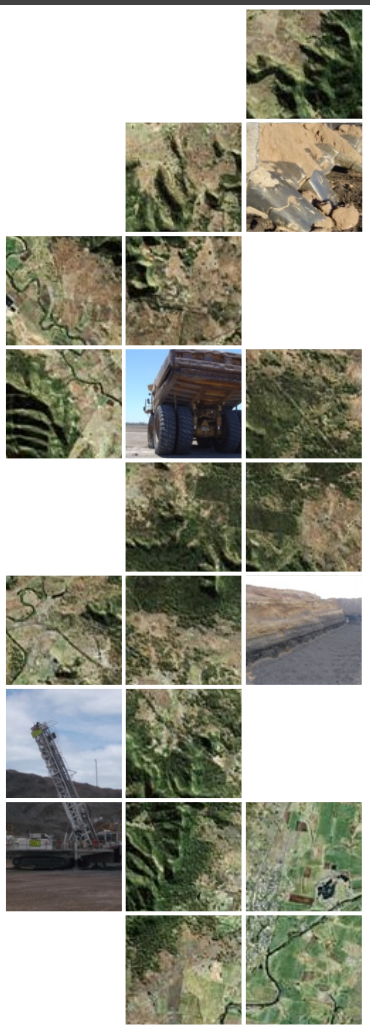
Appendix D – Coal Reserve Statement

Coal Reserve Statement
FEBRUARY 2017

Prepared For :

PT Rinjani Kartanegara



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Assumptions

All previous work is accepted as being relevant and accurate where independent checks could not or were not conducted.

All relevant documentation, along with the necessary and available data to make such a review has been supplied.

Key assumptions, some of which were verified by the client, are accepted as described in the relevant sections of the report.

Conditions

Statements in this document that contain forward looking statements may be identified by the use of forward looking words such as "estimates", “plans”, "intends", "expects", "proposes", "may", "will" and include, without limitation, statements regarding RK’s plan of business operations, supply levels and costs, potential contractual arrangements and the delivery of equipment, receipt of working capital, anticipated revenues, mineral Resource and mineral Reserve estimates, and projected expenditures.

It must be noted that the ability to develop infrastructure and bring into operation the proposed mines to achieve the production, cost and revenue targets is dependent on a large number of factors that are not within the control of SMGC and cannot be fully anticipated by SMGC. These factors include but are not limited to site mining and geological conditions, variations in market conditions and costs, performance and capabilities of mining contractors, employees and management, and government legislation and regulations. Any of these factors may substantially alter the performance of any mining operation.

The appendices referred to throughout and which are attached to this document are considered to be integral to this report. A copy of the appendices must accompany the report or be provided to all users of the report.

The conclusions presented in this report are professional opinions based solely upon SMGC’s interpretations of the information provided by RK referenced in this report. These conclusions are intended exclusively for the purposes stated herein. For these reasons, prospective estimators must make their own assumptions and their own assessments of the subject matter of this report. Opinions presented in this report apply to the conditions and features as noted in the documentation, and those reasonably foreseeable. These opinions cannot necessarily apply to conditions and features that may arise after the date of this report, about which SMGC has had no prior knowledge nor had the opportunity to evaluate.

ABBREVIATIONS

AC	Acid Consuming
ad	Air dried
adb	Air dried basis
AF	Acid Forming
AMDAL	“Analisis Mengenai Dampak Lingkungan” which translates as “Environmental Impact Assessment”. It contains 3 sections: the ANDAL, the RKL and the RPL.
ANDAL	“Analisis Dampak Lingkungan Hidup” which translates as “Environmental Impact Analysis” and is part of the AMDAL
APBI	“Asosiasi Pertambangan Batubara Indonesia” which translates as “Indonesian Coal Mining Association
ar	As received
arb	As received basis
ARD	Acid Rock Drainage
ASTM	American Society for Testing and Materials
bcm	Bank cubic metre
BOW	Base of weathering
Capex	Capital costs
CCoW	Coal Contract of Work
CHPP	Coal Handling and Processing Plant
CV	Measure of energy (kilocalorie) per kilogram
DCF	Discounted cash flow
DGMC	Directorate General of Minerals and Coal within the Ministry of Energy and Mineral Resources
DTM	Digital Terrain Model
EBIT	Earnings Before Interest and Taxes
EBITDA	Earnings Before Interest, Taxes, Depreciation and Amortisation
FC	Fixed carbon
Ft	Feet
gar	gross as received, being a basis of measurement of coal quality
ha	Hectare
HE	Hydraulic Excavator
HGI	Hardgrove Grindability Index
Hr	Hour
HHV	Higher Heating Value
ICMA	Indonesian Coal Mining Association
IM	Inherent Moisture
IPPKH	“Izin Pinjam Pakai Kawasan Hutan” which translates to “Permit to Borrow and Use Forest Land”
IRR	Internal Rate of Return
ITCI	PT ITCI Hutani Manunggal Plantation Company
IUP	“Izin Usaha Pertambangan” which translates to “Mining Business Permit”
JORC	The Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia
Kcal/kg	Unit of energy (kilocalorie) per kilogram
kg	Kilogram
Km	Kilometre
KP	“Kuasa Pertambangan” which translates to “Authority for Mine Workings”

kt	Thousand tonne
kV	Kilovolt
kWh	Kilowatt Hour
l	Litre
LAS	log ASCII standard
lcm	Loose cubic metre
LiDAR	Light Detection And Ranging
LOM	Life of Mine
m	Metre
M	Million
m^3	Cubic Metre
Mbcm	Million bank cubic metres
Mbcmpa	Million bank cubic metres per annum
MEMR	Ministry of Energy and Mineral Resources
MMPS	Mine Mouth Power Station
m/s	Metres per second
Mt	Million tonne
Mtpa	Million tonnes per annum
MW	Megawatt
NAF	Non Acid Forming
NAR	Nett As Received
NPV	Net Present Value
Opex	Operating costs
pa	per annum
PAF	Potential Acid Forming
PKP2B	Perjanjian Kerjasama Pengusahaan Pertambangan Batubara which translates to “Agreement for Coal Mining”
PPE	Personal Protective Equipment
RD	Relative Density
RK	PT Rinjani Kartanegara
RKL	“Rencana Pengelolaan Lingkungan Hidup” which translates as “Environmental Management Plan,” and is part of the AMDAL
RL	Relative Level (used to reference the height of landforms above a datum level)
ROM	Run of Mine
RPL	“Rencana Pemantauan Lingkungan” which translates as “Environmental Monitoring Plan” and is part of the AMDAL
SE	Specific Energy
SMGC	PT SMG Consultants Indonesia
SR	Strip ratio (of waste to ROM coal) expressed as bcm per tonne
SOP	Standard operating procedure
ST	Seam Thickness
t	Tonne
tkm	Tonne kilometre
TM	Total Moisture
t/m3	Tonne per cubic metre
tph	Tonne per hour
TS	Total Sulphur
TM	Total Moisture
VM	Volatile Matter

RELVENT REPORTS AND DOCUMENTS

1. “Coal Resource Statement, February 2017, Prepared for PT Rinjani Kartanegara” by SMGC.
2. “Coal Reserve Statement, April 2016, Prepared for PT Rinjani Kartanegara” by SMGC.
3. “Studi Geoteknik dan Hidrogeologi, Penambangan Batubara di Wilayah, IUP PT. Rinjani Kartanegara”, September 2012, PT LAPI ITB.
4. “Sampling Dan Kajian Geoteknik Untuk Mendukung Rencana Penambangan Batubara PT. Rinjani Kartanegara”, February 2014, Mining Technical Department - Universitas Pembangunan Nasional Yogyakarta.
5. “Kajian Geoteknik Rencana Penambangan Batubara di Wilayah Konsesi Blok II PT Rinjani Kartanegara”, January 2017, Study Centre for Mineral and Energy Research Institute and Community Service, Veteran’s University of National Development Yogyakarta.
6. Preston, KB and Sanders, RH, “Estimating the In Situ Relative Density of Coal”, Australian Coal Geology, Vol 9, pp22-26, May 1993.
7. Australian Guidelines for Estimating and Reporting of Inventory Coal, Coal Resources and Coal Reserves, 2003.
8. “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, The JORC Code 2012 Edition”, 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).
9. “Guidebook of Thermal Coal Sub-Bituminous Coal Second Edition”, Koichi Katoh APBI-ICMA 2011.

EXECUTIVE SUMMARY

BACKGROUND

PT SMG Consultants Indonesia (SMGC) has prepared an independent statement of Open Cut Coal Reserves for the PT Rinjani Kartanegara (RK) coal concession. This statement reports the estimated Coal Reserves contained within the concession as of 31st December 2016, which is the date of the latest survey of the mining areas provided to SMGC. The statement has been prepared in accordance with SMGC's interpretation of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Minerals Resources and Ore Reserves (the JORC Code). The RK concession is located in Kutai Kartanegara Regency, Province of East Kalimantan, Indonesia.

TENURE and PERMITS

Tenure for the concession is held under an operation production mining business licence (Izin Usaha Pertambangan – IUP Operasi Produksi) which was signed on 24th November 2009 and is valid until 24th November 2021. The area of the concession is 1,933 ha. The entire concession is classified as Production Forest, and thus a Permit to Borrow and Use Forest Land (Izin Pinjam Pakai Kawasan Hutan - IPPKH) is required from the Indonesian Forestry Department before mining operations can take place. RK have been issued two IPPKHs over a limited area of approximately 1,206 ha to include the mine, haul road and other infrastructure. These current permits, referred to as IPPKH1 and IPPKH2 are not sufficient to mine all the Reserves in this estimate.

A portion of the concession along the western boundary of the concession is controlled by PT ITCI Hutani Manunggal Plantation Company (ITCI) and has been excluded from the current IPPKH2. To allow the mine plan to be fully executed, an IPPKH2 expansion will be required into this area. This expansion into the ITCI Area is expected to be agreed with ITCI and granted by the forestry department by the end of 2017. It should be noted that while SMGC considers that there is a reasonable level of confidence that this IPPKH2 expansion can be approved by this time, it is not possible to make any guarantee that this can be achieved.

GEOLOGY AND RESOURCES

This Coal Reserve estimate uses the most recent geological model and Coal Resource estimate compiled by Mr. Abdullah Dahlan of SMGC and dated February 2017. Mr. Abdullah Dahlan is a Member of The Australasian Institute of Mining and Metallurgy and is a full time employee of SMGC. He has sufficient experience in coal geology and Resource evaluation to qualify as a Competent Person under the 2012 JORC code.

APPROACH

The geological model developed for the Resource estimate and the mined out and dump survey surfaces were the key inputs to the Reserve estimation process. The mined out surface was modified to ensure that no mined coal was included in the estimate where the geological model differed from the actual seam floor. The mined out and dump surveys were combined with the post clearing topographic survey and the LiDAR survey of the concession to produce the topographic surface for the concession as of the date of this estimate.

SMGC used pit optimisation software to generate a set of nested pit shells that defined the relationship between estimated Run of Mine (ROM) tonnes, sales price and stripping ratio. An economic model was built for the proposed operation and each pit shell from the optimisation process was analysed to determine the shell that best estimates the economic pit boundaries for the deposit given the assumed costs and coal prices. The pit shell that best estimated the breakeven pit limits was then selected and combined with the mined out area as the basis for the design of the ultimate pit. Coal Reserves were calculated by applying appropriate density adjustment and mining loss and dilution parameters to the Measured and Indicated Coal Resources inside the ultimate pit design.

MODIFYING FACTORS

Coal Reserves were estimated by applying appropriate modifying factors and exclusion criteria to the Coal Resources. Surface water management, infrastructure and the location of the IUP boundary were used to determine the surface constraints for the mining operation.

Surface water management in the RK concession is relatively simple as water generally flows away from the proposed pit area. Pit geotechnical design parameters were based on a number of geotechnical studies completed for the RK mine. These geotechnical studies analysed the slope stability for a number of sections through the pit highwall and endwalls and estimated the maximum overall slope in each location that met the criteria of a Factor of Safety (FOS) of 1.30.

Mining operations in the RK concession commenced in June 2012. The RK operation is an open pit mine using standard truck and excavator methods which are a common practice in Indonesia. The mine is operated by contractors and waste material is mined using hydraulic excavators and loaded into standard rear tipping off-highway trucks and hauled to dumps in close proximity to the pits or to in-pit dumps where possible. Coal is cleaned and mined using hydraulic excavators and hauled out of the pit using rigid body coal trucks approximately 32 km to the port stockpile. Coal mining is undertaken on an equipment hire basis and supervised by RK to comply with the Indonesian mining law and regulations. Almost all of the coal is hauled directly from the pit to the port with less than 1 % dumped onto an intermediate stockpile close to the pit and then rehandled into trucks for haulage to the port. Coal is crushed and stockpiled at the port before being loaded into 300 ft barges (~ 8,000 tonnes). The coal is then barged approximately 79 km on the Mahakam River to an anchorage at either Muara Jawa or Muara Berau where a floating crane will load the coal to a vessel.

A reconciliation of actual production versus estimated production from the geological model was conducted from the first production in June 2012 up to the end of December 2016. The resulting reconciliation discrepancy was less than 1 %, so no adjustment was applied to the in situ modelled coal tonnes to estimate the ROM coal tonnes. This very slight increase in coal tonnes between in situ and ROM tonnes indicates more dilution is occurring than coal loss. The reconciliation adjustment should be considered in the light of the inherent inaccuracy of geological modelling, coal barge and stockpile survey methods.

An increase in moisture of 0.9 % (of the total coal mass) was assumed when calculating ROM tonnes and qualities based on the results of the reconciliation. SMGC has observed similar increases in total moisture between geological model estimates and actual production results in similar operations in Kalimantan.

Operating and capital costs were estimated based on actual or design costs wherever possible. Typical industry costs were used where actual costs were not available. The initial coal sales price assumption was based on the average actual sales price from August to January 2016. This price was then projected forward linked to Newcastle index forecasts over the 3 year mine life. The potential continuing volatility of the coal price remains a risk to the project.

Another key risk to the operation is the issue of dust and noise at the port stockpile. There are houses located in very close proximity to the port stockpile and it is unlikely that any meaningful measures can be taken to significantly reduce the impact of dust here. RK have been required to compensate the owners of the houses in this area in the future and this has been included in the operating costs for the mine.

RESERVE ESTIMATE

Coal Reserves have been reported in Proved and Probable categories to reflect the reliability of the estimate. No Inferred Coal Resources are included in the reported Coal Reserves. The results are presented in Table 1 and are rounded to reflect the accuracy of the estimates. All estimates of tonnes contained in this document are on an as received basis, unless otherwise stated. The methodology for the estimate of in-situ and ROM tonnes are described in Sections 5.6 and 5.7. Reserves have slightly increased since the previous estimation in April 2016 because new coal Reserves defined by recent exploration drilling have slightly exceeded coal tonnes depleted by production during this time.

Table 1 – Summary of Coal Reserves as of 31st December 2016

Description	Proved (Mt)	Probable (Mt)	Proved and Probable (Mt)
Open Cut ROM Coal Reserves	2.1	0.8	2.9
Marketable Coal Reserves	2.1	0.8	2.9

**This table must be presented with the entire Coal Reserve Statement from which it was obtained.*

No beneficiation of the coal product is planned other than crushing so ROM Reserves will be equivalent to Marketable Reserves. The estimated combined quality of Coal Reserves after application of modifying factors and the assumed increase in total moisture is shown in Table 2:

Table 2 – Estimated Quality of Coal Reserves

Total Moisture (% arb)	Ash (% arb)	Volatile Matter (% arb)	Total Sulphur (% arb)	Calorific Value (kcal/kg adb)	Calorific Value (kcal/kg gar)
17.9	5.5	37.7	1.67	5,956	5,712

**This table must be presented with the entire Coal Reserve Statement from which it was obtained.*

The information in this report that relates to Coal Reserves in the concession is based upon information compiled by Mr. David Wyllie who is a Member of the Australasian Institute of Mining and Metallurgy. Mr. Wyllie is employed as a Principal Engineer by SMGC. He has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the “Australasian Code for Reporting of Mineral Resources and Ore Reserves”.

1. INTRODUCTION

PT SMG Consultants Indonesia (SMGC) was engaged by PT Rinjani Kartanegara (RK) to prepare an updated independent statement of Open Cut Coal Reserves in their coal concession located in Kutai Kartanegara Regency, East Kalimantan Province, Indonesia.

This estimate of Coal Reserves have been prepared in accordance with SMGC's interpretation of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Minerals Resources and Ore Reserves (the JORC Code) as developed by the Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia. Mining operations commenced in the RK concession in 2012 and this Reserve Estimate is made as of 31st December 2016, which is the date of the survey data used in for the Reserve estimate. All estimates of tonnes contained in this document are on an as received basis, unless otherwise stated.

1.1 INTERPRETATION

Under the 2012 JORC Code only Measured and Indicated Coal Resources can be considered for conversion to Coal Reserves after consideration of 'Modifying Factors' including mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and government factors. To convert Resources to Reserves it must be demonstrated that extraction could be justified after applying reasonable investment assumptions.

A high degree of confidence in the modifying factors establishes Proved Reserves from Measured Resources and a lesser degree of confidence in the modifying factors establishes Probable Reserves from Indicated Resources. A level of uncertainty in any one or more of the Modifying Factors may result in Measured Resources being converted to Probable Reserves, depending on materiality. A high level of uncertainty in any one or more of the Modifying Factors may preclude the conversion of the affected Resources to Reserves.

Key terms used to report Coal Reserves in this report are described below:

- **Coal Reserves** are the same as Ore Reserves as described in the JORC Code, which is defined as the economically minable part of a Measured and/or Indicated Mineral Resource. These are also referred to as Run of Mine (ROM) Reserves and include dilution material and losses that may occur as part of the mining process, as well as consideration of all relevant modifying factors. Coal Reserves are subdivided into Proved and Probable to reflect the confidence of the underlying Resource data and confidence in the application of modifying factors.
- **Marketable Reserves** allow for a realistic yield in a coal beneficiation plant. In the case of this coal, marketable Reserves are equivalent to ROM Reserves as no beneficiation of coal product is planned other than crushing and sizing.
- **Coal Resources** are reported inclusive of Coal Reserves (i.e. Coal Reserves cannot be added to Coal Resources).

1.2 APPROACH

The following approach was undertaken by SMGC to estimate Coal Reserves:

1. The Coal Resources estimate and geological model used as the basis for Reserves estimation has been compiled by Mr. Abdullah Dahlan of SMGC in February 2017. Mr. Abdullah Dahlan is a Member of The Australasian Institute of Mining and Metallurgy and is a full time employee of SMGC and has sufficient experience in coal geology and Resource evaluation to qualify as a Competent Person under the 2012 JORC Code.
2. Physical surface constraints were studied and consideration was made for surface water runoff and management, as well as the location of significant infrastructure and communities inside the potential mining area. Appropriate mining limits were then determined based on this data.
3. Pit optimisation software using the Lerchs Grossman algorithm was applied to the geological model inside the mining limits using appropriate overall pit slope angles. A wide range of sales prices were used to determine the relationship between potential open cut Reserves and sales price. This produced a set of nested pit shells inside the mining limits.
4. Appropriate cost, revenue, mining recovery estimates were then applied to each pit shell and the shell that best estimated the economic pit limit was selected to be used as the basis of pit design.
5. An ultimate pit design was produced based on the selected pit shell and already mined out areas. Appropriate geotechnical parameters were applied and practical mining considerations taken into account.
6. Minex mining software was used to generate a ‘Reserves database’ for all Resources inside the ultimate pit design. An appropriate mining recovery factor and density adjustments were then applied to allow Run of Mine (ROM) quantities and qualities to be reported.
7. A mining schedule and waste balance was then completed to a prefeasibility level of detail. This was done to ensure that the ultimate pit design can be practically achieved, that sufficient room is available for waste dumping and that the mining unit rates and costs are realistic. The plan and schedule were confirmed to be economic by generating a financial model for the mine plan and schedule results.
8. Recoverable Coal Reserves inside the ultimate pit design were then classified as Proved or Probable based on the boundaries for Measured and Indicated Coal Resources provided in the Statement of Coal Resources.
9. The result of the Coal Reserve estimate and supporting information are documented in this report.

1.3 RESULTS LIMITATIONS AND STANDARDS

It is important to note when considering this report that exploration information relies on interpretation of a relatively small statistical sample of the deposit being studied; thus a variety of interpretations may be possible from the data available. Investors should note that the statements and diagrams in this report are based on the best information available at the time, but may not necessarily be absolutely correct. Such statements and diagrams are subject to change or refinement as new exploration makes new data available, or new research alters prevailing geological concepts. Appraisal of all the information mentioned above forms the basis for this report. The views and conclusions expressed are solely those of SMGC. When conclusions and interpretations credited specifically to other parties are discussed within the report, then these are not necessarily the views of SMGC.

1.4 JORC TABLE 1

This Coal Reserve report has been carried out in accordance with SMGC's interpretation of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Minerals Resources and Ore Reserves (the JORC Code) as developed by the Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia. Under the report guidelines all geological and other relevant factors for this deposit are considered in sufficient detail to serve as a guide to on-going development and mining.

In the context of complying with the principles of the code, Table 1 of the JORC Code (Appendix B) has been used as a checklist by SMGC in the preparation of this report and any comments made on the relevant sections of JORC Table 1 have been provided on an 'if not, why not' basis. This has been done to ensure that it is clear to an investor whether items have been considered and deemed of low consequence or have yet to be addressed or resolved.

The order and grouping of criteria in JORC Table 1 reflects the normal systematic approach to exploration and evaluation. Relevance and materiality are the overriding principles which determine what information should be publicly reported and SMGC has attempted to provide sufficient comment on all matters that might materially affect a reader's understanding or interpretation of the results or estimates being reported. It is important to note that the relative importance of the criteria will vary with the particular project and the legal and economic conditions pertaining at the time of determination.

In some cases it may be appropriate for a public report to exclude some commercially sensitive information. A decision to exclude commercially sensitive information would be a decision for the company issuing the public report, and such a decision should be made in accordance with any relevant corporation regulations in that jurisdiction.

In cases where commercially sensitive information is excluded from a public report, the report should provide summary information (for example the methodology used to determine economic assumptions where the numerical value of those assumptions is commercially sensitive) and context for the purpose of informing investors or potential investors and their advisers.

2. LOCATION AND TENURE

2.1 LOCATION

The RK concession is located in Kutai Kartanegara Regency, East Kalimantan Province, Indonesia and is shown in Figure 2.1. The concession boundaries can be seen in Figure 2.2 with the location of exploration boreholes. The current permits to borrow and use forest land (Izin Pinjam Pakai Kawasan Hutan – IPPKH), referred to as IPPKH1 and IPPKH2, cover approximately 1,206 ha of the concession. The boundaries of the current IPPKH1 and IPPKH2 areas are shown in Figure 2.2.

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JORC Coal Reserve Statement

Location Map

Figure No. 2.1

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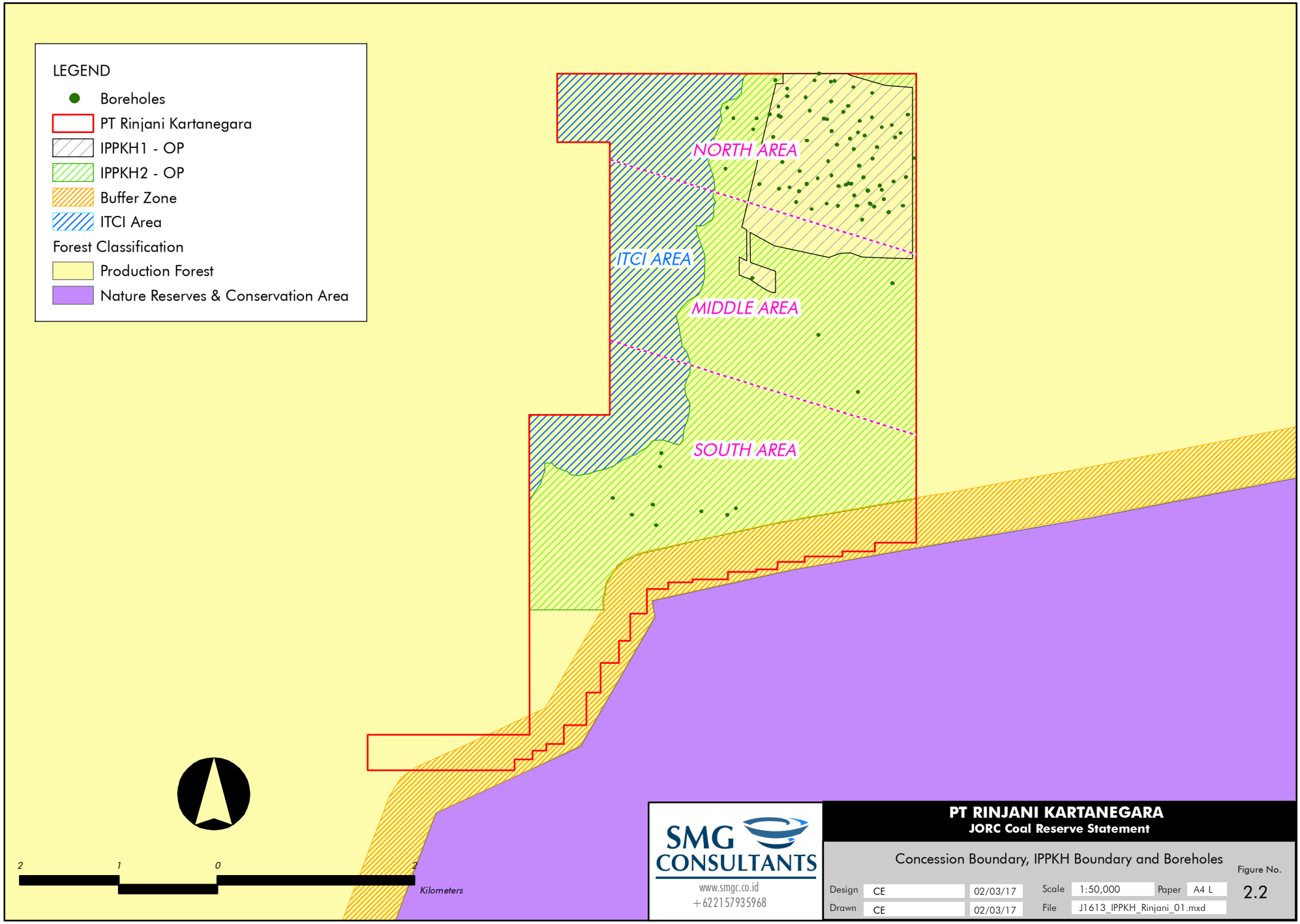
Satellite Image from Google Earth, Landsat/Copernicus December 2016


LEGEND
Boreholes
PT Rinjani Kartanegara
IPPKH1 - OP
IPPKH2 - OP
Buffer Zone
ITCI Area
Forest Classification
Production Forest
Nature Reserves & Conservation Area
NORTH AREA
ITCI AREA
MIDDLE AREA
SOUTH AREA
2
1
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Kilometers
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JORC Coal Reserve Statement
Concession Boundary, IPPKH Boundary and Boreholes
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2.2
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2.2 TENURE AND PERMITS

2.2.1 Tenure

Tenure for the concession is held under an operation production mining business permit (Izin Usaha Pertambangan - IUP Operasi Produksi). The details of this concession are shown in Table 2.1 and all Reserves reported in this statement are contained within this concession. The location of the IUP boundary is shown in Figure 2.2. SMGC has been provided with a copy of the IUP documents for the concession which are attached in Appendix C.

Table 2.1 – Concession Details

IUP	PT Rinjani Kartanegara
IUP Type	Operation Production
IUP Number	540/1654/IUP-OP/MB-PBAT/XI/2009
Company Name	PT Rinjani Kartanegara
District (Kabupaten)	Kutai Kartanegara
Province	Kalimantan Timur
Commodity	Coal
Area	1,933 ha
Date Signed	24th November 2009
Expiry	24th November 2021 (12 years)
Extensions*	2 x 10 years

**Extensions possible under new mining law (Number 4 Year 2009)*

RK has been awarded a Clean and Clear certificate, which was confirmed by checking the Ministry of Energy and Mineral Resources (MEMR) website.

SMGC makes no warranty or representation to RK or third parties (express or implied) in regard to the validity of the IUP and documentation and this Reserve statement does not constitute a legal due diligence of the concession.

2.2.2 Forestry Permits

The RK concession is within an area classified as production forest (Hutan Produksi) by the Indonesian Forestry Department and thus a permit to borrow and use forest land (Izin Pinjam Pakai Kawasan Hutan - IPPKH) is required before construction and mining operations can take place. RK received an IPPKH permit (referred to as IPPKH1) over part of the concession in December 2011. SMGC were provided with a copy of this IPPKH1 permit (number: SK.705/Menhut-II/2011 for exploitation) and the accompanying maps. The total area granted under the IPPKH1 permit is 308.54 ha which comprises:

- 167.07 ha for mining;
- 74.69 ha for infrastructure;
- 34.02 ha for roads; and
- 32.76 ha for development.

This first IPPKH1 was not sufficient to mine all Coal Reserves in the mine plan. To gain access to an additional 898 ha area within the IUP, RK applied for and received an expanded IPPKH referred to as IPPKH2 in July 2016 (number: 50/1/IPPKH/2016). This new IPPKH2 comprised the following elements:

- 682.09 ha for mining;
- 88.33 ha for dumping;
- 2.22 ha for settling ponds;
- 13.48 ha for roads; and
- 111.44 ha for development.

The IPPKH1 and IPPKH2 areas are shown in Figure 2.2.

A portion of the IUP along the western boundary of the concession has still been excluded from the IPPKH2. To allow the mine plan to be fully executed, an additional expansion will be required into this area. This area is controlled by the plantation company PT ITCI Hutani Manunggal (ITCI). Discussions with ITCI management have started with permission being granted for RK personnel to conduct surface mapping exploration activity within the ITCI Area starting 17 February 2017. This surface mapping is already underway. The engagement with the plantation company will need to continue and progress to allow exploration drilling, a business to business agreement to allow mining activity including compensation and then approval from the forestry department. This process to allow RK to conduct mining activity in the ITCI Area is expected to be completed by the end of 2017.

It should be noted that while SMGC considers that there is a reasonable level of confidence that the additional IPPKH expansion into the ITCI Area can be approved by this time, it is still not possible to make any guarantee that this can be achieved. Boundaries for the IPPKH1, IPPKH2 and ITCI controlled areas are shown in Figure 2.2.

2.2.3 Other Permits and Land Acquisition

Other major permits required for a legal coal mining operation in Indonesia include the following:

- blasting and magazine permits (granted December 2016);
- fuel storage permits (granted December 2016);
- use of diesel power permits (granted December 2013);
- building permits (granted November 2011);
- coal port and transportation permit (granted July 2012);
- surface water and groundwater permits (granted January 2015); and
- temporary storage of hazardous and toxic waste (granted August 2016).

Obtaining these permits is considered to be routine and is mostly undertaken at the local government level. RK currently have all the necessary permits in place to continue mining operations in the short term.

Land acquisition and compensation for all areas affected by mining is also required in order to execute the mining plan. SMGC were provided with a map showing the status of land compensation settlement. In the North Area which includes the largest pit (see Figure 2.2 and Figure 5.10), land compensation is almost complete up to the IPPKH2 boundary. Beyond the IPPKH2 boundary will require an agreement with the ITCI plantation company and these discussions have been underway since January 2017. In the Middle Area which includes the smaller pits (see Figure 2.2 and Figure 5.10), land compensation discussions were initiated during the exploration drilling, but still need to be negotiated further and resolved. The Middle Area pits also cross into the ITCI plantation area beyond the IPPKH2 boundary and will be covered by the same negotiations underway for the North Area. At this stage the South Area (see Figure 2.2) has not been included in the mine plan or Reserve estimate for this report.

An area of approximately 230 ha remains to be compensated to allow execution of the mine plan described in this report. The cost of this land compensation has been including in the financial modelling for the project.

The current compensated land in the North Area covers most of the area required for 2017. To allow mining to continue into 2018 and 2019 will required negotiations with the ITCI plantation company in the west by the end of 2017 and individual land owners in the Middle Area to be resolved and settled by September 2017.

Land acquisition can pose a risk to the operation if not handled prudently. With RK's commitment to this target and engagement at multiple levels, SMGC consider it is reasonable to expect the remaining land compensation to be settled in time to allow mining to start in these areas by early 2018. However there is no guarantee that this deadline will be achieved and so it remains as risk to the project.

3. GEOLOGY AND RESOURCES

This section is a summary of the report, “Coal Resource Statement, February 2017, Prepared for PT Rinjani Kartanegara” by SMGC. The reader is referred to that document for a more detailed discussion on geology and Resources.

3.1 OVERVIEW OF GEOLOGY

The RK deposit is located within the lower Kutai Basin of East Kalimantan. Formations of this basin which are exposed in and surrounding the RK concession area are the Pulaubalang, Pamaluan, Balikpapan and Kampungbaru formation. The area is characterised by relatively flat lying strata. On average the stratigraphy dips 9 degrees to the north-northeast. The RK concession is positioned on the eastern flank of a regional syncline and is confined between two parallel and adjacent anticline structures. Large scale faulting has not been identified by current field exploration however minor faulting cannot be ruled out based on the current borehole spacing.

The Pulaubalang formation is the coal bearing formation in the concession area. There are 41 named coal seams intersected within the project area. Several of these seams are characterised by first phase seam splitting.

Table 3.1 summarises the names and thicknesses of the coal seams identified within the concession.

Table 3.1 – Seam Thickness Summary

Seam	Thickness (m)			Number of Records
	Mean	Maximum	Minimum	
S5	2.0	2.8	1.2	20
S10U	0.5	0.8	0.2	8
S10L	0.4	0.7	0.1	8
S15U	0.1	0.3	0.0	15
S15L	0.1	0.3	0.0	15
S20	0.3	0.9	0.0	17
S30U	1.1	1.7	0.0	24
S30L	0.7	1.4	0.0	24
S40	0.4	1.0	0.0	55
S40L	0.1	0.4	0.0	54
S50U	0.1	0.8	0.0	57
S50	0.5	1.4	0.0	58
S50L	0.0	0.4	0.0	58
S100	0.3	1.5	0.0	76
S200	1.3	2.2	0.0	127
S300	1.5	3.3	0.0	163
S400	0.5	1.1	0.0	150
S500	1.9	2.7	0.0	164
S600	0.5	1.0	0.0	162
S700	1.2	2.3	0.0	140
S790	0.2	0.5	0.0	53
S800	0.4	1.1	0.0	49
S900	0.3	0.9	0.0	36
S1000	0.2	0.5	0.0	31
S1050	0.2	0.5	0.0	26
S1999	0.4	0.4	0.0	6
S2001	0.2	0.4	0.0	6
S2100	0.2	0.5	0.1	6
S2200	0.1	0.3	0.0	6
S2300	0.1	0.3	0.0	5
S2400	0.2	0.7	0.0	5
S2500	0.3	0.5	0.2	6
S3000	0.5	1.0	0.0	13
S3100	0.2	0.4	0.0	13
S3200	0.4	0.6	0.0	13
S3300	0.1	0.6	0.0	12
S4000	0.3	0.5	0.0	6
S4900	0.4	0.8	0.0	19
S5000	1.5	1.9	1.0	17
S5100	0.3	0.3	0.3	1
S5200	0.3	0.3	0.3	1
Summary	**0.8**	**3.3**	**0.0**	**1,725**

3.2 EXPLORATION HISTORY AND DATA

RK commenced initial coal exploration on their concession in 2009. This first stage exploration program included limited coal outcrop mapping, general borehole drilling and coal quality analysis. The drilling included of 171 boreholes comprising 76 cored boreholes and 95 open boreholes. The favourable results obtained from this led to a second in-fill drilling program being conducted during the period of September 2012 to March 2013, whereby another 13 cored boreholes were drilled to improve confidence in both geological structure and coal quality data. The program was implemented and managed by RK. A channel sampling programme was also implemented during this later period during which 293 samples were taken.

Following government approval for the IPPKH2 a new drilling program was conducted between July and September 2016. RK drilled an additional 62 boreholes in the IPPKH2 area south and west of the current mining area. This drilling included 45 cored boreholes and 17 open boreholes. A total of 16 new seams were intersected by the new drilling. The new seams were intersected by boreholes in the Middle and South Areas of the IUP within the IPPKH2 boundary. Only 4 of these 16 seams had sufficient quality information to be included in the Resource estimation. The remaining seams will require additional drilling and sampling before they can be considered for inclusion in future Resource estimation.

A total of 246 boreholes have been drilled in the RK concession of which 134 were cored holes and 112 were open holes. Due to insufficient data, such as no geophysics, or improper surveying, 46 of these 246 boreholes could not be included in the geological model.

Borehole collars, mining surfaces and channel sample locations to date have been surveyed using standard Total Station techniques employed by the RK internal survey team during the course of successive drilling and sampling campaigns. Surveys have been reviewed by SMGC. Boreholes with a discrepancy > +/- 2 m from the topography surface were compared to raw survey data. Any boreholes falling outside this tolerance were re-surveyed to ensure the borehole collars were corrected to the topographic data. The surveyed borehole locations for RK matched well with the topographic data.

The topography used in the current RK geological model was derived from Light Detecting and Ranging (LiDAR) remote sensing data in conjunction with the mined out surface survey as of the end of December 2016. The original LiDAR topography was generated by PT Karvak across the RK Project Area in July 2011. The topographic surface used for Resource estimation was current as of 31st December 2016.

The western side of the concession within the ITCI plantation area is considered the most prospective area for future exploration work once access is granted. Other prospective areas include the Middle and South Areas of the concession (within the IPPKH area) where more exploration will improve knowledge of the structural setting, stratigraphy and coal quality.

3.3 COAL QUALITY

Coal quality sampling was undertaken by RK geologists, with analysis testing completed by PT Geoservices in Samarinda. PT Geoservices states that its Samarinda laboratory is accredited to ISO 17025 standards and that quality control is maintained by daily analysis of standard samples and by participation in regular 'round robin' testing programs. No duplicates from core samples were analysed for quality assurance and quality control purposes.

A range of international standard methods have been used by PT Geoservices in their coal analysis tests. Reporting of quality variables has been done on an air-dried, as received and dry ash free basis. American Society for Testing and Material (ASTM) methods has been used for all quality variables with the exception of Relative Density (RD). Australian Standards (AS) has been used for determination of RD.

The following tests were undertaken as a standard on all coal samples:

- Total Moisture (TM) (as received basis);
- Inherent Moisture (IM);
- Ash Content (Ash);
- Volatile Matter (VM);
- Fixed carbon (FC);
- Total Sulphur (TS);
- Calorific Value - air dried basis (CV adb);
- Relative Density (RD); and
- Hardgrove Grindability Index (HGI).

The modelled coal quality data is summarised on a seam by seam basis in Table 3.2. Coal quality in the area can be summarised as moderate total moisture, low ash content, high sulphur and moderate energy coal. This coal is classified as Sub-bituminous Class A coal, (Guidebook of Thermal Coal Sub-Bituminous Coal, Koichi Katoh, APBI-ICMA, page 33).

Table 3.2 – Coal Quality Summary (Boreholes)

Seam	TM arb (%)	IM adb (%)	ASH adb (%)	VM adb (%)	FC adb (%)	TS adb (%)	RD adb (gm/cc)	CV adb (Kcal/kg)	CV arb (Kcal/kg)	Number of Samples
S5	20.2	14.5	2.1	41.7	41.8	1.61	1.34	5988	5588	1
S10U	19.6	13.7	6.3	41.7	40.0	2.59	1.33	5750	5370	3
S10L	19.0	13.9	4.6	42.9	40.5	2.22	1.30	5855	5517	2
S15U	19.6	13.6	10.2	37.8	38.4	5.02	1.41	5427	5053	3
S15L	19.6	13.6	10.2	37.8	38.4	5.02	1.41	5427	5053	3
S20	19.5	13.2	4.6	41.6	40.6	3.32	1.34	5961	5527	4
S30U	21.8	14.3	4.2	40.2	41.5	0.84		5910	5384	5
S30L	21.1	14.6	5.5	39.6	40.6	1.65	1.32	5763	5322	6
S40	18.2	13.2	6.0	39.8	39.6	2.42	1.33	5984	5641	15
S40L	18.8	13.4	8.8	38.0	39.8	3.08	1.33	5638	5288	7
S50U	16.8	12.9	5.7	41.6	39.8	3.07		5945	5683	2
S50	16.9	12.4	5.0	42.8	36.7	3.04	1.31	6089	5778	19
S50L										
S100	19.9	14.6	7.0	37.5	41.2	2.47	1.34	5685	5334	14
S200	16.9	12.3	4.9	40.2	43.1	1.96	1.31	6133	5820	38
S300	15.7	11.8	5.5	42.1	42.2	1.81	1.32	6124	5861	46
S400	17.7	12.7	6.7	38.5	42.6	1.82	1.35	5898	5600	40
S500	16.4	11.8	3.8	41.3	44.0	1.55	1.31	6227	5909	49
S600	15.1	11.1	7.5	42.2	40.1	2.82	1.34	6112	5855	44
S700	17.4	12.9	4.9	38.8	44.1	1.01	1.32	6078	5792	50
S790	14.4	10.4	14.2	39.5	37.9	3.61	1.29	5798	5700	10
S800	16.0	11.9	10.2	38.0	41.6	2.28	1.36	5919	5644	16
S900	14.5	9.9	18.5	35.0	36.2	3.55	1.00	5291	5020	13
S1000	15.9	11.3	9.5	36.9	41.5	2.62	1.32	5873	5570	11
S1050	15.6	11.0	6.8	39.3	42.9	2.18	1.33	6182	5868	3
S1999	15.3	11.1	11.2	40.5	36.9	3.17	1.38	5883	5616	4
S2001	20.1	9.9	27.5			2.63		4526	4012	1
S2100										
S2200										
S2300										
S2400										
S2500	14.1	12.3	5.6	40.0	42.1	2.27	1.32	6171	6044	1

Table 3.2 (continued) – Coal Quality Summary (Boreholes)

Seam	TM ar %	IM ad %	ASH ad %	VM ad %	FC ad %	TS ad %	RD ad gm/cc	CV ad Kcal/kg	CV ar Kcal/kg	Number of Samples
S3000	13.7	10.9	7.1	38.6	42.3	2.33	1.36	6167	5974	5
S3100										
S3200	12.7	10.2	9.7	40.7	39.4	2.01	1.35	6185	6012	5
S3300	10.5	9.0	4.2	46.5	40.3	1.54	1.29	6830	6717	1
S4000	7.6	6.8	9.4	44.3	39.6	2.84	1.00	6635	6579	1
S4900	9.7	7.9	5.7	43.1	43.3	3.11	1.33	6583	6459	8
S5000	10.2	7.9	4.9	41.4	48.3	2.41	1.33	6652	6488	12
S5100										
S5200										

3.4 GEOLOGICAL MODEL

A geological model for the RK Project Area was generated using Minex Geologic Modelling Software. The Minex General or Growth method was used for all structural modelling. Validated collar surveys, lithology data and geophysical logs were required as a minimum for a borehole to be used in the modelling process. A total of 200 validated boreholes have been drilled across the deposit and included in the RK Structural Geological Model. The lithological data from an additional 292 surveyed channel samples have also been included and used to assist with the Structural Geological Model.

A total of 131 of the validated boreholes had sufficient coal quality analyses to act as significant points of observation for the Coal Resource estimations. A valid point has been defined as a seam intersection that is surveyed and cored, where quality analysis has been acquired, sample recovery is ≥ 90 % and the hole is accompanied by valid survey and geophysics.

A “non-conformable” base of weathering (BOW) surface for the RK model was generated using a default depth of weathering of 1.5 m below topography. This was due to the limited logging of the weathered material in the lithological log, but is consistent with the mining operations finding fresh coal 10 horizontal metres and 1.5 vertical metres from the outcrop line. The topography was cut to honour the mined-out portions of the area (31st December 2016). All grids in the final model were cut to this surface which also included a weathering surface 1.5 m below the topography. No other unconformities have been identified in the RK Project Area.

3.5 RESOURCES

A division of the Resources into Measured, Indicated and Inferred status was undertaken for the geological model. The following Resource dimensions were used:

- Measured – 250 m radius circular polygon around points of observation;
- Indicated – between 250 to 500 m radius circular polygon around points of observation; and
- Inferred – between 500 to 1,000 m radius circular polygons around points of observation.

Points of Observation for the model in the RK Project Area were defined using the following criteria:

- only cored boreholes that had valid survey collars (not GPS-survey) were used, i.e. those boreholes not surveyed have not been considered;
- cored boreholes had to be geophysically logged and sampled to be considered as valid points of observation for Resource calculations; and
- coal seam recovery had to be greater than 90 % and samples analysed by an accredited laboratory.

To satisfy the reasonable prospects for eventual economic extraction requirement of the JORC code, the Resource was limited to a Lerch Grossman optimised pit shell confined by a minimum of the following parameters:

- Maximum strip ratio limit of 20:1: This is the operational limit where the intensity of mining at this strip ratio would significantly impede the efficiency of operations.
- Maximum depth limit of 450 m: This is a geotechnical limit based on the deepest known open pit operation in Indonesia.
- Breakeven price of USD135 /t: This is an economic limit based on a reasonable price expectation for coal of this calorific value within the next 50 years. It is equivalent to a Newcastle coal index (CV = 6,322 kcal/kg gar) of USD 150 /t. This is a thermal coal price that has been achieved multiple times in recent history.

An upper cut-off 1.5 m below topography: This represents the base of weathering (BOW) used to limit the Resource estimate. A minimum thickness cut-off of 0.1 m was also set for the area, as it is considered unlikely that any seam thinner than this would be extracted during future mining. Relative density results were limited and where necessary, a default in situ density of 1.30 g/cc was applied to Resource calculations. The Resource is reported using density estimates that are on an in situ moisture basis.

Only 4 out of the 16 seams intercepted in the Middle and South Areas had enough coal quality information to be included in the Resource estimation. With additional drilling and quality sampling, these unclassified seams may qualify for inclusion in future Resource estimations. The Resource Statement declares an Exploration Target range of 1.2 to 4 Mt for these seams. This potential quantity is conceptual in nature because there has been insufficient exploration to estimate a Coal Resource in this area and it is uncertain if further exploration will result in the estimation of a Coal Resource.

The Statement of Resources was prepared by Mr. Abdullah Dahlan in February 2017, and is reported in accordance with SMGC's interpretation of the 2012 JORC Code. Mr. Abdullah Dahlan consents to the inclusion in this report of the information pertaining to Coal Resources in the form and context in which it appears. The Coal Resources for the Project Area are presented in Table 3.3.

Table 3.3 – Coal Tonnes and Quality by Seam and Classification

Seam	Resource Classification	Coal Quantity (Mt)	TM ar (%)	IM adb (%)	Ash adb (%)	VM adb (%)	FC adb (%)	TS adb (%)	CV adb (kcal/kg)	CV gar (kcal/kg)	RD adb (g/cc)
S20	Measured	< 0.1	19.2	13.3	4.4	41.8	40.4	3.30	5,982	5,577	1.34
	Indicated	< 0.1	19.2	13.3	4.3	42.1	40.3	3.24	5,994	5,590	1.33
	Inferred	< 0.1	19.2	13.3	4.4	42.0	40.3	3.23	5,987	5,581	1.34
S30U	Measured	0.2	21.8	14.3	4.2	40.1	41.6	0.80	5,909	5,369	1.32
	Indicated	0.1	21.7	14.3	4.2	40.1	41.7	0.79	5,909	5,387	1.32
	Inferred	< 0.1	21.8	14.3	4.2	40.1	41.7	0.80	5,915	5,385	1.32
S30L	Measured	0.2	20.8	14.4	5.8	39.5	40.5	1.95	5,752	5,322	1.32
	Indicated	0.1	20.0	14.1	6.1	39.3	40.5	2.35	5,750	5,360	1.32
	Inferred	< 0.1	20.0	14.2	6.0	39.2	40.6	2.34	5,748	5,358	1.32
S40	Measured	0.3	18.1	12.8	7.0	39.4	39.2	2.46	5,919	5,564	1.33
	Indicated	< 0.1	17.9	12.6	7.0	39.2	39.0	2.54	5,890	5,536	1.33
	Inferred	0.0									
S40L	Measured	0.1	18.7	13.2	9.4	37.8	39.6	3.05	5,616	5,262	1.32
	Indicated	< 0.1	18.5	12.8	10.0	37.6	39.6	3.02	5,609	5,244	1.32
	Inferred	0.0									
S50	Measured	0.4	16.8	12.0	5.4	42.5	38.9	3.00	6,077	5,745	1.31
	Indicated	< 0.1	17.9	12.5	6.9	39.0	40.3	2.90	5,882	5,519	1.31
	Inferred	0.0									
S100	Measured	0.2	19.8	13.6	8.0	37.4	41.2	2.54	5,670	5,264	1.34
	Indicated	< 0.1	19.4	12.2	17.1	34.3	36.4	3.37	4,987	4,593	1.35
	Inferred	< 0.1	19.5	12.2	17.1	34.3	36.3	3.35	4,977	4,585	1.35
S200	Measured	1.4	17.0	12.1	4.5	41.1	43.0	2.01	6,144	5,804	1.31
	Indicated	< 0.1	17.1	13.1	4.1	40.2	42.7	1.93	6,111	5,829	1.31
	Inferred	0.0									
S300	Measured	1.7	15.8	11.6	5.0	42.4	42.3	1.78	6,172	5,887	1.31
	Indicated	< 0.1	16.3	12.5	4.9	42.4	41.5	1.85	6,091	5,833	1.31
	Inferred	0.0									
S400	Measured	0.6	17.9	12.6	6.1	38.8	42.8	1.85	5,954	5,609	1.35
	Indicated	< 0.1	18.7	13.5	6.9	37.9	42.2	1.43	5,821	5,490	1.35
	Inferred	0.0									
S500	Measured	2.0	16.3	11.7	3.8	41.2	43.9	1.62	6,224	5,900	1.31
	Indicated	0.2	16.4	12.6	4.3	40.5	43.1	1.81	6,127	5,863	1.32
	Inferred	0.1	16.4	12.6	4.3	40.5	43.2	1.78	6,136	5,874	1.32
S600	Measured	0.7	15.2	11.1	6.5	42.9	40.4	2.81	6,182	5,903	1.34
	Indicated	0.1	14.7	11.5	6.7	42.7	39.5	3.03	6,130	5,917	1.34
	Inferred	< 0.1	14.7	11.5	6.7	42.6	39.4	3.02	6,130	5,918	1.34

Table 3.4 - Coal Tonnes and Quality by Seam and Classification - Continued

Seam	Resource Classification	Coal Quantity (Mt)	TM ar (%)	IM adb (%)	Ash adb (%)	VM adb (%)	FC adb (%)	TS adb (%)	CV adb (kcal/kg)	CV gar (kcal/kg)	RD adb (g/cc)
S700	Measured	1.7	17.4	12.9	4.5	39.1	44.2	1.13	6,105	5,813	1.32
	Indicated	0.2	17.7	13.7	4.3	38.6	44.1	1.04	6,047	5,766	1.32
	Inferred	0.1	17.6	13.6	4.5	38.6	44.0	1.17	6,046	5,769	1.32
S790	Measured	< 0.1	13.3	9.9	14.5	40.8	37.8	3.01	5,925	6,163	1.37
	Indicated	0.1	14.7	10.2	13.7	39.4	37.9	3.49	5,806	5,784	1.33
	Inferred	0.1	15.3	10.6	14.8	37.3	37.0	4.17	5,554	5,374	1.21
S800	Measured	0.2	16.0	12.4	10.6	37.9	40.5	2.56	5,801	5,559	1.36
	Indicated	0.3	15.9	12.0	11.3	38.1	41.2	2.37	5,882	5,625	1.36
	Inferred	0.1	15.7	12.0	11.8	38.3	40.2	2.35	5,857	5,614	1.36
S900	Measured	< 0.1	13.4	8.7	26.4	32.7	32.0	2.88	4,763	4,525	1.32
	Indicated	0.1	14.0	9.8	17.9	35.8	36.6	3.49	5,340	5,092	1.32
	Inferred	0.1	14.8	10.0	19.9	34.6	35.5	3.07	5,161	4,885	1.32
S1000	Measured	0.1	15.0	11.3	17.5	34.0	37.0	2.40	5,230	5,014	1.44
	Indicated	0.1	15.5	11.6	12.5	35.8	39.7	2.41	5,606	5,362	1.32
	Inferred	0.2	15.6	11.6	11.1	36.3	40.6	2.50	5,728	5,464	1.28
S1999	Measured	0.0									
	Indicated	0.3	16.3	11.3	10.8	41.0	43.0	2.96	5,887	5,569	1.32
	Inferred	0.1	14.5	10.9	11.7	41.0	43.0	3.38	5,871	5,644	1.32
S3000	Measured	0.0									
	Indicated	1.2	14.7	11.2	7.0	41.0	43.0	2.17	6,146	5,905	1.32
	Inferred	0.3	14.3	11.1	6.7	41.0	43.0	2.42	6,182	5,960	1.32
S3200	Measured	0.0									
	Indicated	0.8	12.6	10.1	8.6	42.4	39.0	2.10	6,344	6,169	1.34
	Inferred	0.3	12.4	10.0	9.5	41.5	39.0	1.95	6,255	6,092	1.34
S4900	Measured	0.1	8.0	6.5	7.5	43.6	42.4	4.45	6,562	6,458	1.35
	Indicated	< 0.1	9.9	8.4	5.8	42.8	42.9	3.05	6,536	6,424	1.33
	Inferred	< 0.1	9.6	8.0	5.9	42.9	43.1	3.14	6,573	6,459	1.33
S5000	Measured	0.4	10.7	8.2	4.7	41.7	48.8	2.39	6,611	6,438	1.33
	Indicated	0.1	11.5	8.8	6.1	41.3	48.4	2.56	6,467	6,280	1.34
	Inferred	< 0.1	11.9	9.0	6.9	41.3	48.2	2.68	6,374	6,179	1.36
Total	**Measured**	**10.3**	**16.6**	**12.0**	**5.2**	**40.8**	**42.7**	**1.90**	**6,115**	**5,804**	**1.32**
	Indicated	**3.8**	**15.1**	**11.3**	**8.1**	**40.5**	**41.6**	**2.25**	**6,081**	**5,835**	**1.33**
	Inferred	**1.4**	**14.9**	**11.2**	**9.3**	**39.6**	**40.9**	**2.44**	**5,980**	**5,742**	**1.32**
Total	**Total**	**15.5**	**16.1**	**11.8**	**6.3**	**40.6**	**42.3**	**2.03**	**6,095**	**5,806**	**1.32**

There may be minor discrepancies in the above table due to rounding of tonnes. these are not considered Material by SMGC.

All tonnes shown are calculated using in situ density that has been estimated on an air dried basis, using the Preston-Sanders method.

This table must be presented with the entire Coal Resource Statement from which it was obtained.

4. EXPLOITATION HISTORY AND RECONCILIATION

4.1 EXPLOITATION HISTORY

Mining operations in the RK concession commenced in June 2012. SMGC was provided with production records from the start of operations to the end of December 2015. The actual waste mined, coal mined and project cumulative stripping ratio are shown in Figure 4.1 and Figure 4.2.

Figure 4.1 – Historical Waste Mining Volumes

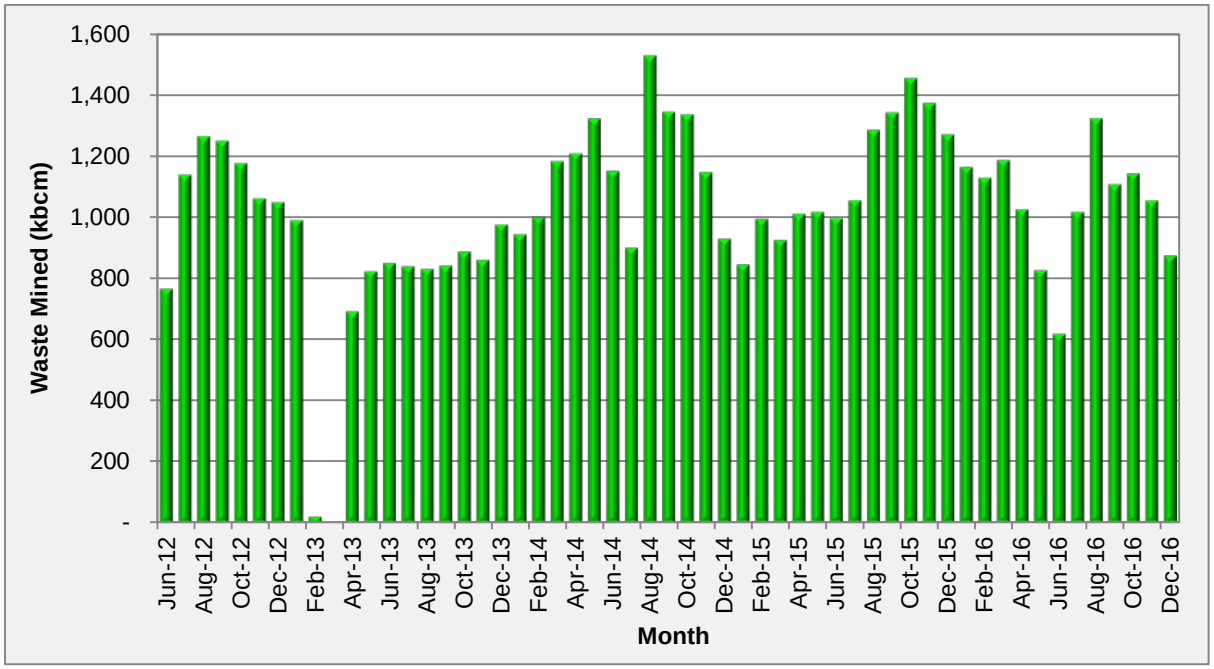
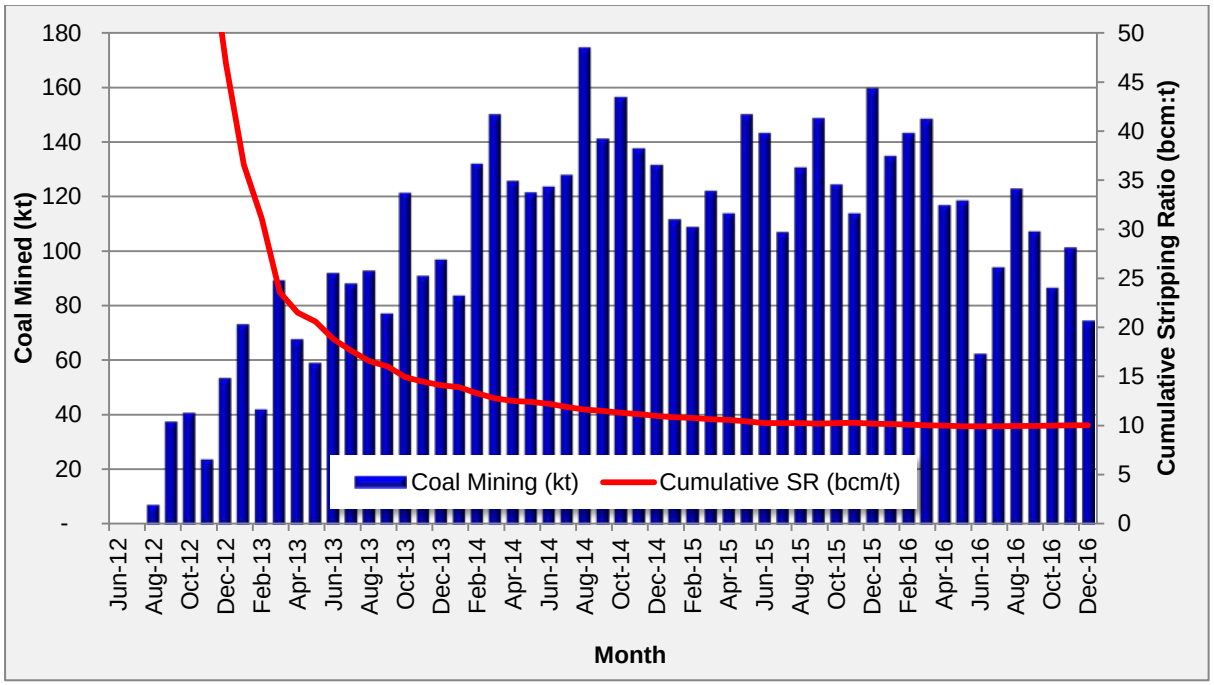


Figure 4.2 – Historical Coal Mining Quantities



RK informed SMGC that waste mining operations were temporarily halted during February and March 2013 and recommenced during April 2013 as a result of contract discussions between RK and the mining contractor.

The production data was provided by RK and is sourced from the monthly contractor joint pit survey volumes combined with truck weighbridge measurements. The total reported waste mined from the project up to the end December 2016 is 56.4 Mbcm and the total reported coal mined for the same period is 5.6 Mt. The stripping ratio for the project over this time period is 10.0 Mbcm per tonne of coal mined.

4.2 RECONCILIATION WITH GEOLOGICAL MODEL

A reconciliation of actual production results versus the geological model estimates was undertaken for the RK concession. The methodology used for the reconciliation is presented in Table 4.1.

Table 4.1 – Reconciliation Methodology

Step	Description
1.	Calculate Actual Coal Tonnes and Coal Quality Mined: The total waste volume, coal tonnes and product qualities mined for the concession were calculated up to the end of December 2016 using the following methodology: a. **Coal mined** was calculated by adding the tonnes from the draft surveys of all coal barged to the end of December 2016, to the estimated tonnes on stockpile. The total stockpile tonnes were estimated by surveying the stockpile, calculating the stockpile volume and multiplying this by the estimated density of the coal, which was measured by an independent surveyor. b. **Coal quality** was taken from the independent shipping certificate analysis that was undertaken for each barge and referred to from sales contracts to determine the coal price. c. **Waste Volume** was calculated by calculating the total volume mined from the pit between the pit floor surveys and the original topographic surveys. The volume of coal mined was then subtracted from the total volume to estimate the volume of waste mined.
2.	Adjust Mined Out Survey Surface: The exposed seam floor survey in the mined out survey surface for the end of December 2016 (supplied by RK) was fitted to the corresponding geological model seam floors, and the exposed seam roof areas were fitted to the corresponding geological model seam roof. This increases the accuracy of the reconciliation by minimising errors where the actual seam roof and floor does not match the model seam floor. This is the same process that is explained in Section 5.4.1.
3.	Generate In Situ Reserves Database for Mined Out Pit: A Reserve database was generated using the geological model developed for the Resource estimate. The adjusted mined out survey surface for end December 2016 was used as the pit floor and the post clearing topography survey as the upper topographic surface. The BOW surface used in the Reserves Database was set to 1.5 m below the post clearing topographic survey surface. The quality data for Seam 5 and Seam 10 was updated with the pre-mining channel sample results. The majority of these seams have been mined out within the IUP.
4.	Adjust In Situ Volumes for Minimum Mineable Thickness and Total Moisture: The in situ volume and tonnes of coal were reported from the Reserves database. A minimum mining thickness was then applied to the Reserves database in order to estimate the in situ volume, tonnes and quality of coal adjusted for minimum mineable thickness. A further adjustment was then applied to match the modelled total moisture with the actual.
5.	Compare Adjusted In Situ Model Estimates to Actual: The adjusted in situ waste volume, coal tonnes and coal quality results were then compared with actual production results and the differences analysed.

The actual tonnes of coal mined from the deposit up to the end of December 2016 are shown in Table 4.2.

Table 4.2 – Estimate of Actual Tonnes Mined to End December 2016

Description	Unit	Value
Total Barge Draft Survey to End December 2016	t	5,633,132
Coal on Stockpile	t	434
Total Coal Mined	**t**	**5,633,566**

It should be noted that the coal quality estimate is only taken from samples of shipped coal, as no reliable samples of the stockpile quality have been taken. Coal on Stockpile represents an insignificant amount of the total tonnes mined to date from the concession, and thus the quality of the coal on stockpile is unlikely to have any significant impact on the reconciliation. The bulk density assumptions used by RK to calculate the tonnes on stockpile were provided and were calculated by an independent surveyor.

Once a Reserve database was generated for the mined out pit, a minimum mineable thickness of 0.1 m was applied to convert the modelled in situ volumes, tonnes and qualities to adjusted in situ values. A further total moisture adjustment of 0.9 % was then applied to match the in situ values with the actual total moisture values. By reconciling these adjusted in situ values against the actual mined values, a coal recovery factor was determined. The reconciliation results for the February 2017 model is shown in

Table 4.3. All qualities are reported on an as received basis except for calorific value which is also reported on a dry ash free (daf) basis.

Table 4.3 – Reconciliation Results with February 2017 Model

Description	Waste Kbcm	Coal kt	TM % arb	Ash % arb	TS % arb	CV arb kcal/kg	CV daf kcal/kg
Actual Production to December 2016	56,363	5,634	18.1	5.0	1.43	5,639	7,327
In Situ Model	57,302	5,543	17.1	4.7	1.52	5,781	7,395
In Situ Model Adjusted for 0.1 m Minimum Mineable Thickness	57,313	5,528	17.1	4.4	1.42	5,782	7,370
In Situ Model Adjusted for Additional 0.9 % TM	57,313	5,579	18.1	4.4	1.41	5,718	7,370
Difference (actual – in situ)	-950	55	0.0	0.62	0.02	-79	-42
Difference (% of actual)	-2 %	1 %	0 %	12 %	1 %	-1 %	-1 %

Key observations and discussions of the differences between the adjusted in situ estimate and the actual production results identified in the reconciliation are detailed below:

a. Actual Production Tonnes are Slightly Higher than Modelled In Situ Adjusted Coal tonnes:

This small 1.0 % gain in coal tonnes could be due to a number of factors:

- More dilution than coal loss is occurring during the mining process giving a net gain in tonnage. This is supported by the higher ash content observed in the actual quality analysis.
- A base of weathering (BOW) depth of 1.5 m below topography has been assumed. This was based on information from RK that fresh coal is uncovered by excavating 10 horizontal meters from the coal outcrop. If this depth of weathering is being conservatively overstated, additional coal maybe recovered close to the surface giving a gain in actual mined coal when compared to the model.
- Mining coal seams less than the assumed minimum mineable thickness will also give a gain in actual tonnes compared to modelled tonnes. This is considered unlikely given the 0.1 m minimum mineable coal thickness assumption used in the adjusted in situ tonnage estimate.
- Inherent inaccuracies and the imprecise nature of coal exploration data, geological modelling, barge survey and stockpile survey processes will lead to discrepancies when reconciling actual versus modelled coal tonnes. These discrepancies are to be expected.

b. In Situ Model TM is Lower than Actual:

Possible explanations for the increase of 0.9 % include the water content of the coal increasing after mining (e.g. due to rainfall), the existence and inclusion of weathered coal near the surface with higher TM, or possible errors in the quality model (e.g. due to sampling error, handling of samples or drying). It is also noted that seam 5 and seam 10 have higher total moisture content than the deposit average and make up approximately 6 % of the coal mined to date (based on geological model estimates). The qualities of these seams were not modelled due to insufficient borehole sample data and average qualities from channel sampling were assumed.

SMGC notes that significant increases between freshly mined coals and shipped coal have been observed from other mines in this area. It is also noted that production channel sampling results taken from the majority of seams mined to date have shown TM values that range from 0.3 % to 0.9 % higher than average values from borehole samples.

c. Actual Ash is Higher than the Modelled In Situ Adjusted Ash:

The most likely explanation for this include higher levels of dilution experienced in the mining process.

d. Higher Sulphur in Actual Production Data

The higher sulphur observed in the actual production data may be due to additional dilution high in sulphur being mined, although the measured differences are minor.

e. Lower in Energy in Actual Production Data

The lower energy in the actual production data will be due to the higher ash in the actual production. The lower DAF energy variation is small and may be due to variability in sampling or natural variation in the deposit, it is also considered possible that this may indicate the inclusion of weathered material in coal mined to date.

SMGC's has used this reconciliation result between the model and actual production data as a coal recovery factor in estimating coal Reserves for the concession. This is considered a more reasonable approach than trying to match up modelled and actual results by adjusting loss and dilution thickness parameters in a trial and error fashion. Further studies and ongoing reconciliations are strongly recommended to increase the level of confidence in the predicted product tonnes and qualities.

5. ESTIMATION OF COAL RESERVES

The following sections describe the processes and modifying factors used in the conversion of Coal Resources to Coal Reserves. Coal Resources are reported inclusive of Coal Reserves in this report.

5.1 SURFACE CONSTRAINTS AND WATER MANAGEMENT

5.1.1 Infrastructure and Community Constraints

SMGC is unaware of any significant community or infrastructure located inside the concession that will have a Material effect on the economic extraction of Coal Reserves. It is still considered possible that there will be community issues associated with the close proximity of houses to the port stockpile and barge loading conveyor, although this risk is considered to be lower now that operations have continued largely uninterrupted until the date of this report. SMGC notes that it still may be necessary to purchase the land and houses located near the jetty, which could significantly increase the capital costs for the project. An allowance was made in operating costs for managing this issue.

5.1.2 Surface Water Management

Consideration of surface water runoff is critical for mining operations in Indonesia. Key issues that need to be managed include:

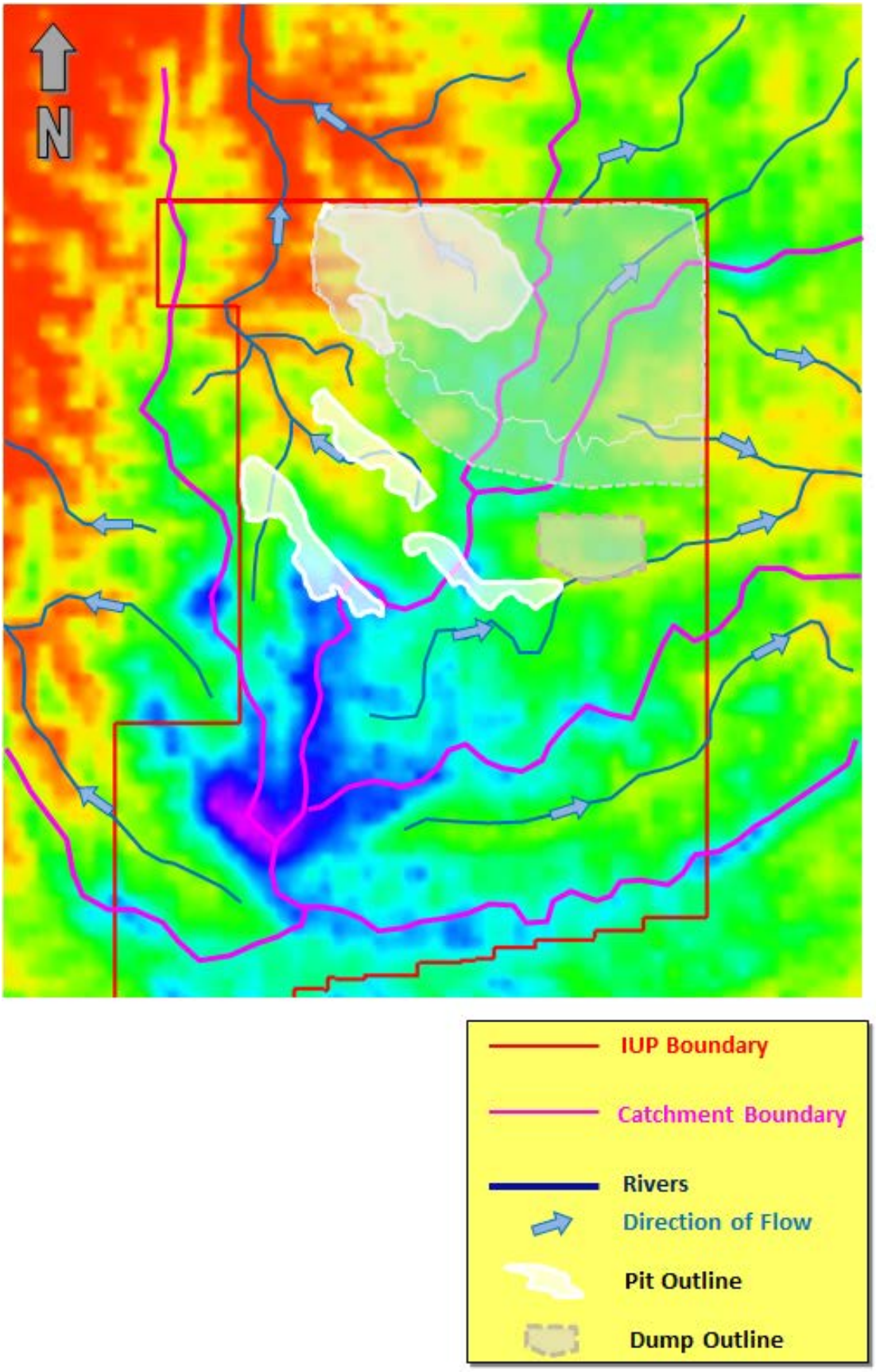
- surface water flows onto the lease and the associated impact on operations; and
- impacts the mining operation will have on water flows outside the lease boundaries.

The topography, catchment areas and water flows around the concession were mapped and analysed using both the SRTM topographic data and LIDAR topographic data. The catchments and rivers that will have a significant impact on the project are shown in Figure 5.1.

The proposed pit for the RK concession is in an area that is relatively high compared to the surrounding topography. This means that surface water management for the designed pit will be relatively simple as there are no significant catchments that will flow onto the planned pit area and thus no significant river diversions will be required. There are some small catchments that will flow into the planned pit from the south to the north; however these catchments are located in the planned out of pit dumping area and water will be diverted away from the pit as part of the dump design.

There is a significant catchment area to the west of the pit design where the water flows from the south to the north. Dumps were designed so that water flowing in this catchment was not disturbed and would not flow towards the pit. All other catchments and water flows in the concession either flow away from the proposed pit and dump areas and are thus not expected to have a significant impact on the operation or are relatively small and will be managed as part of routine mining operations. Water management costs are accounted for in the operating costs of the mine.

Figure 5.1 – Catchment Areas and Water Flows



5.2 GEOLOGICAL AND GEOTECHNICAL CONSTRAINTS AND HAZARDS

5.2.1 Geological Constraints and Hazards

There are no known significant geological factors that influence the estimation of Reserves within the RK concession. No significant geological discontinuities (e.g. faults or barren zones) have been observed within the concession area.

5.2.2 Geotechnical Constraints and Hazards

SMGC were provided with a number of geotechnical studies for RK, including the following:

"Rekapitulasi Hasil Perhitungan Kemantapan Lereng, PT Rinjani Kartanegara" was undertaken by PT LAPI ITB and dated September 2012. This study analysed the stability of 5 sections through the pit highwall and endwalls and estimated the maximum possible overall slope of the pit wall in these locations with a Factor of Safety (FOS) of 1.30. It should be noted that the pit design that was used in this geotechnical study was different to the ultimate pit design that was generated to estimate Reserves, although the study outcomes were useful in determining acceptable pit slopes over a range of pit depths.

"Sampling Dan Kajian Geoteknik Untuk Mendukung Rencana Penambangan Batubara PT. Rinjani Kartanegara" was completed by the Mining Technical Department at the Veteran's University of National Development Yogyakarta and was dated February 2014. This was labelled an interim report, although no final report has been sited. This geotechnical study was based on data collected from 5 boreholes in the lowwall, and a total of 10 samples of overburden collected from existing waste dumps. The purpose of this study was to anlayse the stability of the out of pit dump design in the north of the concession, and to analyse the stability of planned lowwall dumps in the southern part of the concession. The study also analysed the stability of the highwall beneath the northern waste dump. The FOS for the highwall in this report was less than 1.20 and the design was considered to be aggressive.

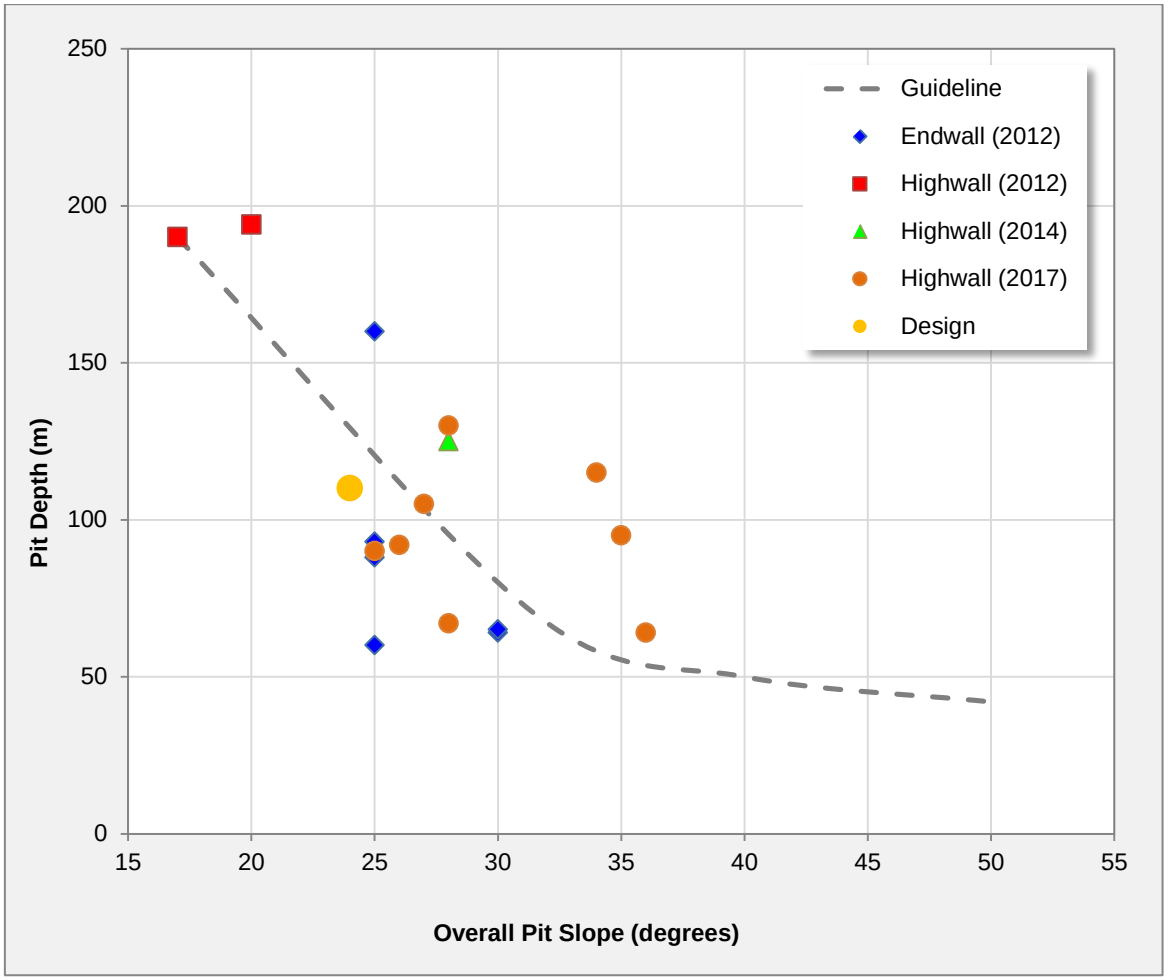
"PT Rinjani Kartanegara Kajian Geoteknik" was completed in August 2014 by the Mining Engineering Study Program of the Veteran's University of National Development Yogyakarta. This study was based on analysis of 15 boreholes located along the highwall, lowwall and dumping areas with depths ranging from 30 m to 204 m. Recommendations included highwall and side wall angles of 28°, overall dump slopes of 17° and 200 m clearance distance between in-pit dumping and coal mining.

"Preliminary Geotechnical Report by PT LAPI ITB" was based on 2 geotechnical boreholes, one of which was 106 m deep and the other 50 m deep. Slope stability analysis was undertaken for both of these holes and the maximum pit depth at a Factor of Safety (FOS) of 1.30 was determined over a range of slope angles for the pit highwall.

"Kajian Geoteknik Rencana Penambangan Batubara di Wilayah Konsesi Blok II PT Rinjani Kartanegara" by the Study Centre for Mineral and Energy Research Institute and Community Service, Veteran's University of National Development Yogyakarta was conducted in January 2017. Analysis was done on 7 boreholes in the North Area. Recommendations included overall highwall slopes of 25° to 36° for depths of 130 m to 64 m. For Lowwalls, overall slopes of 8° to 41° were recommended for depths of 132 m to 30 m. For dumps, overall slopes of 18° and 19° were recommended for heights of 85 m and 75 m respectively.

The results of these geotechnical analyses were used to determine pit design criteria which are shown in Figure 5.2. This figure shows the pit design parameters that were used as well as the slope stability results from the pit sections from geotechnical studies. The maximum highwall height of the pit design was approximately 110 m deep and was designed at a slope of 24 degrees as shown on the chart. This is on the conservative side of the guideline curve.

Figure 5.2 – Geotechnical Design Criteria



Precautions should be taken to prevent the build up of groundwater pressure in the lowwall and associated geotechnical instability. Measures that can be taken to reduce this risk include controlling the rate of vertical descent and monitoring groundwater pressure in the lowwall at all times, as well as using blast-hole rigs to drill depressurisation holes in the lowwall floor.

For waste dump designs, an overal slope of 15° was used. This is a conservative approach compared to the geotechical study recommendations of 18° to 19°.

5.3 MINING METHOD, INFRASTRUCTURE AND COAL LOGISTICS

5.3.1 Mining Method

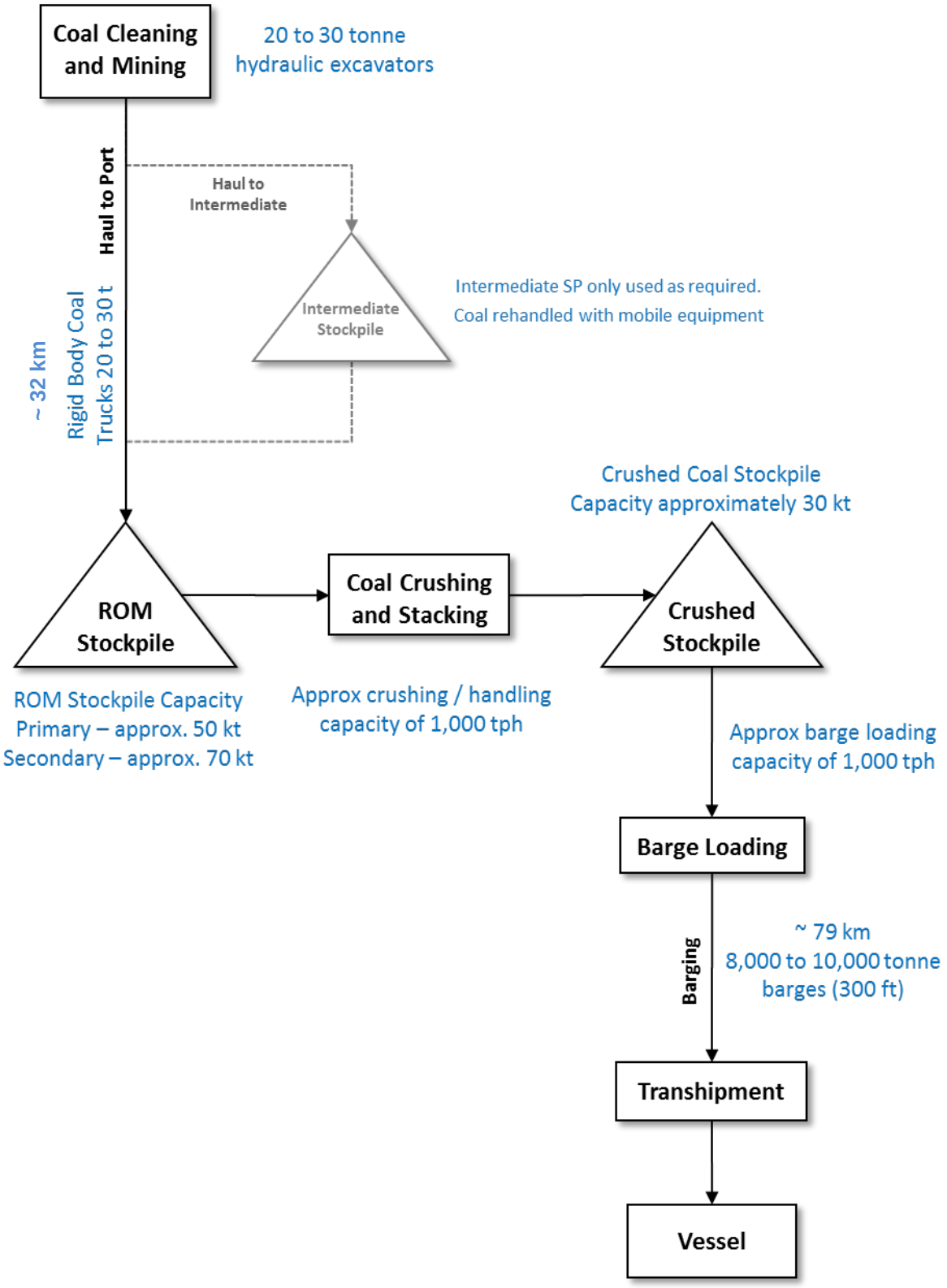
The RK mining operation is an open pit mine using standard truck and excavator methods which are common practice in Indonesia. Waste material is mined using hydraulic excavators and loaded into standard rear tipping off-highway trucks and hauled to dumps in close proximity to the pits or to in-pit dumps where possible. Contractors are currently used for the mining of waste and coal haulage operations and the unit costs used for the Reserve Estimate are based on actual contract rates as of the time of reporting. Coal is mined by RK using contractor equipment on an hourly hire basis. It is assumed that the operation will continue to be operated by contractors over the life of mine.

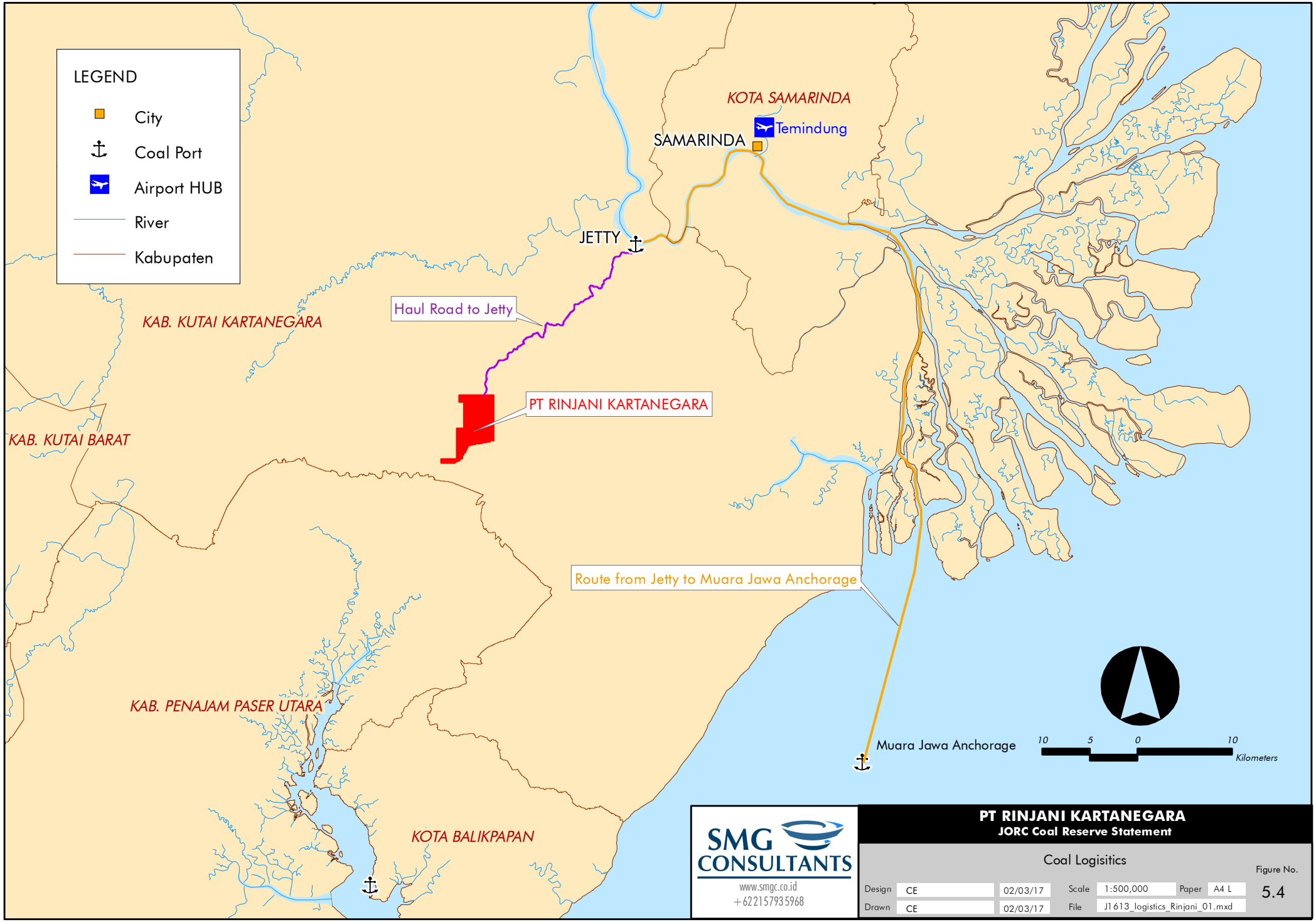
5.3.2 Infrastructure and Coal Logistics

Coal is cleaned and mined using small excavators and hauled out of the pit using rigid body coal trucks. The majority of coal is hauled directly to the port stockpile; however in the past a proportion of coal mined has been stockpiled on an intermediate stockpile at the mine site before being rehandled using mobile equipment and then hauled to the port. RK have stated that they intend to eliminate this practice as much as possible in future operations. In 2016 less than half a percent of mined coal was rehandled through this intermediate stockpile.

The port stockpile is located approximately 32 km from the pit. Once arriving at the port, coal is then either dumped directly into a hopper, or stockpiled onto either the primary or secondary ROM stockpiles and rehandled into the hopper for crushing and stockpiling on the crushed coal stockpile. Coal is then be loaded from the crushed coal stockpile onto barges using a standard mechanical reclaim and barge-loading system. Coal is then barged approximately 79 km on the Mahakam River to an anchorage at either Muara Jawa or Muara Berau where a floating crane loads the coal from the barge into a vessel for shipment. The overall process flows and equipment types that have been used for operating cost estimates are shown in Figure 5.3. A map of the coal logistics is shown in Figure 5.4. All coal handling infrastructure is already in place and operational at the RK concession.

Figure 5.3 – Process Flow and Equipment





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PT RINJANI KARTANEGARA
JORC Coal Reserve Statement

Coal Logisitics

Figure No. 5.4

Design	CE	02/03/17	Scale	1:500,000	Paper A4 L
Drawn	CE	02/03/17	File	J1613_logistics_Rinjani_01.mxd	

5.4 ECONOMIC MINING LIMITS

5.4.1 Mined Out Pit Areas

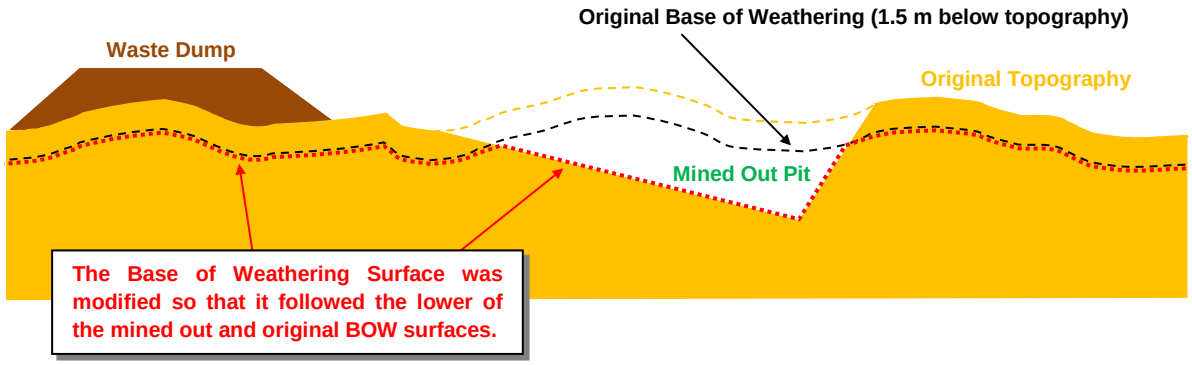
Mining operations in the RK concession have been ongoing since 2012, and it is important that all coal already mined from the deposit is excluded from the Reserve estimations. Three survey surfaces were provided to SMGC that were used to Estimate the Reserve:

- Mined Out Surface dated 31st December 2016;
- Situation Surface dated 31st December 2016 (which included dumps); and
- Original (pre-mining) topographic surface.

The mined out surface contained the floor of all mined out pits and the original topographic data in all locations that had not been mined. The situation surface is the situation on site at the specified date and contains the mined out floor where these have not been dumped on or rehabilitated, the dumped and rehabilitated areas and the topographic data in undisturbed locations. The original topographic surface was built from the LiDAR survey that was conducted for the site.

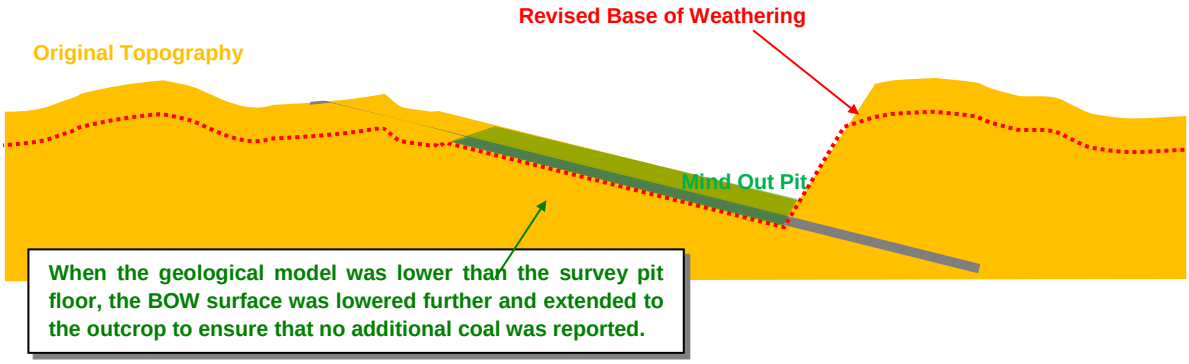
The approach used for the project was to build an *original* BOW surface using the original topography. In the case of RK, the original BOW was set to 1.5 m below the topography. The original BOW was then modified and new BOW generated which was the lower of the original BOW and the Mined Out surface. This ensured that the coal in the model was accurately reported in the mined out areas and beneath the waste dumps. This modified BOW is shown in Figure 5.5.

Figure 5.5 – Base of Weathering Surface



It should be noted that even when the mined out DTM is used it is still possible that additional coal may be included in the optimisation and Reserve estimations. This occurs in cases where the actual coal floor from the survey is higher than the model coal floor. In order to maximise the accuracy of the Reserve estimate and to minimise any mined coal being included, the mined out surface was modified so that the floor of all mined out seams was fitted to the floor of the corresponding seam in the geological model. This process is shown in Figure 5.6.

Figure 5.6 – Modifications to Base of Weathering Surface



5.4.2 Pit Optimisation

Potential open cut Reserves inside the concession were identified with Minex software which utilises the Lerchs Grossman algorithm. The Lerchs Grossman algorithm was developed by Helmut Lerchs and Ingo Grossmann in their 1964 paper “Optimum Design of Open-Pit Mines“, Joint C.O.R.S and O.R.S.A. Conference, Montreal, May 27-29, 1964. By generating the financial value (positive or negative) for each mining block within a deposit and then applying the physical relationship between the blocks, the optimal economic pit can be determined.

This method is widely accepted in the mining industry and is a suitable method for determining economic mining limits in this type of deposit. The optimiser was run across a wide range of coal prices using a standard set of costs that was developed by SMGC. These costs were adjusted to suit the conditions for this project and are described in Section 5.10. Variability of coal quality between the different coal seams is considered to be small and thus coal seams were all assigned the same relative coal price.

A base pit was built and used as a bottom limit for the pit optimiser. This pit shell effectively represented the maximum pit possible in the deposit that was reasonable for the estimation of Coal Reserves.

The optimiser base pit was limited by the following:

- the IUP boundary to the north, east and west;
- Seam 5200 seam floor in all locations; and
- the sub-crop of 5200 to the south.

No offset was left between the crest of the highwall and the IUP boundary as this is not required for water management. It is possible that an access road will be required; however it is likely that this could be constructed outside the IUP boundary. It is also considered likely that there is economic coal in the adjacent IUPs to the north and the east and there may be opportunities in the future for RK to mine coal in the pit walls by extending the pit into the adjacent concessions provided an agreement can be reached for mining in these areas.

The pit optimisation produced a set of nested pit shells that represent incrementally higher stripping ratios per tonne of coal in the deposit. Graphical results of the pit optimisations are shown in Appendix D.

The pit designs used to estimate Reserves for the RK concession contained a portion of mineable coal tonnes not classified as Measured or Indicated Resources. These coal tonnes comprised of Inferred Resources and Exploration Target coal have been referred to as Other Coal throughout this report. Under the JORC Code, this Other Coal cannot be included in Reserve estimations. While this Other Coal was not reported as a Reserve, it was included in the mine plan developed for the deposit. It made up approximately 14 % of the coal in the production schedule.

Areas of Inferred Resources and Exploration Target coal inside the ultimate pit designs referred to as Other Coal were located in the ITCI (western) and Middle Areas. The primary reasons for this Other Coal classification were the lack of drill access to these areas and insufficient core sample analysis. No access was granted to the ITCI Area and limited access was allowed in the Middle Area. This Other Coal has been included in the pit design as it was considered likely the ultimate pit excavation would continue into these areas, and that the waste balance and waste haul distances would be more realistic and accurate if this Other Coal was included. Any user, of this pit design and the associated mine plan should be aware of this Other Coal comprising Inferred Resources and Exploration Target coal. This should be taken into account in any decisions made based on the estimate of Reserves.

5.4.3 Selection of Pit Shell

The Reserve estimation process applied appropriate cost, revenue, mining loss, dilution and moisture adjustment parameters to each pit shell and a financial model was built for each pit shell using an assumed production schedule. These parameters are discussed in detail in the following sections. The pit shells that best estimated the economic pit limits of the deposit were selected as the basis for the ultimate designs.

For pit selection, the deposit was split into three zones:

1. North Area including pits defined by seam S700 and S800 floors;
2. Middle Area including pits defined by seam S2001 and S2400 floors; and
3. Middle Area including pit defined by seam S3200 floor.

The pit shells, OPC005, OPC022 and OPC025 were selected for zones 1, 2 and 3 respectively. These pit shells represent the best estimates of the break-even pit limits for each zone. This is the limit where it is economically viable to mine all contained coal using an average coal price assumption and extraction costs that are discussed in the following sections.

For this Reserve estimate prepared in February 2017, the selected pit shells OPC005, OPC022 and OPC025 were modified in the ultimate pit design process to ensure they could be practically mined. This is discussed in the next Section 5.5.

5.5 ULTIMATE PIT DESIGN

The selected pit shells OPC005, OPC022 and OPC025 and their respective ultimate pit designs are presented in Figure 5.7, Figure 5.8 and Figure 5.9. The selected pit shells were used as the basis for the ultimate pit designs. Factors considered when generating these ultimate pit design included:

- exclusion of small impractical pit shells;
- mined out areas;
- areas sterilised by dumping;
- geotechnical design criteria;
- out-of-pit and in-pit access and waste haulage roads and out-of-pit dumping room; and
- the location and proximity of coal to exploration data and topographic data.

New exploration in the South Area yielded a small pit shell in the optimisation process. This area was excluding from the ultimate pit designs because of the low tonnage, high strip ratio, high sulphur and capital required to build a haul road to the South area. This exclusion status may change if more exploration reveals additional coal in the South Area making it more attractive. It may require consideration of alternative mining methods such as auger mining and assessment of specialised markets for high sulphur coal to make it viable.

Figure 5.7 – Selected Pit Shell and Ultimate Pit Design - North Area S700 and S800

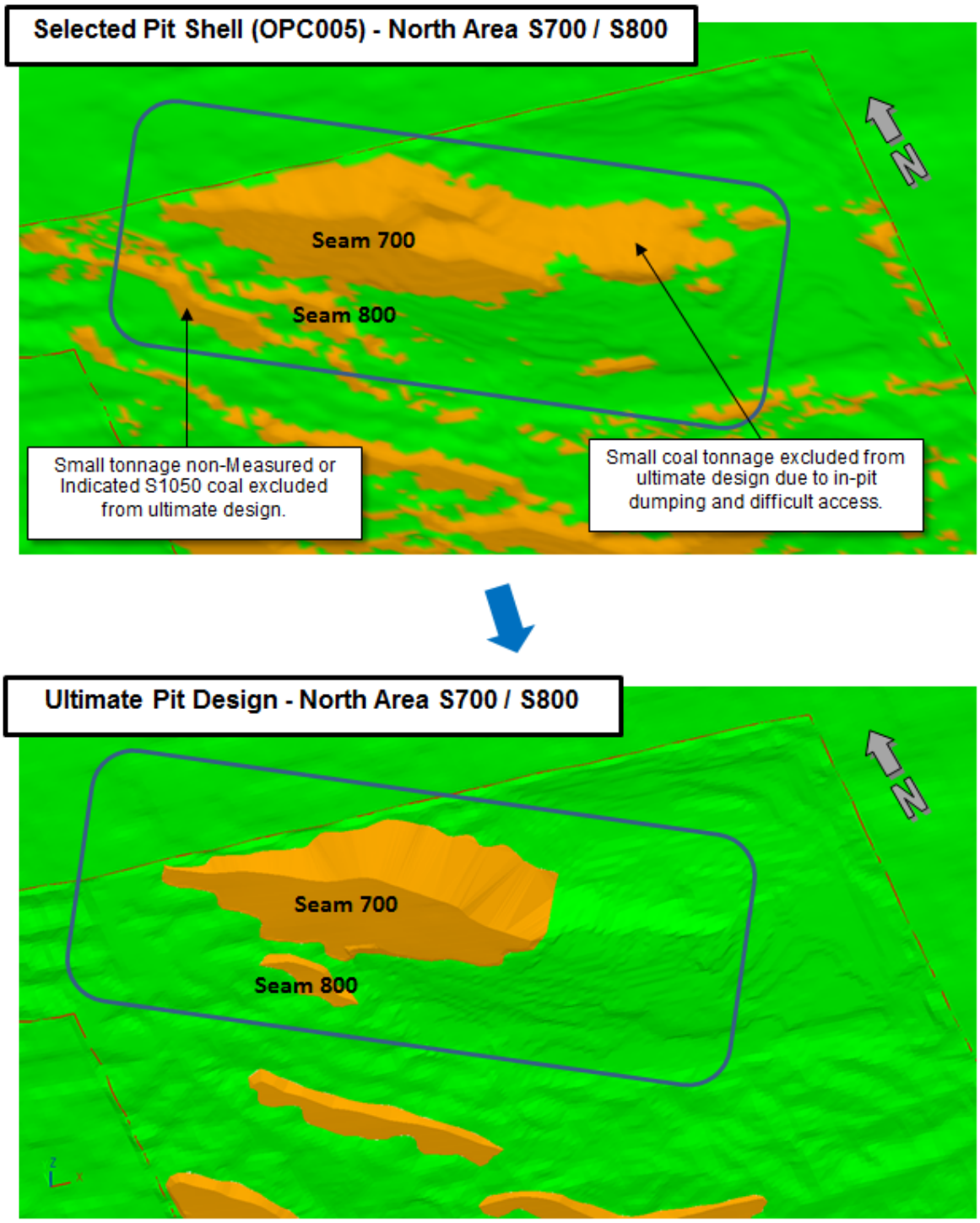


Figure 5.8 – Selected Pit Shell and Ultimate Pit Design - Middle Area S2001 / S2400

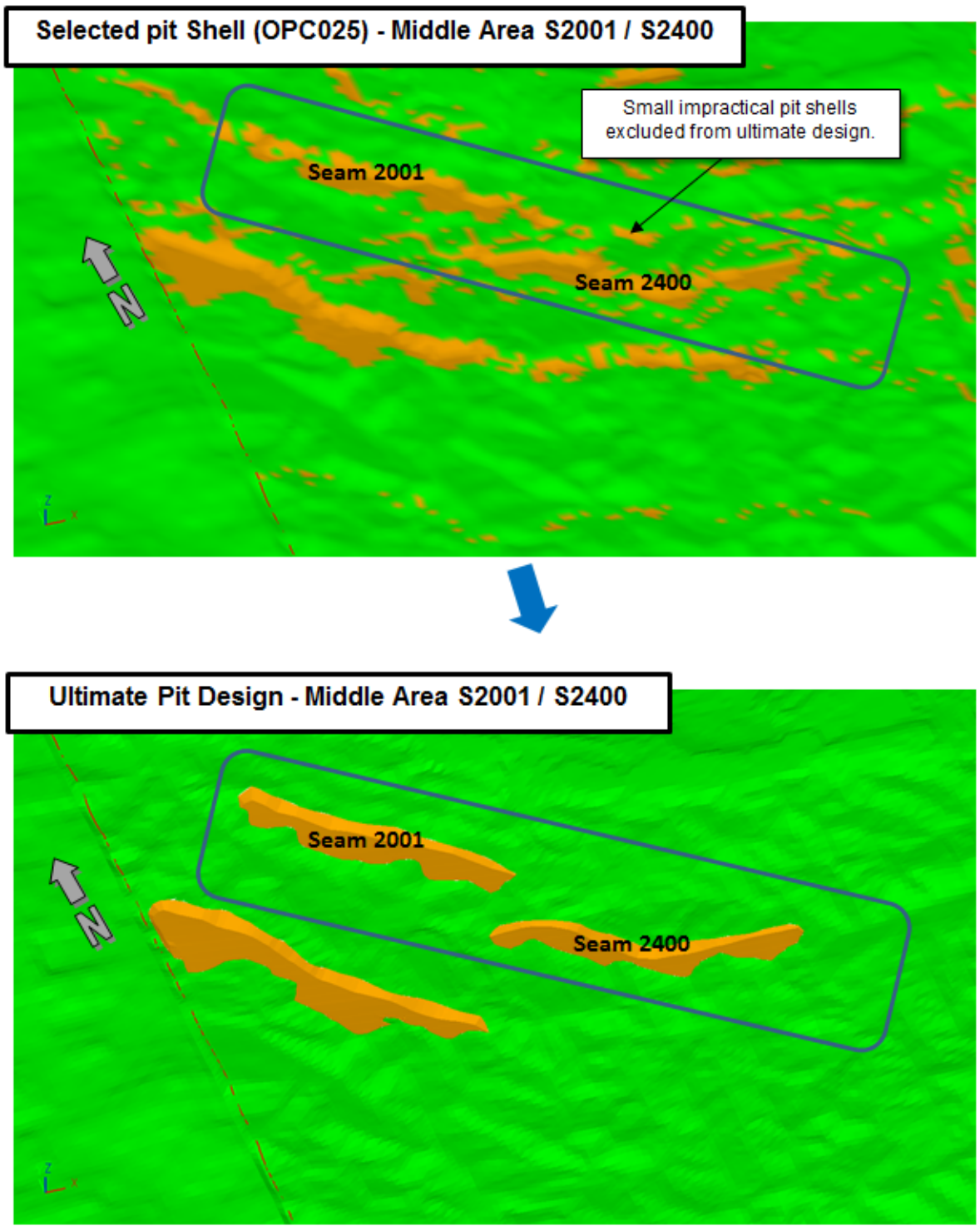
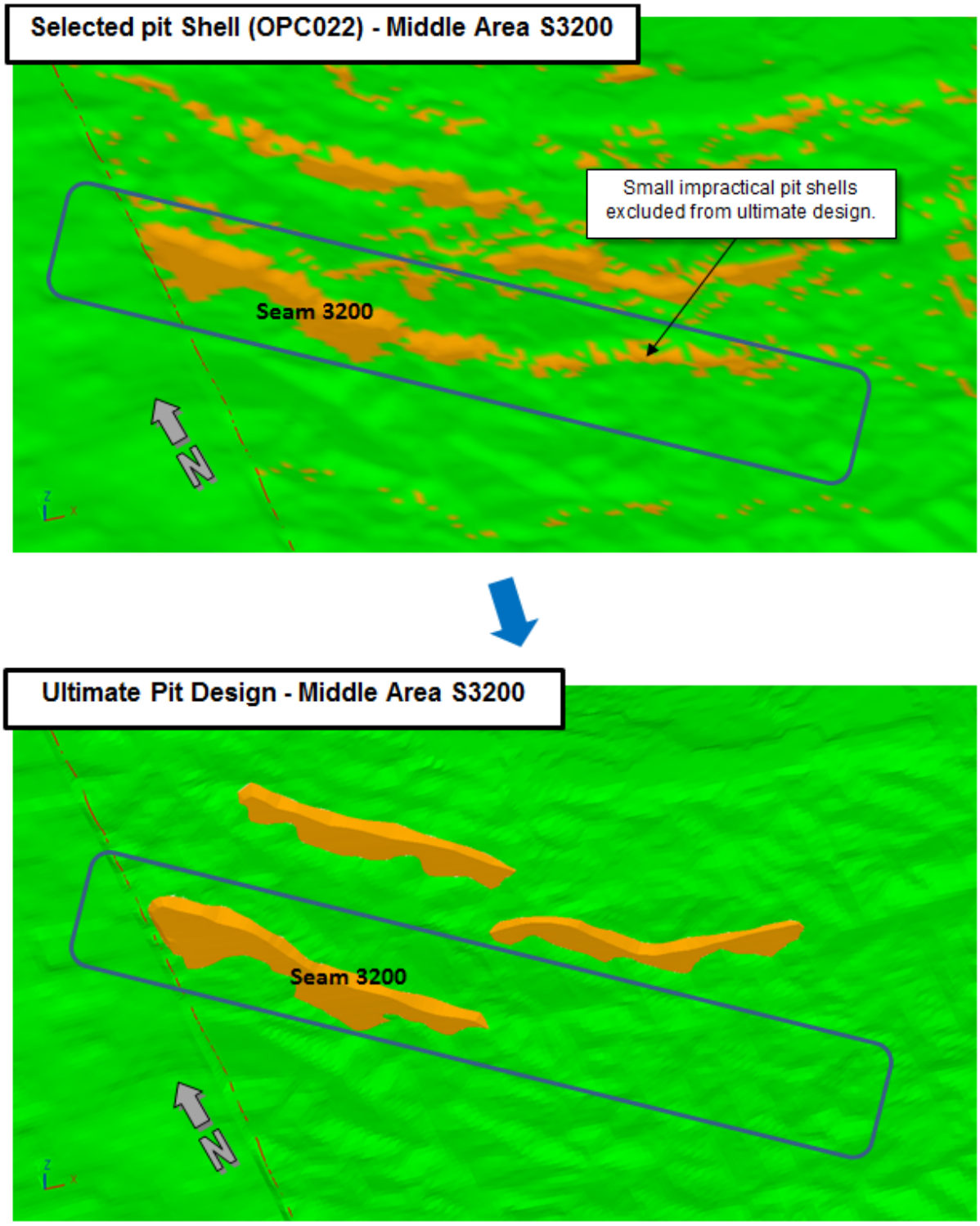


Figure 5.9 – Selected Pit Shell and Ultimate Pit Design - Middle Area S3200



Detailed mining berm and batter design has not been undertaken for the ultimate pit designs as this is considered to have no Material impact on the estimation of Reserves. Plans and cross sections of the ultimate pit design are shown in Figure 5.10 to Figure 5.12.

ITCHI Area

North Area

Middle Area

Middle Area

South Area

485 000 E

485 750 E

487 500 E

488 000 E

488 750 E

9 918 250 N

9 917 500 N

9 916 750 N

9 916 000 N

Key Plan

LEGEND

- Boundary IUP
- Boundary IPPKH 1
- Boundary IPPKH 2
- Contour Line
- Seam S700
- Seam S800
- Seam S2001
- Seam S2400
- Seam S3200
- Boreholes

Horizontal Scale 1 : 12,500 @ A3

125 m 0 250 m

north

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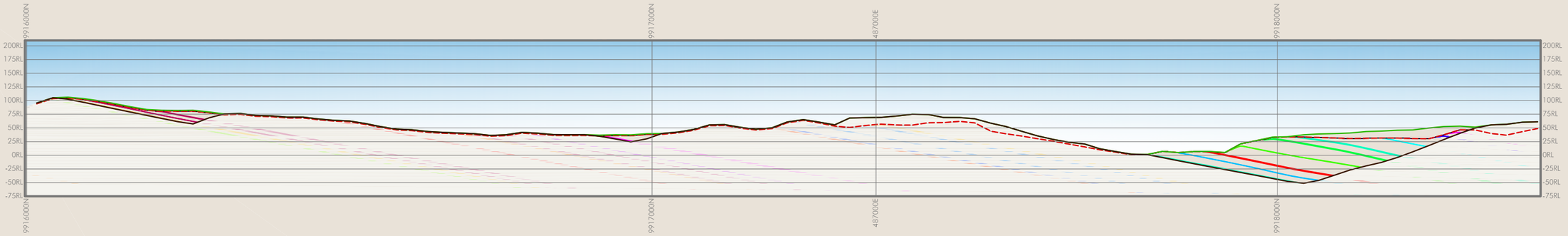
Pit Design

Figure No. 5.10

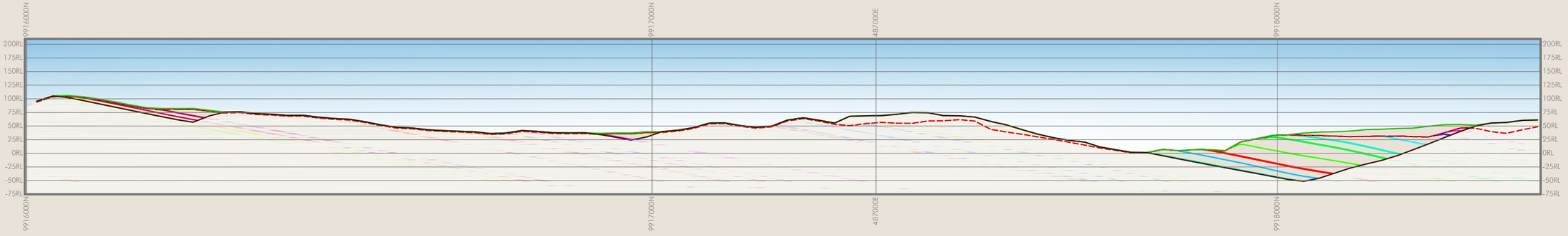
Design	RS	17/02/17	Scale	1 : 12,500	Paper	A3 P	
Drawn	IW	17/02/17	Cad File	J1613_33 Pit Design.dwg			



Cross Section A-A'

H : V = 1 : 1
Vertical Scale 1 : 8,000 @ A3

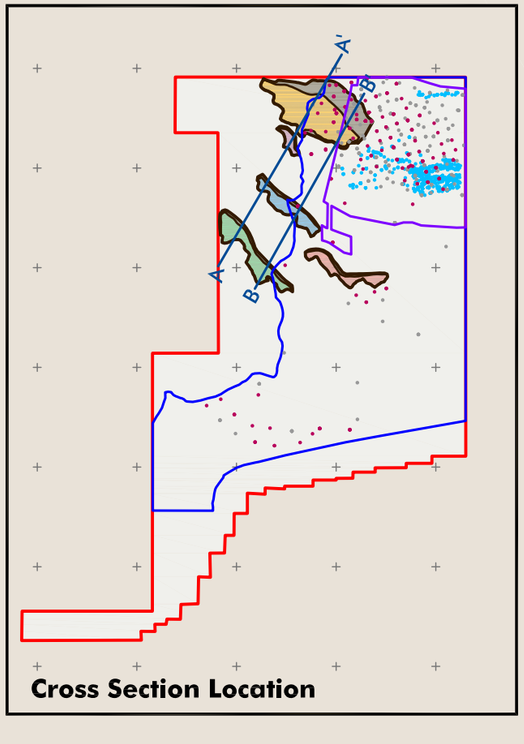
80 m 0 160 m



Cross Section B-B'

H : V = 1 : 1
Vertical Scale 1 : 8,000 @ A3

80 m 0 160 m



Cross Section Location

LEGEND :

- IUP Boundary
- IPPKH1 - OP
- IPPKH2 - OP
- LIDAR Topography
- Base of Weathering
- Pit Design

- Seam S5
- Seam S40
- Seam S50
- Seam S50U
- Seam S100
- Seam S200
- Seam S300
- Seam S400
- Seam S500
- Seam S600
- Seam S700
- Seam S790
- Seam S800
- Seam S900
- Seam S1000
- Seam S1050
- Seam S1999
- Seam S2001
- Seam S2100
- Seam S2200
- Seam S2300
- Seam S2400
- Seam S2500
- Seam S3000
- Seam S3100
- Seam S3200
- Seam S3300
- Seam S4000
- Seam S4900

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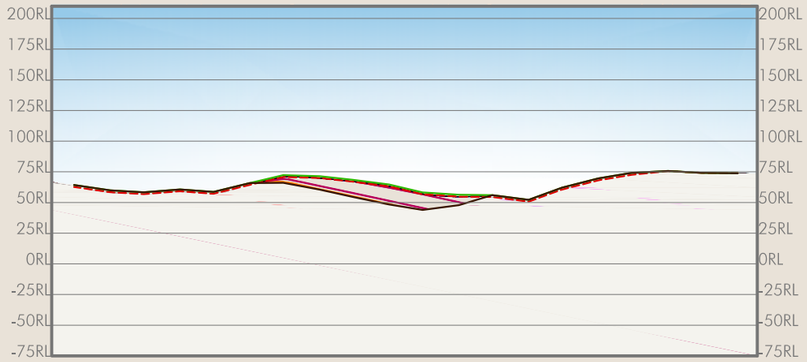
Cross Section A-A' and B-B'

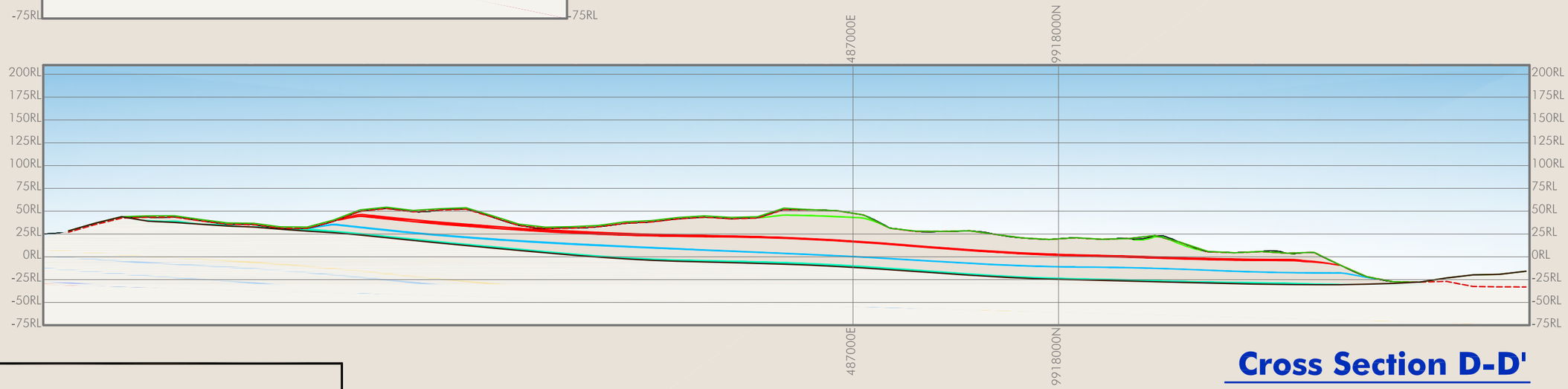
Figure No. 5.11

Design	RS	17/02/17	Scale	1 : 8,000	Paper	A3 P	
Drawn	IW	17/02/17	Cad File	J1613_32 Section RSV.dwg			



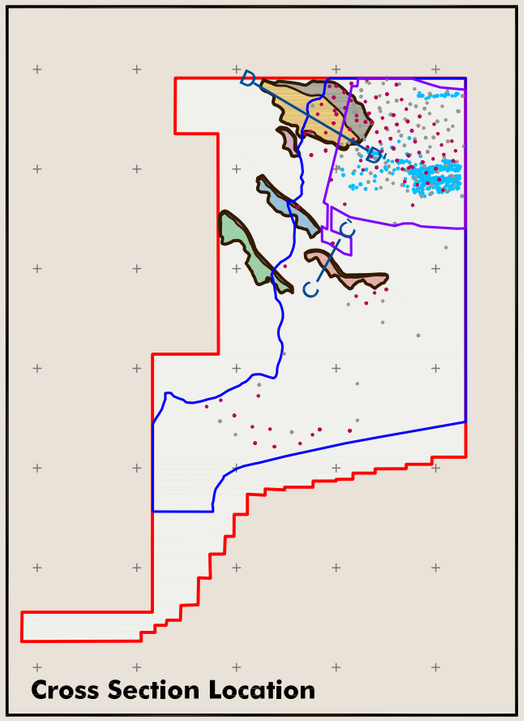
Cross Section C-C'

H : V = 1 : 1
Vertical Scale 1 : 5,000 @ A3
50 m 0 100 m



Cross Section D-D'

H : V = 1 : 1
Vertical Scale 1 : 5,000 @ A3
50 m 0 100 m



Cross Section Location

LEGEND :

- IUP Boundary
- IPPKH1 - OP
- IPPKH2 - OP
- LIDAR Topography
- Base of Weathering
- Pit Design

- Seam S5
- Seam S40
- Seam S50
- Seam S50U
- Seam S100
- Seam S200
- Seam S300
- Seam S400
- Seam S500
- Seam S600
- Seam S700
- Seam S790
- Seam S800
- Seam S900
- Seam S1000
- Seam S1050
- Seam S1999
- Seam S2001
- Seam S2100
- Seam S2200
- Seam S2300
- Seam S2400
- Seam S2500
- Seam S3000
- Seam S3100
- Seam S3200
- Seam S3300
- Seam S4000
- Seam S4900

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Cross Section C-C' and D-D'

Figure No. 5.12

Design	RS	17/02/17	Scale	1 : 5,000	Paper	A3 P	
Drawn	IW	17/02/17	Cad File	J1613_32 Section RSV.dwg			

5.6 DENSITY ADJUSTMENT

The Relative Density (RD) analysis on borehole core samples that was done during the exploration program, as described in Section 3.3, was undertaken on air dried samples. SMGC has estimated the in situ density of the coal using the Preston-Sanders method to account for the difference between air-dried density and in situ density. The formula and inputs were as follows:

$$RD2 = RD1 \times (100 - M1) / (100 + RD1 \times (M2 - M1) - M2)$$

WHERE

RD2	=	In situ Relative Density (arb)
RD1	=	Relative density (adb)
M1	=	Inherent Moisture (adb)
M2	=	Total Moisture (arb)

It should be noted that while the total moisture from laboratory measurements may not necessarily equal the in situ moisture, this is considered to be a best estimate given the limited amount of data. If no adjustment to density is made then it is considered likely that Coal Reserves will be overstated.

5.7 LOSS, DILUTION AND MOISTURE ADJUSTMENT

It is usual practice in this type of mining operation for considerable effort to be spent cleaning the coal roof to minimise dilution and maximise coal recovery. This is in line with the practice observed in operating mines with similar conditions in Indonesia which typically use small excavators with flat bladed buckets to clean the roof of the coal seam prior to mining. It is more difficult to excavate the coal floor cleanly, and some dilution is expected to occur here. This precise mining method allows thin partings to be excluded from the ROM coal and for thin coal seams to be mined. The cost of this type of operation has been assumed in the mining costs for the operation.

It should be noted that in the experience of SMGC the dilution figures regularly achieved in Indonesian operations are significantly lower compared to similar operations elsewhere in the world. The use of small flat bladed excavators with trained operators regularly provides excellent results in terms of coal recovery and dilution.

As discussed in Section 4.2, SMGC has used the reconciliation results from the start of mining in June 2012 up to December 2016 as the coal recovery and adjustment factors for estimating coal Reserves for the concession. This was considered a more reasonable approach than trying to match up modelled and actual results by adjusting loss and dilution thickness parameters in a trial and error fashion.

The parameters for coal recovery and other adjustment factors used for the estimation of in-pit ROM coal from modelled in situ coal are shown in Table 5.1.

Table 5.1 – Parameters, Coal Recovery and Adjustment Factors

Parameters and Factors	Value
Minimum Minable Coal Thickness	0.1 m
In situ to ROM Total Moisture Adjustment (to be added)	+ 0.9 %
Coal Recovery after Minimum Mineable Coal Thickness and TM Adjustments	101 %
Ash Content arb	112 %
Total Sulphur arb	101 %
Calorific Value arb	98.6 %
Waste Adjustment	98 %

The following Table 5.2 shows the tonnes of in-pit coal before and after the application of density adjustment, TM adjustment and coal recovery parameters as described in Table 5.1.

Table 5.2 – Estimate of Tonnes of In-pit Coal

Description	Waste (Mbcm)	Coal (Mt)	Stripping Ratio (bcm:t)	% In Situ Tonnes
In situ Coal Inside Ultimate Pit Design	36.2	3.3	11.1	100.0 %
In situ Coal after Density Adjustment	36.2	3.3	11.1	100.0 %
Coal in Pit Design after Minimum Mineable Coal Thickness	36.2	3.3	11.1	100.0 %
Coal in Pit Design after ROM Total Moisture Adjustment	36.2	3.3	11.0	100.9 %
Coal in Pit Design after Recovery Factor	35.5	3.3	10.7	101.9 %

This table shows the tonnes of coal in the geological model and reserves database inside the ultimate pit design. The tonnes in this table are larger than the estimated Coal Reserves as consideration has not been made for boundaries of Measured and Indicated Resources. There is a portion of coal inside the ultimate pit designs that was not classified as Measured or Indicated and thus cannot be reported as a Reserve. The majority of this Other Coal is located in the ITCI Area and the Middle Area where exploration has been insufficient to qualify this coal as Measured or Indicated. Inclusion of this material in the mine plan is not considered to have a significant impact on the Reserves estimated and reported in this study.

There is also other coal inside the pit design that is not classified as Measured or Indicated that could not be excluded as this would result in an impractical pit design or was important for the mine plan. This coal was not classified as Measured or Indicated because it was not sampled and analysed with sufficient core recovery. Though generally there are open-hole intersections with geophysics to confirm the existence of the seams.

After the application of density, minimum mineable coal thickness, total moisture and recovery factor adjustments the total gain for the deposit from in situ to ROM is approximately 1.9 %. Within the accuracy of the estimation, this is considered reasonable with gains due to additional total moisture and dilution material. The increase in total moisture was applied to ROM coal so that the cost of hauling the extra moisture to the port was included in the operating cost estimate.

5.8 MINING SCHEDULE AND WASTE BALANCE

A Life of Mine (LOM) plan was completed for the deposit based on the ultimate pit design. The plan was completed to a prefeasibility study level of detail and was done to ensure that the mining method was practical and there was sufficient dumping room to contain all the waste mined in the ultimate pit design. This was also used to check if the assumed waste mining costs were reasonable.

The results of the mine plan showing the active mining pits and dumps are documented in Appendix E. It is expected that improvements can be made to this mine plan and production schedule with more detailed planning.

5.9 MARKET ASSESSMENT AND REVENUE FACTORS

5.9.1 Marketable Product Quality and Beneficiation

Other than crushing to a 50 mm top size, no beneficiation of the coal is undertaken. SMGC has assumed that total moisture of the product coal will increase by 0.9 % (as received basis) over the total moisture estimated from the geological model. Some variation in coal quality is expected over the life of the mine, although this is unlikely to affect the marketability of the coal. The average LOM product coal quality is summarised in Table 5.3, with all qualities reported on an as received basis unless otherwise specified.

Table 5.3 – Product Coal Quality

Total Moisture (% arb)	**Ash** (% arb)	**Volatile Matter** (% arb)	**Total Sulphur** (% arb)	**Calorific Value** (kcal/kg adb)	**Calorific Value** (kcal/kg gar)
17.9	5.5	37.7	1.67	5,956	5,712

** This table must be presented with the entire Coal Reserve Statement from which it was obtained.*

5.9.2 Sales Price

After five years of falling prices to levels close to USD 50 /t, the Newcastle coal index recovered sharply in the second half of 2016 to peak at values above USD 100 /t. Prices have since fallen back to mid USD 70 /t levels. This extreme volatility makes it difficult to forecast future price levels.

SMGC have assumed a forward curve for coal prices with a starting price for the first quarter based on the average actual sales price of December 2016 and January 2017. The assumed forward price curve then falls back in line with a ratio linked to the median value of several published Newcastle index forecasts.

The coal prices used in the economic modelling are shown in Table 5.4. The assumed coal price forward curve shown is for delivery FOB Barge at the RK port facility. The forecast price at a base calorific value (CV) of 5,615 kcal/kg gar is shown along with the shipped CV and forecast prices received adjusted to reflect the variation in the shipped CV during the scheduled mine life. The prices presented in Table 5.4 start off significantly higher than last year's estimate but then fall back close to previous levels over the remaining mine life.

Table 5.4 – Sales Price Forecast FOB Barge (Real terms as of end December 2016)

Description	Unit	2017-Q1	2017-Q2	2017-Q3	2017-Q4	2018	2019
Forecast Price* @ Base CV gar	USD / t	58	53	53	53	46	43
Shipped CV gar	kcal/kg	5,751	5,738	5,720	5,686	5,657	5,784
Forecast Price Received	USD / t	60	54	54	53	46	44

** Forecast prices are stated FOB Barge.*

The prices assumed in this study are intended strictly for this purpose only and shall in no way be construed to constitute the basis for a valuation of the project. While these prices are considered to be reasonable for the purpose of this study and represent one possible future outcome; it must be noted that forward prices are influenced by a large number of factors which cannot be controlled nor accurately predicted. It is likely that actual future coal prices will be significantly different from these assumptions.

5.9.3 Marketability

The moderate energy of RK coal is an attractive property in the market, and there are no issues with marketing the coal at the current time. The total sulphur is considered to be slightly higher than other coals of similar energy, and this is reflected in a discount applied to the coal compared to coals of similar energy and lower total sulphur. The Indominco IM East benchmark marker coal has similar qualities but slightly lower sulphur than RK coal. Using the MEMR published benchmark coal prices for February 2017, average RK quality coal was indexed at a discount of USD 0.43 /t or 1 % less than the published comparable Indominco IM East coal price.

SMGC does not see any reason why there will be any difficulties marketing the coal from the RK concession as a thermal coal in the future. This coal is considered to be an attractive coal for blending with lower energy and lower total sulphur coals which are abundant in the area, and markets are expected to be available for this coal type over the life of mine. The variability in coal quality over the life of the mine is not expected to cause any significant issues since the coal will most likely be blended with other coals, provided that the variation is understood and planned for in advance.

5.9.4 Marketing Regulatory Issues

While SMGC does not see any significant issues with marketing this type of coal in the longer term, there are a number of issues with the new Indonesian mining law (Law on Mineral and Coal Mining No. 4 of 2009) and associated regulations that have the potential to affect marketing and selling of coal from coal concessions. Some aspects of the new law that may affect marketing of coal from the RK concession are discussed in this section.

Domestic Marketing Obligation

In order to secure coal supply for domestic use, the new mining law allows for a Domestic Market Obligation (DMO) where the central government is able to control production and export of mining products. Regulation No. 34 of 2009 issued by the Ministry of Energy and Mineral Resources (MEMR) detailed the procedures for the DMO.

The regulation states that the DMO for each concession holder is to be set on an annual basis by the MEMR based on the demands of domestic consumers. To qualify as domestic consumers, consumers must be parties who will actually use the coal as raw material or fuel i.e. they must be end users and not intermediaries such as coal traders.

At the time of writing this report, DMOs had only been specified for selected mining companies and not widely implemented. SMGC has priced coal sold from RK using the forecast export prices described in this section; however RK is potentially subject to a DMO under the new mining law. It is not possible to determine at this stage if this regulation will have any real impact on actual coal prices received.

Minimum Pricing Regulation

The Indonesian government has regulated benchmark prices for coal and other minerals to serve as the floor price for government royalty calculations. If actual coal sales are higher than the benchmark price, then the royalty is based on the actual price; whereas if the actual price is lower than the benchmark price then the benchmark price is used to calculate royalty. The requirements are detailed in Regulation No. 17 of 2010 issued by the MEMR. The benchmark price is applicable to both long term sales and spot sales.

At the current time the government's approach is that the benchmark price is only to be used to calculate royalties for the purpose of preventing transfer pricing. This situation is expected to continue; however it is possible under the new mining law that regulations could be issued such that benchmark prices would determine the minimum price for actual sales, which may affect marketing and sales.

5.10 COST FACTORS

5.10.1 Unit Rates and Operating Costs

The RK mine is operated under unit rate contracts, where a rate is specified for a number of physical quantities which are measured on a periodic basis including waste mined, and coal hauled. Different contractors are used for waste mining and for coal haulage. Unit rates were also used to estimate most of the operating costs for the mine.

Overall operating costs have reduced since the previous Reserves estimate. This is due to ongoing re-negotiation of contract rates and low fuel prices. In the recent industry climate it has become common for contracts to be re-negotiated downward. These re-negotiated contracts often include claw back provisions triggered at various threshold levels in coal price indices.

The unit rates used by SMGC to estimate operating costs for the RK operation were based on the actual unit rates in the contracts that are currently in operation, as well as actual operating costs for the mine. In some cases where actual data was not available or was not considered suitable, typical industry rates were used. These assumptions are considered to be reasonable and suitable for the purpose of this study. The unit rates are shown in Table 5.5.

Table 5.5 – Base Unit Rate Assumptions

Item	Unit	Unit Rate	VAT
Environmental	USD / tonne	0.15	N
Waste Mining (up to 1,000 m)	USD / bcm	*	Y
Waste Overhaul	USD / bcm / 100 m	*	Y
Coal Mining	USD / tonne	0.64	Y
Haul to Port	USD / tonne km	0.186	Y
Port Stockpile and Barge-loading	USD / tonne	1.40	N
Miscellaneous Operations	USD / tonne	2.19	N
Overheads	USD pa	2,760,000	N
VAT	% VAT costs	10 %	

* Commercially sensitive information excluded from this Report.

Operating costs were estimated for the project using these unit rates combined with the planned physical quantities of production over the life of mine plan. It has been assumed that some waste rehandle will be required for temporary in-pit ramps, handling mud and recovering from geotechnical failures. A waste rehandle of 3 % of in situ waste was assumed for the project. The waste mining cost includes drill and blast.

The unit rates in the table include a significant fuel component and are based on the December 2016 actual fuel price of USD 0.51 per litre.

5.10.2 Royalties and Government Costs

Tenure for the concession is held under an Izin Usaha Pertambangan (IUP), and the royalty rate that is dependent on the air dried energy of the coal as sold. Under current regulations, the royalty rate is 5 % of price of coal sold as the air dried energy is greater than 5,100 kcal/kg and less than 6,100 kcal/kg.

In previous years, there have been proposals under discussion within the Indonesian government to increase the rate of royalties for IUP's. These proposals lost momentum with the extended down turn in the coal industry. SMGC now considers it is unlikely that these increases will be implemented in regulations unless a sustained period of elevated coal prices occurs.

5.10.3 Capital Costs

Most of the infrastructure required for the RK concession is already in place and operating. Remaining capital expenditure for the mine has been estimated based on discussions with RK and on typical industry costs in Indonesia. The estimated capital costs remaining for the concession are shown in Table 5.6.

Table 5.6 – Estimate of Remaining Capital Expenditure (USD Millions)

Description	Remaining (USD millions)
Land Compensation	0.4
Permits and licenses	0.7
Exploration and Technical Studies	0.4
Mine Closure Costs (at end of mine life)	4.4
SUBTOTAL	**5.9**
Contingency (15 %)	0.9
TOTAL	**6.8**

Given the short mine life of 3 years, no allowance has been included for ongoing and replacement capital expenditure for the operation.

5.11 ECONOMIC EVALUATION

An economic model was built for the project to confirm that the project is feasible after the application of all modifying factors. The economic model is based on the mine plan and waste balance that is described in Appendix E, and assumes a single coal price and quality for each period of the schedule. The schedule has been broken down to quarterly periods for the first year followed by annual periods for the remainder.

Using the capital costs, operating costs and sales price assumptions combined with the Reserves described below in Section 6, the financial model showed the project to be economically feasible. A chart with real cash flows over the life of mine is shown in Figure 5.13 and the real EBITDA graph for the life of mine is shown in Figure 5.14. A summary table of the financial model is shown in Table 5.7. All cash flows in this table are shown on a real and undiscounted basis.

The economics of the project are helped by tolling of third party coal from neighbouring mines for use of the haul road and barge loading port facilities. The value of this additional revenue stream was based on assumptions provided by RK. These included an estimated quantity of 8 kt per month and a rate of $5.00 per t.

The economic model, resulting cash flow and EBITA graphs shown in Figure 5.13 and Figure 5.14 include the mining of Other Coal not classified as Reserves at the end of the schedule. This proportion of Other Coal mined by period is shown in Figure 3.5 of the Life of Mine Plan (Appendix E). If this Other Coal is not mined, the economics of the project are reduced but remain positive.

The economic assumptions used in the financial evaluation of the mining operation are consistent with current mining industry practices in Kalimantan and are considered appropriate to support the Statement of Coal Reserves in the following section.

Figure 5.13 – Cash Flows over Life of Mine

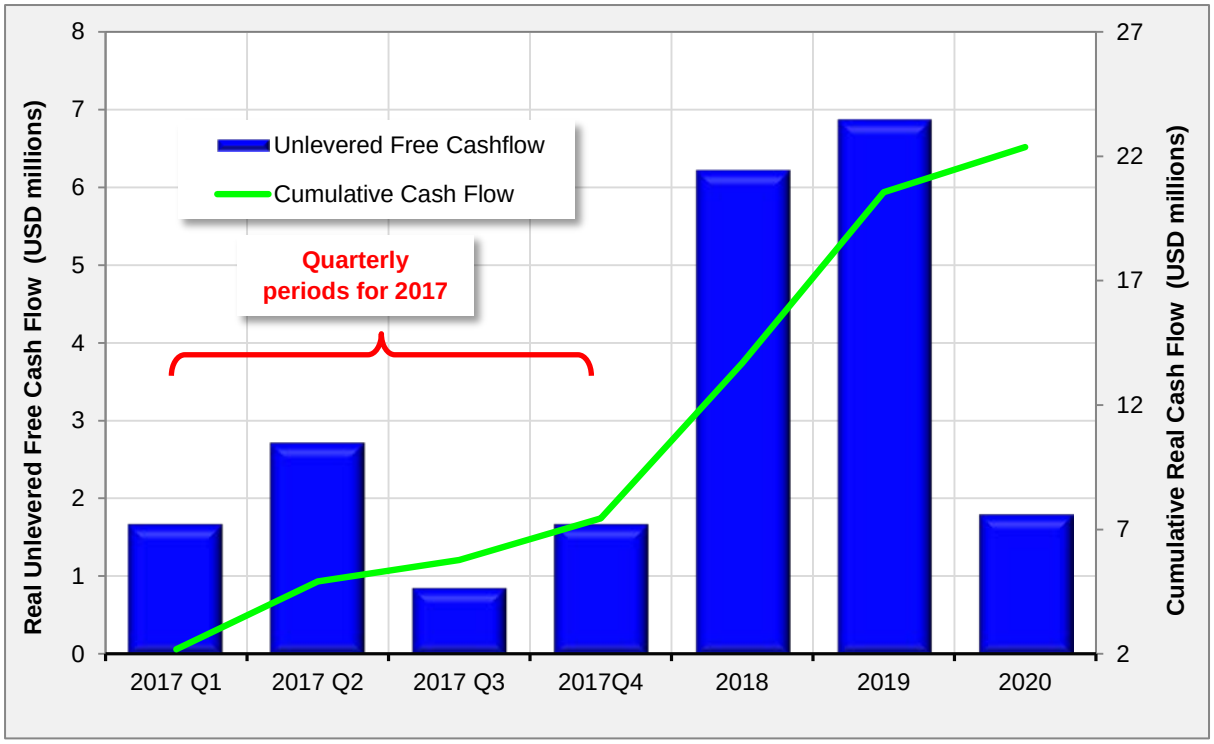


Figure 5.14 – EBITDA over Life of Mine

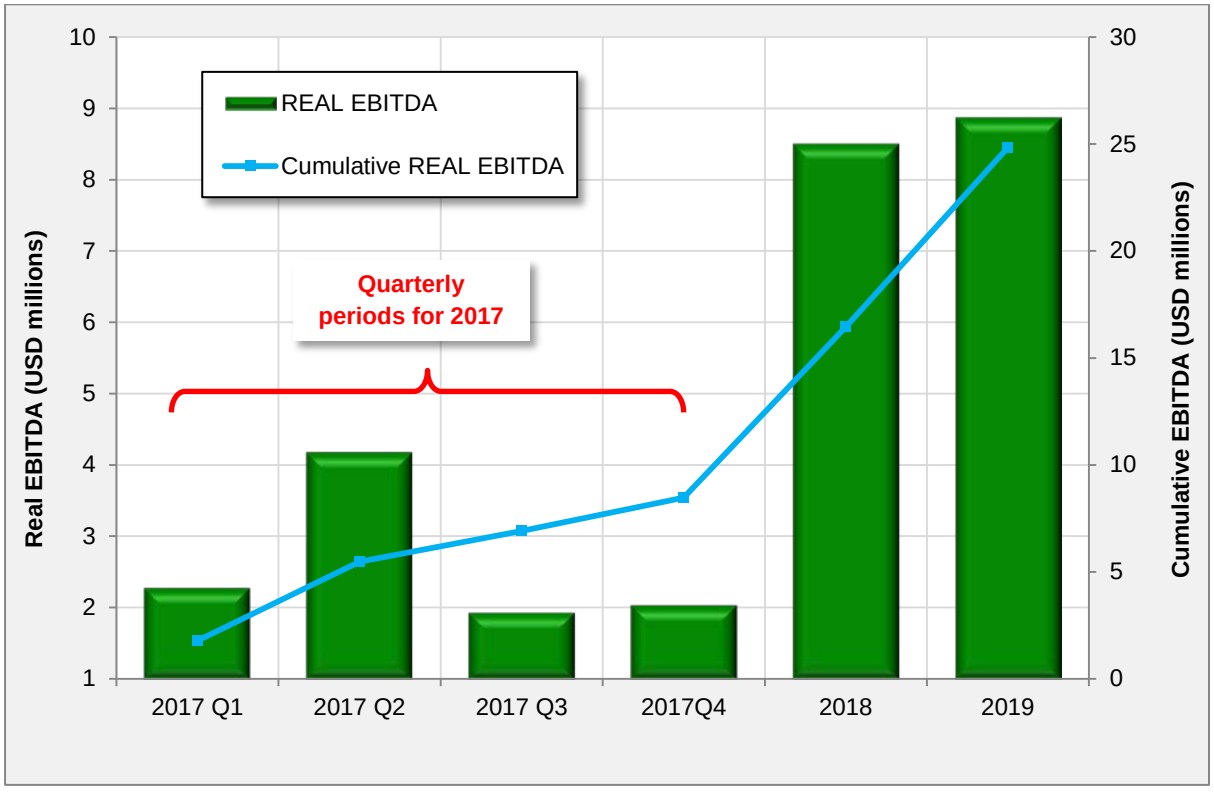


Table 5.7 – Financial Model Results (Real Terms on an Undiscounted Basis)

Year			TOTAL	2017-Q1	2017-Q2	2017-Q3	2017-Q4	2018	2019	2020
Physicals	Waste Mined	Mbcm	36.5	4.2	3.4	4.1	3.5	11.3	10.0	
	Coal Mined	Mt	3.3	0.3	0.3	0.3	0.3	1.1	1.2	
	Stripping Ratio	bcm:t	11.0	16.7	12.1	14.6	13.9	10.5	8.5	
	Coal Shipped	Mt	3.3	0.3	0.3	0.3	0.3	1.1	1.2	
	Coal Stocks	Mt	-	0.0	0.0	0.0	0.0	0.0	-	
	CV Shipped (gar)	kcal/kg	5,724	5,751	5,738	5,720	5,686	5,657	5,784	
Revenue	Coal Price Received	USD/tonne	48.5	59.9	53.9	53.7	53.4	46.4	44.4	
	Revenue	USD (millions)	162.5	15.3	15.3	15.2	13.7	50.1	53.0	
Operating Cost	Pit to Port	USD (millions)	98.7	10.5	8.6	10.6	9.3	29.0	30.6	
	Port to Barge	USD (millions)	4.7	0.4	0.4	0.4	0.4	1.5	1.7	
	Royalty	USD (millions)	8.1	0.8	0.8	0.8	0.7	2.5	2.6	
	Other Variable Costs	USD (millions)	8.1	0.2	0.2	0.2	0.2	3.5	3.8	
	Other Fixed Costs	USD (millions)	8.3	0.7	0.7	0.7	0.7	2.8	2.8	
	VAT	USD (millions)	9.9	1.0	0.9	1.1	0.9	2.9	3.1	
	TOTAL	USD (millions)	137.7	13.5	11.6	13.8	12.1	42.1	44.6	
EBITDA		USD (millions)	24.8	1.8	3.7	1.4	1.5	8.0	8.4	
Cash Margin		USD per tonne	7.5	7.0	13.1	5.1	6.1	7.5	7.1	
Depreciation		USD (millions)	5.9	0.0	0.0	0.1	0.1	0.3	5.4	
Tax Losses Carried Forward		USD (millions)	-	-	-	-	-	-	-	
Taxable Income		USD (millions)	18.9	1.7	3.6	1.4	1.5	7.7	2.9	
Corporate Tax		USD (millions)	4.7	0.4	0.9	0.3	0.4	1.9	0.7	
EARNINGS AFTER TAX		USD (millions)	14.2	1.3	2.7	1.0	1.1	5.8	2.2	
Earnings per Tonne		USD per tonne	4.3	5.2	9.7	3.7	4.4	5.4	1.9	
Add Back Depreciation		USD (millions)	5.9	0.0	0.0	0.1	0.1	0.3	5.4	
Change in Working Capital		USD (millions)	8.6	1.6	0.0	0.2	0.7	0.4	-0.3	5.9
Capital Expenditure		USD (millions)	6.8	1.3	0.1	0.5	0.2	0.3	0.4	4.1
UNLEVERED FREE CASHFLOW		**USD (millions)**	**21.9**	**1.7**	**2.7**	**0.9**	**1.7**	**6.2**	**6.9**	**1.8**

Sensitivity of project NPV was tested against variation in the following factors, using a base real discount rate of 10 %:

- capital expenditure;
- operating costs;
- sales price; and
- discount rate.

SMGC notes that the discount rate will vary for different users depending on individual requirements and how the project is financed. Using an assumed real discount rate of 7.4 % yielded an NPV of USD 19 million.

The input factors were tested over a reasonable range of values while keeping all other factors constant. The results of the sensitivity analysis are shown in Figure 5.15 and Figure 5.16. This analysis shows that the project is most sensitive to variation in sales price, followed by operating costs, capital costs and discount rate. This is typical of many coal projects with a short mine life. If the coal price sensitivity is extrapolated further, the NPV drops to zero when the coal price is reduced by 19 %.

Figure 5.15 – Project Sensitivity Tornado Chart

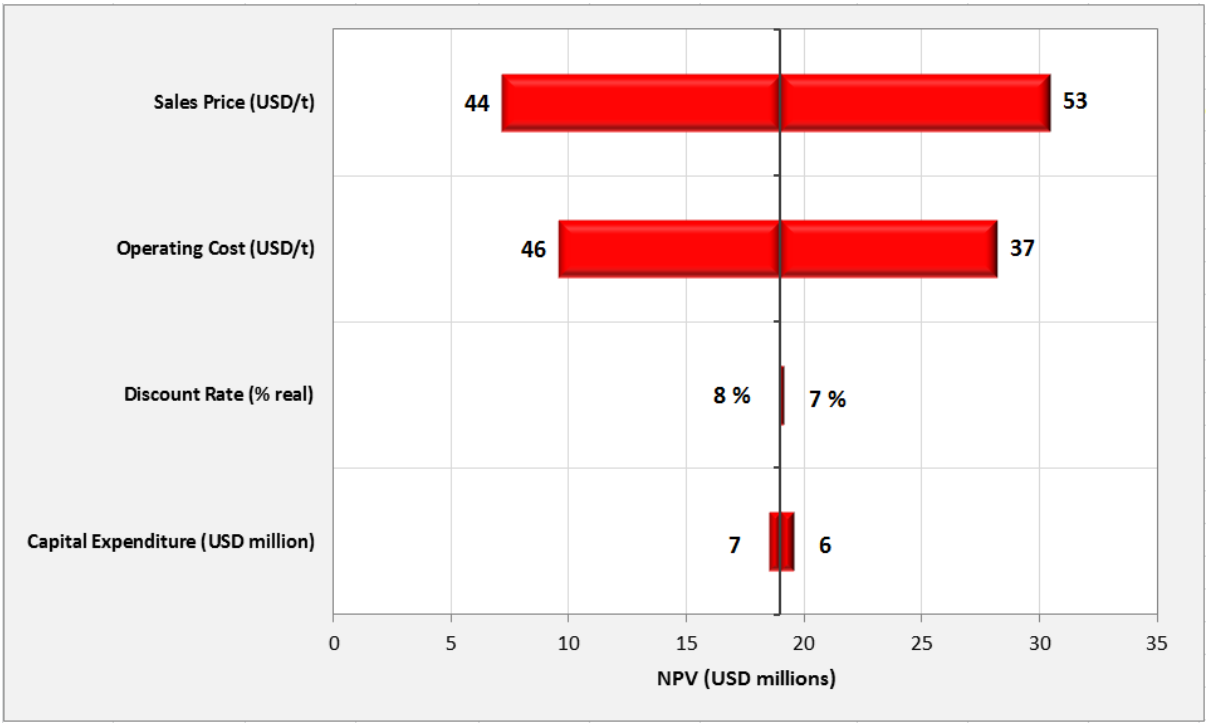
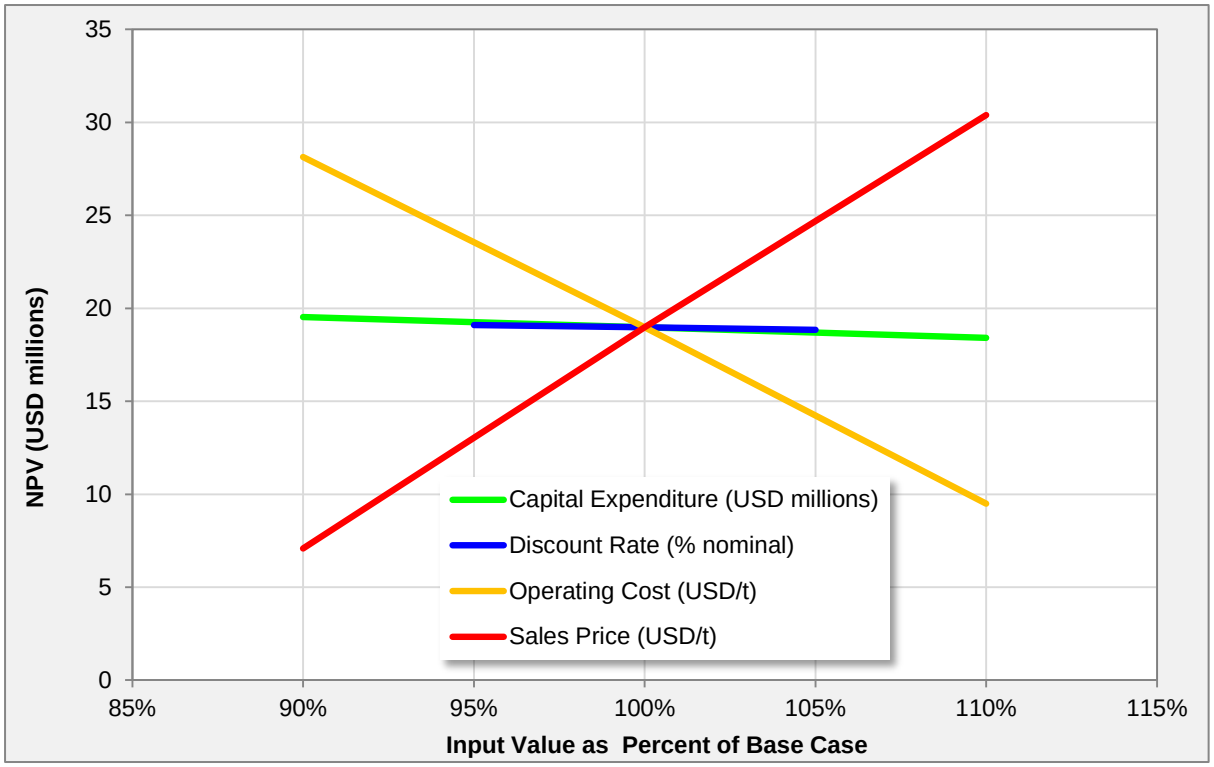


Figure 5.16 – Project Sensitivity



5.12 ENVIRONMENT AND COMMUNITY RELATIONS FACTORS

SMGC reviewed safety, environmental and community relations factors for the RK concession, haul road and port sites by undertaking the following:

1. Review of the environmental impact assessment and management plans (AMDAL);
2. Brief review of the site standard operating procedures; and
3. Site visits and inspection of environmental and safety management infrastructure and procedures undertaken in October 2012, October 2013, April 2015, and September 2016.

While most issues were being managed adequately at the time of review, SMGC notes that the potential issue with the proximity of local community housing to the port stockpile area still remains. During previous site visits, SMGC also observed that RK's facilities for storage of hydrocarbons and other facilities on site were inadequate and temporary installations. SMGC notes that a significant amount of work has been completed in upgrading these facilities since the previous site visit, and the risk of a serious incident with hydrocarbon management has been significantly reduced.

SMGC does not see any other safety, environmental or community issues that are considered to have a Material impact on this Reserve estimate or will affect the performance of the operation in the longer term. It should be noted that this study does not constitute a detailed due diligence of environmental and community issues. SMGC cannot provide any guarantee or warranty that significant environmental or community issues will not affect the operation in the future. Key aspects of environmental and community relations issues are discussed in this section.

5.12.1 Environmental Factors

RK were awarded a green rating for environmental management from the governor of East Kalimantan in May 2016. Key environmental issues associated with the RK project include:

A. Water Discharge from Site: runoff from dumps, stockpiles and roads and water pumped from pits has the potential to pollute local rivers, creeks and vegetation if sediment loads are high or if water is acidic. This is managed on the site through the use of bunds, drains and sediment ponds to allow small particles to settle out of the water. Regular monitoring of water discharge points is required under government regulations.

   SMGC observed the water management infrastructure during the site visits, and inspected the records of water monitoring and testing for acidity, iron, manganese and sediment loads. There were no obvious issues observed during the most recent site visit, and reasonable procedures appeared to be in place and were being followed. Facilities and stock were also in place for the addition of lime to discharge water to reduce acidity, as well as the addition of aluminium sulphate which is a chemical flocculent that assists in speeding up the settling of fine suspended particles in discharge water.

   During a previous site visit, SMGC was shown some results from laboratory analyses of Net Acid Generation (NAG) potential that showed that there was some material on the site that was potentially acid forming. No evidence was found of acidic water being released from site and it appeared that the current procedures are effective in managing this issue. SMGC recommends that more work is undertaken in any future exploration to identify if there is any potentially acid forming material in the overburden or interburden, so that this material can be identified in the geological model and mine plans. If any acid forming waste is identified, this should be dumped separately and encapsulated to prevent any long term acid mine drainage problems.

B. Dust and Noise: from mine operations, haulage, crushing, stockpiling and coal handling have the potential to impact the local environment, particularly if villages and local communities are located within close proximity to mining and coal handling operations. Dust is generally managed by using water trucks on haul roads, and by spraying water or dust suppressant chemicals.

   Dust, and to a lesser extent noise, is considered to be a significant risk for RK at the port stockpile and barge-loading facility. The stockpile, crushing infrastructure and conveyors are located in close proximity to community housing, as can be seen in Figure 5.17. While RK have installed nets between the stockpile and the houses, SMGC is of the opinion that these will have limited effect in reducing dust levels in the community.

   SMGC understands that RK is currently paying compensation to the owners of the houses in this area to address this issue. Based on advice from RK, SMGC have allocated an additional amount of USD 600,000 per annum to operating costs to account for the cost of managing this issue. This amount is considered to be sufficient to cover compensation to the community over the remaining mine life.

Figure 5.17 – Proximity of Community to Port Stockpile

C. Land Clearing and Revegetation: A large area of land will be cleared and disturbed as part of the RK mining operation, although much of this area is secondary growth forest. It is planned that the disturbed area will be rehabilitated and revegetated by mining and handling topsoil separately, and restoring topsoil to rehabilitated sites and replanting suitable vegetation. RK have a procedure for handling topsoil separately and this was observed being practiced at the site. Topsoiled and re-vegetation areas were also observed and appeared to be satisfactory.

D. Hydrocarbon Management: significant stores of fuel and oils are located at the RK mine and discharge of these to the environment could result in significant damage. In earlier site visits, SMGC observed the facilities to be inadequate in both the fuel and oil storage stockpiles. Improvements to this infrastructure were observed during the later site visits in October 2013, April 2015 and September 2016 with concrete bunds and floors constructed for the fuel storage areas. These fuel storage facilities now appear to be at a suitable standard. While the port area has suitable facilities for oil storage, the mine site drum storage enclosure has no bund.

Mine closure plans have yet to be completed. SMGC does not foresee any significant issues with this aspect of the operation, as changes to the mine plan are expected with the expansion of permitting, access and exploration activities. A reasonable allowance has been made in both capital and operating costs for environmental management, rehabilitation and mine closure.

5.12.2 Community Relations Factors

Maintaining a good relationship with local communities is a key requirement for the success of any coal mining operation. Efforts must be implemented to develop community programs in coordination with the local government. RK informed SMGC that the following items were planned or had already been completed with regards to its community relations obligations:

- provision of local employment (almost 90 % of employees are from East Kalimantan);
- provision of education facilities and assistance (a new school has already been constructed);
- provision of health facilities (future plans); and
- assistance with purchase of garbage truck; and
- assistance with sustainable small scale business opportunities including traditional market development and agriculture.

Allocation has been made in operating costs to support community development and corporate social responsibility programs. SMGC is unaware of any significant community relations factors that will affect this Reserve estimate other than the issue of dust and noise at the port stockpile, as discussed in the preceding section.

5.13 OTHER FACTORS

SMGC is not aware of any other environmental, legal, marketing, social or government factors which may hinder the economic realisation of the Coal Reserves other than those disclosed in this report.

5.14 UNCERTAINTY AND CONFIDENCE IN MODIFYING FACTORS

Significant areas of uncertainty in the Coal Resources and the modifying factors applied to the Coal Reserves are discussed in this section.

5.14.1 Permit to Borrow and Use Forest Land (IPPKH)

The IPPKH2 was awarded in July 2016. This permit provides sufficient area for mining at a rate of 1.05 Mtpa until the end of 2017. To allow the mine plan to be executed beyond this date will require an additional expansion of the IPPKH2 into the western area of the concession. This area is controlled by the plantation company ITCI. Discussions with ITCI management have started with permission being granted for RK personnel to conduct surface mapping from 17 February 2017. This engagement with the plantation company will need to continue and progress to allow exploration drilling, a business to business agreement to allow mining activity including compensation and then approval from the forestry department. It is expected to take until the end of 2017 for this process to be completed and allow RK to conduct mining activity in the ITCI Area.

This timing is based on information provided by RK and it is not possible to be certain when this approval will be granted and so it remains a risk to the project. If the final IPPKH2 expansion into the ITCI Area is not awarded by the estimated end of 2017, execution of the mine plan will be delayed.

5.14.2 Land Compensation

As discussed in Section 2.2.3, the current compensated land in the North Area covers most of the area required for 2017. To allow mining to continue into 2018 and 2019 will required negotiations with the ITCI plantation company in the west to be resolved and settled by the end of 2017and individual land owners in the Middle Area to be settled by September 2017.

Land compensation in the ITCI Area west of the current IPPKH2 will need to be resolved well before the end of 2017. These discussions are currently underway, with permission already granted for surface mapping exploration. A negotiated business to business agreement with ITCI needs to be finalised as soon as possible to allow sufficient time for the subsequent approval from the forestry department before the end of 2017.

The other area requiring land compensation settlement is the Middle Area (see Figure 2.2). At the time of writing, no compensation had been settled in this area of the concession. Mining is scheduled to start in the Middle Area in early 2018. Some initial talks were started to allow limited drilling in this area.

Land acquisition can pose a risk to the operation if not handled prudently. With RK's commitment to this target and engagement at multiple levels, SMGC consider it is reasonable to expect the remaining land compensation to be settled in time to allow mining to start in these areas by early 2018. However there is no guarantee that this deadline will be achieved and so it remains as a risk to the project. A reasonable level of compensation has been included in the financial modelling for the project.

5.14.3 Geotechnical Factors

Several geotechnical studies have been undertaken for the RK concession covering pit and dump areas. Procedures including dimensions, bunding and compaction are being put in place based on these geotechnical recommendations. The implementation of these procedures will need to be continuously monitored to ensure compliance. Ongoing condition monitoring, including groundwater pressure in the lowwall is also recommended.

The most significant areas of risk are the stability of the highwall, lowwall and dumps in the deepest part of the pit, which is up to 110 m deep. SMGC is of the opinion that geotechnical issues are being managed adequately and so do not preclude the estimation of Coal Reseves in the concession.

5.14.4 Geological Structure

While no significant geological structures or coal washouts have been observed in the exploration or mining to date, it is still possible that some structures exist in the deposit. Any potential structures are considered unlikely to have a Material impact on the volumes of coal and waste in the deposit; however it is possible that potential structures could have implications for the stability of pit walls, particularly in the deeper parts of the pit. SMGC recommends that geotechnical mapping and monitoring systems are put in place so that any structure identified in the mining operation can be analysed and the impact on pit wall stability assessed immediately.

5.14.5 Coal Prices and Revenue

Future coal price is the factor that most affects project value. The global thermal coal market experienced a significant downturn in prices over the past 5 years followed by a sharp recovery in the second half of 2016. Prices have since pulled back from this peak exceeding USD 100 /t (Newcastle index) to levels of USD 80 /t. It is difficult to predict if prices will hold at this level or

fall back to previous lows. Coal prices are influenced by many factors, most of which are outside of RK's control.

SMGC has assumed that coal prices will hold through 2017 before falling back close to previous low levels by 2019. If these forecast coal prices are not realised and coal prices fall below these levels, there would be a significant reduction in Coal Reserves and a substantial reduction in the value of the project. While it is likely that the project will remain feasible, coal prices lower than assumed would require a significant redesign of pits, lowering of production targets and a significant revision of Reserves and mine plans.

5.14.6 Operating and Capital Costs

Another area of uncertainty in the modifying factors applied in this study relates to the operating costs for the RK mine. Operating cost estimates have as much as possible been based on actual costs experienced at the site and the existing mining contracts that are in place. Any real increase in operating costs in the medium to long term is likely to result in a significant reduction in Coal Reserves.

SMGC notes that the RK has renegotiated a further reduction in waste unit rates. These negotiations included a claw back provision where RK will pay a premium on top of the standard waste rate when various coal index thresholds are exceeded.

Most of the project infrastructure is already in place for the RK concession and capital expenditure is not considered a major area of uncertainty for the project. Variation in future capital expenditure from the assumptions in this study is not considered likely to have a significant impact on Coal Reserves.

5.15 CLASSIFICATION

The JORC Code allows a Measured Resource to be accepted as a Proved Reserve and an Indicated Resource to be accepted as a Probable Reserve. To convert a Resource to a Reserve it must be demonstrated that extraction could reasonably be justified after applying reasonable assumptions. A level of uncertainty in any one or more of the Modifying Factors may result in a Measured Resource being converted to a Probable Reserve. A high level of uncertainty in any one or more of the Modifying Factors may preclude the conversion of the affected Resource to a Reserve.

In the opinion of SMGC the uncertainties in the modifying factors applied to the Coal Reserves are not sufficiently Material to prevent the classification of areas deemed Measured Resources within the ultimate pit designs to be areas of Proved Reserves for the purpose of this study. Similarly in the opinion of SMGC the uncertainties in the modifying factors are also not sufficiently Material to prevent the classification of areas deemed Indicated Resources within the ultimate pit designs to be areas of Probable Reserve.

Areas classified as Measured and Indicated Resources in the South Area of the concession were not included in the ultimate pit designs and Coal Reserve estimate. This assessment was made based on its low tonnage, high strip ratio, high sulphur, impractical pit shape and haul road capital required. This exclusion status may change if more exploration reveals additional coal in the South Area making it more attractive. It may require consideration of alternative mining methods such as auger mining and assessment of specialised markets for high sulphur coal to become viable.

6. ESTIMATE OF COAL RESERVES

The statement of Coal Reserves has been prepared in accordance with SMGC's interpretation of the 2012 Edition of the JORC Code. A summary of all Coal Reserves is shown in Table 6.1 and the Coal Reserves reported by seam with qualities are presented in Table 6.2 and Table 6.3.

It should be noted that rounding errors may result in some small discrepancies in these tables. All estimates of tonnes contained in this document are on an as received basis, unless otherwise stated. No beneficiation of the coal product is planned other than crushing so ROM Reserves will be equivalent to Marketable Reserves. The methodology for the estimate of in situ and ROM tonnes is described in Sections 5.6 and 5.7.

Table 6.1 – Summary of Coal Reserves as of 31st December 2016

Description	Proved (Mt)	Probable (Mt)	Proved and Probable (Mt)
Open Cut ROM Coal Reserves	2.1	0.8	2.9
Marketable Coal Reserves	2.1	0.8	2.9

This table must be presented with the entire Coal Reserve Statement from which it was obtained.

Table 6.2 – ROM Coal Reserves as of 31st December 2016

Seam	Proved	Probable	Reserves	TM	Ash	TS	CV adb	CV gar
	(kt)	(kt)	(kt)	(% arb)	(% arb)	(% arb)	(kcal/kg)	(kcal/kg)
S40	10	< 1	10	19.0	2.4	2.25	6,116	5,785
S40L	5	-	5	20.6	5.2	2.82	5,645	5,366
S50	23	-	23	17.3	3.1	1.79	6,170	5,896
S100	30	-	30	21.3	8.2	3.00	5,560	5,179
S200	226	18	244	17.8	4.2	1.79	6,059	5,816
S300	330	11	340	17.2	4.7	2.31	6,045	5,830
S400	142	24	166	20.9	6.3	1.80	5,691	5,357
S500	501	231	732	17.4	6.3	1.79	5,900	5,686
S600	207	93	300	15.7	7.9	0.51	5,958	5,769
S700	594	166	759	19.6	3.7	2.19	5,950	5,668
S790	-	< 1	< 1	15.8	22.2	3.13	4,861	4,680
S800	4	22	26	17.2	10.1	0.47	5,701	5,468
S1999	-	103	103	15.9	9.3	5.65	6,005	5,790
S3000	-	70	70	16.9	6.1	2.76	6,152	5,844
S3200	-	43	43	13.3	6.4	2.58	6,598	6,423
TOTAL	**2,071**	**781**	**2,851**	**17.9**	**5.5**	**1.67**	**5,956**	**5,712**

There may be minor discrepancies in the above table due to rounding of tonnes. These are not considered Material by SMGC.

This table must be presented with the entire Coal Reserve Statement from which it was obtained.

Table 6.3 – Marketable Coal Reserves as of 31st December 2016

Seam	Proved	Probable	Reserves	TM	Ash	TS	CV adb	CV gar
	(kt)	(kt)	(kt)	(% arb)	(% arb)	(% arb)	(kcal/kg)	(kcal/kg)
S40	10	< 1	10	19.0	2.4	2.25	6,116	5,785
S40L	5	-	5	20.6	5.2	2.82	5,645	5,366
S50	23	-	23	17.3	3.1	1.79	6,170	5,896
S100	30	-	30	21.3	8.2	3.00	5,560	5,179
S200	226	18	244	17.8	4.2	1.79	6,059	5,816
S300	330	11	340	17.2	4.7	2.31	6,045	5,830
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S500	501	231	732	17.4	6.3	1.79	5,900	5,686
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S790	-	< 1	< 1	15.8	22.2	3.13	4,861	4,680
S800	4	22	26	17.2	10.1	0.47	5,701	5,468
S1999	-	103	103	15.9	9.3	5.65	6,005	5,790
S3000	-	70	70	16.9	6.1	2.76	6,152	5,844
S3200	-	43	43	13.3	6.4	2.58	6,598	6,423
TOTAL	**2,071**	**781**	**2,851**	**17.9**	**5.5**	**1.67**	**5,956**	**5,712**

There may be minor discrepancies in the above table due to rounding of tonnes. These are not considered Material by SMGC.
This table must be presented with the entire Coal Reserve Statement from which it was obtained.

6.1 COMPARISON TO PREVIOUS RESERVE ESTIMATE

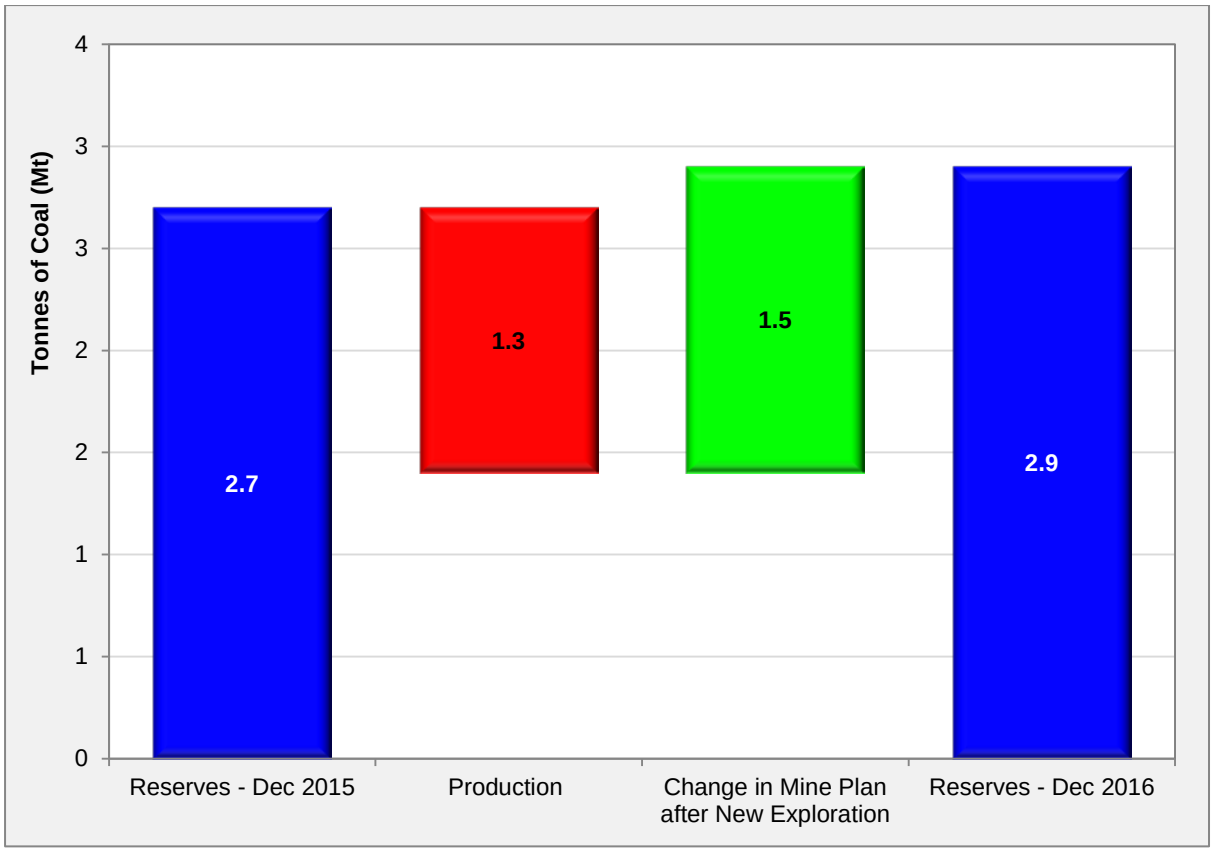
An earlier estimate of Reserves was undertaken by SMGC as of 31st December 2015. The previous Reserve estimate is shown in comparison to this estimate in Table 6.4.

Table 6.4 – Comparison to Previous Reserve Estimate

Description	Proved (Mt)	Probable (Mt)	Proved and Probable (Mt)
Estimate as of 31st December 2015	1.4	1.3	2.7
Estimate as of 31st December 2016	2.1	0.8	2.9
Difference	0.7	- 0.5	0.2

SMGC has undertaken a reconciliation of the previous Reserve estimate to the current Reserve estimate. The results are considered to be approximate only, and are shown in Figure 6.1.

Figure 6.1– Reconciliation to Previous Reserve Estimate



The reason for the slight increase in Reserves even after 1.3 Mt of production in 2016 is the new exploration drilling program which revealed more coal tonnes classified as Measured and Indicated Resources in the North and Middle Areas. These coal tonnes were included in the new mine plan and qualified for inclusion in the new Reserves estimate.

7. COMPETENT PERSON STATEMENT

This Reserve report was completed during February 2017 and has been prepared in accordance with SMGC's interpretation of the 2012 JORC Code.

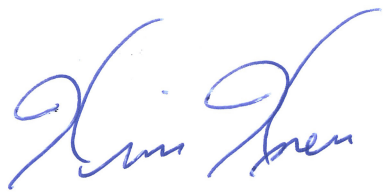
The information in this report that relates to Coal Reserves in the concession is based upon information compiled by Mr. David Wyllie who is also a Member of the Australasian Institute of Mining and Metallurgy. Mr. Wyllie is employed as a Principal Mining Engineer by SMGC. He has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Mineral Resources and Ore Reserves". Mr. Wyllie has over 10 years of experience in the planning and mining of coal deposits. Mr. Wyllie consents to the inclusion in the report of the matters based upon this information in the form and context in which it appears.

The Reserves Report must only be disclosed in the form in which it appears and may only be presented in its entirety. This report must not be released for public reporting purposes. Extraction of selected text from this report is only permitted with the written consent of PT SMG Consultants Indonesia.

David Wyllie

BE Mining MAusIMM

This document was checked as part SMGC's peer review process. Peer review was undertaken by Mr. Kim Knerr who is also a Member of the Australasian Institute of Mining and Metallurgy. Mr. Knerr is employed as a Principal Engineer by SMGC. He has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Mineral Resources and Ore Reserves".



Kim Knerr

B.Sc (Geological Engineering), MAusIMM

Appendix A – Consent Template

[Letterhead of Competent Person or Competent Person's employer]

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

(*Insert name or heading of Report to be publicly released*) ('Report')

(*Insert name of company releasing the Report)*

(Insert name of the deposit to which the Report refers)

If there is insufficient space, complete the following sheet and sign it in the same manner as this original sheet.

(Date of Report)

Statement

I/We,

(*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, Minerals Resources and Ore Reserves (the JORC Code).
- 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 am a full time employee of

(Insert company name)

Or

I/We am a consultant working for

(Insert company name)

and have been engaged by

(Insert company name)

to prepare the documentation for

(Insert deposit name)

on which the Report is based, for the period ended

(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 Exploration Targets, Exploration Results, Mineral Resources and/or Ore Reserves *(select as appropriate).*

Consent

I consent to the release of the Report and this Consent Statement by the directors of:

(Insert reporting company name)

Signature of Competent Person:	Date:
Professional Membership: *(insert organisation name)*	Membership Number:
Signature of Witness:	Print Witness Name and Residence: (eg town/suburb)

Additional deposits covered by the Report for which the Competent Person signing this form is accepting responsibility:

Additional Reports related to the deposit for which the Competent Person signing this form is accepting responsibility:

Signature of Competent Person:	Date:
Professional Membership: *(insert organisation name)*	Membership Number:
Signature of Witness:	Print Witness Name and Residence: (eg town/suburb)

Appendix B – JORC Table 1

Table 1 Checklist of Assessment and Reporting Criteria

Section 1 Sampling Techniques and Data
(Criteria in this section apply to all succeeding sections.)

Criteria	Explanation
Sampling techniques	• Refer to Section 4.4 of the RK Resource Statement - February 2017.
Drilling techniques	• Refer to Section 4.3 of the RK Resource Statement - February 2017.
Drill sample recovery	• Refer to Sections 4.4 of the RK Resource Statement - February 2017.
Logging	• Refer to Sections 4.5 of the RK Resource Statement - February 2017.
Sub-sampling techniques and sample preparation	• Refer to Section 4.4, Table 4.1 and Figure 4.2 of the RK Resource Statement - February 2017.
Quality of assay data and laboratory tests	• Refer to Section 4.6, Table 6.4, and Table 6.5 of the RK Resource Statement - February 2017.
Verification of sampling and assaying	• Refer to Section 4.4 and section 4.6 of the RK Resource Statement - February 2017. • Visual inspection on site.
Location of data points	• Refer to Section 4.1, 4.1.1 and Figure 4.2 of the RK Resource Statement - February 2017.
Data spacing and distribution	• Refer to Section 4.3 of the RK Resource Statement - February 2017. • Borehole locations identified in Figure 4.2 of the RK Resource Statement - February 2017.
Orientation of data in relation to geological structure	• All holes have been drilled vertically. Geological structure and local geology inclusive of seam dip is described in Section 2.2 and 2.3 of the RK Resource Statement - February 2017.
Sample security	• Visual inspection of sample collection and batch creation. • Samples were transported to the laboratory by RK personnel/contractors.
Audits or reviews	• A review of the borehole database was made before modelling was undertaken (See Section 7.1 of the RK Resource Statement - February 2017).

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	Explanation
Mineral tenement and land tenure status	• Refer to Section 1.3 of the RK Resource Statement - February 2017.
Exploration done by other parties	• Refer to Section 3 of the RK Resource Statement - February 2017.
Geology	• Refer to Section 2 of the RK Resource Statement - February 2017.
Drill hole Information	• Refer to Section 4 of the RK Resource Statement - February 2017. • All boreholes exist in a validated Minex database which includes lithological, quality and borehole survey information as discussed in Section 6.6 of the RK Resource Statement - February 2017.
Data aggregation methods	• Sample methodology is discussed in Section 4.4 of the RK Resource Statement - February 2017. • All samples have been composited over the full seam thickness and reported using Minex software tools.
Relationship between mineralisation widths and intercept lengths	• Down-hole lengths have been used in the modelling of the seams in Minex.
Diagrams	• All maps, tables and diagrams are identified in the Table of Contents of the RK Resource Statement - February 2017 under the headings “Tables”, “Figures” and “Appendices”.
Balanced reporting	• All reporting has been done in a balanced and measured way and is discussed in Section 1.4 and 7.6 of the RK Resource Statement - February 2017.
Other substantive exploration data	• Refer to Section 3 and Section 4.7 of the RK Resource Statement - February 2017.
Further work	• Refer to Section 4.7 of the RK Resource Statement - February 2017. • Further work will be necessary to improve the confidence levels of the deposit and understanding of the full seam stratigraphy. • No proposed exploration plan has been included in the RK Resource Statement - February 2017.

Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	Explanation
Database integrity	• Refer to Section 7.1 of the RK Resource Statement - February 2017.
Site visits	• A site visit was undertaken by an SMGC employee in September 2016.
Geological interpretation	• Refer to Section 6 and Section 7.2 of the RK Resource Statement - February 2017. • The RK 3D geological models have been created in Minex software and are considered to be an appropriate interpretation of the dataset.
Dimensions	• Refer to Section 7.3 of the RK Resource Statement - February 2017.
Estimation and modelling techniques	• Refer to Section 7 of the RK Resource Statement - February 2017. • A reconciliation of Actual versus Model is discussed in 7.9 of the RK Resource Statement - February 2017.
Moisture	• Refer to Section 7.4 of the RK Resource Statement - February 2017.
Cut-off parameters	• Refer to Section 7.5 of the RK Resource Statement - February 2017.
Mining factors or assumptions	• The RK area is expected to be mined as an open pit excavation by truck and shovel methods based on current intersected coal seam depths.
Marketing factors or assumptions	• Refer to Section 7.7.3 of the RK Resource Statement - February 2017
Environmental factors or assumptions	• Refer to Section 7.7.1 of the RK Resource Statement - February 2017.
Relative density	• Refer to Section 7.8 and Section 7.9 of the RK Resource Statement - February 2017.
Classification	• Refer to Section 7 and specifically Section 7.8 of the RK Resource Statement - February 2017.
Audits or reviews	• A review of the borehole data has been made as discussed in Section 7.1 of the RK Resource Statement - February 2017. • A reconciliation of Actual versus Model is discussed in Section 7.10 of the RK Resource Statement - February 2017.
Discussion of relative accuracy/ confidence	• Refer to Section 7.7 and 7.8 of the RK Resource Statement - February 2017.

Section 4 Estimation and Reporting of Ore Reserves

(Criteria listed in section 1, and where relevant in sections 2 and 3, also apply to this section.)

Criteria	Explanation
Mineral Resource estimate for conversion to Ore Reserves	• Basis of the estimate is detailed in the RK Coal Resource Statement- February 2017. • Resources are reported inclusive of Reserves.
Site visits	• Site visits were conducted in October 2012, October 2013, April 2015, and September 2016.
Study status	• A Life of Mine Plan has been completed at pre-feasibility level.
Cut-off parameters	• Refer to Section 5.4 of this report. Pit optimisation software was used to generate a set of nested pit shells and a financial model was built. Pit shells from the optimisation process were analysed to determine the shells that best estimated the economic pit boundaries for the deposit given the assumed costs and coal prices. The pit shells that best estimated the breakeven pit limits were then selected and used as a basis for the design of the ultimate pits.
Mining factors or assumptions	• Refer to Section 5.7 in this report for discussion of mining loss, dilution and recovery; and Section 5.3 for a description of the mining method and coal handling processes.
Metallurgical factors or assumptions	• Not applicable to this Coal Reserves Estimate as no beneficiation of coal (except crushing) will occur before shipping of the coal.
Environmental	• Refer to Section 5.12.1 in this report.
Infrastructure	• Refer to Section 5.3.2 in this report.
Costs	• Refer to Section 5.10 in this report.
Revenue factors	• Refer to Section 5.9 in this report.
Market assessment	• Refer to Section 5.9 in this report.
Economic	• Refer to Section 5.9, Section 5.10 and Section 5.11 in this report. • Cash flow analysis was undertaken with the results shown in Table 5.7.
Social	• Refer to Section 5.12.2 in this report.
Other	• Refer to Section 5.13 in this report.
Classification	• Refer to Section 5.15 in this report.
Audits or reviews	• This document has been checked as part of SMGC's peer review process.
Discussion of relative accuracy/ confidence	• The discussion in Section 5.14 reviews relevant issues regarding accuracy and confidence in the modifying factors applied to the Coal Reserves.

Section 5 Estimation and Reporting of Diamonds and Other Gemstones

(Criteria listed in other relevant sections also apply to this section. Additional guidelines are available in the 'Guidelines for the Reporting of Diamond Exploration Results' issued by the Diamond Exploration Best Practices Committee established by the Canadian Institute of Mining, Metallurgy and Petroleum.)

Criteria	Explanation
Indicator minerals	• Not Applicable to this Coal Reserve Estimate.
Source of diamonds	• Not Applicable to this Coal Reserve Estimate.
Sample collection	• Not Applicable to this Coal Reserve Estimate.
Sample treatment	• Not Applicable to this Coal Reserve Estimate.
Carat	• Not Applicable to this Coal Reserve Estimate.
Sample grade	• Not Applicable to this Coal Reserve Estimate.
Reporting of Exploration Results	• Not Applicable to this Coal Reserve Estimate.
Grade estimation for reporting Mineral Resources and Ore Reserves	• Not Applicable to this Coal Reserve Estimate.
Value estimation	• Not Applicable to this Coal Reserve Estimate.
Security and integrity	• Not Applicable to this Coal Reserve Estimate.
Classification	• Not Applicable to this Coal Reserve Estimate.

Generic Terms and Equivalents

Throughout the Code, certain words are used in a general sense when a more specific meaning might be attached to them by particular commodity groups within the industry. In order to avoid unnecessary duplication, a non-exclusive list of generic terms is tabulated below together with other terms that may be regarded as synonymous for the purposes of this document.

Generic Term	Synonyms and similar terms	Intended generalised meaning
Assumption	Value Judgments	The Competent Person in general makes value judgments when making assumptions regarding information not fully supported by test work.
Competent Person	Qualified Person (Canada), Qualified Competent Person (Chile)	Refer to the Clause 11 of the Code for the definition of a Competent Person. Any reference in the Code to the singular (a Competent Person) includes a reference to the plural (Competent Persons). It is noted that reporting in accordance with the Code is commonly a team effort.
Cut-Off Grade	Product Specifications	The lowest grade, or quality, of mineralised material that qualifies as economically mineable and available in a given deposit. May be defined on the basis of economic evaluation, or on physical or chemical attributes that define an acceptable product specification.
Grade	Quality, Assay, Analysis (That Is Value Returned By The Analysis)	Any physical or chemical measurement of the characteristics of the material of interest in samples or product. Note that the term quality has special meaning for diamonds and other gemstones. The units of measurement should be stated when figures are reported.
Metallurgy	Processing, Beneficiation, Preparation, Concentration	Physical and/or chemical separation of constituents of interest from a larger mass of material. Methods employed to prepare a final marketable product from material as mined. Examples include screening, flotation, magnetic separation, leaching, washing, roasting, etc. Processing is generally regarded as broader than metallurgy and may apply to non-metallic materials where the term metallurgy would be inappropriate.
Mineralisation	Type Of Deposit, Orebody, Style Of Mineralisation.	Any single mineral or combination of minerals occurring in a mass, or deposit, of economic interest. The term is intended to cover all forms in which mineralisation might occur, whether by class of deposit, mode of occurrence, genesis or composition.
Mining	Quarrying	All activities related to extraction of metals, minerals and gemstones from the earth whether surface or underground, and by any method (eg quarries, open cast, open cut, solution mining, dredging, etc).
Ore Reserves	Mineral Reserves	‘Ore Reserves’ is preferred under the JORC Code but ‘Mineral Reserves’ is in common use in other countries and is generally accepted. Other descriptors can be used to clarify the meaning (eg Coal Reserves, Diamond Reserves, etc).

Recovery	Yield	The percentage of material of interest that is extracted during mining and/or processing. A measure of mining or processing efficiency.
Significant Project	Material Project	An exploration or mineral development project that has or could have a significant influence on the market value or operations of the listed company, and/or has specific prominence in Public Reports and announcements.
Tonnage	Quantity, Volume	An expression of the amount of material of interest irrespective of the units of measurement (which should be stated when figures are reported).

Appendix C – Tenure Documents

BUPATI KUTAI KARTANEGARA

TENTANG
PERSETUJUAN IZIN USAHA PERTAMBANGAN OPERASI PRODUKSI
KEPADA PT. RINJANI KARTANEGARA
540/1654/IUP-OP/MB-PBAT/XI/2009

BUPATI KUTAI KARTANEGARA

Membaca : Surat Direktur **PT. RINJANI KARTANEGARA** Nomor : **55/RK-SMD/ XI/2009** tanggal **04 Nopember 2009** Perihal Permohonan Penyesuaian Status KP untuk menjadi IUP

Menimbang : Bahwa Berdasarkan hasil evaluasi kegiatan Izin Usaha Pertambangan (IUP) Operasi Produksi **PT. RINJANI KARTANEGARA** telah memenuhi syarat untuk diberikan persetujuan IUP Opersi Produksi.

Mengingat :

1. Undang - Undang Nomor 23 Tahun 1997 tentang Pengelolaan Lingkungan Hidup (LN Tahun 1997 Nomor 68, TLN 3699);
2. Undang - Undang Nomor 32 Tahun 2004 tentang Pemerintahan Daerah (LN Tahun 2004 Nomor 125, TLN 4437) sebagaimana telah diubah dengan Undang - Undang Nomor 8 Tahun 2005 tentang Penetapan Peraturan Pemerintah Pengganti Undang - Undang Nomor 3 Tahun 2005 tentang Perubahan atas Undang - Undang Nomor 32 Tahun 2004 tentang Pemerintahan Daerah menjadi Undang - Undang (LN Tahun 2005 Nomor 108, TLN 4585);
3. Undang - Undang Nomor 25 Tahun 2007 Tentang Penanaman Modal (LN Tahun 2004 Nomor 67, TLN 4724);
4. Undang - Undang Nomor 6 tahun 2007 Tentang Penataan Ruang (LN Tahun 2007 Nomor 68, TLN 4725);
5. Undang - Undang Nomor 4 Tahun 2009 Tentang Pertambangan Mineral dan Batubara (LN Tahun 2009 Nomor 4, TLN 4959);
6. Peraturan Pemerintah Nomor 27 Tahun 1999 Tentang Analisis Mengenai Dampak Lingkungan Hidup (LN Tahun 1999 Nomor 59, TLN 3838);
7. Peraturan Pemerintah Nomor 38 Tahun 2007 Tentang Pembagian Urusan Antara Pemerintah Pusat Pemerintah Daerah Propinsi, Pemerintah Daerah Kabupaten atau Kota (LN Tahun 2007 Nomor 82, TLN 4737);
8. Peraturan Pemerintah Nomor 26 Tahun 2008 Tentang Rencana Tata Ruang Wilayah Nasional (LN Tahun 2008 Nomor 48, TLN 4833);
9. Sesuai Edaran Direktorat Jenderal Mineral,Batubara dan Panas Bumi Nomor : 03.E/31/DJB/2009 Tanggal 30 Januari 2009 tentang Perizinan Pertambangan dan Batubara Sebelum Terbitnya Peraturan Pemerintah Sebagai Pelaksana Undang-Undang Nomor 4 Tahun 2009.
10. Surat Edaran Direktorat Jenderal Mineral,Batubara dan Panas Bumi Nomor : 1053/30/DJB/2009 Tanggal 24 Maret 2009 Perihal Izin Usaha Jasa Pertambangan.

MEMUTUSKAN :

Menetapkan : **KEPUTUSAN BUPATI KUTAI KARTANEGARA TENTANG PERSETUJUAN IUP OPERASI PRODUKSI KEPADA PT. RINJANI KARTANEGARA**

KESATU : Memberikan Izin Usaha Pertambangan Operasi Produksi kepada :

Nama Perusahaan	: **PT. RINJANI KARTANEGARA**
Nama Direktur	: **NORDIANSYAH NASRIE**
Pemegang saham perusahaan dengan mencantumkan	
Nilai/Persentase saham	: ----------
Nama Pemegang saham	: **NORDIANSYAH NASRIE**
Pekerjaan pemegang saham	: **Swasta**
Alamat	: **Taman Laguna Blok H2/39 RT.004 RW.002 Kel. Jati Karya, Kec. Jati Sampurna, Bekasi**
Kewarganegaraan Pemegang Saham/Negara	
Asal Perusahaan	: **Indonesia**
Alamat	: **Jl. Cendana Gg. Jamrud 678 No. 5 Samarinda**
Komoditas	: **Batubara**
Lokasi Pertambangan	: **Loa Janan dan Loa Kulu**
Desa	: **Bakungan dan Jembayan**
Kecamatan	: **Loa Janan dan Loa Kulu**
Kabupaten/Kota	: **Kutai Kartanegara**
Provinsi	: **Kalimantan Timur**
Kode Wilayah	: **KW-KTN 2009 1729 OP**
Luas	: **1.933 Ha**

Dengan Peta dan daftar koordinat WIUP yang diterbitkan oleh Bupati Kutai Kartanegara sebagaimana tercantum dalam lampiran I dan Lampiran II keputusan ini

Lokasi Pengolahan dan pemurnian.
Pengangkutan dan penjualan.
Jangka waktu berlaku IUP OP: **12 (Duabelas)** Tahun
Jangka waktu Tahap Kegiatan (sesuai komoditas tambang):
a. Konstruksi Selama 2 Tahun
b. Produksi Selama 10 Tahun

KEDUA : Pemegang IUP Operasi Produksi mempunyai hak untuk melakukan kegiatan konstruksi,produksi,pengangkutan dan penjualan serta pengolahan pemurnian dalam WIUP untuk jangka waktu 12 (Duabelas) tahun dan dapat diperpanjang 2 (dua) kali (sesuai dengan komoditas tambang sesuai Undang – Undang Nomor 4 Tahun 2009)
Terhitung mulai tanggal ditetapkannya keputusan ini sampai dengan tanggal **24 Nopember 2021**

KETIGA : IUP Operasi Produksi ini dilarang dipindahtangan kan kepada pihak lain tanpa persetujuan Bupati Kutai Kartanegara.

KEEMPAT : **PT. RINJANI KARTANEGARA** sebagai pemegang IUP Operasi Produksi dalam melaksanakan kegiatan mempunyai hak dan kewajiban sebagaimana tercantum dalam Lampiran III Keputusan ini.

KELIMA : Selambat-lambatnya 60 (enam puluh) hari kerja setelah diterbitkannya Keputusan ini sudah harus menyampaikan rencana kerja dan anggaran biaya kepada Bupati Kutai Kartanegara .

Lampiran III
Hak dan Kewajiban

A. Hak

1. Memasuki WIUP sesuai dengan peta dan daftar koordinat.
2. Melaksanakan kegiatan IUP Operasi Produksi (Konstruksi, Produksi, Pengolahan Pemurnian dan Pengangkutan Penjualan) sesuai dengan ketentuan peraturan perundang-undangan
3. Membangun fasilitas penunjang kegiatan IUP Operasi Produksi (Konstruksi, Produksi, Pengolahan Pemurnian dan Pengangkutan Penjualan) didalam maupun diluar WIUP.
4. Dapat menghentikan sewaktu waktu kegiatan IUP Operasi Produksi (Konstruksi, Produksi, Pengolahan Pemurnian dan Pengangkutan Penjualan) disetiap bagian atau beberapa bagian dengan alasan bahwa kelanjutan dari kegiatan IUP Operasi Produksi (Konstruksi, Produksi, Pengolahan Pemurnian dan Pengangkutan Penjualan) tersebut tidak layak atau praktis secara komersial maupun karena keadaan kahar, keadaan yang menghalangi sehingga menimbulkan penghentian sebagian atau seluruh kegiatan usaha pertambangan.
5. Mengajukan permohonan pengusahaan mineral lain yang bukan merupakan asosiasi mineral utama yang diketemukan dalam WIUP.
6. Mengajukan pernyataan tidak berminat terhadap pengusahaan mineral lain yang bukan merupakan asosiasi mineral utama yang diketemukan dalam WIUP.
7. Memanfaatkan sarana dan prasarana umum untuk keperluan kegiatan IUP Operasi Produksi (Konstruksi, Produksi, Pengolahan Pemurnian dan Pengangkutan Penjualan) setelah memenuhi ketentuan peraturan perundang-undangan.
8. Dapat melakukan kerjasama dengan perusahaan lain dalam rangka penggunaan setiap fasilitas yang dimiliki oleh perusahaan lain baik yang berafiliasi dengan perusahaan atau tidak sesuai dengan ketentuan peraturan perundang-undangan.
9. Dapat membangun sarana dan prasarana pada WIUP lain setelah mendapat izin dari pemegang IUP yang bersangkutan.

B. Kewajiban

1. Memilih yuridiksi pada Pengadilan Negeri tempat dimana lokasi WIUP berada.
2. Selambat – lambatnya 6 bulan setelah ditetapkannya keputusan ini pemegang IUP Operasi Produksi harus sudah Melaksanakan dan menyampaikan laporan pematokan batas wilayah IUP Operasi Produksi kepada Bupati Kutai Kartanegara.
3. Hubungan antara pemegang IUP Operasi Produksi dengan pihak ketiga menjadi tanggung jawab pemegang IUP Sesuai ketentuan perundang-undangan.
4. Melaporkan Rencana investasi.
5. Menyampaikan rencana reklamasi.
6. Menyampaikan rencana pasca tambang.
7. Menempatkan jaminan penutupan tambang (sesuai umur tambang).
8. Menyampaikan RKAB selambat lambatnya pada bulan Nopember yang meliputi rencana tahun depan dan realisasi kegiatan setiap tahun berjalan kepada Bupati dengan tembusan kepada :
   *) Menteri dan Gubernur apabila IUP diterbitkan Bupati/Walikota.
9. Menyampaikan laporan kegiatan triwulanan yang harus diserahkan dalam jangka waktu 30 (tiga puluh) hari setelah Akhir dari Triwulan takwim secara berkala kepada Bupati dengan tembusan kepada:
   *) Menteri dan Gubernur apabila IUP diterbitkan Bupati/Walikota
10. Apabila ketentuan batas waktu Penyampaian RKAB dan pelaporan sebagaimana dimaksud pada angka 8 (delapan) dan 9 (Sembilan) tersebut di atas terlampaui, maka kepada pemegang IUP Operasi Produksi akan diberikan peringatan tertulis.
11. Menyampaikan laporan produksi dan pemasaran sesuai ketentuan peraturan perundang undangan.
12. Menyampaikan Rencana Pengembangan dan Pemberdayaan Masyarakat sekitar wilayah pertambangan kepada Bupati Kutai Kartanegara.
13. Menyampaikan RTKL setiap tahun sebelum penyampaian RKAB kepada Bupati Kutai Kartanegara.
14. Memenuhi ketentuan perpajakan sesuai ketentuan peraturan perundang-undangan.
15. Membayar iuran tetap setiap tahun dan membayar royalty sesuai ketentuan peraturan perundang-undangan.
16. Menempatkan jaminan reklamasi sebelum melakukan kegiatan produksi dan Rencana Penutupan Tambang sesuai ketentuan peraturan perundang-undangan.
17. Menyampaikan RPT (Rencana Penutupan Tambang) 2 tahun sebelum kegiatan produksi berakhir.
18. Mengangkat seorang Kepala Teknik Tambang yang bertanggung jawab atas IUP Operasi Produksi (Konstruksi, Produksi, Pengolahan Pemurnian dan Pengangkutan Penjualan), Keselamatan dan Kesehatan Kerja Pertambangan serta pengelolaan Lingkungan Pertambangan
19. Kegiatan produksi dimulai apabila kapasitas produksi terpasang mencapai 70% yang direncanakan.

20. Permohonan perpanjangan IUP untuk kegiatan produksi harus diajukan 2 (dua) tahun sebelum berakhirnya masa izin ini dengan disertai pemenuhan persyaratan.
21. Kelalaian atas ketentuan tersebut pada butir 20, mengakibatkan IUP Operasi Produksi berakhir menurut hukum dan segala usaha pertambangan dihentikan. Dalam jangka waktu paling lama 6 (enam) bulan sejak berakhirnya Keputusan ini Pemegang IUP Operasi Produksi harus mengangkat keluar segala sesuatu yang menjadi miliknya, Kecuali benda-benda bangunan-bangunan yang dipergunakan untuk kepentingan umum.
22. Apabila dalam jangka waktu sebagaimana dimaksud dalam butir 21, pemegang IUP Operasi Produksi tidak melaksanakan maka barang /asset pemegang IUP menjadi milik pemerintah.
23. Pemegang IUP Operasi Produksi harus menyediakan data dan keterangan sewaktu waktu apabila dikehendaki oleh Pemerintah.
24. Pemegang IUP Operasi Produksi membolehkan dan menerima apabila pemerintah sewaktu waktu melakukan pemeriksaan.
25. Pemegang IUP Operasi Produksi tidak boleh melakukan segala kegiatan pertambangan bila lokasi IUP Operasi Produksi masuk dalam Kawasan Budidaya Kehutanan (KBK) dan atau Hutan Produksi (HP) sebelum memiliki izin Pinjam Pakai kawasan dari Menteri Kehutanan RI.
26. Menerapkan kaidah pertambangan yang baik.
27. Mengelola keuangan sesuai dengan system akuntansi Indonesia.
28. Melaporkan pelaksanaan pengembangan dan pemberdayaan masyarakat secara berkala.
29. Mengutamakan pemanfaatan tenaga kerja setempat, barang dan jasa dalam negeri sesuai ketentuan peraturan Peraturan perundangan.
30. Mengutamakan pembelian dalam negeri dari pengusaha lokal yang ada di daerah tersebut sesuai ketentuan peraturan perundang undangan.
31. Mengutamakan seoptimal mungkin penggunaan perusahaan jasa pertambangan lokal dan/atau nasional.
32. Dilarang melibatkan anak perusahaan dan/atau afiliasinya dalam bidang usaha pertambangan di WIUP yang diusahakannya kecuali dengan izin Menteri.
33. Melaporkan data dan pelaksanaan penggunaan jasa penunjang.
34. Menyerahkan selluruh data hasil kegiatan IUP kepada Bupati.* dengan tembusan kepada:
    *) Menteri dan Gubernur apabila IUP diterbitkan bupati/walikota
35. Menyampaikan proposal sekurang kurangnya menggambarkan aspek teknis,keuangan,produksi dan Pemasaran serta lingkungan sebagai persyaratan pengajuan permohonan perpanjangan IUP Operasi Produksi.
36. Memberi ganti rugi kepada pemegang hak atas tanah dan tegakan yang terganggu akibat kegiatan IUP Operasi Produksi.
37. Mengutamakan pemenuhan kebutuhan dalam negeri (DMO) sesuai ketentuan peraturan perundang undangan
38. Penjualan produksi kepada afiliasi harus mengacu pada harga pasar.
39. Kontrak penjualan jangka panjang (minimal 3 tahun) harus mendapat persetujuan terlebih dahulu dari Menteri
40. Perusahaan wajib mengolah produksinya di dalam negeri.
41. Pembangunan sarana dan prasarana pada kegiatan konstruksi antara lain meliputi :
    a. Fasilitas – fasilitas dan peralatan pertambangan.
    b. Instalasi dan peralatan peningkatan mutu mineral/batubara.
    c. Fasilitas – fasilitas Bandar yang dapat meliputi dok-dok, pelabuhan-pelabuhan, dermaga-dermaga, jembatan-jembatan, tongkang-tongkang, pemecah-pemecah air, fasilitas-fasilitas terminal, bengkel-bengkel, daerah-daerah penimbunan, gudang-gudang, dan peralatn bongkar muat.
    d. Fasilitas-fasilitas transportasi dan komunikasi yang dapat meliputi jalan-jalan, jembatan-jembatan, kapal-kapal, feri-feri, tempat-tempat pendaratan pesawat, hangar-hangar, garasi-garasi, pompa-pompa BBM, fasilitas-fasilitas radio dan telekomunikasi, serta fasilitas-fasilitas jaringan telegraph dan telepon.
    e. Perkotaan yang dapat meliputi rumah-rumah tinggal, toko-toko, sekolah-sekolah, rumah sakit, teater-teater dan bangunan lain, fasilitas-fasilitas dan peralatan pegawai kontraktor termasuk tanggungan pegawai tersebut.
    f. Listrik, fasilitas-fasilitas air dan buangan dan dapat meliputi pembangkit-pembangkit tenaga listrik (yang dapat berupa tenaga air, uap, gas atau diesel), jaringan-jaringan listrik, dam-dam, saluran-saluran air, sistem-sistem penyediaan air dan sistem-sistem pembuangan limbah (tailing), air buangan pabrik dan air buangan rumah tangga.
    g. Fasilitas-fasilitas lain, yang dapat meliputi namun tidak terbatas, bengkel-bengkel mesin, bengkel-bengkel pengecoran dan reparasi.
    h. Semua fasilitas tambahan atau fasilitas lain, Pabrik dan peralatan yang dianggap perlu atau cocok untuk operasi pengusahaan yang berkaitan dengan WIUP atau untuk menyediakan pelayanan atau melaksanakan aktifitas-aktifitas pendukung atau aktifitas yang sifatnya insidentil.

KEENAM : Terhitung sejak 90 (sembilan puluh) hari kerja persetujuan rencana kerja dan anggaran Biaya sebagaimana dimaksud dalam diktum kelima Pemegang IUP Operasi Produksi sudah harus memulai aktifitas dilapangan

KETUJUH : Tanpa Mengurangi ketentutan peraturan peraturan perundang-undangan maka IUP dapat diberhentikan sementara, dicabut, atau dibatalkan, apabila pemegang IUP Operasi Produksi tidak memenuhi kewajiban dan larangan sebagaimana dimaksud dalam diktum Ketiga, Keempat dan Kelima dalam Keputusan ini.

KEDELAPAN : Keputusan Bupati Kutai Kartanegara ini mulai berlaku pada tanggal ditetapkan dan apabila terdapat kekeliruan akan diperbaiki sebagaimana mestinya.

Ditetapkan di : TENGGARONG
Pada Tanggal : 24 September 2009

BUPATI KUTAI KARTANEGARA

[illegible], MM

Tembusan :
1. Menteri Energi dan Sumber Daya Mineral
2. Menteri Keuangan
3. Sekretaris Jenderal Departemen Energi dan Sumber Daya Mineral
4. Inspektur Jenderal Departemen Energi dan Sumber Daya Mineral
5. Direktur Jenderal Pajak Departemen Keuangan
6. Direktur Jenderal Perbendaharaan Departemen Keuangan
7. Direktur Jenderal Pendapatan Daerah, Departemen Dalam Negeri
8. Gubernur Kalimantan Timur.
9. Bupati Kutai Kartanegara
10. Kepala Biro Hukum dan Humas/Kepala Biro Keuangan/Kepala Biro Perencanaan dan Kerjasama Luar Negeri, Setjen Departemen Energi dan Sumber Daya Mineral.
11. Sekretaris Direktorat Jenderal Mineral, Batubara dan Panas Bumi.
12. Direktur Teknik dan Lingkungan Mineral, Batubara dan Panas Bumi.
13. Direktur Pembinaan Program Mineral, Batubara dan Panas Bumi.
14. Direktur Pembinaan Pengusahaan Mineral dan Batubara.
15. Direktur Pajak Bumi dan Bangunan, Departemen Keuangan.
16. Kepala Dinas Pertambangan dan Sumber Daya Mineral Propinsi Kalimantan Timur.
17. Kepala Dinas Pertambangan dan Energi Kabupaten Kutai Kartanegara
18. Direksi PT. RINJANI KARTANEGARA

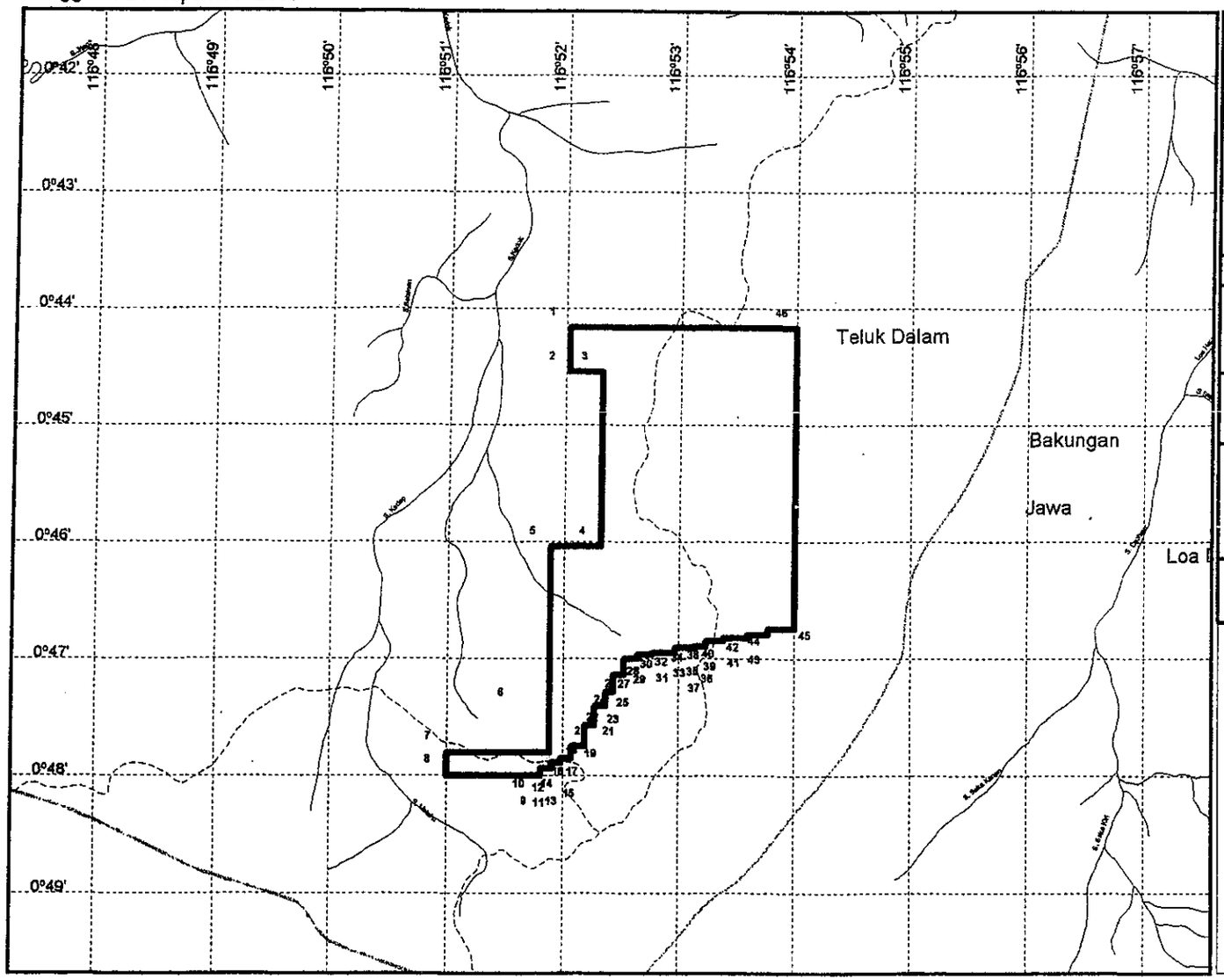
PEMERINTAH KABUPATEN KUTAI KARTANEGARA
DINAS PERTAMBANGAN DAN ENERGI

NOMOR : 540/26/IUB-PBAT/IV/2010

PENGESAHAN
TELAH DIPERIKSA KEBENARANNYA DAN SESUAI DENGAN ASLINYA
TENGGARONG, 26 APRIL 2010
DINAS PERTAMBANGAN DAN ENERGI
KABUPATEN KUTAI KARTANEGARA
SEKRETARIS,

Drs. H. ABD. RAHMAN K, S.Sos, I.MM
NIP. 19570317. 198001. 1. 001

Lampiran I
Surat Keputusan Bupati Kutai Kartanegara
Nomor : 540/1654/IUP-OP/MB-PBAT/XI/2009
Tanggal : 24 Nopember 2009



PETA WILAYAH IZIN USAHA PERTAMBANGAN
DI DAERAH LOA JANAN DAN LOA KULU
KABUPATEN KUTAI KARTANEGARA
PROVINSI KALIMANTAN TIMUR

N

Skala 1 : 100.000

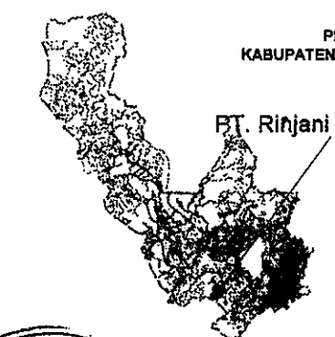
Nomor Lokasi	KETERANGAN
KW.KTN 2009 1654 OP	*LUAS : 1.933 Ha*

DINAS PERTAMBANGAN DAN ENERGI KABUPATEN KUTAI KARTANEGARA
UNIT PELAYANAN INFORMASI DAN PENCADANGAN WILAYAH PERTAMBANGAN (UPIPWP)

Keterangan :
- Lokasi IUP
- Sungai
- Jalan
- Batas Wilayah

Sumber Peta :
Peta Rupabumi, Bakosurtanal 1991
Datum Horizontal,Datum Geodesi Nasional (DGN 95), WGS 84

PETA INDEKS
KABUPATEN KUTAI KARTANEGARA



Pemohon : PT. RINJANI KARTANEGARA
Hari dan Tanggal Proses : 24 Nopember 2009
Jam Proses : 10.13
Operator : Mei Chidayanto, ST
Catatan : Persetujuan IUP Operasi Produksi

Dikeluarkan di Tenggarong
Pada Tanggal 24 Nopember 2009
PJ. Bupati Kutai Kartanegara

BUPATI KUTAI KARTANEGARA

Drs. H. SJACHRUDDIN, MS. MM

LAMPIRAN II
KOORDINAT WILAYAH IZIN USAHA PERTAMBANGAN OPERASI PRODUKSI

Nama Perusahaan : PT. RINJANI KARTANEGARA

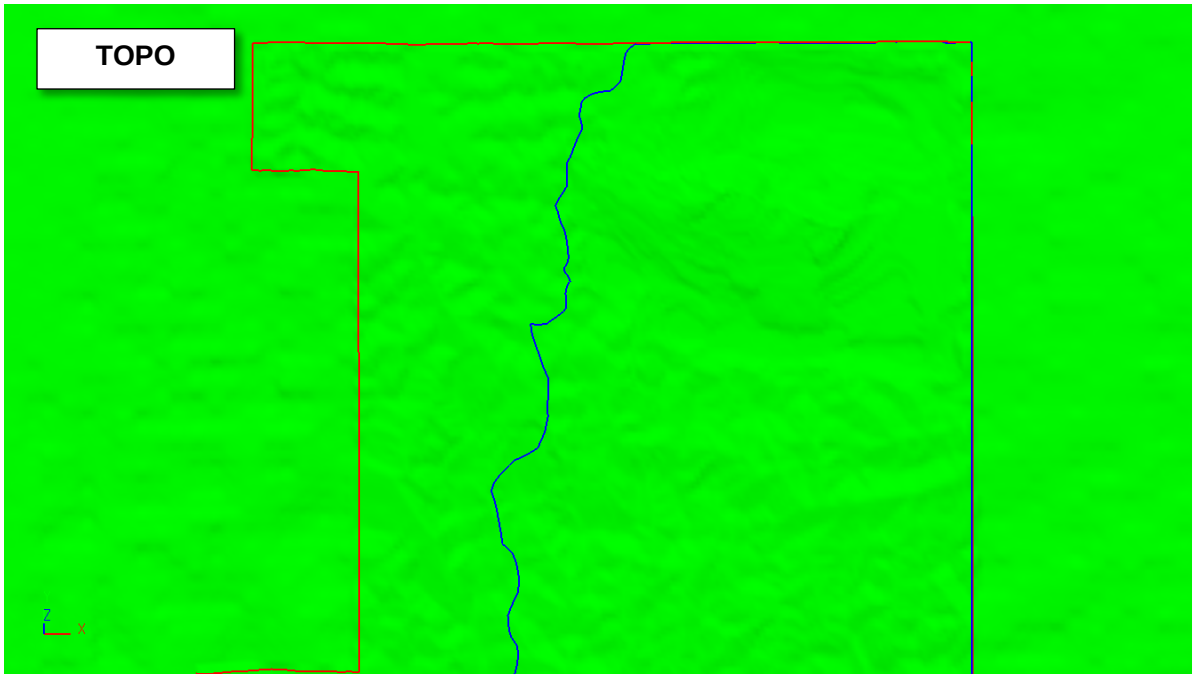
Lokasi

- Provinsi : Kalimantan Timur
- Kabupaten : Kutai Kartanegara
- Kecamatan : Loa Janan dan Loa Kulu
- Komoditas : Batubara
- Luas : 1.933 Ha
- Kode Wilayah : KTN 2009 1654 OP

No. Titik Koord.	Bujur Timur			Lintang (LU/LS)			
	ø	'	"	ø	'	"	
1.	116	52	02.13	0	44	10.00	LS
2.	116	52	02.13	0	44	32.63	LS
3.	116	52	19.36	0	44	32.63	LS
4.	116	52	19.36	0	46	02.65	LS
5.	116	51	53.04	0	46	02.65	LS
6.	116	51	53.04	0	47	48.18	LS
7.	116	51	00.00	0	47	48.18	LS
8.	116	51	00.00	0	48	00.00	LS
9.	116	51	48.20	0	48	00.00	LS
10.	116	51	48.20	0	47	56.40	LS
11.	116	51	54.00	0	47	56.40	LS
12.	116	51	54.00	0	47	53.43	LS
13.	116	51	58.61	0	47	53.43	LS
14.	116	51	58.61	0	47	51.20	LS
15.	116	52	04.40	0	47	51.20	LS
16.	116	52	04.40	0	47	45.11	LS
17.	116	52	11.69	0	47	45.11	LS
18.	116	52	11.69	0	47	34.26	LS
19.	116	52	16.44	0	47	34.26	LS
20.	116	52	16.44	0	47	24.45	LS
21.	116	52	22.39	0	47	24.45	LS
22.	116	52	22.39	0	47	17.17	LS
23.	116	52	26.10	0	47	17.17	LS
24.	116	52	26.10	0	47	08.25	LS
25.	116	52	31.60	0	47	08.25	LS
26.	116	52	31.60	0	47	00.08	LS
27.	116	52	38.59	0	47	00.08	LS
28.	116	52	38.59	0	46	57.85	LS
29.	116	52	46.46	0	46	57.85	LS
30.	116	52	46.46	0	46	56.96	LS
31.	116	52	58.21	0	46	56.96	LS
32.	116	52	58.21	0	46	54.43	LS
33.	116	53	07.42	0	46	54.43	LS
34.	116	53	07.42	0	46	53.69	LS
35.	116	53	14.26	0	46	53.69	LS
36.	116	53	14.26	..dst..			

No. Titik Koord.	Bujur Timur			Lintang (LU/LS)			
	ø	'	"	ø	'	"	
36.	116	53	14.26	0	46	52.97	LS
37.	116	53	14.41	0	46	52.97	LS
38.	116	53	14.41	0	46	51.16	LS
39.	116	53	23.32	0	46	51.16	LS
40.	116	53	23.32	0	46	49.38	LS
41.	116	53	35.66	0	46	49.38	LS
42.	116	53	35.66	0	46	47.74	LS
43.	116	53	46.36	0	46	47.74	LS
44.	116	53	46.36	0	46	44.77	LS
45.	116	54	00.00	0	46	44.77	LS
46.	116	54	00.00	0	44	10.00	LS

Appendix D – Pit Optimisation Results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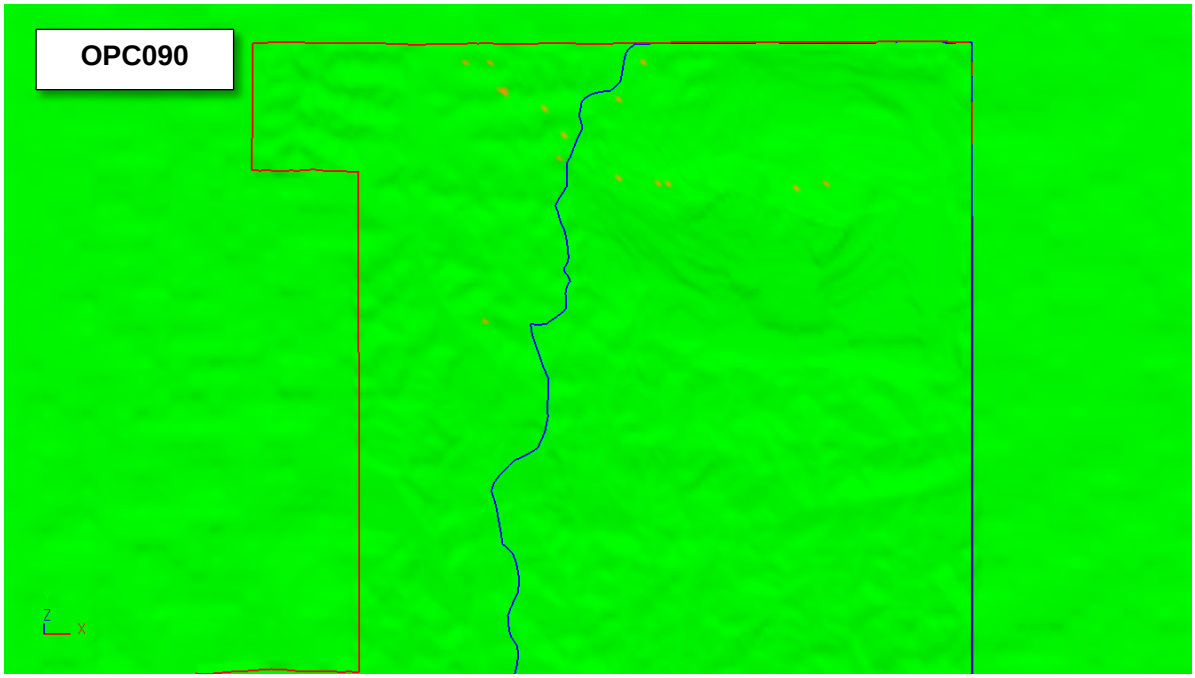
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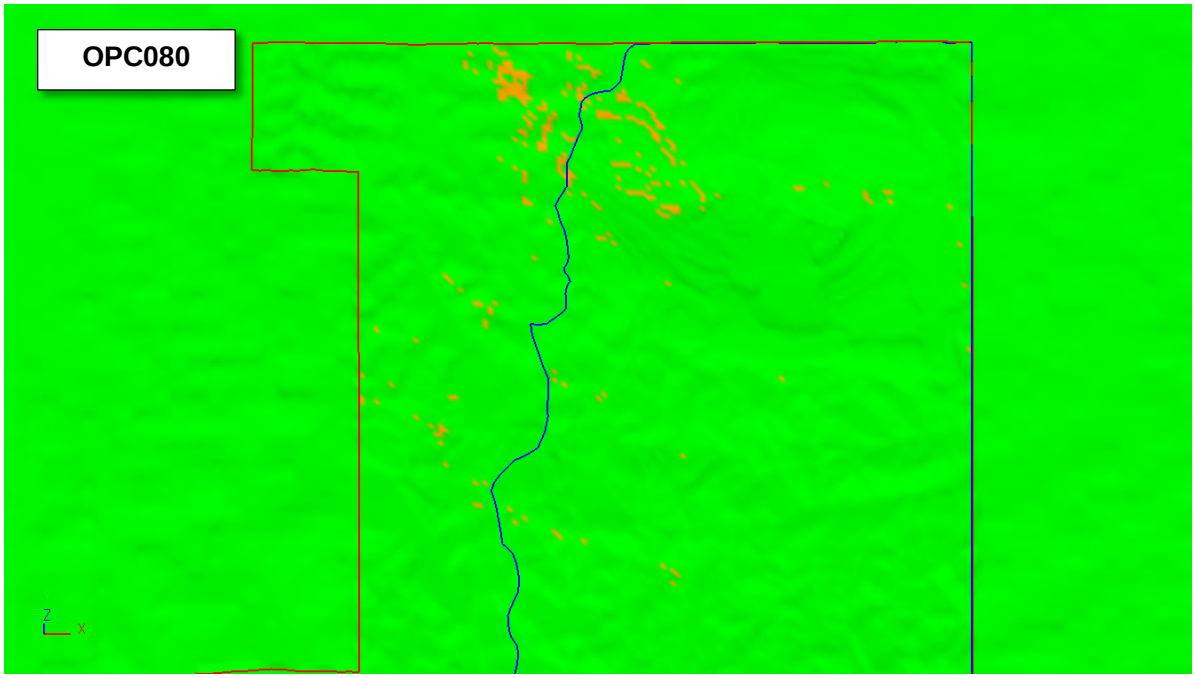
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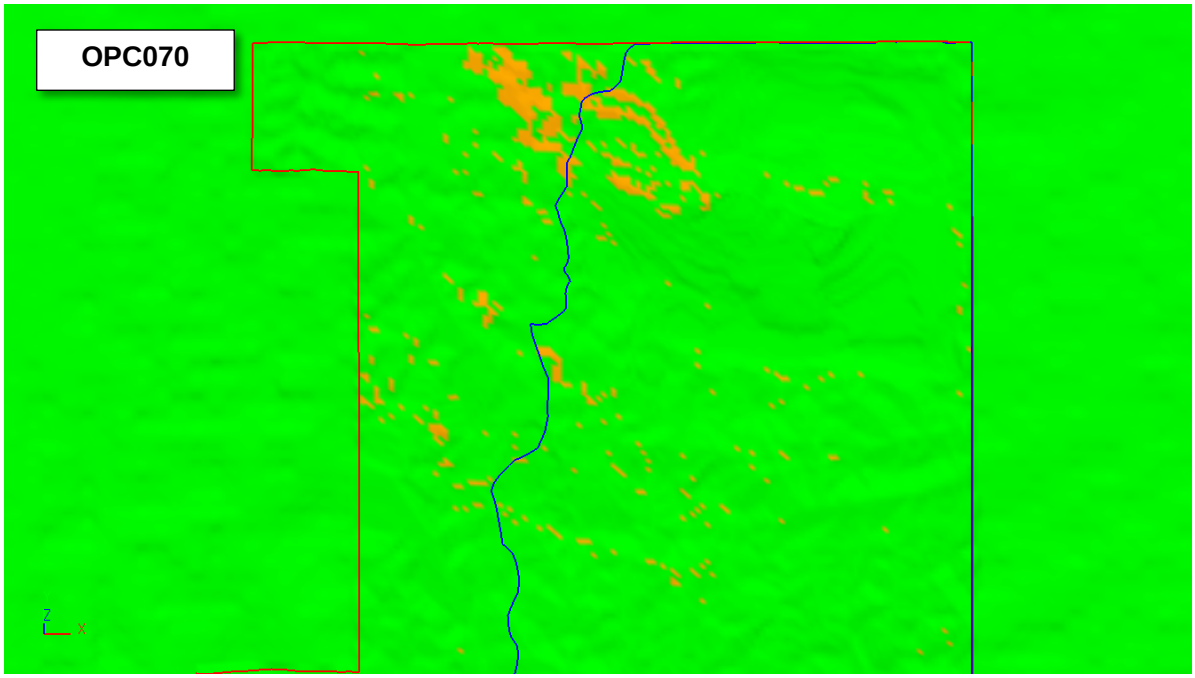
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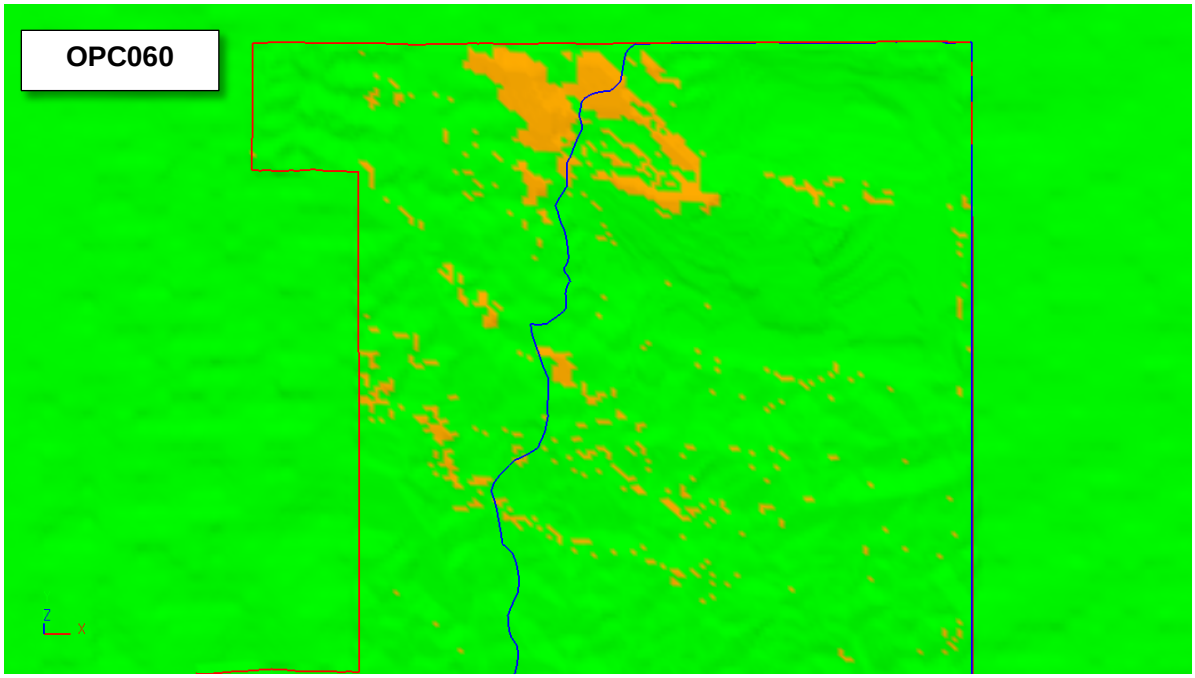
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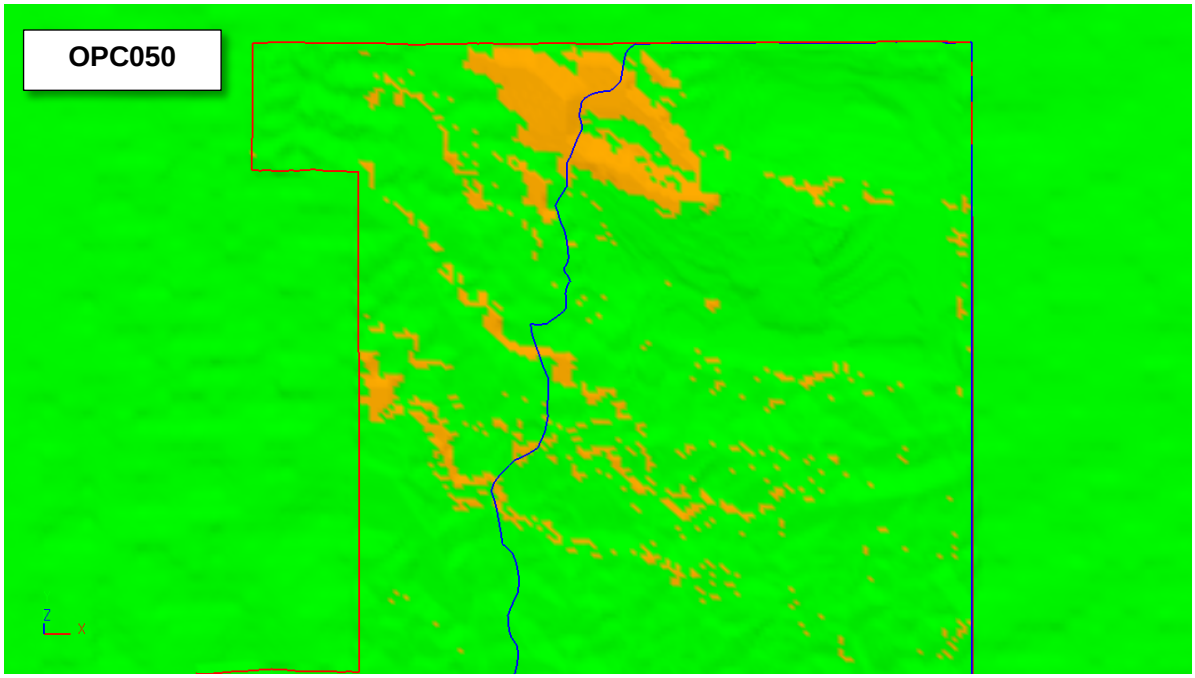
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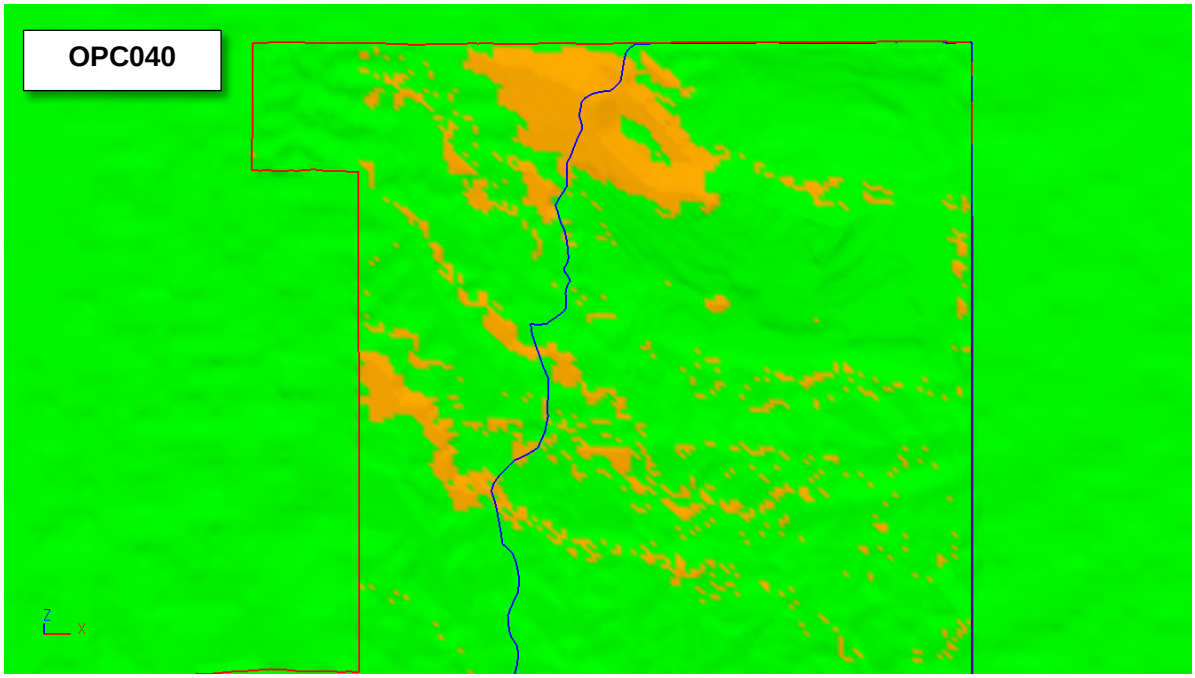
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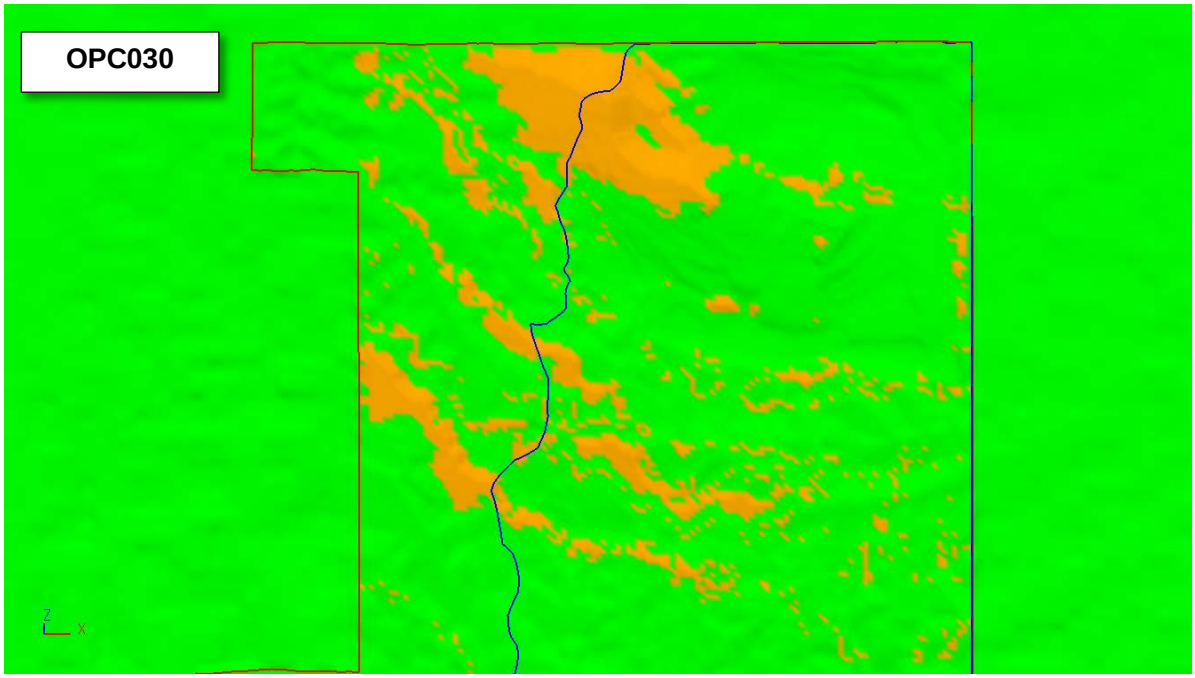
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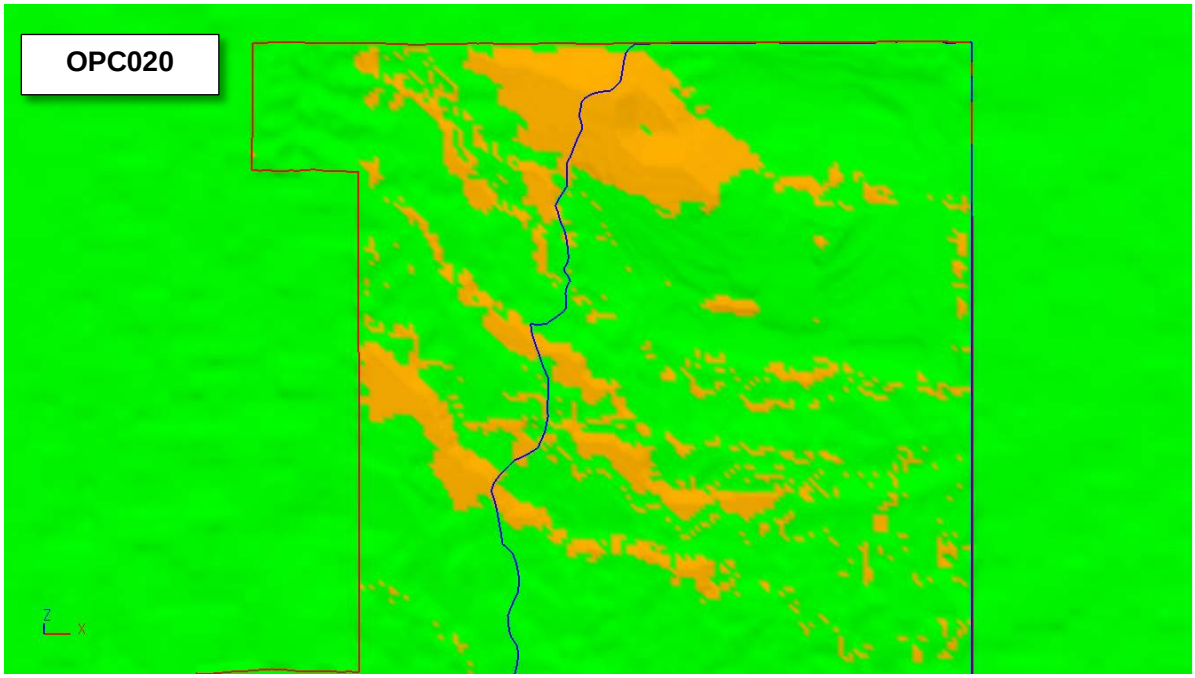
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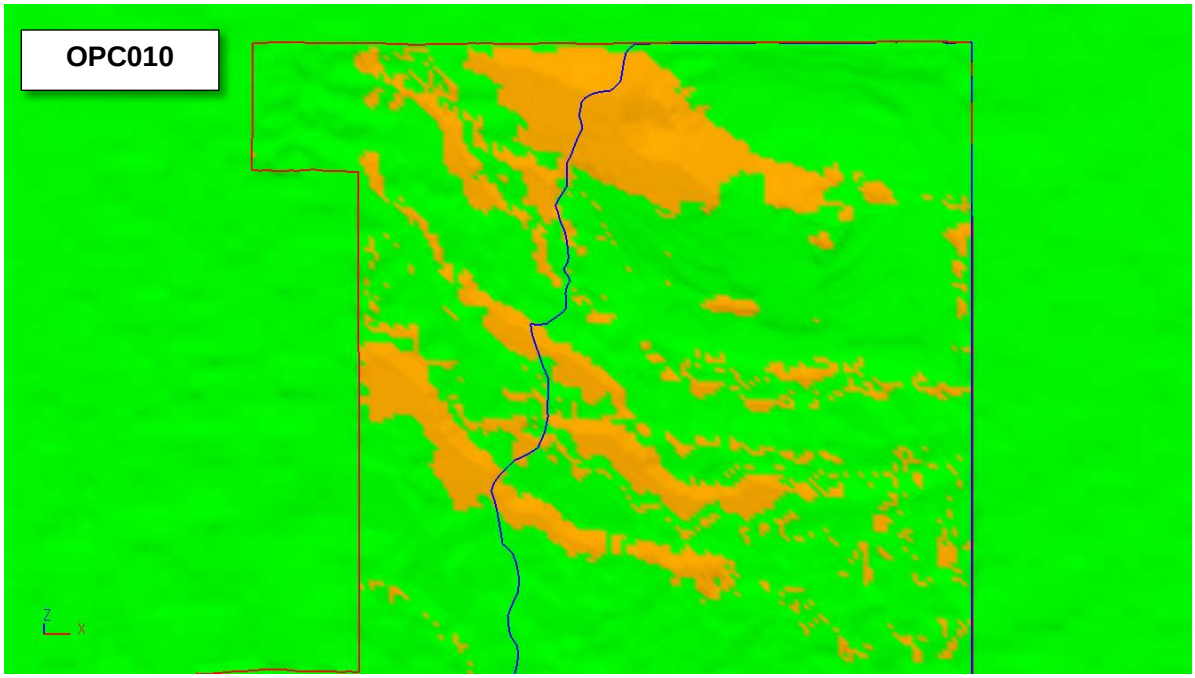
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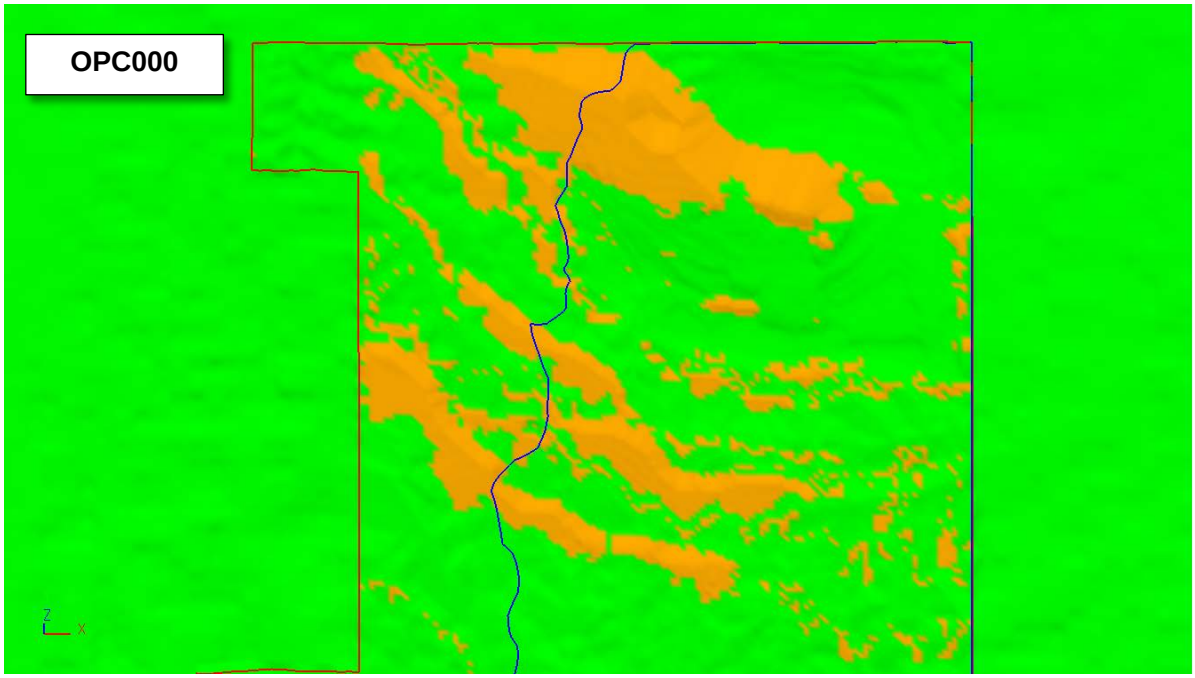

OPC000
Z
X

		OPTIMISER FOR SEAM 700								
		Estimated Run of Mine - Accumulative			Estimated Run of Mine - Incremental			Measured and Indicated - Accumulative		
#	Pit Shell	Waste Volume (Mbcm)	ROM Coal (Mtonnes)	Accumulative Stripping Ratio	Waste Volume (Mbcm)	ROM Coal (Mtonnes)	Incremental Stripping Ratio	ROM Measured (Mtonnes)	ROM Indicated (Mtonnes)	Total ROM (Mtonnes)
1	OPC090	0.15	0.02	8.1	0.15	0.02	8.1	0.01	0.00	0.02
2	OPC089	0.18	0.02	7.6	0.02	0.00	5.7	0.02	0.01	0.02
3	OPC088	0.23	0.03	8.3	0.06	0.00	11.7	0.02	0.01	0.02
4	OPC087	0.30	0.04	8.0	0.07	0.01	6.9	0.02	0.01	0.03
5	OPC086	0.34	0.04	8.2	0.04	0.00	10.3	0.03	0.01	0.04
6	OPC085	0.41	0.06	7.3	0.07	0.01	4.9	0.03	0.01	0.04
7	OPC084	0.50	0.07	6.8	0.08	0.02	5.0	0.04	0.01	0.05
8	OPC083	0.56	0.08	6.6	0.06	0.01	5.4	0.04	0.02	0.06
9	OPC082	0.63	0.09	6.7	0.07	0.01	7.7	0.04	0.02	0.07
10	OPC081	0.74	0.12	6.3	0.11	0.02	4.6	0.05	0.03	0.09
11	OPC080	0.81	0.12	6.5	0.07	0.01	11.1	0.06	0.03	0.09
12	OPC079	0.83	0.13	6.6	0.03	0.00	8.5	0.06	0.03	0.09
13	OPC078	0.90	0.14	6.5	0.06	0.01	6.0	0.06	0.04	0.10
14	OPC077	1.01	0.15	6.5	0.11	0.02	6.5	0.07	0.04	0.12
15	OPC076	1.15	0.18	6.3	0.14	0.03	4.9	0.08	0.06	0.14
16	OPC075	1.26	0.20	6.2	0.11	0.02	5.8	0.08	0.08	0.16
17	OPC074	1.41	0.23	6.1	0.16	0.03	5.4	0.10	0.08	0.18
18	OPC073	1.57	0.26	6.0	0.16	0.03	5.0	0.11	0.08	0.20
19	OPC072	1.69	0.28	6.0	0.13	0.02	6.3	0.12	0.09	0.22
20	OPC071	1.80	0.30	6.1	0.11	0.02	7.1	0.14	0.09	0.23
21	OPC070	2.20	0.36	6.2	0.39	0.06	6.7	0.15	0.12	0.27
22	OPC069	2.52	0.41	6.1	0.33	0.06	5.8	0.17	0.14	0.31
23	OPC068	2.80	0.46	6.1	0.27	0.05	5.9	0.19	0.16	0.35

24	OPC067	3.46	0.56	6.1	0.66	0.10	6.3	0.26	0.18	0.44
25	OPC066	3.71	0.60	6.2	0.26	0.04	6.5	0.28	0.20	0.48
26	OPC065	4.23	0.68	6.2	0.52	0.08	6.6	0.29	0.24	0.53
27	OPC064	4.46	0.71	6.3	0.23	0.03	7.4	0.31	0.25	0.56
28	OPC063	4.86	0.76	6.4	0.40	0.05	7.7	0.32	0.28	0.61
29	OPC062	5.11	0.80	6.4	0.25	0.04	6.9	0.35	0.29	0.64
30	OPC061	5.57	0.86	6.5	0.47	0.06	7.3	0.37	0.33	0.70
31	OPC060	5.66	0.88	6.5	0.09	0.01	6.4	0.38	0.34	0.71
32	OPC059	5.87	0.90	6.5	0.21	0.02	8.7	0.38	0.36	0.74
33	OPC058	6.07	0.93	6.6	0.20	0.02	8.4	0.39	0.37	0.76
34	OPC057	6.36	0.96	6.6	0.29	0.03	9.0	0.42	0.37	0.79
35	OPC056	6.67	0.99	6.7	0.31	0.03	9.1	0.44	0.39	0.83
36	OPC055	7.25	1.06	6.8	0.58	0.07	8.4	0.46	0.42	0.88
37	OPC054	7.69	1.11	6.9	0.43	0.05	9.1	0.50	0.42	0.92
38	OPC053	8.06	1.15	7.0	0.38	0.04	10.2	0.51	0.45	0.96
39	OPC052	9.00	1.25	7.2	0.93	0.10	9.0	0.56	0.50	1.07
40	OPC051	9.67	1.32	7.3	0.67	0.07	9.8	0.63	0.50	1.13
41	OPC050	9.76	1.33	7.3	0.10	0.01	9.5	0.64	0.50	1.14
42	OPC049	11.18	1.47	7.6	1.42	0.14	10.2	0.74	0.55	1.28
43	OPC048	11.76	1.53	7.7	0.58	0.06	9.7	0.80	0.55	1.34
44	OPC047	11.85	1.54	7.7	0.09	0.01	10.2	0.81	0.55	1.35
45	OPC046	12.39	1.59	7.8	0.53	0.05	10.0	0.86	0.55	1.41
46	OPC045	13.49	1.70	8.0	1.10	0.11	10.5	0.94	0.57	1.51
47	OPC044	13.59	1.70	8.0	0.10	0.01	11.0	0.95	0.57	1.52
48	OPC043	14.69	1.80	8.1	1.10	0.10	11.0	1.04	0.57	1.62
49	OPC042	14.76	1.81	8.1	0.08	0.01	10.2	1.05	0.57	1.62
50	OPC041	15.34	1.86	8.2	0.58	0.05	11.3	1.10	0.57	1.68

51	OPC040	15.62	1.89	8.3	0.28	0.02	12.1	1.12	0.58	1.70
52	OPC039	15.72	1.90	8.3	0.10	0.01	10.6	1.13	0.58	1.71
53	OPC038	16.48	1.96	8.4	0.76	0.07	11.6	1.19	0.58	1.77
54	OPC037	16.51	1.97	8.4	0.03	0.00	7.2	1.20	0.58	1.78
55	OPC036	17.41	2.03	8.6	0.89	0.07	13.6	1.27	0.58	1.84
56	OPC035	17.86	2.06	8.7	0.45	0.03	13.6	1.30	0.58	1.88
57	OPC034	17.88	2.07	8.7	0.02	0.00	7.6	1.30	0.58	1.88
58	OPC033	17.92	2.07	8.7	0.04	0.00	14.1	1.30	0.58	1.88
59	OPC032	18.75	2.14	8.7	0.84	0.07	11.3	1.37	0.58	1.96
60	OPC031	18.90	2.15	8.8	0.14	0.01	14.3	1.38	0.58	1.97
61	OPC030	19.66	2.21	8.9	0.77	0.06	13.4	1.44	0.59	2.02
62	OPC029	19.71	2.22	8.9	0.05	0.01	5.7	1.44	0.59	2.03
63	OPC028	19.83	2.23	8.9	0.11	0.01	17.8	1.45	0.59	2.04
64	OPC027	20.36	2.26	9.0	0.53	0.04	13.9	1.49	0.59	2.07
65	OPC026	21.22	2.33	9.1	0.86	0.06	13.4	1.55	0.59	2.14
66	OPC025	22.08	2.38	9.3	0.86	0.05	15.7	1.60	0.59	2.19
67	OPC024	22.68	2.43	9.3	0.60	0.04	13.9	1.64	0.59	2.23
68	OPC023	23.19	2.46	9.4	0.51	0.04	13.6	1.68	0.59	2.27
69	OPC022	23.96	2.51	9.5	0.77	0.05	15.2	1.73	0.59	2.32
70	OPC021	24.84	2.57	9.7	0.88	0.06	15.6	1.79	0.59	2.38
71	OPC020	24.85	2.57	9.7	0.02	0.00	5.1	1.79	0.59	2.38
72	OPC019	24.89	2.57	9.7	0.03	0.00	50.5	1.79	0.59	2.38
73	OPC018	24.96	2.58	9.7	0.08	0.00	26.1	1.79	0.59	2.38
74	OPC017	25.01	2.58	9.7	0.05	0.00	25.4	1.79	0.59	2.39
75	OPC016	25.54	2.61	9.8	0.53	0.04	14.9	1.83	0.59	2.42
76	OPC015	26.06	2.65	9.8	0.52	0.03	15.8	1.86	0.60	2.45
77	OPC014	26.08	2.65	9.8	0.02	0.00	13.8	1.86	0.60	2.46

78	OPC013	26.38	2.67	9.9	0.30	0.02	16.7	1.88	0.60	2.47
79	OPC012	26.40	2.67	9.9	0.02	0.00	8.5	1.88	0.60	2.47
80	OPC011	26.56	2.68	9.9	0.16	0.01	13.8	1.89	0.60	2.49
81	OPC010	26.62	2.68	9.9	0.06	0.00	17.3	1.89	0.60	2.49
82	OPC009	27.01	2.71	10.0	0.39	0.02	16.0	1.92	0.60	2.51
83	OPC008	27.33	2.72	10.0	0.32	0.02	20.2	1.93	0.60	2.53
84	OPC007	27.33	2.72	10.0	0.00	0.00	0.0	1.93	0.60	2.53
85	OPC006	27.86	2.76	10.1	0.53	0.03	16.3	1.97	0.60	2.56
86	OPC005	27.86	2.76	10.1	0.00	0.00	0.0	1.97	0.60	2.56
87	OPC004	27.87	2.76	10.1	0.00	0.00	165.4	1.97	0.60	2.56
88	OPC003	28.15	2.77	10.2	0.28	0.02	18.6	1.98	0.60	2.58
89	OPC002	28.33	2.79	10.2	0.18	0.01	13.4	1.99	0.60	2.59
90	OPC001	28.33	2.79	10.2	0.00	0.00	0.0	1.99	0.60	2.59

		OPTIMISER FOR SEAM 3000								
		Estimated Run of Mine - Accumulative			Estimated Run of Mine - Incremental			Measured and Indicated - Accumulative		
#	Pit Shell	Waste Volume (Mbcm)	ROM Coal (Mtonnes)	Accumulative Stripping Ratio	Waste Volume (Mbcm)	ROM Coal (Mtonnes)	Incremental Stripping Ratio	ROM Measured (Mtonnes)	ROM Indicated (Mtonnes)	Total ROM (Mtonnes)
1	OPC090	0	0	0	0	0	0	0	0	0
2	OPC089	0	0	0	0	0	0	0	0	0
3	OPC088	0	0	0	0	0	0	0	0	0
4	OPC087	0	0	0	0	0	0	0	0	0
5	OPC086	0	0	0	0	0	0	0	0	0
6	OPC085	0	0	0	0	0	0	0	0	0
7	OPC084	0	0	0	0	0	0	0	0	0
8	OPC083	0	0	0	0	0	0	0	0	0
9	OPC082	0	0	0	0	0	0	0	0	0
10	OPC081	0	0	0	0	0	0	0	0	0
11	OPC080	0.06	0.00	1271.1	0.06	0.00	1271.1	0	0	0
12	OPC079	0.08	0.00	443.9	0.02	0.00	140.4	0	0	0
13	OPC078	0.09	0.00	490.3	0.01	0.00	0.0	0	0	0
14	OPC077	0.10	0.00	66.9	0.01	0.00	7.7	0	0	0
15	OPC076	0.11	0.00	51.2	0.01	0.00	16.8	0	0	0
16	OPC075	0.13	0.00	35.7	0.02	0.00	12.3	0	0	0
17	OPC074	0.16	0.01	28.6	0.02	0.00	13.6	0	0	0
18	OPC073	0.17	0.01	26.7	0.01	0.00	14.9	0	0	0
19	OPC072	0.19	0.01	24.8	0.02	0.00	14.4	0	0	0
20	OPC071	0.22	0.01	26.0	0.03	0.00	36.6	0	0	0
21	OPC070	0.25	0.01	26.2	0.03	0.00	28.5	0	0	0
22	OPC069	0.28	0.01	24.6	0.03	0.00	16.4	0	0.01	0.01
23	OPC068	0.29	0.01	24.8	0.01	0.00	31.8	0	0.01	0.01

24	OPC067	0.31	0.01	24.1	0.02	0.00	17.5	0	0.01	0.01
25	OPC066	0.35	0.01	23.8	0.04	0.00	21.6	0	0.01	0.01
26	OPC065	0.37	0.02	24.4	0.02	0.00	45.5	0	0.01	0.01
27	OPC064	0.40	0.02	23.5	0.02	0.00	15.0	0	0.01	0.01
28	OPC063	0.42	0.02	23.0	0.03	0.00	18.1	0	0.01	0.01
29	OPC062	0.45	0.02	23.4	0.02	0.00	33.4	0	0.01	0.01
30	OPC061	0.48	0.02	22.5	0.03	0.00	14.2	0	0.01	0.01
31	OPC060	0.50	0.02	21.9	0.02	0.00	12.8	0	0.01	0.01
32	OPC059	0.53	0.03	21.0	0.04	0.00	14.2	0	0.01	0.01
33	OPC058	0.62	0.03	19.5	0.08	0.01	13.0	0	0.01	0.01
34	OPC057	0.66	0.04	17.6	0.05	0.01	7.8	0	0.01	0.01
35	OPC056	0.73	0.04	17.0	0.07	0.01	12.5	0	0.02	0.02
36	OPC055	0.76	0.04	17.0	0.03	0.00	17.1	0	0.02	0.02
37	OPC054	0.81	0.05	16.7	0.06	0.00	13.2	0	0.02	0.02
38	OPC053	0.88	0.05	16.3	0.07	0.01	12.9	0	0.02	0.02
39	OPC052	1.05	0.07	14.7	0.17	0.02	9.8	0	0.02	0.02
40	OPC051	1.09	0.07	14.8	0.04	0.00	18.4	0	0.02	0.02
41	OPC050	1.16	0.08	14.8	0.07	0.01	13.6	0	0.02	0.02
42	OPC049	1.17	0.08	14.8	0.01	0.00	0.0	0	0.02	0.02
43	OPC048	1.29	0.09	14.4	0.12	0.01	11.1	0	0.02	0.02
44	OPC047	1.32	0.09	14.3	0.03	0.00	11.0	0	0.02	0.02
45	OPC046	1.50	0.11	13.9	0.18	0.02	11.9	0	0.03	0.03
46	OPC045	1.53	0.11	13.8	0.03	0.00	10.7	0	0.03	0.03
47	OPC044	1.60	0.12	13.7	0.07	0.01	10.5	0	0.03	0.03
48	OPC043	1.67	0.13	13.3	0.07	0.01	8.5	0	0.03	0.03
49	OPC042	1.80	0.14	13.3	0.13	0.01	12.6	0	0.03	0.03
50	OPC041	1.99	0.15	13.0	0.19	0.02	10.9	0	0.03	0.03

51	OPC040	2.31	0.18	12.8	0.32	0.03	11.7	0	0.04	0.04
52	OPC039	2.46	0.19	12.7	0.15	0.01	11.1	0	0.05	0.05
53	OPC038	2.49	0.20	12.7	0.03	0.00	11.8	0	0.05	0.05
54	OPC037	2.70	0.21	12.7	0.21	0.02	12.8	0	0.06	0.06
55	OPC036	2.83	0.22	12.8	0.13	0.01	14.9	0	0.06	0.06
56	OPC035	2.99	0.23	12.8	0.16	0.01	13.8	0	0.07	0.07
57	OPC034	3.05	0.24	12.8	0.06	0.01	10.4	0	0.07	0.07
58	OPC033	3.25	0.25	12.8	0.20	0.02	13.5	0	0.09	0.09
59	OPC032	3.29	0.26	12.8	0.04	0.00	12.5	0	0.09	0.09
60	OPC031	3.46	0.27	12.8	0.17	0.01	12.4	0	0.09	0.09
61	OPC030	3.51	0.27	12.8	0.05	0.00	12.6	0	0.10	0.10
62	OPC029	3.58	0.28	12.8	0.06	0.00	13.8	0	0.10	0.10
63	OPC028	3.78	0.30	12.8	0.20	0.02	13.1	0	0.10	0.10
64	OPC027	4.07	0.31	13.0	0.29	0.02	15.8	0	0.11	0.11
65	OPC026	4.22	0.32	13.1	0.16	0.01	15.3	0	0.12	0.12
66	OPC025	4.31	0.33	13.1	0.09	0.01	13.3	0	0.12	0.12
67	OPC024	4.46	0.34	13.2	0.15	0.01	17.1	0	0.12	0.12
68	OPC023	4.52	0.34	13.2	0.06	0.00	13.1	0	0.12	0.12
69	OPC022	4.62	0.35	13.1	0.11	0.01	12.4	0	0.13	0.13
70	OPC021	4.65	0.35	13.2	0.03	0.00	18.4	0	0.13	0.13
71	OPC020	4.72	0.36	13.2	0.07	0.00	18.9	0	0.13	0.13
72	OPC019	5.05	0.38	13.4	0.33	0.02	16.6	0	0.14	0.14
73	OPC018	5.29	0.39	13.6	0.24	0.01	17.9	0	0.15	0.15
74	OPC017	5.40	0.40	13.6	0.11	0.01	15.1	0	0.16	0.16
75	OPC016	5.59	0.41	13.7	0.19	0.01	17.1	0	0.16	0.16
76	OPC015	5.85	0.42	13.8	0.26	0.01	17.8	0	0.17	0.17
77	OPC014	5.91	0.43	13.8	0.06	0.00	15.5	0	0.17	0.17

78	OPC013	6.07	0.44	13.9	0.16	0.01	16.2	0	0.18	0.18
79	OPC012	6.32	0.45	14.1	0.26	0.01	19.7	0	0.18	0.18
80	OPC011	6.34	0.45	14.1	0.02	0.00	22.3	0	0.18	0.18
81	OPC010	6.70	0.47	14.3	0.36	0.02	19.2	0	0.19	0.19
82	OPC009	7.04	0.49	14.4	0.34	0.02	18.3	0	0.21	0.21
83	OPC008	7.07	0.49	14.4	0.03	0.00	16.3	0	0.21	0.21
84	OPC007	7.19	0.50	14.5	0.12	0.01	18.6	0	0.21	0.21
85	OPC006	7.31	0.50	14.6	0.13	0.01	23.8	0	0.21	0.21
86	OPC005	7.46	0.51	14.6	0.15	0.01	17.1	0	0.22	0.22
87	OPC004	7.77	0.52	14.8	0.31	0.01	21.5	0	0.22	0.22
88	OPC003	8.11	0.54	15.0	0.34	0.02	20.0	0	0.23	0.23
89	OPC002	8.14	0.54	15.0	0.03	0.00	11.4	0	0.23	0.23
90	OPC001	8.19	0.55	15.0	0.05	0.00	23.0	0	0.23	0.23

		OPTIMISER FOR SEAM 2000								
		Estimated Run of Mine - Accumulative			Estimated Run of Mine - Incremental			Measured and Indicated - Accumulative		
#	Pit Shell	Waste Volume (Mbcm)	ROM Coal (Mtonnes)	Accumulative Stripping Ratio	Waste Volume (Mbcm)	ROM Coal (Mtonnes)	Incremental Stripping Ratio	ROM Measured (Mtonnes)	ROM Indicated (Mtonnes)	Total ROM (Mtonnes)
1	OPC090	0	0	0	0	0	0	0	0	0
2	OPC089	0	0	0	0	0	0	0	0	0
3	OPC088	0	0	0	0	0	0	0	0	0
4	OPC087	0	0	0	0	0	0	0	0	0
5	OPC086	0	0	0	0	0	0	0	0	0
6	OPC085	0	0	0	0	0	0	0	0	0
7	OPC084	0	0	0	0	0	0	0	0	0
8	OPC083	0	0	0	0	0	0	0	0	0
9	OPC082	0	0	0	0	0	0	0	0	0
10	OPC081	0.04	0.00	103.6	0.04	0.00	103.58	0	0.00	0.00
11	OPC080	0.04	0.00	112.3	0.00	0.00	0.0	0	0.00	0.00
12	OPC079	0.06	0.00	43.0	0.02	0.00	19.6	0	0.00	0.00
13	OPC078	0.07	0.00	28.0	0.01	0.00	9.2	0	0.00	0.00
14	OPC077	0.09	0.00	27.3	0.02	0.00	25.1	0	0.00	0.00
15	OPC076	0.10	0.00	29.3	0.01	0.00	56.2	0	0.00	0.00
16	OPC075	0.12	0.00	29.8	0.02	0.00	33.4	0	0.00	0.00
17	OPC074	0.14	0.00	29.8	0.03	0.00	29.9	0	0.00	0.00
18	OPC073	0.18	0.01	28.7	0.03	0.00	24.8	0	0.01	0.01
19	OPC072	0.18	0.01	28.1	0.01	0.00	17.3	0	0.01	0.01
20	OPC071	0.20	0.01	28.5	0.01	0.00	34.8	0	0.01	0.01
21	OPC070	0.24	0.01	22.8	0.04	0.00	11.9	0	0.01	0.01
22	OPC069	0.25	0.01	20.1	0.01	0.00	5.5	0	0.01	0.01
23	OPC068	0.27	0.01	20.2	0.01	0.00	20.8	0	0.01	0.01

24	OPC067	0.28	0.01	20.5	0.01	0.00	30.2	0	0.01	0.01
25	OPC066	0.31	0.02	19.3	0.03	0.00	12.3	0	0.01	0.01
26	OPC065	0.38	0.02	16.7	0.07	0.01	10.6	0	0.02	0.02
27	OPC064	0.40	0.02	17.2	0.02	0.00	50.4	0	0.02	0.02
28	OPC063	0.44	0.03	16.9	0.04	0.00	14.6	0	0.02	0.02
29	OPC062	0.47	0.03	17.2	0.03	0.00	23.2	0	0.02	0.02
30	OPC061	0.50	0.03	17.8	0.03	0.00	44.3	0	0.02	0.02
31	OPC060	0.55	0.03	18.0	0.06	0.00	20.0	0	0.02	0.02
32	OPC059	0.62	0.03	17.9	0.06	0.00	17.2	0	0.02	0.02
33	OPC058	0.66	0.04	17.9	0.04	0.00	17.3	0	0.02	0.02
34	OPC057	0.72	0.04	18.4	0.06	0.00	27.5	0	0.02	0.02
35	OPC056	0.74	0.04	18.4	0.03	0.00	18.1	0	0.02	0.02
36	OPC055	0.81	0.04	18.4	0.06	0.00	18.0	0	0.02	0.02
37	OPC054	0.83	0.05	18.3	0.02	0.00	15.8	0	0.02	0.02
38	OPC053	0.89	0.05	18.3	0.07	0.00	18.4	0	0.02	0.02
39	OPC052	0.95	0.05	18.0	0.06	0.00	14.8	0	0.02	0.02
40	OPC051	1.03	0.06	17.8	0.07	0.00	15.2	0	0.03	0.03
41	OPC050	1.08	0.06	17.7	0.05	0.00	16.2	0	0.03	0.03
42	OPC049	1.14	0.07	17.4	0.06	0.00	13.6	0	0.03	0.03
43	OPC048	1.15	0.07	17.5	0.01	0.00	0.0	0	0.03	0.03
44	OPC047	1.17	0.07	17.4	0.03	0.00	15.5	0	0.03	0.03
45	OPC046	1.20	0.07	17.3	0.03	0.00	13.8	0	0.03	0.03
46	OPC045	1.27	0.07	17.1	0.07	0.01	13.6	0	0.03	0.03
47	OPC044	1.32	0.08	17.3	0.05	0.00	25.5	0	0.04	0.04
48	OPC043	1.35	0.08	17.4	0.02	0.00	26.9	0	0.04	0.04
49	OPC042	1.43	0.08	16.9	0.09	0.01	11.7	0	0.04	0.04
50	OPC041	1.52	0.09	17.0	0.09	0.00	18.6	0	0.04	0.04

51	OPC040	1.60	0.09	17.1	0.08	0.00	18.3	0	0.04	0.04
52	OPC039	1.68	0.10	17.1	0.08	0.00	18.1	0	0.04	0.04
53	OPC038	1.76	0.10	17.0	0.08	0.00	15.2	0	0.05	0.05
54	OPC037	2.17	0.14	15.9	0.41	0.03	12.4	0	0.06	0.06
55	OPC036	2.33	0.15	15.8	0.16	0.01	15.1	0	0.06	0.06
56	OPC035	2.46	0.16	15.8	0.13	0.01	14.4	0	0.06	0.06
57	OPC034	2.55	0.16	15.8	0.09	0.01	16.0	0	0.06	0.06
58	OPC033	2.64	0.17	15.8	0.09	0.01	16.9	0	0.06	0.06
59	OPC032	2.67	0.17	15.9	0.03	0.00	28.7	0	0.07	0.07
60	OPC031	2.73	0.17	15.9	0.06	0.00	15.0	0	0.07	0.07
61	OPC030	2.91	0.18	15.8	0.18	0.01	14.9	0	0.07	0.07
62	OPC029	2.92	0.19	15.8	0.01	0.00	10.8	0	0.07	0.07
63	OPC028	2.93	0.19	15.8	0.01	0.00	24.3	0	0.07	0.07
64	OPC027	3.08	0.20	15.8	0.15	0.01	15.6	0	0.07	0.07
65	OPC026	3.19	0.20	15.8	0.11	0.01	17.1	0	0.07	0.07
66	OPC025	3.41	0.22	15.8	0.22	0.01	15.3	0	0.08	0.08
67	OPC024	3.46	0.22	15.8	0.04	0.00	16.6	0	0.08	0.08
68	OPC023	3.58	0.23	15.8	0.12	0.01	17.5	0	0.08	0.08
69	OPC022	3.62	0.23	15.9	0.04	0.00	20.1	0	0.08	0.08
70	OPC021	3.74	0.23	16.0	0.13	0.01	19.5	0	0.08	0.08
71	OPC020	3.75	0.23	16.0	0.01	0.00	14.7	0	0.08	0.08
72	OPC019	3.94	0.25	16.0	0.19	0.01	15.7	0	0.08	0.08
73	OPC018	4.17	0.26	16.0	0.24	0.01	16.4	0	0.09	0.09
74	OPC017	4.32	0.27	16.1	0.14	0.01	18.2	0	0.09	0.09
75	OPC016	4.56	0.28	16.1	0.24	0.01	17.9	0	0.09	0.09
76	OPC015	4.72	0.29	16.1	0.16	0.01	14.9	0	0.09	0.09
77	OPC014	4.75	0.29	16.1	0.03	0.00	22.8	0	0.09	0.09

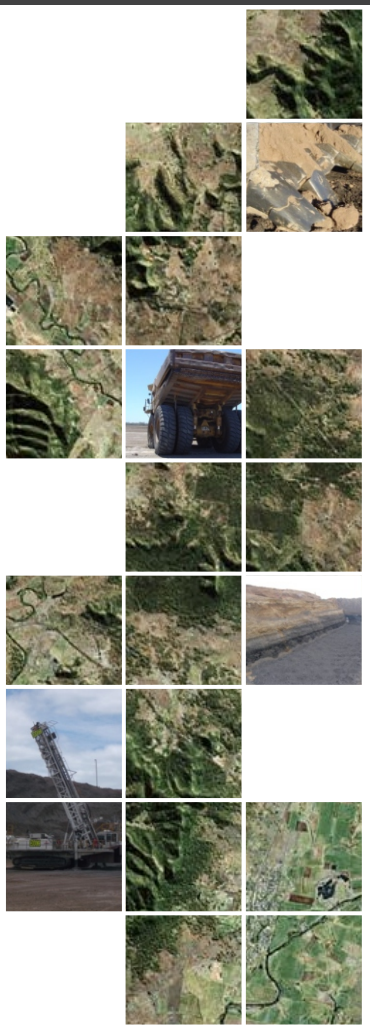
78	OPC013	4.83	0.30	16.2	0.09	0.00	23.4	0	0.09	0.09
79	OPC012	5.01	0.31	16.3	0.18	0.01	17.8	0	0.09	0.09
80	OPC011	5.29	0.32	16.3	0.28	0.02	17.3	0	0.09	0.09
81	OPC010	5.55	0.34	16.4	0.26	0.01	18.5	0	0.09	0.09
82	OPC009	5.89	0.36	16.4	0.35	0.02	17.1	0	0.09	0.09
83	OPC008	6.01	0.36	16.5	0.11	0.01	18.0	0	0.09	0.09
84	OPC007	6.06	0.37	16.5	0.06	0.00	24.2	0	0.09	0.09
85	OPC006	6.35	0.38	16.6	0.29	0.02	17.7	0	0.09	0.09
86	OPC005	6.40	0.39	16.6	0.06	0.00	22.0	0	0.09	0.09
87	OPC004	6.58	0.40	16.6	0.17	0.01	18.3	0	0.10	0.10
88	OPC003	6.80	0.41	16.8	0.22	0.01	21.1	0	0.11	0.11
89	OPC002	6.94	0.41	16.8	0.14	0.01	19.8	0	0.11	0.11
90	OPC001	7.19	0.42	17.0	0.26	0.01	22.5	0	0.11	0.11

Appendix E – Life of Mine Plan

Life on Mine Plan
FEBRUARY 2017

Prepared For :

PT Rinjani Kartanegara



SMG CONSULTANTS

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- the limitations and assumptions referred to throughout the report;
- the limited scope of the report; and
- other relevant issues which are not within the scope of the report.

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Assumptions

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All relevant documentation, along with the necessary and available data to make such a review has been supplied.

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ABBREVIATIONS

AC	Acid Consuming
ad	Air dried
adb	Air dried basis
AF	Acid Forming
AMDAL	Analisis Mengenai Dampak Lingkungan Hidup
ANDAL	Analisis Dampak Lingkungan Hidup
ar	As received
arb	As received basis
ARD	Acid Rock Drainage
ASTM	American Society for Testing and Materials
bcm	Bank cubic metre
capex	Capital costs
CCoW	Coal Contract of Work
CHPP	Coal Handling and Processing Plant
CV	Measure of energy (kilocalorie) per kilogram
EBIT	Earnings Before Interest and Taxes
EBITDA	Earnings before Interest, Taxes, Depreciation and Amortisation
FC	Fixed carbon
Ha	Hectare
HE	Hydraulic Excavator
HGI	Hardgrove Grindability Index
Hr	Hour
HHV	Higher Heating Value
IM	Inherent Moisture
IPPKH	“Izin Pinjam Pakai Kawasan Hutan” which translates to “Permit to Borrow and Use Forest Land”
IRR	Internal Rate of Return
ITCI	PT ITCI Hutani Manunggal Plantation Company
IUP	“Izin Usaha Pertambangan” which translates to “Mining Business Permit”
JORC	Australasian Institute of Mining and Metallurgy Joint Ore Reserves Committee
Kcal/kg	Unit of energy (kilocalorie) per kilogram
kg	Kilogram
Km	Kilometre
KP	“Kuasa Pertambangan” which translates to “Authority for Mine Workings”
Kt	Thousand tonne
kV	Kilovolt
kWh	Kilowatt Hour
l	Litre
LAS	log ASCII standard
lcm	Loose cubic metre
LiDAR	Light Detection And Ranging
LOM	Life of Mine
m	Metre
M	Million
M^3	Cubic Metre
Mbcm	Million bank cubic metres
Mbcmpa	Million bank cubic metres per annum
MEMR	Ministry of Energy and Mineral Resources

MMPS	Mine Mouth Power Station
m/s	Metres per second
Mt	Million tonne
Mtpa	Million tonnes per annum
MW	Megawatt
NAF	Non Acid Forming
NAR	Nett As Received
NPV	Net Present Value
Opex	Operating costs
pa	per annum
PAF	Potential Acid Forming
PKP2B	Perjanjian Kerjasama Pengusahaan Pertambangan Batubara
PPE	Personal Protective Equipment
RD	Relative Density
RK	PT Rinjani Kartanegara
RL	Relative Level (used to reference the height of landforms above a datum level)
ROM	Run-of-Mine
SE	Specific Energy
SMGC	PT SMG Consultants Indonesia
SR	Strip ratio (of waste to ROM coal) expressed as bcm per tonne
SOP	Standard operating procedure
ST	Seam Thickness
t	Tonne
tkm	Tonne kilometre
TM	Total Moisture
t/m3	Tonne per cubic metre
tph	Tonne per hour
TS	Total Sulphur
TM	Total Metals
VM	Volatile Matter

RELEVENT REPORTS AND DOCUMENTS

1. “Coal Resource Statement, February 2017, Prepared for PT Rinjani Kartanegara” by SMGC.
2. “Coal Reserve Statement, February 2017, Prepared for PT Rinjani Kartanegara” by SMGC.
3. “Kajian Geoteknik Rencana Penambangan Batubara di Wilayah Konsesi Blok II PT Rinjani Kartanegara”, January 2017, Study Centre for Mineral and Energy Research Institute and Community Service, Veteran’s University of National Development Yogyakarta.

1. INTRODUCTION

SMGC were contracted by PT Rinjani Kartanegara (RK) to develop a Life of Mine (LOM) plan for their coal concession located in Kutai Kartanegara Regency, East Kalimantan Province, Indonesia. The LOM plan is based on the work described in the document "Coal Reserve Statement, March 2017, Prepared for PT Rinjani Kartanegara" by SMGC (Reserve Statement).

The objective of the LOM plan study is to demonstrate a feasible and achievable mine plan for the deposit to support the Reserve Estimate. The first four periods in the mine plan are for the four quarters of 2017 starting on 1st January 2017. These first four periods have been labelled 2017-Q1, 2017-Q2, 2017-Q3 and 2017-Q4. The remaining 2 years of the life of mine plan, 2018 and 2019 have been scheduled on an annual basis.

Currently, mining operations within the RK concession are constrained by the boundary of the two Permits to Borrow and Use Forest Land (referred to as IPPKH1 and IPPKH2). The 1,206 ha combined area of these two permits does not cover the entire concession and is insufficient for execution of the mine plan. Expansion of the IPPKH2 will be required by the end of 2017 to allow the life of mine plan to be executed to its completion. As a precursor to this IPPKH2 expansion, an agreement must be reached with the plantation operator PT ITCI Hutani Manunggal (ITCI) on land compensation. Additionally land compensation will need to be resolved in the Middle Area of the concession already covered by IPPKH2.

The timing of the IPPKH2 expansion into the ITCI area has a significant impact on the mine plan. By the end of December 2017 the mining excavation will reach the limit of current IPPKH2. This timing issue for the IPPKH2 expansion is discussed further in Section 2.2.2 of the Reserve statement.

The mine plan is based on the pit design described in Section 5.5 of the Reserve Statement. The classification and stripping ratio for coal inside this pit design is shown in Table 1.1.

Table 1.1 – Classification of Coal in Final Pit Design

Description	Unit	Volume/Tonnes
Waste	**Mbcm**	**35.5**
Proved Reserve	Mt	2.1
Probable Reserve	Mt	0.8
Other Coal *(not classified as Reserve)*	Mt	0.5
Total Coal	**Mt**	**3.3**
Stripping Ratio	bcm:t	10.7

This shows that approximately 14 % of the coal included in the pit designs was not classified as a Proved or Probable Reserve. This coal comprising Inferred Resources and Exploration Target coal has been referred to as Other Coal throughout this report. Most of this Other Coal inside the pit designs is located in the PT ITCI Hutani Manunggal (ITCH) and Middle areas of the concession (see Figure 5.10 of the Reserve Report). The primary reasons for this Other Coal classification were the lack of drill access to these areas and insufficient core sample analysis. No access was granted to the ITCI Area and limited access was allowed in the Middle Area. This Other Coal has been included in the pit design as it was considered likely the ultimate pit excavation would continue into these areas, and that the waste balance and waste haul distances would be more realistic and accurate if this Other Coal was included.

Any user, of this pit design and mine plan should be aware of this Other Coal comprising Inferred Resources and Exploration Target coal. SMGC is of the opinion that this mine plan has been completed to a sufficient level of detail to satisfy the requirements of a prefeasibility study.

2. MINING METHOD AND STRATEGY

2.1 MINING METHOD

The RK mine is an open pit mining operation using excavator and truck mining methods, which is typical of many Indonesian operations. Mining and hauling of waste is performed by the mining contractor PT Cipta Kridatama (CK). Waste is mined using hydraulic excavators ranging from 100 tonne class up to 200 tonne class and 50 to 90 tonne capacity class off highway trucks. Softer material and topsoil is mined using smaller 50 tonne excavators and 40 tonne capacity articulated dump trucks. SMGC has assumed that this mining method will continue to be used for the entire life of mine.

2.2 MINING STRATEGY

Key factors and constraints that influenced the mining strategy for the life of mine plan were:

- mining activities are restricted to the current IPPKH2 until the end of 2017;
- it has been assumed this IPPKH2 will be expanded by December 2017, opening up the ITCI Area in the west of the concession for mining activity;
- the production rate was decreased from the current 1.3 Mtpa to 1.07 Mtpa to allow more time for IPPKH2 expansion and land compensation to be resolved;
- more than 80 % of produced coal comes from the S700 Pit in the North Area;
- S700 Pit in the North Area has the lowest strip ratio and sulphur content;
- the remaining coal from smaller pits in the North and Middle Areas is of higher strip ratio and higher sulphur;
- for the final land form, filling the S700 Pit void is a priority;
- the general direction of mining is from east to west with in-pit dumping being maximised wherever possible;
- the westward advance depends on the approval of the IPPKH2 expansion by December 2016; and
- the mining sequence was designed so that the waste haul distance was minimised as much as practical.

The mining sequence was developed in this way so that the western areas of the pit were not mined in the early part of the schedule, due to the lack of exploration data and IPPKH2 approval in these areas. It is considered likely that improvements to the mine plan and project cash flows may be achieved with modifications to the mine plan once more exploration is undertaken in the concession.

3. PRODUCTION SCHEDULE

Production from the RK project is constrained by working room in the pit, capacity of the waste mining fleet, land compensation and approval of the IPPKH2 expansion. The production schedule was generated using the following methodology:

- A coal target schedule and mining sequence was developed with an approximate annual coal production target of 1.07 Mtpa.
- The schedule had to be controlled so mining activities did not extend beyond the approved IPPKH2 boundaries before this permit was approved. There are two critical approval milestones that must be achieved to allow the mine plan to be executed without interruption. These are summarised below in Table 3.1:

Table 3.1 – IPPKH2 Approval Requirements

Description	Target Approval Date	Mine Scheduled Start of Excavation
IPPKH2 Expansion into ITCI area.	December 2017	February 2018
Land Compensation Settlement in Middle Area	September 2017	January 2018

With these constraints there was little flexibility to smooth out waste stripping requirements unless the IPPKH2 expansion approval is achieved earlier than planned and scheduling can be more selective.

The main aspects for each year of the schedule are summarised below:

- In 2017, mining continues in the current S700 Pit in the North Area. Mining advances to the west with dumping in-pit to the east. The advancing pit crest will reach the current IPPKH2 boundary by the end of December 2017.
- In 2018 mining will start in Pit S2400 in the Middle Area. Mining direction will be from east to west, with initial dumping to an out-of-pit dump to the east until in-pit dumping room is available. This Pit S2400 will provide some flexibility if the IPPKH2 expansion is delayed. Once the IPPKH2 expansion is approved, mining in the Pit S800 can also start and mining in Pit S700 can continue advancing westward into the ITCI Area beyond the current IPPKH2 boundary.
- 2019 is the final year of the mine plan. During this year, Pit S700 continues mining until depleted. Pits S2001 and S3200 are started later in the year to allow back filling into the S700 Pit void.

As waste stripping is the major cost component for the RK project, waste excavator fleet requirements and working room have been estimated in Section 5. It is recommended that the productivity of the waste mining fleet is maximised and that some excess capacity is maintained in the coal mining fleet and ancillary fleets to allow for variation in other equipment requirements over the life of the mine.

3.1 PRODUCTION SCHEDULE RESULTS

The physical quantities of waste and coal and product qualities for the life of mine from the production schedule are shown in Table 3.2. For this mine plan, the annual production rate has been reduced from the current levels of 1.3 Mtpa to 1.07 Mtpa. This has been done to allow more time for the IPPKH2 expansion into the ITCI Area to be agreed and approved before mining operations are forced to stop at the current IPPKH2 boundary.

Table 3.2 – Life of Mine Schedule

Description	Unit	TOTAL	2017-Q1	2017-Q2	2017-Q3	2017-Q4	2018	2019
MINING								
Disturbed Area	Ha	264	15	15	11	11	83	129
Topsoil	kbcm	709	82	66	79	69	219	195
In Situ Waste	kbcm	35,468	4,122	3,286	3,968	3,438	10,928	9,727
Rehandle	kbcm	1,064	124	99	119	103	328	292
Total Waste	kbcm	36,532	4,245	3,385	4,087	3,541	11,255	10,018
Waste Haul Distance	km	1.5	1.3	1.2	1.4	1.4	1.3	1.8
Coal to ROM	kt	3,322	254	281	281	254	1,070	1,182
Stripping Ratio	bcm:tonne	10.7	16.2	11.7	14.1	13.5	10.2	8.2
Coal Hauled to Port	kt	3,322	254	281	281	254	1,070	1,182
Mined Calorific Value (adb)	kcal/kg	5,972	6,049	5,982	5,973	5,924	5,908	6,020
Mined Calorific Value (gar)	kcal/kg	5,724	5,751	5,738	5,720	5,686	5,657	5,784
% Proved and Probable	%	86	99	100	100	100	90	69
Haul Distance to Port	km	32.3	32.3	32.3	32.3	32.3	32.3	32.3
SHIPPING								
Coal Barged	kt	3,322	254	281	281	254	1,070	1,183
Total Sulphur	% adb	1.76	1.71	1.50	1.30	1.59	1.81	1.94
CV Barged (adb)	cal/g	5,972	6,049	5,982	5,973	5,925	5,908	6,020
CV Barged (gar)	cal/g	5,724	5,751	5,738	5,720	5,686	5,657	5,784

Waste mining, coal mining and stripping ratio are shown in Figure 3.1 and Figure 3.2. The stripping ratio generally trends downward over the life of mine. This is due to the mining direction to the west which is up-dip for the coal seam structure. Consequently, the coal depth and strip ratio decreases as mining advances to the west.

Figure 3.1 – Waste Mining

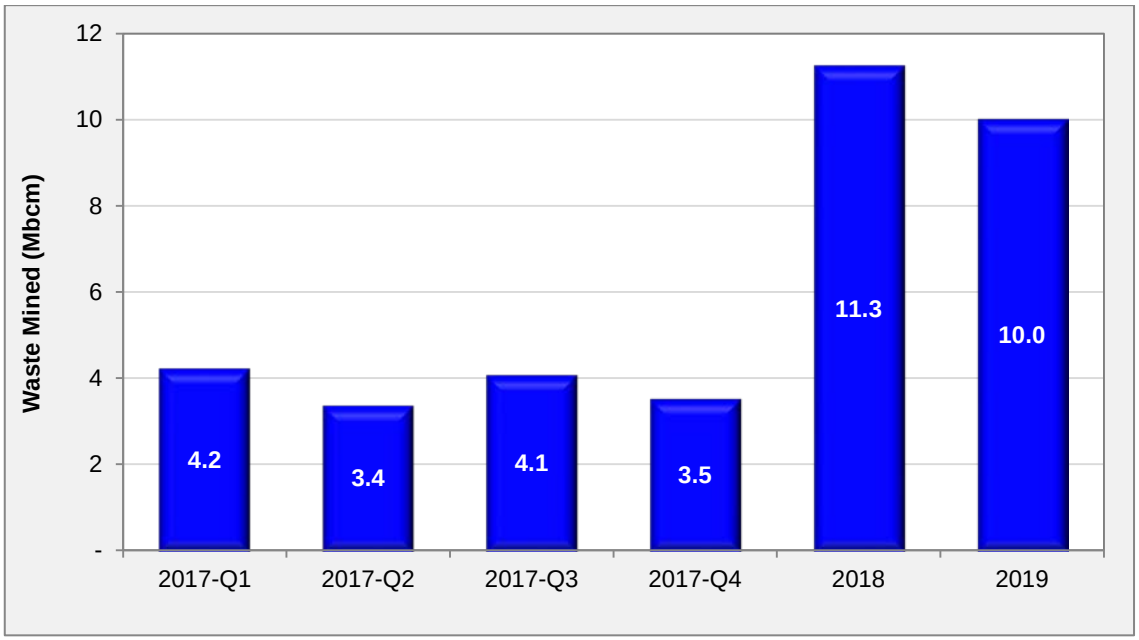
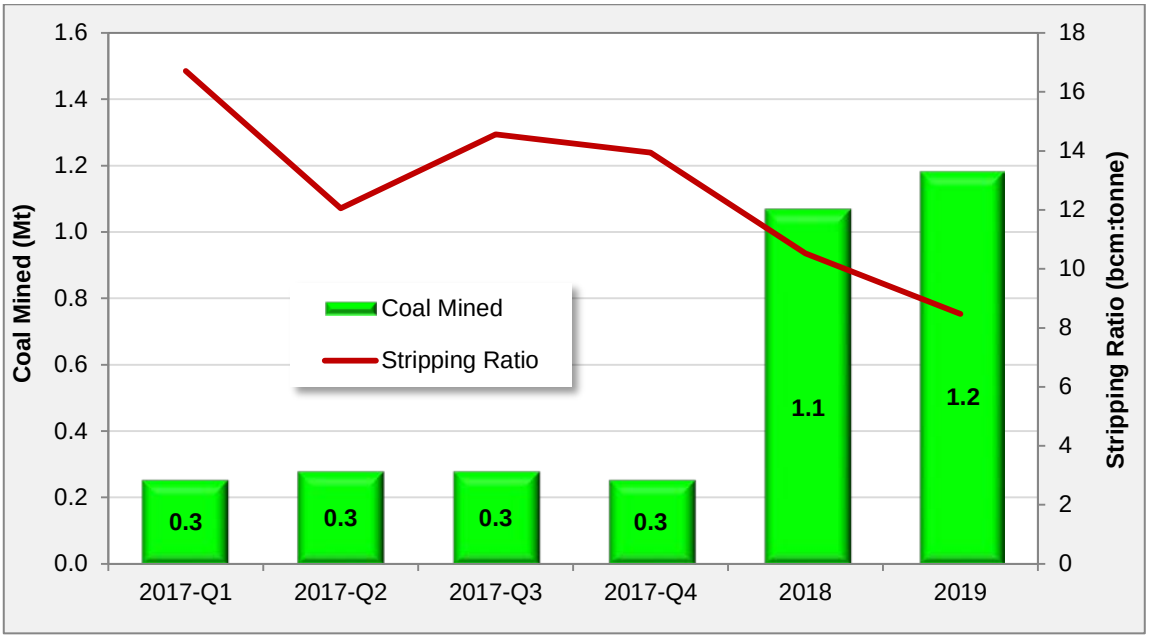
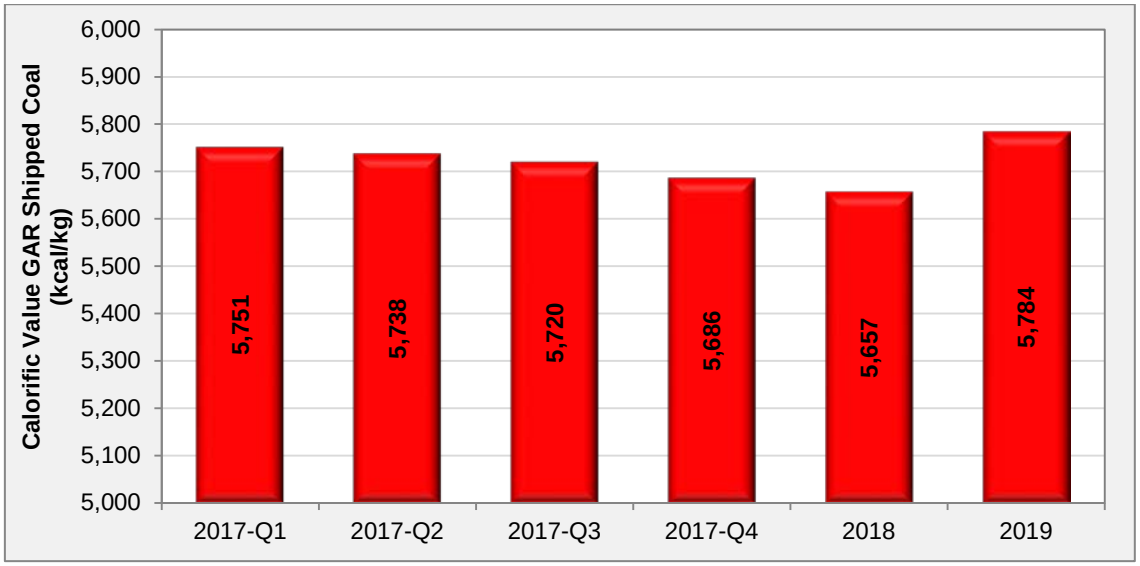


Figure 3.2 – Coal Mining and Stripping Ratio



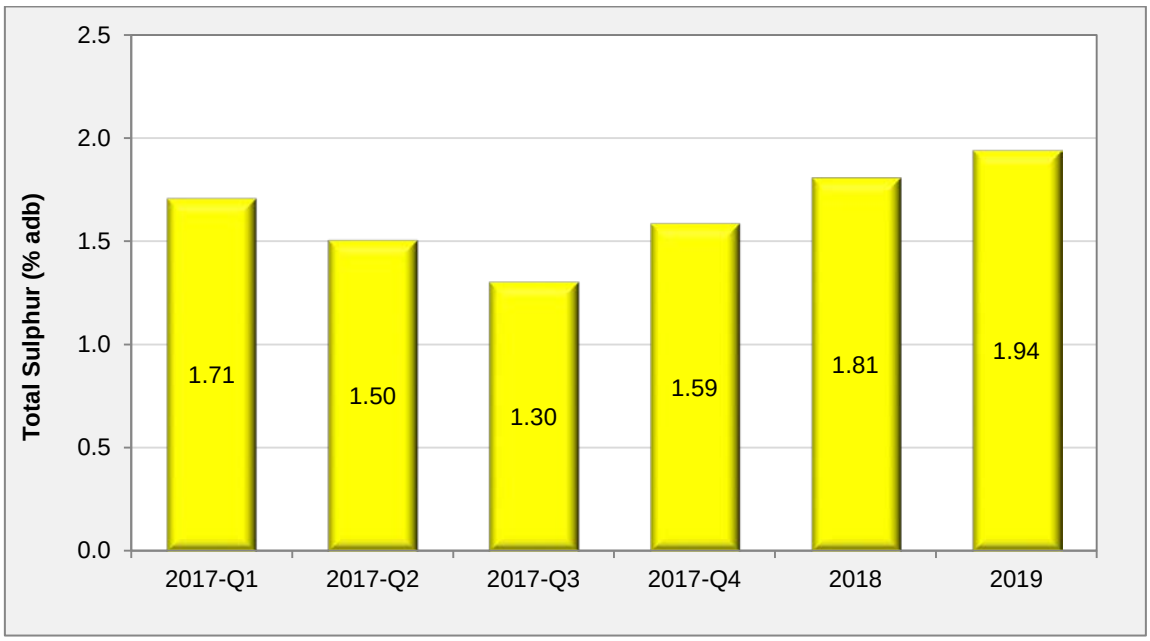
The estimated calorific value on a gross as received basis and total sulphur on an air dried basis from the production schedule are shown in Figure 3.3 and Figure 3.4. These charts show there is some variation in these parameters over the life of mine. This is not expected to result in significant issues with marketability of the coal in terms of CV, but the sulphur content will have to be managed through blending.

Figure 3.3 – Calorific Value (kcal/kg gar)



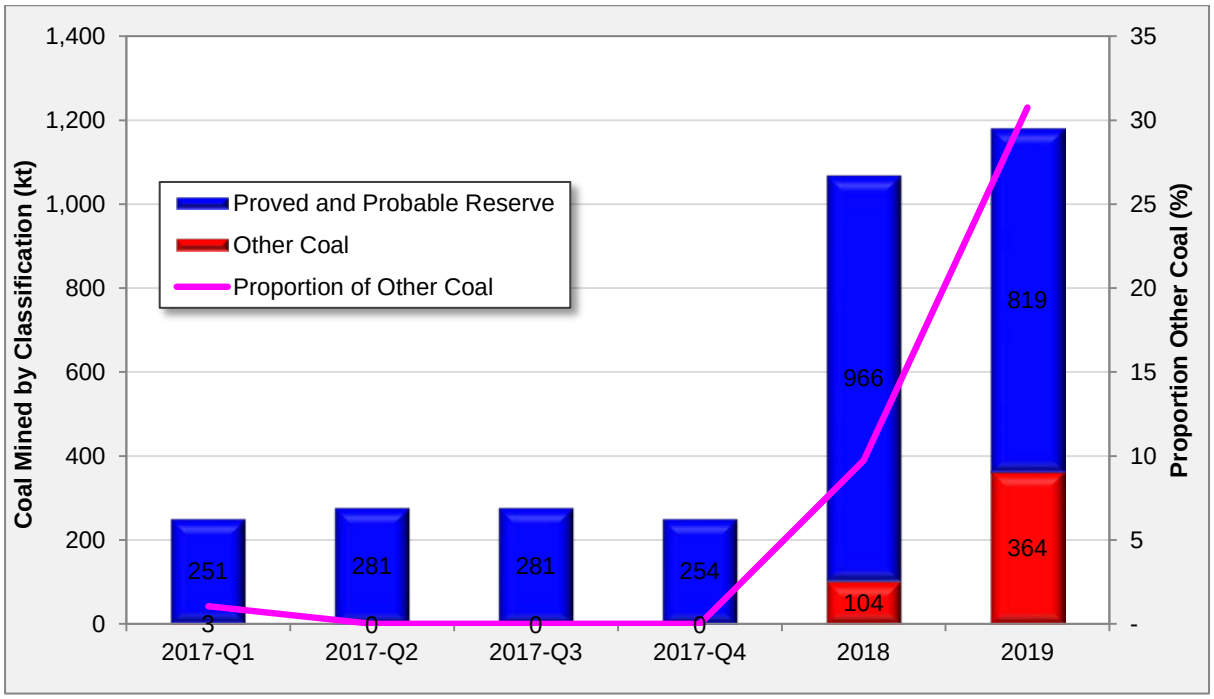
There is an increase in the total sulphur in the last years of the schedule. These higher sulphur values are mainly coming from the Middle Area pits. The blending of coal from these pits will have to be managed closely to avoid penalties for high sulphur. Further drilling and sampling in this area is recommended to better understand the sulphur properties. The investigation of more specialised coal markets for these high sulphur coals is also recommended.

Figure 3.4 – Total Sulphur (% adb)



The total quantity and proportion of coal not classified as Measured or Indicated in the production schedule is shown in Figure 3.5. This lower confidence coal is referred to as Other Coal and makes up 14 % of the total coal in the mine plan. Most of this Other Coal is coming from the deeper seams in the North Area and most of the Middle Area pits. Where possible, this coal has been pushed to the back of the schedule to allow time for additional drilling to improve the confidence of the coal.

Figure 3.5 – Proportion of Other Coal Scheduled over LOM

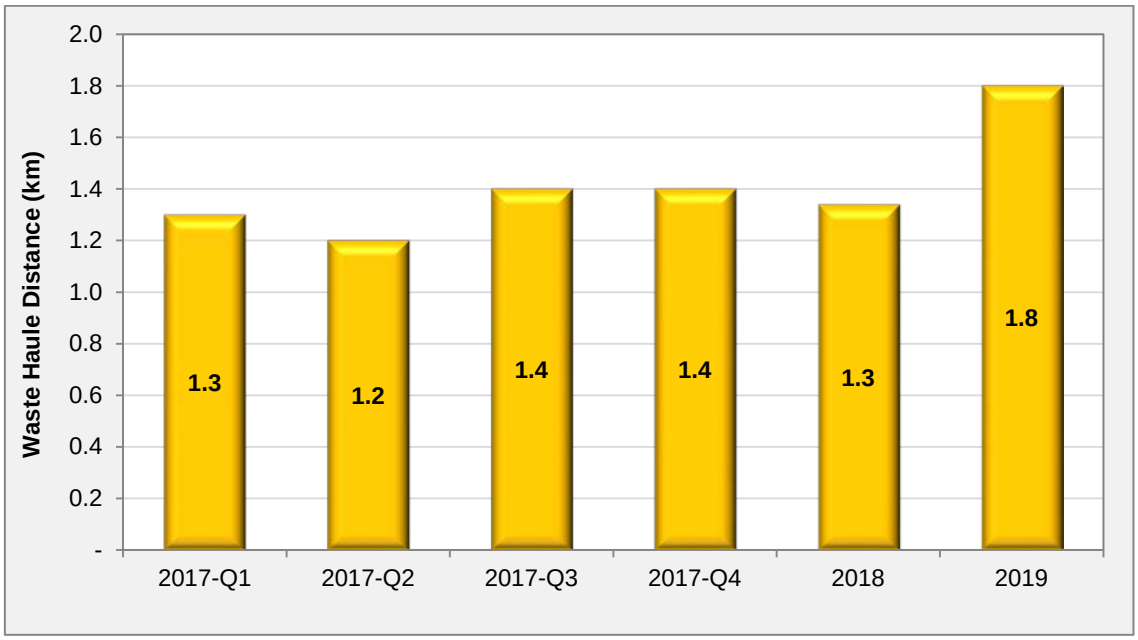


4. WASTE BALANCE AND DUMP DESIGN

A waste dumping balance was completed for the life of mine plan and the stage plans are shown in Section 6. A waste swell factor of 1.2 was assumed for all waste over the life of mine. The waste haul distance was estimated for each period of the plan by plotting approximate haul strings from the centroid of each mining block to the centroid of the corresponding dump. The average haul distances by period are shown in Figure 4.1.

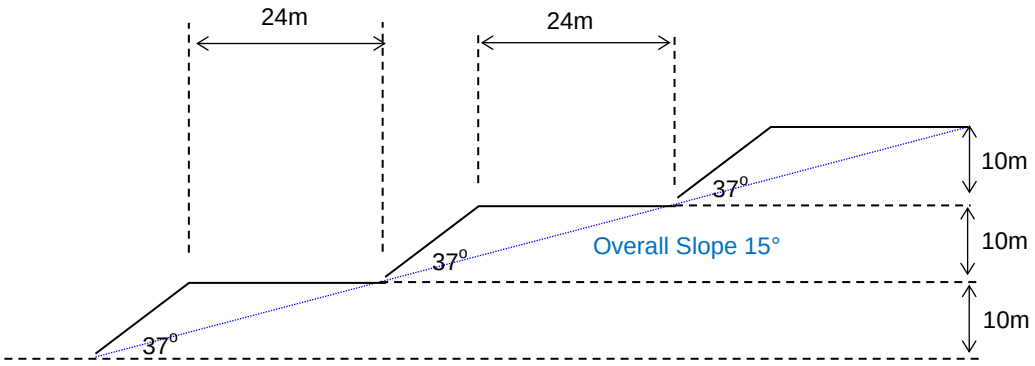
Waste hauls remain steady until the final year. In the final year, the average haul distance increases due to mining from the S2001 and S3200 pits in the Middle Area. Waste from these pits will be hauled to the Pit S700 void. Filling of this void has been stated as a priority for the ITCI plantation company.

Figure 4.1 – Waste Haul Distance by Period



The proposed final dump design slopes are shown in Figure 4.2 and are designed to have an overall slope that will minimise erosion in the long term while still being practical for implementation in the field. The final overall dump slope was limited to 15° and is expected to be constructed in 10 m lifts as shown in Figure 4.2.

Figure 4.2 – Final Dump Slope Design



The following recommendations are made by SMGC regarding detailed dump design and operating practices in the mine in order to improve dump slope stability:

- all pit floors should to be cleaned of all soft material prior to dumping and the bottom layer of all dumps will be selected hard material to ensure the dump foundation is strong; and
- trenches should be dug in the floor of all dumps parallel to the toe prior to dumping in order to disrupt the floor layer and lock in the toe of the dump

5. EQUIPMENT AND WORKING AREA

An analysis of waste mining fleet requirements have been calculated for this project to give an indication of the size of the operation and the amount of equipment required to achieve the production targets and to ensure that the production schedule and working room is as realistic as possible.

This analysis assumes a mixed fleet ranging between 75 tonne class and 200 tonne class hydraulic excavators which are models that are currently or have been used at the RK site. SMGC recommends that the number of larger excavators is increased as this will reduce working room requirements which may reduce waste haul distances and thus mining costs. The following equipment calendar was used as the basis for calculating equipment requirements for the project:

Table 5.1 – Mining Fleet Operating Hours

Description	Value	Unit
Calendar Days	365	Days
Non Production Days	6	Days
Scheduled Production Hours	8,616	hrs per year
Shift Change	1	hrs per day
Meal and Rest Hours	2	hrs per day
Praying	0.75	hrs per day
Rain and Slippery Conditions	3.03	hrs per day
Others	2.25	hrs per day
Total Delays	9.03	hrs per day
Total Lost Time	3,252	hrs per year
Effective Time	**5,364**	**hrs per year**
Plant Availability	85	%
Operating Hours	**4,559**	**hrs per year**

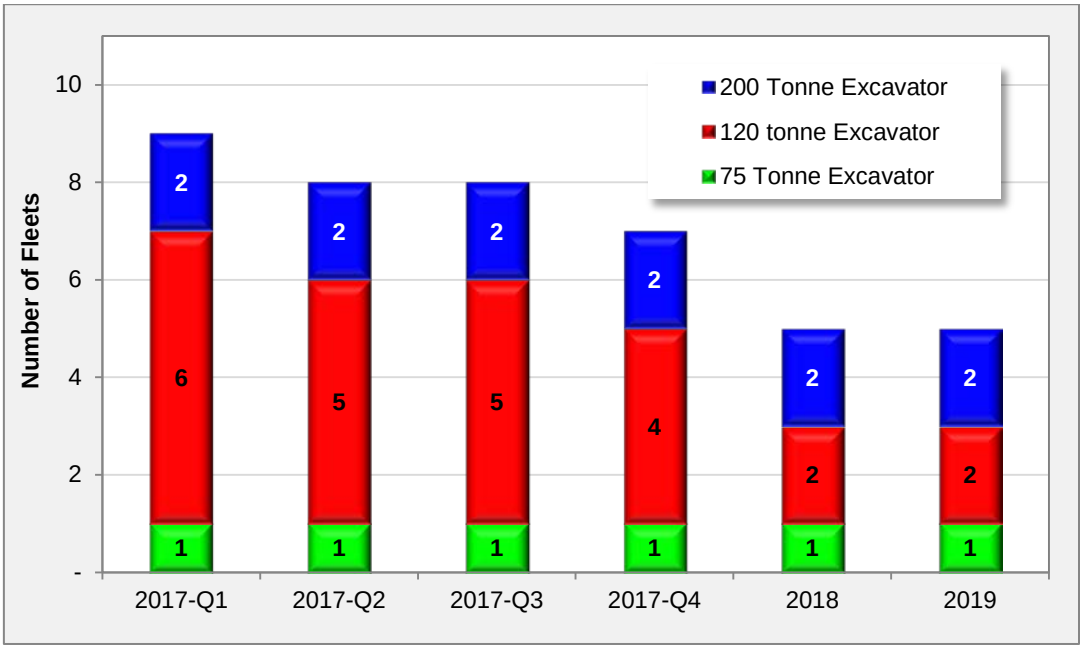
These operating hours are based on actual performance from a major contractor in Indonesia. Lost time due to rain and slippery conditions is based on historical data from an operation on the Mahakam River in East Kalimantan and is considered a reasonable estimate for this project. Additional lost time is assumed during the Ramadan period and is incorporated into the assumptions above. Mechanical availability of 85 % is based on performance achieved by contractors in Indonesia on typical equipment. Actual performance may vary from this and is primarily a function of the contractor's performance and time lost to wet weather.

Lost time due to rain and slippery conditions is a very important assumption for operations in Indonesia and has a large impact on mine production. This usually contributes over 1,000 hours of lost time per year and is often significantly greater than this amount. The actual lost time due to rain and slippery conditions in any period is dependent on a number of factors including:

- Quantity of Rainfall
- Duration and Intensity of Rainfall
- Type of Material on the site
- Effectiveness of drainage
- Quality of Road Construction

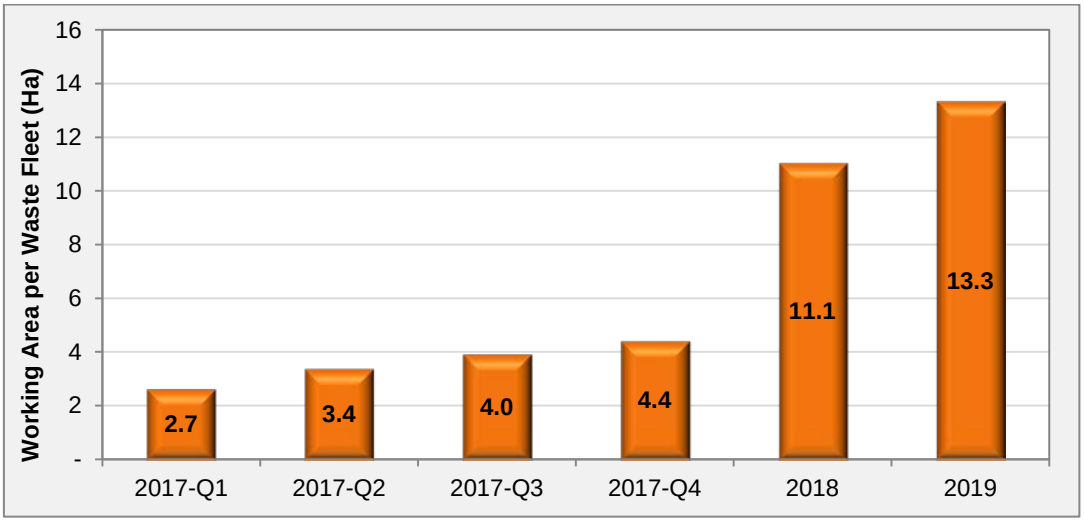
Fleets of 75 tonne, 120 tonne and 200 tonne class excavators were selected as per the current operations on site. This size of equipment would be expected to be combined with trucks of either 90 tonne or 55 tonne capacity. There will be a proportion of 'wedge' material which is better suited to mining with smaller equipment. The assumed fleet numbers over the life of mine are shown Figure 5.1.

Figure 5.1 – Waste Mining Fleets



The working area per excavator was calculated for each period of the schedule by dividing the active mining area by the total number of waste fleets operating. A minimum area per fleet of 3.0 Ha per fleet was targeted, with 4.0 Ha per fleet whenever possible. This target area per fleet is set to allow room for coal mining fleets and dozers or drill and blast as required. The working area per waste fleet for each period of the schedule is shown in Figure 5.2. Early in the schedule, working room is tight because the operation is still restricted to the IPPKH2 area.

Figure 5.2 – Working Area per Waste Fleet



6. FACE POSITIONS

6.1 FACE POSITIONS

Face positions showing the mining and dumping areas for each period of the schedule are shown in Figure 6.1 to Figure 6.7. The IPPKH2 boundary is shown in purple.

Operations are restricted to the IPPHK2 area until December 2017. During this first year, mining of Pit S700 in the North area progresses to the west with in-pit dumping to the east. It can be seen this becomes critical in Figure 6.5 which shows the face position at the end of December 2017 right at the limit of the IPPKH2. At this time, mining is restricted to cleaning out the benches in the bottom of the pit. The upper benches cannot advance because the pit crest has reached the IPPKH2 boundary.

It is assumed that expansion of IPPKH2 into the ITCI Area and land compensation in the Middle Area are settled by the end of 2017. This opens up these additional areas for mining in 2018 and 2019.

In 2018, Pit S700 continues advancing to the west and dumping waste in-pit to the east. The small Pit S800 in the North Area is depleted and dumped into the S700 in-pit dump during 2018. Also in 2018, the small Pit S2400 in the Middle Area is mined out and dumped out-of-pit.

In 2019, Pit S700 becomes depleted. The Middle Area pits S2001 and S3200 are also depleted in this final year with their waste being dumped in the S700 Pit void. ITCI have stated their priority is to fill up the North Area Pit S700 void.

Figure 6.1 – Face Position End December 2016 (starting condition)

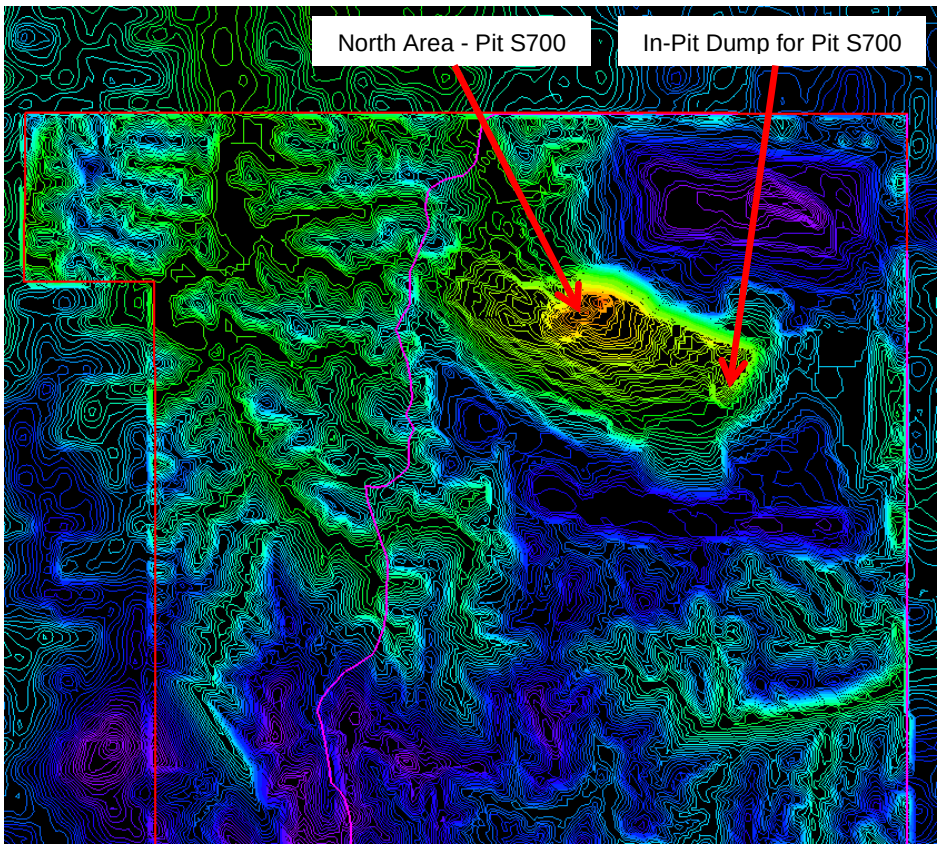


Figure 6.2 – Face Position End March 2017

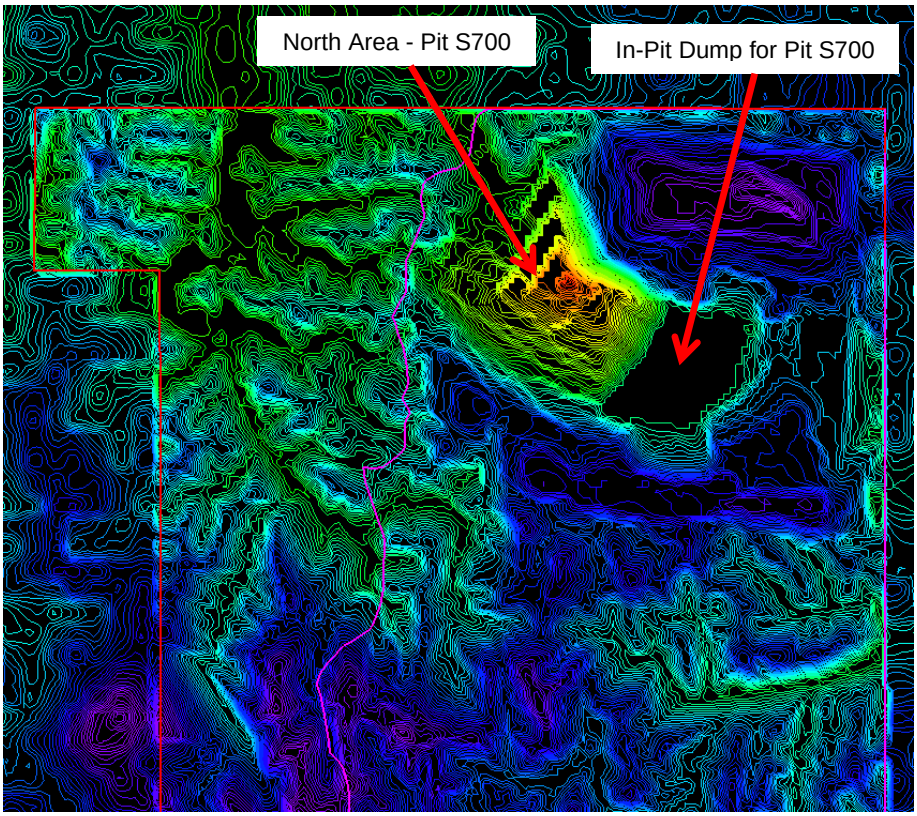


Figure 6.3 – Face Position End June 2017

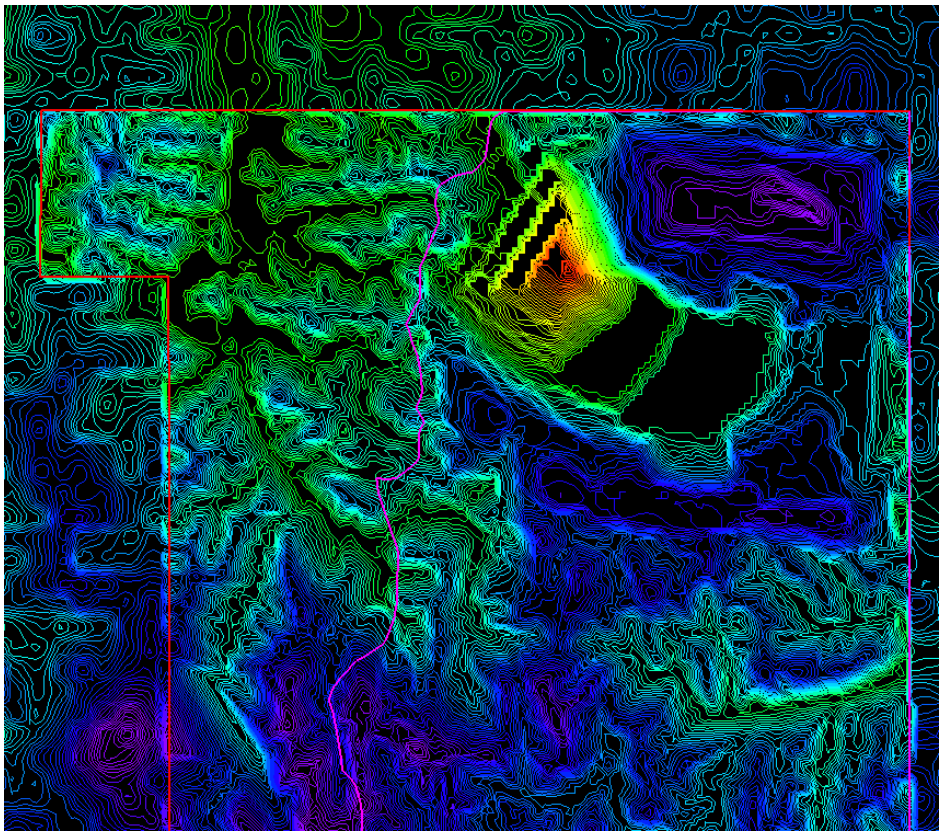


Figure 6.4 – Face Position End September 2017

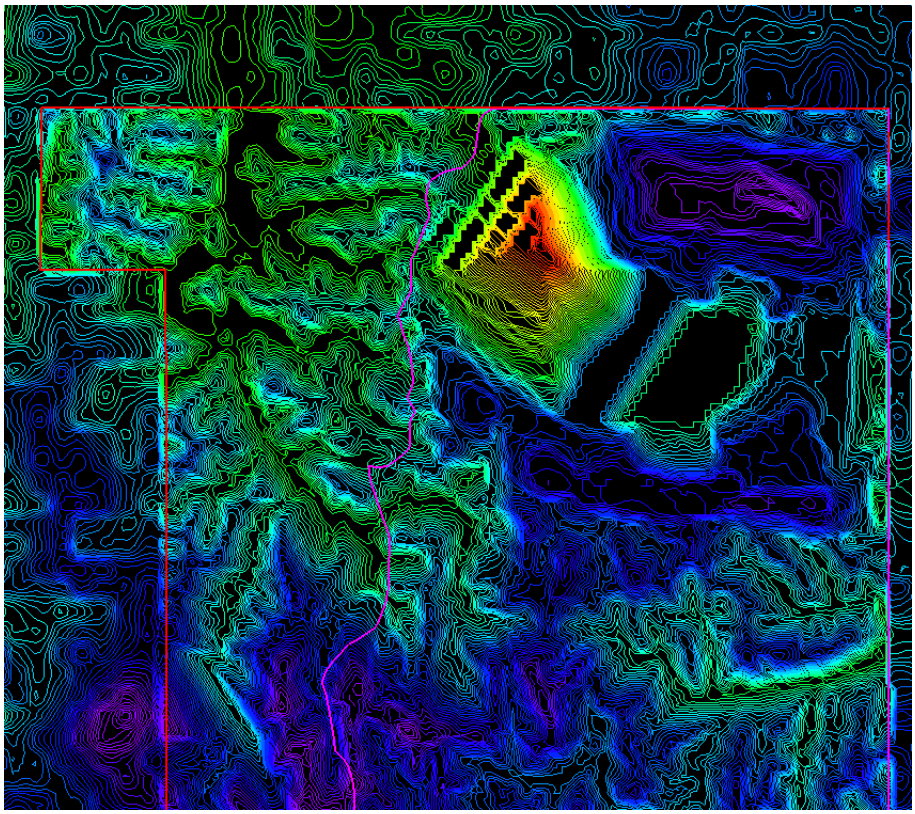


Figure 6.5 – Face Position End December 2017

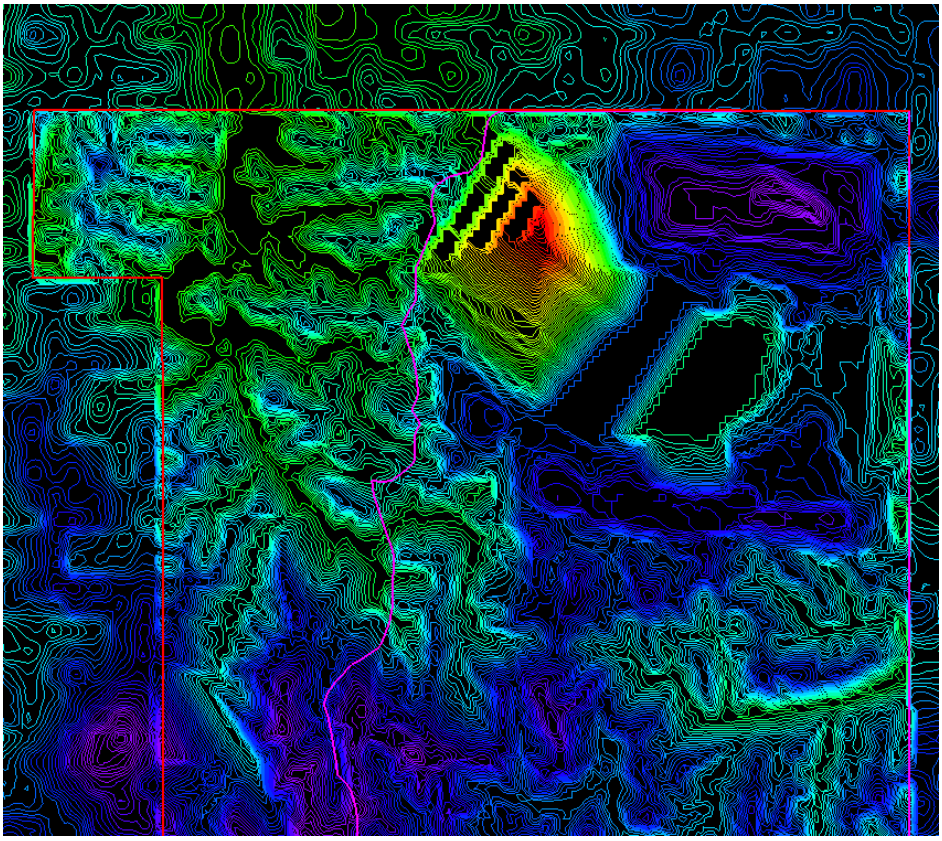


Figure 6.6 – Face Position End 2018

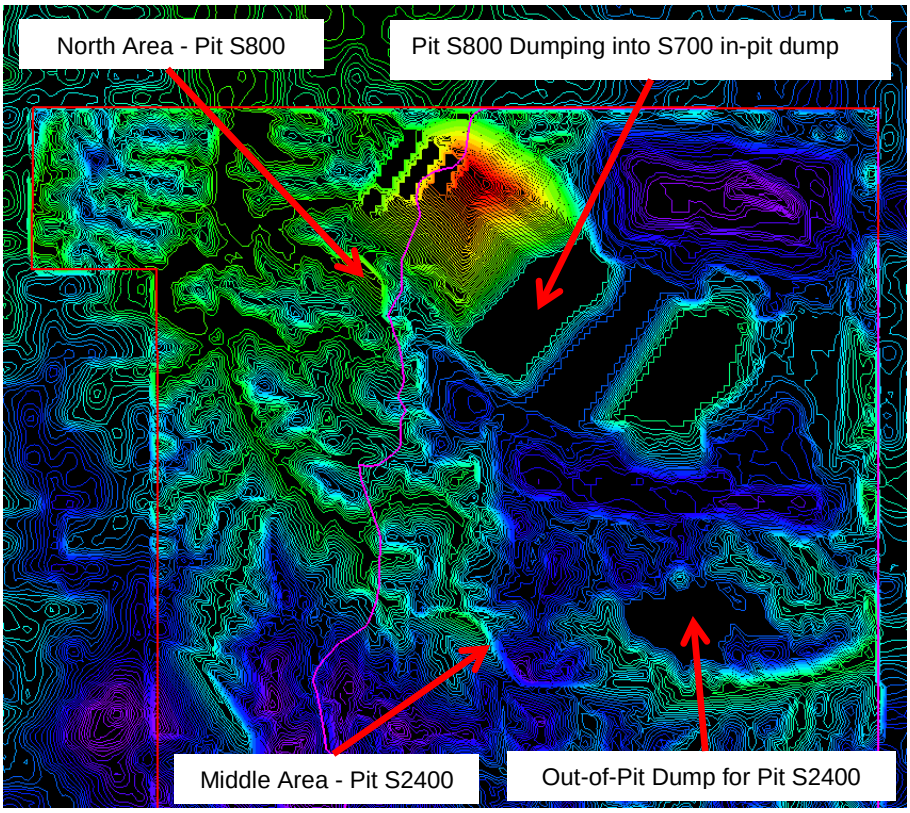


Figure 6.7 – Face Position End 2019