



Arafura Resources Limited (ASX:ARU)

“Emerging as Australia’s Next NdPr Producer”

August 2019

Investor Presentation

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2

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Mineral Resources and Ore Reserves

The information in this presentation that relates to Mineral Resources was released in an ASX announcement dated 7 June 2017 (Detailed Resource Assessment Completed) and was completed in accordance with the guidelines of the JORC Code (2012). The information in this presentation that relates to Ore Reserves was released in an ASX announcement dated 7 February 2019 (Nolans Project Definitive Feasibility Study) and was completed in accordance with the guidelines of the JORC Code (2012). Arafura Resources confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements and that all material assumptions and technical parameters underpinning the estimates in the original market announcements continue to apply and have not materially changed. Arafura Resources confirms that the form and context in which the Competent Person's findings are represented have not been materially modified from the original market announcement.

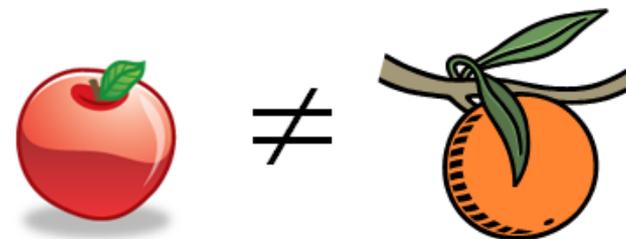
Production Targets and Financial Information

Information in relation to production targets and financial information included in this presentation is extracted from an ASX announcement dated 7 February 2019 (Nolans Project Definitive Feasibility Study). Arafura Resources confirms that all material assumptions underpinning the production target and financial information set out in the announcement released on 7 February 2019 continue to apply and have not materially changed.

Rare Earth Projects – Myths and Mis-directions

3

- Metrics for RE projects not well understood by average investor.
- Not simple mining projects.
- Effective comparison requires “looking” under the hood and digging into the detail required to allow comparison between projects
- Cost structures of RE projects are fundamentally different

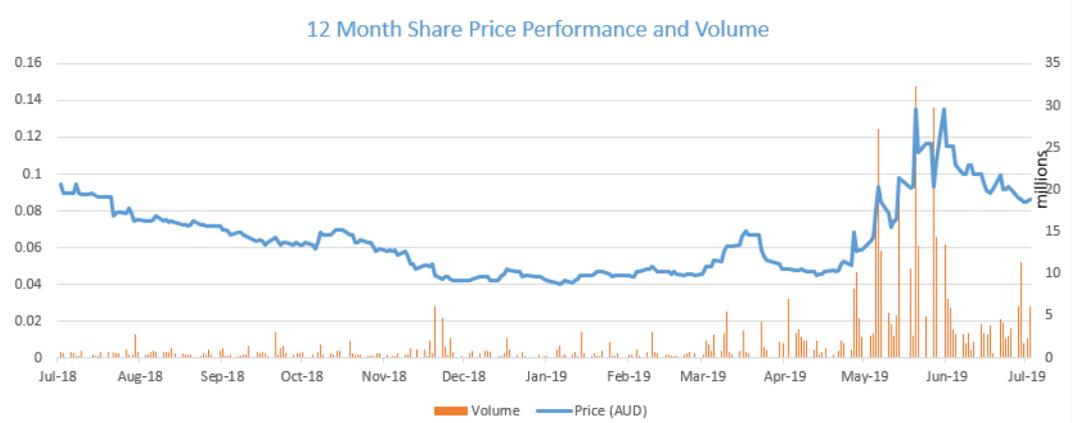


- **RE Projects are NOT Created Equal** (Nd, Pr, Dy, Tb are where all the value is, Ce, La, Y worth little)
- **“Production of what?”** (1kg NdPr Oxide = \$50 as separated oxide, ≈ \$35 as mixed carbonate, ≈ \$20 as a mineral concentrate)
- **Basket Price** and **Operating cost per kg TREO** provides information on the product mix not profitability
- **RE Projects aren’t Mining Project** (mining costs small, unit margins are high)
- **Feasibility Studies & Piloting Matter** (complex projects and you cant cut corners)

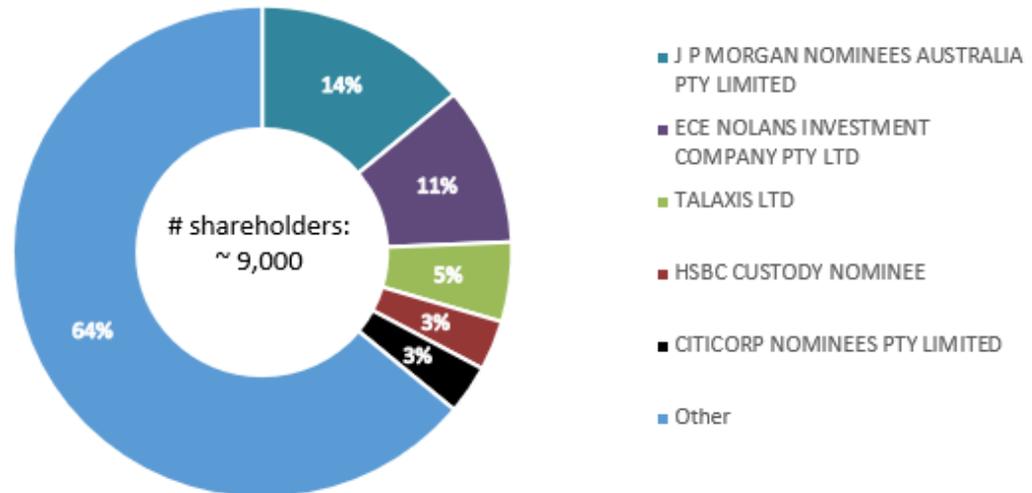
Arafura Corporate Snapshot



Capital Structure	
ASX Code	ARU
ASX Share Price (26 Jul 19)	\$0.086
Shares on Issue	1,055m
Market Capitalisation (26 Jul)	\$90.7m
12 Month Liquidity	\$42.3m
Cash (30 Jun*)	\$28.6m
Debt	Nil
Enterprise Value (30 Jun)	\$76.6m



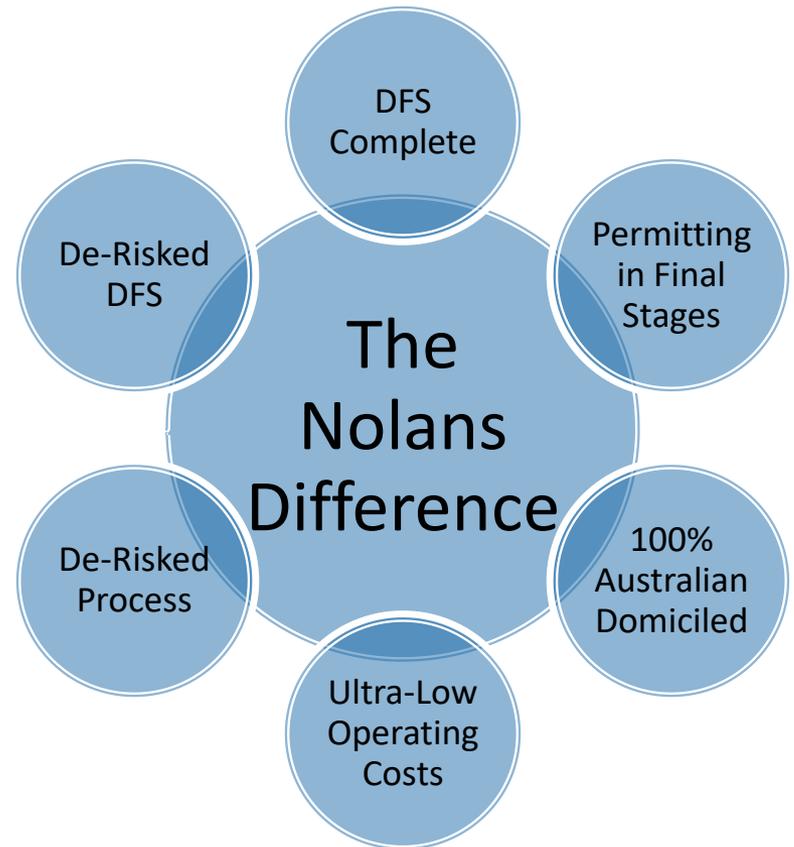
Patersons recently underwrote rights issue which included investment by Talaxis Ltd a member of the Noble group.



* Data based on 30 June plus proceeds from entitlement offer

Arafura's Nolans Project

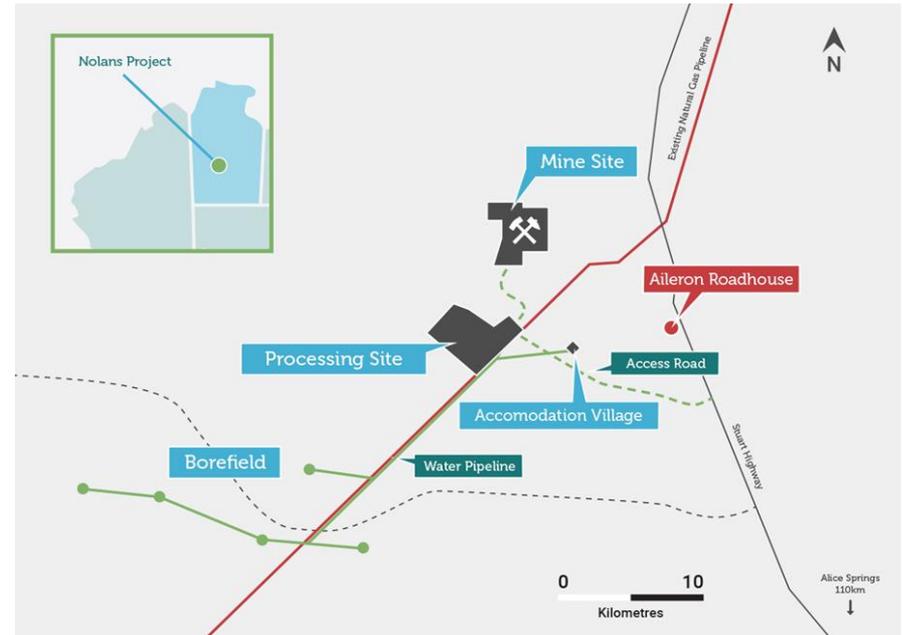
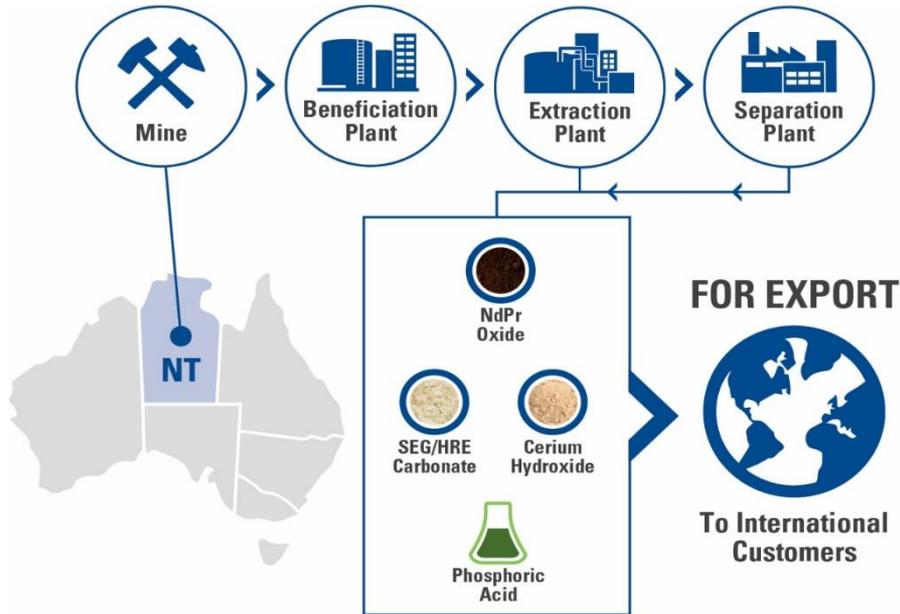
- DFS Completed February 2019 confirms Nolans as a world class NdPr project
- Annual NdPr production 4,357 tonnes
- Ultra-low cost producer US\$25.94/kg NdPr
- Robust economics with average EBITDA A\$377m p.a., NPV₁₀ A\$729m, IRR 17.43%
- Highly leveraged to NdPr (96% of RE revenue) – US\$5/kg increases NPV by A\$130m
- Long-life asset – 23-year mine life based on Ore Reserves only with potential to extend production
- Well positioned to feed forecast NdPr supply shortfall
- Target Project commissioning in 2022
- Globally strategic – 100% Australian-domiciled operation with environmental approval



Refer ASX announcement 7 February 2019: Nolans Project Definitive Feasibility Study

100% Australian Domiciled with Infrastructure

6



- DFS includes fully costed permanent disposal and rehabilitation of tailings and process residues at site.
- Environmental approvals secured
- Able to provide customers with product traceability and waste management certainty.

- Stuart Highway 10 km east.
- Alice Springs railyard, airport and other services 135 km south.
- Amadeus natural gas pipeline adjacent to project site.
- Water supply 30 km south.

Sustainable Supply is Our Value

7

Extensive community and stakeholder consultation

Waste management plan tailings and residue facility

Assessing impact from mining, extraction and transport corridor

Surface water & groundwater management plans

Biodiversity studies on existing flora and fauna

Framework for decommissioning closure and rehabilitation

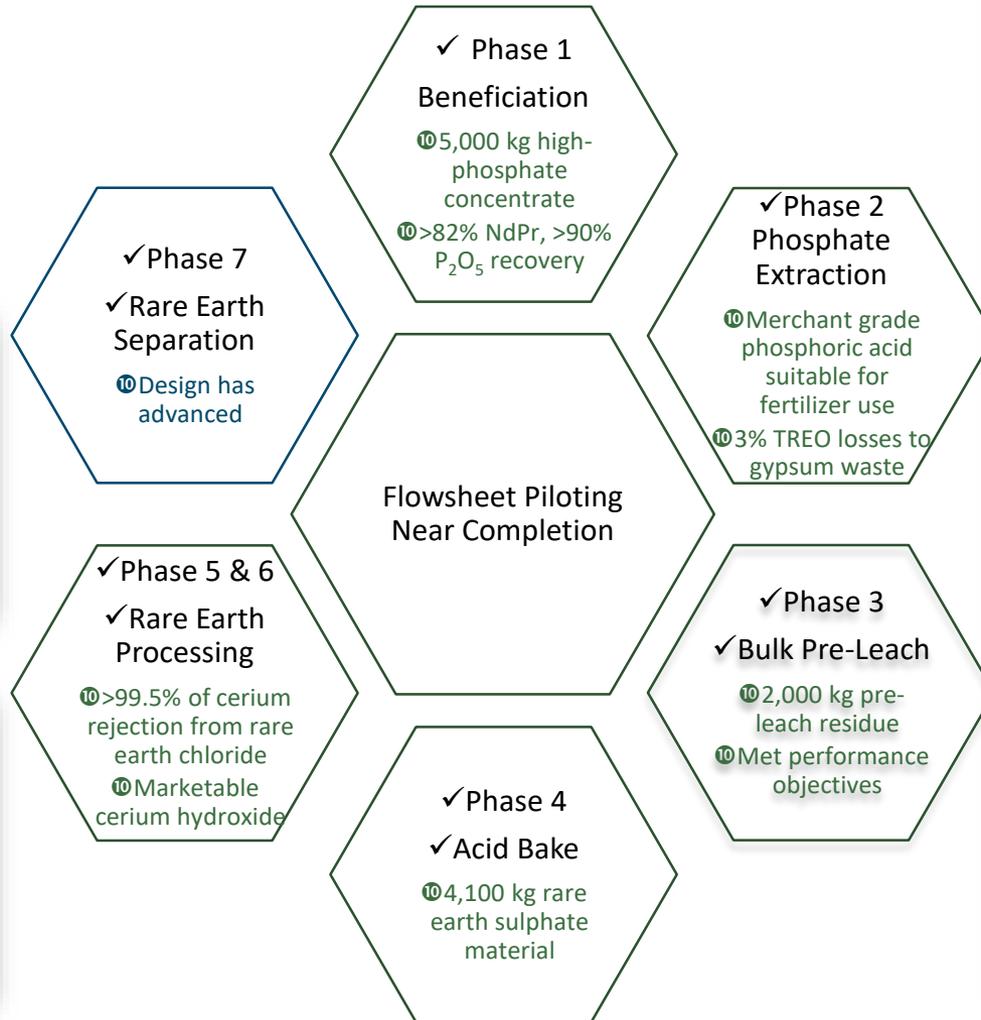


Social License to Operate

8

The Hard Work Matters

Technology Program – De-Risked Process



Beneficiation Pilot Plant



Phosphate Extraction Pilot Plant



Bulk Pre-Leach Pilot Plant



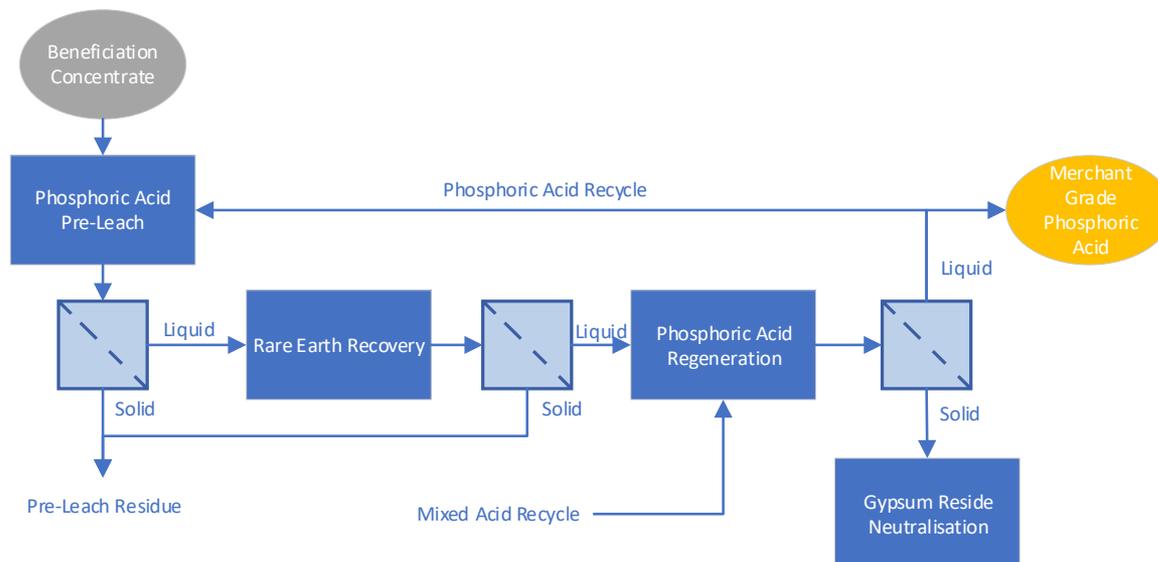
Rare Earth Processing Pilot Plant



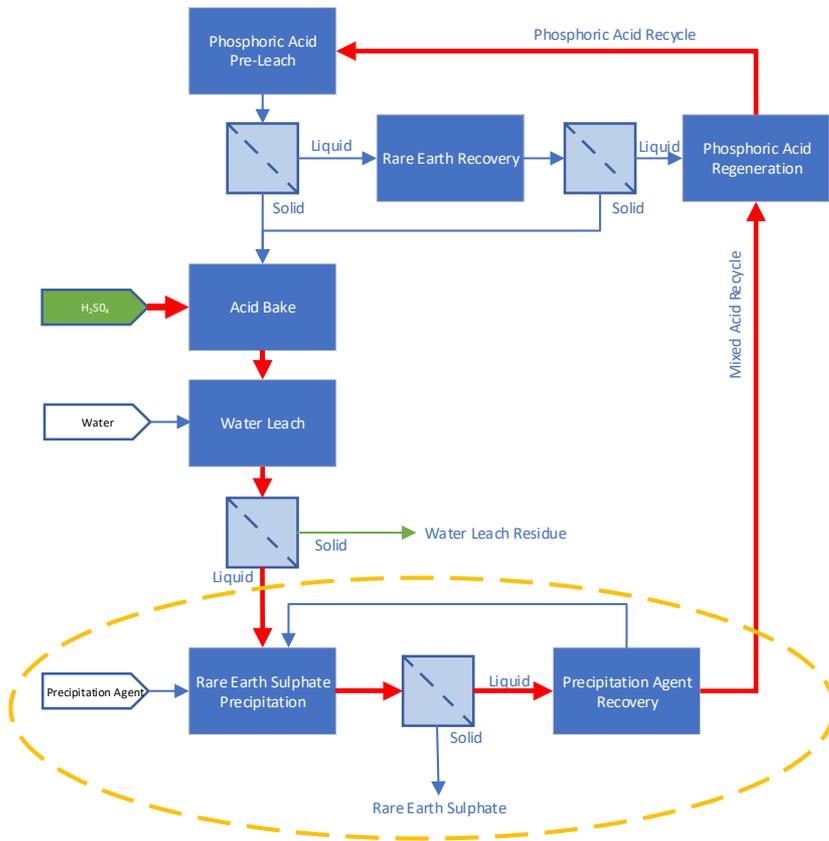
Acid Bake Pilot Plant

Unique Process Delivers Ultra-Low Opex

- Leaching in phosphoric acid allows the leaching of the phosphate minerals **without** precipitation of the calcium reducing tonnage to the acid bake
- Phosphoric acid for pre-leach is generated by leaching of the high phosphate concentrate and regeneration of leach liquor with sulphuric acid
- Excess phosphoric acid is purified, primarily U and Th removal, and concentrated for sale
- Phosphoric acid production is significant value by-product offsetting operating costs and is a key contributor to making Nolans an ultra-low cost producer of NdPr



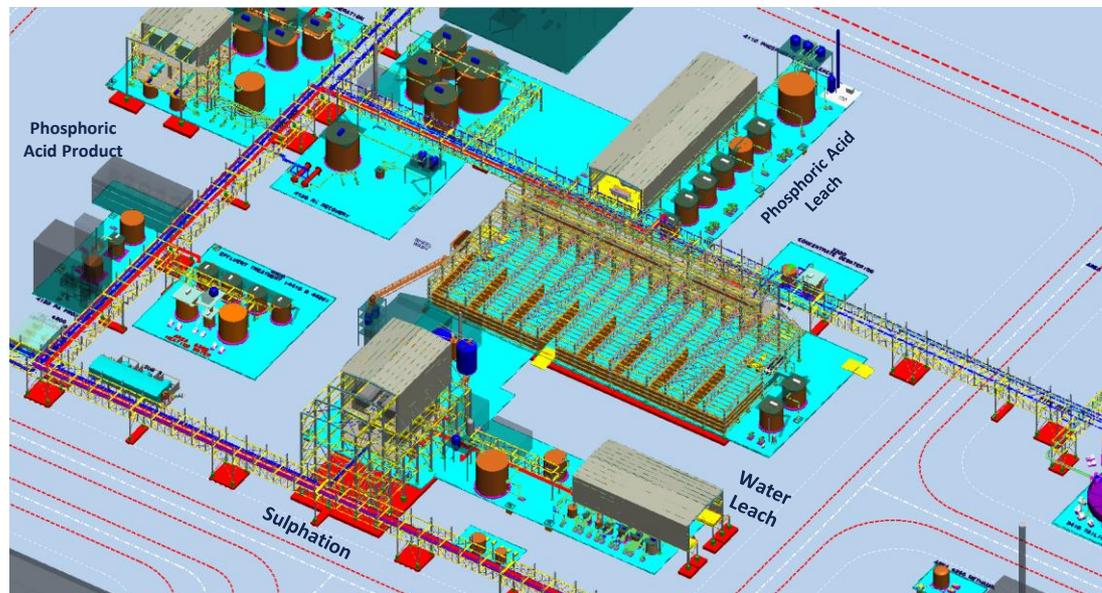
Unique Process Delivers Ultra-Low Opex



- Innovative process developed by Arafura precipitates low impurity rare earth sulphate by addition of precipitation agent without neutralisation of acid
- Following precipitation and solid/liquid separation, recovery and recycling of precipitation agent is possible to leave a clean mixed acid
- Mixed acid is then used for regeneration of phosphoric acid in pre-leach circuit
- All excess acid added into bake used in leaching of apatite and production of phosphoric acid product
- Ability to add significant excess acid to bake, without increasing operating costs, allows for lower temperature and paddle dryer technology
- Acid added into bake is essentially **FREE** as it mostly goes to production of phosphoric acid

Opex of US\$25-26 per kg NdPr net of phosphoric acid credit

- **Designed for ramp-up**
 - Surge capacities between major process stages including one week concentrate, two weeks PLR, one week RE chloride
 - Parallel trains of acid bake to improve availability
 - Space for expansion and modification in layout
 - Modular acid plant for staged ramp up
- **Risks costed into DFS outcomes**
 - Conservative three year ramp up schedule included (29% Y1, 62% Y2, 93% Y3)
 - Additional labour and reagents costed into ramp up operating costs
 - A\$20M included for de-bottlenecking capital
- **Nolans DFS includes learnings from other complex metallurgical projects including nickel laterites and rare earths to develop designs and costs that maximise the likelihood of delivery on the DFS promises in operation**

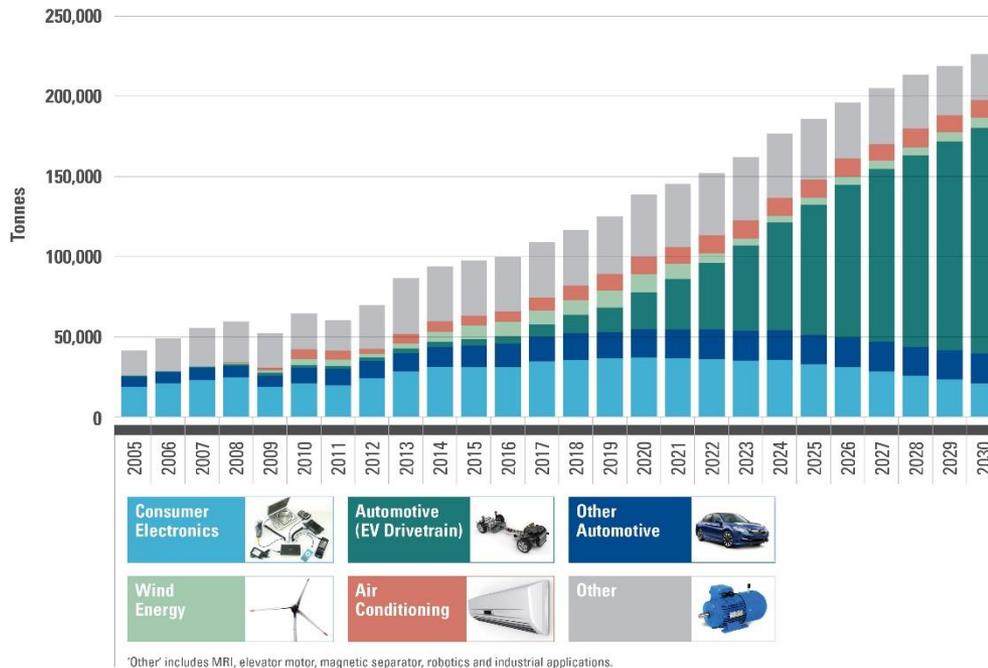


13

The Opportunity

NdPr Market Opportunity

NdFeB Magnet Demand by Application

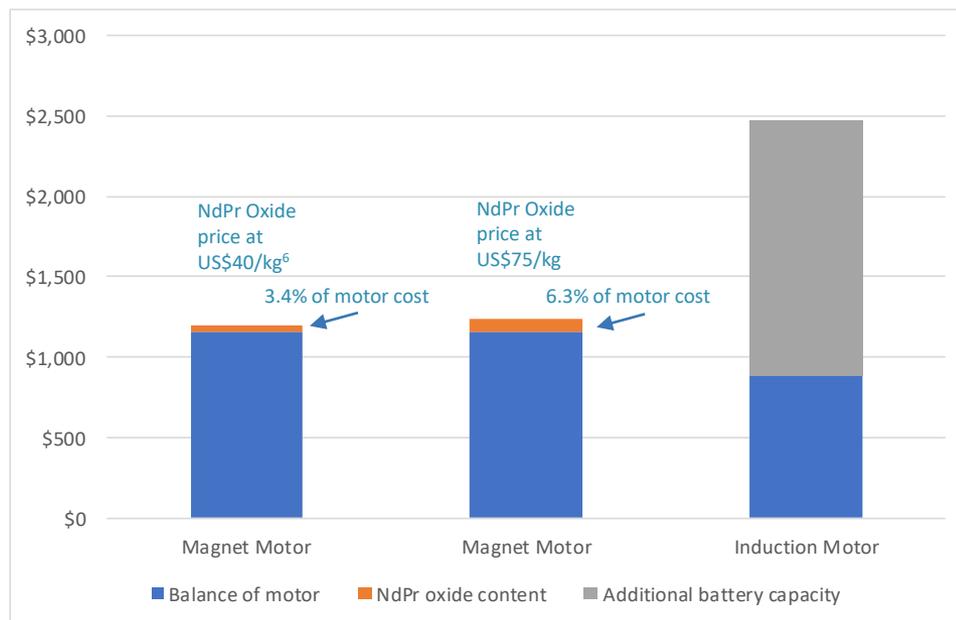


- Underlying demand for NdFeB magnets across all applications is forecast to grow by 6% p.a. over the period to 2030
- NdFeB demand growth for EV applications is more dramatic and forecast to grow by 24% p.a.
- Demand in applications for consumer electronics and wind turbines will reduce during the forecast period. For some applications substitution will be traded off against reduced performance and cost.
- Supply-demand balance achieved through demand destruction in lower quality applications and technology innovations that achieve better use of NdPr in magnet manufacturing
- New supply will not come on stream fast enough to meet demand from all applications – NdFeB magnets and NdPr oxide will move to the best value in use
- EV applications require high quality and efficient motors using NdFeB magnets

Source: Roskill Consulting (November 2018) – Rare Earths Market Analysis

NdPr Magnet Substitution - EV

Modelled effect of increase in NdPr price, NdFeB Magnet v Induction Motor and incremental Li-ion battery pack



- Chevrolet Bolt: 150 kW NdFeB magnet motor with 60 kWh lithium-ion battery pack.¹
- NdFeB magnet motor cost based on US\$8 per kW.²
- Estimate of 1 kilogram of NdPr metal per NdFeB motor magnet.²
- Induction motor cost calculated as 76% of NdFeB magnet motor.³
- Efficiency of induction motor 15% less than NdFeB magnet motor.⁴ To compensate, an extra 6 kWh of battery capacity has been allowed for.
- Lithium-ion battery pack costs of US\$176 per kWh applied.⁵
- Demand estimates do not include analysis on the impact of drive efficiency

¹ www.chevrolet.com

² UBS, "UBS Evidence Lab Electric Car Teardown – Disruption Ahead?", www.ubs.com/investmentresearch, May 2017.

³ Parker Hannifin, "Comparing AC Induction with Permanent Magnet motors in hybrid vehicles and the impact on the value proposition", 2013.

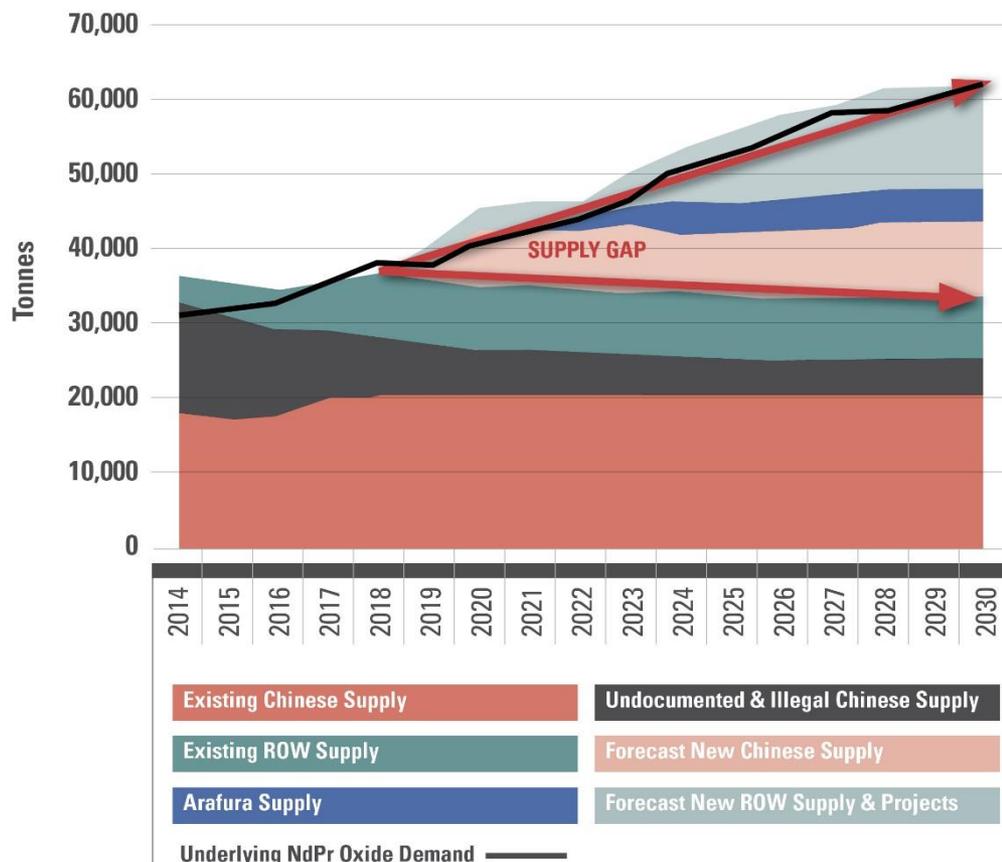
⁴ Adamas Intelligence, "Spotlight on Dysprosium", www.adamasintel.com/spotlight-on-dysprosium/, April 2018.

⁵ Bloomberg New Energy Finance, "A Behind the Scenes Take on Lithium-ion Battery Prices", March 2019.

⁶ Average NdPr oxide EXW China price for April 2019. www.asianmetal.com

Supply & Demand Balance

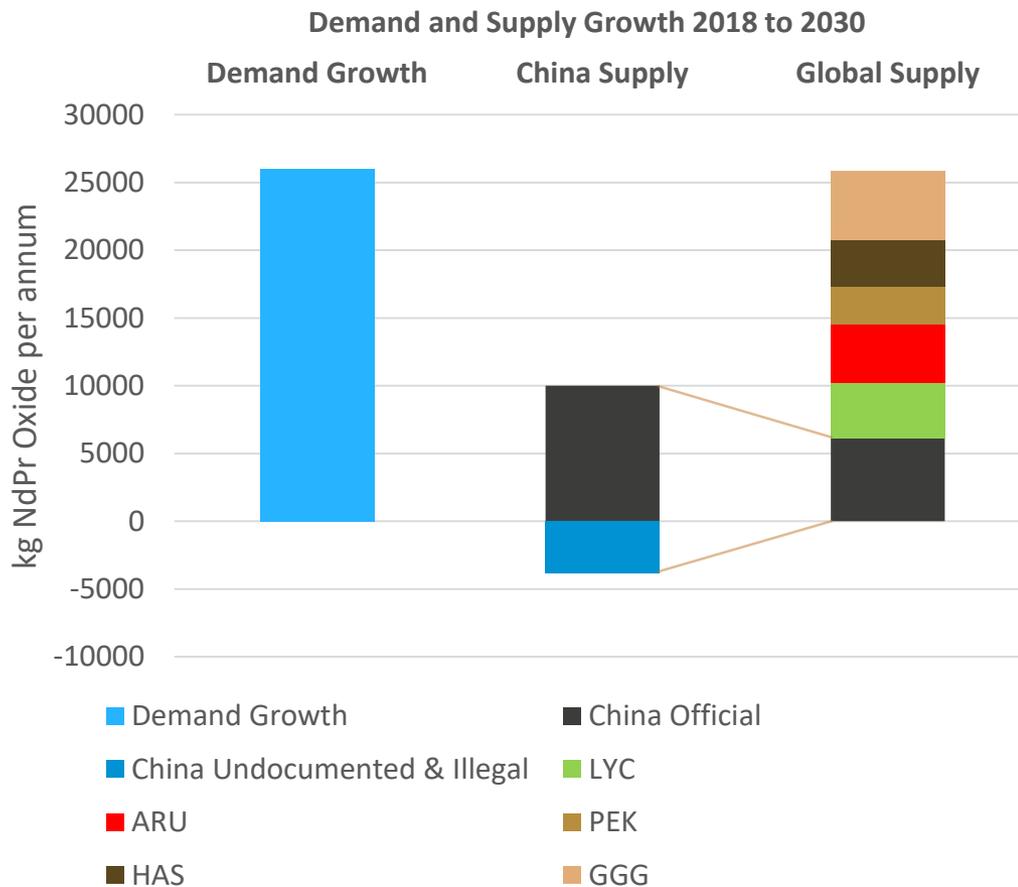
NdPr Oxide Supply & Demand



- China continues to dominate the global supply chain being the world's largest producer accounting for about 80% of NdPr for global NdFeB magnet production
- Supply reforms, industry consolidation and higher environmental standards will constrain China's ability to rapidly increase NdPr production
- Lynas Corporation (ASX:LYC) is the only significant miner and processor of rare earth materials outside China enjoying a market capitalisation in excess of \$1bn
- China remains the dominant supplier, however analysts forecast China to become a net importer by the early 2020's
- Supply growth of 20,000 tonnes of NdPr oxide required in the 2020's

Source: Roskill Consulting (November 2018) – Rare Earths Market Analysis

Supply & Demand Balance



- China will likely to experience some reduced illegal/undocumented production offsetting increased production from domestic ores and imported mineral concentrates
- Demand projections don't fully incorporate impact on efficiency when using rare earth magnets
- Demand projections also cannot incorporate the potential impact, real or reactionary, from international trade wars
- 20,000 tonnes of additional NdPr oxide in the 2020's means there is room in the market for additional China and LYC production along with all advanced stage projects including ARU, PEK, HAS and GGG

Source: Roskill Consulting (November 2018) – Rare Earths Market Analysis

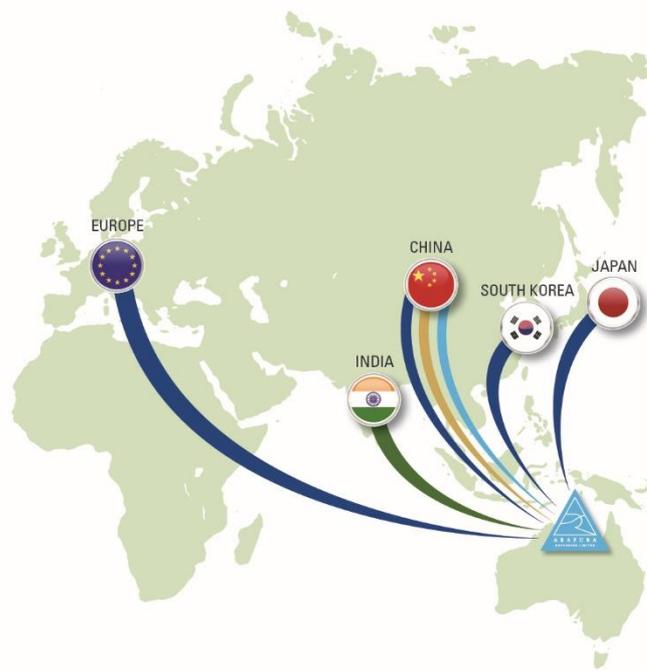
18

Funding to production

Offtake Strategy

FOR EXPORT TO INTERNATIONAL CUSTOMERS

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CHINA
JAPAN
SOUTH KOREA
EUROPE
- 
CHINA
- 
CHINA
JAPAN
- 
INDIA



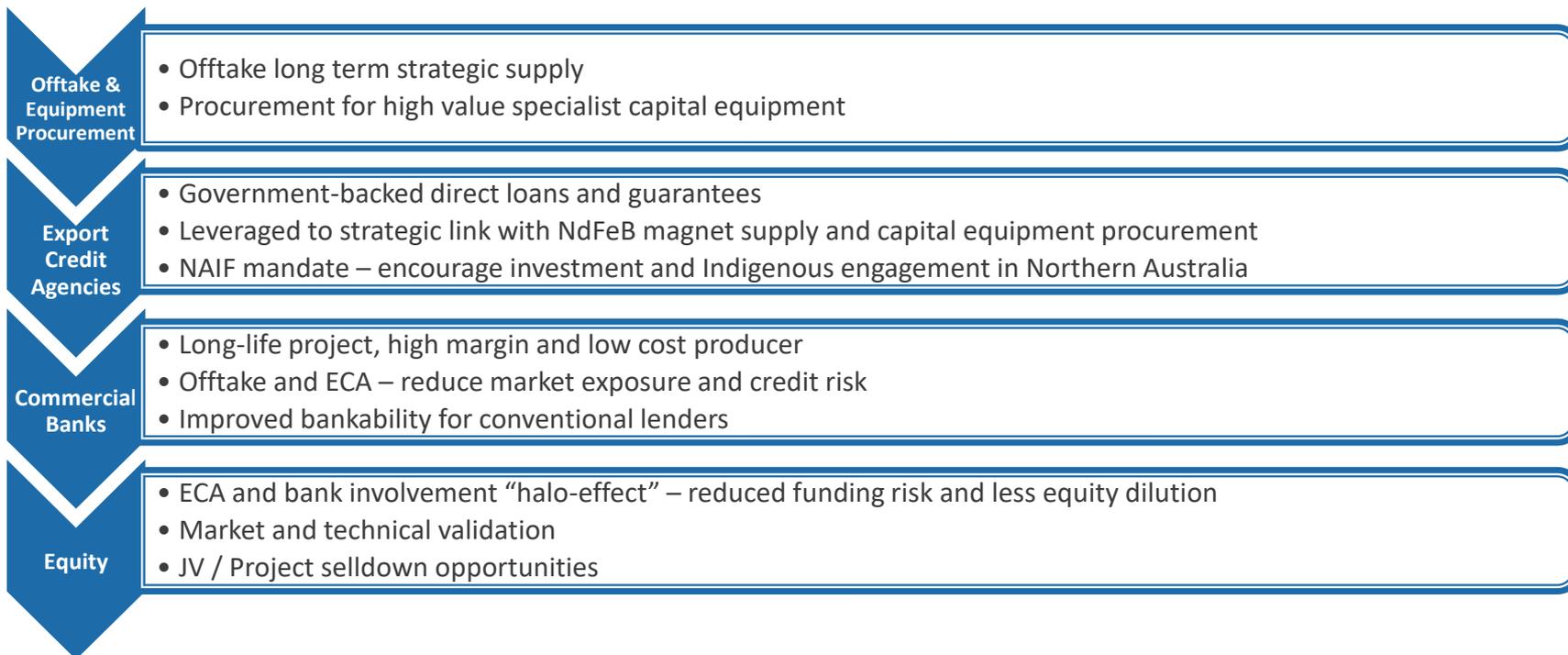
- Offtake agreements to underpin project funding
- Customer engagement targeted at NdPr users not aligned with China 2025 strategy
- Japan – NdFeB magnet manufacturers
- Europe & Korea – automotive OEMs and wind turbine makers
- China – NdFeB magnet manufacturers with significant export markets

Customer / Target Region	Amount (tonnes p.a.)	Offtake Status	Proportion of Revenue
JingCi Material Science Co. 	900	MoU	96%
China 	3,457	In progress	
Japan 			
South Korea 			
Europe 			
SEG-HRE Carbonate – targeting contracts with rare earth processors			
China 	606 (TREO equivalent)	In progress	1%
Japan 			
Cerium Hydroxide – targeting contracts with rare earth processors			
Baotou Xinyuan Rare Earth Hi-tech 	8,383 (TREO equivalent)	MoU	3%

Proportion of revenue for rare earth products only

Project Funding Strategy

- Arafura looking to secure a A\$1,146m⁽¹⁾ in new funding to execute the Nolans Project
- Potential sources of funding include equity, debt, JV and/or project selldown with a strategic investor
- DFS completion and environmental approval are critical enablers for engagement with funding partners
- Recently completed \$23.2m raising to accelerate Project timeline and get “Shovel Ready”



(1) Expected peak funding includes pre-production capital, sulphuric acid plant, working capital and capital escalation. Excludes financing costs.



Contact:

Level 3, 263 Adelaide Terrace
Perth, WA, 6000, Australia

T: +61 8 6210 7666

E: arafura@arultd.com

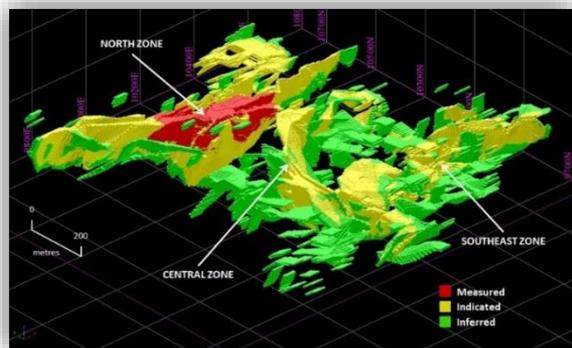
Long Life Asset

RESOURCES	TONNES (m)	RARE EARTHS TREO %	PHOSPHATE P ₂ O ₅ %	NdPr Enrichment %
Measured	4.9	3.2	13	26.1
Indicated	30	2.7	12	26.4
Inferred	21	2.3	10	26.5
TOTAL	56	2.6	11	26.4

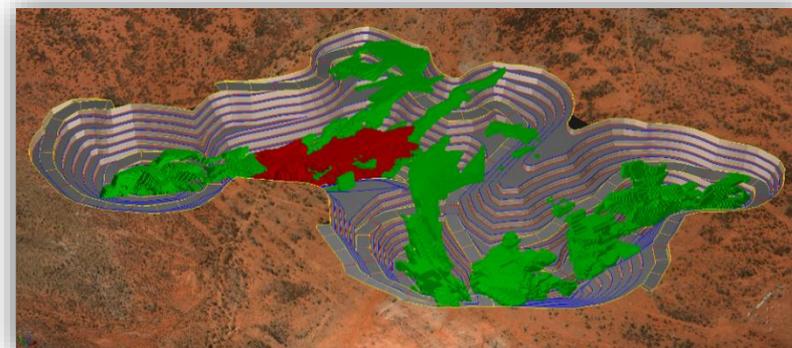
As announced on 7 June 2017. 1.0% TREO cut-off grade. Numbers may not compute exactly due to rounding. "NdPr enrichment" is the proportion of TREO comprising Nd₂O₃ and Pr₆O₁₁.

RESERVES	TONNES (m)	RARE EARTHS TREO %	PHOSPHATE P ₂ O ₅ %	NdPr Enrichment %
Proved	4.3	3.1	13	26.1
Probable	14.9	2.9	13	26.5
TOTAL	19.2	3.0	13	26.4

As announced on 7 February 2019. Numbers may not compute exactly due to rounding. "NdPr enrichment" is the proportion of TREO comprising Nd₂O₃ and Pr₆O₁₁.



Mineral Resources



Ore Reserves