Ardea Resources Limited

ASX & Media Release

3 December 2021

ASX Symbol

ARL

Ardea Resources Limited

Suite 2 / 45 Ord St
West Perth WA 6005

PO Box 1433
West Perth WA 6872

Telephone

+61 8 6244 5136

Email

ardea@ardearesources.com.au

Website

www.ardearesources.com.au

Directors

Mat Longworth
Non-Executive Chair

Andrew Penkethman
Managing Director & CEO

Ian Buchhorn
Technical Executive Director

Executive Management

Sam Middlemas
Company Secretary & CFO

Alex Mukherji
Manager Land Access & Compliance

Mike Miller
General Manager Technical Services

Issued Capital

Fully Paid Ordinary Shares
138,830,219

Directors/Employee Performance Rights
4,971,000

ABN 30 614 289 342

Nickel Sulphide Discovery Confirmed at Emu Lake

- Diamond drill hole AELD0003 intersects massive nickel sulphide mineralisation on an intact basal contact in the West Channel
- The nickel sulphide is on the same komatiite basal flow contact intersected in adjoining diamond drill hole AELD0002 (4.8m of mineralisation, up to 4.78% nickel from 365.9m depth) (ASX release 10 June 2021)
- With two intersections of massive nickel sulphide now established on the same basal komatiite horizon, Ardea confirms a discovery
- Identification of pentlandite (nickel sulphide) and chalcopyrite (copper sulphide) confirmed by handheld XRF
- Down Hole Electro-Magnetic (DHEM) contractor has commenced work aimed at extending the target zone for follow-up drilling

Ardea Resources Limited (**Ardea** or the **Company**) confirms a massive nickel sulphide discovery at its Kalpini Project, 70km northeast of Kalgoorlie, WA (Figure 1 and 2).

Figure 1: ALED0003, NQ2 core at 392.1m showing massive sulphide zone containing visible pentlandite (nickel sulphide), chalcopyrite (copper sulphide) and pyrrhotite-pyrite (iron sulphides).

Ardea's Managing Director, Andrew Penkethman, said:

"The focus of historic Emu Lake exploration has been the Binti Gossan prospect area, 1km north of Ardea's West Channel discovery.

West Channel is on a separate ultramafic flow that pinches out before reaching surface, so the massive sulphide has no surface gossan expression and has therefore been missed by past explorers.

The geometry of the AELD0003 discovery will be better understood once the DHEM survey is completed, and multi-element assays received.

The discovery of massive nickel sulphide on an intact basal contact in two adjoining drill holes has opened up a new search space and is a major exploration breakthrough for the Company. With Ardea holding 20km of fertile komatiite strike at Emu Lake, there is significant scope to extend this discovery and make additional nickel sulphide discoveries."

For personal use only

Kalpini Project - Emu Lake Prospect

Ardea's Kalpini Project covers over 121km^2, with the leading nickel sulphide target, Emu Lake, located 70km north-east of Kalgoorlie (Figure 2). This strategic tenement package contains 20km strike of prospective ultramafic stratigraphy held 100% by Ardea and mostly within granted mining leases. The project is 35km east of the Black Swan Nickel Project (Silver Swan mine), operated by Poseidon Nickel Ltd, within a parallel komatiite volcanic belt.

The exploration model being applied by Ardea is similar to that modelled at the Silver Swan nickel sulphide mine (Figure 2). Silver Swan has a strike length near surface of less than 50m, but a plunge extent over 1,000m and features very high-grade zones of massive nickel sulphide.

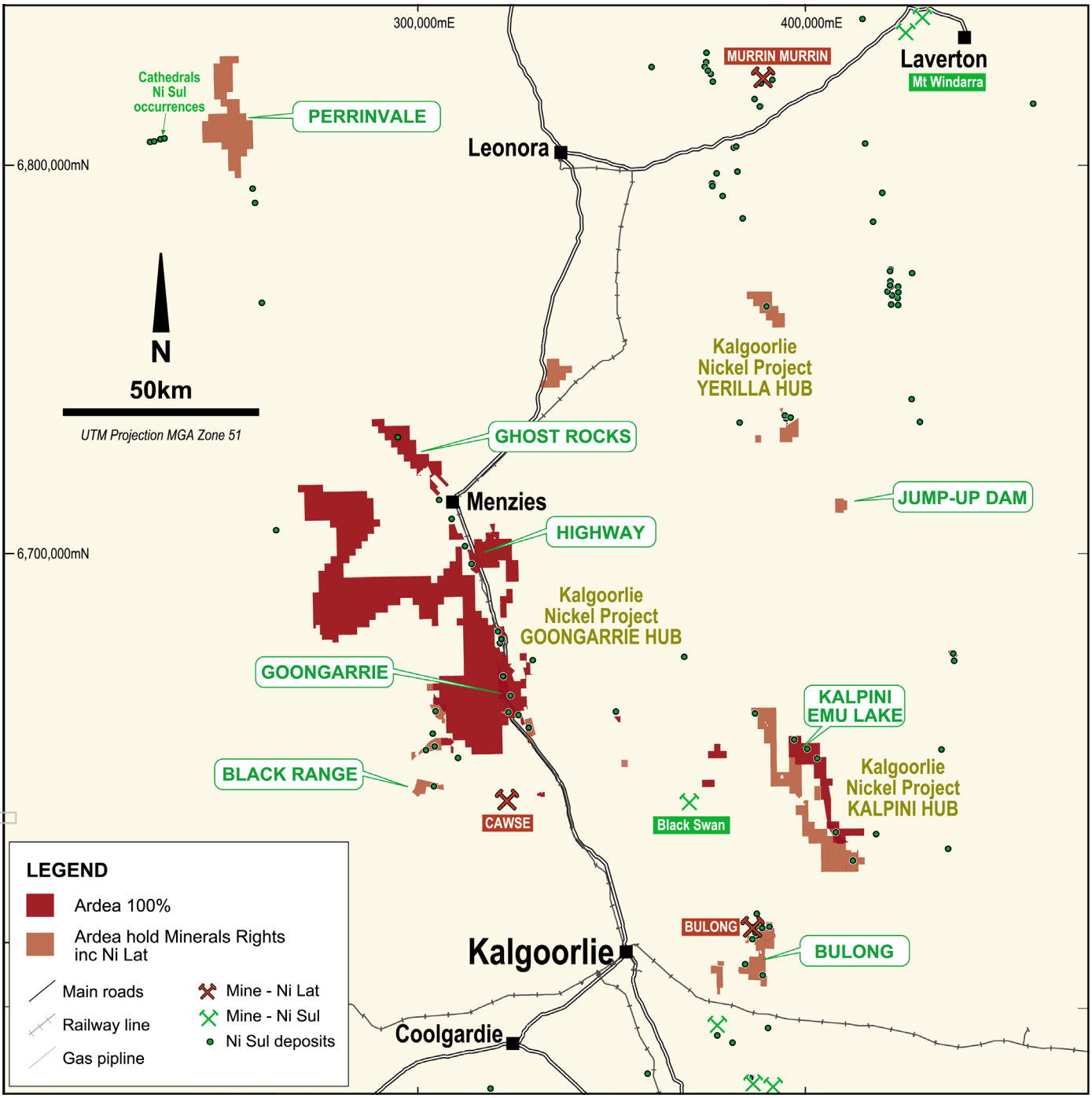


Figure 2: Ardea tenement plan highlighting the location of the Kalpini Project, Emu Lake Prospect and nickel mines and deposits in the region. Projection MGA 94 Zone 51.

For personal use only

Defining the target that confirmed the Emu Lake West Channel nickel sulphide discovery

AELD0001 was drilled to follow-up on an historic DHEM plate that had not been previously drilled tested. This hole intersected a narrow zone of remobilised nickel sulphide (ASX release 2 March 2021). A DHEM survey completed in this AELD0001 defined an off-hole conductor for drill testing. To test the strong (8,000 siemens) DHEM conductor, diamond drillhole AELD0002 was drilled and intersected a basal nickel sulphide occurrence (ASX release 10 June 2021) and returned assays of:

- **1.1m @ 4.78% Ni**, 0.16% Cu, 0.47g/t Pt, 0.20g/t Pd from 366.9m downhole consisting of semi-massive and matrix-style nickel sulphides, within a broader zone of:
- **4.8m @ 1.44% Ni** and 0.09% Cu, 0.20g/t Pt, 0.09g/t Pd from 365.9m depth.

This intersection confirms the prospectivity of the West Channel position that has received little attention in the past with most historic drilling concentrated on the Binti Gossan Main Zone 1km to the north. Although nickel sulphide has previously been intersected below the outcropping Binti Gossan, it consists of mainly remobilised stringer sulphides.

To follow-up on the nickel sulphide results in AELD002, a DHEM survey was completed which defined a strong off-hole conductor directly south and below the AELD002 nickel sulphide intercept, providing a target for future drilling.

AELD003 was recently drilled to a depth of 450m to test this DHEM plate. From a depth of 391.05m the following nickel sulphide zones were intersected (Figure 3, 4 and 5):

3.33m of massive, semi-massive, disseminated and matrix nickel sulphide

- 1.20m of massive sulphides, with visible pentlandite (nickel sulphide), chalcopyrite (copper sulphide), pyrrhotite and pyrite (iron sulphides).
- 1.55m of disseminated and matrix sulphides with some minor zones of massive sulphides. Visible sulphides include pentlandite, chalcopyrite, pyrrhotite and pyrite.
- 0.20m of massive sulphides, with visible pentlandite, chalcopyrite, pyrrhotite and pyrite.
- 0.38m of mixed matrix and disseminated sulphides with visible pentlandite, chalcopyrite, pyrrhotite and pyrite.

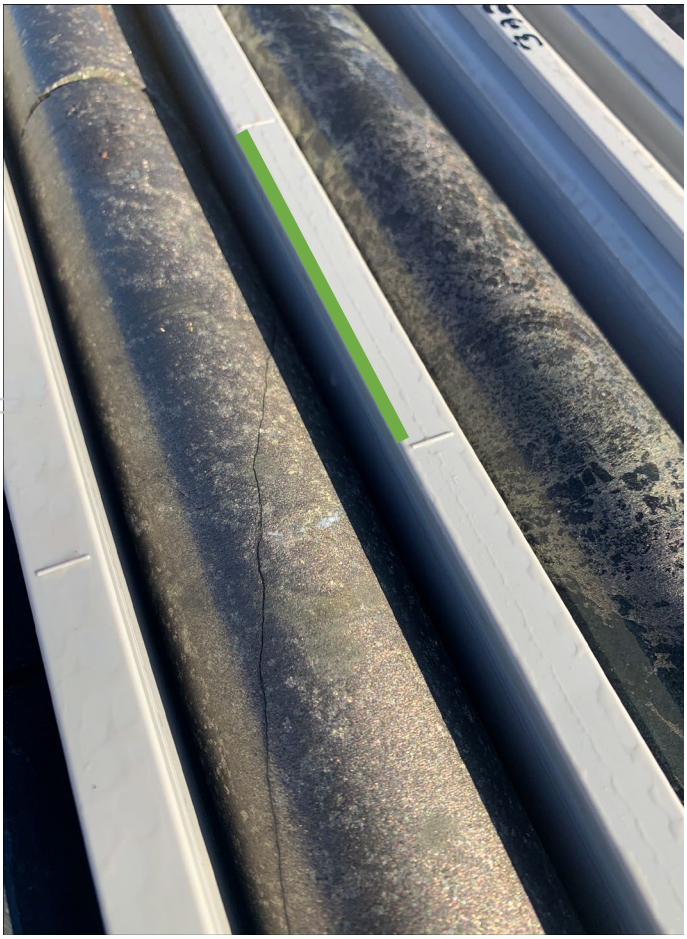


Figure 3: AELD0003 NQ2 core photo, 391.00 to 393.75m.

Left hand side core stick - Massive sulphide zone with visible pentlandite (nickel sulphide), chalcopyrite (copper sulphide), pyrrhotite and pyrite.

Right hand side core stick – Net textured sulphide zone with visible pentlandite, chalcopyrite and pyrrhotite.

For scale, the green line in the photo is 10cm in length.

For personal use only

The massive and semi-massive sulphides are of similar high grades (based on handheld XRF Niton results) to other previously reported intercepts in the Emu Lake area, with laboratory assays required to quantify the results, which will be reported once available.

Following on from the above zone of massive nickel sulphide, there is a 0.52m zone of barren intermediate volcaniclastic, followed by a further 37m of disseminated 1% to 2%, sulphide to a depth of 431.90m, within an ultramafic unit. Assay results are required to determine the nickel sulphide prospectivity of this wide low grade zone.

The host volcanic sequence is interpreted to be over-turned, hence the massive sulphide being intersected before the disseminated sulphides.

Significant project upside

The DHEM conductor from AELD0002 was stronger than that seen in AELD0001 and in light of the increased quantity of massive nickel sulphide observed in AELD0003, when compared to AELD002, indicates that the extent of nickel mineralisation is increasing.

A recently completed RC drill hole, AELR0002, was drilled up plunge of AELD0002. This hole did not intersect the target komatiite lava channel and indicates that this zone has pinched out closer to surface (Figure 5). This realisation helps explain why past explorers have missed the massive nickel sulphides discovered by Ardea in core holes AELD0002 and AELD0003 (Figure 4 and 5).

Neither surface geochemical sampling nor geophysical surveys would be able to detect such a system, with drilling and DHEM the only effective exploration method for this style of “blind” deposit. The exploration difficulty is further exacerbated by the limited strike length of Silver Swan style mineral systems.

The mineralised zone defined in Ardea drill holes AELD0002 and AELD0003 is open down-plunge.

With Ardea controlling 20km of strike of this essentially unexplored komatiite channel system, there is significant scope to make additional discoveries.

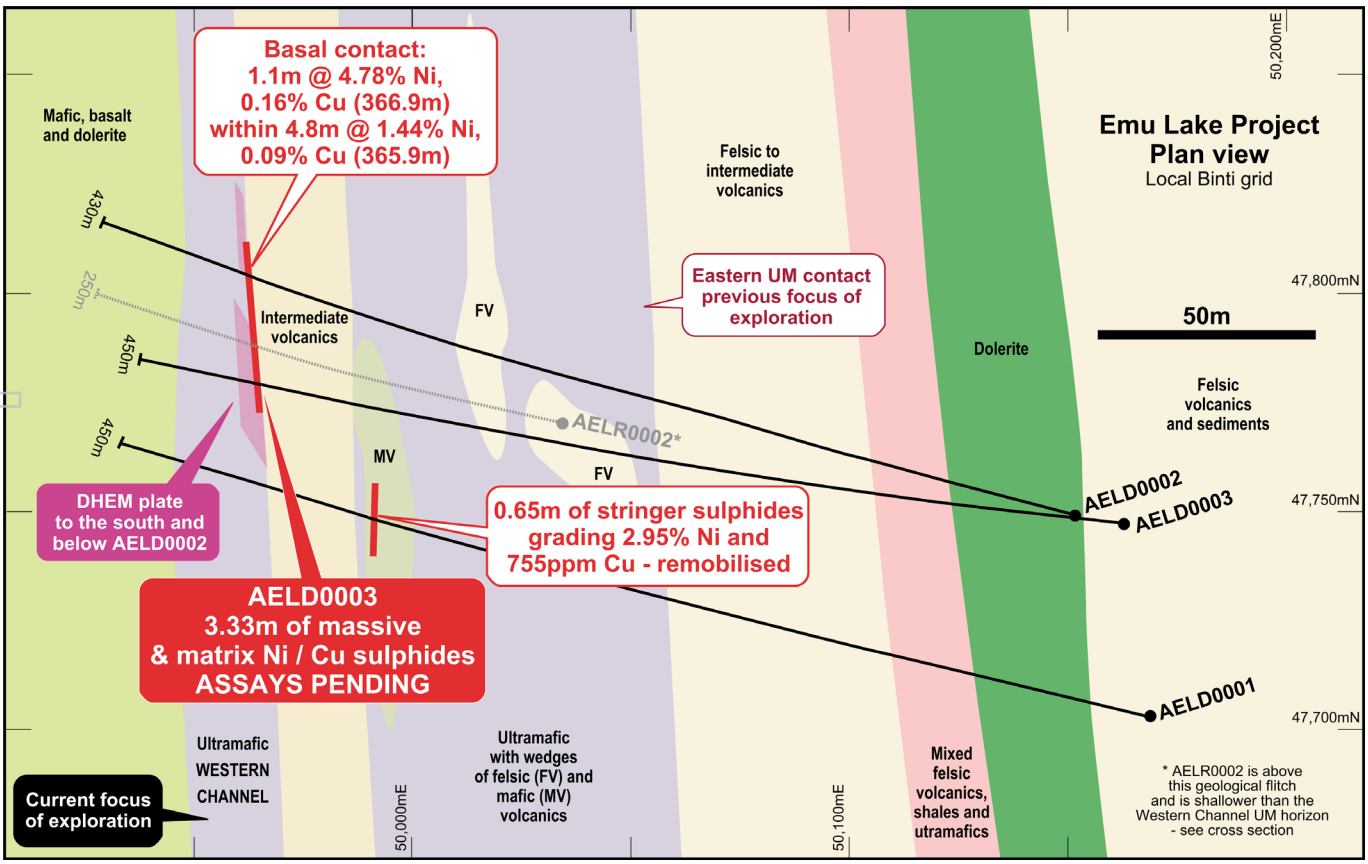


Figure 4: Drill hole location plan. Local Binti Grid.

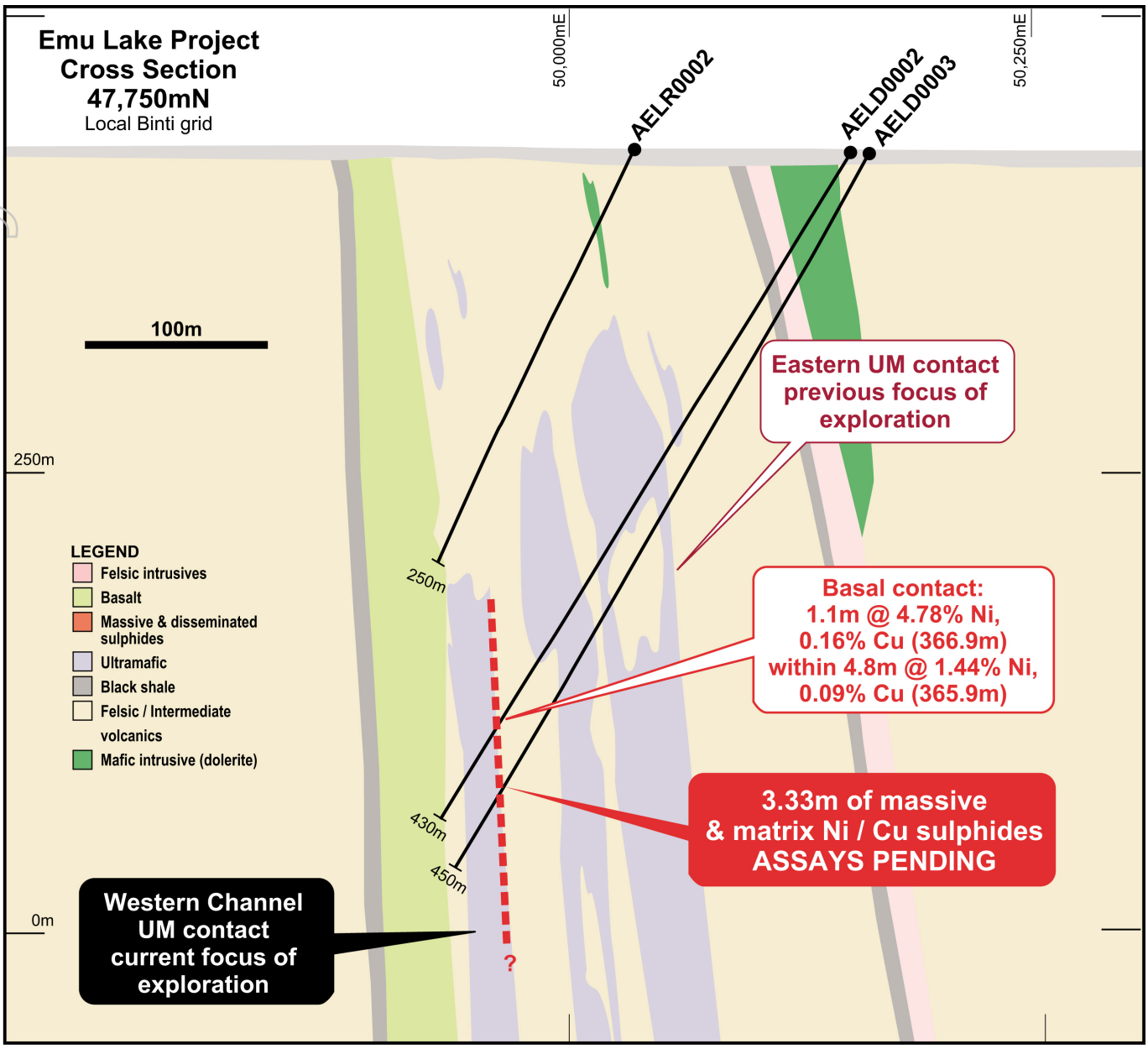


Figure 5: Cross section 47,750mN. Local Binti Grid.

Next Steps

Drill core logging of AELD0003 is being finalised. The core will be sampled and dispatched to an independent assay laboratory in the coming days. Assay results will be reported once available (expected in Q1, 2022).

Results of the in-progress DHEM surveys on drill holes AELR0002 and AELD0003 will be reported once they have been received and interpreted (expected during December 2021).

Once the above information is available, follow-up exploration will be planned to expand the known extent of this exciting nickel sulphide discovery.

For personal use only

Authorised for lodgement by the Board of Ardea Resources Limited.

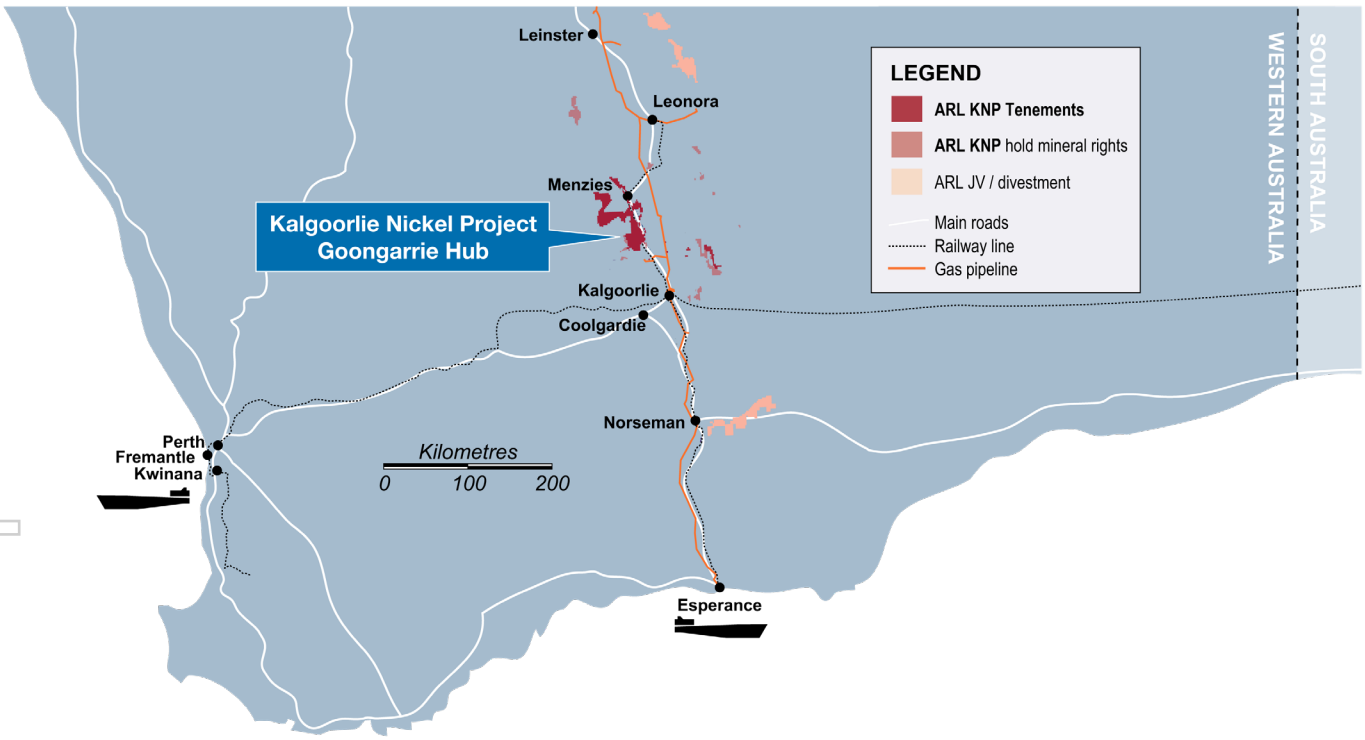
For further information regarding Ardea, please visit https://ardearesources.com.au/ or contact:

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

About Ardea Resources

Ardea Resources (ASX:ARL) is an ASX-listed 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** (ARL ASX announcements 15 February, 16 June 2021) located in a jurisdiction with exemplary ESG credentials.
- Advanced-stage exploration at compelling nickel sulphide targets, such as Emu Lake and Critical Minerals targets within the KNP Eastern Goldfields world-class nickel-gold province, with all exploration targets complementing the KNP nickel development strategy.



Follow Ardea on social media

For personal use only

For personal use only

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 exploration, 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, the ability to create and spin-out a gold focussed Company, 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.

Compliance Statement (JORC 2012)

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.

For personal use only

Appendix 1: Details of Drilling and JORC (2012) Table 1

Details of current round of drilling at Emu Lake, collar location data

Hole ID	Tenement	Total Depth	MGA51 East	MGA51 North	RL	Dip	Azimuth (Magnetic)
AELD0003	M27/506	450m	400105	6647878	427	-60.5	235.9
AELR0002	M27/506	250m	399993	6647812	425	-63.0	239.0

JORC Code, 2012 Edition, Table 1 report

Section 1 Sampling Techniques and Data

(Criteria in this section applies to all succeeding sections)

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report.*	• Samples from NQ sized drill core will be sampled on a nominal 1 to 2 metre basis taking into account smaller sample intervals up to geological contacts and massive sulphide zones. • For AELD0003, the core samples will be cut in half with one half remaining in the trays as a reference and the other half taken as the laboratory sample. • For AELD0002, the core samples were cut in half with one half of the core sent to the GSWA as a reference (it being an Exploration Incentive Scheme (EIS) hole, partly funded by the GSWA) and the other half was cut in half again and this quarter core sampled and sent to the laboratory for assays.
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details.*	• AELD0003, diamond core drilling commencing with HQ size and then reducing to NQ size when fresh rock was encountered. • Diamond core drilling was undertaken by DDH1 and RC drilling by Kennedy Drilling using a face sampling hammer.
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.*	• Drill sample recovery was recorded from the RC drill samples and diamond drilling core blocks – no material issues were reported and apart from some zones of broken ground, recoveries were greater than 90%.
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.*	• The RC drill chips and diamond core were geologically logged by qualified geologists and recorded in the Ardea database.
Sub-sampling techniques and sample preparation	• *For all sample types, the nature, quality and appropriateness of the sample preparation technique.*	• Samples were prepared and assayed in industry standard laboratories and significant results reported to JORC (2012) standards. • Samples will be crushed and ground to nominal 75 micron size. • The samples will be split into a pulp fraction for analysis and a pulp-reject for storage.
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*	• Samples will be assayed in an industry standard laboratory and significant results reported to JORC (2012) standards. • QAQC samples (blanks and standards) have been

For personal use only

Criteria	JORC Code explanation	Commentary
	• *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	or will be inserted every 10 samples. • A handheld Niton XRF unit was used as a guide to geochemical composition of different geological units and confirmation of visually observed and logged mineralisation. No portable XRF values are reported.
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• No independent verification of results has been undertaken at this stage. • All field and laboratory data has been entered into an industry standard database. • No adjustment to assay data was done.
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.*	• The drill collars were located with handheld GPS which is considered sufficient for the DHEM survey. Downhole surveys were taken every 30m downhole with a north seeking gyro tool.
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* • *Whether sample compositing has been applied.*	• Drilling is of an exploration nature and no resource style drilling requiring specific drill spacing was undertaken.
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	• The drilling orientation was designed to intersect the mineralised lenses at a close to perpendicular angle. The mineralised lenses are dipping at approximately 50-70 degrees to the west and the drilling is approximately at 60 degrees to the east. This will vary from hole to hole.
Sample security	• *The measures taken to ensure sample security.*	• Sampling was undertaken by Ardea personnel and reputable laboratories used. No issues with sample security are reported.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• Given the early stage of the exploration results, no audits or reviews have been undertaken or considered necessary at this stage.

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	• The project area locations are shown on Figure 1 of this report and described in the body of the report. • The tenure is considered to be secure and held 100% by Ardea under granted Mining Lease, M27/506. • Given the early stage of the exploration no mining specific applications have been made, but there are no known impediments (eg *overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings)* to mining in the tenure.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• The Emu Lake project has been explored for nickel sulphides since 2003 by Image Resources, Skryne Hill, Jubilee Mines, Emu Nickel, Xstrata – the majority of the drilling was undertaken by these companies.

For personal use only

Criteria	JORC Code explanation	Commentary
Geology	• *Deposit type, geological setting and style of mineralization.*	• The Company is seeking Archaean komatiite hosted nickel sulphide and related deposits in the project areas, commonly referred to as Kambalda-style.
Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:*	• Significant intercepts from the Emu Lake drilling have been provided by Ardea in previous ASX reports.
Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.*	• The reported assays are weighted for their assay interval width. • No cutting of grades has been undertaken.
Relationship between mineralization widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.*	• True width of the reported sulphide zones has not been attempted during this early stage of reporting. True width is considered to be approximately the same as reported down-hole width.
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• Where relevant, a diagram showing the hole positions relevant for the current phase of exploration is included in the release.
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Results.*	• The reporting is considered to be balanced taking into account the early stage of the exploration and the summary nature of this ASX report.
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• Down-hole electromagnetic surveys will be undertaken with the survey designed by Newexco geophysical consultants.
Future work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*	• Ardea is seeking Archaean komatiite hosted, Kambalda-style, nickel sulphide deposits on its extensive ultramafic tenement holding in the Eastern Goldfields of Western Australia. • Future work at Emu Lake will include: • Further assessment of DHEM and other geophysical data sets to determine targets for follow-up drilling – at this stage this is expected to be immediately below AELD0003.