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.
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**
NdPr Market Update
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)
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**

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

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

Non-China Supply Peer Comparison

- 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

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

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

- 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**

<table>
<thead>
<tr>
<th>Phase 1 Beneficiation</th>
<th>Phase 2 Phosphate Extraction</th>
<th>Phase 3 Bulk Pre-Leach</th>
<th>Phase 4 Acid Bake</th>
<th>Phases 5 &amp; 6 Rare Earth Processing</th>
<th>Phase 7 Rare Earth Separation</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ 5,000 kg high-phosphate concentrate</td>
<td>✓ Merchant grade phosphoric acid suitable for fertilizers</td>
<td>✓ 2,000 kg pre-leach residue</td>
<td>✓ Successful use of paddle dryer residue</td>
<td>• Pilot setup and operation scheduled</td>
<td>• Planning well advanced</td>
</tr>
<tr>
<td>✓ &gt;82% NdPr recovery</td>
<td>✓ 3% TREO losses to gypsum waste</td>
<td>✓ Met performance objectives</td>
<td>✓ Met performance objectives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>✓ &gt;90% P₂O₅ recovery</td>
<td>✓ Met performance objectives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>✓ Met performance objectives</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Phases 5 & 6 Rare Earth Processing:

- Pilot setup and operation scheduled

Phases 7 Rare Earth Separation:

- Planning well advanced

Not for release or distribution in the United States of America
Definitive Feasibility Study

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**

- **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**

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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.

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### 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

2018 targets include:

- Advancing NdPr offtake arrangements
- Reporting DFS results
- Engaging with strategic partners for capital equipment procurement and project funding
Summary
## Why Arafura?

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Arafura</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-growth and high-value NdFeB permanent magnet focus</td>
<td>✓</td>
</tr>
<tr>
<td>NdPr production planned to <strong>coincide with projected supply gap</strong></td>
<td>✓</td>
</tr>
<tr>
<td><strong>Low production cost</strong> to remain competitive in a cyclical downturn</td>
<td>✓</td>
</tr>
<tr>
<td>Located in a jurisdiction with <strong>low geopolitical risk</strong> and with <strong>strategic support</strong></td>
<td>✓</td>
</tr>
<tr>
<td>Long-life, low-risk resource with planned output that supports <strong>&gt;30 years of production</strong></td>
<td>✓</td>
</tr>
<tr>
<td>Close to vital <strong>transport, energy and water infrastructure</strong></td>
<td>✓</td>
</tr>
<tr>
<td><strong>Environmental approval</strong> secured</td>
<td>✓</td>
</tr>
<tr>
<td>Dedicated team that has developed an <strong>efficient, high-recovery flowsheet now in final piloting phase</strong></td>
<td>✓</td>
</tr>
</tbody>
</table>
Appendices
# Appendix A: Mineral Resources

<table>
<thead>
<tr>
<th>RESOURCES</th>
<th>TONNES (m)</th>
<th>RARE EARTHS TREO %</th>
<th>PHOSPHATE P₂O₅ %</th>
<th>NdPr Enrichment %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured</td>
<td>4.9</td>
<td>3.2</td>
<td>13</td>
<td>26.1</td>
</tr>
<tr>
<td>Indicated</td>
<td>30</td>
<td>2.7</td>
<td>12</td>
<td>26.4</td>
</tr>
<tr>
<td>Inferred</td>
<td>21</td>
<td>2.3</td>
<td>10</td>
<td>26.5</td>
</tr>
<tr>
<td>TOTAL</td>
<td><strong>56</strong></td>
<td><strong>2.6</strong></td>
<td><strong>11</strong></td>
<td><strong>26.4</strong></td>
</tr>
</tbody>
</table>

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 C: Established Markets & Growing Applications

NdFeB Magnet Volume & Forecast Growth

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

Not for release or distribution in the United States of America
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.

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

Source: Resource Capital Research Pty Ltd (AFSL 325340)
Appendix F: Board

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.

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.

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.

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.

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.

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

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.