

# QUARTERLY OPERATIONS REPORT

ASX & Media Release 31 July 2018

ASX Symbol

ARL

#### Ardea Resources Limited

Suite 2 / 45 Ord St West Perth WA 6005

PO Box 1433 West Perth WA 6872

Telephone

+61 8 6244 5136

Email ardea@ardearesources.com.au

Website

www.ardearesources.com.au

#### Directors

Katina Law Executive Chair

Ian Buchhorn Executive Director

Wayne Bramwell Non-Executive Director

#### Issued Capital

*Fully Paid Ordinary Shares* 104,990,413

Unlisted options exercisable at \$0.25 12,310,022

Directors/Employee Performance Rights 2,990,000

ABN 30 614 289 342

For the Quarter ended 30 June 2018

### DEVELOPMENT

#### Goongarrie Nickel Cobalt Project (GNCP)

• Expansion Study (ES) highlights strong case for an expanded throughput to 2.25Mtpa

Case	Pre-tax NPV <sub>8</sub>	Post-tax NPV <sub>8</sub>	IRR	Payback
1.0Mtpa PFS	A\$1.43 billion	A\$1.04 billion	25 %	5.3 years
1.5Mtpa PFS	A\$1.93 billion	A\$1.40 billion	25 %	5.6 years
2.25Mtpa ES	A\$3.15 billion	A\$2.29 billion	<b>27 %</b>	5.1 years

- Goongarrie infill 80x40m RC drilling completed, resource estimation current including nickel-cobalt-scandium, neutraliser and alumina
- Key appointments to deliver Definitive Feasibility Study:
  - o Susanna Beech appointed Approvals Manager, Perth
  - o Will Stewart appointed Geology Superintendent, Kalgoorlie
- Research and Development for Goongarrie flow-sheet culminates with pilot plant commissioning:
  - o 15 wet tonnes, sonic core supplemented with RC chips
  - End-product will be nickel and cobalt sulphate, available for battery manufacturer testing in September
- Programs for Goongarrie flora, fauna, hydrology, geotechnical design and material characterisation underway
- KPMG Corporate Finance appointed to coordinate the Strategic Partner search for development of the GNCP

### **EXPLORATION**

### WA Gold-Nickel Assets

- **Mt Zephyr regional** structural interpretation completed defining Yamarna-style structural system with altered granitoid gold host
- Gale prospect large granitoid quartz vein system, awaiting assays

#### Lachlan Fold Belt NSW

- NSW assets notably Lewis Ponds being evaluated for divestment
- Orange-based, NSW management team appointed

# CORPORATE

Cash position at end of Quarter of **\$19.2M**, all corporate and development activity well-funded



# June 2018 Quarter

Ardea is pleased to provide this update of the Company's progress during the June 2018 Quarter.

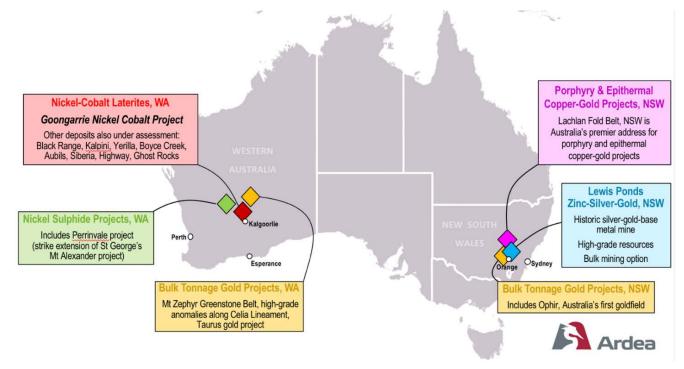


Figure 1 – Project Locations

# 1. Development

During the Quarter the Expansion Study for the Company's flagship Goongarrie Nickel Cobalt Project (GNCP) in Western Australia was completed.

Goongarrie and the encompassing Kalgoorlie Nickel Project (KNP) is a strategically valuable asset that has had >A\$50M spent on it by multiple significant resource companies. The GNCP is underpinned by the following highlights:

- March 2018 Pre-feasibility Study (PFS) with 1.0Mtpa and 1.5Mtpa throughputs covers only 5% of the KNP resource.
- Recently released Expansion Study for a 2.25Mtpa throughput focussed on Train 1 at Goongarrie, with the KNP resource well able to service an additional Train 2 with generations of mine life untapped and available.
- Uncomplicated flowsheet focussed on premium goethite ore.
- Short residence time in pressure vessels in comparison to other laterite ore types.
- Low risk fifth generation Pressure Acid Leach (PAL) process which is proven and operating successfully in other jurisdictions.
- Significant infrastructure advantages with a major highway, railway line, high pressure gas pipeline and power transmission lines adjacent to Goongarrie tenements.

# Ardea Resources Limited

- Highest cobalt grades from a non-conflict jurisdiction.
- Largest bulk resource cobalt project outside of Democratic Republic of Congo.
- Significant by-product metals being evaluated, notably scandium, alumina and manganese.
- Abundance of opex-reducing feedstocks notably neutraliser for PAL discharge located within scheduled Goongarrie pits, negating the need to import high-cost neutraliser.
- Internationally intense competition amongst EV manufacturers and battery makers to secure long term, reliable supply of "ethical" battery metals.

# **Goongarrie Nickel Cobalt Project feasibility**

The location of the GNCP is a key advantage for the Company as it is less than an hour's drive on bitumen roads from Kalgoorlie in Western Australia, an established regional hub with 125 years of mining history.

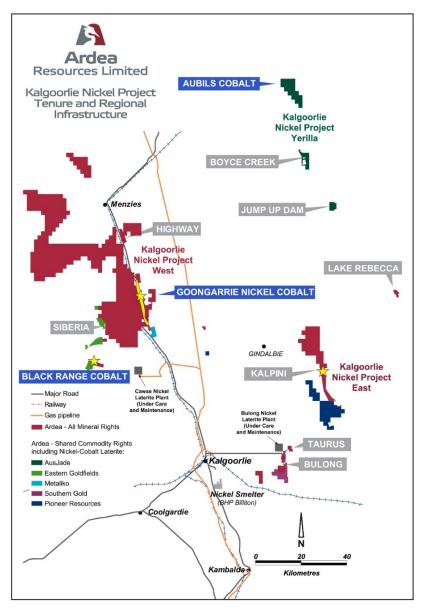


Figure 2 – The Kalgoorlie Nickel Project (KNP) Regional Infrastructure, showing project areas

The proximity of world-class infrastructure is a major advantage, with Kalgoorlie providing key support for mining operations, including infrastructure, logistical and personnel support, and is considered to be Australia's key mining capital.

Definitive Feasibility Study (DFS) programs commenced immediately following release of the PFS results (see announcement dated 28 March 2018).

Programs involving hydrology, geotechnical design and material characterisation are underway, in preparation for initial Environmental Protection Authority (EPA) referral.

Strategically, Ardea holds nickel-cobalt laterite projects covering 1,738 km<sup>2</sup> near Kalgoorlie. Goongarrie makes up only 142 km<sup>2</sup> of this total area.



# Key metrics of the Goongarrie Nickel Cobalt Project Expansion Study

Autoclave Throughput*2.25Initial Life of Mine25Average Annual EBITDAUS\$ 354 millionPre-production Capital Estimate**US\$ 918 millionNet Present Value (NPV) (post tax)***US\$ 1.805 billionInternal Rate of Return (IRR) (post tax)27Average C1 operating cash costs – inclusive of by-product credits(US\$4.63/lb NickelAverage C1 operating cash costs – exclusive of by-product creditsS.88/lb Nickel	Parameter	Assumption/Outcome \$US****	Assumption/Outcome \$A
Average Annual EBITDAUS\$ 354 million\$ 450 millionPre-production Capital Estimate**US\$ 918 million\$ 1.165 billionNet Present Value (NPV) (post tax)***US\$ 1.805 billion\$ 2.29 billionInternal Rate of Return (IRR) (post tax)27%Average C1 operating cash costs – inclusive of by-product credits(US\$0.34)/Ib Nickel(\$ 0.43)/Ib NickelAverage C1 operating cash costs – exclusiveUS\$4.63/Ib Nickel\$ 5.88/Ib Nickel	Autoclave Throughput*	2.25Mtpa	
Pre-production Capital Estimate**US\$ 918 million\$1.165 billionNet Present Value (NPV) (post tax)***US\$ 1.805 billion\$2.29 billionInternal Rate of Return (IRR) (post tax)27%Average C1 operating cash costs – inclusive of by-product credits(US\$0.34)/Ib Nickel(\$0.43)/Ib NickelAverage C1 operating cash costs – exclusive of by-product creditsUS\$4.63/Ib Nickel\$5.88/Ib Nickel	Initial Life of Mine	25 y	/ears
Net Present Value (NPV) (post tax)***US\$ 1.805 billion\$2.29 billionInternal Rate of Return (IRR) (post tax)27%Average C1 operating cash costs – inclusive of by-product credits(US\$0.34)/Ib Nickel(\$0.43)/Ib NickelAverage C1 operating cash costs – exclusive of by-product creditsUS\$4.63/Ib Nickel\$5.88/Ib Nickel	Average Annual EBITDA	US\$ 354 million	\$ 450 million
Internal Rate of Return (IRR) (post tax) 27%   Average C1 operating cash costs – inclusive of by-product credits (US\$0.34)/Ib Nickel (\$0.43)/Ib Nickel   Average C1 operating cash costs – exclusive US\$4.63/Ib Nickel \$5.88/Ib Nickel	Pre-production Capital Estimate**	US\$ 918 million	\$1.165 billion
Average C1 operating cash costs – inclusive of by-product credits(US\$0.34)/Ib Nickel(\$0.43)/Ib NickelAverage C1 operating cash costs– exclusiveUS\$4.63/Ib Nickel\$5.88/Ib Nickel	Net Present Value (NPV) (post tax)***	US\$ 1.805 billion	\$2.29 billion
of by-product credits US\$4.63/Ib Nickel   Average C1 operating cash costs- exclusive US\$4.63/Ib Nickel	Internal Rate of Return (IRR) (post tax)	2	7%
		(US\$0.34)/Ib Nickel	(\$0.43)/lb Nickel
		US\$4.63/Ib Nickel	\$5.88/lb Nickel
Project payback (simple) 5.1 years	Project payback (simple)	5.1 years	

Table 1: Summary of Approximate Outcomes for the 2.25Mtpa Throughput Scoping Study

\*Autoclave throughput rate following 24-month commissioning and ramp up period

\*\*Includes \$192 million contingency on capital costs

\*\*\*8% discount, 100% equity, real terms

\*\*\*\* Exchange rate used AUD:US 0.788 as for March 2018 PFS

Nickel sulphate and cobalt sulphate prices are average recorded transaction prices for February 2018 in the People's Republic of China, the world's largest consumer of these products (Source: SMM, see 28 March 2018 PFS announcement Section 13). Note: production tonnages are rounded to reflect degree of certainty.

The purpose of the 2.25Mtpa Goongarrie Expansion Study (see announcement dated 24 July 2018) was to investigate at a scoping level the optimal throughput that could be achieved using a single autoclave processing train. The Expansion Study is a scoping level study with operating and financial parameters generated through up-scaling the previous PFS results.

The outstanding metallurgical characteristics and rheology of the Goongarrie orebody have resulted in an extremely robust, unleveraged, pre-tax NPV of approximately A\$3.1 billion, with a pre-tax IRR of approximately 31% and a rapid payback period of 5.1 years for a 2.25Mtpa operation.

The positive financial results reflect the favourable metallurgical characteristics which enables extremely short residence time in the autoclave, with no significant loss in metal recovery.

The 2.25Mtpa start-up option can easily be expanded by adding modular processing trains to take advantage of the full scale of Goongarrie's world-class resource base.

The Expansion Study highlights the upside potential of Goongarrie and its competitive economies of scale. The primary goal of the Company was to determine a cost-effective start-up scenario, whilst also providing an upside case more suited to a Financier or Strategic Partner seeking a long life, low cost, sustainable production base in a stable jurisdiction. The results show the benefits of scale, demonstrating Goongarrie as a unique battery metals project that can become a significant global producer over a long life.

Mine and processing life is artificially limited to 25 years for the purposes of financial modelling. With conversion of resources (which is current including new 2018 drilling results), mine life could be extended for many decades beyond these 25 years.



### Mining schedule and cost adjustment

The optimised pits from the 1.5Mtpa PFS mining schedule were used, supplemented with pit shells from non-schedule areas containing Inferred Mineral Resource.

		1.5Mtpa PFS Level*			2.25Mtpa	Expansion S	tudy Level
Mining schedule parameter		Total	Measured + Indicated	Inferred	Lotal	asured dicated	Inferred
High Grade Cut-off		1.0 % Ni equivalent <sup>1</sup>		1.0 % Ni equivalent <sup>1</sup>			
High Crado Oro	Tonnes Input to Mill	32.6	30.9	1.7	56.6	44.5	12.0
High Grade Ore	Co grade Input to Mill	0.11%	0.11%	0.13%	0.10%	0.10%	0.11%
	Ni grade Input to Mill	0.93%	0.93%	0.92%	0.88%	0.87%	0.78%
Low Grade Cut-off		0.8	1 % Ni equivale	ent <sup>2</sup>	0	81 % Ni equival	ent <sup>2</sup>
	Tonnes Input to Mill	4.4	4	0.4	-	-	-
	Co grade Input to Mill	0.05%	0.05%	0.05%	-	-	-
	Ni grade Input to Mill	0.57%	0.57%	0.57%	-	-	-
	Tonnes to Stockpile	5.9	5.3	0.7	22.0	17.1	4.8
Low Grade Ore	Co grade Input to S/pile	0.06%	0.05%	0.05%	0.05%	0.05%	0.05%
	Ni grade Input to S/pile	0.56%	0.56%	0.56%	0.56%	0.56%	0.55%
	Total LG Tonnes	10.3	9.2	1.1	22.0	17.1	4.8
	Co grade	0.05%	0.05%	0.05%	0.05%	0.05%	0.05%
	Ni grade	0.56%	0.56%	0.59%	0.56%	0.56%	0.55%
Total Mill Feed	Tonnes to Mill	37.0	34.8	2.1	56.6	44.5	12.0
	Co grade Input to Mill	0.10%	0.10%	0.12%	0.10%	0.10%	0.11%
	Ni grade Input to Mill	0.89%	0.89%	0.86%	0.88%	0.87%	0.78%
Waste Tonnes			~63.0 Mt			~115.1 Mt	
Mining Life		23 years ~25 years					
Processing Life			25 years		~25 years		

Table 2 – Mining Schedule Outputs for the 2.25Mtpa Throughput Scoping Study

\*See PFS announcement released to ASX on 28 March 2018, Expansion Study released 24 July 2018.

1. Using a nickel equivalent cut of >1.0%, 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+(Co grade × Co price)/ Ni price . Prices used are US\$15,120/t for nickel and US\$96,600/t for cobalt.

2. 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+(Co grade × Co price)/ Ni price . Prices used are US\$15,120/t for nickel and US\$96,600/t for cobalt.

The material in the mining schedule was sourced from the pit optimisation shells for the Goon Line being Goongarrie South, Big Four and Scotia Dam, using the same input parameters as the PFS Ore Reserve mining schedule, with the addition of JORC classified inferred material.

The PFS Ore Reserve pit designs deliver approximately 33Mt of material at greater than or equal to a 1.0% nickel equivalent high-grade cut-off. A further approximately 24Mt at greater than 1.0% nickel equivalent grade was sourced from pit shells created by deepening the open pits.

### Pilot Plant

Research and development of the Goongarrie metallurgical flow-sheet culminated with Ardea engaging engineering firm Simulus to conduct pilot plant trials for Goongarrie ore.



The pilot plant trial is being completed on 7.5 dry tonnes of representative mineralisation in the largest laboratory-scale research autoclave in the southern hemisphere. The objective is to provide data on the planned Goongarrie process flowsheet while producing sufficient marketing quantities of cobalt sulphate and nickel sulphate crystals. These marketing products will be available as part of third party due diligence currently being completed by potential Strategic Partners.

Based on the optimised pit schedule material, specifically drilled sonic core drilled at 200m intervals along the strike length of Pamela Jean and Elsie Tynan orebodies supplemented with bulk RC chips from the Patricia Anne orebody was used, being 15 wet tonnes at approximately 1.1% nickel, 0.12% cobalt and 35g/t scandium. Comminution has been successfully completed and leaching is due to commence shortly.

#### **Approvals Process**

The Goongarrie Nickel Cobalt Project has been designed such that multiple characteristics of the mineralisation favour a minimised site footprint:

- The strip ratio is low at approximately 2:1, thereby minimising project waste generation.
- Waste is in any event used for progressive back-fill and rehabilitating adjoining earlier stage pits.
- Early-mined nodular surface laterite waste is particularly well suited to the road network construction required for servicing multiple pits.
- The ultramafic rock mine waste from anecdotal observation favours flora assemblages amenable to waste stabilisation.

Referrals for the State and Commonwealth environmental regulator EPA are in preparation.

### Research and Development

The Goongarrie Project has had several key attributes identified in R&D programs:

- Carbonate is necessary for neutralising autoclave discharge. Such carbonate can be recovered from mine waste at nil effective cost and includes dolomite and magnesite neutraliser resources within palaeo-channels overlying the cobalt-nickel ore zones. This carbonate will be consumed as plant neutraliser feedstock. This is a breakthrough concept entirely unique to Goongarrie.
- Nickel and cobalt naturally present in carbonates above the defined ore zones may also be recovered in part. The metals would be released through consumption of the carbonates, with new techniques unique to Goongarrie being tested to maximise metal recovery.
- Tailings research has demonstrated exceptional filtration ability facilitating dry-stack tailings disposal. The current back-fill plan is clay-rich mine waste below standing water tables, and dry-stack tailings above. This again is a unique Goongarrie development.
- Detailed core logging combined with multi-element geochemistry and XRD mineralogy has identified potential co-products including scandium oxide and manganese sulphate from the PAL/MS circuit, and High Purity Alumina (kaolin precursor), scandium and vanadium in an independent circuit.
- Palygorskite-type clays have been identified in transported overburden (ancestral Lake Goongarrie playa lake). Given the clay's sorptive properties, it has use in environmental clean-up.
- Alternate energy options are under investigation to reduce site energy operating costs and minimise greenhouse gas emissions.
- Research into potential scandium markets and product development from the GNCP has commenced. Further development of a scandium flowsheet by bench scale research will be followed by a continuous flowsheet.



3

# Comparison of Cobalt and Nickel Grades between RC Drill-hole Original and Comfirmatory Sonic Drill-hole Twin

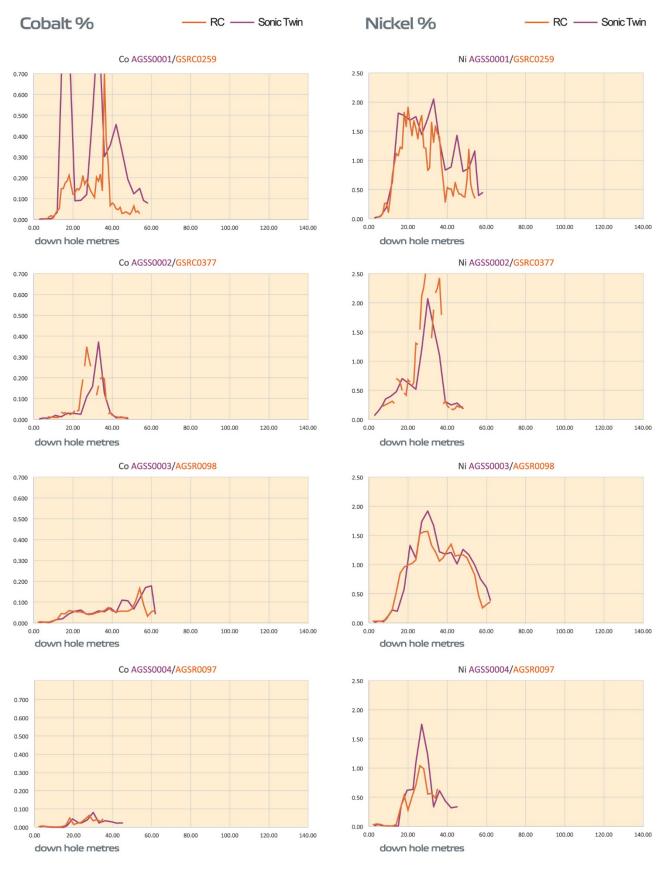


Figure 3 – Comparison plots sonic versus RC assays.



## **Resource Drilling**

Drilling for the June 2018 Quarter consisted of:

- Goongarrie South 174 RC holes of 80x40m infill for 7,967m.
- Goongarrie South 64 RC holes of 40x40m infill for 3,170m.
- Goongarrie South 8 RC holes of 40x20m infill for 709m.
- Big Four 99 RC holes of 80x40m infill for 3,777.
- 17 Diamond Drill core holes for 841.8m.
- 19 Sonic core holes for 1,108m.

The RC infill drilling provided excellent agreement with historic RC holes, providing confidence that areas of current Inferred Mineral Resource will upgrade to Indicated.

The diamond drilling QAQC twins confirmed that historic plus current Ardea RC drill-holes are generating valid grade and geo-metallurgical data.

The wide diameter sonic core holes were completed at 200m intervals along the axes of the proposed Pamela Jean and Elsie Tynan pits, for QAQC confirmation of historic RC drill holes (refer figure 3), and for generating pilot plant ore feed. The sonic results received to date suggest cobalt grades could be under-estimated in historic RC drilling, though nickel is more accurate.

With the excellent results for the 2.25Mtpa Expansion Study, additional areas of Inferred Mineral Resource now require infill RC drilling to an 80x40m pattern, notably at Scotia Dam. Drill approval applications have been approved by the State mining regulator DMIRS.

A deep RC drilling program has commenced at the Pamela Jean Deeps to allow accurate siting of core holes for geotechnical evaluation of pit batter positions, as well as generate additional deeper core for current Material Characterisation studies.

Results continue to be received for the completed RC, diamond and sonic drilling with updates on these results planned for the upcoming reporting period.

The systematic assaying of scandium, vanadium and chromium by the Company shows that substantial by-product mineralisation continues to be discovered above and within the known cobalt-nickel mineralisation.

# **Strategic Partner Process**

The GNCP is attracting strategic investor interest because of its scalability, superior nickel-cobalt metal endowment, large upside resource potential and possible valuable co-production of payable metals.

The intense competition seen amongst large European, US, Korean, Japanese and Chinese Electric Vehicle and battery manufacturers has generated much interest in the GNCP and as such the Company has engaged KPMG Australia Corporate Finance's Metals and Mining team to conduct a global search for strategic investor(s) to assist in the financing and development of the GNCP.

KPMG Corporate Finance is running a competitive process to identify and attract one or more strategic financing partners to support the development of the Goongarrie Nickel Cobalt Project.

The Company has received positive enquiries from interested parties including industrial conglomerates, battery manufacturers, automakers, trading houses, mining houses and others.



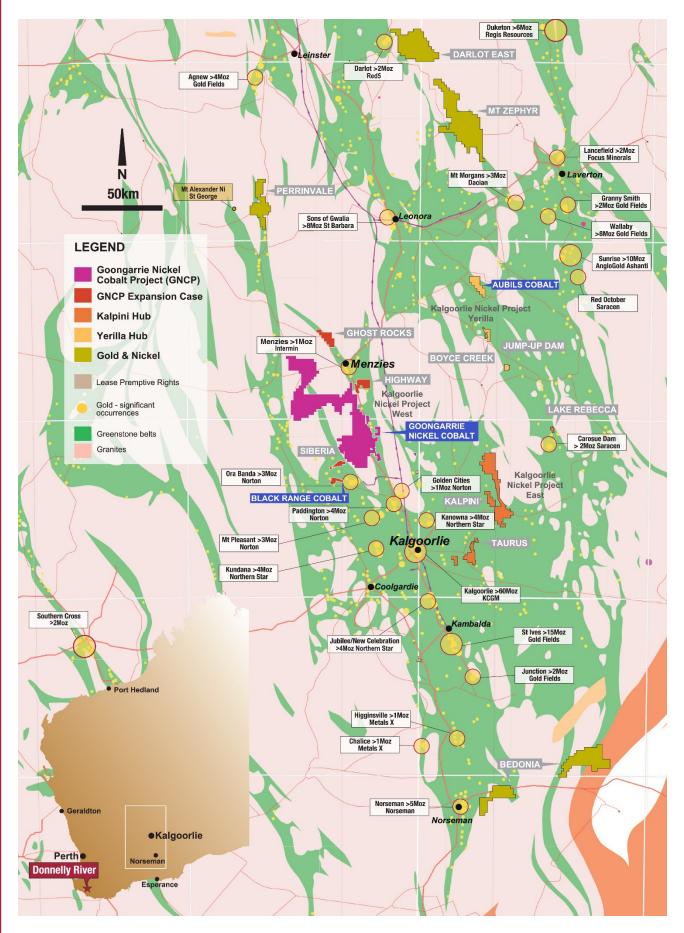


Figure 4 – Ardea's Western Australian projects



# 2. Exploration

Ardea has a significant number of additional projects outside of but supporting the GNCP. Many such projects host nickel-cobalt laterite resources whilst other host significant gold or nickel sulphide mineralisation.

The WA Exploration and Development tenure is shown in Figure 4:

- The primary and current focus is the GNCP, with multiple DFS programs already underway. Key current work programs are piloting, approvals and updated resource estimation.
- Supporting the DFS programs are the GNCP Expansion Case tenure and "additional train" tenure at Siberia, Highway and Ghost Rocks. All current evaluation programs include these tenements, notably piloting has specifically included geometallurgical types characteristic of individual Expansion Case ore bodies.
- Kalpini Hub is nontronitic and goethitic nickel-cobalt laterite, being evaluated either as a satellite feed to the GNCP or potential future standalone hub.
- Yerilla Hub is nontronitic and saprolitic nickel-cobalt laterite, being evaluated either as a satellite feed to the GNCP or potential future standalone hub.
- Gold and Nickel tenure has a surprisingly important role in development and production at the GNCP:
  - Initial metallurgical modelling indicates nickel sulphide is a beneficial GNCP autoclave addition for high grade nickel units, sulphuric acid generation and oxidation/reduction control.
  - The currently defined GNCP borefield and infrastructure sites have presented in initial studies with potentially good gold endowment, and ore grade gold intercepts within porphyry intrusives are often recorded in Ardea laterite drill-outs.

In these circumstances, all WA tenure is likely to remain 100% Ardea-owned in the immediate term.



For NSW based projects, the Ardea tenure is under review for possible divestment. A potential strategy to crystallise value for Ardea Shareholders is a spin-out of the gold-copper-zinc portfolio.

In order to advance the divestment of the NSW assets, a local Orange-based management team has been appointed.

Figure 5 – Matt Painter field checking and sampling at the Mount Zephyr gold mine, along the Celia Shear Zone. Outcropping BIF along Dunn's Line is cross-cut by a series of structures that offset the BIF and correspond with historic gold workings. Here one of the "Boogardie Break" type structures is being sampled.

# Ardea Resources Limited

# Mount Zephyr gold project, Eastern Goldfields, WA (100% Ardea)

Upon acquisition of Ardea's new, high-resolution aeromagnetic and ground gravity data at Mount Zephyr, a complete reinterpretation of the geology was undertaken.

In areas of poor outcrop such as the Mount Zephyr greenstone belt, such data is used to redefine the geology and assist in the identification of potential targets for gold mineralisation.

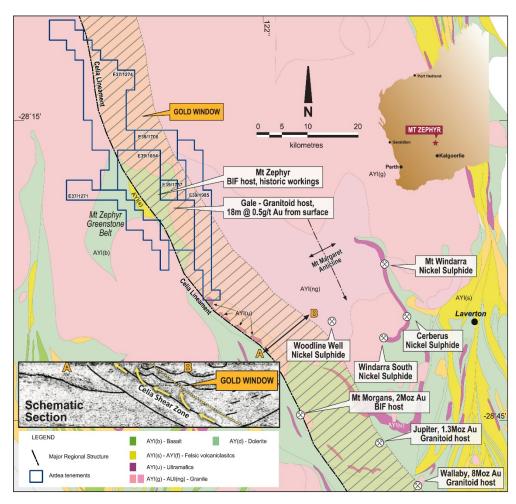


Figure 6 – Regional scale geology, Mount Zephyr, Celia Shear Zone defines the western bounding structure of the greenstone belt, with the Gale gold target some 10km east of the Celia Shear Zone.

To the southeast, there are major granite-hosted (syenite) gold systems at Jupiter and Wallaby, also located some 10km east of the Celia Shear Zone bounding fault.

Additionally, the western limb of the nickel sulphideendowed Mt Windarra ultramafic occurs within Mt Zephyr tenure.

### Gale

The Gale prospect is located on the eastern margin of the Mount Zephyr greenstone belt, and is hosted within an "internal" granitoid within the greenstones, as opposed to the regional granites further to the east.

Gold mineralisation is documented from historic exploration, with RAB drill intercepts including 18m at 0.5g/t Au from surface corresponding with alteration and oxidised pyrite mineralisation in granite.

Reinterpretation of geophysical data suggested extension of the internal granite further west of the historic drill programs. This was confirmed through on-ground checking, with the western extension corresponding to common, intense red-rock alteration and strong quartz(-pyrite) veining and brecciation.

This alteration is so intense that it has destroyed the original granitic texture and is typical of mineralised zones in other Celia Shear Zone deposits. Assay results are pending, but the textures observed are consistent with a significant mineralising event.



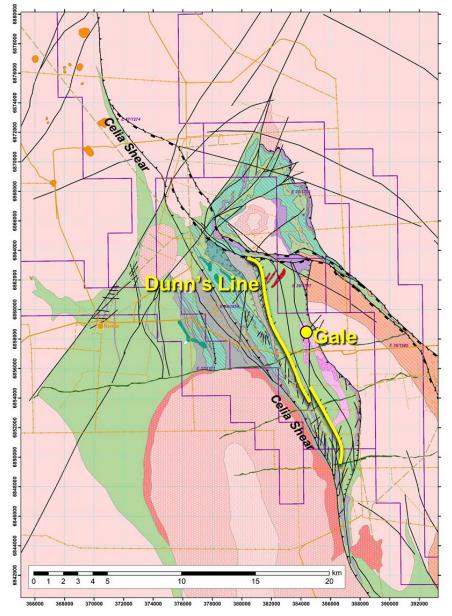


Figure 7 – New geological interpretation of the Mount Zephyr greenstone belt is a work in progress. Ardea's tenements have a purple outline and show the Company's dominant position in the belt. New interpretations are already generating new targets for gold exploration.

Green units are mafic rocks (basalt, dolerite, gabbro), purple are ultramafic rocks, and grey are metasedimentary rocks. Blue lines represent banded iron-formation (BIF) which is host to gold mineralisation along Dunn's Line. Pink, red, and orange are various phases of granites and granitic gneisses. The bright pink (centre right) is the Gale granitoid.

### Dunn's Line

Dunn's Line is a line of historic working along banded-iron formation (BIF) outcrops to the east of the Celia Shear Zone. The localised workings are distributed along 5km of exposed BIF.

Historic mining commenced in 1899, with mining grades between 5 and 90g/t common from the Mount Zephyr mine.

On-ground examination of Dunn's Line in conjunction with geophysical data shows that all historic workings correspond to faulted offsets of the BIF. It seems that they correspond to NNE-trending faults along which there has been up to 50m of left-lateral (sinistral) apparent movement in the horizontal plane (comparable to the famed Mt Magnet "Boogardie Breaks"). Ardea will, in contrast to previous exploration efforts, target these breaks in the BIF units rather than targeting the boldly outcropping BIFs themselves.

Reinterpretation of geophysical data shows that the host BIF unit is far more extensive than outcrop suggests. It appears to extend for up to 18km through various offsets and breaks, with most of this being under cover.



### **Regional Targets**

The broader architecture of the Mt Zephyr greenstone belt is felt to be comparable to that of the Yamarna greenstone belt located in parallel to the east.

The Celia Shear Zone in the Dunn's Line area can be compared to the Yamarna Shear Zone, and parallel and further east, the Gale structures can be compared to the Dorothy Hills Shear Zone (which hosts the 5.9 Moz Gruyere gold discovery).

Ardea has completed several field programs at Mt Zephyr during the Quarter, and samples have been submitted for assay and results awaited.

# Bardoc Tectonic Zone gold project, Eastern Goldfields, WA (100% Ardea)

The Company's Bardoc Tectonic Zone (BTZ) gold project comprises a series of gold deposits and prospects stretching more than 40 km parallel to and immediately east of the Goongarrie nickel-cobalt ultramafic. The BTZ is a major regional structure, hosting numerous gold mines such as Paddington and the historic Goongarrie gold mining centre, and connecting through to the Boulder-Lefroy Fault which controls mineralisation at Kalgoorlie amongst others.

In Ardea's tenure, gold occurrences are located within a distinct corridor and have been mined historically along shear-parallel structures, with the site of the historic township of Goongarrie (located north of the proposed nickel and cobalt operations) originally being a gold mining centre in the early twentieth century (the second gold mining centre in the Eastern Goldfields after Coolgardie and before Kalgoorlie).

The BTZ is immediately adjacent to the Goongarrie nickel-cobalt mineralisation in a corridor of minimal outcrop exposure. Historic workings are present at the Big Four gold mine within GNCP tenure and several other localities. Sterilisation drilling for the Goongarrie project will cover some of this area, and gold anomalies are present locally throughout historic and current drilling.

Interpretation of geophysical data over the BTZ during the Quarter shows several potential target areas along the strike length of the Goongarrie Nickel Cobalt Project.

Interestingly, detailed geophysical interpretation aimed at defining gold exploration targets has highlighted structures which correspond closely to the main GNCP borefield targets.

# 

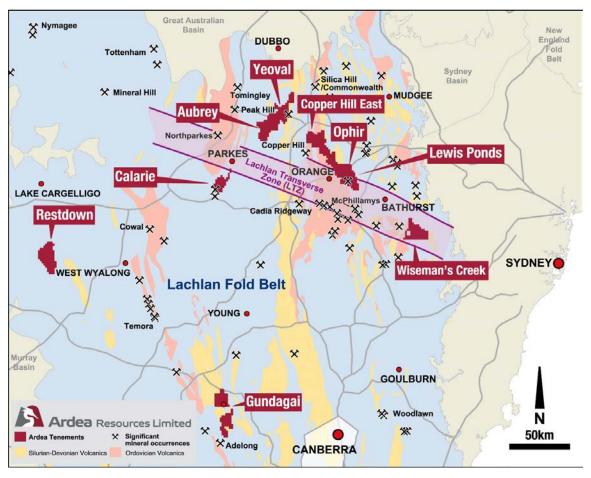


Figure 8 – Ardea's projects in the highly prospective Lachlan Fold Belt of NSW

# **3. NSW**

# Lewis Ponds zinc-gold-silver-copper deposit, NSW (100% Ardea)

Relogging and resampling of the historic drill core was completed during the Quarter. A new resource will be generated upon receipt of all data.

Metallurgical testwork for the scoping study into bulk mining and recovery of metals from the Lewis Ponds deposit is near completion. The study has focused on producing two separate concentrates at bench scale – a zinc concentrate and a lead-copper-silver-gold concentrate.

# Lachlan Fold Belt copper-gold, NSW (100%Ardea)

# Copper Hill East copper-gold project – EL8556

An epithermal gold-silver prospect was generated for the Lewis Ponds area based on sampling old workings associated with the Godolphin Fault, a shallow east-dipping domain boundary structure separating the Ordovician Macquarie Arc in the west from the Silurian Hill End Trough in the east. From southeast to northwest, the structure hosts gold mining centres and targets from McPhillamy's, Springfield, Mt Shorter, Calula and Copper Hill East. This Godolphin Fault trend is held within Ardea's tenement package, a 50km strike of continuous tenure in proximity to the McPhillamy's deposit in the south and the Commonwealth (Silica Hill) deposit in the north.



# Yeoval Porphyry copper-gold-molybdenum-rhenium project – EL8538

Yeoval is located within the Macquarie Arc, 60km northeast of the Northparkes copper-gold mine. The tenement covers an area of 138km<sup>2</sup> and is intensely mineralised with more than 60 historic copper workings trending in a north-easterly direction along a 20km strike. The project area encompasses the eastern section of the Early Devonian Yeoval Complex, with the major host being the Devonian-aged Naringla Granodiorite. The Ardea exploration target is a large tonnage porphyry copper-gold-molybdenum-rhenium system.

The known Yeoval deposit comprises two main near-surface zones of bornite-chalcopyrite mineralisation. Initial drilling in 1972 produced best intercepts of 42.7m at 0.93% Cu and 18m at 0.8g/t Au. Drilling in 2008 produced best intercepts of 90m at 0.90% Cu and 0.14g/t Au and 50m at 0.54% Cu and 0.48g/t Au.

## Mt Aubrey epithermal gold-silver project - EL8532

Mt Aubrey is located at the east contact of the highly mineralised Macquarie Arc Ordovician andesites some 30km northeast of Parkes and 30km southeast of the historic Peak Hill epithermal gold mine.

Mt Aubrey was acquired by Ardea as an epithermal gold system hosted in Upper Silurian to Lower Devonian-aged Dulladerry Volcanics, a bimodal subaerial suite of quartz eye porphyry with rhyolitic ashflow lapilli tuff, pyroclastic and breccia and amygdaloidal basalt. Gold mineralisation is typically hosted by 0.5-3m thick chalcedonic epithermal quartz veins and stockworks.

Gold mineralisation at the Mt Aubrey vein system remains open at depth and along strike, as the historical drilling done by BHP Gold was only designed to define shallow oxide resources. The Mount Aubrey deposit was mined in the supergene zone only by BHP Gold in 1990 and 1991 as shallow open-pit satellite operations to the Parkes Gold Mine.

Mt Aubrey along with the adjoining Yeoval tenure is interpreted by Ardea as the manifestation of a major NE-trending zoned porphyry copper-gold-molybdenum-rhenium to epithermal gold-silver intrusive centre.

### Wiseman's Creek gold-copper project – EL8554

Wiseman's Creek is located 35km southeast of Bathurst, NSW. Epithermal gold mineralisation within the tenure is hosted largely within Late-Silurian – Early Devonian-aged slates, shales and sediments of the Kildrummie and Campbell's Groups, with geology through the centre of the tenure comprising the andesitic Ordovician-aged Rockley Volcanics.

Mineralisation has been reported as predominantly associated with silicified zones with epithermal textures such as open-space filling in quartz veins, quartz vein breccias, chalcedonic silicification and colloform banding. The units strike NNW and dip steeply eastwards.

# Gundagai gold-copper project – EL8061 & 8586

The Gundagai tenements are located 315km southwest of Sydney. Several old gold workings hosted by mineralised porphyry units exist in the Ardea tenure with mining dating back to 1842.

The Big Ben gold prospect was drilled by previous tenement holder Heron Resources Limited in 2013. Several intervals had panned visible gold indicating coarse gold in the system. Results include 20 metres at 1.58g/t gold from 27metres in drill-hole BBRC007. Additionally, highly anomalous soil gold geochemical targets remain untested immediately east of Big Ben.



# 4. Corporate

# Leadership

On 29 June 2018, Katina Law assumed the role of Executive Chair when Managing Director and CEO Mr Brett Clark resigned for family reasons. An executive search for a new Managing Director has commenced.

The Company's internal resources remain focussed on the advancement of the Goongarrie Nickel Cobalt Project. General Manager Gold, Dr Matt Painter, is focused on drill appraisal of the 100%-owned Mt Zephyr Gold Project in WA and evaluating a possible divestment including spin-out of the Lewis Ponds Zinc Project and associated tenure in NSW.

# Finance

The Company's cash position is \$19.2M at quarter end.

Issued capital at 30 June 2018 was 104,990,413 shares. The increase in capital arose from the conversion of Ardea Loyalty Options up to 31 May 2018, in total raising \$17.5M.

# **5. Looking Forward**

During the September 2018 Quarter, Ardea will focus upon the following programs.

# **Goongarrie Nickel Cobalt Project (WA)**

# **Ongoing Definitive Feasibility Study Programs**

The Company will continue work on DFS programs focussing on studies related to approvals and submission of the GNCP development proposal to the Environmental Protection Authority

The pilot plant research and development program will be completed to provide engineering and design data on the planned Goongarrie process flowsheet while producing sufficient quantities of cobalt and nickel sulphate crystals for marketing samples.

Ardea will also continue to report results from previously completed drilling programs as assays are received and interpreted.

# **Resource Upgrades**

The Company is currently conducting RC drill programs at Pamela Jean Deeps to assist in siting of geotechnical core drilling for batter designs and material characterisation.

Work on resource upgrades will continue for the areas covering the Goongarrie South and Big Four optimised pits.

Upon receipt of final assays for the current 80x40m infill RC drilling of proposed pit areas, a full GNCP resource upgrade will be completed.



# **GNCP** Flowsheet Research and Development

With the 773Mt KNP resource inventory, discrete high-grade cobalt zones and the 2018 scandium and neutraliser discoveries, further project upside is expected at Goongarrie with studies underway to define business cases for:

- Scandium oxide and manganese sulphate production from the PAL/MS sulphate circuit.
- Palaeochannel and mineralised saprock neutraliser optimisation.
- High Purity Alumina opportunities including from kaolin in the under-size reject from the neutraliser preparation circuit.
- Scandium-vanadium-aluminium in surface laterite overlying and separate from the nickel-cobalt mineralised sheet.

All potential co-production is after or independent from nickel-cobalt, meaning such options don't impact on nickel-cobalt.

Results will be released in the coming months and may well provide significant upside to the Goongarrie business case.

## **Strategic Partner Process**

KPMG Corporate Finance will continue to progress the search for one or more Strategic Partners for the GNCP. The Company intends to advance this process significantly during the Quarter, with the Virtual Data Room now available to pre-selected parties.

# WA and NSW Exploration / Development

# Mt Zephyr (WA)

Targets generated form the recent gravity/magnetic surveys and field sampling will initially be assessed with soil auger geochemistry.

# Lewis Ponds (NSW)

The new team for Lewis Pond will continue to advance the project with a view to a potential divestment of the NSW assets. Once all assay and geological data is available, resource estimation will commence.

A considerable amount of historic data requires validation and integration into the Ardea data base.

For and on behalf of the Board

Katina Law, Executive Chair, Ardea Resources Limited Tel +61 8 6244 5136

For further information regarding Ardea, please visit www.ardearesources.com.au



#### COMPLIANCE STATEMENT (JORC 2012)

A competent person's statement for the purposes of Listing Rule 5.22 has previously been announced by the Company for:

- 1. Kalgoorlie Nickel Project on 21 October 2013 and 31 July 2014, October 2016, 2016 Heron Resources Annual Report and Ardea Second Supplementary Prospectus, 6 January 2017;
- 2. KNP Cobalt Zone Study on 7 August 2017.

The Company confirms that it is not aware of any new information or data that materially affects information included in previous announcements, and all material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed. All projects are subject to new work programs, notably drilling, metallurgy and JORC Code 2012 resource estimation as applicable.

The information in this report that relates to Exploration Results for the Goongarrie Nickel Cobalt Project is based on information originally compiled by previous and current full time employees of Heron Resources Limited. The Exploration Results and data collection processes have been reviewed, verified and re-interpreted by Mr Ian Buchhorn who is a Member of the Australasian Institute of Mining and Metallurgy and currently a director of Ardea Resources Limited. Mr Buchhorn has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the exploration activities undertaken 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'. Mr Buchhorn consents to the inclusion in this report of the matters based on his information in the form and context that it appears.

The exploration and industry benchmarking summaries are based on information reviewed by Dr Matthew Painter, who is a Member of the Australian Institute of Geoscientists. Dr Painter is a full-time employee and a director of Ardea Resources Limited and 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'. Dr Painter has reviewed this press release and consents to the inclusion in this report of the information in the form and context in which it appears.

The information in this report that relates to Mineral Resources for the Goongarrie Hill, Goongarrie South, Big Four and Scotia Dam deposits of the Goongarrie Nickel Cobalt Project is based on information compiled by Mr Stephen Hyland who is a Fellow of the Australasian Institute of Mining and Metallurgy and who has provided expert guidance on resource modelling and resource estimation. Mr Hyland is a Principal Consultant Geologist with Hyland Geological and Mining Consultants and has sufficient experience 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. Mr Hyland consents to the inclusion in the report of the matters based on this information in the form and context in which it appears.

The information in this report that relates to Ore Reserves for the Goongarrie South and Big deposits of the Goongarrie Nickel Cobalt Project is based on information compiled by Mr Steve Lampron who is a Member of the Australasian Institute of Mining and Metallurgy and who has provided expert guidance on mine planning and Ore Reserve estimation. Mr Lampron is a director of Auralia Mining Consulting and has sufficient experience 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. Mr Lampron consents to the inclusion in the report of the matters based on this information in the form and context in which it appears.

#### ASX CHAPTER 5 COMPLIANCE AND PFS CAUTIONARY STATEMENT

The Company has concluded that it has a reasonable basis for providing the forward-looking statements and forecast financial information included in this announcement. The detailed reasons for that conclusion are outlined throughout this announcement and all material assumptions, including the JORC modifying factors, upon which the forecast financial information is based are disclosed in this announcement. This announcement has been prepared in accordance with the JORC Code (2012) and the ASX Listing Rules.

The actual results could differ materially from a conclusion, forecast or projection in the forward-looking information. Certain material factors were applied in drawing a conclusion or making a forecast or projection as reflected in the forward-looking information.

The Goongarrie Nickel Cobalt Project is at the PFS phase and although 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 scandium 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 PFS, which is based on forward looking statements, is that the Goongarrie Project is considered to have positive economic potential.

The Mineral Resource used for the PFS was classified under JORC 2012 Guidelines and announced by the Company on 14 March 2018. The cut-off grades adapted for the PFS and reported in Table 3.1 are the basis of the production target assumed for the PFS.

The Company believes it has a reasonable basis to expect to be able to fund and further develop the Goongarrie Project. However, there is no certainty that the Company can raise funding when required.

#### CAUTIONARY NOTE REGARDING FORWARD-LOOKING INFORMATION

This news release contains forward-looking statements and forward-looking information within the meaning of applicable Australian securities laws, which are based on expectations, estimates and projections as of the date of this news release.

This forward-looking information includes, or may be based upon, without limitation, estimates, forecasts and statements as to management's expectations with respect to, among other things, the timing and amount of funding required to execute the Company's programs, development and business plans, capital and exploration expenditures, the effect on the Company of any changes to existing legislation or policy, government regulation of mining operations, the length of time required to obtain permits, certifications and approvals, the success of exploration, development and mining activities, the geology of the Company's properties, environmental risks, the availability of labour, the focus of the Company in the future, demand and market outlook for precious metals and the prices thereof, progress in development of mineral properties, the Company's ability to raise funding privately or on a public market in the future, the Company's future growth, results of operations, performance, and business prospects and opportunities. Wherever possible, words such as "anticipate", "believe", "expect", "intend", "may" and similar expressions have been used to identify such forward-looking information. Forward-looking information is based on the opinions and estimates of management at the date the information is given, and on information available to management at such time. Forward-looking information involves significant risks, uncertainties, assumptions and other factors that could cause actual results, performance or achievements to differ materially from the results discussed or implied in the forward-looking information. These factors, including, but not limited to, fluctuations in currency markets, fluctuations in commodity prices, the ability of the Company to access sufficient capital on favourable terms or at all, changes in national and local government legislation, taxation, controls, regulations, political or economic developments in Australia or other countries in which the Company does business or may carry on business in the future, operational or technical difficulties in connection with exploration or development activities, employee relations, the speculative nature of mineral exploration and development, obtaining necessary licenses and permits, diminishing quantities and grades of mineral reserves, contests over title to properties, especially title to undeveloped properties, the inherent risks involved in the exploration and development of mineral properties, the uncertainties involved in interpreting drill results and other geological data, environmental hazards, industrial accidents, unusual or unexpected formations, pressures, cave-ins and flooding, limitations of insurance coverage and the possibility of project cost overruns or unanticipated costs and expenses, and should be considered carefully. Many of these uncertainties and contingencies can affect the Company's actual results and could cause actual results to differ materially from those expressed or implied in any forward-looking statements made by, or on behalf of, the Company. Prospective investors should not place undue reliance on any forward-looking information.

Although the forward-looking information contained in this news release is based upon what management believes, or believed at the time, to be reasonable assumptions, the Company cannot assure prospective purchasers that actual results will be consistent with such forward-looking information, as there may be other factors that cause results not to be as anticipated, estimated or intended, and neither the Company nor any other person assumes responsibility for the accuracy and completeness of any such forward-looking information. The Company does not undertake, and assumes no obligation, to update or revise any such forward-looking statements or forward-looking information contained herein to reflect new events or circumstances, except as may be required by law.

No stock exchange, regulation services provider, securities commission or other regulatory authority has approved or disapproved the information contained in this news release.

+Rule 5.5

# Appendix 5B

# Mining exploration entity and oil and gas exploration entity quarterly report

Introduced 01/07/96 Origin Appendix 8 Amended 01/07/97, 01/07/98, 30/09/01, 01/06/10, 17/12/10, 01/05/13, 01/09/16

Name of entity	
Ardea Resources Limited	
ABN	Quarter ended ("current quarter")
30 614 289 342	30 June 2018

Consolidated statement of cash flows		Current quarter \$A'000	Year to date (12 months) \$A'000
1.	Cash flows from operating activities		
1.1	Receipts from customers		
1.2	Payments for		
	(a) exploration & evaluation	(279)	(1,688)
	(b) feasibility & development	(4,336)	(7,602)
	(c) production	-	-
	(d) staff costs	(254)	(579)
	(e) administration and corporate costs	(351)	(926)
1.3	Dividends received (see note 3)	-	-
1.4	Interest received	101	161
1.5	Interest and other costs of finance paid	-	-
1.6	Income taxes paid	-	-
1.7	Research and development refunds	-	-
1.8	Other	-	-
1.9	Net cash from / (used in) operating activities	(5,119)	(10,634)

2.	Cash flows from investing activities		
2.1	Payments to acquire:		
	(a) property, plant and equipment	(78)	(311)
	(b) tenements (see item 10)	-	(222)
	(c) investments	-	-
	(d) other non-current assets	-	-

+ See chapter 19 for defined terms

Con	solidated statement of cash flows	Current quarter \$A'000	Year to date (12 months) \$A'000
2.2	Proceeds from the disposal of:		
	(a) property, plant and equipment	-	-
	(b) tenements (see item 10)	-	200
	(c) investments	-	-
	(d) other non-current assets	-	-
2.3	Cash flows from loans to other entities	-	-
2.4	Dividends received (see note 3)	-	-
2.5	Other (provide details if material)	-	-
2.6	Net cash from / (used in) investing activities	(78)	(333)

3.	Cash flows from financing activities		
3.1	Proceeds from issues of shares	-	9,976
3.2	Proceeds from issue of convertible notes	-	-
3.3	Proceeds from exercise of share options	9,085	17,512
3.4	Transaction costs related to issues of shares, convertible notes or options	(63)	(426)
3.5	Proceeds from borrowings	-	-
3.6	Repayment of borrowings	-	-
3.7	Transaction costs related to loans and borrowings	-	-
3.8	Dividends paid	-	-
3.9	Other (provide details if material)	-	-
3.10	Net cash from / (used in) financing activities	9,022	27,062

4.	Net increase / (decrease) in cash and cash equivalents for the period		
4.1	Cash and cash equivalents at beginning of period	15,332	3,062
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(5,119)	(10,634)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	(78)	(333)
4.4	Net cash from / (used in) financing activities (item 3.10 above)	9,022	27,062
4.5	Effect of movement in exchange rates on cash held	-	-
4.6	Cash and cash equivalents at end of period	19,157	19,157

.....

5.	Reconciliation of cash and cash equivalents at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	Current quarter \$A'000	Previous quarter \$A'000
5.1	Bank balances	2,157	2,332
5.2	Call deposits	17,000	13,000
5.3	Bank overdrafts	-	-
5.4	Other (provide details)	-	-
5.5	Cash and cash equivalents at end of quarter (should equal item 4.6 above)	19,157	15,332

6.	Payments to directors of the entity and their associates	Current quarter \$A'000
6.1	Aggregate amount of payments to these parties included in item 1.2	326
6.2	Aggregate amount of cash flow from loans to these parties included in item 2.3	-
6.3 Include below any explanation necessary to understand the transactions included in items 6.1 and 6.2		
Paym	ies, Directors fees and consulting fees paid to Directors - \$257,361 nent for Kalgoorlie office to a Director related entity for the quarter - \$12,5 nent for HR Services to a Director related entity for the quarter - \$56,929	500

7.	Payments to related entities of the entity and their associates	Current quarter \$A'000
7.1	Aggregate amount of payments to these parties included in item 1.2	-
7.2	Aggregate amount of cash flow from loans to these parties included in item 2.3	-

7.3 Include below any explanation necessary to understand the transactions included in items 7.1 and 7.2

1.

8.	Financing facilities available Add notes as necessary for an understanding of the position	Total facility amount at quarter end \$A'000	Amount drawn at quarter end \$A'000
8.1	Loan facilities	-	-
8.2	Credit standby arrangements	-	-
8.3	Other (please specify)	-	-
84	Include below a description of each facil	ity above including the lender	interest rate and

8.4 Include below a description of each facility above, including the lender, interest rate and whether it is secured or unsecured. If any additional facilities have been entered into or are proposed to be entered into after quarter end, include details of those facilities as well.

9.	Estimated cash outflows for next quarter	\$A'000
9.1	Exploration and evaluation	(831)
9.2	Feasibility and Development	(3,672)
9.3	Production	-
9.4	Staff costs	(191)
9.5	Administration and corporate costs	(504)
9.6	Other (provide details if material)	-
9.7	Total estimated cash outflows	(5,198)

10.	Changes in tenements (items 2.1(b) and 2.2(b) above)	Tenement reference and location	Nature of interest	Interest at beginning of quarter	Interest at end of quarter
10.1	Interests in mining tenements and petroleum tenements lapsed, relinquished or reduced	See Attached Schedule			
10.2	Interests in mining tenements and petroleum tenements acquired or increased	See Attached Schedule			

#### Compliance statement

- 1 This statement has been prepared in accordance with accounting standards and policies which comply with Listing Rule 19.11A.
- 2 This statement gives a true and fair view of the matters disclosed.

Jam Middlena

Sam Middlemas Company Secretary

31 July 2018

#### Notes

- 1. The quarterly report provides a basis for informing the market how the entity's activities have been financed for the past quarter and the effect on its cash position. An entity that wishes to disclose additional information is encouraged to do so, in a note or notes included in or attached to this report.
- 2. If this quarterly report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, AASB 6: Exploration for and Evaluation of Mineral Resources and AASB 107: Statement of Cash Flows apply to this report. If this quarterly report has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standards apply to this report.
- 3. Dividends received may be classified either as cash flows from operating activities or cash flows from investing activities, depending on the accounting policy of the entity.



#### 10.1

#### Interests in mining tenements and petroleum tenements lapsed, relinquished or reduced

Tenement   Location   Nature of Interest   Ardea interest beginning Quarter   Ardea interest end Quarter	Ardea NSW Tenements									
	Tenement	Location	Nature of Interest							
	0	0	0	0	0					

		Ardea WA Tenements		
Tenement	Location	Nature of Interest	Ardea interest beginning Quarter	Ardea interest end Quarter
0	0	0	0	0

#### 10.2

#### Interests in mining tenements and petroleum tenements acquired or increased

		Ardea NSW Tenements		
Tenement	Location	Nature of Interest (current)	Ardea interest beginning Quarter	Ardea interest end Quarter
0	0	0	0	0

		Ardea WA Tenements		
Tenement	Location			Ardea interest end Quarter
E29/01048	GCNP Expansion Siberia	Pending	0	100
P29/2484	GCNP Expansion Siberia	Pending	0	100
P29/2485	GCNP Expansion Siberia	Pending	0	100
M27/0506	Kalpini	Pending	0	100
E25/0578	Kalpini Bulong	Pending	0	100
P25/2559	Kalpini Bulong	Pending	0	100
P25/2560	Kalpini Bulong	Pending	0	100
P25/2561	Kalpini Bulong	Pending	0	100

#### Ardea Resources Ltd Tenement Schedule (NSW) as at 30 June 2018.

	Ardea NSW Tenements											
Tenure	Location	Ardea Interest	Status	Note	Tenuret	Location	Ardea Interest	Status	Note			
EL5583	Lewis Ponds 15km E Orange	100	Live	4	EL8555	Calarie 5km N Forbes	100	Live				
EL8323	Lewis Ponds 10km NE Orange	100	Live		EL8580	Calarie 10km N Forbes	100	Live				
EL8556	Copper Hill East NE Orange	100	Live		ML0739	Calarie 10km N Forbes	100	Live				
EL8554	Wiseman Ck 27km SE Bathurst	100	Live		EL8061	Gundagai 5km S Gundagai	100	Live				
EL8538	Yeoval 22km SW Wellington	100	Live		EL8586	Gundagai 5km N Gundagai	100	Live				
EL8532	Mt Aubery 30km NE Parkes	100	Live		EL8557	Restdown 62km W of Wyalong	100	Live				

#### Ardea Resources Ltd Tenement Schedule (WA) as at 30 June 2018.

#### Goongarrie Nickel Cobalt Project

Tenure	Location	Ardea Interest	Status	Note	Tenure	Location	Ardea Interest	Status	Note
E24/0211	Goongarrie Nickel Cobalt	100%	Pending		M24/0541	Goongarrie Nickel Cobalt	100%	Live	
E29/0934	Goongarrie Nickel Cobalt	100%	Live		M24/0731	Goongarrie Nickel Cobalt	100%	Live	3.7
E29/1028	Goongarrie Nickel Cobalt	100%	Pending		M24/0732	Goongarrie Nickel Cobalt	100%	Live	3.7
E29/1038	Goongarrie Nickel Cobalt	100%	Pending		M24/0744	Goongarrie Nickel Cobalt	100%	Live	7
E29/1039	Goongarrie Nickel Cobalt	100%	Pending		M24/0778	Goongarrie Nickel Cobalt	100%	Live	3
E30/0500	Goongarrie Nickel Cobalt	100%	Pending		M29/0167	Goongarrie Nickel Cobalt	100%	Live	
E30/0501	Goongarrie Nickel Cobalt	100%	Pending		M29/0202	Goongarrie Nickel Cobalt	100%	Live	
E30/0502	Goongarrie Nickel Cobalt	100%	Pending		M29/0272	Goongarrie Nickel Cobalt	100%	Live	
G29/0024	Goongarrie Nickel Cobalt	100%	Pending		M29/0278	Goongarrie Nickel Cobalt	100%	Live	
L24/0239	Goongarrie Nickel Cobalt	100%	Pending		M29/0423	Goongarrie Nickel Cobalt	100%	Live	
L29/0134	Goongarrie Nickel Cobalt	100%	Pending		M29/0424	Goongarrie Nickel Cobalt	100%	Pending	
L29/0135	Goongarrie Nickel Cobalt	100%	Pending		M29/0426	Goongarrie Nickel Cobalt	100%	Pending	
L30/0067	Goongarrie Nickel Cobalt	100%	Pending		P29/2265	Goongarrie Nickel Cobalt	100%	Live	
L30/0068	Goongarrie Nickel Cobalt	100%	Pending		P24/5260	Goongarrie Nickel Cobalt	100%	Pending	
					P24/5265	Goongarrie Nickel Cobalt	100%	Pending	



# Goongarrie Nickel Cobalt Project Expansion Case

Tenement	Location	Ardea Interest	Status	Note	Tenement	Location	Ardea Interest	Status	Note
M24/0919	GNCP Expansion Siberia	100% Ni lat	Live	10	M24/0797	GNCP Expansion Siberia	100% Ni lat	Live	5
M24/0959	GNCP Expansion Siberia	100% Ni lat	Live	10	M24/0915	GNCP Expansion Siberia	100% Ni lat	Live	5
E29/1045	GNCP Expansion Siberia	100%	Pending		M24/0916	GNCP Expansion Siberia	100% Ni lat	Live	5
E29/1048	GNCP Expansion Siberia	100%	Pending		P24/5235	GNCP Expansion	100%	Pending	
M29/0214	GNCP Expansion Highwy	100%	Live		P24/5236	GNCP Expansion	100%	Pending	
E24/0203	GNCP Expansion Siberia	100% Ni lat	Live	5	P29/2484	GNCP Expansion	100%	Pending	
E29/0889	GNCP Expansion Siberia	100% Ni lat	Live	5	P29/2485	GNCP Expansion	100%	Pending	
M24/0634	GNCP Expansion Siberia	100% Ni lat	Live	1,5	M24/0757	GNCP Expans Black Range	100% Ni lat	Live	5
M24/0660	GNCP Expansion Siberia	100% Ni lat	Live	5	M24/0973	GNCP Expans Black Range	100% Ni lat	Pending	5
M24/0663	GNCP Expansion Siberia	100% Ni lat	Live	5	P24/4395	GNCP Expans Black Range	100% Ni lat	Live	5
M24/0664	GNCP Expansion Siberia	100% Ni lat	Live	5	P24/4396	GNCP Expans Black Range	100% Ni lat	Live	5
M24/0665	GNCP Expansion Siberia	100% Ni lat	Live	2,5	P24/4400	GNCP Expans Black Range	100% Ni lat	Live	5
M24/0683	GNCP Expansion Siberia	100% Ni lat	Live	5	P24/4401	GNCP Expans Black Range	100% Ni lat	Live	5
M24/0686	GNCP Expansion Siberia	100% Ni lat	Live	5	P24/4402	GNCP Expans Black Range	100% Ni lat	Live	5
M24/0772	GNCP Expansion Siberia	100% Ni lat	Live	5	P24/4403	GNCP Expans Black Range	100% Ni lat	Live	5
E29/0941	GNCP Expans Ghost Rock	100%	Live						

### Kalpini Hub GNCP Expansion Case

Tenement	Location	Ardea Interest	Status	Note	Tenement	Location	Ardea Interest	Status	Note
E27/0524	Kalpini	100%	Live		M25/0161	Kalpini Bulong	100% Ni lat	Live	8
E27/0606	Kalpini	100%	Pending		M25/0171	Kalpini Bulong	100% Ni lat	Live	8
E27/0607	Kalpini	100%	Pending		M25/0187	Kalpini Boulder Block	100%	Live	
E28/1224	Kalpini	100%	Live		M25/0209	Kalpini Bulong	100% Ni lat	Live	8
M27/0395	Kalpini	100%	Live		P25/2256	Kalpini Bulong	100% Ni lat	Live	8
M27/0506	Kalpini	100%	Pending		P25/2257	Kalpini Bulong	100% Ni lat	Live	8
M28/0199	Kalpini	100%	Live		P25/2258	Kalpini Bulong	100% Ni lat	Live	8
M28/0201	Kalpini	100%	Live		P25/2454	Kalpini Bulong	100%	Pending	
M28/0205	Kalpini	100%	Live		P25/2455	Kalpini Bulong	100%	Pending	
E27/0278	Kalpini Pioneer	80%	Live	9	P25/2456	Kalpini Bulong	100%	Pending	
E28/1746	Kalpini Pioneer	80%	Live	9	P25/2457	Kalpini Bulong	100%	Pending	
E28/2483	Kalpini Pioneer	80%	Live	9	P25/2458	Kalpini Bulong	100%	Pending	
M31/0488	Kalpini Lake Rebecca	100%	Pending		P25/2459	Kalpini Bulong	100%	Pending	
P31/2038	Kalpini Lake Rebecca	100%	Live		P25/2460	Kalpini Bulong	100%	Pending	
P31/2039	Kalpini Lake Rebecca	100%	Live		P25/2461	Kalpini Bulong	100%	Pending	
P31/2040	Kalpini Lake Rebecca	100%	Live		P25/2482	Kalpini Bulong	100%	Pending	
E25/0576	Kalpini Bulong	100%	Pending		P25/2483	Kalpini Bulong	100%	Pending	
E25/0578	Kalpini Bulong	100%	Pending		P25/2484	Kalpini Bulong	100%	Pending	
M25/0059	Kalpini Bulong	100% Ni lat	Live	8	P25/2559	Kalpini Bulong	100%	Pending	
M25/0134	Kalpini Bulong	100% Ni lat	Live	8	P25/2560	Kalpini Bulong	100%	Pending	
M25/0145	Kalpini Bulong	100% Ni lat	Live	8	P25/2561	Kalpini Bulong	100%	Pending	
M25/0151	Kalpini Taurus	100%	Live						

## Yerilla Hub GNCP Expansion Case

Tenement	Location	Ardea Interest	Status	Note	Tenement	Location	Ardea Interest	Status	Note
E39/1954	Yerilla Aubils	100%	Live	7	M31/0475	Yerilla Jump-up Dam	100%	Live	6
E31/1092	Yerilla Boyce Creek	100%	Live	6	M31/0477	Yerilla Jump-up Dam	100%	Live	6
E31/1169	Yerilla Boyce Creek	100%	Pending		M31/0479	Yerilla Jump-up Dam	100%	Live	6
M31/0483	Yerilla Boyce Creek	100%	Live	6					

# Mt Zephyr Gold-Nickel

Tenement	Location	Ardea Interest	Status	Note	Tenement	Location	Ardea Interest	Status	Note
E37/1271	Mt Zephyr	100%	Live		E39/1706	Mt Zephyr	100%	Live	
E37/1272	Mt Zephyr	100%	Live		E39/1757	Mt Zephyr	100%	Live	
E37/1273	Mt Zephyr	100%	Live		E39/1854	Darlot East	100%	Live	
E37/1274	Mt Zephyr	100%	Live		E39/1985	Darlot East	100%	Live	

#### Perrinvale Nickel-Gold

Tenement	Location	Ardea Interest (%)	Status	Note	Tenement	Location	Ardea Interest (%)	Status	Note
E29/1006	Perrinvale	100	Pending						

# 

# Bedonia Nickel-Copper-PGM

Tenement	Location	Ardea Interest	Status	Note	Tenement	Location	Ardea Interest	Status	Note
E63/1827	Bedonia Ni-Cu-PGM	100%	Live		E63/1856	Jimberlana Ni-Cu-PGM	100%	Live	
E63/1828	Bedonia Ni-Cu-PGM	100%	Live		E63/1857	Jimberlana Ni-Cu-PGM	100%	Live	

# Donnelly River Graphite

Tenement	Location	Ardea Interest	Status	Note	Tenement	Location	Ardea Interest	Status	Note
E70/4804	Donnelly River	100	Pending						

# WA Regional, Mineral Rights

Tenement	Location	Ardea Interest	Status	Note	Tenement	Location	Ardea Interest	Status	Note
M15/1101	WA Regional	100%	Live	11	M15/1323	WA Regional	100%	Live	11
M15/1263	WA Regional	100%	Live	11	M15/1338	WA Regional	100%	Live	11
M15/1264	WA Regional	100%	Live	11	E27/0300	WA Regional	100%	Live	12

	Notes:
1.	Britannia Gold Ltd retained precious metal rights.
2.	Impress Ventures Ltd has a 10% equity free-carried interest to a decision to mine.
3.	Placer Dome Australia Limited assignee (Norton Goldfields) retains certain gold claw-back rights.
4.	Finder's fee to David Timm's on EL5583 sale transaction or production commencement (\$2M cap).
5.	Eastern Goldfields owns gold-silver rights, Ardea owns all non-Au-Ag, in particular Ni-Co-PGM.
6.	Ausjade right to tenement ownership and semi-precious minerals, Ardea owns all non- semi-precious mineral rights, in particular Ni-Co-PGM-Au.
7.	Ausjade right to semi-precious minerals, Ardea owns all non- semi-precious mineral rights, in particular Ni-Co-PGM-Au, Ardea registered holder.
8.	Southern Gold owns gold rights and responsible for tenement management, Ardea 100% Ni-Co laterite rights.
9.	Pioneer-Northern Star owns gold-nickel sulphide rights and responsible for tenement management, Ardea owns 100% Ni-Co laterite rights.
10.	Intermin subsidiary Metaliko as owns gold rights and responsible for tenement management, Ardea owns 100% Ni-Co laterite rights.
11.	Ramelius assignee owns all mineral rights, Ardea pre-emptive right to Ni-Co laterite.
12.	Pioneer assignee owns all mineral rights, Ardea owns Ni-Co laterite