



Arafura Resources Limited

Up and coming supplier of NdPr to permanent magnets used in the growing clean energy industry

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The information in this presentation that relates to Exploration Results or Mineral Resources is based on information compiled by Mr Kelvin Hussey BSc (Hons). Mr Hussey is a Member of the Australian Institute of Geoscientists and he has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code)". Mr Hussey consents to the inclusion in this presentation of the matters based on his information in the form and context in which it appears. Mr Hussey is a full-time employee of Arafura Resources.

Company Snapshot

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- ASX listed company developing the **Nolans Rare Earths Project** in the Northern Territory, a **long-life** mining and chemical processing operation
- Arafura has the expectation of producing **5-10% of global demand of NdPr oxide** for permanent magnets
- Nolans has been afforded **major project status** by the Northern Territory and Australian governments
- Nolans has **environmental approval** and is in **advanced feasibility**



ASX Code	ARU
Share Price (24-Aug-18)	A\$0.081
Issued Shares (24-Aug-18)*	605.1m
Market Cap (24-Aug-18)	A\$49.0m
Cash (30-Jun-18)	A\$7.9m
Debt (30-Jun-18)	Nil
Enterprise Value (24-Aug-18)	A\$41.1m

Shareholder Spread (as at 22-Aug-18)*

JP Morgan Nominees	19.99%
ECE Nolans Investment Co	18.13%
Citicorp Nominees	3.18%
HSBC Custody Nominees	3.16%

* 1 for 4 Rights issue currently being undertaken

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NdPr Market Update

Overview

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Secure Supplier of NdPr to Permanent Magnets Used in Clean Energy

- **NdPr Oxide is a key component** in the manufacture of high-strength NdFeB permanent magnets used in electric vehicles (EVs), wind turbines, portable electronic devices, and many industrial applications
- EVs use an additional **1 kg of NdPr per electric drive motor** over a standard vehicle's use of 0.7 kg
- NdPr accounts for 26.4% of Nolans rare earths composition by volume and **85% by value**
- China has been the dominant NdPr producer but recently analysts are forecasting **China to become a net importer**
- Structural changes are being implemented in China to **weed out illegal operators, close unsustainable operations**, and push bigger players to consolidate

NdFeB Magnet Vital To Automotive Market

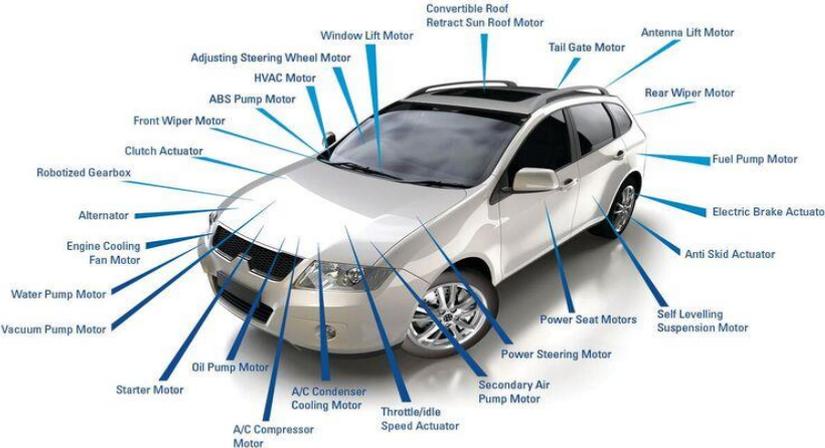
25,000 tonnes NdFeB magnets used in 2016 automotive market growing at 9% CAGR (total market 135,000 tonnes)

EVs and hybrids represent additional growth through Permanent Magnet Synchronous Motors (PMSM)

PMSM is dominant drive train technology for EVs

Recent announcements include:

- Most auto makers have EV targets of 10-60% by 2025
- Tesla moving to PMSM for mass produced Model 3
- Toyota to sell more than 10 EV models in 2020s and have EV versions of every Toyota and Lexus model by 2025 (Dec 2017)
- Ford increasing planned investment in EVs from US\$4.5 billion to US\$11 billion by 2022 and to introduce 16 EVs and 23 hybrid and plug-in hybrid models (Jan 2018)
- EV demand forecasts range from 'big' to 'very big' (HSBC Mar 2018)
- OPEC raises forecast global EV sales in 2040 from 50 million to 250 million; Bloomberg forecasts 500 million (Mar 2018)



EV Drivetrain: Additional 1 kg of NdPr



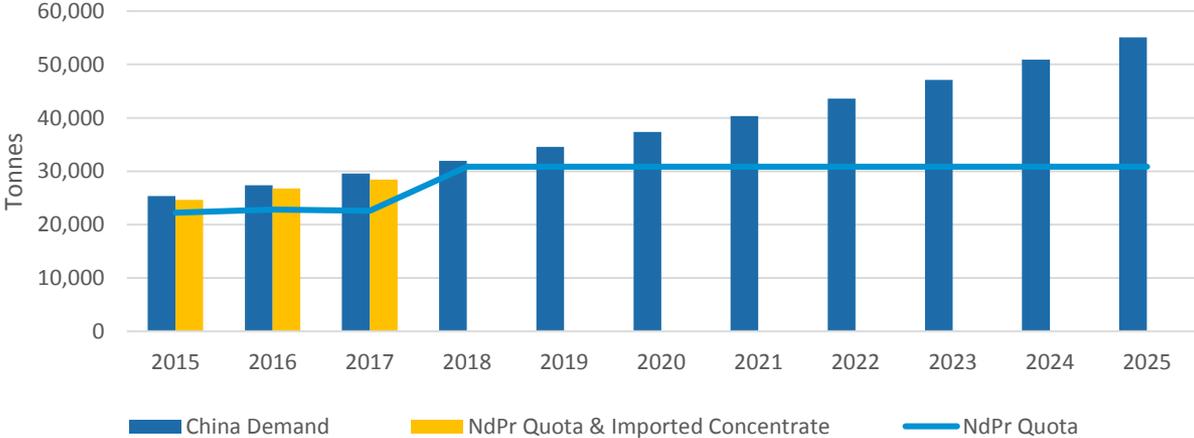


Emerging Demand Dynamic – China 2025 Strategy

Arafura is of the opinion that:

- **China’s domestic NdPr consumption will increase by over 30% in the next 5 years** as it pursues clean energy objectives and global leadership in EV manufacturing
- Supply reforms, industry consolidation and higher environmental standards will constrain China’s ability to rapidly increase NdPr production. Further policy change is expected but in recent years Chinese production has been supplemented with imported concentrate and oxide to meet China demand. ROW supply is being sourced from Malaysia and notionally illegal China sources.
- **Increased NdPr consumption combined with constrained supply could result in China moving from being the world’s major source of NdPr to a net importer by the early 2020’s**

NdPr Oxide China

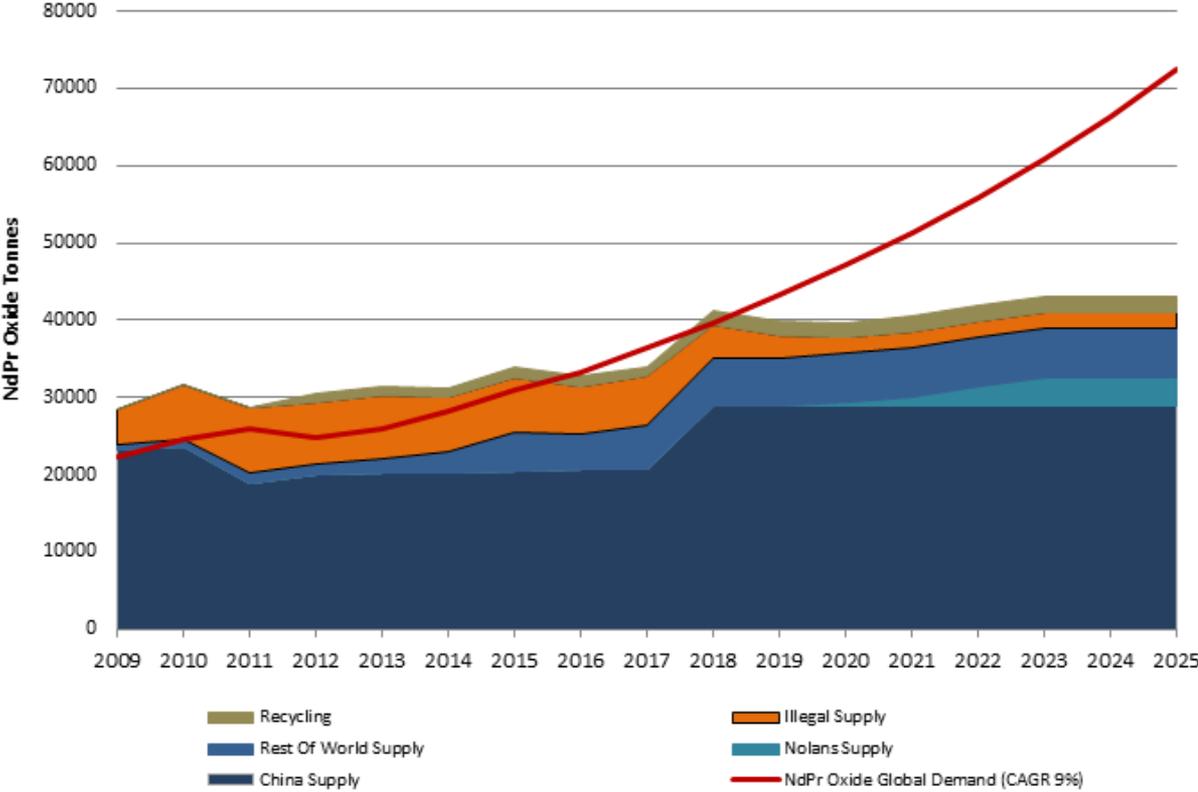


Source: ACREI, Adamas Intelligence, Asian Metal and Shanghai Metals Market



Looming Supply Deficit

NdPr Oxide Supply & Demand



- Assuming no additional production:
 - **4,000 tonnes p.a. required** to meet growing demand
 - EV sales 1.2 million in 2017 growing to 1.6 million in 2018; estimated global sales of 25 million by 2025⁽¹⁾
- Overall NdFeB magnet growth at **9% CAGR**
- Unsustainable by China to maintain additional supply year-on-year
- **Non-Chinese supply will be required** to meet demand

(1) <https://www.forbes.com/sites/sarwantsingh/2018/04/03/global-electric-vehicle-market-looks-to-fire-on-all-motors-in-2018/#4b12259a2927>

Non-China Supply Peer Comparison

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- Non-China NdPr supply will be constrained by the **sector's historical inability to attract capital**
- **Nolans is one of the world's largest and more advanced undeveloped NdPr projects which provides investors with a compelling investment opportunity in a low-risk jurisdiction**
- Nolans has the potential to provide meaningful NdPr production in the **lowest cost quartile due to its NdPr enrichment**, and advanced project development status

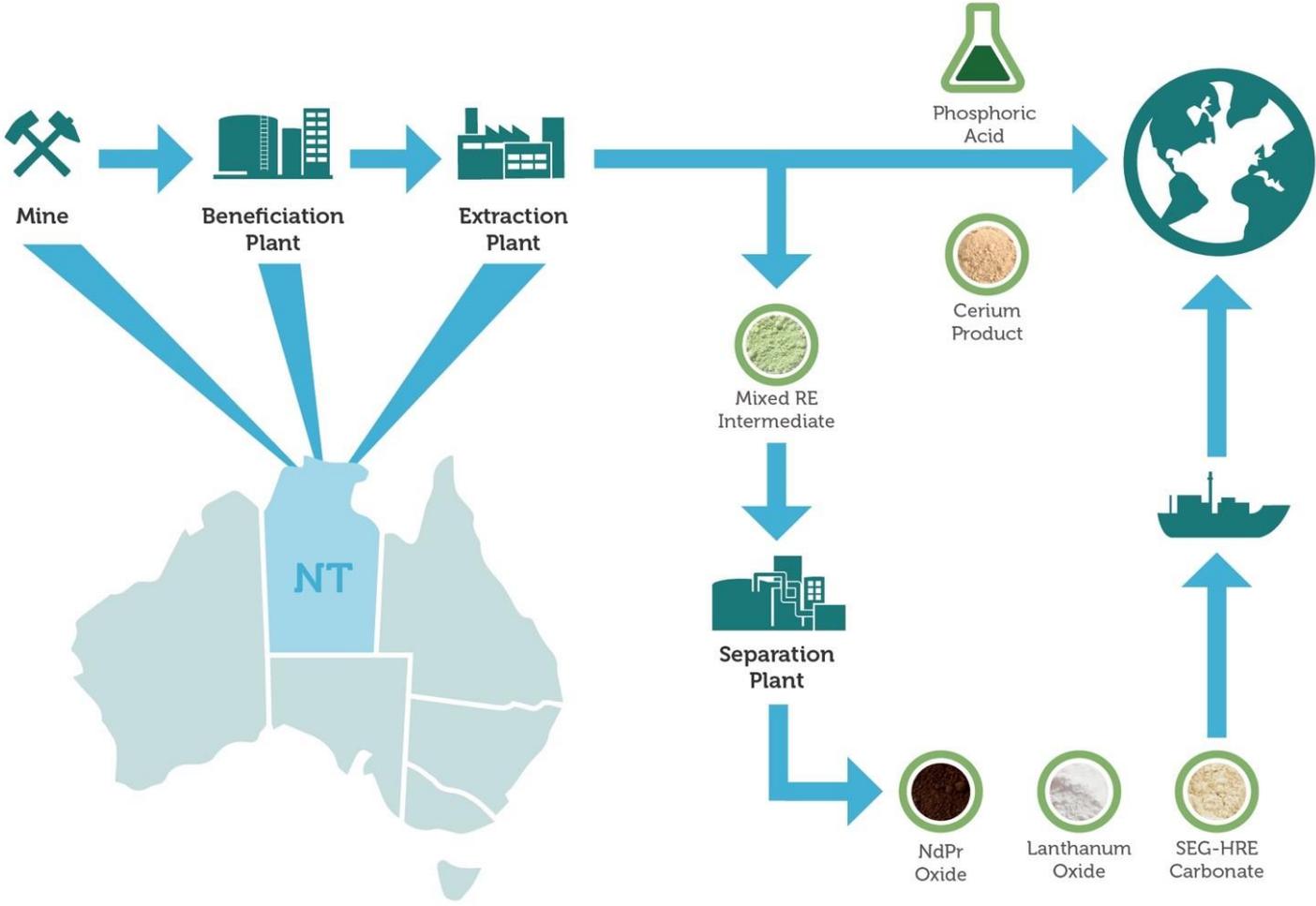
Asset	Nolans	Mount Weld/LAMP	Yangibana	Ngualla	Kvanefjeld
Owner	Arafura Resources	Lynas Corporation	Hastings Technology Metals	Peak Resources	Greenland Minerals and Energy
Country	Australia	Australia / Malaysia	Australia	Tanzania	Greenland
Status	Development	Production	Development	Development	Development
Contained NdPr (kt)	255	242	33	210	907
NdPr "enrichment" (%)	26.4%	23.3%	34.1%	21.2%	17.7%
Annual NdPr Production (kt)	3.6	5.3	3.4	2.8	5.3
OPEX (US\$/kg NdPr)	\$34.70	\$37.80	\$37.60	\$32.20	\$63.20
OPEX (US\$/kg NdPr) - after by-product credits	\$24.40	\$37.80	\$37.60	\$32.20	\$50.80

Source: Resource Capital Research Pty Ltd (AFSL 325340). See Appendix D for notes and assumptions used in the preparation of the Peer Comparison.

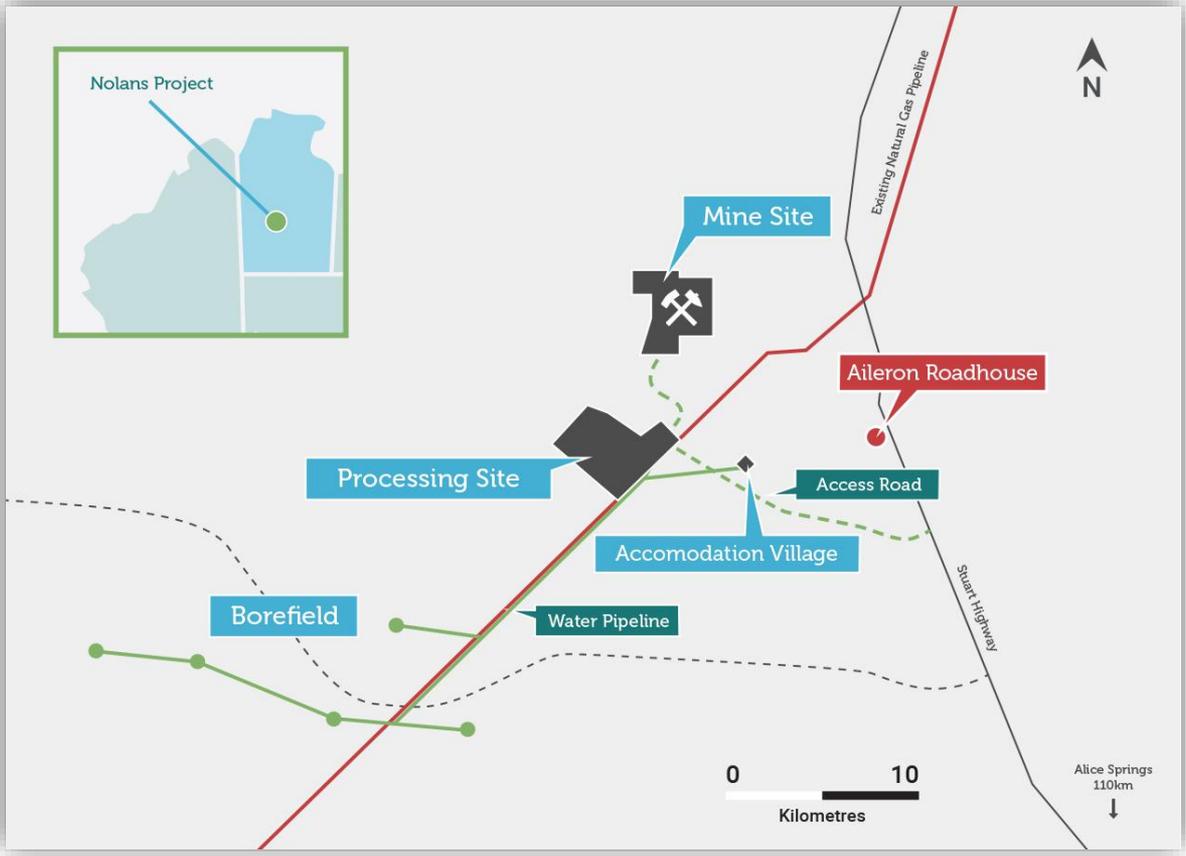
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Nolans Project

Project Configuration



Close To Key Infrastructure



- 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**
- Tailings and process wastes **remain at site**



Flowsheet Piloting

Beneficiation Pilot Plant



Bulk Pre-Leach Pilot Plant



- Program **reduces execution risk** by addressing all key engineering and operational considerations prior to commissioning of the commercial facility
- Draws on independent expert advice from **specialist consultants and equipment vendors**

Phase 1
Beneficiation

- ✓ 5,000 kg high-phosphate concentrate
- ✓ >82% NdPr recovery
- ✓ >90% P₂O₅ recovery
- ✓ Met performance objectives

Phase 2
Phosphate Extraction

- ✓ Merchant grade phosphoric acid suitable for fertilizers
- ✓ 3% TREO losses to gypsum waste
- ✓ Met performance objectives

Phase 3
Bulk Pre-Leach

- ✓ 2,000 kg pre-leach residue
- ✓ Met performance objectives

Phase 4
Acid Bake

- ✓ Successful use of paddle dryer technology
- ✓ Met performance objectives

Phases 5 & 6
Rare Earth Processing

- Pilot setup and operation scheduled

Phase 7
Rare Earth Separation

- Planning well advanced



Phosphate Extraction Pilot Plant



Acid Bake Pilot Plant

Definitive Feasibility Study

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- ✓ **Director appointment:** Mark Southey, previously WorleyParsons Group Managing Director for Minerals, Metals and Chemicals
- ✓ **Nolans Project Manager appointment:** Stewart Watkins, chemical engineer (AusIMM) 25 years experience
- ✓ **DFS Lead Engineering Study Manager appointment:** **HATCH**
- ✓ **Process design commenced:** engineering study expected completion in 2018

- Process design criteria, PFDs and mechanical equipment list issued for use for the DFS
- Underway
 - Layouts of process plant
 - Energy demand finalised and commenced discussions with Power and Water Corporation
 - Tailings impoundment designs and planning for site geotechnical program
- Awarded
 - Mine planning: Mining Plus
 - Transport and logistics study: Qube Bulk
 - Water supply study and design: GHD and Ride Consulting
 - Tailings impoundment design: Knight Pièsold

Project Metrics

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- **Ultra competitive operating costs**
US\$6.23/kg TREO or US\$24.38/kg NdPr oxide – lowest amongst peers
- Phosphoric acid recovered to **reduce commodity risk**
- **High rare earths recovery**
- NdPr oxide price **US\$47.00/kg**

Refer Arafura ASX release 7 June 2017 for additional and qualifying information on the Mineral Resources that underpin the production target and provides the material assumptions on which the production target is based

The Company confirms that all material assumptions underpinning the forecast financial information derived from its 14,000 tpa TREO production target and the production target itself, continue to apply and have not materially changed since the 7 June 2017 ASX release

Based on 14,000 tpa TREO production processing Measured and Indicated Mineral Resources as per Appendix A

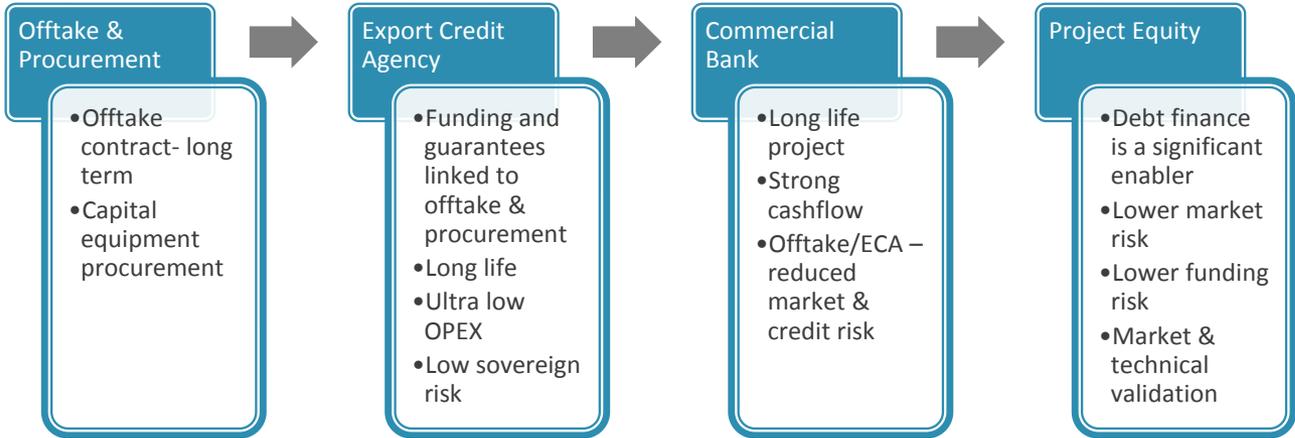
NdPr oxide price as at 24 August 2018

Mining & Processing	
Mine life (years)	30+
Production	
TREO equivalent (tpa)	14,000
NdPr oxide (tpa)	3,600
La oxide (tpa)	2,660
SEG-HRE carbonate (tpa TREO equivalent)	660
Phosphoric Acid (tpa MGA)	110,000
Financial	
Capital cost (US\$m)	\$680
Operating cost (US\$m pa)	\$125
Operating cost (US\$/ kg TREO)	\$8.89
Operating cost (US\$/ kg TREO; less credit phos acid)	\$6.23
Operating cost (US\$/ kg NdPr; less credit phos acid)	\$24.38



Project Funding Strategy

- **Advancement of environmental approval critical enabler** for engagement with offtakers, financiers and Export Credit Agencies (ECA)
- ECAs are key to providing government-backed funding and guarantees, leveraged against the strategic link to NdFeB magnet production
- ECA funding linked to offtake arrangements, capital equipment supply, and construction
- ECA-linked project finance is a catalyst to attract equity at corporate and/or project level
- Project sell down may also be a source of project equity





Timeline & Targets

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2018 targets include:

- Advancing **NdPr offtake arrangements**
- Reporting **DFS results**
- Engaging with **strategic partners for capital equipment procurement and project funding**

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Summary



Why Arafura?

Attribute	Arafura
High-growth and high-value NdFeB permanent magnet focus	✓
NdPr production planned to coincide with projected supply gap	✓
Low production cost to remain competitive in a cyclical downturn	✓
Located in a jurisdiction with low geopolitical risk and with strategic support	✓
Long-life, low-risk resource with planned output that supports >30 years of production	✓
Close to vital transport, energy and water infrastructure	✓
Environmental approval secured	✓
Dedicated team that has developed an efficient, high-recovery flowsheet now in final piloting phase	✓

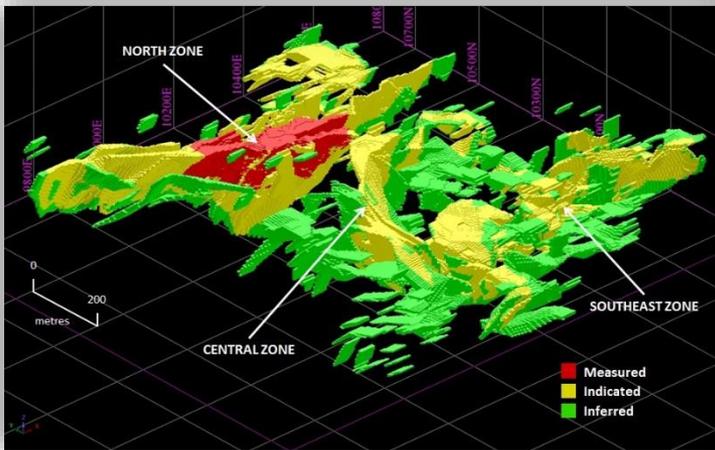
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Appendices

Appendix A: Mineral Resources

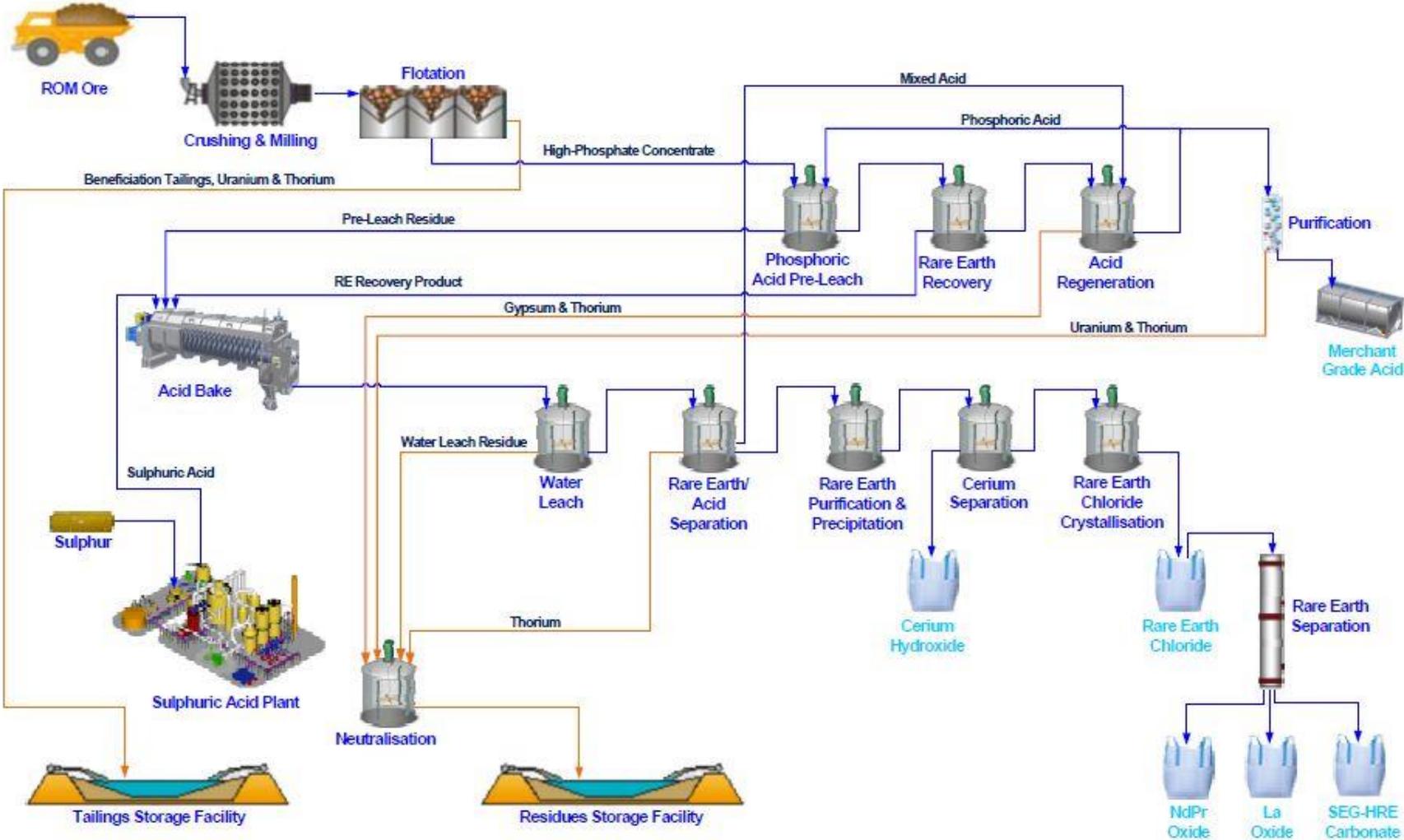
RESOURCES	TONNES (m)	RARE EARTHS TREO %	PHOSPHATE P ₂ O ₅ %	NdPr Enrichment %
Measured	4.9	3.2	13	26.1
Indicated	30	2.7	12	26.4
Inferred	21	2.3	10	26.5
TOTAL	56	2.6	11	26.4

1% TREO cut-off grade. Numbers may not compute exactly due to rounding. "NdPr enrichment" is the proportion of TREO comprising Nd₂O₃ and Pr₆O₁₁.



- **Low resource risk** via extensive drilling and detailed material type studies
- Mineralization **at surface** and **open at depth**, below 215m
- 90,000 metres of drilling
- Amenable to **low-cost open cut** mining and standard beneficiation techniques
- Apatite is the most abundant REE-bearing mineral

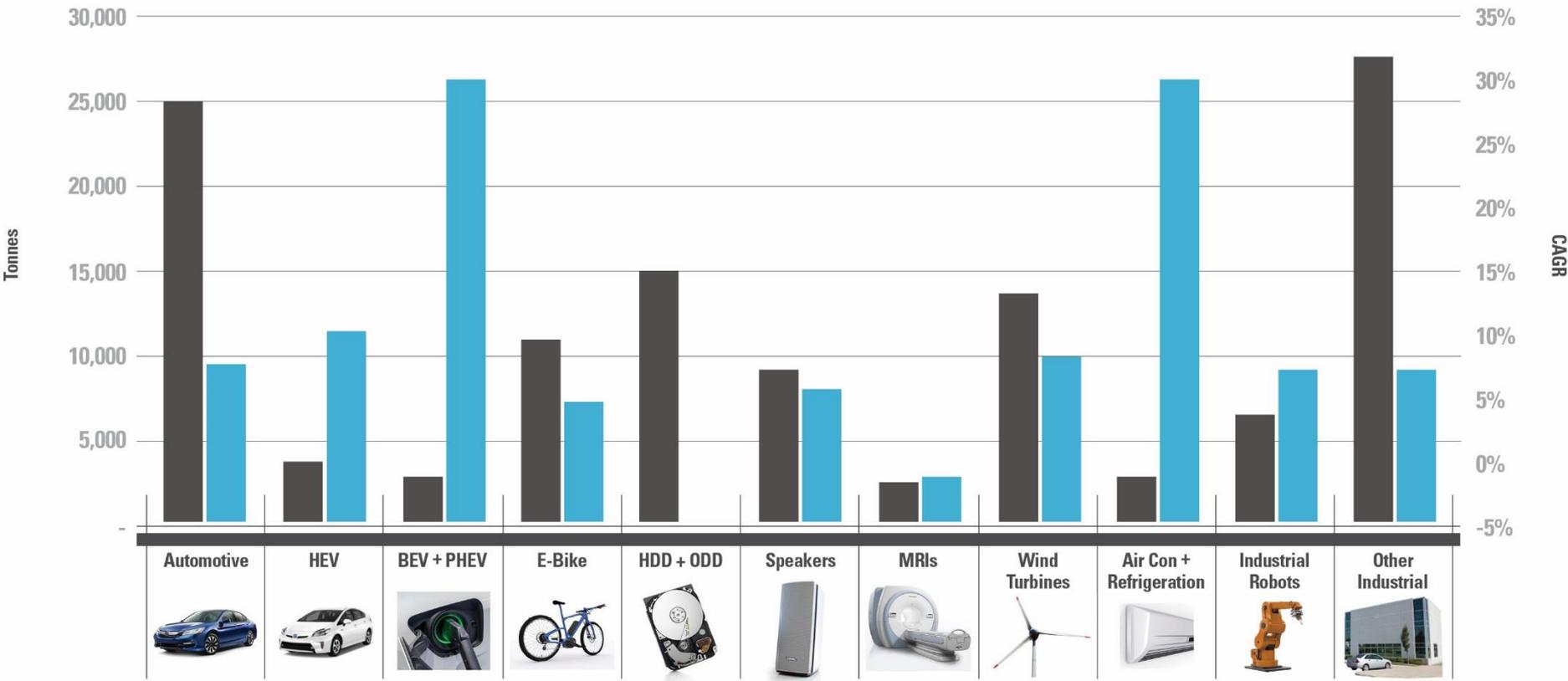
Appendix B: Process Flowsheet



Appendix C: Established Markets & Growing Applications

NdFeB Magnet Volume & Forecast Growth

■ NdFeB Magnet Tonnes 2016
■ Forecast CAGR% 2025



Source: Adamas Intelligence, Arnold Magnetic Technologies, Japanese industry participants, Roskill

Appendix D: Peer Comparison

Notes and assumptions used in the preparation of the Peer Comparison

- Exchange rate of AUD1 = USD 0.79.
- Forecast operating data for development projects based on published company reports and project updates. ARU operating expense includes provision for staff and administration costs.
- NdPr “enrichment” (%) is based on published company reports and project updates for rare earth element distribution for mineral resources or reserves where applicable.
- Contained NdPr (kt) is based on Ore Reserves or Measured and Indicated mineral resources where no reserves quoted.
- Contained NdPr (kt) and Annual NdPr Production (kt) is presented on a project basis. NdPr production has not been adjusted to reflect the relevant underlying project interest for PEK (75%) and HAS (91%).
- LYC Annual NdPr Production (kt) is based on total reported “ready for sale production volumes” for the four quarters up to and including the March 2018 quarter. Operating costs are based on total operating and staff costs (excluding administration) reported for the same period. Operating costs have been converted at an average exchange rate of AUD1= USD 0.755 for that year.

ASX-Listed Peer Group Companies

Code	Company Name	Project	Location	Project Interest
ARU	Arafura Resources Ltd	Nolans	NT	100%
LYC	Lynas Corporation Ltd	Mt Weld/LAMP	WA & Malaysia	100%
HAS	Hastings Technology Metals Ltd	Yangibana	WA	91%
PEK	Peak Resources Ltd	Ngualla	Tanzania	75%
GGG	Greenland Minerals and Energy Ltd	Kvanefjeld	Greenland	100%

Source: Resource Capital Research Pty Ltd (AFSL 325340)

Appendix F: Board

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IAN KOWALICK
NON-EXECUTIVE CHAIRMAN

Ian Kowalick has qualifications in science, engineering, economics, and finance. From 1995 to 2000, he held the most senior management position in the South Australian public sector, and is currently the Chairman of the South Australian Forestry Corporation Board. Ian is a board member of the Northern Territory Power and Water Corporation.



TERRY GROSE
NON-EXECUTIVE DIRECTOR

Terry Grose has a strong commercial background gained over 30 years as a senior business executive, consultant, and director, in Australia and internationally. Terry worked in Hong Kong for over a decade in a senior financial role before establishing his own business, Grose International, a commercial and financial consultancy with clients throughout Asia.



GAVIN LOCKYER
MANAGING DIRECTOR

Gavin Lockyer's diverse, global experience has provided management and leadership opportunities in a range of disciplines including; Accounting, Financial & Investment Banking, Major Resource Development & Operations, and Global Bank Treasuries. Over the past 20 years his career has exposed him to business practices in North America, Europe, and Australasia.



QUANSHENG ZHANG
NON-EXECUTIVE DIRECTOR

Quansheng Zhang holds a Doctoral degree in Engineering and a Masters degree in Geophysical Prospecting. He is based in Nanjing in the Peoples Republic of China and is the General Manager of Hong Kong East China Non-Ferrous Mineral Resources Co Ltd (HKECE). Quansheng has over 30 years of mineral prospecting and exploration experience, and expertise in mineral resource surveys and geophysics.



CHRIS TONKIN
NON-EXECUTIVE DIRECTOR

Chris Tonkin has over 35 years' experience as a senior business executive with a broad industry background in business generation, management, and strategy development. He is a member of Arafura Resources' Remuneration and Nomination and Audit and Risk Committees and is also Chairman of Lakes Oil NL.



MARK SOUTHEY
NON-EXECUTIVE DIRECTOR

Mark Southey has previously held senior executive positions with Honeywell and ABB both in Australia and internationally, and more recently was part of the global executive leadership team within WorleyParsons, where he held the position of Group Managing Director for the Minerals, Metals and Chemicals Sector.

Appendix G: Management

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RICHARD BRESCIANINI
GENERAL MANAGER EXPLORATION &
DEVELOPMENT

Richard has over 30 years' experience in the minerals industry. He worked with BHP Minerals on base and precious metals exploration programs throughout Australasia and North America, contributing to significant economic discoveries at Eloise (copper-gold) and Cannington (silver-lead-zinc). Thereafter he led the Northern Territory Government's Geological Survey as its Director from 2003 to 2007 before joining Arafura.



LLOYD KAISER
GENERAL MANAGER SALES,
MARKETING & TECHNOLOGY
DEVELOPMENT

Lloyd has more than 10 years' experience in the sales and marketing of industrial minerals into high value sector markets including the nuclear, automotive, and advanced ceramics sectors. Prior to joining Arafura, he held several senior positions in account management, business development and marketing across a diverse range of commodities and chemicals including alumina, coal, industrial minerals, refractories, and ceramics.



PETER SHERRINGTON
CHIEF FINANCIAL OFFICER & COMPANY
SECRETARY

He commenced employment with Arafura in 2008 as Commercial Manager and was appointed Chief Financial Officer in July 2013. He has more than 20 years' experience in professional and corporate roles in Perth. Prior to working with Arafura, he held senior finance and commercial positions with several ASX and public unlisted entities. He has also worked in public practice for 10 years in the areas of business services and corporate advisory.



BRIAN FOWLER
GENERAL MANAGER NT & SUSTAINABILITY

Brian has worked for over 40 years in private sector mineral companies developing a range of commodities, including rare earths, base metals, and gold. Brian is a member of the Northern Territory Mining Board, Management Board of the Northern Territory Minerals Council of Australia, and a member of Work Health & Safety Advisory Council of the Northern Territory.



STEWART WATKINS
PROJECT MANAGER – NOLANS PROJECT

Stewart Watkins has 25 years' experience in many facets of the mining industry including operations, engineering consulting, project development and management. Stewart is a Fellow of the AusIMM.