

# ASX Release 27<sup>th</sup> April 2018

# QUARTERLY ACTIVITIES REPORT For the quarter ended 31 March 2018

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# Highlights:

# Mt Marion Lithium Operation

- Production ramp up continued during the quarter with 104,505t of concentrate produced, including 56,065t 6% Li₂O concentrate and 48,440t 4% Li₂O concentrate.
- Shipments totalled 83,949t.

# Mt Edwards Lithium Project

- Acquisition of brownfields lithium exploration project 40km from Mount Marion.
- ➤ A combination of tenements and mineral rights covering 240 km².
- > Strategic addition to Neometals' spodumene sourcing pipeline to support its planned lithium hydroxide business.

# Lithium Hydroxide Project

- Vendor test work report received confirming technical feasibility for production of battery grade Lithium Hydroxide from Mt Marion concentrates.
- Progressed project partner discussions.

# Lithium Battery Recycling Project

- Primero Group appointed to project manage the completion of construction and operation of the Pilot Plant and test work program to process LCO batteries.
- Pilot operation scheduled to commence in July 2018.
- Engineering Cost Study to follow pilot tests.

# Barrambie Titanium Project

- Updated Mineral Resource Estimate.
- Core samples shipped for evaluation by potential Chinese customers.
- Mining proposal approved to extract bulk sample for DSO evaluation.

#### Corporate

- Cash and restricted access term deposits \$41.8 million.
- Net receivables, bonds and listed securities \$16.5 million.
- Received partial loan repayment from RIM.



All the right elements



# PROJECT LOCATIONS AND OPERATING STRUCTURE



Figure 1: Neometals Lithium and Titanium Project locations

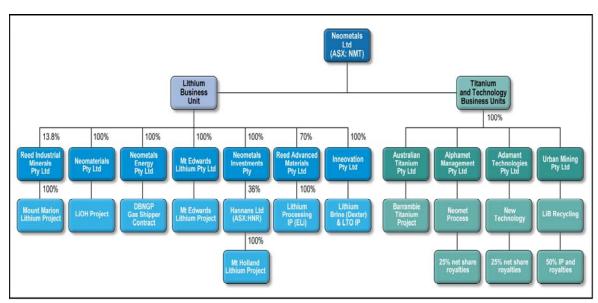


Figure 2: Neometals Operating and Corporate Structure



# **LITHIUM BUSINESS UNIT**

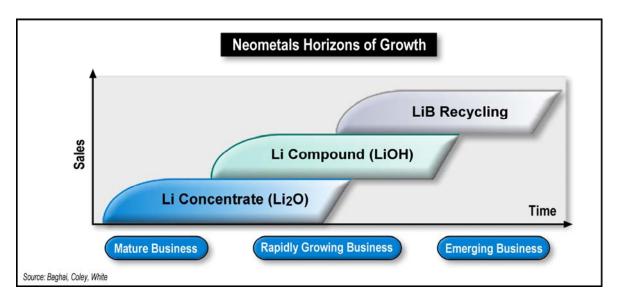


Figure 3: Schematic of Neometals' positions in the lithium ion battery supply chain

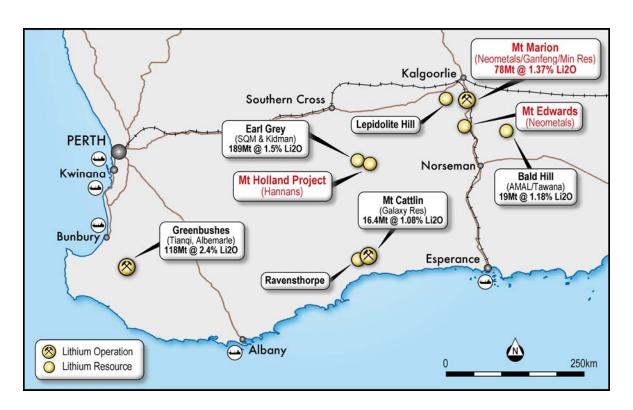


Figure 4: Schematic of Neometals' positions in the lithium ion battery supply chain



# MT MARION LITHIUM OPERATION

Neometals Ltd 13.8%, Mineral Resources Limited 43.1% ("MRL"), Ganfeng Lithium Co., Ltd 43.1% ("GFL") through Reed Industrial Minerals Pty Ltd (RIM)



Image 1: Aerial View of Mt Marion Lithium Operation's Processing and Tailings Storage Facilities

Production figures for the quarter included:

- Zero Lost Time Injuries, maintaining LTIFR of zero for project to date;
- 737,589 tonnes ore mined;
- 573,222 tonnes processed; and
- 104,505 tonnes concentrate produced including 56,065t 6% Li2O and 48,440t of 4% Li2O concentrates.

Shipments of lithium concentrates to Ganfeng during the quarter with 6,983 tonnes departing in January, 23,274 tonnes in February and 53,692 tonnes in March, totalling 83,949 tonnes for the quarter.

During the quarter RIM shipped concentrates to Ganfeng at pricing linked to international lithium carbonate and hydroxide prices under the previously-agreed formula. The SC6 (6% Li<sub>2</sub>O) price for the March Quarter was agreed at US\$900/t CIF China and US\$960/t CIF China for the June Quarter.

Construction of the upgrade to the concentrator circuits to facilitate production of all 6%  $\rm Li_2O$  concentrate continues and is expected to be completed in the December Quarter.



# MT EDWARDS LITHIUM PROJECT Neometals Ltd 100% on completion

On 15 March the Company announced that it executed binding agreements to acquire 100% of the lithium rights of the Mt Edwards Lithium Project, for cash consideration of \$2.5M and additional contingent payments upon satisfaction of certain milestones and a royalty. As part of the acquisition, Neometals will also acquire the underlying tenure to all the tenements comprising the Mt Edwards Lithium Project (other than M15/87), together with some neighbouring tenements and the nickel rights on an adjoining nickel rights package (refer to Figure 5).

The Mt Edwards Lithium Project is located 40km south of the Mount Marion Lithium Project (Neometals 13.8%, through Reed Industrial Minerals Pty Ltd). The project is located centrally within what is emerging as a highly endowed and globally significant lithium province (refer Figure 4). The tenements cover an area of 240 square kilometres and historical exploration confirms multiple fertile Lithium-Caesium-Tantalum ("LCT") pegmatites are present (refer to Figure 6).

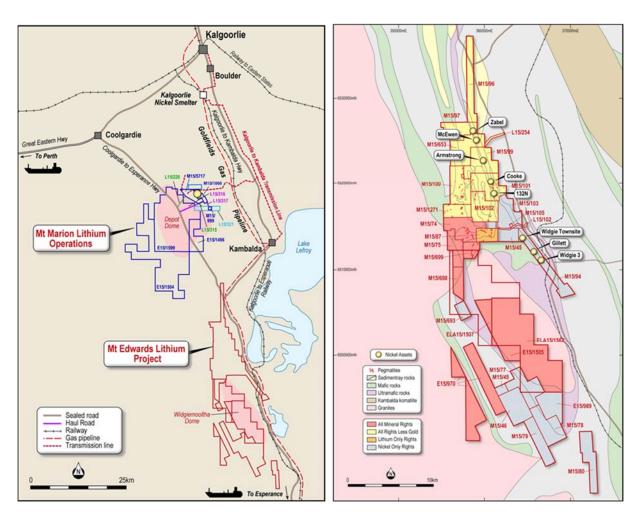


Figure 5: Project Location and Tenure Map



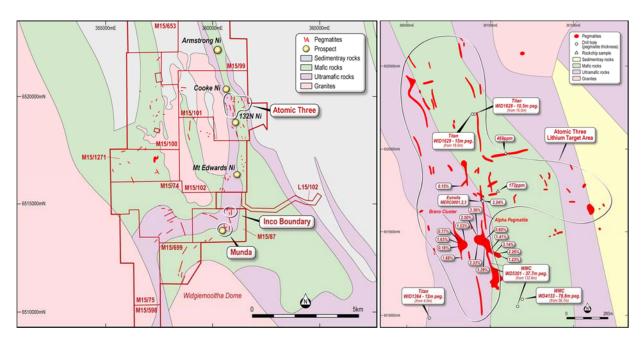


Figure 6: Location of Lithium Targets and historical exploration results

# Material terms of the acquisition

Under the acquisition, Neometals will pay the following consideration:

- 1. for the acquisition of Mt Edwards Lithium Pty Ltd, the 2 Estrella Resources Ltd (Estrella) tenements and the 25% lithium rights on M15/87, Neometals will pay Estrella the following consideration:
  - a. \$700,000 on completion of the acquisition;
  - b. \$1,000,000 upon definition of a JORC resource of 2,000,000 tonnes of ore at greater than 1% of Li<sub>2</sub>O (uncut) on the lithium rights tenements;
  - c. \$1,000,000 upon the processing of 2,000,000 tonnes of ore at greater than 1% of Li<sub>2</sub>O (uncut) from the lithium rights tenements; and
  - d. a royalty in the amount of \$0.50 per tonne of 75% of the amount of lithium bearing ore processed from the lithium rights tenements.
- 2. for acquisition of Apollo Phoenix Resources Pty Ltd (Apollo)'s tenements and nickel rights, \$1.8M on completion of the transfer of all assets.

Neometals has also agreed to an on-sale right, whereby Neometals would pay Apollo 15% of any value uplift, if Neometals sold the tenement package to a third party within 24 months.

Completion of the acquisition remains conditional upon the receipt of any necessary Ministerial consents to the transfer of the tenements, together with the receipt or execution of any necessary consents and deeds of assignment/assumption in respect of the rights and obligations of third parties. Completion is anticipated to occur within 1 to 2 months.



# WA LITHIUM HYDROXIDE PROJECT (Neometals 100%)

During the Quarter the Company continued to assess the development of a lithium processing facility close to its Mt Marion Lithium Operation. The retention by the Company of its binding offtake option rights for a minimum of 12.37% of production from Mt Marion from February 2020, will provide a secure supply of feedstock at the Company's discretion, to support the prospective development of its own downstream processing plant.

# **Neometals Integrated Lithium Strategy**

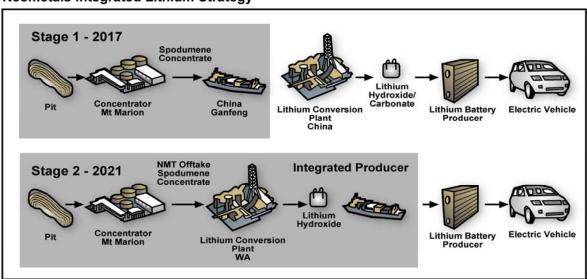


Figure 7: Schematic of the WA Lithium Hydroxide Project integration

The Company has completed the vendor equipment test work in North America and the results of this test work were delivered in March 2018. The results of the testing were positive and in line with expectations, confirming the proposed process flowsheet and very high-quality product analysis (99.99% Lithium Hydroxide Monohydrate). Work has continued on flow sheet design, process design criteria and mass balance analysis in preparation for the proposed FEED Study.

A search for potential project partners has resulted in discussions with several globally significant companies in the battery and car industries and the Company will advise the market of any material developments.

# **FEED Study**

It is the Company's intention to proceed with a Front-End Engineering Design (FEED) Study to complete the technical and economic evaluation of a decision to proceed with the construction of a Commercial Plant. Detailed proposals from two leading Study/EPC engineering contractors have been evaluated with a view to making an appointment, subject to Board approval for funding of the Study. The FEED Study report is scheduled to be delivered by late 2018/early 2019 to facilitate an investment decision for the project, based on an anticipated appointment of FEED Study contractor by the end of April 2018. Site selection studies were advanced in discussions with relevant parties and authorities as were studies aimed at developing potential alternatives to residue disposal with the objective of offsetting or minimising disposal costs.





(\*) Subject to NMT Board Approval (\*\*) Subject to FID

Figure 8: Commercialisation Plan

#### Lithium market

Lithium prices have remained high and have stimulated construction of new concentrate conversion capacity in China, albeit only some of the new capacity has reached operational status. New concentrate production capacity is under construction in Australia and Brazil with a view to supplying the new conversion capacity and the first concentrators are expected to reach production later in 2018. Lithium demand continues to increase at a rate that stretches supply capability and prices are firm as a result. The market demand is forecast to grow significantly through to 2025.

The current global weighted average price for battery-grade lithium hydroxide are approximately USD19,388/t (source: Benchmark Mineral Intelligence March 2018).

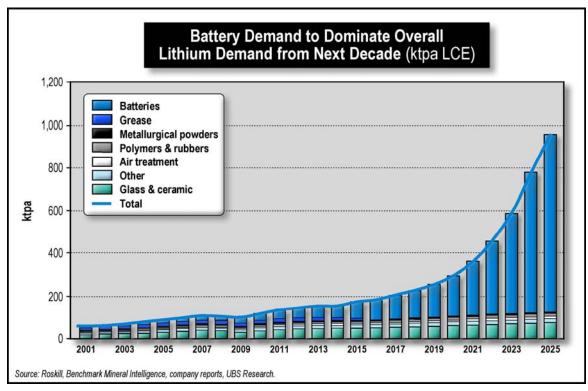


Figure 9: Lithium Battery Demand by Use



# **TECHNOLOGY BUSINESS UNIT**

# LITHIUM BATTERY RECYCLING TECHNOLOGY

(Neometals 100% Commercialisation Rights through Urban Mining Pty Ltd, 50% Ownership in IP)

Neometals is co-developing a technology to economically recover high-value cobalt that can be recycled within the battery manufacturing chain. Currently less than 5% of used lithium-ion batteries are recycled as disposal is typically either paid-for recycling or landfill.

During the Quarter, Neometals continued the construction of the pilot facility for cobalt extraction from LCO batteries (consumer electronics). The Company has engaged leading lithium EPC engineers, Primero Group Pty Ltd, to project manage the engineering and operation of the LCO pilot plant program from their Montreal branch to accelerate progress.

Laboratory development of the main and by-product purification processes for extraction of multiple metallic elements from NMC batteries continued and will be subsequently incorporated into the 100kg/day mini-max pilot plant post completion of the LCO program.

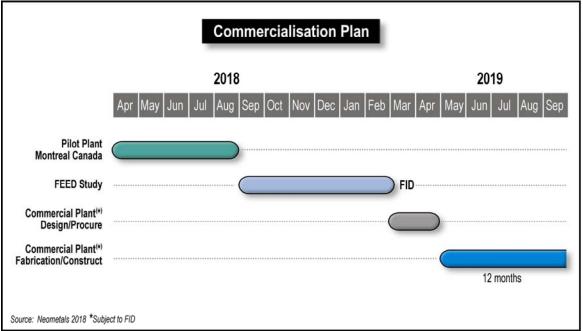


Figure 10: Commercialisation Plan

# **Next Steps**

Subject to the success of the testwork, it is the Company's intention to proceed with an Engineering Cost Study (±15% accuracy) to complete the technical and economic evaluation of a decision to proceed with the construction of a 10t/day Commercial Plant. Neometals has internal financial resources with which to fund evaluation, construction and commissioning of the commercial-scale plant and is in preliminary discussions with a number of interested parties from the lithium battery supply chain. The pilot plant will also test batteries supplied by consumer electronics manufacturers and car makers.



# LITHIUM TITANATE RESEARCH PROJECT (Neometals 100%)

During the Quarter test work at the CSIRO was completed identifying the optimal process conditions and producing larger samples of Lithium Titanate ("LTO") anode material for adhesion test work, which makes an electrode from casting a LTO slurry onto a copper substrate. The adhesion tests were successful, and the next stage is to prepare sufficient LTO to prepare 18650 format batteries typically found in electric vehicle battery packs.

Lithium Titanate is an anode (negative electrode) material, which can replace graphite and allow super-fast wireless charging. The primary advantage over graphite is the surface area of the anode of LTO being around 100 square metres per gram in contrast to typically 3 square metres for graphite.

The conceptual plan is to develop a process for enhancing the value from the Company's lithium (and potentially) titanium feedstocks.

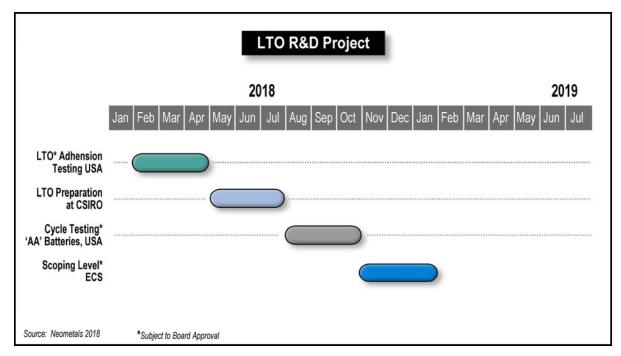


Figure 11: LTO Research and Development Plan



# LITHIUM HYDROXIDE PROCESSING TECHNOLOGY – ELi Process™ (Neometals 70% through Reed Advanced Materials Pty Ltd)

All downstream lithium processing technology and patents are owned by Reed Advanced Materials Pty Ltd ("RAM"). RAM is beneficially owned 70:30 by the Company and MRL respectively.

The commercialisation program of the RAM's JV Partners' patented ELi process is directed to its application to both traditional salar brines and to spodumene/hard rock supply sources. Deployment of ELi to replace carbonation and subsequent causticisation circuits in a brine processing operation to directly produce lithium hydroxide has the potential to substantially reduce operating costs, reagent consumption and logistics.

RAM remains in discussions with potential users regarding sub-licensing the ELi Process to produce lithium hydroxide and will advise the market of any material developments.

# LITHIUM BRINE PROCESSING TECHNOLOGY – Dexter Process™ (Neometals 100% through Inneovation Pty Ltd)

During the Quarter test work on a titanium-based adsorbent developed by the Company continued.

The technology has the potential to replace the sodium removal in the conventional solar evaporation process stage used in typical brine processing flowsheets, such as those used in the Andes region of South America. The conceptual plan is to return "stripped" brine to the salar or aquifer and use a large processing volume coupled with short cycle time to extract lithium/potassium on a suitable scale.

The Company has filed a Provisional Patent and PCT Application. The strategy is to develop related technologies and commercialise the technologies with suitable partners. The commercial strategy is to licence the technology for royalties and to retain the rights to deploy it as principal. The Company will keep the market updated on all material developments with commercialisation partners.

# NEOMET PROCESSING TECHNOLOGY (25% Net Profit Interest through Alphamet Management Pty Ltd - 100% Neometals)

Neometals is responsible for managing the commercialisation and development of the technology ("Neomet Process"). This patented (USA, Canada, Australia), environmentally friendly process technology has broad application in the recovery of a wide range of metal oxides from chloride leach solutions, including titanium). The energy-efficient recovery and regeneration of hydrochloric acid with minimal effluent is an environmentally sustainable, competitive advantage over conventional processing flowsheets.

All revenue received from the commercialisation of the technology is split 25:75 between Neometals and the owners of the technology. Neometals has a Strategic Alliance with Sedgman Limited (a wholly owned subsidiary of CIMIC Group Limited (ASX:CIM)) to provide the platform for the commercialisation of the technology



# **TITANIUM BUSINESS UNIT**

# BARRAMBIE TITANIUM PROJECT (Neometals 100% through Australian Titanium Pty Ltd)

Barrambie is one of the world's highest-grade titanium deposits, containing a Total Indicated and Inferred Mineral Resource Estimate¹ of 280.1 million tonnes² at 9.18% TiO₂ and 0.44% V₂O₅ to 80m vertical depth. Contained Titanium Dioxide (TiO₂) in the total mineral resource estimate exceeds 25 million tonnes whilst contained Vanadium Pentoxide (V₂O₅) in the total mineral resource estimate exceeds 1.2 million tonnes. Within the total resource is a high-grade Titanium subset of the total mineral resource estimate of 53.6 million tonnes³ at 21.17% TiO₂ and 0.63% V₂O₅ and a high-Grade Vanadium subset of total mineral resource estimate of 64.9 million tonnes³ at 0.82% V₂O₅ and 16.90% TiO₂.

In addition, this month an inaugural Exploration Target was released for Barrambie. The total Exploration Target<sup>1</sup> is estimated to be 470 to 700Mt, grading at 6 to 10% TiO<sub>2</sub> and 0.3 to 0.5% V<sub>2</sub>O<sub>5</sub>.

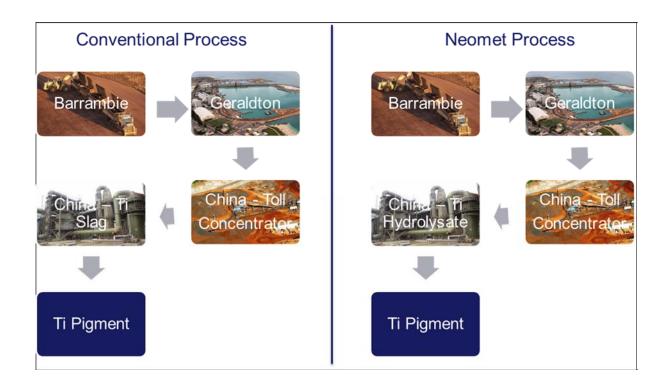


Figure 12: Dual Track Evaluation Strategy

<sup>1</sup> See ASX Announcement titled "Updated Barrambie Mineral Resource Estimate" dated 17<sup>th</sup> April 2018

 $<sup>^2\,</sup>$  Based on Cut-off grades of  $\geq \! 10\% \ TiO_2$  or  $\geq \! 0.2\% \ V_2O_5$ 

<sup>&</sup>lt;sup>3</sup> The high-grade titanium and vanadium figures are a sub-set of the total Mineral Resource. These figures are not additive and are reporting the same block model volume but using different cut-off grades.



# **DSO/Toll Concentrate Evaluation**

During the Quarter work continued evaluating a parallel fast-track Barrambie start-up as a direct shipping operation (DSO) (that involves concentration of the ore into a titaniferous magnetite concentrate in China by potential customers). This Quarter the Company completed logistic studies, grade control drilling and received approval for a Mining Proposal for Small Operation for the extraction of a bulk ore sample to study feasibility for DSO. The Company has commenced discussions in China to negotiate the sale of ore to selected concentrators in the titanium and the vanadium supply chains to take advantage of current supply constraints in both the titanium and vanadium markets.

#### **Neomet Process Evaluation**

The current Barrambie project development strategy is to advance the titanium hydrolysate chemical processing plant to a suitable stage of evaluation so that it can attract titanium industry partner. Neometals plans to licence the Neomet Process to titanium industry partners conditional on the entry into a long-term, take-or-pay offtake agreement for Barrambie titanium concentrates.



(\*) Subject to Board Approval

Figure 13: Commercialisation Plan

This Quarter beneficiation work was completed at Nagrom to produce a high-grade mineral concentrate. This concentrate will be used to feed into the Neomet Minimax pilot plant for operation expected to commence, subject to board approval, in the December Quarter 2018 following reconfiguration of the facilities after the battery recycling process testing has been completed.



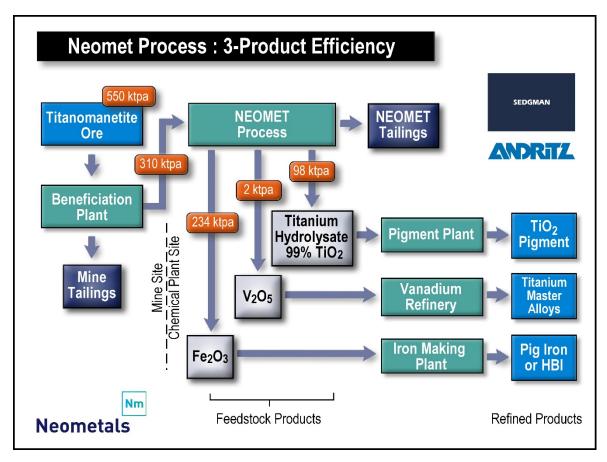


Figure 14: Pre-Feasibility Study - Physical Inputs and Outputs

The advantages of the Neomet process are reduced production cost, more easily operated process, high specification chemical analysis product and improved environmental footprint. Engineering studies to date indicate the process can be integrated with the "front end" of existing sulphate process plants at minimal cost and modification to existing plant.

High purity titanium hydrolysate (+99.5% TiO<sub>2</sub>.2H<sub>2</sub>O) offers potential operating cost and environmental benefits to both Western and Chinese pigment producers and the Company has commenced discussions with potential industry partners.

Titanium hydrolysate can be used as feedstock to replace sulphate-grade ilmenites (40-50% TiO<sub>2</sub>) in sulphate-process pigment production, thereby eliminating nearly all the large volumes of iron sulphate waste that are generated by the traditional sulphate process.

# Marketing

The major Chinese processors of vanadiferous titanomagnetite ("VTM") ores were visited during the Quarter to review their metallurgical processing routes, their feedstock requirements and their interest in purchasing a direct shipping ore from Barrambie. Prospective buyers sought information about recommended processing routes and requested samples of ore for metallurgical evaluation.



Further to these discussions, leading mining and metallurgy research institutes in China were invited to submit quotations to undertake confirmation test work to verify the most suitable beneficiation and pyrometallurgical pathways for the extraction of titanium, vanadium and iron from the DSO. This work will provide prospective Chinese buyers with guidance in respect of the likely recoveries of the valuable concentrate, slag and metal products. It will also assist Neometals with the placement and pricing of Barrambie material in the Chinese market.

A Chinese vanadium industry conference was attended during the Quarter to raise the Barrambie Project profile and gather information about the current industry dynamics. Factors influencing the recent buoyant pricing for vanadium products include a Chinese ban on vanadium slag imports, the closure of vanadiferous stone-coal mines and processing operations for environmental reasons and changes to the Chinese standards governing the quality of steel rebar that will result in a higher intensity of use in this sector.

The majority of vanadium feedstocks (annual consumption of 88.6kt V or 91% by volume) are used in steel production with the balance (8.9kt V or 9% by volume) used to produce non-ferrous alloys and chemicals for energy storage.

The current FOB China price for vanadium pentoxide ( $V_2O_5$ ) is US\$14.20 – 15.50 per pound or US\$31,296 – 34,162 per tonne (source: Metal Bulletin 19 April 2018), which has nearly trebled over the last 12 months. Global vanadium pentoxide and ferro-vanadium (FeV) prices have continued their upward trend in 2018, with prices rising strongly in response to concerns about supply availability.

The majority of titanium feedstocks (an annual market of US\$17 Billion or 85% by value) are used to produce titanium dioxide pigment which is then used as an additive in paints, plastics, paper and ink with the balance (15%) used to produce titanium metal products.

The current median price for high quality titanium dioxide pigment is US\$3,400 per tonne on a CIF basis to USA (source: Industrial Minerals 19 April 2018).

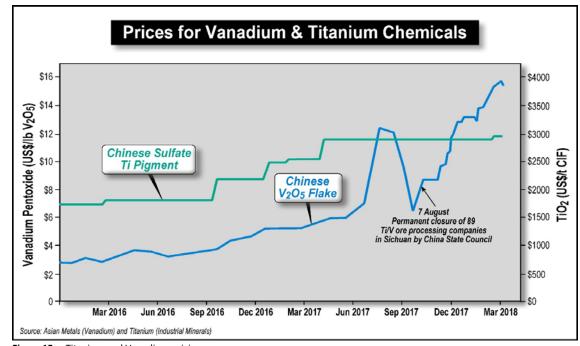


Figure 15: Titanium and Vanadium pricing



# **CORPORATE**

# Shareholder Loan – Reed Industrial Minerals Pty Ltd (RIM)

On 28 March 2018 the Company received \$4,104,458 from RIM. This equates to repayment of 50% of the original amount loaned to RIM as working capital with the remaining 50% expected to be received prior to 30 June 2018.

# Hannans Limited (ASX:HNR) (Yilgarn Nickel/Lithium/Gold)

As at 31 March 2018 Neometals holds 706,209,483 ordinary fully paid shares (36% of the issued capital) in Hannans Limited on an undiluted basis. At 31 March 2018 Hannans shares closed at 1.6c.

# Critical Metals Limited (Unlisted)(Scandinavian Lithium/Cobalt/Base Metals)

Neometals holds 13.5% of unlisted public company Critical Metals Ltd, a company which now houses the Scandinavian mineral assets previously held by Hannans. Neometals will assist Critical Metals to realise lithium, cobalt and carbon opportunities in Scandinavia through a technical assistance arrangement.

#### Other Investments

The market value of the Company's other investments as at 31 March 2018 total \$355K.

# Finances (unaudited)

Cash and term deposits on hand as of 31 March 2018 totalled A\$41.8 million, including \$4.0 million in restricted use term deposits supporting performance bonds and other contractual obligations. The Company has net receivables and listed securities totalling approximately \$16.2 million and holds debt instruments with a face value of A\$0.3M.

# **Capital Management**

During the Quarter the Company's on-market share buy-back (to acquire up to a maximum of 5% of the Company's issued capital -28,150,043 shares) closed with the Company acquiring 22,271,311 shares in the 12 month period.

# **Issued Capital**

During the Quarter the Company granted a total of 166,696 Performance Rights to Non-Executive Directors pursuant to invitations made in accordance with the Company's Performance Rights Plan (PRP). In addition, following re-testing at 31 December 2017 under the Company's PRP the Company cancelled 560,719 performance rights that did not meet the vesting conditions.

The total number of shares on issue at 31 March 2018 was 543,532,473.

# **ENDS**

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# **Compliance Statement**

The information in this report that relates to Mineral Resource Estimates Barrambie Titanium Project are extracted from the ASX Announcement entitled "Updated Barrambie Mineral Resource Estimate" lodged 17 April 2018. The Company confirms that it is not aware of any new information or data that materially affects the information included on the original market announcement and that all material assumptions and technical parameters underpinning the estimates in the market announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified form the original market announcement.



# **APPENDIX A: TENEMENT INTERESTS**

As at 31 March 2018 the Company has an interest in the following projects and tenements in Western Australia.

PROJECT NAME	LICENCE NAME	BENEFICIAL INTEREST	STATUS
Barrambie	E57/769	100%	Live
Barrambie	E57/770	100%	Live
Barrambie	E57/1041	100%	Live
Barrambie	L57/30	100%	Live
Barrambie	L20/55	100%	Live
Barrambie	M57/173	100%	Live
Mount Marion	L15/315	13.8% (*)	Live
Mount Marion	L15/316	13.8% (*)	Live
Mount Marion	L15/317	13.8% (*)	Live
Mount Marion	L15/321	13.8% (*)	Live
Mount Marion	L15/0220	13.8% (*)	Live
Mount Marion	L15/360	13.8% (*)	Live
Mount Marion	M15/999	13.8% (*)	Live
Mount Marion	M15/1000	13.8% (*)	Live
Mount Marion	M15/717	13.8% (*)	Live
Mount Marion	E15/1496	13.8% (*) Live	
Mount Marion	E15/1504	13.8% (*)	Live
Mount Marion	P15/6050	13.8% (*)	Pending



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Mount Marion	P15/6042	13.8% (*)	Live	
Mount Marion	P15/6043	13.8% (*)	Live	
Mount Marion	P15/6044	13.8% (*)	Live	
Mount Marion	P15/6045	13.8% (*)	Pending	
Mount Marion	P15/6046	13.8% (*)	Pending	
Mount Marion	P15/6047	13.8% (*)	Pending	
Mount Marion	P15/6041	13.8% (*)	Live	
Mount Marion	P15/6049	13.8% (*)	Live	
Mount Marion	L15/0360	13.8% (*)	Live	
Mount Marion	P15/6052	13.8% (*)	Live	
Mount Marion	P15/6053	13.8% (*)	Live	
Mount Marion	P15/6054	13.8% (*)	Live	
Mount Marion	P15/6055	13.8% (*)	Pending	
Mount Marion	P15/6056	13.8% (*)	Pending	
Mount Marion	P15/6057	13.8% (*)	Pending	
Mount Marion	P15/6058	13.8% (*)	Live	
Mount Marion	P15/6048	13.8% (*)	Pending	
Mount Marion	E15/1599	13.8% (*)	Live	
Mount Marion	L15/353	13.8% (*)	Live	

<sup>-</sup> registered holder is Reed Industrial Minerals Pty Ltd (Neometals Ltd 13.8%, Mineral Resources Ltd 43.1%, Ganfeng Lithium Co.,Ltd 43.1%).



# Changes in interests in mining tenements

Interests in mining tenements acquired or increased

PROJECT NAME	LICENCE NAME	ACQUIRED OR INCREASED	
Mount Marion	L15/353	Granted 5 September 2017	

# Interests in mining tenements relinquished, reduced or lapsed

PROJECT NAME	LICENCE NAME	RELINQUISHED, REDUCED OR LAPSED	
n/a	n/a	n/a	
n/a	n/a	n/a	



APPENDIX B

Barrambie Mineral Resource Estimate for Cut-off grades of ≥10% TiO₂ or ≥0.2% V₂O₅

Category	Tonnage	TiO2	V2O5
(JORC 2012)	(Mt)	(%)	(%)
Indicated	187.1	9.61	0.46
Inferred	93.0	8.31	0.40
Total	280.1	9.18	0.44

See ASX Announcement titled "Updated Barrambie Mineral Resource Estimate" dated  $17^{th}$  April 2018