



# Excellent Results from Large Scale Metallurgical Test Work

Tawana Resources NL ("Tawana" or the "Company") and Alliance Mineral Assets Limited (SGX: AMAL) are pleased to announce that larger scale metallurgical test work has delivered exceptional results which will allow for a simple, low-capital, low-risk startup operation and a short construction period for the planned commissioning at the Bald Hill Lithium and Tantalum Mine in October 2017.

# Highlights

- Larger scale metallurgical test work completed.
- Two key findings of Bald Hill mineralisation are:
  - The ability to produce grades well in excess of 6%  $\rm Li_2O$  at good mass yields and acceptably low iron content.
  - The ability to reject 60-70% of the feed mass after a first pass Dense Media Separation (DMS), thus reducing processing costs appreciably.
- After removal of -1mm fines and mica, 78% of feed to the plant, containing 83% of the lithium, is available for low-cost gravity DMS processing.
- Recovery to immediately marketable concentrates from the DMS is 76.4% with an additional 21.8% reporting to secondary concentrates for future processing. This equates to about 129,000tpa of high grade coarse concentrate grading +6.4% Li<sub>2</sub>O at 1mtpa of feed.
- In addition, a total of 285,000t of fines and secondary concentrates, per million tonnes of feed, would be stockpiled for stage 2 processing or initially treated through the tantalum circuit.
- The benefits of the selected process route, for the stage one DMS circuit, are:
  - Low capital cost
  - Short time to commissioning, low risk
  - Very low processing cost
  - Production of a coarse high grade premium concentrate
- A circuit to treat the fines and secondary concentrates will be constructed after production commences and will be funded out of cash flow. This is expected to add ~45,000t of concentrate at limited incremental cost.
- The plan is to operate the existing tantalum plant concurrently with the DMS spodumene circuit adding significant by-product credits. This plant would be fed from fines from the DMS circuit and additional high grade tantalum mineralisation mined whilst mining lithium mineralisation.
- The DMS Feasibility study is well advanced with plant and infrastructure costings for the DMS circuit expected at the end of March.
- A 5 tonne sample is currently being processed to provide concentrate parcels for potential off-take partners.
- A number of off-take partners have visited the Project in the past few weeks and the company is currently advancing negotiations for offtake.

16 March 2017





## Study/Implementation progress

The processing content of the feasibility study was awarded to Primero Group, who are experienced lithium processing plant engineers and constructors. Primero have now finalised the plant flow sheet and developed a detailed 3-D model of the plant and site infrastructure. Plant and infrastructure costing is well advanced and will be available by the end of March.

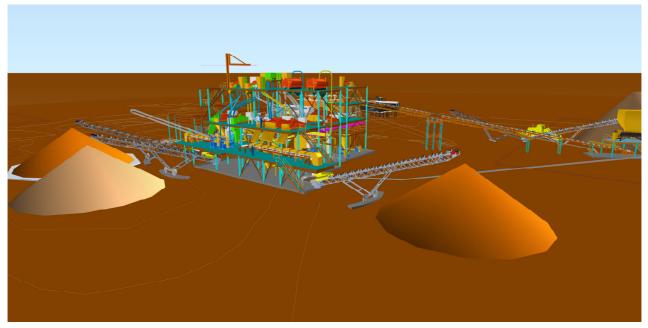


Figure 1 | View of the 3-D model of plant and infrastructure

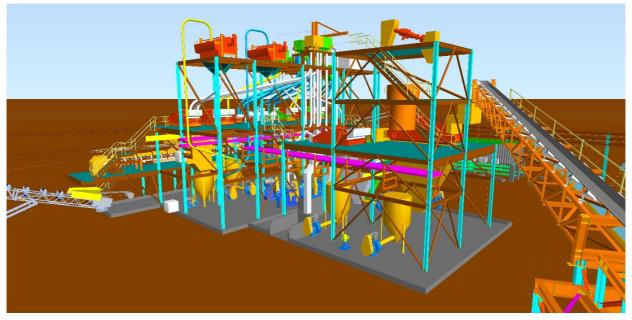


Figure 2 | Main DMS Processing Plant





## Progress on 5-tonne sample

The companies have been approached by several potential off-take partners, all of whom have requested 40-80 kg parcels of typical concentrate to be produced at Bald Hill. It was decided to produce approximately 600-800kg of concentrate to satisfy these requirements, which in turn, required 4-5 tonnes of pegmatite to be processed. This material was obtained from existing pits.

This sample was crushed to 20mm and delivered to Nagrom Laboratory at the end of February. The sample will be further crushed to 10mm and processed according to the proposed plant flow sheet, and is expected to be completed before the end of March. The sample has a head grade of 2.14%  $Li_2O$ .

### **Details on Metallurgical Results**

Following on from the excellent results obtained from the variability test work (refer ASX announcement on 13 February and SGX announcement on 12 February 2017), larger scale tests were done on a 160kg composite of core used in the variability tests.

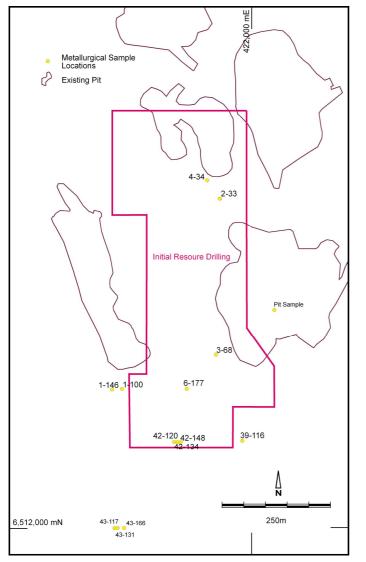


Figure 3 | Metallurgical Sample Locations





The sample was crushed to 10mm and screened at 1mm. The -1mm fines have been retained for later testing. The +1mm fraction was further screened at 5.6 mm to assist the DMS gravity processing. The -5.6+1mm fraction was processed in a reflux classifier to remove mica, and then both -10+5.6mm and -5.6+1mm fractions were processed in a 100mm DMS cyclone.

The results of this phase of the test work were:

#### Table 1 | Feed Composition

Feed	Mass Yield %	Cont. Li
-1mm screened out after 10mm crushing	17	14.7%
Mica/gangue minerals removed in reflux classifier	5	1.5%
Composite treated through DMS	78	83.8%
Head grade of composite $1.41\%$ Li <sub>2</sub> O		

These results demonstrated that the amount of fines produced was limited to 17% by coarse crushing at 10mm and that over 80% of the contained lithium was available for processing via the cheaper gravity DMS route.

The results obtained from DMS processing were:

Table 2a	Coarse fraction (-10+5.6mm) at SG 2.8 (55% of DMS feed)
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Fraction	% Mass Yield	% Li <sub>2</sub> O	% Cont. Li	% Fe <sub>2</sub> O <sub>3</sub>
SG 2.8 Sinks	17	6.30	78.9	0.76
SG 2.8 Floats	12	2.56	13.3	0.56
SG 2.7 Floats	71	0.16	7.8	0.29

Table 2b | Finer fraction (-5.6+1mm) at SG 2.9(mica removed) (45% of DMS feed)

Fraction	% Mass Yield	% Li <sub>2</sub> O	% Cont. Li	% Fe <sub>2</sub> O <sub>3</sub>
SG 2.9 Sinks	16	6.55	73.4	0.90
SG 2.9 Floats	21	1.53	21.8	0.57
SG 2.7 Floats	63	0.11	4.9	0.33

These results highlighted two key characteristics of the Bald Hill mineralisation:

- The ability to produce grades well in excess of 6% Li<sub>2</sub>O at good mass yields with acceptably low iron content.
- The ability to reject 60-70% of the feed mass after a first pass DMS, thus reducing processing costs appreciably.

The product grade obtained in the coarser fraction using a density of 2.9 was over 7%  $Li_2O$  and, whereas this is an excellent result, it is generally way above market requirements. Hence a lower medium density of 2.8 was adopted to increase the mass yield. This resulted in a mass yield of 17% at a grade of 6.3%  $Li_2O$  at SG 2.8.

The middlings fraction, or 2.8 floats, still had a grade of 2.56%  $Li_2O$  and a further test was done by re-crushing this to 3.35 mm to determine additional DMS recovery. This test resulted in a further mass yield of 4% at a grade of 6.14%  $Li_2O$  to the sinks.





#### Table 2c | Weighted recovery through DMS

Fraction	% Mass Yield	% Li <sub>2</sub> O	% Cont. Li	% Fe <sub>2</sub> O <sub>3</sub>
Primary Concentrate	16.5	6.43	76.4	0.82
Secondary Concentrate (middlings)	16.1	1.95	17.1	0.56
Waste	67.4	0.14	6.5	0.31

#### Table 2d| Weighted Recovery of Total Plant Feed

Mass Yield %	% Li₂O	% Cont. Li
12.9	6.43	63.4%
28.5	1.40	28.2%
58.2	0.20	8.2%
	12.9 28.5	12.9 6.43 28.5 1.40

Notes

- 1) Comprises 44% Secondary Concentrates and 56% Fines after de-sliming
- 2) Waste product containing high  $Ta_2O_5$  will be stockpiled for future recovery

The test work has demonstrated that, after allowing for the removal of -1mm fines and mica, 78% of the ore fed to the plant, containing 83% of the lithium, is available for gravity DMS processing.

The overall mass yield from gravity processing of the +1mm fraction was 16% of the total feed at a concentrate grade of 6.4% Li<sub>2</sub>O.

Additional significant lithium and tantalum value is contained in the Fines and Secondary Concentrates representing 28.5% of plant feed. Further design engineering will be undertaken on a circuit to treat this ore after final design for the Stage One DMS has been completed.

**Competent Persons Statement** The information in this news release that relates to Exploration Results is based on and fairly represents information and supporting documentation compiled by Mr Mark Calderwood, an employee of the Company. Mr Calderwood is a member of The Australasian Institute of Mining and Metallurgy. Mr Calderwood has sufficient experience relevant to the style of mineralisation under consideration and to the activity which they are undertaking to qualify as a Competent Person as defined in the 2012 edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves", the standard used for this report. Mr Calderwood consents to the inclusion in this report of the matters based on his information in the form and context in which it appears. Mr Calderwood meets the requirements to act as a Qualified Person (as defined in the SGX Catalist rules).

**Metallurgy** The information in this release that relates to metallurgy and metallurgical test work has been reviewed by Mr Noel O'Brien, FAusIMM, MBA, B. Met Eng. Mr O'Brien is not an employee of Tawana, but is employed as a contract consultant. Mr O'Brien is a Fellow of the Australasian Institute of Mining and Metallurgy, and he has sufficient experience with the style of processing response and type of deposit under consideration, and to the activities undertaken, to qualify as a competent person as defined in the 2012 edition of the "Australian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves" (The JORC Code). Mr O'Brien consents to the inclusion in this report of the contained technical information in the form and context as it appears. Mr O'Brien meets the requirements to act as a Qualified Person (as defined in the SGX Catalist rules).

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