Ardea Resources Limited

ASX & Media Release
31 January 2023

ASX Symbol
ARL

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Issued Capital
Fully Paid Ordinary Shares
171,502,772

Performance Rights
6,793,000

Options
4,000,000

ABN 30 614 289 342

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QUARTERLY OPERATIONS REPORT

For the Quarter ended 31 December 2022

Ardea Resources Limited (ASX:ARL) (**Ardea** or the **Company**) is pleased to provide the following report on its activities during the December 2022 Quarter.

DECEMBER 2022 QUARTER HIGHLIGHTS

Kalgoorlie Nickel Project (KNP)

- Well regarded and highly experienced resources sector executive, Matthew Read, appointed Project Director for the KNP.
- Senior Health, Safety and Environment advisor, Alison O'Leary, appointed.
- Preliminary Feasibility Study (**PFS**) to consolidate all current development models with previous KNP Goongarrie Hub study programs continues.
- Finalising an update of the KNP Goongarrie Hub Ore Reserve.
- Mineralised Neutraliser metallurgy model confirmed, and IP Patent lodged.
- Strategic Partner approaches continue to be received, several site visits completed, and due diligence engagements are ongoing.
- Ardea were invited, and attended, the Austrade Critical Minerals delegations to Korea, France, Germany and the UK.
- Continuing discussions with multiple Export Credit Agencies (**ECA**), notably Export Finance Australia (**EFA**), and with debt/equity advisors.
- Engagement with stakeholders continues with the Ardea Team active with the City of Kalgoorlie-Boulder, Shire of Menzies, FBICRC, Critical Minerals Office, EFA and Austrade.
- Digbee ESG report finalised with an overall rating of BBB, which is considered to be a very good rating for an early-stage Development project. Good ESG foundations are in place.
- Bore field design, including passive seismic surveys as the Company's water exploration tool, with multiple paleochannel targets confirmed.
- Satellite KNP resources, modelling Lake Rebecca laterite commenced.
- Plant site sterilisation drilling completed with initial assessment not identifying any significant mineralisation over the now settled plant site.

Exploration

- Assay results and downhole electromagnetic (**DHEM**) surveys from recent diamond drilling at the Binti Prospect at Emu Lake identified three offhole anomalies with conductivities consistent with massive sulphides and aligned with defined mineralised channel positions.
- Completed 3D modelling at the Binti Prospect (Emu Lake Project) based on results from the recent drilling and DHEM, with current interpretation indicating prospective mineralised channels are still open.
- Emu Lake Project aircore drill program of 24 holes for 1,077m completed and intersected various thicknesses of prospective ultramafics within the Western Ultramafic sequence, with assay results expected next Quarter.
- CSA Global completed a desktop review of Lithium-Caesium-Tantalum (**LCT**) pegmatite and Rare Earth Element (**REE**) potential within Ardea's tenements. Initial rock chip samples of pegmatites from generated targets have been taken at the Perrinvale and Ghost Rocks Projects with assay results awaited and follow-up field sampling planned.
- Goongarrie West **Ionic Adsorption Clay REE discovery**[1], three holes over 3km strike returned 0.1-0.4% TREO, open every direction.

Corporate

- Ardea remains debt free, with a tight capital structure and $15.3M cash-at-bank to maintain momentum with the KNP work streams.

[1] – ASX release 30 January 2023.

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OVERVIEW

CORPORATE

Ardea Resources Limited (**Ardea** or the **Company**) is a battery, magnet and other Critical Minerals company focussed on its 100%-owned Kalgoorlie Nickel Project (**KNP**), which hosts the largest nickel-cobalt resource in Australia*. The KNP Goongarrie Hub is being advanced towards production by working with Commonwealth government Critical Minerals agencies, stakeholders and industry- leading partners in completing feasibility programs. Development may be through partners who are able to earn a 50% offtake right, or alternatively Ardea may elect to longer retain 100% ownership options as the Company continues to advance this globally significant asset.

Such a strategy provides the Company with the opportunity to achieve the optimal outcome for stakeholders, as end-users continue to try to secure meaningful quantities of sustainable and ethical battery, magnet and other Critical Mineral supply. By Ardea retaining all off-take rights leading to securing of project funding, the Company maintains maximum optionality to continue to engage with a number of well-regarded potential partners.

Ardea remains debt free, with a tight capital structure and had $15.3M cash-at-bank at the end of the December Quarter.

Health and Safety

There were nil incidents or LTIs recorded during the Quarter.

Ardea have recently recruited Alison O'Leary, as Senior Health Safety and Environmental Advisor to ensure ongoing statutory compliance. Work is currently underway to review and update all policies, procedures, training requirements and other safety documentation. This is in line with the changes that came into effect through the implementation of the Work Health and Safety Act WA 2020 and the Work Health and Safety (Mines) Regulations WA 2022. This will require updating of Ardea's current Mines Safety Management System and will be implemented through a Mines Safety Management Plan for site work activities.

DEVELOPMENT

Kalgoorlie Nickel Project

KNP Pre-Feasibility Study (PFS) work streams on the Goongarrie Hub:

- Goongarrie Hub (**Goongarrie**), base case two x 1.5Mtpa Goethite Grind High Pressure Acid Leach (**HPAL**) autoclaves with acid, heat and energy balance facilitated by Grind Atmospheric Leach (**AL**) 0.3Mtpa Serpentine + 0.2Mtpa Neutraliser Fines. Of critical note the 3.5Mtpa base case incorporates proven hydrometallurgical technology successfully utilised at several existing nickel laterite operations world-wide.
- PFS base case end-product Mixed Hydroxide Precipitate (**MHP**), which is the new Class 1 nickel for Lithium Ion Batteries (**LIB**).
- Hydrometallurgical sample assay results **confirm the 2021 resource models** and metallurgical test work attains **maximum resource utilisation** and **optimisation of the low-carbon flow sheet supporting the Mineralised Neutraliser concept and lowering CO_2 emissions**†.
- Engagements with stakeholders continue with Team Ardea active at benchmark Critical Minerals and ECA events throughout Australia and overseas.
- PFS work streams conducted during the December Quarter include:
  - Finalising the Study structure.
  - Work Breakdown Structure finalisation.
  - Process Design Criteria document agreed.
  - Ore preparation circuits streamlined to consist of Goethite Grind HPAL, Beneficiation AL and Mineralised Neutraliser milling.
  - Mass and Energy balance updated.

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* Ardea ASX release 21 March 2022

† Ardea ASX releases 16 May 2022, 26 May 2022, 14 June 2022 and 16 November 2022.

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- Process and Non-Process Infrastructure battery limits were defined.
- Autoclave sizing has been verified.
- Materials of construction report has identified alternatives to refractory-lined tankage yielding safety and life cycle cost benefits.
- Prepared data package for sulphuric acid package and accommodation village for supplier indicative quotes.
- Sulphur delivery logistics are being assessed via a third-party study.
- Document control system went live.
- Metallurgical laboratory FLSmidth issued the HPAL Feed Thickener Report, with preliminary thickener sizing and underflow density.
- Investigations are ongoing into the effect of ore drying on slurry rheology.
- Site Sterilisation Drilling completed and have agreed on plant site location and orientation of access and haul roads.
- Process plant layout has been selected for study purposes.
- International consultants Wood Engineers have provided a proposal to provide the Non-Process Infrastructure engineering and capital costing.
- Resource optimisation and detailed mine schedule with final open pit mine designs are being finalised.

- **Strategic Partner Process:** Multiple international companies and organisations continue to engage with Ardea seeking to secure nickel-cobalt off-take from the KNP. Ardea requires off-take to be conditional upon the off-take partner facilitating a project development funding mechanism. All groups want to secure sustainable and ethical nickel-cobalt mineral supply from Western Australia, which is a favoured geopolitical jurisdiction for the LIB sector.
- **KNP Development Funding:** Ardea's preferred investment model is to retain off-take and link this to favourable ECA funding terms. The preferred funding option for the KNP Goongarrie Hub development is a mixture of project debt and project equity, with indications of long tenor, favourable ECA debt funding terms being contemplated.

EXPLORATION

WA Nickel Sulphide and Critical Minerals

Exploration for Critical Minerals, REEs and magmatic nickel-copper-PGE sulphide continues within the KNP on compelling targets which are complementary to the development of the KNP.

- **Goongarrie West REE Discovery**, three aircore holes over a 3km strike returned 0.1-0.4% Total Rare Earth Oxide (**TREO**) at the western contact of the Walter Williams Formation (**WWF**): Aircore drill-hole AGSA0224 returned **7m at 3,506ppm TREO** from 64 metres, AGSA0225 **12m at 2,387ppm TREO** from 40 metres and AGSA0226 **4m at 1,181ppm TREO** from 56 metres. The REE mineralisation occurs at the Saprolite Lower (80%) and Saprock (20%) regolith interface. Based on drill chip logging, the host clay and clay-weathered saprock is an Ionic Adsorption Clay (**IAC**) hosted REE deposit (ASX release 30 January 2023).
- **Nickel Sulphide** – the recent phase of diamond drilling and geophysical surveys at the Emu Lake Project, located within the nickel sulphide-fertile Western Komatiite Belt at Kalpini, has been completed (ASX release 14 October 2022). Results received from the downhole electromagnetic (**DHEM**) surveys identified three new off-hole anomalies at the Binti Prospect with conductivities consistent with massive sulphides and aligned with mineralised channel positions. 3D modelling at the Binti Prospect indicates prospective mineralised lava channels are still open, with further drill programs being planned for later in 2023.
- **Rare Earth Elements (REE)** and **Lithium-Caesium-Tantalum (LCT)** - Critical Mineral exploration opportunities continue to be evaluated, with consultancy CSA Global recently completing a desktop review of the REE and LCT pegmatite potential over Ardea's extensive tenement holding. Initial rock chip samples of pegmatites have been taken at the Perrinvale and Ghost Rocks Projects with follow-up trips planned once assay results are available.

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December 2022 Quarter

Environmental, Social and (Corporate) Governance

Environmental, Social and (Corporate) Governance (**ESG**) considerations are at the forefront of the Ardea operation. Project designs and work practices are based on the Company minimising CO_2 green-house gas emissions when in production. The proposed flow sheet (Figure 6) has been enhanced for CO_2 mitigation in the neutralisation circuit through introducing an AL circuit to assist in neutralising the HPAL discharge. The AL circuit facilitates upgrade of the site acid plant utilisation and allows Ardea to generate its own site power requirements off-grid, without relying on fossil fuel for power generation.

Ardea has contributed its Critical Mineral technical expertise to groups advocating for net zero carbon by 2050 and lodged a supportive submission to the House of Representatives Standing Committee on the Environment and Energy inquiry into the Climate Change (National Framework for Adaptation and Mitigation) Bill 2020. The KNP mineral resource was also included in the Geological Survey of Western Australia nickel-cobalt investment flyer, as the largest nickel resource in Western Australia (and therefore the largest in Australia), and the Commonwealth Government's December 2022 Australian Critical Minerals Prospectus.

Responsible sourcing of materials, through mechanisms such as mandatory reporting of CO_2 footprints for all batteries sold is essential. Traceability is also being implemented with raw materials used in batteries that must be procured according to OECD guidelines for sustainable sourcing. These important considerations are an essential part of the feasibility study work Ardea is undertaking on the KNP.

Ardea enjoys strong support from the communities in which we operate, primarily the City of Kalgoorlie-Boulder and the Shire of Menzies and has a Native Title Agreement in place for development of the Goongarrie Hub. The benign environmental setting, being the Great Western Woodlands, allows excellent post-mining rehabilitation, reafforestation, and resultant carbon offset. At the Goongarrie Hub, mining and processing has no land-use conflict with the agricultural activity which occurs in multiple peer nickel laterite centres.

During the Quarter, Ardea co-funded and attended the Shire of Menzies Discovery Day, a family fun day for locals and visitors alike on 15 October 2022.

Figure 1: The Ardea Kalgoorlie Team.

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ESG Compliance

Internationally-accredited Digbee ESG ™ have awarded Ardea an overall ESG rating of "BBB" on both corporate and the Kalgoorlie Nickel Project. For an emergent development company such as Ardea, BBB is a meritorious outcome and an excellent platform to achieve AAA as the Company grows. Sustainability consultancy Minviro has been retained to provide a cradle-to-gate Life Cycle Assessment (**LCA**) of the KNP. An ISO 14040/14044 compliant report will be produced addressing Scope 1, 2 and 3 emissions and environmental impacts.

Nickel Sector Commentary

Global equity markets remained volatile during the Quarter, primarily due to ongoing interest and inflation rate increases being mainly driven by higher costs of fuel and food. China's GDP fell to a 46 year low of 3.2% at the close of 2022. The war in Ukraine has led to energy deficits in Europe. Despite these challenges, the outlook for nickel remains compelling and the investment fundamentals continue to strengthen. China has eased its zero-Covid policy and this should assist the country's economic recovery, especially in the property and construction sector which is a major consumer of stainless steel and nickel. In addition, the move towards zero-carbon emissions, Electric Vehicle (**EV**) and renewable energy leaves the forecast demand for nickel in a bullish position.

Current producers of nickel will not meet demand forecasts and higher nickel prices will be required to enable new investments to come online. These fundamentals underpin the global significance of the KNP and its international recognition, given the strategic scale of the resource, industry leading low-carbon flow sheet and location in the premium mineral resources operating jurisdiction in the World (Figure 2b).

As noted, the demand for nickel is increasing from traditional uses such as stainless steel and in particular from the rapidly growing LIB sector as supply chains for the EV sector, where nickel is an essential component of high-performance chemistry batteries (Figure 2a). Many of the potential partners that Ardea has engaged with are in the LIB sector and are accelerating their development plans for nickel dominant cathode chemistries using NCM 811 technology. In recent Strategic Partner engagements, a growing number of companies are moving towards more nickel-rich battery chemistries where nickel is expected to comprise over 90% of the Cathode-Active Material.

By 2040, the anticipated nickel demand just from the LIB sector is expected to match the total nickel market consumption achieved in 2020 of approximately 2.4 million tonnes per annum. On this basis, current World battery grade nickel production levels cannot keep pace with demand, even if every currently identified nickel laterite and sulphide deposit that can deliver sustainable and ethical mineral supply enters production. These factors reiterate that without the development of significant new nickel resources as exemplified by the KNP, the EV revolution will be impeded, and COP26 Glasgow climate commitments will not be met.

With Ardea's KNP hosting one of the largest nickel-cobalt resources in the developed World, 830Mt at 0.71% Ni and 0.046% Co (**5.9Mt contained nickel metal, 380kt contained cobalt metal** – ASX release 16 June 2021), Ardea is in a prime position to provide essential supplies of sustainably-sourced nickel and cobalt, along with other Critical Minerals (notably scandium and the magnet REEs neodymium and praseodymium, subject to current metallurgical programs).

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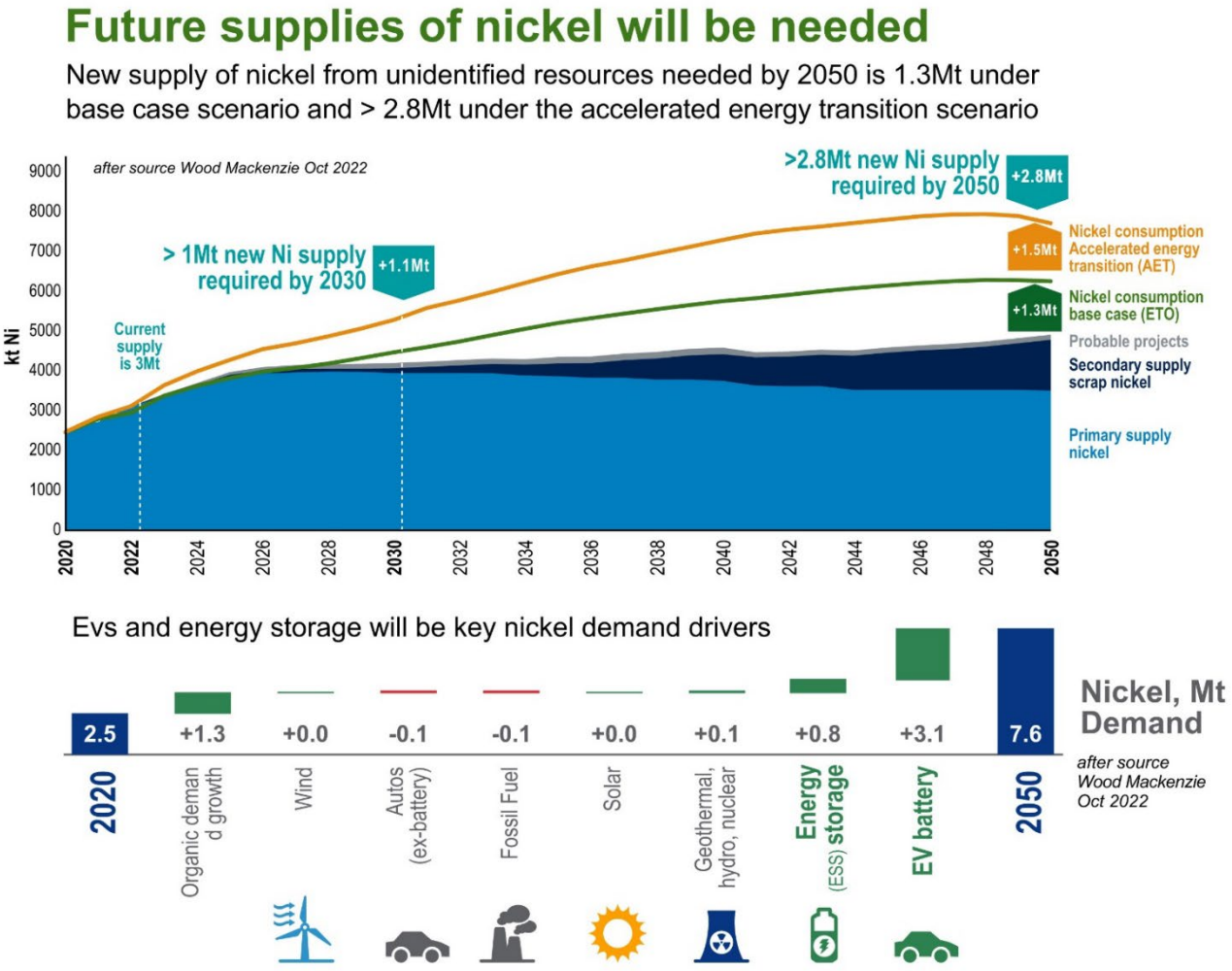

Figure 2a: Existing and forecast nickel consumption, overlays graph of existing and probable primary nickel supply - highlighting the critical need for new nickel supply from 2022 onwards. Graph after Wood Mackenzie October 2022.

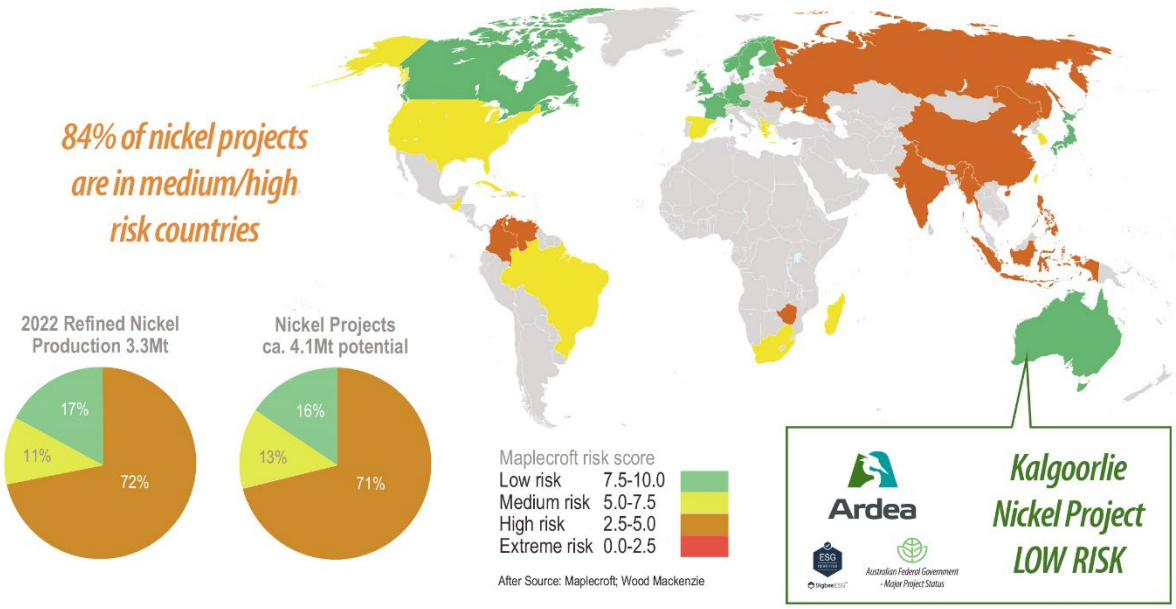

Figure 2b: Overlaying the critical demand for nickel is the ethical and risk considerations. The map above shows that 84% of nickel projects are considered medium/high risk countries. Ardea's KNP project is in the enviable, premier and low risk mining jurisdiction of Western Australia. After Maplecroft/ Wood Mackenzie October 2022.

1. KALGOORLIE NICKEL PROJECT - GOONGARRIE HUB

The Goongarrie Hub is located 70km northwest of the mining centre the City of Kalgoorlie-Boulder and is the premium ore feed within the broader KNP (Figure 3). Resources from the Goongarrie, Highway and Siberia North laterite nickel deposits are planned to be the base load feed for two 1.5Mtpa HPAL autoclaves with a 0.5Mtpa AL circuit at the Goongarrie South plant site.

The resources at Goongarrie are dominantly the premium goethite style and extend continuously over 25km of strike and at Highway, 30km north, over a strike length of 6km (Figure 3). All Goongarrie Hub mineral resources are located on granted mining leases with Native Title Agreement in place and tenure 100%-controlled by Ardea.

The project also has ready access to high-quality infrastructure with the Goldfields Highway, rail line and power infrastructure passing through the project area (Figure 3). There are two port options, these being Esperance and Kwinana, that are well serviced by the KNP road and rail network.

Significantly, the KNP is located on the rail connection to the developing battery hub at the Port of Kwinana industrial area immediately south of Perth, as well as east to Port Augusta and developing low-carbon energy hubs on the eastern Australia seaboard.

Ardea is actively engaged with Commonwealth and State agencies and statutory authorities, notably the Department of Foreign Affairs and Trade (**DFAT**), Critical Minerals Office (**CMO**), Major Projects Facilitation Agency (**MPFA**), Australian Trade and Investment Commission (**Austrade**) and Export Finance Australia (**EFA**) who are coordinating the push for a downstream battery industry within Australia through "*Team Australia*" and the State of Western Australia through "*Team WA*".

All the LIB feedstocks, including nickel and cobalt, are available in Australia and WA at the scales required for world-significant green energy centres of excellence.

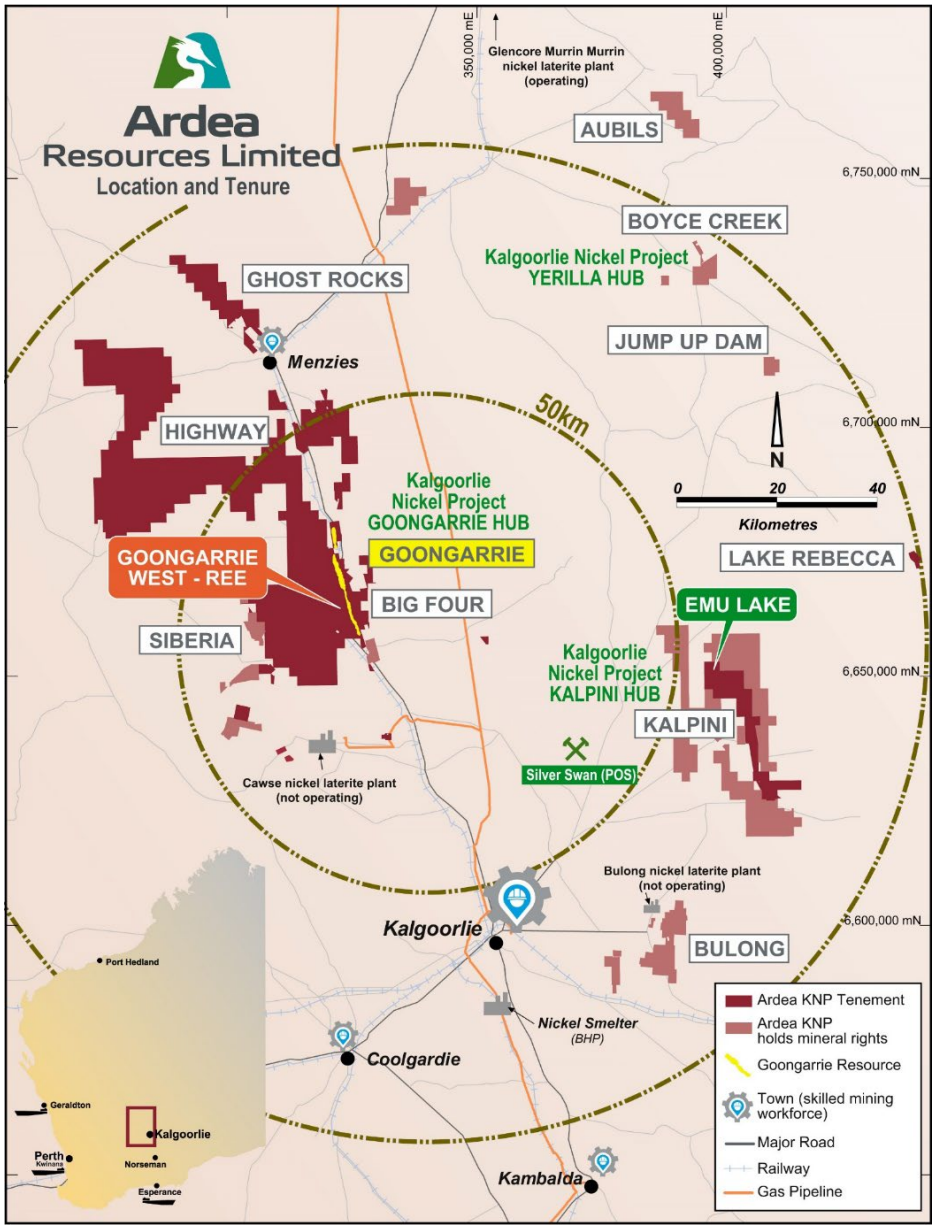

Figure 3: KNP location and infrastructure plan. Projection GDA94 MGA94 Zone 51.

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Project Funding

Following the KNP being awarded Major Project Status (ASX release 21 March 2022), engagement with State and Commonwealth agencies has continued to grow, particularly with the CMO, EFA and Austrade.

Ardea is also in discussions with multiple Export Credit Agencies and advisors in jurisdictions aligned geopolitically with Australia and in which potential project partners are based.

The preferred funding option for the KNP Goongarrie Hub development is a mixture of project debt and project equity, with long tenor ECA debt funding being favoured.

With the rapid expansion of the LIB sector, supply chain security issues and the push for sustainable and ethical battery mineral supply sourced from tier one operating jurisdictions such as Western Australia, there has never been a better time for Ardea to be advancing the KNP towards development.

To expedite a more favourable KNP funding package, an industry-leading mining consultancy, Orelogy, has been retained to produce an Ore Reserve for the KNP Goongarrie Hub, using the currently defined Mineral Resource Estimate (**MRE**) of 561Mt at 0.68% Ni and 0.044% Co. This PFS level update, as part of the ongoing feasibility study, is important, as the project scale has increased significantly from the 2018, 1.5Mtpa PFS and 2.25Mtpa Expansion Study to the current 3.5Mtpa. Flow sheet enhancements such as the inclusion of the second HPAL autoclave, the AL circuit and Mineralised Neutraliser need to be quantified, to be able to optimally communicate the Company value proposition.

Figure 4: Aerial image of Ardea's Goongarrie Hub at Goongarrie South looking south towards Kalgoorlie-Boulder showing road and rail infrastructure within the granted mining leases upon which the resources are located.

Note the semi-arid woodlands environment, ideal for project development, safe tailings management and revegetation post mining.

All pits for the critical Payback period at project start-up are located in the flat terrain east of the Goldfields Highway and railway in an area of dominant goethite grind HPAL ore, in some locations extending to depths exceeding 100m. This is the jewel in the KNP crown and the impetus for LIB OEMs being so keen to engage with Ardea to secure sustainable nickel-cobalt offtake.

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Feasibility Programs

Ardea's sole priority is the development of the KNP Goongarrie Hub as a globally significant Critical Minerals operation focussed on nickel-cobalt. The project finance model seeks to optimise Ardea's project equity and long-term offtake rights.

The project scale has been settled at a 3.5Mtpa. The flow sheet solely uses hydrometallurgical technology successfully deployed at established nickel laterite operations over six decades. The main neutralising agent required in ore processing is derived in-pit as Mineralised Neutraliser (**MN**), immediately underlying the nickel-cobalt laterite ore.

Ore preparation focusses on a low-risk comminution "Grind HPAL" circuit treating premium high-grade Goethite ore to facilitate an early project pay-back. With time, an increasing contribution from screened siliceous ore processed in the beneficiation "Bene HPAL" circuit is planned, as this facilitates an optimised resource utilisation and extended mine-life.

The AL circuit ore is sourced from high-magnesium Serpentine ore below the target Goethite ore and is gained within pit optimisations pursuant to the Goethite mining and from MN Fines. Power generated from using additional sulphur in the acid plant as required for the AL circuit is the key to the low-carbon footprint (Figure 5).

Initial proposed sale product is an MHP for the lithium-ion battery sector. Project financing will proceed around an MHP flow sheet. The longer-term objective is to further refine the MHP on-site to Precursor Cathode-Active Material (**PCAM**), and ultimately also recover scandium and Rare Earth Elements from the tailings stream.

Ardea's 2018 Expansion Study (ASX release 24 July 2018) was a single autoclave processing 2.25Mtpa as the preferred Goongarrie Hub throughput. This is now superseded by the 3.5Mtpa base case, which aims to significantly increase initial stage nickel-cobalt production from within the KNP resource endowment of 830Mt at 0.7% Ni and 0.05% Co (5.9Mt contained nickel metal, 380kt contained cobalt metal – ASX release 16 June 2021).

Ardea's Owners Team has been significantly strengthened with the appointment of well-respected and experienced resources sector professional, Matthew Read as Project Director (ASX release 18 January 2023).

Ardea continues to work with industry-leading consultants and service providers to complete a PFS which will underline the 3.5Mtpa base case. This PFS will consolidate previous studies and will be completed in the June Quarter 2023. This timing will enable Project Director Matthew Read to assume leadership of the feasibility process. In particular, Ardea need to consider the optimum follow-up program and potential project implications arising from the Goongarrie West Ionic Clay Rare Earth discovery (ASX release 30 January 2023).

During the previous Quarter an aircore Sterilisation Drilling program for the Goongarrie Hub Processing Plant was completed at Goongarrie South with 76 vertical holes for 2,043m drilled. Final assays have been received from the drill program, with initial assessment not identifying any significant gold or nickel anomalism or mineralisation in the selected Plant Site areas.

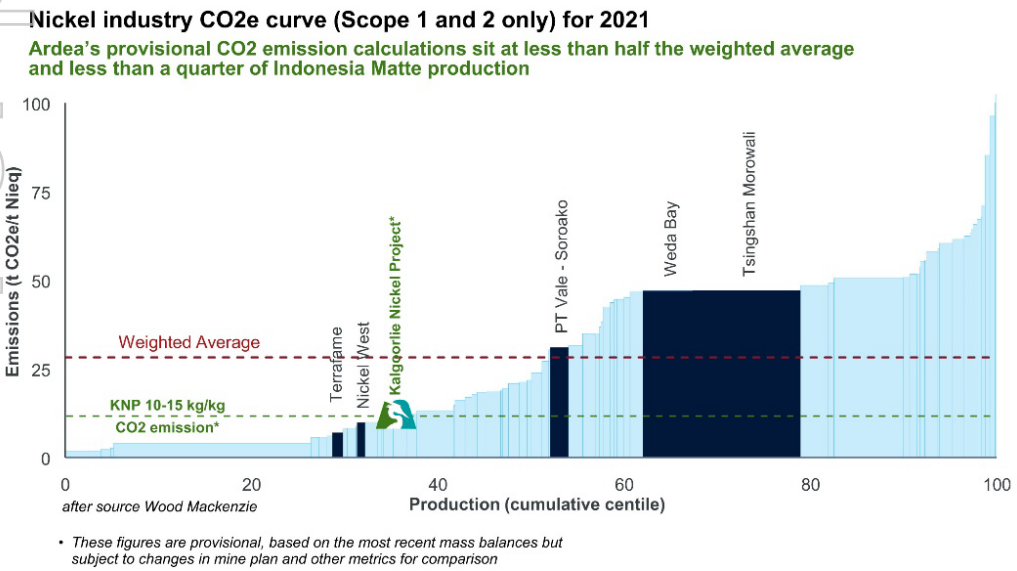

Figure 5: Indicative CO_2 emissions intensity for the nickel industry, including initial estimates from the KNP Goongarrie Hub, with in progress PFS work streams continuing to drive emissions lower, without any allowance for offsets. After WoodMac Nickel Industry analysis and Ardea internal analysis.

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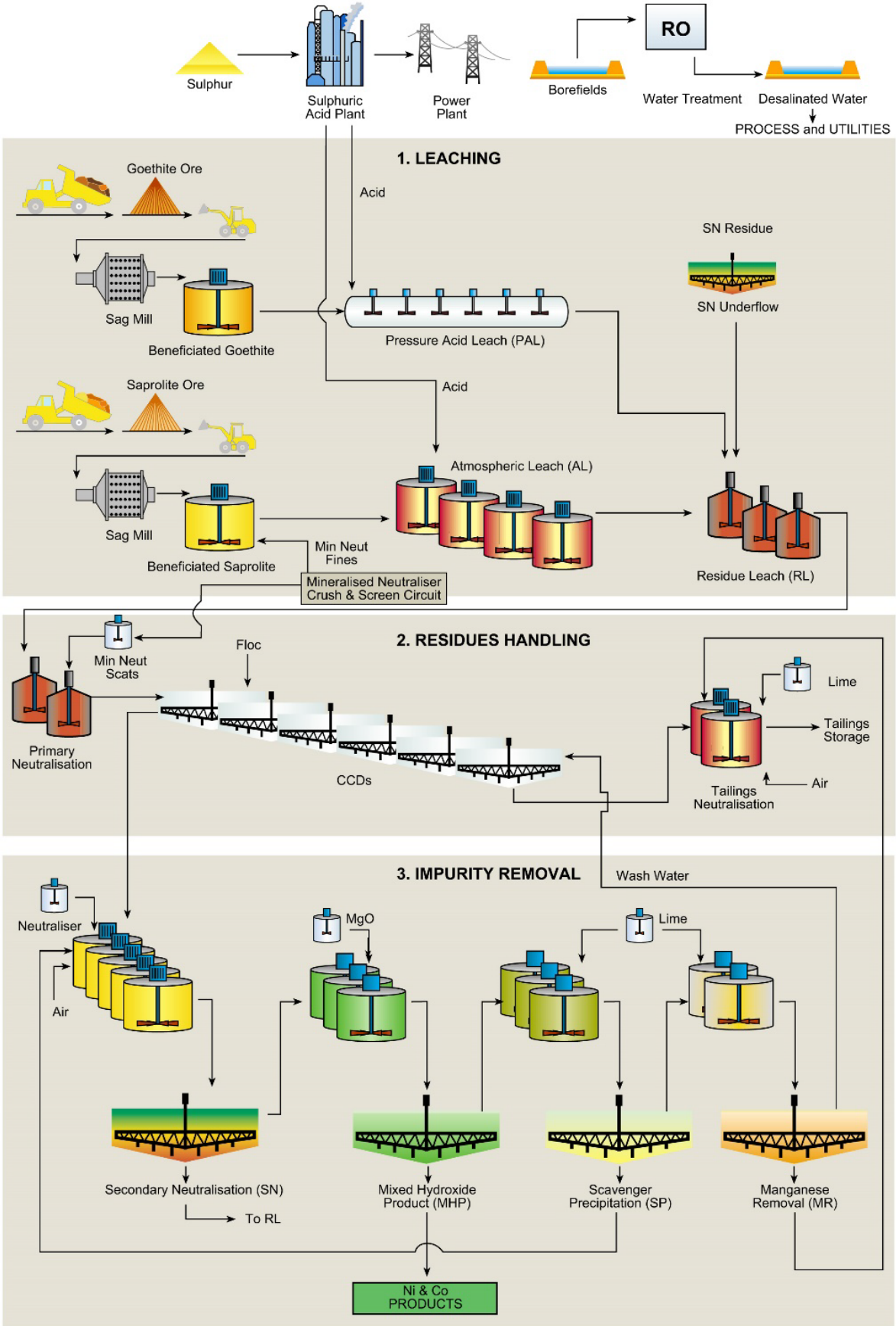

Figure 6: Goongarrie Hub process flow sheet.

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Resource Modelling

The full KNP continues to be evaluated for high-grade, >1% nickel plant feed options. These studies also address metallurgical by-products including scandium and REE. All mineral resource estimation uses uniform methodologies throughout the KNP. A review of the full KNP high-grade nickel MRE is continuing, with Siberia North in the western Goongarrie Hub and Lake Rebecca in the Kalpini Hub currently being assessed for an updated MRE.

The combined Mineral Resources at the Goongarrie and Highway deposits for a starter processing plant development at the KNP Goongarrie Hub are reported below (Table 1), with an initial focus on the high-grade resource based on a 0.8% Ni cut-off.

The full Goongarrie Hub now has a single Material Types algorithm based solely on XRD-generated mineralogy. This modelling is the basis for pit optimisations, metallurgical flow sheet and engineering designs. Specifically, the Material Type classification aims to optimise feed to the HPAL and AL circuits.

Most importantly, Material Types are now segregated in the comminution circuit as Grind or Bene, and in leaching as HPAL feed, AL feed and Neutraliser. There are five feed options:

1. Grind HPAL — the base load high grade Ni-Co feed from Goongarrie South, basis of feed schedules.
2. Bene HPAL — later project feed, dominantly from Highway and Goongarrie Hill.
3. Grind AL — sourced from Mineralised Neutraliser Fines and from Serpentine ore underlying Goethite ore.
4. Bene AL — run-of-mine ore at depth in the Highway and Goongarrie Hill pits.
5. Min Neut — Scat magnesite for the neutraliser circuit, Fines to AL circuit.

The Material Types algorithm is mainly required for Bulk Density estimates for the MREs. The sophistication is such that it can predict material down to mine road surface sheeting. The system has been developed by Ardea's in-house Principal Resource Geologist and is illustrative of the elite nickel laterite expertise the Company has developed since its 2017 ASX listing.

At the current nickel price exceeding US$29,000 per tonne, Scat grades as low as 0.4% Ni have a significant value exceeding variable processing cost. This has the potential to move plant feed away from Bene in favour of Grind. Additionally, HPAL with 94% nickel recovery is favoured over AL with lower recoveries.

Table 1 - Highway and Goongarrie (ASX release 16 June 2021) nickel and cobalt Mineral Resources using a 0.8% Ni cut-off grade.

Deposit	Resource Category	Tonnes (Mt)	Ni %	Co %	Contained Metal Ni (kt)	Contained Metal Co (kt)
Goongarrie Hub (GH, GS, BF & SD)	Measured	11.0	1.13	0.106	125	11.6
	Indicated	41.5	0.97	0.070	404	29.0
	Inferred	7.1	0.95	0.051	67	3.6
	Subtotal	59.6	1.00	0.074	595	44.3
Highway	Indicated	15.1	1.01	0.053	152	8.0
	Inferred	3.7	0.98	0.053	36	2.0
	Subtotal	18.8	1.00	0.053	188	10.0
Combined Deposits	Measured	11.0	1.13	0.106	125	11.6
	Indicated	56.5	0.98	0.066	556	37.1
	Inferred	10.8	0.95	0.051	103	5.6
	Grand Total	**78.3**	**1.00**	**0.069**	**784**	**54.3**

Ardea's updated 2021 Goongarrie and Highway resource estimates were incorporated with historic KNP resource estimates compiled by various parties between 2004 and 2009 and signed off to meet JORC-2012 guidelines by Heron Resources in 2013 (refer Table 2 below).

The KNP Goongarrie Hub MRE, based on a 0.5% Ni cut-off grade, is 561Mt with 3.8Mt of contained nickel and 248kt of contained cobalt and will be able to supply premium goethite plant feed to a HPAL process plant located at Goongarrie for multiple decades.

Table 2 – Highway and Goongarrie (ASX release 16 June 2021) KNP nickel and cobalt Mineral Resources based on a 0.5% Ni cut-off grade.

Camp	Prospect	Resource Category	Size (Mt)	Ni (%)	Co (%)	Contained Metal Ni (kt)	Contained Metal Co (kt)	Estimation Details Method	Estimation Details Source	Estimation Details Year
Goongarrie	Goongarrie South	Measured	18	0.94	0.085	171	15	LUC	Ardea	2021
		Indicated	82	0.71	0.049	584	40	LUC	Ardea	2021
		Inferred	10	0.64	0.033	61	3	LUC	Ardea	2021
	Highway	Indicated	71	0.69	0.038	487	27	LUC	Ardea	2021
		Inferred	21	0.67	0.040	141	8	LUC	Ardea	2021
	Ghost Rocks	Inferred	47	0.66	0.042	312	20	OK	Snowden	2004
	Goongarrie Hill	Indicated	40	0.65	0.037	259	15	LUC	Ardea	2021
		Inferred	29	0.60	0.025	176	7	LUC	Ardea	2021
	Big Four	Indicated	49	0.71	0.047	346	23	LUC	Ardea	2021
		Inferred	14	0.68	0.043	96	6	LUC	Ardea	2021
	Scotia	Indicated	12	0.71	0.065	82	7	LUC	Ardea	2021
		Inferred	5	0.72	0.043	37	2	LUC	Ardea	2021
	Goongarrie Subtotal	Measured	18	0.94	0.085	171	15			
		Indicated	253	0.69	0.044	1,758	112			
		Inferred	127	0.65	0.037	823	47			
		Combined	***398***	***0.69***	***0.044***	***2,753***	***175***			
Siberia	Siberia South	Inferred	81	0.65	0.033	523	27	OK	Snowden	2004
	Siberia North	Indicated	10	0.64	0.051	64	5	OK	Snowden	2009
		Inferred	53	0.66	0.043	352	23	OK	Snowden	2009
	Black Range	Indicated	9	0.67	0.090	62	8	OK	HGMC	2017
		Inferred	10	0.69	0.100	68	10	OK	HGMC	2017
	Siberia Subtotal	Indicated	19	0.65	0.070	126	13			
		Inferred	144	0.66	0.041	943	59			
		Combined	***163***	***0.66***	***0.045***	***1,070***	***73***			
KNP Goongarrie Hub	**TOTAL**	Measured	18	0.94	0.085	171	15			
		Indicated	272	0.69	0.046	1,885	126			
		Inferred	270	0.65	0.039	1,767	107			
		Combined	***561***	***0.68***	***0.044***	***3,822***	***248***			
Bulong	Taurus	Inferred	14	0.84	0.051	119	7	OK	Snowden	2007
	Bulong East	Indicated	16	1.06	0.055	169	9	OK	Snowden	2004
	Bulong East	Inferred	24	0.79	0.053	190	13	OK	Snowden	2004
	Bulong Subtotal	Indicated	16	1.06	0.055	169	9			
		Inferred	38	0.81	0.052	309	20			
		Combined	***54***	***0.88***	***0.053***	***477***	***29***			
Hampton	Kalpini	Inferred	75	0.73	0.044	550	33	OK	Snowden	2004
	Hampton Subtotal	Inferred	75	0.73	0.044	550	33			
KNP Kalpini Hub	**TOTAL**	Indicated	16	1.06	0.055	169	9			
		Inferred	114	0.76	0.047	859	53			
		Combined	***130***	***0.79***	***0.048***	***1,028***	***62***			
Yerilla	Jump Up Dam	Measured	4	0.94	0.048	36	2	OK	Snowden	2008
		Indicated	42	0.78	0.043	324	18	OK	Snowden	2008
		Inferred	18	0.63	0.034	116	6	OK	Snowden	2008
	Boyce Creek	Indicated	27	0.77	0.058	206	16	OK	Snowden	2009
	Aubils	Inferred	49	0.70	0.066	346	33	OK	Heron	2008
KNP Yerilla Hub	**TOTAL**	Measured	4	0.94	0.048	36	2			
		Indicated	68	0.78	0.049	531	33			
		Inferred	68	0.68	0.057	462	39			
		Combined	***140***	***0.73***	***0.053***	***1,028***	***74***			
KNP TOTAL		Measured	22	0.94	0.079	207	17			
		Indicated	357	0.72	0.047	2,584	168			
		Inferred	452	0.68	0.044	3,088	199			
	GRAND TOTAL	***Combined***	***830***	***0.71***	***0.046***	***5,879***	***384***			

Legend: LUC – Local Uniform Conditioning; OK – Ordinary Kriging.

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Processing Research and Development

The Ardea FY2023 Research & Development (**R&D**) is primarily based upon metallurgical experiments aimed at optimising the product range and hence revenue streams from the KNP and its Goongarrie Hub.

A key processing break through was achieved during the Quarter with confirmation of Ardea's Mineralised Neutraliser concept (ASX release 16 November 2022). Impetus for the Mineralised Neutraliser experiments was to test whether magnesite could replace the calcite limestone invariably used for Eastern Goldfields HPAL/AL sulphuric acid neutralisation and in so doing save on consumable purchase and transport cost and minimise CO_2 emissions associated with transporting the limestone to site. Highlights from Ardea's work included:

- Simple screen beneficiation produced high-grade Serpentine Goethite Fines to supplement the AL circuit feed.
- The Magnesite Scats Acid Neutralisation Capability is well suited to first stage Primary Neutralisation (Figure 6).
- The sulphuric acid reacts with magnesite to form soluble magnesium sulphate which goes to tailings storage and evaporation ponds. In contrast, the reaction with limestone is to form insoluble gypsum, which then becomes an additional solid requiring waste management and occupying valuable pit void tailings space.

An Australian provisional patent application covering Ardea's Mineralised Neutraliser R&D has been filed at IP Australia (AU2022903389 entitled "Acid Neutraliser Composition" filed 11 November 2022).

Scandium and Rare Earth Elements

Key experiments relate to sustainability enhancements for the KNP HPAL and AL flow sheets. In terms of potential by-product revenue streams, opportunities involving the Critical Minerals cobalt, scandium, the Platinum Group Elements (**PGE**) - Ru, Rh, Os (due to excessive assay cost, using 500ppb Pt-Pd as a pathfinder in pulp re-assay) and the REE neodymium, praseodymium and cerium, used in magnets for EV motors and wind-turbine generators.

The securing of feed for the AL and MN circuits is critical, since this is the mechanism to increase acid demand and thus sulphur burning to ensure site non-fossil fuel energy self-sufficiency.

Highly sought Critical Minerals within the KNP lateritic enrichment regolith profile include:

- NCM content in LIB including precursor cathode-active material;
- EV electric motor REE permanent NdFeB magnet metals, most notably Nd-Pr. The KNP also has common Ce, and potential for Tb, Dy and La;
- Scandium for scandium-aluminium lightweight, high-strength fabrication in general and EV chassis in particular;
- Vanadium for community-scale and larger SSBs;
- Critical Minerals targets at potentially extractable grades identified during KNP R&D include:
    - Ba, Cr, Ga, In, Mg, Mo, Te, Ti, Sn, W, Y, Zr; and
    - PGEs - Ru, Rh, Os .

All these Critical Minerals can be realistically assessed for recovery because the HPAL process requires complete dissolution of goethite-hosted nickel-cobalt mineralisation, thereby rendering all contained metals into solution and thus amenable to recovery. This does not require each of these metals to individually be in stand-alone economic concentrations. Recovery of these metals relies on nickel and cobalt hydrometallurgical recovery, potentially providing significant credits and upside to the project economics. Planned metallurgical test work will help determine the viability of recovering co-product Critical Minerals from the HPAL Pregnant Liquor Solution (**PLS**).

Critical Minerals research and development is predicated on the 60 element Ardea multi-element assay suite used in all sampling programs. The R&D focus for the Company continues to be searching the KNP technical data base to select archived Ardea drilling sample pulps for re-assay for Critical Minerals (notably REE co-products and identifying fertile nickel sulphide multi-element ratios indicative of PGEs). The PGE R&D is a joint CSIRO-Ardea program.

Subject to current bench-scale metallurgical test work on Highway core material, REEs and Rare Metals identified within the KNP will be targeted to provide potential by-product credits as does cobalt already, and also potentially scandium.

FBICRC

The FBICRC is an independent centre where industry, government and researchers can come together to create the tools, technologies, and skills to grow the role of battery storage in Australia's electricity grids and make Australia a larger downstream player in global battery value chains.

The focus of all Ardea R&D is ultimately aligned with the FBICRC objective of developing Australian autonomous, ESG-compliant, renewable energy supply chains.

Ardea sponsors and works with the FBICRC team on the following work streams:

1. Cathode Precursor Project.
2. Innovative Nickel-Cobalt Extraction.
3. Electrochemical testing of Australian battery materials in standard cell formats.
4. Provenance and Trusted Supply Chains.
5. Certification and Environmental life Cycle Assessment.

Each one of these work streams is aimed at ensuring quality product specifications and ESG compliance for the Australian LIB sector and sustainable and ethical supply from the best-regarded operating jurisdiction in the World, WA.

The consortium of FBICRC participants includes some of the largest nickel and chemicals producers in the World who are working with companies such as Ardea to produce from locally sourced materials the batteries used in EVs.

Ardea has assembled suitable bulk drill sample material from current Goongarrie Hub drilling plus product from the 2018 PFS Goongarrie pilot run as test material for the FBICRC pilot plant.

During the Quarter, Ardea Managing Director and CEO, Andrew Penkethman, attended the FBICRC Second Participant Forum in Melbourne on 25 October 2022 at Deakin University which consisted of a number of work stream presentation updates and a tour of the battery research facility.

Bench-scale Metallurgy

The current round of bench scale metallurgical test work at the ALS metallurgical laboratory in Perth has been completed and a final report received. Results are currently being reviewed and will be reported upon in more detail in the coming weeks.

Metallurgical Bulk Samples

Several parties undertaking technical due diligence or conducting R&D work on the KNP have requested bulk samples for independent test work. This has been facilitated through Ardea's extensive drill sample laboratory coarse residue archive (several tonnes of material archived at the West Kalgoorlie yard and at the Malaga storage unit). These are key R&D assets, with results used to help validate existing PFS data.

During the Quarter independent results were reported from a potential Strategic Partner who was very pleased with the outcomes and described the performance of the Goongarrie Goethite as being comparable to the premium laterite ore from the tropics.

Hydrogeology

At Goongarrie, all nickel-cobalt-scandium mineral resources (ASX release 15 February 2021) are located on granted mining leases. As such, Ardea has first rights to any ground water underlying these areas. Past work by Ardea has defined multiple water sources, with water for project development to be sourced from dedicated bore fields.

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No hydrogeological drilling occurred during the Quarter, with PFS drilling set to resume in February 2023. The Ardea Team continue working with consultants Rockwater, reviewing regional palaeo-channel and fractured rock aquifer target sites for water sources to then complete confirmatory drill exploration and production bores.

Results from this work is allowing Ardea and Rockwater to continue developing a groundwater model to support additional 5C water abstraction licence applications.

Passive seismic surveys over potential palaeo-channel tributaries were completed during the Quarter. Tromino seismometers were used on traverses across interpreted palaeo-valleys to allow interpretation of bedrock profiles and targets for water-bearing structures. Very clear palaeo-channels were identified in multiple areas for potential drill testing. The primary palaeo-channel target identified was Scorpion East, 75km west of the Goongarrie Hub. The Company and Rockwater are looking at options for this potential source to supplement existing bore fields within the Goongarrie Hub.

Both typical Eastern Goldfields saline water and potable water will be required for project development. Ardea's US-based nano-filtration R&D test work has already demonstrated the potential for this technology to be used for softening the HPAL water feed and for recycling barren process water to reduce both the project's water consumption and its water evaporation pond footprint.

Infrastructure and Logistics

As part of its ongoing stakeholder engagement, Ardea has accelerated communications with several key stakeholders, including:

1. The City of Kalgoorlie-Boulder (**CKB**) – to provide both organisations with an update on key project development considerations, such as infrastructure and worker accommodation. Regular communication continues, with the most recent direct interaction being the CKB hosting a Strategic Partner site visit meeting.
2. The Shire of Menzies – to provide both organisations with an update on key project development considerations, such as infrastructure and worker accommodation. Regular communication continues, with Ardea Managing Director and CEO attending the Shire of Menzies December 2022 Council meeting.
3. Southern Ports, Esperance – to provide both organisations with an update on key project development considerations, such as the transport of goods and services between Esperance and Goongarrie.
4. Goldfields Industrial Water Group – to study means of working co-operatively with the local Community and industry for efficient collection, use and recycling of water resources in the Kalgoorlie region.
5. Rail infrastructure and logistical suppliers in the Kalgoorlie region.

Environment and Rehabilitation

All project development within the KNP is aimed at ensuring systematic and rapid rehabilitation concurrent with operations. The KNP is located within the Great Western Woodlands, the largest and healthiest temperate to semi-arid (Mediterranean climate) woodland on Earth. The woodlands cover almost 16,000,000 hectares from the Nullarbor Plain in the east to the Wheatbelt in the west; from Esperance in the south through to the inland mulga country north of Kalgoorlie, including the KNP as a comparative very small component (Figures 3 and 4).

Comprehensive KNP flora and fauna surveys by Vale Inco in 2009 and Ardea in 2018 have confirmed environmental sustainability within the "temperate dry laterite" ecosystem. An environmental field survey was conducted at Lake Goongarrie and Lake Owen North during October by Stantec consultants who collected vegetation and fauna specimens as part of the ongoing lake ecology study.

Mine rehabilitation methodology is facilitated through four decades of WA open pit gold mine operations, and the KNP footprint is minimised using mining voids for tailings and mullock disposal. Mining voids will be progressively rehabilitated during operations and returned to their pre mining state, by dressing the back filled open pit voids with topsoil (Figure 7) and then revegetating.

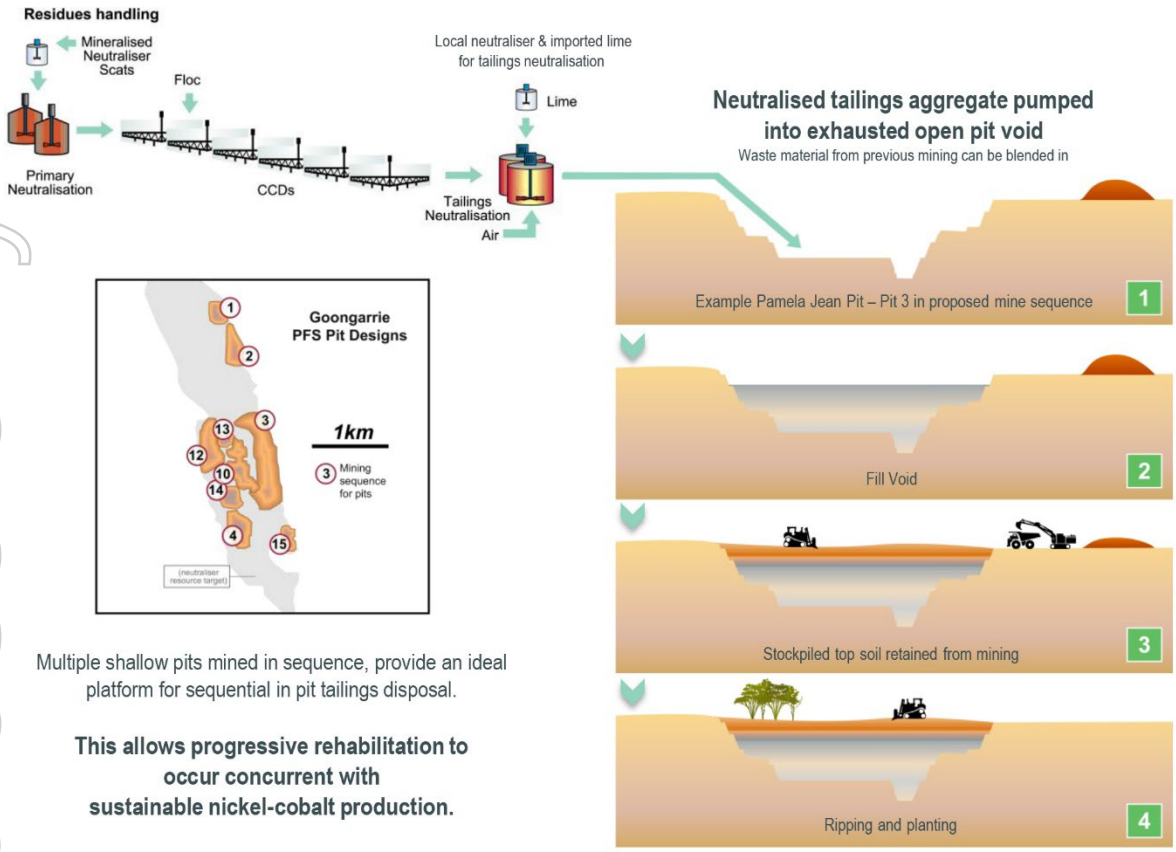

Figure 7: Planned Goongarrie Hub in-pit tails disposal and rehabilitation strategy.

In terms of ESG compliance for hydrometallurgical metal processing, the KNP's benign and manageable environmental footprint contrasts strongly with "wet tropical laterite" projects. The tropical laterites require submarine tailings disposal or valley tailings storage with consequent substantial environmental risk. Tailings disposal in these environments tends to be further complicated by high rainfall and the fact that most tropical laterite deposits are in seismically active regions. Additionally, wet tropical laterite production areas commonly involve non-restorable rain forest habitat destruction, which is unacceptable to OECD battery metal end-users.

It is doubtful whether wet tropical laterite hydrometallurgical battery metal sources can comply with the ESG standards required by the Japanese, South Korean, European and north American EV sectors, particularly where submarine tailings disposal is used. Similarly, with more than 3,000mm of annual rainfall in the tropical laterites, it is an immense challenge for long-term tailings stabilisation.

The KNP semi-arid climate is likely just as important as its high nickel grade and excellent ore rheology for its robust environmental and economic viability.

Rehabilitation of legacy exploration at Ardea's Bulong tenements, approximately 30km east of the CKB (Figure 3), continued during the Quarter with all drill-collar cutting, removal of bags and backfilling of sumps completed and historic gold shafts fenced off and costeans backfilled. The rehabilitation for this area is anticipated to be completed in February 2023.

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2. WA NICKEL SULPHIDE and CRITCAL MINERALS

Ardea's extensive and strategic land holding in the Eastern Goldfields of WA comprises 168 tenements, covering over 4,270km^2 and in addition to the globally significant nickel-cobalt-scandium KNP resource, is highly prospective for nickel sulphide, PGEs and Critical Minerals notably REEs (Figure 8).

Ardea Nickel Sulphide Strategy

The Company priority continues to be the development of the KNP, commencing with the Goongarrie Hub nickel laterite deposits. However, Ardea's tenure in the heart of the Eastern Goldfields of Western Australia is also highly prospective for komatiite-hosted nickel sulphide deposits which are mined extensively throughout the region.

Ardea's nickel sulphide strategy complements the development of the KNP. The KNP nickel sulphide targets are an asset in a region of multiple nickel sulphide concentrators, with most constrained by insufficient sulphide feed availability. Nickel sulphide also has potential value for a nickel laterite operation, in that it is a potential addition to any goethite autoclave feed for exothermic heating (optimise steam use), Eh reduction to control hexavalent chromium and adding nickel and sulphur units to the autoclave reaction vessel, and typically improving overall nickel recoveries.

An additional bonus is that metal concentrations considered deleterious to conventional nickel sulphide flotation concentrator processing (and that have historically curtailed development of several Eastern Goldfields nickel sulphide deposits) do not affect the HPAL process, opening the possibility of mineral extraction from nickel sulphide deposits that may otherwise be overlooked.

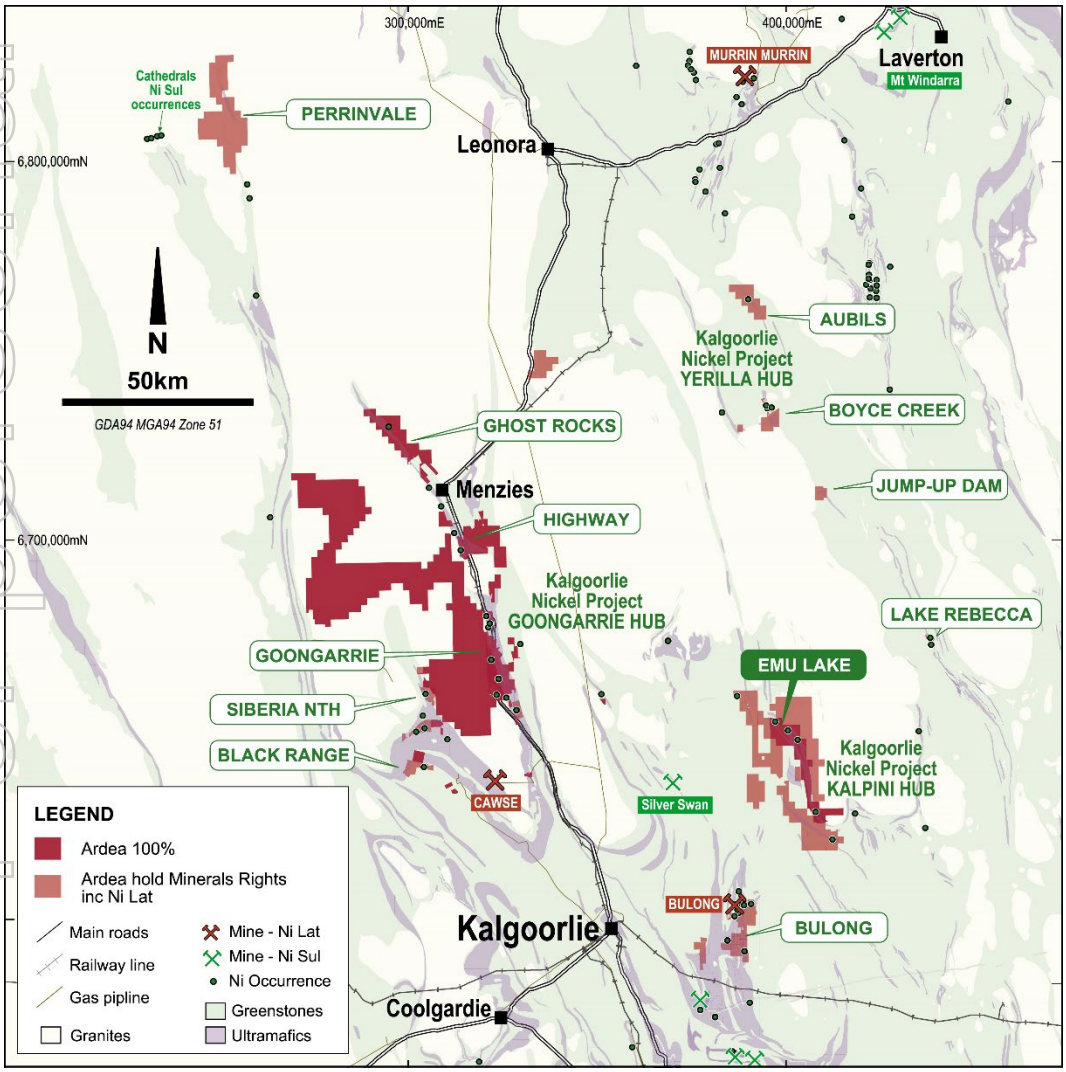

Figure 8: Ardea tenement plan highlighting the location of the Kalpini Project, Emu Lake Nickel Sulphide Camp and nickel mines and deposits in the region. Projection MGA 94 Zone 51.

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Emu Lake Nickel Sulphide Prospect

Ardea's Kalpini Project is located 70km north-east of the City of Kalgoorlie-Boulder and covers 121km^2 of contiguous granted tenure 100%-owned by Ardea (Figure 8 and 9). The Type 1 massive nickel-copper-PGE sulphides recently discovered at the Binti Prospect at Emu Lake occur in the Kurnalpi Terrane which is significant given there are only a few other Type 1 nickel sulphide occurrences in this Terrane. Ardea hold approximately 20km strike of the prospective ultramafic sequence (mostly on granted mining leases) that is largely unexplored for primary magmatic nickel sulphide mineralisation.

Regionally there are two distinct Kalpini ultramafic units each with 20-25km strike within Ardea tenure (Figure 9):

- The **Kalpini Eastern Komatiite Belt** hosts the Wellington East and Acra North nickel laterite deposits containing 75Mt at 0.73% nickel and 0.04% cobalt, for 549.7kt nickel and 32.6kt cobalt (Ardea ASX release 16 June 2021). The ultramafics are typical of the Walter Williams Formation style consisting of a thick 200-600m sheet with olivine orthocumulate upper and lower contacts with middle olivine meso to adcumulate which weathers to nickel laterite (Dunitic Sheet Flows-Layered Lava Lakes).
- The **Kalpini Western Komatiite Belt** hosts the Emu Lake Nickel Sulphide mineralisation. There are at least two fertile nickel sulphide ultramafic flows at Emu Lake. The volcanics are characterised by a bi-modal co-magmatic suite, with each cycle having a footwall dacite volcanic overlain by ultramafic volcanic flows. The ultramafic component of the flows is typically 10-40m thick, with dacite being the main footwall component. Massive, matrix, blebby and disseminated nickel sulphide identified to date occurs in the Western Ultramafic (**WU**) and Central Ultramafic (**CU**) flows. The Western Komatiite Belt overlies a thick felsic volcanic sequence and is presumably a younger flow sequence.

Historic nickel sulphide exploration within the Kalpini Western Komatiite Belt has focussed on the Eastern Ultramafic and Central Ultramafic, with key historic drill hole being ELD015: 2m at 6.08% Ni (ASX release 7 February 2022). Historic drill testing of the Western Ultramafic was restricted to minimal "scissor" sections with easterly drill directions. The 2021-2022 drill testing of the Western Ultramafic at Binti discovered significant komatiite-hosted massive Ni-Cu-PGE sulphides (AELD0003: 2.72m at 5.42% Ni and 0.85% Cu from 391.04m including 1.23m at 8.22% Ni and 0.56% Cu from 391.04m) (Ardea ASX releases 3 December 2021, 14 January 2022).

During the previous Quarter, Ardea completed four diamond drill holes for 2,368.5m and completed DHEM surveys on all holes. The drill holes were largely following up targets at the Binti Prospect where Type 1 massive nickel sulphide mineralisation was discovered by Ardea on an intact basal contact of the steeply east dipping overturned Western Ultramafic flow. An additional diamond hole was drilled testing a regional target 6km to the southeast of Binti.

During the December Quarter, final results were received from the DHEM surveys which identified three new offhole anomalies (Figure 10). Conductivities are consistent with massive sulphides and aligned with mineralised channel positions. The priority DHEM plate to test is offhole from AELD0008 (Figure 10) which is an 82x50m plate with a conductivity of 5,000 siemens. The AELD0007 DHEM plate is located between ELD023 and AELD0006, and initially the down-plunge position of this target will be tested by drilling the AELD0008 DHEM plate. The AELD0009 northern DHEM plate is on the basal contact of the Western Ultramafic but AELD0002 and AELD0003 have already tested this. The southern AELD0009 plate is associated with a vein of remobilised stringer sulphide off the basal contact. There was no priority DHEM plates associated with AELD0010 which was drilled 6km southeast of Binti.

Current interpretation is that the massive sulphide mineralisation at the Binti Prospect may be defined by tight folding around primary lava pathways, with mineralisation on or close to primary basal contact positions. These lava pathway positions are currently interpreted as moderate to steeply south plunging (Figure 10), with more structural and geophysical data being collected and assessed to confirm this. The mineralised channel positions are open both up and down plunge (Figure 10). Previous nickel sulphide intersections at the Binti Gossan occur in the Central Ultramafic, whereas thicker intersections at Binti Central and Binti South occur in the Western Ultramafic which is absent at the Binti Gossan Prospect.

While the width of these potential lava channels may appear limited (typically 100m), they can have significant continuation down plunge. An example is the high-grade Silver Swan mine located 35km to the west, that has a shallow strike length of <100m but a down plunge extent of over 1,000m.

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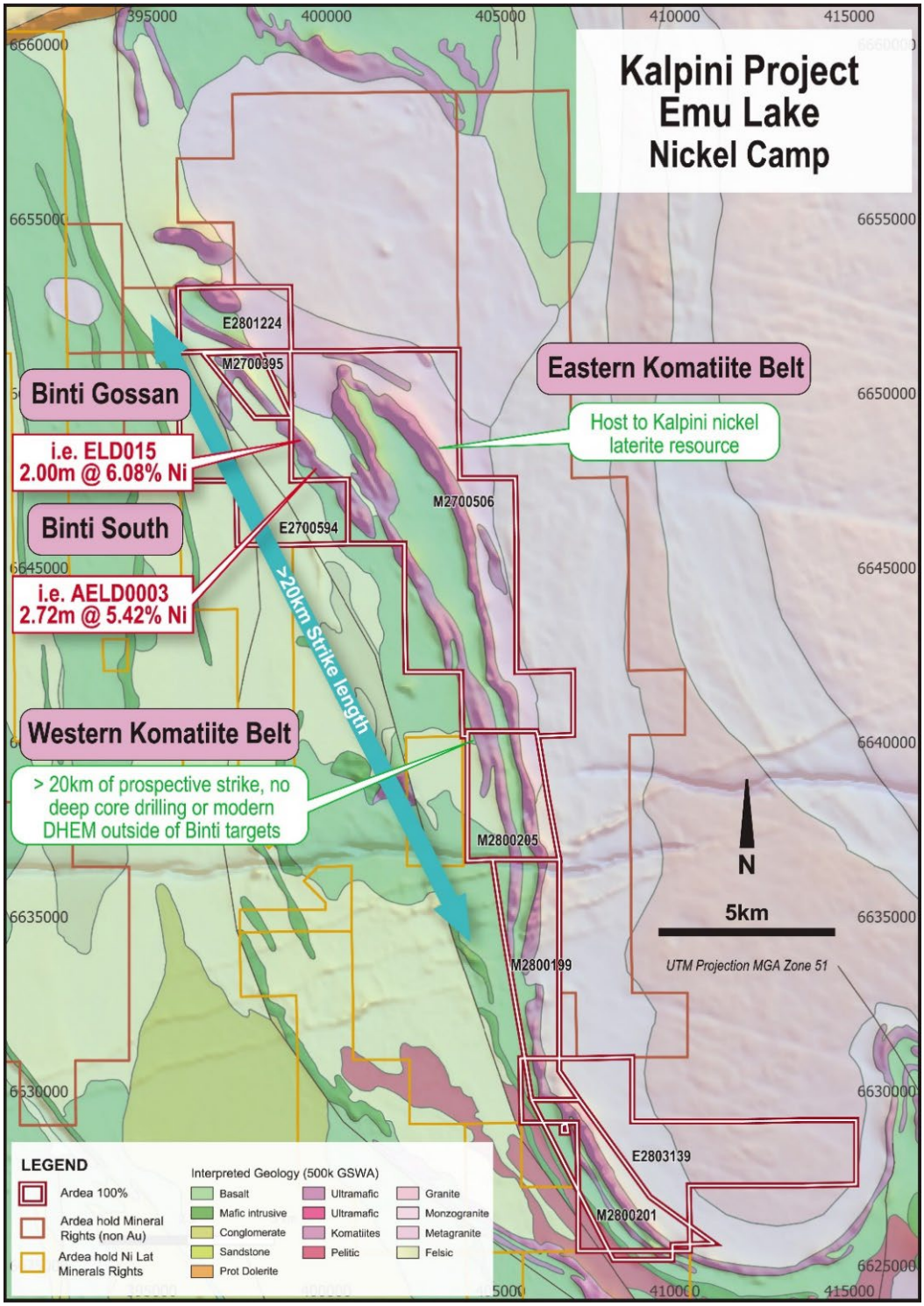

Figure 9: Interpreted geology of the Kalpini Project showing magnetic Komatiite Belts with the historic nickel laterite resource located on the Eastern Komatiite Belt, with the Western Belt largely untested for nickel sulphide mineralisation. Projection MGA 94 Zone 51.

Further exploration is currently being planned at the Binti Prospect based on results from the recent drilling, DHEM and updated 3D geological modelling to extend prospective mineralised channels and assess new targets. Regional target assessment using detailed geochemical ratios, geophysical data, geological and structural interpretation to generate a pipeline of nickel sulphide exploration targets largely over the underexplored Western Komatiite sequence will commence next Quarter.

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An aircore program of twenty-four vertical holes for 1,077m was completed on E27/524 on 11 November 2022. The program was designed along three traverse lines (one northern line and two southern lines) with 80m centres to infill previous laterite drilling and as a first pass assessment of nickel sulphide potential. Drill holes intersected various thicknesses of prospective ultramafics both in weathered profile and also fresh rock in the Western Komatiite sequence. The holes have been geologically logged and the samples dispatched for assay.

Assay Results

Assays have been returned from three recent diamond holes at the Binti Prospect (AELD0007-9). Significant intersections are shown in Table 3 and include several zones of disseminated-blebby sulphides, and massive and matrix sulphides.

Table 3: Significant intersections from recent assay results received for diamond drilling at the Binti prospect.

Hole ID	Prospect	From (m)	To (m)	Width (m)	Ni %	Cu %	Co %	PGE g/t total
AELD0007	Binti Central	430	438	8	0.41	0.011	0.012	0.11
AELD0007	Binti Central	491.69	492.15	0.46	3.09	0.492	0.092	0.65
Including		491.94	492.15	0.21	4.65	0.603	0.128	0.56
AELD0007	Binti Central	510	514	4	0.63	0.003	0.016	0.29
AELD0007	Binti Central	516.23	520	3.77	0.53	0.003	0.013	0.20
AELD0007	Binti Central	534.8	536	1.2	0.53	0.005	0.015	0.19
AELD0008	Binti Central	371.29	371.49	0.2	1.31	0.018	0.060	0.20
AELD0008	Binti Central	383	385	2	0.47	0.018	0.012	0.16
AELD0008	Binti Central	508.17	514	5.83	0.60	0.048	0.015	0.18
Including		511.86	512.41	0.55	2.05	0.226	0.048	0.57
AELD0009	Binti South	326	336	10	0.47	0.015	0.011	0.26
AELD0009	Binti South	448	451.19	3.19	0.62	0.036	0.015	0.17

AELD0007 intersected stringer and massive nickel sulphides with 0.46m @ 3.09% Ni, 0.49% Cu and 0.65g/t PGE from 491.69m on the basal contact of the Western Ultramafic. The drill hole also intersected three zones of disseminated nickel sulphides below the massive sulphides, though stratigraphically above as the sequence is overturned. This drill hole also intersected disseminated nickel sulphides in the Central Ultramafic (8m @ 0.41% Ni from 430m).

AELD0008 intersected nickel sulphides in the Central Ultramafic (0.2m @ 1.31%Ni from 371.29m and 2m @ 0.47% Ni from 383m) and also blebby-matrix/breccia sulphides in the Western Ultramafic (5.83m @ 0.6% Ni from 508.17m including 0.55m @ 2.05% Ni, 0.23% Cu and 0.57g/t PGEs from 511.86m).

AELD0009 intersected disseminated sulphides in both the Central Ultramafic (10m @ 0.47% Ni from 326m) and the Western Ultramafic (3.19m @ 0.62% Ni from 448m).

Follow-up drilling of nickel sulphide targets will commence once higher priority PFS hydrogeological and Goongarrie West REE drilling has been completed.

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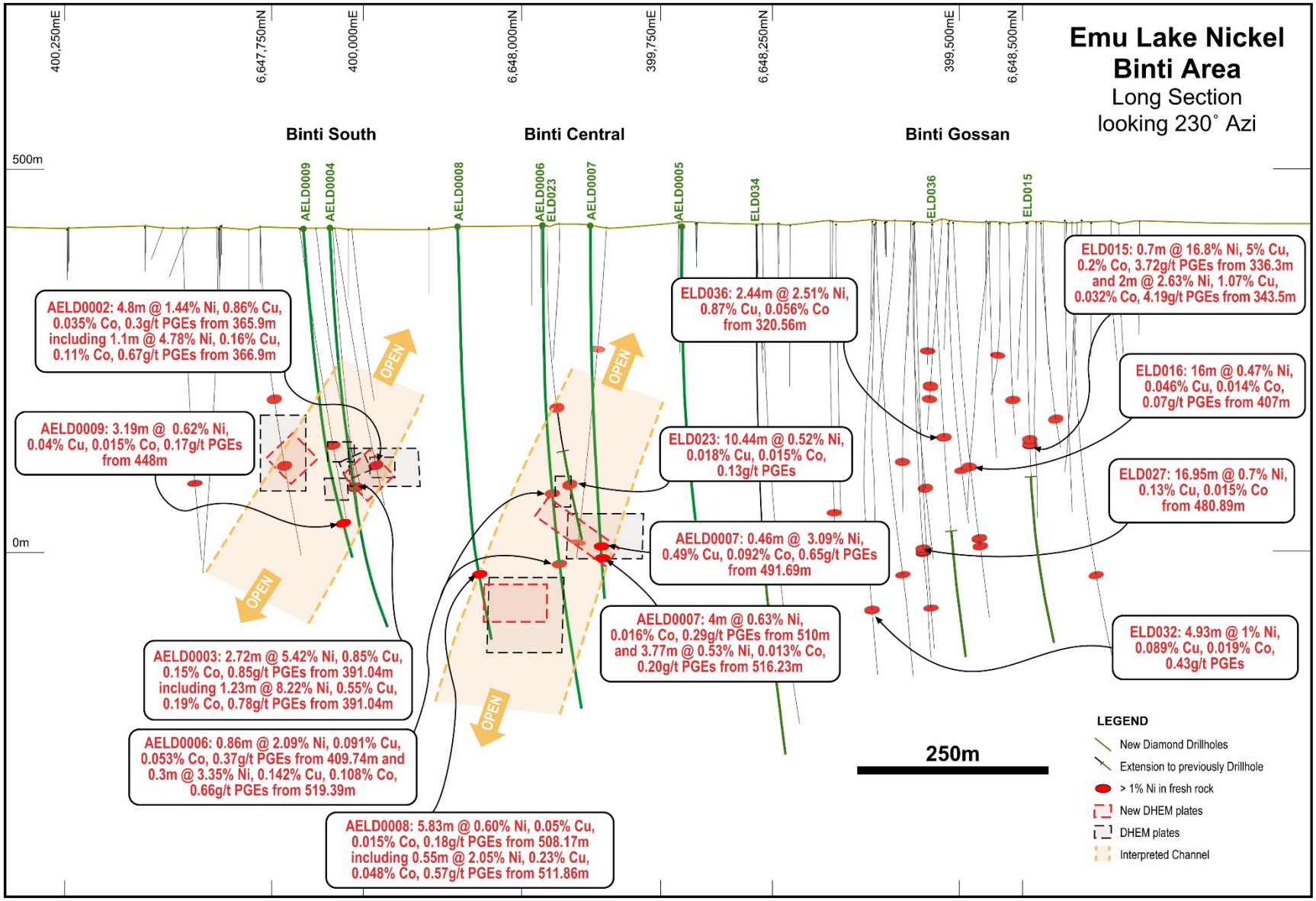

Figure 10: Long section of the Binti prospect showing significant nickel sulphide intersections from historic drilling, recent drilling (green), interpreted mineralised channels and associated DHEM plates. New DHEM plates are shown in red. Projection GDA94 Zone 51.

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Rare Earth Element Evaluation

Rare Earth Element targets in rocks adjoining the Goongarrie South and Big Four nickel laterite mineralisation were tested during the Quarter (Figure 11).

Three single hole traverses were designed at Goongarrie West as broad-spaced aircore drilling over a 3km NNW strike in a location containing no previous drilling.

Intercepts of Total Rare-Earth Oxides (**TREO**) at a 1,000ppm TREO cut-off for the three hole Goongarrie West program were received, with highlights including (ASX release 30 January 2022):

- **AGSA0224, 7m at 3,506ppm TREO from 64m**
- **AGSA0225, 12m at 2,487ppm TREO from 40m**
- **AGSA0226, 4m at 1,181ppm TREO from 56m**

Once the AGSA0224-226 TREO intercepts were interpreted, very similar mineralisation was identified in historic drill holes, AGWR0012-13, extending the strike extent of mineralisation to 3.5km, all as a single hole sections requiring systematic follow-up drilling.

The REE mineralisation defined to date is remarkably consistent and clay-hosted (refer Figure 12).

AGWR0012 as an RC drill hole is the sole hole to have penetrated through to bedrock, so allowing a complete interpretation of the regolith profile and its likely genesis (Table 4).

Depth metres	Regolith	TREO ppm	Fe %	Mg %	Al %	Si %	LOI %	Ca %	K %
0-8	Pedogenic Qtz sand, calc cement	51	3.4	0.6	4.0	31.8	9.1	5.3	0.7
8-20	Laterite Mottled, hem-kaolin clay	103	8.2	0.7	7.4	29.3	6.9	0.4	0.5
20-30	Saprolite Upper, relic carbonate	164	3.1	0.8	11.9	27.0	11.0	0.8	0.1
30-50	Saprolite Upper, kaolinite-hem clay	442	2.7	0.2	11.1	29.7	9.1	0.1	0.1
50-54	Saprolite Lower, silica-kaol-hem clay	1,081	2.3	0.9	9.2	30.0	7.2	0.5	2.8
54-74	Saprock, qtz-kaol-hem, clay weather	290	2.1	0.5	7.9	32.6	1.1	1.4	2.5
74-80	Bedrock, feld-qtz-biot granodiorite	246	2.2	0.7	8.3	30.7	4.0	1.5	2.1

Table 4: RC hole, AGWR0012, regolith profile interpretation.

The bedrock granodiorite has a very high background of 246ppm TREO, being localised within the regolith profile at the Top of Fresh Rock (**TOFR**). Immediately overlying within the Saprolite Lower at the Base of Complete Oxidation (**BOCO**), there is a sharp grade increase to **1,081ppm TREO**.

Within the extensively studied Kalgoorlie Goldfields supergene gold deposits, the regolith interval between BOCO and TOFR is where regolith-related supergene gold enrichment occurs. The Goongarrie West REE mineralisation is precisely following gold enrichment models documented in non-ultramafic host rocks.

In terms of ultramafic nickel laterite host rocks within the WWF olivine cumulate rocks at the immediate eastern contact of Goongarrie West, the high-grade nickel-cobalt occurs at the contact of Clay Upper and Clay Lower within the regolith profile, termed the Enrichment Zone (**EZ**). The EZ is characterised by high cobalt and manganese (asbolite mineral) and reflects palaeo-water table metal enrichment. The Goongarrie West REE enrichment profile thus corresponds precisely with the WWF nickel laterite enrichment within the immediate adjoining Elsie Tynan and Big Four proposed pit areas.

R&D has long confirmed the KNP EZ has significant REE enrichment, notably at Kalpini. Intercepts at Kalpini include WERC0371: 12m at 1.70% nickel, 0.151% cobalt, 28g/t scandium from 20m with 2,440ppm TREO and 1.320% Total Rare Metal Oxide (**TRMO**) which Includes titanium (Ti), yttrium (Y), zircon (Zr), niobium (Nb), hafnium (Hf), tantalum (Ta) and tungsten (W) (ASX release 14 March 2022).

There can be little doubt that the Goongarrie West REE mineralisation is regolith-related and due to palaeo-water table metal enrichment. This would indicate an Ionic Adsorbed Clay (**IAC**) genesis for the Goongarrie West mineralisation. Confirmation requires bench-scale metallurgy testing to evaluate metal leaching from the clays.

As an IAC occurrence, the REE grades returned at Goongarrie West can be considered as a significant discovery.

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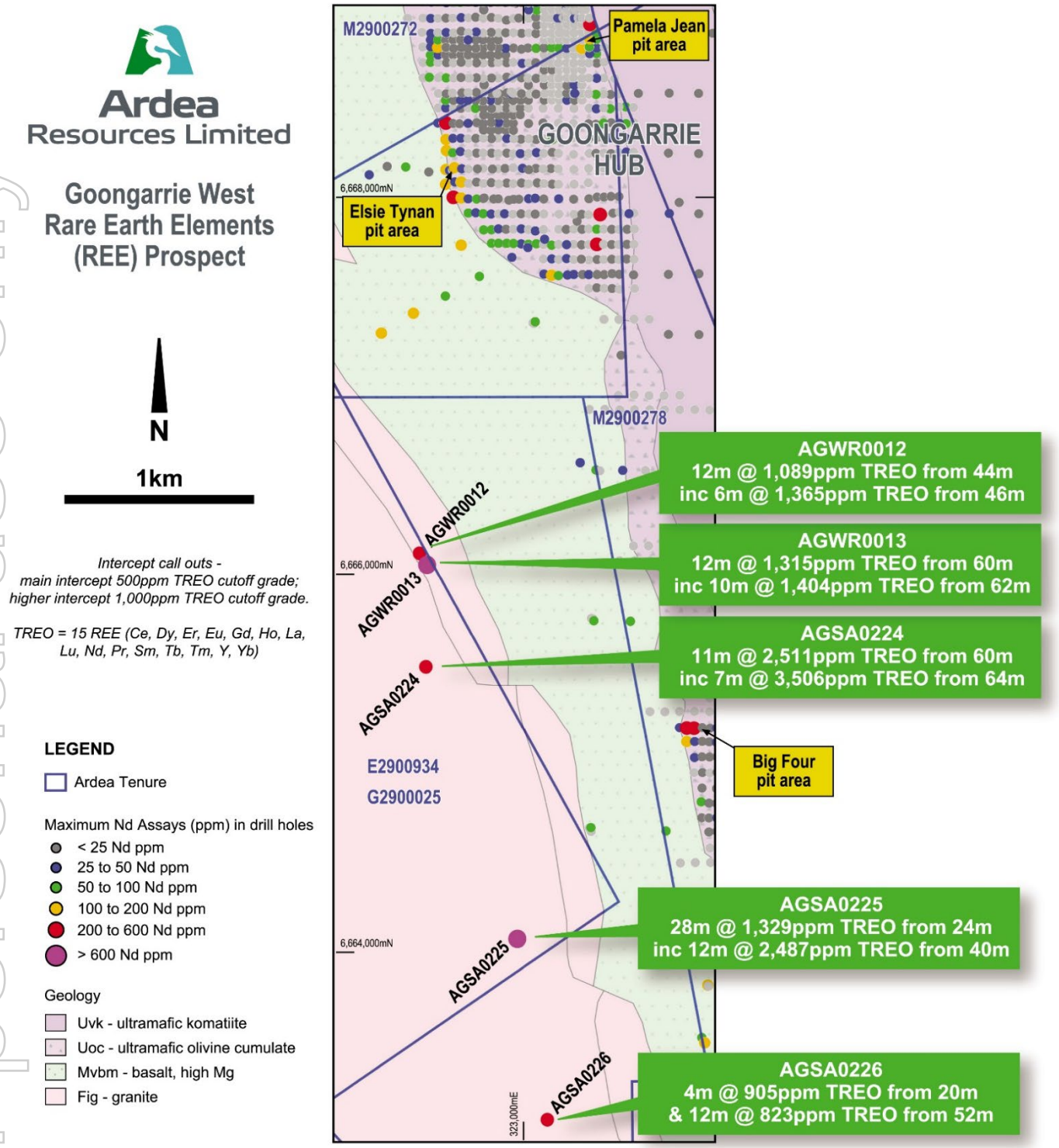

Figure 11: Goongarrie West Rare Earth Element Prospect, drill hole location plan and intercept summary. Projection: MGA94 Zone 51.

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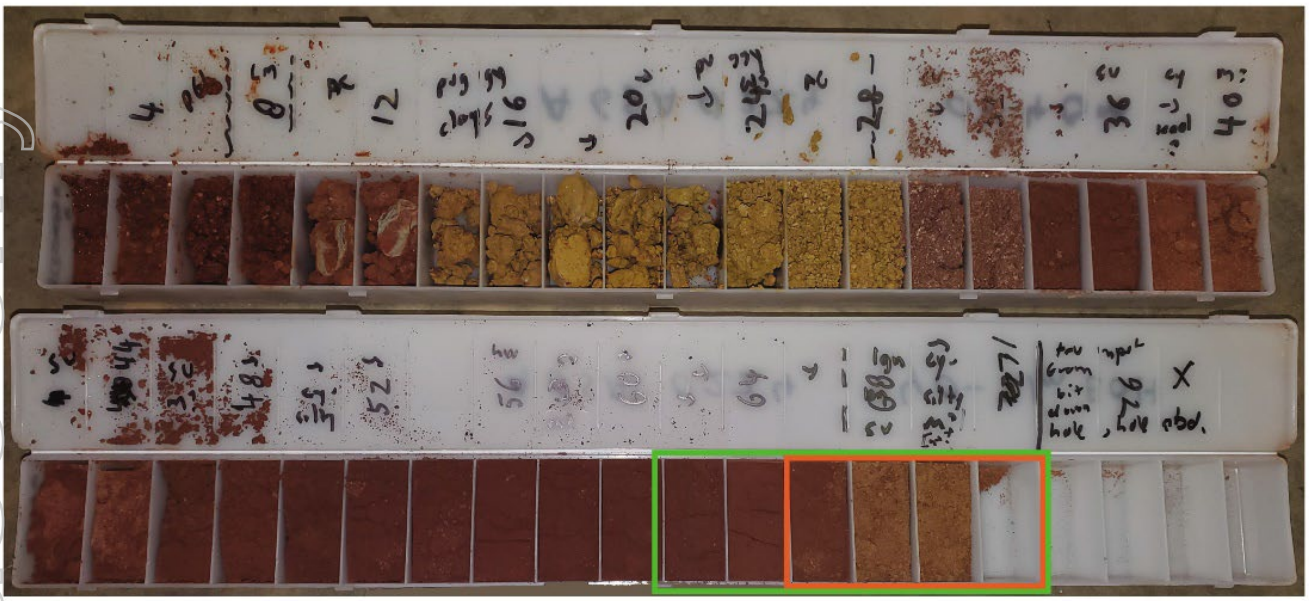
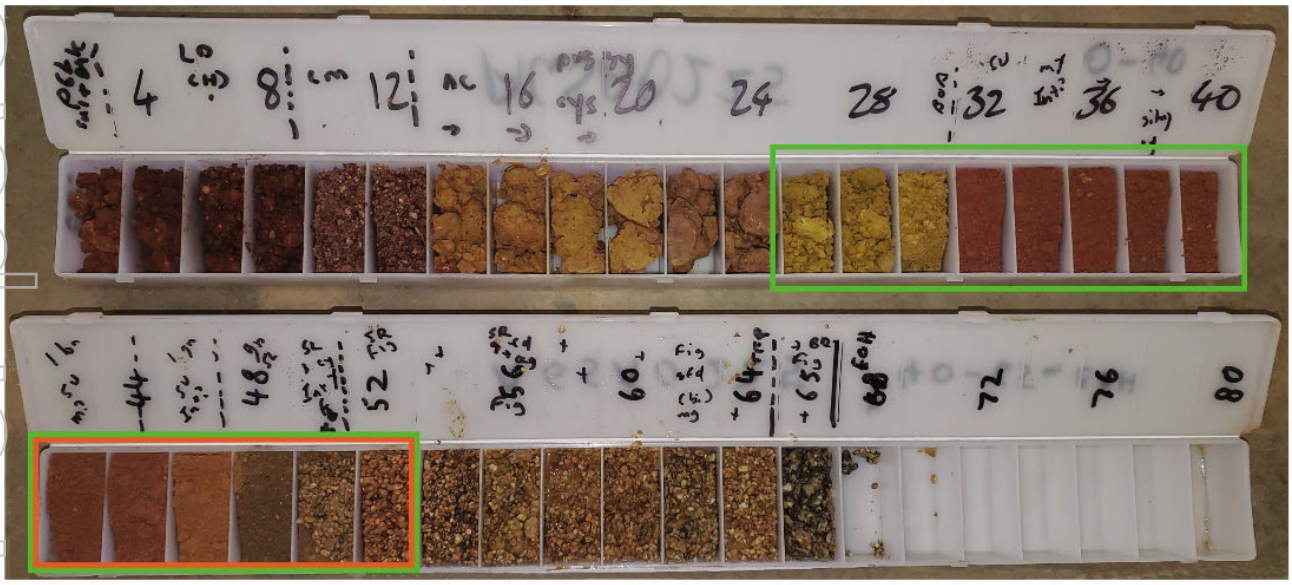
AGSA0224



11m @ 2,511ppm TREO from 60m (500ppm TREO cutoff grade)

7m @ 3,506ppm TREO from 64m (1,000ppm TREO cutoff grade)

AGSA0225



28m @ 1,329ppm TREO from 24m (500ppm TREO cutoff grade)

12m @ 2,487ppm TREO from 40m (1,000ppm TREO cutoff grade)

Figure 12: Goongarrie West Rare Earth Element Prospect, drill holes AGSA0224, and 225 chip tray photographs.

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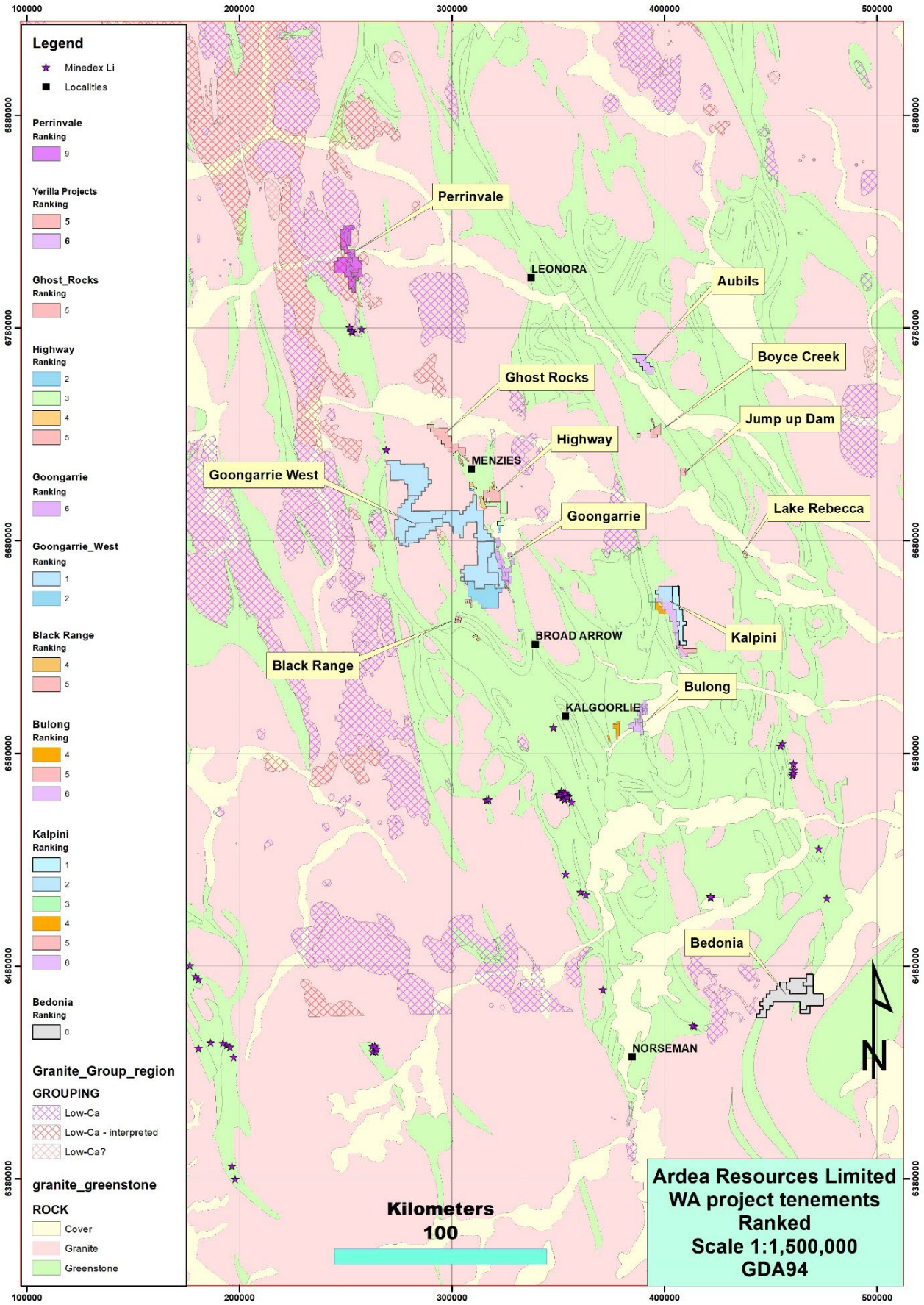

Figure 13: Project locations assessed by CSA Global for LCT pegmatites exploration potential. Prospectivity ranking for rare-element LCT pegmatites is shown. A ranking of 1 is low and 10 is high prospectivity. Mindex lithium occurrences are shown by stars.

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Lithium Exploration

During the Quarter CSA Global completed a desktop review of LCT pegmatite and REE potential over Ardea's tenements including a project ranking (Figure 13) (ASX release 22 November 2022). The Perrinvale project ranked as the highest priority area for pegmatite-hosted LCT mineralisation, where multiple pegmatites have previously been mapped and several reconnaissance rock chip samples recently taken and submitted for assay. Ardea also notes the ongoing LCT pegmatite exploration and resource development from several other ASX listed companies around Ardea's Perrinvale tenure.

Assay results from the more extensive recent rock chip sampling program at Perrinvale (30 samples) and Ghost Rocks (12 samples) are due in the March Quarter 2023.

The recent CSA Global review also identified the Bedonia project as having potential for ionic clay REE mineralisation.

3. CORPORATE

Strategy

Ardea's priority is the KNP nickel-cobalt-scandium laterite project development, commencing with Goongarrie, to produce sustainably and ethically sourced battery minerals for the LIB supply chain to further advance the transition to a low carbon future.

The starter KNP development project is the Goongarrie Hub to capitalise on the premium goethite ore type and infrastructure-rich location. Complementary exploration opportunities in nickel sulphide and Critical Minerals (notably REE) will also be pursued, such as the Ardea 2021 nickel sulphide discovery at Emu Lake, 2022 REE discovery at Kalpini and the recent REE discovery at Goongarrie West.

Finance

The Company's cash position was $15.3M at Quarter end with no debt. All current programs are well funded.

Issued capital at 31 December 2022 was 171,502,772 shares, with 6,793,000 Performance Rights and 4,000,000 options.

During the Quarter an additional 1,765,000 shares were issued to Directors and employees pursuant to vesting of staff Performance Rights (ASX release 7 December 2022).

Summary of Expenditures for the Quarter

During the Quarter, the Company incurred a total net expenditure from operating activities of $4.4M. This was made up of $4M expended on exploration and evaluation activities including feasibility studies, $215k on staff costs and $408k on administrative and corporate costs, with the balance on minor items. Funds received during the Quarter included interest of $27k.

Included in these costs were payments made to Directors of the entity and their associates. These payments were Directors Salaries and Superannuation payments and Consulting fees of $218k and rental for the Company's West Kalgoorlie operations office of $15k for the Quarter. All payments were made on an arm's length basis.

Further details on Quarterly expenditures are included in the Appendix 5B – Quarterly Cashflow Report attached to this Quarterly Report.

Investor Relations and Stakeholder Engagement

During the Quarter representatives from Ardea attended the Australian Nickel Conference on 5 and 6 October and the Kalgoorlie Boulder Chamber of Commerce and Industry - Down the Track Forum on 17 November. The Company also hosted a broker and media CKB and Goongarrie Hub site visit on 20 September 2022 and presented at the 121 Global Online Tech Metals event over 26 and 27 October.

Ardea representative, Andrew Penkethman, attended the Austrade-organised Australian Critical Minerals delegations to Korea during October 2022, and to France, Germany and the UK in November 2022. He also participated in a Critical Minerals roundtable discussion held as part of the Mines and Money London event on 30 November 2022.

During the Critical Minerals delegations Ardea met with potential Strategic Partners already engaged with and also met a number of new potential partners, potential project debt funders and multiple Critical Mineral stakeholders. These meetings provided a firsthand insight into the Critical Minerals sector and reiterated the need for a coordinated Australian response to secure supply chains of sustainable and ethical mineral supply.

Figure 14: Andrew Penkethman and other Critical Minerals attendees at Austrade organised events in the December Quarter 2022.

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4. LOOKING FORWARD

During the March 2023 Quarter, Ardea will focus upon the following programs.

Kalgoorlie Nickel Project

Ardea will continue to work with all stakeholders, including industry groups and the Federal and State Governments to ensure project development is predicated on sustainable and ethical standards.

KNP PFS

The current priorities are updating the Goongarrie Hub JORC Code (2012)-compliant Ore Reserve, lodging process water licences and continuing water studies such as the in-progress lake ecology study, EPA approvals submission and completing financial metrics that reflect the 3.5Mtpa base case.

Continue to advance feasibility study work streams utilising both in-house personnel, supporting consultants and the Ardea Owners Team.

Strategic Partner Process

- Maintain engagement with groups who have executed confidentiality agreements and who are active in the Virtual Data Room (**VDR**), and work with new parties who have contacted Ardea and want to accelerate their engagement.
- Consider the merits of Ardea and advisors selecting a preferred project partner to work with Team Ardea on completing a DFS, making a Final Investment Decision, securing project funding and developing the Goongarrie Hub. The investment model presented in engagements is reaching milestones under which a Strategic Partner secures off-take, and ensuring Ardea retains all off-take until project funding is secured.
- There are also mechanisms for advancing the project as a 100%-owned asset.

In all Strategic Partner engagements, securing off-take is the primary driver, with these rights only available if there is a project equity investment and critically, securing project finance.

Grant Application

The Australian Government has announced the opening of the Critical Minerals Development Program. This is a competitive-based grants program which aims to provide funding to help progress early to mid-stage Critical Minerals projects towards financing and production. Ardea will be submitting an application for this grant.

Resource Upgrades

- Complete the Siberia North resource update.
- Complete an initial Lake Rebecca MRE.
- Commence MRE work at Kalpini, Bulong, Yerilla and other satellite nickel-cobalt deposits.
- Incorporate archived pulp re-assays with all new resource updates.

These satellite deposits can be considered as additional plant feed for the Goongarrie Hub, or develop as a standalone Kalpini Hub or Yerilla Hub to further increase nickel-cobalt production rates from the full KNP. The Kalpini Hub satellite laterites are the current focus of KNP nickel sulphide exploration.

Flow Sheet Research and Development

Continue evaluating additional by-product credit potential from the HPAL/AL pregnant liquor solution to supplement the nickel-cobalt-scandium resource.

The R&D continues to focus upon minimising the project development footprint and carbon emissions, while adhering to Western Australia's world-class safety, health, environmental and operating standards.

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Stakeholder Engagement

- Community consultation, in particular with our First Nations groups, the City of Kalgoorlie Boulder, Shire of Menzies, Southern Ports Esperance and all other stakeholders.
- Continue engagement with groups such as FBICRC, CSIRO, Australian Commonwealth Government, WA State Government, Austrade, DFAT, CMO and MPFA.

WA Nickel Sulphide, Critical Minerals

Goongarrie West REE

- Follow up RC drilling to quantify the Exploration Target, initial bench-scale metallurgy.

Emu Lake

- Further exploration at the Binti prospect based on results from the recent drilling, DHEM and updated 3D geological modelling, to extend prospective mineralised channels that are open both up and down plunge and assess new targets.
- Regional technical assessment using detailed geochemical ratios, geophysical data, geological and structural interpretation to generate a pipeline of nickel sulphide exploration targets over the underexplored Western Komatiite Belt.

Lithium

Review assay results from the recent rock chip sampling programs at Perrinvale and Ghost Rocks and plan follow-up exploration.

Other KNP Projects

Ardea will commence assessment for nickel sulphide potential at other projects in the KNP including the Goongarrie Hub, Kalpini Hub, Yerilla Hub and Perrinvale. All projects comprise significant volumes of komatiite ultramafic flows that are either underexplored or unexplored for magmatic nickel sulphides. Other project areas will also continue to be cost effectively reviewed using Ardea's extensive database, sample drill pulps available for re-assay at the West Kalgoorlie office and detailed geophysical datasets.

Investor Relations

During the March 2023 Quarter, Ardea has a booth and presentation slot and is attending meetings at:

- RIU Explorers Conference,14 to 16 February 2023.
- Paydirt 2023 Battery Minerals Conference, 21 and 22 March 2023.

This announcement is authorised for release by the Board of Ardea Resources Limited.

For further information regarding Ardea, please visit https://ardearesources.com.au/ or contact:

Andrew Penkethman
Managing Director and Chief Executive Officer
Tel +61 8 6244 5136

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About Ardea Resources

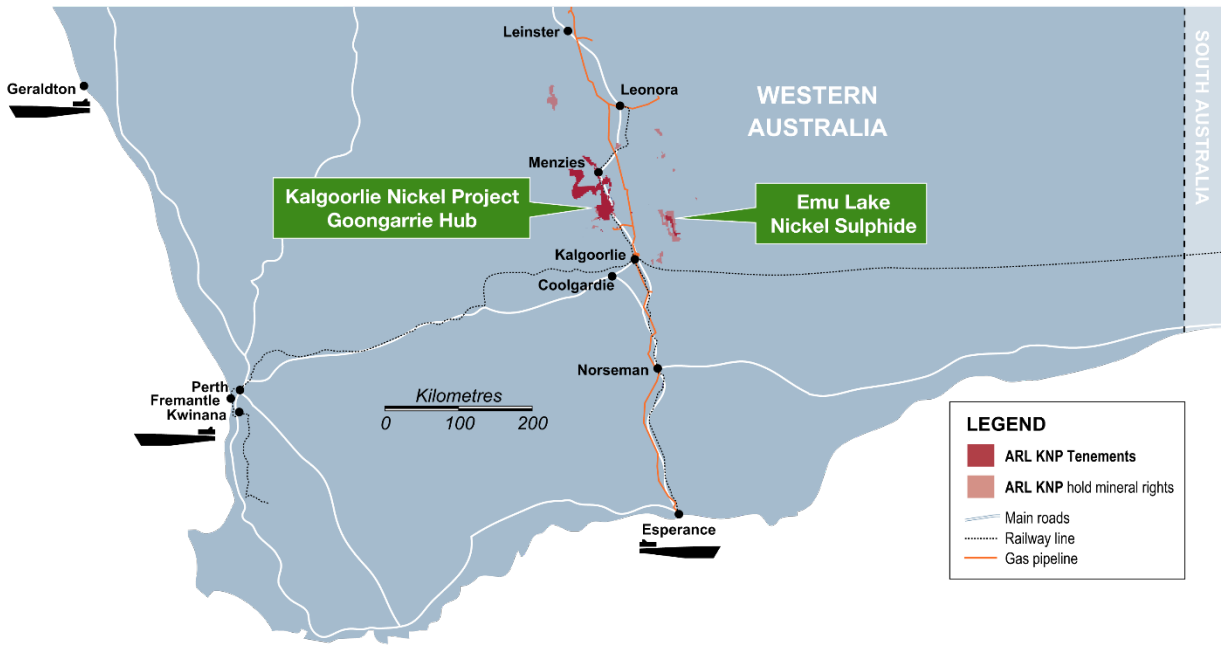
Ardea Resources (ASX:ARL) is an ASX-listed nickel resources company, with a large portfolio of 100%-controlled West Australian-based projects, focussed on:

- Development of the Kalgoorlie Nickel Project (**KNP**) and its sub-set the Goongarrie Hub, a globally significant series of nickel-cobalt and Critical Mineral deposits which host the largest nickel-cobalt resource in the developed World at **830Mt at 0.71% nickel and 0.046% cobalt for 5.9Mt of contained nickel and 380kt of contained cobalt** (Ardea ASX releases 15 February, 16 June 2021), located in a jurisdiction with exemplary Environmental Social and Governance (**ESG**) credentials, notably environment.
- Advanced-stage exploration at compelling nickel sulphide targets, such as Emu Lake, and Critical Minerals targets including scandium and Rare Earth Elements throughout the KNP Eastern Goldfields world-class nickel-gold province, with all exploration targets complementing the KNP nickel development strategy.

Ardea's KNP development with its 5.9 million tonnes of contained nickel is the foundation of the Company, with the nickel sulphide exploration, such as Emu Lake, as an evolving contribution to Ardea's building of a green, forward-facing integrated nickel company.

Put simply, in the Lithium Ion Battery (**LIB**) sector, the Electric Vehicle and Energy Storage System battery customers demand an ESG-compliant, sustainable, and ethical supply chain for nickel and other inputs. In the wet tropics, with their signature HPAL submarine tailings disposal and rain forest habitat destruction, an acceptable ESG regime is problematic. In contrast, the world-class semi-arid, temperate KNP Great Western Woodlands with its benign environmental setting is likely the single greatest asset of the KNP.

The KNP is located in a well-established mining jurisdiction with absolute geopolitical acceptance and none of the land-use and societal conflicts that commonly characterise nickel laterite proposals elsewhere. All KNP Goongarrie Hub production tenure is on granted Mining Leases with Native Title Agreement in place.



Ardea

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Australian Federal Government - Major Project Status

KNP KALGOORLIE NICKEL PROJECT
Battery Minerals to the World

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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. *PFS 28 March 2018 and Expansion Study 24 July 2018.*
2. *GNCP High Grade Resource - 60 million tonne at 1.0% Nickel Sustainable Long-life Battery Metal Resource Confirmed, 15 February 2021.*
3. *Highway Nickel Deposit - Mineral Resource Estimate, 16 June 2021.*
4. *Emu Lake Nickel Sulphide Discovery confirmed with 2.72m at 5.42% Ni, 14 January 2022.*
5. *Goongarrie Hub Feasibility Study Update, 25 January 2022.*
6. *Emu Lake Nickel Sulphide Camp Follow-Up Program, 7 February 2022.*
7. *High-grade Nickel-Cobalt Confirmed at Kalpini with Scandium and Rare Earth Elements, 14 March 2022.*
8. *Kalgoorlie Nickel Project Awarded Major Project Status, 18 March 2022.*
9. *Kalgoorlie Nickel Project Recognition on All Tiers of Australian Government, 21 March 2022.*
10. *Kalgoorlie Nickel Project Feasibility Study Update, 14 June 2022.*
11. *Kalgoorlie Nickel Project Strategy Update, 9 September 2022.*
12. *Australian Nickel Conference, 6 October 2022.*
13. *Appendix 4G and 2022 Corporate Governance Statement, 27 September 2022.*
14. *Annual Report 2022, 27 September 2022.*
15. *Australian Nickel Conference Presentation, 6 October 2022.*
16. *Emu Lake Nickel Sulphide Exploration Update, 14 October 2022.*
17. *Notification of Issue, Conversion or Payment up of Unquoted Equity Securities, 28 October 2022.*
18. *Kalgoorlie Nickel Project: Metallurgical Update – Mineralised Neutraliser, 16 November 2022.*
19. *Eastern Goldfields Projects Exploration Update, 22 November 2022.*
20. *Notification of Issue, Conversion or Payment up of Unquoted Equity Securities, 22 November 2022.*
21. *Ardea Completes KNP ESG Accreditation from Independent Leading Global Platform, 24 November 2022.*
22. *Ardea appoints Project Director, 18 January 2023.*
23. *Kalgoorlie Nickel Project - Goongarrie West Drilling Ionic Clay Rare Earth Discovery, 30 January 2023.*

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 Resource Estimates for the KNP is based on information originally compiled by previous and current full-time employees of Heron Resources Limited and current full-time employees of Ardea Resources Limited. The Exploration Results, Resource Estimates 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. Mr Buchhorn owns Ardea shares.

The exploration and industry benchmarking summaries are based on information reviewed or compiled by Mr Andrew Penkethman, who is a Fellow of the Australasian Institute of Mining and Metallurgy and a Member of the Australian Institute of Geoscientists. Mr Penkethman is a full-time employee 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'. Mr Penkethman 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. Mr Penkethman owns Ardea shares.

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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 and Expansion Study, which are based on forward looking statements, is that the Goongarrie Nickel Cobalt 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 Nickel Cobalt 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.

Appendix 5B

Mining exploration entity or oil and gas exploration entity quarterly cash flow report

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Name of entity

Ardea Resources Limited

ABN	Quarter ended ("current quarter")
30 614 289 342	31 December 2022

Consolidated statement of cash flows		Current quarter $A'000	Year to date (6 months) $A'000
1.	**Cash flows from operating activities**		
1.1	Receipts from customers	-	-
1.2	Payments for		
	(a) exploration & evaluation	(2,065)	(2,952)
	(b) Feasibility Studies	(2,008)	(3,089)
	(c) production	-	-
	(d) staff costs	(215)	(315)
	(e) administration and corporate costs	(408)	(755)
1.3	Dividends received (see note 3)	-	-
1.4	Interest received	27	44
1.5	Interest and other costs of finance paid	-	-
1.6	Income taxes paid	288	418
1.7	Government grants and tax incentives	-	-
1.8	Other (provide details if material) – Kalgoorlie Gold costs to be repaid on IPO	-	-
	Kalgoorlie Gold costs repaid, R&D refund	-	-
1.9	**Net cash from / (used in) operating activities**	**(4,380)**	**(6,649)**
2.	**Cash flows from investing activities**		
2.1	Payments to acquire or for:		
	(a) entities	-	-
	(b) tenements	-	-
	(c) property, plant and equipment	(55)	(55)
	(d) exploration & evaluation	-	-
	(e) investments	-	-
	(f) other non-current assets	-	-

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Consolidated statement of cash flows		Current quarter $A'000	Year to date (6 months) $A'000
2.2	Proceeds from the disposal of:		
	(a) entities	-	-
	(b) tenements	-	-
	(c) property, plant and equipment	-	-
	(d) investments	-	-
	(e) 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**	**(55)**	**(55)**

3.	**Cash flows from financing activities**		
3.1	Proceeds from issues of equity securities (excluding convertible debt securities)	-	-
3.2	Proceeds from issue of convertible debt securities	-	-
3.3	Proceeds from exercise of options	-	-
3.4	Transaction costs related to issues of equity securities or convertible debt securities	-	-
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**	**-**	**-**

4.	**Net increase / (decrease) in cash and cash equivalents for the period**	(4,435)	(6,704)
4.1	Cash and cash equivalents at beginning of period	19,749	22,018
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(4,380)	(6,649)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	(55)	(55)
4.4	Net cash from / (used in) financing activities (item 3.10 above)	-	-

Consolidated statement of cash flows		Current quarter $A'000	Year to date (6 months) $A'000
4.5	Effect of movement in exchange rates on cash held	-	
4.6	**Cash and cash equivalents at end of period**	**15,314**	**15,314**

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	1,671	6,247
5.2	Call deposits	13,643	13,502
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)**	**15,314**	**19,749**

6.	**Payments to related parties of the entity and their associates**	**Current quarter $A'000**
6.1	Aggregate amount of payments to related parties and their associates included in item 1	218
6.2	Aggregate amount of payments to related parties and their associates included in item 2	-

Note: if any amounts are shown in items 6.1 or 6.2, your quarterly activity report must include a description of, and an explanation for, such payments.

Salaries, Directors fees and Consulting fees paid to Directors - $203,124

Payments for Kalgoorlie Office to a Director related entity for the quarter - $15,105

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7.	**Financing facilities** *Note: the term "facility' includes all forms of financing arrangements available to the entity.* *Add notes as necessary for an understanding of the sources of finance available to the entity.*	**Total facility amount at quarter end $A'000**	**Amount drawn at quarter end $A'000**
7.1	Loan facilities	-	-
7.2	Credit standby arrangements	-	-
7.3	Other (please specify)	-	-
7.4	**Total financing facilities**	-	-
7.5	**Unused financing facilities available at quarter end**		-
7.6	Include in the box below a description of each facility above, including the lender, interest rate, maturity date and whether it is secured or unsecured. If any additional financing facilities have been entered into or are proposed to be entered into after quarter end, include a note providing details of those facilities as well.		

8.	**Estimated cash available for future operating activities**	**$A'000**
8.1	Net cash from / (used in) operating activities (item 1.9)	(4,381)
8.2	(Payments for exploration & evaluation classified as investing activities) (item 2.1(d))	-
8.3	Total relevant outgoings (item 8.1 + item 8.2)	(4,381)
8.4	Cash and cash equivalents at quarter end (item 4.6)	15,314
8.5	Unused finance facilities available at quarter end (item 7.5)	-
8.6	Total available funding (item 8.4 + item 8.5)	15,314
8.7	**Estimated quarters of funding available (item 8.6 divided by item 8.3)**	3.5

Note: if the entity has reported positive relevant outgoings (ie a net cash inflow) in item 8.3, answer item 8.7 as "N/A". Otherwise, a figure for the estimated quarters of funding available must be included in item 8.7.

8.8 If item 8.7 is less than 2 quarters, please provide answers to the following questions:

8.8.1 Does the entity expect that it will continue to have the current level of net operating cash flows for the time being and, if not, why not?

Answer: N/A

8.8.2 Has the entity taken any steps, or does it propose to take any steps, to raise further cash to fund its operations and, if so, what are those steps and how likely does it believe that they will be successful?

Answer: N/A

8.8.3 Does the entity expect to be able to continue its operations and to meet its business objectives and, if so, on what basis?

Answer: N/A

Note: where item 8.7 is less than 2 quarters, all of questions 8.8.1, 8.8.2 and 8.8.3 above must be answered.

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.

Date: 31 January 2023

Authorised by: Ardea Board of Directors

Notes

1. This quarterly cash flow report and the accompanying activity report provide a basis for informing the market about the entity's activities for the past quarter, how they have been financed and the effect this has had on its cash position. An entity that wishes to disclose additional information over and above the minimum required under the Listing Rules is encouraged to do so.
2. If this quarterly cash flow 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 cash flow 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.
4. If this report has been authorised for release to the market by your board of directors, you can insert here: "By the board". If it has been authorised for release to the market by a committee of your board of directors, you can insert here: "By the [*name of board committee – eg Audit and Risk Committee*]". If it has been authorised for release to the market by a disclosure committee, you can insert here: "By the Disclosure Committee".
5. If this report has been authorised for release to the market by your board of directors and you wish to hold yourself out as complying with recommendation 4.2 of the ASX Corporate Governance Council's *Corporate Governance Principles and Recommendations*, the board should have received a declaration from its CEO and CFO that, in their opinion, the financial records of the entity have been properly maintained, that this report complies with the appropriate accounting standards and gives a true and fair view of the cash flows of the entity, and that their opinion has been formed on the basis of a sound system of risk management and internal control which is operating effectively.

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Ardea Resources Limited Tenement Schedule (WA) as at 31 December 2022

Goongarrie Hub

Tenure	Location	Ardea Interest (%)	Status	Note	Tenure	Location	Ardea Interest (%)	Status	Note
E24/196	Goongarrie	100	Live		**M24/731**	Goongarrie	100	Live	3
E24/209	Goongarrie	100	Live		**M24/732**	Goongarrie	100	Live	3
E24/211	Goongarrie	100	Pending		**M24/744**	Goongarrie	100	Live	
E29/934	Goongarrie	100	Live		**M24/778**	Goongarrie	100	Live	3
E29/1028	Goongarrie	100	Live		**M29/167**	Goongarrie	100	Live	
E29/1038	Goongarrie	100	Live		**M29/202**	Goongarrie	100	Live	
E29/1039	Goongarrie	100	Pending		**M29/272**	Goongarrie	100	Live	
E29/1045	Goongarrie	100	Live		**M29/278**	Goongarrie	100	Live	
E29/1048	Goongarrie	100	Live		**M29/423**	Goongarrie	100	Live	
E30/500	Goongarrie	100	Live		**M29/424**	Goongarrie	100	Live	
E30/501	Goongarrie	100	Live		**M29/426**	Goongarrie	100	Live	
E30/502	Goongarrie	100	Live		**P24/5260**	Goongarrie	100	Live	
G29/25	Goongarrie	100	Pending		**P24/5328**	Goongarrie	100	Live	
L24/239	Goongarrie	100	Live		**P24/5329**	Goongarrie	100	Live	
L29/134	Goongarrie	100	Live		**P24/5265**	Goongarrie-Carr Boyd	100	Live	
L29/135	Goongarrie	100	Live		**P24/5169**	Goongarrie-Windanya	100	Live	
L30/67	Goongarrie	100	Live		**P24/5480**	Goongarrie-Windanya	100	Live	
L30/68	Goongarrie	100	Live		**M24/919**	Goongarrie-Scotia	100 Ni rights	Live	6
L16/141	Goongarrie	100	Live		**M24/959**	Goongarrie-Scotia	100 Ni rights	Live	6
L30/85	Goongarrie	100	Live		**M24/541**	Goongarrie	100	Live	
P29/2646	Highway North	100	Live		**P29/2650**	Highway North	100	Live	
P29/2647	Highway North	100	Live		**P29/2651**	Highway North	100	Live	
P29/2648	Highway North	100	Live		**E29/1125**	Goongarrie East	100	Live	16
P29/2649	Highway North	100	Live		**E29/1082**	Goongarrie	100	Live	
P24/5528	Goongarrie	100	Pending		**E29/1089**	Goongarrie	100	Live	
P29/2559	Highway North	100	Live		**P29/2561**	Highway North	100	Live	
P29/2560	Highway North	100	Live		**P29/2562**	Highway North	100	Live	
P29/2501	Highway - Moriarty	100	Live		**E29/941**	Ghost Rocks	100	Live	
P29/2511	Ghost Rocks	100	Live		**E29/981**	Ghost Rocks	100	Live	
P29/2512	Ghost Rocks	100	Live		**M29/214**	Highway	100	Live	
P29/2513	Ghost Rocks	100	Live		**P29/2538**	Ghost Rocks	100	Live	
P29/2514	Ghost Rocks	100	Live		**P29/2539**	Ghost Rocks	100	Live	
P29/2515	Ghost Rocks	100	Live		**E29/1083**	Goongarrie	100	Live	
L16/143	Goongarrie – Credo West	100	Pending		**L16/147**	Goongarrie – Credo West	100	Pending	
L16/144	Goongarrie – Credo West	100	Pending		**L16/148**	Goongarrie – Credo West	100	Pending	
L16/145	Goongarrie – Credo West	100	Pending		**L16/149**	Goongarrie – Credo West	100	Pending	
L16/146	Goongarrie – Credo West	100	Pending		**L30/95**	Goongarrie – Credo West	100	Pending	

Goongarrie Hub Expansion

Siberia

Tenure	Location	Ardea Interest (%)	Status	Note	Tenure	Location	Ardea Interest (%)	Status	Note
E24/203	Siberia	100 non Au-Ag righ	Live	4	**P24/5235**	Siberia	100	Live	
E29/889	Siberia	100 non Au-Ag righ	Live	4	**P24/5236**	Siberia	100	Live	
M24/634	Siberia	100 non Au-Ag rights	Live	1,4	**P29/2484**	Siberia	100	Live	
M24/660	Siberia	100 non Au-Ag rights	Live	4	**P29/2485**	Siberia	100	Live	
M24/663	Siberia	100 non Au-Ag rights	Live	4	**P24/5416**	Siberia	100	Live	
M24/664	Siberia	100 non Au-Ag rights	Live	4	**P24/5417**	Siberia	100	Live	
M24/665	Siberia	90 non Au-Ag rights	Live	2,4	**P24/5418**	Siberia	100	Live	

M24/683	Siberia	100 non Au-Ag rights	Live	4	**P24/5566**	Siberia	100	Live	
M24/686	Siberia	100 non Au-Ag rights	Live	4	**P24/5567**	Siberia	100	Live	
M24/772	Siberia	100 non Au-Ag rights	Live	4	**L24/248**	Siberia	100	Pending	
M24/797	Siberia	100 non Au-Ag rights	Live	4	**L24/249**	Siberia	100	Pending	
M24/915	Siberia	100 non Au-Ag rights	Live	4	**L24/250**	Siberia	100	Live	
M24/916	Siberia	100 non Au-Ag rights	Live	4	**L24/251**	Siberia	100	Pending	
M24/1002	Siberia	100 non Au-Ag rights	Pending	4	**P24/5599**	Siberia	100	Pending	

Goongarrie Hub Expansion
Black Range

Tenure	Location	Ardea Interest (%)	Status	Note
M24/757	Black Range	100 non Au-Ag rights; 100 ownership	Live	4
M24/973	Black Range	100 non Au-Ag rights	Pending	4
P24/4395	Black Range	100 non Au-Ag rights	Live	4
P24/4396	Black Range	100 non Au-Ag rights	Live	4
P24/4400	Black Range	100 non Au-Ag rights	Live	4
P24/4401	Black Range	100 non Au-Ag rights	Live	4
P24/4402	Black Range	100 non Au-Ag rights	Live	4
P24/4403	Black Range	100 non Au-Ag rights	Live	4
P24/5593	Black Range	100% non Au rights	Pending	14
P24/5594	Black Range	100% non Au rights	Pending	14
P24/5595	Black Range	100% non Au rights	Pending	14
P24/5596	Black Range	100% non Au rights	Pending	14

Kalpini Hub

Tenure	Location	Ardea Interest (%)	Status	Note	Tenure	Location	Ardea Interest (%)	Status	Note
E27/524	Kalpini	100 non Au rights	Live	9	**P25/2454**	Kalpini-Bulong	100 non Au rights	Live	14
E27/606	Kalpini	100 non Au rights	Live	14	**P25/2455**	Kalpini-Bulong	100 non Au rights	Live	14
E27/607	Kalpini	100 non Au rights	Live	14	**P25/2456**	Kalpini-Bulong	100 non Au rights	Live	14
E28/1224	Kalpini	100	Live		**P25/2457**	Kalpini-Bulong	100 non Au rights	Live	14
E28/2978	Kalpini	100 non Au rights	Live	14	**P25/2458**	Kalpini-Bulong	100 non Au rights	Live	14
M27/395	Kalpini	100	Live		**P25/2459**	Kalpini-Bulong	100 non Au rights	Live	14
M27/506	Kalpini	100	Live		**P25/2460**	Kalpini-Bulong	100 non Au rights	Live	14
M27/512	Kalpini	100	Pending		**P25/2461**	Kalpini-Bulong	100 non Au rights	Live	14
M28/199	Kalpini	100	Live		**P25/2482**	Kalpini-Bulong	100 non Au rights	Live	14
M28/201	Kalpini	100	Live		**P25/2483**	Kalpini-Bulong	100 non Au rights	Live	14
M28/205	Kalpini	100	Live		**P25/2484**	Kalpini-Bulong	100 non Au rights	Live	14
E27/278	Kalpini-Acra	100 Ni Lat Ore	Live	5	**P25/2559**	Kalpini-Bulong	100 non Au rights	Live	14
E27/438	Kalpini-Acra	100 Ni Lat Ore	Live	5	**P25/2560**	Kalpini-Bulong	100 non Au rights	Live	14
E27/520	Kalpini-Acra	100 Ni Lat Ore	Live	5	**P25/2561**	Kalpini-Bulong	100 non Au rights	Live	14
E27/579	Kalpini-Acra	100 Ni Lat Ore	Live	5	**P25/2609**	Kalpini-Bulong	100 non Au rights	Live	14
E28/1746	Kalpini-Acra	100 Ni Lat Ore	Live	5	**P25/2613**	Kalpini-Bulong	100 non Au rights	Live	14
E28/2483	Kalpini-Acra	100 Ni Lat Ore	Live	5	**P25/2614**	Kalpini-Bulong	100 non Au rights	Live	14
E25/578	Kalpini-Bulong	100 non Au rights	Live	14	**P25/2615**	Kalpini-Bulong	100 non Au rights	Live	14
M25/59	Kalpini-Bulong	100 non Au rights	Live	14	**P25/2650**	Kalpini-Bulong	100 non Au rights	Live	14
M25/134	Kalpini-Bulong	100 non Au rights	Live	14	**P25/2305**	Kalpini-Bulong	100 non Au rights	Live	13, 14
M25/145	Kalpini-Bulong	100 non Au rights	Live	14	**M31/488**	Kalpini-Lake Rebecca	100 non Au rights	Pending	14
M25/151	Kalpini-Bulong	100 non Au rights	Live	14	**P31/2038**	Kalpini-Lake Rebecca	100 non Au rights	Live	14
M25/161	Kalpini-Bulong	100 non Au rights	Live	14	**P31/2039**	Kalpini-Lake Rebecca	100 non Au rights	Live	14
M25/171	Kalpini-Bulong	100 non Au rights	Live	14	**P31/2040**	Kalpini-Lake Rebecca	100 non Au rights	Live	14
M25/187	Kalpini-Bulong	100 non Au rights	Live	14	**E27/647**	Kalpini	100 non Au rights	Live	14
M25/209	Kalpini-Bulong	100 non Au rights	Live	14	**P25/2306**	Kalpini-Bulong	100 non Au rights	Live	13, 14
E27/646	Kalpini	100 non Au rights	Live	14	**M25/19**	Kalpini-Bulong	100 non Au rights	Live	13, 14
E28/3139	Kalpini	100	Pending		**P25/2307**	Kalpini-Bulong	100 non Au rights	Live	13, 14
P25/2295	Kalpini	100 non Au rights	Live	14	**P25/2308**	Kalpini-Bulong	100 non Au rights	Live	13, 14
P25/2296	Kalpini-Bulong	100 non Au rights	Live	13, 14	**P25/2408**	Kalpini-Bulong	100 non Au rights	Live	13, 14

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Tenure	Location	Ardea Interest (%)	Status	Note	Tenure	Location	Ardea Interest (%)	Status	Note
P25/2297	Kalpini-Bulong	100 non Au rights	Live	13, 14	**P25/2409**	Kalpini-Bulong	100 non Au rights	Live	13, 14
P25/2304	Kalpini-Bulong	100 non Au rights	Live	13, 14	**L27/102**	Kalpini	100	Pending	
E27/692	Kalpini-Bulong	100 non Au rights	Live	14	**L31/88**	Kalpini	100	Pending	

WA Regional

Tenure	Location	Ardea Interest (%)	Status	Note
M15/1101	WA Regional	Pre-emp Ni-Co Lat	Live	7
M15/1263	WA Regional	Pre-emp Ni-Co Lat	Live	7
M15/1264	WA Regional	Pre-emp Ni-Co Lat	Live	7
M15/1323	WA Regional	Pre-emp Ni-Co Lat	Live	7
M15/1338	WA Regional	Pre-emp Ni-Co Lat	Live	7
M27/510	WA Regional	100 Ni Lat Ore	Live	8
M27/272	Kanowna East	Non-Au Rights	Live	10

Yerilla Hub

Tenure	Location	Ardea Interest (%)	Status	Note
E39/1954	Yerilla-Aubils	100 non Au rights	Live	14
M39/1147	Yerilla-Aubils	100 non Au rights	Pending	14
E31/1092	Yerilla-Boyce Creek	100 non Au rights	Live	14
E31/1169	Yerilla-Boyce Creek	100 non Au rights	Live	14
E31/1208	Yerilla-Boyce Creek	100 non Au rights	Live	14
E31/1213	Yerilla-Boyce Creek	100 non Au rights	Live	14
M31/483	Yerilla-Boyce Creek	100 non Au rights	Live	14
M31/493	Yerilla-Boyce Creek	100 non Au rights	Pending	14
M31/475	Yerilla-Jump Up Dam	100 non Au rights	Live	14
M31/477	Yerilla-Jump Up Dam	100 non Au rights	Live	14
M31/479	Yerilla-Jump Up Dam	100 non Au rights	Live	14

Kookynie Gold-
Perrinvale Nickel-Gold

Tenure	Location	Ardea Interest (%)	Status	Note
E40/350	Kookynie	0	Live	11
E40/357	Kookynie	0	Live	11

Tenure	Location	Ardea Interest (%)	Status	Note
E29/1006	Perrinvale	100 non Au rights	Live	14
E29/1078	Perrinvale	100 non Au rights	Live	14

Mt Zephyr Gold-Nickel

Tenure	Location	Ardea Interest (%)	Status	Note	Tenure	Location	Ardea Interest (%)	Status	Note
E37/1271	Mt Zephyr	100	Live	12	**E39/1706**	Mt Zephyr	100	Live	12
E37/1272	Darlot East	100	Live	12	**E39/1854**	Mt Zephyr	100	Live	12
E37/1273	Darlot East	100	Live	12	**E39/1985**	Mt Zephyr	100	Live	12
E37/1274	Mt Zephyr	100	Live	12					

Bedonia Nickel-PGE-Gold

Tenure	Location	Ardea Interest (%)	Status	Note	Tenure	Location	Ardea Interest (%)	Status	Note
E63/1828	Bedonia	100	Live		**E63/1857**	Bedonia	100	Live	
E63/1856	Bedonia	100	Live		**E63/1928**	Bedonia	100	Live	

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Notes:	
1.	Britannia Gold Ltd retains precious metal rights.
2.	Impress Ventures Ltd has a 10% equity free-carried interest to a decision to mine.
3.	Norton Gold Fields Limited retains certain Au claw-back rights and royalty receivable.
4.	Ora Banda Mining Ltd holds Au-Ag rights while Ardea retains all non Au-Ag rights.
5.	Acra JV – Northern Star Resources Ltd earn-in with Essential Metals Limited. Former holds gold rights while latter retains nickel sulphide rights. Ardea retains rights to Ni laterite ore.
6.	Black Mountain Gold Limited all rights with exception of Ardea retaining Ni rights.
7.	Ramelius Resources Limited assignee (Maximus Resources Ltd) all rights, Ardea pre-emptive right to Ni-Co laterite.
8.	Paddington Gold Pty Ltd all mineral rights (except nickel sulphide) while Ardea retains rights to nickel laterite ore.
9.	By Sale Agreement between Northern Star (Carosue Dam) Pty Ltd and Kalnorth Gold Mines Ltd, Northern Star (Carosue Dam) Pty Ltd now owns Au rights while Ardea retains non-Au rights.
10.	Northern Star (Kanowna) Limited holds Au rights. Ardea retains non-Au rights.
11.	The Option to purchase the tenements was transferred to Metalicity Limited on 21 November 2020. Ardea retains non Au rights.
12.	The Mt Zephyr/Darlot East tenements were farmed out to Red 5 Limited on 18 November 2020 whereby Red 5 Limited may earn 80% equity interest. Ardea is free carried to Decision to Mine.
13.	Purchase of tenements by Binding Terms Sheet and Alluvial Rights Agreements dated 4 June 2021 between the Seller Steven Lionel Kean and Ardea Resources Limited.
14.	By way of the Demerger Implementation Deed executed between Ardea Resources Limited, Kalgoorlie Gold Mining Limited, Yerilla Nickel Pty Ltd, Kalgoorlie Nickel Pty Ltd and Ardea Exploration Pty Ltd dated 9 September 2021, certain tenements are to be transferred to newly listed Kalgoorlie Gold Mining Limited. For certain other tenements, Ardea Resources Limited or its subsidiaries will continue to hold and retain non-gold rights while Kalgoorlie Gold Mining Limited retain gold rights only.

Interests in Mining Tenements and Petroleum Tenements Acquired or Increased during the December Quarter 2022

Tenure	Location	Nature of Interest	Ardea Interest beginning Quarter (%)	Ardea Interest end Quarter (%)
P25/2743	Bulong	Application	0	100
E63/1928	Bedonia	Surrender	100	0
L16/149	Goongarrie – Credo West	Withdrawal	100	0
E28/3139	Kalpini	Withdrawal	100	0

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