Ardea Resources
World-significant Australian cobalt and nickel for the battery industry

Diggers and Dealers – Booth E06, Kalgoorlie, 6 - 8 August 2018
www.ardearesources.com.au
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No stock exchange, regulation services provider, securities commission or other regulatory authority has approved or disapproved the information contained in this news release.
Application for securities under the Company's public offer can only be made under the prospectus, a copy of which is available from the Company. Investors should consider the prospectus in deciding whether to acquire Ardea shares and will need to complete the application form that accompanies the prospectus.
The Ardea Value Proposition

- The 100%-owned Goongarrie Nickel Cobalt Project is part of the largest Cobalt Resource in the Developed World
  - 773Mt at 0.7% Ni and 0.05% Co*
- Potentially a multi-decade producer of high-quality nickel and cobalt sulphate – 100% offtake available
- 1.0Mtpa base case PFS demonstrates a low-capital expenditure start-up with robust project economics
- Readily expandable to 2.25Mtpa – Mill feed grades 0.88% Ni and 0.10% Co
- Goongarrie is a low technical risk project to feed the burgeoning EV and ESS market
- DFS programs underway – focus on Approvals, piloting
- Strategic partner interest is high as Ni-Co supply concerns rise
- Other value drivers – Au and Ni sulphide in WA and base metals in NSW

*Cobalt sulphate produced from Goongarrie ore, December 2017
*Ardea Resources Annual Report 2017
Experienced management team with global experience in corporate fundraising, processing and engineering for laterite nickel-cobalt deposits, laterite geology and geometallurgy, ensures the right mix to make Goongarrie succeed.
**BULK TONNAGE GOLD PROJECTS, WA**
Mt Zephyr Greenstone Belt, high-grade anomalies along Celia Lineament, Taurus gold project

**NICKEL-COBALT LATERITES, WA**
*Goongarrie Nickel Cobalt Project*
Other deposits also under assessment: Black Range, Kalpini, Yerilla, Boyce Creek, Aubils, Siberia, Highway, Ghost Rocks

**NICKEL SULPHIDE PROJECTS, WA**
Includes Perrinvale project (strike extension of St George’s Mt Alexander project)

**100% AUSTRALIAN ASSET PORTFOLIO**

**PORPHYRY & EPITHERMAL COPPER-GOLD PROJECTS, NSW**
Lachlan Fold Belt, NSW is Australia’s premier address for porphyry and epithermal copper-gold projects

**LEWIS PONDS ZINC-SILVER-GOLD, NSW**
Historic silver-gold-base metal mine
High-grade resources
Bulk mining option

**BULK TONNAGE GOLD PROJECTS, NSW**
Includes Ophir, Australia’s first goldfield
Looking towards the ore body at Goongarrie adjacent to the Goldfields Highway, looking NE.
Goongarrie Nickel Cobalt Project – 15km strike length of continuous mineralisation

Goongarrie JORC Resources
215.6 Mt at 0.06% cobalt and 0.71% nickel*

Reserves optimised for 1.5Mtpa, 25 year mine life only, less than 20% of Goongarrie resource utilised at this scale (40.1 Mt at 0.09% cobalt and 0.82% nickel *)

* See appendix for resource breakdown.

View over Goongarrie Nickel Cobalt Project, looking southeast, showing the extent of the deposit (blue-green = Co > 0.05%, purple = Co > 0.10%), and proximity to infrastructure. * See appendix for resource breakdown.
Simple, shallow open pit mining

- Uniform mineralisation grades and mineralogy
- Scheduled pits within 60m of surface
- Soft, free-digging open-pit mining
- Low strip ratio, 2:1
Base case flowsheet
Pressure Acid Leach, with Mixed Sulphide precipitation yields high purity product
Outstanding results delivered from recently completed PFS* and Expansion Study*

- PFS 1.0Mtpa base case over a 25-year mine life
- ES 2.25Mtpa with a 25-year mine life
- 95.5% cobalt and 94.5% nickel recovery – life of mine
- Pre-cobalt credit C1 costs in line with current worldwide operators
- PAL** 5th generation plant, proven design, successfully operated in other laterite projects globally

<table>
<thead>
<tr>
<th></th>
<th>1.0Mtpa</th>
<th>1.5Mtpa</th>
<th>2.25Mtpa</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Status</strong></td>
<td>PFS</td>
<td>PFS</td>
<td>ES</td>
</tr>
<tr>
<td><strong>No. Trains</strong></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Pre Tax NPV</strong></td>
<td>US$ 1.13 billion</td>
<td>US$ 1.52 billion</td>
<td>US$ 2.4 billion</td>
</tr>
<tr>
<td><strong>Pre Tax IRR</strong></td>
<td>29 %</td>
<td>29 %</td>
<td>31 %</td>
</tr>
<tr>
<td><strong>CAPEX</strong></td>
<td>US$ 472 million</td>
<td>US$ 588 million</td>
<td>US$918 million</td>
</tr>
<tr>
<td><strong>C1 cash cost</strong></td>
<td>US$ 0.42 / lb</td>
<td>US$ 0.45 / lb</td>
<td>US$ (0.34) / lb</td>
</tr>
<tr>
<td><strong>Payback</strong></td>
<td>5.3 years</td>
<td>5.6 years</td>
<td>5.1 years</td>
</tr>
<tr>
<td><strong>Cobalt sulphate</strong></td>
<td>5,500tpa</td>
<td>6,900tpa</td>
<td>10,000tpa</td>
</tr>
<tr>
<td><strong>Nickel sulphate</strong></td>
<td>41,500tpa</td>
<td>55,300tpa</td>
<td>81,000tpa</td>
</tr>
</tbody>
</table>

* Goongarrie Nickel Cobalt Project, PFS study, 28 March 2018, ** PAL = Pressure Acid Leach
+Goongarrie Expansion Study, 24 July 2018
Capital Intensity of HPAL Projects - Peer Comparison

The diagram illustrates the capital intensity of various HPAL (Hydrometallurgical Acid Leaching) projects compared to Peer Comparison. The costs are shown in $US per tonne Nickel, with two price points: $US 140,000 and $US 60,000. Projects are compared to a baseline cost of $US 140,000 per tonne Ni.

Projects listed include: Coral Bay 1, Coral Bay 2, Gérdes, Tagenito, GNCP (2.25Mtpa) Expansion Study, GNCP (1 & 1.5Mtpa) PFS, Ravenshoe, Ramu, Ambatovy, CleanTeq, and Goro.

Legend:
- Back End as at 2018
- Sulphuric Acid Plant as at 2018
- Front end as at 2018

Graph representation: Bar chart with project names on the x-axis and cost per tonne Nickel on the y-axis, with different colors indicating cost categories.
2.25Mtpa Expansion Study

- Unique mineralogy of Goongarrie allows:
  - Single autoclave for 2.25Mtpa (same size as the 1.5Mtpa case)
  - 40 minutes residence time
  - High density solids into the autoclave
  - No significant change in recoveries with short residence time

- Goongarrie exhibits significant potential for expansion via multiple parallel modular trains

- Proximity to world-class infrastructure and logistics - prime location on the Goldfields Highway
  - Adjacent to rail
  - Adjacent to gas pipelines and power transmission lines

- Significant potential to provide exceptional returns over a minimum of 25 years

- Expansion Study was based on only 26% of the Company’s total resources at Goongarrie

- Goongarrie offers an ethical, low environmental impact and long life source of Ni-Co from a stable jurisdiction

The Kalgoorlie-Menzies railway line where it crosses the northwesternmost tip of the Patricia Anne Ni-Co orebody at Goongarrie, 80km north of Kalgoorlie
DFS Programs Underway

- DFS programs underway including:
  - Demonstration-scale Pilot Plant currently running to produce Ni and Co Sulphate
  - Resource drilling and re-estimation
  - Approvals

- Additional upside options are currently being assessed and include the following:
  - Mineralised neutraliser optimisation
  - Scandium by-product optimisation
  - High purity alumina
  - Vanadium
## Exceptional Size and Scale

<table>
<thead>
<tr>
<th>Investment criteria</th>
<th>Ardea Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Company resources</strong></td>
<td>773 million tonnes of cobalt and nickel resources, WA</td>
</tr>
<tr>
<td></td>
<td>Goongarrie, Black Range, Kalpini, Yerilla, Boyce</td>
</tr>
<tr>
<td></td>
<td>Creek, Aubils, Siberia, Highway, Ghost Rocks (all within 100km radius)</td>
</tr>
<tr>
<td><strong>Metal contained in resources</strong></td>
<td>&gt;400,000 t cobalt</td>
</tr>
<tr>
<td></td>
<td>&gt;5,600,000 t nickel</td>
</tr>
<tr>
<td><strong>Market capitalisation</strong></td>
<td>$90 million</td>
</tr>
<tr>
<td><strong>Market cap per cobalt tonne (in resources)</strong></td>
<td>~A$225 / t cobalt</td>
</tr>
<tr>
<td><strong>Market cap per nickel tonne (in resources)</strong></td>
<td>~A$16.1 / t nickel</td>
</tr>
</tbody>
</table>

All data sourced from publicly released documents from each company’s website as of 01 August 2018. AUZ = Australian Mines, CLQ = CleanTeQ
The Bigger Picture – multi-decade resource

- The Goongarrie Nickel Cobalt Project is part of the broader Kalgoorlie Nickel Project (KNP)
- KNP is the largest cobalt resource in Australia*
- Ardea is adopting a staged development approach
- Potential additional processing hubs at:
  - Siberia/Highway/Ghost Rocks
  - Black Range
  - Aubils/Boyce Creek
  - Kalpini
- Other deposits able to provide potential feed for 3rd party operators

* See appendix for resource breakdown
## Indicative Development Timetable

<table>
<thead>
<tr>
<th>2018</th>
<th>2019</th>
<th>2020/2021</th>
<th>2021/2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
<td>Q4</td>
</tr>
<tr>
<td>PFS</td>
<td>DFS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offtake discussions</td>
<td>2.25Mtpa Scoping Study (Completed)</td>
<td>Goongarrie Resource Upgrade</td>
<td>Scandium Study</td>
</tr>
<tr>
<td>Resource/reserve/sampling drilling</td>
<td>Mineralised Neutraliser Study</td>
<td>Production &amp; Marketing Samples</td>
<td></td>
</tr>
<tr>
<td>Environmental studies</td>
<td>Approvals and licencing</td>
<td>Funding</td>
<td>Strategic partner</td>
</tr>
</tbody>
</table>

### Key Milestones:
- **2018:**
  - Q1: PFS
  - Q2: DFS
- **2019:**
  - Q1: Offtake discussions
  - Q2: 2.25Mtpa Scoping Study (Completed)
  - Q3: Goongarrie Resource Upgrade
  - Q4: Scandium Study
- **2020/2021:**
  - Q1: Mineralised Neutraliser Study
  - Q2: Production & Marketing Samples
  - Q3: Investment Decision
  - Q4: Environmental studies
- **2021/2022:**
  - Q1: Approvals and licencing
  - Q2: Funding
  - Q3: Strategic partner
  - Q4: Front End Engineering Design

### Notes:
- **PFS:** Pre-Feasibility Study
- **DFS:** Definitive Feasibility Study
- **Q1-Q4:** Quarterly Periods
- **Front End Engineering Design:** Stage of project development where detailed engineering and planning occur before construction begins.
Drill samples from Black Range west of the Goongarrie Nickel Cobalt Project. Black Range contains high nickel, and cobalt, and accessory scandium, platinum and palladium.

OTHER VALUE DRIVERS FOR ARDEA

Ardea’s portfolio includes Australia’s largest cobalt resource, as well as significant gold, nickel sulphide and base metal projects.
• New ideas to test in old gold mining areas ~350km north of Kalgoorlie
• Mt Zephyr greenstone belt barely explored for >20 years
• Numerous historic gold workings
• Extensive exploration programs underway:
  – New geophysics
  – New geological interpretations
  – New targets
• Historic workings along >4 km strike
  • Gold grading from “a few pennyweights to 3oz per ton”, Dunn, April 1900
  • ~5 to 90 g/t gold
  • Gold-hosting BIF units traced ~18 km under cover
• Mt Morgans equivalent BIF-hosted replacement style gold
  • Hill 50-style with mineralised breaks, largely undrilled
New concepts to test

- **Area east of Celia Lineament** is highly prospective:
  - Most historic gold workings east of lineament
  - Mt Windarra nickel sulphide stratigraphy
  - Jupiter, Wallaby granitoid-hosted gold to the east of the lineament further south
- Along structure from Mt Morgans gold deposits
- Ardea has first application of new concepts to test
Zn Au – Lewis Ponds (NSW)

- Major zinc-gold-silver development project with enormous potential in NSW
- Historic resources:
  - 6.62 Mt @ 2.4 % Zn, 1.4 % Pb, 0.2 % Cu, 1.5 g/t Au, and 69 g/t Ag
  - Bulk mining open pit exploration target:
    - 15-25 Mt @ 2.2-3.7 % Zn equiv* or 1.0-1.5 g/t Au equiv*
- Main resource on freehold land owned by Ardea
- Mineral Resource currently being updated
- Large tenement holding in NSW
Need long term Ni-Co Supply?

- Goongarrie is a multi-decade producer of high-quality nickel and cobalt sulphate
- 1.0Mtpa base case PFS demonstrates a low-capital expenditure start-up with robust project economics
- Size and scalability of Goongarrie offers significant upside for project growth
- PFS has only accounted for 5% of the Company’s nickel-cobalt laterite resources
- 2.25Mtpa Expansion Study via a single processing train confirms economies of scale
- Substantial resource inventory supports multiple trains at Goongarrie, and potential additional processing hubs at Kalpini or Yerilla
- Goongarrie perfectly placed to leverage Electric Vehicle and Electric Static Storage demand growth
- Significant amount of news flow expected over the coming months
APPENDICES
## APPENDIX – Goongarrie Nickel Cobalt Project Resources

Summary of total mineral resources within the Goongarrie Nickel Cobalt Project area, comprising resources at Goongarrie Hill, Goongarrie South, Big Four, and Scotia Dam (14 March 2018).

<table>
<thead>
<tr>
<th>Camp</th>
<th>Domains</th>
<th>Cut-off %</th>
<th>Resource category</th>
<th>Size (Mt)</th>
<th>Cobalt (%)</th>
<th>Nickel (%)</th>
<th>Contained Co (t)</th>
<th>Metal Ni (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goongarrie Hill</td>
<td>Ni &amp; Co</td>
<td>&gt; 0.5% Ni or &gt; 0.08% Co</td>
<td>Inferred</td>
<td>52.5</td>
<td>0.04</td>
<td>0.65</td>
<td>21,600</td>
<td>340,400</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Subtotal</td>
<td>52.5</td>
<td>0.04</td>
<td>0.65</td>
<td>21,600</td>
<td>340,400</td>
</tr>
<tr>
<td>Goongarrie South</td>
<td>Ni &amp; Co</td>
<td>&gt; 0.5% Ni or &gt; 0.08% Co</td>
<td>Measured</td>
<td>10.3</td>
<td>0.10</td>
<td>0.98</td>
<td>10,200</td>
<td>101,200</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Indicated</td>
<td>56.2</td>
<td>0.07</td>
<td>0.72</td>
<td>37,200</td>
<td>407,000</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Inferred</td>
<td>32.2</td>
<td>0.06</td>
<td>0.69</td>
<td>20,300</td>
<td>221,200</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Subtotal</td>
<td>98.7</td>
<td>0.07</td>
<td>0.74</td>
<td>67,700</td>
<td>729,300</td>
</tr>
<tr>
<td>Big Four</td>
<td>Ni &amp; Co</td>
<td>&gt; 0.5% Ni or &gt; 0.08% Co</td>
<td>Indicated</td>
<td>45.5</td>
<td>0.06</td>
<td>0.71</td>
<td>28,200</td>
<td>320,700</td>
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<tr>
<td></td>
<td></td>
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<td>Inferred</td>
<td>9.9</td>
<td>0.06</td>
<td>0.63</td>
<td>6,100</td>
<td>61,900</td>
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<td></td>
<td></td>
<td></td>
<td>Subtotal</td>
<td>55.4</td>
<td>0.06</td>
<td>0.69</td>
<td>34,300</td>
<td>382,700</td>
</tr>
<tr>
<td>Scotia Dam</td>
<td>Ni &amp; Co</td>
<td>&gt; 0.5% Ni or &gt; 0.08% Co</td>
<td>Indicated</td>
<td>3.3</td>
<td>0.09</td>
<td>0.81</td>
<td>3,000</td>
<td>26,900</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Inferred</td>
<td>5.7</td>
<td>0.07</td>
<td>0.76</td>
<td>4,100</td>
<td>43,300</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Subtotal</td>
<td>9.0</td>
<td>0.08</td>
<td>0.78</td>
<td>7,100</td>
<td>70,200</td>
</tr>
<tr>
<td>Total</td>
<td>All</td>
<td>&gt; 0.5% Ni or &gt; 0.08% Co</td>
<td>Measured</td>
<td>10.3</td>
<td>0.10</td>
<td>0.98</td>
<td>10,200</td>
<td>101,200</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Indicated</td>
<td>105.0</td>
<td>0.07</td>
<td>0.72</td>
<td>68,400</td>
<td>754,600</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Inferred</td>
<td>100.3</td>
<td>0.05</td>
<td>0.67</td>
<td>52,100</td>
<td>666,900</td>
</tr>
<tr>
<td>Goongarrie Resource Global</td>
<td>TOTAL</td>
<td></td>
<td></td>
<td>215.6</td>
<td>0.06</td>
<td>0.71</td>
<td>130,700</td>
<td>1,522,700</td>
</tr>
</tbody>
</table>

Note: All nickel and cobalt domains are included, and are encapsulated by an envelope defined by nickel grades equal to or greater than 0.5%. Note that figures are rounded to reflect degree of certainty and may not tally.
**APPENDIX – Reserves Defined for Goongarrie Nickel Cobalt Project**

**Goongarrie Nickel Cobalt Project, Ore Reserves based on 25 year mine life at 1.5 Mtpa.**

<table>
<thead>
<tr>
<th>Deposits</th>
<th>Class</th>
<th>Size (Mt)</th>
<th>Cobalt (%)</th>
<th>Nickel (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goongarrie South</strong></td>
<td>Proven</td>
<td>8.95</td>
<td>0.10%</td>
<td>0.96%</td>
</tr>
<tr>
<td></td>
<td>Probable</td>
<td>17.26</td>
<td>0.09%</td>
<td>0.79%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td>26.22</td>
<td>0.10%</td>
<td>0.85%</td>
</tr>
<tr>
<td><strong>Big Four</strong></td>
<td>Proven</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>Probable</td>
<td>13.92</td>
<td>0.09%</td>
<td>0.77%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td>13.92</td>
<td>0.09%</td>
<td>0.77%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>Proven</td>
<td>8.95</td>
<td>0.10%</td>
<td>0.96%</td>
</tr>
<tr>
<td></td>
<td>Probable</td>
<td>31.18</td>
<td>0.09%</td>
<td>0.78%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td>40.13</td>
<td>0.09%</td>
<td>0.82%</td>
</tr>
</tbody>
</table>

Using a nickel equivalent cut of >0.81%, which used inputs of A$18,900/t nickel and A$120,750/t cobalt. (US$15,120/t Ni and US$96,600/t Co, 0.8 exchange rate). Nickel equivalent (Nieq %) = \( \text{Ni grade} + \text{Co grade} \times \text{Co price}/\text{Ni price} \). Prices used are US$15,120/t for nickel and US$96,600/t for cobalt. No assumption about recovery is included here. Recoveries are addressed elsewhere throughout the mining schedule and financial model.
### KNP nickel-cobalt mineral resource (JORC 2012), Ardea Annual Report 2017

<table>
<thead>
<tr>
<th>Resource Category</th>
<th>Quantity (Mt)</th>
<th>Cobalt (%)</th>
<th>Nickel (%)</th>
<th>Contained cobalt (t)</th>
<th>Contained nickel (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measured</td>
<td>9.6</td>
<td>0.10</td>
<td>1.02</td>
<td>9,700</td>
<td>98,800</td>
</tr>
<tr>
<td>Indicated</td>
<td>232.9</td>
<td>0.06</td>
<td>0.75</td>
<td>141,200</td>
<td>1,759,700</td>
</tr>
<tr>
<td>Inferred</td>
<td>530.5</td>
<td>0.05</td>
<td>0.68</td>
<td>254,400</td>
<td>3,600,000</td>
</tr>
<tr>
<td><strong>KNP Total Resources</strong></td>
<td><strong>773.0</strong></td>
<td><strong>0.05</strong></td>
<td><strong>0.70</strong></td>
<td><strong>405,400</strong></td>
<td><strong>5,458,400</strong></td>
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</tbody>
</table>

In accordance with the Australian Securities Exchange Limited Listing Rules Appendix 5A:

The information in this report that relates to Mineral Resources for the Highway, Goongarrie Hill, Goongarrie South, Big Four, Aubilis and Boyce Creek Prospects is based on information originally compiled in-house and validated by Steve Jones in 2013. Steve Jones is a member of the Australasian Institute of Mining and Metallurgy. Steve Jones is a full time employee of Heron Resources Limited and has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the resource estimation activity that 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’. Steve Jones consents to the inclusion in this report of the matters based on his information in the form and context that it appears. Note that Mineral Resources that are not Ore Reserves do not have demonstrated viability.

The information in this report that relates to Mineral Resources for the Siberia North, Bulong East, Siberia, Black Range, Taurus and Jump Up Dam Prospects is based on information compiled by Snowden Mining Industry Consultants by members of the Australian Institute of Mining and Metallurgy. Snowden Mining Industry Consultants had sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the resource estimation activity. All resources were internally audited by Snowden and signed off by a person of sufficient experience 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’. Steve Jones validated the Snowden Mining Siberia North estimate in 2013. Note that Mineral Resources that are not Ore Reserves do not have demonstrated viability.
APPENDIX – The Sulphate Markets

- Strong growth in sulphate pricing is expected with rapidly increasing demand for high-purity product from manufacturers globally. Increased battery production is required to power the Automotive Electrification Revolution

- Cobalt sulphate and nickel sulphate attract a price premium (based on contained metal)
  - **Cobalt sulphate** – 5% premium
  - **Nickel sulphate** – 30% premium

- East Asia is the major consumer, manufacturing most of the world’s lithium ion batteries – ongoing discussions with a number of interested parties from this region.

- Sulphate market is strong with spot prices increasing substantially since PFS release

<table>
<thead>
<tr>
<th></th>
<th>Price date</th>
<th>Units</th>
<th>CNY / t</th>
<th>USD / t</th>
<th>USD / lb</th>
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<tbody>
<tr>
<td>Cobalt sulphate</td>
<td>PFS Feb 2018 (avg)</td>
<td>Sulphate</td>
<td>¥121,600</td>
<td>$19,241</td>
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<td>Contained metal equiv.</td>
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<td>Spot 4 Apr 2018</td>
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<td>Nickel sulphate</td>
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All pricing data sourced from SMM (Shanghai Metals Markets – metals.com)
CNY USD exchange rate USD:CNY $1.00 equals ¥6.32
TARGETING THE SULPHATE MARKET

Ardea is positioning itself to supply the lithium ion battery market as the Automotive Electrification Revolution gathers pace.
The Growing Momentum in Cobalt

- Cobalt demand continues to grow on the back of the Electric Vehicle and Electric Static Storage battery markets

- Electric Vehicles predicted to account for 14% of all new car sales by 2025

- Cobalt sulphate market forecast to reach US $9.5 billion by 2025

- Anticipated cobalt sulphate market CAGR of 8% from 2017-2025

- Increased demand for cobalt sulphate driven by the higher energy density it provides to EV and ESS batteries
The Growing Momentum in Cobalt

- Increasing ethical concerns over supply of cobalt from DRC (~60% of global supply)
- Some companies have stopped sourcing cobalt from DRC and are opting to pay a premium for cobalt from regulated industrial mines
- More global manufacturers anticipated to follow in sourcing alternative supply
- Demand for alternative cobalt supplies will drive new mine development and product pricing
Cobalt and Nickel Sulphate Fundamentals

- Cobalt and nickel are critical components of lithium ion batteries ensuring high energy density and chargeability.
- Higher cobalt and nickel content provides EVs with greater range and faster recharge times.
  - The battery industry requires the metals specifically as soluble compounds to be suitable for the cathode manufacturing process.
  - Purity of the sulphate product is key to produce high-quality batteries.
  - PFS bench-scale sulphate production confirms that Ardea has the flowsheet to deliver highest-purity cobalt and nickel sulphate products.
- Goongarrie is a limonite laterite deposit, which means:
  - Efficient dissolution in acid.
  - High metal recoveries.
  - Low undesirable elements.
  - Goongarrie is amenable to high-purity sulphate production.
- At Goongarrie, an incremental capital cost increase for sulphate circuits is expected to realise substantial revenue benefits.