

Ardea Resources

World-significant Australian cobalt and nickel
for the battery industry



Sprott Natural Resource Symposium, Vancouver, 17–20 July 2018

www.ardearesources.com.au

Disclaimer

Important notice

This presentation contains general information only and is, or is based upon, information which has been released to ASX or is contained in the Company's prospectus dated 9 November 2016 (including supplementary prospectuses dated 18 November 2016 and 6 January 2017) and the Goongarrie Nickel Cobalt Project Pre-Feasibility Study (dated 28 March 2018). This presentation is not an invitation, offer or recommendation (express or implied) to subscribe for, or apply for the purchase of, or to take any other action in respect of securities of any entity described herein and is not a prospectus, product disclosure statement or disclosure document for the purposes of the Corporations Act 2001 (Cth) and has not been lodged with ASIC. None of Ardea Resources Limited (Ardea or the Company) or its representatives are providing or offering investment advice or services by making this presentation.

Neither Ardea nor its representatives make any representation, warranty or guarantee of any kind, express or implied, as to the accuracy, completeness or reasonableness of the information contained herein or any other written or oral communication transmitted or made available to any person receiving this presentation. To the maximum extent permitted by law, Ardea and representatives expressly disclaim any and all liability based on or arising from, in whole or in part, such information, or any errors or omissions.

This presentation contains forward-looking statements regarding the Company's resources, intentions and future business. These statements reflect current information, expectations, intentions and strategies regarding the future, and are subject to certain risks and uncertainties. Should one or more of these risks or uncertainties materialise, or should any of underlying assumptions prove incorrect, actual results may vary from the expectations, intentions and strategies described in this presentation. Investors are cautioned not to place undue reliance on forward-looking statements, which speak only as of the date they are made. Other than where required by law, the Company is under no obligation to revise any forward looking statement to reflect events or circumstances after the date of this presentation or to reflect the occurrence of unanticipated events.

The Goongarrie Project has completed the Pre-Feasibility Study phase and has commenced programs that are part of the Definitive Feasibility Study. Though reasonable care has been taken to ensure that the facts are accurate and/or that the opinions expressed are fair and reasonable, no reliance can be placed for any purpose whatsoever on the information contained in this document or on its completeness. Actual results and developments of projects and the market development may differ materially from those expressed or implied by these forward looking statements depending on a variety of factors. A key conclusion of the Pre-Feasibility Study, which is based on forward looking statements, is that the Goongarrie Project is considered to have positive economic potential.


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 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
- Robust Pre-Feasibility Study which included the following highlights:
 - Pre-tax NPV US\$1.4 billion
 - Pre-tax IRR 29%
 - Initial focus will be on **40Mt at 0.83% Ni and 0.09% Co** reserves
 - Significant expansion potential on 1.0 Mtpa base case
 - Higher throughput options being investigated.
- Goongarrie is a **low technical risk project**
- Goongarrie offers an **ethical, low environmental impact**, multi-generation mine-life
- **Significant economic advantages** and cost benefits via on-site neutraliser, scandium and other by-product opportunities
- **Continued discussions** with a number of potential strategic and offtake partners
- Upside potential from WA and NSW gold and base metal projects



*Cobalt sulphate produced
from Goongarrie ore,
December 2017*

Corporate Snapshot

Capital Structure

Shares on Issue	104,990,413
Share Price (6 July 2018)	\$0.76
52 week high / low	\$2.20 / \$0.42
Cash (31 May 2018)	\$19.2 million
Market Cap (6 July 2018)	\$80 million
Unlisted Stock \$0.25 options (IPO)	12.31 million
Staff performance rights	2.99 million

Ian Buchhorn and Associates	11.3%
Citicorp Nominees	9.8%
Brian O'Shannassy and Associates	8.5%
BNP Paribas Nominees	8.1%
JP Morgan Nominees	3.4%

Katina Law	Executive Chair
Ian Buchhorn	Executive Director
Wayne Bramwell	Non-Executive Director
Sam Middlemas	Chief Financial Officer
Sarah Mitchell	GM Technical Services
Dr Matt Painter	GM Gold

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.

Share Price Performance



Diversified Project Portfolio

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)

Bulk Tonnage Gold Projects, WA

Mt Zephyr Greenstone Belt, high-grade
anomalies along Celia Lineament,
Taurus gold project

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

GOONGARRIE NICKEL COBALT PROJECT

WESTERN AUSTRALIA

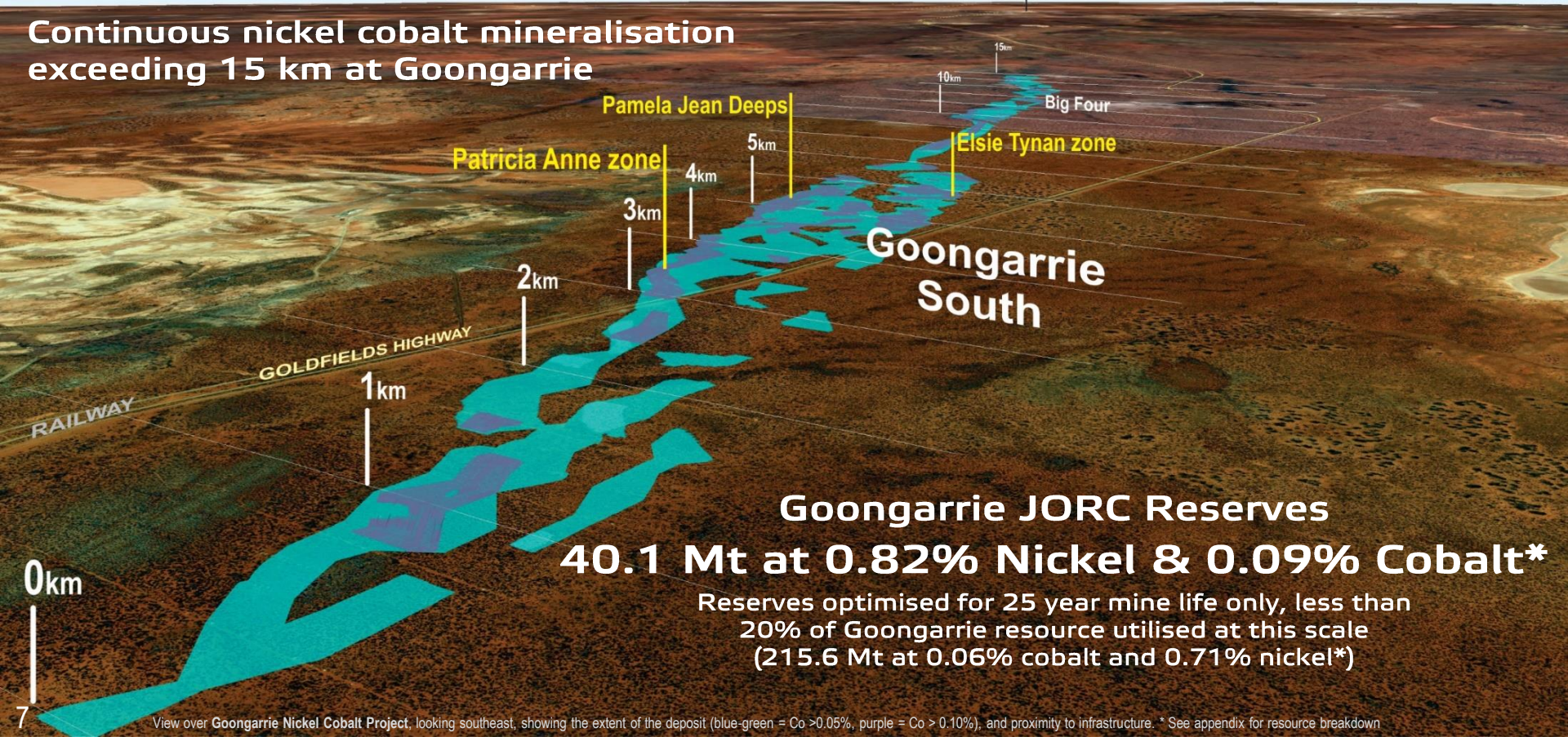
Ardea's flagship is Australia's premier nickel cobalt project



The Flagship Goongarrie Nickel Cobalt Project

CITY OF KALGOORLIE-BOULDER

Continuous nickel cobalt mineralisation
exceeding 15 km at Goongarrie



Goongarrie JORC Reserves

40.1 Mt at 0.82% Nickel & 0.09% Cobalt*

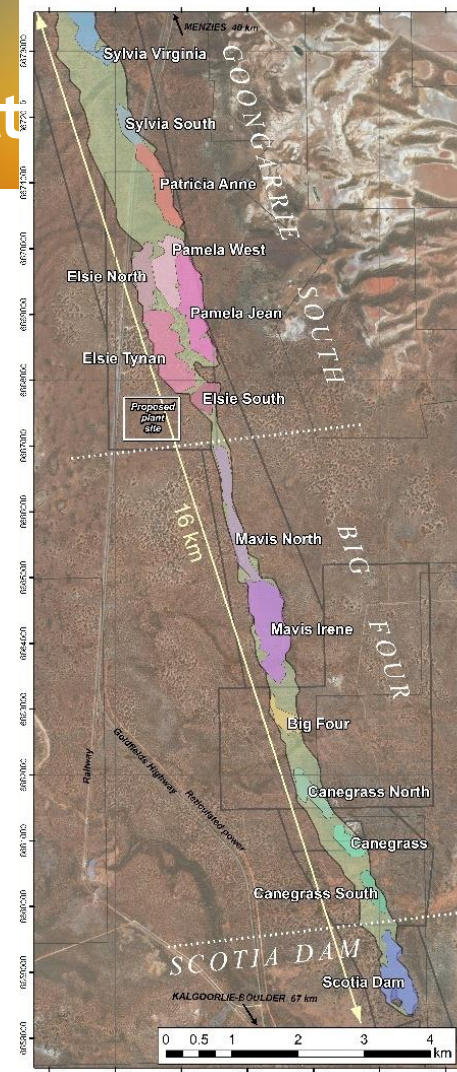
Reserves optimised for 25 year mine life only, less than
20% of Goongarrie resource utilised at this scale
(215.6 Mt at 0.06% cobalt and 0.71% nickel*)

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

A Globally Significant and Scalable Project

- Significant potential to provide exceptional returns over a minimum of 25 years
- Ardea holds nickel-cobalt laterite projects covering 1,738 km² near Kalgoorlie, Western Australia
 - Goongarrie makes up 142 km² of this total area
- Close proximity to world-class infrastructure and logistics
 - Prime location on the Goldfields Highway
 - Adjacent to rail
 - Adjacent to gas pipelines and power transmission lines
- PFS was based on only 5% of the Company's total resources at Goongarrie
- Significant potential upside for future scalability
- Goongarrie to become a long-term producer of high-quality cobalt and nickel sulphate

* See Appendix for full resource breakdown



A High-Quality Cobalt and Nickel Sulphate Producer

Outstanding results delivered from recently completed Pre-Feasibility Study*

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

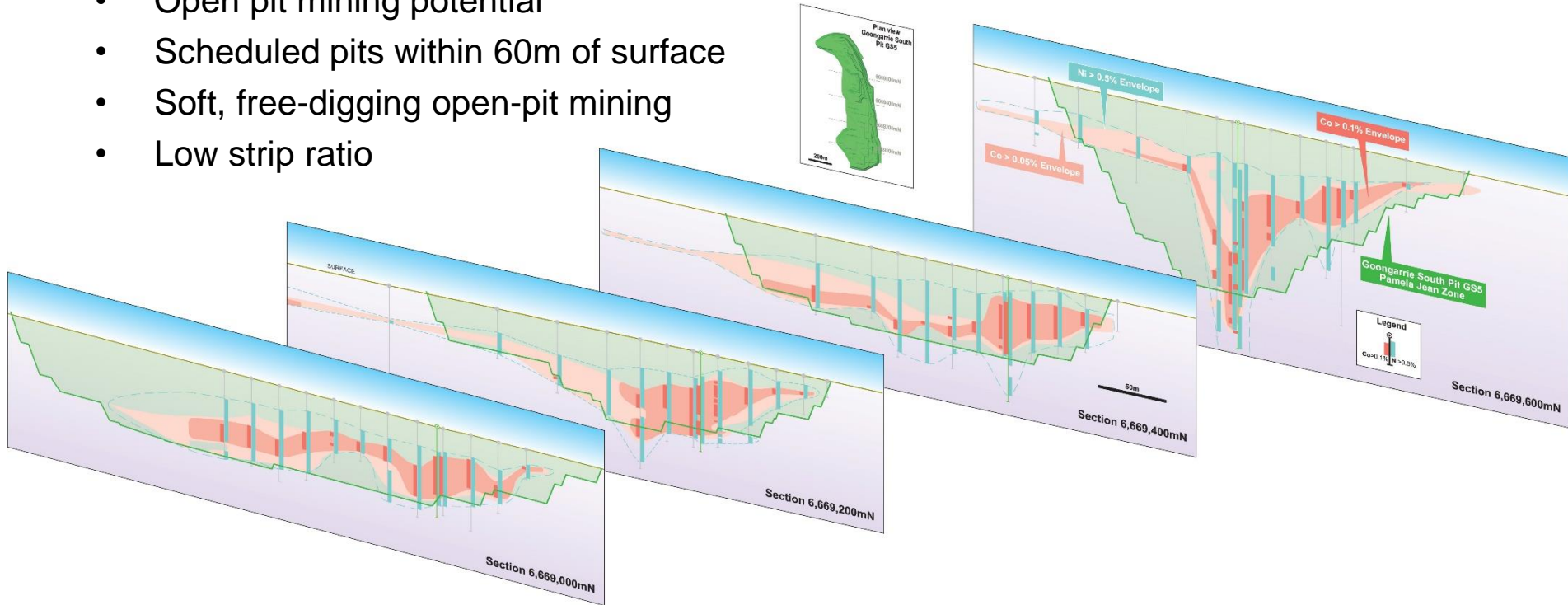
	1.0 Mtpa (base case)	1.5 Mtpa
Status	PFS	PFS
No. Trains	1	1
Pre Tax NPV₈	US\$ 1.13 billion	US\$ 1.52 billion
Pre Tax IRR	29 %	29 %
CAPEX	US\$ 472 million	US\$ 588 million
C1 cash cost	US\$ 0.42 / lb	US\$ 0.45 / lb
Payback	5.3 years	5.6 years
Cobalt sulphate	5,500 tpa	6,900 tpa
Nickel sulphate	41,500 tpa	55,300 tpa

* Goongarrie Nickel Cobalt Project, PFS study, 28 March 2018, ** PAL = Pressure Acid Leach



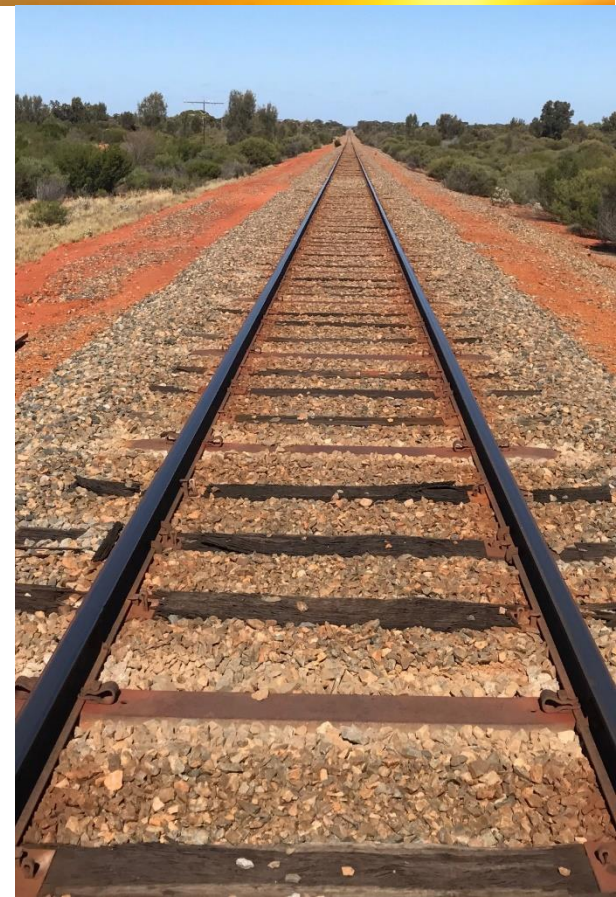
Simple Mining Characteristics

- Uniform mineralisation grades and mineralogy
- Open pit mining potential
- Scheduled pits within 60m of surface
- Soft, free-digging open-pit mining
- Low strip ratio



Expansion Upside Potential

- Scoping study on 2.25 Mtpa via single processing train is nearing completion
 - > 8,000 tpa cobalt sulphate expected
 - > 70,000 tpa nickel sulphate expected
- Goongarrie exhibits significant potential for expansion via multiple parallel modular trains
- Additional upside options are currently being assessed and include the following:
 - Higher throughput / shorter autoclave residence time
 - Mineralised neutraliser optimisation
 - Scandium by-product optimisation
- Scalability potential remains a major competitive advantage (only ~5% of current resources have been utilised)



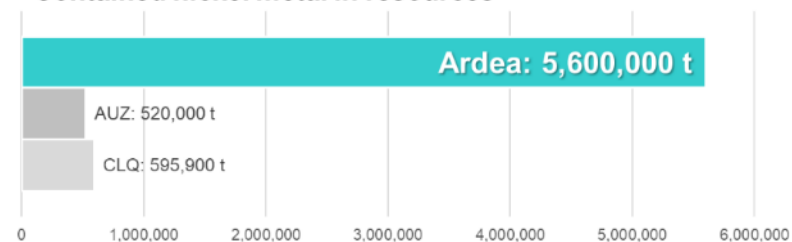
Exceptional Size and Scale

Investment criteria	Ardea Resources
<i>Company resources</i>	Over 700 million tonnes of cobalt and nickel resources, WA Goongarrie, Black Range, Kalpini, Yerilla, Boyce Creek, Aubils, Siberia, Highway, Ghost Rocks (all within 100km radius)
<i>Metal contained in resources</i>	>400,000 t cobalt >5,600,000 t nickel
<i>Market capitalisation</i>	\$80 million
<i>Market cap per cobalt tonne (in resources)</i>	~A\$200 / t cobalt
<i>Market cap per nickel tonne (in resources)</i>	~A\$14.3 / t nickel

Contained cobalt metal in resources

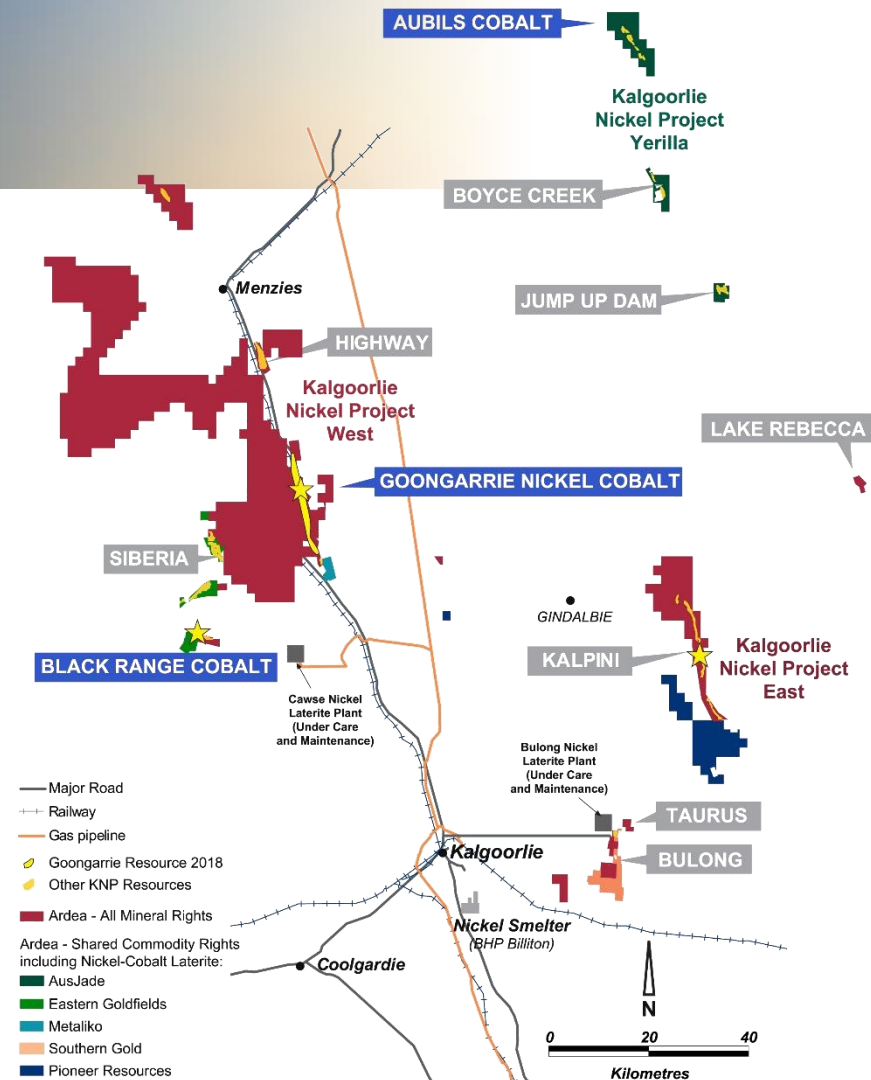


Contained nickel metal in resources



The Bigger Picture

- 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 conservative staged development approach
- A targeted plan will be utilised to prove up the resources at the following deposits:
 - Siberia/Highway/Ghost Rocks
 - Black Range
 - Aubils/Boyce Creek
 - Kalpini
- Other deposits to provide potential feed options for the Goongarrie plant or an additional processing hub
- Other deposits to provide potential feed for 3rd party operators



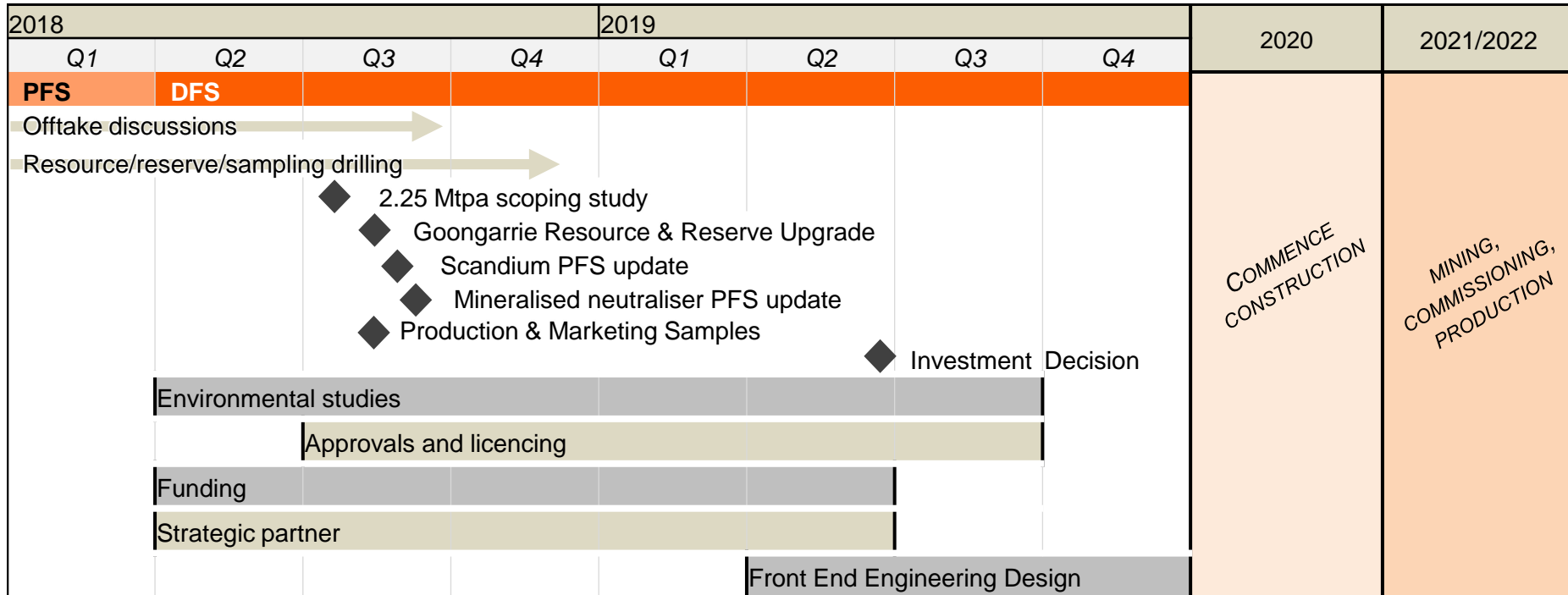
World-Class Mining Jurisdiction



View of Hannan St, Kalgoorlie, looking south, City of Kalgoorlie-Boulder

- Kalgoorlie, Western Australia offers **world-class infrastructure in an established mining hub**
 - Over 125 years of mining in the region
 - Low sovereign risk
 - World-leading workplace practices enshrined in law
 - Goongarrie is 80 km north on the main Goldfields Highway
- Renewable mine site electricity supplies under DFS investigation
 - Solar farm
 - Pumped hydro
- An Australian source for battery metals removes supply line concerns
- **Goongarrie offers a safe, secure** non-conflict alternative to DRC cobalt

Accelerating Goongarrie Towards Production



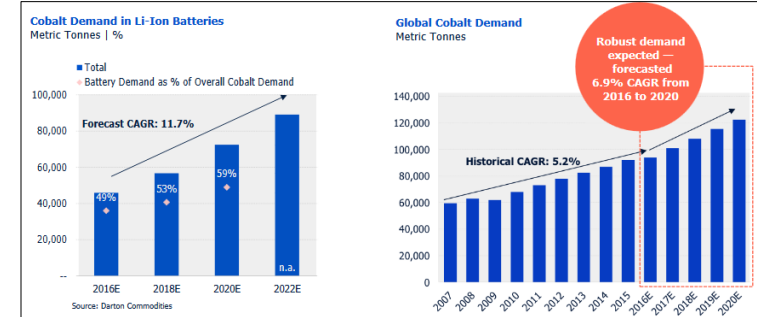
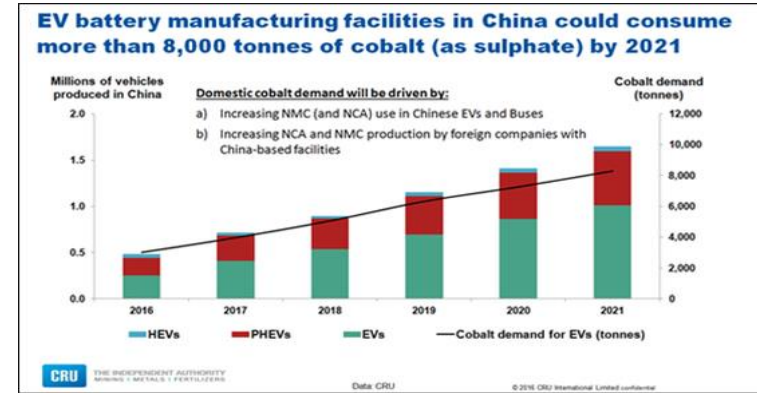
A close-up photograph of a bright green electric vehicle (EV) being charged. A yellow charging cable is plugged into the car's charging port, which is located on the front fender. The cable is coiled and extends downwards. The background is slightly blurred, showing a parking lot with other cars and some people in the distance. A semi-transparent dark blue banner is overlaid across the middle of the image, containing the title and subtitle text.

TARGETING THE SULPHATE MARKET

Ardea is positioning itself to supply the lithium ion battery market as the Automotive Electrification Revolution gathers pace

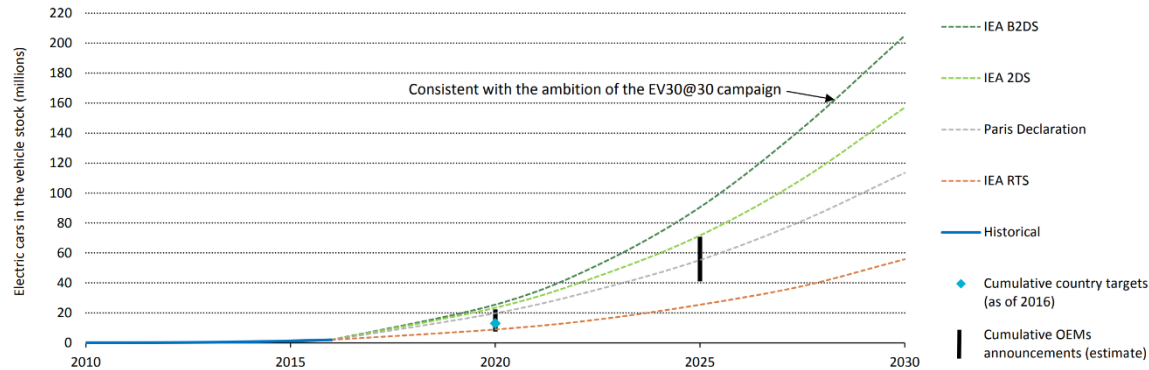
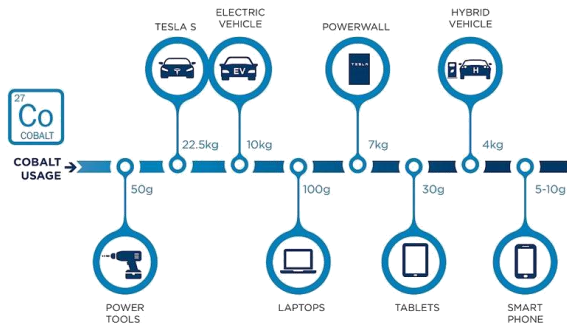
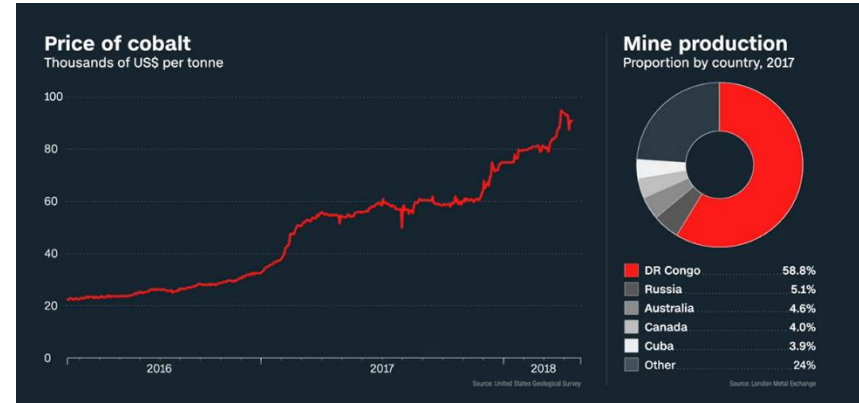
The Growing Momentum in Cobalt

- 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



Cobalt Sulphate
(20.97% cobalt)



Nickel Sulphate
(22.33% nickel)

OTHER OPPORTUNITIES

Ardea's portfolio includes Australia's largest cobalt resource, as well as significant gold and base metal projects



Ardea

Golden opportunities at Mount Zephyr

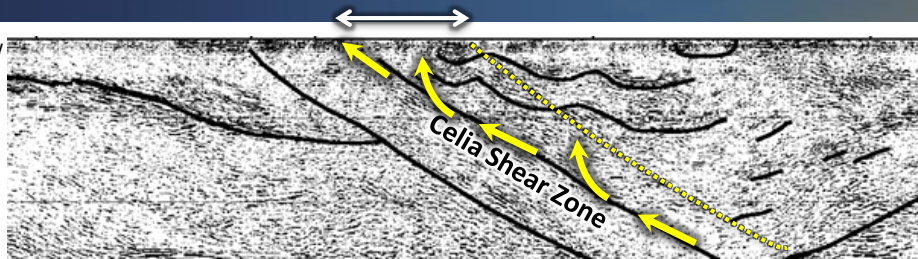


- New ideas to test in old gold mining areas ~350km north of Kalgoorlie
- Mt Zephyr greenstone belt barely explored for >20 years
- Numerous historic gold workings
- Extensive work programs underway:
 - New geophysics
 - New geological interpretations
 - New targets

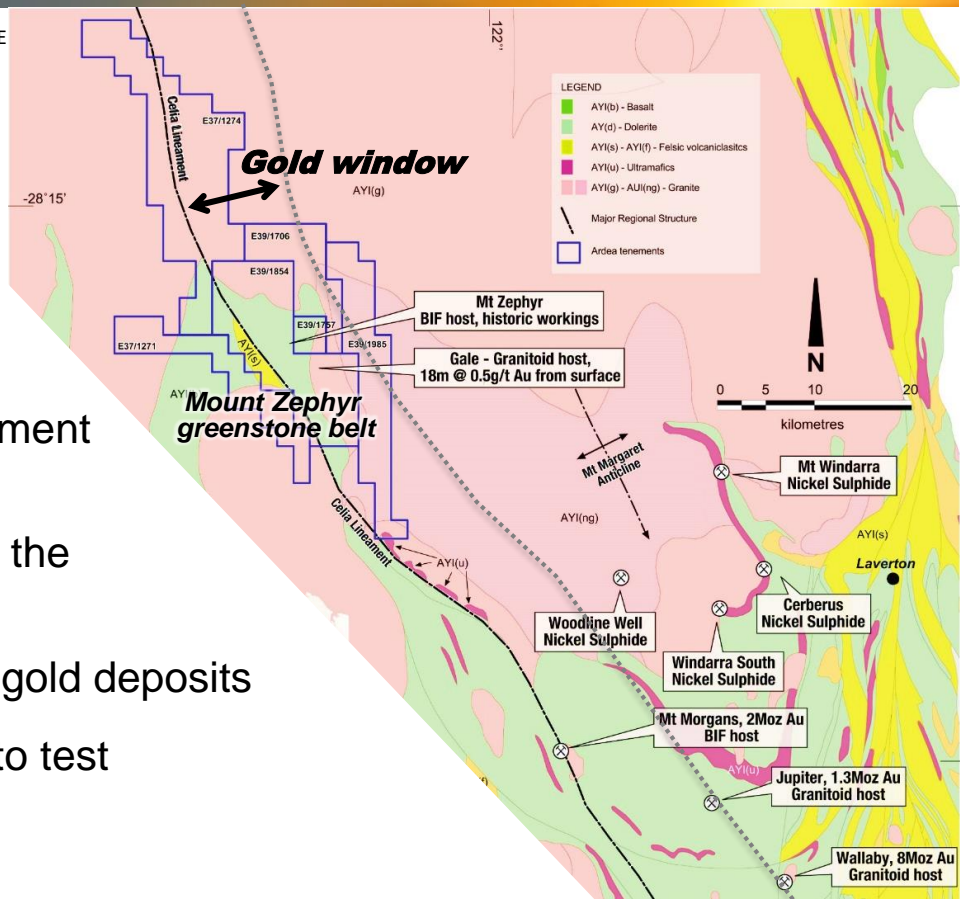


Alteration and brecciation in granite, Gale project

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, Bombora gold deposits
- Ardea has first application of new concepts to test



Dunn's Line, Mount Zephyr

- 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

Apr. 1900
In regard to Dunn's Find the prospector (Mr. John Dunn F.R.S.) has submitted the following report to Mr. Alex Forrest
Report on the progress carried out on leases known as the Crown of Nations since its discovery in August 1895.

56 acres This property consists of three G.M.Z.'s containing amount of prospecting work has been done on these leases. Up to the end of last year a shaft was carried down to 70 ft. and the lode cut and driven across which proved to be 32 ft. in width. The gold bearing matrix was found to be that of quartzite (ironstone) Jasper of a very hard and siliceous nature, and carrying gold of high quality, from a few dwts. to 3ozs/15 dwts per ton. After these results, the property was proved to be a highly payable ore. It was decided to sink a new shaft to prove the value of a depth of 100 ft. or deeper to prove the value of the lode at depth. The work was started about the commencement of the year and located in a position such as to cut the lode at 130 ft. from the surface.

This is a good shaft 7 1/2 ft x 4 ft. and heavy water was encountered in sinking, making it impossible to continue deeper, owing to not having the appliances to control the water. All I could do then was to drive from the level to discover the lode.

A Compelling Cobalt Story

- Goongarrie is a multi-decade producer of high-quality nickel and cobalt sulphate
- 1.0 Mtpa 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
- 2.25 Mtpa Scoping Study via a single processing train near completion
- Substantial resource inventory supports multiple trains at Goongarrie, and potential additional 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





Ardea Resources Limited

ASX : ARL

www.ardearesources.com.au

Suite 2, 45 Ord St, West Perth WA 6005, AUSTRALIA

+61 8 6244 5136

Email us at ardea@ardearesources.com.au

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).

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

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.

Deposits	Class	Size (Mt)	Cobalt (%)	Nickel (%)
Goongarrie South	Proven	8.95	0.10%	0.96%
	Probable	17.26	0.09%	0.79%
	Total	26.22	0.10%	0.85%
Big Four	Proven	—	—	—
	Probable	13.92	0.09%	0.77%
	Total	13.92	0.09%	0.77%
TOTAL	Proven	8.95	0.10%	0.96%
	Probable	31.18	0.09%	0.78%
	Total	40.13	0.09%	0.82%

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 %) = $Ni\ grade + \frac{Co\ grade \times Co\ price}{Ni\ price}$. 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.

APPENDIX – KNP resource breakdown

KNP nickel-cobalt mineral resource (JORC 2012), Ardea Annual Report 2017

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

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, Aubils 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.

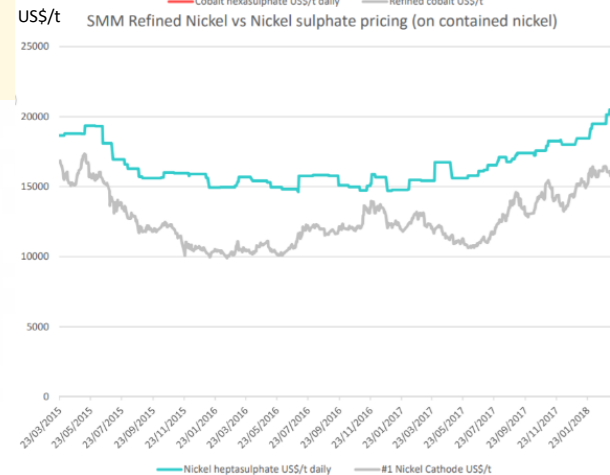
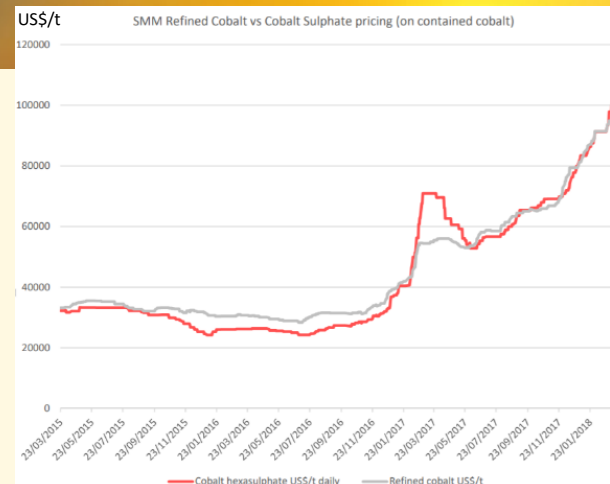
The information in this report that relates to Mineral Resources for the Siberia North, Bulong East, Siberia, Black Range, Taurus and Jump Up Dam Prospects is based on information compiled by Snowden Mining Industry Consultants by members of the Australian Institute of Mining and Metallurgy. Snowden 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.

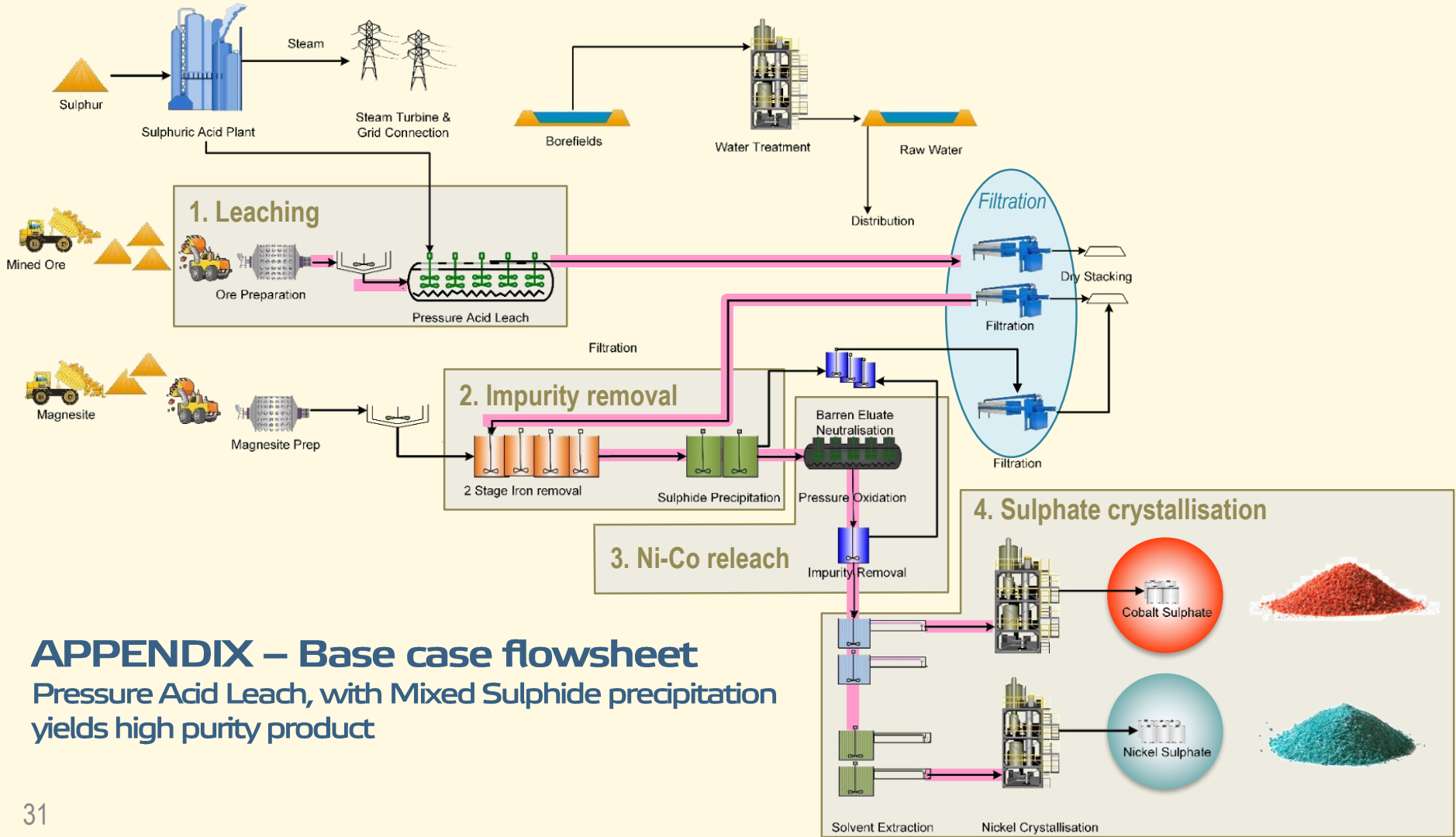
APPENDIX – The Sulphate Markets

- 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

		Price date	Units	CNY / t	USD / t	USD / lb
Cobalt sulphate (contains 20.97% cobalt)	PFS	Feb 2018 (avg)	Sulphate	¥121,600	\$19,241	\$8.73
			Contained metal equiv.		\$91,771	\$41.63
	Spot	4 Apr 2018	Sulphate	¥142,000	\$22,469	\$10.19
			Contained metal equiv.		\$107,167	\$48.61
Nickel sulphate (contains 22.33% nickel)	PFS	Feb 2018 (avg)	Sulphate	¥27,500	\$4,351	\$1.97
			Contained metal equiv.		\$19,486	\$8.84
	Spot	4 Apr 2018	Sulphate	¥28,500	\$4,510	\$2.05
			Contained metal equiv.		\$21,509	\$9.76

All pricing data sourced from SMM (Shanghai Metals Markets – metals.com)
CNY USD exchange rate USD:CNY \$1.00 equals ¥6.32





APPENDIX – Base case flowsheet

Pressure Acid Leach, with Mixed Sulphide precipitation yields high purity product



Ardea Resources Limited

ASX : ARL

www.ardearesources.com.au

Suite 2, 45 Ord St, West Perth WA 6005, AUSTRALIA

+61 8 6244 5136

Email us at ardea@ardearesources.com.au