

# ASX ANNOUNCEMENT

## PRESENTATION- NOLANS PROJECT & THE IMPACTS OF COVID-19

25 September 2020

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**Arafura Resources Limited (ASX:ARU)** ("**Arafura**" or the "**Company**") is pleased to attach a copy of the presentation given at the WA State Chapter function hosted by the University of Western Australia.

Mr Gavin Lockyer, Arafura's Managing Director presented on the impacts of COVID-19 to supply chain and funding of the Nolans Project to the UWA Finance Faculty in association with the Finance & Treasury Association.

**-ENDS-**

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**NdPr**

# Nolans Project & the impacts of Covid-19

Finance & Treasury Association – WA State  
Chapter Function hosted by UWA

24 September 2020



24/09/2020



(ASX:ARU)



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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 16 March 2020 (Major Increase in Mine Life for the Nolans Project) 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 Forecast Financial Information

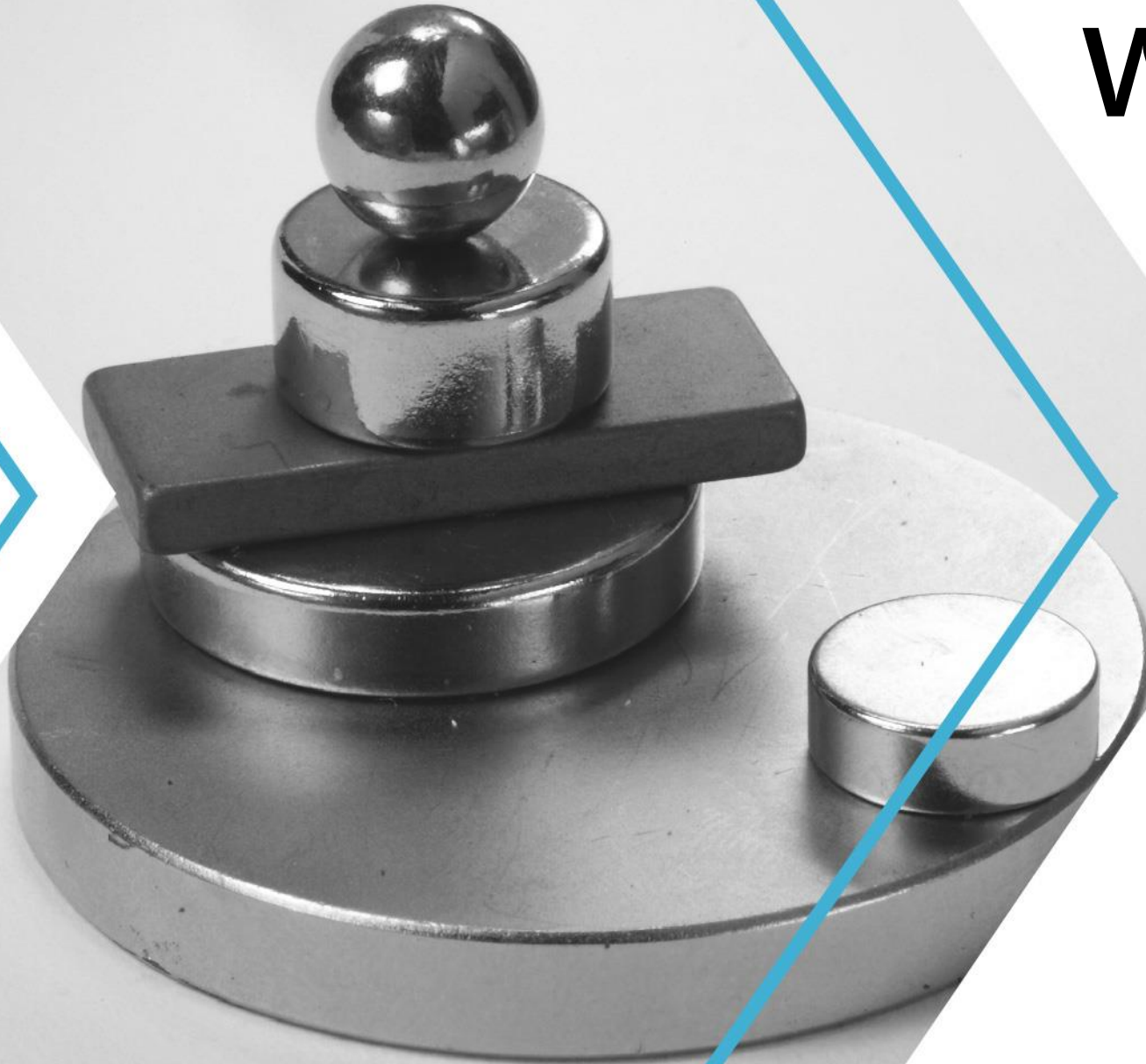
The information in this presentation that relates to production targets and financial information included in this presentation is extracted from ASX announcement dated 16 March 2020 (Major Increase in Mine Life for the Nolans Project). Arafura confirms that all material assumptions underpinning the production target and forecast financial information derived from production targets set out in the announcement released on 16 March 2020 (including the cost and pricing assumptions referred to in the Company's 16 March 2020 announcement that were used in the DFS and which are set out in the Company's ASX Announcement 7 February 2019 (Nolans Project Definitive Feasibility Study)), continue to apply and have not materially changed.

# Agenda

- 1 What are Rare Earths?**
- 2 Impact of COVID-19 on global supply chain**
- 3 About Arafura Resources & Nolans Project**
- 4 Project Financing**



# What are Rare Earths?



# Rare Earths

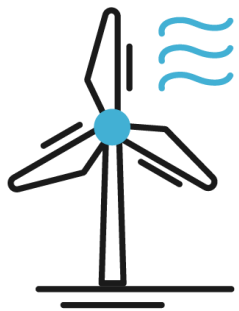
Rare Earths are Critical Minerals. They are essential to the economic wellbeing of the world's major and emerging economies.



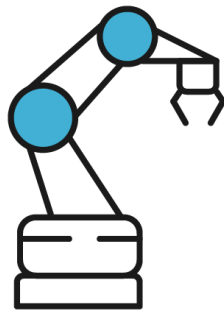
**The Nolans Project** contains all the Rare Earths but is particularly enriched in the 'Magnet Feed' Rare Earths NdPr



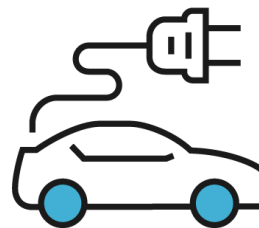
The fastest growing market for NdPr is in NdFeB Magnets. They are one of the reasons why everyday items have become smaller, lighter, mobile, more efficient and more affordable.



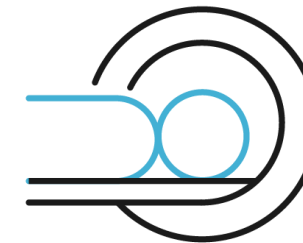
WIND  
TURBINES



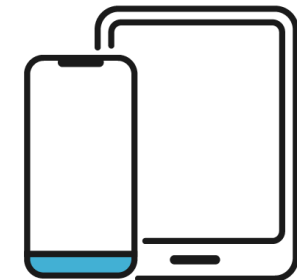
ROBOTS



ELECTRIC  
VEHICLES



MRI  
MACHINES

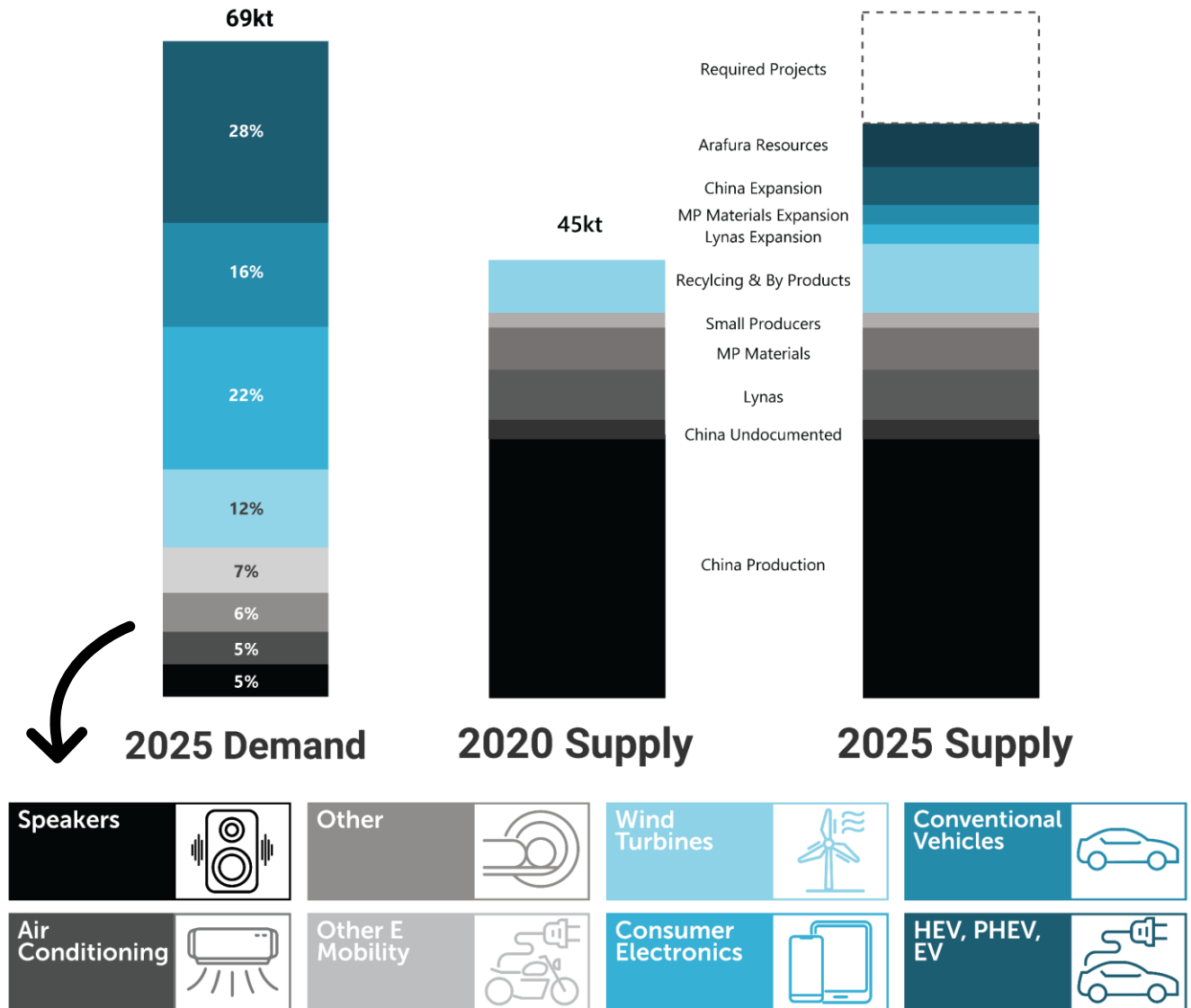


PHONES &  
TABLETS

# NdPr Market Opportunity

- ✓ Underlying demand for NdFeB magnets across all applications is forecast to grow by 6% p.a. over the period to 2030
- ✓ New energy vehicle (NEV, comprising EV, HEV, PHEV) applications require efficient permanent magnet motors using NdFeB magnets
- ✓ NdFeB demand growth for NEV applications is more dramatic and forecast to grow by 17% p.a.
- ✓ Automotive sector is forecast to consume nearly 50% of NdFeB supply in 2030
- ✓ Offshore wind energy sector will accelerate with strong growth from new projects to 2030
- ✓ 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

## NdPr Supply & Demand

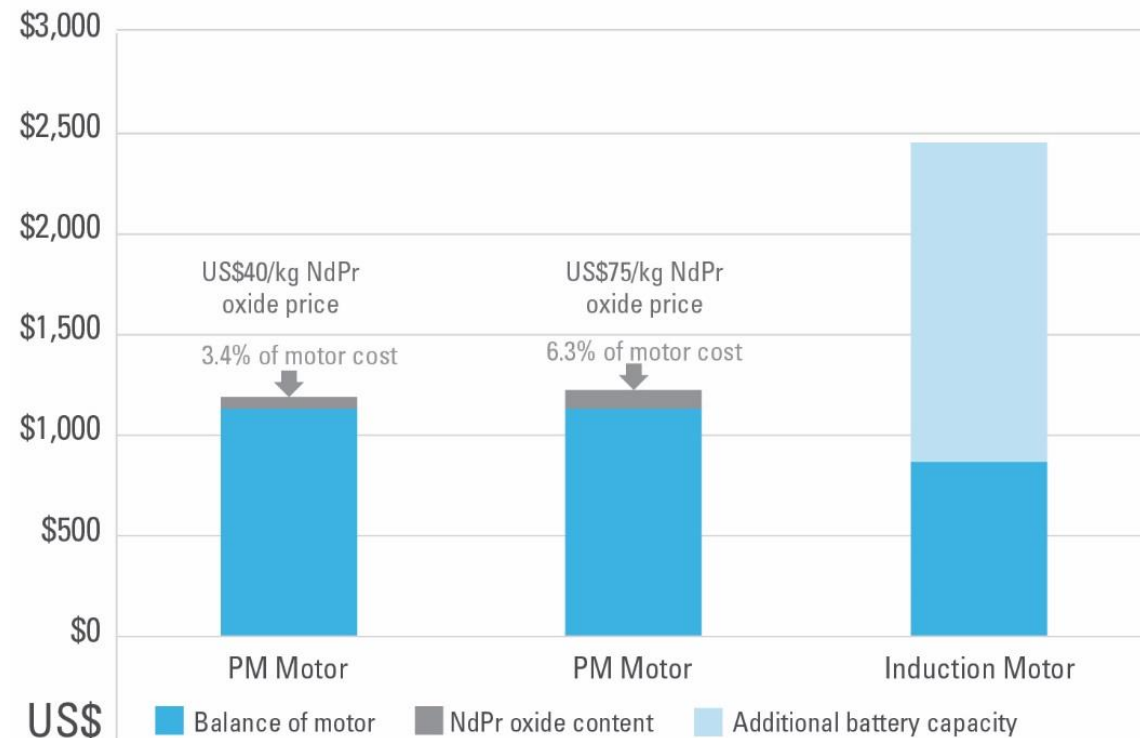


'Other' includes MRI, elevator motor, magnetic separator, robotics and industrial applications.

Reference: Arafura internal Supply Demand forecast referencing CRU, Rare Earth Market Study 2020; Roskill, Rare Earth Market Analysis 2018; Kingsnorth, The Rare Earths Market in 2020.

# NdPr Magnet Power Efficiency & Deprival Value

Modelled effect of increase in NdPr price, Permanent Magnet (PM) vs Induction Motor and incremental Li-ion Battery Pack



- ✓ Chevrolet Bolt: 150 kW permanent magnet (PM) motor with 60 kWh lithium-ion battery pack.<sup>1</sup>
- ✓ PM motor cost based on US\$8 per kW.<sup>2</sup>
- ✓ Estimate of 1 kilogram of NdPr metal per PM motor.<sup>2</sup>
- ✓ Induction motor cost calculated as 76% of PM motor.<sup>3</sup>
- ✓ Efficiency of induction motor 15% less than PM motor.<sup>4</sup> To compensate, an extra 6 kWh of battery capacity has been allowed for.
- ✓ Lithium-ion battery pack costs of US\$176 per kWh applied.<sup>5</sup>

<sup>1</sup> [www.chevrolet.com](http://www.chevrolet.com)

<sup>2</sup> UBS, "UBS Evidence Lab Electric Car Teardown – Disruption Ahead?", [www.ubs.com/investmentresearch](http://www.ubs.com/investmentresearch), May 2017.

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

<sup>4</sup> Adamas Intelligence, "Spotlight on Dysprosium", [www.adamasintel.com/spotlight-on-dysprosium/](http://www.adamasintel.com/spotlight-on-dysprosium/), April 2018.

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

<sup>6</sup> Average NdPr oxide EXW China price for April 2019. [www.asianmetal.com](http://www.asianmetal.com)

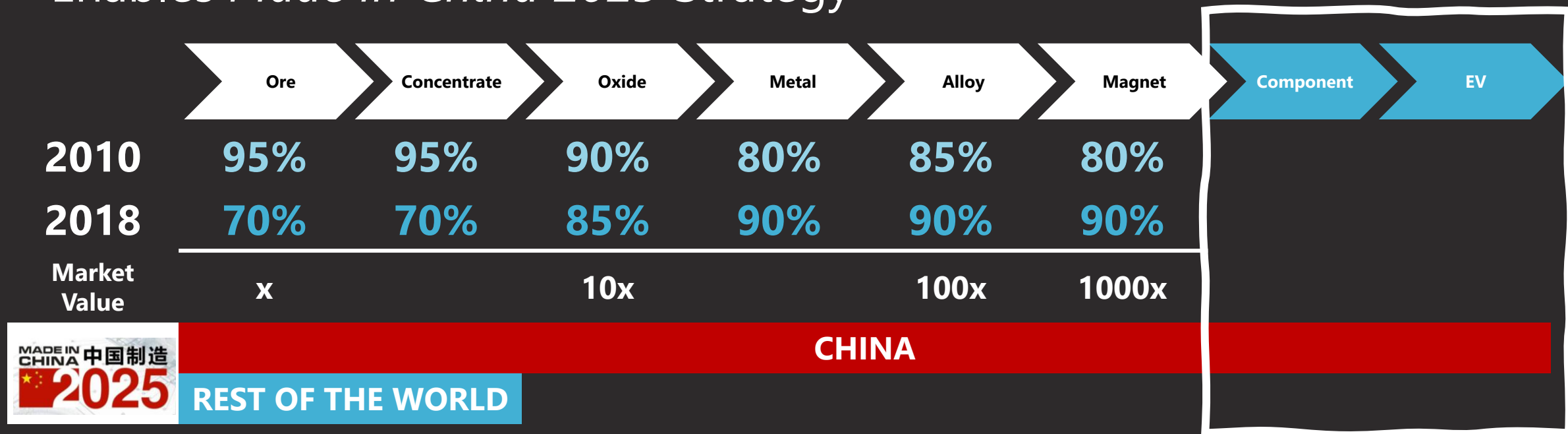


# Impact of COVID-19 on the global supply chain



# China's Evolving Integrated NdPr Supply Chain

– Enables *Made In China 2025* Strategy



1

More recently China has **increased its reliance** on concentrate and oxide from non-China sources

2

Access to capital and increased environmental constraints means ore, concentrate and oxide production from China **will be less reactive to world demand**

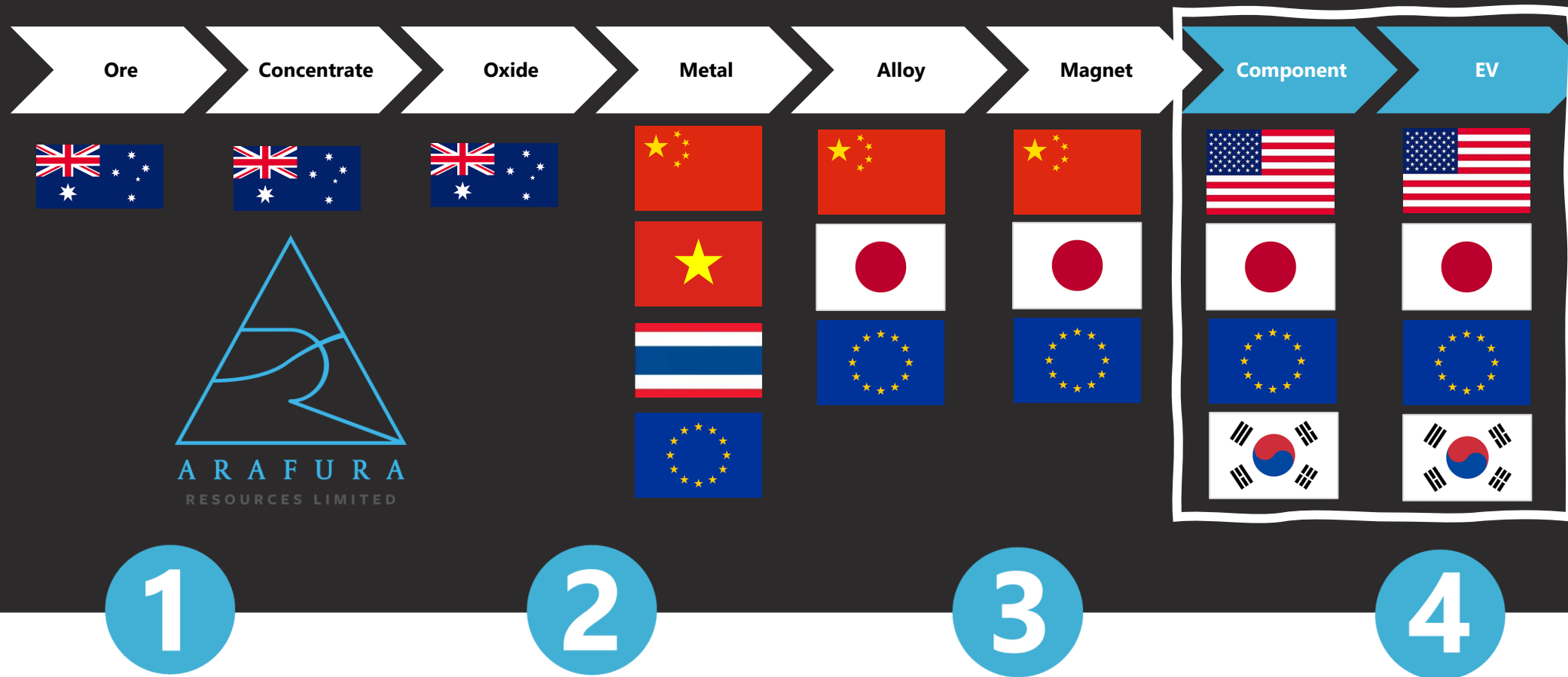
3

Capital deployed down the value chain focused on enabling China's ***Made In China 2025* strategy**

4

China is the only country with a fully integrated **Mine to Motor** supply chain

# Rest of the World Alternative Supply Chain



1

**European auto industry employs 13.8 million people** which equates to 6.1% of the EU workforce and 11.4% of all manufacturing jobs  
*("Electric cars sparks jobs fears in Germany's auto heartland" – Wall Street Journal, August 2019)*

2

**Diversification of NdPr supply source** may provide better traceability, supply certainty and more transparent pricing

3

**Government recognition of the strategic significance of NdPr** can enable multilateral Mine to Motor supply chain solutions

4

**Nolans offtake strategy** focused on parties **not aligned with the Made in China 2025 EV strategy**

# Diversify supply chains outside of China

to avoid similar disruption in the future.

- ✓ Covid-19 caused 80% of Global sectors to face supply chain disruptions<sup>1</sup>
  - ✓ Lack of flexibility in supplier base
- ✓ 75% to widen the scope of their existing re-shoring plans<sup>1</sup>
- ✓ Global supply chains planning to increase resilience
  - ✓ Dual sourcing of materials
  - ✓ Expanding supplier base
  - ✓ Regionalizing supply chains
  - ✓ Building stronger, reliable and transparent supply chains

<sup>1</sup> <https://www.cnn.com/2020/08/18/bofa-us-european-firms-face-1-trillion-to-relocate-china-supply-chains.htm>

<sup>2</sup> <https://www.bloomberg.com/news/articles/2020-04-08/japan-to-fund-firms-to-shift-production-out-of-china>



Companies relying solely on China supply are suddenly stuck finding out that they do not have alternative suppliers

1. Orders cancelled, procurement was complicated
2. Workforce shortages - labour intensive production stalled
3. Shipments stalled causing widespread production closure in **Key Global Markets**
4. Trust and visibility within China is broken



The diversification of manufacturing supply chains out of China has begun



Governments are re-structuring in response to the disruption



**Japan** earmarked \$2 billion to assist companies shift production home<sup>2</sup>



**EU** Commission initiatives to remove materials supply risks for future deployment of low carbon economy



The **US** "turbocharging" an initiative to remove global industrial supply chains from China.



# Rare Earth supply chain at risk and vulnerable to value chain disruption

- ✓ Global priority to rebuild and invest in ex-China **RE Supply Chains**
- ✓ End Users seeking alternatives and shifting from sole sourcing and non sustainable inputs
- ✓ Lack of visibility and transparency on supplier risks no longer acceptable for **e-mobility**



sky news .COM.AU



Australia must 'help the US meet its need for critical minerals'

**THE AUSTRALIAN** 

Australia to finalise joint strategy with US on rare earths mining

**FINANCIAL REVIEW**

Australia points to holes in US rare earth supply chain

Why taxpayers should fund Aussie rare earth miners

**Forbes**

China And The U.S. Fight Over Australian Rare Earths



**REUTERS**

U.S., Australia to unveil plan Friday to improve rare earth mineral supply

**2GB**  
**873AM**

US looks to Australia for rare earths

**The Sydney Morning Herald**

Morrison and Trump open new front in China trade war with rare earth 'action plan'

 **THE UNITED STATES STUDIES CENTRE**

RARE EARTHS: IS THERE A CASE FOR GOVERNMENT INTERVENTION?



(ASX:ARU)

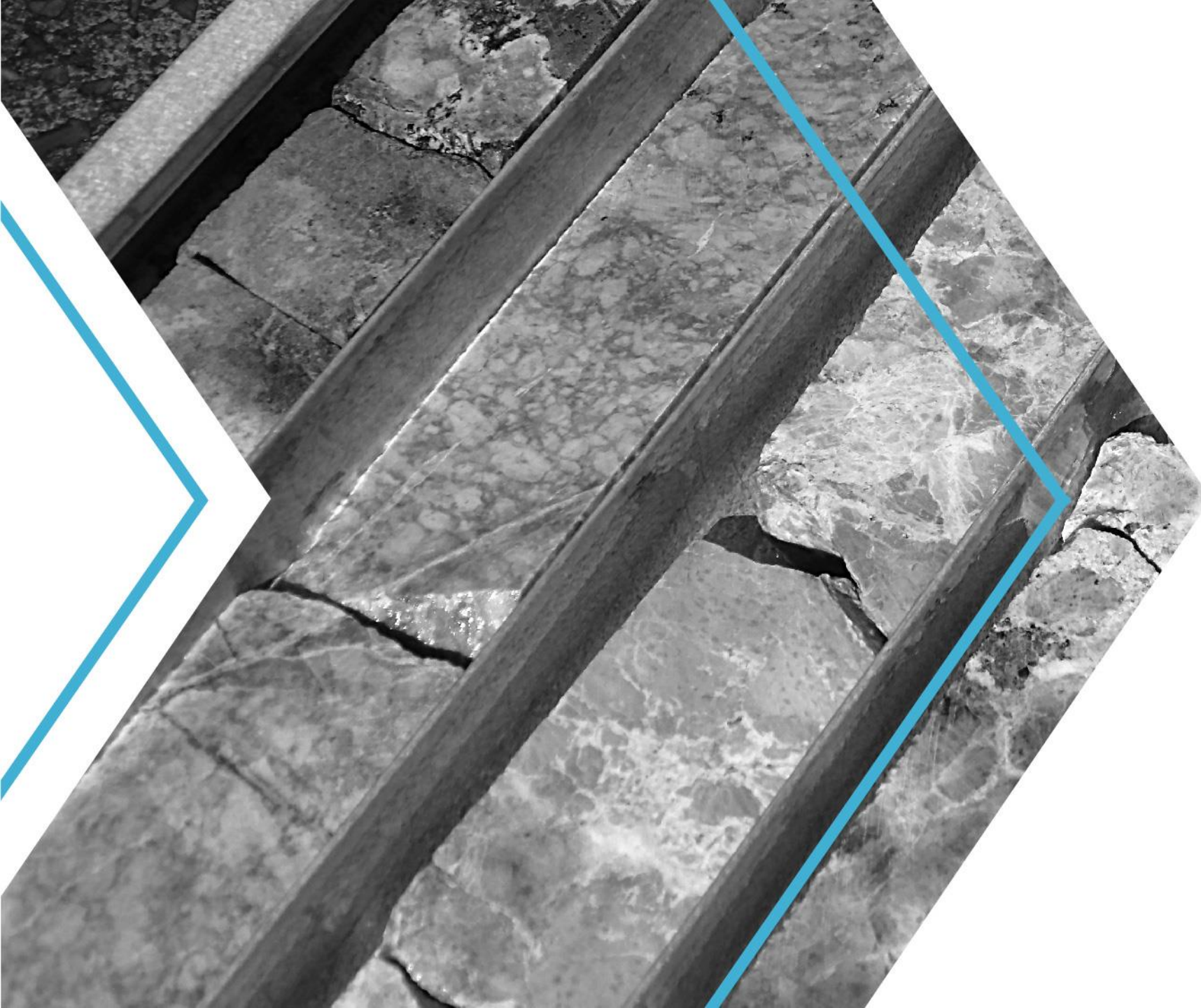


# Impact of Covid-19 to Supply Chains

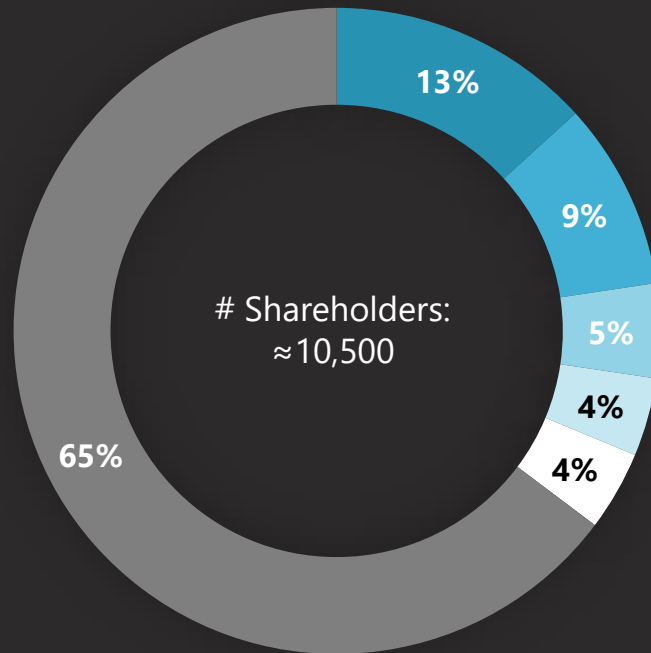


- ✓ **China exerts control** over most of the global rare earth supply chain
- ✓ **Australia and its strategic allies recognise the threat posed by China's strategy** to deny capital to new developments
- ✓ **Australia is active in its policy response:** Critical Minerals Strategy & Facilitation Office, expanded EFA mandate via Defence Export Facility, NAIF-EFA co-investment, Austrade support
- ✓ **Multilateral engagement intensifying** with Japan, EU member states and USA
- ✓ **Nolans aims to supply 5-10% of global demand for NdPr oxide**

# About Arafura Resources & Nolans Project



# Corporate Snapshot



■ JP Morgan Nominees Australia Pty Ltd  
 ■ ECE Nolans Investment Company  
 ■ Talaxis Ltd  
 ■ Citicorp Nominees Pty Ltd  
 ■ HSBC Custody Nominees (Australia) Ltd  
 ■ Other

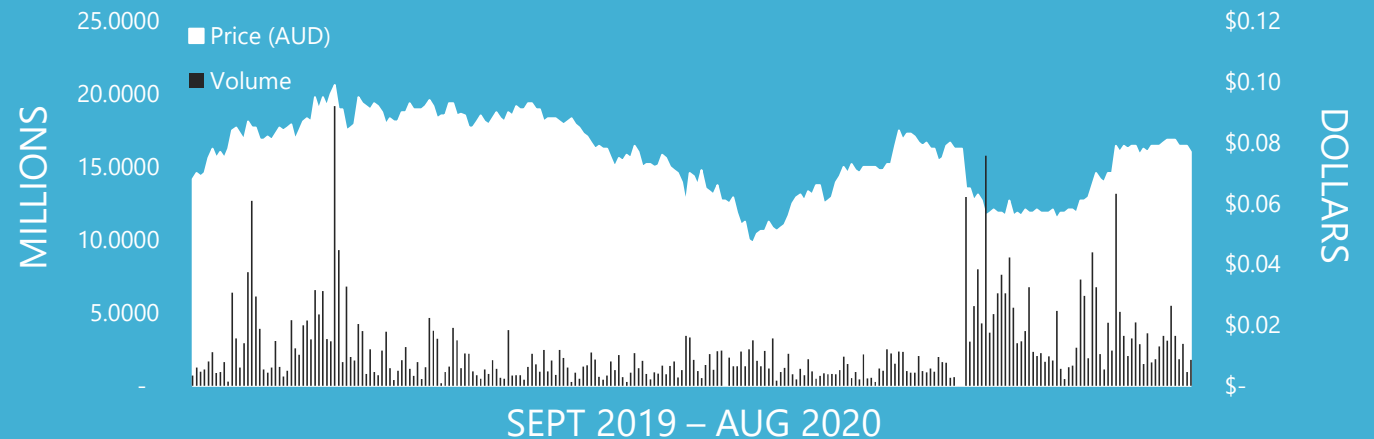
- ✓ Nolans world class NdPr project – DFS completed February 2019
- ✓ NdPr is the key input for high performance NdFeB permanent magnets
- ✓ NdPr is a critical input for the manufacture of energy efficient electric motors
- ✓ NdPr central to many clean energy applications including EVs and wind turbines

## Capital Structure

ASX Code	ARU
ASX Share Price (31 August)	\$0.077
Shares on Issue	1,168m
Market Capitalisation*	\$89.92m
12 Month Liquidity	\$46.00m
Cash*	\$22.80m
Debt	Nil
Enterprise Value*	\$67.12m

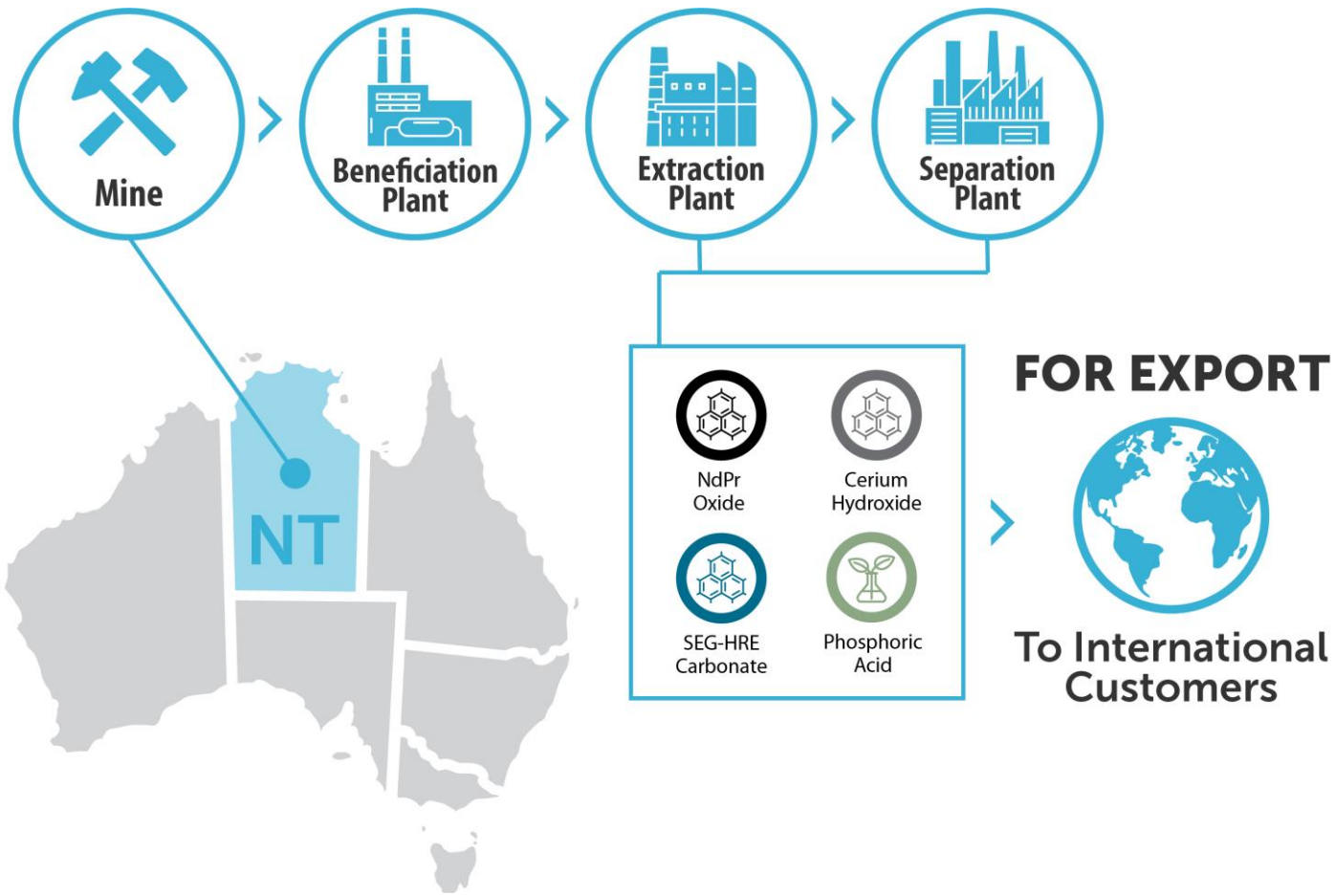
\* Data based on 30 June 2020 Quarterly Report

## 12 Month Share Price Performance



# Nolans NdPr Project

- ✓ Globally Strategic
- ✓ 100% Australian Domiciled



## KEY FACTS



**\$1 billion**  
cost to develop & build



**\$225 million**  
annual cost to operate



minimum **39-year**  
mine life



**135 kilometres**  
from Alice Springs



construction  
workforce of **620**

operational  
workforce of **280**



**5-10%** of the world's  
magnet rare earths supply



# What we have achieved in the last year



Pictured from left, Archie Glenn, Tony Scrutton and James Glenn signing the Native Title Agreement.

- 1 DFS completed 2019
- 2 Federal & NT environment approvals secured
- 3 Native Title Agreement executed
- 4 Mining Licence granted
- 5 Federal Major Project Status renewed
- 6 Updated Ore Reserves & Life of Mine
- 7 Completion of Indigenous Engagement Strategy
- 8 Clough Worley joint venture
- 9 Appointment of KBR as the IPMT for Nolans
- 10 Customer Verification of products
- 11 Key ongoing programs execution readiness,  
**Offtake and Project Funding**



# Project Financing



# Project Funding Strategy

- ✓ Arafura looking to secure US\$726m to meet CAPEX requirements for 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
- ✓ Critical mineral supply and NdPr supply diversification strategies are topical with industry, ECAs and governments
- ✓ Nolans a key critical minerals project identified for potential financing support through Australian Government's Export Finance Australia (EFA) and Northern Australia Infrastructure Facility (NAIF)

## Offtake & Equipment Procurement

- ✓ Offtake long term strategic supply
- ✓ Procurement for high value specialist capital equipment

## Export Credit Agencies

- ✓ Government-backed direct loans and guarantees
- ✓ Leveraged to strategic link with NdFeB magnet supply and capital equipment procurement
- ✓ NAIF mandate – encourage investment and Indigenous engagement in Northern Australia

## Commercial Banks

- ✓ Long-life project, high margin and low-cost producer
- ✓ Offtake and Export Credit Agency(s) (ECA) – reduce market exposure and credit risk
- ✓ Improved bankability for conventional lenders

## Equity

- ✓ ECA and bank involvement “halo-effect” – reduced funding risk and less equity dilution
- ✓ Market and technical validation
- ✓ JV / Project selldown opportunities

# Offtake Drivers – Aligned with Nolans Strengths

Drivers	Price	Customer Pull	Supply Security	Sustainability
NdFeB China Domestic				
NdFeB China Export				
NdFeB Japan				
Automotive Component				
Wind Turbine				
Automotive OEM				

1

Customer engagement targeted at NdPr users not aligned with *Made in China 2025* strategy

- Japan – NdFeB magnet manufacturers
- Europe & Korea – automotive component makers and OEMs, and wind turbine makers
- China – Tier 1 NdFeB magnet manufacturers with significant export markets

2

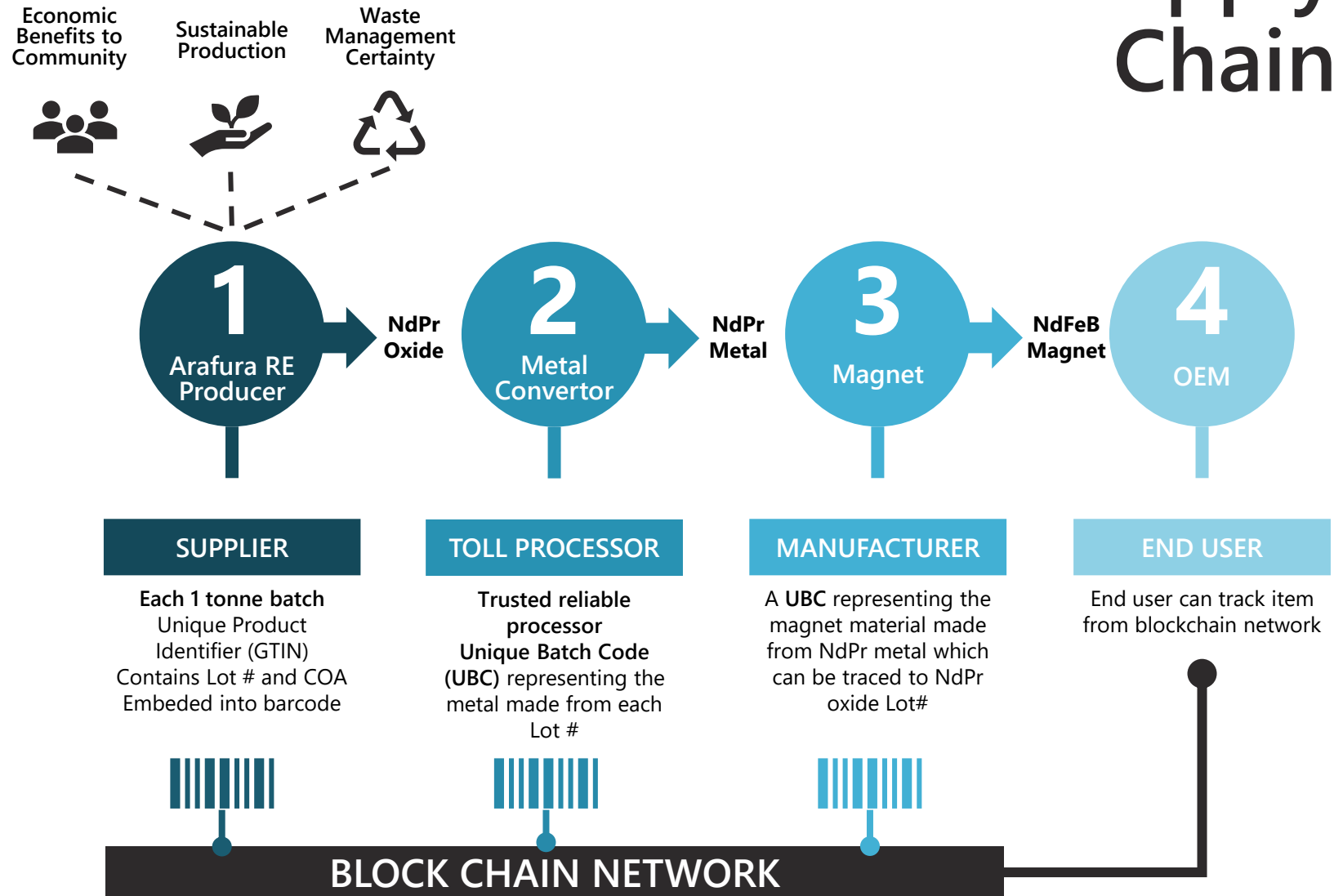
U.S. emerging as an offtake opportunity

3

Product offtake closely linked to project funding – ESG growing in importance

# Aligned with Customer Needs

- ✓ Aim to achieve a positive social, environmental and economic legacy which supports the objectives of the **United Nations Sustainable Development Goals (SDGs)**
- ✓ **Sustainability Analysis Review** with KBR Environmental Services to benchmark against international standards
- ✓ **MOU with Source Certain International** to deliver a verified supply chain enabling origin verification of NdPr oxide.



# Product Offtake

Customer / Target Region	Amount (tonnes p.a.)	Offtake Status	Proportion of Revenue
NdPr Oxide – targeting contract with NdFeB magnet companies &/or end users			
JingCi Material Science	900	MoU	96%
Baotou Tianhe Magnetics	900	MoU	
Japan	2,557	In progress	
South Korea			
Europe			
USA			
SEG-HRE Carbonate – targeting contract 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%

## Offtake Strategy

FOR EXPORT TO INTERNATIONAL CUSTOMERS



1

Customer Engagement targeted at NdPr users not aligned with Made in China 2025 strategy

- Japan – NdFeB magnet manufacturers
- Europe & Korea – automotive component makers, OEMs and wind turbine makers
- China – Tier 1 NdFeB magnet manufacturers with significant export markets

2

US emerging as an offtake opportunity

3

India – vertically integrated fertilizer producers



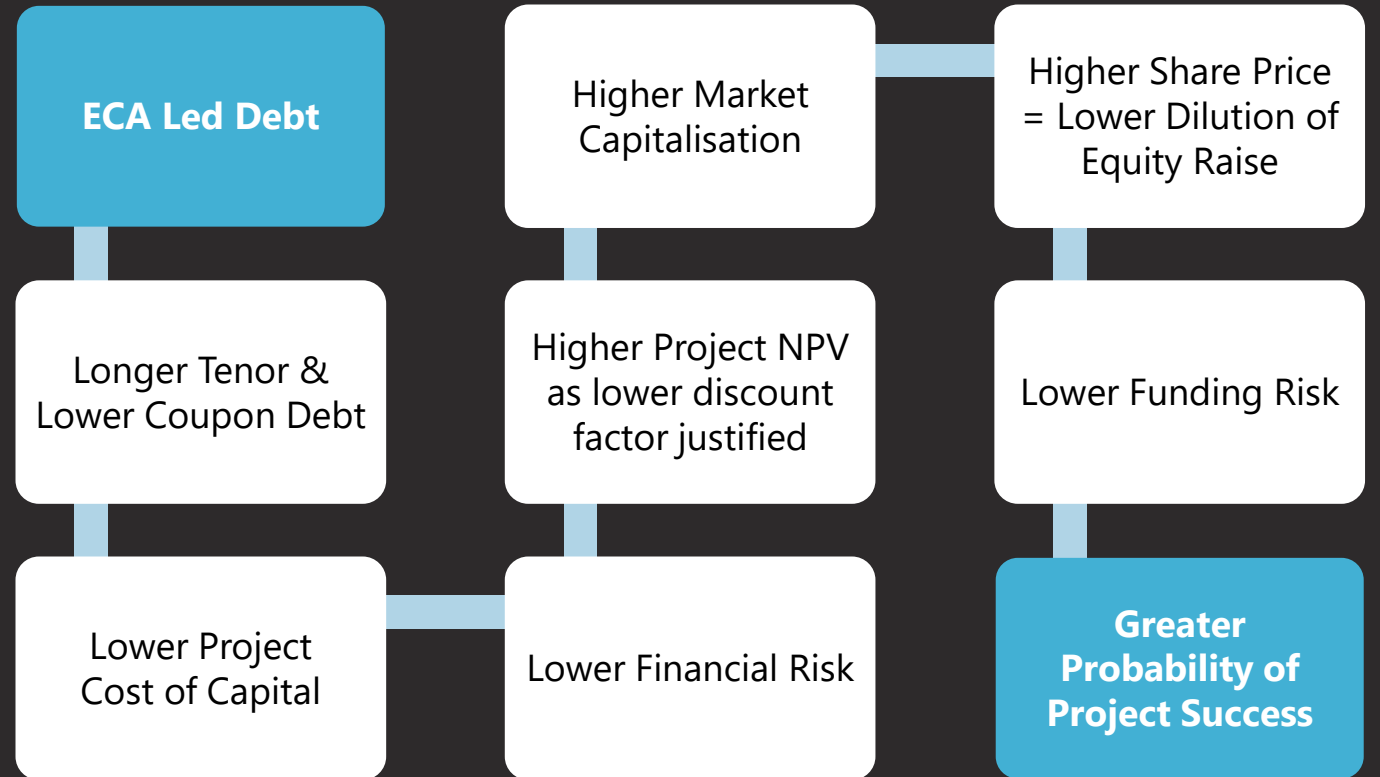
# Nolans Project Funding Strategy



Nolans is an **Australia** based **NdPr** project and, being a strategic geopolitical asset, the funding strategy is leveraged against this significant attribute. The project is wholly aligned with key Export Credit Agency (ECA) mandates of EV manufacturing and renewable energy. ECA funding must be used to lower the cost of capital, reduce financing risk and attract equity on acceptable terms.

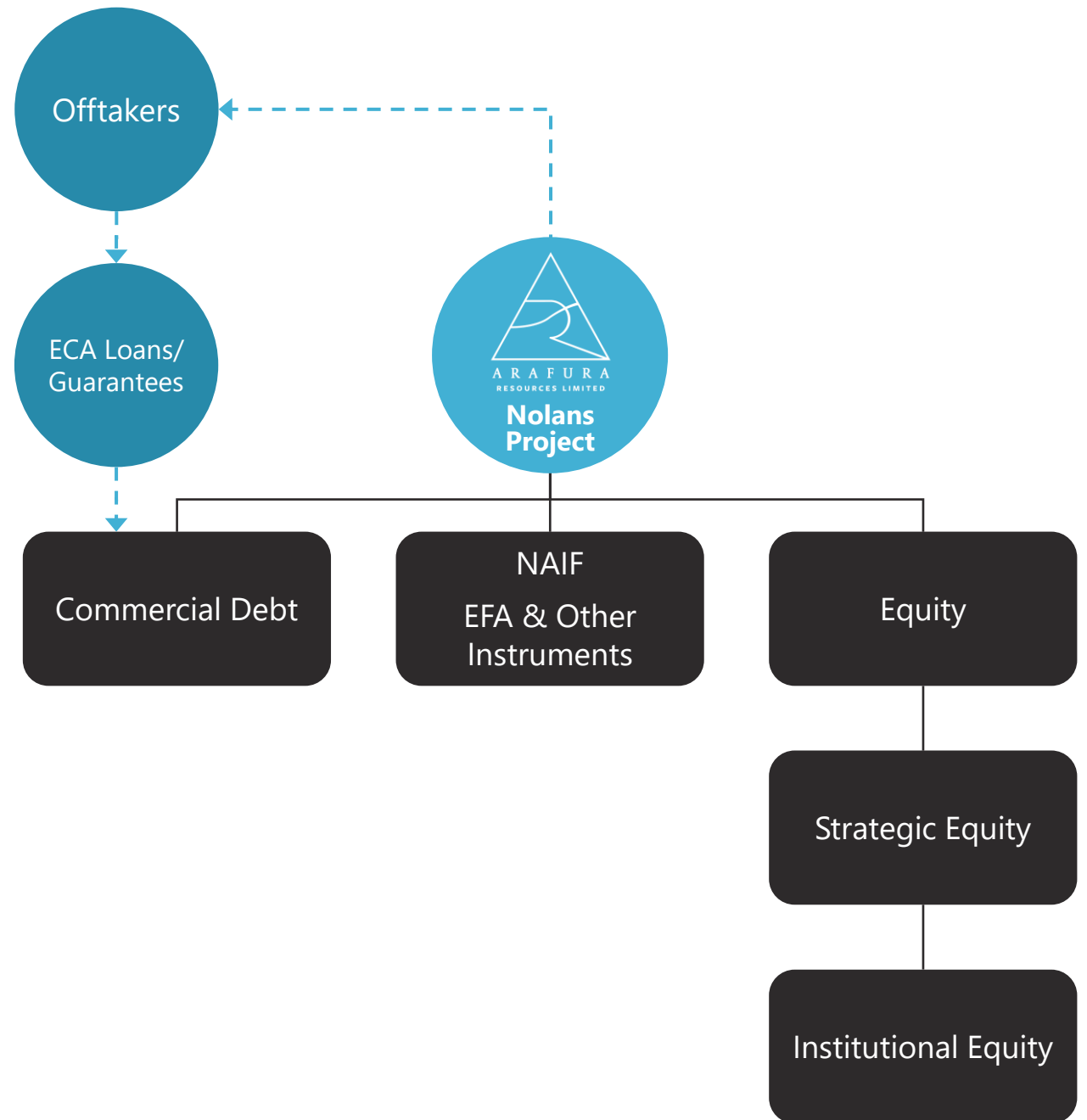
# Debt Led Funding Strategy

- ✓ Funding strategy is debt led, leveraging Nolans “shovel ready” status
- ✓ Offtake and financing activities interlinked
- ✓ Potential for Export Finance Australia (EFA) and/or Northern Australia Infrastructure Facility (NAIF) to provide additional momentum with ECA engagement in Europe, Japan and Korea
- ✓ Leverage the “halo effect” of the ECA-backed debt structure and potential terms to attract equity at a better valuation



# Targeted Funding Structure

- ✓ ECA debt will be critical but not the entire funding solution
- ✓ Portfolio of funding sources
- ✓ Offtake, debt and strategic equity all interlinked and driving schedule





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