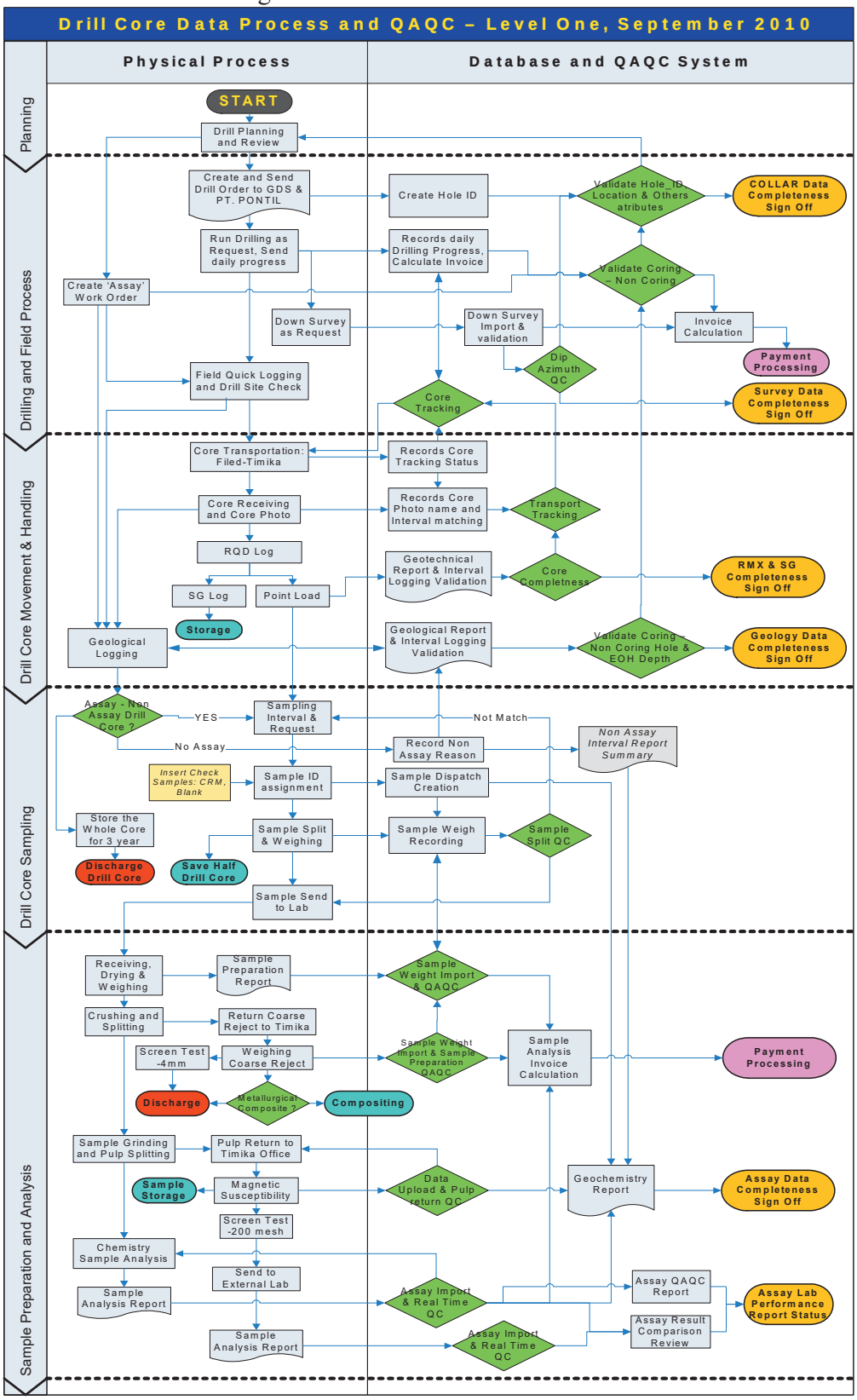


Figure 3-2 shows the Sample Preparation Protocol for Diamond Drill Core Samples at the SFKK lab. The following items address some of the main points on Figure 3-2.

1. The sample is dried in an oven for a maximum of 8 hours at 105 degrees C. Samples are weighed and recorded on the transmittal sheet.

2. The entire sample is crushed to less than 4mm with a Boyd RSD combination crusher and split to about 1 kilogram sample using the integrated rotary splitter. The final size after crushing is about 2mm. The remaining material reports to coarse reject. The crush-size is tested regularly as part of the QA/QC measures.

3. Additional reject splits are retained for future metallurgical work and for duplicate coarse reject analysis. Roughly 1 in 25 of the duplicate coarse reject (DR) samples is prepared and assayed as a check on the pulp preparation process. As well, 1 in 25 coarse reject samples are also screen analyzed to confirm the size is 95% passing 4mm. Results of the screen analysis are reported monthly

4. The 1 kilogram crushed samples are then pulverized in a disk grinder (LM2 ring and puck pulverizer). The grinding time is 6 to 8 minutes. The end product is -200 mesh. The grind size requirement is 95% passing -200 mesh passing. The grind size is tested regularly as part of the QA/QC procedure.

5. The pulverized sample is split in an 8-way rotary splitter. Two 1/8 splits on opposite ends are combined to produce about 250 grams of pulp sample.

6. Of the three 250 gram pulps, one of the pulps is nitrogen purged then vacuum sealed. This is called the library pulp. One of the remaining pulps is placed in paper bags then sealed in plastic. The remaining pulp is placed in a paper bag.

7. PTFI geologists request that SFKK insert “blanks” and standards into the sample sequence. Standards are inserted on a 1 in 20 basis and one blank is inserted per batch. SFKK may know that a sample is a blank or standard, but they do not know the CRM value or whether it is a blank or a standard.

8. PTFI geologists provide assay instructions to SFKK. After assay, all pulps are returned to the Exploration Core Shed in Timika.

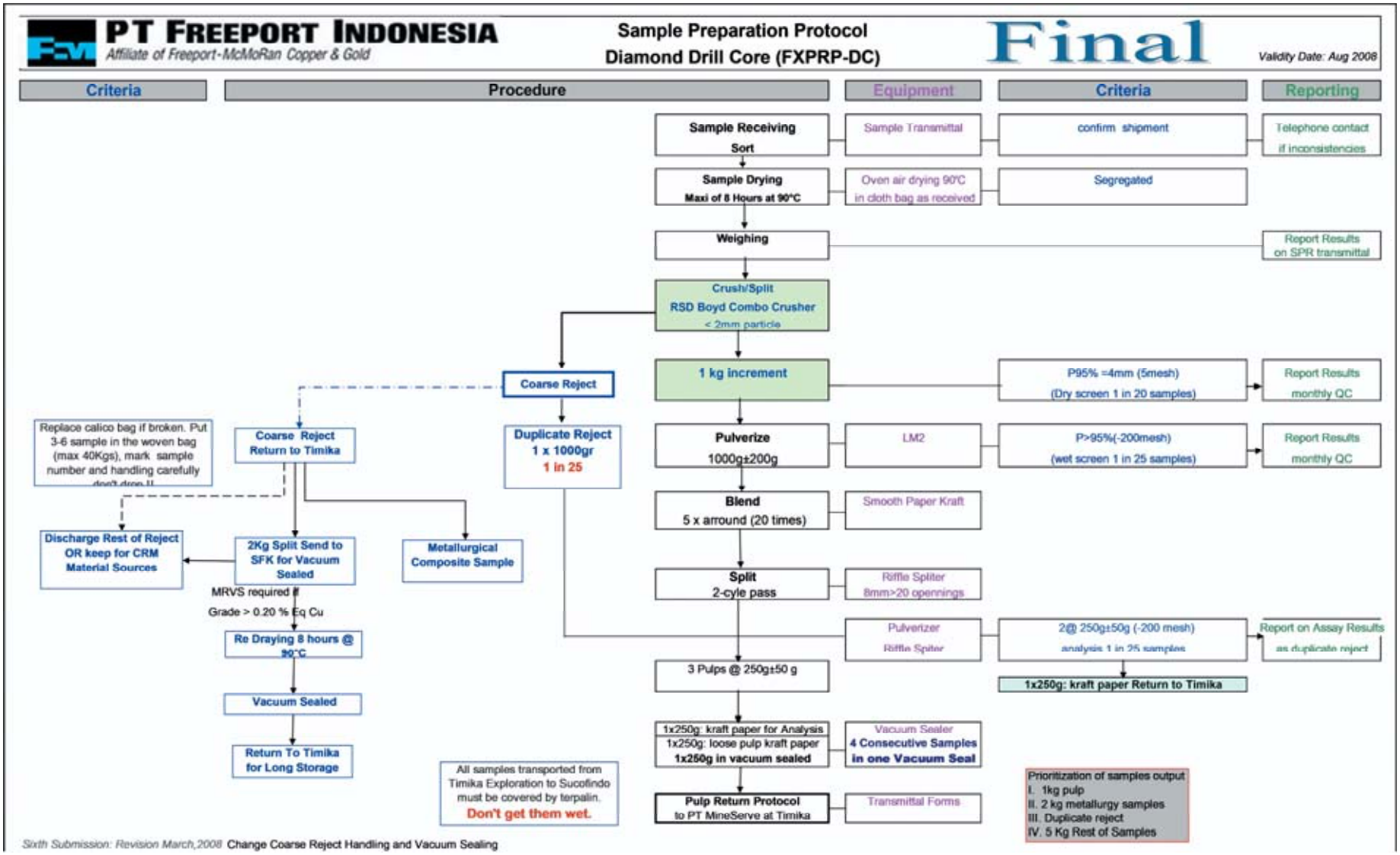
9. Duplicate assays of pulps are run at SFKK on a 1 in 10 basis. Duplicate pulp preparation and assay of rejects (DR) are completed by SFKK on a 1 in 25 basis. Check assays to an outside lab (called “rechecks”) are sent out on a 1 in 10 to 15 basis.

Assay instructions are supplied to Sucofindo electronically by Timika core shed personnel. The protocol for assay is spelled out in SOP-GEODH-1.2.3. The project geologist has three options: full assay, no assay, and selected assay. No assay can be used where assay information already exists, as in dewatering holes for example.

The option of selective assay can be flexible. If the rock type is observed to be barren, the geologist can order assays on a 1 in every 8 interval basis as a cost savings.

During a core shed visit in 2016, the verification team observed that assay selection procedures were altered when drill holes were closely spaced in the first few meters of fan hole drilling. This process is referenced in GEODH-1.2.3, but implementation did not appear consistent. Management of PTFI observed this issue and changes were immediately implemented to return to full assay sample selection for holes requiring assay.

Figure 3-2
Provided by PTFI



SOP-GEODH-1.3.7.5_Sample Prep and Analytical Protocol

3.2 Assay Methods

The available assay methods and the general approach to assaying are summarized on Figure 3-3. Not all assay techniques shown on the Table are utilized on all samples. This section will focus on the assays for Cu, Au and Ag that are used directly in the reserve grade calculations. The 2017 assaying protocols also call for assaying the base metals molybdenum, lead, and zinc. Sampling and assaying for pyrite will be discussed in a later sub-section of this chapter.

All assays for diamond core are assayed at the Sucofindo Laboratory in Timika where the CCLAS system, a commercially available Laboratory Information Management System, is in use to control, store, and transfer analytical results are electronically. Since its' implementation in 2005, PTFI and SFKK personnel have successfully submitted assay orders and sample assay instructions including the orders for insertions of blanks, standards and outside check using CCLAS.

Data capture within the CCLAS system is much more direct than in the past and the potential for sample swapping is reduced. The AAS and ICP-OES machines report directly to a "SIF" (standing information file) automatically with the 5 digit job code and the elements reported. The LIMS software package checks the SIF file every 5 minutes and automatically uploads into CCLAS when data is available.

A weekly backup of SFKK internal results is generated and stored off site on CD. This information is also backed up to a server system.

The Sucofindo gold assay procedure utilizes a high soda flux. The use of the iron nail in the sample is an operators' prerogative depending on the color of the sample. Gold is assayed by fire assay methods utilizing a 30 gm aliquot with an AA finish. In the case of very high grades (+15 gm/ton or concentrate assays) a gravimetric finish is used.

Copper is initially assayed with a 0.20 gm pulp sample (aliquot) with three acid digestion, and flame atomic absorption (AA). The specific assay procedure is listed on Table 3-1 and is referred to as the "Aluminum Block Method". If the result of that method reports greater than 0.50% copper, the assay is rerun as an "ore grade" sample where a 0.5 gm sample is digested with three acids and followed with flame AA. If the initial aluminum block result is greater than 2%, the sample is rerun by titration with the larger aliquot (1.0 gm).

Table 3-1 summarizes the analytical procedures applied at Sucofindo. This information is excerpted from an SFKK procedures documents.

The current PTFI protocol for selection of assay for modeling and grade estimation when multiple assays are available within a sample interval is as follows: 1) Sucofindo AAS, 2) GeoAssay (ICP-OES), 3) SGS-Indoassay (AAS), 4) any other outside lab, 5) PTFI Lab (AAS). The selection from this hierarchy is referenced as the selection of the

"best" assay for block model assembly. The inclusion of GeoAssay in late 2011 necessitated the addition of that lab to the hierarchy of assay selection.
Historically, the primary assay laboratory has changed over time. Sucofindo at Kuala Kencana (SFKK) is the current primary lab. The following notes summarize the protocol, general availability, and assay source for each deposit.

Early in 2017, PTFI resource estimators detected a inadvertent change in the lab selection protocol. That was corrected back to the standard protocol prior to model estimation.

Grasberg

Prior to 1999, the Grasberg Lab was used as the primary assay for copper, gold, and silver. Outside labs were used for check values only. That procedure was reversed so that outside labs became the priority lab after that date.

During 1999, Grasberg drilling from the Amole drift underground used Indoassay for primary values of copper, gold, and silver. Grasberg and later Sucofindo were used for check assays.

From 2000 forward, the primary data source is the Sucofindo lab. Check assays were completed at Indoassay until late 2011. Beginning in late 2011 the check assay lab is now PT Geoservices Ltd. - GeoAssay Analytical Laboratory in Cikarang, Jakarta (GA).

EESS

Prior to 1999, the Grasberg Lab was used as the primary assay for copper, gold, and silver. Within the pre-1999 data base, outside lab results (SFKK or Indoassay) account for about 2.6% of the data base. During 1999 roughly 44% of the data was assayed by Indoassay. From 2000 to 2012 SFKK lab was the primary assay with Indoassay check assays. In late 2011, GeoAssay became the new check assay laboratory.

Kucing Liar

Prior to 1999, the Grasberg Lab was utilized as an initial assay and then a second assay from an outside lab (Indoassay) was obtained for all intervals with potentially economic grade. Consequently, Indoassay was used as the primary assay in the ore areas for the pre-1999 drilling. During 2000 through 2008, primary assays were done at Sucofindo with check assay by Indoassay. Sucofindo is now the primary lab and after late 2011 GeoAssay is the check assay laboratory.

Big Gossan

Prior to 1999, the Grasberg Lab was utilized as an initial assay and then a second assay from an outside lab (Indoassay) was obtained for all intervals with potentially economic grade. Consequently, the Indoassay lab was the assay source for many of the ore intervals in Big Gossan. Sucofindo is now the primary lab and after late 2011 GeoAssay is the check assay laboratory.

Figure 3-3
Provided by PTFI

Appendix B

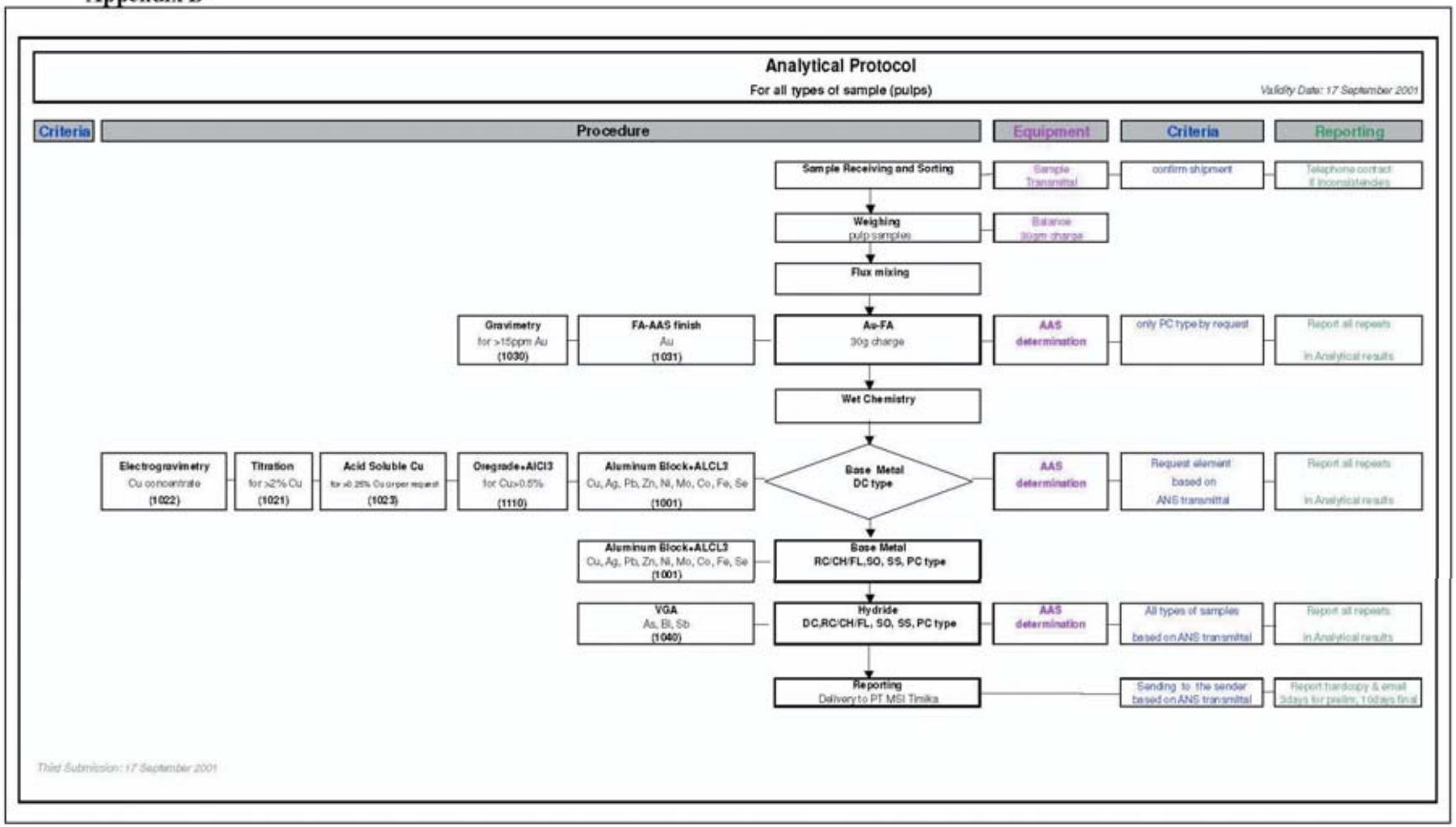


Table 3-1
Sucofindo Analytical Procedures

Gold by Fire Assay

1) Weigh 30.000 gram of sample into the plastic bag containing 150 gram Flux, shake and add nail. (The nail is optional based on sample observation, High sulfides would utilize the iron nail).
2) Fusion Stage As Follows:

Fusion Stage:		
Fusion Stage	Furnace Temp, °C	Duration
a. First Stage	830 *	Until Melt is Tranquil
b. Second Stage	880 **	Until Melt is Tranquil
c. Third Stage	950	Until Melt is Tranquil
d. Fourth Stage	950-980	About 15 Min
e. Fifth Stage	1050	15-20 Min

* For Dolomic Limestone
** For Calcitic Limestone

Note:
If composition of limestone is known, the first or second stage may be omitted as follows:
if calcitic, omit first stage
if dolomitic, omit second stage
if unknown, do both stages

3) Separate Pb button from slag, record the Pb Button weight.
4) Transfer Pb button to a cupel.
5) Cupellation at 950 °C for 60 minutes.
6) Transfer the prill to 10 ml Volumetric Flask, add 1ml Nitric Acid 65 %.
7) Heat at 90-100 °C for 20-30 minutes (until the silver soluble), let it cool.
8) Add 1 ml Hydrochloric Acid 37 % and heat for 10-20 minutes (until the yellow fume gone).
9) Dilute to volume with distilled water. Mix thoroughly and let it settle completely
10) The clear solution is ready for flame AAS with the appropriate setting.

Table 3-1
Sucofindo Analytical Procedures (Continued)

Aluminum Block for Base Metals and Silver

1) Weigh 0.20 gram sample into a 20 ml calibrated test tube.
2) Add 2 ml of Perchloric Acid 70 % and put on an aluminum block heater and heat to strong fumes for 1.5 hours at about 200-250 °C, until the reaction complete.
3) Remove from aluminum block heater and let the samples cool.
4) Add 1 ml of Nitric Acid 65 % and 2 ml of Hydrochloric Acid 37 % and shake vigorously. Let stand for several minutes.
5) Heat on the aluminum block heater at 150-180 °C for 1 hour. Remove from heat and let cool.
6) Add 2 ml of Hydrochloric Acid 37 % and heat on aluminum block heater for 20 minutes at 150-180 °C. Remove from heat and let cool
7) Add 5 ml Aluminum Chloride 0.5 % solution and add distilled water to 20 ml.
8) Mix thoroughly and let it settle completely. ($AlCl_3$ is for Mo determination)
9) The clear solution is ready for flame AAS with the appropriate setting for each of the following elements: Ag, Cu, Pb, Zn, Fe, Mo, Co, Ni, Cd.

Ore Grade for Copper

1) Weigh 0.5 gram sample into 150 ml beaker glass.
2) Add 5 ml of Perchloric Acid 70%, 5 ml of Nitric Acid 65%, and 5 ml of Hydrochloric Acid 37%. Heat gently on a hot plate (200-250 ^{o}C) until dryness,
3) Remove from hot plate and let it cool.
4) Add 10 ml of Hydrochloric Acid 37 % and wash down with a little distilled water. Heat for about 15 minutes (200-250 ^{o}C) and let it cool to room temperature.
5) Transfer sample into 100 ml volumetric flask. Add 25ml of 0.5% aluminum chloride (for Mo request only) dilute to volume with distilled water and let it settle completely.
6) The clear solution is ready for flame AAS with the appropriate setting for copper.

For Samples over 2% copper, are rerun with a short iodide titration finish

1) Weigh 1.0 gm of sample into a 400 ml tall beaker.
2) Add 5 ml Hydrochloric Acid 37% and 10 ml Perchloric Acid 70%
3) Cover with watch glass
4) Heat on hot plate until strong fumes (+-300 Deg C) about 30 to 45 minutes until the reaction is complete. Rinse beaker with distilled water and let it cool.
5) Add 25ml of ammonium acetate until dark color and 3 gm of ammonium bifluride.
6) Add 3 gm potassium iodide, swirl to dissolve and titrate with sodium thiosulfate. Use 0.05 N for exploration samples.
7) When the yellow brown iodine color fades to pale yellow, add 5 ml of start solution as the indicator an continue the titration until the solution is light blue.
8) Add 5ml of 10% KCNS solution and titrate to milky white endpoint.
9) Calculate the grade based on the titration volume

3.3 Exploration QAQC Results

The procedures used by PTFI and Sucofindo (SFKK) for quality control on exploration diamond drill samples are as follows;

1. Duplicate Assays (DA) are completed by SFKK internally as a precision or repeatability check on the assay results with duplicate prepared pulps. Submitted on a 1 in 10 basis.
2. Duplicate Rejects (DR) are completed by SFKK internally as a precision or repeatability check on the sample pulp preparation process by re-pulping coarse rejects and submitting on a 1 in 20 basis.
3. Blind standards (CRM's) are inserted by PTFI on a 1 in 15 basis for assay by SFKK and / or the check labs.
4. Pulps are sent to an outside lab as check assays (called recheck assays by PTFI). The outside lab is currently GeoAssay in Jakarta on a 1 in 15 basis.

SFKK maintains internal and independent QAQC procedures in parallel to the PTFI mandated procedures above.

5. Standards are also inserted by SFKK on a 1 in 20 basis as an internal lab control.
6. Blanks are inserted by SFKK for 3 out of every 40 samples as an internal control.
7. A reagent blank is inserted into the AA sample stream by SFKK as an internal control

Each of the PTFI mandated tests will be summarized in the following paragraphs for the exploration diamond drill assays. The data set reflects the period from June 2016 through August of 2017. This time period for QAQC was selected to overlay the annual data download for the block models which occurs in July of each year. The data transfer date to IMC was completed during the third quarter of 2017.

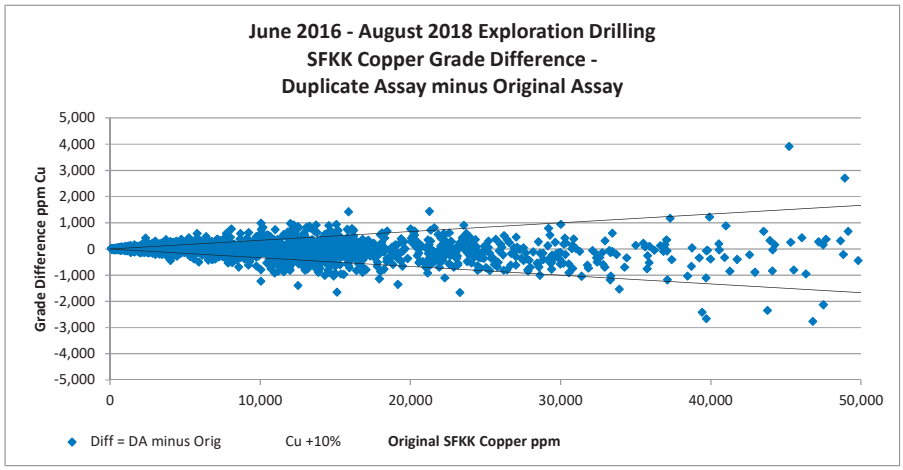
Exploration Duplicate Assays

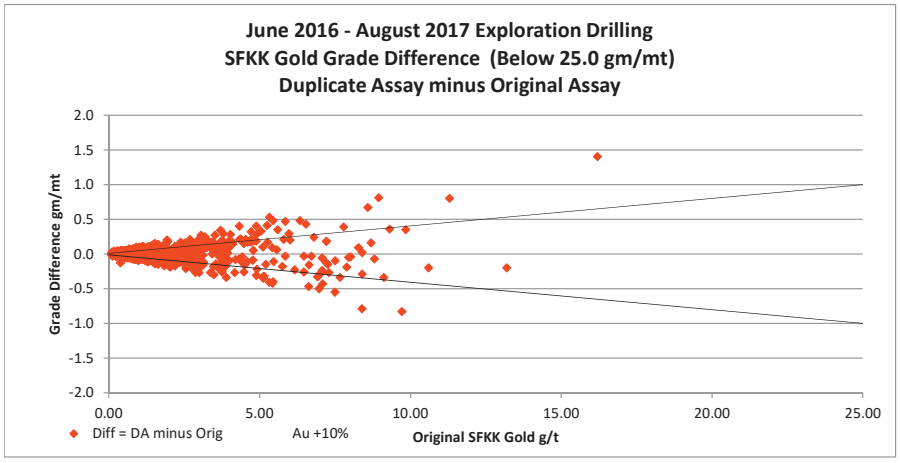
Sucofindo submits duplicate assays (DA) from the same pulp on a 1 in 10 basis. This repeat analysis is used to measure the quality of the assay procedures and is conducted routinely by the laboratory as part of the laboratory internal quality control. These DA assays are run to confirm the precision / repeatability of the Sucofindo assay lab.

Figure 3-4 illustrates the DA results, showing the actual grade difference versus the original sample value. The 10% error envelope added to the assay threshold is shown on each graph. The three major elements, copper, gold, and silver are shown.

The duplicate assay information that is presented on Figure 3-4 and Table 3-2 has had the lower grades excluded from the analysis for clarity. The low limit values on the figure and table are: 0.01% for copper, 0.10 gm/t gold, and 3.0 gm/t silver. The table and figure shows the number of duplicate samples with greater than 10% error that area above the cutoffs on the table. IMC ideally targets DA's to have less than 10% of the samples with more than 10% error.

Figure 3-4
Summary of Exploration Drilling Duplicate Assay Results from Sucofindo
June 2016 to August 2017 Exploration Drilling





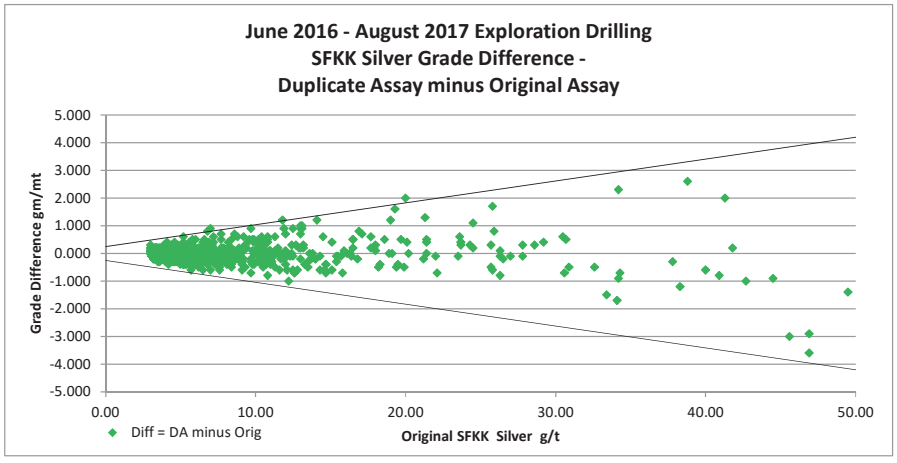


Table 3-2

Sucofindo Duplicate Assay Statistics, June 2016 - August 2017			
	Copper %	Gold, gm/t	Silver, gm/t
Sample Counts are Greater Than →	> 0.010% Cu	> 0.10 gmt	> 3.0 gmt
Number of Duplicate Assays	2388	1714	789
Number 10% + Threshold Level	11	7	3
Percentage, 10% + Threshold	0.46%	0.41%	0.38%
Mean of First Assay	1.017	1.132	9.257
Mean of Second Assay	1.013	1.135	9.259

DA data for silver that was sent to IMC was filtered to reflect samples above 3.0 gm/t. IMC recommends that all data or all data at a lower threshold be provided in the future.

Exploration Duplicate Reject Assays - DR

Duplicate Reject is the analysis of a pulp prepared from an additional 0.5 to 1 kilo split of coarse rejects material –4mm crush process. Some samples are used for metallurgical testing, others stored, and another is re-assayed on a 1 in 25 basis by Sucofindo. The so-called "DR" assays are intended to be a measure on the precision of the Sucofindo pulverizing, pulp splitting, and assay procedure in combination. As with the DA assays, only minor information can be obtained regarding sample bias from this work. However, the ability to replicate the pulp and pulp split processes are tested.

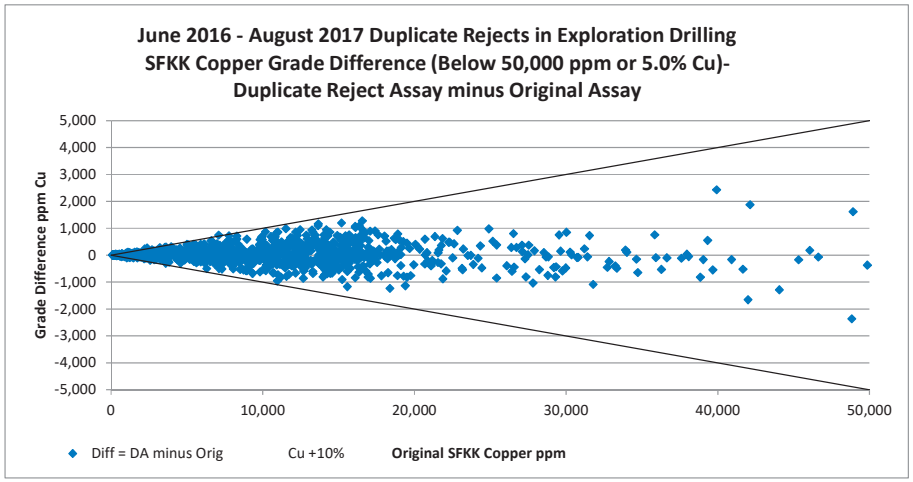
Figure 3-5 and Table 3-3 illustrate the DR results for the assay threshold + 10% of the first value. The table and figure shows the number of duplicate samples with greater than 10% error as well as the means values of the original and duplicate reject values.

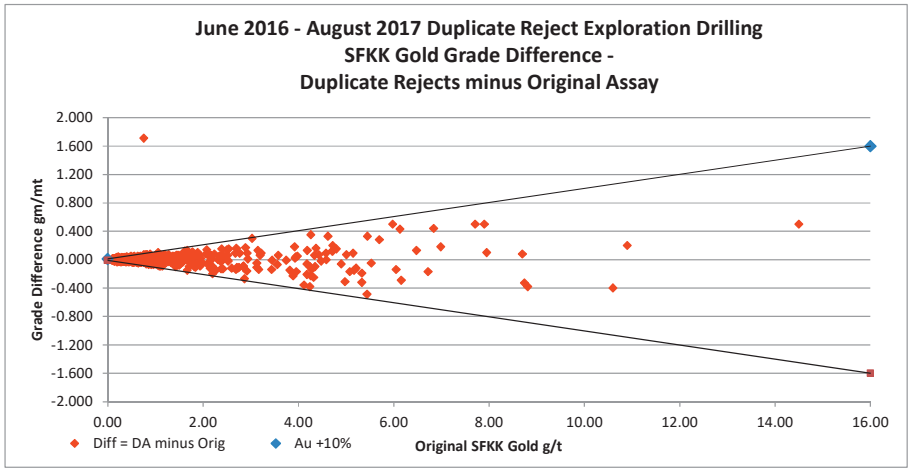
Table 3-3

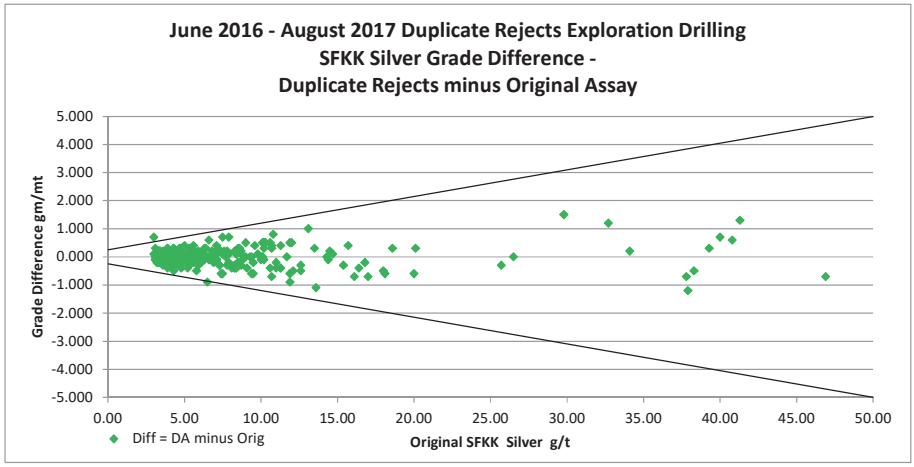
Sucofindo Duplicate Reject Assay Statistics June 2016 - August 2017			
	Copper %	Gold, gm/t	Silver, gm/t
Sample Counts are from All Grade Ranges	> 0.005 %	>0.1 gm/mt	> 3.0 gm/mt
Number of Duplicate Assays	1220	693	260
Number 10% + Threshold Level	3	6	3
Percentage, 10% + Threshold	0.25%	0.87%	1.15%
Mean of First Assay	1.040	1.152	8.691
Mean of Second Assay	1.040	1.166	8.695

As with the DA information sent to IMC, the DR results for silver were filtered to values above 3 gm/t.

Figure 3-5
Summary of Exploration Drilling Duplicate Reject Results from Sucofindo
June 2016 to Aug 2017 Exploration Drilling







Exploration Standards – CRM

Standards or "CRM" (Certified Reference Materials) samples were developed by PTFI from material at jobsite. The procedures and protocols for preparation of this material and to establish the standard value have been described in the Geologic Data Services Group (GDS) (GEODH-1.3.7.5.1_CRM_Preparation_and_Certification). The standards within this section represent all exploration standards from June 2016 to August 2017. The standards have all been analyzed by Sucofindo KK using the AAS analytical determination method.

Over time, some standards are retired when the batch is depleted, and others are added to replace them. In total there were 10 standards that were utilized by PTFI during Jun16 to Aug17 for QAQC of exploration drill. A total of 1,317 standard insertions were analyzed for copper, gold, and silver.

The instructions for insertion of CRM's are issued to SFKK by PTFI personnel. SFKK knows that the sample is a standard or blank, but Sucofindo informs IMC that they do not know the certified values of the PTFI standards. The submission rate of these standards is typically roughly 1 in 20.

The table below is a count of the number of standards out of all that were submitted during Jun16-Aug17 that were more than 10% plus threshold assay out of tolerance from the calculated mean of the Sucofindo assays. This represents a measure of the ability of the SFKK lab to repeat the assay values.

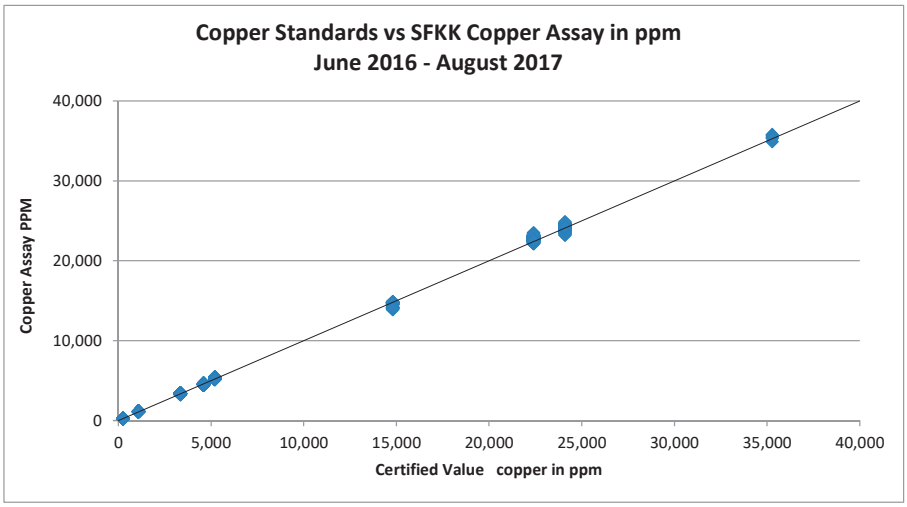
Table 3-4

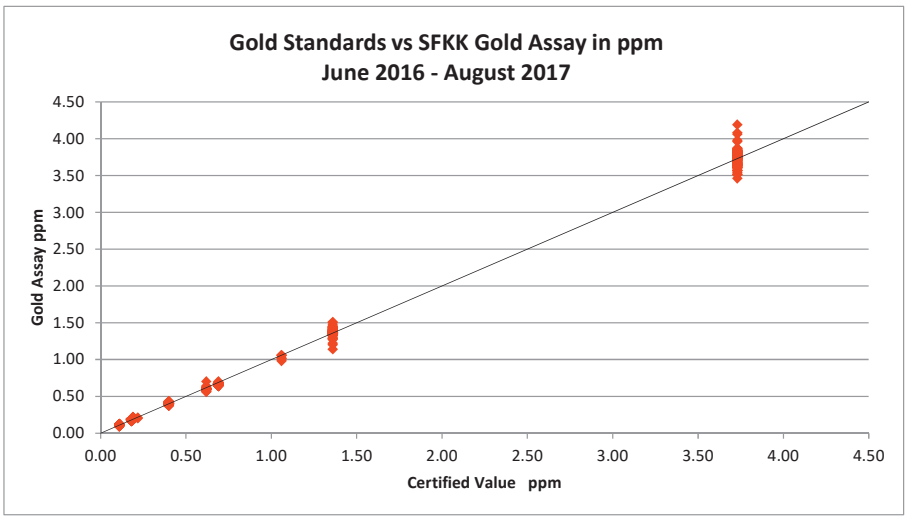
Succofindo Performance on PTFI Submitted Standards, June 2016 - August 2017				
Parameter	Thresold	Copper	Gold	Silver
Number of Standards Assays	0.01%	1317	1317	1317
Number Outside, 10% +Threshold Level	0.01 ppm	6	6	28
Percentage Outside, 10% + Threshold	0.25 ppm	0.46%	0.46%	2.13%

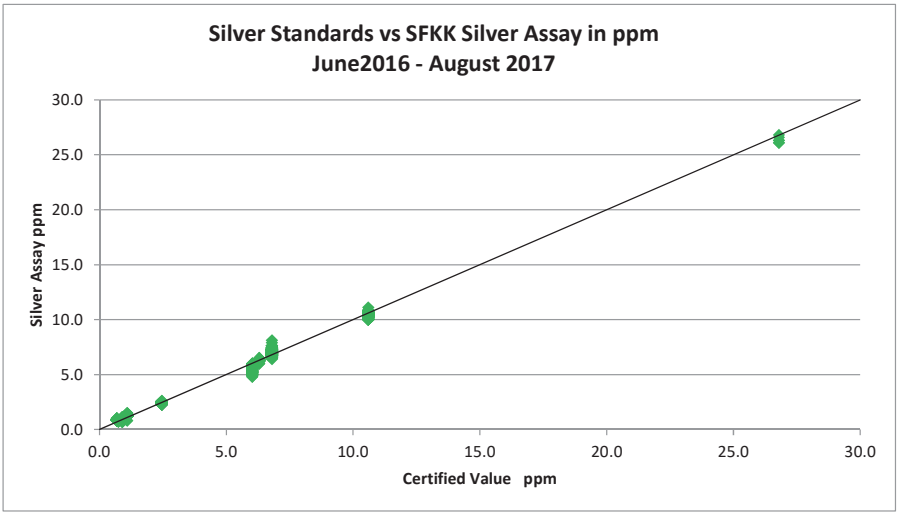
The results are as expected with good repeatability for copper and somewhat more variability in reporting for silver. There are no indications of sample swapping within the Jun16 – Aug17 CRM data set.

Figure 3-6 presents all of the standards results versus the certified value. The minor amount of scatter in the data is illustrated on the XY plots.

Figure 3-6
SFKK Reported Results of Submitted Standards (CRM)







Results of Blank Submissions

Geologic Data Services Group (GDS) at Timika submits blanks within the sample submissions to Sucofindo in the same manner that standards are inserted. One blank is inserted into every sample batch. The blank material is currently made up from barren limestone half core from dewatering drill holes. The purpose of blanks insertions is to confirm that there is no contamination between samples due to sample preparation errors at the lab.

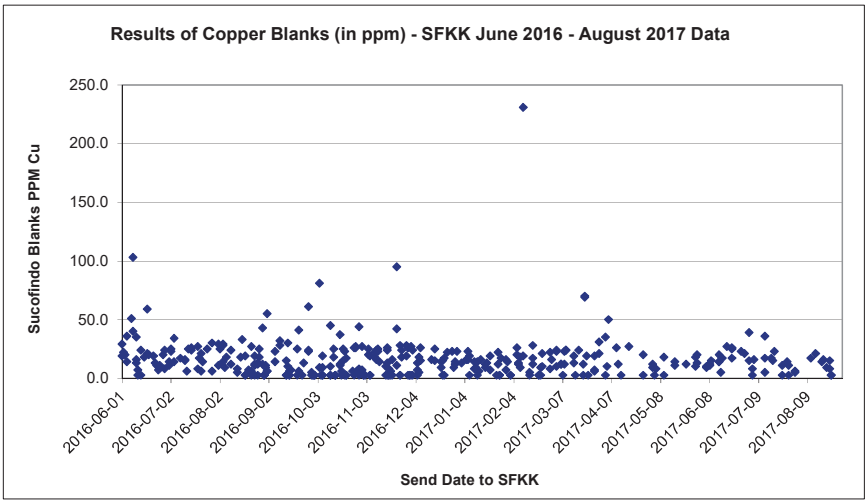
Figure 3-7 illustrates the results of the 371 blanks submitted with exploration data during Jun16 to Aug17. The data on the graph is sorted by the date the assay was returned from the SFKK Lab. The horizontal axis represents the sequential order in which SFKK returned the assayed sample data.

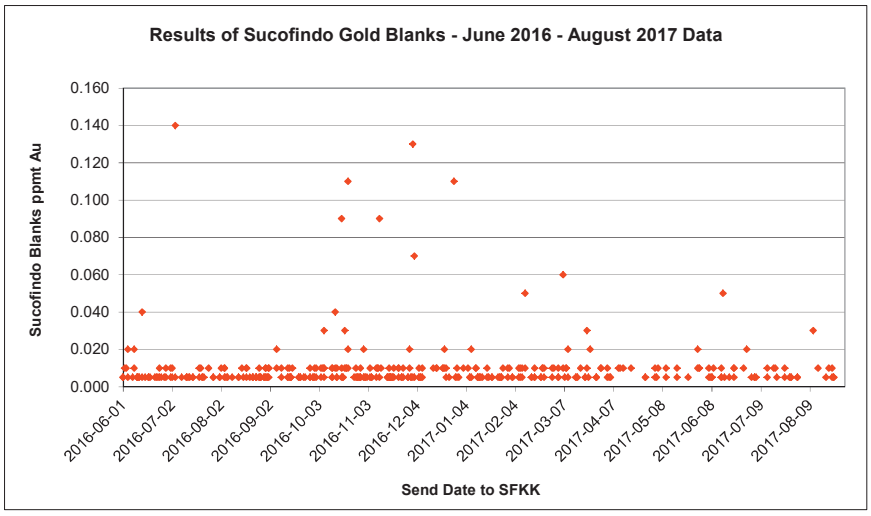
Blank results indicate that there are a few isolated results for blanks reporting at ore value. When they occur, they are not the same samples for copper, gold, and silver, and each occurred in different months throughout the year tested. The high values are few in context of potential ore grade.

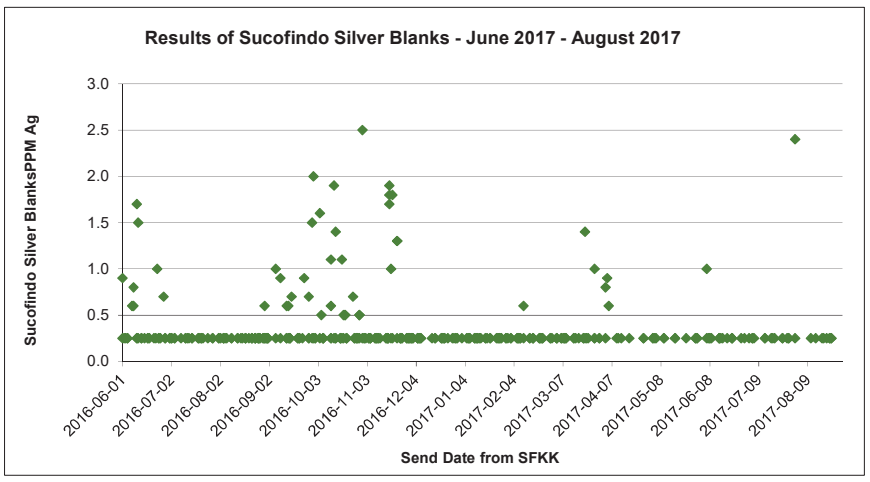
There are 2 copper values above 0.01%
There 9 gold values above 0.05 gm/t
There are 41 silver above 0.50 gm/t of which 10 are at 1.50 gm/t or greater

Figure 3-7 indicates that many of the blank failures occurred in the period of September – November 2017.

Figure 3-7
Results of Blanks Submitted with Jun16 to Aug17 Exploration Data







Exploration – Check Assay Results

PTFI submits pulps from exploration holes to outside check assay on roughly a 1 in 15 basis. Beginning in late 2011, the outside check lab is PT Geoservices Ltd – GeoAssay Laboratory located in Cikarang, Jakarta. GeoAssay has been using ICP-OES methods to analyze copper and silver while gold is analyzed using traditional fire and AAS methodology.

This section focuses on the diamond drilling data check assays completed during the period of Jun16 to Aug17. There will be a separate discussion of Blast Hole QAQC because the Grasberg block model again utilizes selected blast holes in the block grade estimation. Ore control checks are not addressed in this section.

Figure 3-8 illustrates the XY plots for all the ELQC (Exploration Lab Quality Control) samples for copper, gold, and silver respectively for the period between Jun16 to Aug17. The plot range has been selected to focus on the interesting grade range and illustrate observed issues. Reported mean statistics include all data and are presented below.

Table 3-5
Check Assay Results, SFKK vs Geoassay

Sucofindo AAS versus GeoAssay Assay Check Assays June 2016 - August 2017			
	Copper (%)	Gold (gm/mt)	Silver (gm/mt)
Number of Check Assays	1,399	1,399	1,399
Mean of SFKK Assay	1.078	1.222	4.736
Mean of Geoassay	1.146	1.122	4.749
Percentage Difference	6.30%	-8.20%	0.29%

Figure 3-8 indicates that there biases in all metals as summarized below:

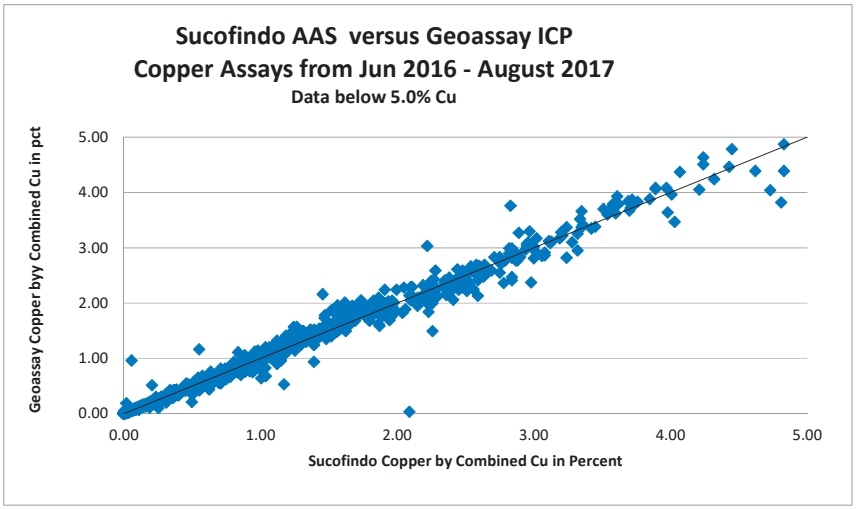
GeoAssay Cu higher than SFKK by 6.3%
GeoAssay Au lower than SFKK by 8.2%
GeoAssay Ag higher than SFKK by 0.3%

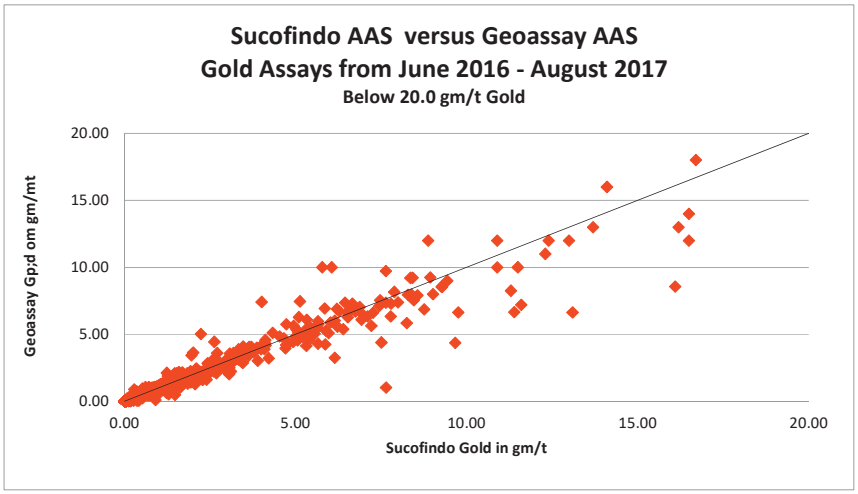
The same trend was observed in last years review for copper. There is a slight offset in the copper plot at 2% copper. SFKK converts to titration above the 2% level which likely explains the shift.

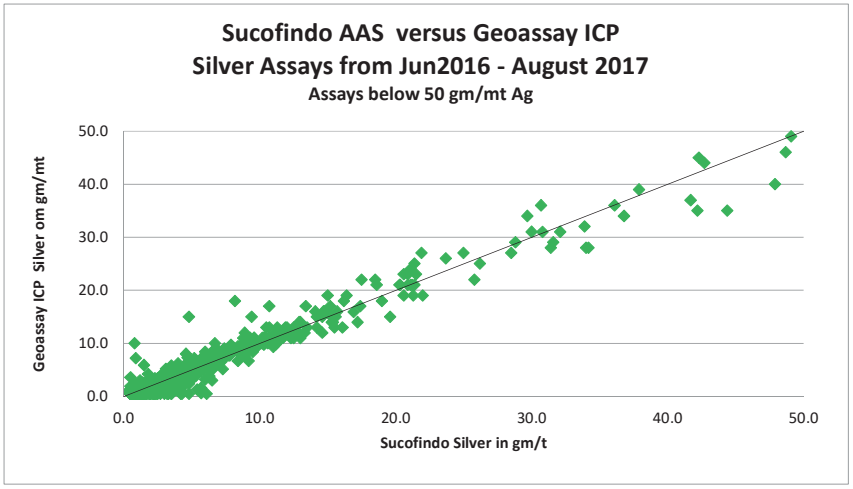
The low bias of GeoAssay relative to SFKK in gold is a trend that was not observed last year. The graph indicates that most of the issue occurs in grade ranges of over about 7 gm/t. SFKK changes to a gravity finish above 15 gm/t which may explain part of the difference.

GeoAssay silver was 5.6% high in 2015, 12.3% low in 2016 and now appears to be a close match. It appears that GeoAssay no longer caps reporting for silver at 100 gm/t which accounts for the low bias in 2016 and could explain the change in correlation.

Figure 3-8
Check Assay Summary Results







Data Base Checks

The data base entry was checked during 2017 by comparing the electronic data provided by PTFI which is dated June 1, 2017 and (received by IMC on 13 Sept 2017) versus the previous year's data that was extracted from AcQuire on 25 July 2016 (received by IMC on 28 September 2016). This procedure has been in place at IMC for a number of years where the current data base is compared to the previous year. Previous year drill hole data that changes in the latest update is subject to scrutiny.

The procedure to transfer data from the AcQuire data base system into the block model and mine planning software has been in use for the last few years. Macros or scripts have been implemented within AcQuire to ensure that the data is exported in the same manner for multiple users.

The IMC comparison of 2017 data versus 2016 data was done in two steps:

1) Assay information in the entire COW-A data base was compared between June 1, 2017 and July 25, 2016.

2) Composite information in the individual model volumes were compared between 2016 and 2017 data sets. The model limits compared are: Grasberg, Kucing Liar, EESS, and Big Gossan. Even though there is overlap between Grasberg and KL the underground drilling was reviewed as a stand alone composite data base. These comparisons are presented in the discussions of each of the models.

The comparison of raw assay data was accomplished by trapping the AcQuire ASCII dump of the data. The discussion that follows summarizes the material differences between the COW-A data base in 2017 versus 2016.

- 348 Drillholes have been added since June 2016.

- 10 drillholes that were in the 2016 database were not included in the 2017 database.

8,447 Drillholes are in both databases. For these drillholes in both data bases, the following differences were found:

- 1 drillhole has coordinate differences between the 2 databases. Drillhole VZW35H-389 moved in both the Northing and Easting (less than 10 m both directions).

- 66 drillholes have down hole survey differences between the two databases.

    - AM96-61-06 had a change in bearing for all intervals.
    - 54 drillholes had minor bearing and dip changes
    - 1 drillhole had 34 survey intervals – now has 1 survey interval
    - 5 drilholes had minor dip changes
    - 5 drillholes had minor bearing changes

- 17 drillholes had “no assay” intervals which had copper, gold, silver and/or moly grades added.
- 1466 drillholes had changes in the copper grade values, this changed 11,351 intervals before discovery and correction.
- 136 Drillholes had copper assay detection limits change from .0025 to .005
- 79 Drillholes had gold assay detection limits change from .005 to .003
- 5 Drill holes had changes in silver grade which changed 24 intervals.
- 75 Drill holes had changes in the gold grade values, this changed 2533 intervals

The change to copper assay in 2016 and older holes was due to an inadvertent change in the procedure to select the best assay for copper when multiple assays are present. This issue was discovered by PTFI after the transfer of data to IMC and the protocol was corrected back to the original selection procedure. PTFI calculates this impacted 11,314 assays.

The following table shows the overall changes in the number of drillholes and various assay information from the 2016 database to the 2017 database.

2017 Database	All Data	Same Holes as 2016	New Drilling Since 2016	Old Drilling Added 2017
No. of drillholes	8,815	8,447	171	188
Copper assays	756,066	741,721	14,311	34
Gold Assays	719,541	705,196	14,311	34
Silver assays	728,694	714,349	14,311	34
Moly assays	413,303	398,958	14,311	34

2016 Database	All Data	Same Holes as 2017	Old Drilling Missing 2017
No. of drillholes	8,457	8,447	10
Copper assays	742,420	740,887	1,533
Gold Assays	705,725	704,402	1,323
Silver assays	714,957	713,424	1,533
Moly assays	399,074	397,561	1,513

Diff 2017 - 2016		
No. of drillholes	368	0
Copper assays	15,179	834
Gold Assays	15,139	794
Silver assays	15,270	925
Moly assays	15,742	1,397

The following tables show the changes in the COWA database from 2016 to 2017 by the reserve different metals.

Copper Assays

Copper	Number of Assays	Mean
All Assay Data 2016 Database	742,420	0.680
All Assay Data 2017 Database	756,066	0.683
Same Drillholes 2016	740,887	0.681
Same Drillholes 2017	741,721	0.680
Added 2017 New Drilling	14,311	0.833
Added 2017 Previous Drilling	34	0.001
Total added 2017	17,992	0.588
Missing 2017	1,533	0.025
Same Interval Different 2016	11,317	0.229
Same Interval Different 2017	11,316	0.215

Gold Assays

Gold	Number of Assays	Mean
All Assay Data 2016 Database	705,725	0.586
All Assay Data 2017 Database	719,541	0.589
Same Drillholes 2016	704,402	0.588
Same Drillholes 2017	705,196	0.587
Added 2017 New Drilling	14,311	0.712
Added 2017 Previous Drilling	34	0.005
Total added 2017	17,787	0.532
Missing 2017	1,323	0.030
Same Interval Different 2016	2,534	0.123
Same Interval Different 2017	2,533	0.006

Silver Assays

Silver	Number of Assays	Mean
All Assay Data 2016 Database	714,957	4.0
All Assay Data 2017 Database	728,694	4.0
Same Drillholes 2016	713,424	4.0
Same Drillholes 2017	714,349	4.0
Added 2017 New Drilling	14,311	3.3
Added 2017 Previous Drilling	34	0.3
Total added 2017	17,998	3.3
Missing 2017	1,533	0.8
Same Interval Different 2016	24	0.8
Same Interval Different 2017	26	1.6

3.4 Composite Procedures

The composite procedure for grade estimation is the same for all deposits with the exception of Big Gossan. Big Gossan utilizes a shorter length of composites at 5m down hole length rather than 15m down hole lengths used in the other deposits.

The composite procedures are completed with TechBase software and are summarized below:

a. Drill hole data with the "best" assay method is extracted from acQuire with a standard query into an ASCII file. "Best" is defined by the hierarchy discussed earlier and means that when more than one assay exists for an interval, the first priority is SFKK and any outside lab over the PTFI lab. The SFKK value utilizes the internal SFKK hierarchy of Copper > 2% by titration, Copper from 0.5 to 2% by Ore Grade, Copper less than 0.5% by aluminum block.

b. The 15m down hole (5m for Big Gossan) composites are calculated using the established procedure by PTFI which requires 30% recovered core within a composite.

c. Big Gossan 5m down hole composites are broken on geologic boundaries for metal grades and specific gravity. Geotechnical information is not broken at geologic boundaries for Big Gossan

With the exception of Big Gossan, diamond drill holes are composited to 15m down-hole, or length composites. A minimum of 4.5 meters of recovered core is required within a given composite for that composite to be utilized. PTFI reports that the 4.5m requirement is applied independently to each of the copper, gold, and silver values.

Differing cap grades for copper, gold and silver grades are applied to composites within each deposit. Those cap values are presented in the model discussions for each deposit.

Diamond Drill Hole Geotechnical Data

PTFI logs geotechnical parameters for each of the diamond drill holes. These parameters are logged on a separate form and utilize different from-to intervals than the assay intervals. For GRS/KL and EESS the RQD parameter was composited to 3m down hole intervals for RQD model estimation. Bulk density and bulk_f (density correction factor) were composited to 15m length composites.

A number of items are recorded during the geotechnical logging process. The primary data fields that are utilized in the assembly of the block model are: RQD, Core Recovery, %Crushed, %Broken. This geotechnical data base is utilized to calculate a density correction factor herein referred to as "Denfact". The intent of this variable is to correct the density estimates for fracture frequency to more accurately reflect the bulk density incurred when mining. Denfact is calculated for each logged geotechnical interval as:

Denfact = RQD + (0.923 x Broken) + (0.864 x Crushed)
Crushed = fraction of run < 1.0 cm pieces
Broken = fraction of run in pieces between 1.0 cm and RQD length
RQD = fraction of run > 2 core diameters (usually 10cm)

The factors are based on compaction ratios obtained for waste compaction tests with materials of different sizes and base density of 2.60: 0.932 = 2.40 / 2.60, 0.864 = 2.25 / 2.60. Missing core is assigned to the Crushed category so all components total to the length drilled.

The sum of the ratios of "Crushed + Broken + RQD" is rationalized to 1.0 for all intervals. If one of the parameters is not measured, or if the total of the raw data is not equal to 1.0 (the total length of the core run) the most conservative assumption is used to fill in the missing interval (i.e. crushed). Roughly half the historic geotechnical data base measured Crushed but did not measure Broken. The other half measured Broken as + 1cm, but did not measure Crushed. Where Broken exists in the data base it was often measured as overall cumulative greater than 1cm and did not subtract the RQD component.

When either component was missing, it was calculated from the other available components so that the total of the three variables was rationalized to 1.0. The Denfact was calculated for each available drill interval and then composited to 15m down-hole composites.

The geotechnical variables Denfact and core recovery were merged with the assay interval composites. Core recovery is also measured by the logging geologist in the geologic log prior to geotechnical logging. When core recovery existed in both the assay file and the geotechnical file, the assay file core recovery was given first priority in calculating length of recovered core.

3.5 Grasberg Blast Hole QAQC

Ore control or blast hole assays are collected from the active areas of mining at the Grasberg pit. The purpose of the blast hole samples in the pit are to establish the ore control boundaries between ore and waste and, secondarily to provide daily grade estimates of the material mined.

PTFI has an ongoing assay quality control program in-place to check the reliability of the blast hole values. A program of check assays and standards insertions on the ore control program has been underway since 2002. This quality control program is called the "MQC" ore more recently the "LQ" program.

The primary lab for the ore control samples is the PTFI assay lab is located at the Mill 74 area. The primary purpose of the LQ program is to check the PTFI lab with standards and check assays that are ran at the Sucofindo lab in Kuala Kencana (SFKK), and the third party lab in Jakarta (Indoassay).

The LQ program is designed to maintain oversight on the ore control assay labs. The procedures do not measure the impacts of blast hole sample collection on the overall assay results, however they check the difference or variation between laboratories.

IMC Checks on Blast Holes

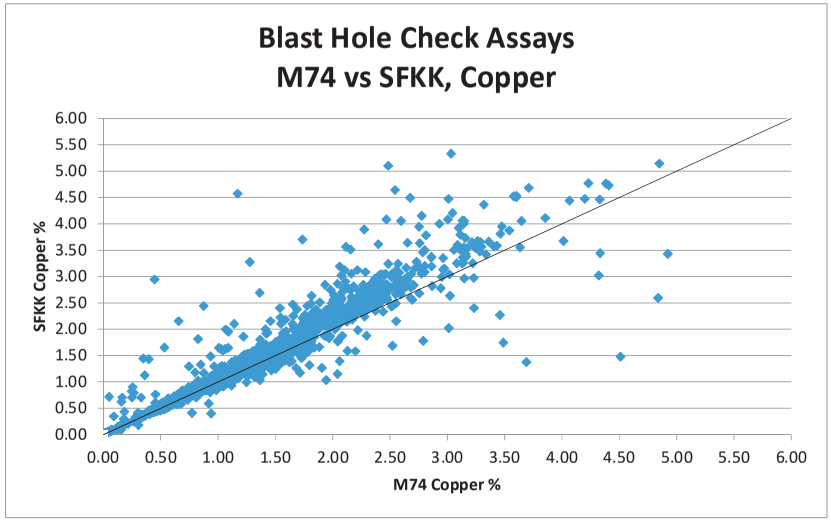
IMC was supplied the interlab blast hole check assay results where blast holes samples are routinely sent to outside laboratories for check assay. The 2017 check program sends Mill 74 original assays to SFKK for checks and a third party lab as well. Copper and gold as well as lead, zinc, NAG (Net Acid Generation) and NAGpH are assayed for the blast holes.

The Figure 3-9 is an XY plot that summarizes the M74 to SFKK checks for copper and gold. Over the broad range of sample grades, M74 reports occasional high grade copper and gold that do not report as high grade at SFKK. In both cases, SFKK applies an alternative assay technique in those high grade ranges. These high grade occurrences are few and are capped by PTFI prior to being used for grade estimation.

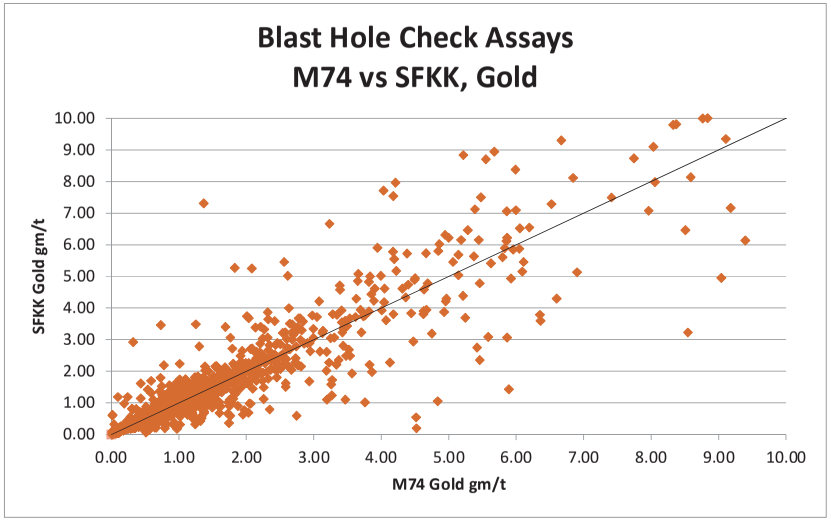
In the range of copper from 0 to 3% SFKK reports higher than M74. Again the likely reason for the difference is that SFKK uses the titration method for samples with AA response over 2%.

Blast holes are still sampled by the "Pipe" method whereby a pipe sampler is pushed through the blast hole cuttings pile 4 times after striking the top few centimeters off of the pile at each pipe point. This in theory results in a sample of between 5 and 6 kg. Blast hole sample preparation and assay procedures are presented on the following pages.

Figure 3-9
Blast Hole Check Assays



Mean M74 Cu 1.423%
Mean SFKK Cu 1.550%



Mean M74 au 1.367 gm/t
Mean SFKK Cu 1.393 gm/t

Blast Hole Sample Preparation

1) Samples arrive at the M74 Lab every afternoon. The weight of the BH sample is now about 5 kg.
2) LIMS creates a bar code and a sample number that is added to the sample bag.
3) The sample is not dried before being sent to the crusher unless they are "mud".
4) The sample is pushed through the Boyd Crusher-Splitter to generate a split. The crusher is cleaned with a blast of compressed air between samples. A split of between 500 to 800 grams is collected after the rotary splitter of the Boyd Crusher Combo.
5) The entire sample is pulverized in an LM-2 ring and puck pulverizer for 2 to 3 minutes. Methanol is added to the LM-2 pulverizers to prevent sticking.
6) From the ground pulp, 200-300gm is scooped and placed in a craft bag. The rest of the pulp is discarded.

Blast Hole Selection for the Grasberg Open Pit Model (IPM)

Prior to 2017, PTFI utilized a method for selection of blast holes that was referred to as the "Pig Tail" search. That process was eliminated during 2017 and the following procedures was applied.

1) The open pit surface on 29 June was selected.
2) All blast holes within a 60 meter vertical window above the 29 June 2017 topography were selected.
3) No declustering of blast holes was applied

IMC Checks on Blast Holes

Historically, PTFI applies a correction factor to blast hole samples to reflect sample collection biases. The copper and gold blast hole corrections factors that are applied by PTFI are still:

BH Copper Factor = 0.934 and
BH Gold Factor = 0.934

These factors remain unchanged from their inception in the 1996 reserve update for the Grasberg open pit.

IMC completed a nearest neighbor comparison between the selected blast holes and the diamond drilling composites. The nearest neighbor analysis was developed with separation distances of 5m and 10m between selected blast holes and nearby diamond composites. The results of the nearest neighbor comparison are summarized on Table 3-6. IMC understands that the blast hole data within this comparison has received the 0.934 factor that is applied by PTFI at the grade estimation stage.

Table 3-6
Grasberg Composite Diamond Drill Hole to Nearest Factored Blast Holes
Diamond Drilling Paired to Selected Blast Hole Samples, July 20, 2017

COPPER																
Pair	Set 1	No. of	Mean	Variance	Std. Dev.	Smith-Satter T		Paired T		Binomial Statistics					KS Statistic	
Distance	Set 2	Pairs	(%)	(%^2)	(%)	T-Stat	D.F.	T-Stat	D.F.	L1>L2	L1=L2	L1<l2	Diff	Crit Diff	Max Dev	Crit Dev
5m	DDH	849	0.726	0.595	0.771											
	Blast Hole		0.695	0.591	0.769	0.823	1696	1.890	848	448	0	401	47	58	0.041	0.061
	% Difference		-4.3%			PASS		PASS						PASS		PASS
10m	DDH	2373	0.618	0.576	0.759											
	Blast Hole		0.591	0.545	0.738	1.217	4740.4	2.749	2372	1203	0	1170	33	97	0.044	0.036
	% Difference		-4.4%			PASS		FAIL						PASS		FAIL

GOLD																
Pair	Set 1	No. of	Mean	Variance	Std. Dev.	Smith-Satter T		Paired T		Binomial Statistics					KS Statistic	
Distance	Set 2	Pairs	(%)	(%^2)	(%)	T-Stat	D.F.	T-Stat	D.F.	L1>L2	L1=L2	L1<l2	Diff	Crit Diff	Max Dev	Crit Dev
5m	DDH	847	1.076	2.978	1.726											
	Blast Hole		1.012	2.939	1.714	0.796	1691.9	1.589	486	437	0	410	27	58.2	0.043	0.061
	% Difference		-5.9%			PASS		PASS						PASS		PASS
10m	DDH	2380	0.880	2.448	1.565											
	Blast Hole		0.818	2.485	1.576	1.404	4749.4	2.728	2379	1202	1	1177	25	96.7	0.049	0.036
	% Difference		-7.0%			PASS		FAIL						PASS		FAIL

The factored blast holes are lower grade than the close paired diamond composites by roughly the same amount as the correction fator. The factored blast hole copper grades are 4.3% less that the diamond values and the factored blast hole gold values are 6% less than the diamond values. The correction factors set the blast hole values 6.6% lower than the original blast hole assay.

It has been known for several years that the blast hole correction that was established in 1996 does not reflect the current open orebody this is being mined today. It should also be noted that the revised sample selection of blast holes will have an overwhelming impact on the remaining open pit ore when compared to the impact of diamond drilling. Consequently, the remaining open pit reserve is generally based on factored blast holes. It is fortunate that there is a limited life remaining in the open pit and by the time this approach could be improved, the open pit will be complete.

The blast hole data has not been applied to the GRS/KL model that is used for underground block cave mine planning. The factored blast hole data is only used in the open pit model and consequently has a limited impact on the total district reserve.

3.6 Underground Channels versus Nearest Neighbor Diamond Drilling

The use of underground “chip” or “channel” samples in the resource block models was discontinued in 2016. Since the DOZ model was not updated since 2016, there are relic channel samples incorporated into that model.

However, the block models for the DMLZ and GRS BC eliminated the use of channels from the estimation process. These samples are not conventional channel samples that would be taken in a controlled manner. They are literally “grab” samples of a bag of rocks where ever the mapping geologist could find rock outcrop underneath the support screening. If shotcrete was applied before the geologist could visit the drive, no sample could be selected.

The PTFI management for block model estimation understands the weakness in this inconsistent sampling method and eliminated the use of the underground “chips” or “grab” samples from the underground reserve and resource models in 2016.

3.7 Pyrite Data Collection

During 2016, PTFI embarked on a program to improve the estimation of pyrite, marcasite, and pyrrhotite in the block models. The zones of the orebodies where these minerals are in high concentration require additional processing and eventually specific tailing storage. Consequently, it becomes important to have an improved and analytically supported estimate for mine and process planning and cost estimation. Until this point in time, PTFI has relied on geologists visual calls on the amount of iron sulfide minerals that are present during core logging.

PTFI embarked on a sampling process where historic pulps from the sample prep process were selected to generate a roughly 50 x 50 x 50m grid throughout the GRS-KL and DMLZ deposits. This process is being done in stages and the GRS-KL and DMLZ zones are the first priority for this form of sampling and estimation.

The GRS-KL samples were expanded to include the KL deposit during 2017. The EESS samples cover the elevation range of the DMLZ deposit and incorporate samples in the upper elevations that will contribute to block cave dilution.

The data base inclusive of values reported as 0.0 amounts to:

EESS	3,427 samples of which 1,687 are > 0.0
GRS-KL	8,912 samples of which 6,218 are > 0.0

The pulps were collected and sent to ALS in Australia to obtain multi-element ICP analysis. The pulps were also sent to the Freeport McMoRan AXN mineral laboratory in Safford, Arizona for XRD determination. The XRD result was the primary information used in the estimation process.

Duplicates of the ICP samples were prepared on a 1 in 20 basis which were submitted to the Safford lab as duplicates. PTFI staff reports that the results of the 164 duplicate were a close check on the original values.

The XRD information that was used in the modeling process was:

- % Pyrite
- % Marcasite
- % Pyrrhotite

The pyrite and marcasite were added together and treated as one variable at Grasberg and EESS. Pyrrohotite was estimated separately, but later combined at the modeled blocks with the other iron sulfides.

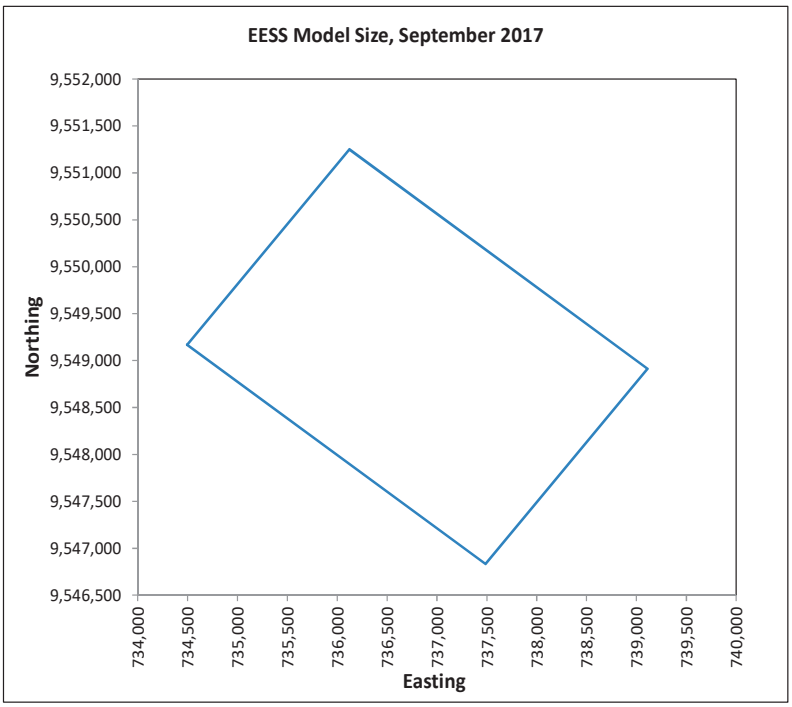
4.0 EESS MODEL

The EESS model (Ertsberg East Skarn System) was updated by PTFI staff and issued mid-August 2017. The new model was received by IMC during September of 2017 and will be referred to in this text as the Sep17 model. The previous model that was received by IMC was the Aug16 model which will be a basis for comparison.

The EESS model contains the DOZ and DMLZ reserves as well as the Dom resources. The copper, gold, silver, density, and confidence codes were not changed in the DOZ area. In summary, the DOZ model for reserve determination did not change during 2017. The DMLZ component of the model was updated with new interpretation, drilling, and reserve grade estimates. The Dom resources were not changed during 2017.

The model size reported below reflects the size and the outside edges of the Sep17 Model.

September 2017 EESS Model Area - Block Corners				
	Southwest	Northwest	Northeast	Southeast
Easting	734,495.85	736,121.20	739,111.70	737,486.35
Northing	9,549,169.67	9,551,250.02	9,548,913.58	9,546,833.23
Elevation Range		1,855.00	4,750.00	
Model Rotation, Primary Axis =		128	degrees	
Model		253	Blocks in 128 Bearing	
Size		176	Block in 38 Bearing	
Block Size m x m m high		193	Levels	



The EESS model was assembled in components. The DOZ area has been modeled with its own unique domain controls on mineralization and data that was based on all drill holes and all channel data samples. The DOZ model grades have not been updated since the 2012 10K model.

The DMLZ component was assembled with its own domain codes and was based on the data down load of 1 June 2017. Channel assay data was eliminated from the DMLZ during 2017 following the procedure set in 2016.

The Dom resource zone that is contained within the EESS model was not modified during the 2017 model update.

4.1 Data Base

The drill hole data base for the entire COW-A was checked by comparing 2016 data versus the 2017 data as discussed in Section 3. The composite data base that was used for the Sep17 model was also compared to that used in the previous model update in 2016. The table below summarizes the number of composites that were added to the EESS model area since the last model.

Table 4-1

Comparison of 2017 Composite Data to 2016 Composite Data
Contained in Entire EESS Model Area, Prior to Composite Grade Caps

Metal	2017 DDH Composites Within Model Limits		2016 DDH Composites Within Model Limits	
	Number	Mean Grd	Number	Mean Grd
Copper (%)	70,566	0.674	68,940	0.675
Gold (gm/t)	63,592	0.463	61,966	0.462
Silver (gm/t	67,524	4.008	65,898	4.022

Chips and Channels were not used in DMLZ in 2018
The following is an estimate of the relic Chips and Channels in DOZ

Metal	2016 Channel Comps DOZ Model Area	
	Number	Mean Grd
Copper %	10,129	0.638
Gold gm/t	9,493	0.627
Silver gm/t	6,351	2.603

The “chip” and “channel” samples were not used to estimate the DMLZ deposit during 2017. A review of the procedures to collect those samples during 2016 indicated that they are not representative samples. The requirements for rapid ground support in the production development drives has resulted in these samples being random “grab” samples where they can be acquired underneath the wire mesh.

Historic channel samples in the DOZ area were consistently collected channels along drift walls. Those samples were utilized in the DOZ deposit and since the metal grades have not been updated in the model, they are still utilized today.

Composite Procedure

PTFI uses 15m down hole composites at the EESS. Once the composites are calculated, the length of recovered core within the composite is used to filter the composites used for grade estimation. A minimum recovered length of 4.5m of core within a 15m composite is required for the composite to be used for grade estimation. Prior to grade estimation, composites were capped at a maximum value that is summarized on the grade estimation procedures tables that follow.

Channel assays in the legacy block model of the DOZ deposit were composited to 15m length values and were also used for block grade estimation. Channels were not used at DMLZ.

In addition to the composite cap values, there was a limited search applied to “high yield” composites with relatively high grades. That technique will be discussed later with grade estimation procedures.

4.2 Model Assembly Procedures

Geology and Grade Estimation Domains

The DOZ and DMLZ estimation procedures applied a 0.25% EQCU cutoff grade for the mineralized domain which was further subdivided into estimation sub-domains by formation and intrusive units. Domain coding was done by PTFI personnel using a combination of mineralized/non-mineralized domains within updated stratigraphic subdivisions of sedimentary units and intrusive rocks as hard boundaries. The DOZ component of the model was unchanged during 2017. The DMLZ portion of the model was updated during 2017 with additional drilling, slight modifications to geology and the identical estimation procedures as in 2016 for Cu, Au Ag.

The grade zone boundary was based on 0.25% Eqcu. This boundary was interpreted on section and plan and was developed into a solid in the Vulcan software package. The 0.25% Eqcu boundary was selected to be:

1) Low enough to not interfere with the continuity of the grade distribution at the economic cutoff grade, and
2) High enough that it demarcated a reasonable limit to potential economic mineralization.

The stratigraphy, rock type, and structural boundaries were extracted from the district wide geologic interpretation that is maintained by the geology group at site. The geologic model update was completed at the mine site on 30 April 2017. The specific rock type and grade boundary components that make up the EESS models are summarized below.

The rock types and grade domains are summarized on the following table for the DOZ/ESZ and DMLZ model areas. DMLZ is the component of the model below the 3115m elevation.

Estimation Domains and Codes, EESS Model

Stratigraphy	Plus 0.25 Eqcu	Less Than 0.25 Eqcu
Te - Tertiary Ertsberg Intrusive	150	250
KK – Kembelangan - Kkeh, Kkel, Kkes	166	266
TW – The Tertiary Waripi Formation	164	264
TF, TK, TS (Tertiary Faumai and Kais limestone and Sirga sandstones)	163 in DOZ	263

Hard boundaries were applied between the mineralized (+0.25Eqcu) and non-mineralized (-0.25 Eqcu) domains in all cases. The estimation domain codes above were all hard boundaries. The stratigraphic codes for the low grade units were combined into two domains: 250 for intrusives, and 260 for sediments.

Grade Estimation Procedures

Grade estimation within the DOZ/ESZ and DMLZ components of the model utilized ordinary linear kriging. A high grade limit was applied to the grade estimation process. Values above the high grade limit for each domain could not be used further than 1/4 of the variogram range which is equal to 37% of the search radius.

Conventional grade estimation tools are used with a maximum of 10 composites and a minimum of 3 composites utilized to estimate a block.

Table 4-2 and 4-3 summarize the grade estimation procedures utilized in the DOZ/ESZ and DMLZ components of the EESS model. The grade estimates at DOZ were not updated during 2017. The DMLZ grade estimates were updated with additional data but no changes to the estimation parameters.

Table 4-2
Estimation Parameters for DOZ, Above the 3115 Elevation

EST_Zone and Metal				Variogram			Vulcan Rotation			Search (2/3 of vario range), Meters				Exclude Distance (1/4 of Range), M			
				Dip, Azimuth, and Ranges (M)			Alpha, Zeta Beta			Cap Value	Dist_1	Dist_2	Dist_3	High Yield Limit	Dist_1	Dist_2	Dist_3
				DIR_1	DIR_2	DIR_3											
cu_150		Total Sill	Az / Dip	130/0	40/0	40/90	130.0	0.0	50.0					2.3%			
Nugget	0.05	0.48								3.8%							
Str1	0.22			35.0	30.0	30.0											
Str2	0.21			155.0	135.0	105.0					103	90	70		39	34	26
cu_163		Total Sill	Az / Dip	127/15	37/-15	37/75	127.3	14.8	100.3					4.5%			
Nugget	0.05	0.42								7.5%							
Str1	0.16			60.0	33.0	30.0											
Str2	0.21			233.5	155.0	145.0					155	103	97		58	39	36
cu_164		Total Sill	Az / Dip	110/0	20/0	20/90	110.0	0.0	55.0					4.0%			
Nugget	0.05	0.51								8.0%							
Str1	0.08			25.0	25.0	20.0											
Str2	0.38			240.0	175.0	105.0					160	117	70		60	44	26
cu_166		Total Sill	Az / Dip	127/15	37/-15	37/75	127.3	14.8	100.3					0.7%			
Nugget	0.05	0.42								1.2%							
Str1	0.16			60.0	33.0	30.0											
Str2	0.21			233.5	155.0	145.0					155	103	97		58	39	36
				DIR_1	DIR_2	DIR_3											
cu_250		Total Sill	Az / Dip	130/0	40/0	40/90	130.0	0.0	50.0					0.9%			
Nugget	0.05	0.48								1.5%							
Str1	0.22			35.0	30.0	30.0											
Str2	0.21			155.0	135.0	105.0					103	90	70		5	5	5
cu_263		Total Sill	Az / Dip	127/15	37/-15	37/75	127.3	14.8	100.3					1.5%			
Nugget	0.05	0.42								3.8%							
Str1	0.16			60.0	33.0	30.0											
Str2	0.21			233.5	155.0	145.0					155	103	97		5	5	5
cu_264		Total Sill	Az / Dip	110/0	20/0	20/90	110.0	0.0	55.0					1.2%			
Nugget	0.05	0.51								2.5%							
Str1	0.08			25.0	25.0	20.0											
Str2	0.38			240.0	175.0	105.0					160	117	70		5	5	5
cu_266		Total Sill	Az / Dip	127/15	37/-15	37/75	127.3	14.8	100.3					0.2%			
Nugget	0.05	0.42								1.0%							
Str1	0.16			60.0	33.0	30.0											
Str2	0.21			233.5	155.0	145.0					155	103	97		5	5	5
				DIR_1	DIR_2	DIR_3											
au_150		Total Sill	Az / Dip	135/0	45/0	45/90	135.0	0.0	45.0					2.4 g/t			
Nugget	0.05	0.56								6.0 g/t							
Str1	0.27			22.0	20.0	15.0											
Str2	0.24			170.0	155.0	135.0					113	103	90		43	39	34
au_163		Total Sill	Az / Dip	135/0	45/0	45/90	135.0	0.0	90.0					2.2 g/t			
Nugget	0.05	0.55								3.8 g/t							
Str1	0.09			35.0	25.0	30.0											
Str2	0.41			225.0	165.0	110.0					150	110	73		56	41	28
au_164		Total Sill	Az / Dip	129/18	39/-18	39/72	128.7	18.1	63.6					3.6 g/t			
Nugget	0.05	0.53								8.0 g/t							
Str1	0.25			45.0	20.0	27.0											
Str2	0.23			225.5	190.0	90.0					150	127	60		56	48	23
au_166		Total Sill	Az / Dip	135/0	45/0	45/90	135.0	0.0	90.0					0.7 g/t			
Nugget	0.05	0.55								1.8 g/t							
Str1	0.09			35.0	25.0	30.0											
Str2	0.41			225.0	165.0	110.0					150	110	73		56	41	28
				DIR_1	DIR_2	DIR_3											
au_250		Total Sill	Az / Dip	135/0	45/0	45/90	135.0	0.0	45.0					1.8 g/t			
Nugget	0.05	0.56								5.1 g/t							
Str1	0.27			22.0	20.0	15.0											
Str2	0.24			170.0	155.0	135.0					113	103	90		5	5	5
au_263		Total Sill	Az / Dip	135/0	45/0	45/90	135.0	0.0	90.0					0.8 g/t			
Nugget	0.05	0.55								1.6 g/t							
Str1	0.09			35.0	25.0	30.0											
Str2	0.41			225.0	165.0	110.0					150	110	73		5	5	5
au_264		Total Sill	Az / Dip	129/18	39/-18	39/72	128.7	18.1	63.6					1.2 g/t			
Nugget	0.05	0.53								1.6 g/t							
Str1	0.25			45.0	20.0	27.0											
Str2	0.23			225.5	190.0	90.0					150	127	60		5	5	5
au_266		Total Sill	Az / Dip	135/0	45/0	45/90	135.0	0.0	90.0					0.5 g/t			
Nugget	0.05	0.55								1.0 g/t							
Str1	0.09			35.0	25.0	30.0											
Str2	0.41			225.0	165.0	110.0					150	110	73		5	5	5
				DIR_1	DIR_2	DIR_3											
ag_150		Total Sill	Az / Dip	130/0	40/0	40/90	130.0	0.0	65.0					12.0 g/t			
Nugget	0.10	0.55								24.0 g/t							
Str1	0.11			35.0	26.0	20.0											
Str2	0.34			185.0	110.0	100.0					123	73	67		46	28	25
ag_163		Total Sill	Az / Dip	135/0	45/0	45/90	135.0	0.0	100.0					25.0 g/t			
Nugget	0.05	0.51								40.0 g/t							
Str1	0.30			35.0	30.0	20.0											
Str2	0.16			185.0	165.0	95.0					123	110	63		46	41	24
ag_164		Total Sill	Az / Dip	127/19	37/-19	37/71	127.1	18.7	68.8					22.0 g/t			
Nugget	0.10	0.50								40.0 g/t							
Str1	0.11			63.0	55.0	50.0											
Str2	0.29			200.0	100.0	85.0					133	67	57		50	25	21
ag_166		Total Sill	Az / Dip	135/0	45/0	45/90	135.0	0.0	100.0					3.0 g/t			
Nugget	0.05	0.51								6.0 g/t							
Str1	0.30			35.0	30.0	20.0											
Str2	0.16			185.0	165.0	95.0					123	110	63		46	41	24
				DIR_1	DIR_2	DIR_3											
ag_250		Total Sill	Az / Dip	130/0	40/0	40/90	130.0	0.0	65.0					5.5 g/t			
Nugget	0.10	0.55								15.0 g/t							
Str1	0.11			35.0	26.0	20.0											
Str2	0.34			185.0	110.0	100.0					123	73	67		5	5	5
ag_263		Total Sill	Az / Dip	135/0	45/0	45/90	135.0	0.0	100.0					7.0 g/t			
Nugget	0.05	0.51								25.0 g/t							
Str1	0.30			35.0	30.0	20.0											
Str2	0.16			185.0	165.0	95.0					123	110	63		5	5	5
ag_264		Total Sill	Az / Dip	127/19	37/-19	37/71	127.1	18.7	68.8					4.5 g/t			
Nugget	0.10	0.50								15.0 g/t							
Str1	0.11			63.0	55.0	50.0											
Str2	0.29			200.0	100.0	85.0					133	67	57		5	5	5
ag_266		Total Sill	Az / Dip	135/0	45/0	45/90	135.0	0.0	100.0					2.5 g/t			
Nugget	0.05	0.51								2.0 g/t							
Str1	0.30			35.0	30.0	20.0											
Str2	0.16			185.0	165.0	95.0					123	110	63		5	5	5

Notes: All Models are Exponential Models

Minimum composites = 3, Maximum Composites = 10

Table 4-3
Estimation Parameters for DMLZ
Below the 3115 Elevation

EST_Zone and Metal				Variogram			Vulcan Rotation			Search (2/3 of vario range), meters				Exclude Distance (1/4 of Range), m			
				Dip, Azimuth, and Ranges (M)			Alpha, Zeta Beta			Cap Grade	Dist_1	Dist_2	Dist_3	High Limit	Dist_1	Dist_2	Dist_3
Diorite Min				DIR_1	DIR_2	DIR_3											
cu_150	Nugget	0.05	Total Sill				125	0	40					2.00 %			
	Str1	0.48	1.00	70	35	30				4.25%							
	Str2	0.47		225	250	210					150	170	140		56	63	53
Waripi Min				DIR_1	DIR_2	DIR_3											
cu_164	Nugget	0.05	Total Sill				123.17	15.19	48.24					5.00 %			
	Str1	0.64	1.00	80	65	25				8.40%							
	Str2	0.31		385	200	90					260	135	60		96	50	23
Kembelangan				DIR_1	DIR_2	DIR_3											
cu_166	Nugget	0.15	Total Sill				110	0	55					2.40 %			
	Str1	0.06	1.00	45	160	45				3.60 %							
	Str2	0.79		300	205	150					200	140	100		75	50	38
Diorite outside				DIR_1	DIR_2	DIR_3											
cu_250	Nugget	0.10	Total Sill				125	0	40					0.65 %			
	Str1	0.43	1.00	45	35	135				2.00 %							
	Str2	0.47		195	220	270					130	150	180		7.5	7.5	7.5
Sediments outside				DIR_1	DIR_2	DIR_3											
	Nugget	0.10	Total Sill				120	0	40	\				1.80 %			
	Str1	0.69	1.00	30	25	90				3.60 %							
	Str2	0.21		125	220	150					85	150	100		7.5	7.5	7.5
Diorite Min				DIR_1	DIR_2	DIR_3											
au_150	Nugget	0.10	Total Sill				125.0	0.0	45.0					3.1 g/t			
	Str1	0.72	1.00	45	50	45				6.0 g/t							
	Str2	0.18		255	370	160					170	250	105		64	93	40
Waripi Min				DIR_1	DIR_2	DIR_3											
au_164	Nugget	0.10	Total Sill				128.17	15.19	48.24					5.5 g/t			
	Str1	0.65	1.00	55	45	20				15.0 g/t							
	Str2	0.25		220	200	85					150	135	57		55	50	21
Kembelangan				DIR_1	DIR_2	DIR_3											
au_166	Nugget	0.10	Total Sill				120	0	40					3.1 g/t			
	Str1	0.41	1.00	30	45	90				6.0 g/t							
	Str2	0.49		265	265	155					180	180	105		66	66	39
Diorite outside				DIR_1	DIR_2	DIR_3											
au_250	Nugget	0.20	Total Sill				125	0	45					0.5 g/t			
	Str1	0.62	1.00	40	35	20				1.0 g/t							
	Str2	0.18		400	215	215					270	145	145		7.5	7.5	7.5
Sediments outside				DIR_1	DIR_2	DIR_3											
au_260	Nugget	0.10	Total Sill				120	0	40					0.5 g/t			
	Str1	0.64	1.00	35	50	20				1.0 g/t							
	Str2	0.26		145	205	100					95	140	67		7.5	7.5	7.5
Diorite Min				DIR_1	DIR_2	DIR_3											
ag_150	Nugget	0.10	Total Sill				125.0	0.0	45.0					10.0 g/t			
	Str1	0.59	1.00	30	15	40				26.0 g/t							
	Str2	0.31		195	205	195					130	138	130		50	50	50
Waripi Min				DIR_1	DIR_2	DIR_3											
ag_164	Nugget	0.10	Total Sill				128.17	15.19	48.24					24.0 g/t			
	Str1	0.37	1.00	55	45	20				41.0 g/t							
	Str2	0.53		300	235	90					200	160	60		75	60	23
Kembelangan				DIR_1	DIR_2	DIR_3											
ag_166	Nugget	0.05	Total Sill				120.0	0.0	50.0					10.0 g/t			
	Str1	0.50	1.00	75	105	70				26.5 g/t							
	Str2	0.45		295	175	100					200	118	67		75	45	25
Diorite outside				DIR_1	DIR_2	DIR_3											
ag_250	Nugget	0.10	Total Sill				125.0	0.0	45.0					3.0 g/t			
	Str1	0.72	1.00	55	25	35				5.0 g/t							
	Str2	0.18		155	205	255					105	138	170		7.5	7.5	7.5
Sediments outside				DIR_1	DIR_2	DIR_3											
ag_260	Nugget	0.10	Total Sill				120.0	0.0	40.0					10.0 g/t			
	Str1	0.79	1.00	70	30	45				20.0 g/t							
	Str2	0.11		200	180	105					135	120	70		7.5	7.5	7.5

Notes: All Models are Exponential Models Minimum composites = 3, Maximum Composites = 10

Density Assignment Procedure

Bulk density estimation procedures were similar to those employed at the all of the PTFI deposits. Two separate estimation procedures are utilized: 1) uncorrected bulk density, and 2) a bulk density correction factor based on the geotechnical logging information. The final bulk density in each model block is the product of the two values.

Specific gravity (SG) determinations were by ordinary kriging estimation of bulk and bulk_f within hard boundaries for the main rock codes. A bulk density correction factor is applied to adjust the intact rock density based on the geotechnical logging information. In the areas where blocks were not estimated, constant bulk and bulk_f (Denfact) was assigned within rock boundaries.

The uncorrected bulk density is based on the weight of intact samples that are weighed in air and in water during the core logging and preparation process. These values are generally measured for each core run. The drill interval densities are composited to 15m down hole composite values. Block uncorrected densities are then assigned by linear kriging. The density kriging estimation parameters used in this process are summarized on Table 4-3.

A bulk density correction factor is also applied that adjusts the intact rock density based on the geotechnical logging information. The bulk density correction calculation was summarized in Section 3.0 for all deposits.

The bulk density correction factor is composited to 15m length composites, and assigned to blocks by linear kriging. Table 4-4 summarizes the kriging parameters that were used for the density and correction factor.

If the block density could not be estimated by the procedures described above, then default values were set based on the average of the estimated values in the rock types for both Bulk and Bulk_F.

The final rock density variable for mine planning is labeled as “SG” which is the product of Bulk x “times” Bulk_F.

Table 4-4

Estimation Parameters for Bulk Density and Bulk Correction Factor
DOZ Area, Above the 3115 Elevation

EST_Zone and Metal					Variogram			Vulcan Rotation			Search (2/3 of vario range), Meters				Exclude Distance (1/4 of Range), M			
					Dip, Azimuth, and Ranges (M)			Alpha, Zeta Beta			Lower and Upper Cut Value	Dist_1	Dist_2	Dist_3	High Yield Limit	Dist_1	Dist_2	Dist_3
Bulk					**DIR_1**	**DIR_2**	**DIR_3**											
Diorite			Total Sill	Az / Dip	58/-29	-32/29	-32/119	105.0	0.0	40.0	1.80 g/cc				3.30 g/cc			
	Nugget	0.12	0.48								6.00 g/cc							
	Str1	0.10			35.0	35.0	35.0											
	Str2	0.26			185.0	150.0	150.0					200	200	50		62	50	50
Bulk					**DIR_1**	**DIR_2**	**DIR_3**											
Marble			Total Sill	Az / Dip	125/14	35/-14	35/76	125.2	14.1	69.4	1.80 g/cc				3.30 g/cc			
	Nugget	0.10	0.72								6.00 g/cc							
	Str1	0.41			55.0	35.0	25.0											
	Str2	0.21			135.0	115.0	105.0					90	77	70		45	38	35
Bulk					**DIR_1**	**DIR_2**	**DIR_3**											
Skarn			Total Sill	Az / Dip	105/0	15/0	15/90	105.0	0.0	55.0	1.80 g/cc				3.30 g/cc			
	Nugget	0.10	0.49								6.00 g/cc							
	Str1	0.21			35.0	35.0	25.0											
	Str2	0.18			150.0	135.0	90.0					100	90	60		50	45	30
Bulk Factor					**DIR_1**	**DIR_2**	**DIR_3**											
Diorite			Total Sill	Az / Dip	95/0	5/0	5/90	95.0	0.0	20.0	0.85 g/cc							
	Nugget	0.01	0.31								0.99 g/cc							
	Str1	0.05			32.0	32.0	32.0											
	Str2	0.25			170.0	170.0	140.0					113	113	93				
Bulk Factor					**DIR_1**	**DIR_2**	**DIR_3**											
Marble			Total Sill	Az / Dip	117/10	27/-10	27/80	116.6	9.6	39.0	0.85 g/cc							
	Nugget	0.03	0.43								0.99 g/cc							
	Str1	0.06			25.0	25.0	25.0											
	Str2	0.34			185.0	150.0	100.0					123	100	67				
Bulk Factor					**DIR_1**	**DIR_2**	**DIR_3**											
Skarn			Total Sill	Az / Dip	135/35	45/-35	45/55	135.3	35.4	29.8	0.85 g/cc							
	Nugget	0.03	0.42								0.99 g/cc							
	Str1	0.19			50.0	30.0	30.0											
	Str2	0.20			160.0	130.0	120.0					107	87	80				

Estimation Parameters for Bulk Density and Bulk Correction Factor
DMLZ Area, Below the 3115 Elevation

EST_Zone and Metal					Variogram			Vulcan Rotation			Search (2/3 of vario range), Meters				Exclude Distance (1/4 of Range), M			
					Dip, Azimuth, and Ranges (M)			Alpha, Zeta Beta			Lower and Upper Cut Value	Dist_1	Dist_2	Dist_3	High Yield Limit	Dist_1	Dist_2	Dist_3
Bulk					**DIR_1**	**DIR_2**	**DIR_3**											
Diorite			Total Sill	Az / Dip	105/0	15/0	15/90	105.0	0.0	40.0	1.80 g/cc				3.75 g/cc			
	Nugget	0.10	0.55								6.00 g/cc							
	Str1	0.15			150.0	150.0	15.0											
	Str2	0.30			300.0	300.0	130.0					200	200	50		100	100	25
Bulk					**DIR_1**	**DIR_2**	**DIR_3**											
Marble			Total Sill	Az / Dip	130/0	40/0	40/90	130.0	0.0	-10.0	1.80 g/cc				3.75 g/cc			
	Nugget	0.07	0.64								6.00 g/cc							
	Str1	0.36			40.0	20.0	15.0											
	Str2	0.21			190.0	160.0	130.0					127	107	87		63	53	43
Bulk					**DIR_1**	**DIR_2**	**DIR_3**											
Skarn			Total Sill	Az / Dip	110/0	20/0	20/90	110.0	0.0	60.0	1.80 g/cc				3.75 g/cc			
	Nugget	0.07	0.62								6.00 g/cc							
	Str1	0.29			40.0	40.0	30.0											
	Str2	0.26			298.0	298.0	94.0					198	198	63		99	99	31
Bulk Factor					**DIR_1**	**DIR_2**	**DIR_3**											
Diorite			Total Sill	Az / Dip	30/-60	-60/60	-60/150	30.0	-60.0	0.0	0.85 g/cc							
	Nugget	0.05	0.53								0.99 g/cc							
	Str1	0.22			45.0	80.0	35.0											
	Str2	0.26			250.0	195.0	100.0					167	130	67				
Bulk Factor					**DIR_1**	**DIR_2**	**DIR_3**											
Marble			Total Sill	Az / Dip	115/0	25/0	25/90	115.0	0.0	40.0	0.85 g/cc							
	Nugget	0.07	0.48								0.99 g/cc							
	Str1	0.15			55.0	79.0	115.0											
	Str2	0.26			275.0	168.0	121.0					183	112	81				
Bulk Factor					**DIR_1**	**DIR_2**	**DIR_3**											
Skarn			Total Sill	Az / Dip	110/0	20/0	20/90	110.0	0.0	65.0	0.85 g/cc							
	Nugget	0.02	0.39								0.99 g/cc							
	Str1	0.05			36.0	45.0	45.0											
	Str2	0.32			260.0	170.0	95.0					173	113	63				

Notes: All Models are Exponential Models Minimum composites = 3, Maximum Composites = 10

Pyrite Estimation

A data base of iron sulfide minerals, pyrite, marcasite, and pyrrhotite was developed based on XRD analysis of archived drill hole pulps. Those pulps were selected to develop a sample spacing of roughly 50 x 50 x 50 across the DMLZ deposit.

The total XRD data base contains 3,427 samples due to the addition of 805 additional samples during 2017.

The XRD pulp samples are the information that is input directly into kriging. There has not been any compositing because the samples are not continuous runs of drill hole analysis. Population boundaries were identified at the primary rock types which are; 1) Ertsberg Diorite (Te=code 5), 2) Skarn (Tf, Tw, Kkeh, Kkel, Kkes, = code 9), 3) Hangingwall Marble (code 8). Each of the three zones was estimated as a hard boundary.

Within the data base, pyrite and marcasite were summed to form a variable called py_mc. That was estimated into each block. Pyyrhotite was estimated separately. At the block scale, py_mc was added to pyrrhotite into a block model variable called "wt_fes" meaning weight percent iron sulfides.

Table 4-5 summarizes the grade estimation parameters. All blocks were estimated with a maximum of 15 composites and a minimum of 3 samples.

Table 4-5
Estimation Parameters for Iron Sulfides

EST_Zone and Metal			Variogram			Vulcan Rotation			Search Distance (M)			High Grade Search Limit (M)			
			Dip, Azimuth, and Ranges (M)			Alpha, Zeta Beta			Dist_1	Dist_2	Dist_3	High Limit	Dist_1	Dist_2	Dist_3
Diorite, Rock = 5			DIR_1	DIR_2	DIR_3	DIR_1	DIR_2	DIR_3							
Nugget	0.10	Total Sill										10 %			
Str1	0.59	0.91	180	180	115	120	0	60							
Str2	0.22		310	240	200				207	160	135		155	120	100
Skarn, Rock = 9			DIR_1	DIR_2	DIR_3	DIR_1	DIR_2	DIR_3							
Nugget	0.14	Total Sill										24 %			
Str1	0.36	1.00	85	125	65	110	0	40							
Str2	0.50		205	165	100				137	110	67		103	83	50
Hanging Wall Marble, Rock =8			DIR_1	DIR_2	DIR_3	DIR_1	DIR_2	DIR_3							
Nugget	0.14	Total Sill										12 %			
Str1	0.36	1.00	85	125	65	110	0	40							
Str2	0.50		205	165	100				137	110	67		103	83	50

Notes: All Models are Exponential Models Minimum composites = 3, Maximum Composites = 15

Classification Codes

Resource confidence codes were assigned to the block model based on the kriging variance, the number of drill holes, and sample distance to the closest sample. The measured, indicated, and inferred confidence codes were defined as follows for the DOZ/ESZ and DMLZ areas.

DOZ/ESZ Area, Above 3115 Elevation

Measured Classification Copper, Code = 3
- Diorite
  - Copper Kriged Variance < 0.13 and
  - Minimum distance to the nearest composite < than 17.5m
  - At least 2 drill holes used to estimate the block
- Skarn and Marble
  - Copper Kriged Variance < 0.11 and
  - Minimum distance to the nearest composite < 17.5m
  - At least 2 drill holes

Indicated Classification, Code = 2
- Diorite
  - Copper Kriged Variance >= 0.13 and < 0.32
  - Minimum distance to the nearest composite < than 100m
  - At least 2 drill holes used to estimate the block
- Skarn and Marble
  - Copper Kriged Variance >= 0.11 < 0.30
  - Minimum distance to the nearest composite < 100m
  - At least 2 drill holes

Inferred Classification, Code = 1
- Diorite
  - Copper Kriged Variance >=0.32 or Min_Dist > 100m
- Skarn and Marble
  - Copper Kriged Variance > =0.30 or Min_Dist > 100m

DMLZ Area, Below 3100 Elevation

Measured Classification Copper, Code = 3
- Diorite
  - Copper Kriged Variance < 0.20 and
  - Minimum distance to the nearest composite < than 20m
  - At least 2 drill holes used to estimate the block
- Skarn and Marble
  - Copper Kriged Variance < 0.15 and
  - Minimum distance to the nearest composite < 20m
  - At least 2 drill holes

Indicated Classification, Code = 2
- Diorite
  - Copper Kriged Variance >= 0.20 and < 0.64
  - Minimum distance to the nearest composite < than 100m
  - At least 2 drill holes used to estimate the block
- Skarn and Marble
  - Copper Kriged Variance >= 0.15 and < 0.62
  - Minimum distance to the nearest composite < 100m
  - At least 2 drill holes

Inferred Classification, Code = 1
- Diorite
  - Copper Kriged Variance >=0.64 or Min_Dist > 100m
- Skarn and Marble
  - Copper Kriged Variance > =0.62 or Min_Dist > 100m

Where possible, IMC confirmed that the above procedures were followed during checks of the block model.

4.3 Block Model Assembly Checks

Two basic types of checks of grade estimation were completed on the EESS Sep17 model by IMC:

1) A comparison of the block grade estimates versus contained composite grades in the mining geometries. This is done on a global reserve basis as well as by a range of cutoffs within the mining shape.

2) A comparison of the undiluted mining geometries between the Sep17 and the Aug16 models.

3) Additional spot checks have been applied to specific gravity, and density factor estimates as well as logical checks on estimation zones versus rock types. Rock type and grade have been visually checked on plans and sections.

In previous years, a production reconciliation comparison was made for each individual deposit under production, for example DOZ and Grasberg. Allocation of mill production to each deposit was based on weight average calculations from the mine production reports. This year, as in several recent years, a separate section is provided in this report where the total of model predicted production for DOZ, Grasberg, and Big Gossan is compared against the total mill production estimate. The result is a global comparison of predicted versus realized metal production.

Block Grade to Composite Comparison

The table that follows summarizes a comparison between the block statistics and the contained composites inside of the minable envelopes for the DOZ and DMLZ components of the EESS model. The block statistics are presented in two ways: 1) tonnage weighted pre-dilution and pre-mining tabulation, and 2) simple block counts not weighted by density.

The primary result is that the block grades average lower than the simple average grade of the contained composites. This is due to the fact that the block grade estimates incorporated lower grade samples from outside the minable envelope when estimating the grade. The results of this check are reasonable and do not indicate a high bias to the block grade estimates.

The DMLZ deposit illustrates the trend of having higher grade when tonnage weighted as compared with simple block count. This is due to the fact that the higher grade components of the deposit tend to be higher density.

Table 4-6
Undiluted Model vs Composite Statistics Inside 2016 Reserve Outlines

Sepember 2017 Block Model by Freeport Personnel Undiluted2017 Model vs 2017 Composite Statistics Inside 2016 Mineable Reserve Outlines							
		Copper Kt or Num	Mean Cu%	Gold Number	Mean gm/mt	Silver Number	Mean gm/mt
DOZ/ESZ	Model Ktonnes	380,594	0.735		0.693		3.640
	Model Blk Count	41,343	0.726		0.690		3.607
	Composites	9,522	0.886	8,876	0.753	9,128	4.467
DMLZ	Model Ktonnes	468,749	0.932		0.777		4.430
	Model Blk Count	48,476	0.878		0.740		4.220
	Composites	9,524	1.184	9,430	0.892	9,281	5.516

Composite means DO NOT reflect grade caps
Composites are not declustered in this calculation
DOZ and DMLZ composites tabulated above are DDH Only

The above information was further subdivided by cutoff grade to understand how well the block model followed local grade changes as measured by the contained composites.

Table 4-7 is a summary of the results within both the DOZ and DMLZ mining zones based on the previous year 2016 reserve envelope. All blocks and composites within those outlines were used for the test and then filtered on cutoff grade.

For example, all copper blocks above a cutoff within the two minable envelopes were selected. All composites contained within that geometry were also selected. The table illustrates the average grade of the contained composites versus the average grade of the blocks above at several tested cutoffs.

The column labeled “% less” than cutoff indicates the percentage of the composites within the model shape that are less than the selected cutoff. The values of 20 to 30% as shown on Table 4-7 are indicative that the block model would not provide good local estimates on a block by block basis. The “% less” ratio at the Grasberg pit is substantially smaller due to the well zoned nature of the Grasberg deposit.

The DOZ and DMLZ deposit models are sufficient for selecting block cave undercut boundaries, and for predicting long term production grade. However, the ability to predict short term grade is somewhat moot in a block cave operation due to the mixing of the cave process which is not reflected in the composite and cutoff checks. Table 4-7 does indicate that the block model has the proper grade response throughout a range of cutoff grades and that there is some latitude should potential changes to development cutoff be required in the future.

For simplicity, channel composites have been removed from the DOZ on Table 4-7 although they were used in the historic model grade estimation. No channel or chip samples are used in the DMLZ.

Table 4-7
September 2017 EESS Model to Composite Check
Inside 2016 Minable Envelopes, No Channels used in this Analysis

DOZ 2016 BLOCK CAVE ENVELOPE (rsv_2016=2)

Diamond Drill Hole Copper Composites

Cutoff Grade	% Comps Less Than Cutoff	Number of Comps In Shape	Composite Grade (% Cu)	Number of Blocks in Shape	Model Grade (% Cu)
0.10	0.5	9,490	0.889	40,893	0.734
0.50	21.3	6,055	1.203	23,225	1.040
0.75	24.0	3,559	1.632	12,178	1.430
1.00	23.7	2,351	2.045	7,324	1.809
1.50	26.4	1,385	2.641	3,779	2.374
2.00	23.9	869	3.212	2,131	2.877

Diamond Drill Hole Gold Composites

Cutoff Grade	% Comps Less Than Cutoff	Number of Comps In Shape	Composite Grade (gm/mt)	Number of Blocks in Shape	Model Grade (gm/mt)
0.10	1.9	8,856	0.754	40,825	0.699
0.50	20.5	5,745	1.021	24,879	0.969
0.75	25.8	3,723	1.262	15,795	1.170
1.00	30.5	2,162	1.549	8,680	1.417
1.50	30.7	651	2.348	2,506	1.956
2.00	34.2	243	3.203	836	2.471

DDH ONLY Silver Composites

Cutoff Grade	% Comps Less Than Cutoff	Number of Comps In Shape	Composite Grade (gm/mt)	Number of Blocks in Shape	Model Grade (gm/mt)
0.0	0.0	9,128	4.47	41,343	3.61
1.0	11.1	8,509	4.74	37,562	3.90
2.0	16.4	6,026	6.10	24,177	5.24
3.0	19.3	4,385	7.44	16,086	6.63
4.0	20.6	3,169	8.99	11,350	7.96
5.0	23.3	2,402	10.43	8,333	9.23

DMLZ 2016 BLOCK CAVE ENVELOPE (rsv_2016=4)

DDH Copper Composites

Cutoff Grade	% Comps Less Than Cutoff	Number of Comps In Shape	Composite Grade (% Cu)	Number of Blocks in Shape	Model Grade (% Cu)
0.10	0	9,523	1.18	48,108	0.88
0.50	16.1	6,345	1.62	27,471	1.31
0.75	18.2	5,039	1.90	19,570	1.60
1.00	19.5	4,060	2.16	14,220	1.87
1.50	20.6	2,518	2.73	7,287	2.51
2.00	24.7	1,805	3.14	4,529	2.98

DDH Gold Composites

Cutoff Grade	% Comps Less Than Cutoff	Number of Comps In Shape	Composite Grade (gm/mt)	Number of Blocks in Shape	Model Grade (gm/mt)
0.10	0	9,430	0.892	48,086	0.746
0.50	22.3	6,045	1.225	28,022	1.047
0.75	28.4	3,836	1.595	15,636	1.390
1.00	30.6	2,499	2.000	9,281	1.753
1.50	29.9	1,200	2.886	4,188	2.425
2.00	29.6	700	3.688	2,159	3.086

DDH Silver Composites

Cutoff Grade	% Comps Less Than Cutoff	Number of Comps In Shape	Composite Grade (gm/mt)	Number of Blocks in Shape	Model Grade (gm/mt)
0.0	0.0	9,281	5.52	48,476	4.22
1.0	6.8	8,985	5.67	46,286	4.39
2.0	13.4	7,199	6.71	34,600	5.35
3.0	16.4	5,777	7.79	24,181	6.60
4.0	19.1	4,678	8.80	17,603	7.77
5.0	20.7	3,679	9.99	12,889	8.98

The same process was applied as a check of the new pyrite estimate. Table 4-8 summarizes the results of the check on pyrite within the DOZ and DMLZ reserve shapes for 2015.

Table 4-8
September 2017 EESS Model to Composite Check on Iron Sulfides
Inside 2016 Minable Envelopes

DOZ 2016 RESERVE CAVE ENVELOPE (rsv_2016=2)					
Wt % Iron Sulphide Composites					
Cutoff Grade	Percent Samples LessThan Cutoff	Number of Samples In Shape	Average Sample Grade Py_Mc%	Number of Blocks in Shape	Model Grade Wt_Fes%
0.0	0.0	250	1.39	39,281	1.14
1.0	33.9	62	4.92	11,447	2.95
2.0	15.4	39	7.37	5,431	4.68
5.0	14.3	14	14.32	1,564	8.75
10.0	28.6	7	21.65	384	14.41
20.0	0.0	2	39.16	42	24.16

DMLZ 2016 RESERVE CAVE ENVELOPE (rsv_2016=4)					
Wt % Iron Sulphide Composites					
Cutoff Grade	Percent Samples LessThan Cutoff	Number of Samples In Shape	Average Sample Grade Py_Mc%	Number of Blocks in Shape	Model Grade Wt_Fes%
0.0	0.0	878	2.20	48,475	1.93
1.0	20.0	444	3.99	26,330	3.21
2.0	22.1	294	5.45	16,983	4.17
5.0	15.7	89	11.17	3,475	8.61
10.0	29.0	31	18.99	784	15.33
20.0	0.0	5	43.16	128	23.74

The sample counts on Table 4-8 indicate that the sample selection was targeted at the DMLZ deposit and reflect the additional samples collected since 2016. This is appropriate considering the long term future remaining for the DMLZ.

The results within the DMLZ cave shape indicate that the model is a reasonable estimate based on the sample data. As more drilling is added to un-caved ground in the DMLZ, it would be prudent to continue the XRD sampling for the iron sulfide minerals to continue to improve the data density for the estimate.

Sep17 versus Aug16 Model Comparisons

IMC tabulated the pre-mining and pre-dilution tonnage and grade for each of the reserve mine geometries against the Sep17 and the previous Aug16 block models. The geometries are the 2016 mine reserve shapes that were applied to the both models as a comparison of model tonnage and grade within a constant set of geometries. All are tabulated at a zero cutoff grade to reflect contained mineralization within the block cave geometries. Contained inferred is set to zero grade dilution in the tabulations below.

Table 4-9
Undiluted and Pre-mine 2016 Cave Shapes
Sep17 versus Aug16 EESS Block Models

Model	Ktonnes	Copper %	Gold gm/t	Silver gm/t	Difference (%) in Contained Metal		
					Copper	Gold	Silver
DOZ- ESZ 2016 Cave Envelope *(rsv_2016=2)*							
Aug16	380,594	0.735	0.693	3.64			
Sept17	380,594	0.735	0.693	3.64	0.0%	0.0%	0.0%
					Positive is Increase from Previous Model		
DMLZ 2016 Cave Envelope *(rsv_2016=4)*							
Aug16	468,434	0.923	0.775	4.42			
Sept17	468,749	0.932	0.777	4.44	1.0%	0.3%	0.4%

The density and grade changes in the DMLZ portion of the model did not have a material impact on the total contained tonnage and grade within the DMLZ mining shapes. The results indicate that there were no changes to the DOZ mineable tonnes and grade between the 2016 and 2017 block models.

5.0 EESS MINABLE RESERVES

There are two active mining areas in the EESS system:

1) The DOZ active block cave produced roughly 11.4 Mt during 2017.
2) The DMLZ was produced at a rate that was less than planned for 2017. A total of 1.2 Mt was produced. Permit issues and geotechnical concerns have limited the production rate to substantially less than planned.

The resource of the Dom deposit is also within the volume estimated by the EESS model.

The reserves for the two active block caves were updated during 2017. The grade estimate of the DOZ component of the model has not changed since 2012. The DMLZ reserve was updated using the Sep17 block model that was described in Section 4.0

The DOZ was originally comprised of two areas called the DOZ and the ESZ. It is now a single mining unit and the two historic areas are no longer reported as separate mine plans. The DMLZ extraction level is 530 meters below the DOZ extraction level and is transposed to the northeast, following the dip of the diorite contact..

1) The DOZ produced about 11.4 million tonnes of ore during 2017. Mine design changes and premature closures of drawpoints removed about 9.9 million tonnes from the reserve for a net reduction of about 21.3 million tonnes.

   Remaining reserves at DOZ are dependent on the geotechnical response of the cave. Some draw points have closed early or must be produced at a reduced rate due to wet muck and local draw point convergence. The reduced production rate could potentially result in a loss of reserves if the underlying DMLZ undercuts the DOZ crusher before completion of all of the planned DOZ block cave.

2) The Deep MLZ block cave continued limited production during 2017 and produced roughly 1.2 million tonnes of combined cave production and development ore. The block model was updated and the mine plan modified slightly. The combined impact on reserves was a net reduction of about 2.4 million tonnes of ore compared to last year.

3) The Dom resource was unchanged during 2017.
   There are two resource components at the Dom:
   a. Dom open pit
   b. Dom underground block cave to follow the planned pit.

The Dom open pit and underground mineralization was moved from reserve to resource status during 2007 because the schedule for Dom production currently falls after the termination of the current contract of work. It remains a resource in this statement of reserves and resources.

The DOZ and DMLZ mining areas listed above will be discussed in the following subsections. In addition to reserves, there are resources surrounding each of the deposits.

5.1 DOZ Minable Reserve

The PTFI reported DOZ reserves were developed during 2017 based on the Sep17 block model. However, the metal grade estimates in the DOZ portion of the model have been static since 2012. The reserve analysis has been updated to reflect production during 2017.

The reserve reduced by about 21.3 million tonnes due to production and changes to the plan. The DOZ production amounted to 11.4 million tonnes and there were about 9.9 million tonnes lost from the reserves due to design changes.

Current plans for DOZ are to produce about 52,400 tpd (tonnes per day) in 2018 and then sustain an average of 60,000 tpd for two years until draw points begin to close out and production starts to ramp down in 2021. Production rates during 2017 averaged about 31,200 tpd.

Geotechnical issues combined with a limited number of remotely operated LHD's are currently setting the actual production at DOZ. A number of drawpoints are now categorized as having a wet muck risk. In general, they underlie the area of the old IOZ deposit. Wet muck drawpoints must be loaded with remote controlled LHD's to limit human exposure to the risk. In addition, wet muck cannot be handled by the ore handling system underground and that ore must be hauled by trucks, further limiting production capacity. There is limited remote control capacity at site which contributes to the production limitations.

PTFI utilizes the PCBC routine to assist in the development of planned block cave tonnage and grade inclusive of estimated dilution. IMC has manually checked the PCBC dilution procedures in the past and found them to be repeatable and logical. In general, the PTFI application of the PCBC dilution algorithms incorporates primarily vertical dilution relative to horizontal dilution.

Figures 5-1 and 5-2 summarize the general location of the DOZ block cave. The undercut elevation of the combined mining zones averages to be the 3126 elevation. Figure 5-2 illustrates the block cave minable area on the 3160 elevation to illustrate the total DOZ block cave undercut area for the reserve. The west side of the DOZ caves material below the historic IOZ area above. Some IOZ material is being recovered as over draw, but the IOZ is not included in the DOZ statement of reserves.

The economic input to the PCBC routine as applied by PTFI to set the cave envelope are summarized on the next page. The drawpoint hurdle rate of $350,000 per drawpoint has been removed since development of the DOZ is now complete. Process recovery and smelter terms are applied by ore type. The notes that follow summarize the average values.

DOZ PCBC Input Parameters for End 2016 Reserves

Mining, Milling, G&A Ore-flow, Support, Mining, milling, overheads and indirects, excludes footprint development cost.	$30.80 / tonne
Metal Prices: Economics Applied to Measured and Indicated Only	$2.00/lb Cu $1,000/oz Au $15.00/oz Ag
Values per unit of grade as input to PCBC As Reported by PTFI in 10K Update Notes	$30.14 / 1 % Cu $24.98 / gm Gold $ 0.30 / gm Silver

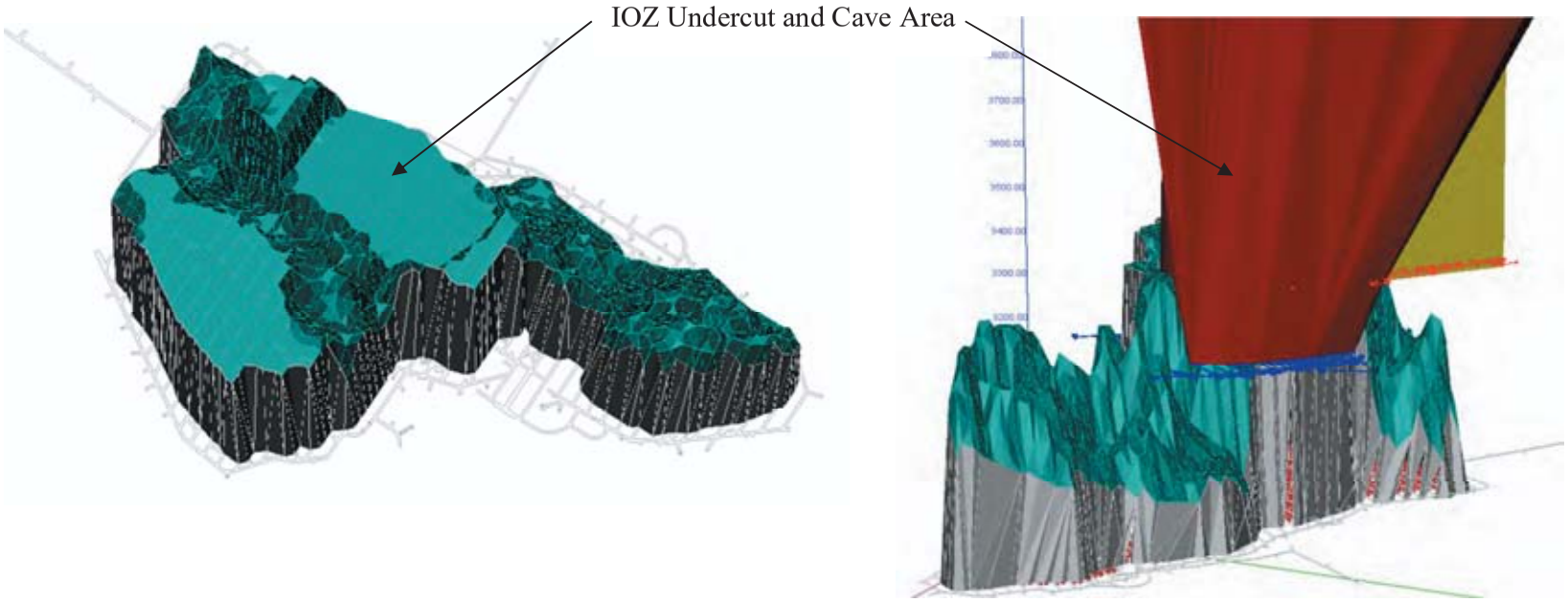
The following average parameters were provided by PTFI as the basis for cutoff determination:

Mill Recoveries	93.7% Cu 84.5% Au 87.5% Ag
Smelter Recoveries	96.5% Cu 97.0% Au 76.9% Ag
Smelting and Refining Charges (converted to lbs by IMC)	$0.406 / lb Cu $5.00 /oz Au $0.35 /oz Ag
Royalty	4.0 % Cu, 3.75 % Au, 3.25 Ag
FFIJD	1%

Using the parameters above, IMC used the value per unit of grade above to back calculate the metal prices relative to the announced reserve price as an independent check. The resulting prices are: $2.00 /lb Cu, $1,000 /oz Au, and $14.83 /oz Ag. The checks are well within rounding differences to the announced reserve prices.

IMC check calculations above are not intended to replace PTFI calculations but rather act as a check comparing the published reserve information against the mine planning input data.

The PTFI calculation of remaining reserves after December 2017 is summarized on Table 5-1. The DOZ mine production schedule is presented on the table. Grades on the production schedule may not precisely match the reserve due to rounding differences.



Looking North and Down

Looking Southwest and Down

Figure 5-1
DOZ
Perspective Views of Block Cave Envelope
Provided by PTFI

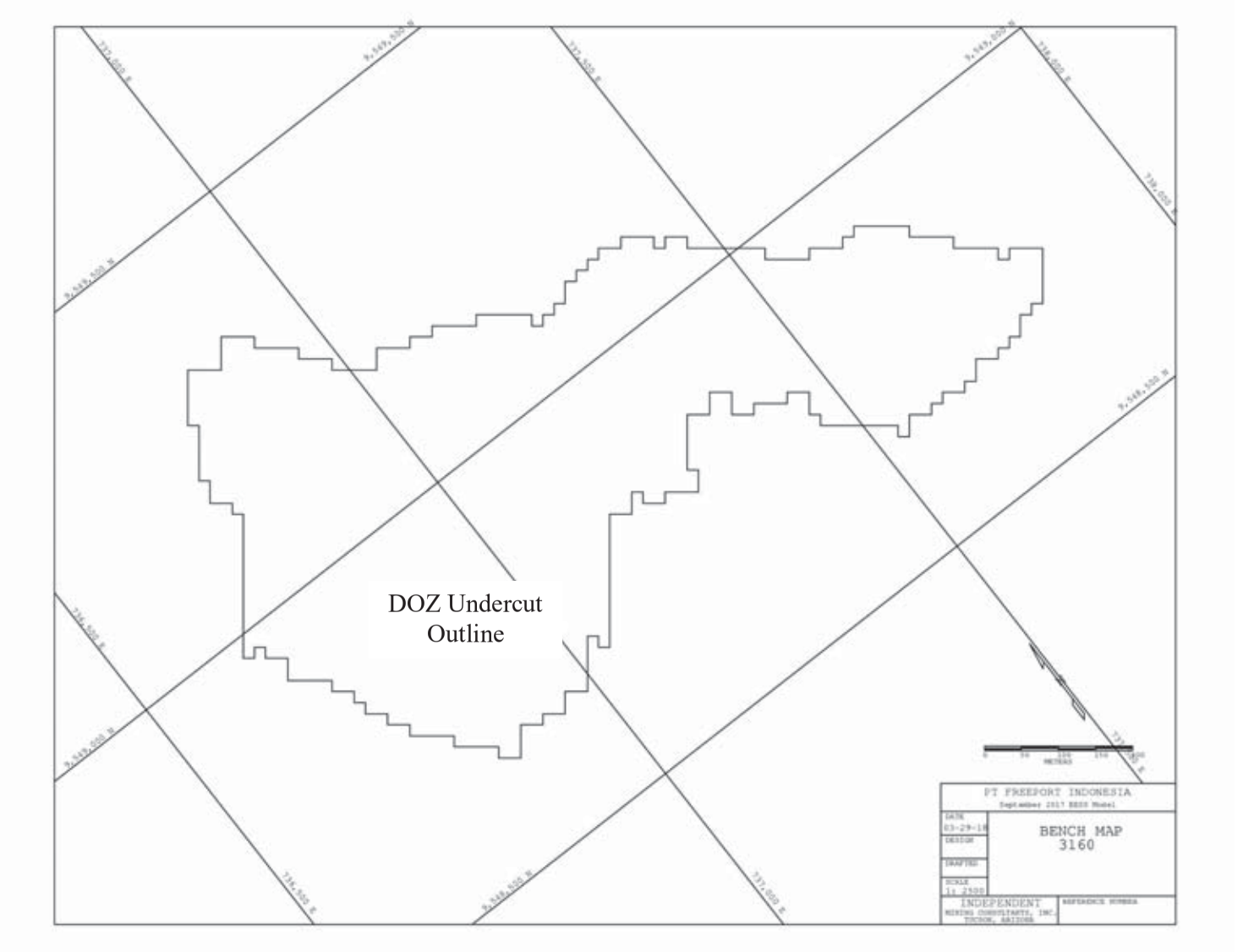


Figure 5-5
DOZ 2017 Undercut Outline for Reserves

Table 5-1

DOZ Minable Reserves
Proven and Probable Minable Reserves
December 31, 2017

	Ktonnes	Copper %	Gold gm/t	Silver gm/t
December 2016 Reserve	100,050	0.51	0.70	2.10
Less 2017 PCBC Production From Model *	11,390	0.45	0.57	1.98
Mine Design and Model Changes	-9,899	0.35	0.34	2.63
December 2017 Reserve	**78,761**	**0.54**	**0.76**	**2.05**

Production Schedule Including Dilution from PCBC

Year	Ktonnes	Copper %	Gold gm/t	Silver gm/t
2018	19,121	0.60	0.73	2.36
2019	21,900	0.52	0.86	1.86
2020	21,960	0.55	0.80	1.99
2021	15,780	0.52	0.60	2.03
Total	78,761	0.54	0.76	2.05

tab5-1.xls

* PCBC Estimate of model grades, not actual reported from production

DOZ Cash Flow and Sensitivity Check

IMC assembled an independent pre-tax cash flow calculation as a check on the financial status of the DOZ. The IMC check calculations address the period from January 2018 forward in time. From this point forward, the required capital for DOZ is minor equipment sustaining capital. IMC utilized the operating costs and development capital costs as summarized by PTFI in their cash flow and cutoff grade calculation tables along with IMC adjustments and judgments.

IMC cash flow calculations applied Mill + Ore flow + G&A operating costs of $19.74/tonne. Mining costs with continuing development were based on the PTFI provided cash flow summary for DOZ with average mining cost of $11.06/tonne of ore. Recoveries were based on the detailed recovery models developed by PTFI. The PTFI DOZ mine life schedule for reserves was utilized as summarized on Table 5-1.

The summary results of the IMC economic analysis and sensitivity analysis are as follows:

IMC Cash Flow Sensitivity Check for the DOZ/ESZ

		NPV 10%
Base Case:	$2.00/lb Cu, $1,000/oz Au, and $15.00/oz Ag	$ 330 million
Metal Price Sensitivity:	$1.75/lb Cu, $875/oz Au, and $13.13/oz Ag	$ 13 million

Using Base Case Metal Prices:
Operating Cost Sensitivity: (Operating + Sustaining Costs) x 1.17 results in an NPV 10% of $0.5 million USD over the mine life.

The sensitivity to low metal prices or increased costs is illustrated in the above results. Using the base case prices of $2.00/lb and $1,000.00/oz Au, the project operating and development costs can increase by 17% and still breakeven on a discounted basis.

The IMC cash flow calculations are simplified pre-tax calculations and are not intended to replace or replicate more detailed PTFI calculations. IMC work is a simple measure of the economic robustness of the reserve.

Cutoff Check on PCBC Minable Envelope

The PTFI procedure for use of PCBC is to base the cutoff on NSR values per tonne rather than a metal or equivalent metal cutoff. IMC calculated the breakeven cutoff grade in equivalent copper terms for undercut of drawpoints based on the PTFI provided cost and development data as a check on PTFI calculations. Using the recoveries and operating costs that reflect current conditions at DOZ, the breakeven grade would be roughly 0.97% Eqcu and the internal cutoff would be 0.62 % Eqcu at the $2.00 /lb base metal prices.

Of the 365 million tonnes within the pre-mine block cave envelope, there are about 57.2 million tonnes of undercut material with the draw column grade less than 0.97% Eqcu, (about 17% of the reserve). However, there is only 0.6% of the material in the draw columns below internal cutoff.

DOZ Resource Estimate

PTFI has estimated resources for the DOZ deposit and other deposits in the district based on the guidelines outlined in the AusIMM JORC code. The PTFI resource estimates are within approximate minable geometries based on reasonable cutoff grades and include inferred category material within the resource estimate.

The DOZ resource incorporated material that overlies and is adjacent to the planned block cave reserve. This material includes the over pull and mineralized material that is above resource cutoff based on CA3D sequential runs. The IOZ cave area was not included within the DOZ resource. The resulting resource for the DOZ deposit as tabulated by PTFI follows:

Table 5-2
DOZ Resource
Measured, Indicated, and Inferred Categories
December 31, 2017

Resource Source	Measured				Indicated				Measured + Indicated			
	Ktonnes	Copper %	Gold gm/t	Silver gm/t	Ktonnes	Copper %	Gold gm/t	Silver gm/t	Ktonnes	Copper %	Gold gm/t	Silver gm/t
DOZ Cave	5,667	0.33	0.76	0.48	58,422	0.40	0.74	0.65	64,089	0.39	0.74	0.64

Resource Source	Inferred			
	Ktonnes	Copper %	Gold gm/t	Silver gm/t
DOZ Cave	123	0.53	0.36	0.27

The resource above does not include the stated reserves so that the resource is an incremental addition outside of the statement of reserves. The measured and indicated component of the above resources qualify under SEC rules as Additional Mineralized Material.

5.2 DMLZ Reserve

The PCBC run that developed the Deep Mill Level Zone (DMLZ) reserve was updated based on the Sep17 model described in Section 4.0. Production from drawpoints continued during 2017, but the production rate was constrained due to environmental permit limitations that were under evaluation by the Indonesian government and due to geotechnical concerns.

The DMLZ deposit is currently planned for undercut on the 2600m elevation with the extraction drifts on the 2590. This isis 530m below the DOZ undercut elevation. The current reserve underlies a broad area of the overlying DOZ mining areas. Figure 5-3 illustrates the planned cave envelope in isometric format. Figure 5-4 illustrates the DMLZ minable geometry just above the undercut on the 2605 elevation. Figure 5-5 shows the location of the DMLZ on a cross section looking northwest to illustrate the relative locations of the overlying DOZ and IOZ block caves.

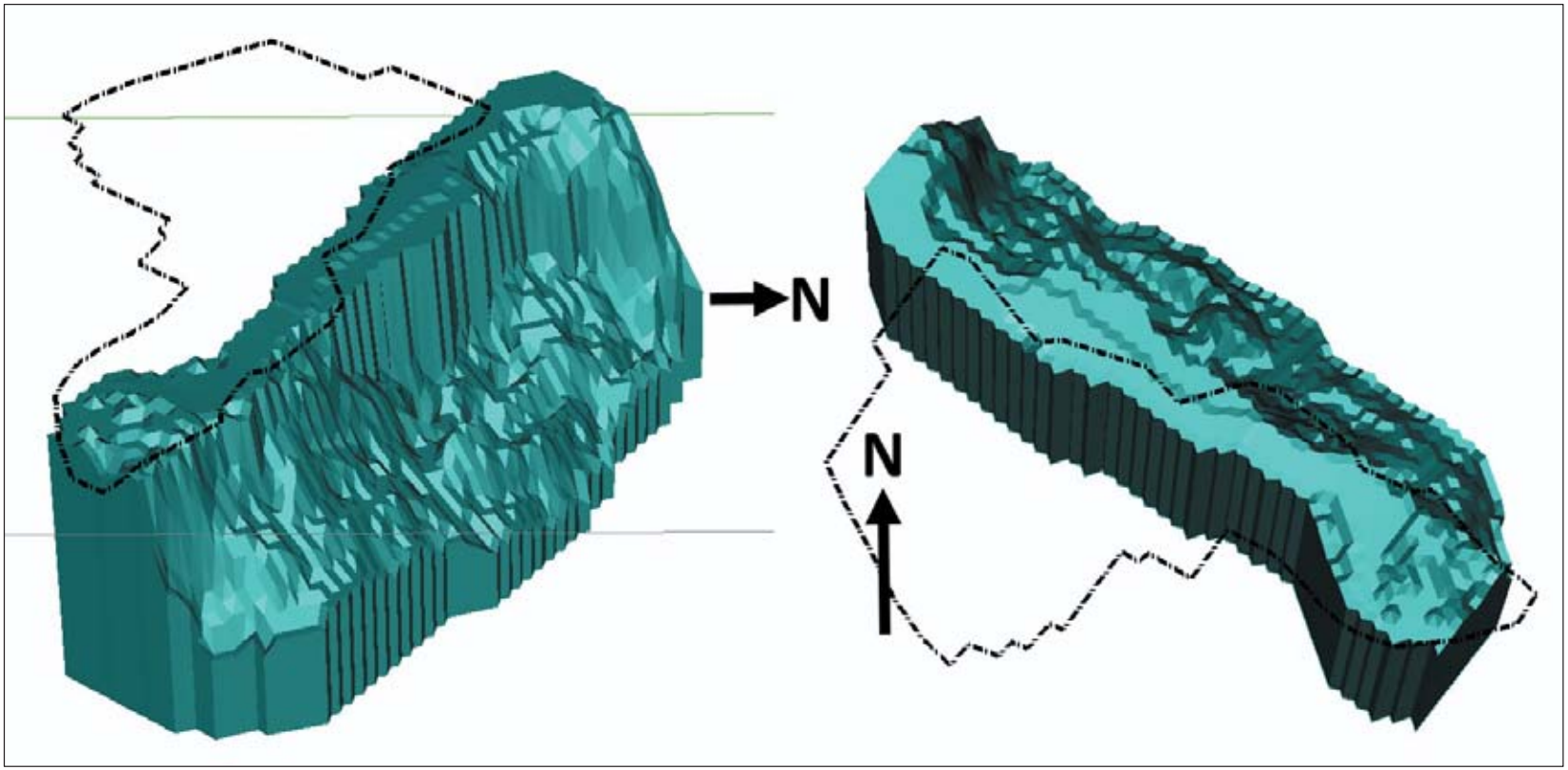
DMLZ Minable Reserve

The DMLZ is planned for production by block cave underground methods. Geotechnical work by PTFI staff and their contractors (CNI) has concluded the DMLZ can be caved. The analysis utilized RQD and other geotechnical parameters recorded by PTFI during the drill program. Substantial process testing and process simulation has also been completed to develop the estimated process recoveries applied to the deposit.

The DMLZ minable reserve and production schedule was established using the PCBC block cave scheduling routine. PTFI provided IMC with the economic parameters that follow as input data to the PCBC runs that were completed late in 2017.

The economic input for the DMLZ during 2017 incorporates a declining mining cost over time. The strategy employs a breakeven cutoff through about 2027 then the cutoffs reduce linearly until reaching an internal cutoff grade in 2041.

The DMLZ caving was started in the 3rd quarter of 2015. Ramp up to full production of 80,000 tpd is planned to occur in 2022.



Looking West and Down

Looking North and Down

Figure 5-3
Illustration of DMLZ Cave Envelope.
Showing DOZ Undercut as Dotted Overlay
Provided by PTFI

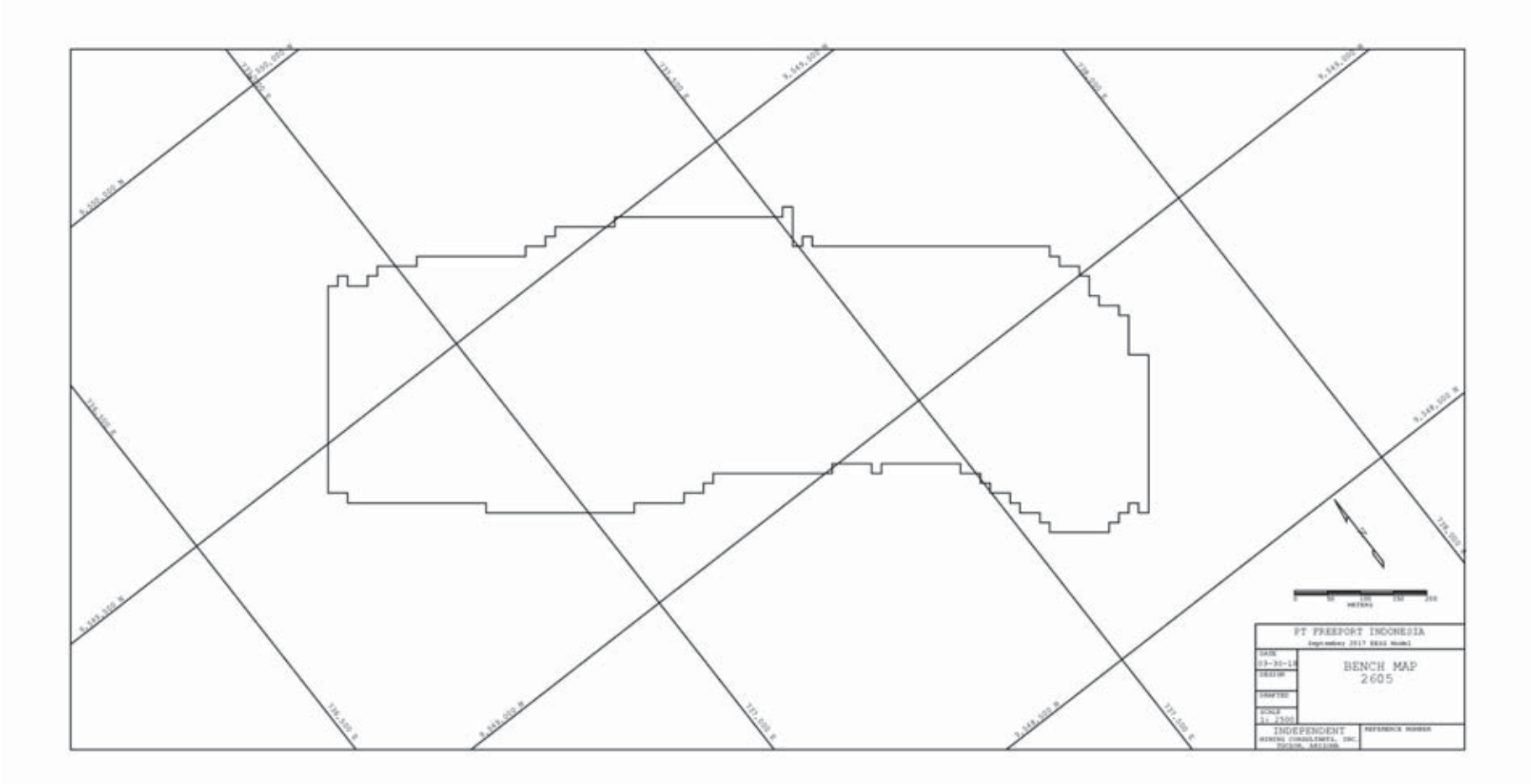


Figure 5-4
DMLZ Undercut Outline on 2590 for Reserve

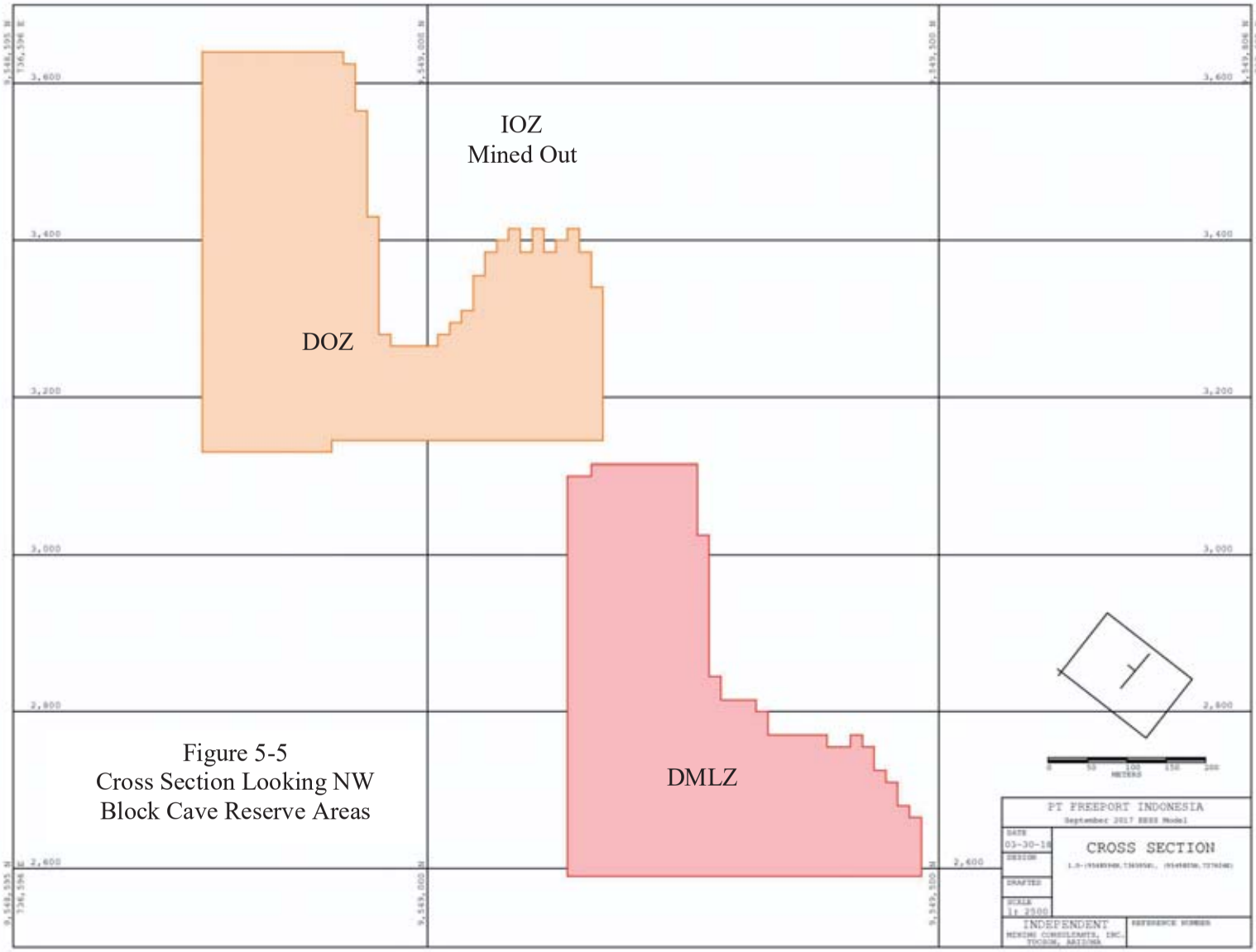


Figure 5-5
Cross Section Looking NW
Block Cave Reserve Areas

DMLZ-BC PCBC Input Parameters

Total per Tonne Cost, 2017-2024 Mining, milling, overheads and indirects, excludes footprint development cost.	$27.63/ tonne
Drawpoint Hurdle Cost	$340,000 / drawpoint
Metal Prices:	$ 2.00 /lb Cu $1,000 /oz Au $15.00 /oz Ag
Value per unit, Average	$30.65 / % Cu $24.21 / gm Gold $ 0.29 / gm Silver

The following parameters were provided by PTFI as the basis for cutoff determination:

Mill Recovery and Concentrate Grade Details Applied to Reserve Determination

	Tw-A Waripi High Rec	Tw-B Waripi Low Rec	Ksk Kembelangan Skarn	Te-A Diorite High Rec	Te-B Diorite Med Rec	Te-C Diorite Low Rec
Copper	92.20%	85.58%	88.70%	96.16%	90.99%	90.16%
Gold	83.77%	80.04%	78.64%	86.09%	79.15%	79.62%
Silver	86.48%	74.99%	81.61%	95.06%	88.13%	84.59%
CuConGrd	33.50%	34.38%	23.83%	16.44%	23.28%	22.89%

Average Mill Recovery for Check Calculations Mill Recoveries, Variable with Ore Type, Reserve Average Shown	90.2% Cu 81.9% Au 83.7% Ag
Smelter Recoveries	96.5% Cu 97.0% Au 76.9% Ag
Smelting and Refining Charges, Calculated by IMC	$0.3194 / lb Cu $5.00 /oz Au $0.35 /oz Ag
Royalty	4.0% Cu, 3.75% Au, Ag 3.25% Ag
FFIJD	1%

Using the parameters above, IMC used the values per unit of grade above to back calculate the metal prices relative to the announced reserve price. IMC check calculations confirm that the values per unit of grade were consistent with the metal prices and the rest of the input information provided above. Applying the average mill recoveries, the resulting check calculations were: $2.00/lb Cu, $1,000/oz Au, and $14.98/oz Ag.

The PCBC run was applied to the Sep17 model as described in Section 4.0. Table 5-3 summarizes the production schedule and the reserve as planned by PTFI.

Table 5-3

DMLZ Block Cave
Minable Reserve, December 31, 2017
Proven and Probable Reserves

	DMLZ-BC Minable Reserve			
	Ktonnes	Cu %	Au gm/t	Ag gm/t
Reserve	437,043	0.91	0.76	4.39
Mill Recoveries		90.1%	82.0%	83.7%
Smelt-Refining Recovery		96.5%	97.0%	76.9%
Recovered Metal		7,658 Mlbs	8,467 Kozs	39,752 Kozs

Year		DMLZ-BC PCBC Reseve Support Schedule			
		Ktonnes	Cu %	Au gm/t	Ag gm/t
1	2018	5,809	1.57	1.573	6.602
2	2019	13,115	1.71	1.594	7.363
3	2020	21,934	1.57	1.312	7.253
4	2021	28,272	1.19	0.927	5.785
5	2022	29,170	1.03	0.838	5.064
6	2023	29,193	0.95	0.806	4.724
7	2024	29,449	0.95	0.773	4.603
8	2025	29,327	0.99	0.761	4.776
9	2026	26,649	0.94	0.743	4.581
10	2027	22,754	0.81	0.711	3.866
11	2028	21,890	0.70	0.626	3.331
12	2029	17,994	0.64	0.570	3.051
13	2030	16,800	0.58	0.554	2.954
14	2031	16,825	0.52	0.563	2.989
15	2032	16,470	0.49	0.559	2.972
16	2033	16,425	0.52	0.565	3.041
17	2034	13,613	0.59	0.584	3.170
18	2035	13,613	0.71	0.602	3.472
19	2036	11,999	0.90	0.634	4.093
20	2037	11,070	1.09	0.665	4.609
21	2038	11,070	1.15	0.653	4.569
22	2039	11,070	1.05	0.609	4.194
23	2040	11,093	0.80	0.536	3.608
24	2041	11,439	0.54	0.428	3.209
Total		437,043	0.91	0.76	4.39

DMLZ-BC Cash Flow and Sensitivity Check

IMC modified the economic input parameters within the PTFI development plan, cutoff economics, and IMC judgment to develop an independent pre-tax cash flow analysis of the DMLZ-BC operation.

IMC cash flow calculations applied Mill + Ore flow + G&A operating costs of $16.53/tonne. Mining costs with continuing development were based on the PTFI provided cash flow summary for DMLZ with average direct mining cost without development of $11.15/tonne of ore. Sustaining capital costs were variable by year and were sourced from the PTFI August 2017Development Plan. Sunk capital prior to 2018 was excluded from this simple financial analysis. The PTFI DMLZ mine life schedule for reserves was utilized for the mine schedule as summarized on Table 5-3.

The summary results of the IMC pre-tax economic analysis and sensitivity analysis are as follows:

IMC Cash Flow Sensitivity Check for the DMLZ-BC

		NPV 10%
Base Case:	$2.00/lb Cu, $1,000/oz Au, and $15.00/oz Ag	$3,710 million
Metal Price Sensitivity:	$1.32/lb Cu, $660/oz Au, and $9.90/oz Ag	10 million
Using Base Case Metal Prices:		
Operating Cost Sensitivity:	Operating Costs x 1.73	$35.3 million
Capital Cost Sensitivity:	Initial Capital x 4.65	$38.8 million

The sensitivity to low metal prices or increased costs is illustrated in the above results.

Using the $2.00/lb and $1,000/oz Au metal prices, increasing operating costs by a factor of 1.73 would result in a positive pretax cash flow at 10% discounting. The initial capital could increase by a factor of 4.65 and still result in a project with a positive NPV 10%.

Cutoff Check on DMLZ-BC Minable Envelope

The economics used for the IMC cash flow check result in a breakeven cutoff grade of 0.90% Eqcu based on a $2.00 /lb copper price and on the final mine+process cost of $27.63. If the processing plus G&A cost of $16.54 is used, the internal cutoff grade would is 0.54% Eqcu. IMC developed a map of the undiluted draw column grades for each column of model blocks in the DMLZ-BC. There are about 16.7% of the columns that are below 0.90% Eqcu. This amounts to about 8.7% of the contained metal.

Applying internal cutoff results in 0.1% of the draw columns averaging less than 0.54% Eqcu. The percentage sub-grade material at breakeven cutoff compared to the results at internal cutoff reflects the application of variable cutoff to the mine schedule.

DMLZ Resource

The PTFI resource estimates are within approximate minable geometries based on reasonable cutoff grades and include inferred category material within the resource estimate.

The ore reserves are currently planned for production by the end of 2041, so there is no transfer to resource due to delayed production.

The DMLZ resource also incorporated material that overlies and is adjacent to the planned block cave reserve. This material includes the over pull and mineralized material that is above resource cutoff based on CA3D sequential runs. The resulting resource for the DMLZ deposit as tabulated by PTFI follows:

Table 5-4
DMLZ Resource
Measured, Indicated, and Inferred Categories
December 31, 2017

Resource Source	Measured				Indicated				Measured + Indicated			
	Ktonnes	Copper %	Gold gm/t	Silver gm/t	Ktonnes	Copper %	Gold gm/t	Silver gm/t	Ktonnes	Copper %	Gold gm/t	Silver gm/t
DMLZ Cave	16,592	0.61	0.68	3.06	415,360	0.64	0.59	3.24	431,953	0.64	0.60	3.24

Resource Source	Inferred			
	Ktonnes	Copper %	Gold gm/t	Silver gm/t
DMLZ Cave	53,747	0.61	0.49	3.08

The resource above does not include the stated reserves so that the resource is an incremental addition outside of the statement of reserves.

5.3 Dom Resource

The Dom deposit was evaluated during 2007 based on the Aug07 EESS block model. The open pit and block cave plans were modified based on 2007 costs, changes to metal prices, and the geotechnical constraints that are an intrinsic component of consideration for Dom production.

Dom was moved from the reserve category to the resource category during 2007. The current schedule for Dom production is late in the sequence of mines in the district. Consequently, Dom production would be delayed until after 2041 which is the termination of the current contract of work.

The open pit geometry for Dom is essentially unchanged from 2006 as the geotechnical constraints that are imposed on the pit are more restrictive than any current economic constraints. The Dom pit is designed to stay on the north side of the ridge to minimize the potential for any overspill of material down the south slope of the ridge toward the mill.

The block cave tonnage was modified during 2007 to reflect an improved estimate of dilution from pit wall failure from the overlying open pit.

Evaluations of the Dom must take into account the presence of acid soluble copper in the open pit component of the Dom. Flotation recoveries applied to the Dom utilize a variable recovery formula that is based on the amount of acid soluble copper present in any model block.

Figure 5-6 is an illustration of the relative locations of the Dom open pit and block cave resource geometries.

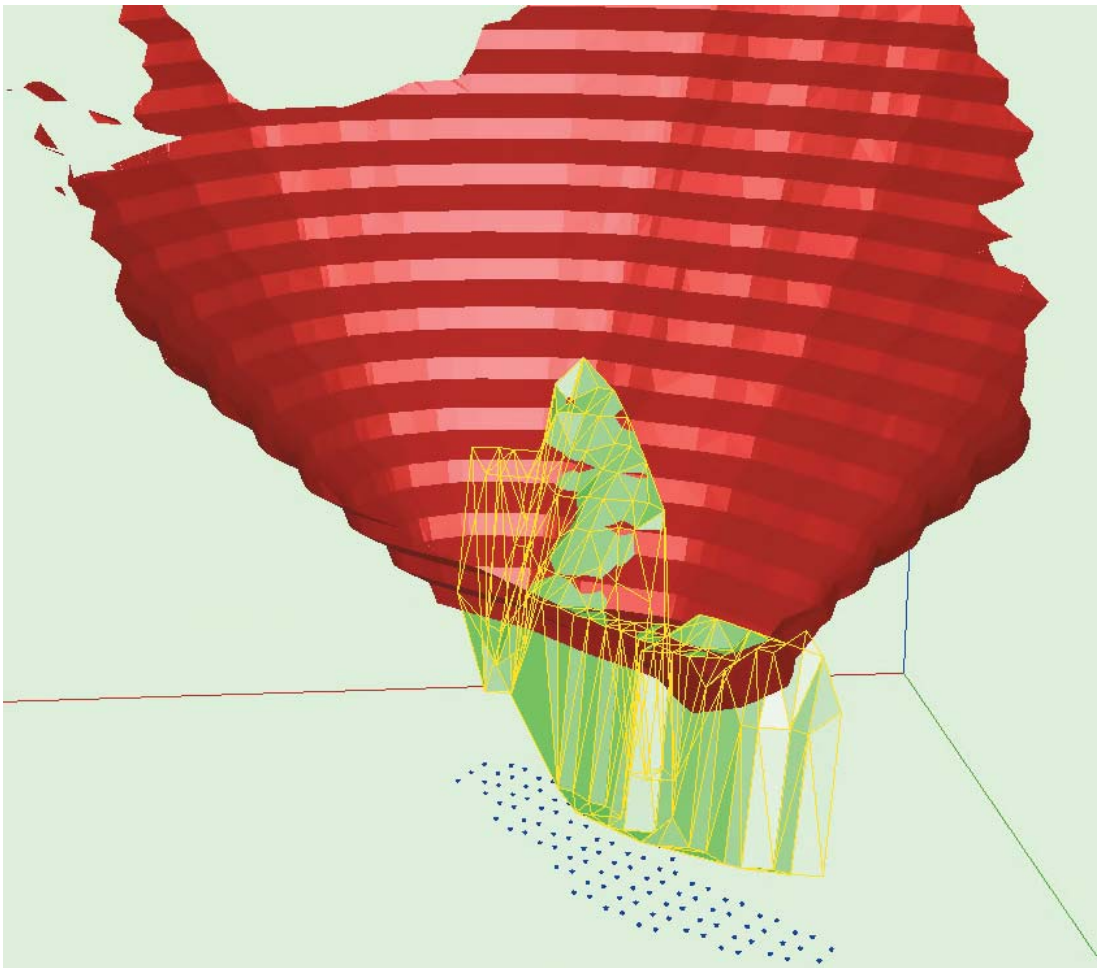


Figure 5-6
Dom Open Pit and Block Cave Resource Shapes
Looking South

Dom Open Pit Resource, December 31, 2016
Measured, Indicated, and Inferred Categories
0.40% Eqcu Ore Cutoff

	Ktonnes	Cu%	Au	Ag
		%	gm/t	gm/t
Measured	7,426	1.71	0.37	10.73
Indicated	24,731	1.59	0.36	9.64
Meas+Ind	32,157	1.62	0.36	9.89
Inferred	595	0.86	0.08	2.88

The total material moved within the open plan to release this resource is approximately 82,000 ktonnes.

Dom Block Cave Resource, December 31, 2016
Measured, Indicated, and Inferred Categories

	Ktonnes	Cu%	Au	Ag
		%	gm/t	gm/t
Measured	8,800	1.37	0.34	8.80
Indicated	20,049	1.13	0.30	7.24
Meas+Ind	28,849	1.20	0.31	7.72
Inferred	None			

The resources above do not include reserves so that the resource is an incremental addition outside of the statement of reserves.

6.0 BIG GOSSAN MODEL

Big Gossan mine continued production on a limited basis during 2017. This section will summarize the model assembly that was completed in August of 2014 which is the basis for current statement of reserves. The 2014 model estimates of copper, gold, and silver have not been changed. Mine planning and cutoff grade was updated during 2017 with a revised stope schedule and revised cutoff grades with a corresponding change to reserves.

The block model for the Big Gossan deposit was completed during August 2014 by PTFI personnel in Phoenix based on drill hole data that was down loaded on June 23, 2014. The model is based on blocks that are 5 x 5 x 5m cubes. The block model utilized linear kriging respecting rock types and a grade boundary. The location and size of the block model is summarized below:

August 2014 Big Gossan Model Area - Block Corners				
	Southwest	Northwest	Northeast	Southeast
Easting	734,261.04	734,559.64	735,599.81	735,301.21
Northing	9,548,674.60	9,549,056.79	9,548,244.11	9,547,861.93
Elevation Range		2,350.00	3,280.00	
Model Rotation, Primary Axis =		128	degrees	
Model		264	Blocks in 128 Bearing	
Size		97	Block in 38 Bearing	
Block Size 5m x 5 m 5m high		186	Levels	

Geologic interpretation for all deposits at PTFI is a continuous process with periodic revisions and improvements. The geology for the Aug14 Big Gossan model was updated using the Updated Regional Geological Model as of mid-2014. Updated geology wireframes from jobsite geologists were used to assign geologic attributes to the 5x5x5m Big Gossan block model. The 1% EqCu shell interpretation was modified during 2014 based on new assays from grade control drilling. Estimation domains were assigned using a combination of the geology and mineralization wireframes.

Domain statistics were reviewed, but the estimation parameters for the metals and density were identical to those used in 2013. The estimation procedure for rock quality designation (RQD) was modified from 2013. The scheme for assigning estimation confidence and resource classification was unchanged

The August 2014 model was utilized by PTFI to develop the updated Big Gossan reserves and resources as reported in January 2018.

6.1 Data Base

The original Big Gossan definition drilling began in 1992. The early definition of the Big Gossan deposit occurred from 1992 to 1996. The deposit was initially defined by surface and underground diamond drilling, the majority of which was collared underground. The definition diamond drilling was completed from 32 underground drill stations and 14 surface drill holes. The first twelve underground drill stations were located along the 2930 elevation

Amole dewatering drift. The remaining 20 stations were drilled from the Big Gossan exploration drift that parallels the deposit. Drill stations along the exploration drift were spaced every 50m. Each drill stations has a fan of six to eight drill holes with the holes angled roughly every 15 degrees in the fan.

Additional drilling for ore control was initiated at Big Gossan during 2010. The ore control procedure requires at least one diamond drill hole to penetrate through each stope. The ore control drilling plus other holes in the area added 85 drill holes to the Big Gossan resource model during 2014.

Total Drill Hole Data Available in 2012 through 2014
Holes that Penetrate the Big Gossan Model

2012	792 Drill Holes	50,827 Assay Intervals,	174,398 meters of drilling
2013	863 Drill Holes	53,822 Assay Intervals,	183,122 meters of drilling
2014	959 Drill Holes	59,684 Assay Intervals	201,012 meters of drilling

The tabulation above indicates that more than 85 drill holes were added. As new ore control drilling is added to the data set, some of the old holes that were drilled in the 1990's with questionable down hole surveys are removed from the data set and replaced by the new drilling.

Procedures at Big Gossan during the 1996 to 1999 period called for assay of all drill intervals at the PTFI assay lab. Intervals with potentially economic mineralization were also assayed at PT Indo Assay. Since that time Sucofindo Assay Lab in Kuala Kencana has been the primary lab for all Big Gossan assay data. The current protocols are to use the external assays where ever possible.

Drill hole assays were composited to 5 meter run length intervals broken on geologic bounds. Standard PTFI procedures require there to be 30% of the composite interval or 1.5m of assayed core to be available for the calculation of a composite value.

IMC completed a check composite calculation by independently calculating 5m down hole composites from the Big Gossan assay data. As an indication of the number of samples added since the previous model, the basic statistics of the 5m composites within the Big Gossan area for 2014 are tabulated against the 2012 and 2013 composite statistics.

Comparison of 2014 Composite Count to 2012 and 2013 (5m downhole composites)

Composite Basis	Copper		Gold		Silver	
For Data Comparison	Number	Mean%	Number	Mean gm/t	Number	Mean gm/t
2014 Composite Count	32,327	0.791	32,305	0.508	32,309	6.172
2013 Composite Count	29,901	0.770	29,881	0.513	29,883	6.128
2012 Composite Count	27,787	0.819	27,768	0.524	27,770	6.450

No Capping applied to above mean values

Most of the Big Gossan drill holes that were drilled prior to 2004 utilized acid tube methods for down hole survey. This method provides information regarding dip, but does not provide down hole information regarding the bearing of the hole. Some of the questionable acid tube holes were removed from the data set once ore control drilling provides coverage in the same area. Holes drilled since 2008 utilize the Maxibor II (laser beam) down hole survey method.

6.2 Geologic Interpretation

The three dimensional geologic interpretation of the BG deposit was updated by jobsite geologists during 2014 utilizing Vulcan software. The geological model update included changes to some stratigraphic units and intrusions. The triangulation solids were used to create a new $5m^3$ geological block model.

In addition to the geologic interpretation, the 1% equivalent copper shell was updated in the Phoenix office. Rock type and the 1% shell are used as the primary controls on mineralization

The Big Gossan deposit is located at the contact of the Cretaceous Ekmai Formation (Kkel, Kkeh of the Kembelangan group) and the Tertiary Waripi Formation (Tw) of the Faumai limestone sequence. The bulk of the mineralization is hosted within the Waripi Formation on the northeast side of the Kkeh contact. The footwall contact of the deposit is generally marked by the Ekmai Formation Shale Member (Kkeh), a hornfels altered unit that marks the top of the Kembelangan Group. The Kkeh is a distinctive 3 to 5m thick marker unit used to define stratigraphic position and assist in structural interpretation. It is continuously present along the footwall contact of the deposit. Locally there is mineralization on the southwest side of the Kkeh contact within the Kkel Ekmai limestone. Adjacent to and sometimes surrounding the mineralization on the east to northeast side of the deposit is the Ertsberg Diorite unit (Te).

An addition in 2012 to the Big Gossan geologic model, was an area referred to the Broken Zone. The broken zone area in Big Gossan is mainly traversed by two regional faults (Big Gossan Fault and Big Gossan North Fault). On the lower levels of Big Gossan, an area has been identified as being on the contact between the Kkeh and Tw skarn. This area has been subdivided into two domains: mineralized portion of broken zone (domain 8801) and the non-mineralize portion of the broken zone (domain 8802).

The deposit is tabular, dipping nearly vertical and strikes 128 degrees. Mineralization is typically 20 to 60m wide and the known extent of mineralization is over 1200m along strike and 750m vertically.

A 1% Eqcu shell was interpreted and a wireframe developed. The mineralized domain cutoff grade of 1% Eqcu was chosen because it defines a natural geologic boundary in the tenor of mineralization, and it is high enough that it demarcates a reasonable limit to economic mineralization. Minor changes in the interpretation from 2013 were based on assays from the 85 new grade control drill holes. The Eqcu values used in the interpretation of the 1% Cu shell were calculated with the 2014 Eqcu formula of:
Eqcu = Cu + 0.6395 x Au + 0.009 x Ag.

The 1% Eqcu shell was wire framed in Vulcan, and used to flag the composites within the 1% shell. The stratigraphy and intrusion wireframes were cut by the mineralization boundary to create the estimation domains used for interpolation of the various metals (table below). Search parameters within these domains were unchanged from the 2012 and 2013 model for copper (Table 6-4) and gold (Table 6-5).

The Kkeh shale member was combined with the adjacent Kkel limestone when searching for composites as a soft boundary grade estimation because the Kkeh unit is often too narrow to model effectively and to assign composites.

The domains for the Ertsberg Diorite (770) and the Distal or External Seds (777) were separate domains that were not segregated by the 1% Equivalent boundary. The primary hosts units of the Kembelangan and the Waripi formations were segregated by the 1% Equivalent mineralization bound

The combined estimation domain codes were as follows:

Estimation Domain Codes Assigned to August 2014 Model		
Lith or Strat Unit Estimation Domains	Inside 1% Eq Bound	Outside 1% Eq Bound
Tertiary Waripi (Tw)	6401	6402
Kkeh, Hornfels	6631	6632
Kkel Kembelangan Ekmai Limestone	6641	6642
Kkes Kembelangan Ekmai Sandstone	6671	6672
Diorite Intrusive (Te)	770, Combined Unit	
External Seds, Tf, Tk, Ts	777, Combined Unit	
Broken Zone (Contact at Kkeh and Tw)	8801	8802

All Domains above treated as hard boundaries, except
Kkeh and Kkel form a soft boundary.

Figures 6-1 and 6-2 illustrate the estimation zones that reflect geology and an illustrative grade boundary.

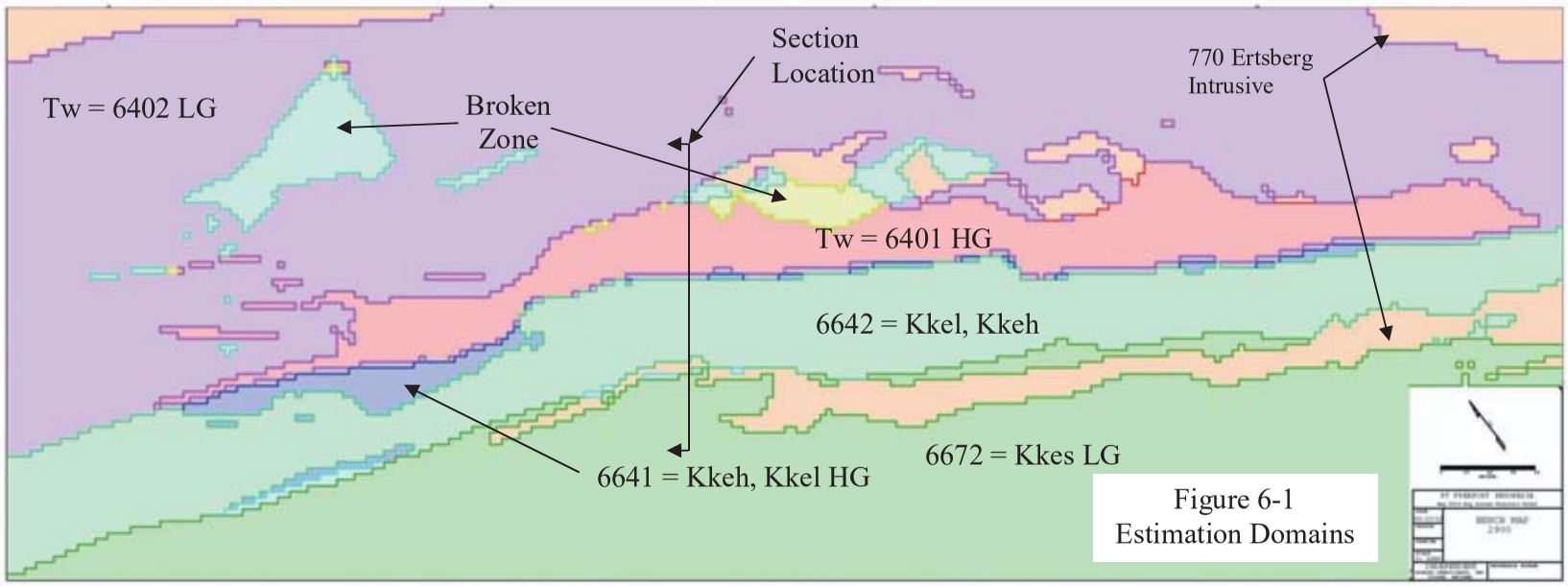


Figure 6-1
Estimation Domains

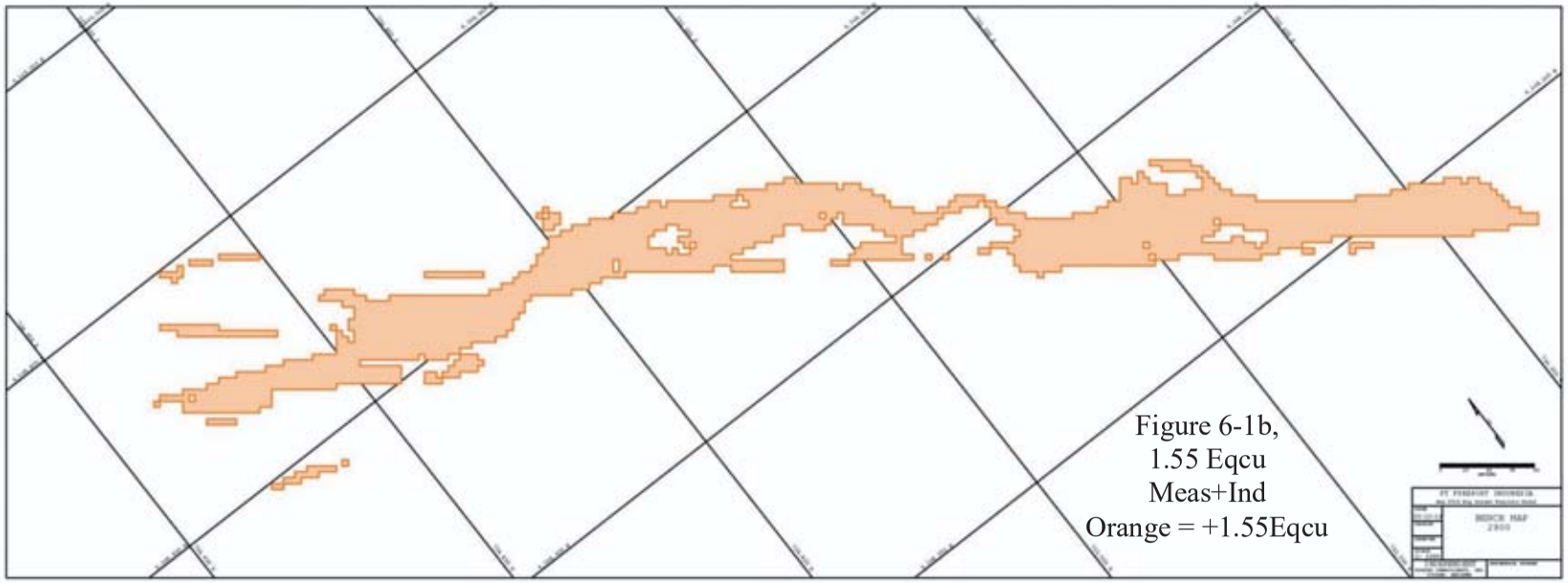


Figure 6-1b,
1.55 Eqcu
Meas+Ind
Orange = +1.55Eqcu

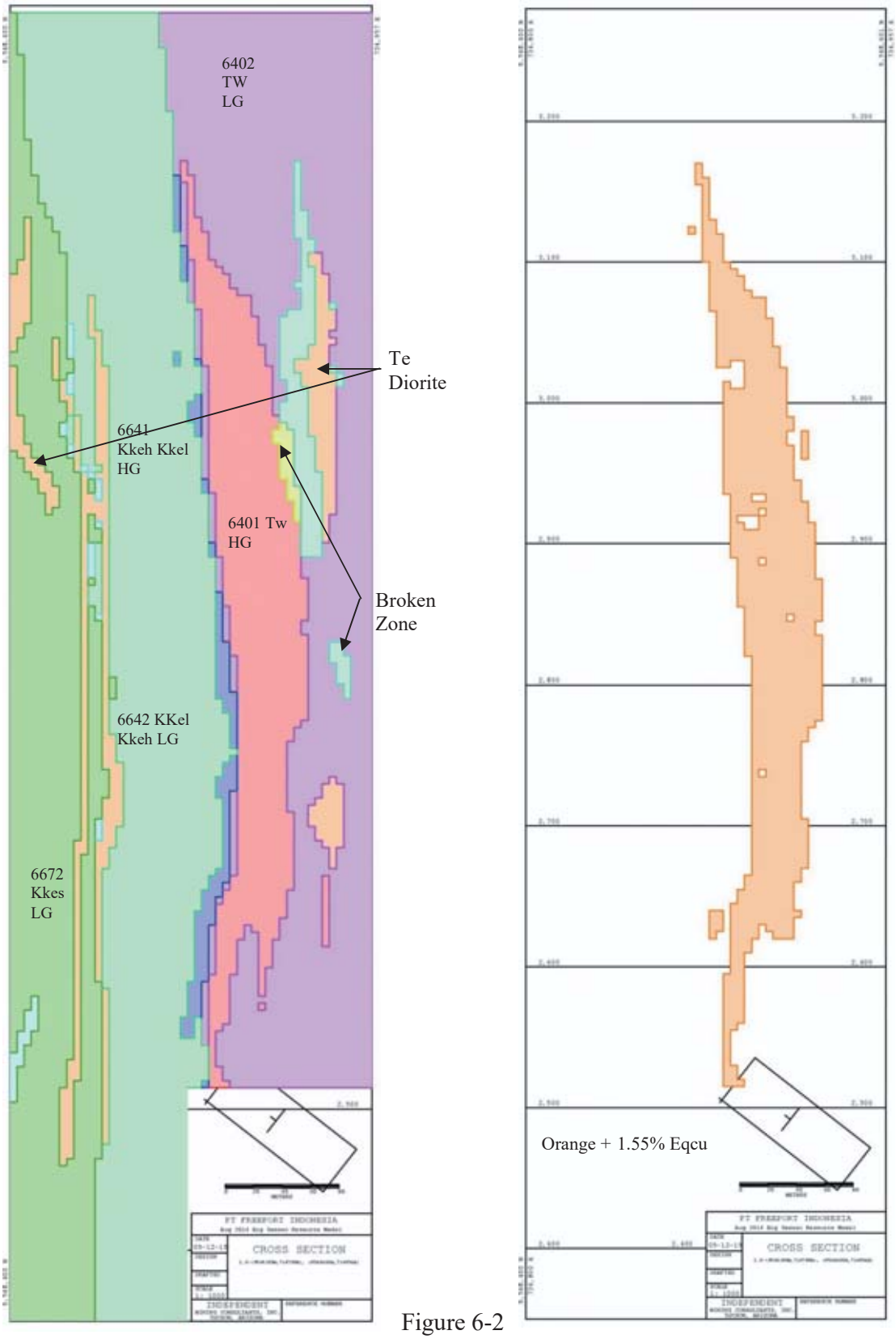


Figure 6-2
Estimation Domains Left
1.55% Eqcu Right

6.3 Model Assembly Procedures

The block model assembly methods used at Big Gossan generally parallel the procedures used at the other deposits. Grade assignment utilized ordinary linear kriging respecting the estimation domains.

Density Assignment Procedure

Bulk density estimation procedures were similar to the other deposits. Two separate items are estimated to establish the in-situ density for mine planning: 1) uncorrected bulk density, and 2) a bulk density correction factor based on the geotechnical logging information. The final bulk density assigned to each model block is the product of the two values.

The density correction factor is based on geotechnical logging categories of %Crushed, %Broken and % RQD. The equation for bulk correction is:

Bulk Correction =RQD + (0.923 x %Broken + 0.864 x Crushed)

The major rock types as outlined by the estimation domains were respected as hard boundaries when assigning the bulk factor and bulk density. The mineralized envelope boundary was not used as a control for density and bulk density estimation. The broken zone was used as an additional hard boundary in the Tw.

The kriging parameters to assign the density are shown on Table 6-1. The bulk factor estimation procedures are shown on Table 6-2. If blocks could not be estimated, they were assigned defaults of the average density and bulk correction factor on a rock type by rock type basis.

Table 6-1
Big Gossan, 2014 Bulk Density Estimation Parameters

Est_Zone/metal				Variogram			Vulcan Rotation Alpha, Zeta Beta			Search (2/3 of vario range) Upper Grade Cut Value	Dist_1	Dist_2	Dist_3	Exclude distant (1/3 range) High Yield Limit	Dist_1	Dist_2	Dist_3
Bulk - Outside bk_zone eq 0				DIR_1	DIR_2	DIR_3											
Rock Zone 640		Total Sill	Az / Dip	120/0	030/0	030/90	120.0	0.0	80.0	1.80				3.50			
Nugget	0.1	0.46								6.00							
Str1	0.14			30	25	15											
Str2	0.22			220	180	55					147	120	37		73	60	18
Bulk - Inside bk_zone eq 1				DIR_1	DIR_2	DIR_3											
Rock Zone 640 B		Total Sill	Az / Dip	120/0	030/0	030/90	120.0	0.0	80.0	1.80				3.50			
Nugget	0.1	0.46								6.00							
Str1	0.14			30	25	15											
Str2	0.22			220	180	55					147	120	37		73	60	18
Bulk				DIR_1	DIR_2	DIR_3											
Rock Zone 663		Total Sill	Az / Dip	120/0	030/0	030/90	120.0	0.0	80.0	1.80				3.50			
Nugget	0.05	0.59								6.00							
Str1	0.3			20	10	10											
Str2	0.24			160	85	50					107	57	33		53	28	17
Bulk				DIR_1	DIR_2	DIR_3											
Rock Zode 664		Total Sill	Az / Dip	115/0	025/0	025/90	115.0	0.0	85.0	1.80				3.50			
Nugget	0.1	0.53								6.00							
Str1	0.06			35	15	10											
Str2	0.37			190	100	25					127	67	17		63	33	8
Bulk				DIR_1	DIR_2	DIR_3											
Rock Zode 667		Total Sill	Az / Dip	125/0	035/0	035/90	125.0	0.0	90.0	1.80				3.50			
Nugget	0.1	0.56								6.00							
Str1	0.02			20	20	10											
Str2	0.44			195	195	50					130	130	33		65	65	17
Bulk				DIR_1	DIR_2	DIR_3											
Rock Zode 770		Total Sill	Az / Dip	125/0	035/0	035/90	125.0	0.0	85.0	1.80				3.50			
Nugget	0.1	0.71								6.00							
Str1	0.16			15	10	10											
Str2	0.45			115	115	50					77	77	33		38	38	17
Bulk				DIR_1	DIR_2	DIR_3											
Rock Zode 777		Total Sill	Az / Dip	170/0	080/0	080/90	170.0	0.0	85.0	1.80				3.50			
Nugget	0.1	0.69								6.00							
Str1	0.24			10	10	10											
Str2	0.35			140	100	50					93	67	33		47	33	17

All Models are exponential Max of 10 Composites, Mininum of 3 Composites

Table 6-2
Big Gossan, 2014 Bulk Density Correction Factor Estimation Parameters

Est_Zone/metal				Variogram			Vulcan Rotation (Z,Y,X) Alpha, Zeta Beta			Search (2/3 of vario range) Upper Grqade Cut Value	Dist_1	Dist_2	Dist_3	Exclude distant (1/3 vario range) NO High Yield Limit	Dist_1	Dist_2	Dist_3
Bulkf - Outside bk_zone eq 0				DIR_1	DIR_2	DIR_3											
Rock Zone 640		Total Sill	Az / Dip	105/0	015/0	015/90	105.0	0.0	60.0	0.850				0.00			
Nugget	0.1	0.38								0.985							
Str1	0.01			15	15	5											
Str2	0.27			185	185	85					123	123	57		50	50	50
Bulkf - Inside bk_zone eq 1				DIR_1	DIR_2	DIR_3											
Rock Zone 640 B		Total Sill	Az / Dip	105/0	015/0	015/90	105.0	0.0	60.0	0.850				0.00			
Nugget	0.1	0.38								0.985							
Str1	0.01			15	15	5											
Str2	0.27			185	185	85					123	123	57		50	50	50
Bulkf				DIR_1	DIR_2	DIR_3											
Rock Zone 663		Total Sill	Az / Dip	120/0	030/0	030/90	120.0	0.0	80.0	0.850				0.00			
Nugget	0.1	0.55								0.985							
Str1	0.18			25	15	10											
Str2	0.27			180	150	50					120	100	33		50	50	50
Bulkf				DIR_1	DIR_2	DIR_3											
Rock Zode 664		Total Sill	Az / Dip	120/0	030/0	030/90	120.0	0.0	90.0	0.850				0.00			
Nugget	0.1	0.49								0.985							
Str1	0.13			30	30	30											
Str2	0.26			190	190	125					127	127	83		50	50	50
Bulkf				DIR_1	DIR_2	DIR_3											
Rock Zode 667		Total Sill	Az / Dip	140/0	050/0	050/90	140.0	0.0	80.0	0.850				0.00			
Nugget	0.05	0.26								0.985							
Str1	0.08			40	40	15											
Str2	0.13			180	120	90					120	80	60		50	50	50
Bulkf				DIR_1	DIR_2	DIR_3											
Rock Zode 770		Total Sill	Az / Dip	110/0	020/0	020/90	110.0	0.0	90.0	0.850				0.00			
Nugget	0.05	0.29								0.985							
Str1	0.02			15	15	15											
Str2	0.22			160	160	105					107	107	70		50	50	50
Bulkf				DIR_1	DIR_2	DIR_3											
Rock Zode 777		Total Sill	Az / Dip	110/0	020/0	020/90	110.0	0.0	80.0	0.850				0.00			
Nugget	0.05	0.7								0.985							
Str1	0.12			20	20	10											
Str2	0.53			175	175	50					117	117	33		50	50	50

All Models are exponential Max of 10 Composites, Mininum of 3 Composites

RQD Estimates

A revised approach for RQD estimation was developed during 2014. RQD estimation was performed with straight (drill run) composites and ordinary kriging. Four estimation domains were the defined: broken zone, and three stratigraphic units: Kkes-Kkel, Kkeh-Tw-Te, and TF-Ts-Tk.

The broken zone is a distinctive zone of broken rocks associated with the upper levels of the Big Gossan Fault system, and a large zone of anhydrite leaching/dissolution in the lower levels of the mine area. This zone was treated as a domain and assembled from wireframes that were interpreted by jobsite personnel. The zone is generally low RQD and reflects the most up to date interpretation of high fractured "broken" ground.

A nearest neighbor estimate (rqd_nn) was also run with boundary conditions and search parameters for comparison with the liner kriging estimate.

Table 6-3
Big Gossan, 2014 RQD Estimation Parameters

Est_Zone/metal			Variogram Orientaton and Range			Vulcan Rotation (Z,Y,X)			Search Distance m		
						Alpha, Zeta Beta			Dist_1	Dist_2	Dist_3
RQD Rock Zone Kkeh Tw, Te			Azimuth	Dip	No						
Codes: 663-640-770	Nugget	Total Sill	125	70	Plunge	120.0	85.0	0.0	120	120	40
	0.51	0.735	624	146	3						
RQD Rock Zone Kkes Kkel			Azimuth	Dip	No						
Codes: 664-667	Nugget	Total Sill	120	85	Plunge	120.0	85.0	0.0	120	120	40
	0.40	0.55	37	14	5						
RQD Rock Zone Tf, Tk, Ts			Azimuth	Dip	No						
Codes: 777	Nugget	Total Sill	125	80	Plunge	120.0	85.0	0.0	120	120	40
	0.25	0.37	40	56	30						
RQD in Broken Zone			Azimuth	Dip	No						
	Nugget	Total Sill	125	90	Plunge	120.0	85.0	0.0	120	120	40
	0.30	0.66	21	9	11						

Block Grade Assignments

Block grades of copper, gold, and silver were assigned using ordinary linear kriging respecting the estimation zone boundaries discussed earlier.

Composite grades were capped prior to grade estimation as shown on Tables 6-4 through 6-6. A second high grade limitation was applied by selecting a high grade value that could not be assigned more than 1/3 of the variogram range.

Tables 6-4 through 6-6 summarizes the grade estimation parameters for copper, gold, and silver. In all domains, the composite count for estimation was as follows: Minimum = 3, Maximum = 10 and maximum of 4 per drill hole.

Table 6-4
Big Gossan August 2014 Block Model by PTFI
2014 Copper Grade Estimation Parameters

Est_Zone/metal				Variogram			Vulcan Rotation (Z,Y,X)			Search (2/3 of vario range)				Exclude distant (1/3 vario range)			
							Alpha, Zeta Beta			Upper Grade Cut Value %	Dist_1	Dist_2	Dist_3	High Yield Limit	Dist_1	Dist_2	Dist_3
Cu				DIR_1	DIR_2	DIR_3											
ESTDMN 6401		Total Sill	Az / Dip	120/0	030/0	030/90	120.0	0.0	80.0					6.00			
Nugget	0.10	0.91								13.00							
Str1	0.40			30	20	20											
Str2	0.41			300	250	160					200	167	107		100	83	53
Cu				DIR_1	DIR_2	DIR_3											
ESTDMN 6402		Total Sill	Az / Dip	120/0	030/0	030/90	120.0	0.0	85.0					1.00			
Nugget	0.15	0.69								3.00							
Str1	0.14			20	25	15											
Str2	0.4			155	175	105					103	117	70		52	58	35
Cu				DIR_1	DIR_2	DIR_3											
ESTDMN 6631		Total Sill	Az / Dip	135/0	045/0	045/90	135.0	0.0	85.0					1.25			
Nugget	0.15	0.69								3.50							
Str1	0.40			30	30	15											
Str2	0.14			130	130	65					87	87	43		43	43	22
Cu				DIR_1	DIR_2	DIR_3											
ESTDMN 6632		Total Sill	Az / Dip	135/0	045/0	045/90	135.0	0.0	85.0					0.25			
Nugget	0.15	0.69								0.45							
Str1	0.40			30	30	15											
Str2	0.14			130	130	65					87	87	43		43	43	22
Cu				DIR_1	DIR_2	DIR_3											
ESTDMN 6641		Total Sill	Az / Dip	120/0	030/0	030/90	120.0	0.0	80.0					3.00			
Nugget	0.10	0.78								6.00							
Str1	0.17			25	20	15											
Str2	0.51			250	125	80					167	83	53		83	42	27
Cu				DIR_1	DIR_2	DIR_3											
ESTDMN 6642		Total Sill	Az / Dip	120/0	030/0	030/90	120.0	0.0	85.0					0.50			
Nugget	0.10	0.74								1.15							
Str1	0.21			15	40	10											
Str2	0.43			180	255	85					120	170	57		60	85	28
Cu				DIR_1	DIR_2	DIR_3											
ESTDMN 6671		Total Sill	Az / Dip	120/0	030/0	030/90	120.0	0.0	80.0					1.00			
Nugget	0.15	0.75								4.80							
Str1	0.27			15	15	10											
Str2	0.33			165	165	65					110	110	43		55	55	22
Cu				DIR_1	DIR_2	DIR_3											
ESTDMN 6672		Total Sill	Az / Dip	120/0	030/0	030/90	120.0	0.0	90.0					0.20			
Nugget	0.10	0.61								0.70							
Str1	0.20			25	25	15											
Str2	0.31			165	165	85					110	110	57		55	55	28
Cu				DIR_1	DIR_2	DIR_3											
ESTDMN 770		Total Sill	Az / Dip	120/0	030/0	030/90	120.0	0.0	85.0					1.40			
Nugget	0.1	0.76								2.20							
Str1	0.26			80	25	25											
Str2	0.4			200	135	95					133	90	63		67	45	32
Cu				DIR_1	DIR_2	DIR_3											
ESTDMN 777		Total Sill	Az / Dip	120/0	030/0	030/90	120.0	0.0	85.0					0.70			
Nugget	0.1	1.00								2.00							
Str1	0.34			15	15	15											
Str2	0.56			160	160	75					107	107	50		53	53	25
Cu				DIR_1	DIR_2	DIR_3											
ESTDMN 8801		Total Sill	Az / Dip	125/50	035/-50	035/40	125.9	49.7	82.2					3.80			
Nugget	0.15	0.90								7.00							
Str1	0.21			25	25	25											
Str2	0.54			120	70	65					80	47	43		40	23	22
Cu				DIR_1	DIR_2	DIR_3											
ESTDMN 8802		Total Sill	Az / Dip	146/79	056/-79	056/11	146.3	78.8	63.3					0.85			
Nugget	0.1	0.56								1.35							
Str1	0.12			10	10	10											
Str2	0.34			130	55	55					87	37	20		43	18	18

Notes: All Models are Exponential Models

Minimum composites = 3, Maximum Composites = 10, Max per hole = 4

Table 6-5
Big Gossan August 2014 Block Model by PTFI
2014 Gold Grade Estimation Parameters

Est_Zone/metal				Variogram			Vulcan Rotation (Z,Y,X)			Search (2/3 of vario range)				Exclude distant (1/3 vario range)			
							Alpha, Zeta Beta			Upper Grade Cut Value gm/t	Dist_1	Dist_2	Dist_3	High Yield Limit	Dist_1	Dist_2	Dist_3
Au				DIR_1	DIR_2	DIR_3											
ESTDMN 6401		Total Sill	Az / Dip	125/0	035/0	035/90	125.00	0.00	85.00					7.00			
Nugget	0.15	0.75								17.00							
Str1	0.27			25	20	20											
Str2	0.33			260	145	100					173	97	67		87	48	33
Au				DIR_1	DIR_2	DIR_3											
ESTDMN 6402		Total Sill	Az / Dip	125/0	035/0	035/90	125.00	0.00	80.00					1.50			
Nugget	0.15	0.66								8.00							
Str1	0.19			15	15	15											
Str2	0.32			205	205	130					137	137	87		68	68	43
Au				DIR_1	DIR_2	DIR_3											
ESTDMN 6631		Total Sill	Az / Dip	120/0	030/0	030/90	120.00	0.00	80.00					2.20			
Nugget	0.15	0.65								5.20							
Str1	0.26			15	15	10											
Str2	0.24			105	105	50					70	70	33		35	35	17
Au				DIR_1	DIR_2	DIR_3											
ESTDMN 6632		Total Sill	Az / Dip	120/0	030/0	030/90	120.00	0.00	80.00					0.25			
Nugget	0.15	0.65								0.60							
Str1	0.26			15	15	10											
Str2	0.24			105	105	50					70	70	33		35	35	17
Au				DIR_1	DIR_2	DIR_3											
ESTDMN 6641		Total Sill	Az / Dip	125/0	035/0	035/90	125.00	0.00	80.00					5.00			
Nugget	0.15	0.80								12.00							
Str1	0.23			15	30	15											
Str2	0.42			215	245	110					143	163	73		72	82	37
Au				DIR_1	DIR_2	DIR_3											
ESTDMN 6642		Total Sill	Az / Dip	120/0	030/0	030/90	120.00	0.00	85.00					1.00			
Nugget	0.15	0.74								3.00							
Str1	0.26			25	15	20											
Str2	0.33			190	125	80					127	83	53		63	42	27
Au				DIR_1	DIR_2	DIR_3											
ESTDMN 6671		Total Sill	Az / Dip	120/0	030/0	030/90	120.00	0.00	85.00					2.00			
Nugget	0.10	0.52								5.30							
Str1	0.26			20	10	15											
Str2	0.16			125	120	80					83	80	53		42	40	27
Au				DIR_1	DIR_2	DIR_3											
ESTDMN 6672		Total Sill	Az / Dip	120/0	030/0	030/90	120.00	0.00	85.00					1.10			
Nugget	0.10	0.52								3.50							
Str1	0.26			20	10	15											
Str2	0.16			125	120	80					83	80	53		42	40	27
Au				DIR_1	DIR_2	DIR_3											
ESTDMN 770		Total Sill	Az / Dip	120/0	030/0	030/90	120.00	0.00	85.00					1.85			
Nugget	0.15	0.63								3.25							
Str1	0.28			25	25	20											
Str2	0.20			175	175	90					117	117	60		58	58	30
Au				DIR_1	DIR_2	DIR_3											
ESTDMN 777		Total Sill	Az / Dip	120/0	030/0	030/90	120.00	0.00	85.00					1.70			
Nugget	0.15	0.96								4.50							
Str1	0.38			15	15	15											
Str2	0.43			205	190	100					137	127	67		68	63	33
Au				DIR_1	DIR_2	DIR_3											
ESTDMN 8801		Total Sill	Az / Dip	145/20	055/-20	055/70	145.00	20.00	90.00					2.60			
Nugget	0.05	0.50								9.00							
Str1	0.21			20	10	25											
Str2	0.24			110	50	75					73	33	50		37	17	25
Au				DIR_1	DIR_2	DIR_3											
ESTDMN 8802		Total Sill	Az / Dip	125/0	035/0	035/90	125.00	0.00	85.00					1.00			
Nugget	0.05	0.62								2.70							
Str1	0.33			10	15	20											
Str2	0.24			85	95	85					57	63	57		28	32	28

Notes: All Models are Exponential Models Minimum composites = 3, Maximum Composites = 10, Max per hole = 4

Table 6-6
Big Gossan August 2014 Block Model by PTFI
2014 Silver Grade Estimation Parameters

Est_Zone/metal				Variogram			Vulcan Rotation (Z,Y,X) Alpha, Zeta Beta			Search (2/3 of vario range) Upper Grade Cut Value gm/t	Dist_1	Dist_2	Dist_3	Exclude distant (1/3 vario range) High Yield Limit	Dist_1	Dist_2	Dist_3
Ag				DIR_1	DIR_2	DIR_3											
ESTDMN 6401		Total Sill	Az / Dip	125/0	035/0	035/90	125.00	0.00	80.00					40.00			
Nugget	0.15	0.71								115.00							
Str1	0.21			25	20	40											
Str2	0.35			270	155	85					180	103	57		90	52	28
Ag				DIR_1	DIR_2	DIR_3											
ESTDMN 6402		Total Sill	Az / Dip	115/0	025/0	025/90	115.00	0.00	80.00					17.00			
Nugget	0.15	0.53								45.00							
Str1	0.11			25	25	27											
Str2	0.27			215	130	70					143	87	47		72	43	23
Ag				DIR_1	DIR_2	DIR_3											
ESTDMN 6631		Total Sill	Az / Dip	120/0	030/0	030/90	120.00	0.00	80.00					5.00			
Nugget	0.15	0.47								17.00							
Str1	0.19			20	20	10											
Str2	0.13			105	105	50					70	70	33		35	35	17
Ag				DIR_1	DIR_2	DIR_3											
ESTDMN 6632		Total Sill	Az / Dip	120/0	030/0	030/90	120.00	0.00	80.00					2.30			
Nugget	0.15	0.47								4.50							
Str1	0.19			20	20	10											
Str2	0.13			105	105	50					70	70	33		35	35	17
Ag				DIR_1	DIR_2	DIR_3											
ESTDMN 6641		Total Sill	Az / Dip	115/0	025/0	025/90	115.00	0.00	80.00					17.00			
Nugget	0.10	0.71								50.00							
Str1	0.13			20	15	10											
Str2	0.48			215	195	45					143	130	30		72	65	15
Ag				DIR_1	DIR_2	DIR_3											
ESTDMN 6642		Total Sill	Az / Dip	120/0	030/0	030/90	120.00	0.00	80.00					4.60			
Nugget	0.10	0.41								8.56							
Str1	0.02			25	20	10											
Str2	0.29			230	200	115					153	133	77		77	67	38
Ag				DIR_1	DIR_2	DIR_3											
ESTDMN 6671		Total Sill	Az / Dip	120/0	030/0	030/90	120.00	0.00	90.00					28.00			
Nugget	0.10	0.38								58.00							
Str1	0.17			20	10	5											
Str2	0.11			130	75	50					87	50	33		43	25	17
Ag				DIR_1	DIR_2	DIR_3											
ESTDMN 6672		Total Sill	Az / Dip	120/0	030/0	030/90	120.00	0.00	90.00					4.00			
Nugget	0.10	0.38								7.80							
Str1	0.17			25	25	25											
Str2	0.11			130	75	60					87	50	40		43	25	20
Ag				DIR_1	DIR_2	DIR_3											
ESTDMN 770		Total Sill	Az / Dip	120/0	030/0	030/90	120.00	0.00	85.00					8.00			
Nugget	0.10	0.42								15.00							
Str1	0.01			20	20	20											
Str2	0.31			175	175	100					117	117	67		58	58	33
Ag				DIR_1	DIR_2	DIR_3											
ESTDMN 777		Total Sill	Az / Dip	120/0	030/0	030/90	120.00	0.00	85.00					30.00			
Nugget	0.10	0.81								67.00							
Str1	0.26			20	20	20											
Str2	0.45			210	175	100					140	117	67		70	58	33
Ag				DIR_1	DIR_2	DIR_3											
ESTDMN 8801		Total Sill	Az / Dip	135/0	045/0	045/90	135.00	0.00	80.00					47.00			
Nugget	0.10	0.61								80.00							
Str1	0.40			10	15	15											
Str2	0.11			65	55	35					43	37	23		22	18	12
Ag				DIR_1	DIR_2	DIR_3											
ESTDMN 8802		Total Sill	Az / Dip	130/0	040/0	040/90	130.00	0.00	85.00					48.00			
Nugget	0.05	0.36								75.00							
Str1	0.20			35	10	25											
Str2	0.11			105	110	60					70	73	40		35	37	20

Notes: All Models are Exponential Models

Minimum composites = 3, Maximum Composites = 10, Max per hole = 4

Confidence Codes

Confidence codes were assigned to the block model based on the kriged variance of copper, the number of composites, and the distance to the composites. The criteria for classification remains the same as in the 2013 model.

Measured Confidence for Copper, Code = 3
Copper Kriged Variance < 0.27 in min_zone=1, 0.17 in min_zone=2
Minimum of 2 drill holes and
Minimum distance to nearest sample less than 12.5 meters

Indicated Confidence for Copper, Code = 2
Copper Kriged Variance < 0.76 min_zone=1, 0.54 in min_zone=2
Minimum of 2 drill holes and
Minimum distance to nearest sample less than 50 meters

Inferred Confidence for Copper, Code = 1
Copper Kriged Variance < 0.86 min_zone=1, 0.72 in min_zone=2
Minimum of 1 drill hole and
Minimum distance to nearest sample less than 105 meters

6.4 Block Model Assembly Checks

The grade assignment within the model was checked by IMC using several methods.

1) Visual comparison of drill hole sections versus block sections
2) Comparison of block grade to contained composite grade at alternative cutoffs,
3) Comparison of composite grade within the mining shapes to the undiluted block grade.

Visual reviews indicate that the model grade is as expected based on the drill hole grades. The following numeric checks are meant to identify any potential model bias that may not be observed in visual reviews.

Block to Composite Check

IMC utilizes a simple method to compare the block model results against the composite grades used to estimate the block model. The test is applied to each model separately and is summarized as follows:

1) A cutoff grade is selected and the block model is used to establish the number of blocks above that cutoff and the average grade of those blocks.
2) The drill hole composites that are contained within that group of blocks are identified and the average grade of the composites calculated.
3) The percentage of the composites less than the grade outline value that are contained within the selected cutoff zone is tabulated.
4) The above 3 steps are repeated at multiple cutoff grades to understand the response of the block model relative to composites over a range of cutoff grades.

The comparison of the composite mean to the block mean should generally result in the average grade of the composites being higher than the average grade of the blocks. This is due to the fact that the block grades are usually impacted by surrounding lower grade samples. If the block grades are higher than the average of the contained composites, additional investigation is warranted.

The calculation of the percentage of composites that are less than the block outline cutoff are an indication of the amount of smearing of high grade over lower grade that has occurred in the model. Values in the range of 15 to 20% are typical for block models estimated by ordinary kriging.

Table 6-7 summarizes the results of the grade outline to contained composite check. The results on the table are as expected and do not indicate issues with the block model estimation process.

Table 6-7
Big Gossan 2014 Composites versus Block Model Checks
Composites and Blocks INSIDE the 1.0% EqCu Mineralized Zone
All DDH Data, Including Exploration and Ore Control Drilling

DDH and Ore Control Copper Composites					
Cutoff Grade	% Comps Less Than Cutoff	Number of Comps In Shape	Composite Grade (% Cu)	Number of Blocks in Shape	Model Grade (% Cu)
0.010	1.79	12,828	1.788	275,521	**1.877**
0.50	15.25	10,760	2.066	235,426	**2.152**
1.00	20.11	8,250	2.485	192,865	2.462
1.50	21.11	6,059	2.999	147,243	2.837
2.00	22.21	4,218	3.615	103,362	3.301
2.50	22.81	2,916	4.278	70,211	3.806
3.00	21.35	2,061	4.983	47,987	4.302
3.50	20.71	1,463	5.720	32,064	4.832
4.00	20.36	1,100	6.383	21,429	5.380
4.50	20.00	830	7.052	14,561	5.921
5.00	20.98	653	7.624	10,249	6.420

Diamond Drill Hole and Ore Control Gold Composites					
Cutoff Grade	% Comps Less Than Cutoff	Number of Comps In Shape	Composite Grade (gm/mt)	Number of Blocks in Shape	Model Grade (gm/mt)
0.010	0.40	12,817	1.036	274,754	0.981
0.50	25.09	7,847	1.509	175,450	1.357
1.00	31.79	3,888	2.374	81,275	2.115
1.50	34.91	2,346	3.177	47,798	2.746
2.00	34.00	1,559	4.000	30,535	3.321
2.50	33.36	1,064	4.872	20,587	3.849
3.00	33.87	741	5.839	14,220	4.349
3.50	31.30	540	6.855	9,771	4.856
4.00	31.07	412	7.682	6,611	5.394
4.50	29.12	285	8.914	4,557	5.917
5.00	21.78	202	10.366	3,141	6.449

Diamond Drill Hole and Ore Control Silver Composites					
Cutoff Grade	% Comps Less Than Cutoff	Number of Comps In Shape	Composite Grade (gm/mt)	Number of Blocks in Shape	Model Grade (gm/mt)
0.010	0.00	12,895	12.458	288,351	11.647
1.00	5.48	12,680	12.566	272,288	12.329
2.00	10.46	12,292	12.892	265,262	12.614
3.00	14.57	11,660	13.414	254,410	13.045
4.00	18.00	10,875	14.123	241,055	13.573
5.00	20.03	10,011	14.984	225,527	14.197
6.00	21.90	9,106	15.956	207,269	14.962
7.00	23.15	8,142	17.137	185,818	15.937
8.00	24.36	7,237	18.427	164,194	17.048
9.00	25.65	6,420	19.785	144,465	18.218
10.00	26.23	5,695	21.172	127,190	19.403

Stope Composite Grade

The 5m composites were "dipped" in the model and assigned the current stope codes as developed by the PTFI mine planners in 2014. In other words, the composites that are physically contained in the current mine plan are tabulated. The average grade of the contained composites is compared with the average grade of August 2014 model.

The 2014 reserve and resource geometry was supplied to IMC via block model codes. The reserve stopes are coded as 1 and resource stopes are coded as 2 (RSVRSO=1 or 2). This plan was used for the test as it was convenient and readily available for this check.

The 2014 mine plan grades below are the direct Aug14 model tabulations, prior to any assignment of dilution adjustments. The composite grades are those used in the block estimation. The blocks are those in the reserve shape (RSVRSO=1). Block grades include the few inferred blocks contained in the minable envelope.

Table 6-8
Composites and Model Grades in Planned Reserve Stopes

			Block Count, and Man		Tonnage Weighted	
2014 Data	Number of Comps	Composite Grade	Number of Blocks	Blk Avg Grd (No Dilution)	Minable Ktons	Tons Wt Grade (No Dilution)
Copper (% Cu)	6,456	2.37	143,179	2.32	55,145	2.37
Gold (gm/mt)	6,446	1.151	143,179	1.028		1.043
Silver (gm/mt)	6,445	15.56	143,179	14.20		14.48

The undiluted stope grades are properly less than the average grade of the contained composites. Composites have not been declusterd, and block grades are not tonnage weighted.

7.0 BIG GOSSAN MINABLE RESERVES

The Big Gossan mine production was halted in April of 2017 and then restarted on a limited basis in October of 2017. Total production for the year was roughly 223 Ktonnes. The reserve mine plan was updated during 2017 based on the block model of the deposit that was originally developed in August 2014. The only changes to the model were the recalculation of block economics for cutoff grade. The mine plan was revamped with revised production rates, optimization parameters, and cutoff grades.

Big Gossan is planned as an underground mine using blast hole open stoping with cemented paste backfill. The basic stope geometry is 15m along strike and 20m across strike with a height of 20m to 40m. Stopes are generally 40m high. When rock conditions are weaker the stope height is reduced to 20m. No stopes are planned for development if the model estimated RQD is less than 40%.

7.1 Determination of Minable Geometry

The Big Gossan mine plan and minable reserve geometry are based on production plans that integrate a wide range or constraints into the operational plan including: geotechnical constraints, ventilation, drainage, material handling, and economics. The procedures that were applied by the mine site and Phoenix staff were similar to last year . The following paragraphs are a brief synopsis of the planning procedures that were followed.

Prior to 2016, a “cookie cutter” approach was used where all potential stopes geometries were defined. The contained tonnage and grade from those stopes was tabulated individually. Those stopes were then sorted on cutoff and sequenced based on development access, geotechnical, ventilation, and economic constraints. The total of all minable stopes reflected the minable reserve after addition of dilution and recovery factors.

During 2016, a stope optimizer program called “Deswik” was used to determine the stope geometries and the mining reserve. The basic stope geometries were still applied, but the stope length can be modified between 15 and 30m to better model the hanging wall and footwall boundaries of the deposit. Stope width is still 15m and stope height can be varied between 20 and 40m.

The results of the Deswik output were adjusted to incorporate the designed 3% gradient of the access drifts and cross cuts that is required for drainage. Previous reserve verification reports have detailed the drift and cross cut gradient plan.

The mine development sequence and production schedule addressed all the constraints listed above while providing reasonable time value economic results. Geotechnical and production development constraints are the primary inputs to stope sequencing and the production schedule.

Table 7-1 summarizes the economic input information that was used to guide the development of the Big Gossan mine plan. The PTFI calculation of equivalent copper resulted in the following equation: Eqcu = Cu+ Au x 0.6419 + Ag x 0.0089. IMC checks match that calculation closely. The breakeven cutoff grade based on the 2017 development plan information was 1.69% Eqcu.

Table 7-1 is an IMC check calculation of cutoff grade based on the same economic parameters that were used by PTFI mine planners. The calculated breakeven cutoff is identical to the IMC calculation at 1.69% Eqcu. A check calculation was also completed by IMC where the fixed Job Site support costs were removed to estimate an internal cutoff. The resulting 1.48% Eqcu provides a lower bound on cutoff that could be utilized if required.

The past production was volumetrically removed from the model to reflect depletion of the existing stopes. The volume, density, and weight of material within the stopes was removed from the model before tabulating the remaining reserve.

Once the stope geometries were designed and scheduled, mining dilution and recovery was incorporated to reflect mining practice. The dilution procedure was modified in 2016 as compared to previous years. There are three forms of dilution that are recognized in the new procedure:

1) Material inside the stope that is sub-grade. This is part of the stope design process is incorporated in the stope report from the model.
2) Unplanned or external dilution. This is estimated with an additional 1m expansion of the hanging wall and footwall boundary. This amounts to 4.2% additional volume at the model reported grade of that expansion.
3) Paste Dilution. It is assumed that one wall of the stope will be against paste and that an additional 0.5m of paste (+3.2% volume) will be mucked with ore at 0.0 grade.

In addition, a production loss of 5% reflecting a mining recovery of 95% is also applied. All of the above factors have been incorporated into the mine production schedule and reported mining reserve.

The Big Gossan mine production schedule inclusive of dilution and the resulting reserve is summarized on Table 7-2.

Table 7-1

Big Gossan Cutoff Grade Check by IMC
December 31, 2017 Estimate

Mining Cost	$37.59	/tonne
Milling Cost	$8.65	/tonne
Ore Flow	$0.14	/tonne
Support Cost	$6.80	/tonne
G&A	$1.23	/tonne
Total per tonne costs	$54.41	/tonne
Metal Prices	$2.00	/lb Cu
	$1,000	/oz Au
	$15.00	./oz Ag
Mill Recoveries	94.7%	Cu
	69.8%	Au
	82.8%	Ag
Smelter Recoveries	96.5%	Cu
	97.0%	Au
	76.9%	Ag
Smelting, Refining, Freight, IMC Calculation	$0.3199	/lb Cu
	$5.00	/oz Au
	$0.35	/oz Ag
Royalties	4.0%	Cu
	3.75%	Au
	3.25%	Ag
FFIJD	1.0%	
Breakeven Cutoff, Equivalent Copper	1.69	% EqCu
IMC Estimated Internal Cutoff Support Cost Removed	1.48	% EqCu

tab7-1

Table 7-2

Big Gossan
Minable Reserve, December 31, 2017
Proven and Probable Reserves

	Big Gossan Minable Reserve			
	Ktonnes	Cu %	Au gm/t	Ag gm/t
Reserve	57,971	2.22	0.93	13.18
Mill Recoveries		94.7%	68.5%	82.8%
Smelt-Refining Recovery		96.5%	97.0%	76.9%
Recovered Metal		2,600 Mlbs	1,156 Kozs	15,633 Kozs

Year		Big Gossan Reserve Support Schedule			
		Ktonnes	Cu %	Au gm/t	Ag gm/t
1	2018	1,229	1.99	0.75	10.59
2	2019	1,530	1.81	0.56	9.99
3	2020	1,823	1.67	0.58	8.71
4	2021	2,287	2.16	0.77	10.87
5	2022	2,547	2.20	0.77	11.87
6	2023	2,555	2.44	0.95	12.84
7	2024	2,555	2.47	1.03	13.06
8	2025	2,555	2.50	0.89	12.55
9	2026	2,555	2.37	0.79	11.81
10	2027	2,555	2.38	0.82	12.24
11	2028	2,555	2.38	0.88	12.89
12	2029	2,555	2.22	0.80	11.74
13	2030	2,555	2.18	0.84	12.39
14	2031	2,555	2.18	0.79	12.86
15	2032	2,555	2.27	0.87	14.12
16	2033	2,555	2.27	0.97	14.76
17	2034	2,555	2.33	1.05	15.34
18	2035	2,555	2.29	1.09	15.53
19	2036	2,555	2.22	1.18	15.87
20	2037	2,555	2.19	1.13	15.43
21	2038	2,555	2.17	1.01	14.79
22	2039	2,555	2.02	1.16	13.27
23	2040	2,560	2.03	1.16	13.63
24	2041	2,561	2.20	1.24	14.93
Total		57,971	2.22	0.93	13.18

tab7-2.xls

7.2 Checks on the Minable Geometry and Mine Plan

IMC completed two checks on the minable geometry and reserve. The IMC checks are summarized as follows:

1) IMC approximation of stopes from the model as a bounding limits check.
2) Cash flow check on the mine schedule.

Reserve Tabulation Check

IMC utilized a simple procedure to provide a reasonability check on the estimated minable reserves at Big Gossan. Model blocks (not stopes) with equivalent copper values above 1.69% Eqcu were tagged in the model with code value of 1.0. A simple algorithm was applied that counts the number of ore blocks surrounding each block that is above cutoff. Internally at IMC, this count is referred to as the "buddy count".

An isolated block would have a buddy count of 0.0. A block that is completely surrounded would have a buddy count of 6.0 (top, bottom, and all four sides).

The IMC buddy count brackets the PTFI statement of reserves with a buddy count between 4 and 5. With a count of 5, only one wall of the block is not surrounded. With a count of 4, a corner block can be counted.

The table below summarizes the IMC check at cutoffs of 1.69% Eqcu. The reserve tonnage should fall between the values tabulated below.

1.69% Eqcu	4 Sides	63,241 kt	2.59% Cu	1.17 gm Au,	15.9 gm Ag
1.69% Eqcu	5 Sides	55,535 kt	2.66% Cu	1.15 gm Au,	16.0 gm Ag

The PTFI reserve tonnages are bracketed by the above tests. The above tabulation does not include dilution, so comparisons between the above results and PTFI tabulated reserves is an indication of the total amount of dilution that is incorporated into the plan.

The IMC bounding checks above would indicate that the global grade reduction due to dilution is about 20% when using the 5 sided tonnage to estimate undiluted head grade. These results are reasonable expectations and generally confirm the stope design approach applied by PTFI.

The PTFI Big Gossan reserve includes a combined 7.4% factor of external dilution in their tabulation. By subtraction, the stope design geometries include about 13% internal dilution.

Big Gossan Cash Flow and Sensitivity Check

IMC modified the economic inputs and developed an independent pre-tax cash flow analysis of the Big Gossan operation. The production schedule utilized for the cash flow analysis is summarized on Table 7-2.

IMC cash flow calculations applied Mill + Ore flow + G&A operating costs of $16.82/tonne. Mining costs with continuing development, initial capital and sustaining capital were based on the 2017 Development Plan information. The resulting average mining cost averaged $37.59/tonne of ore but varied by year. Recoveries were varied by year and averaged close to the results on Table 7-2. Initial capital costs include the planned capital for year 2018. Capital expenditures prior to 2018 are treated as sunk costs and not included in the IMC cash flow analysis

The summary results of the IMC pre-tax economic analysis and sensitivity analysis are as follows:

IMC Cash Flow Sensitivity Check for the Big Gossan Stoping Mine

		NPV 10%, Millions
Base Case:	$2.00/lb Cu, $1,000/oz Au, and $15.00/oz Ag	$600.0
Metal Price Sensitivity:	$1.44/lb Cu, $720/oz Au, and $10.80/oz Ag	$5.5
Using Base Case Metal Prices:		
Operating Cost Sensitivity:	Operating Costs x 1.48	$7.9

The sensitivity to low metal prices or increased costs can be seen in the above results. The project is robust to lower metal prices.

Using the $2.00/lb and $1,000/oz Au metal prices, increasing operating costs by a factor of 1.48 would result in just over a 10% return. The project has sunk the majority of capital development cost prior to 2017. Consequently, the initial capital cost appears low and NPV highly robust.

Recent IMC experience at other stope mining projects has not supported mine operating costs for stope operations as low as $37 to $38/ton as calculated by PTFI. However, if IMC applies mining costs of $50.00/ton and combines that with the process and G&A cost of $16.82, the resulting NPV10% would be $360 million USD. The increase in mining costs is equivalent to an operating cost factor of about 1.20.

7.3 Big Gossan Resources

Big Gossan resources are comprised of additional marginal stopes within minable stope geometries that were developed at resource cutoff grades. Inferred material was not included in the tabulation inside these marginal stopes. The design cutoff grade for the resource stopes was 1.52% Eqcu Cutoff based on the resource copper price of $2.20/lb Cu.

Big Gossan resources increased by about 1.2 million tonnes when compared to last year. Roughly 1.7 Mt was transferred from reserve to resource during 2017 and roughly 0.5 Mt was lost from the resource due to cutoff grade increases.

Table 7-3
Big Gossan Resource
Measured, Indicated, and Inferred Categories
December 31, 2017

Resource Source	Measured				Indicated				Measured + Indicated			
	Ktonnes	Copper %	Gold gm/t	Silver gm/t	Ktonnes	Copper %	Gold gm/t	Silver gm/t	Ktonnes	Copper %	Gold gm/t	Silver gm/t
Material Inside Designed Stopes	3,232	2.22	0.96	14.13	6,718	1.91	1.16	13.36	9,951	2.01	1.09	13.61
Total Resource	3,232	2.22	0.96	14.13	6,718	1.91	1.16	13.36	9,951	2.01	1.09	13.61

Resource Source	Inferred			
	Ktonnes	Copper %	Gold gm/t	Silver gm/t
Material Inside Designed Stopes	0	0.00	0.00	0.00
Total Inferred	0	0.00	0.00	0.00

tab7-3.xls

8.0 GRASBERG – KUCING LIAR MODELS

There are two block models that were used to estimate the reserves in the Grasberg. One of those models, the GRS-KL model, is sufficiently large that it also contains the Kucing Liar (KL) deposit. Both models use blocks that are 15 x 15 x 15m cubes. The two models are summarized below:

1) GRS-KL model. This combined model incorporates the entire Grasberg deposit and the KL deposit to the southwest. The underground block cave reserves for each of these deposits were defined with this single model. This model was completed in August of 2017 (Aug17).

2) GRS-IPM model. The Intermediate Planning Model is updated quarterly for open pit mine planning purposes in the Grasberg Pit. This model was completed in December of 2017 (Dec17) and was used to set the remaining open pit reserve at the Grasberg. It includes a large number of attributes unique to the open pit operation, which are not required for the block cave mines below the pit.

The two models differ in size from each other. However, both are rotated 128 degrees to assign with the regional trend. The IPM model covers a larger area on the horizontal plane to allow for dump and access road design for the open pit, but is limited to the 2440 m elevation in depth. The GRS-KL model covers a smaller area horizontally, but extends down to the 1510 elevation.

The primary technical difference between the GRS-KL model and the GRS-IPM model is the method used for estimation of Grasberg Intrusive Complex (GIC).

1) Within the IPM model, the GIC was estimated with ordinary linear kriging for all metals and incorporates selected blast holes.

2) Within the GRS-KL model, the estimation method for the GIC (excluding Kali) utilizes Locally Varying Anisotropy (LVA) below the end of 2016 pit surface and ordinary linear kriging above the end of 2016 pit surface. Selected blast holes were used above the end of 2016 pit surface within the ordinary linear kriging portion of the deposit.

The application of LVA is intended to allow the search to “bend” around the horseshoe geometry of the GIC stockwork mineralization on plan in an effort to improve the grade estimate in the overall GIC.

The GRS-IPM model does not incorporate all of the stratigraphic estimation domains that exist in the GRS-KL model due to the exclusion of sedimentary-rock hosted mineralization from consideration as an ore source for the open pit. However, with the exception of the GIC, all estimation procedures that are applied on the GRS-KL model are also applied to the IPM model. The only estimation domain with a different estimation method for metal grades between the two models is the GIC (units 16 and 32 Main Grasberg and Dalam Grasberg). Within the GRS-KL model, there were minor changes to geology and drill hole additions and minor changes in estimation procedure for copper, gold, and silver.

Both models use selected the blast hole data. However, each model applies the blast hole estimates to somewhat different volumes.

During 2016, a revised estimate of iron sulfide minerals (pyrite, marcasite, and pyrrhotite) was added to both models in order to better predict the occurrence of potentially acid generating rock. That estimate was updated with additional XRD information in 2017.

The size and location of the two models are summarized on the following tables.

August 2017, Grasberg-Kucing Liar Model Area - Block Corners				
	Southwest	Northwest	Northeast	Southeast
Easting	732,167.28	734,180.49	736,899.13	734,885.92
Northing	9,550,988.95	9,553,565.75	9,551,441.71	9,548,864.92
Elevation Range		1,510.00	4,360.00	
Model Rotation, Primary Axis =		128 degrees		
Model		230 Blocks in 128 Bearing		
Size		218 Block in 38 Bearing		
Block Size, 15 x 15 x 15m		190 Levels		

December 2017 Grasberg IPM Model, Leading Coordinates Truncated				
	Southwest	Northwest	Northeast	Southeast
Easting	31,930.88	34,101.09	37,115.23	34,945.02
Northing	51,173.64	53,951.38	51,596.47	48,818.73
Elevation Range		2,440.00	4,360.00	
The leading 95 is removed from the north coordinates				
The leading number 7 is removed from the east coordinates				
Model Rotation, Primary Axis =		128 degrees		
Model		235 Blocks in 128 Bearing		
Size		255 Block in 38 Bearing		
Block Size, 15 x 15 x 15m		128 Levels		

This section will describe the estimation parameters that were applied for both the sediment hosted ore and intrusive hosted portions of the deposit.

The previous GRS-KL model that was used for reserves was reported in August of 2016. It will be referenced as the Aug16 model or data set within this text. The models described in this text will be referred to as the Aug17 GRS-KL or the GRS-IPM which were used for the December 31, 2017 statement of reserves.

8.1 Data Base

Diamond Drill Hole Assay Data

A single combined data base is used for the GRS-KL model. There is no distinction between KL and Grasberg composites. Mineralization is continuous between the two deposits. However, the minable envelopes for the KL block cave, Grasberg block cave, and Grasberg Pit are not overlapping.

Diamond drill assay information and their corresponding 15m composites are the data source for grade and bulk density estimation. Selected blast hole data is also used in both models. That selection will be outlined later in this section.

The composite procedure used by PTFI for the GRS-KL and GRS-IPM models are identical to that used at the other deposits in the district: 1) 15m down hole composites, and 2) 4.5m of intact core is required per 15m composite.

The data extraction from acQuire for both the GRS-KL and GRS-IPM models was completed in June 2017. The table below summarizes the total number of diamond drilling composites that are contained within the GRS-KL model area that were available to estimate the GRS-KL model during the last 3 years**.**

Composites Physically Contained in the GRS-KL Block Model

GRS-KL Composite Data Comparison	June 17 Data Base		June 16 Data Base		June 15 Data Base	
	Number	Mean Grade	Number	Mean Grade	Number	Mean Grade
Copper Composites	70,224	0.60 %	68,474	0.59 %	65,330	0.60 %
Gold Composites	70,102	0.655 gm/t	68,352	0.650 gm/t	65,238	0.666 gm/t
Silver Composites	69,004	3.37 gm/t	67,234	3.38 gm/t	64,138	3.40 gm/t

To further check on the reserve and resources, the number of composites within the 2017 reserve and resource geometries in the GRS-KL model were compared to the 2016 data base for comparison.

Composite Count from the 2017 and 2016 Data Sets
Within the 2016 Reserve and Resource Geometries

Reserve and Resource Geometries in 2016	Metal	2017 Composites		2016 Composites	
		Number	Mean	Number	Mean
2 = GBC Reserve Shape	Copper %	11,813	1.20	10,726	1.20
	Gold gm/t	11,813	1.05	10,726	1.06
	Silver gm/t	11,781	3.95	10,694	4.05
3 = KL Reseve Shape	Copper %	3,188	1.14	3,162	1.15
	Gold gm/t	3,188	1.10	3,162	1.10
	Silver gm/t	3,183	5.75	3,157	5.78
21 = GBC Overdraw+Insitu	Copper %	4,523	0.77	4,155	0.76
	Gold gm/t	4,523	0.63	4,155	0.63
	Silver gm/t	4,521	4.24	4,153	4.34
22 = GBC 2600 Undercut	Copper %	1,061	0.78	1,053	0.78
	Gold gm/t	1,061	0.55	1,053	0.55
	Silver gm/t	1,061	2.31	1,053	2.32
23 = GBC 2500 Undercut	Copper %	231	0.77	225	0.79
	Gold gm/t	231	0.47	225	0.48
	Silver gm/t	231	3.41	225	3.53
31 = KL Overdraw+Insitu	Copper %	1,103	0.99	1,096	0.99
	Gold gm/t	1,103	0.71	1,096	0.71
	Silver gm/t	1,103	4.20	1,096	4.19
32 = KL 2500 Undercut	Copper %	347	1.01	346	1.01
	Gold gm/t	347	0.68	346	0.67
	Silver gm/t	347	3.71	346	3.72

The above tabulation indicates that there were no composites lost within the reserve and resource geometries.

The mean values in the last several tables have not had grade capping applied. Composites were capped for block grade estimation at different values for each grade estimation domain. The specific cap values are shown on the tables that summarize the reserve estimation methods.

Rock type and alteration codes are assigned to composites by PTFI by comparing the composite location directly to the interpreted wire frame modeled boundaries of the rock type and alteration interpretations. The entire 15m length composite is assigned a rock and alteration code based on the majority of the composite being contained within the wire frame boundary. Composites are not split or broken at the rock and/or alteration boundaries.

Blast Hole Data Inclusion

Blast hole data was incorporated into both models, using a different technique compared to previous years. As the remaining open pit life becomes shorter, the blast holes will have a more significant impact on the remaining open pit reserves. The block cave component of the Grasberg deposit is not currently impacted by the blast hole data as it was not used in the LVA estimation of the GIC below the 2016 pit progress surface.

The inclusion of recent blast holes from a few benches above the active mining surface is utilized by PTFI in an effort to improve the model estimate with the blast hole data density for a few benches below the selected pit surface.

Prior to 2017, PTFI utilized a method for selection of blast holes that was referred to as the "Pit Tail" search. That process was eliminated during 2017 and the following procedures was applied.

1) The open pit surface on 29 June 2017 was selected.
2) All blast holes within a 60 meter vertical window above the 29 June 2017 topography were selected.
3) No declustering of blast holes was applied

Historically, PTFI applies a correction factor to blast hole samples to reflect sample collection biases. The copper and gold blast hole corrections factors that are applied by PTFI are still:

BH Copper Factor = 0.934 and
BH Gold Factor = 0.934

These factors remain unchanged from their inception in the 1996 reserve update for the Grasberg open pit. The blast hole data was treated as composite data during grade estimation. Cuts are also applied to the blast hole data which are unchanged since 2014 and are 6% copper and 6.00 gm/t gold.

At this time roughly 95% of the remaining in-situ open pit reserve has been impacted by blast hole grade estimates. Roughly 72% of the in-situ reserve is more than 50% influenced by blast holes and 47% of the remaining pit in-situ reserve is 100% based on blast holes. The current method of blast hole selection has swamped the block grade estimation for the remaining in-situ reserve such that the reserve is essentially a blast hole estimate. As a result, the remaining 33.2 Mtonnes of in-situ ore is generally based on blast hole assays that have been factored by a value established over 20 years ago from 30 blast hole samples. The issue of excessive blast hole impact would be of concern if the pit life was not near exhaustion in the next year.

The primary reason that PTFI has incorporated blast holes in the recent models is that the open pit ore production is now relying on areas that were not densely diamond drilled and where the closest drill intercepts are near the total depth of long drill holes. Any uncertainty in DDH down hole survey could move the location of a drill hole and consequently change the block model estimate of the ore waste boundary.

8.2 Geologic Controls and Estimation Domains

The rock type and structural controls on mineralization reflect the two types of ore occurrences in the GRS-KL model: 1) sediment hosted, and 2) igneous hosted.

Sedimentary rocks in the district are offset by northwest striking reverse faults so that the stratigraphic column is repeated as one moves southwestward or northeastward across faults through the district. Sedimentary facies in the variably folded and faulted stratigraphy provide strong mineralization controls within these rocks. Consequently, there are structural domains that separate otherwise similar stratigraphy.

Sharp grade contrasts between well mineralized and largely barren rock, together with sparse data, required the development of mineralization constraint domain boundaries, in addition to the structural and stratigraphic domain features.

PTFI has developed a 3 digit estimation code that combines the following three items:

Mineral Zone

1 = mineralized, using a 0.25% Eqcu boundary
2 = non-mineral

Structural zone, Only zones 2, 4, and 5 are used in the GRS-KL model

1	IF2FW	Indenberg #2, Footwall
2	IF1FW	Indenberg #1, Footwall
4	IF1HW	Indenberg #1, Hanging Wall
5	FLFW	Fairy Lakes Fault, Hanging wall
6	FLFW	Fairy Lakes Fault, Foot wall
7	MVHW	Meren Valley Hanging Wall

Formation code or Stratigraphic code

1 = 622 - 631 Tertiary Kais Limestone, Faumi Limestone, and Sirga Sandstone
2 = 640 – 664 Tertiary Waripi, Cretaceous Ekmai (shale), and Ekmai Limestone
3 = 667 – 669 Cretaceous Kembelangan/Ekmai Sandstone and Piniya

The intrusives and related domains in the GRS-KL model have been simplified to five major units:

1) Ertsberg, Karume, Kay	156 of 256 for mineralized and non-mineral
2) Dalam Units:	DMLF=166 or 266
2) South Kali Dikes:	KALI=176 or 276
3) Main Grasberg Intrusive:	GIC = 186 and 286 has been combined with Dalam as 166 or 266
4) Heavy Sulfide Zone	HSZ=335

For estimation purposes, the Dalam and the Main Grasberg rocks are combined into a single domain. This is because more than half of the GIC Stockwork mineralization is hosted with Dalam rocks.

The structural, stratigraphic, and mineralized boundary codes were combined to establish the estimation domains on the following table. Domains not listed on the table were not required for estimation of the reserve metal grades.

2017 GRS-KL Model Estimation Domains

Sediment Domains		Grade Estimation Domains							
		IF2FW = 1		IF1FW = 2		IF1HW = 4		FLFW = 5	
		HG	LG	HG	LG	HG	LG	HG	LG
TK1,2,3,4 TF, TS, QAL	1		211	121	221	141	241	151	251
TW (Waripi)	2			122	222	142	242	152	252
Kkeh, Kkel	3			123	223	143	243		
Kkes and older sediments	4					144	244		

Intrusives and Related Domains		
Ertsberg, Kay, Karume	156	256
Dalam Rocks	166	266
South Kali Intrusion	176	276
Main Grasberg Intrusive	186	286
Intrusive along model edge		296
Heavy Sulfide	335	

HG > 0.25% Eqcu
LG < 0.25% Eqcu
ALL Domains are Hard Boundaries

Figure 8-1 is an illustrative SW – NE Cross section on a 38 degree orientation that illustrates the major estimation zones within the sediments and intrusive units. Estimation zones 151 and 152 are on not shown on this section but are located further NE (right on the section) generally surrounding the Grasberg intrusive mass.

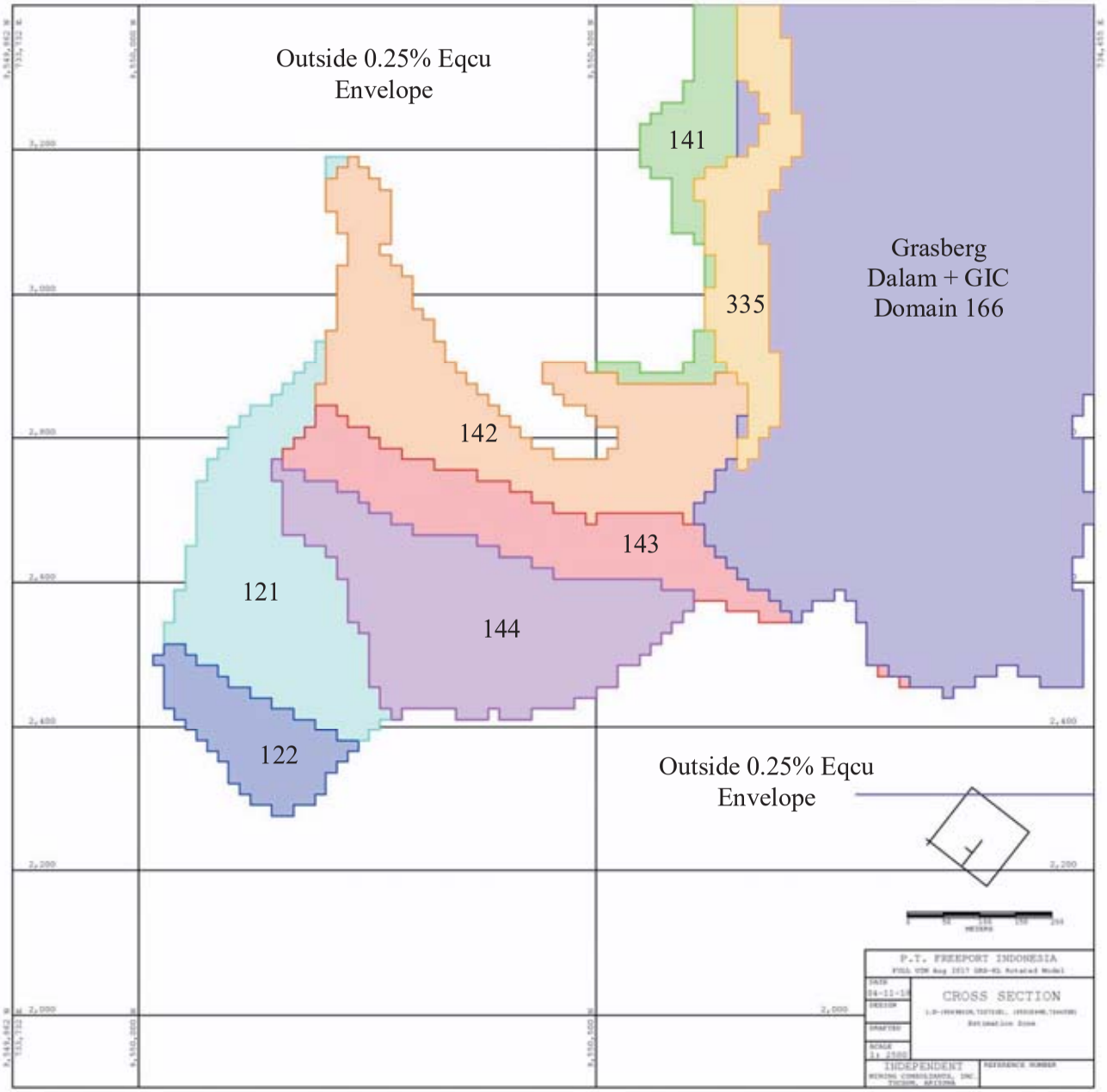


Figure 8-1
SW-NE Section
38 Bearing

Illustration of
Estimation Zones

8.3 Model Assembly Procedures

Many of the grade estimation procedures for copper, gold, and silver are unchanged from 2016 to 2017.

Bulk Density Estimation

The bulk density or in-place dry density was estimated based on the measured density values in each drill interval. Specific Gravity's have been averaged to 15 meter composites and tabulated by Estimation Zone and Formation with sub-tabs for mineralized and un-mineralized samples. These SG values are then converted to bulk density. The procedures applied at GRS-KL are identical to the bulk density estimation procedures in the other PTFI deposits. There are two steps in the bulk density process. The procedure is similar for all other deposits in the district.

1. The uncorrected in-place density was estimated by ordinary linear kriging.

2. A bulk density correction factor (bulk_f) was developed from the geotechnical data which incorporates RQD, % broken, and %Crushed to approximate the voids ratio in the rock mass. This factor was assigned to the model using ordinary linear kriging.

3. The final bulk density for mine planning is the product of the two values above.

The bulk density correction factor was originally developed for the Grasberg deposit several years ago and remains unchanged. The equation is:

Factor = RQD + 0.923 x %Broken + 0.846 x %Crushed.

Tables 8-1 and 8-2 summarize the grade estimation procedures that were applied to density (bulk) and density correction factor (bulk_f) within the estimation zones described earlier. Blocks that were not estimated by kriging were assigned default values based on the average of the bulk density and correction factor within that estimation zone.

If an estimation zone does not have parameters shown on Tables 8-1 and 8-2, then the estimation parameters of the non-mineralized domain were the same as those assigned to the mineralized domain. Some domains that appear to not be estimated were assigned default density and correction factor because there were insufficient samples to estimate.

The limit values for density and density correction factor at GRS-KL were:

Bulk must be between 1.80 and 6.00 mt/cubic meter
Bulk Correction must be between 0.80 and 0.985.

Table 8-1
Bulk Density Estimation Parameters, Inside and Outside 0.25% Eqcu Mineralization Envelope

Model Estimation	Search Parameters, Degrees, Meters						Nugget + Sills			Structure 1						Structure 2						Caps and High Yield Limits					
Domains	BearZ	PlungeY	DipX	Major	Semi	Minor	c0	c1	c2	BearZ	PlungeY	DipX	Major	Semi	Minor	BearZ	PlungeY	DipX	Major	Semi	Minor	low cuts	high cuts	H-Yield	major	semi	minor
bu20o	0	90	40	150	60	60	0.20	0.80	0.00	0	90	40	330	100	100							1.80	6.00				
bu121o	120	0	-90	150	150	100	0.20	0.20	0.60	120	0	-90	40	20	40	120	0	-90	220	80	160	1.80	6.00	4.13	115	98	123
bu122o	115	0	45	173	200	130	0.03	0.33	0.22	115	0	45	65	215	35	115	0	45	260	300	195	1.80	6.00	3.62	87	100	65
bu141o	115	0	40	53	183	73	0.03	0.65	0.30	115	0	40	20	170	38	115	0	40	80	275	110	1.80	6.00	4.65	27	92	37
bu142o	130	0	10	103	140	196	0.02	0.35	0.24	130	0	10	135	70	140	130	0	10	155	210	295	1.80	6.00	4.59	52	70	98
bu143o	110	0	65	230	180	83	0.02	0.16	0.64	110	0	65	110	135	95	110	0	65	345	270	125	1.80	6.00	3.92	115	90	42
bu144o	110	0	65	230	180	83	0.02	0.16	0.64	110	0	65	110	135	95	110	0	65	345	270	125	1.80	6.00	3.92	115	90	42
bu151o	255	-80	0	193	210	137	0.01	0.64	0.58	255	-80	0	245	115	150	255	-80	0	290	315	205	1.80	6.00	4.00	97	105	68
bu152o	0	90	-90	117	117	117	0.07	0.03	0.22	0	90	-90	30	30	30	0	90	-90	175	175	175	1.80	6.00	3.32	58	58	58
bu156o	0	0	0	125	125	125	0.10	0.90	0.00	0	0	0	150	150	150							1.80	6.00	3.00	0	0	0
bu166o	185	-75	-44	200	150	150	0.10	0.15	0.75	185	-75	-44	350	60	150	185	-75	-44	750	250	300	1.80	6.00	3.50	99	0	0
bu176o	0	90	-50	200	100	60	0.30	0.40	0.30	0	90	-50	100	100	10	0	90	-50	300	150	100	1.80	6.00				
bu211o	125	0	-10	125	75	125	0.10	0.10	0.80	40	125	0	-10	20	25	125	0	-10	150	100	150	1.80	6.00	3.55	45	150	72
bu221o	140	0	50	90	200	143	0.01	1.22	0.48	140	0	50	110	215	125	140	0	50	135	450	215	1.80	6.00	3.55	45	150	72
bu222o	115	0	40	173	213	60	0.02	0.34	0.19	115	0	40	90	75	40	115	0	40	260	320	90	1.80	6.00	3.62	87	107	30
bu241o	130	0	50	120	120	100	0.03	0.16	0.10	130	0	50	10	10	10	130	0	50	55	55	55	1.80	6.00	4.60	18	18	18
bu242o	130	0	40	123	123	123	0.01	0.04	0.04	130	0	40	80	80	80	130	0	40	185	185	185	1.80	6.00	3.50	62	62	62
bu244o	130	0	10	220	107	150	0.01	0.51	0.02	130	0	10	215	110	90	130	0	10	330	160	225	1.80	6.00	3.10	110	53	75
bu251o	350	0	70	97	97	97	0.01	0.04	0.05	350	0	70	90	90	90	350	0	70	145	145	145	1.80	6.00	3.27	48	48	48
bu252o	0	90	-90	117	117	117	0.07	0.03	0.22	0	90	-90	30	30	30	0	90	-90	175	175	175	1.80	6.00	3.32	58	58	58
bu254o	350	0	70	97	97	97	0.01	0.04	0.05	350	0	70	90	90	90	350	0	70	145	145	145	1.80	6.00	3.32	48	48	48
bu256o	0	0	0	125	125	125	0.10	0.90	0.00	0	0	0	150	150	150							1.80	6.00	3.00	50	50	50
bu261o	120	0	55	80	75	80	0.10	0.66	0.20	120	0	55	80	50	90	120	0	55	180	80	150	1.80	6.00	3.27	48	48	48
bu262o	0	0	0	75	75	50	0.10	0.10	0.80	0	0	0	25	25	25	0	0	0	100	100	100	1.80	6.00	3.32	58	58	58
bu264o	0	0	0	75	75	50	0.10	0.10	0.80	0	0	0	25	25	25	0	0	0	100	100	100	1.80	6.00	3.32	48	48	48
bu266o	40	-40	0	150	130	200	0.20	0.40	0.40	40	-40	0	100	50	50	40	-40	0	250	200	300	1.80	6.00				
bu271o	130	0	20	80	50	70	0.10	0.10	0.80	130	0	20	20	20	20	130	0	20	125	75	125	1.80	6.00				
bu272o	130	0	20	80	50	70	0.10	0.20	0.70	130	0	20	10	25	75	130	0	20	150	70	150	1.80	6.00				
bu276o	0	90	-50	200	100	60	0.30	0.40	0.30	0	90	-50	100	100	10	0	90	-50	300	150	100	1.80	6.00				
bu296o	0	0	0	125	125	125	0.15	0.85	0.00	0	0	0	150	150	150							1.80	6.00				
bu335o	0	0	0	200	200	200	0.30	0.70	0.00	0	0	0	250	250	250							1.80	6.00				

Composite Count: Max=10, Min=3. Max/hole =4

TabSec8_EstParams

Table 8-2
Bulk Density Correction Factor Estimation Parameters, Inside and Outside 0.25% Eqcu Mineralization Envelope

Model Estimation	Search Parameters, Degrees, Meters						Nugget + Sills			Structure 1						Structure 2						Cap Values	
Domains	BearZ	PlungeY	DipX	Major	Semi	Minor	c0	c1	c2	BearZ	PlungeY	DipX	Major	Semi	Minor	BearZ	PlungeY	DipX	Major	Semi	Minor	low cuts	high cuts
bf20o	0	90	40	150	60	60	0.20	0.80	0.00	0	90	40	330	100	100							0.8	0.985
bf121o	120	0	-90	150	150	100	0.05	0.18	0.20	130	0	40	100	145	50	130	0	40	240	230	345	0.8	0.985
bf122o	115	0	45	137	147	180	0.02	0.10	0.53	115	0	45	35	90	35	115	0	45	205	220	270	0.8	0.985
bf141o	135	0	35	125	80	80	0.06	0.14	0.24	135	0	35	30	10	15	135	0	35	185	50	55	0.8	0.985
bf142o	120	0	20	93	120	100	0.06	0.17	0.11	120	0	20	40	120	65	120	0	20	140	180	150	0.8	0.985
bf143o	130	0	30	173	133	140	0.09	0.19	0.33	130	0	30	60	140	190	130	0	30	260	200	210	0.8	0.985
bf144o	110	0	65	230	180	83	0.02	0.16	0.64	110	0	65	110	135	95	110	0	65	345	270	125	0.8	0.985
bf151o	335	0	40	113	113	113	0.07	0.52	0.11	335	0	40	105	105	105	335	0	40	170	170	170	0.8	0.985
bf152o	0	90	-90	80	80	80	0.05	0.17	0.17	0	90	-90	35	35	35	0	90	-90	120	120	120	0.8	0.985
bf156o	0	0	0	125	125	125	0.10	0.90	0.00	0	0	0	150	150	150							0.8	0.985
bf166o	40	-20	-90	100	300	200	0.05	0.10	0.85	40	-20	-90	100	10	80	40	-20	-90	200	500	350	0.8	0.985
bf176o	40	50	-90	100	100	100	0.10	0.30	0.60	40	50	-90	25	25	25	40	50	-90	200	200	200	0.8	0.985
bf211o	125	0	-10	125	75	125	0.10	0.20	0.80	125	0	-10	25	20	25	125	0	-10	150	100	150	0.8	0.985
bf221o	130	0	40	193	206	93	0.03	0.34	0.19	130	0	40	30	110	35	130	0	40	290	310	140	0.8	0.985
bf222o	115	0	35	200	200	100	0.01	0.18	0.56	115	0	35	140	195	45	115	0	35	300	345	300	0.8	0.985
bf241o	120	0	40	167	123	57	0.06	0.04	0.46	120	0	40	95	20	10	120	0	40	250	185	100	0.8	0.985
bf242o	110	0	45	160	186	53	0.06	0.15	0.27	110	0	45	75	50	50	110	0	45	240	280	100	0.8	0.985
bf244o	130	0	30	200	200	100	0.10	0.17	0.39	130	0	30	175	110	395	130	0	30	320	320	435	0.8	0.985
bf251o	170	0	60	193	140	133	0.05	0.33	0.13	170	0	60	145	85	145	170	0	60	290	210	200	0.8	0.985
bf252o	0	90	-90	117	117	117	0.07	0.03	0.22	0	90	-90	30	30	30	0	90	-90	175	175	175	0.8	0.985
bf254o	170	0	60	193	140	133	0.05	0.33	0.13	170	0	60	145	85	145	170	0	60	290	210	200	0.8	0.985
bf256o	0	0	0	125	125	125	0.10	0.90	0.00	0	0	0	150	150	150							0.8	0.985
bf261o	120	0	55	80	75	80	0.10	0.10	0.80	120	0	55	179	80	90	35	60	0	180	80	100	0.8	0.985
bf262o	0	0	0	75	75	50	0.10	0.10	0.80	0	0	0	25	25	25	0	0	0	75	75	75	0.8	0.985
bf264o	0	0	0	75	75	50	0.10	0.10	0.80	0	0	0	25	25	25	0	0	0	75	75	75	0.8	0.985
bf266o	40	-40	0	150	130	200	0.10	0.20	0.80	40	-40	0	100	50	50	140	0	30	500	400	400	0.8	0.985
bf271o	130	0	20	80	50	70	0.10	0.10	0.70	130	0	20	20	20	20	130	0	20	125	75	50	0.8	0.985
bf272o	130	0	20	80	50	70	0.10	0.10	0.70	130	0	20	10	25	75	130	0	20	150	70	150	0.8	0.985
bf276o	0	90	-50	200	100	60	0.10	0.40	0.60	0	90	-50	100	100	10	40	50	-90	200	200	200	0.8	0.985
bf296o	0	0	0	125	125	125	0.15	0.85	0.00	0	0	0	150	150	150							0.8	0.985
bf335o	0	0	0	180	180	180	0.30	0.70	0.00	0	0	0	180	180	180							0.8	0.985

Composite Count: Max=10, Min=3. Max/hole =4

TabSec8_EstParams

Grade Estimation

Metal grade estimation for copper, gold, and silver within estimation zones 166, 186, 266, and 286 utilized the LVA method within the GRS-KL block model. Those zones are the Main Grasberg and Dalam intrusive units. All other estimation zones utilized ordinary linear kriging. The GRS-IPM model utilized ordinary linear kriging for all those domains, including 166, 186, 266, 286.

The ordinary linear kriging procedures inclusive of those used in the GRS-IPM model are summarized on Tables 8-3 through 8-5. Estimation for each block was based on a maximum of 10 composites, minimum of 3 and a maximum of 4 composites per drill.

A shorter search radius was applied to high grade composites so that their area of influence was limited compared with that of the remainder of the population. The column labeled High Yield Limit on the following tables indicates the grade level at which the limited search radius was applied. The restricted search radii that was used is typically 1/3 the variogram range.

The use of shorter search radii for gold and silver as compared with copper leaves some blocks in the model with estimates for copper but default low grade gold and silver. The background default grade was 0.001 for copper, gold, and silver if the block were not estimated.

The LVA estimation of the main ore intrusive units is discussed later in this section.

Table 8-3
KL-GRS 2014 Copper Grade Estimation Parameters, Inside 0.25% Eqcu Mineralization Envelope

Model Estimation		Search Parameters, Degrees, Meters						Nugget + Sills			Structure 1						Structure 2						Caps and High Yield Limits				
Domains	Combined	BearZ	PlungeY	DipX	Major	Semi	Minor	c0	c1	c2	BearZ	PlungeY	DipX	Major	Semi	Minor	BearZ	PlungeY	DipX	Major	Semi	Minor	high cuts	H-Yield	major	semi	minor
cu20o		0	90	40	150	60	60	0.15	0.85	0.00	0	90	40	330	100	100							1.00	0.50	30	30	30
cu121o		130	0	0	160	100	80	0.10	0.10	0.80	130	0	0	50	20	35	130	0	0	380	110	190	3.00				
cu122o	122,123	130	0	30	185	165	150	0.15	0.15	0.70	130	0	30	95	70	35	130	0	30	280	250	228	1.50	1.00	90	80	75
cu141o		110	0	25	120	120	100	0.30	0.25	0.45	110	0	25	40	45	65	110	0	25	180	175	145	6.00	2.00	60	60	50
cu142o		110	0	30	250	185	75	0.30	0.25	0.45	110	0	30	80	30	65	110	0	30	380	280	110	6.00	4.00	127	93	36
cu143o		110	0	30	250	185	75	0.30	0.25	0.45	110	0	30	80	30	65	110	0	30	380	280	110	6.00	4.00	127	93	36
cu144o		110	0	30	120	120	100	0.20	0.10	0.70	110	0	30	40	45	65	110	0	30	180	175	145	3.00	2.00	60	58	49
cu151o		320	0	70	200	260	125	0.30	0.20	0.50	320	0	70	80	145	60	320	0	70	305	395	190	2.00	0.70	100	130	60
cu152o	152,153	320	0	70	100	100	100	0.30	0.20	0.50	320	0	70	65	65	65	320	0	70	150	150	150	0.50				
cu156o		0	0	0	125	125	125	0.10	0.90	0.00	0	0	0	150	150	150							1.70	1.00	50	50	50
cu166o	166,186	20	80	0	500	400	300	0.20	0.25	0.55	20	80	0	100	25	150	20	80	0	900	600	450	5.00	3.00	100	100	100
cu176o		0	90	35	170	70	60	0.15	0.50	0.35	0	90	35	90	50	30	0	0	0	250	100	90	3.00	2.00	60	30	30
cu211o	111,211	60	35	35	100	75	75	0.15	0.10	0.75	60	35	35	20	10	60	60	35	35	150	100	75	2.00	1.00	50	30	30
cu212o		0	0	0	80	80	80	0.40	0.60	0.00	0	0	0	100	100	100							0.40				
cu221o		130	0	0	250	70	130	0.25	0.45	0.30	130	0	0	50	22	35	130	0	0	380	110	190	1.50	0.80	130	40	60
cu222o	222,224	130	0	30	185	170	150	0.25	0.45	0.30	130	0	30	95	69	36	130	0	30	280	250	228	0.50	0.00	0	0	0
cu241o		110	0	25	120	120	100	0.50	0.10	0.40	110	0	25	40	45	65	110	0	25	180	175	146	2.00	1.00	60	60	50
cu242o	242,243	110	0	30	250	185	75	0.30	0.30	0.40	110	0	30	80	30	65	110	0	30	380	270	110	1.50	0.50	130	90	40
cu244o		110	0	30	120	120	100	0.20	0.10	0.70	110	0	30	40	45	65	110	0	30	180	175	146	0.42				
cu251o		320	0	70	200	150	125	0.25	0.70	0.05	320	0	70	80	145	60	320	0	70	305	395	187	2.00	0.70	100	75	60
cu252o	153,252,253	320	0	70	100	100	100	0.10	0.20	0.70	320	0	70	65	65	65	320	0	70	150	150	150	0.26				
cu254o		320	0	70	75	75	50	0.10	0.20	0.70	320	0	70	50	50	50	320	0	70	75	75	75	0.31				
cu256o		0	0	0	125	125	125	0.10	0.90	0.00	0	0	0	150	150	150							0.50				
cu261o		120	-30	-90	50	50	80	0.15	0.05	0.80	120	-35	-90	10	10	15	120	-35	-90	50	50	80	0.50				
cu262o	262,263	0	0	0	75	75	50	0.10	0.10	0.80	0	0	0	25	25	25	0	0	0	75	75	75	0.40				
cu264o		0	0	0	75	75	50	0.10	0.10	0.80	0	0	0	25	25	25	0	0	0	75	75	75	0.50				
cu266o	266,286	20	80	0	250	200	150	0.20	0.25	0.55	20	80	0	100	25	150	20	80	0	900	600	450	1.00				
cu271o		130	-30	0	80	50	70	0.20	0.25	0.55	110	0	25	40	45	65	110	0	25	180	175	145	0.37				
cu272o		130	-30	0	80	50	70	0.20	0.25	0.55	110	0	25	40	45	65	110	0	25	180	175	145	0.10				
cu276o		0	90	35	100	50	50	0.15	0.30	0.55	0	90	35	90	50	30	0	0	0	250	100	90	0.50				
cu296o		0	0	0	125	125	125	0.15	0.85	0.00	0	0	0	150	150	150							2.00				
cu335o		0	0	0	180	180	180	0.30	0.70	0.00	0	0	0	180	180	180							5.00				

Composite Count: Max=10, Min=3. Max/hole =4

TabSec8_EstParams

Table 8-4
Gold Grade Estimation Parameters, Inside and Outside 0.25% Eqcu Mineralization Envelope

Model Estimation		Search Parameters, Degrees, Meters						Nugget + Sills			Structure 1						Structure 2						Caps and High Yield Limits				
Domains	Combined	BearZ	PlungeY	DipX	Major	Semi	Minor	c0	c1	c2	BearZ	PlungeY	DipX	Major	Semi	Minor	BearZ	PlungeY	DipX	Major	Semi	Minor	high cuts	H-Yield	major	semi	minor
au20o		0	90	40	150	60	60	0.20	0.80		0	90	40	330	100	100	0	0	0	0	0	0	1.00	0.50	60	30	30
au121o		120	0	0	260	260	260	0.20	0.40	0.40	120	0	0	40	40	40	120	0	0	150	150	150	7.00				
au122o	122,123	130	0	30	215	200	225	4.00	0.20	0.65	130	0	30	165	270	35	130	0	30	320	300	340	2.00	1.00	100	100	100
au141o		110	0	30	135	120	135	0.15	0.20	0.65	110	0	30	35	30	20	110	0	30	200	180	200	7.50	4.00	60	60	60
au142o		110	0	30	235	140	85	0.20	0.20	0.60	110	0	30	60	40	55	110	0	30	355	210	125	10.00	4.00	118	70	42
au143o		120	0	25	200	200	150	0.15	0.30	0.55	110	0	30	60	40	50	110	0	30	355	210	125	10.00	4.00	118	70	42
au144o		120	0	30	200	200	150	0.15	0.30	0.55	115	0	30	120	110	125	115	0	30	130	345	385	4.00	2.50	42	115	128
au151o		230	-70	0	160	30	70	0.15	0.20	0.65	230	-70	0	115	30	45	230	-70	0	235	45	105	2.50	1.30	80	15	35
au152o	152,153	110	0	30	100	100	100	0.20	0.20	0.60	110	0	30	45	45	45	110	0	30	150	150	150	1.00				
au156o		0	0	0	125	125	125	0.10	0.90		0	0	0	150	150	150	0	0	0	0	0	0	1.50				
au166o	166,186	120	0	-80	200	400	200	0.10	0.15	0.75	120	0	-80	100	100	100	120	0	-80	400	1000	400	10.00	5.00	200	150	75
au176o		0	80	0	140	80	70	0.10	0.30	0.60	0	80	0	200	75	100	0	0	0	210	125	100	10.00	4.00	70	40	30
au211o	111,211	125	0	-10	125	75	125	0.10	0.20	0.70	125	0	-10	50	20	20	125	0	-10	200	150	75	2.00	1.00	130	130	130
au212o		0	0	0	80	80	80	0.40	0.60		0	0	0	50	50	50	0	0	0	0	0	0	1.00				
au221o		130	-35	-90	90	100	50	0.20	0.40	0.40	130	-35	-90	100	20	20	130	-35	-90	130	150	65	6.00	4.00	50	50	30
au222o	222,224	130	0	30	215	150	225	0.15	0.20	0.65	130	0	30	165	270	35	130	0	30	320	303	338	0.60				
au241o		110	0	30	135	120	135	0.15	0.20	0.65	110	0	30	35	30	20	110	0	30	200	180	200	3.00	1.50	60	60	60
au242o	242,243	110	0	30	235	140	85	0.20	0.20	0.60	110	0	30	60	40	55	110	0	30	355	210	125	2.00	1.10	120	70	40
au244o		115	0	30	80	80	80	0.15	0.30	0.55	115	0	30	120	110	125	115	0	30	130	345	385	0.33				
au251o		230	-70	0	160	30	70	0.15	0.20	0.65	230	-70	0	115	20	45	230	-70	0	235	45	104	2.50	1.00	80	15	35
au252o	153,252,253	110	0	30	100	100	100	0.20	0.20	0.60	110	0	30	45	45	45	110	0	30	150	150	150	1.00	1.00	50	50	50
au254o		230	-70	0	160	30	70	0.20	0.20	0.60	230	-70	0	115	20	45	230	-70	0	235	45	105	0.20				
au256o		0	0	0	125	125	125	0.10	0.90		0	0	0	150	150	150	0	0	0	0	0	0	2.00				
au261o		95	45	-35	70	100	75	0.20	0.10	0.70	95	45	-35	10	10	10	95	45	-35	100	150	70	1.40				
au262o	262,263	0	0	0	75	75	50	0.10	0.10	0.80	0	0	0	25	25	25	0	0	0	75	75	75	0.10				
au264o		0	0	0	75	75	50	0.20	0.10	0.70	0	0	0	25	25	25	0	0	0	75	75	75	0.50				
au266o	266,286	40	80	0	300	200	150	0.10	0.40	0.50	40	80	0	250	300	200	40	80	0	1500	800	350	3.00	2.00	100	75	50
au271o		230	-70	0	80	50	70	0.20	0.20	0.60	230	-70	0	115	20	45	230	-70	0	235	45	105	2.00				
au272o		230	-70	0	80	50	50	0.20	0.20	0.60	230	-70	0	115	20	45	230	-70	0	235	45	105	0.50				
au276o		0	80	0	120	80	80	0.10	0.30	0.60	0	80	0	200	75	100	0	80	0	210	125	100	0.70				
au296o		0	0	0	125	125	125	0.15	0.85		0	0	0	150	150	150	0	0	0	0	0	0	2.00				
au335o		0	0	0	180	180	180	0.30	0.70		0	0	0	180	180	180	0	0	0	0	0	0	7.00	4.00	40	40	40

Composite Count: Max=10, Min=3. Max/hole =4

TabSec8_EstParams

Table 8-5
Silver Grade Estimation Parameters, Inside and Outside 0.25% Eqcu Mineralization Envelope

Model Estimation		Search Parameters, Degrees, Meters						Nugget + Sills			Structure 1						Structure 2						Caps and High Yield Limits				
Domains	Combined	BearZ	PlungeY	DipX	Major	Semi	Minor	c0	c1	c2	BearZ	PlungeY	DipX	Major	Semi	Minor	BearZ	PlungeY	DipX	Major	Semi	Minor	high cuts	H-Yield	major	semi	minor
ag20o		0	90	40	150	60	60	0.30	0.70	0.00	0	90	40	330	100	100							30.00	20.00	50	50	50
ag121o		130	0	-10	70	60	70	0.15	0.35	0.20	130	0	-10	45	55	25	130	0	-10	110	100	110	40.00	12.00	35	35	25
ag122o	122,123	130	0	30	175	150	150	0.20	0.15	0.20	130	0	30	155	155	200	130	0	30	260	230	220	10.00	7.00	80	70	70
ag141o		110	0	30	100	90	90	0.20	0.35	0.15	110	0	30	65	60	60	110	0	30	150	140	130	50.00	35.00	50	45	45
ag142o		110	0	30	185	155	100	0.15	0.15	0.20	110	0	30	35	50	60	110	0	30	280	235	145	40.00	35.00	100	80	50
ag143o		120	0	25	150	150	80	0.15	0.15	0.20	110	0	30	35	50	60	110	0	30	280	235	145	40.00	35.00	100	80	50
ag144o		120	0	30	150	150	80	0.15	0.10	0.20	110	0	30	65	60	60	110	0	30	150	140	130	25.00	20.00	50	45	45
ag151o		235	-70	0	105	105	105	0.10	0.30	0.45	235	-70	0	45	45	45	235	-70	0	155	155	155	40.00				
ag152o		0	0	0	120	120	120	0.15	0.20	0.30	0	0	0	55	55	55	0	0	0	180	180	180	40.00				
ag156o		0	0	0	125	125	125	0.10	0.90	0.00	0	0	0	150	150	150							6.00				
ag166o	166,186	40	80	-90	350	275	250	0.10	0.70	0.20	40	80	-90	130	100	100	40	80	-90	1000	500	450	30.00	15.00	80	100	80
ag176o		0	90	0	130	50	50	0.10	0.35	0.55	0	90	0	100	40	50	0	90	0	200	70	70	20.00	10.00	60	30	30
ag211o	111,211	125	0	-10	100	60	100	0.10	0.30	0.60	125	0	-10	20	20	20	125	0	-10	125	75	125	12.00	5.00	40	40	40
ag212o		0	0	0	40	40	40	0.40	0.60	0.00	0	0	0	50	50	50							5.00	1.00	50	50	50
ag221o		130	0	-90	75	70	55	0.15	0.35	0.20	130	0	-90	44	55	20	130	0	-90	110	105	80	40.00	30.00	40	40	40
ag222o	222,224	130	0	30	175	150	150	0.20	0.15	0.20	130	0	30	155	155	200	130	0	30	260	230	220	3.00				
ag241o		110	0	30	100	95	90	0.20	0.35	0.15	110	0	30	65	60	60	110	0	30	150	140	130	50.00	25.00	50	45	45
ag242o	242,243	110	0	30	185	155	100	0.15	0.15	0.15	110	0	30	35	50	60	110	0	30	280	235	145	30.00				
ag244o		110	0	30	100	95	90	0.15	0.10	0.20	110	0	30	65	60	60	110	0	30	150	140	130	5.00				
ag251o		235	-70	0	105	105	105	0.15	0.30	0.45	235	-70	0	45	45	45	235	-70	0	155	155	155	50.00	25.00	50	50	50
ag252o	153,252,253	0	0	0	120	120	120	0.15	0.20	0.25	0	0	0	55	55	55	0	0	0	180	180	180	12.00	4.00	60	60	60
ag254o		235	-70	0	105	105	105	0.10	0.30	0.45	235	-70	0	45	45	45	235	-70	0	155	155	155	3.80				
ag256o		0	0	0	125	125	125	0.10	0.90	0.00	0	0	0	150	150	150							10.00				
ag261o		120	0	55	80	50	80	0.10	0.10	0.80	120	0	55	20	20	20	120	0	55	100	60	100	15.00	8.00	40	40	40
ag262o	262,263	0	0	0	75	75	50	0.10	0.10	0.80	0	0	0	25	25	25	0	0	0	75	75	75	1.40				
ag264o		0	0	0	75	75	50	0.10	0.10	0.80	0	0	0	25	25	25	0	0	0	75	75	75	5.00				
ag266o	266,286	40	80	-90	250	150	150	0.10	0.70	0.20	40	80	-90	130	100	100	40	80	-90	1000	500	450	15.00				
ag271o		130	0	20	80	50	70	0.20	0.10	0.70	130	0	20	25	20	40	130	0	20	200	90	150	7.00				
ag272o		0	90	25	40	50	50	0.10	0.20	0.70	0	90	25	20	25	50	0	90	25	50	70	70	15.00				
ag276o		0	90	0	100	50	50	0.10	0.35	0.55	0	90	0	100	40	50	0	90	0	200	70	70	10.00				
ag296o		0	0	0	125	125	125	0.15	0.85	0.00	0	0	0	150	150	150							30.00				
ag335o		0	0	0	180	180	180	0.30	0.70	0.00	0	0	0	180	180	180							40.00	12.00	40	40	40

Composite Count: Max=10, Min=3. Max/hole =4

TabSec8_EstParams

Blast Hole Grade Estimation

PTFI documentation indicates that the BH estimates utilized similar techniques as the DDH block grade procedures but with more limited search radii. Blast hole estimates were applied to the IPM model in the all rock types where the selected blast holes were present.

Within the GRS-KL model, the blast hole estimate was not incorporated into the heavy sulfide and sedimentary units. Blast holes were not used in domains 166, 186, 266, and 286 below the end of 2016 pit surface due to the use of LVA in those units.

The selected blastholes were used in all of the domains for the Grasberg pit within the IPM model. They were not used in the Grasberg Block Cave or Kucing Liar (KL). The KL area is separated from the pit such that the blastholes have no influence. The LVA model did not use blastholes at all.

For the Grasberg Pit portion of the model (IPM), ordinary linear kriging is applied to the blast holes to develop an independent block grade estimate for copper and gold based only on blast holes. The blast hole block grades were then combined with the DDH grades using an indicator process.

The estimation zones that were applied to the DDH kriging were also applied to the blast hole grade estimates. Those zones were back assigned from the model to the selected blast holes. The vertical search extents for the blast hole estimation is restricted to 60 meters.

The DDH and BH block estimates for copper and gold were combined by using an indicator process. The process estimated the relative impact of BH data on a block compared with the impact of DDH data.

The selected blast holes were assigned an indicator value of 1.00. Diamond drill composites were assigned an indicator value of 0.0. This value or indicator was estimated in each block by ordinary kriging using search ranges similar to those used for grade assignment.

The blast hole impact indicator was used to combine the DDH and BH estimates for copper and gold in the following manner. For this text, the blast indicator will be referenced as "bhdh_ind".

1) If bhdh_ind = 0, Assigned the DDH estimates to the block
2) Otherwise use the equation for both copper and gold. The copper example is shown:
   Combined Cu = (bhdh_ind x CuBH) + ((1.0-bhdh_ind) x CuDDH)

Blast hole data and the process above was only applied within the GIC and sediments local to the open pit and blast hole data. Table 8-6 summarizes the copper and gold kriging parameters along with the indicator kriging parameters to set the blast hole fraction (pctbh).

The blast hole data selection was completed in June of 2017 and contained all blast holes within 60m of the end of June 2017 pit surface.

Table 8-6
Blast Hole Grade Estimation Parameters and Blast Hole Indicator Parameters

Metal and	Search	Ellipse		Search Parameters			Nugget + Sills			Structure 1						Structure 2						
Estimation Zone	BearZ	PlungeY	DipX	Major	Semi	Minor	C0	C1	c2	BearZ	PlungeY	DipX	Major	Semi	Minor	BearZ	PlungeY	DipX	Major	Semi	Minor	Cap
Copper 166 MGI/Dalam	130	0	-75	60	60	60	0.20	0.20	0.60	130	0	-75	30	30	30	130	0	-75	100	100	60	6%
Copper 176 Kali	130	0	0	60	60	60	0.20	0.10	0.70	130	0	0	30	30	30	130	0	0	60	60	40	4%
Copper 335 HSZ	0	0	0	60	60	60	0.30	0.10	0.60	0	0	0	30	30	30	0	0	0	80	80	60	3%
Copper Seds	130	0	-35	60	60	60	0.30	0.20	0.50	130	0	-35	30	30	30	130	0	-35	80	60	60	2%
Gold 166 MGI/Dalam	130	0	-65	60	60	60	0.20	0.20	0.60	130	0	-65	30	30	30	130	0	-75	80	80	60	8 gm/t
Gold 176 Kali	130	0	50	60	60	60	0.30	0.10	0.60	130	0	50	30	30	30	130	0	0	80	60	60	8 gm/t
Gold 335 HSZ	0	0	0	60	60	60	0.30	0.10	0.60	0	0	0	30	30	30	0	0	0	80	80	60	8 gm/t
Gold Seds	130	0	0	60	60	60	0.30	0.20	0.50	130	0	0	30	30	30	130	0	0	80	60	60	6 gm/t
BH Indicator MGI/Dalam	130	0	0	100	100	60	0.20	0.20	0.60	130	0	0	25	25	20	130	0	0	100	80	60	1
BH Indicator Kali	130	0	0	100	100	60	0.20	0.20	0.60	130	0	0	25	25	20	130	0	0	100	80	60	1
Hole Indicator HSZ	130	0	0	100	100	60	0.20	0.20	0.60	130	0	0	25	25	20	130	0	0	80	80	60	1
BH Indicator Seds	130	0	0	100	100	60	0.20	0.20	0.60	130	0	0	25	25	20	130	0	0	100	80	60	1

Confidence Codes

Measured, Indicated and inferred blocks are classified according to geological continuities, distance to the closest drill hole and the kriging variance. All blocks are classified according values derived during the estimation of copper grades. Within the LVA estimated units, the confidence code is based on the results from the ordinary linear kriging.

The procedure for estimation of confidence code within the sediments (KL) zone was unchanged from last year and is summarized as follows:

The criteria for confidence within the Sediment domains were as follows:

Measured Classification, Code 3
- Copper kriged variance < = 0.26
- Minimum distance to nearest sample < = 30m
- Minimum number of drill holes = 2

Indicated Classification, Code 2
- Copper kriged variance < = 0.72
- Minimum distance to nearest sample < = 120m
- Minimum number of drill holes = 2

Inferred Classification, Code 1
- Copper kriged variance <= 0.80
- Minimum distance to nearest sample > 150m

Undefined
- Kriged variance > 0.80

Confidence code was assigned in the open pit area with two passes; the first was based on the diamond drilling parameters only. Different criteria were used in the GIC (166,186) versus the Kali (176). The DDH parameters are summarized below:

The criteria for confidence within the GIC domains were as follows:

Measured Classification, Code 3
- Copper kriged variance < = 0.25
- Minimum distance to nearest sample < = 30m
- Minimum number of drill holes = 2

Indicated Classification, Code 2
- Copper kriged variance < = 0.70
- Minimum distance to nearest sample < = 120m
- Minimum number of drill holes = 2

Inferred Classification, Code 1
- Copper kriged variance < = 0.75
- Minimum distance to nearest sample < = 150m
- Minimum number of drill holes = 1

The criteria for confidence within the Kali domains were as follows:

Measured Classification, Code 3
- Copper kriged variance < = 0.30
- Minimum distance to nearest sample < = 30m
- Minimum number of drill holes = 2

Indicated Classification, Code 2
- Copper kriged variance < = 0.60
- Minimum distance to nearest sample < = 100m
- Minimum number of drill holes = 2

Inferred Classification, Code 1
- Copper kriged variance < = 0.80
- Minimum distance to nearest sample < = 150m

The criteria for confidence within the Heavy Sulfide domain was as follows:

Measured Classification, Code 3
- Copper kriged variance < = 0.25
- Minimum distance to nearest sample < = 30m
- Minimum number of drill holes = 2

Indicated Classification, Code 2
- Copper kriged variance < = 0.75
- Minimum distance to nearest sample < = 120m
- Minimum number of drill holes = 2

Inferred Classification, Code 1
- Copper kriged variance < = 0.80
- Minimum distance to nearest sample < = 150m

Prior to 2016, a second correction was made to the classification code based on the number of blast holes used in the blast hole grade estimate. If 10 or more blast holes were used in the blast hole estimate, the block was recoded as “measured” independent of the previous diamond drilling classification. That process was discontinued during 2016 and is no longer in use.

Locally Varying Anisotropy

The GRS-KL model applied a procedure called Locally Varying Anisotropy (LVA) to the Grasberg Intrusive Complex defined by estimation domains 166, 186, 266, and 286. LVA was not applied to the IPM model and consequently has no impact on the open pit reserves remaining at the Grasberg Pit.

The LVA procedure used diamond drilling composites only and did not use blast holes for the estimation of the GIC domains.

LVA applies a series of coordinate translations and rotations to each block in the model prior to estimation of the block grade. The procedure allows for search orientations to follow defined paths in space that are not the traditional elliptical search geometry. Simply put, the search radii were warped to look around the corner and follow the shape of the GIC intrusive in plan. The resulting LVA field changes for each block in the GIC complex.

The defined search zone for the application of LVA at Grasberg took advantage of the geometry of the GIC which is a horseshoe geometry in plan. An inner and an outer outline were generated on each bench based on the blast hole data to define the two semi-concentric boundaries.

The inner boundary was based on contours of the blast hole gold data at grades of 1, 2, 3, and 4 gm/tonne. The outer boundary was interpreted from, blast hole copper data at grades of 0.25%, 0.50%, 0.75% and 1.0% copper. The interpreted boundaries were stored digitally and used to define the LVA field. A software package called SPFIT was used to establish the LVA field from defined boundaries.

If one were to locate a point between the two surfaces that is radially 25% of the distance from the inner to the outer surface, every point between the two surfaces that is 25% of the way outward would define another dented cylinder. That surface could then be mathematically unfolded using coordinate rotations and translations so that a plane exists of all data points that are 25% of the way between the two contacts. The LVA application is not a two dimensional process as just described in the example. It is a full three dimensional analysis that is different for every block in the model.

If one were to define a search ellipse that has a range in terms of radial distance and distance around the cylinder, that surface can also be transformed into a new shape that would allow for ordinary kriging in the new orthogonal space. Data points that are inside the search ellipse would be transformed to the new temporary orthogonal coordinate system for input to the kriging estimator.

LVA incorporates anisotropic translations into the data field for each block. The anisotropy applied at Grasberg is 1:1 vertical, and 5:1 horizontal. The direction of the horizontal component at Grasberg depends on the LVA field, but nominally the primary horizontal direction is “circumferential” and minor horizontal axis is “radial”.

The variogram that is applied is consequently isotropic in the LVA space. This procedure is not dissimilar to the anisotropy conversions of conventional kriging or inverse distance

methods. The difference however, is that LVA incorporates that anisotropy into the final data field along with the field rotations from the two defined surfaces.

Since space is stretched or contracted to match the anisotropy and directional controls, the variograms applied to LVA are in transformed units rather than Euclidean meters. The table below summarizes the inputs applied to the LVA kriging of the GIC.

Table 8-7
LVA Parameters in GIC

Estimation Zone and Metal			Struct 1	Struct 2	Grade Cap
Copper			Relative Units		
Domains 166,266, 186, 286		Total Sill	LVA Space		
Nugget	0.000	1.00			
Exponential Str1	1.000		383.20		5%
Gold			Relative Units		
Domains 166,266, 186, 286		Total Sill	LVA Space		
Nugget	0.050	0.99			
Exponential Str1	0.939		353.00		10 gm/t
Silver			Relative Units		
Domains 166,266, 186, 286		Total Sill	LVA Space		
Nugget	0.100	1.00			
Exponential Str1	0.129		48.45	302.39	20 gm/t
Spherical Str2	0.771				

Composite Count: Max=10, Min=3 TabSec8_EstParams

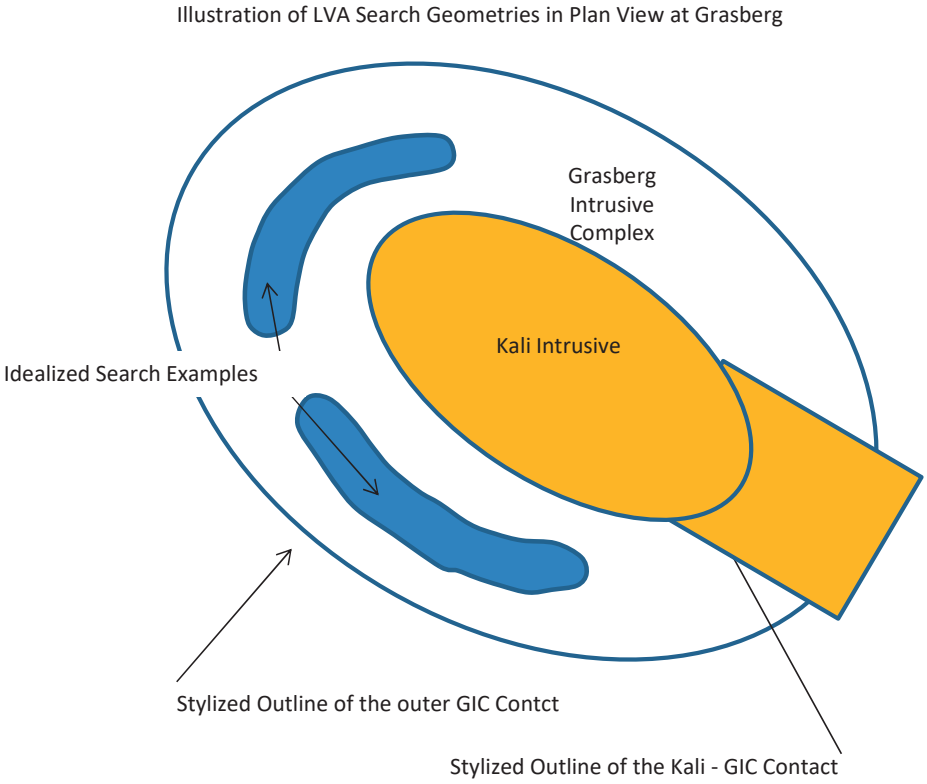
Figure 8-2 is a stylized illustration of what the resulting search ellipse might look like once transformed back into real space. If one were to slice the GIC on plan, the geologic outlines would look like the simple shapes on Figure 8-2. If a search ellipse were transformed as just discussed, it might look something like the blue outlines on the figure.

The LVA application at the Grasberg resulted in a block grade in each block for copper, gold and silver. Tests of the model could then be performed as with any other model.

Figure 8-2

Simplified and Stylized Bench Plan of the Grasberg Deposit

Illustrating What a Curved Search Ellipse Might Look Like



Metallurgical Process Code

The following codes were assigned based on the component of pyrite and magnetite observed during the core logging process and guided by the weight percent estimates of iron sulfide and iron oxide that were estimated in the model.

KL Process Ore Types		
	Tertiary Formations	Cretaceous Formations
No Pyrite, No Magnetite	20	25
Low Pyrite, Low Magnetite	21	26
High Pyrite, Low Magnetite	22	27
Low Pyrite, High Magnetite	23	28
High Pyrite, High Magnetite	24	29

These codes were combined with the stratigraphic units in the model to assign process recoveries for copper, gold, and silver in the mine plan.

Pyrite Estimation

Prior to 2016, iron sulfides were estimated based on the pyrite information that was logged by the geologists at the core shed. In this case the term "pyrite" includes all of the iron sulfide minerals of pyrite, marcasite and pyrrhotite. That information was combined with pit mapping to develop an estimate of pyrite content throughout the GRS-KL model area.

Recent experience in the Grasberg pit indicated that where the model had predicted high levels of pyrite, the mine and mill did not incur the same high level of pyrite. That occurrence prompted the analysis of existing core pulp samples by x-ray diffraction (XRD) to measure the individual iron sulfide minerals.

A data base of iron sulfide minerals, pyrite, marcasite, and pyrrhotite was developed based on XRD analysis of archived drill hole pulps. Those pulps were selected to develop a sample spacing of roughly 50 x 50 x 50 meters and cover the elevations below 3,500 meters. During 2017 an additional 1,301 XRD samples were added bring the total contained in the GRS-KL model up to 5,214 of which 4,139 have results above 0.0. Zero is a valid result and is included in the estimation process. The KL area was targeted for sampling during 2017 in order to get most of the model on the same data support basis.

The XRD pulp samples are input directly into the model estimation process. There has not been any compositing because the samples are not continuous runs of drill hole analysis. The XRD procedure provides analytical results on a range of minerals, but the minerals of importance for this estimate are pyrite, marcasite and pyrrhotite.

Population boundaries were based on the total of all three minerals grade ranges of:

1 to 10% Py+Mc+Pyr
10 to 20% and
Greater than 20% which equates to the Heavy Sulfide Zone.

Wire frames of those grade range and geology boundaries were interpreted. Contact or boundary analysis was completed to confirm the populations and to establish the proper treatment of the samples during the estimation process.

Once the population boundaries were established, pyrite and marcasite were added together and treated as a single variable for estimation. Pyrrhotite was estimated separately during the grade estimation process. Once both estimations were complete they were combined by addition in the model to generate the variable "wt_FeS".

Table 8-8 summarizes the estimation domains that were applied to pyrite, pyrrhotite estimation

Table 8-8
Estimation Domains, Pyrite, Pyrrotite, FeS

Py_domain	Grade Range	Description
100	<1%	Diorite rocks of the GIC, including Kali and Karume
101	>1%	Diorite rocks of the GIC, including Kali and Karume
10	>10%	>10% pyrite halo around the Heavy Sulfide Zone of the GBC
20	>20%	>20% pyrite representing the Heavy Sulfide Zone of the GBC
200	<1%	Sedimentary rocks in the south limb of YVS
201	>1%	Sedimentary rocks in the south limb of YVS
300	<1%	Sedimentary rocks in the south limb of YVS
301	>1&	Sedimentary rocks in the south limb of YVS
5	>5%	>5% pyrite halo around the Idenberg Fault Zone at Kucing Liar
21	>20%	>20% pyrite halo within and around the Idenberg Fault Zone at Kucing Liar

Within each domain, the kriging estimation procedures that were used are summarized on Table 8-9.

Once the above procedure was completed, it was compared with the work completed in 2015 that was based on logged data. The following correction factors were developed in 2016 to adjust the 2015 estimates to more closely match the 2016 work that was based on XRD.

2015 wt_py	Factor match 2016 results
0 to 2 %	0.65
2 to 5	0.70
5 to 10	0.80
10 to 20	0.80
Above 20	No factor

The final pyrite model was a combination of the two methods. Where blocks could be estimated with the XRD data using the kriging parameters in Table 8-9, that information was used in the block model. Outside of that area the 2015 methods were used after application of the correction factors listed above. For example, the 2015 methods based on logging were applied to about 10% of the KL deposit during the 2017 update.

Table 8-9
Pyrite + Marcasite, Pyrrotite Estimation Parameters

Model Estimation		Search Parameters, Degrees, Meters						Nugget + Sills			Structure 1						Structure 2					
Domains	Combined	BearZ	PlungeY	DipX	Major	Semi	Minor	c0	c1	c2	BearZ	PlungeY	DipX	Major	Semi	Minor	BearZ	PlungeY	DipX	Major	Semi	Minor
100	100, 30ft 101	0	0	0	150	150	150	0.30	0.42	0.28	0	0	0	30	30	30	0	0	0	160	160	160
101		0	0	0	150	150	150	0.35	0.55	0.10	0	0	0	40	40	40	0	0	0	210	210	210
10		0	0	0	140	140	140	0.30	0.69	0.01	0	0	0	105	105	105	0	0	0	150	150	150
20		0	0	0	150	150	150	0.30	0.30	0.40	0	0	0	30	30	30	0	0	0	230	230	230
200	200, 30 ft 201	120	0	0	175	175	100	0.10	0.65	0.14	120	0	0	70	70	70	0	0	0	205	205	205
201		120	0	0	175	175	100	0.10	0.65	0.14	120	0	0	70	70	70	0	0	0	205	205	205
300	300, 30 ft 301	120	0	25	175	175	100	0.10	0.65	0.14	120	0	25	70	70	70	120	0	25	205	205	205
301	301	120	0	25	175	175	100	0.10	0.65	0.14	120	0	25	70	70	70	120	0	25	205	205	205
5		0	0	0	150	150	150	0.15	0.28	0.47	0	0	0	15	15	15	0	0	0	220	220	220
21		0	0	0	150	150	150	0.10	0.65	0.25	0	0	0	20	20	20	0	0	0	280	280	280

Sample Count: Max=15, Min=3

TabSec8_EstParams

8.4 Block Model Assembly Checks

IMC completed three statistical checks of the GRS-KL model assembly process as a review of drill hole and model cross sections. The three statistical checks were:

1) Comparison of composite grade versus model grade
2) Comparison of average grade of composites within the minable envelope versus the average block grade before dilution.
3) Comparison of the tonnage and grade between the previous GRS-KL 2017 model and the current Aug17 model.

Composite versus Model Grade

A check process was applied to the GRS-KL block cave component of the model where blocks above a range of cutoff grades are compared against the average grade of the contained composites within the cutoff grade envelope. The block and composites tagged as within the minable reserve envelope of KL (rsv_2016=3) and GRS BC (rsv_2016=2) were first used to filter the data.

The procedure compares the block grade at a given cutoff against the grade of the contained composites. For example, a 0.50% total copper cutoff is applied to the model. All composites contained within that model defined 0.50% outline and the KL and GRS block cave shapes are tabulated and compared against the block grades for the same outline. Comparison of averages is a check on potential model bias. The percentage of composites within the outline that are less than the selected block cutoff is a measure of the grade smearing of the model. The process is repeated at a number of cutoff grades.

Table 8-10 and Table 8-11 summarize the results of this test. The average block grades are properly lower than the average grade of the contained composites. The percentage of composites less than cutoff indicates an acceptable amount of grade smearing, particularly considering that the non-selective mining method of block caving that will be applied.

Tables 8-12 and 8-13 summarize the results of the pyrite check in the GRS BC. The table shows both the Total Iron Sulfides (wt_FeS) check within the GRS BC and the KL shape for 2016 without regard to rock type. Of interest is the 1% cutoff in KL where the model reports higher grade than the contained composites. This reflects the hard model boundaries at 10% and is slightly conservative. High Wt_FeS adds to project costs for treatment and tailing disposal.

Table 8-10
Aug17 GRS-KL Model to Composite Check
Kucing Liar Composites and Blocks In 2016 Reserve Shape

DDH Copper Composites					
Cutoff Grade	% Comps Less Than Cutoff	Number of Comps In Shape	Composite Grade (% Cu)	Number of Blocks in Shape	Model Grade (% Cu)
0.010	0.44	3,166	1.144	74,565	1.102
0.50	11.76	2,797	1.260	66,871	1.191
0.75	14.98	2,143	1.472	51,731	1.354
1.00	16.94	1,553	1.704	37,122	1.545
1.50	17.67	730	2.249	15,533	1.984
2.00	16.77	310	2.867	5454	2.487

Diamond Drill Hole Gold Composites					
Cutoff Grade	% Comps Less Than Cutoff	Number of Comps In Shape	Composite Grade (gm/mt)	Number of Blocks in Shape	Model Grade (gm/mt)
0.010	0.09	3,170	1.101	74,445	1.020
0.50	14.79	2,535	1.299	61,623	1.160
0.75	18.41	1,945	1.519	46,183	1.339
1.00	22.50	1,391	1.791	31,994	1.547
1.50	20.16	640	2.487	12,832	2.037
2.00	23.44	320	3.163	5,151	2.522

Diamond Drill Hole Silver Composites					
Cutoff Grade	% Comps Less Than Cutoff	Number of Comps In Shape	Composite Grade (gm/mt)	Number of Blocks in Shape	Model Grade (gm/mt)
1.0	4.99	3,066	5.84	71,610	5.16
2.0	14.70	2,571	6.68	59,005	5.93
3.0	19.49	1,919	8.17	44,759	7.03
4.0	18.47	1,451	9.79	34,261	8.12
5.0	20.10	1,189	10.96	27,132	9.08

Table 8-11
Aug 17 GRS-KL Model to Composite Check
Grasberg Block Cave Composites and Blocks In 2016 Reserve Shape

DDH Copper Composites					
Cutoff Grade	% Comps Less Than Cutoff	Number of Comps In Shape	Composite Grade (% Cu)	Number of Blocks in Shape	Original Model Grade (% Cu)
0.010	0.31	11,777	1.202	99,893	1.131
0.50	4.27	10,075	1.353	87,293	1.248
0.75	5.04	8,545	1.484	73,589	1.363
1.00	5.68	6,900	1.629	57,733	1.496
1.50	8.44	3,328	2.034	23,272	1.866
2.00	9.87	1,256	2.553	5,859	2.367

Diamond Drill Hole Gold Composites					
Cutoff Grade	% Comps Less Than Cutoff	Number of Comps In Shape	Composite Grade (gm/mt)	Number of Blocks in Shape	Original Model Grade (gm/mt)
0.010	0.02	11,803	1.054	100,023	0.818
0.50	7.05	6,923	1.608	53,404	1.285
0.75	8.04	5,136	1.954	36,160	1.604
1.00	7.72	3,797	2.337	24,936	1.937
1.50	7.16	2,262	3.088	12,369	2.671
2.00	8.04	1,467	3.813	7,109	3.378

Diamond Drill Hole Silver Composites					
Cutoff Grade	% Comps Less Than Cutoff	Number of Comps In Shape	Composite Grade (gm/mt)	Number of Blocks in Shape	Original Model Grade (gm/mt)
1.0	3.23	9,904	4.56	89,065	3.96
2.0	6.69	6,888	5.90	60,654	5.13
3.0	9.50	5,072	7.15	43,045	6.22
4.0	14.01	3,670	8.58	30,254	7.38
5.0	16.50	2,612	10.29	21,401	8.58

Table 8-12
Aug 17 GRS-KL Model to Composite Check for Pyrite
Grasberg Block Cave Composites and Blocks In 2016 Reserve Shape
Heavy Sulfide and Intrusive Results Shown

wt_fes Composites Versus Model wt_fes in GRS_BC Wt % Iron Sulfide = (pyrite(+marcasite) + pyrrhotite)					
Cutoff Grade	% Comps Less Than Cutoff	Number of Comps In Shape	Composite Grade py_po_mc	Number of Blocks in Shape	Original Model Grade wt_fes %
0.00	6.43	1,652	11.39	100,424	11.55
1.00	14.65	1,058	17.63	65,298	17.53
10.00	13.97	471	34.35	29,043	33.69
20.00	9.52	315	44.67	19,452	43.47

Table 8-13
Aug 17 GRS-KL Model to Composite Check for Pyrite
Grasberg Block Cave Composites and Blocks In 2016 Reserve Shape
Heavy Sulfide and Intrusive Results Shown

wt_fes Composites Versus Model wt_fes in KL_BC Wt % Iron Sulfide = (pyrite(+marcasite) + pyrrhotite)					
Cutoff Grade	% Comps Less Than Cutoff	Number of Comps In Shape	Composite Grade py_po_mc	Number of Blocks in Shape	Original Model Grade wt_fes %
0.00	0.00	801	11.60	76,643	12.56
1.00	11.19	729	12.64	73,628	**13.05**
10.00	16.22	260	27.67	28,721	27.15
20.00	23.60	161	35.97	17,944	35.85

Minable Outline Grade Comparison

The average grade of the composites contained within the planned minable envelope was compared with the average undiluted grade of the planned block cave envelope at KL and at the Grasberg Block Cave. All contained composites within the mining shape were utilized in this tabulation.

Table 8-14
Aug17 GRS-KL Block Model
Undiluted Model vs Composite Statistics Inside 2016 Reserve Outlines

August 2017 Block Model by Freeport Personnel Undiluted 2017 Model vs 2017 Composite Statistics Inside 2016 Mineable Reserve Outlines						
	Copper Kt or Num	Mean Cu%	Gold Number	Mean gm/mt	Silver Number	Mean gm/mt
2016 KL Block Cave, No Dilution Applied						
Model Ktonnes	767,557	1.107		1.027		4.97
Model Blk Count	76,643	1.072		0.991		4.83
Composites	3,188	1.142	3,188	1.100	3,183	5.75
2016 Grasberg Block Cave, No Dilution Applied						
Model Ktonnes	944,778	1.113		0.817		3.77
Model Blk Count	100,424	1.125		0.815		3.60
Composites	11,813	1.199	11,813	1.054	11,781	3.95

Composite means DO NOT reflect grade caps
Composites are not declustered in this calculation
Tonnes are model contained material, tabulated at a 0.000% Eqcu COG

The tonnage reported above for the KL is based on the block cave minable envelope prior to limitation to respect the COW period. Consequently, the tonnage is greater than the reported reserve.

The results of the test are positive in that the direct block count grades are slightly less than the contained composite grades. The tonnage weighted model grades are often higher than the block count grades because the higher grade blocks in the model tend to be heavier than average density.

Comparison with the Previous Model

IMC tabulated the undiluted tonnage and grade contained within the 2016 block cave minable envelope from two different models: 1) the Aug16 GRS-KL block model, and 2) the Aug17 GRS-KL model. The intent is to compare the changes between the new model and a previous model within the same volume.

The results are summarized below:

Table 8-15
Comparison of Undiluted and Pre-mine 2016 Reserve Cave Shapes
Aug17 Model versus Aug16 GRS_KL Block Models

Model	Ktonnes	Copper	Gold	Silver	Difference (%) in Contained Metal		
		%	gm/t	gm/t	Copper	Gold	Silver
					Positive is Increase from Previous Model		
Kuching Liar Minable Shape, M+I+I Tabulated							
Aug16	768,813	1.115	1.035	4.97			
Aug17	767,557	1.107	1.027	4.97	-0.9%	-0.9%	-0.2%
Grasberg Minable Shape, M+I+I Tabulated							
Aug16	944,394	1.103	0.816	3.75			
Aug17	944,778	1.113	0.817	3.77	0.9%	0.2%	0.6%

The two models are similar in the test areas with small positive and negative differences. The primary reason for the differences are the minor geometry changes of the revised 2017 geologic interpretation.

9.0 KUCING LIAR MINABLE RESERVES

The Kucing Liar (KL) minable reserve and mine plan was updated during 2017 based on the August 2017 GRS-KL model and updated project economic input. The update incorporated a revised run of the PCBC mine schedule that is used to define the KL reserve.

PTFI utilizes the PCBC routine to assist in the development and scheduling of planned block cave tonnage and grade inclusive of estimated dilution. IMC has manually checked the PCBC dilution procedures in the past and found them to be repeatable and logical. In general, the PTFI application of the PCBC dilution algorithms reflects primarily vertical dilution.

A mine schedule was developed by PTFI based on the 2017 block cave mining plan and schedule from PCBC. However, the last several years of that schedule extend beyond the time period of the existing Contract of Work (COW). As a result, planned block cave production tonnage in years after 2041were transferred to the resource category.

The primary undercut elevation for the KL is the 2605 elevation. Figure 9-1 illustrates the undercut pattern on the 2605. The northeast component of the KL cave undercuts the Grasberg block cave above. Consequently, the northeastern component of the KL cave is delayed to allow completion of the Grasberg block cave.

The Kucing Liar deposit is scheduled to start initial production in 2025 once the GBC and DMLZ caves are well established. The reserve basis of KL is established by the time period remaining in the contract of work through the end of 2041. There is also a total production capacity limit at the mills of 240,000 tpd. Changes in the DMLZ and GBC production schedules this year reduced the amount of ore required from KL to fill the process plant to capacity. As a result, there was a reduction of KL reserves of about 47.8 million tonnes.

Without extension to the contract of work, delays that trigger a reduction of the production tonnage at KL could potentially limit the future reserves and future economic viability of the KL deposit.

Figure 9-2 is a three dimensional representation of the KL and the Grasberg block caves. The cave height is higher along the southwest side of the KL along the Eidenburg fault zone as the ore grade mineralization has more vertical extent along the fault.

PTFI used net smelter return (NSR) to define mine planning and block economics rather than equivalent copper grade. This decision is driven primarily by the use of variable process recoveries by metallurgical ore type. The process recoveries for each of the ore type units are presented later in this section.

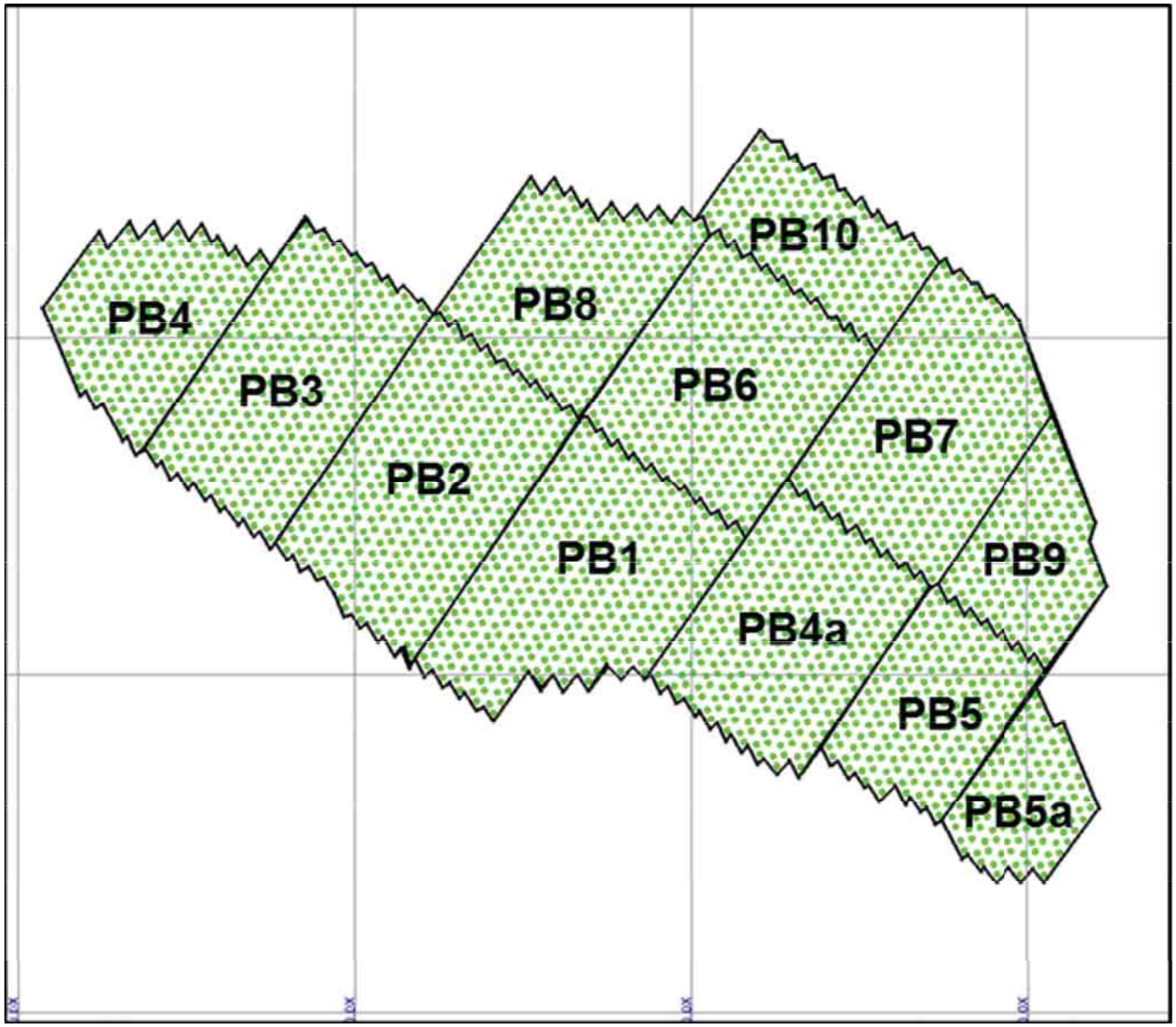


Figure 9-1
KL Block Cave Undercut and Drawpoint Layout in 2605 Elevation

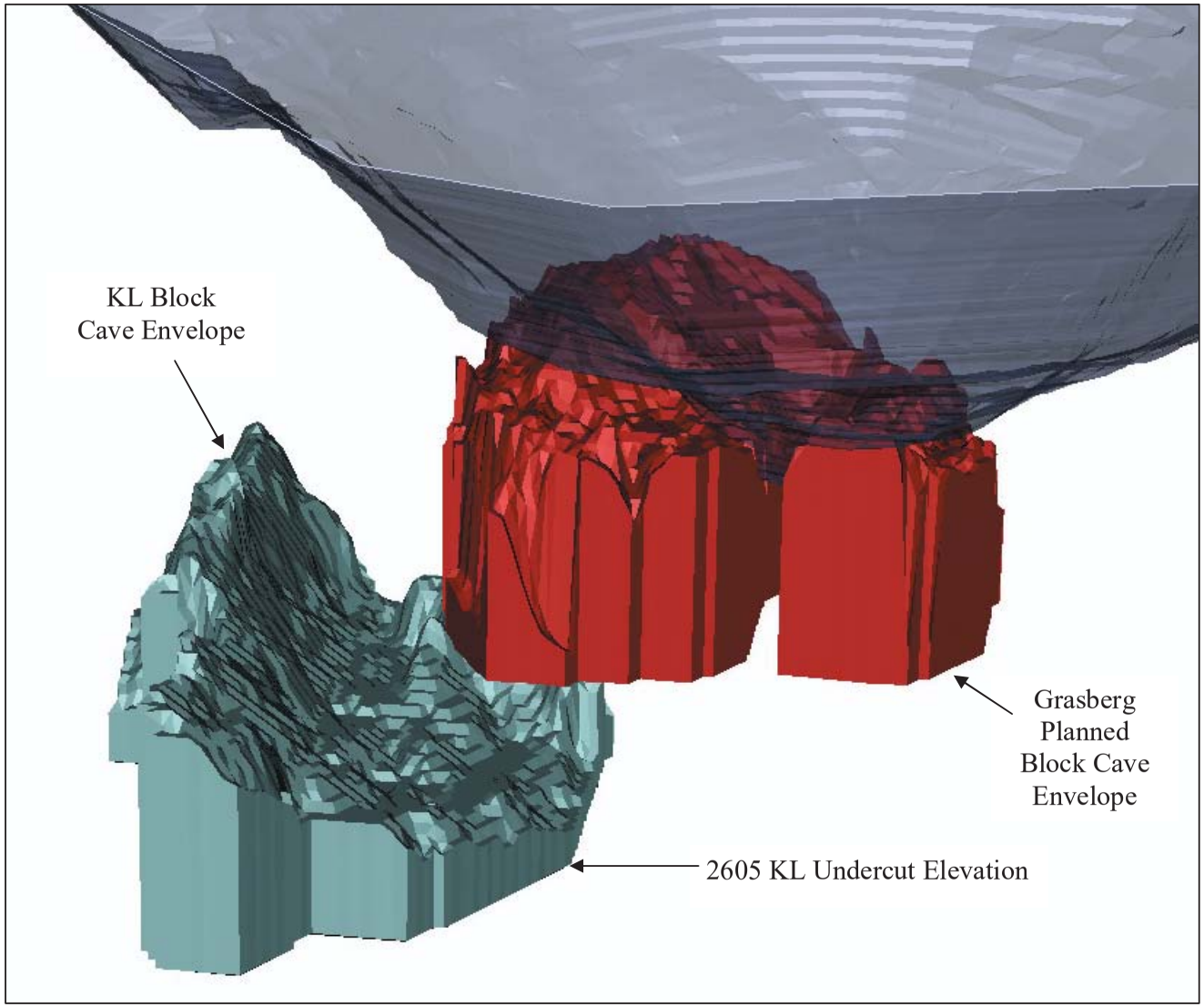


Figure 9-2
KL and Grasberg Minable Envelopes
Perspective View Developed by PTFI
Looking West

The economic table that follows summarizes the input data used to establish the KL minable reserve during 2016.

Kucing Liar PCBC Input Parameters

Total Mining Cost, Mining, milling, overheads and indirects, excludes footprint development cost.	$27.54 / tonne
Drawpoint Hurdle Cost,	$610,000 / drawpoint
Metal Prices: Economics Applied to Measured and Indicated Only	$2.00 /lb Cu $1,000 /oz Au $15.00 /oz Ag

Mill Recoveries in Percent are based on the Ore Type Codes for both GRS and KL.

KL Unit Recoveries are:

Strat Unit		NPNM	LPLM	LPHM	HPLM	HPHM
Tertiary Waripi	Copper	90.9	90.9	93.3	76.7	87.6
	Gold	56.5	56.5	60.3	28.2	42.3
	Silver	60.8	60.8	61.4	29.1	37.5
Cret. Kembalangan,	Copper	93.5	93.5	93.3	89.9	93.7
	Gold	60.8	60.8	60.3	39.3	61.1
	Silver	74.1	74.1	61.4	41.3	47.1

LPLM = Low Pyrite, Low Magnetite for example

Copper Concentrate Grade % Copper

Strat Unit		NPNM	LPLM	LPHM	HPLM	HPHM
Tertiary Waripi	Copper	25.0	25.0	25.0	15.0	20.0
Cret. Kembalangan,	Copper	25.0	25.0	25.0	15.0	20.0

Smelter Recoveries,	96.5% Cu 97.0% Au 76.9% Ag
Smelting, Refining, and Freight Charges, Vary with Concentrate Grade IMC Calculated Average	$0.404 /lb Cu $5.00 /oz Au $0.35 /oz Ag
Royalty:	4.00 % Cu, 3.75% Au, 3.25%Ag

The net smelter revenue multipliers vary by ore type and cover the range of

$24.74 to $29.33 per tonne of 1% Copper,
$ 8.34 to $17.83 per tonne of 1 gm/t Gold,
$ 0.10 to $ 0.26 per tonne of 1gm/t Silver

IMC has calculated the average revenue multipliers using the above inputs and the average process recoveries that are reported for the reserve (87.6% Cu, 45.6 % Au, and 50.9% Ag) as a check on the PTFI calculation and obtained: $28.26 per tonne of 1% Copper, $13.48 per tonne of 1 gm/t gold and, and $0.18 per tonne of 1 gm/t silver. The average results fall in the ranges utilized for the PCBC runs.

The PCBC production schedule and resulting diluted block cave reserve is presented on Table 9-1. The total reserve is less than reported in December 2016, because the KL production rates are less due to the change in the GBC and DMLZ cave rates.

IMC tabulated the tonnage and grade reported from the Aug16 block model from the KL mine plan geometry. The IMC tabulation does not include dilution but does provide a basis of comparison between the IMC non-diluted estimate of minable material versus the PTFI diluted mine plan.

The table below summarizes the results:

PTFI and IMC Tabulations	KL-BC Reserve Check, 31 Dec 2017			
	Ktonnes	Cu %	Au gm/t	Ag gm/t
PTFI Mine Plan, Diluted	696,153	1.08	1.00	5.20
IMC Check Tabulation	739,482	1.12	1.04	5.05
Difference	6.2%	4.1%	4.1%	-2.9%

The reduction in grades for copper and gold between the above two estimates are a function of the dilution calculations within PCBC. The loss of grade is not as significant as would be typically expected because much of the overlying “dilution” is located along the Eidenburg fault. The grades along that fault are often better than average. The diluted silver grade is higher that the undiluted value because the overdraw dilution near the Eidenburg fault is substantially higher in silver grade than the average grade of the deposit.

The overestimation of tonnage within the IMC check tabulation is due to the procedure that is utilized by PTFI to code blocks within the cave envelope. The block coding to the nearest whole block incorporates slightly more cave height than the PCBC procedure.

Table 9-1

Kucing Liar Block Cave
Minable Reserve, December 31, 2017
Proven and Probable Reserves

	KL-BC Minable Reserve			
	Ktonnes	Cu %	Au gm/t	Ag gm/t
Reserve	359,883	1.25	1.07	6.48
Mill Recoveries		87.6%	45.6%	50.9%
Smelt-Refining Recovery		96.5%	97.0%	76.9%
Recovered Metal		8,401 Mlbs	5,466 Kozs	29,313 Kozs

Year		KL PCBC Reseve Support Schedule			
		Ktonnes	Cu %	Au gm/t	Ag gm/t
1	2025	486	1.12	0.59	4.18
2	2026	1,293	1.22	0.67	5.37
3	2027	3,891	1.25	0.76	5.62
4	2028	4,835	1.24	0.81	5.52
5	2029	8,651	1.17	0.81	5.13
6	2030	15,460	1.18	0.84	5.19
7	2031	23,720	1.27	0.95	5.48
8	2032	25,502	1.34	1.10	5.89
9	2033	25,820	1.34	1.17	6.31
10	2034	28,632	1.30	1.17	6.67
11	2035	28,632	1.26	1.16	7.11
12	2036	30,376	1.24	1.13	7.33
13	2037	31,176	1.25	1.12	7.51
14	2038	31,176	1.27	1.10	7.45
15	2039	31,176	1.29	1.08	6.85
16	2040	32,557	1.23	1.04	6.23
17	2041	36,500	1.11	1.01	5.66
Total Reserve		359,883	1.25	1.07	6.48

tab9-1.xls

KL-BC Cash Flow and Sensitivity Check

IMC modified the economic inputs and developed an independent pre-tax cash flow analysis of the KL-BC operation. The production schedule utilized for the cash flow analysis is summarized on Table 9-1.

IMC cash flow calculations applied Mill + Ore flow + G&A operating costs of $17.35tonne. Mining costs were set on an annual basis which average $11.80 per tonne ore. Recoveries were as provided in the PTFI cutoff grade spreadsheets for the KL component of the district mine schedule. Initial and sustaining capital are as developed within the PTFI 2015 development plan. Although ore flow starts in year 2025, development costs are started in 2019, so discounting was calculated to the beginning of 2019 for the IMC cash flow check,

The summary results of the IMC pre-tax economic analysis and sensitivity analysis are as follows:

IMC Cash Flow Sensitivity Check for the KL-BC

		ROI
Base Case:	$2.00/lb Cu, $1,000/oz Au, and $15.00/oz A	7.8%
Metal Price Sensitivity:	$1.67/lb Cu, $835/oz Au, and $12.53/oz Ag	0.1 %
Using Base Case Metal Prices:		
Operating Cost Sensitivity:	Operating Costs x 1.30	0.1%
Capital Cost Sensitivity:	Initial Capital x 2.25	0.1 %

The sensitivity to low metal prices or increased costs can be seen in the above results. The project is robust to metal prices that are 16% below the design values.

Using the $2.00/lb and $1,000/oz Au metal prices, increasing operating costs by a factor of 1.30 would result in a breakeven project on a time value of money basis. Capital costs could increase by a factor of 2.25 and still result in a breakeven project.

KL could face economic challenges in the future if there are significant delays in the development and project start. Unless there is an extension to the Contract of Work (COW) any delay in project start results in a loss of ore reserves due to the fixed end time for the COW of 2041. The reduced production rate for KL and the corresponding loss of reserve in 2017 compared to 2016 have already limited the project return to a value less than 10% at the reserve metal prices.

Cutoff Check on PCBC Minable Envelope

The PTFI procedure for use of PCBC is to base cutoff on NSR values per tonne rather than a metal or equivalent metal cutoff. IMC calculated the breakeven cutoff grade in equivalent copper terms for undercut of drawpoints based on the average of the PTFI provided cost and development data as a check on PTFI calculations. Using the summarized average recoveries and operating costs presented earlier in this section, the breakeven cutoff grade would be roughly 0.97% Eqcu at the $2.00 /lb base metal prices. Internal cutoff would be 0.61% Eqcu

IMC developed a map of the undiluted draw column grades for each column of model blocks in the KL minable envelope. Of the original 739 million tonne envelope of premine reserves (IMC tabulation), there are about 35.9 million tonnes of undercut material with the draw column grade less than 0.97% eqcu, (about 5% of the reserve). If the internal cutoff is applied the percentage drops to 1.2% of subgrade columns. This calculation indicates that the boundary of the block cave undercut is robust to the design metal prices and there is little material that is undercut that is of marginal value.

KL Resource

Resources as discussed in this report reflect the JORC definitions in Australia. The measured and indicated components of the resource qualify as Additional Mineralized Material under the U.S. SEC definitions.

The PTFI resource estimates are within approximate minable geometries based on reasonable cutoff grades and include inferred category material within the resource estimate.

A component of the resource is the 336.3 million tonnes of material within the mine plan that is scheduled for production after 2041. That material is reported as resource. Two additional components were included in resources: 1) Continued overdraw of the planned 2605 undercut, 2) development of a lower undercut on the 2500m elevation that includes material currently underlying the reserve. The resulting total KL resources are tabulated on Table 9-2.

The break out of the component resources are based on IMC tabulations from the block model rather than PTFI sourced values. The total resource reported on Table 9-2 matches the reported resource on Table 2-3 for the KL deposit.

Table 9-2
KL Resource
Measured, Indicated, and Inferred Categories
December 31, 2017

Resource Source	Measured				Indicated				Measured + Indicated			
	Ktonnes	Copper %	Gold gm/t	Silver gm/t	Ktonnes	Copper %	Gold gm/t	Silver gm/t	Ktonnes	Copper %	Gold gm/t	Silver gm/t
Scheduled after 2041	127,385	0.95	0.98	4.23	193,492	0.92	0.96	3.87	320,877	0.93	0.97	4.01
Overdraw+Undercut 2600	7,163	0.90	0.77	4.01	271,024	0.62	0.66	4.90	278,187	0.63	0.66	4.88
Additional Undercut on 2500	30,052	0.96	0.64	3.61	100,553	0.93	0.65	3.50	130,605	0.93	0.65	3.53
Total Resource	164,600	0.95	0.91	4.11	565,069	0.78	0.76	4.30	729,669	0.82	0.80	4.26

Resource Source	Inferred			
	Ktonnes	Copper %	Gold gm/t	Silver gm/t
Scheduled after 2041				
Overdraw+Undercut 2600	6,581	0.49	0.20	1.28
Additional Undercut on 2500	4,887	0.45	0.69	2.49
Total Resource	11,468	0.47	0.41	1.80

tab9-2.xlsx

10.0 GRASBERG MINABLE RESERVES

The Grasberg ore reserve has two components: 1) the currently operating open pit, and 2) a block cave currently under development to follow the completion of the pit. The Grasberg open pit produced roughly 40.0 million tonnes of ore to the mill during 2017 from a total material movement of about 60.1 million tonnes.

1) The open pit statement of reserves for December 31, 2017 is based on the GRS-IPM that was assembled by PTFI staff during December 2017 and an updated mine plan.

2) The underground reserves for December 31, 2017 are based on the Aug17 GRS-KL model and an updated block cave mine plan and schedule.

The Grasberg pit and stockpile reserve reduced by about 29.2 million tonnes compared with last year. Production to the mill and stockpile was about 36.3 million tonnes of ore and low grade. A stockpile strategy is in place and re-mining of the stockpile is included within the reserve plan. Roughly 43% of the total Grasberg pit reserve is from stockpile.

10.1 Open Pit Minable Reserve

The ore reserve procedure for the Grasberg open pit utilizes a conventional and straight forward mine planning approach. The procedures followed for the December 31, 2017 statement of reserves were as follows:

Mine Planning Procedures:

1. Phase or pushback designs have been developed by PTFI mine planners including mine access roads and equipment working room.
2. The tonnage and grade contained within the remaining pushback design was tabulated on a bench by bench basis from the GRS-IPM block model.
3. PTFI utilizes an open pit production scheduling software routine to develop a schedule that meets the ore requirements at the mill. The mine schedule is now reduced to a simple bench by bench extraction sequence from the remaining single pushback.
4. Stockpile accounting of material into and out of the stockpile is now a significant component of the remaining GRS reserve (43%).

There is effectively only one pushback remaining in the Grasberg open pit mine plan. Slope angles have been increased for the remaining 12 benches to interramp angles of 58 to 63degrees which will require double benching and pre-splitting to achieve. The ore release schedule as outlined above is now simplified to the waste associated with the remaining ore on the remaining benches in the final pushback.

The mine schedule that is presented in the 18Q1R1 mine plan utilizes cutoff grade of 0.25% Eqcu cutoff during the final 15 months of the pit life, scheduled to complete in March 2019.

During the few remaining months of open pit life, no material is specifically sent to stockpile. Overbank material from the remaining pit operations will act as a stockpile and amounts to about 2% of the planned remaining pit reserve.

Geotechnical considerations are primary controls on the remaining open pit plans at Grasberg. Instability in the pit could impact the production of the remaining reserve. In the opinion of this author, the recent approach to steepen the last dozen benches of the pit has substantial risk. It is understood that the rock types remaining in the pit bottom are better geotechnical units than those mined at higher elevations. However, the final pit walls on the west and southwest sides of the pit are approaching 900 m high at overall angles of 43 degrees with no catch structures in that 900 m height. Failures anywhere in the 900m above the remaining production levels present a risk. Continued diligent monitoring of the pit slopes is mandatory for operational safety.

Table 10-1 presents the PTFI developed mine production schedule for the remaining Grasberg reserve. As a check, IMC tabulated the model contained tonnage and grade from the PTFI phase design and replicated the PTFI production schedule by hand. The direct replication of the PTFI schedule utilized the equivalent multipliers published by PTFI to develop the Grasberg reserve (Eqcu= Cu + 0.6591 x Au + 0.0071 x Ag). IMC tabulations of remaining pit reserve are higher that PTFI by about 14%. The differences are due to the fact that IMC used actual end of 2017 for the tabulation rather than a projected plan.

The stockpile tabulation was checked by IMC by utilizing the end of 2016 stated reserve less reported production from the stockpiles plus pit material reported to stockpile. The result was about 9% less tonnage than the stated reserves. PTFI notes that the stockpile survey at the end of 2017 added the tonnage difference of 9%.

PTFI reports that they have 5 stockpiles that constitute the remaining stockpile reserve. Overbank is a component of stockpile although it is reported as pit tonnage on Table 10.1. Other in-pit stockpiles were created as pit wall buttresses and their tonnage is based on truck count. Once material is stockpiled, the mill recovery is set to the lowest value of all process types considered at Grasberg to allow for oxidation.

PTFI reports stockpile material as “proven” category when required to do so under AusIMM JORC standards. IMC holds the opinion that this material should be reported as “Probable”. This opinion has no impact on U.S. reporting under the SEC guidelines.

Table 10-1

Grasberg Open Pit
Proven and Probable Reserve as of December 31, 2017

	Grasberg Pit + Stkp Reserve			
	Ktonnes	Cu %	Au gm/t	Ag gm/t
Pit Reserve	33,257	1.29	2.64	3.63
Stkp Reserve	25,661	0.58	0.41	1.63
Mill Recoveries for Pit		97.5%	93.6%	61.9%
Mill Recoveries for Stkp		65.0%	34.9%	46.0%
Smelt-Refining Recovery		96.5%	97.0%	76.9%
Pit Recovered Metal		890	2,558	1,848
Stkp Recovered Metal		204	113	475
		Mlbs	Kozs	Kozs

Grasberg Open Pit and Stockpile Production Schedule by PTFI, For Reserves

Year	Equiv. Cutoff	Mine and Stockpile Production Plan												Mine Waste	Total Material
		From Mine with Limestone				From Stockpile				To Mill					
	%	Ktonnes	Cu	Au	Ag	Ktonnes	Cu	Au	Ag	Ktonnes	Cu	Au	Ag	Ktonnes	Ktonnes
2018	0.25	31,490	1.29	2.59	3.63	22,363	0.53	0.31	1.63	53,853	0.92	1.62	2.80	1,246	32,736
2019	0.25	1,767	1.34	3.41	3.63	3,298	0.49	0.35	1.63	5,065	1.45	1.85	2.88		
TOTAL		33,257	1.29	2.64	3.63	25,661	0.52	0.32	1.63	58,918	0.98	1.66	2.76	1,246	32,736

Notes: Eqcu = Copper + 0.6591 x gold + 0.0071 x silver
Annualized silver grades are approximate. Final Reserve Silver as reported by PTFI

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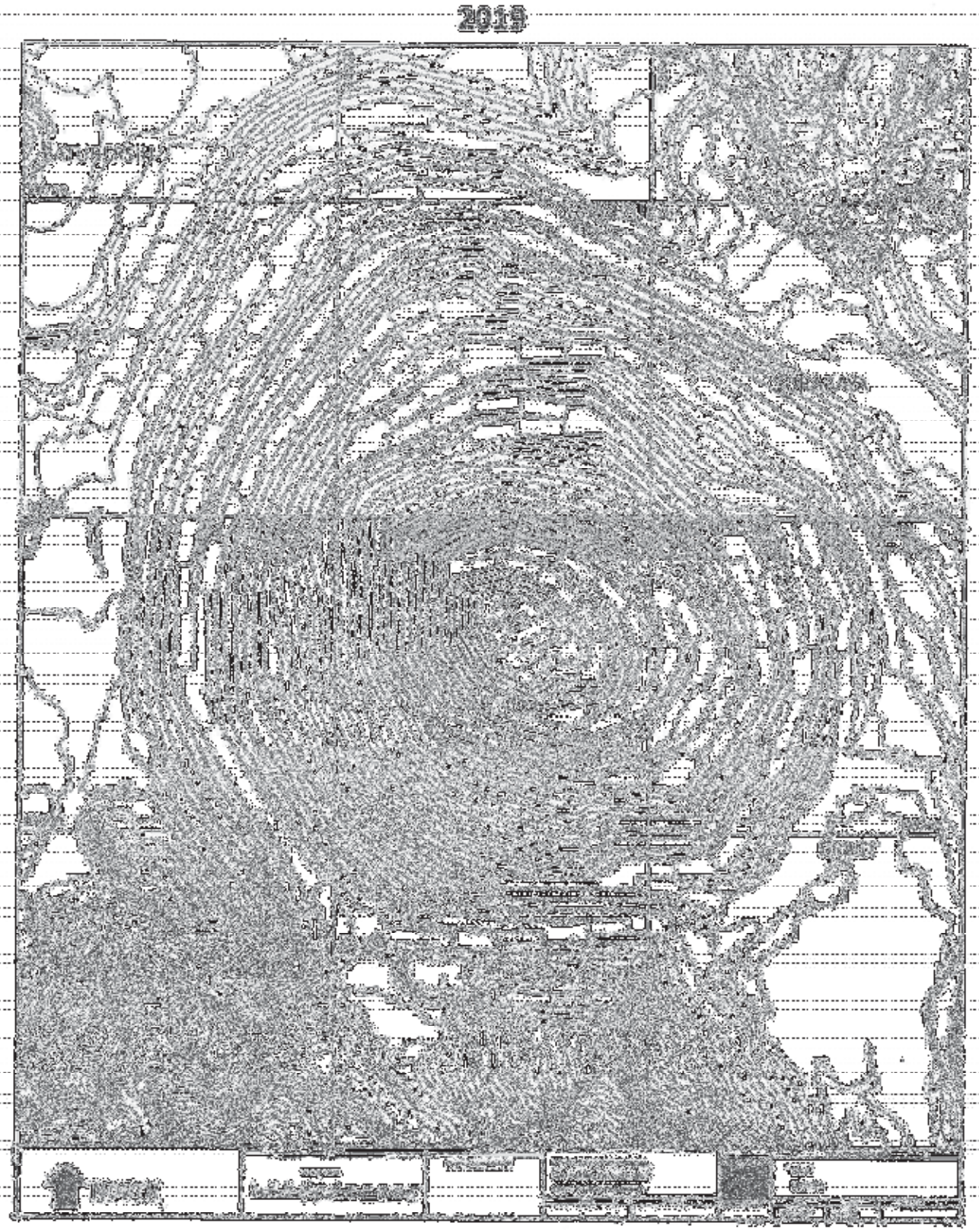


Figure 10-1
Grasberg Final Pit for Reserves

IMC Cash Flow and Sensitivity Check

PTFI has provided IMC with cost data that indicates breakeven and internal (With G&A) cutoff grades of 0.87% Eqcu and 0.55% Eqcu respectively based on the metal prices of $2.00/lb copper, plus gold and silver. It should be noted that the internal cutoff in the IMC calculation above covers the direct cost of ore flow, total milling cost, G&A and includes support costs and corporate overhead. If support and overhead are removed the marginal cutoff becomes 0.25% Eqcu.

The IMC cash flow test was calculated based on the information provided by PTFI. The calculations applied Mill + Ore flow + G&A + Support operating costs of $18.17 for all remaining years of pit production. During the last 2 years of stockpile mining, the mining cost was reduced to $3.00/tonne of stockpile ore. Mine operating costs were $10.73 and $5.70/tonne of total material (including stockpile movement) for 2018 and 2019 respectively. Process recoveries were based on the information in the district mine schedule guided by previous year recoveries and are more conservative than those reported with the statement of reserves. The PTFI production schedule from the district schedule was used (Table 10-1).

The summary results of the IMC economic analysis and sensitivity analysis are as follows:

IMC Cash Flow Sensitivity Check for the Grasberg Pit

		NPV 10% Millions
Base Case:	$2.00/lb Cu, $1,000/oz Au, and $15.00/oz Ag	$2.40
Metal Price Sensitivity:	$0.97/lb Cu, $435/oz Au, and $6.53Ag	$0.01
Using Base Case Metal Prices:		
Operating Cost Sensitivity:	Operating Costs x 2.56	$0.01

The sensitivity to low metal prices or increased costs can be seen in the above results. Using the base case prices of $2.00/lb, $1000/oz Au, and $15.00/oz Ag, the project operating costs and sustaining capital can increase by a factor of 2.56 and still breakeven on a time value of money basis.

IMC has assumed that the stockpile reclaim mining costs would be $3.00/tonne. Although this seems low by PTFI standards, it is well within the range of values for other operations remining stockpiles. No drilling, or blasting is required and the haul to the crusher is relatively short compared to the current pit hauls.

Grasberg Open Pit Resources

The Grasberg open pit no longer contains reportable resources. The mill cutoff is now equal to the historic resource cutoff grade for the MGI rock types. The heavy sulfide material is not longer exposed in the pit walls because the pit is now deeper than the heavy sulfide contact.

10.2 Block Cave Minable Reserve

The block cave minable reserve was updated during 2017 and is based on the Aug17 GRS-KL model. An economic block value approach to cutoff grade was utilized as applied at the other block cave deposits to establish the block cave reserve using the PCBC software as a guide.

The planned block cave undercut is on the 2850m elevation. A panel type haulage and development orientation is planned by PTFI with panels oriented in the 38 degree bearing orientation of the deposit. Panels drifts are planned to be driven through the low grade Kali core zone, but drawpoints would not be developed in that low grade area. The Grasberg block cave would follow completion of the pit. Development has started before pit completion but there will be only minor development production prior to finishing the open pit. Production is currently planned to ramp up to 160,000 tpd. That level of production is not anticipated until 2027.

Figure 10-2 is illustrates the undercut draw panel geometry and Figure 10-3 shows the location of the block cave looking northwest and north with the overlying Grasberg open pit.

PTFI is starting to use a refined block cave simulation tool called Cellular Automaton 3D (CA3D) for resource development. However, the 2017 reserves were based on PCBC as in past years. The CA3D software package provides more elegant simulation of pit wall failures over the cave and cave propagation into the drawpoints. The tool is being developed by the same team that developed the original PCBC routine. At this time, the economic controls on the block cave are still established by PCBC. The CA3D tool is used as an indication of resource material flow only. This allows evaluation of the 'depleted model' for remaining economic resource available for overdraw.

Pit Wall Failure Dilution

The procedure for estimating block cave dilution from the completed and overlying Grasberg open pit was similar to last year.

1) PTFI and their open pit geotechnical consultants developed estimated failure geometries of the open pit walls assuming initial undercut and displacement from block caving. The estimated failure geometries were updated for 2017.
2) The average tonnage and grade of the pit wall failure areas were calculated from the bock model.
3) That material was then removed from the pit walls, and the pit floor was filled with the average grade of the failed materials. The starting topography for PCBC was amended to reflect the post pit wall failure geometry with the failed material represented as fill in the pit bottom. Furthermore, an additional layer of fill material, with zero grade, was added on top of the estimated failed material with an average grade from the predicted failures. This was done to avoid the PCBC draw columns mining into open voids because that would be extremely unlikely to occur in actual mining

4) Only measured and indicated category material was used to contribute metal to the fill volume. Once assigned as failed fill, all failed material was reclassified as "indicated"
5) The relative percentage of fines within the fill material was set to a level that is double that of in-situ rock. This change to the PCBC input factors increases the rate of mixing and dilution with the overlying failed pit wall material.
6) The PCBC routine was run with the failure material filled pit as the base case topography. The average grades of failed material were: 0.22% Cu, 0.24 gm/t Au, and 2.39 gm/t Ag. The total failure tonnage was 634 Mtonnes. Not all of the failed material was produced from the cave.

The undercut area on the 2850 elevation is illustrated below.

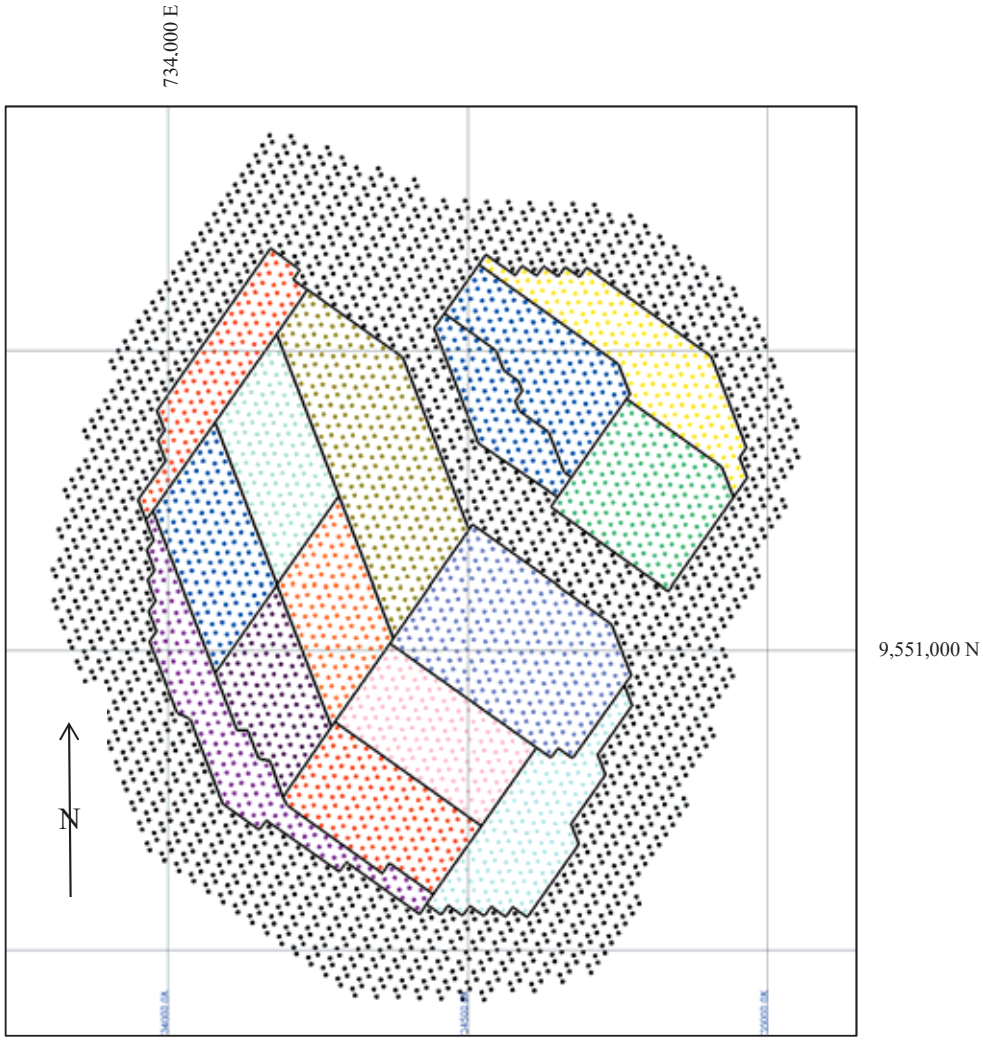
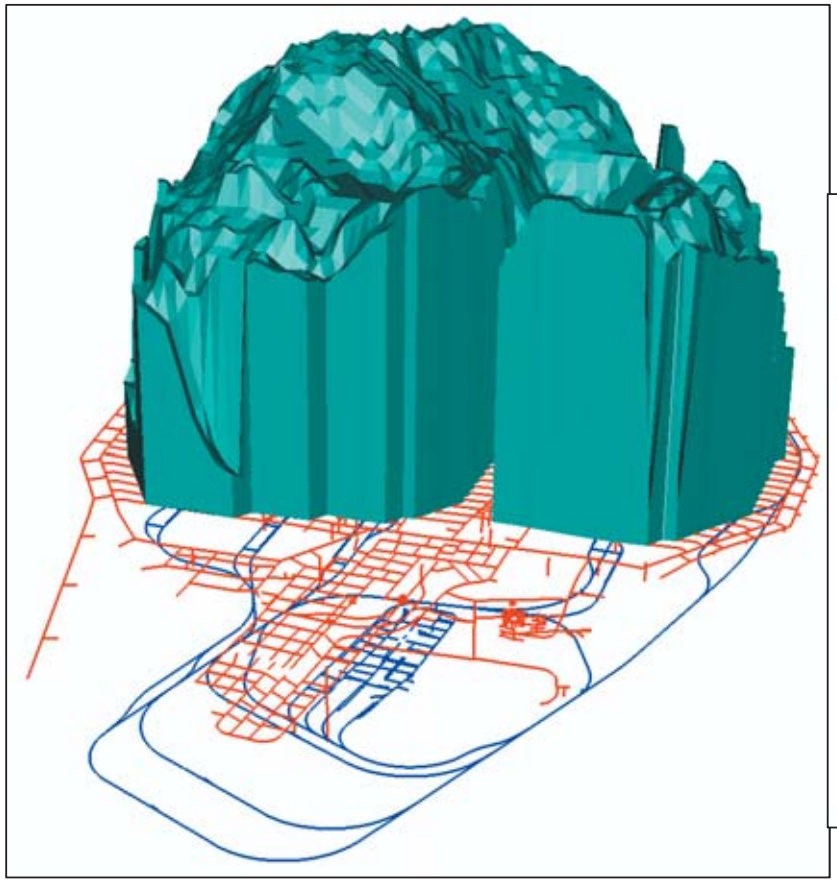
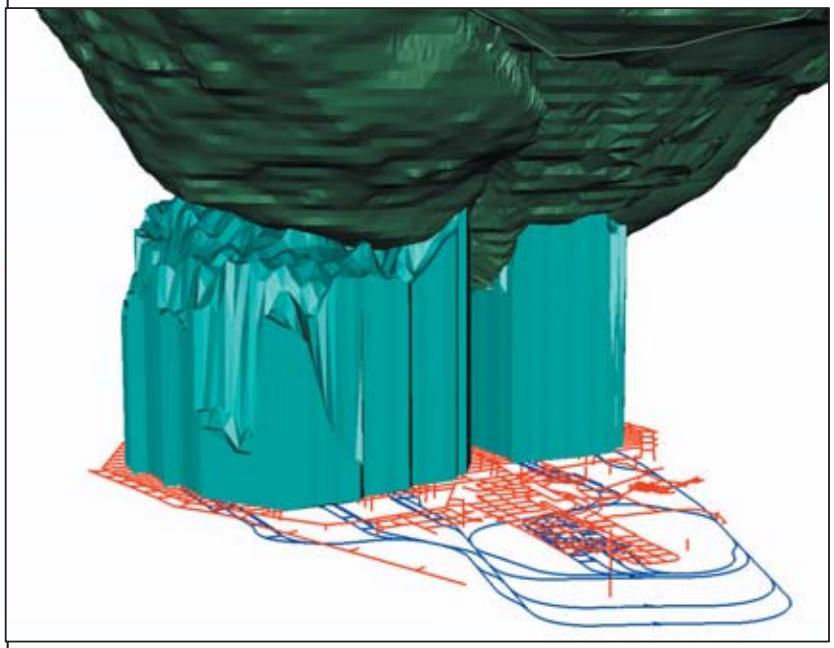


Figure 10-2 Block Cave Undercut on 2850 Elevation
500 m Grid



GRS-Block Cave Minable Envelope
Looking NW 308 Deg Bearing



GRS-Block Cave with Overlying Open Pit
Looking North

Figure 10-3
Illustration of Grasberg Block Cave

PCBC Mine Schedule

PTFI utilized the PCBC routine to develop the undercut geometry and the mine production schedule for the Grasberg block cave reserve.

The economic input for the GRS-BC during 2017 incorporated a declining mining cost over time. Prior to 2012, PTFI applied a fixed mining cost in all years as the input to the PCBC program. That cost incorporated all development costs against every tonne of ore in each draw column. The change during 2012 and continued through 2017 recognizes that once a column was developed, undercut, and well into production, the Mining+Process+G&A cost reduces to drawpoint repair and direct production costs.

The economic input to the PCBC routine as applied by PTFI to set the cave envelope was as follows for the Grasberg Block Cave.

Grasberg Block Cave, PCBC Input Parameters

Total Mining Cost, IMC Assumed as per 2016 Dev Plan Mining, milling, overheads and indirects, excludes footprint development cost.	$22.81 / tonne
Reduces by $0.28/tonne/yr from 2028 through 2041 until	$19.17 /tonne
Drawpoint Hurdle Cost	$610,000 / drawpoint
Metal Prices: Economics Applied to Measured and Indicated Only	$2.00/lb Cu $1,000/oz Au $15.00/oz Ag
Smelter Recoveries	96.5% Cu 97.0% Au 76.9% Ag
Smelting, Refining, and Freight Charges:	 $0.3529/lb Cu $5.00/oz Au $0.35/oz Ag
Royalty in %	4.0 Cu, 3.75 Ag, 3.25 Ag
PTFI Average Revenue multipliers:	$29.19/lb Cu, $20.00/g Au, $0.26/gm Ag

IMC Checks using the average recoveries match the above values within $0.01 per tonne..

Detailed input to revenue multipliers on an ore type by ore type basis is presented below.

Table 10-2
Grasberg Block Cave, NSR Input, Process Recoveries and Conc. Grade

Item	Grasberg Block Cave Ore Types						GRS-ABCD Types			
	OT1	OT2	OT3	OT4	OT5	OT6	OT11	OT12	OT13	OT14
Mill Recovery %										
Copper	92.00	88.80	89.40	84.00	92.30	74.40	98.70	92.00	86.20	66.60
Gold	75.10	72.70	69.70	67.60	65.30	52.10	87.20	91.70	78.40	35.30
Silver	81.50	82.10	89.80	84.50	70.70	50.50	63.70	59.70	56.00	43.30
Concentrate Grade										
Copper %	30.50	20.90	28.60	15.00	18.00	16.00	34.70	28.90	27.20	10.70
Value per 1 Unit in NSR Calculations										
Copper, $/lb	31.58	28.81	30.44	25.28	29.06	22.78	34.37	31.37	29.16	17.82
Gold, $/gm	22.21	21.5	20.61	19.99	19.31	15.4	25.78	27.11	23.18	10.44
Silver, $/gm	0.28	0.58	0.31	0.29	0.24	0.17	0.22	0.21	0.19	0.15

The ore types above are summarized by rock type as follows:

OT1 = Kali, OT2 = MGI, OT3 and OT4 = Dalam OT5 and 6 = Heavy Sulfide

Metallugical classfications of the deposit are further classified as:

OT11 = Type A OT12 = Type B OT13 = Type C OT14 = Type D problematic

The PCBC production schedule and resulting diluted block cave reserve is presented on Table 10-3.

Table 10-3
Grasberg Block Cave
Proven and Probable Minable Reserve as of December 31, 2017

	Grasberg Block Cave			
	Ktonnes	Cu %	Au gm/t	Ag gm/t
PTFI Reserve	963,474	1.01	0.72	3.52
Average of Mill Recoveries		87.5%	66.6%	74.5%
Smelt-Refining Recovery		96.5%	97.0%	76.9%
Recovered Metal		18,121 Mlbs	14,506 Kozs	62,488 Kozs

Year		Grasberg Block Cave Support Schedule			
		Ktonnes	Cu %	Au gm/t	Ag gm/t
1	2018	1,134	0.56	0.494	4.012
2	2019	2,068	0.88	0.670	2.747
3	2020	8,019	0.97	0.825	2.927
4	2021	18,173	1.07	0.962	3.101
5	2022	31,468	1.16	1.163	3.183
6	2023	44,881	1.20	1.315	3.328
7	2024	51,000	1.13	1.233	3.378
8	2025	55,232	1.01	1.040	3.234
9	2026	57,103	0.93	0.889	3.043
10	2027	58,400	0.87	0.769	2.828
11	2028	58,560	0.83	0.656	2.660
12	2029	58,400	0.87	0.578	2.690
13	2030	52,785	0.98	0.555	2.897
14	2031	44,500	1.05	0.553	3.229
15	2032	43,313	1.07	0.546	3.476
16	2033	42,800	1.09	0.534	3.777
17	2034	42,800	1.09	0.521	3.937
18	2035	42,800	1.08	0.508	4.006
19	2036	42,910	1.08	0.512	4.134
20	2037	42,800	1.11	0.545	4.369
21	2038	42,800	1.13	0.578	4.441
22	2039	42,800	1.04	0.572	4.213
23	2040	41,631	0.87	0.568	4.114
24	2041	37,101	0.79	0.696	5.261
Total		963,474	1.01	0.72	3.52

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Grasberg Block Cave Cash Flow and Sensitivity Check

IMC assembled an independent pre-tax cash flow calculation as a check on the financial status of the GRS-BC. The IMC check calculations used the mine schedule on Table 10-3.

The cash flow evaluation includes processing costs, G&A charges, mine capital and operating costs. These costs are based on the 2017 Development Plan. Summarized input estimates were: 1) Mill+Ore Flow+G&A = $16.32/tonne, 2) Variable mine operating costs that average $6.08/tonne, 3) Continued Development and Sustaining Capital that are variable but average 1.20/tonne after initial capital and, 4) Plant recoveries from the reserve district wide schedule. Initial capital before reaching full production is $3.28 billion over the period of 2018 through 2022. The summary results of the IMC economic analysis and sensitivity analysis are as follows:

IMC Cash Flow Sensitivity Check for the Grasberg Block Cave

		ROI %
Base Case:	$2.00/lb Cu, $1,000/oz Au, and $15.00/oz Ag	35.0%
Metal Price Sensitivity:	$1.31/lb Cu, $655/oz Au, and $9.83/oz Ag	0.7%
Operating Cost Sensitivity	Operating Costs x 1.75	0.9%
Capital Cost Sensitivity	Initial Capital x 6.2	0.0%

The sensitivity to low metal prices or increased costs can be seen in the above results. Using the base case prices of $2.00/lb, $1,000/oz Au, and $15.00/oz Ag, the project operating and remaining capital costs can increase by factors of 1.75 and 6.2 respectively and still have positive ROI.

The IMC cash flow calculations are simplified pre-tax calculations and are not intended to replace or replicate more detailed PTFI calculations but act as a simple measure of the economic robustness of the reserve.

Cutoff Check on the PCBC Minable Envelope

The PTFI procedure for use of PCBC is to base economic cutoff on NSR values per tonne rather than a metal or equivalent metal cutoff. As a check, IMC calculated the breakeven cutoff grade in equivalent copper terms for undercut of drawpoints based on the PTFI reserve support economics and average recoveries. The breakeven cutoff would be roughly 0.77% Eqcu at the $2.00 /lb base metal prices and the mine+process+G&A cost of $22.38/tonne.

IMC developed a map of the undiluted draw column grades for each column of model blocks in the Grasberg minable envelope. The tabulation addresses the blocks that are outside of the final open pit. Of the 946 million tonnes (IMC check value) in the undiluted draw columns, before drawing pit wall caved material, there are 1.5% of the columns that are less than the 0.77% Eqcu breakeven cutoff.

Grasberg Block Cave Resource

There are two components of the Grasberg block cave resource: 1) expansion of the undercut on the 2815m level, and 2) deep Grasberg block cave with undercut below the current 2815m elevation (2,600 and 2,500 elevations).

The Grasberg block cave resource was based on PCBC runs that utilized $2.20/lb copper, $1,000/oz gold, and $20.00/oz silver. Declining cutoffs were applied to the cave expansion and over draw case to reflect mine costs after development is complete.

The PTFI Grasberg Block Cave Resources are:

Table 10-4
Grasberg Block Cave Resource, December 31, 2017
Measured, Indicated, and Inferred Categories

Expanded Grasberg Cave, 2800 Elevation				
Category	Tonnes x 1000	Total Cu%	Gold gm/t	Silver gm/t
Measured	17,980	0.46	0.51	4.94
Indicated	264,813	0.58	0.56	3.28
Total	282,793	0.57	0.56	3.38
Inferred	10,774	0.12	0.26	1.87

Deep Grasberg Cave, 2500, 2600 Footprints				
Category	Tonnes x 1000	Total Cu%	Gold gm/t	Silver gm/t
Measured	70,277	0.71	0.56	2.90
Indicated	223,368	0.71	0.50	2.73
Total	293,645	0.66	0.47	2.64
Inferred	5,578	0.29	0.24	1.76

Total Grasberg Block Cave Resource				
Category	Tonnes x 1000	Total Cu%	Gold gm/t	Silver gm/t
Measured	88,257	0.66	0.55	3.31
Indicated	488,181	0.64	0.53	3.03
Total	576,438	0.64	0.54	3.07
Inferred	16,353	0.18	0.26	1.83

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11.0 RECONCILIATION

The purpose of the IMC reconciliation is to compare the predictive capability of the block models against the reported mill production. This procedure does not validate the mining process, the ore control sampling, or if a predicted mine plan was actually followed. The intent is to measure the ability of the block models to provide reliable estimates of future tonnage, grade, and metal production.

IMC has utilized the same approach to model reconciliation since 2007. The total of model predicted production is compared directly with mine and mill reported production. The impacts of stockpiling and development muck were handled as in the past years. Overbank mining at Grasberg was treated in the same manner as a stockpile with material into and out of the overbank volume.

During 2017, PTFI consolidated the approach to modeling the Grasberg. The GRS-KL model utilizes parallel techniques as the IPM model above a surface that represents the designed end of 2016. So above that surface, the IPM model and the GRS-KL model should be essentially identical. In previous years, this section reported the IPM model and the GRS-KL model separately as a measure of the effectiveness of both models. Since the models are the essentially the same above the 2016 pit surface there is no value in reporting them separately.

In order to confirm that opinion, IMC tabulated the historic response of both the IPM and GRS-KL models within the Grasberg pit. The 17 years of history were all nearly identical with the exceptions of years 2003 through 2007 where there were variations between the models of + - 5 to 9%. The reconciliation presented here addresses the GRS-KL model.

The reconciliation spreadsheet was expanded this year to include dedicated tracking for DMLZ, GBC, and Big Gossan. Production from the cave or stopes is recorded along with the total mine production records. Development is estimated as total mine production minus the cave production.

In all cases, model predicted tonnage and grade are “proven and probable” class material. Inferred is treated as waste. In order to obtain the model predicted input information, the following procedures were followed:

Model Predicted Estimates

Grasberg Pit

The following procedures were applied to both the GRS-KL model.

1) The mine progress maps for the Grasberg pit have been obtained in digital format by IMC since 1992. Since 1997, the mine progress geometries have been stored on a monthly basis. Since 2001, the monthly progress has been represented as monthly surface Tin files. We have utilized the surface files to report years 2001 through 2017.
2) The equivalent copper cutoff grade and the equivalent copper multiplier that was used for ore control has been recorded and archived with each mine progress shape.
3) The model prediction of ore tonnage and grade at the mine operational cutoff and equivalent multiplier is tabulated from the model being tested.
4) This approach applies the historic mined geometries backward in time in the same manner that a mine plan is developed forward in time. The model estimate of both tonnage and grade above cutoff is tabulated within an actual mining shape.
5) This procedure does not utilize a previous budget or forecast plan, but rather the actual mining geometries from survey. Therefore, any deviations from the mine plans are removed from this analysis.
6) The model used for this analysis was the Sep17, GRS-KL model reported out by PTFI in August of 2017.
7) When comparing one monthly surface to the next, minor fractions of ore and waste are often reported on benches that are not mined in that time period. This is caused by minor variations in the surface from one period to the next. IMC removed these minor tonnages and reports only those benches where mining was reported to have occurred.

DOZ Block Cave Predicted:

1) The Sep17 EESS block model (reported out by PTFI in August) was input into the PCBC block cave scheduling routine by PTFI personnel.
2) The PCBC program was then run by PTFI so that the production draw history from each draw point was “mined” from the block model by PCBC.
3) The standard PTFI dilution model was applied in the same manner as utilized when developing the mining plans and the reserve estimates.
4) The result is a diluted estimate of historic production as predicted by the Sep17 block model.

Table 11-1 summarizes the results of the model to mill comparison. The bullets that follow explain the contents of the data columns.

1) Total Models, Predicted: This is the total of Grasberg, DOZ, DMLZ, GBC and Big Gossan models prediction of cave or stope production. The Grasberg pit is the result of running the historic shapes and applying the appropriate cutoff grades along with the confidence and process codes. The DOZ, DMLZ, and GBC results are from the PCBC report of drawpoint only production with the model grades.

2) Net GRS Stkp Ovb Change: The monthly Grasberg reconciliation reports summarize the material mined, and the material sent to the crusher. The difference is the into-and-out-of the stockpile. Overbank was combined with the stockpile material. If the sign is negative, material that was mined was sent to stockpile and must be subtracted from the model prediction to report model predicted mill feed. The Stockpile Change is reported from the reconciled production report based on the blast hole model.

3) DOZ, GBC, DMLZ, BG Devel: The development muck from all underground mines is combined on this summary table. The tonnage and grade is added to the model prediction of production for comparison to the mill. The data source for this material is the monthly production records and the PCBC cave record.

4) Total Models with Adjusts: This is the sum of all items above.

5) Total Mines Production Record: This is the sum of the reconciled production reports from PTFI which is based on blast holes in the pit, and on DOZ, DMLZ, BG reported head grades.

6) Total Mills Production Record: This is reported mill production from the reconciled mill production reports.

7) Model to Mill + = Model High: This represents the percentage difference between the Total Model Estimates with the required adjustments and the Total Mill Production. Grade differences are measured in terms of contained pounds of metal including the tonnage difference.

The results of the analysis are summarized on Tables 11-1. During 2017, 25% of the total feed to the mill was made up of overbank, open pit stockpiles, and development. The estimated grades of these items are not necessarily related to the block models and do not receive the same QAQC procedures as applied to the modeling. About half of the material reported in Total Models with Adjusts came from the Grasberg block model.

Altogether, the PTFI models plus overbank, development and stockpile have predicted mill production within 1.7% in tonnage over the last 5 years.

Of particular interest is the change in tonnage estimation in 2016 when compared to surrounding years. The model underestimate the ore tonnage by 23.7 % during 2016. Production reports from PTFI indicate that cutoff grades were applied to ore control ranged from 1.0% to 0.6% Eqcu. A quick review of the grade tonnage response of the

model indicates that an average cutoff grade applied to the model of 0.60% Eqcu would bring reconciliation to the mill back into line. This issue appears to have reconciled during 2017 with most of the pit production at a 0.25 eqcu cutoff.

Scanning backward in time, the model predictions changed substantially in 2014, 2012, 2004 when compared with model results from last year. After some work to determine the reason, it appears that the variable called "Mplan" that accompanies the models for mine planning changed since 2016.

For comparison Table 11-2 presents the same tabulation using the 2017 models but applying the "Mplan" variable from the previous 2016 IPM model. The results are substantially more stable and parallel the results of previous years.

Mplan was originally intended to simply the application of several variables for mine planning.

Mplan is set to a code of 1.0 if:
- Confidence = Proven or Probable
- Reject Heavy Sulfide
- Reject Limestone
- Reject "Spotty" ore.

Comparing the Mplan 2016 to the Mplan provided in 2017, it appears that the rejection of spotty ore was not applied to the 2017 estimate. The use of the spotty ore code has always been controversial in that it is somewhat arbitrary compared to the detailed effort applied to geologic interpretation and estimation.

In this case, the impact of "spotty" on the remaining Grasberg pit reserves in 2018 and early 2019 is negligible. The application or omission of spotty not does not materially impact the remaining reserves.

Table 11-1

GRSKL Model included in Total Models Predicted
Grasberg Tabulations Limited to Benches with Mining Reported, Mplan = 1 to Report as Ore

Year	Total Models, Predicted			Net GRS Stkp Ovb Change			DOZ, GBC, DMLZ, BG Devel			Total Models with Adjusts			Total Mines Production Record			Total Mills Production Record			Models to Mill, + = Model High		
	Ktonnes	Cu %	Au gm/t	Ktonnes	Cu %	Au gm/t	Ktonnes	Cu %	Au gm/t	Ktonnes	Cu %	Au gm/t	Ktonnes	Cu %	Au gm/t	Ktonnes	Cu %	Au gm/t	KT %	CuMetal%	AuMetal%
2001	84,146	1.005	1.372				354	0.896	0.429	84,501	1.004	1.368	87,830	1.02	1.44	86,787	1.00	1.41	-2.6%	-2.5%	-5.2%
2002	81,896	1.187	1.340				437	0.923	0.602	82,333	1.186	1.336	87,025	1.21	1.27	86,001	1.14	1.24	-4.3%	-0.4%	3.3%
2003	76,503	1.041	1.403				403	1.112	0.392	76,906	1.042	1.398	74,638	1.14	1.49	74,103	1.09	1.54	3.8%	-0.7%	-5.8%
2004	79,557	0.809	0.782	-2,044	0.873	0.626	538	1.189	0.619	78,052	0.810	0.785	64,865	0.89	0.87	67,750	0.87	0.88	15.2%	7.7%	3.2%
2005	82,900	1.140	1.646	-1,057	0.016	0.000	868	1.170	0.605	82,710	1.155	1.657	75,578	1.20	1.68	78,907	1.13	1.65	4.8%	7.4%	5.0%
2006	87,219	0.923	0.858	638	0.200	1.557	887	0.865	0.772	88,744	0.917	0.862	80,190	0.92	0.87	82,350	0.86	0.86	7.8%	14.8%	8.3%
2007	80,190	0.792	1.053	2,789	0.742	0.616	1,086	0.868	0.671	84,065	0.791	1.034	76,897	0.87	1.20	77,591	0.82	1.24	8.3%	4.9%	-9.3%
2008	78,367	0.858	0.645	-8,278	0.568	0.275	1,084	0.691	0.781	71,174	0.889	0.690	72,101	0.83	0.68	70,595	0.83	0.66	0.8%	8.4%	5.3%
2009	83,136	1.002	1.328	3,036	0.839	0.556	727	0.819	1.086	86,900	0.995	1.299	84,952	0.94	1.24	86,973	0.98	1.30	-0.1%	1.2%	-0.1%
2010	71,795	0.918	1.032	7,198	0.641	0.513	1,140	0.841	0.620	80,134	0.892	0.979	83,317	0.82	0.91	84,009	0.85	0.90	-4.6%	0.4%	3.6%
2011	57,107	0.753	0.936	6,549	0.747	0.637	565	1.229	0.737	64,221	0.757	0.904	61,547	0.77	0.96	60,638	0.79	0.93	5.9%	1.4%	2.8%
2012	77,783	0.539	0.593	-1,618	0.058	0.111	587	1.299	0.780	76,752	0.555	0.604	60,105	0.62	0.59	60,379	0.62	0.59	27.1%	13.5%	29.3%
2013	69,401	0.706	0.741	1,682	0.668	0.539	772	1.637	0.710	71,855	0.715	0.736	64,896	0.75	0.69	65,418	0.76	0.69	9.8%	3.8%	16.4%
2014	52,530	0.671	1.065	632	4.687	3.381	549	0.973	0.535	53,711	0.721	1.086	42,805	0.82	0.99	43,985	0.79	0.99	22.1%	12.0%	33.9%
2015	63,831	0.640	0.731	-5,156	0.225	-0.105	1,058	0.742	0.679	59,733	0.678	0.802	58,315	0.67	0.76	59,322	0.67	0.79	0.7%	1.9%	1.6%
2016	53,300	0.991	0.716	-9,983	0.635	0.177	2,926	0.904	0.769	46,243	1.063	0.836	61,020	0.91	0.66	60,628	0.91	0.68	-23.7%	-11.3%	-6.0%
2017	40,530	1.121	1.421	10,882	0.675	0.290	2,437	0.818	0.615	53,849	1.017	1.156	54,122	1.02	1.18	51,262	1.01	1.15	5.0%	5.9%	6.0%
Totals	1,220,193	0.89	1.04	5,270	2.20	8.75	16,420	0.95	0.69	1,241,883	0.90	1.05	1,190,204	0.92	1.05	1,196,700	0.90	1.06	3.8%	3.4%	2.9%
Last 5 Years																					
13-17	279,593	0.80	0.89	-1,943	-2.03	-2.56	7,742	0.93	0.69	285,392	0.82	0.91	281,159	0.83	0.84	280,616	0.82	0.84	1.7%	1.5%	10.2%

Net GRS Stockpile Change combines Overbank and Stockpile production to the mill
DOZ Production Prediction Adjusted with addition of Development Muck for Comparison to Mill
2003 Stockpile Results Not Included due to Uncertainties of Failure Impact
Big Gossan, DMLZ, GBC Development Production included as Model Adjustment during 2009, 2010, 2011, 2012, 2013, 2014, 2016

p3433/hist_tin/dec17/Reconciliation_grskl_Mar18_update.xlsx

Table 11-2

GRSKL Model included in Total Models Predicted
Grasberg Tabulations Limited to Benches with Mining Reported

Mplan 2016 Used as a Test

	Total Models, Predicted			Net GRS Stkp Ovb Change			DOZ, GBC, DMLZ, BG Devel			Total Models with Adjusts			Total Mines Production Record			Total Mills Production Record			Models to Mill, + = Model High		
Year	Ktonnes	Cu %	Au gm/t	Ktonnes	Cu %	Au gm/t	Ktonnes	Cu %	Au gm/t	Ktonnes	Cu %	Au gm/t	Ktonnes	Cu %	Au gm/t	Ktonnes	Cu %	Au gm/t	KT %	CuMetal%	AuMetal%
2001	84,146	1.005	1.372				354	0.896	0.429	84,501	1.004	1.368	87,830	1.02	1.44	86,787	1.00	1.41	-2.6%	-2.5%	-5.2%
2002	81,896	1.187	1.340				437	0.923	0.602	82,333	1.186	1.336	87,025	1.21	1.27	86,001	1.14	1.24	-4.3%	-0.4%	3.3%
2003	71,769	1.100	1.482				403	1.112	0.392	72,172	1.100	1.476	74,638	1.14	1.49	74,103	1.09	1.54	-2.6%	-1.6%	-6.7%
2004	70,214	0.899	0.865	-2,044	0.873	0.626	538	1.189	0.619	68,709	0.902	0.871	64,865	0.89	0.87	67,750	0.87	0.88	1.4%	5.6%	0.8%
2005	79,059	1.184	1.710	-1,057	0.016	0.000	868	1.170	0.605	78,869	1.199	1.721	75,578	1.20	1.68	78,907	1.13	1.65	0.0%	6.3%	4.0%
2006	83,912	0.947	0.874	638	0.200	1.557	887	0.865	0.772	85,437	0.941	0.878	80,190	0.92	0.87	82,350	0.86	0.86	3.7%	13.4%	6.2%
2007	75,627	0.823	1.089	2,789	0.742	0.616	1,086	0.868	0.671	79,502	0.821	1.066	76,897	0.87	1.20	77,591	0.82	1.24	2.5%	3.0%	-11.6%
2008	76,598	0.870	0.650	-8,278	0.568	0.275	1,084	0.691	0.781	69,405	0.903	0.697	72,101	0.83	0.68	70,595	0.83	0.66	-1.7%	7.4%	3.8%
2009	79,710	1.032	1.366	3,036	0.839	0.556	727	0.819	1.086	83,474	1.023	1.334	84,952	0.94	1.24	86,973	0.98	1.30	-4.0%	-0.1%	-1.5%
2010	69,840	0.932	1.047	7,198	0.641	0.513	1,140	0.841	0.620	78,179	0.903	0.992	83,317	0.82	0.91	84,009	0.85	0.90	-6.9%	-0.9%	2.4%
2011	53,059	0.793	0.966	6,549	0.747	0.637	565	1.229	0.737	60,173	0.792	0.928	61,547	0.77	0.96	60,638	0.79	0.93	-0.8%	-0.6%	-1.1%
2012	65,390	0.590	0.561	-1,618	0.058	0.111	587	1.299	0.780	64,359	0.610	0.574	60,105	0.62	0.59	60,379	0.62	0.59	6.6%	4.6%	3.0%
2013	64,433	0.743	0.734	1,682	0.668	0.539	772	1.637	0.710	66,887	0.752	0.729	64,896	0.75	0.69	65,418	0.76	0.69	2.2%	1.7%	7.3%
2014	44,605	0.750	0.957	632	4.687	3.381	549	0.973	0.535	45,786	0.807	0.986	42,805	0.82	0.99	43,985	0.79	0.99	4.1%	6.9%	3.6%
2015	62,739	0.646	0.726	-5,156	0.225	-0.105	1,058	0.742	0.679	58,641	0.684	0.799	58,315	0.67	0.76	59,322	0.67	0.79	-1.1%	0.9%	-0.6%
2016	53,287	0.991	0.716	-9,983	0.635	0.177	2,926	0.904	0.769	46,230	1.063	0.836	61,020	0.91	0.66	60,628	0.91	0.68	-23.7%	-11.4%	-6.0%
2017	40,441	1.123	1.423	10,882	0.675	0.290	2,437	0.818	0.615	53,760	1.018	1.157	54,122	1.02	1.18	51,262	1.01	1.15	4.9%	5.8%	5.9%
Totals	1,156,727	0.93	1.07	5,270	2.20	8.75	16,420	0.95	0.69	1,178,417	0.93	1.07	1,190,204	0.92	1.05	1,196,700	0.90	1.06	-1.5%	2.0%	-0.3%
Last 5 Years																					
13-17	265,506	0.83	0.87	-1,943	-2.03	-2.56	7,742	0.93	0.69	271,305	0.85	0.89	281,159	0.83	0.84	280,616	0.82	0.84	-3.3%	0.1%	2.4%

Net GRS Stockpile Change combines Overbank and Stockpile production to the mill
DOZ Production Prediction Adjusted with addition of Development Muck for Comparison to Mill
2003 Stockpile Results Not Included due to Uncertainties of Failure Impact
Big Gossan, DMLZ, GBC Development Production included as Model Adjustment during 2009, 2010, 2011, 2012, 2013, 2014, 2016

p3433/hist_tin/dec17/Reconciliation_grskl_Mar18_update_mplan2016.xlsx

Model to Mine

Tables 11-3 and 11-4 summarize a comparison of the model predictions to reconciled mine reported production. Both tables use the GRS-KL model for the Grasberg estimate.

Table 11-3 utilizes “mplan” from 2017 and , and Table 11-4 applies “mplan” from 2016. The reports of Grasberg production on Tables 11-3 and 11-4 are extracted from production reports by PTFI. The stockpile adjustment has not been applied to the model or mine tonnages so both are estimates of the material removed from the pit or from the caves.

The Sep17 EESS block model prediction of DOZ production is compared against the DOZ reconciled production reports for the last 5 years. The DOZ portion of the table illustrates the production reported from draw points only which is a direct comparison of the model estimate. Tonnages match closely on this table because the PCBC simulation back in time used the reported tonnage from draw point that was reported from mine production.

The DOZ comparisons on Tables 11-3 and 11-4 are identical do not include development and swell muck within the model prediction. If one assumes a tonnage match between model and mine reported, the EESS model appears to be reporting higher gold grade than the mine for the last few years.

Table 11-3

GRSKL Model included in Total Models Predicted, Mplan = 2017
Annual Summary, Total of All Model Production vs Mine Reported Production

Grasberg Tabulations Limited to Benches with Mining Reported

	GRS Model, Predicted			GRS Mined, Reported			GRS Mod to Mined, + = Mod High		
Year	Ktonnes	Cu %	Au gm/t	Ktonnes	Cu %	Au gm/t	KT %	CuMetal%	AuMetal%
2000	75,286	1.03	1.10	76,849	1.08	1.18	-2.0%	-6.6%	-8.5%
2001	74,853	0.95	1.47	78,180	0.98	1.53	-4.3%	-7.9%	-7.7%
2002	67,346	1.15	1.48	72,018	1.18	1.41	-6.5%	-8.6%	-2.0%
2003	62,112	0.98	1.52	55,713	1.07	1.75	11.5%	2.4%	-2.8%
2004	64,149	0.76	0.80	50,963	0.83	0.92	25.9%	14.5%	9.6%
2005	68,449	1.13	1.84	61,318	1.15	1.87	11.6%	8.8%	9.8%
2006	71,609	0.88	0.91	63,055	0.86	0.90	13.6%	16.9%	15.1%
2007	61,755	0.77	1.22	54,587	0.87	1.43	13.1%	0.3%	-3.9%
2008	56,340	0.89	0.65	57,267	0.82	0.63	-1.6%	7.4%	2.3%
2009	57,576	1.09	1.60	54,885	1.07	1.52	4.9%	7.3%	10.1%
2010	44,244	1.02	1.27	45,920	0.95	1.16	-3.6%	3.5%	4.8%
2011	38,902	0.77	1.06	35,556	0.84	1.19	9.4%	-0.3%	-2.3%
2012	62,034	0.52	0.57	44,830	0.59	0.55	38.4%	20.8%	43.2%
2013	51,972	0.74	0.76	44,413	0.79	0.71	17.0%	8.8%	25.0%
2014	34,356	0.73	1.26	23,207	0.90	1.26	48.0%	18.7%	48.2%
2015	48,022	0.67	0.74	46,450	0.66	0.70	3.4%	6.0%	8.5%
2016	39,249	1.16	0.73	54,176	0.95	0.58	-27.6%	-11.8%	-8.8%
2017	28,848	1.38	1.75	29,121	1.36	1.80	-0.9%	0.2%	-3.6%
Totals	1,007,102	0.92	1.16	948,508	0.95	1.18	6.2%	2.4%	3.7%
Last 5 Years									
13-17	202,447	0.89	0.97	197,367	0.90	0.90	2.6%	1.6%	11.3%

p3433/hist_tin/dec17/Reconciliation_grskl_Mar18_update.xlsx

DOZ Model Predicted vs DOZ Total Reported as Mined

	DOZ Model, Predicted			DOZ Mined, Total Reported			DOZ Model to Mined		
Year	Ktonnes	Cu %	Au gm/t	Ktonnes	Cu %	Au gm/t	KT %	CuMetal%	AuMetal%
2011	18,205	0.73	0.67	18,877	0.65	0.64	-3.6%	7.7%	1.1%
2012	15,749	0.63	0.69	16,306	0.62	0.64	-3.4%	-2.0%	4.1%
2013	17,429	0.61	0.69	18,029	0.63	0.65	-3.3%	-6.8%	1.9%
2014	18,174	0.57	0.70	18,417	0.57	0.59	-1.3%	-1.4%	16.3%
2015	15,809	0.54	0.72	15,963	0.55	0.65	-1.0%	-2.0%	8.5%
2016	14,051	0.53	0.69	13,901	0.56	0.61	1.1%	-4.8%	14.0%
2017	11,390	0.45	0.57	11,390	0.50	0.54	0.0%	-10.6%	5.1%
Totals	110,807	0.59	0.68	112,884	0.59	0.62	-1.8%	-2.0%	7.0%
Last 5 Years									
13-17	76,854	0.55	0.68	77,701	0.57	0.62	-1.1%	-4.7%	9.2%

DOZ Mined tonnage is higher than modeled due to swell muck and development inclusion.

Table 11-4

GRSKL Model included in Total Models Predicted
Annual Summary, Total of All Model Production vs Mine Reported Production

Mplan 2016 Used as a Test

Grasberg Tabulations Limited to Benches with Mining Reported

	GRS Model, Predicted			GRS Mined, Reported			GRS Mod to Mined, + = Mod High		
Year	Ktonnes	Cu %	Au gm/t	Ktonnes	Cu %	Au gm/t	KT %	CuMetal%	AuMetal%
2000	75,286	1.03	1.10	76,849	1.08	1.18	-2.0%	-6.6%	-8.5%
2001	74,853	0.95	1.47	78,180	0.98	1.53	-4.3%	-7.9%	-7.7%
2002	67,346	1.15	1.48	72,018	1.18	1.41	-6.5%	-8.6%	-2.0%
2003	57,378	1.05	1.63	55,713	1.07	1.75	3.0%	1.2%	-3.8%
2004	54,806	0.87	0.91	50,963	0.83	0.92	7.5%	11.7%	6.4%
2005	64,608	1.18	1.93	61,318	1.15	1.87	5.4%	7.6%	8.7%
2006	68,302	0.91	0.93	63,055	0.86	0.90	8.3%	15.1%	12.4%
2007	57,192	0.81	1.28	54,587	0.87	1.43	4.8%	-2.4%	-6.6%
2008	54,571	0.91	0.66	57,267	0.82	0.63	-4.7%	6.2%	0.2%
2009	54,150	1.14	1.67	54,885	1.07	1.52	-1.3%	5.5%	8.3%
2010	42,289	1.05	1.30	45,920	0.95	1.16	-7.9%	1.5%	3.1%
2011	34,854	0.83	1.12	35,556	0.84	1.19	-2.0%	-3.5%	-7.5%
2012	49,641	0.58	0.52	44,830	0.59	0.55	10.7%	8.4%	4.9%
2013	47,004	0.79	0.75	44,413	0.79	0.71	5.8%	5.6%	12.0%
2014	26,431	0.87	1.13	23,207	0.90	1.26	13.9%	10.1%	2.8%
2015	46,930	0.68	0.73	46,450	0.66	0.70	1.0%	4.8%	5.2%
2016	39,236	1.16	0.73	54,176	0.95	0.58	-27.6%	-11.8%	-8.8%
2017	28,759	1.38	1.76	29,121	1.36	1.80	-1.2%	0.1%	-3.7%
Totals	943,636	0.96	1.19	948,508	0.95	1.18	-0.5%	0.7%	0.0%
Last 5 Years									
13-17	188,360	0.94	0.95	197,367	0.90	0.90	-4.6%	-0.3%	0.9%

'p3433/hist_tin/dec17/Reconciliation_grskl_Mar18_update_mplan2016.xlsx

DOZ Model Predicted vs DOZ Total Reported as Mined

	DOZ Model, Predicted			DOZ Mined, Total Reported			DOZ Model to Mined		
Year	Ktonnes	Cu %	Au gm/t	Ktonnes	Cu %	Au gm/t	KT %	CuMetal%	AuMetal%
2011	18,205	0.73	0.67	18,877	0.65	0.64	-3.6%	7.7%	1.1%
2012	15,749	0.63	0.69	16,306	0.62	0.64	-3.4%	-2.0%	4.1%
2013	17,429	0.61	0.69	18,029	0.63	0.65	-3.3%	-6.8%	1.9%
2014	18,174	0.57	0.70	18,417	0.57	0.59	-1.3%	-1.4%	16.3%
2015	15,809	0.54	0.72	15,963	0.55	0.65	-1.0%	-2.0%	8.5%
2016	14,051	0.53	0.69	13,901	0.56	0.61	1.1%	-4.8%	14.0%
2017	11,390	0.45	0.57	11,390	0.50	0.54	0.0%	-10.6%	5.1%
Totals	110,807	0.59	0.68	112,884	0.59	0.62	-1.8%	-2.0%	7.0%
Last 5 Years									
13-17	76,854	0.55	0.68	77,701	0.57	0.62	-1.1%	-4.7%	9.2%

DOZ Mined tonnage is higher than modeled due to swell muck and development inclusion.

Mine to Mill

The simple graph below summarizes the reconciled mine production from the last 5 years versus the reconciled mill tonnages and head grades for the same period. Grasberg production on this table does include stockpiled material that has been fed to the mill.

The table indicates that mine production reports are slightly conservative in metal prediction compared to the mill actual reports.

Table 11-5

Simplified Flow Sheet
Reconciled Mine Production and Reconciled Mill Production for 5 Years

Total All Mines		
Ktonnes	Cu%	Au gm/t
281,159	0.82	0.84

Grasberg Pit		
Ktonnes	Cu%	Au gm/t
195,424	0.93	0.93

DOZ Block Cave		
Ktonnes	Cu%	Au gm/t
77,701	0.5645	0.6151

Big Gossan		
Ktonnes	Cu%	Au gm/t
1,672	1.2171	0.6508

DMLZ		
Ktonnes	Cu%	Au gm/t
4,060	0.5977	0.8156

GBC		
Ktonnes	Cu%	Au gm/t
2,302	0.3288	0.5865

Total All Mills		
Ktonnes	Cu%	Au gm/t
280,616	0.82	0.84

Mine to Mill Difference		
Ktonnes	Cu%Lbs	Au Ozs
0.2%	0.4%	-0.1%

Negative Means Mines are Low Compared to Mill

p3434/report18/ftab11-5.xls

12.0 SARBANES-OAXLEY VERIFICATION

This section summarizes the results of the Ore Reserves Internal Controls Verification related to P.T. Freeport Indonesia (PTFI) for the calendar year 2017. This task was requested by PTFI in conjunction with the normal technical verification of ore reserves that has been completed annually by IMC for the last several years.

Members of the IMC staff were not able to travel to job-site during 2017 due to security concerns. John Marek of IMC met with PTFI Phoenix staff personnel on September 7, 2017 and on December 20, 2017 to collect documentation and to discuss model and mine plan procedures.

During the normal course of this work, PTFI transferred drill hole data, deposit block models, and mine plans to IMC for installation on the IMC computer system for independent checks of the PTFI reserve determination.

The list of Internal Controls was not modified from last year. Additional description of the IMC Sarbanes-Oxley (SOX) verification procedures have been incorporated into the checklists and summarized later in this text.

There are three control checklists. In total there are 22 Control ID's contained in the listed processes.

Internal Controls Check Lists

1) Data Acquisition

2) Block Model Assembly

3) Mine Plan and Reserve Determination

The following minor exceptions were noted during this review work.

Control ID: 2017-Mod001 addresses the procedures for extraction of data from the master database for input to the resource models.

> PTFI staff identified changes in some drill hole assays from previous years. They identified a change in procedure had occurred when selecting the appropriate assay when multiple assays are present. The procedure was corrected back to the SOP and additional training implemented for the staff.

Control ID: 2017-Dat001 is an independent comparison by IMC of the data down load from the previous year to the current year.

> The IMC check also identified the exception noted above. PTFI confirmed the IMC observation and informed IMC of the corrections to established procedures

The controls are effective and were able to identify the above exception with two independent controls. Issues were identified and the data corrected before being incorporated into the estimation of mineral reserves and resources.

There are no other material exceptions noted within this review.

Supporting Documents

The detailed checklists prepared by IMC accompany this letter in digital form. Their titles reflect the naming convention in the list presented earlier.

All documents that are referenced within the controls checklists will be archived on the IMC computer backup system along with the 2017 database, models, and mine plan information collected by IMC in the course of preparing this controls verification and the technical review of reserves.

Discussion of Internal Controls Verification Procedures

The Internal Controls Verification process (SOX verification) differs from the IMC technical verification in that the purpose is not to check the answer or verify the reserves, but to confirm that PTFI has internal processes in place for documenting and reporting all of the major procedures that are applied during the estimation of reserves. Consequently, the SOX verification is a review of documentation and a confirmation that the documentation was completed for a given process rather than a technical check on the process itself.

IMC requested the documentation for the 2017 Data Acquisition check based on the previous year's support documentation. All requested information was supplied by jobsite or Phoenix personnel in a timely fashion.

In particular, IMC generated a list of 8 drill holes which was a random start and series sample representing just over 13% of the copper bearing drilling completed during 2017. For these holes, IMC requested the "Data Completeness Forms". These forms report the completion of the major important tasks of data acquisition with the electronic signatures of both the completing and reviewing or accepting parties. This support data in itself represents a significant component of the data acquisition process verification.

The Geo Engineering department prepares several tracking spreadsheets and monthly reports. Drill production tracking was moved into the AcQuire software system during 2015 as opposed to the use of a spreadsheet in previous years. IMC requested AcQuire tracking reports for the period of 10 November 2017 through 15 January 2018 as a sample of the procedure. Review of the tracking documents adds support and credibility to the procedures reported in the monthly reports.

The tracking spreadsheets include:

Tracking Status IMC 2017.xlsx (extracted from AcQuire for IMC)
Sample_Despatch_Tracking.xls

The results, progress, and check procedures are reported to management by Geo Engineering department in the following monthly reports:

Monthly Reports to Management (January through October 2017)

Monthly Lab QA Report 2017XX-SFK.pdf
17(month)_GDS-Datamanagement_Monthly_(month)2017.docx

The assembly and completion of the block models and the technical reasonability of those models is reviewed as part of the IMC technical verification. The internal documentations of completion are the model release notes, and the subsequent use of the models by the mine planners for determination of the minable reserves.

IMC obtained and reviewed the model release notes to confirm that the model assembly tasks were completed and reported to PTFI management and to the mine-planning department.

The model release notes for 2017 were:

GRS-KL:	grskl_2017_model release note.docx
GRS Pit:	December 17_Grs_Published_IPM_v401.pdf
EESS:	EESS_2017_Resource_Mod_release notes.docx
BG:	BG_Aug_2014_model_release_FINAL.doc, amended by BigGossan_ResvChanges_21Dec17.docx

The BG model release notes of 2014 are still valid because the model for copper, gold, and silver has not been modified since that time. The calculation of equivalent copper (a mine planning tool) was updated as noted in the memo referenced above.

The block models are transferred to individuals in the mine planning departments to determine the component of the mineralization that qualifies as a reserve. Within PTFI, a reserve is comprised of all proven and probable confidence ore that is planned for production.

In order to establish the production component for each mine area, the PTFI mine planners complete a mine plan and the total of the material planned for processing constitutes the reserve. IMC completes several economic, and reasonability checks on the mine plans as part of the technical verification.

The SOX verification relies on the completion of "10-K" reserve update documentation by PTFI mine planners to confirm completion of the mine plans and that they were reported to management. The annual budget plan is also a key component in that reporting process because it is reviewed and approved for execution by senior management.

The mine plan reports for 2017 were:

GRS Pit: Plan_18Q1-R1.pdf
GRS BC: GBC end_2017 10-K_Update_Chapter_write-up-Final.docx
DOZ: DOZ end-2017 10-K Update_Chapter Write-Up_Final.docx
DMLZ: DMLZ end-2017 10-K Update_Chapter Write-Up_Final.docx
KL: KL end-2017 10-K Update_chapter write-up rev1_Final.docx
BG: BG 10-K Report 2017Q3v2.docx

Final documentation and reporting of the reserves and resources for review by management and reporting to the public are presented in the reserve and resource spreadsheets that are completed annually. The actual reserve tabulations within these spreadsheets are checked by IMC as part of the technical verification.

Internal reporting of reserves and resources are confirmed by the final sign off by the Manager of Resource Estimation and Reporting and approval by the President and COO - Indonesia

These reserve and resource final documents are:

end2017_rsrv_stmnt_22Jan2018_fnl.xlsx
end2017_reso_stmnt_19Jan2018_fnl.xlsx

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PT INDONESIA ASAHAN ALUMINIUM (PERSERO)

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US$1,000,000,000 5.230% Notes due 2021
US$1,250,000,000 5.710% Notes due 2023
US$1,000,000,000 6.530% Notes due 2028
US$750,000,000 6.757% Notes due 2048

Issue price for the 2021 Notes: 99.263%
Issue price for the 2023 Notes: 98.763%
Issue price for the 2028 Notes: 97.534%
Issue price for the 2048 Notes: 92.575%

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November 7, 2018