Ardea Resources Limited

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**ASX Symbol**

ARL

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*Fully Paid Ordinary Shares*
124,747,246

*Directors/Employee Performance Rights*
3,711,000

**ABN** 30 614 289 342

# First metallurgical tests: very high gold recoveries from Big Four Gold deposit

- **Overall gold extractions of 97.7%**
- **No refractory issues or deleterious contaminants**
- **Significant proportion of gravity-recoverable gold revealed**
- **Conventional operating conditions and reagent consumptions**
- **Potential for stand-alone toll treatment or incorporation into Ardea's broader gold strategy**

First ever metallurgical testwork has been undertaken on four metallurgical samples selected from Ardea's Big Four Gold resource, located on a granted mining lease within the Goongarrie Nickel Cobalt Project (GNCP), 65km north west of Kalgoorlie.

Laboratory testwork employing industry standard (gravity-leach) procedures attained very high gold recoveries of nearly 98% under conditions and reagent consumptions matching industry norms. Although presently at a scoping study level, the results are highly encouraging, and indicate that the resource has potential to achieve reasonable prospects for eventual economic extraction of gold.

Ardea's Managing Director, Andrew Penkethman, said:

*"Excellent results from the first ever metallurgical test work at the Big Four Gold project mark another significant step towards development of Ardea's evolving gold assets. High recoveries and a lack of deleterious elements are exactly what any miner would want, and we have achieved that here at Big Four Gold. It also shows what can be achieved in WA during these difficult times, with Ardea's drilling, resource modelling, and now metallurgical testing of the Big Four Gold project all being completed since commencement in February 2020.*

*Work remains to be done at Big Four Gold, but these excellent results mean that, should the deposit be developed, several options will be available. This will be strongly influenced by our ongoing drill programs at several targets in the GNCP, including the Aphrodite North area and follow-up drilling at Lady Charlotte. Ardea's gold programs aim to assess individual targets in their own right. They also mark the first pass systematic assessment of a modelled gold camp, potentially comparable to the Paddington mining centre to the south or the Menzies mining centre to the north, hidden beneath transported cover within Ardea's expansive mining and exploration tenure.*

*Of course, definition of the gold potential throughout the GNCP benefits efficient development of the extensive nickel and cobalt resources whilst maximising potential returns for all stakeholders."*

## Metallurgical test work shows excellent recoveries

Conventional metallurgical test work has defined **overall gold extractions of 97.7%.** Gravity concentrate and tails leach results demonstrate that Big Four Gold mineralisation is highly amenable to the efficient recovery of gold. These results provide strong metallurgical grounds for Reasonable Prospects of Eventual Economic Extraction (RPEEE) from this resource.

Tests were conducted on sub-samples from Ardea's February 2020 Reverse Circulation (RC) resource definition samples on composite drill intervals selected by Ardea geologists. Samples included three "fresh" domain samples and one "transitional" sample.

Head grades were consistent with the analyses obtained from earlier drilling results.

Multi-elemental analyses **did not indicate deleterious levels of chemical contaminants**. Preg-robbing carbon and other refractory-type elements were identified below significant concentration levels.

These metallurgical tests used conventional gravity and cyanide leach technology, replicating typical process conditions. After a conventional grind, the gravity gold was recovered in a laboratory Knelson jig. Gravity concentrates and tails were subjected to batch leaching tests to permit calculation of an **average gold recovery for all samples tested of 97.7%.**

| Composite sample | Head gold grade (g/t) | Gold Recovery | | | |
|---|---|---|---|---|---|
| | | Gravity Gold Recovery (%) | Gravity Gold Concentrate Leach (%) | Gravity Gold Tails Leach (%) | Overall Gold Recovery (%) |
| **Transition** | **2.26** | 42.6% | 95.7% | 95.8% | **95.8%** |
| **Fresh #1** | **2.70** | 22.1% | 99.5% | 99.0% | **99.1%** |
| **Fresh #2** | **2.62** | 37.7% | 95.1% | 96.6% | **96.0%** |
| **Fresh #3** | **7.32** | 87.9% | 99.8% | 99.3% | **99.8%** |
| **Overall average** | | | | | **97.7%** |

Between 22% and almost 88% of the gold deported to the gravity concentrate. Average gold leach efficiencies for both the gravity concentrate and the gravity tail were almost 98%. In these first tests, extraction calculations do not factor secondary gold recovery from gravity gold concentrate leaching, so are potentially understated. The excellent gold recovery results support the general reliability of the process metallurgy.

The overall gold recoveries obtained for all materials tested mean that elaborate flowsheet options are not warranted. The high proportion of gold deported to the gravity concentrate is especially encouraging as this tends to result in lower operating costs in process plants that include a gravity circuit.

Reagent consumptions were tested under both bottle roll and tank leach conditions. Reagent consumptions were within the expected range for full scale operations.

Qualitative observations during the course of the testwork indicated that the material was readily milled and would not introduce significant issues on processing. It is apparent that leaching kinetics can be further optimised by:

- selecting suitable grind sizes;
- return of gravity gold leach residues to the head of the process; and
- appropriate processing of oxidised material. The transitional mineral sample was extremely fine and may benefit from blending with the other material types to both optimise slurry handling properties and to ensure the most efficient liberation of gold-bearing mineralisation.

The results place Ardea in a favorable position to either monetise the resource via a stand-alone toll treatment arrangement, or to combine with other gold-bearing prospects currently under investigation in the Ardea portfolio.

## The Big Four Gold deposit

Big Four Gold was subject to small scale historic underground mining during the early 1900s. Ardea drilling[1] has defined intercepts such as:

- ABFR0270 18m at 3.38g/t gold from 18m
  - including 6m at 6.03g/t gold from 20m
- ABFR0272 14m at 2.4g/t gold from 6m
  - including 4m at 5.73 g/t gold from 6m
- ABFR0273 4m at 5.78g/t gold from 38m
  - including 2m at 10.90g/t gold from 38m

From this drilling and legacy drilling data, an initial JORC 2012 Inferred Mineral Resource was defined of **178kt at 2.7g/t gold** (0.5g/t Au cut off) for 15,300 oz gold[2].

## Next Steps

In-light of the emerging gold discoveries within the GNCP, such as those at the Aphrodite North and Grafter areas, Ardea believes that a gold camp, hidden beneath transported cover is being defined. Follow-up work at the Big Four Gold deposit and other gold targets within the GNCP, will be strongly influenced by results from our ongoing drill programs to ensure knowledge gained from each drilling program is used to maximise discovery success and project priorities are appropriately allocated.

RC exploration drilling continues on several gold targets within the GNCP. The second round of RC drilling at the Aphrodite North gold target area was completed on 24 September 2020 with 8 holes drilled for 2,001 metres. A second RC rig mobilised to site on 29 September 2020 to resume drilling at the emerging Lady Charlotte gold discovery and another two targets within the Grafter area. Several other gold targets within the broader GNCP and at Windanya, 50km north of the City of Kalgoorlie-Boulder, are also scheduled to be drilled during October 2020.

Assay results from this drilling will be reviewed and interpreted as they are received, with regular updates expected.

Authorised for lodgement by the Board of Ardea Resources Limited.

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

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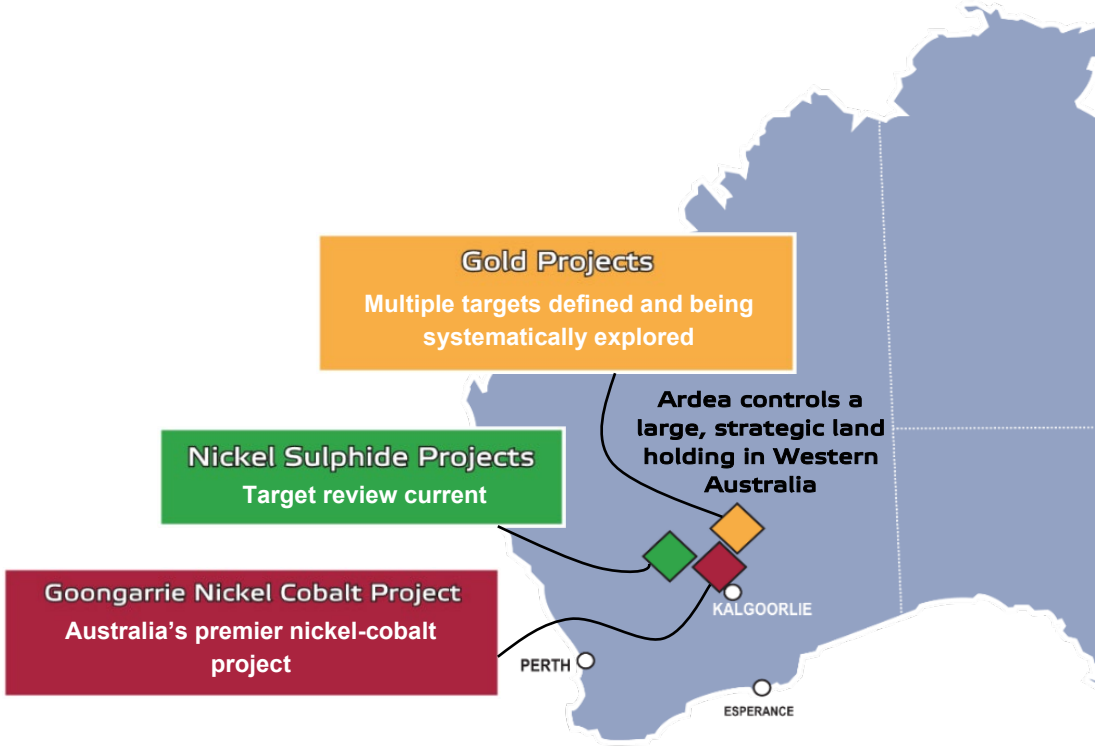
[1] Ardea Resources ASX release 26 Feb 2020, “Drilling defines shallow, high-grade gold at Big Four Gold, Goongarrie”
[2] Ardea Resources ASX release 14 May 2020, “Maiden resource for Big Four Gold Project, WA”

**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 Goongarrie Nickel Cobalt Project, which is part of the Kalgoorlie Nickel Project, a globally significant series of nickel-cobalt deposits which host the largest nickel-cobalt resource in the developed world, coincidentally located as a cover sequence overlying fertile orogenic gold targets; and
- Advanced-stage exploration within its WA nickel sulphide and gold exploration tenure located on crustal-scale Tectonic Zone structures in lake settings within the Eastern Goldfields world-class nickel-gold province.

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***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.***

***Competent Person Statement***

*The information in this report that relates to Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves is based on information compiled or reviewed by Dr Matthew Painter, a Competent Person who is a Member of the Australian Institute of Geoscientists. Dr Painter is a full-time employee of Ardea Resources Limited and has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being 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. Supporting analysis and metallurgical review for this testwork has been provided by Mr Michael John Miller who is a Member of the Australian Institute of Mining and Metallurgy. Mr Miller is a metallurgist with over 30 years' experience in the design, management and review of major metallurgical testwork programs and can be deemed to be knowledgeable in these activities. Mr Miller consents to the contents of this report relating to the specifics of the metallurgical testwork and reporting. Dr Painter consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.*

Ardea Resources Limited

# Appendix 1 – Collar location data, Big Four Gold, GNCP

Collar location data for recent RC drill holes used by Ardea Resources for metallurgical test work at Big Four Gold.

| Drill hole | Type | Depth (m) | Tenement | Grid | Easting (mE) | Northing (mN) | RL (mASL) | Dip (°) | Azimuth (°) |
|---|---|---|---|---|---|---|---|---|---|
| ABFR0266 | RC | 26 | M24/00778 | MGA94_51 | 325346.0 | 6663362.0 | 384.8 | -60 | 243 |
| ABFR0267 | RC | 48 | M24/00778 | MGA94_51 | 325355.3 | 6663362.8 | 384.8 | -59 | 249 |
| ABFR0268 | RC | 74 | M24/00778 | MGA94_51 | 325368.6 | 6663364.4 | 385.0 | -60 | 244 |
| ABFR0269 | RC | 70 | M24/00778 | MGA94_51 | 325358.8 | 6663385.0 | 384.8 | -60 | 242 |
| ABFR0270 | RC | 64 | M24/00778 | MGA94_51 | 325343.1 | 6663391.6 | 384.7 | -60 | 255 |
| ABFR0271 | RC | 70 | M24/00778 | MGA94_51 | 325350.3 | 6663397.3 | 384.6 | -60 | 247 |
| ABFR0272 | RC | 23 | M24/00778 | MGA94_51 | 325334.4 | 6663400.5 | 384.5 | -60 | 246 |
| ABFR0273 | RC | 79 | M24/00778 | MGA94_51 | 325348.1 | 6663405.1 | 384.5 | -60 | 251 |
| ABFR0274 | RC | 130 | M24/00778 | MGA94_51 | 325368.5 | 6663417.2 | 384.7 | -59 | 247 |
| ABFR0275 | RC | 74 | M24/00778 | MGA94_51 | 325341.3 | 6663421.8 | 384.4 | -60 | 243 |
| ABFR0276 | RC | 80 | M24/00778 | MGA94_51 | 325310.9 | 6663376.7 | 384.5 | -60 | 066 |

# Appendix 2 – Individual increment subsamples tested

| Hole | From (m) | To (m) | Sample ID | Sample Weight (kg) | Met sample | Material type |
|---|---|---|---|---|---|---|
| ABFR0266 | 10 | 11 | ABFR0266_10-11 | 8.75 | Transition | Transitional, oxidised |
| ABFR0266 | 11 | 12 | ABFR0266_11-12 | 7.60 | Transition | Transitional, oxidised |
| ABFR0266 | 12 | 13 | ABFR0266_12-13 | 9.00 | Transition | Transitional, oxidised |
| ABFR0266 | 13 | 14 | ABFR0266_13-14 | 8.30 | Transition | Transitional, oxidised |
| ABFR0266 | 14 | 15 | ABFR0266_14-15 | 5.15 | Transition | Transitional, oxidised |
| ABFR0266 | 15 | 16 | ABFR0266_15-16 | 5.15 | Transition | Transitional, oxidised |
| ABFR0272 | 6 | 7 | ABFR0272_6-7 | 8.25 | Transition | Transitional, oxidised |
| ABFR0272 | 7 | 8 | ABFR0272_7-8 | 9.25 | Transition | Transitional, oxidised |
| ABFR0272 | 8 | 9 | ABFR0272_8-9 | 5.35 | Transition | Transitional, oxidised |
| ABFR0272 | 9 | 10 | ABFR0272_9-10 | 6.40 | Transition | Transitional, oxidised |
| ABFR0270 | 18 | 19 | ABFR0270_18-19 | 7.75 | Transition | Transitional, oxidised |
| ABFR0270 | 19 | 20 | ABFR0270_19-20 | 5.20 | Transition | Transitional, oxidised |
| ABFR0267 | 18 | 19 | ABFR0267_18-19 | 8.70 | Fresh #1 | Fresh rock |
| ABFR0267 | 19 | 20 | ABFR0267_19-20 | 9.70 | Fresh #1 | Fresh rock |
| ABFR0267 | 20 | 21 | ABFR0267_20-21 | 8.45 | Fresh #1 | Fresh rock |
| ABFR0267 | 21 | 22 | ABFR0267_21-22 | 9.35 | Fresh #1 | Fresh rock |
| ABFR0267 | 22 | 23 | ABFR0267_22-23 | 9.65 | Fresh #1 | Fresh rock |
| ABFR0267 | 23 | 24 | ABFR0267_23-24 | 6.85 | Fresh #1 | Fresh rock |
| ABFR0269 | 32 | 33 | ABFR0269_32-33 | 8.90 | Fresh #1 | Fresh rock |
| ABFR0269 | 33 | 34 | ABFR0269_33-34 | 10.90 | Fresh #1 | Fresh rock |
| ABFR0269 | 34 | 35 | ABFR0269_34-35 | 11.00 | Fresh #1 | Fresh rock |
| ABFR0269 | 35 | 36 | ABFR0269_35-36 | 8.65 | Fresh #1 | Fresh rock |
| ABFR0269 | 36 | 37 | ABFR0269_36-37 | 10.20 | Fresh #1 | Fresh rock |
| ABFR0269 | 37 | 38 | ABFR0269_37-38 | 13.00 | Fresh #1 | Fresh rock |
| ABFR0270 | 20 | 21 | ABFR0270_20-21 | 4.55 | Fresh #2 | Fresh rock |
| ABFR0270 | 21 | 22 | ABFR0270_21-22 | 8.15 | Fresh #2 | Fresh rock |
| ABFR0270 | 22 | 23 | ABFR0270_22-23 | 8.50 | Fresh #2 | Fresh rock |
| ABFR0270 | 23 | 24 | ABFR0270_23-24 | 8.80 | Fresh #2 | Fresh rock |
| ABFR0270 | 24 | 25 | ABFR0270_24-25 | 7.95 | Fresh #2 | Fresh rock |
| ABFR0270 | 25 | 26 | ABFR0270_25-26 | 4.70 | Fresh #2 | Fresh rock |
| ABFR0270 | 26 | 27 | ABFR0270_26-27 | 6.60 | Fresh #2 | Fresh rock |
| ABFR0270 | 27 | 28 | ABFR0270_27-28 | 10.10 | Fresh #2 | Fresh rock |
| ABFR0270 | 28 | 29 | ABFR0270_28-29 | 13.75 | Fresh #2 | Fresh rock |
| ABFR0270 | 29 | 30 | ABFR0270_29-30 | 9.15 | Fresh #2 | Fresh rock |
| ABFR0270 | 30 | 31 | ABFR0270_30-31 | 10.00 | Fresh #2 | Fresh rock |
| ABFR0270 | 31 | 32 | ABFR0270_31-32 | *12.35* | Fresh #2 | Fresh rock |
| ABFR0270 | 32 | 33 | ABFR0270_32-33 | 7.70 | Fresh #2 | Fresh rock |
| ABFR0270 | 33 | 34 | ABFR0270_33-34 | 9.95 | Fresh #2 | Fresh rock |
| ABFR0270 | 34 | 35 | ABFR0270_34-35 | 11.05 | Fresh #2 | Fresh rock |
| ABFR0270 | 35 | 36 | ABFR0270_35-36 | 7.50 | Fresh #2 | Fresh rock |
| ABFR0273 | 56 | 57 | ABFR0273_56-57 | 11.50 | Fresh #3 | Fresh rock |
| ABFR0273 | 57 | 58 | ABFR0273_57-58 | 9.90 | Fresh #3 | Fresh rock |
| ABFR0274 | 76 | 77 | ABFR0274_76-77 | 12.20 | Fresh #3 | Fresh rock |
| ABFR0274 | 77 | 78 | ABFR0274_77-78 | 11.55 | Fresh #3 | Fresh rock |
| ABFR0274 | 78 | 79 | ABFR0274_78-79 | 5.55 | Fresh #3 | Fresh rock |
| ABFR0274 | 79 | 80 | ABFR0274_79-80 | 10.55 | Fresh #3 | Fresh rock |
| ABFR0274 | 86 | 87 | ABFR0274_86-87 | 12.70 | Fresh #3 | Fresh rock |
| ABFR0274 | 87 | 88 | ABFR0274_87-88 | 5.30 | Fresh #3 | Fresh rock |
| ABFR0274 | 92 | 93 | ABFR0274_92-93 | 10.65 | Fresh #3 | Fresh rock |
| ABFR0274 | 93 | 94 | ABFR0274_93-94 | 4.60 | Fresh #3 | Fresh rock |
| ABFR0274 | 94 | 95 | ABFR0274_94-95 | 7.60 | Fresh #3 | Fresh rock |
| ABFR0274 | 95 | 96 | ABFR0274_95-96 | 5.85 | Fresh #3 | Fresh rock |
| ABFR0276 | 48 | 49 | ABFR0276_48-49 | 13.25 | Fresh #3 | Fresh rock |
| ABFR0276 | 49 | 50 | ABFR0276_49-50 | 11.55 | Fresh #3 | Fresh rock |
| ABFR0276 | 54 | 55 | ABFR0276_54-55 | 11.55 | Fresh #3 | Fresh rock |
| ABFR0276 | 55 | 56 | ABFR0276_55-56 | 10.95 | Fresh #3 | Fresh rock |

*Note:* Subsampling conducted on 3 June 2020. All subsamples were visually logged as dry chips, with estimated recovery at 100%.

# Appendix 3 – Composite head assay results

Multi-Element head assay analyses comprising over 70 elemental assays and other determinants for the Big Four Gold testwork composites. Only those elements typically associated with gold mineralisation and discussed in the body of the announcement are shown here.

*Abbreviations used:* Au – gold, Ag – silver, As – arsenic, Sb – antimony, S – sulphur, $C_{total}$ – total contained carbon, $C_{org}$ – contained organic carbon, $CO_3^{2-}$ - carbonate, ppm – parts per million, ppb – parts per billion.

| | | Transition | | Fresh #1 | | Fresh #2 | | Fresh #3 | |
|---|---|---|---|---|---|---|---|---|---|
| | | Head | Repeat | Head | Repeat | Head | Repeat | Head | Repeat |
| Gold | ppb | 2400 | - | 2730 | - | 2990 | - | 9750 | - |
| Gold (repeat) | ppb | 2330 | - | 2900 | - | 3040 | - | 9340 | - |
| Gold (average) | ppb | **2365** | **-** | **2815** | **-** | **3015** | **-** | **9545** | - |
| Silver | ppm | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 |
| Arsenic | ppm | 45 | 47 | 41 | 40 | 29 | 31 | 147 | 146 |
| Antimony | ppm | 1.6 | 1.8 | 1.2 | 1.6 | 0.4 | 0.6 | 1 | 1 |
| Sulphur | ppm | 250 | 200 | 100 | 100 | 100 | 100 | 6150 | 6150 |
| Sulphur (repeat) | ppm | <100 | <100 | <100 | <100 | <100 | <100 | 5600 | 5700 |
| $C_{TOTAL}$ | % | 0.09 | 0.09 | 0.19 | 0.19 | 0.49 | 0.49 | 0.92 | 0.92 |
| $C_{ORG}$ | % | 0.07 | 0.09 | 0.07 | 0.08 | 0.03 | 0.03 | 0.07 | 0.08 |
| $CO_3^{2-}$ | % | 0.1 | 0 | 0.6 | 0.55 | 2.3 | 2.3 | 4.25 | 4.2 |

# Appendix 4 – 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 (e.g. 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.*<br>• *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.*<br>• *Aspects of the determination of mineralisation that are Material to the Public Report.*<br>• *In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases, more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.* | • All holes were sampled on a 2 metre down hole interval basis, with exceptions being made for end of hole final-lengths. All sampling lengths were recorded in ARL's standard sampling record spreadsheets. Sample condition, sample recovery and sample size were recorded for all drill samples collected by ARL.<br>• The drill spacing was *ad hoc*, being defined by proximity to twinned drill holes, or through identification of a gap in data. Nominally, drill holes are around 10-20m apart. The drilling will also contribute to provide material for the purpose of metallurgical sampling should the need arise.<br>• Industry standard practice was used in the processing of samples for assay, with 2m intervals of RC chips collected in green plastic bags.<br>• Assay of samples utilised standard laboratory techniques with standard ICP-AES undertaken on 50 gram samples for Au, Pt and Pd, and lithium borate fused-bead XRF analysis used for the remaining multi-element suite. Further details of lab processing techniques are found in Quality of assay data and laboratory tests below. |
| ***Drilling techniques*** | • *Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).* | • In the 2020 program, Ardea drilled the Big Four Gold prospect with 11 reverse circulation (RC) drill holes . Holes were drilled to be parallel to historic twin holes, at a nominal 60˚→245˚. The only exception to this approximate orientation was ABFR0276 (60˚→066˚) as the preferred collar location was inaccessible due to historic mine workings. Twin holes were generally collared within 2 m north or south of the twin hole's collar position. RC drilling was performed with a face sampling hammer (bit diameter between 4½ and 5 ¼ inches) and samples were collected by either a cone (majority) or riffle splitter using 2 metre composites. Sample condition, sample recovery and sample size were recorded for all drill samples collected by ARL. |
| ***Drill sample recovery*** | • *Method of recording and assessing core and chip sample recoveries and results assessed.*<br>• *Measures taken to maximise sample recovery and ensure representative nature of the samples.*<br>• *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.* | • RC chip sample recovery was recorded by visual estimation of the reject sample, expressed as a percentage recovery. Overall estimated recovery was high. RC Chip sample condition recorded using a three code system, D=Dry, M=Moist, W=Wet. A small proportion of samples were moist or wet (11.5%), with the majority of these being associated with soft goethite clays, where water injection has been used to improve drill recovery.<br>• Measures taken to ensure maximum RC sample recoveries included maintaining a clean cyclone and drilling equipment, using water injection at times of reduced air circulation, as well as regular communication with the drillers and slowing drill advance rates when variable to poor ground conditions are encountered. |
| ***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.*<br>• *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.*<br>• *The total length and percentage of the relevant intersections logged.* | • Drilling was undertaken for confirmation of historic results and gap infill. The level of logging detail utilised supports future potential resource estimation and was as follows:<br>  ○ Visual geological logging was completed for all drilling both at the time of drilling (using standard Ardea logging codes), and later over relevant met-sample intervals with a metallurgical-logging perspective.<br>  ○ Geochemistry from historic data was used together with logging data to validate logged geological horizons.<br>• Visual geological logging was completed for all RC drilling on 1 metre intervals. Logging was performed at the time of drilling, and planned drill hole target lengths adjusted by the geologist during drilling. The geologist also oversaw all sampling and drilling practices. A mixture of ARL employees and contract geologists supervised all drilling. A small selection of representative chips were also collected for every 1 metre interval and stored in chip-trays for future reference.<br>• In total, 738 m were drilled during the program, with the chips generated during entire program logged in detail.Individual subsample data were logged on a spreadsheet, which was despatched with the subsamples (via paper and electronic copy) to the metallurgical laboratory for reconciliation purposes. |
| ***Sub-sampling techniques and sample*** | • *If core, whether cut or sawn and whether quarter, half or all core taken.*<br>• *If non-core, whether riffled, tube sampled,* | • Subsample increments from the selected RC sample increments were collected in the field and split to 50% of original mass using a riffle splitter. Subsamples from each increment were bagged separately in labelled green plastic bags with colour coding to |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| ***preparation*** | *rotary split, etc and whether sampled wet or dry.*<br>• *For all sample types, the nature, quality and appropriateness of the sample preparation technique.*<br>• *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.*<br>• *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.*<br>• *Whether sample sizes are appropriate to the grain size of the material being sampled.* | denominate the intended composite destination.<br>• Samples were despatched to BV laboratories Perth for processing.<br>• On arrival at the Perth laboratory, the samples were sorted, logged, wet weighed, dried and reweighed.<br>• Drying was conducted at 60 degrees Celsius to control the risk of sample oxidation.<br>• The subsamples were crushed to 100% passing 1 mm, then combined to form their respective composites.<br>• Crushed <1 mm material was passed through a rotary divider for a minimum of four times to produce 24 lots of 1 kg (+/- 0.5 grams) and homogenous reserve lots weighing between 8-10 kg each.<br>• A single 1 kg lot was selected at random and pulverised for head grade analysis.<br>• Individual 1 kg lots were used as necessary for grind determination tests on each composite.<br>• A single 10 kg lot from each composite was used for gravity separation testwork. |
| ***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.*<br>• *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.*<br>• *Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.* | • All Ardea samples were submitted to Kalgoorlie Bureau Veritas (BV) laboratories and transported to BV Perth, where they were processed.<br>• Procedures and results are reported in Bureau Veritas report number 4446, dated October 2020.<br>• The 10 kg gravity separation sample was deemed as more statistically reliable than the 1 kg head sample, especially for gold and precious elemental analyses. The resulting values were used in mass balance calculations.<br>• Gravity separation was conducted in a laboratory scale (nominal 200 mm diameter) Knelson Concentrator. Each composite sample (10 kg solids) was processed as a single pass through the concentrator, and all equipment was thoroughly cleaned before and after testing to control the risks of contamination or mass loss.<br>• Concentrate and tailings were collected and tested separately.<br>• Each gravity concentrate was subjected to an intensive cyanide leach. The entire concentrate mass was leached, and the concentrate grade was calculated from a mass balance over the intensive leach digestion.<br>• Residues from the intensive leach were analysed in their entirety and were not available for further processing.<br>• Gravity tailings were subjected to conventional cyanide leaching at pH ~10.2 with a nominal NaCN endpoint target of 100 mg/L NaCN.<br>• Two tailings leach tests were conducted for each composite. The first was a bottle roll test, the second was a vat leach test. Tests were conducted on 1 kg subsamples taken from the gravity tailings.<br>• Bottle roll tests were conducted at a particle size corresponding to 80% passing 140 microns. The vat tests used an 80% passing size of 106 microns to enable leach recovery sensitivity to grind size to be evaluated. Milling of the Transitional material appears to have produced a bimodal particle size distribution, with coarse mineralised oversize being initially associated with inferior gold recovery values (~88%). Tests for this material were repeated after remedial changes were made to the procedure that eliminated the rogue oversize. The data displayed in this report represent the test data obtained after this correction. The earlier data were not selected because they did not represent the target process conditions or the normal output from a conventional milling circuit.<br>• Target slurry leach solids content was 48%, in keeping with typical milling operations. Ambient temperature was used.<br>• Test duration was 48 hours, with periodic sampling and reagent adjustment at the 2, 4, 8, 12, 24 and 48 hour periods.<br>• Leach tests were conducted using Kalgoorlie site water. Lime demand was determined by testing ahead of the leach test series.<br>• Recovery calculations were based on the stream analyses from the gravity and leaching tests. The head grade was calculated from the sample stream weights and product stream analyses; this was compared to the physical head sample and to projected head analysis derived from the original drill sample incremental analyses.<br>• All chemical analyses were conducted by Bureau Veritas at their analytical laboratories in Perth.<br>• Precious metal elements (Au, Pt, Pd) were determined using fire assay (40 g charge) followed by digestion and ICP-MS analysis.<br>• Multi-elemental analysis (62 elements) was conducted by mixed acid digest and a combination of ICP-OES and ICP-MS techniques.<br>• Aqua regia digest was used for mercury digestion ahead of ICP-MS analysis.<br>• Sulphur and carbon speciations were conducted instrumentally by thermal decomposition/ gas spectroscopy methods. |
| ***Verification of sampling and assaying*** | • *The verification of significant intersections by either independent or alternative company personnel.*<br>• *The use of twinned holes.*<br>• *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* | • Analyses were conducted using BV's in-house QA/QC procedures, which include use of analytical blanks, standards and duplicates in the course of client analytical runs.<br>• This, combined with the fact that the data is demonstrably consistent has meant that the results are considered to be acceptable and suitable for reporting. |

| Criteria | JORC Code explanation | Commentary |
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| | • *Discuss any adjustment to assay data.* | |
| ***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.*<br>• *Specification of the grid system used.*<br>• *Quality and adequacy of topographic control.* | • All drill holes are to be surveyed using an RTK DGPS system with either a 3 or 7 digit accuracy. The coordinates are stored in the exploration database referenced to the MGA Zone 51 Datum GDA94.<br>• All holes drilled as part of the Big Four Gold program were angled and were surveyed down hole at 30 m intervals and at EOH.<br>• The grid system for all models is GDA94. Where historic data or mine grid data has been used it has been transformed into GDA94 from its original source grid via the appropriate transformation. Both original and transformed data is stored in the digital database.<br>A DGPS pickup up of drill collar locations is considered sufficiently accurate for reporting of resources, but is not suitable for mine planning and reserves. |
| ***Data spacing and distribution*** | • *Data spacing for reporting of Exploration Results.*<br>• *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.*<br>• *Whether sample compositing has been applied.* | • The drill spacing ad hoc, designed to either twin a historic drill holes or infill gaps in near-surface data. Spacing between holes was generally of the order of 10-20 m.<br>• The spacing is considered sufficient for the definition of Mineral Resources. Data will be assessed in detail prior to estimation of a Mineral Resource.<br>Samples were composited over 2 m for the entire drill program. |
| ***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.*<br>• *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.* | • All drill holes in this program were angled. They were designed to parallel historic holes for twinning, and were drilled at a nominal 60˚→245˚. The only exception was ABFR0276 (60˚→066˚) as the preferred collar location was inaccessible due to historic mine workings.<br>• Gold mineralisation is subvertical and striking approximately 335˚-340˚, associated with a subvertical, late-stage intermediate porphyry intrusive. Intercepts are as normal to the orientation of mineralisation as can be reliably defined using RC drilling. However, the detailed orientation of vein sets and breccia zones within and adjacent to the intrusive is not currently known. |
| ***Sample security*** | • *The measures taken to ensure sample security.* | • All samples were collected and accounted for by ARL employees/consultants during drilling. All samples were bagged into green plastic bags and closed with cable ties. Samples were transported to Kalgoorlie from logging site by ARL employees/ consultants and submitted directly to BV Kalgoorlie.<br>• The appropriate manifest of sample numbers and a sample submission form containing laboratory instructions were submitted to the laboratory. Any discrepancies between sample submissions and samples received were routinely followed up and accounted for. |
| ***Audits or reviews*** | • *The results of any audits or reviews of sampling techniques and data.* | • No audit or review beyond normal operating procedures has yet been undertaken on the Big Four Gold dataset. ARL has periodically conducted internal reviews of sampling techniques relating to resultant exploration datasets, and larger scale reviews capturing the data from multiple drilling programs.<br>• Internal reviews of the exploration data included the following:<br>  • Unsurveyed drill hole collars (less than 1% of collars).<br>  • Drill Holes with overlapping intervals (0%).<br>  • Drill Holes with no logging data (less than 2% of holes).<br>  • Sample logging intervals beyond end of hole depths (0%).<br>• Samples with no assay data (from 0 to <5% for any given project, usually related to issues with sample recovery from difficult ground conditions, mechanical issues with drill rig, damage to sample in transport or sample preparation).<br>  • Assay grade ranges.<br>  • Collar coordinate ranges<br>  • Valid hole orientation data.<br>• In the calculations, it was found that where analytical results were below level of detection, then the analytical result would be taken to be 50% of the detection limit. This is clearly stated in the text of the calculations and does not have a material impact on the accuracy of the calculations or the conclusions of this report.<br>• The BV metallurgical laboratory was visited by ARL staff in the course of this testwork, and the laboratory processes and procedures were observed and determined to be acceptable. |

## Section 2 - Reporting of Exploration Results

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

| Criteria | JORC Code explanation | Commentary |
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| ***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.*<br>• *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 tenement on which the Big Four Gold drilling was undertaken is M24/778-I. ARL, through its subsidiary companies, is the sole holder of the tenement.<br>• Heritage surveys were carried out prior to application for the Program of Works to undertake the program. The tenement is part of a large group of tenements that is the subject of an agreement between ARL and the Maduwongga native title applicants. |
| ***Exploration done by other parties*** | • *Acknowledgment and appraisal of exploration by other parties.* | • The Big Four Gold prospect has been subject to limited historic exploration, mostly as drilling.<br>  • Limited historic mining around the 1920s to 1930s recovered 571.5t of ore for 10.53kg gold (~339oz gold), at an average grade of 18.4g/t Au. This gold occurrence cropped out at surface so was discovered by prospectors.<br>  • Historic drilling of the Big Four Gold prospect has been undertaken by several companies between 1984 and present. In total, there have been 65 RC drill holes (prior to this program), and 2 diamond drill holes. Most drilling has been less than 100 m depth.<br>  • Coopers Exploration (1980s), Heron Resources (late-2000s) and now Ardea are the main companies to have drilled at Big Four. |
| ***Geology*** | • *Deposit type, geological setting and style of mineralisation.* | • Mineralisation at Big Four Gold is orogenic gold mineralisation. It is hosted within and around a late-stage, intermediate porphyritic hornblende-plagioclase intrusive that has intruded into the Siberia Komatiite. Pyritic, silicic, albitic, and chloritic alteration are directly associated with gold mineralisation in both shear and breccia hosts. Contrasting rheological characteristics between the porphyry and the rocks of the Siberia Komatiite (including tremolite-chlorite schist) likely result in fracturing contemporaneous with deformation and regional gold mineralising events. |
| ***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:*<br>• *easting and northing of the drill hole collar*<br>• *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*<br>• *dip and azimuth of the hole*<br>• *down hole length and interception depth*<br>• *hole length.* | • All holes drilled and used for metallurgical testwork in this most recent program are listed in "Appendix 1 – Collar location data". |
| ***Drill hole Information*** | • *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.* | • All assay data relating to the metals of interest at Big Four Gold, namely gold and associated tracefinder elements arsenic, antimony, and sulphur, are listed in "Appendix 3 – Composite head assay results". Other elements were assayed but have not been reported here. They are of use and of interest from a scientific and metallurgical perspective, but are not considered material and their exclusion does not detract from the understanding of this report. |
| ***Data aggregation methods*** | • *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.*<br>• *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.*<br>• *The assumptions used for any reporting of metal equivalent values should be clearly stated.* | • Most drill hole samples have been collected over 2 m down hole intervals.<br>• Gold intercepts at Big Four Gold are defined using a 0.5 g/t cut-off on a minimum intercept of 1 m and a maximum internal waste of 2 m. Secondary intercepts (i.e. the "including" intercepts) are defined using a 2.0 g/t cut-off and the same intercept and internal waste characteristics.<br>• All assay samples were composited over 2 m. .<br>• No metal equivalent calculations have been used in this assessment. |
| ***Relationship between mineralisation widths and intercept lengths*** | • *These relationships are particularly important in the reporting of Exploration Results.*<br>• *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.*<br>• *If it is not known and only the down hole lengths are reported, there should be a clear* | • All drill holes in this program were angled.<br>• Gold mineralisation is subvertical and striking approximately 335˚-340˚, associated with a subvertical, late-stage intermediate porphyry intrusive. Intercepts are as normal to the orientation of mineralisation as can be reliably defined using RC drilling. However, the detailed orientation of vein sets and breccia zones within and adjacent to the intrusive is not currently known. |

| Criteria | JORC Code explanation | Commentary |
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| | *statement to this effect (e.g. 'down hole length, true width not known').* | |
| ***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.* | • Appropriate sections and maps are shown in the body of the document. |
| ***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 Exploration Results.* | • Not applicable to this report. All results are reported either in the text or in the associated appendices. Examples of high-grade mineralisation are labelled as such. |
| ***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.* | • No other data are, at this stage, known to be either beneficial or deleterious to recovery of the metals reported. |
| ***Further work*** | • *The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).*<br>• *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.* | • Further drilling is required at Big Four Gold but has not yet been defined. Further drilling could include infill drilling, and extension of programs to the north and south along strike, or down-plunge to the north.<br>• More detailed metallurgical assessment, including comminution testwork, of all material types of interest at Big Four Gold will be undertaken prior to progression to a Pre-Feasibility Study (PFS) should such a study be warranted. |