Ardea Resources Limited

Lewis Ponds Resource Update

ASX & Media Release

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ASX Symbol

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- A new JORC 2012 Mineral Resource for the Volcanic hosted massive sulphide (VHMS) Lewis Ponds Project comprises **Indicated** and **Inferred Mineral Resources**. Total resource is:

  20.24 Mt at 0.5g/t Au, 33.3g/t Ag, 1.5% Zn, 0.7% Pb, and 0.1% Cu

  - Total contained metal is over **326,000 oz gold**, **21.6 million oz silver**, **290,000 t zinc** and **135,000 t lead**.
- Conventional flotation produces a gold-silver-lead-copper concentrate and a zinc concentrate that meets industry specifications.
- Mineralisation at Lewis Ponds is open in all directions with the resource part of a much larger mineral camp extending over 9 km to the southeast with extensive gold, copper and base metal workings.
- On a regional scale, Lewis Ponds is located on and controlled by the Godolphin-Narragal Fault system:
  - Hosts McPhillamys 2.3 Moz gold deposit 23 km SE along structure.
  - Total 65 km strike of the structure within Ardea tenure, hosting historic gold mining centres from south to north at Lewis Ponds, Mt Shorter, Mt Lindsay, Ophir and Calula.

Ardea Resources Limited (Ardea or the Company) is pleased to announce a new JORC 2012 Indicated and Inferred Mineral Resource estimate, for its Lewis Ponds gold-silver-zinc-lead-copper deposit near Orange, NSW. Open pit and underground resources (Indicated and Inferred) are defined as follows:

Resource grouping	Resource Category	Cut-off (ZnEq %)	Tonnes (Mt)	Au (g/t)	Ag (g/t)	Zn (%)	Pb (%)	Cu (%)
Open pit	Indicated	1	7.88	0.3	26.3	1.1	0.4	0.1
	Inferred	1	6.51	0.5	27.4	1.3	0.6	0.1
	Subtotal	*1*	*14.39*	*0.4*	*26.8*	*1.2*	*0.5*	*0.1*
Under -ground	Indicated	3	0.07	0.2	20.0	1.8	0.5	0.1
	Inferred	3	5.78	0.7	49.5	2.1	1.1	0.1
	Subtotal	*3*	*5.85*	*0.7*	*49.1*	*2.1*	*1.1*	*0.1*
All	**TOTAL**		**20.24**	**0.5**	**33.3**	**1.5**	**0.7**	**0.1**

Table 1 – Lewis Ponds Project Total Mineral Resource Statement (September 2019), comprising Open Pit and Underground Mineral Resource Statements. Mineral Resources are reported using a nominal cut-off ZnEq calculated by the following equation: ***ZnEq = Zn% + (Au g/t*1.949) + (Ag g/t*0.019) + (Cu%*2.306) + (Pb%*0.741)*** *with the listed commodity price assumptions as of 21 June 2019: Zn – US$2585/t (80% recovery), Au – US$1393/oz (90% recovery), Ag – US$15.50/oz (80% recovery), Cu – US$5960/t (80% recovery), Pb – US$1915/t (80% recovery).*

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The Ardea development strategy for Lewis Ponds is predicated upon a bulk tonnage disseminated precious and base metal operation aiming to exploit multiple mineralised sites. A modern-day camp-focussed approach has proven enormously successful at other Lachlan Fold Belt (LFB) mining centres such as Cadia-Ridgeway, Tomingley, and potentially McPhillamys. Along with Cowal and Northparkes elsewhere within the LFB, the production philosophy is to target bulk tonnage systems and develop long-life mines with world-competitive operating costs.

Ardea CEO, Andrew Penkethman commented:

"The Lewis Ponds polymetallic mineral system is regionally significant and shares similarities with other well-known and significant Lachlan Fold Belt bulk tonnage projects. This project is being vended into Godolphin Resources Limited, Ardea's planned IPO of its NSW gold and base metal assets with Godolphin expected to expand upon the considerable resource already defined at Lewis Ponds as mineralisation is open in every direction. There has been minimal historic gold exploration done across what is clearly an excellent gold structure with multiple historic workings that hosts Lewis Ponds and the 2.3 Moz McPhillamys gold deposit 23 km SE along structure".

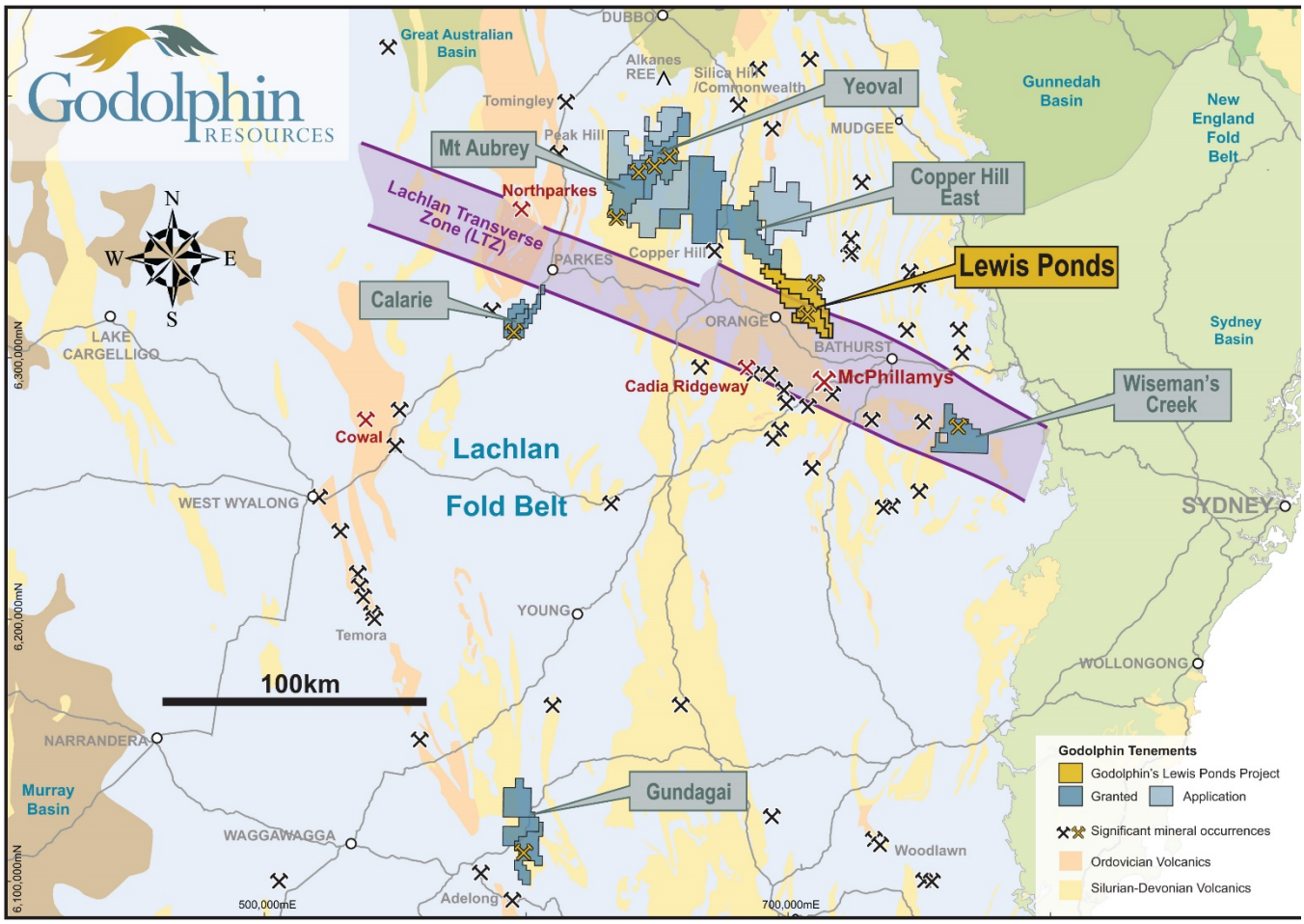

Figure 1 – Tenure map for Ardea's forthcoming spin-out, Godolphin Resources Limited. Godolphin will have a contiguous tenement holding from Mt Aubrey to Lewis Ponds in and around the Lachlan Transverse Zone, which is the axis around which the major deposits of the Lachlan Fold Belt cluster.

Lewis Ponds Mineral Resource Summary

Lewis Ponds is a historic mine site located in central western NSW (Figure 1) that has variably and intermittently been the focus of gold, silver, base metal and sulphur mining since the 1850s.

The project is interpreted as a volcanic-hosted massive sulphide (VHMS) type deposit hosting gold, silver, zinc, lead and copper in massive sulphide stratiform beds, veins, disseminated veins and stringer veins that occur in combination with overprinted pervasive gold mineralisation and including late stage epithermal style gold-silver mineralisation. The gold mineralisation is postulated to be of a similar style to the Regis Resources' McPhillamys Gold Project 23 km SE along strike of the Godolphin-Narragal Fault System (Figure 1, 2 and 3).

This is the third in a series of announcements providing resource updates on Ardea's extensive work programs on selected NSW projects in preparation for the Godolphin Resources IPO towards the end of 2019. These announcements provide clarity to investors regarding the NSW portfolio and highlight the potential it holds, notably in respect of bulk-tonnage gold mineralisation.

Updated Mineral Resource for open cut and underground deposits

The new Mineral Resource total, which comprises Indicated and Inferred Mineral Resource estimates, is:

20.24 Mt at 0.5 g/t gold, 33.3 g/t silver, 1.5 % zinc, 0.7 % lead and 0.1 % copper

The estimation is split into two parts – an open pit resource and an underground resource, each of which have different cut-off values to define the resource. Also, each part comprises Indicated and Inferred Mineral Resource estimates:

- **Open pit** 14.39 Mt at 0.4 g/t Au, 26.8 g/t Ag, 1.2 % Zn, 0.5 % Pb, and 0.1 % Cu (combined resource)
- **Underground** 5.85 Mt at 0.5 g/t Au, 49.1 g/t Ag, 2.1 % Zn, 1.1 % Pb, and 0.1 % Cu (combined resource)

Consequently, and concomitant with a predominantly bulk tonnage, open cut style of mining at a low cut-off grade, tonnages have increased substantially whilst grades have reduced from previous estimates. Compared to a previously announced exploration target, tonnage is as expected, with grades either at or exceeding the grades expected. Project economics are enhanced by the disseminated mineralisation being amenable to dense media separation (DMS) to upgrade the flotation circuit feed grade.

The resource remains open to the north, south and down-dip.

Table 2 – Lewis Ponds Project Total Mineral Resource Statement (August 2019), comprising Open Pit and Underground Mineral Resource Statements. Mineral Resources are reported using a nominal ZnEq calculated by the following equation: ***ZnEq = Zn% + (Au g/t*1.949) + (Ag g/t*0.019) + (Cu%*2.306) + (Pb%*0.741)*** *with the listed commodity price assumptions as of 21 June 2019:* ***Zn*** *– US US$2585/t (80% recovery),* ***Au*** *– US$1393/oz (90% recovery),* ***Ag*** *– US$15.50/oz (80% recovery),* ***Cu*** *– US$5960/t (80% recovery),* ***Pb*** *– US$1915/t (80% recovery).*

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	Subtotal	*3*	*5.85*	*0.7*	*49.1*	*2.1*	*1.1*	*0.1*
All	**TOTAL**		**20.24**	**0.5**	**33.3**	**1.5**	**0.7**	**0.1**

Contained metal

Overall, contained metal within the Mineral Resource estimation has increased substantially, with over 326,000 oz gold, 21.6 Moz silver, 290,000 t zinc and 135,000 t lead contained metal.

Table 3 – Contained metal in the Lewis Ponds combined resource, showing open pit and underground contents

Resource	Contained metal				
	Gold (oz)	Silver (oz)	Zinc (t)	Lead (t)	Copper (t)
Open pit	187,000	12,372,000	171,000	71,200	12,200
Underground	139,000	9,216,000	120,000	64,300	7,500
TOTAL	**326,000**	**21,588,000**	**290,900**	**135,500**	**19,700**

Comparison to other deposits of the Lachlan Fold Belt

The Ardea concept to incorporate lower-grade, disseminated mineralisation into a potential bulk mining operation with DMS upgrade of feed grades, is consistent with major operations in the central Lachlan Fold Belt, which are all low grade, bulk excavation-based mines (Table 2). Gold equivalent (AuEq) values are compared for published endowments of major mining centres as a proxy for contained metal value to enable direct comparison between deposits and show the inherent value of the mineral assemblage within the Lewis Ponds resource.

Project	Resource type	Tonnage (Mt)	AuEq (g/t)	Resource	Source
Lewis Ponds	indicated and inferred	20.24	**1.80**	20.24 Mt at 0.5g/t Au, 33.3g/t Ag, 1.5% Zn, 0.7% Pb, & 0.1% Cu	
Mt Aubrey	inferred	1.208	1.61	1.208 Mt @ 1.61 g/t Au, 62.4 Koz Au	2
McPhillamys	indicated and inferred	69.8	1.02	69.8 Mt @ 1.02 g/t Au, 2.293 Moz Au	2
Cowal	global	240.6	0.96	240.6 Mt @ 0.96 g/t Au, 7.415 Moz Au	2
Northparkes	global	487.5	0.79	487.5 Mt @ 0.56 % Cu, 0.18 g/t Au, and 1.75 g/t Ag	2
Cadia Valley	global	3170	0.65	3170 Mt @ 0.37 g/t Au, 0.68 g/t Ag and 0.26 % Cu	2
Copper Hill	inferred	215	0.57	215 Mt @ 0.24 g/t Au and 0.31 % Cu	1

Source references *– 1: NSW Dept of Industry, Resources & Environment, "Copper opportunities in NSW", Dec 2015. 2: NSW Dept of Industry, Resources & Environment, "Gold opportunities in NSW", Jul 2016.* ***Gold equivalents (AuEq)*** *were defined using the following values (21 June 2019 US$ price, recovery): Zn ($2585/t, 80%), Au ($1393/oz, 100%), Ag ($15.50, 80%), Pb ($1915/t, 80%), Cu ($5960/t, 80%). Au equiv. = Au(g/t) + 0.011Ag(g/t) + 0.577Zn(%) + 0.428Pb(%) + 1.331Cu(%). Gold equivalence is subjective thus indicative only and is used to allow comparisons between major deposits of the region.*

Project Location

The project area is located 12 km east of Orange, NSW. Orange is a major regional centre approximately 200 km west of Sydney which also services the Cadia-Ridgeway gold-copper mine. Access from Orange is via a number of sealed and unsealed roads (Figure 2 and 3).

The project is located within the Lachlan Fold Belt (LFB) which is Australia's premier domain for porphyry and epithermal gold and base metal deposits. The resource area is readily accessible.

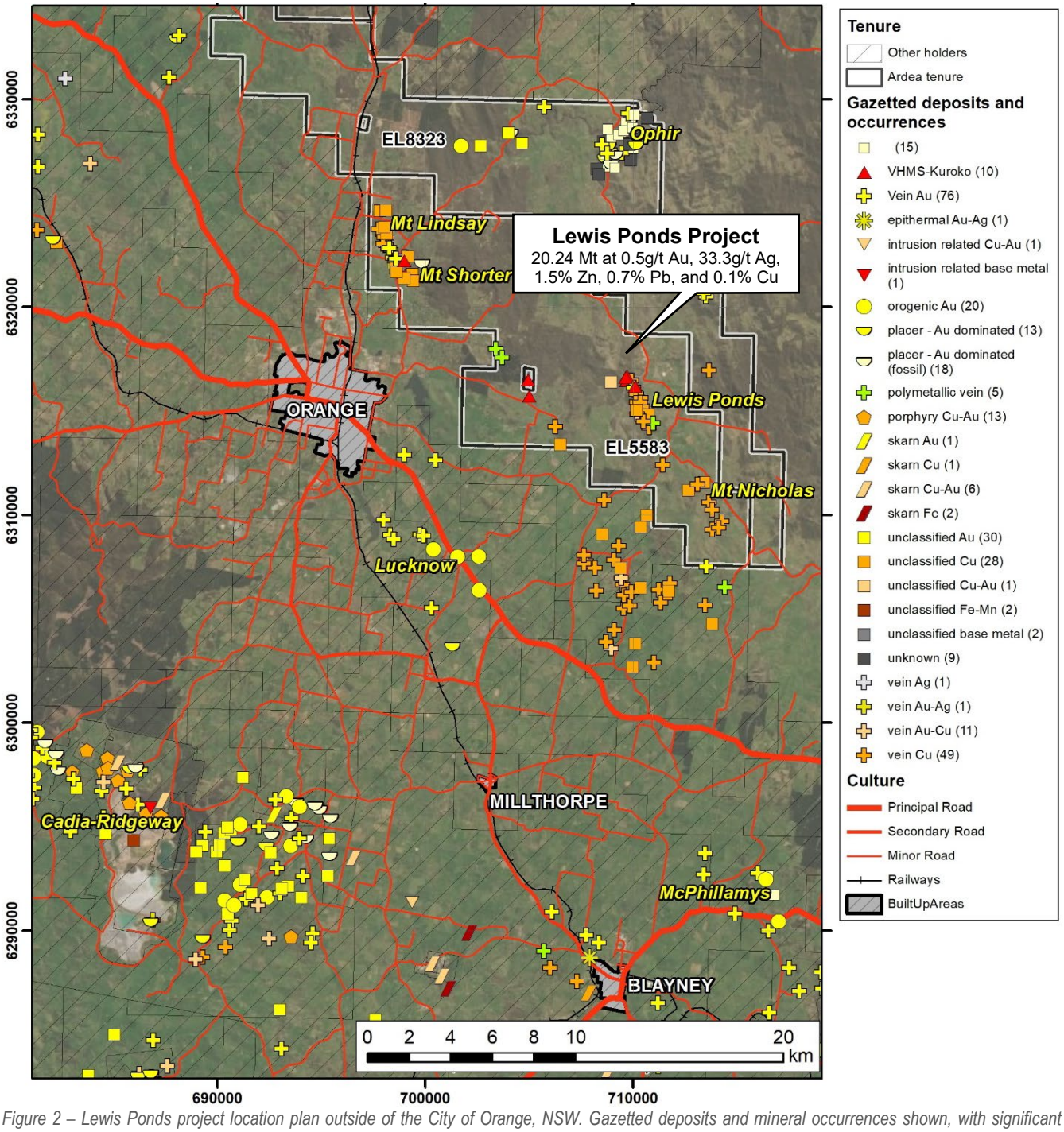


Figure 2 – Lewis Ponds project location plan outside of the City of Orange, NSW. Gazetted deposits and mineral occurrences shown, with significant mining centres labelled in yellow. Projection GDA 1994 MGA Zone 55.

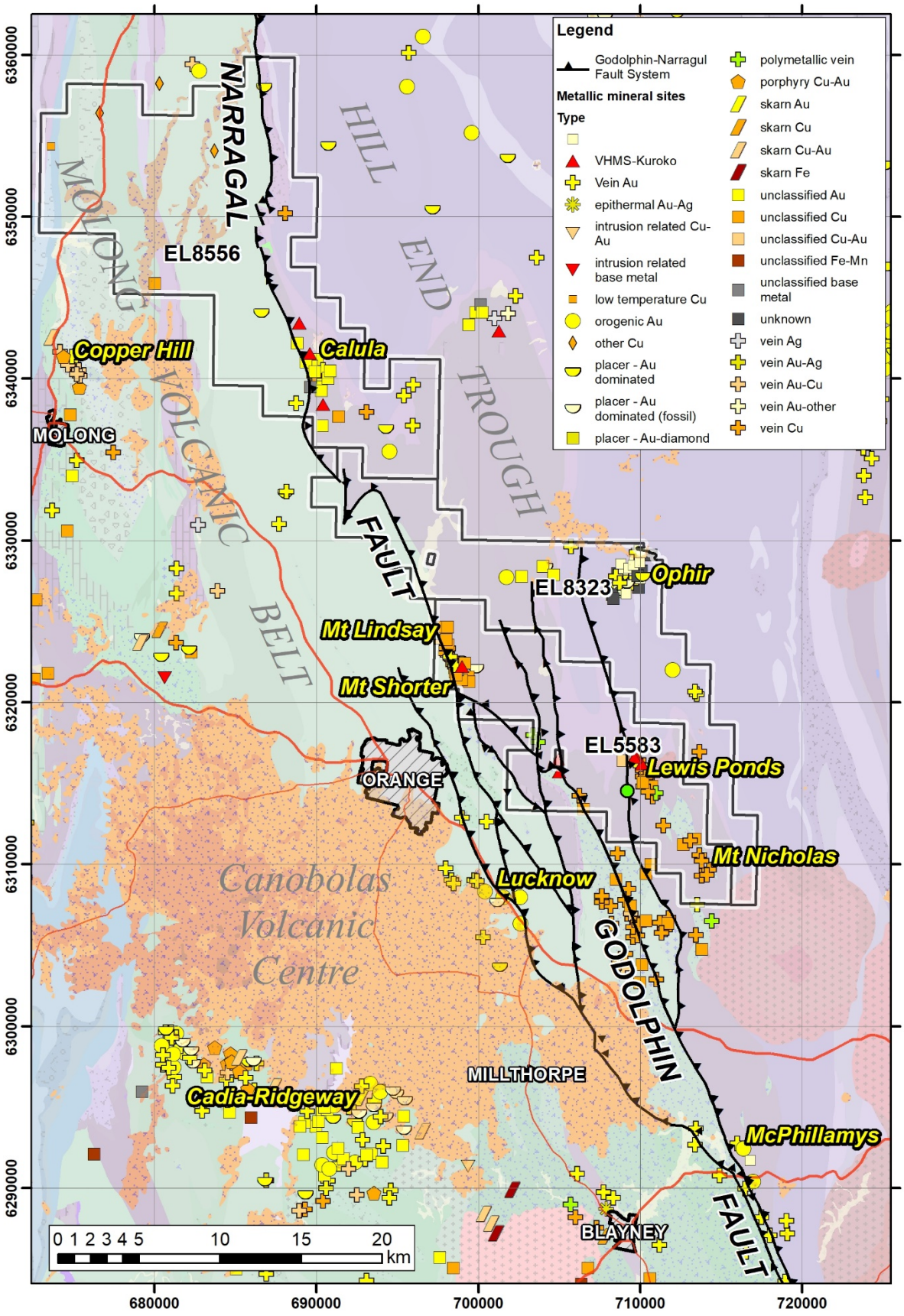


Figure 3 – Lewis Ponds project location plan outside of the City of Orange, NSW. Gazetted deposits and mineral occurrences shown, with significant mining centres labelled in yellow and regionally significant faults in black. Note the location of the Godolphin/Narragal Fault and splay structures, controlling the location of known mineral occurrences, particularly McPhillamys and Lewis Ponds. Projection GDA 1994 MGA Zone 55.

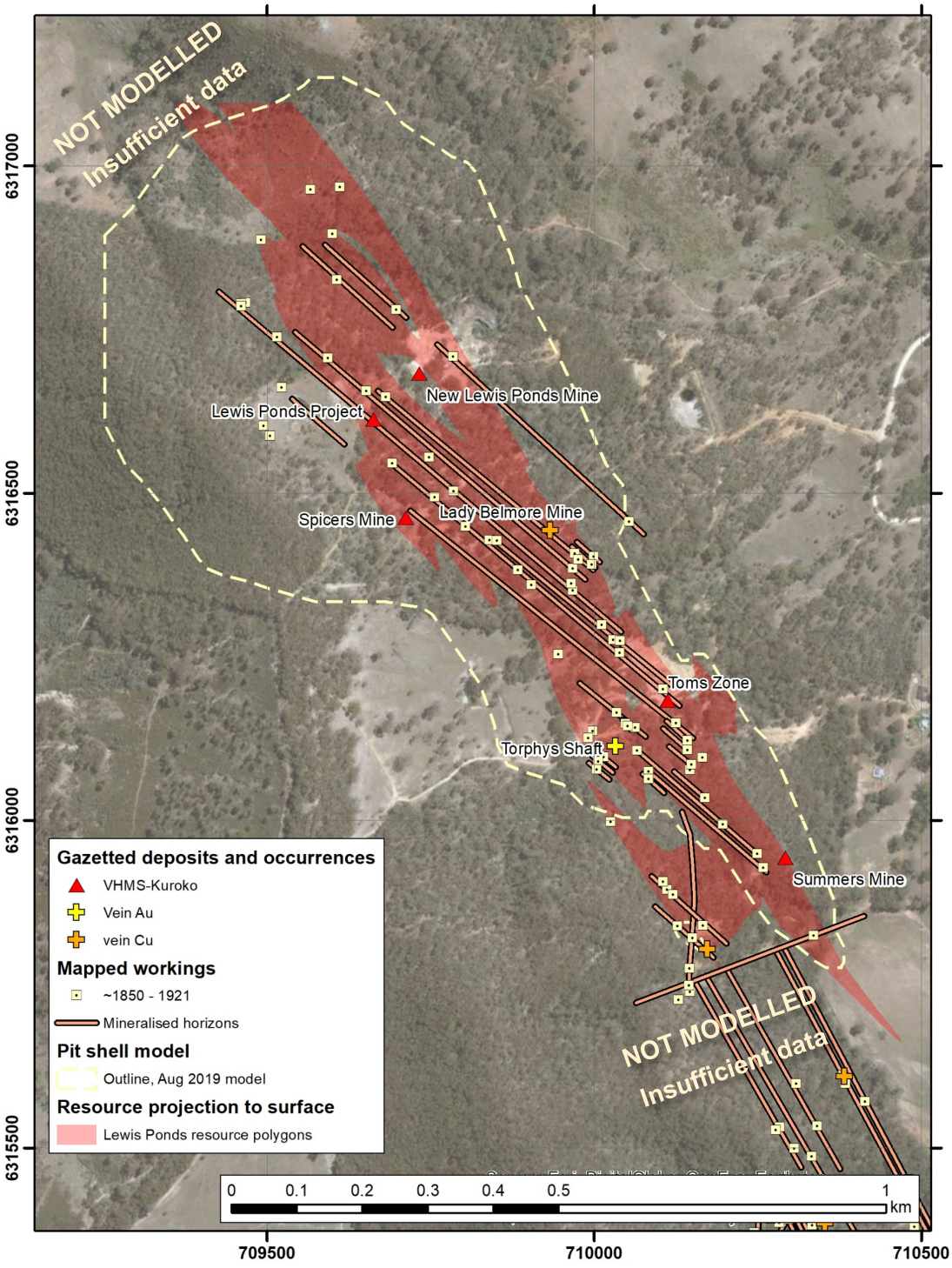


Figure 4 – The Lewis Ponds project area, gazetted prospects, mapped mineralisation and workings (Ardea), projection of the resource (red) and the crest line of one of the modelled pit shell. Projection GDA 1994 MGA Zone 55.

Geology and Geological Interpretation

The Lewis Ponds mineralisation occurs in the Silurian-aged Anson Formation, part of the Mumbil Group within the Hill End Trough (Figure 3). The Anson Formation is a fining upwards sequence from conglomerate at the base to finer pyritic siltstones at the top, which suggests a deepening upwards environment of deposition. Such an environment is consistent with VHMS mineralisation, and stratabound base metal and gold mineralisation is interbedded with the pyritic siltstones.

The sequence hosting the deposits lies on the east limb of the Mullions Range Anticline, and dips steeply NE, with average dips varying between 70°NE at Main Zone, subvertical at Tom's Zone are subvertical, to 80°SW at depth. The dominant foliation is a regional NW trending subvertical cleavage into which stringer and disseminated sulphides are recrystallised and remobilised.

The Lewis Ponds Fault immediately to the west of the mineralised area is a NNW trending fault connected to the Godolphin fault along strike and interpreted to tap the Godolphin Fault at depth at Lewis Ponds. Interaction of these faults and associated structures with subordinate east-west, SW, and NW orientated faults have previously been interpreted to control the location of mineralisation. Regional metamorphism has altered the rocks to upper greenschist facies.

Weathering of the rock sequence at Lewis Ponds is limited and restricted to the near-surface. It has not had a significant impact upon mineral resources, as the majority of the estimated resources lies below the transitional zone in fresh rock. As such, recovery of payable sulphides through flotation is very good.

Figure 5 – Semi-massive to disseminated pyrite-sphalerite-chalcopyrite sulphides within chlorite-dominated alteration, ALD0003, 148.50 m.

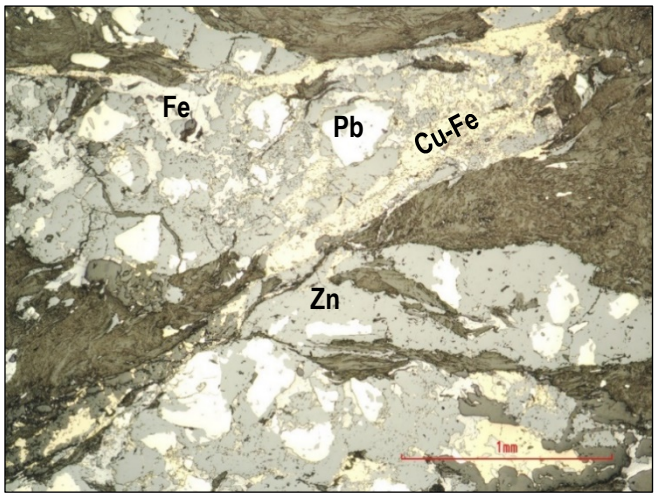


Figure 6 – Photomicrograph (plane polarised reflected light) of sheared mineralisation at Lewis Ponds, dominated by sphalerite (Zn, mid-grey) which envelops galena (Pb, white), pyrite (Fe, pale yellow) and chalcopyrite (Cu-Fe, yellow), shown amongst non-sulphide minerals (dark grey). Silver and gold (not visible here) are associated with the galena, hence upon processing the production of the Cu-Pb-Ag-Au concentrate. ALD0003, 148.50 m (see Figure 2), field of view is 3 mm across.

Mineralisation Style

The Lewis Ponds polymetallic (gold–silver–copper–lead–zinc) massive and disseminated sulphide VHMS system includes two primary strata bound ore bodies, the Main Zone and Tom's Zone. Although the best gold, silver, zinc, lead and copper grades are associated with massive sulphide mineralisation, there is an extensive envelope of disseminated mineralisation that has not previously been appraised.

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-volcaniclastic-siltstone package. Tom's Zone in the south consists of a narrow massive sulphide stratiform zone in reasonable proximity to interpreted footwall feeder pyrite-chalcopyrite stringers.

Mineralising fluids emanating from syn-volcanic faults in the footwall sequence moved laterally through porous zones in the host package causing sulphide replacement. The mineralising fluids may have exhaled onto 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.

History

Alluvial gold was discovered at Lewis Ponds around the time of the discovery of the Ophir goldfield downstream around 1849. Numerous small-scale gold, silver, copper and base metal mines operated around the Lewis Ponds mining centre and township through to 1894, when the establishment of New Lewis Ponds mine marked the first industrialised mining activity on site. Various underground operations continued until 1921. Modern exploration commenced at Lewis Ponds in 1964.

Figure 7 – Historic workings at the New Lewis Ponds mine site. Core palettes in the middle distance are stacked on the old slag heap.

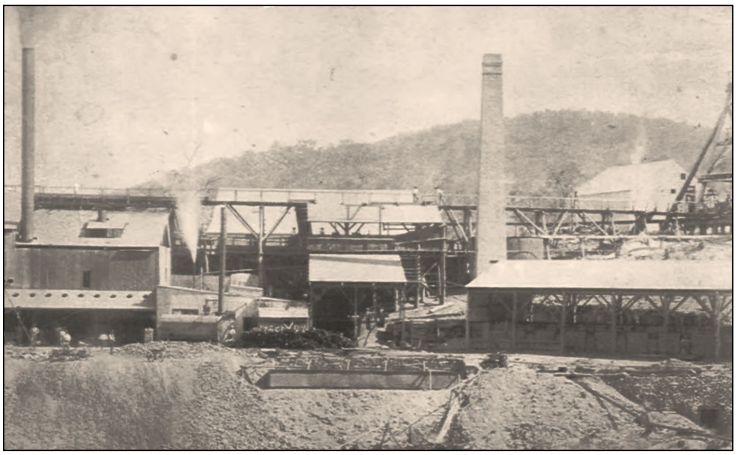


Figure 8 – Smelter at the New Lewis Ponds Mine, ~1890s

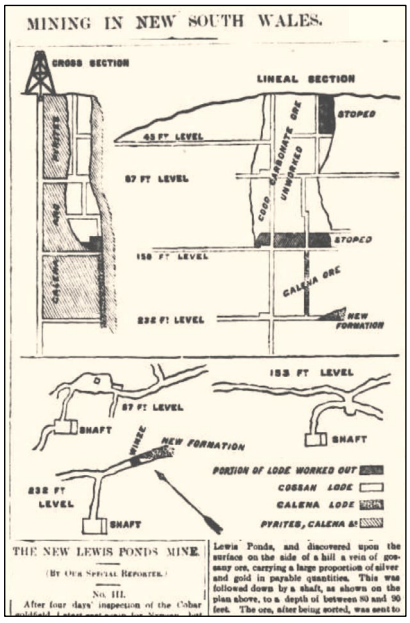


Figure 9 – Mine diagrams from the New Lewis Ponds Mine, reproduced from a newspaper article published in The Argus (Melbourne), 2 May 1889.

Table 4 – Historic workings at Lewis Ponds prior to 1964

Date range	Mine/operator	Ore type	Reported production	Depth of workings
~1850-1894	Lewis Ponds mining centre artisanal workings	Oxide, sulphide, placer	-	-
1894-1903	New Lewis Ponds	-	-	-
1913-1921	Tom's Mine Sulphide Corporation	Pyrite	30,000 t sulphuric acid	Shafts -61 m
1915	Spicers		4,622 t at 6.7% Pb, 187 g/t Ag	Shafts -71 m
1914	Queen of Ranges		328 t produced 231 oz Au	

Formerly ASX and TSX-listed company TriAusMin (and its predecessor Tri Origin) have held the project since 1992 (TriAusMin is now a wholly-owned subsidiary of Ardea). During this time, the companies have undertaken detailed mapping and extensive drilling culminating in a number of resource estimates. There are extensive geophysical, geochemical and mapping datasets to compliment the data derived from drilling. Ironically, in such a gold-endowed province, there is a dearth of gold exploration data, notably soil geochemistry. This represents an excellent discovery opportunity for Godolphin.

Sampling and Sub-Sampling Techniques

The Lewis Ponds Resource data comprises data from 213 drill holes drilled since 1971, for a total of 63,335 m. Most drilling was undertaken by Tri Origin between 1992 and 1997. Diamond drilling (DD) and reverse circulation (RC) drilling have contributed to the Lewis Ponds resource database. Average downhole depth was 289 m because deep-seated high-grade mineralisation was targeted for underground mining. Ardea completed four diamond drill holes in 2017 to confirm the geological model and complete metallurgical testwork aimed at validating a typical LFB bulk-tonnage development strategy.

Most historic sampling was undertaken at 1 m intervals for both styles of drilling but was commonly only taken where visual massive sulphides were present. As such, material now known to be prospective for shear-hosted gold was not sampled, and core is now too degraded to sample, and historic laboratory pulp material could not be located by Ardea. In drill core, half core was sampled. For RC drilling, samples were generally dry, and a 3-5kg sub-sample was taken by the spear method, bagged and submitted to the laboratory. The quality of the assay data was assessed by analysing the Certified Reference Material (CRM or Standards) and duplicate samples in terms of accuracy and precision.

Throughout the datasets, five analytes have been assayed consistently – Au, Ag, Cu, Pb, Zn although Au is often absent in key target intervals. Other elements were assayed from time to time. Typically, four acid digestions and/or aqua regia were used, with analysis by ICP-MS and fire assay. All assays were performed at ALS Orange laboratory.

Drilling Techniques

The resource is largely constructed from the results of diamond and RC drilling. The Lewis Ponds data consists of 213 drill holes over several decades as follows:

Table 5 – Historic drilling at Lewis Ponds that has been used in the calculation of the new Mineral Resource estimate

Period	No. holes	Drill type	Metres	% of drilling
1971 to 1979	15	Diamond	3,396.36	5%
1980 to 1988	6	Diamond	1,805.70	3%
	33	RC	2,298	4%
1992 to 1997	118	Diamond (+ wedge)	48,719.8	77%
	6	RC	612	1%
	2	Diamond extension	1,328	2%
2004 to 2017	8	Diamond	2,409.08	4%
	18	RC	1,999.20	3%
	7	Diamond extension	766.50	1%

Most holes were drilled towards the southwest (~225˚), typically at an inclination of -60˚. Drill collars were picked up by a surveyor or using a handheld GPS, providing adequate spatial control. Most diamond holes were down-hole surveyed.

Resource Classification

The Mineral Resource estimate appropriately reflects the Competent Person's view of the deposit. Resource blocks have been classified as Indicated or Inferred on the basis of a range of criteria.

- The continuity of mineralisation along modelled bodies is generally very good.
- **Indicated open pit resources** are defined generally on 50 x 40m or better spaced drilling which corresponds with a kriging slope of regression averaging 0.70 or greater and an average distance to composite data of 40 to 50m.

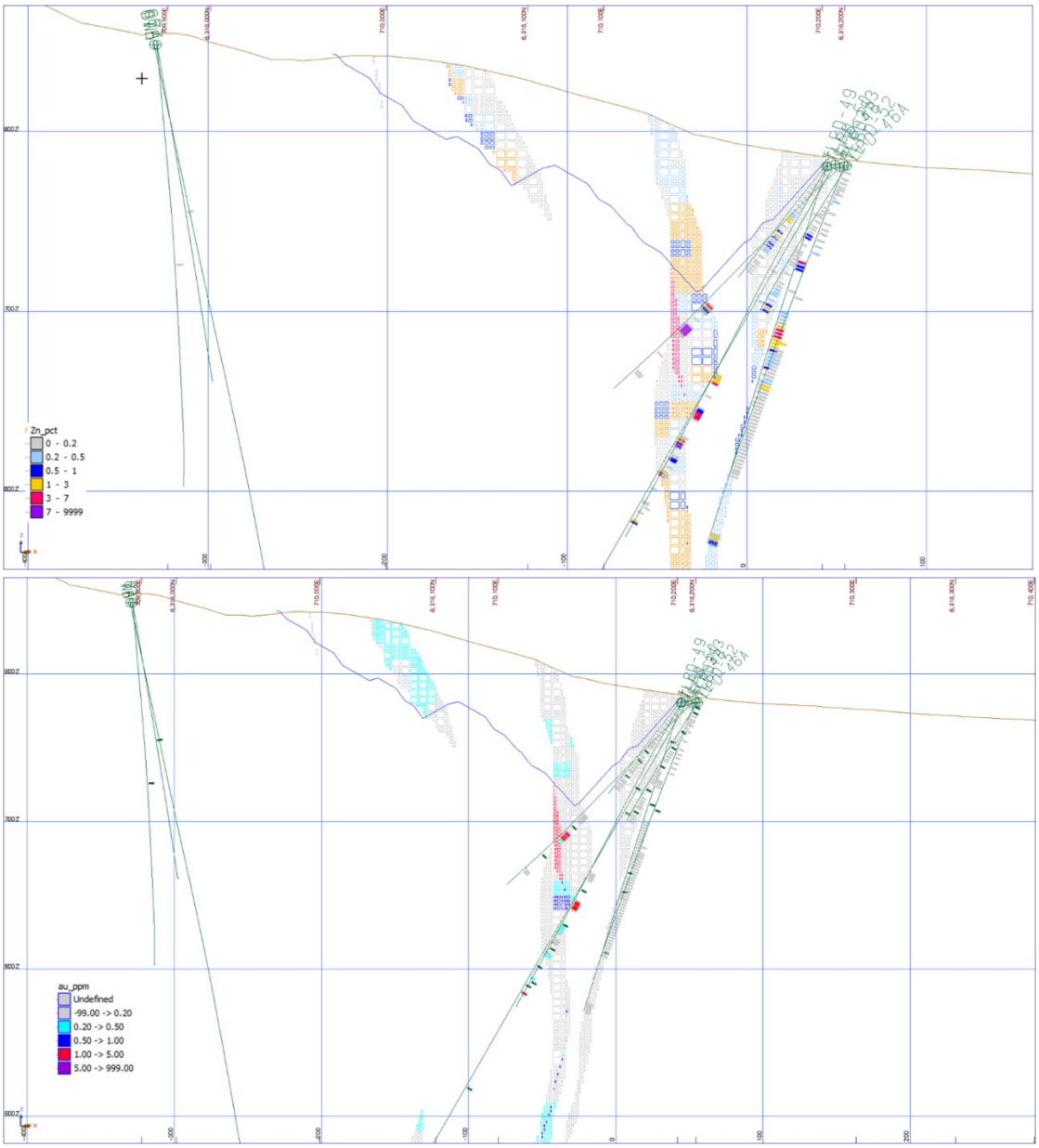


Figure 10 – Oblique section 1, looking northwest showing the zinc grade model (top, not ZnEq), and gold grade model (below). A modelled pit shell is shown. The sections show the extension of mineralisation below the modelled pit shell in what is part of the underground resource.

- **Inferred open pit resources** are defined by wider spaced drilling and limited by a digital terrain model defining the base of reasonable expectations of economic extraction, where sufficient drilling confidence exists that the continuity of geology and mineralisation can be extended. The Inferred

portions of the Mineral Resource has an average kriging slope of regression of 0.4 to 0.5 and an average distance to informing composite data of 70 to 80m.

- **Underground Mineral Resources** are classified as Inferred as a result of the less continuous nature of the lodes, wider spaced data defining the lodes and the resulting fewer informing composite data. The average distance to informing composite data within the primary massive sulphide lodes exceeds 75m with an average slope of regression of 0.22. Otherwise, drilling density is sufficient to classify the underground resources as Indicated.
- The domains that have been constructed seem appropriate in relation to the information available and currently understood mineralisation model.

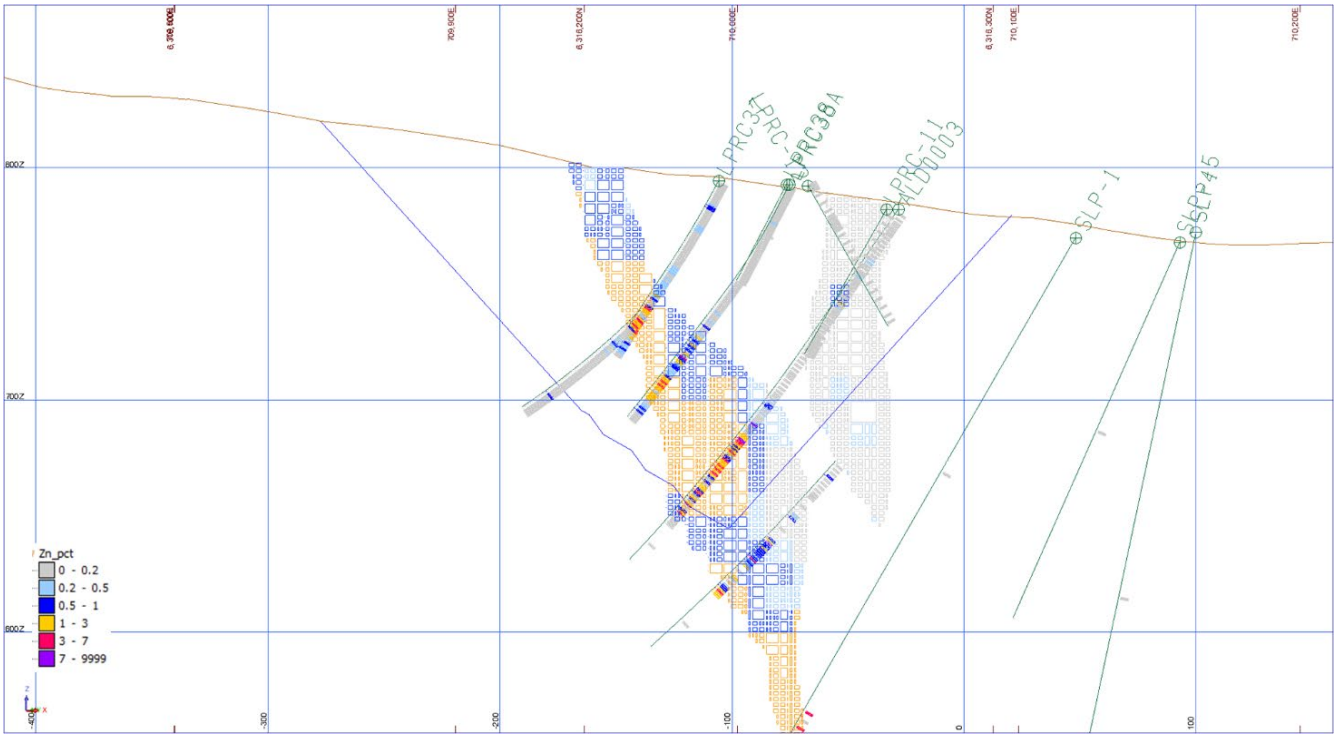


Figure 11 – Oblique Section 2 View looking northwest, showing the block model for zinc (not ZnEq) and calculated pit shell (blue line). Note that this section shows the importance of Ardea's limited drill program, with ALD0003 defining the depth extent of the better-grade disseminated zinc mineralisation in this section.

Sample Analysis and Estimation Methodology

Resource modelling of the Lewis Ponds deposit is based on estimating grades for all metals by kriging.

The assay data used for the project contain unsampled intervals, particularly within the halo mineralised domains. This reflects the project being explored historically as a high-grade underground resource.

The block model was defined using Surpac Mining Software. Block size (20 m N-S, 10 m E-W and 10 m vertical) has been chosen based on a consideration of the overall data spacing, the dimensions of the lode volumes to be modelled and the assumed method of mining. A sub-blocking strategy to a minimum of 5m N-S, 1.25m E-W and 2.5m vertical was implemented to ensure close correlation between wireframe and block model volume definition.

In total, twelve separate domains were defined in Surpac, with each domain containing sub-parallel mineralised horizons. Domain orientations vary only slightly, as do search and variogram values (mostly

bearing 315˚ to 330˚, 0˚ plunge and dip -73˚ to -84˚). A resource for each domain was individually estimated, with individual estimation neighbourhoods to ensure tailored criteria for optimal results.

Grades were interpolated using kriging.

The historic database contains 1,031 *in situ* Archimedean bulk density measurements providing a range of specific gravities for a variety of rock types containing variable concentrations of mineralisation. Density weighting of the resource model has required a density value for each assayed interval. Where a direct density measurement was not recorded for a specific interval, a weighting density was calculated using a regression formula (Weighting density = 0.0203*ZnEq+2.7928) developed from the density database and a ZnEq value (see below) calculated on sample support.

Cut-off Grade

Two cut-off grades are defined for the resource: one for open pit mining, and one for underground mining. As Lewis Ponds is a multi-commodity deposit, metal equivalents are used. Zinc equivalent (ZnEq) grades were calculated throughout the resource model. Open pit Mineral Resources are reported at a cut-off of +1.0% ZnEq and underground Mineral Resources at a cut-off of +3% ZnEq.

ZnEq is calculated by the following equation:

ZnEq = Zn% + (Au ppm * 1.949) + (Ag ppm * 0.019) + (Cu% * 2.306) + (Pb% * 0.741)

Listed commodity price assumptions as of 31 July 2019 are combined with estimated metallurgical recovery proportions as follows:

- **Zn** – US$2585/t, 80% recovery,
- **Au** – US$1393/oz, 90% recovery,
- **Ag** – US$15.50/oz, 80% recovery,
- **Cu** – US$5960/t, 80% recovery,
- **Pb** – US$1915/t, 80% recovery.

The selection of 3% ZnEq cut-off (underground) corresponds to US$77.55 per tonne or A$115.75 per tonne *in situ* value (at 1 AUD = 0.67 USD). The *in-situ* value at 1% ZnEq cut-off (open cut) is A$38.58.

Mining and Metallurgical Methods and Parameters and Other Modifying Factors

Open Pit Mineral Resources are constrained by a preliminary pit shell generated in Whittle software. The shell has been defined using the calculated zinc equivalent (as discussed within the above cut-off grade section) together with an assumed $30/t processing cost and $4/t mining cost with 45 degree wall slopes. Analyses of the resultant shells from the optimisation run which included revenue factors from 0.5 to 2.0 of the base input assumption, together with a visual inspection of key selected shells, led to the decision to use the revenue factor 1.9 shell to limit the reporting of these mineral resources to within reasonable expectations of future economic extraction by open pit method.

By utilising this shell, all portions of the model within the shell were subjected to a 1% ZnEq cut-off, whereas those portions of the model below the pit shell were subjected to a 3% ZnEq cut-off.

Metallurgical testwork conducted by Ardea Resources (announcement, 26 November 2018) showed that an initial dense media separation (DMS) at a relatively large crushed particle size (-12.5 mm), over 90% of the sulphide and precious metals are recovered, on top of 25% of the material being rejected. DMS is an inexpensive method that could be applied to ore feed that rejects lower grade or gangue material and hence allowing for higher grade process plant feed material or a lower mine cut-off.

Testwork indicated that two concentrates could be produced via gravity and flotation methods:

1. Zn concentrate containing 66% zinc and 64 g/t silver for 80% zinc recovery,
2. Cu-Pb-Ag-Au concentrate contained 30.3 % lead, 4.78 % copper, 1,619 g/t silver and 17.6 g/t gold for 70.3 % lead recovery and 61.8 % Cu recovery.

The metallurgical testwork concluded that:

- The flotation process is expected to be relatively simple.
- A fine re-grind size (20-35 µm) may be required to liberate acceptable levels of galena (lead).

A moderate grind size (40-60 µm) would be required for sphalerite (zinc) liberation.

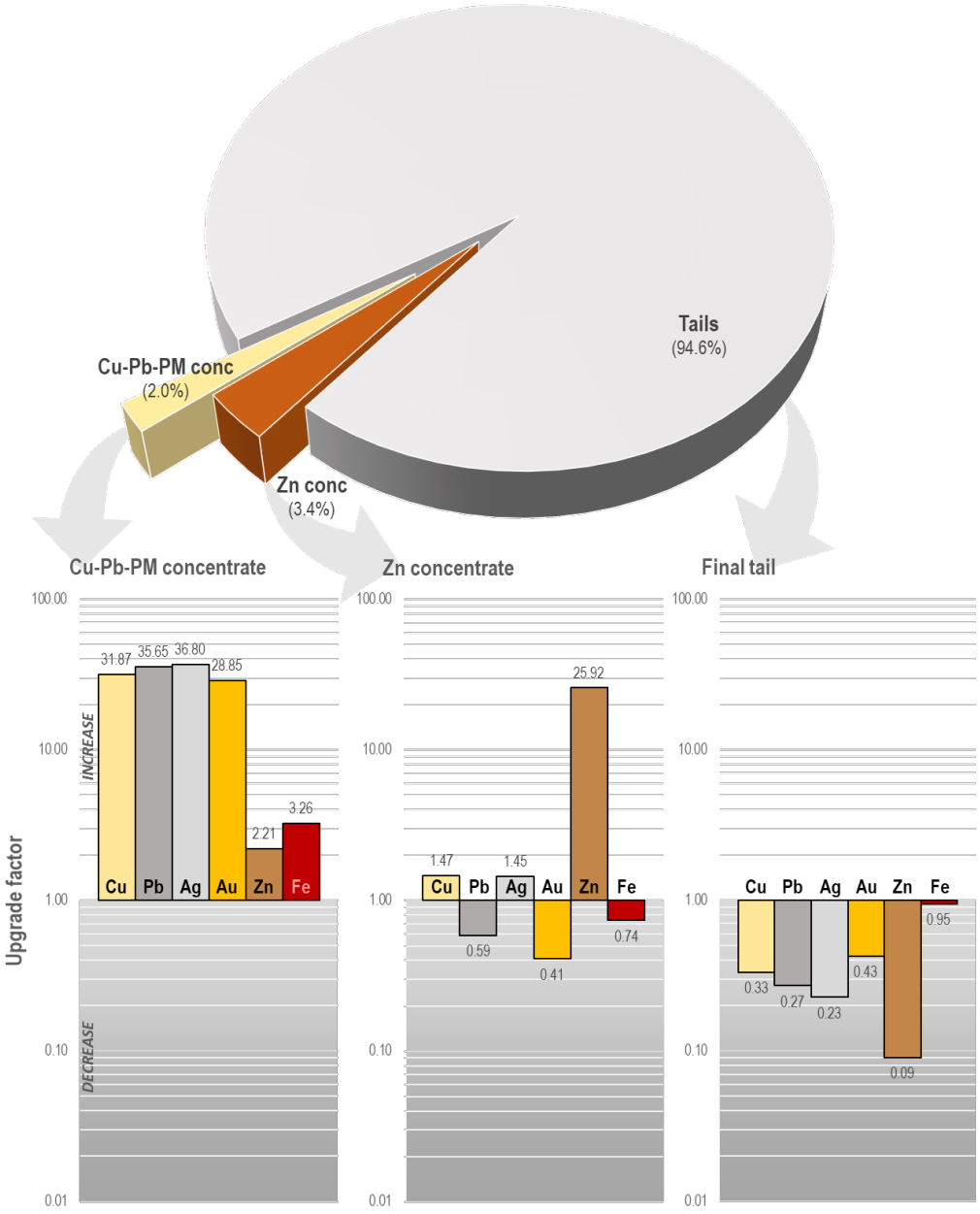


Figure 12 – Proportions of products obtained from processing of the initial feed for all runs in this study. The Cu-Pb-Precious Metal concentrate represents only 2 % of the volume but shows increases of between 29 times and 37 times for the metals of interest. The Zn concentrate is only 3.4 % of the volume but shows around a 26 times increase in zinc levels. The final tails which comprise around 95 % by volume show that the metals of interest are removed to varying degrees, with nearly all waste iron reporting to the tails.

Project Potential and Work Planned

Mineralisation is open at Lewis Ponds to the north, south and down-dip (Figure 4). Significant potential exists to extend mineralisation in each direction, augmenting both the open pit and underground potential. Further exploration up-sequence to the northeast is also warranted, as is exploration down-sequence south-westward into the interpreted feeder zone, to define the palaeo-vertical extent of the mineralising system.

The Lewis Ponds deposit is part of a larger mineralised system or camp that extends from Lewis Ponds southeast to the various gazetted copper, gold and zinc workings at Little Bell Mount (copper), Brittania (copper-gold), Mount Regan (polymetallic) and others. Spacing between each of these and other unnamed workings is less than 400 m. The overall strike from New Lewis Ponds to a copper vein prospect near Mt Regan is over 3.3 km (Figure 14).

Further to the southeast along strike lies the Mt Nicholas copper mining centre, comprising the Mt Nicholas, Icely, Browns Creek, and Ophir Copper Mines. Total strike length is over 9 km (Figure 14). Post IPO, Godolphin's exploration methodology is to approach Lewis Ponds - Mt Nicholas area as a singular mineralising system related to the Godolphin Fault System (Figure 3 and 14). Such an approach has proven enormously successful at other historic Lachlan Fold Belt mining centres such as Cadia-Ridgeway, Tomingley, and potentially McPhillamys.

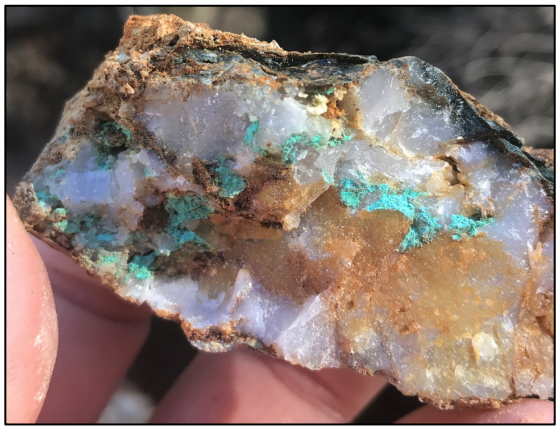


Figure 13 – Secondary, vein-hosted copper mineralisation from the Little Bell mine several hundred metres southeast of the Lewis Ponds mineral resource. The extensive line of 19th Century workings to the southeast suggests an opportunity to significantly expand resources.

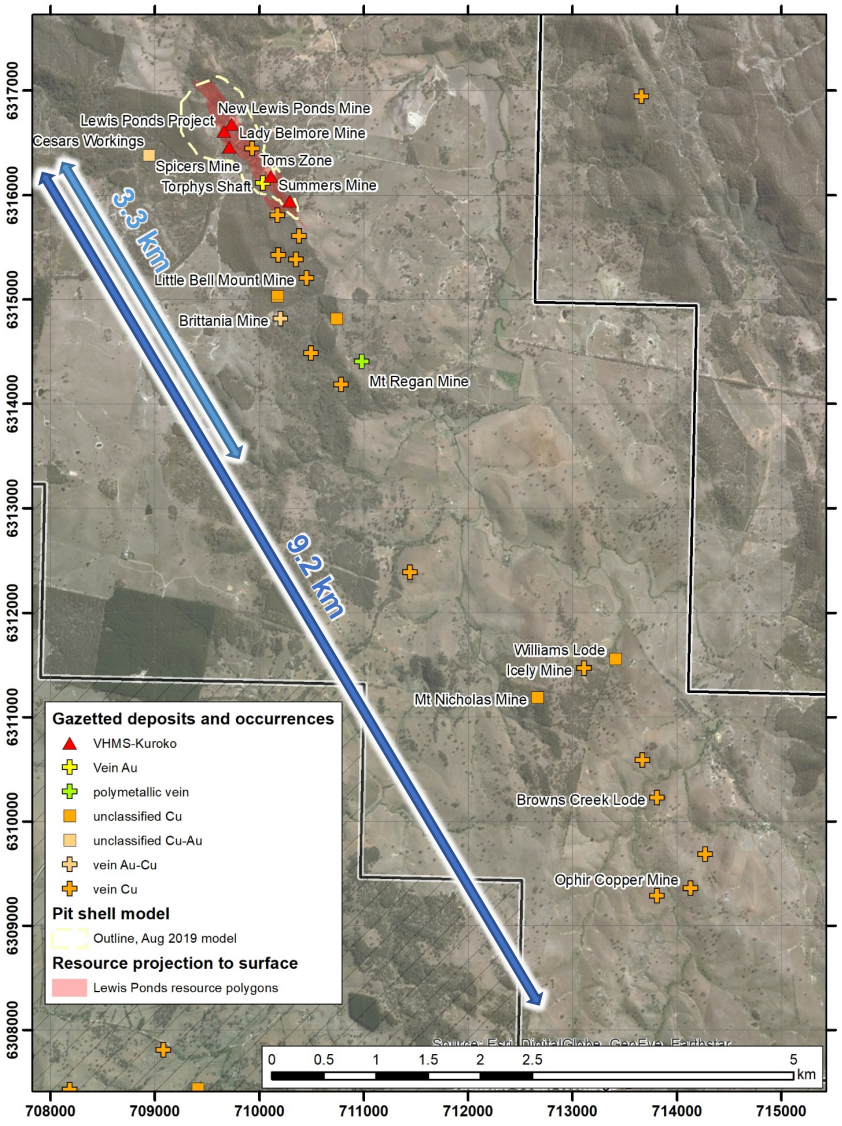
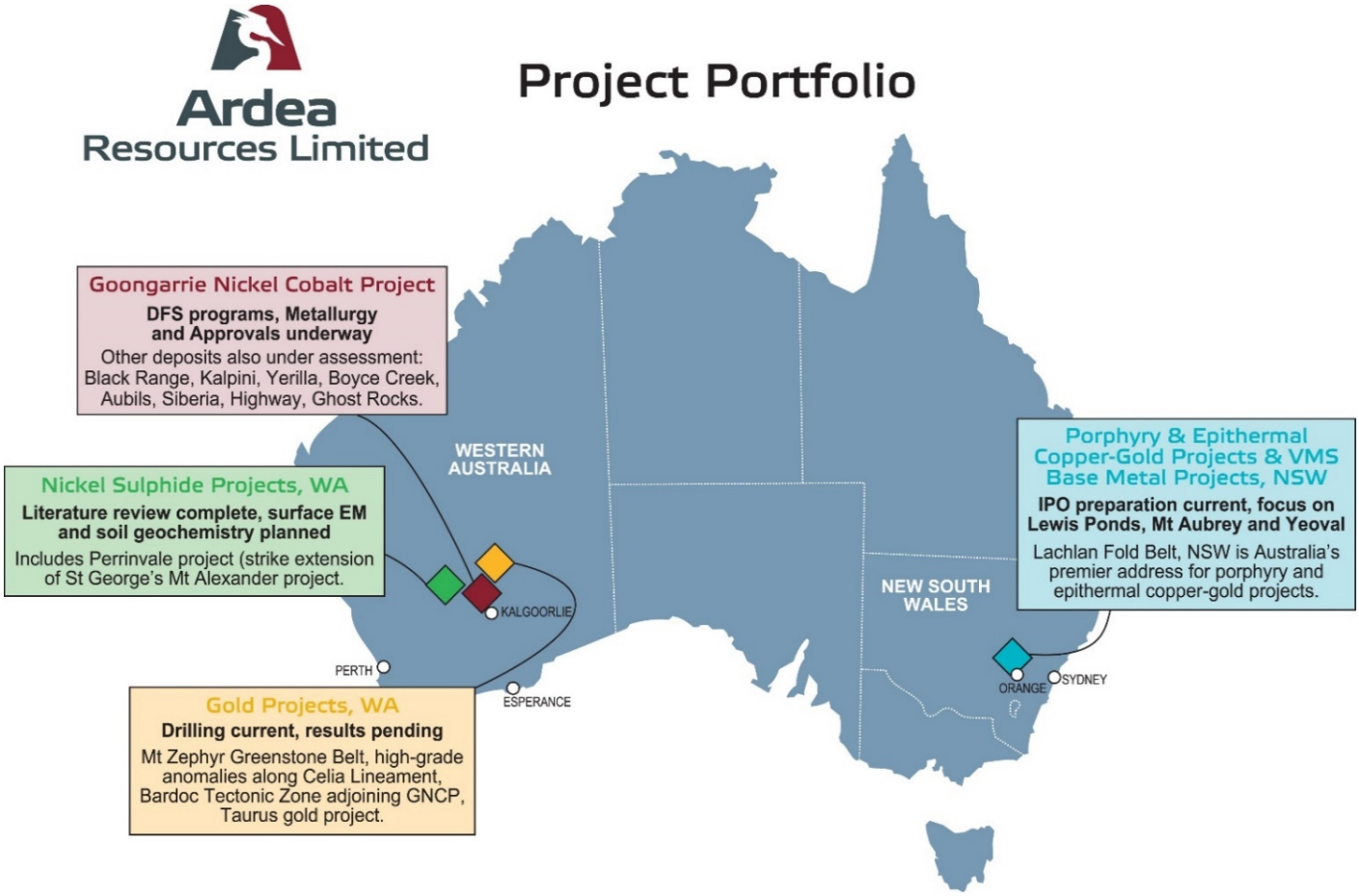


Figure 14 – Lewis Ponds is part of a larger mineral camp that extends for over 9.2 km to the southeast, comprising a series of historic mine sites from the Lewis Ponds and Mt Nicholas mining centres.

About Ardea Resources

Ardea Resources ("Ardea" – ASX:ARL) is an ASX listed resources company, with 100% controlled Australian-based projects, prioritising a three-pronged value creation strategy which is:

- 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;
- advanced-stage exploration at WA gold and nickel sulphide targets within the Eastern Goldfields world-class nickel-gold province; and
- the Godolphin Resources Limited demerger of the NSW gold and base metal assets with planned in-specie share distribution, with all projects located within the Lachlan Fold Belt world-class gold-copper province, specifically within the Lachlan Transverse Zone (hosts McPhillamy's gold and Cadia and Northparkes copper-gold) and splay fault of the Gilmore Suture (hosts Cowal gold).



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

Ardea Resources:
Andrew Penkethman
Chief Executive Officer, Ardea Resources Limited
Tel +61 8 6244 5136

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 of Godolphin Resources Limited, 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 of Godolphin Resources Limited 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.

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 Johan Lambrechts, a Competent Person who is a Member of the Australian Institute of Geoscientists. Mr Lambrechts 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. Mr Lambrechts 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

JORC Code, 2012 Edition – Table 1 report for the Lewis Ponds Resource, NSW

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td>Sampling techniques</td><td>

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.
In cases where 'industry standard' work has been done this would be relatively simple (eg '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 (eg submarine nodules) may warrant disclosure of detailed information.

</td><td>

Both Reverse Circulation Percussion drilling (RCP) and Diamond core drilling (DD) have contributed to the Lewis Ponds resource database.
The Lewis Ponds data consists of 213 drill holes over several decades as follows:
1971 to 1979 – 15 DD holes for 3,396.36 metres representing 5% of the total metres
1980 to 1988 – 6 DD holes for 1,805.70 metres representing 3% of the total metres
1980 to 1988 – 33 RCP holes for 2,298 metres representing 4% of the total metres
1992 to 1997 – 118 DD/DDWEDGE holes for 48,719.8 metres – 77% of the total metres
1992 to 1997 – 6 RCP holes for 612 metres representing 1% of the total metres
1992 to 1997 – 2 DD extension holes for 1,328 metres representing 2% of the total metres
2004 to 2017 – 8 DD holes for 2,409.08 metres representing 4% of the total metres
2004 to 2017 – 18 RCP holes for 1,999.20 metres representing 3% of the total metres
2004 to 2017 – 7 DD extension holes for 766.50 metres representing 1% of the total metres
Total drilling to the date of this report was 63,334.64 metres comprising of:
117 primary diamond holes for 41,253.43 metres
30 wedged diamond holes for 15,077.51 metres
9 diamond tails to RCP holes for 2,094.50 metres
57 RCP holes for 4,909.20 metres
Sample type and assay metres is summarised as follows:
<table>
<tr><th></th><th></th><th>Zn%</th><th>Cu%</th><th>Pb%</th><th>Au ppm</th><th>Ag ppm</th></tr>
<tr><td>DD</td><td>Count</td><td>6,873</td><td>6,873</td><td>6,887</td><td>6,899</td><td>6,873</td></tr>
<tr><td></td><td>Metres</td><td>9,229.12</td><td>9,229.12</td><td>9,229.12</td><td>9,255.12</td><td>9,229.12</td></tr>
<tr><td>RCP</td><td>Count</td><td>1,737</td><td>1,445</td><td>1,445</td><td>2,712</td><td>1,776</td></tr>
<tr><td></td><td>Metres</td><td>2,019.3</td><td>1,724.3</td><td>1,724.3</td><td>3,922.3</td><td>2,058.3</td></tr>
<tr><td>NR</td><td>Count</td><td>513</td><td>492</td><td>471</td><td>97</td><td>453</td></tr>
<tr><td></td><td>Metres</td><td>710.82</td><td>670,62</td><td>618.32</td><td>151.7</td><td>610.49</td></tr>
</table>

The Resource is based on sub-surface samples obtained by the above drilling. Earliest drilling was successful testing of geochemical and/or geophysical anomalism adjacent to historic small mining. This progressed into drilling on grid sections to test the mineralisation at intervals appropriate for improving confidence in mineralised continuity.
The earliest was diamond drilling by Amax commencing 25 October 1971. The Longyear 44 rig used was industry standard for the time. Similarly, the first single shot gyro instruments were being used for downhole surveys. Handheld GPS became practical for sub-5m accuracy collar positioning in year 2000 (removal of Selective Availability). The programs after and including 2004 used Trimble GPS for collar positioning. The first hole to have (Differential) GPS collar positioning was TLPD-55 which commenced 3 Nov 1995. The most recent drilling the ALD series utilised a Reflex EZ multishot down hole survey tool. About 40 percent of the total metreage drilled was GPS located.

</td></tr>
<tr><td>Drilling techniques</td><td>

Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type,

</td><td>

Two main types of drilling have been used since the first drill testing at Lewis Ponds in 1971: Reverse Circulation Percussion (RCP) and Diamond Core Drilling (DD). Open hole techniques including Tricone, Blade and Hammer have been used to pre-collar holes through overburden and barren ground to place casing to facilitate deeper RC and/or DD.
Prior to 1980, HQ core size was used only to seat the casing to enable NQ coring to start. Most of these holes at some stage reduced to BQ core size when

</td></tr>
</table>

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td></td><td>whether core is oriented and if so, by what method, etc).</td><td>rotation became an issue with NQ. In DD programs subsequent to 1980 HQ core size was used to refusal then reduction to NQ and possibly BQ. After 1990 triple tube barrels were used to good effect minimising core loss, and reduction to NQ became the norm with no further use of BQ coring.
• Diamond tails, as distinct from pre-collars, were used to extend RCP holes in the 2004 and 2005 programs. These totalled 2,909.20 m in nine holes.
• No use of oriented core was made until 2004 where drillers marks on core assisted determination of vergence in folding adjacent to mineralisation.
• DD wedge drilling has been undertaken to increase coverage at depth contributing 15,077.51 metres of drilling.</td></tr>
<tr><td>Drill sample recovery</td><td>• Method of recording and assessing core and chip sample recoveries and results assessed.
• Measures taken to maximise sample recovery and ensure representative nature of the samples.
• 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.</td><td>• Core recoveries at Lewis Ponds have not in every case been recorded on a sample by sample basis, however a good recovery database is provided by recoveries recorded in the Geological Logs. These show that significant core loss is a comparatively rare event once the hole enters competent rock, and in most cases is due to local stopped voids, faulting and/or shearing. Recovery of core has been measured by restoring the core, fitting individual pieces end to end where possible. Lengths of the assembled core were measured to compare with the intervals between drillers' downhole markers. The ratio between the measured length and the marker interval length was recorded as core recovery percent. Percussion chip samples, at least in the more recent RC drilling, were weighed and the weight recorded. Any noticeably low weight recorded became a recovery factor in the sampling record.
• Core loss was minimised by maintaining a satisfactory balance between core diameter and drilling cost. For the TOA, TRO and TriAusMin programs between 1992 and 2004, also the Shell/Aquitaine 1981 program, the standard core size was HQ reducing to NQ. This was the most significant factor in minimising core loss, to the extent that contract controlled drilling provisions were not called for.
• Tests of the database for sensitivity of core recovery to grade yielded the following results for diamond drill cores:
<table>
<tr><th>Metal</th><th>Downhole Cutoff range</th><th>Total Metreage</th><th>Average Core Recovery %</th><th>Zn%</th><th>Au g/t</th></tr>
<tr><td>Zn%</td><td>0 – 1</td><td>3811</td><td>98.3</td><td>0.21</td><td>0.17</td></tr>
<tr><td>Zn%</td><td>1 – 2</td><td>532</td><td>97.2</td><td>1.42</td><td>0.56</td></tr>
<tr><td>Zn%</td><td>2 – 3</td><td>242</td><td>99.2</td><td>2.41</td><td>0.99</td></tr>
<tr><td>Zn%</td><td>3 – 4</td><td>113</td><td>99.7</td><td>3.46</td><td>1.08</td></tr>
<tr><td>Zn%</td><td>4 – 5</td><td>70</td><td>97.7</td><td>8.36</td><td>3.47</td></tr>
</table>
• There seems to be no evidence for reduced core recoveries with increasing zinc grades, similarly with increasing gold:
<table>
<tr><th>Metal</th><th>Downhole Cutoff range</th><th>Total Metreage</th><th>Average Core Recovery %</th><th>Zn%</th><th>Au g/t</th></tr>
<tr><td>Au g/t</td><td>0 – 1</td><td>3657</td><td>98.0</td><td>0.09</td><td>0.49</td></tr>
<tr><td>Au g/t</td><td>1 – 2</td><td>351</td><td>98.6</td><td>0.69</td><td>1.82</td></tr>
<tr><td>Au g/t</td><td>2 – 3</td><td>127</td><td>99.0</td><td>1.22</td><td>3.20</td></tr>
<tr><td>Au g/t</td><td>3 – 4</td><td>85</td><td>99.1</td><td>1.73</td><td>3.84</td></tr>
<tr><td>Au g/t</td><td>4 – 5</td><td>178</td><td>99.4</td><td>5.63</td><td>4.92</td></tr>
</table>
• Results in the high 90's come from the higher cutoffs for Cu and Ag also.
• Noticeably poorer recoveries are recorded for the ALP drilling in 1972 by Amax. This was at a time when most rigs were drilling for nickel in WA and Amax had to accept BQ core (diameter 36.5 mm) in part. The four Amax holes produced one significant Au assay (not sampled systematically for Au) and four significant Zn assays and thus is a low proportion of the overall database.</td></tr>
<tr><td>Logging</td><td>• 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.
• Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.
• The total length and percentage of the relevant intersections logged.</td><td>Logging of core and chips has been maintained throughout the Lewis Ponds programs. In the 1992 - 2004 programs, logs of downhole geology were generally prepared on paper proformas then entered digitally. In most cases scans of the hand logs have been made as well as the digital logs. The first objective has been to enable the lithology, alteration and mineralisation, and oxidation records to appear on screen together with grades for geological interpretive purposes. This has taken place to the standard required for mineral resource estimation and subsequent studies. The geological logging done, together with available photography, is considered to be adequate for mineral resource studies.
Where needed terms such as 'massive', semi-massive' 'stringer' or 'disseminated' have been used to describe the aspect of the metal sulphides. These qualitative terms are expected to be reflected in the assay results for the same intervals. This applies to logging both core and chips. Visual estimation of sulphide percentages has not been systematic throughout the drilling. Core photography has been carried out over the mineralised intervals in core obtained between TLPD33 and TLPD72 (Oct 1994 to April 1997) and the mineralised section of TLPD12. This represents approximately 50% of the total drilling, thus there is insufficient core photography to</td></tr>
</table>

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td></td><td></td><td>be a proxy for geotechnical logging in the event of a scoping study for Lewis Ponds.

Geological logs exist for 95 percent of total RC plus DD drilling. Geotechnical logging appears to have been limited to two holes in the 2004 TRO program, TLPDD04001 and 04002, totalling 643 m (approx. 1% of all core). Basically, unless additional records come to light, for scoping study purposes geotechnical logging would have to be extended over stored core or further geotechnical drilling done.</td></tr>
<tr><td>Sub-sampling techniques and sample preparation</td><td>• If core, whether cut or sawn and whether quarter, half or all core taken.
• If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.
• For all sample types, the nature, quality and appropriateness of the sample preparation technique.
• Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.
• 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.
• Whether sample sizes are appropriate to the grain size of the material being sampled.</td><td>• After core logging, generally routine 1m intervals to be assayed were split using a diamond saw and half-core samples bagged for assay. This was industry standard procedure. Paying for HQ coring was to achieve maximum representivity through higher volume samples.
• RC sampling, generally dry, was carried out on a metre by metre basis, collected directly into a plastic bulk bag from the rig cyclone. A 3-5kg sub-sample was taken by the spear method, bagged and submitted to the laboratory. Wet samples were mixed and quartered manually, but this was a rare necessity. The large volume of the sample and the use of the Reverse Circulation method was industry standard to achieve representivity. Normal quality control procedures were in place in the RCP drilling, in particular, cleaning the hole with air between each sampling run, and casing through overburden to avoid up hole contamination.
• With both RCP and DD drill sampling, a replicate sample was taken every 20m for quality control and submitted without special identification with other samples to the laboratory. It was rare for replicate sample assays, when compared with the original, to fall outside normal variability within the sampling/assay process. On some occasions a triplicate sample was taken for an umpire Au assay.
• The Lewis Ponds sulphides, whether massive or disseminated, have not raised problems of representivity with the RCP and DD sampling employed. Gold is a significant element of the Lewis Ponds metal value and could have representivity issues. Preliminary metallurgical study indicates that gold is largely refractory within sulphides. Coarse gold is therefore unlikely to be a problem in fresh rock at Lewis Ponds with attendant representivity issues. This may have to be reviewed if mineralisation in the oxide zone becomes a drilling target.
• No problems of ultra-fine grain size exist at Lewis Ponds and the sample sizes are considered adequate.</td></tr>
<tr><td>Quality of assay data and laboratory tests</td><td>• The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.
• 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.
• 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.</td><td>For DD in the 2004 drilling, entire half core samples were crushed to >70 percent passing -6mm mesh and weighed. For gold, 30g were taken for fire assay and AA finish. Sub-samples for Ag, Cu, Pb and Zn received aqua regia digestion followed by AA. The procedures were industry standard with a reputable laboratory. Procedures followed are considered to have built a good quality database for Lewis Ponds.

Field analysers have not contributed to the Lewis Ponds mineral resources assay database.

QC Certificates of Analysis are held from the laboratory in respect of regular internal check assays of Standards, Blanks and Internal Duplicates from pulps of the original samples. Random checks give evidence of satisfactory procedures. Accuracy and Precision stats could be run for a marginally higher level of comfort.</td></tr>
<tr><td>Verification of sampling and assaying</td><td>• The verification of significant intersections by either independent or alternative company personnel.
• The use of twinned holes.
• Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.
• Discuss any adjustment to assay data.</td><td>• All significant intersections (TRO, TOA and prior) have been independently verified by a senior consultant to the extent of re-logging to become familiar with the detailed characteristics. This was carried out in two phases and a full report has been presented describing each phase.
• The drill intercept spacing is perhaps surprisingly regular given the number of drilling campaigns that have contributed. One significant intersection twinned is:
<table><tr><th>Drill hole</th><th>East
Local m</th><th>North
Local m</th><th>Interval
m</th><th>Au
g/t</th><th>Ag
g/t</th><th>Cu
%</th><th>Pb
%</th><th>Zn
%</th></tr><tr><td>SLP-2</td><td>-0.4</td><td>760</td><td>2.1</td><td>13.5</td><td>486</td><td>2.73</td><td>3.44</td><td>5.21</td></tr><tr><td>SLP-2W</td><td>2.1</td><td>761</td><td>2.1</td><td>3.9</td><td>370</td><td>0.32</td><td>5.3</td><td>5.8</td></tr></table>• Another example approaches the twinning situation with a separation of 22 m. Comparable intercepts are:
<table><tr><th>Drill hole</th><th>East
Local m</th><th>North
Local m</th><th>Interval
m</th><th>Au
g/t</th><th>Ag
g/t</th><th>Cu
%</th><th>Pb
%</th><th>Zn
%</th></tr><tr><td>TLPDD04001</td><td>-169</td><td>1323</td><td>5.9</td><td>1.67</td><td>89</td><td>0.22</td><td>3.37</td><td>5.08</td></tr><tr><td>TLPDD36</td><td>-168</td><td>1301</td><td>15</td><td>3.97</td><td>246</td><td>0.27</td><td>3.44</td><td>5.28</td></tr></table>• In 2004 a Database Verification exercise was carried out for Lewis Ponds. This was recorded on a master spreadsheet which listed all drill holes, one sample per</td></tr>
</table>

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td></td><td></td><td>record. The data as had been entered was checked individually against source Assay Certificates and Sample Submission information. 289 errors were identified, listed and corrected. Of these 16 were significant errors. 9 of the 16 from early drilling could not be reconstructed and had to be deleted from the database. In those cases, original Assay Certificates were not available, and checks could only be made against scanned tables of assays or in some cases scans of assay results on drill cross sections.

From this exercise procedures were developed for the 2004 drilling: digitising sample submission (order numbers vs sample numbers vs intercepts), receiving digital Assay Certificates, and the critical 'synchronising' of assays and corresponding sample intercepts on spreadsheet. The new results were incorporated into the exploration software database and viewed on screen to see that there was geological sense in the results. The entire technical database was backed up daily on the server, together with corporate records. One backup tape was taken out of the building each evening and returned the following day.

One error which necessitated correction in the assay records came from a small block of assays having moved one line in the file relative to intercept.</td></tr>
<tr><td>Location of data points</td><td>• 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.
• Specification of the grid system used.
• Quality and adequacy of topographic control.</td><td>Collar positions have been set in using a Trimble GPS instrument with a sub-5 metre level of accuracy. Collars of TOA and TRO holes have been picked up using a DGPS Sub-1 metre instrument since mid-1995. Prior to that, holes may have been sited relative to a pegged tape and compass grid with significant inaccuracies. However, in 1995 all previous hole collars appear to have been identified and surveyed by DGPS. No tape and compass coordinates are used to locate any item of drill data in the current database. In 2004 limited checks were made of surviving early hole collars (pre-1995) using DGPS with satisfactory results when compared with database.

The Lewis Ponds grid was established in 1992 using a local grid north reference of 315 degrees magnetic. The Grid north orientation of 315 degrees (Mag) equates to 329 degrees MGA.

• To convert local grid bearing to magnetic subtract 45 degrees.
• To convert local grid bearings to MGA, subtract 31 degrees.
• A number of points along the local grid baseline have been surveyed using real time DGPS with sub-metre accuracy.
• To allow for transformation into MGA coordinates two corresponding surveyed points are:

<table>
<tr><th colspan="2">Local grid</th><th colspan="2">MGA (55) grid</th></tr>
<tr><th>Easting (mE)</th><th>Northing (mN)</th><th>Easting (mE)</th><th>Northing (mN)</th></tr>
<tr><td>000</td><td>1100</td><td>709679.3</td><td>6316506.4</td></tr>
<tr><td>000</td><td>-370</td><td>710436</td><td>6315245.4</td></tr>
</table>

It is considered that all issues with the location of historic data points have been identified and remedied prior to the start of 2004 drilling.</td></tr>
<tr><td>Data spacing and distribution</td><td>• 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.</td><td>Drill spacing in mineralisation material to this mineral resource estimate (above 400mRL) is generally set out on 40 to 50m oblique sections (Azimuth 235°) in the best drilled areas increasing to 100m at the strike extremities. On section collar spacing varies from 40 to 50m at best providing intercept spacing in mineralisation of 50 to 80m down dip. The drilling density is increased marginally at surface with a number of shallow holes and at depth by the use of DD wedge drilling.</td></tr>
<tr><td>Orientation of data in relation to geological structure</td><td>• Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.
• 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.</td><td>As the lenses dip variably to the east, and the difficult topography is to the west, there has been little problem in siting holes to optimise the drill to mineralisation intersection angles. The strongest mineralisation dips about 50° to 70° east with vertical tails up to the west and down to the east, i.e. sigmoid. This has resulted in intersection angles effectively normal to the thicker parts of the mineralisation. Where the lenses tail up to the west and down to the east, the incident angles reduce to 40° to 60°.

No significant bias is likely as a result of the pattern of intersection angles.</td></tr>
<tr><td>Sample security</td><td>• The measures taken to ensure sample security.</td><td>For all programs care has been taken to have standard procedures for sample processing, and each past drilling program has recorded its procedures. These have been simple and industry standard to avoid sample bias. There is need to avoid classification bias in spear sampling of RCP chips by thorough pre-mixing. This method needs to remain consistent.</td></tr>
</table>

Criteria	JORC Code explanation	Commentary
		Perhaps the best security against potential sample tampering for a situation such as Lewis Ponds has been not to have to store the samples. Site processing of samples was by Company employees and when complete samples were less than an hour from the laboratory by company vehicle. Satisfactory internal security was maintained routinely by the Laboratory.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	A total review and audit of the Lewis Ponds database was carried out following the public float of Tri Origin Minerals Limited on 9 Jan 2004. Areas were: Grids and Collars, Downhole Surveys, Assays, Geology. Apart from this Review, previous resource estimates were studied for factors likely to introduce bias, up or down.

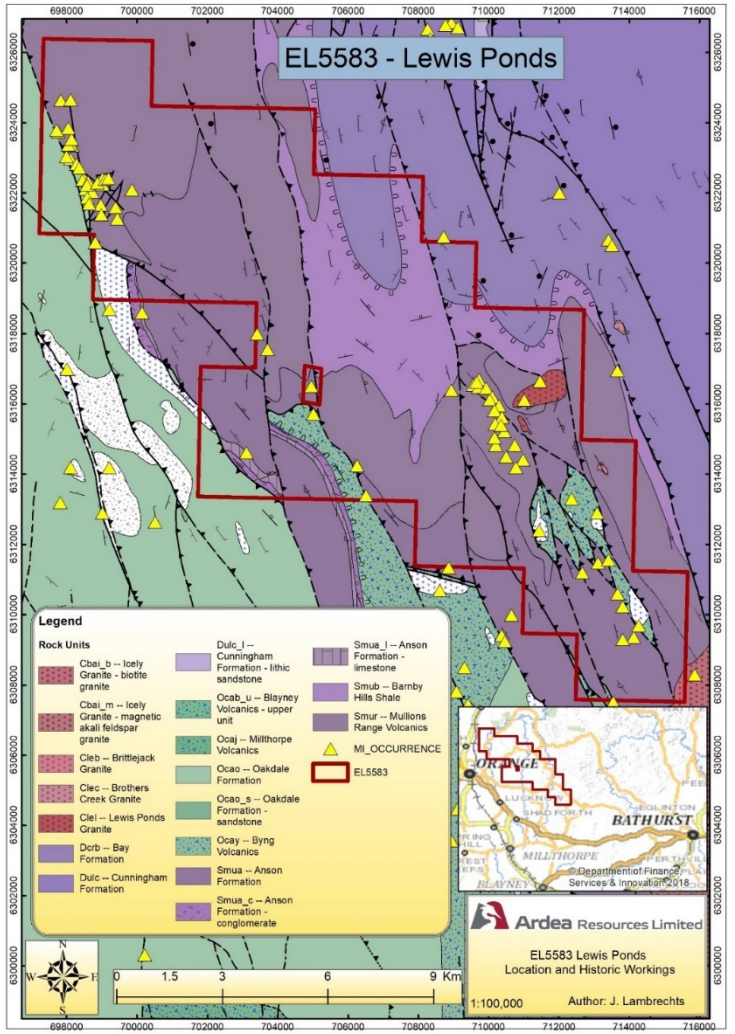
Section 2 Reporting of Exploration Results

(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 Lewis Ponds project is 14km east-northeast of the city of Orange, central New South Wales, Australia. Local relief at the site is between 700 and 900m above sea level. • The mineral rights to the project are 100 percent owned by Ardea Resources Limited (Ardea) through the granted Exploration Licence 5583. A capped (A$2M) royalty and finders fee is payable to a private third party if the project is sold or commences production. • $40,000 Security Bond is in place • 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.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	EL 5583 was granted to TriAusMin in 1999 for an area of 71 units and replaced three previously held exploration licences (EL 1049, EL 4137 and EL 4432). In the 2006 renewal, the licence was party relinquished to 57 units and the following year TriAusMin purchased 289 hectares of freehold land over Lewis Ponds. Upon renewal in 2011, EL 5583 was reduced to 51 units for a further term until 24th June 2014. The second renewal of EL 5583 was granted until June of 2017 with no reduction in tenement size. On August 5th 2014, TriAusMin underwent a corporate merger with Heron Resources Limited which resulted in Heron acquiring 100% of EL 5583 and the 289 hectares of freehold land over Lewis Ponds. In 2017, Ardea Resources Ltd was "spun out" as a new company, and gained ownership of EL 5583, with TriAusmin becoming a wholly owned subsidiary of Ardea. In the 1850's gold was discovered at Lewis Ponds and shallow underground mining took place at Spicers, Lady Belmore, Tom's Zone and on several mines in the Icely area during the period 1887 to 1921. In 1964, a number of major companies including Aquitaine, Amax, Shell and Homestake explored the region looking for depth and strike extensions of the Lewis Ponds mineralisation but failed to intersect significant mineralisation. These companies had drilled approximately 8,500 metres. Not commonly noted, but of great significance is the fact that much of Lewis Ponds' early development was in lieu of the high grades of silver in its ores. It appears that silver was the major commodity mined at different points of the mines' history. Exploration activities at Lewis Ponds since the 1990s are as follows. • 1990s ○ Historic exploration data review, geological data compilation and mapping ○ Rock chip sampling and detailed regional mapping, establishment of a regional grid baseline ○ EM, dipole-dipole, induced polarization and magnetic, moving loop Sirotem surveys ○ Diamond and RC drilling programs ○ Integration of exploration data into digital GIS format and conversion of older grids ○ Updated resource estimate • 2000 – 2002 ○ Conversion of historic datasets into modern GIS databases ○ Compilation, appraisal and reinterpretation of previous exploration data ○ Geological re-interpretation of the Lewis Ponds deposit ○ Updated Mineral Resource estimate 5.7 Mt at 1.9 g/t gold, 97/t silver, 0.15% copper, 1.1% lead and 2.4% zinc ○ Identification of regional prospects and targets ○ Co-sponsorship of PhD research on the Lewis Ponds Deposit • 2003 – 2005 ○ Re-interpretation of the prospect geology and structure and investigation to exploit high-grade resource within Shoot 1 of the Main Zone ○ Economic study of Lewis Ponds deposit based on underground mining of the Main Zone ○ RC and diamond drilling, both at Lewis Ponds and on regional prospects ○ Airborne HoistEM survey

Criteria	JORC Code explanation	Commentary
		○ Soil sampling and geochemistry ○ Integration and validation of drill hole database, exploration review ○ Extensive consultants study on the Lewis Ponds Deposit (P Gregory) • 2005 – 2008 ○ Regional mapping, soil and rock sampling ○ Reinterpretation of the HoistEM survey ○ Multiple programs of RC and diamond drilling ○ IP survey, downhole EM survey, moving loop EM survey ○ Scoping study, JORC Indicated and Inferred Resource estimate of 6.6 Mt at 2.4% zinc, 0.2% copper, 1.4% lead, 69 g/t silver and 1.5 g/t gold ○ Target TEM processing and interpretation of previously flown HoistTEM data (concluded that the HoistEM survey was corrupt and should be disregarded) ○ Rehabilitation and review ○ 3D model of the resource area giving 10.9 Mt at 3 % zinc equivalent • 2008 – 2011 ○ Data review (external consultants) ○ Resource review and comparison, resource modelling (external consultants) ○ Additional rehabilitation ○ Tenement wide VTEM survey ○ 3D modelling of Lewis Ponds deposit ○ VTEM data processing and interpretation • 2011 – 2013 ○ Significant rehabilitation – clean up or all historic core in core yard on the scale of tens of thousands of metres of core, rehabilitation of old holes ○ Environmental work – new fencing, new gate, weeding ○ VTEM data processing and regional drill targeting ○ Ground assessment drill targets, significant amount of landowner liaison and engagement for earthworks, logistics and accommodation services ○ RC drilling of southern, up-plunge extensions to Lewis Ponds deposit at Toms, 9 holes totalling 869 metres ○ Diamond drilling 6 holes for 1,317 m into VTEM anomalies identified in 2010 – 2011 ○ Re-processing of 1990's legacy IP over the Tom's Zone generated new targets, possible extensions to Lewis Ponds deposit ○ Tenement scale project review and relinquishment of 6 units ○ Prospect scale mapping and sampling of Mt Nicholas Prospect ○ Re-sampling of historical drill core from Williams Lode ○ Re-processing of the tenement-wide 2010 VTEM survey ○ Ongoing land management program. ○ Ground assessment of prospects, rock chip sampling and drill targeting. ○ Ongoing landowner liaison. • 2013 – 2015 ○ Corporate merger with Heron Resources Limited. ○ Two reconnaissance field trips, rock chip sampling, followed by geological, geophysical and geochemistry review, drill targeting and planning. ○ Commencement of drill program at Brown's Creek. ○ 2015 – 2016 ○ Completion of Drilling program assay results review for Browns Creek ○ Regional Rock chip assay review, and grab sampling at Lewis Ponds • 2016- present ○ Corporate spin-out of Ardea Resources Limited from Heron Resources, transfer of TriAusMin subsidiary to Ardea ○ 4 DD holes for 780m ○ Metallurgical studies

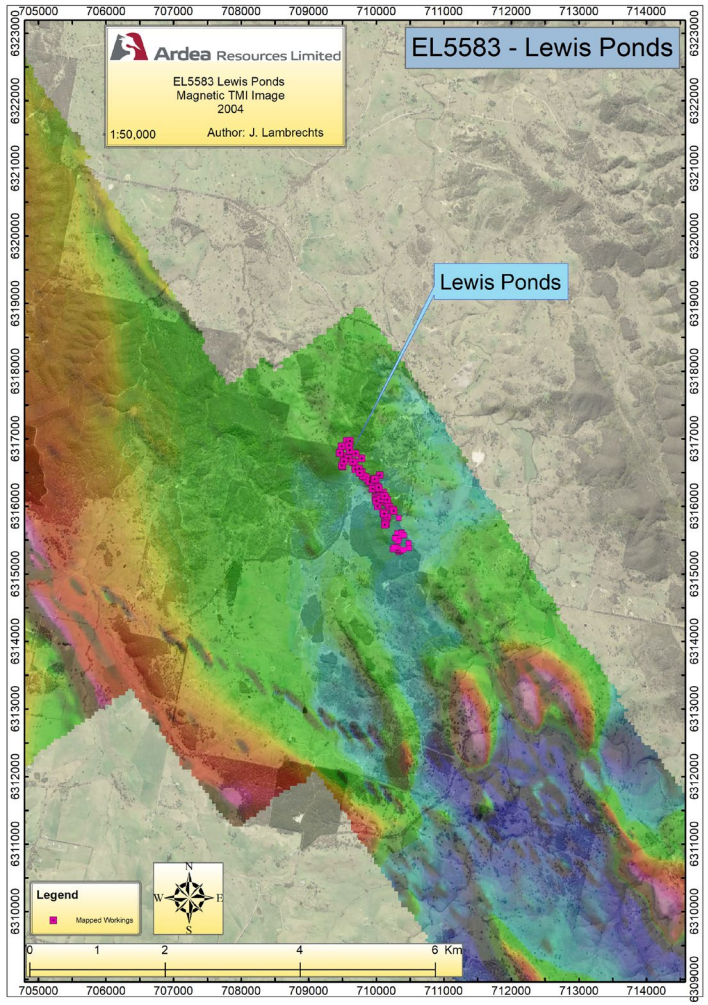
Criteria	JORC Code explanation	Commentary
		○ Surface mapping and sampling
Geology	• *Deposit type, geological setting and style of mineralisation.*	The Lewis Ponds Project occurs on the western margin of the Hill End Trough in the eastern Lachlan Fold Belt, which hosts a range of base metals in volcanic-hosted massive sulphide deposits (VMS), porphyry copper-gold and gold deposits, including Woodlawn (polymetallic), Cadia-Ridgeway (Cu-Au), North Parkes (Cu-Au), Copper Hill (Cu-Au), Tomingly (Au) and McPhillamy's (Au). The Molong Volcanic Belt is west of the EL 5583 and comprises Ordovician to early Silurian basal units of mafic to ultramafic volcanic and sedimentary rocks of the Kenilworth and Cabonne Groups. These units are separated from the Hill End Trough by the extensive Godolphin Fault Thrust System. The Mumbil Group unconformably overlies the Molong Volcanic Belt and comprises shallow-water Later Silurian sequence of felsic volcanics, volcanoclastics, siltstone and limestone. Part of this Group is the Barnby Hills Formation at Lewis Ponds and comprises (tuffaceous) siltstones overlying limestone and rhyodacitic volcaniclastics. To the east and conformably overlying rocks of the Mumbil Group, siltstone and minor sandstone units form part of the Silurian-Early Devonian Hill End Trough sedimentary sequence The Lewis Ponds deposit is located in a locally highly structured zone within the western limb of a north-west plunging syncline. The deposit consists of stratabound, disseminated to massive sulphide lenses. The deposit is hosted in Silurian felsic to intermediate volcanic rocks as a thin, mostly fine-grained sedimentary unit with occasional limestone lenses that has undergone significant deformation and is now defined as a steeply east dipping body with mineralisation that occurs over a strike length of more than 2km. The Southern mineralisation occurs within a limestone breccia and Tom's mine is hosted by siltstone and consists of fine-grained tuffaceous sediments. The mineralised zones unconformably overlie a sequence of strongly foliated and hydrothermally altered quartz-plagioclase dacite. Mineralisation occurs in two main styles: plunging shoots of thicker, high-grade mineralisation within the anticline and syncline axes; and as tabular lenses in fold limbs and shear zones.
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:*	Total drilling to the date of this report was 63,334.64 metres comprising of: • 117 primary diamond holes for 41,253.43 metres • 30 wedged diamond holes for 15,077.51 metres

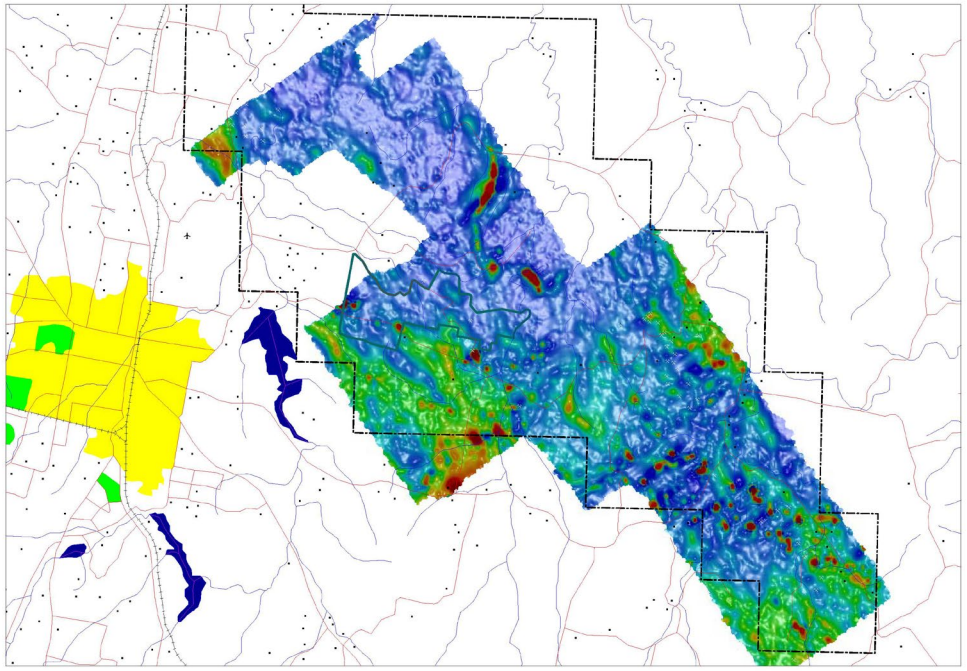


<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td></td><td>

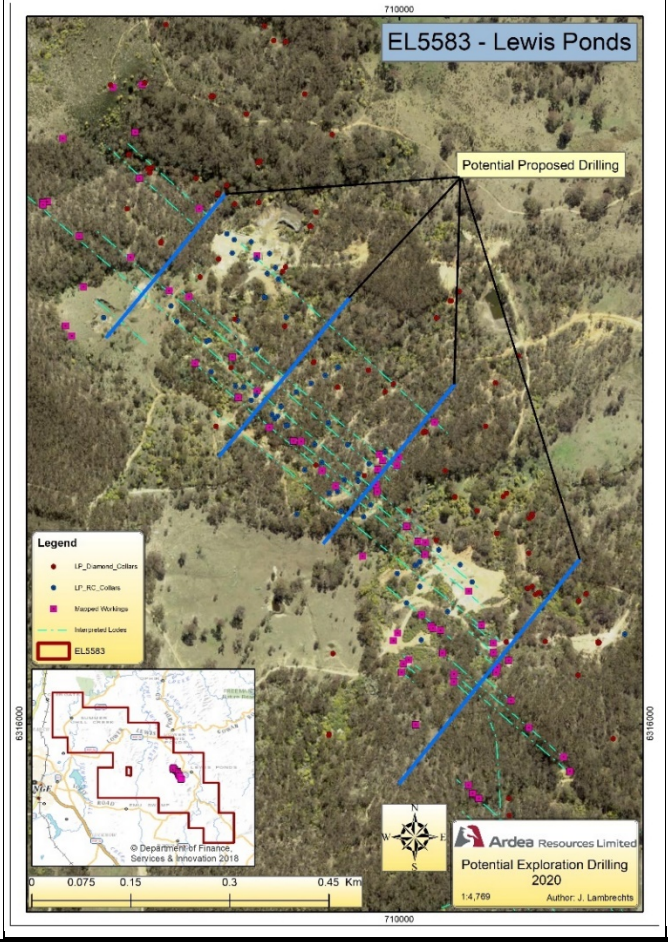
easting and northing of the drill hole collar
elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar
dip and azimuth of the hole
down hole length and interception depth
hole length.

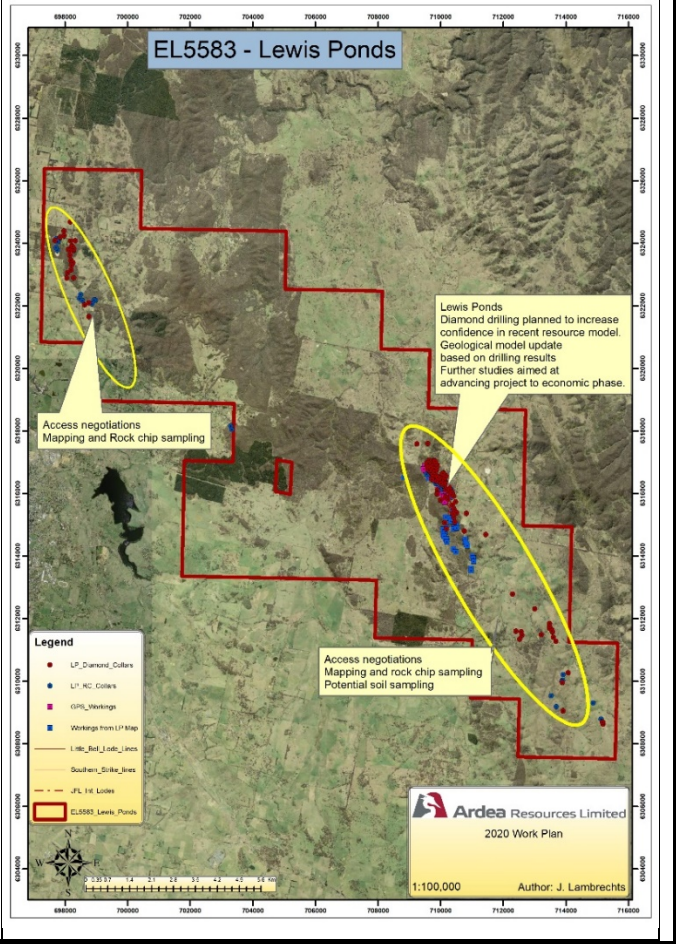
• If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.
</td><td>
• 9 diamond tails to RCP holes for 2,094.50 metres
• 57 RCP holes for 4,909.20 metres
Total sampling to the date of this report is summarised in the Table below:
<table>
<tr><th></th><th></th><th>Zn%</th><th>Cu%</th><th>Pb%</th><th>Au ppm</th><th>Ag ppm</th></tr>
<tr><td>DD</td><td>Count</td><td>6,873</td><td>6,873</td><td>6,887</td><td>6,899</td><td>6,873</td></tr>
<tr><td></td><td>Metres</td><td>9,229.12</td><td>9,229.12</td><td>9,229.12</td><td>9,255.12</td><td>9,229.12</td></tr>
<tr><td>RCP</td><td>Count</td><td>1,737</td><td>1,445</td><td>1,445</td><td>2,712</td><td>1,776</td></tr>
<tr><td></td><td>Metres</td><td>2,019.3</td><td>1,724.3</td><td>1,724.3</td><td>3,922.3</td><td>2,058.3</td></tr>
<tr><td>NR</td><td>Count</td><td>513</td><td>492</td><td>471</td><td>97</td><td>453</td></tr>
<tr><td></td><td>Metres</td><td>710.82</td><td>670,62</td><td>618.32</td><td>151.7</td><td>610.49</td></tr>
</table>
</td></tr>
<tr><td>Data aggregation methods</td><td>
• 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 assumptions used for any reporting of metal equivalent values should be clearly stated.
</td><td>No new exploration results are reported in this release. Data aggregation methods used in the Mineral Resource Estimate are detailed in Section 3 Estimation and modelling techniques.</td></tr>
<tr><td>Relationship between mineralisation widths and intercept lengths</td><td>
• 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.
• If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').
</td><td>The mineralised units are near vertical and drilling has almost exclusively been conducted from the east at perpendicular angles with the mineralised units. The drill angles vary, but is generally at 60 degrees down, resulting in mineralised intersections slightly longer than the true width. Interpretation of the mineralised units honour the true width.</td></tr>
<tr><td>Diagrams</td><td>
• 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.
</td><td>No new exploration results are reported in this release. The Mineral Resource Estimation has used all available project data.</td></tr>
<tr><td>Balanced reporting</td><td>
• 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.
</td><td>No new exploration results are reported in this release. The Mineral Resource Estimation has used all available project data.</td></tr>
</table>

Criteria	JORC Code explanation	Commentary
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.*	A Magnetic TMI survey was conducted in 2004 and found magnetic anomalies south east of Lewis Ponds. 

Criteria	JORC Code explanation	Commentary
		A Hoist Electro Magnetic survey was also done at the same time. 
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	Additional diamond drilling is planned for the following 12 months with four holes planned to traverse the width of the deposit from east to west. In addition, surface reconnaissance is also underway and planned to continue southward of the Lewis Ponds modelled resource to determine actual extents and relationships between the current resource and extensional areas.

Criteria	JORC Code explanation	Commentary





Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td>Database integrity</td><td>• Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.
• Data validation procedures used.</td><td>In 2004 a Database Verification exercise was carried out for Lewis Ponds. This was recorded on a master spreadsheet which listed all drill holes, one sample per record. The data as had been entered was checked individually against source Assay Certificates and Sample Submission information. 289 errors were identified, listed and corrected. Of these 16 were significant errors. 9 of the 16 from early drilling could not be reconstructed and had to be deleted from the database. In those cases original Assay Certificates were not available and checks could only be made against scanned tables of assays or in some cases scans of assay results on drill cross sections.

Database logic errors were corrected within the Micromine Exploration & Mine Design package: integrity of hole names and intercepts across the Collar, Assay, Downhole Survey and Geology files.

Subsequent work by Ardea has systematically standardised the geological logging codes, evaluated the down hole surveys and checked them against primary records.</td></tr>
<tr><td>Site visits</td><td>• Comment on any site visits undertaken by the Competent Person and the outcome of those visits.
• If no site visits have been undertaken indicate why this is the case.</td><td>The competent person has made numerous visits to the Lewis Ponds deposit and has personally mapped over 100 historic workings on site. He has walked the length of the resource becoming intimately familiar with the characteristics and used this knowledge to envisage the underground geological model.</td></tr>
<tr><td>Geological interpretation</td><td>• Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.
• Nature of the data used and of any assumptions made.
• The effect, if any, of alternative interpretations on Mineral Resource estimation.
• The use of geology in guiding and controlling Mineral Resource estimation.
• The factors affecting continuity both of grade and geology.</td><td>The approach taken in 2019 has been to encapsulate all anomalous mineralisation containing either zinc and/or gold mineralisation in broad domains. Within these broad domains massive sulphide lodes have been interpreted to contain the very high grade massive sulphide mineralisation in appropriate volumes.

The broad mineralisation has been defined using a bulk and carry methodology which defines intercepts down hole based on a zinc equivalent with an excepted internal dilution of 3m and total dilution of 9m per intercept.

The zinc equivalent for the interpretation of mineralised domains was calculated as:

ZnEq= Zn% + (Au ppm* 1.559) + (Ag ppm *0.015) + (Cu% * 1.844) + (Pb% *0.593)

The equivalence calculations were based on the following assumed data:

<table>
<tr><th>Metal</th><th>Quantity</th><th>Price</th><th>Recovery for ZnE</th></tr>
<tr><td>Zn</td><td>Tonne</td><td>US$2585</td><td>1</td></tr>
<tr><td>Au</td><td>Troy ounce</td><td>US$1393</td><td>0.9</td></tr>
<tr><td>Ag</td><td>Troy ounce</td><td>US$15.5</td><td>0.8</td></tr>
<tr><td>Cu</td><td>Tonne</td><td>US$5960</td><td>0.8</td></tr>
<tr><td>Pb</td><td>Tonne</td><td>US$1915</td><td>0.8</td></tr>
</table>

This calculation is different (more conservative) to the ZnEq calculation used for the determination of reasonable expectations limits and used for the reporting of the Mineral Resource which used a recovery factor of 0.8 on Zn, thus increasing the relative contribution of each of the other grade items (see details below in Cut off parameters).

The mineralisation domains have been interpreted on 50m spaced oblique sections (aligned at 055° Azimuth). The broad scale mineralisation (low grade halo domains) are generally defined as plus 0.2 ZnEq with anomalous gold present or 0.4 to 0.5 ZnEq without gold anomalous mineralisation. The high grade massive sulphide (MS) domains have been interpreted based primarily on geological logging and generally contain ZnEq values in excess of 5%. Geological confidence in the interpretation of the low grade halo mineralisation is high. These domains are projectable up and down dip and along strike.

Continuity along strike is impacted by a number of cross cutting linear features, interpreted to be faults. The attitude and offset movement of these structural terminations is not fully understood and more work is required for them to be fully integrated into the estimate. Generally these features have been used as terminations along strike in the current interpretations.

The bulk mineralisation approach serves to lower the risk of overestimation due to conditional bias.</td></tr>
</table>

Criteria	JORC Code explanation	Commentary
Dimensions	• *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	The low grade halo domains are continuous over a horizontal strike length of 700 metres. Domains develop a maximum thickness of 60 to 80 metres. The grouped domains have a plan strike length of 1300 metres. A total of 8 low grade mineralised halo domains were interpreted. The interpreted MS domains as interpreted are generally less continuous with a maximum of 500 metres strike. The shoots at this high cut off are narrow, ranging less than 1 metre to about 3 metres in horizontal width. They have a similar vertical range to the lower grade halo domains but have less horizontal length. A total of 7 massive sulphide domains were interpreted.
Estimation and modelling techniques	• *The nature and appropriateness of the **estimation technique(s) applied** and **key assumptions**, including **treatment of extreme grade values**, **domaining**, **interpolation parameters** and **maximum distance of extrapolation from data points**. If a computer assisted estimation method was chosen include a description of **computer software and parameters used.*** • *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of by-products.* • *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).* • *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* • *Any assumptions behind modelling of selective mining units.* • *Any assumptions about correlation between variables.* • *Description of how the geological interpretation was used to control the resource estimates.* • *Discussion of basis for using or not using grade cutting or capping.* • *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	The 15 individual mineralised domains have been geostatistically characterised for each of the five grade attributes. A single Surpac block model was defined to store the estimation. Drill hole assay data were composited to a uniform one metre density weighted length (best fit methodology) for geostatistical analysis and estimation. The density weighting has required a density value for each assayed interval. The weighting density used has been calculated using a regression formula developed from 1032 measured density data available and a ZnEq value calculated on sample support. The intervals where density was measured was used in place of the regressed value. Based on the measured density data the regression formula used was as follows: **Weighting density = 0.0203*ZnEq+2.7928** Grade attributes Au, Ag, Cu, Pb and Zn were estimated. High grade cuts were applied to reduce variability and limit the extent of outlier grade. Search parameter selection has been based on QKNA analysis of trial block outcomes by domain. This process tests and summarises a range of criteria including block size, search radii and number of composite data used. Optimal parameters were selected based on analysis of the summary tables by domain. Block size used was 20m N-S, 10m E-W and 10m vertical. A sub-blocking strategy to a minimum of 5m N-S, 1.25m E-W and 2.5m vertical was implemented to ensure close correlation between wireframe and block model volume definition. Potentially deleterious elements such as sulphur, iron and arsenic have in general not been assayed for and would require a campaign of resampling of core and/or check drilling Each grade item has been treated separately in the kriging process with its relevant search ellipse and kriging parameters.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	All tonnages have been calculated from Dry Bulk Densities.
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	The selection of 3 percent ZnEq cut off for the 2005 statement of Resources was (01 Sept 2016) equivalent to US$70 or A$93 in situ value. Allowing for metallurgical losses to tails in the process of making three concentrates, Cu Pb and Zn, this reduced to $80 Australian per tonne recovered value. The assumptions for metallurgical losses are: Au:35% Ag:20% Cu:20-30% Pb:15-25% and Zn 10-15% as suggested by R W Nice (2006). Reporting of the 2019 MRE has used a ZnEq cut off as follows: **ZnEq= Zn% + (Au ppm* 1.949) + (Ag ppm *0.019) + (Cu% * 2.306) + (Pb% *0.741)** The equivalence calculations were based on the following assumed data:

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Metal</th><th>Quantity</th><th>Price</th><th>Recovery for ZnEq</th></tr>
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<tr><td>Au</td><td>Troy ounce</td><td>US$1393</td><td>0.9</td></tr>
<tr><td>Ag</td><td>Troy ounce</td><td>US$15.5</td><td>0.8</td></tr>
<tr><td>Cu</td><td>Tonne</td><td>US$5960</td><td>0.8</td></tr>
<tr><td>Pb</td><td>Tonne</td><td>US$1915</td><td>0.8</td></tr>
</table>
Reporting of the 2019 Open Pit Mineral Resources has been limited by an optimisation reflecting the reasonable expectation of eventual economic extraction with additional underground Mineral Resources reported below the optimisation base.
Open pit Mineral Resources are reported at a cut off of +1.0% ZnEq and underground Mineral Resources at a cut off of +3% ZnEq.</td></tr>
<tr><td>Mining factors or assumptions</td><td>• Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.</td><td>• It has been assumed that Lewis Ponds would be mined by open pit methods.
• Historic underground mining has taken place at the Lewis Ponds project. No detailed survey of mining voids was available at the time of this MRE. The available surface mapping reviewed by Cube indicates that many shafts and pits are shallow and targeting lodes not modelled in this MRE. A small number of logged stopes and voids are identified in geological logging of single diamond core holes without defined strike extent, supporting the small scale nature of this work. Reported project area production from historic records includes a total of 30,000t from the Toms Lodes (pyrite ore for sulphuric acid production), 4,622t from the Spicers lode at 6.7% Pb and 231 g/t Ag and 328 t from the Queen of Ranges for 231 oz Au.
• Cube have assumed that the impact of this mining activity is not material to the scale of the mineral resources modelled in 2019 and have not depleted the Mineral Resources. The risk associated with the depletion of the sulphide lodes is reflected in the classification.
• A reasonable expectations limit has been applied to the estimated Mineral Resources to limit the open pit portions of the estimate. The limit has been defined by means of an open pit optimisation process using the calculated zinc equivalent (as discussed within the above cut-off grade section) together with an assumed $30/t processing cost and $4/t mining cost with 45 degree wall slopes. Analyses of the resultant shells from the optimisation run which included revenue factors from 0.5 to 2.0 of the base input assumption, together with a visual inspection of key selected shells, led to the decision to use the revenue factor 1.9 shell to limit the reporting of these mineral resources to within reasonable expectations of future economic extraction by open pit method.</td></tr>
<tr><td>Metallurgical factors or assumptions</td><td>• The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.</td><td>• See Ardea Resources announcement dated 21 November 2018.
• Given 25% of gold reporting to gravity circuit and the balance to flotation feed, the assumptions for tailings losses are: Au:35% Ag:18% Cu:17% Pb:16% and Zn 9%, from three concentrates, Cu, Pb and Zn. These losses are from a 2006 review of previous Lewis Ponds metallurgical testing by RW Nice, Metallurgical Engineer. The high tailings loss for Au reflects refractory Au in pyrite and one recommendation was for a pyrite concentrate. In the 10 years since the Nice report, advances have been made which could improve Au recovery, desirable to maximise the gold contribution to a recoverable resource. Making a Cu concentrate maximises the Ag value of the resource.
• At Lewis Ponds, the Dense Media Separation studies found that at a 12.5 mm crush size, 94 % of sulphide and precious metal content can be recovered with the rejection 25 % of the mass resulting in a 1.25 upgrade factor.
• The studies also showed the zinc concentrate resulted in recovery of around 87 % of the contained metal from the feed. When including the zinc content of the Cu-Pb-PM concentrate, zinc recoveries exceed 90 %
• In the Cu-Pb-Precious Metal concentrate, lead recoveries of around 73% of the contained metal was achieved while copper saw 64 % recovery. These represent opportunities for future improvement.</td></tr>
<tr><td>Environmental factors or assumptions</td><td>• Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts,</td><td>• Topographically and logistically the Lewis Ponds site is amenable to mine construction. However, the plant location and tailings dam could raise community and/or adjacent landholder issues. The site options need to be identified in order of suitability, including environmental impact, then engagement with potential stakeholders started early.
• Baseline flora and fauna studies have been done (GHD) with respect to proposed drilling and sensitive species in this respect have been identified. In summary: “under the Commonwealth guidelines for significance of actions, it is unlikely that the proposed drilling programme would have a significant impact on the area, particularly in relation to the listed sensitive species. This statement is also applicable to the state legislation.”</td></tr>
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Criteria	JORC Code explanation	Commentary
	particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.	• If gold sales are via concentrates, CIL/CIP issues are bypassed. Metallurgical advice on this aspect will be important in maximising the resource.

Bulk density	• *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.*
	• *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.*
	• *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*
		Average density values have been assigned to the block model by geological lithotype using the measured density data available. The assigned density values were as follows:
		• Fresh
		  ○ Felsic units 2.83
		  ○ Sedimentary units 2.78
		  ○ Tectonic units 2.69
		  ○ MS 3.35
		  ○
		• Transitional all lithologies
		  ○ 2.2
		• Oxide all lithologies
		  ○ 1.8

Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.* • *Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* • *Whether the result appropriately reflects the Competent Person's view of the deposit.*	Resource blocks have been classified as Indicated or Inferred on the basis of a range of criteria. Indicated open pit resources are defined generally on 50 x 40m or better spaced drilling which corresponds with a kriging slope of regression averaging 0.70 or greater and an average distance to composite data of 40 to 50m. Inferred open pit resources are defined by wider spaced drilling and limited by a DTM surface defining the base of reasonable expectations of economic extraction, where sufficient drilling confidence exists that the continuity of geology and mineralisation can be extended. The Inferred portions of the Mineral Resource has an average kriging slope of regression of 0.4 to 0.5 and an average distance to informing composite data of 70 to 80m. Underground Mineral Resources are classified as Inferred as a result of the less continuous nature of the lodes, wider spaced data defining the lodes and the resulting fewer informing composite data. The average distance to informing composite data within the primary massive sulphide lodes exceeds 75m with an average slope of regression of 0.22. The Mineral Resource estimate appropriately reflects the Competent Person's view of the deposit.
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	No audits or reviews have been undertaken on the 2019 Mineral Resource estimate.
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the* ***application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits****, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.* • *The statement should specify whether it relates to global* ***or local estimates****, and, if local, state the* ***relevant tonnages, which should be relevant to technical and economic evaluation****. Documentation*	Due to wide spaced drilling in areas, local variations can be expected within the narrow massive sulphide lodes and the surrounding low grade halo mineralisation. Unto unrecognised structural terminations may impact continuity of these two interpreted lode styles The use of OK has assisted in reducing the risk associated with the relatively high nugget observed in the Zinc and gold distribution. The additional benefit of OK is it inherently assists in declustering the data during the estimate. The Mineral Resources constitute a global resource estimate. • As yet there is no opportunity to compare with production data.

Criteria	JORC Code explanation	Commentary
	should include assumptions made and the procedures used. • *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	