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ENABLING GREEN LITHIUM PRODUCTION IN THE EU



13 December 2021 ASX
Code: NMT
OTC/Nasdaq Intl: RDRUY
Frankfurt: R9R

Authorised for release by Christopher Reed,
Managing Director of Neometals Ltd



Neometals

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EXECUTIVE SUMMARY

Neometals innovatively develops opportunities in minerals and advanced materials essential for a sustainable future

- Innovative ASX-listed project developer
- Focus - integrated minerals/materials for EV and ESS sectors to decarbonise the supply-chain
- Pivoting away from hard-rock mining to circular, sustainable materials recovery
- 3 core projects co-funded with partners – all reaching FID's in 2022
- Management team with strong track-record of identifying early-stage opportunities, de-risking project development via partnership and delivering returns to shareholders



CORPORATE DASHBOARD



ASX: NMT OTC:RDRUY

Shares on Issue ¹	m	548.4
Share Price (2-Dec-21)	A\$	1.12
Market cap (2-Dec-21)	A\$m	616
Cash (30-Sep-21) ²	A\$m	83.5
Debt	A\$m	-
Investments (30-Sep-21) ³	A\$m	38.7

Major Shareholders (26-Nov-21)

David Reed (Non-Executive Director)	6.9%
Clearstream/Deutsche Börse	2.9%
Top 20	34.8%
No of Shareholders	~11,010



Source: Neometals

Note 1: Excludes 10.26M performance rights.

Note 2: incl A\$4.2M restricted term deposits

Note 3: Loan receivables and investments

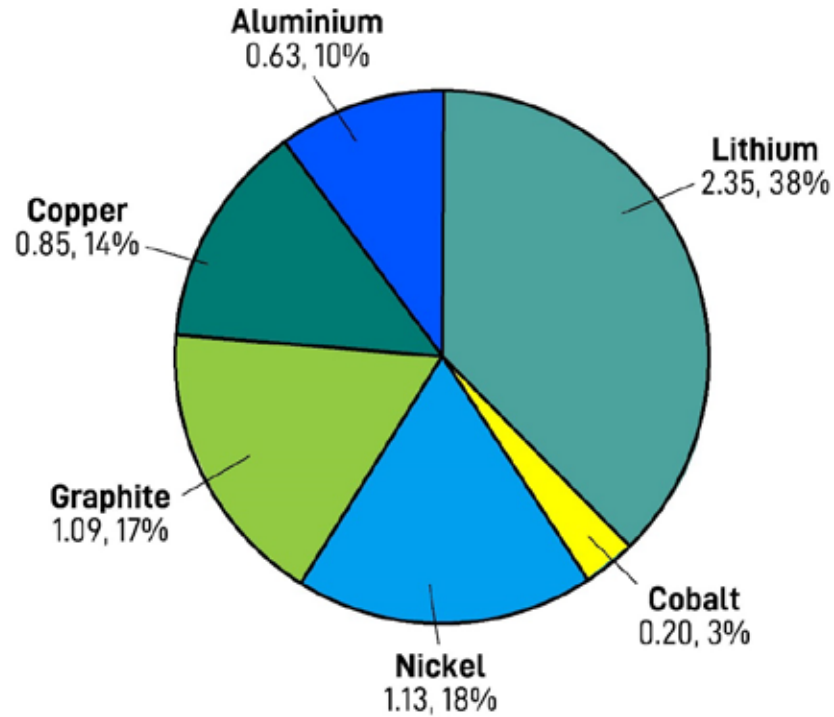


WHY WE STILL LOVE LITHIUM

*IT'S THE ONLY NON-SUBSTITUTABLE
ELEMENT OF THE LITHIUM-ION
BATTERY...NATURALLY*

HOWEVER LITHIUM IS LARGEST CONTRIBUTOR TO LIB CO₂ FOOTPRINT

CO₂ Footprint of Battery Components
(kg CO₂e/kg of NMC811 Batteries)



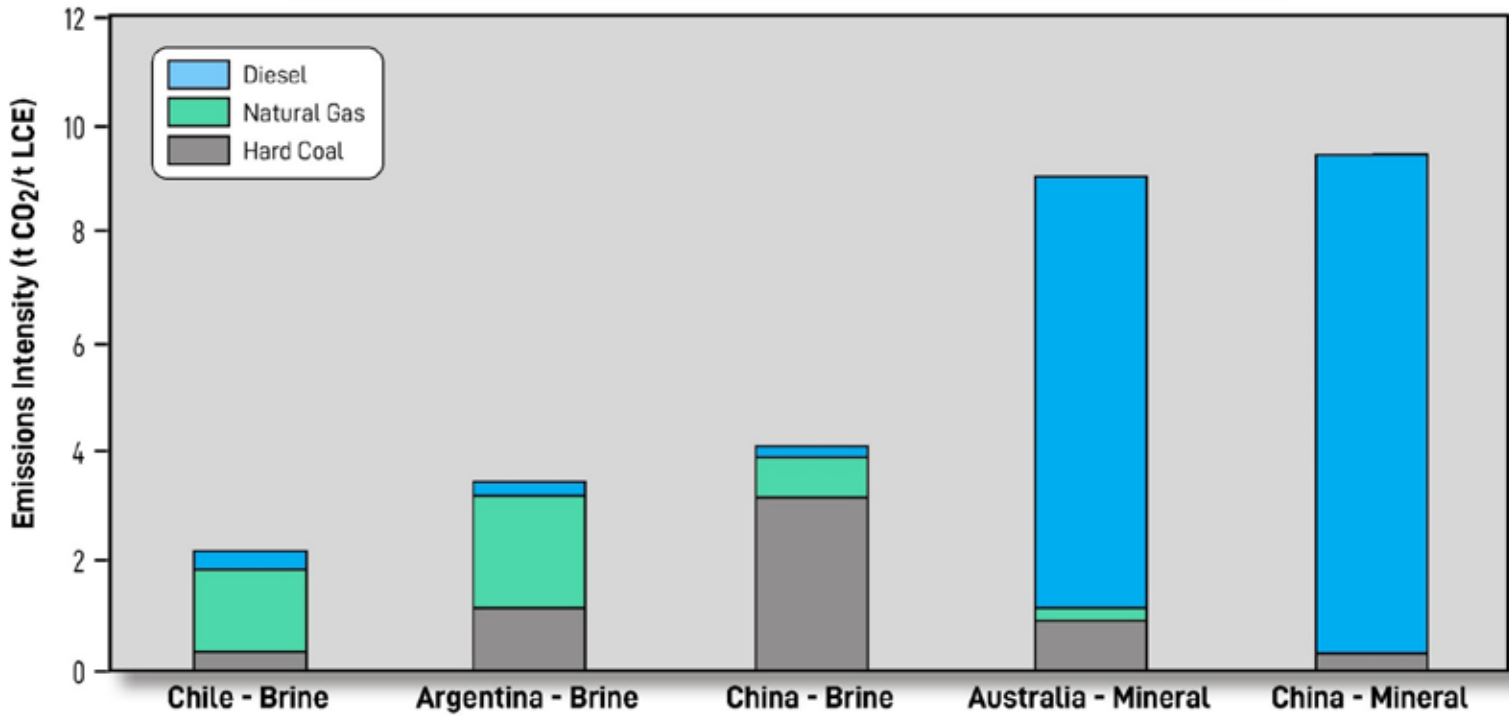
Source:
Carbon footprint - SQM Benchmark World TourWest June 2020
Battery composition - Neometals Management

Graph excludes plastics, electrolyte and binder
CO₂ footprints are for metals, not salt equivalents



NEED MORE BRINE PRODUCTION TO LOWER CO₂ FOOTPRINT

Emissions Intensity of Lithium Production 2020



Source: Roskill



70% OF GLOBAL LITHIUM RESOURCES ARE IN BRINE DEPOSITS

World Resources in 2020 of Contained Tonnes of Lithium Carbonate Equivalent (LCE)



Source: US Geological Survey (US Figures Rounded)



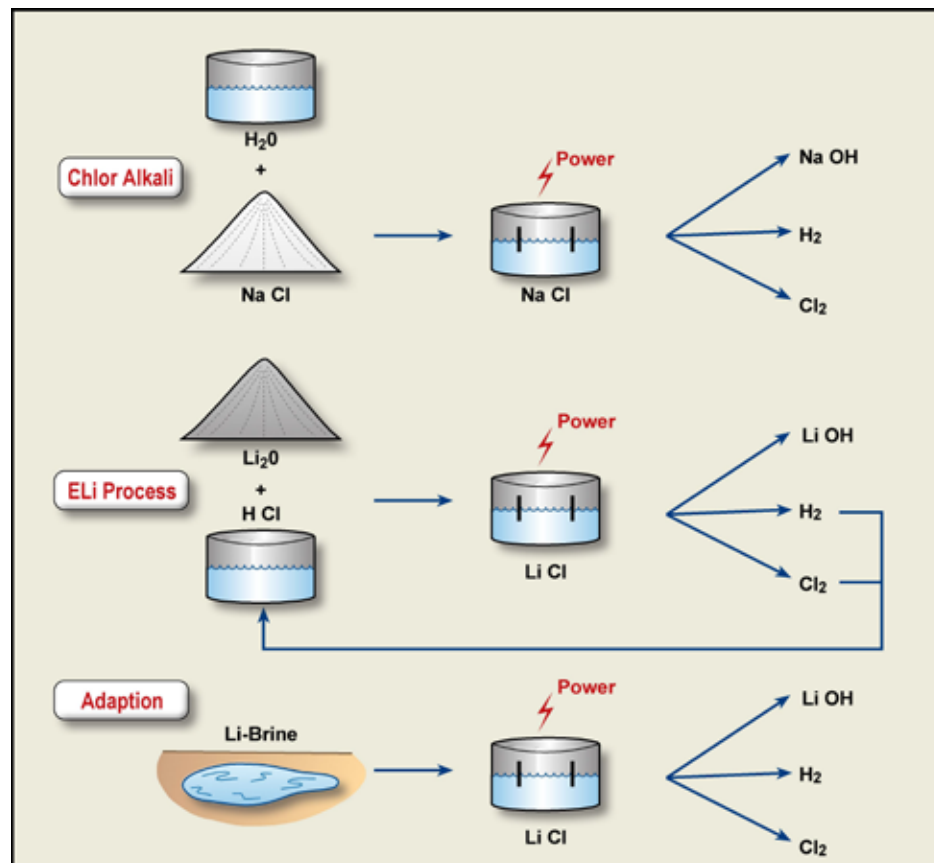
ELi[®] LITHIUM PROCESS

REED ADVANCED MATERIALS PTY LTD

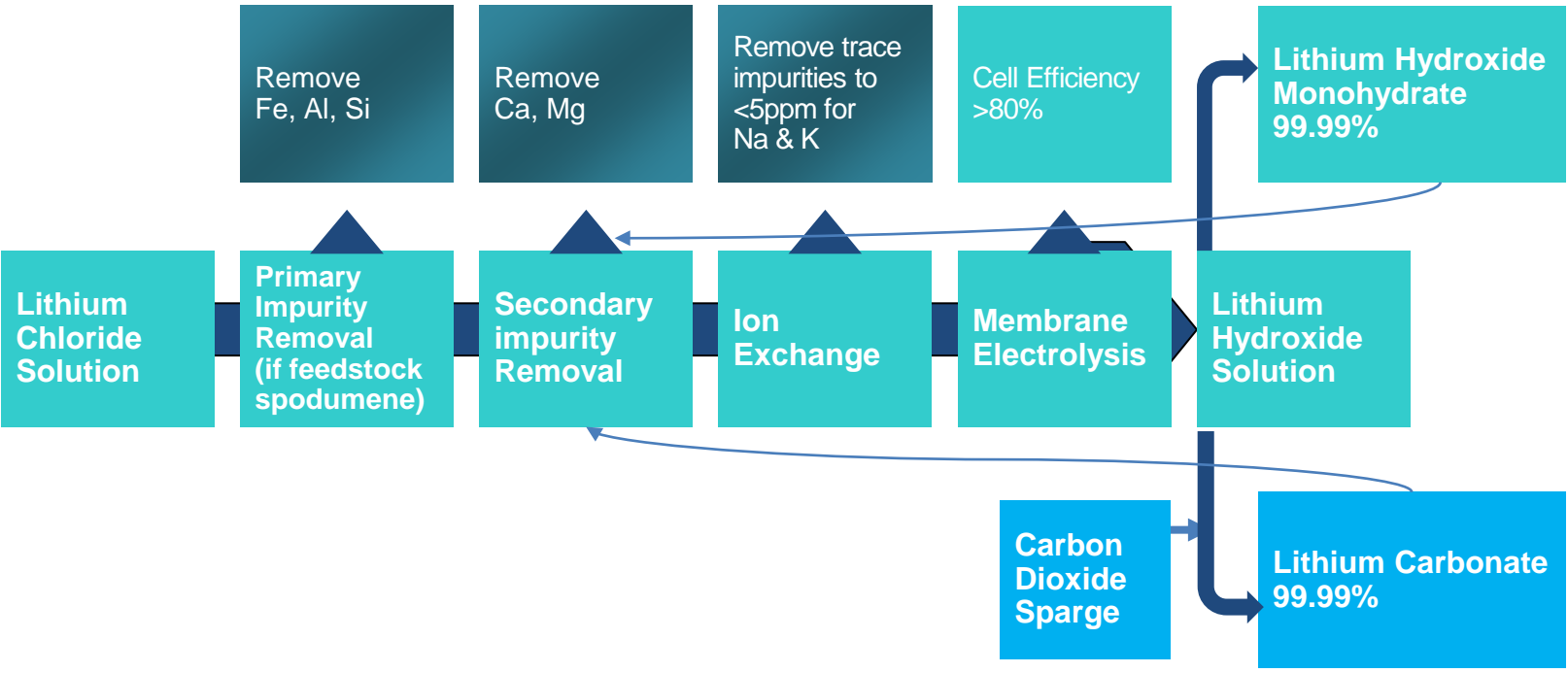
70:30 Incorporated JV with Mineral Resources Ltd

WHAT IS ELI?

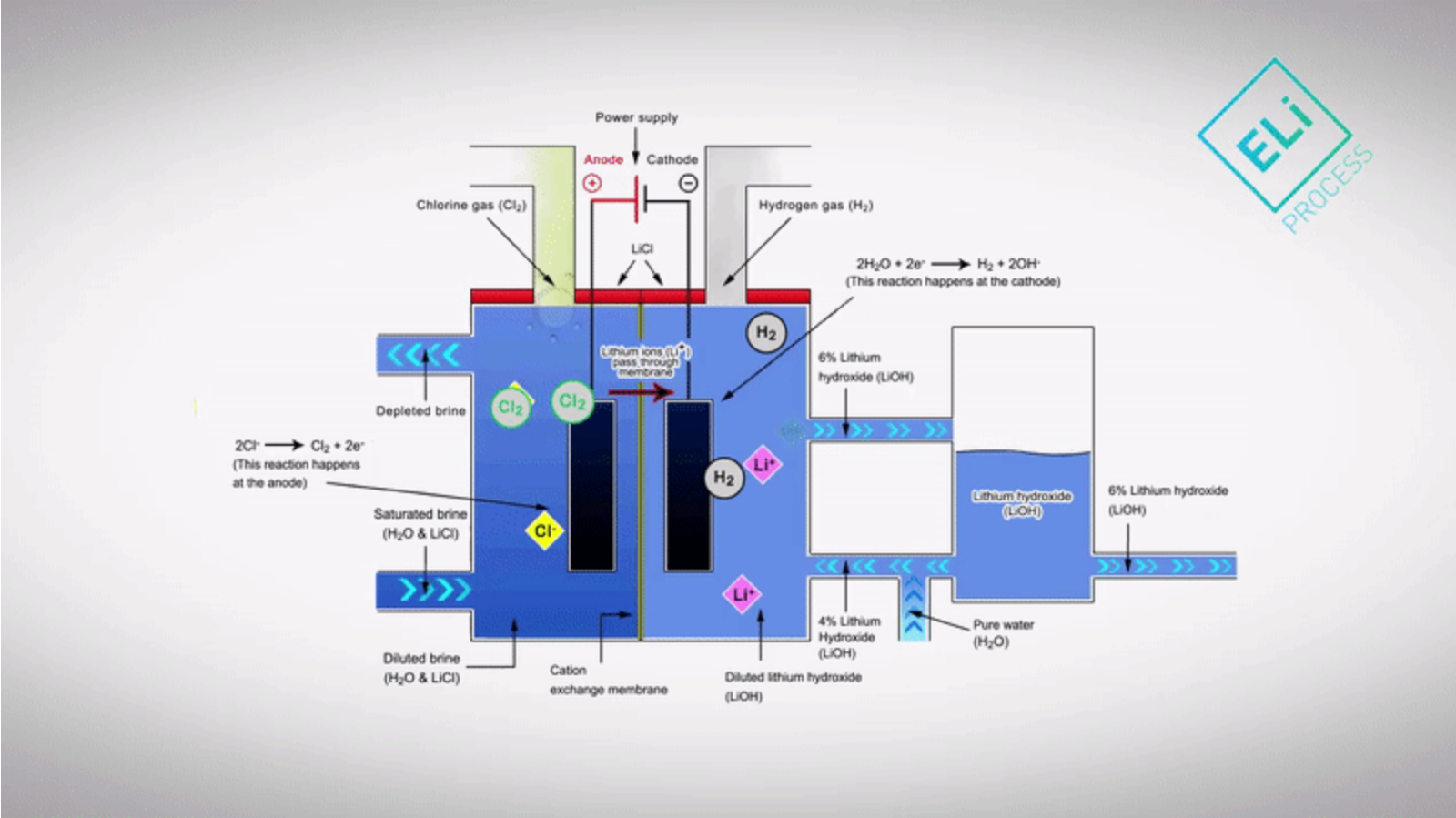
- “ELI” is short for electrolytic lithium.
- +100yr old Chlor-alkali process uses electricity to split sodium salt (NaCl) into caustic soda (NaOH) and chlorine gas (plus hydrogen!)
- We created purification flowsheet to make LiCl pure enough for electrolysis
- Primarily for low-cost LiOH production from HCl leaching of spodumene (Li_2O)
- Brine producers can produce LiCl at much lower cost
- Brine LiCl + ELi potentially the lowest-cost, lowest-carbon, highest purity Lithium



RAM'S PROPRIETARY ELI PROCESS



ELi® ELECTROLYSIS STAGE



<https://www.neometals.com.au/our-projects/long-term-projects/eli-process-technology/>

LOW REAGENT USE

Process	Conventional		
	RAM	Brine	Hard Rock
Bulk Lime	No	Yes	Yes
Bulk Soda Ash	Minimal	Yes	Yes
Power	Yes	Yes	Yes
Gas/oil	Yes	Yes	Yes
Acid	Recycled	Low	Yes

- Use of solvent extraction and ion exchange and recycling results in minimal reagent consumption and circuit top-up
- Decoupled from bulk reagent availability, market disturbances and transport costs
- Proposed sites leverage attractive energy supply options

UNIQUE SELLING POINTS

Capex differential: lower capex for ELi process than conventional process plants based on 2016 Class 3 Engineering Cost Study (“ECS”)

Cash operating cost advantage replaces chemical treatment with soda ash for purification and caustic soda for hydroxide production.

Exceptional product purity due to inverse relationship with brine purity and electrolysis costs (ie better brine purification = less power used)

Reduced reagent consumption (no bulk lime, no bulk soda ash):

- Reduced logistic costs
- No bulk lime eliminates the poor greenhouse environmental impact of burning lime
- Insulates from reagent cost movement and supply/demand issues

Low environmental impact when coupled with use of renewable electricity is compatible with “green EV” principles

Scalability and modularity for expanding production capacity

Reduced implementation risk through integration of proven, off the shelf vendor process equipment

IP Summary

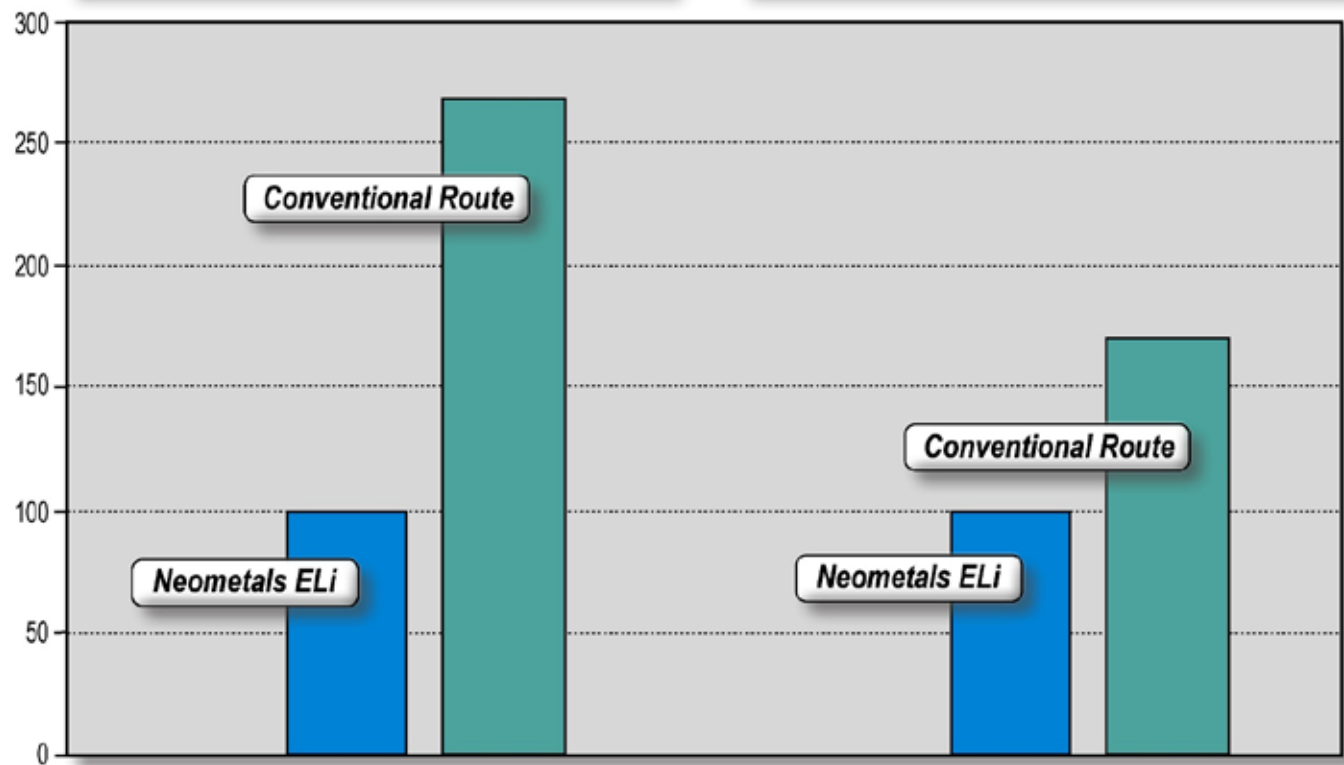
- International PCT filed
- 11 Granted National phase patents covering hard rock and brine producing countries
- 18 National phase patents pending covering remainder of countries with major resources



OPERATING COST COMPARISON

Relative LiOH Conversion Costs from LiCl Brine
(US\$ per tonne LiOH.H₂O) - Argentina basis
ELi Process = Base 100

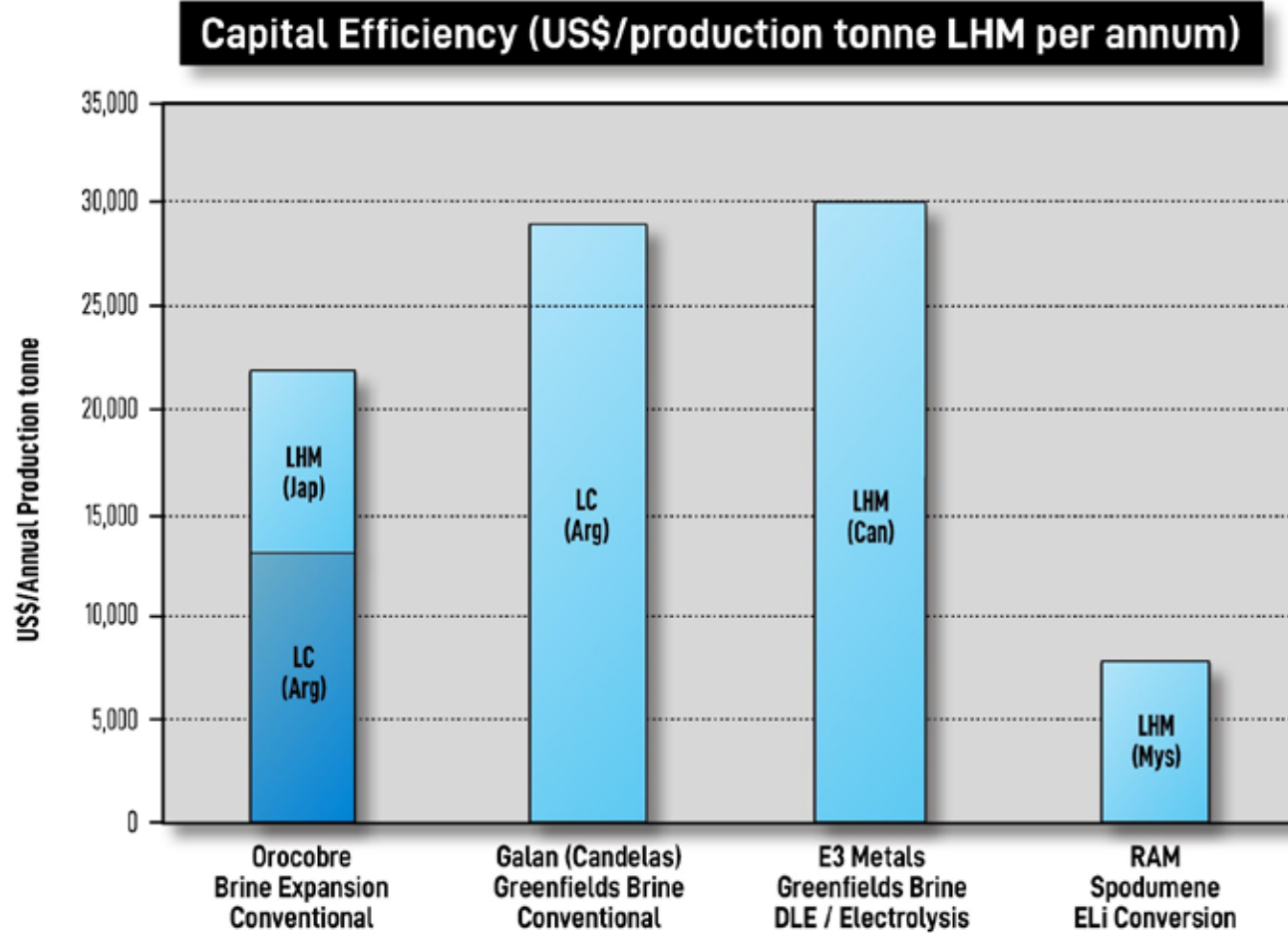
Relative LiOH Conversion Costs from Spodumene Leach Solution
(US\$ per tonne LiOH.H₂O) - Malaysia basis
ELi Process = Base 100



Source: Neometals Management, Exyte Class 3 Engineering Cost Study (2016)



CAPITAL COST COMPARISON



Please see slide 27 for the calculations and data sources





BONDALTI CO- OPERATION AGREEMENT

CO-FUNDING EVALUATION TO FORM
50:50 INCORPORATED JV WITH RAM TO
COMMERCIALISE ELI[®] IN EU

BONDALTI CHEMICALS, S.A.



JOSÉ DE MELLO

- Private (family-owned) Grupo Jose de Mello company based in Portugal
 - Focus on chlor-alkali chemical and aniline production
 - Largest Portuguese chemical producer
 - Production base in Estarreja chemical cluster (Dow Chemical etc)
- Operating Profits €1.26B, Assets €2.3B, Employees +10,000
- Bondalti is seeking entry into LiOH production using chlor-alkali process infrastructure and experience and based adjacent to its Estarreja operations
- Production synergy for ELi[®] to ship H₂ and Cl₂ by-products “over the fence” Bondalti chlor-alkali production already supplies adjacent Dow MDI production facility
- Experienced and competent industrial operator of the same type of chlor-alkali plant used for ELi[®]
- Potential for RAM to have 50% equity in EU LiOH special purpose vehicle and to use as principal or licence ELi[®] to third-party operator and developers outside EU



GOAL: LOW-CARBON LiOH IN EU

1 Buy/Toll Process lithium chloride from Argentina/Chile

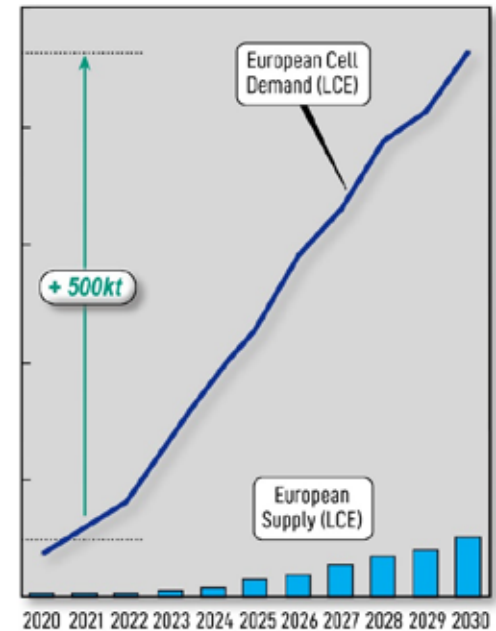
- Conventional solar evaporation to remove Na, K, Mg, Ca
- Produces an impure concentrated lithium chloride brine that is suitable for lithium hydroxide manufacturing with ELi

2 ELi® purification and conversion to LiOH in Portugal

- Conventional conversion of lithium chloride to lithium hydroxide is an industry-standard route but uses sodium carbonate and sodium hydroxide (high carbon footprint materials)
- ELi process uses low carbon electricity from renewable sources to make low carbon lithium hydroxide



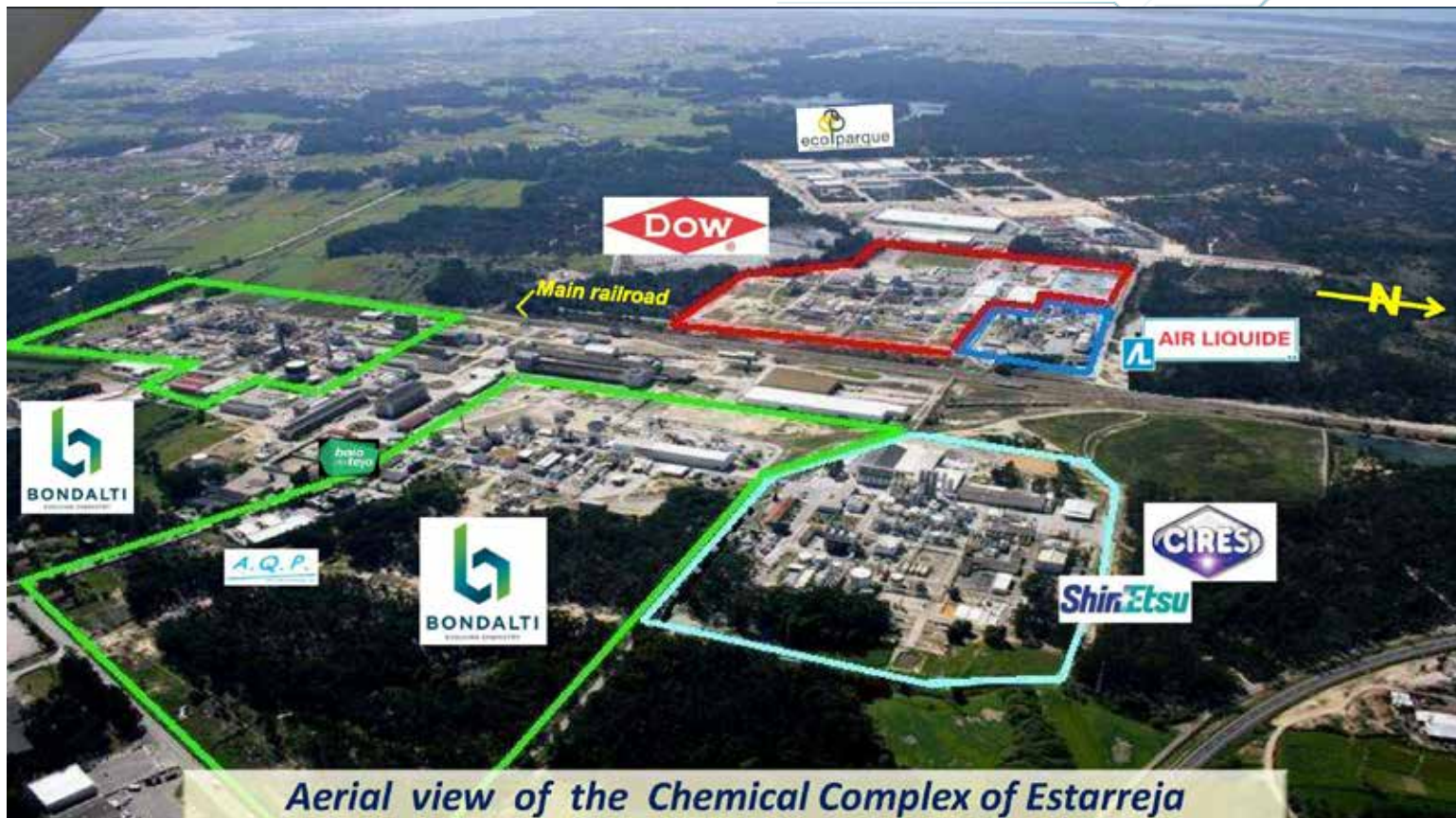
3 Offtake to European EV supply chain



Source: Benchmark Forecasts



BONDALTI – ESTARREJA, PORTUGAL



Aerial view of the Chemical Complex of Estarreja



COOPERATION AGREEMENT KEY TERMS

- Binding Co-operation agreement under which RAM and Bondalti will dedicate means and resources to evaluate the feasibility (technical, economic and financial) to construct and operate a Refinery to commercially deploy the ELi® Process for the generation of lithium hydroxide for future European automotive applications.
- RAM and Bondalti will form a steering committee with equal representation from both parties to oversee the evaluation activities. The parties will each be responsible for 50% of the total costs of conducting the evaluation activities.
- Pursuant to the Co-operation, the parties will construct and operate a pilot plant in Portugal, and if satisfied with the results of the pilot plant, complete an AACE Class 2 FEED Study for a Refinery in Estarreja. After completed the FEED Study, the parties will make a decision as to whether they wish proceed with establishing a commercial Refinery operation, and thereby establish JVCo. RAM will provide JVCo with a royalty free licence to use the ELi® Process in the Refinery operation.
- If JVCo is established, Bondalti will undertake to identify project debt funding for JVCo on best available terms and identify/apply for appropriate European Union subsidies.
- The Co-operation establishes a framework of key principles and terms for the incorporated JVCo, to be set up and owned 50:50 between RAM and Bondalti, if the evaluation activities are successful.
- For the duration of the Co-operation, the parties have agreed to deal exclusively with each other in relation to the application of electrolysis technology for the production of lithium chemicals in the area of the European Patent Convention countries.
- The Co-operation terminates on 30 September 2023 or such other date as the parties may agree in writing.



EVALUATION ACTIVITIES



* Subject to Steering Committee approvals



NEOMETALS TEAM MEMBERS



Michael Tamlin – Chief Operating Officer (Project Sponsor)

Mike has over 35 years experience in metals industries covering lithium, tantalum, vanadium, base metals, industrial minerals and chemicals in Australia, China, South America and Canada. He has a strong track record in maximising commercial performance, developing and implementing strategy and brings experience in the development of lithium projects, lithium supply negotiation, lithium markets and management at executive level.



Matthew Read – General Manager Lithium Projects (Project Engineer)

Matthew has more than 20 years of resources industry experience, having held a variety of project and commercial roles at companies including Tianqi Lithium Australia, Roy Hill and BHP. Most recently, Matthew spent two years as Head of Projects for Tianqi, overseeing the development of its lithium hydroxide facility in Kwinana, Western Australia. Matthew holds a Bachelor Science (Materials Science), Bachelor of Engineering (Chemical) and a Master of Business Administration.



Gavin Beer – General Manager Process & Metallurgy (Process Development)

Gavin is a metallurgist with over 30 years of experience in operational and technical roles.

His extensive experience through multiple commodities around the world has been gained through various roles, the most recent being General Manager Metallurgy of Peak Resources Limited,

Gavin has also run a successful consultancy since 2012 specialising in flowsheet development and optimisation for rare earths, niobium and lithium technology metals.





THANK
YOU

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CAPITAL EFFICIENCY OF SELECT LITHIUM PROJECTS



Company/ Feedstock/ Process Flowsheet	Product	CAPEX US\$ million	Production TPA	Capital Efficiency (US\$/TPA LCE)	Capital Efficiency (US\$/TPA LHM)	Process	Product	CAPEX US\$ million	Production TPA	Capital Efficiency (US\$/TPA LHM)	Source
Orocobre Ltd (ASX:ORE) Brownfields Expansion Conventional Brine	Lithium Carbonate	330	25,000	13,200	13,200	Carbonate Conversion	Lithium Hydroxide	86.4	10,000	8,640	ASX Announcement, 13 November 2020 Titled "AGM Presentation"
Galan Lithium Ltd (ASX:GLL) Greenfields Brine Conventional	Lithium Carbonate	408	14,000	29,143	33,117						ASX Announcement, 30 November 2021 Titled "Excellent PEA Results for Candelas Project"
E3 Metals Corp (TSX:EMTC) Greenfields Brine Direct Lithium Extraction (DLE)/Electrolysis	Lithium Hydroxide	602	20,000		30,100						E3 Metals Corp, Press Release 16 November 2020 Titled "E3 Metals Announces Positive Preliminary Economic Assessment Results for its Clearwater Lithium Project"
Neometals (via RAM) Greenfields Spodumene ELi Conversion	Lithium Hydroxide	158	20,000		7,900						ASX Announcement 11 July 2016 Titled "Positive Lithium Downstream Processing Feasibility Results"

1 tonne Lithium hydroxide monohydrate = 0.88tonnes LCE