

**ASX & Media Release**

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**ASX Symbol**

ARL

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**Issued Capital**

*Shares*  
67,000,747

*Unlisted options*  
12,310,022

ABN 30 614 289 342

## **Broad sulphide intercepts from Lewis Ponds – additional information on visual mineralisation**

Pre-Feasibility Study drilling now underway at Lewis Ponds, in parallel with KNP Cobalt Zone PFS program

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- First diamond drill hole at Lewis Ponds has successfully intercepted over 50 m of massive, banded, and stringer zinc sulphide mineralisation. Drilling is ongoing.
  - Visible zinc mineralisation intercepted from only 42 m downhole, associated with intense shearing, alteration and quartz-sulphide veining, suggests favourable bulk tonnage setting.
  - Cobalt-focused drilling to commence at Kalpini next week.
  - Drilling approval received for Black Range in the KNP Cobalt Zone, program to follow Kalpini
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### **Mineralisation intercepted at Lewis Ponds**

Ardea Resources Limited (ASX: ARL, “Ardea” or “the Company”) recently reported on extensive visible mineralisation intercepted in our first drill hole at Lewis Ponds. We stated that mineralisation was intercepted around 50 m (downhole thickness) of significant visible massive to stringer zinc mineralisation from a depth of 42 m downhole.

### **Zinc, lead, and copper mineralisation**

Although assays are not yet available, we noted that the main sulphides present are sphalerite (zinc sulphide), pyrite, and pyrrhotite (iron sulphides), with lesser amounts of galena (lead sulphide) and chalcopyrite (copper iron sulphide).

Over the mineralised intercept are various styles of mineralisation, including banded, stringer and massive mineralisation, generally associated with intense shearing and alteration. As implied, sulphide content is highly variable throughout, with barren bands interspersed with mineralised bands over the full 50 m thickness of the intercept, as well as post-mineral quartz-carbonate veining. Visual estimates of sulphide mineral proportions can be highly subjective and potentially misleading, particularly in variably mineralised zones as at Lewis Ponds, so Ardea has defined conservative estimates of the proportions of the constituent sulphides.

*Table 1 – Visually estimated proportions of sulphide species in ALD0001, 42 – 92 metres down-hole*

<b>Sulphide</b>	<b>Composition</b>	<b>Visually estimated percentage range</b>
<b>Sphalerite</b>	Zinc sulphide	0 – 6 %
<b>Galena</b>	Lead sulphide	0 – 2 %
<b>Chalcopyrite</b>	Copper-iron sulphide	0 – 1 %
<b>Pyrite</b>	Iron sulphide	0 – 50 %
<b>Pyrrhotite</b>	Iron sulphide	0 % – trace amounts

It should be noted that these estimates are collated on a metre-by-metre scale, and that individual bands of mineralisation within these one metre intervals may contain up to 80% sulphides.

The grade of mineralisation will be defined by assays of the drill core. All drill core from ALD0001 is being submitted for assay.

### **Gold and silver mineralisation**

Gold and silver are usually not visible at Lewis Ponds and have not been observed in this core. However, a distinctive quartz-pyrite veining and strong sericite alteration is commonly associated with gold-silver mineralisation, and this style of alteration is evident. The mineralised zone as defined in adjoining holes is gold-enriched (e.g. TLPRC04010, 114-151 m, 37 m at 0.3 g/t Au, 38 g/t Ag, 2.0 % Zn and 0.7 % Pb).

### **Second drill hole at Lewis Ponds completed**

Further to the above information, a second drill hole has just been completed at Lewis Ponds. Mineralisation was intercepted at expected depths, intensities, and thicknesses, as predicted by Ardea’s modelling and compared to adjacent historic drill holes. The core has not yet been geologically logged but processing is underway.

### **Cobalt drilling to commence at Kalpini next week.**

Ardea can confirm that an RC drilling program of 28 holes is now scheduled to commence at Kalpini next week. The aim of the program is to investigate and infill highly anomalous cobalt intercepts, which will test whether the known Kalpini resource can be promoted to the high-grade KNP Cobalt Zone. This program is effectively a pilot program for promoting other outlying cobalt anomalies to the KNP Cobalt Zone.

As well as assessing the cobalt and nickel potential at Kalpini, the drill program will also assess the potential for chrysoprase mineralisation. Chrysoprase, like opal, is one of Australia’s signature gemstones. Commonly referred to as ‘Australian jade’, chrysoprase is a rich green-coloured semi-precious gemstone that is highly sought after and valued in east Asia, notably China. Ardea has five recently active

chrysoprase mines within its tenure, but only small-scale occurrences are noted at Kalpini. This will be the first known drill program partly aimed at defining chrysoprase distributions on the KNP.

## Approval for drilling at Black Range within the KNP Cobalt Zone

A program of 24 RC drill-holes has received governmental approval at Black Range. Previous wide spaced drilling indicated an Inferred Mineral Resource of 20.1 million tonnes at 0.103% cobalt and 0.75% nickel (see Table 2 below and refer Ardea Prospectus 9 November 2016 Appendix C for resource details). The program will commence immediately on completion of the Kalpini drilling program.

*Table 2 – KNP Cobalt Zone, Resource Statement from RMRC consulting group*

Area	Prospect	Resource category	Cutoff (% Co)	Size (Mt)	Co (%)	Ni (%)
Goongarrie	Goongarrie South	Measured	0.08	3.4	0.14	1.19
		Indicated	0.08	11.2	0.11	0.92
		Inferred	0.08	1.4	0.11	0.76
	Big Four	Indicated	0.08	4.5	0.11	0.89
		Inferred	0.08	0.2	0.11	0.95
	Scotia	Inferred	0.08	2.9	0.14	0.88
<i>Goongarrie subtotal</i>				23.6	0.12	0.94
Siberia	Black Range	Inferred	0.50(Ni)	20.1	0.10	0.75
Yerilla	Aubils	Inferred	0.08	6.0	0.15	0.90
<b>KNP TOTAL</b>				<b>49.7</b>	<b>0.12</b>	<b>0.86</b>

Ardea looks forward to updating shareholders as results are received.

**For further information regarding Ardea, please visit [www.ardearesources.com.au](http://www.ardearesources.com.au) or [www.heronresources.com.au](http://www.heronresources.com.au) or contact:**

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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. Kalgoorlie Nickel Project on 21 October 2013 and 31 June 2014, October 2016, 2016 Heron Resources Annual Report and 6 January 2017;*
- 2. KNP Cobalt Zone Study on 6 January 2017*

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

The information in this report that relates to KNP Exploration Results is based on information originally compiled by previous and current full time employees of Heron Resources Limited. The Exploration Results and data collection processes have been reviewed, verified and re-interpreted by Mr Ian Buchhorn who is a Member of the Australasian Institute of Mining and Metallurgy and currently a director of Ardea Resources Limited. Mr Buchhorn has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the exploration activities undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Buchhorn consents to the inclusion in this report of the matters based on his information in the form and context that it appears.

The exploration and industry benchmarking summaries are based on information reviewed by Dr Matthew Painter, who is a Member of the Australian Institute of Geoscientists. Dr Painter is a full-time employee and a director of Ardea Resources Limited and has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Dr Painter has reviewed this press release and consents to the inclusion in this report of the information in the form and context in which it appears.

### **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 ability to complete the Ardea spin-out, 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 complete the Ardea spin-out on the basis of the proposed terms and timing or at all, 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 2 – 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	<ul style="list-style-type: none"> <li>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.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> </ul>	<ul style="list-style-type: none"> <li>Samples from the diamond-core holes are being taken from mostly HQ3 and NQ3 sized core and sampled on a nominal 1 metre basis taking into account smaller sample intervals up to geological contacts. The core is cut in half along the core orientation line (where available) and in massive sulphide zones one portion is quartered for assaying, half the core is preserved for metallurgical testing and the remaining quarter is retained as reference material in the core trays. In non-massive sulphide material half core is sampled.</li> <li>Rock chip samples are collected from outcrop, float, or other exposure. Samples are clear of organic matter.</li> <li>These sampling methods are standard industry methods and are believed to provide acceptably representative samples for the type of mineralisation encountered.</li> </ul>
Drilling techniques	<ul style="list-style-type: none"> <li>Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details.</li> </ul>	<ul style="list-style-type: none"> <li>Diamond-core drilling is being undertaken by a Sandvik DE710 rig with mostly NQ3 sized core being drilled. Various techniques are employed to ensure the hole is kept within limits of the planned position. The core is laid out in standard plastic cores trays.</li> </ul>
Drill sample recovery	<ul style="list-style-type: none"> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> </ul>	<ul style="list-style-type: none"> <li>The core is transported to an enclosed core logging area and recoveries are recorded. Recoveries to date have been better than 95%. The core is orientated where possible and marked with 1 metre downhole intervals for logging and sampling.</li> </ul>
Logging	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>The diamond core is geologically logged by qualified geologists. Geotechnical logging is also being undertaken on selected sections of the core. Samples for metallurgical testing are being kept in a freezer to reduce oxidation prior to being transported to the metallurgical laboratory.</li> </ul>
Sub-sampling techniques and sample preparation	<ul style="list-style-type: none"> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> </ul>	<ul style="list-style-type: none"> <li>All core and rock chip samples are crushed then pulverised in a ring pulveriser (LM5) to a nominal 90% passing 75 micron. An approximately 250g pulp sub-sample is taken from the large sample and residual material stored.</li> <li>A quartz flush (approximately 0.5 kilogram of white, medium-grained sand) is put through the LM5 pulveriser prior to each new batch of samples. A number of quartz flushes are also put through the pulveriser after each massive sulphide sample to ensure the bowl is clean prior to the next sample being processed. A selection of this pulverised quartz flush material is then analysed and reported by the lab to gauge the potential level of contamination that may be carried through from one sample to the next.</li> </ul>

Criteria	JORC Code explanation	Commentary
Quality of assay data and laboratory tests	<ul style="list-style-type: none"> <li>• <i>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</i></li> <li>• <i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Sample preparation and assaying is being conducted through ALS Laboratories, Orange, NSW with certain final analysis of pulps being undertaken at the ALS Laboratory in Brisbane QLD.</li> <li>• Gold is determined by 30g fire assay fusion with ICP-AES analysis to 1ppb LLD.</li> <li>• Other elements by mixed acid digestion followed by ICP-AES analysis.</li> <li>• Laboratory quality control standards (blanks, standards and duplicates) are inserted at a rate of 5 per 35 samples for ICP work.</li> </ul>
Verification of sampling and assaying	<ul style="list-style-type: none"> <li>• <i>The verification of significant intersections by either independent or alternative company personnel.</i></li> <li>• <i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i></li> <li>• <i>Discuss any adjustment to assay data.</i></li> </ul>	<ul style="list-style-type: none"> <li>• An internal review of results was undertaken by Company personnel. No independent verification was undertaken at this stage.</li> <li>• All field and laboratory data has been entered into an industry standard database using a contract database administrator (DBA) in the Company's Perth office. Validation of both the field and laboratory data is undertaken prior to final acceptance and reporting of the data.</li> <li>• Quality control samples from both the Company and the Laboratory are assessed by the DBA and reported to the Company geologists for verification. All assay data must pass this data verification and quality control process before being reported.</li> </ul>
Location of data points	<ul style="list-style-type: none"> <li>• <i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The drill collars were initially located with a combination of handheld GPS and licenced surveyor using a DGPS system, with accuracy of about 1m. The final drill collars are "picked up" by a licenced surveyor with accuracy to 1 centimetre.</li> <li>• While drilling is being undertaken, downhole surveys are conducted using a downhole survey tool that records the magnetic azimuth and dip of the hole. These recordings are taken approximately every 30 metres downhole. Where possible holes are also being surveyed with gyroscopic methods, with some 80 percent of holes drilled in the current program also surveyed by this method after drilling has been completed.</li> </ul>
Data spacing and distribution	<ul style="list-style-type: none"> <li>• <i>Data spacing for reporting of Exploration Results.</i></li> <li>• <i>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.</i></li> <li>• <i>Whether sample compositing has been applied.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The diamond drilling is mostly following-up in various directions from previous intercepts with a nominal spacing in the range 50-100m. This drill hole spacing will be sufficient to provide Mineral Resource estimates in the future.</li> </ul>
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> <li>• <i>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The drilling orientation is designed to intersect the mineralised lenses at a close to perpendicular angle. The mineralised lenses are dipping at approximately 50-60 degrees to the northeast and the drilling is approximately at 60 degrees to the southwest. This will vary from hole to hole.</li> </ul>
Sample security	<ul style="list-style-type: none"> <li>• <i>The measures taken to ensure sample security.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Samples are being secured in green plastic bags and are being transported to the ALS laboratory in Orange, NSW via a courier service or with Company personnel/contractors.</li> </ul>

Criteria	JORC Code explanation	Commentary
<i>Audits or reviews</i>	<ul style="list-style-type: none"> <li><i>The results of any audits or reviews of sampling techniques and data.</i></li> </ul>	<ul style="list-style-type: none"> <li>A review and assessment of the laboratory procedures was undertaken by Company personnel in late 2016.</li> </ul>

## Section 2 Reporting of Exploration Results

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

Criteria	JORC Code explanation	Commentary
<i>Mineral tenement and land tenure status</i>	<ul style="list-style-type: none"> <li><i>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.</i></li> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>The Lewis Ponds project is located 14km east-northeast of the city of Orange, central New South Wales, and has an elevation 700 m and 900 m above sea-level.</li> <li>The exploration rights to the project are owned 100% by the Ardea Resources through the granted exploration licence EL5583, which expires on 24 June 2017. The company is applying for a 5 year renewal of the licence.</li> <li>A capped (A\$2M) royalty and finders fee is payable to a private third party if the project is sold or commences production.</li> <li>The project is on partly cleared private land, most of which is owned by Ardea. Access agreements are in place for the private land surrounding the main deposit area. There are no national parks, reserves or heritage sites affecting the project area.</li> </ul>
<i>Exploration done by other parties</i>	<ul style="list-style-type: none"> <li><i>Acknowledgment and appraisal of exploration by other parties.</i></li> </ul>	<ul style="list-style-type: none"> <li>The Lewis Ponds deposit and surrounding workings were part of Australia's first recognised gold field, discovered 1835. Various surface and shallow underground mining operations and associated processing and smelting operations were present at various times between discovery and approximately 1920. The detailed history for this period is presently the subject of research.</li> <li>Amax Exploration Australia Inc entered a Joint Venture Agreement which Metals Investments Holdings NL and A.I.Consolidated Gold Pty Ltd held with the owner of the title, Wentworth Mining Corporation Pty Ltd, over ground which included the Lewis Ponds deposit. Amax drilled four DD holes totalling 875 meters in 1971-1972 which contributed four intercepts above 7% ZnE to this Resource estimate. The only drilling done prior to Amax was by Cominco in 1969. Three holes were abandoned after entering disused workings at the Spicers Mine location, Lewis Ponds.</li> <li>Subsequent drilling by Aquitaine Australia Minerals Pty Ltd in 1975-1976 was under joint venture agreement with Amax and Shell Company of Australia. 10 (BOA series) holes were drilled totalling 2102 metres, which also contributed four intercepts.</li> <li>Between 1979 and 1981 a further 7 holes totalling 2274 metres (SLP series) were drilled by Shell and Aquitaine under the JV agreement with Amax. This drilling contributed five intercepts including one twinned in a wedge hole. In total, other party exploration contributed 15 percent of the database which now determines the geometry of potentially ore grade mineralisation for this Resource estimate.</li> </ul>

Criteria	JORC Code explanation	Commentary
		<ul style="list-style-type: none"> <li>In 1987-1988, the Homestake subsidiary Sabminco drilled 33 RCP holes totalling 2300 metres (LPRC series). This drilling contributed 21 intercepts of the 230 used to interpret the Resource.</li> <li>Prior to the acquisition of TriAusMin by Heron in August 2014, Tri Origin Australia drilled 42232 metres in 124 holes, followed by Tri Origin Minerals with 3812 metres in 30 holes.</li> </ul>
<b>Geology</b>	<ul style="list-style-type: none"> <li><i>Deposit type, geological setting and style of mineralization.</i></li> </ul>	<ul style="list-style-type: none"> <li>The most recent statement of the Lewis Ponds geology by Dr Peter Gregory (2005) has also built on much prior geological insight by other parties in the 1970s and 1980s, and by geologists employed by predecessor companies to Tri Origin Minerals since 1992. Also between 1999 and 2003 a comprehensive Ph.D study of the geology was made (Agnew 2003) A re-cast of Peter Gregory's summary is as follows: <ul style="list-style-type: none"> <li>Type: Results of the study show that primary volcanogenic mineralisation of Late Silurian age developed within an extensive axial zone over 1200m in a moderately deep water trough (extensional back arc). Mineralisation deposited at one horizon close to and possibly on the seafloor within sediments and volcanoclastics and at the end of a rhyolite-dacite volcanic episode involving lava domes. Tom's Zone in the south formed in a quieter sedimentary environment dominated by siltstones. Current work by Ardea is showing that late-stage gold mineralization overprints the earlier VMS style mineralisation.</li> <li>Setting: The Lewis Ponds mineralised zone is located on the eastern limb of a major regional F1 anticline and within several subsidiary anticlinal and synformal zones on that limb. Plunges are variable with Main Zone plunging moderately northwest, but there appears to be little or no plunge along other sections of the mineralised trend. Various reverse faults probably emanating from a basal sole thrust at the contact of the Ordovician basement and the Silurian rift succession cut the axial zones of several of these folds and leave most volcanic sediment contacts as fault zones. The Lewis Ponds Fault, a ductile and brittle fault zone cuts a synform axis and has caused, kinking and reorientation of cleavage and remobilisation of sulphides. An interpreted southwest-northeast dip slip fault near 1220N is suggested to downfault the mineralised package to the northwest</li> <li>Style of mineralisation: Main Zone mineralisation to the north is largely composed of massive to semi-massive sulphide replacement as well as veining and dissemination within the host polymict breccia-volcanoclastic-siltstone package. Mineralising fluids emanating from syn-volcanic faults in the footwall porphyry moved laterally through porous zones in the host package causing sulphide replacement. The mineralising fluids may have exhaled on the seafloor at some stage based on the minor occurrence of interpreted reworked sulphide clasts and interstitial bands of fine sulphide in some carbonate dominated breccias. Tom's Zone in the south consists of a narrow massive sulphide stratiform zone in reasonable proximity to interpreted footwall feeder pyrite-chalcocopyrite stringers. Subsequent, possibly epithermal style precious metal mineralisation is present though its relationship to the earlier, well-documented mineralisation is not yet clear.</li> </ul> </li> </ul>
<b>Drill hole Information</b>	<ul style="list-style-type: none"> <li><i>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:</i></li> </ul>	<ul style="list-style-type: none"> <li>The archival database carries 211 holes totalling 54,516 metres of drilling. Ardea is presently reviewing this database.</li> </ul>

Criteria	JORC Code explanation	Commentary
<p><i>Data aggregation methods</i></p>	<ul style="list-style-type: none"> <li><i>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.</i></li> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>No significant drilling information has been generated by Ardea at this stage.</li> <li>No grade aggregation methods were used for this announcement. For treatment of historical data, see below.</li> <li>Grades: Grade compositing was by averages above cutoff weighted for sample length. The maximum total inclusion of subgrade was 5m and the maximum consecutive inclusion of subgrade was 3m. Two sets of composites were prepared, one based on downhole cutoff of 1 percent Zinc Equivalent (% ZnE) and the other based on 7% ZnE (potentially economic). No cutting of high grades took place at the aggregation stage because grade composites were used only for the interpretation of the geometry of the mineralisation on cross section and in plan, prior to wireframing, not for Resource estimation.</li> <li>Metal Equivalent: Being a multi-element deposit in terms of value, some synthesis of the contribution of five metals, Au, Ag, Cu, Pb and Zn to the application of any downhole (or block) cutoff was required. The standard technique of converting grade to \$US per grade unit (gram, ounce, percent), adding the dollar contributions then converting back to a single metal equivalent was used, in this case Zn Equivalent percent. Conversion to Au equivalent grams per tonne would have served the same purpose.</li> <li>For 2016 purposes the question arises: would the use of current metal prices make an appreciable change to the estimated Resource figure via changes to the intercept lengths used to define the geometry of the mineralised lenses? Re-calculation of the project's zinc equivalents and comparison with the 2005 figures give interesting results for intercepts above the 7% ZnE cutoff: the number of intercepts increases by 20 percent (although many lie between 7 and 8% ZnE); the sum of intercept lengths increases 30 percent and the weighted average ZnE grade of intercepts increases marginally, about 7 percent. Much of this lift is carried by the higher Au intercepts, the gold price having increased 300% since 2005. These changes in ZnE suggests that if the same cutoffs are retained (1% and 7% ZnE), a somewhat larger mineralisation could be interpreted at a similar grade. For the purposes of this report it is sufficient to say that there is no ZnE penalty in respect of today's metal prices.</li> </ul>
<p><i>Relationship between mineralization widths and intercept lengths</i></p>	<ul style="list-style-type: none"> <li><i>These relationships are particularly important in the reporting of Exploration Results.</i></li> <li><i>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</i></li> </ul>	<ul style="list-style-type: none"> <li>Within the Main zone the strongest mineralisation dips about 50° northeast with vertical tails up to the west and down to the east, ie sigmoid. This has resulted in intersection angles effectively normal to the thicker parts of the mineralisation making true widths equal to downhole widths. Where the lens tails up to the west and down to the east, the angles reduce to 40° to 60° with much reduced true widths in the thinnest parts of the mineralised lenses.</li> <li>In Toms zone to the south of Main zone, dips of mineralisation are vertical or sub-vertical. In the upper levels, angles between hole and mineralisation are around 50° but at deeper levels can be as low as 30° or 20°, substantially reducing true widths. Interpretation of mineralised lenses honours the true widths.</li> </ul>

Criteria	JORC Code explanation	Commentary
<i>Diagrams</i>	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>No new drilling to show at this stage. Do be drafted for future releases.</li> </ul>
<i>Balanced reporting</i>	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>The reporting is considered to be balanced and all relevant results have been disclosed for this current phase of exploration.</li> </ul>
<i>Other substantive exploration data</i>	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>The most material information affecting the resource estimates was the geological logging and core photography carried out by Dr Peter Gregory (Gregory, P., February 2004 and Gregory P., January 2005). This work was completed in time for this estimate (April 2005). Of particular interest were his views on the likely continuity of the massive sulphides as distinct from the enclosing dissemination, veins and stringers, especially as the highest grades are identified with massive or 'semi-massive' sulphides. A number of geologists, including Gregory, are of the opinion that mass flows incorporating carbonate and volcanic debris have disrupted earlier seafloor-deposited massive banded sulphides. This happened in situ without significant transport away from the original depositional site. Thus at say a 1% ZnE cutoff, the mineralisation has good continuity. At a higher cutoff, say 7% ZnE continuity could become an issue. With a drill spacing sometimes 50-100m there is every possibility of a massive sulphide 'bed' being disrupted into a series of "rafts" generally parallel to the axis of the +1% mineralisation.. However, in seeking to model the deposit, statistically massive sulphide seems to be represented in adjacent holes as though it were a continuous or semi-continuous bed.</li> <li>A number of metallurgical studies have now been made of Lewis Ponds mineralisation. These have centred on optimising the number of concentrates, predicting what percentage of the gold could report to a gravity circuit and whether refractory gold should go to CIL or be paid in the concentrates. These studies have been reviewed by R W Nice (2006).</li> </ul>
<i>Further work</i>	<ul style="list-style-type: none"> <li><i>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</i></li> </ul>	<ul style="list-style-type: none"> <li>In the 11 years since this estimate was prepared Au and Ag metal prices have trebled and Cu, Pb and Zn effectively doubled. To test the effect, zinc equivalents for Lewis Ponds have been re-calculated using metal prices current at 1 September 2016. Any intercepts with significant Au have increased 30 to 50 percent in terms of ZnE and a significant number which were near below the 7 percent ZnE cutoff are now above the cutoff. The result has been a 20 percent increase in the number of intercepts, a 30 percent increase in the total intercept metreage, and a 6 percent increase in the average dollar value of the intercepts. Thus there could be case at some stage to re-model the geometry of the lenses and to re-estimate a block model.</li> <li>Also the LPRC34-LPRC41 drilling done in 2011, which had some intersections of interest, with further comparatively short hole drilling, approximately 100m each, could add a useful tonnage and value to the Resource. The structure drilled is on the Torpy's Shaft line and is clearly open to</li> </ul>

Criteria	JORC Code explanation	Commentary
		the south.