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## ASX Release 28 April 2017

## QUARTERLY ACTIVITIES REPORT For the quarter ended 31 March 2017

### Highlights:

#### Mt Marion Lithium Operation

- Production ramp up continued during the quarter.
- First two shipments totalled 31,662t with third shipment in early April of 17,718t.
- Neometals commenced Sale Process for its 13.8% residual equity.

#### Lithium Hydroxide Project

- Progressed study with Mineral Resources Ltd for determining feasibility of producing 20,000tpa LCE Lithium Hydroxide in Eastern Goldfields of WA.

#### Lithium Battery Recycling Project

- Completed 'proof of scale' test work at its facilities in Canada on co-developed, proprietary process to recover Cobalt from Lithium Ion Batteries from consumer electronic devices.
- Preliminary Engineering Cost Study supports business case to accelerate commercialisation of the technology. Projected operating cost of US\$4.45/lb contained Cobalt.

#### Barrambie Titanium Project

- Evaluation of DSO/Concentrate production commenced following doubling of titanium feedstock prices in last year.
- Continued optimisation of Neomet Process to produce Titanium Hydrolysate (+99% TiO<sub>2</sub>) as intermediate product for direct supply into Chinese Sulfate Pigment Production.
- Initiated R&D program for high-value specialty titanium products.

#### Sedgman Alliance for Commercialisation of Neomet Process

- Third party test work continued on industrial/steel/fertiliser mineral feedstocks.

#### Corporate

- Cash and restricted access term deposits \$53.5 million.
- Net receivables and listed securities \$16.5 million.



## PROJECT LOCATIONS



## 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 ramp up continued during the quarter, achieving:

- 2.389 M tonnes mined;
- 401,412 tonnes processed; and
- 31,662 tonnes shipped

Shipments of lithium commenced during the quarter with 15,000 tonnes departing in February and 16,662 tonnes in March, totalling 31,662 tonnes for the quarter.

MV Pacific Venus departed on the 9 April 2017, signifying the third Mt Marion shipment with 17,718 tonnes on board. Equating to 49,380 tonnes of exported product across the three shipments to China.

Throughput of the beneficiation plant has been surpassing nameplate.

The upgrade of process water purification units has resulted in an improved beneficiation process and production of 3.25 million litres per day, aiding in nameplate sustainability.

Mining in Pit 2 West began with 2.389 MT mined in the quarter.

Construction of the flotation circuit is progressing and on track for commissioning in May 2017.

An extension to the mining area has been approved by regulatory authorities allowing ongoing clearing and mine development, as per the current mine plan.

The MRL-operated Mt Marion Project is a joint project between MRL (43.1%), Neometals (13.8%) and one of the world's largest lithium producers, Ganfeng Lithium Co (43.1%).

### **Sale process**

On 23<sup>rd</sup> March 2017, Neometals advised that it gave notice to its joint venturers in the Mt Marion Lithium Project that it proposes to sell all its 13.8% stake in the project vehicle, Reed Industrial Minerals Pty Ltd ("RIM"), for a price of US\$96,001,080.

Under the terms of the Shareholders' Agreement for RIM, the other shareholders, Mineral Resources Limited via its wholly owned subsidiary Process Minerals International Pty Ltd and Ganfeng Lithium Co., Ltd via GFL International Co., Ltd ("GFL"), had 30 days from service of Neometals' notice to decide whether to exercise a pre-emptive right to buy Neometals' shares in RIM at the nominated price.

As neither shareholder exercised their rights within the required timeframe, Neometals is now entitled within 60 days to dispose of its equity interest in RIM to a third party on terms no less favourable than those offered to its joint venture partners.

Neometals is now in discussions with interested third parties and will advise the market of any material developments.

## **DOWNSTREAM LITHIUM PROCESSING PROJECT**

### **Project Development and Corporate strategy**

The Company announced on 30 September 2016 it had entered into a MOU with MIN to jointly assess the development of a downstream lithium processing facility close to its Mt Marion Lithium Operation. As previously reported, a modern version of the direct hydroxide sulphate process is favoured for initial production located the Eastern Goldfields region of Western Australia to eliminate the substantial bulk overseas shipping costs from the process. NMT has continued to study the process flowsheet and potential locations during the Quarter.

### **Lithium market**

Lithium prices have remained high and are stimulating interest in construction of new processing capacity. The market demand is forecast to grow significantly for the next 4 years through to 2020.

The current median prices for battery-grade lithium hydroxide are approximately USD17,000/t, on a CIF basis to Europe and US and now converged with Chinese prices average (source: Industrial Minerals, 20 April 2017).

### **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 MIN.

The commercialisation program of the JV Partners patented ELi process will continue separately from arrangements under the aforementioned MOU with primary focus on its application to traditional salar brines as well as spodumene/hard rock supply sources.

RAM is in discussions with potential users regarding sub-licensing the ELi Process to produce lithium hydroxide.

### **LITHIUM BATTERY RECYCLING TECHNOLOGY (Neometals 50% through Urban Mining Pty Ltd)**

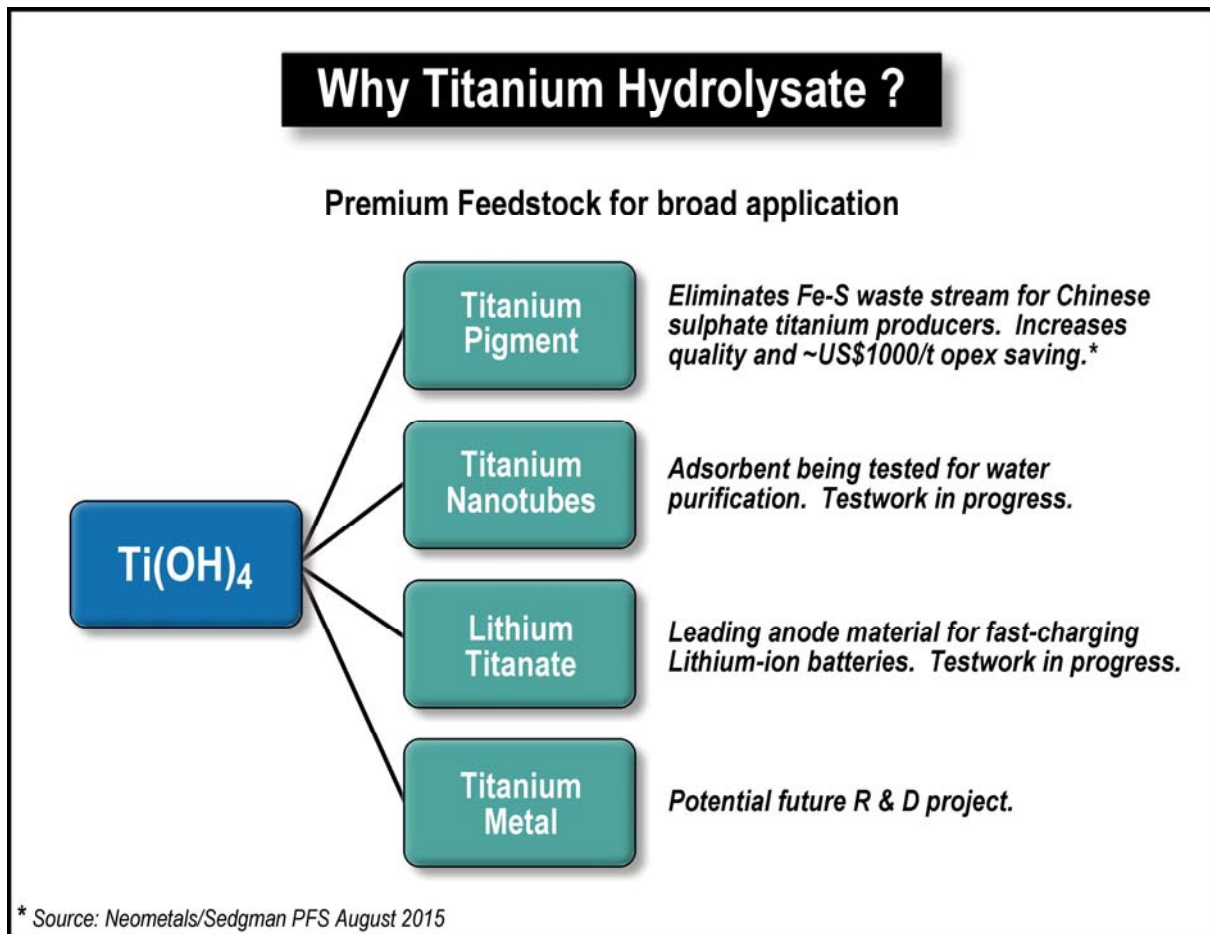
Neometals completed laboratory scale test work on 100kg of spent lithium-ion laptop and phone batteries (containing an average of 19.8% Co) and engaged Sedgman to complete an Engineering Cost Study on a small scale plant using the technology. Results from the study, outlined in Appendix C, have indicated strong potential for a viable processing operation via a modular plant to initially recover saleable Cobalt product from used lithium-ion batteries.

Immediate plans involve investing in a continuous operation, pilot-scale hydrometallurgical plant at NMT’s Montreal laboratory to accelerate the evaluation of the recovery of high-purity Cobalt and future recovery of lithium, nickel, copper and aluminium. Neometals has internal financial resources with which to fund evaluation, construction and commissioning of the commercial-scale plant and will seek partners with complementary skill sets.

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

Barrambie is one of the world’s highest grade titanium deposits, containing total Indicated and Inferred Mineral Resources of 47.2Mt at 22.2% TiO<sub>2</sub>, 0.63% V<sub>2</sub>O<sub>5</sub> and 46.7% Fe<sub>2</sub>O<sub>3</sub>, at a cut-off grade of 15% TiO<sub>2</sub> (Appendix B).

During the Quarter, the Company produced titanium hydrolysate (Titanium Hydroxide Ti(OH)<sub>4</sub>) from leach solutions of Barrambie concentrates using the patented Neomet Process. The titanium hydrolysate product is considered to be the product best suitable as a feedstock into either Sulphate or Chloride Titanium Pigment processes and higher-value specialty chemical applications.



**Figure 1.** Titanium Hydrolysate (end product) and Target Markets

The Company’s project engineers Sedgman Ltd commenced an internal review of operating and capital costs for the flowsheet which will remove the titanium pigment production section. The economic advantage of the Neomet Process is derived from the low-cost production of this product and not in the pigment finishing stages. The replacement of sulphate ilmenites (40-50% TiO<sub>2</sub>) with high purity titanium hydrolysate (+99.5% TiO<sub>2</sub>) by sulphate pigment producers will practically eliminate the large volumes of FeSO<sub>4</sub> generated as a waste stream. This has been both a major financial and environmental cost to incumbent operators and is the main driver behind the Chinese government’s plan to move to chloride pigment production, which uses higher purity (and cost) feedstocks including chloride ilmenites +55% TiO<sub>2</sub>, synthetic rutile +85% TiO<sub>2</sub>, natural rutile +90% TiO<sub>2</sub> and upgraded titanium slag +80% TiO<sub>2</sub>.

## Project Development and Corporate Strategy

Prices for domestic hard-rock titanium concentrates (46% TiO<sub>2</sub>, mine gate, ex-VAT) are now in excess of RMB1800/t CFR (AUD340)(source: Wogen), in line with the trend of international feedstock prices, which have doubled over the past year. The Company has commenced its evaluation of starting Barrambie up as a direct shipping operation with toll-concentration in China. Chinese domestic titanium ores are routinely concentrated in close proximity by third-parties close to sulphate titanium pigment processing hubs.

Concentration testwork and mine planning will guide a fully-permitted diamond drill program for metallurgical (variability) testwork to produce concentrates for third-party evaluation and pilot plant testing of the Neomet Process in Canada, planned to commence by the end of September Quarter 2017.

The currently preferred project development strategy is to advance the project to a suitable stage of evaluation to obtain a titanium industry partners to develop Barrambie as an integrated titanium hydrolysate operation on a shared equity or joint-venture basis.

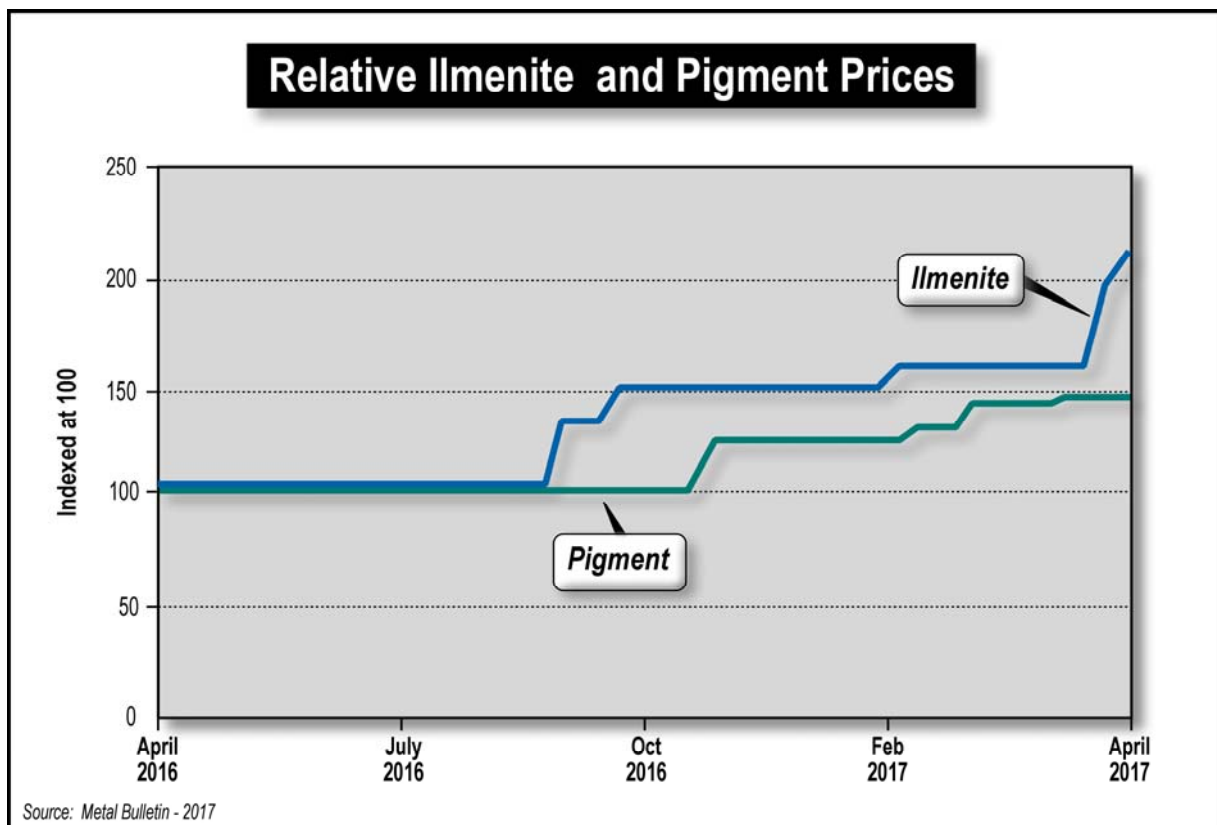


Figure 2. Relative Ilmenite and Titanium Pigment Prices

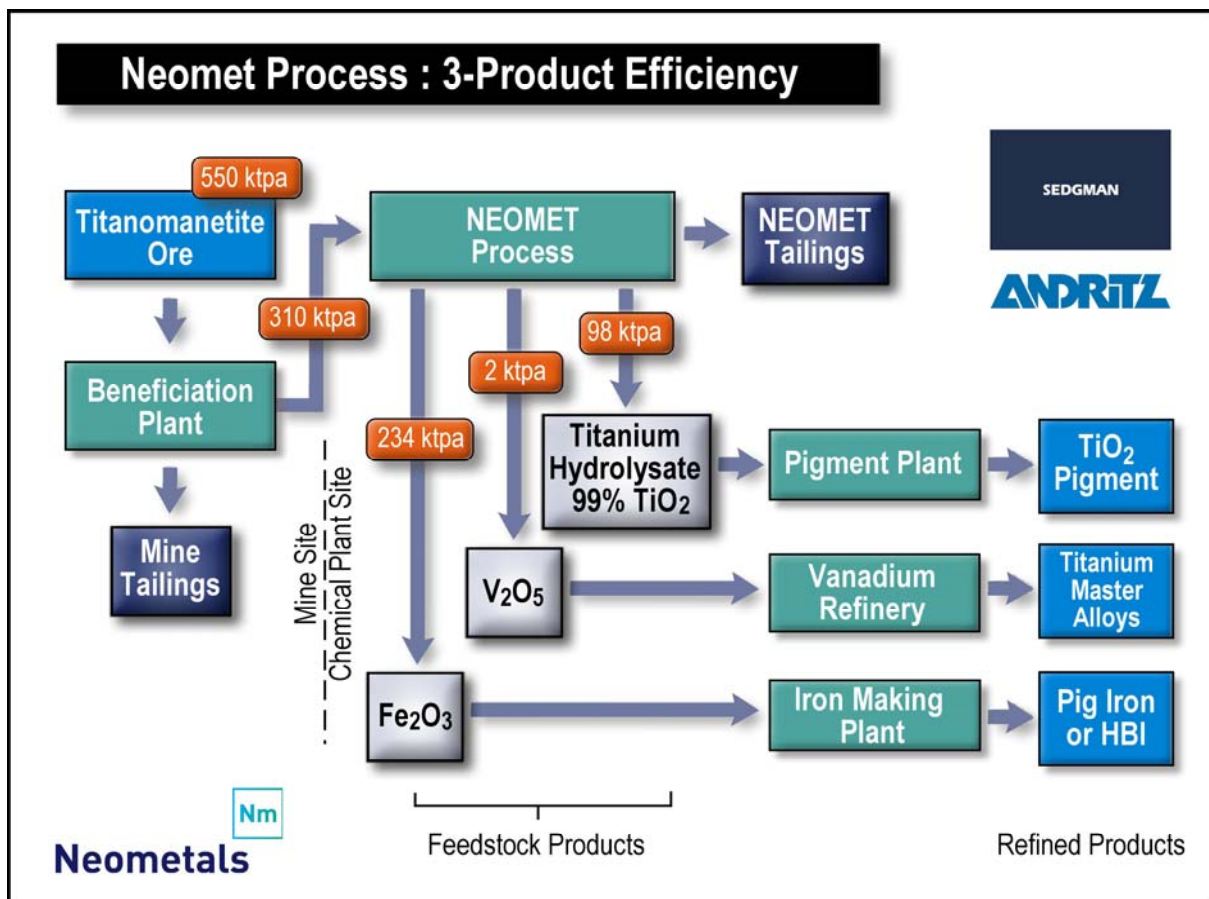


Figure 3. Pre-Feasibility Study - Physical Inputs and Outputs

### Titanium market

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\$2,650 per tonne on a CIF basis to USA (source: Industrial Minerals 20 April 2017).

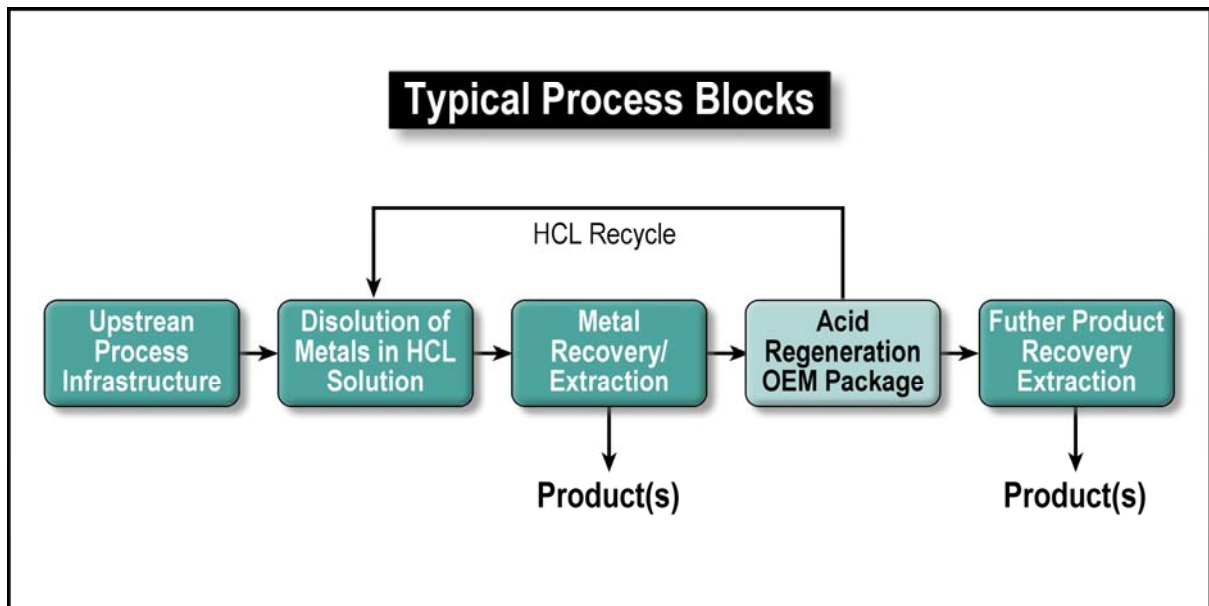
### NEOMET PROCESSING TECHNOLOGY

**(25% Net Profit Interest through Alphamet Management Pty Ltd)**

Neometals is responsible for managing the commercialisation and development of the technology ("Neomet Process"). All revenue received from the commercialisation of the technology will be split 25:75 between Neometals and the owners of the technology.

The technology was originally invented for refractory precious and base metal concentrates by Mr Carl White and Dr Bryn Harris, a former professor at McGill University Montreal, Canada and recipient of the Sherritt Award for Hydrometallurgy.

This patented, environmentally friendly process technology has broad application in the recovery of a wide range of metal oxides from chloride leach solutions other than titanium. The energy-efficient recovery and regeneration of hydrochloric acid with minimal effluent is an environmentally sustainable, competitive advantage over conventional processing flowsheets.



**Figure 4.** Neomet Process Flowsheet

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, at no up-front cost to Neometals. Sedgman’s project team has been marketing the Acid Regeneration Plant and process technology, identifying initial QuickTest evaluation customers and readying the laboratory facilities. Neometals’ strategy is to develop and hold a portfolio of royalty interests from sub-licencing the technology in addition to deploying the technology for the Barrambie Project.

The Company has also executed a non-binding Memorandum of Understanding with Andritz AG with respect to marketing the technology and suppling equipment as preferred manufacturer. Andritz is one of the world’s leading suppliers of process technologies, equipment, plants and systems for special industries. It is headquartered in Graz, Austria and has over 25,000 employees at 250 sites worldwide.

The Company holds a long-term lease for the commercial laboratory facilities from one of the owners of the technology for use by the Strategic Alliance partners to test third party material. A number of third-party ores were tested for clients during the Quarter and formal documentation for the first third-party licence are well advanced.



**Image 2.** Neometals’ Leased Laboratory at 5800 Thimens, Montreal, Canada

## **CORPORATE**

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

As at 31 March 2017 Neometals holds 709,833,333 ordinary fully paid shares (42% of the issued capital) in Hannans Limited on an undiluted basis. At 31 March 2017 Hannans shares closed at 1.2c.

### **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.

### **Estrella Resources Limited (ASX:ESR) (Goldfields Lithium)**

As at 31 March 2017 Neometals holds 5 million ordinary fully paid shares (1.4% of the issued capital) in Estrella Limited on an undiluted basis. At 31 March 2017 Estrella shares closed at 3.7c.

### **Finances (unaudited)**

Cash and term deposits on hand as of 31 March 2017 totalled A\$53.5 million, including \$4.0 million in restricted use term deposits supporting performance bonds and other contractual obligations.

### **Capital Management**

As at the end of the Quarter the Company had not acquired any shares through the on-market share buy-back (to acquire up to a maximum of 5% of the Company's current shares) that is currently open.

## Issued Capital

The total number of shares on issue at 31 March 2017 was 563,000,865.

## ENDS

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## Compliance Statement

The information in this report that relates to Mineral Resource Estimates at the Mt Marion Lithium Project and Barrambie Titanium Project are extracted from the ASX Announcements entitled "Mt Marion Resource Upgrade" lodged 27 October 2016, and "Barrambie - Amended JORC 2012 Mineral Resource Estimate" lodged 6 December 2013. 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 relevant 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 from the original market announcement.

## APPENDIX A: TENEMENT INTERESTS

As at 31 March 2017 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
Barrambie	E57/1046	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
Mount Marion	P15/6042	13.8% (*)	Pending
Mount Marion	P15/6043	13.8% (*)	Pending

Mount Marion	P15/6044	13.8% (*)	Pending
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% (*)	Pending
Mount Marion	P15/6049	13.8% (*)	Pending
Mount Marion	L15/0360	13.8% (*)	Live
Mount Marion	P15/6052	13.8% (*)	Pending
Mount Marion	P15/6053	13.8% (*)	Pending
Mount Marion	P15/6054	13.8% (*)	Pending
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% (*)	Pending
Mount Marion	P15/6048	13.8% (*)	Pending
Mount Marion	E15/1599	13.8% (*)	Pending
Pilgangoora	P45/3003	70% (**)	Pending

\* - registered holder is Reed Industrial Minerals Pty Ltd (Neometals Ltd 13.8%, Mineral Resources Ltd 43.1%, Ganfeng Lithium Co.,Ltd 43.1%).

\*\* - registered holder is Reed Advanced Materials Pty Ltd (Neometals Ltd 70%, Mineral Resources Ltd 30%).

#### Changes in interests in mining tenements

##### Interests in mining tenements acquired or increased

PROJECT NAME	LICENCE NAME	ACQUIRED OR INCREASED
Mount Marion	E15/1599	Application 21 March 2017

##### Interests in mining tenements relinquished, reduced or lapsed

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

## APPENDIX B: MINERAL RESOURCE ESTIMATES

### Mt Marion Resource Table for 0.5% Li<sub>2</sub>O cut-off

Category (JORC, 2012)	Tonnage (Mt)	Li <sub>2</sub> O%	Fe %
Indicated	28.9	1.35	1.06
Inferred	48.9	1.38	1.10
<b>Total</b>	<b>77.8</b>	<b>1.37</b>	<b>1.09</b>

All tonnage and grade figures have been rounded down to two or three significant figures, respectively; slight errors may occur due to rounding of values.

### Barrambie Mineral Resource Estimate for 15% TiO<sub>2</sub> cut-off

Category (JORC, 2012)	Tonnage (Mt)	TiO <sub>2</sub> (%)	V <sub>2</sub> O <sub>5</sub> (%)	Fe <sub>2</sub> O <sub>3</sub> (%)	Al <sub>2</sub> O <sub>3</sub> (%)	SiO <sub>2</sub> (%)
Indicated	34.7	22.25	0.64	46.77	9.48	14.95
Inferred	12.5	21.99	0.58	46.51	9.32	15.40
Total	47.2	22.18	0.63	46.70	9.44	15.07

All tonnage and grade figures have been rounded down to two or three significant figures, respectively; slight errors may occur due to rounding of values.

## APPENDIX C: SCOPING STUDY HIGHLIGHTS

The highlights for an initial 10t per day (3,424tpa) throughput module, the subject of the study, are summarised below. Operating and Capital Costs are both valid as at January 2017 with an indicative accuracy in the range of  $\pm 30\%$ . All analysis is in US dollars and assumes a selling price of US\$35,000/t for Cobalt.

Scoping Study Highlights	
Annual Production	666 t contained Co or 1,467,280 lb
Life of Plant (LOP)	10 years
Life of Plant (LOM) Revenue	US\$ 233 million
Pre-tax Cashflow	US\$ 144 million
Pre-tax NPV (10% discount rate)	US\$ 84 million
Average Net Operating Cost of recovered Co	US\$ 4.45/lb (US\$9,852/t)
Total initial capital costs	US\$ 4.5 million
Payback of capital costs	<1 year

### CAUTIONARY STATEMENT

*The Scoping Study referred to in this report is based on low-level technical and economic assessments, and is insufficient to provide definitive assurance of an economic development case, or to provide certainty that the conclusions of the Scoping Study will be realised.*

## DEVELOPMENT SCENARIO

The development scenario for this study, with the aim of refining the concept into a production unit that can be scaled up to full commercial operations, is characterised by:

- Relocatable, modular plant with a throughput capacity of 3,424 tpa located in Montreal, Canada
- Lithium-Ion battery feedstock provided by OEM's and battery collectors.
- A new technology based on limited testwork will be used for high, low cost recovery of Cobalt with Lithium by-product.

### Processing

The proposed process is based on the development test work that was conducted for the Company in Montreal, Canada.

The process comprises the following steps:

- Feed preparation - Pulverising and segregation of the used batteries
- Extraction - Acid leach of used battery feed to selectively dissolve up to 99% of the cobalt values. Purification - to remove other metal values from the cobalt solution
- Recovery - of pure cobalt carbonate (>99.9% pure) by hydrometallurgical methods.

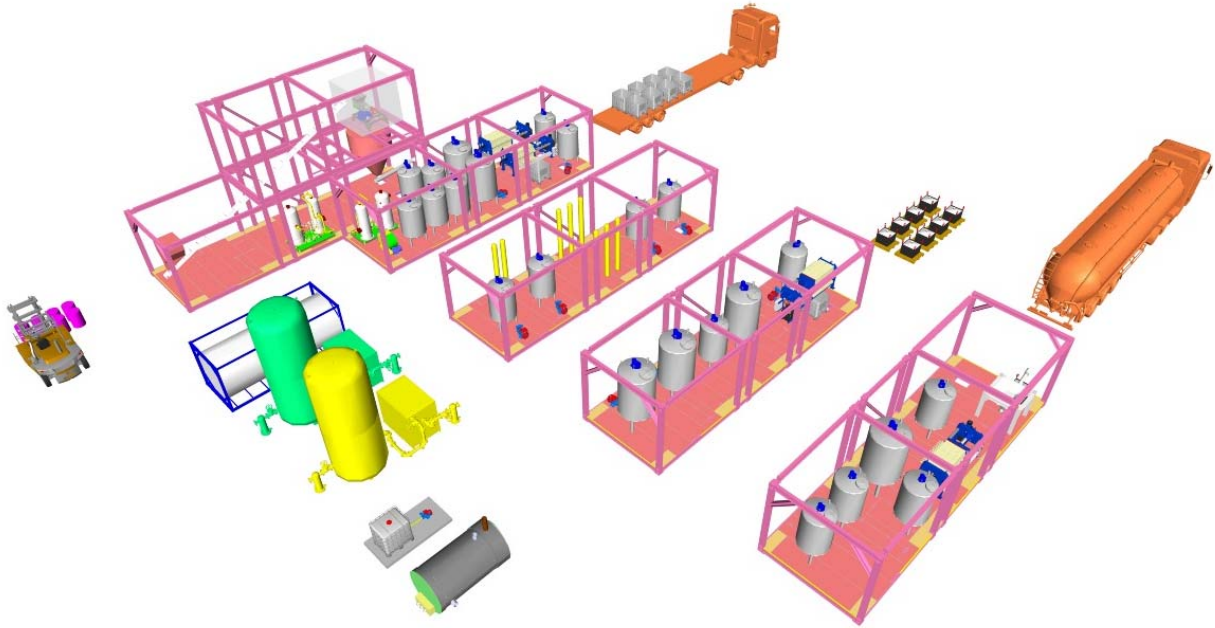


Figure 1. 3D Rendering of proposed Modular, Containerised Lithium Battery Processing Facility

Feed to the initial plant will be used rechargeable lithium ion batteries that predominantly arise from consumer electronics equipment such as smart phone, laptops and other portable electronic devices. These rechargeable batteries typically use battery chemistry that is generally known as lithium cobaltate (LCO) and have been in commercial use for at least 20 years. This cathode chemistry typically contains approximately 60% Co (eg 600kg contained cobalt per tonne of cathode feed into the plant) and has the best commercial potential for the operation. Several other rechargeable lithium ion battery cathode types also contain significant proportions of cobalt, although less than 60%, and will be tested in the future for viability as a source for the process.

Rechargeable lithium ion batteries are typically disposed of either through paid for waste disposal (including by voluntary battery collection points that aggregate batteries for disposal) or through uncontrolled landfill (eg batteries thrown into domestic garbage). The intended feed material to this plant will arise from the former source (legislated/mandatory recycling by battery makers and organised battery aggregators) and has had no revenue associated with it in the project model (eg the sources are assumed to be not paying Urban Mining for disposal). Urban Mining is in discussions with potential feed sources for both the pilot plant and initial proposed commercial operation.

Global used rechargeable lithium ion battery arisings from consumer electronics have been estimated to contain more than 30,000t of contained cobalt, based on being 60,000t of cathode materials available for recycling in 2016 (Argonne National Laboratory 2016).

#### *Project Infrastructure*

Sedgman proposed that the trial processing will take place at a site in Montreal, Canada where the Company already maintains pilot testing facilities. The footprint of the plant is 25m x 35m.

A suitable commercial-scale processing site will have access to local infrastructure such as:

- power generation and reticulation
- water
- buildings
- supply of used batteries

## **CAPITAL COST ESTIMATE**

### *Processing*

Sedgman developed the process design criteria for the facility and based the +/-30% capital estimate for the process plant on budget price estimates from equipment suppliers using those criteria after internal and external review.

### *Project infrastructure*

Infrastructure costs such as buildings, hardstand foundations, waste disposal, dismantling and erection were not allowed for by Sedgman but have been estimated in the economic analysis.

## **OPERATING COST ESTIMATE**

### *Processing*

The processing facility operating cost was estimated by major cost type and is considered a concept level estimate with a nominal accuracy of  $\pm 30\%$ . The estimated cash cost for processing is US\$4.45/lb Co.

## **MARKET AND MARKETING**

Cobalt is traded on the London Metal Exchange (LME), a terminal market that publishes daily prices for cobalt. The price for cobalt at the time of writing is >US\$43,000 per tonne and cobalt compounds used in battery materials typically attract a price premium.

Assessment of the market by Neometals using third party commodity research and current spot prices, led to the US\$35,000/t Co price assumptions.

The plant scope is to recover and produce high purity cobalt carbonate and/or cobalt sulphate at a specification that is used in the manufacture of rechargeable lithium ion battery cathode materials. The tests to date have demonstrated the process is capable of producing the required purity of product for this market.

## **ECONOMIC ANALYSIS**

Neometals prepared a simplified discounted cash flow analysis to provide an early indication of the potential of the project. The analysis makes the following assumptions:

- no allowance was made for tax
- no allowance was made for inflation
- NPV is calculated against the full capital cost of process plant and does not include for credit or any other type of funding of the project.

The important economic and technical assumption inputs are summarised as:

- 99.2% recovery of Cobalt contained in the used battery feed material achieved in testing of the process (19.8% Cobalt by weight).
- Price US\$35,000/t contained Cobalt.
- 10% gross sales royalty to cover processing technology license
- US\$4.5 M capital cost for processing plant (installed) excluding infrastructure (+/- 30% estimate from Scoping Study).

Initial economic assessment indicates potential for a viable operation. The project highlights are:

- Pre-tax NPV<sub>10%</sub> of US\$87 M
- Life of Plant Revenue of US\$233 M
- conservative Plant life 10 years
- payback period of less than one year
- average net operating cost of US\$4.45/lb (US\$9,852/t) of recovered Co
- annual production of 666t Co as cobalt carbonate.