2 August 2017 ASX: AOH, FSE: A2O

THE CLONCURRY COPPER PROJECT: JORC 2012 DISCLOSURE

Altona Mining Limited ("Altona" or "the Company") today released an update to the Definitive Feasibility Study for the Cloncurry Copper Project near Mt Isa, Queensland.

As part of the update and consolidation of prior technical studies, Altona has consolidated prior disclosure of Mineral Resources and Ore Reserves that had been disclosed under either the 2004 or 2012 Edition of the JORC Code (Appendix 4) to JORC 2012 Code standards (Appendix 5).

Mineral Resources and Ore Reserves for the Cloncurry Copper Project are summarised in Table 1. For a detailed breakdown by deposit and classification refer to Appendices 1 and 2.

Table 1. Mineral Resource and Ore Reserve Estimates

Mineral Resources and Ore Reserves*	Tonnes (million)	Copper (%)	Gold (g/t)
Measured, Indicated and Inferred Resources	290.0	0.58	0.05
Contained metal in Resources		1,668,000(t)	430,000(oz)
Proven and Probable Reserves	85.6	0.50	0.07
Contained metal in Reserves		426,000(t)	203,900(oz)

Mineral Resources are inclusive of Ore Reserves

This disclosure will be updated as changes occur.

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Competent Person Statement and JORC Compliance

Responsibility for Exploration Targets, Exploration Results, Mineral Resources: The information in this report that relates to Exploration Targets, Exploration Results or Mineral Resources is based on information generated or compiled by Dr Alistair Cowden, BSc (Hons), PhD, MAusIMM, MAIG, Mr Roland Bartsch, BSc(Hons), MSc, MAusIMM, Mr George Ross, BSc, MSc, MAIG and Mr Frank Browning BSc (Hons) MSc, MAIG. Dr Cowden, Mr Bartsch, Mr Ross and Mr Browning are full time employees of the Company and have sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Dr Cowden, Mr Bartsch, Mr Ross and Mr Browning consent to the inclusion in the report of the matters based on their information in the form and context in which it appears.

Responsibility for Ore Reserves: The information in this report that relates to Ore Reserves is based on information generated or compiled by Dr Alistair Cowden, BSc (Hons), PhD, MAusIMM, MAIG and Mr Roland Bartsch, BSc(Hons), MSc, MAusIMM. Dr Cowden and Mr Bartsch are full time employees of the Company and have sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Dr Cowden and Mr Bartsch consent to the inclusion in the report of the matters based on their information in the form and context in which it appears.

Copper equivalence: When used, copper equivalence (Cueq) refers to copper and gold in concentrate, not resources or reserves, or drill results. Revenue from gold is simply equated to copper revenue using the assumptions reported in the ASX release dated 2 August 2017.

About Altona and the Cloncurry Copper Project

Altona Mining Limited ("Altona") is an ASX listed company focussed on the Cloncurry Copper Project ("Project") in Queensland, Australia. The Project has Mineral Resources containing some 1.67 million tonnes of copper and 0.43 million ounces of gold. It is envisaged that a 7 million tonnes per annum open pit copper-gold mine and concentrator will be developed at the Project. The development is permitted with proposed annual production[1] of 39,700 tonnes of copper and 17,500 ounces of gold for a minimum of 14 years. The Definitive Feasibility Study was refreshed in July 2017.

[1]*Refer to the information attached to this ASX release 'Updated DFS Delivers Bigger and Better Cloncurry Copper Gold Project' dated 2 August 2017 which outlines information in relation to this production target and forecast financial information derived from this production target. The release is available to be viewed at www.altonamining.com or www.asx.com.au. The Company confirms that all the material assumptions underpinning the production target and the forecast financial information derived from the production target referred to in the above-mentioned release continue to apply and have not materially changed.*

APPENDIX 1: SUMMARY OF MINERAL RESOURCE ESTIMATES FOR THE CLONCURRY COPPER PROJECT

Deposit	Total			Contained Metal		Measured			Indicated			Inferred		
	Tonnes (millions)	Cu (%)	Au (g/t)	Copper (tonnes)	Gold (ounces)	Tonnes (million)	Cu (%)	Au (g/t)	Tonne (million)	Cu (%)	Au (g/t)	Tonnes (million)	Cu (%)	Au (g/t)
Deposit in Mine Plan														
Little Eva	105.9	0.52	0.09	546,000	295,000	37.1	0.60	0.09	45.0	0.46	0.08	23.9	0.50	0.10
Turkey Creek	21.0	0.59		123,000	-	-	-		17.7	0.59		3.4	0.58	-
Ivy Ann	7.5	0.57	0.07	43,000	17,000	-	-	-	5.4	0.60	0.08	2.1	0.49	0.06
Lady Clayre	14.0	0.56	0.20	78,000	85,000	-	-	-	3.6	0.60	0.24	10.4	0.54	0.18
Bedford	4.8	0.80	0.21	38,000	32,000	-	-	-	2.3	0.95	0.23	2.5	0.66	0.19
Sub-total	153.3	0.54	0.09	829,000	430,000	37.1	0.60	0.09	74.0	0.52	0.07	42.2	0.53	0.11
Other Deposits														
Blackard	76.4	0.62	-	475,000	-	27.0	0.68	-	6.6	0.60	-	42.7	0.59	-
Scanlan	22.2	0.65	-	143,000	-	-	-	-	18.4	0.65	-	3.8	0.60	-
Longamundi	10.4	0.66	-	69,000	-	-	-	-	-	-	-	10.4	0.66	-
Legend	17.4	0.54	-	94,000	-	-	-	-	-	-	-	17.4	0.54	-
Great Southern	6.0	0.61	-	37,000	-	-	-	-	-	-	-	6.0	0.61	-
Caroline	3.6	0.53	-	19,000	-	-	-	-	-	-	-	3.6	0.53	-
Charlie Brown	0.7	0.40	-	3,000	-	-	-	-	-	-	-	0.7	0.40	-
Sub-total	136.7	0.61	-	840,000	-	27.0	0.68	-	25.0	0.64		84.7	0.59	-
Total	290.0	0.58	0.05	1,668,000	430,000	64.1	0.63	0.05	99.0	0.55	0.05	126.9	0.57	0.04

See tabulation in Appendix 4 for source information and Appendix 5 for details of supporting data and estimation methodology (Table 1 of the JORC Code 2012).

Little Eva is reported above a 0.2% copper lower cut-off grade, all other deposits are above 0.3% lower copper cut-off.

Resources have been reported as inclusive of Reserves.

APPENDIX 2: SUMMARY OF ORE RESERVE ESTIMATES FOR THE CLONCURRY COPPER PROJECT

Reserve Classification	Tonnes	Copper (%)	Gold (g/t)	Copper (tonnes)	Gold (ounces)
Little Eva					
Proved	31,000,000	0.64	0.08	198,200	84,700
Probable	22,100,000	0.50	0.09	109,900	62,600
Turkey Creek					
Probable	11,300,000	0.46	0	52,100	0
Ivy Ann					
Probable	3,500,000	0.59	0.08	21,000	9,100
Lady Clayre					
Probable	920,000	0.56	0.27	5,100	8,100
Bedford					
Probable	1,350,000	0.85	0.20	11,600	8,500
Total Proved and Probable Reserves (excl. stockpiles)	**70,200,000**	**0.57**	**0.08**	**397,400**	**173,000**
Little Eva Low Grade Stockpile					
Probable	15,400,000	0.18	0.06	28,100	30,900
Total (including stockpile)	**85,600,000**	**0.50**	**0.07**	**426,000**	**203,900**

See tabulation in Appendix 4 for source information and Appendix 5 for details of supporting data and estimation methodology (Table 1 of the JORC Code 2012).

Little Eva and Turkey Creek are reported above a 0.16% copper lower cut-off grade, for Bedford 0.17% copper, for Lady Clayre 0.20% copper and for Ivy Ann 0.22% copper.

All data has been rounded to two significant figures. Discrepancies in summations may occur due to rounding. Minor rounding discrepancies or inconsistencies in summaries since initial publication in 2012 have been updated.

APPENDIX 3: OVERVIEW OF CLONCURRY COPPER PROJECT GEOLOGY, MINERAL RESOURCES AND ORE RESERVES

1. GEOLOGY

1.1. Setting

The Cloncurry Copper Project is located within Proterozoic rocks of the Mount Isa Province of Queensland, Australia. The region is one of the world's premier base metal provinces with mining continuing uninterrupted since discovery of copper and gold near Cloncurry in the 1860s. The Mount Isa Province hosts numerous copper, lead, silver and zinc mines, including several of global significance.

The Project is situated within the Mary Kathleen Domain and to a lesser extent the Canobie Domain of the late Palaeoproterozoic Eastern Fold Belt of the Inlier (Figure 2). These rocks have undergone polyphase deformation, metamorphism and metasomatism during the Isan Orogeny (1600-1500 million years). Deformation and late to post orogenic plutonism is most pronounced in the Eastern Fold Belt where it is associated with widespread high temperature sodium-iron metasomatism expressed as magnetite or hematite alteration assemblages. IOCG style mineralisation is a variant of this alteration and the Project deposits are examples of such mineralisation.

The Project straddles the northern portion of a north-south striking corridor up to 10 kilometres wide and 80 kilometres long, bound to the east by the regionally significant Rose Bee Fault and to the west by the Coolullah Fault which is the eastern bounding fault of the Phanerozoic Landsborough Graben (Figure 3).

The Project area predominantly consists of variably metamorphosed sedimentary and igneous rocks of Proterozoic age that typically outcrop with limited residual regolith cover. Regolith cover tends to thicken east of the Rose Bee Fault and a thick sequence of Phanerozoic sediments overlies Proterozoic rock to the west of the Coolullah Fault in the Landsborough Graben.

The Little Eva copper-gold deposit (the Project's largest resource) is hosted within an intermediate igneous complex within the Corella Formation. These are similar to rocks to the south-east that host the major Ernest Henry copper-gold mine.

The Roseby Schist is structurally juxtaposed with the Corella Formation across major faults. It consists of fine-grained and grey muscovite-quartz-biotite +/- scapolite schists (psammopelite) interbedded with carbonate-rich layers. The schists host the Projects 'copper-only' deposits. Within the top (west) of the Roseby Schist is the Dugald River Shale Member (carbonaceous zinc-rich slates) which hosts the Dugald River zinc-lead-silver deposit of 63 million tonnes at 12.5% zinc, 1.9% lead and 31g/t silver.

1.2. Deposit Types

The copper deposits within the Project are of the IOCG style of hydrothermal mineralisation. Significant examples of Australian IOCG deposits include Olympic Dam and Prominent Hill in South Australia and Ernest Henry, located some 60 kilometres from Little Eva.

Mineral deposits occurring within Mt Isa Province IOCG system are associated with relatively high temperature, iron-rich hydrothermal alteration (typically hematite or magnetite) which is both spatially and temporally related to felsic plutons. Mineralisation can manifest in a variety of styles including vein networks, breccias, disseminations and replacements. Deposits are typically localised in dilation zones of structures active during pluton emplacement and cooling.

In the Eastern Mt Isa Inlier deposits are interpreted to have formed during the waning stages of the Isan Orogeny (1530-1495 million years) in association with intrusion of the Williams Naraku batholith suites. This is coincident with wrench reactivation of earlier large crustal scale faults, which saw dextral displacement on north-northwest trending transfer faults and some regional north-south structures suggesting northwest-southeast compression.

In the Project area, deposits fit into two categories, ‘copper-gold’ and ‘copper-only’.

The copper-only deposits are a distinct metasediment-hosted stratabound mineralisation style in the region unique to the Roseby Schist.

The copper-gold deposits are more typical of the IOCG deposits in the Eastern Mt Isa Inlier. The deposits occur within structural-lithological settings facilitating the evolution of dilational sites, typically within igneous rocks or intercalated metamorphosed igneous and sedimentary rocks outside of the Roseby Schist which hosts the copper-only deposits.

Copper-Gold Deposits

Four copper-gold deposits are scheduled for mining in the DFS; Little Eva, Lady Clayre, Ivy Ann and Bedford.

Little Eva is the largest single copper deposit within the Project and is a close analogue of the Ernest Henry deposit. The deposit contains gold which has a strong spatial relationship with copper. It is hosted by a large body of faulted subvolcanic porphyritic and amygdaloidal intermediate rock that displays widespread sodium and potassium feldspar, hematite and magnetite alteration assemblages. The mineralisation is structurally controlled within breccia and veinlet stockworks. Chalcopyrite is the dominant copper mineral, mineralisation is coarse and readily recovered through flotation concentration.

Bedford, Lady Clayre, and Ivy Ann have a similar metal association to Little Eva. These are smaller shear zone, fault and vein hosted deposits within thinly intercalated metasedimentary and igneous rocks. Gold grades within these deposits are higher than Little Eva.

All the deposits are subcropping, covered by a relatively shallow (approximately 25 metres) oxidised cap.

Copper-Only Deposits

The Turkey Creek deposit is the only copper-only deposit scheduled for mining in the Project DFS; other deposits are Blackard, Legend, Scanlan, Longamundi, Legend, Great Southern, Caroline and Charlie Brown. The economic mineralisation is copper, however trace amounts of gold occur locally within the deposits. The mineralisation is generally stratabound. With the exception of Turkey Creek, these deposits are distributed around the eastern margin of the Knapdale Range over a strike length of 16 kilometres.

Primary sulphide mineralisation is dominated by bornite with minor chalcopyrite. Copper oxide mineralisation is ubiquitous within the near surface weathered zone. At all deposits other than Turkey Creek, native copper mineralisation in weathered schist overlies fresh rock and lies beneath oxide mineralisation. Weathering can range from 20 metres depth at Turkey Creek to up to 100 metres depth where native copper mineralisation is best developed at Blackard and Scanlan.

The mineralisation is associated with a specific stratabound copper zone which displays ubiquitous low tenor copper anomalism. The horizon reflects the complex folding and fault patterns within the Roseby Schist. Fold axes are predominantly north-northwest trending. At Blackard and Scanlan, mineralisation occurs within shallowly north plunging anticlines with steeply dipping to locally overturned western limbs and flatter east dipping limbs.

2. MINERAL RESOURCE ESTIMATES

2.1. Overview

The global Mineral Resource for the Project is:

290 million tonnes at 0.58% copper, 0.05g/t gold for 1.67 million tonnes of contained copper and 0.4 million ounces contained gold (Appendix 1).

All Mineral Resources were initially classified and reported in accordance with the 2004 or 2012 editions of the JORC Code relevant to the time of publishing. Appendix 5 is a consolidated 2012 JORC Table 1 disclosure which supersedes prior disclosures.

Estimates of Mineral Resources at deposits included in the DFS mine plan total 153.3 million tonnes at 0.54% copper and 0.09g/t gold. These Mineral Resources contain some 829,000 tonnes of contained copper, 430,000 ounces of contained gold and are reported at either a 0.2 or 0.3% copper minimum cut-off grade.

More than 70% of the Project's total Mineral Resource is classified within the Measured or Indicated categories. Stated Mineral Resource estimates in the mine plan only reflect the primary sulphide mineralisation component of each deposit, with the exception of Turkey Creek which also includes an oxide component.

2.2. Estimation Methodology

A broadly consistent approach to data collection, modelling and estimation has been adopted for all Project Mineral Resource Estimates and is outlined below. Further information is provided in the 2012 JORC Table 1 in Appendix 5.

Drilling and Sampling

Resource Estimates were primarily based on reverse circulation and diamond drilling. The majority of drilling was conducted by five companies; CRAE 1978 to 1996, Bolnisi 2002 to 2003, Universal 2002 to 2010, Xstrata 2005 to 2011 and Altona 2011 to 2015. RC drilling typically utilised face sampling hammers (5 ¼", 5 ½" or 6") and diamond drilling mainly provided NQ or HQ core samples. Samples were routinely collected on 1 metre intervals. Where necessary, sub-standard data was excluded from the estimation process due to low sample quality, assay quality or sample representivity.

The majority of collar locations have been surveyed by licensed surveyors or Altona personel using a Differential Global Positioning System (DGPS) with approximately 0.1m or better horizontal accuracy. Elevation accuracy is considered to be less than 0.5m. Downhole surveys have been completed using a variety of methods including down-hole cameras and gyroscopic surveying (gyro) systems, with a minority of holes having collar orientations only.

Drill spacing at each deposit is deemed sufficient to establish geological and grade continuity appropriate for the given estimation methodology and resource classification applied. No bias is considered to be caused by drilling direction.

Assaying and Verification

Different standards, procedures and industry standard commercial laboratories were employed over time by the different operators of the various drilling campaigns over the last 38 years.

Altona, Universal and Xstrata utilised ALS and SGS for routine drill sample analyses, with other laboratories used as required (Ammtec and Ultratrace). Samples were crushed and pulverised at the respective laboratories; base metals were assayed via standard multi-element methods; (acid digests with either AAS or ICP-AES/OES finishes). Samples reporting more than 1% copper were re-assayed using methods optimised for precision and accuracy at high concentrations. Gold was assayed via Fire Assay with either AAS or ICP-OES finishes or Aqua Regia Digest with a AAS or ICP-MS finishes.

Altona, Universal, Xstrata and Bolnisi implemented and maintained a programme of quality control involving certified reference materials for both copper and gold, blank samples and duplicates to monitor accuracy and precision of the laboratory. For each resource estimate the relevant QAQC data was reviewed internally by Altona and/or externally by independent consultants Optiro and McDonald Speijers. In each case the laboratory performance was appropriate, with only minor issues affecting very small percentages of the data.

Density Measurements

Bulk density measurements were completed from drill core using the industry standard Archimedes Principle method. Resulting density values have been analysed and compared to lithology, depth and the degree of weathering and oxidation.

At Little Eva, sufficient data was available to assign mean bulk density values for each lithology in fresh rock. For other deposits, assigned bulk densities are based on limited datasets and/or average values for similar lithologies at neighbouring deposits.

Data Management

Altona has standard operating procedures and protocols for the collection, recording and managing of all drilling and geological data that form the basis of the Mineral Resource Estimates. All drilling data has been validated and loaded into Maxwell GeoServices DataShedTM database system. Accordingly data is consistent, complete, validated, secure and easily interrogated.

Geological Framework

At Little Eva, Turkey Creek and Bedford, geological models are well supported by various datasets, including geochemical surface sampling, field mapping, aeromagnetic surveys, IP surveys, drillhole logging and sampling. Combined with a good understanding of regional geology, confidence in the geological framework supporting these Resource Estimates is moderate to high.

Current geological models for Lady Clayre, Ivy Ann, Blackard, Legend, Scanlan, Longamundi, Great Southern, Caroline and Charlie Brown Resource Estimates are predominantly grade based. Confidence in the geological framework supporting these Resource Estimates is moderate to low depending on continuity of geometry and grade relative to data spacing.

Estimation

Mineral Resource estimates were completed in-house by Altona (Little Eva and Bedford) or by external consultants Optiro (Lady Clayre, Ivy Ann, Turkey Creek, Blackard, Scanlan and Legend) and McDonald Speijers (Longamundi, Great Southern, Caroline and Charlie Brown).

In all Resource Estimates, sample data was flagged from estimation domain wireframes and composited to 1 metre or 2 metre downhole lengths. Statistical and geostatistical properties of the estimation domains were then characterised, prompting a range of optimisation processes such as declustering, top-cut analysis, contact analysis and domain revision.

Quantitative kriging neighbourhood analysis was performed to optimise certain parameters in all kriging based estimates, such as block size, search distance and sample number.

Hard boundary estimation was applied for most estimation domains.

Grade estimation for Little Eva, Bedford, Lady Clayre, Ivy Ann, Turkey Creek, Blackard and Scanlan utilised non-linear estimation techniques to produce recoverable resources. This approach estimates the average grade and proportion of each panel recoverable above a series of cut-off grades at selective mining unit (“SMU”) scale. This enables assessment of recoverable resources within a panel when drill coverage is insufficient for direct estimation into small SMU blocks.

Multiple Indicator Kriging was applied to copper estimation at the Little Eva deposit. Post-processing steps included change of support corrections and localisation of panel results into SMU blocks, referred to as Localised Multiple Indicator Kriging. Gold was estimated using collocated co-kriging.

Ordinary Kriging with Uniform Conditioning post-processing was applied to copper estimation at Lady Clayre, Ivy Ann, Bedford, Blackard, Legend and Scanlan. This method does not attempt to specify the actual locations of economically extractable SMU blocks within a panel. The same method was applied to copper estimation at Turkey Creek, however additional post-processing steps that localise panel results into SMU blocks were undertaken. This is referred to as Localised Uniform Conditioning. Gold estimation at Lady Clayre, Ivy Ann and Bedford utilised Ordinary Kriging only.

Grade estimation for Longamundi, Great Southern, Caroline and Charlie Brown utilised Inverse Distance Weighting. All Mineral Resources for these deposits are classified as Inferred.

Model Validation

Considerable care has been practiced in the derivation of the Mineral Resource Estimates. Model validation included wireframe versus block model volume comparison, average composite grade versus block model grade comparisons (statistics and swathe plots), grade-tonnage curves and visual checks on cross section and level plans.

Classification

Mineral Resources have been classified on the basis of confidence in geological and grade continuity using data quality, drilling density, geological model, modelled grade continuity, estimation passes and conditional bias measures as criteria.

3. ORE RESERVE ESTIMATES

The Project has an Ore Reserve of 85.6 million tonnes at 0.50% copper and 0.07g/t gold for 426,000 tonnes contained copper and 204,000 ounces contained gold (Appendix 2).

The Ore Reserves are reported within pit designs. Designs are based on bulk open pit mining using conventional drill and blast, load and haul practices. Underlying pit optimisations were carried out on the Measured, Indicated and Inferred Mineral Resource categories. Optimisations incorporated a pre-strip of oxidised rock and copper oxide mineralisation.

Ore Reserves for Little Eva, Ivy Ann, Bedford and Lady Clayre were estimated by Optiro in 2012. Turkey Creek Ore Reserves were estimated by Altona in 2016 based on a mining inventory and pit design developed by Orelogy in 2015.

Only sulphide ore within pit designs, classifed as Measured and Indicated Mineral Resources and processed in the mining schedule was converted to Ore Reserves. The stated Mineral Resource for each deposit is inclusive of the corresponding Ore Reserves.

All Ore Reserves were initially classified and reported in accordance with the 2004 or 2012 editions of the JORC Code relevant to the time of publishing. Appendix 5 is a consolidated JORC 2012 Table 1 disclosure which supersedes prior disclosures. Additional detail relevant to Reserve estimation is provided in the ASX release dated 2 August 2017.

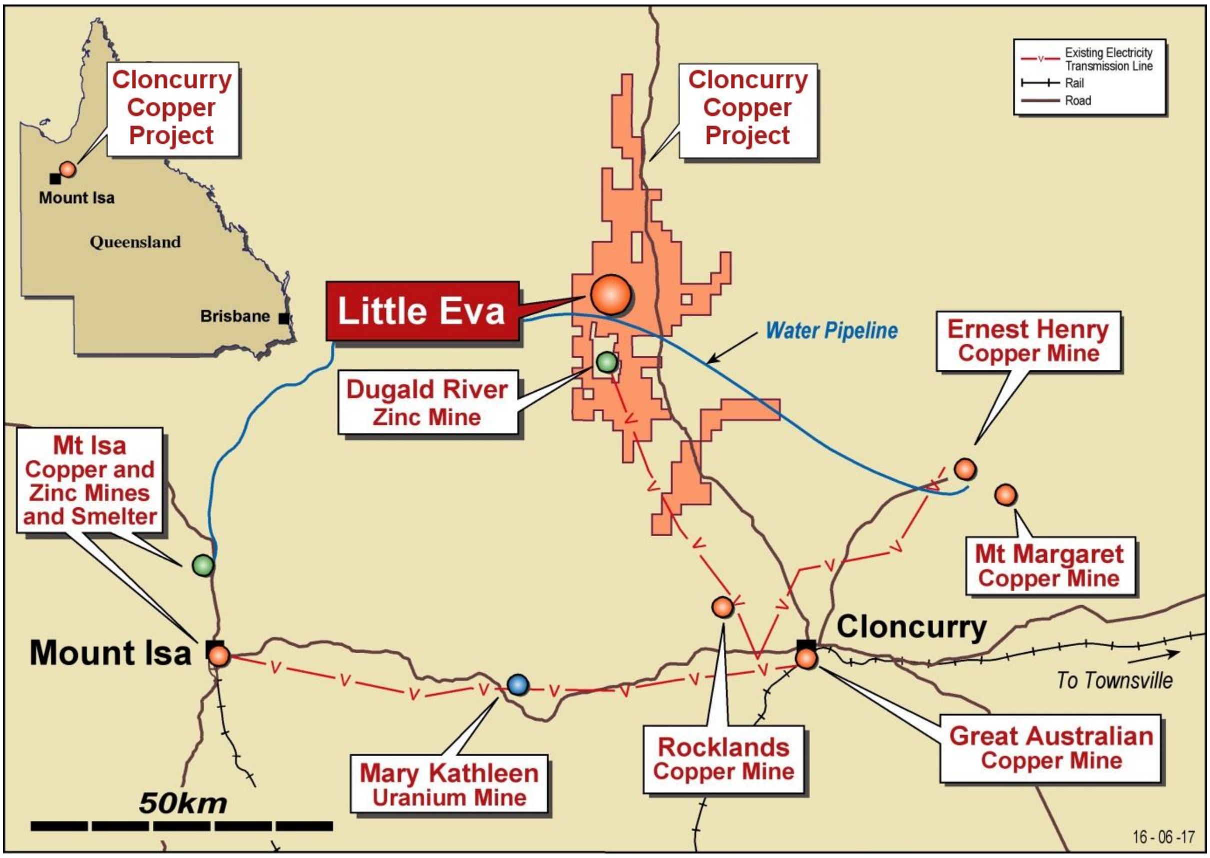

Figure 1: Location of the Project, the Little Eva plant and regional infrastructure

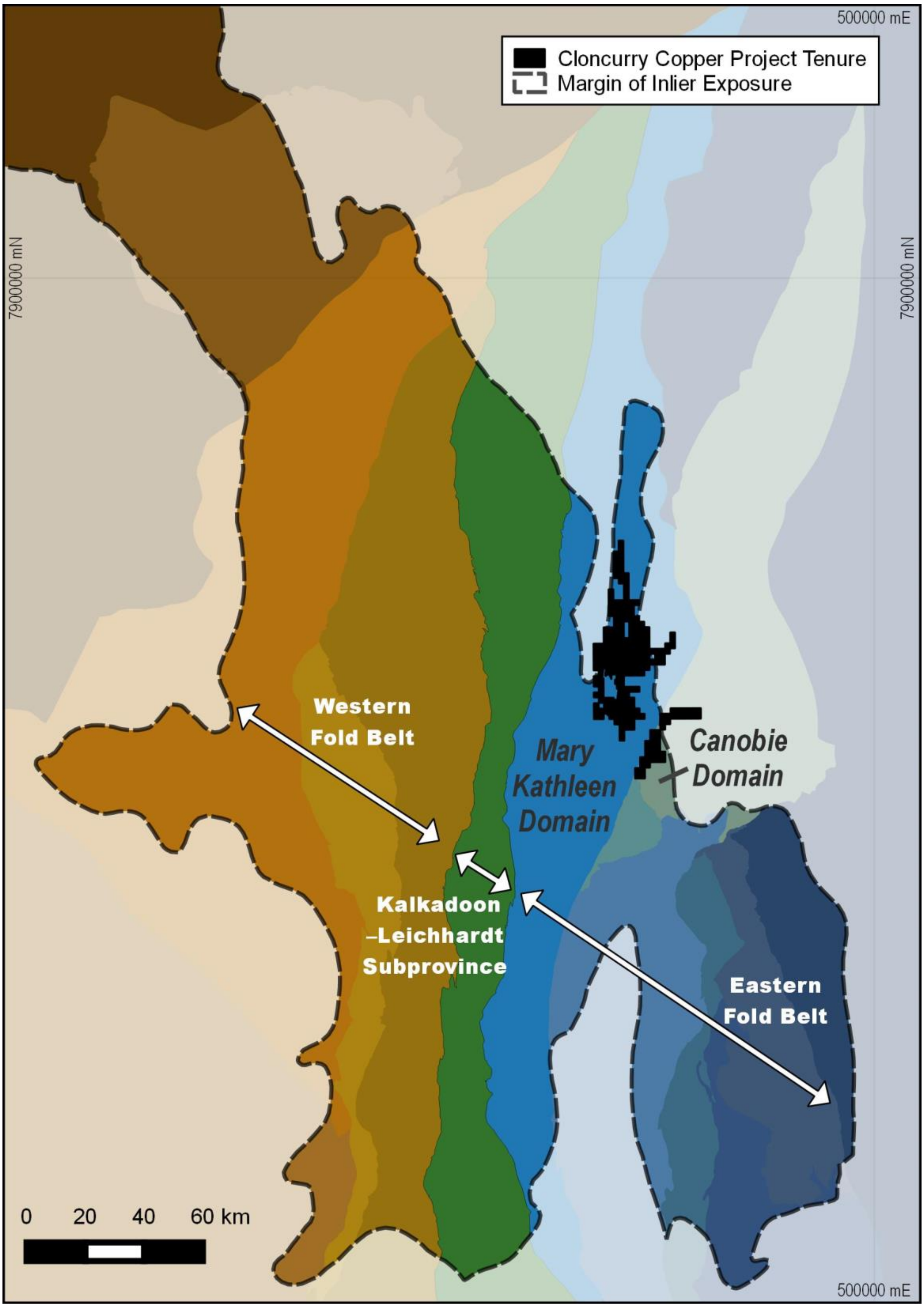

Figure 2: Geological domains (various colours) of the Mt Isa Province with Mount Isa Inlier exposure and project location highlighting the location of the Project in the north-south trending Mary Kathleen domain

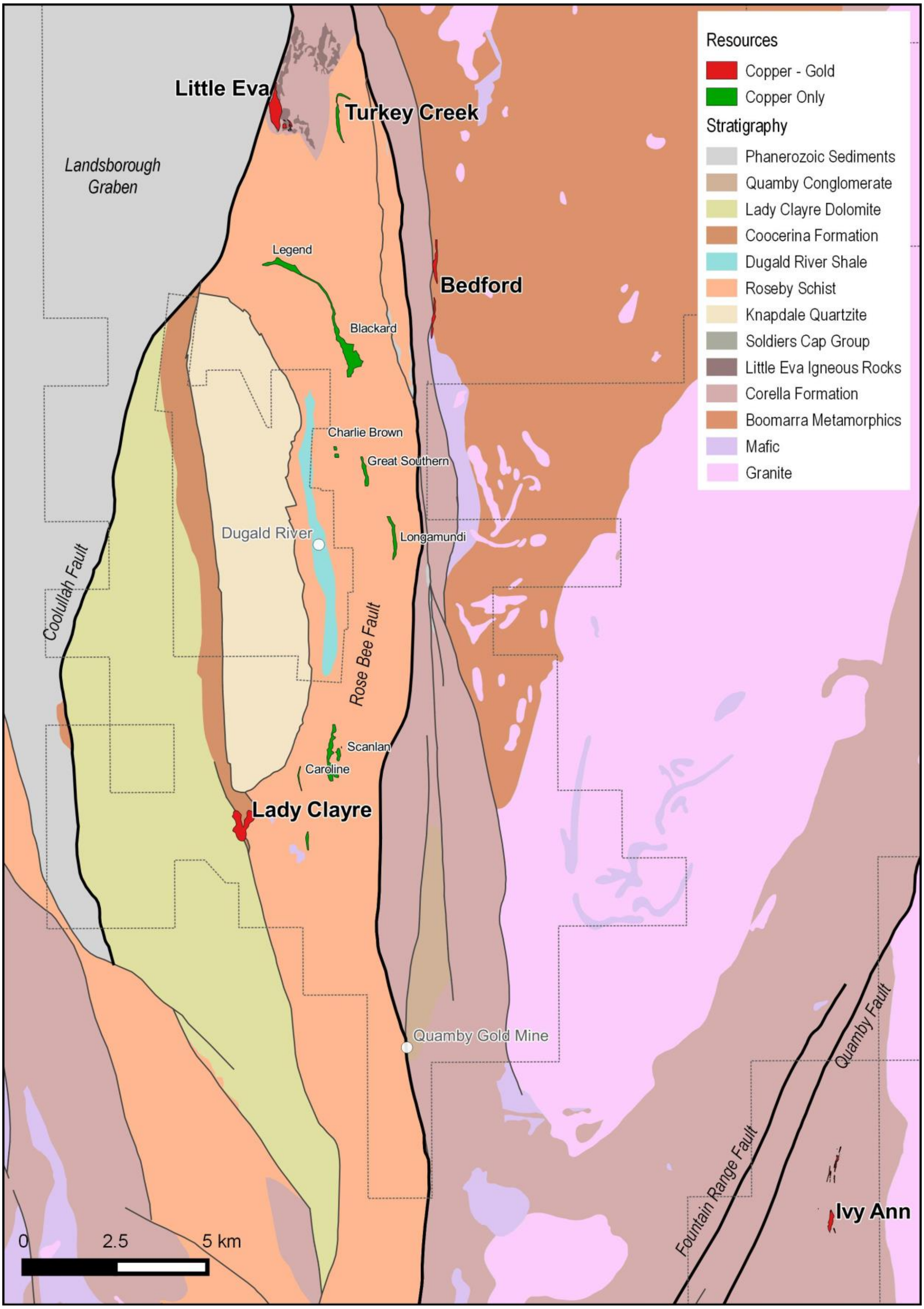

Figure 3: Project area geology with outline of Project tenure and major deposits

Little Eva Copper-Gold Deposit

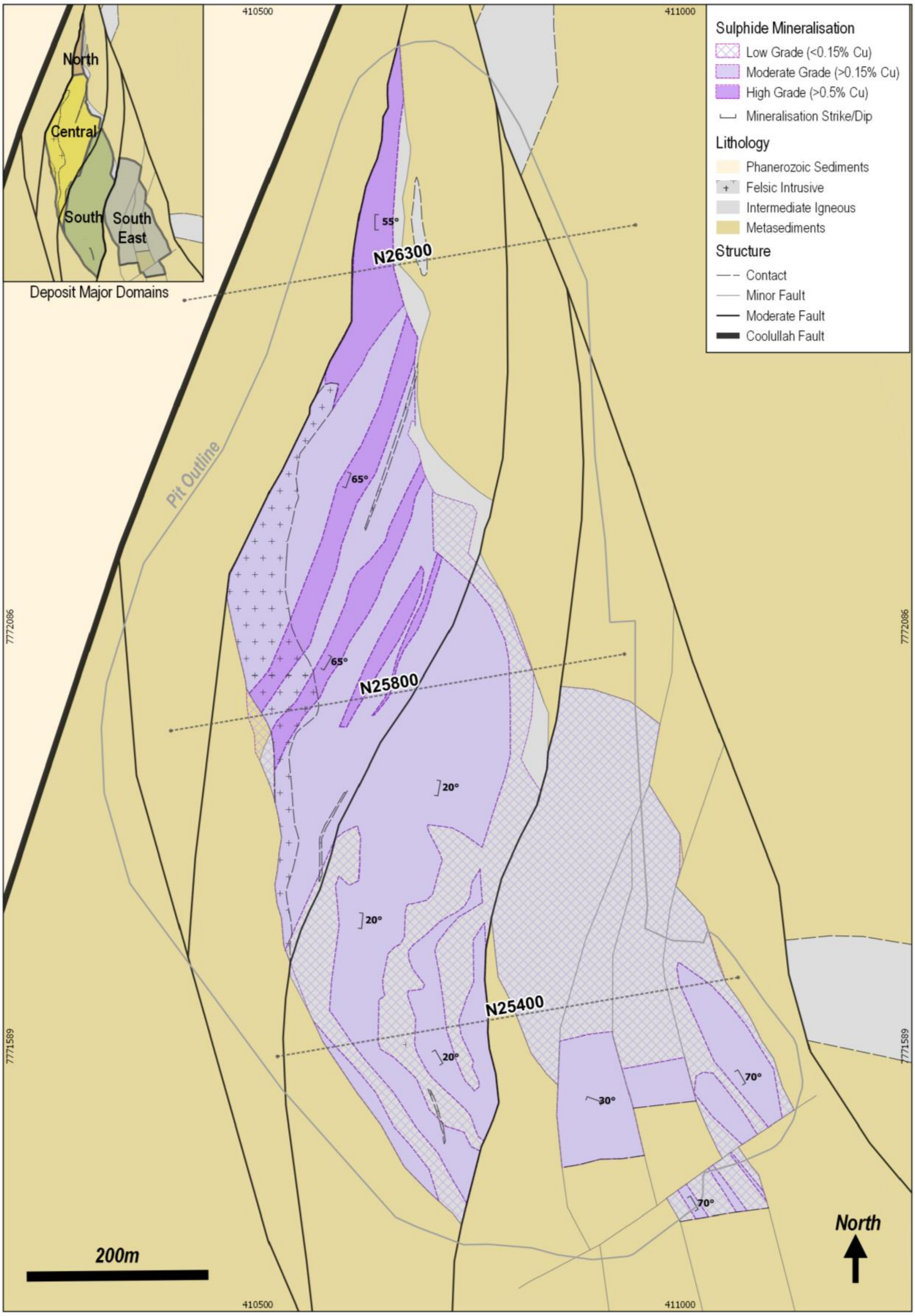

Figure 4: Plan of geology and mineralisation at the Little Eva deposit

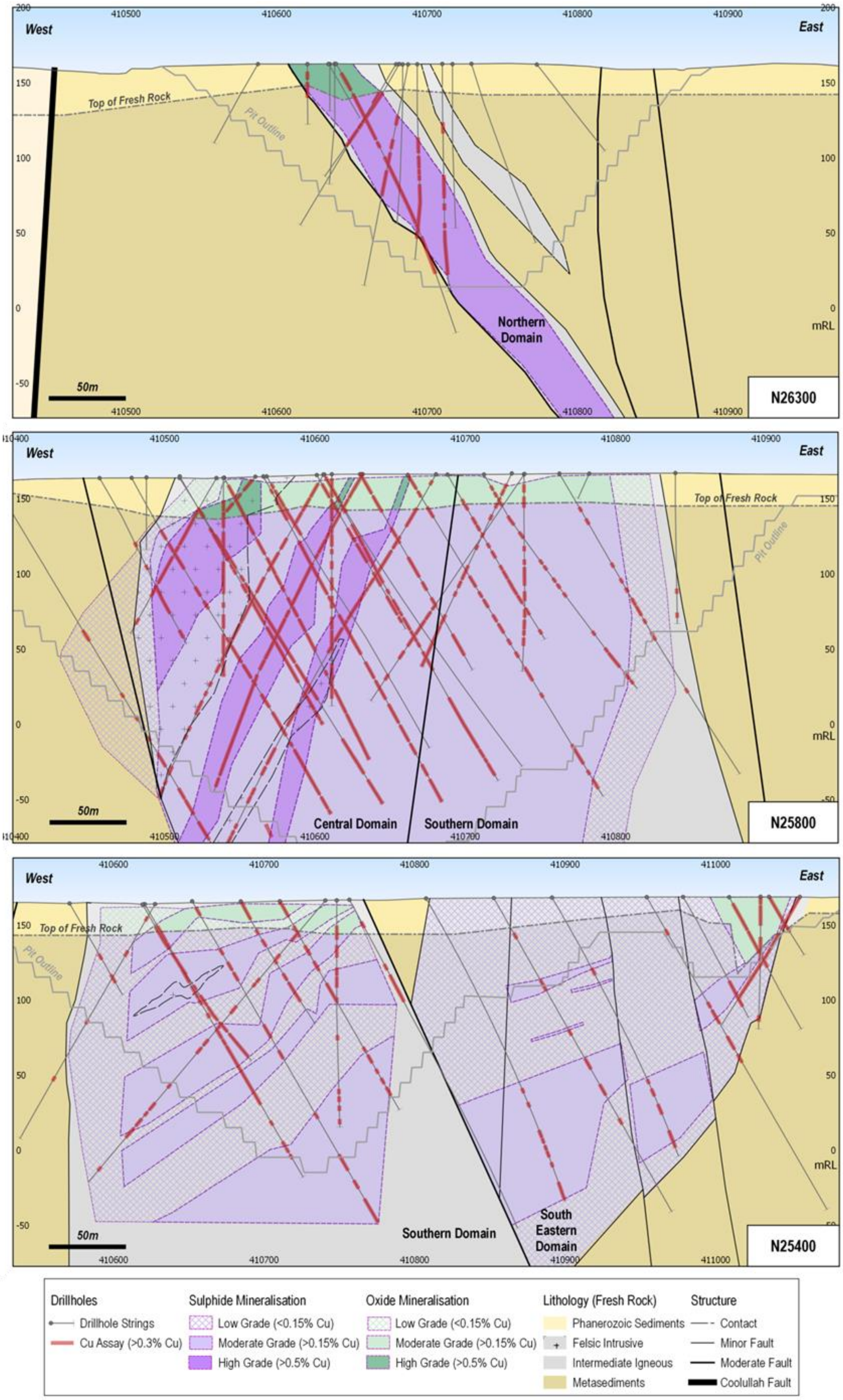

Figure 5: Geological cross sections through the Little Eva deposit from north to south (see Figure 4 for locations)

Lady Clayre Copper-Gold Deposit

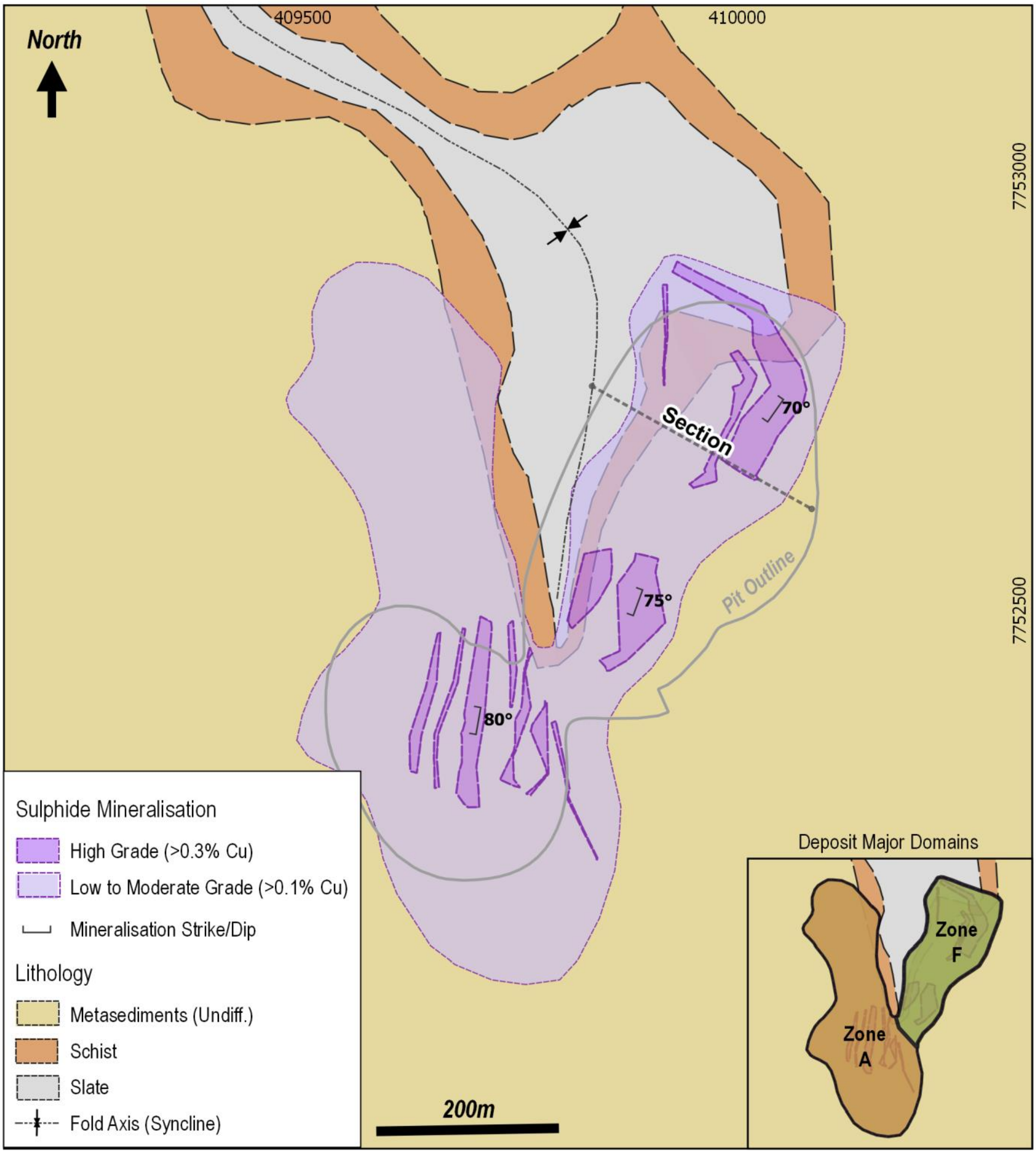

Figure 6: Plan of geology and mineralisation at Lady Clayre

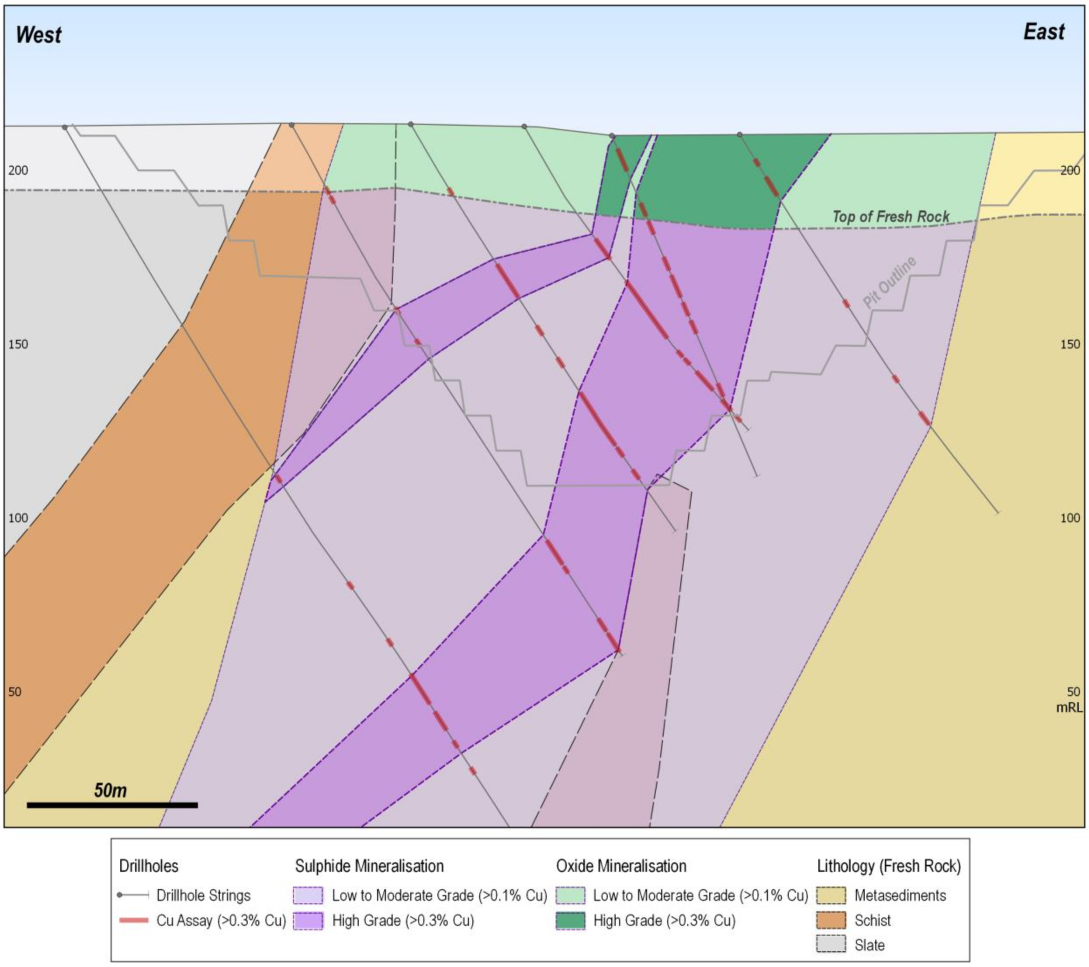

Figure 7: Geological cross section through the Lady Clayre deposit Zone F (see Figure 6 for section location)

Ivy Ann Copper-Gold Deposit

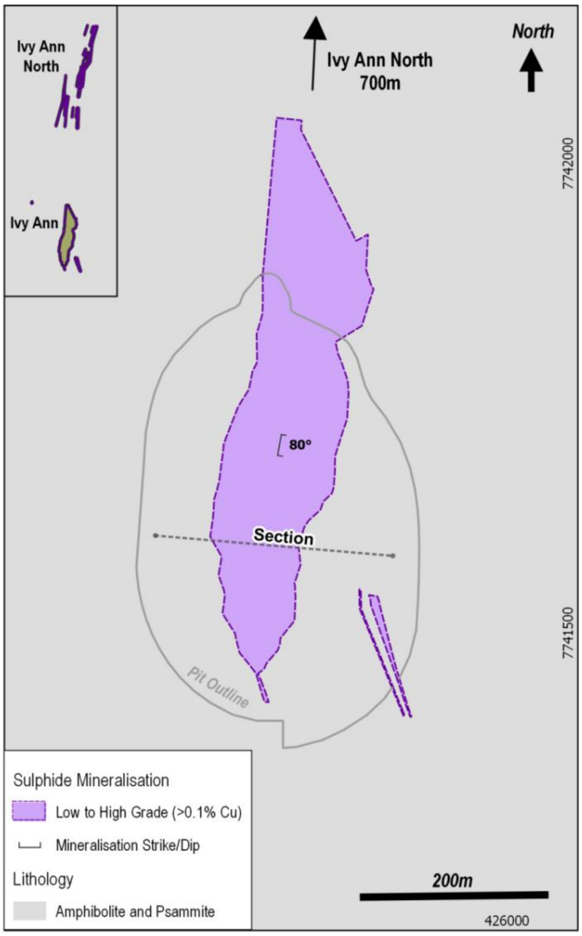

Figure 8 : Plan of Ivy Ann mineralisation

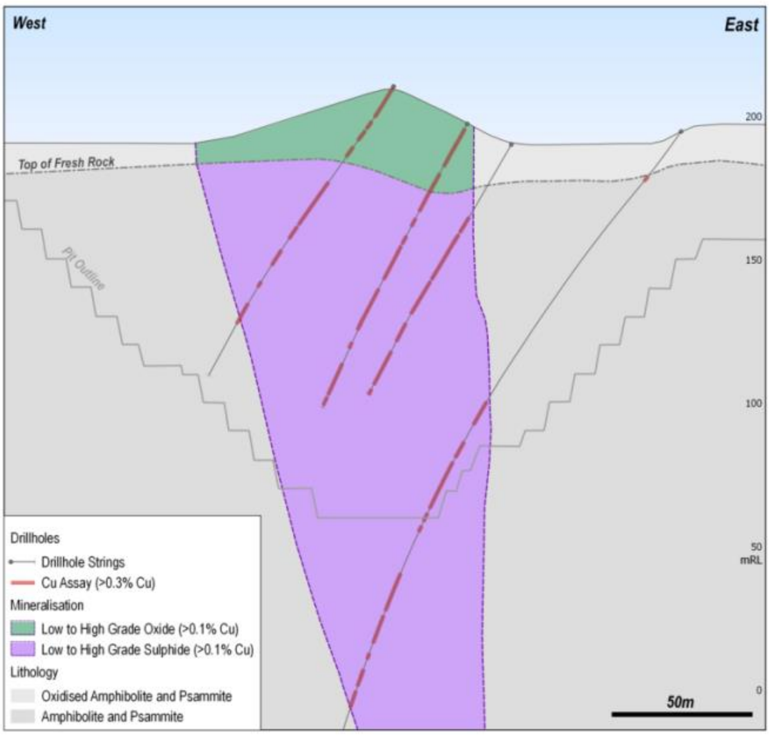

Figure 9: Geological cross section of the Ivy Ann deposit

Bedford Copper-Gold Deposit

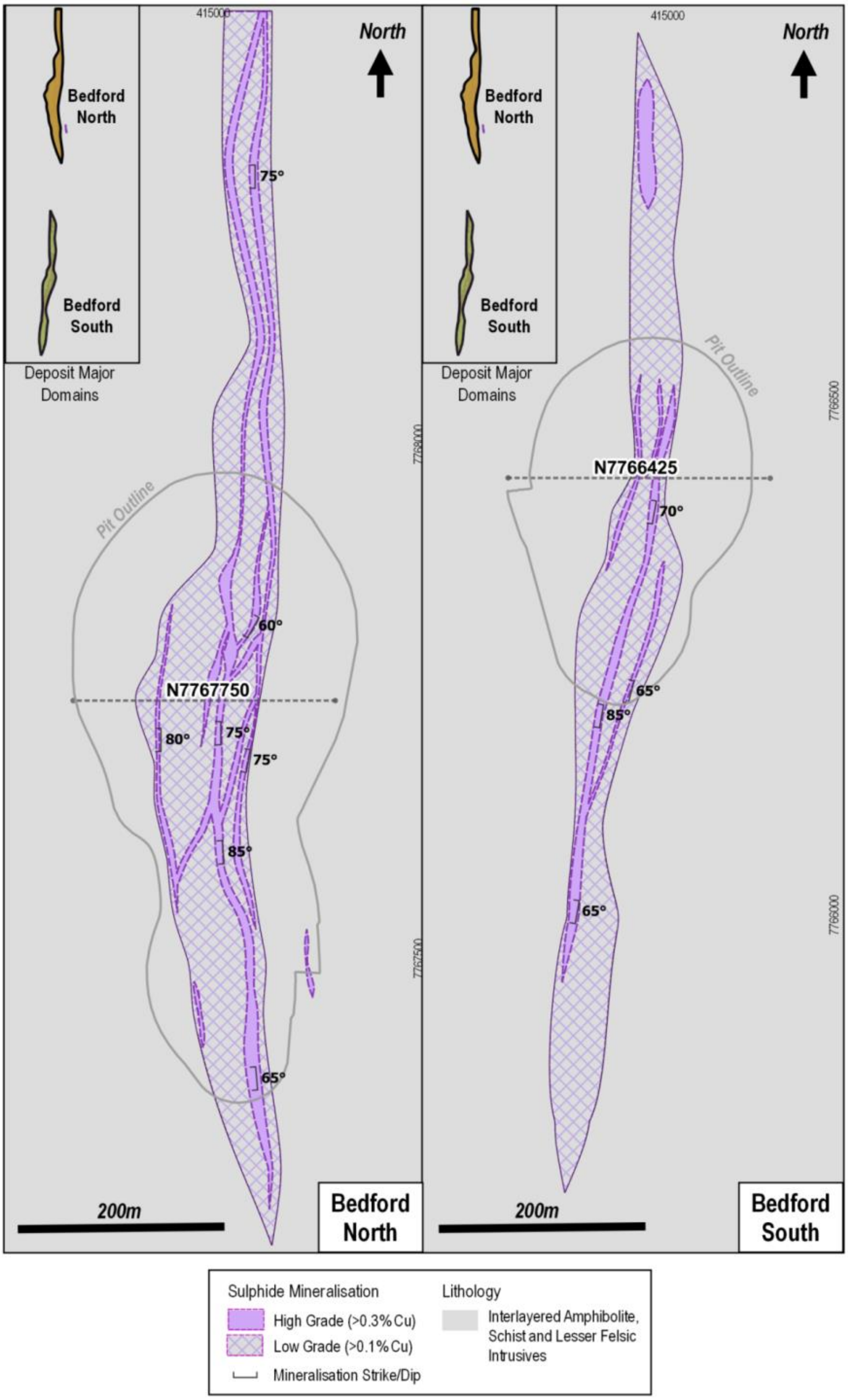

Figure 10: Bedford deposit mineralisation plan.

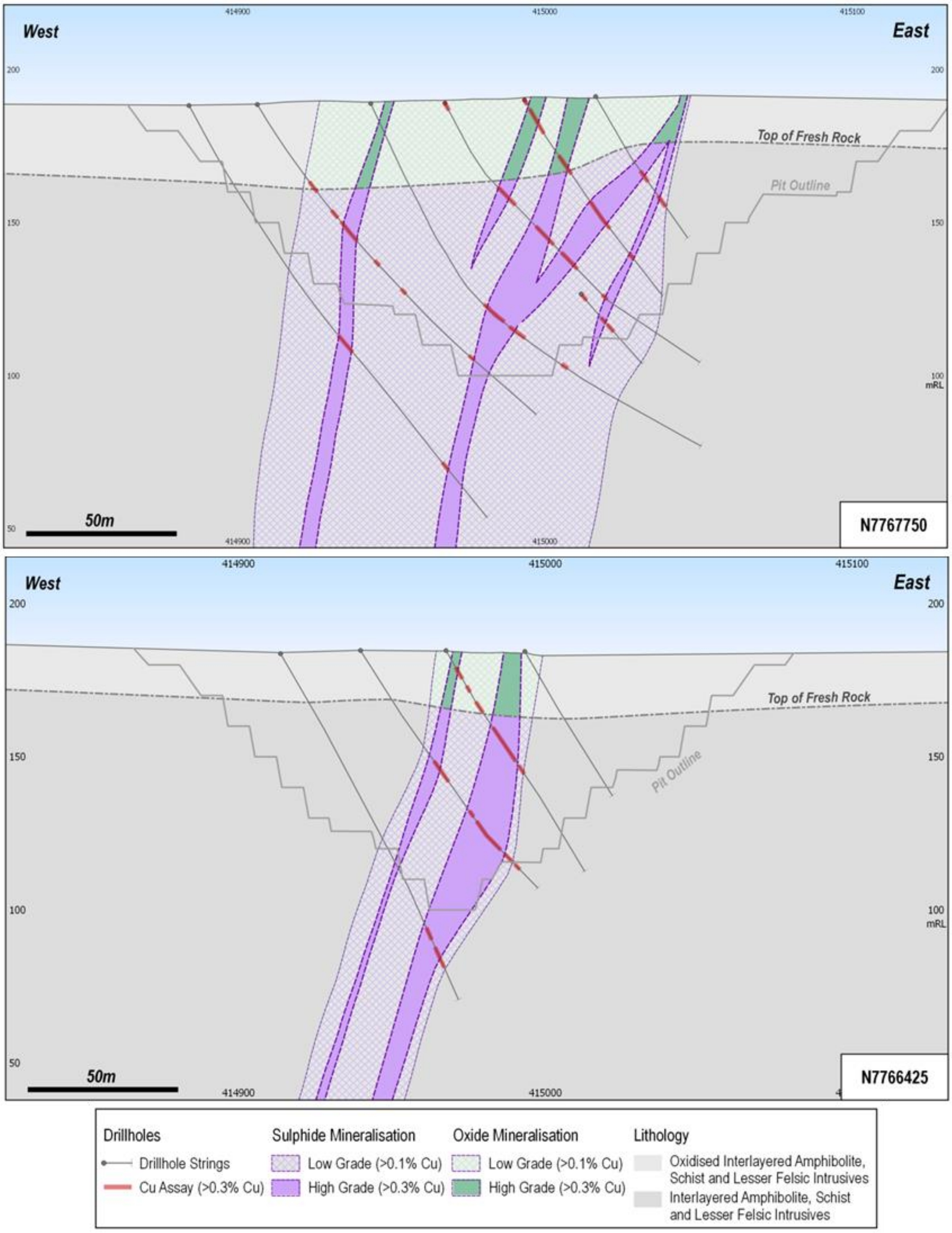

Figure 11: Geological cross sections through the Bedford deposit (see Figure 10 for location)

Turkey Creek 'Copper-Only' Deposit

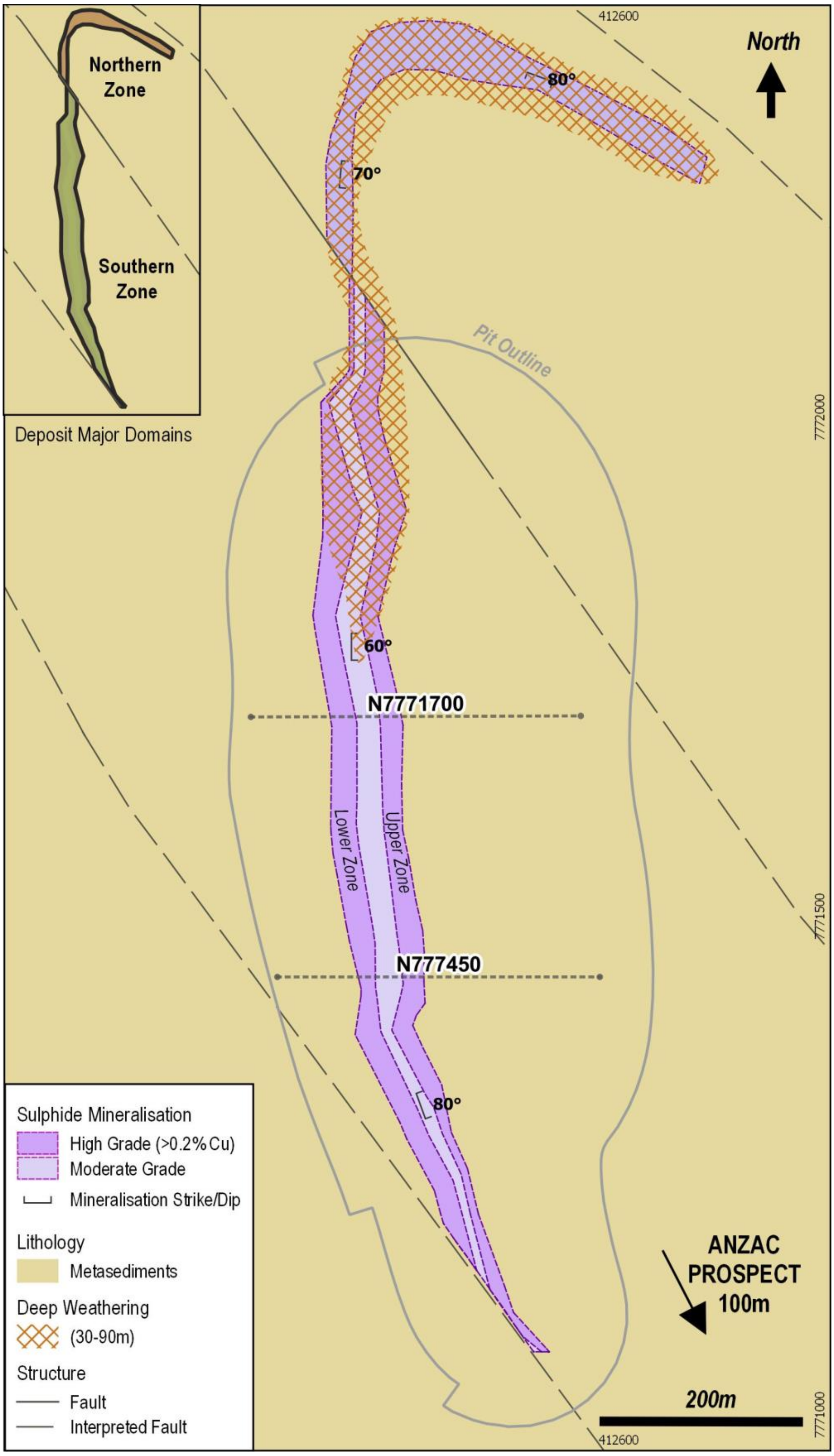

Figure 12: Turkey Creek deposit mineralisation plan

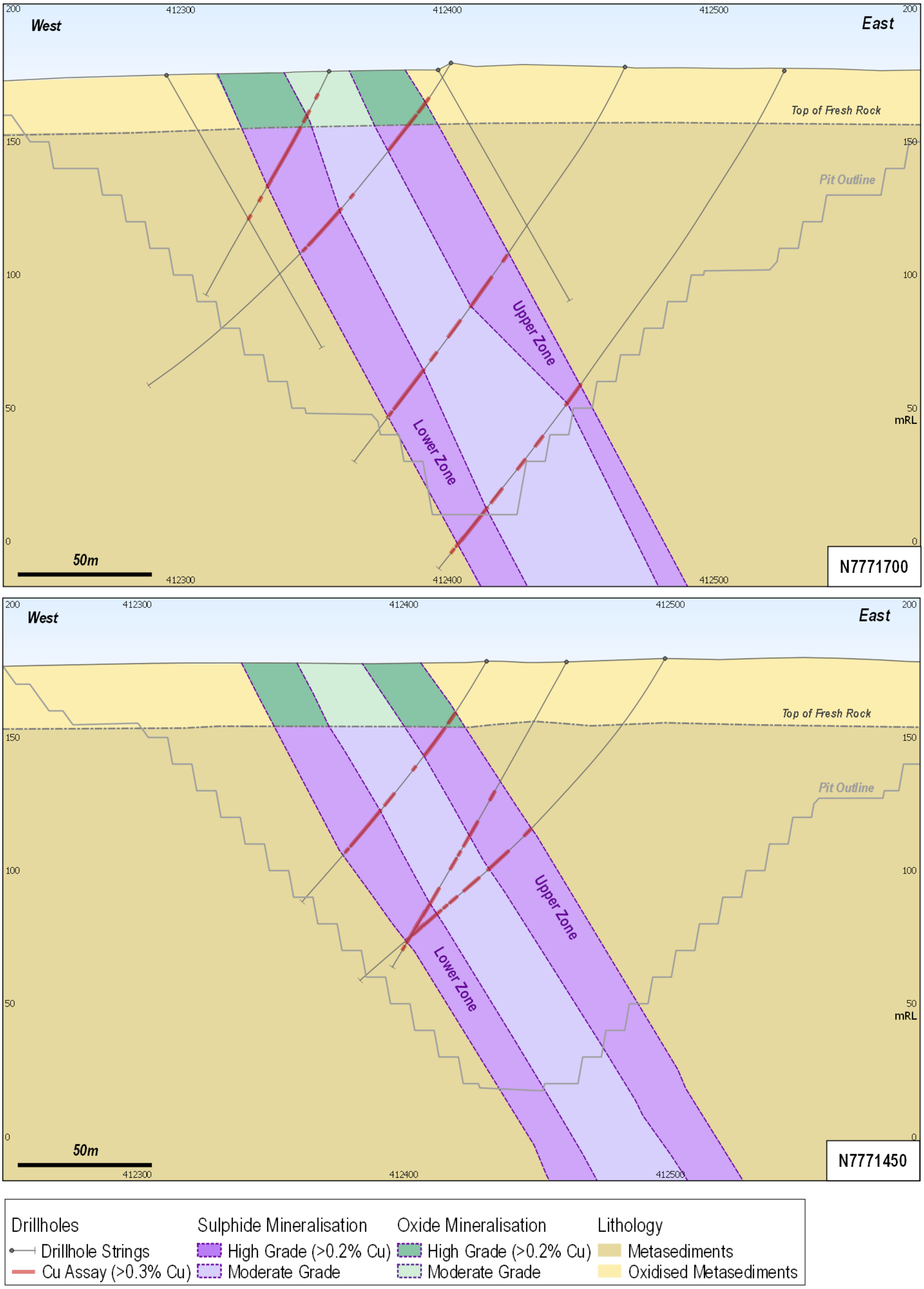

Figure 13: Geological cross sections through the southern zone of the Turkey Creek deposit (see Figure 12 for location)

Blackard and Legend 'Copper-Only' Deposits

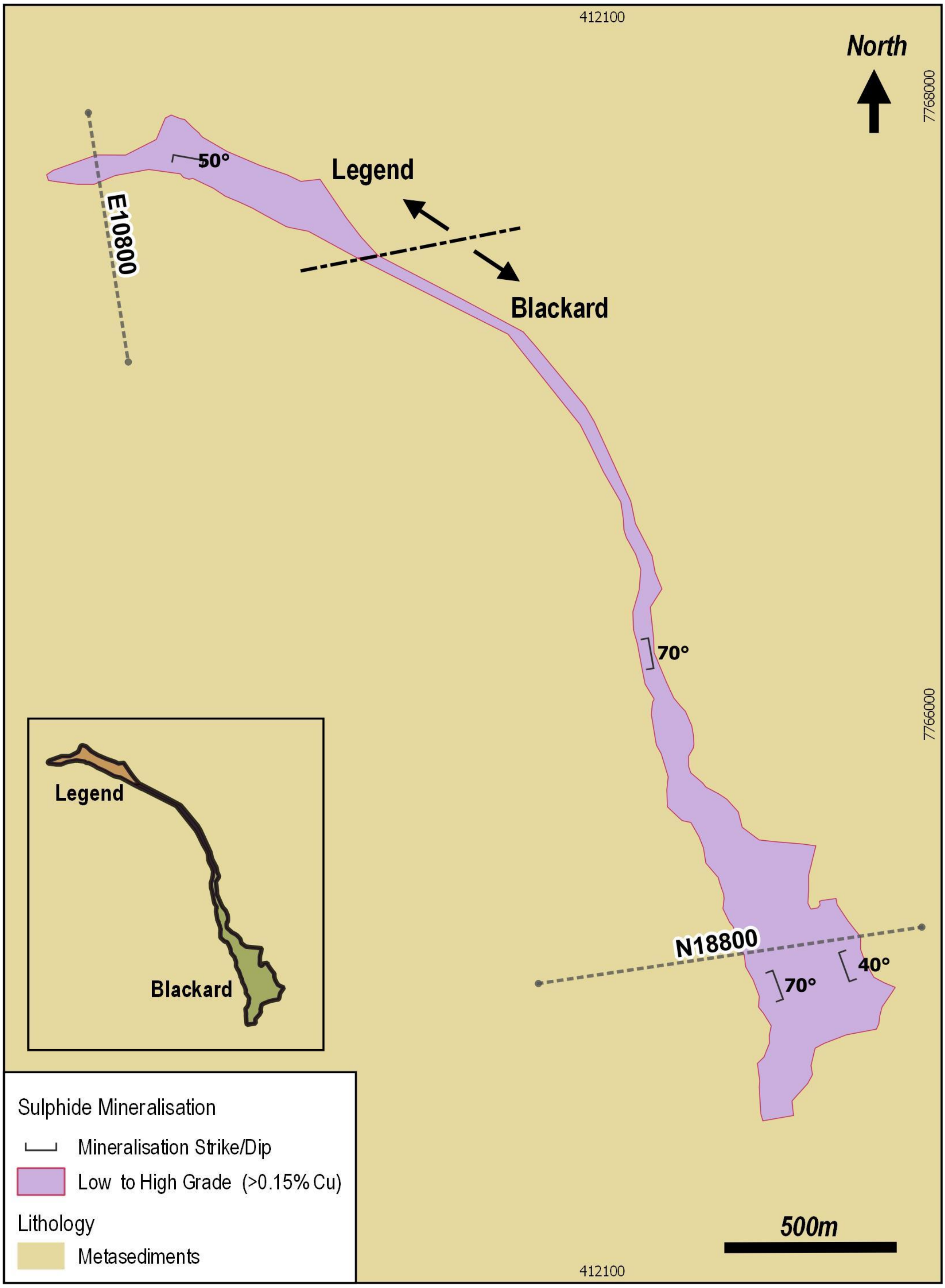

Figure 14: Blackard and Legend deposits mineralisation plan

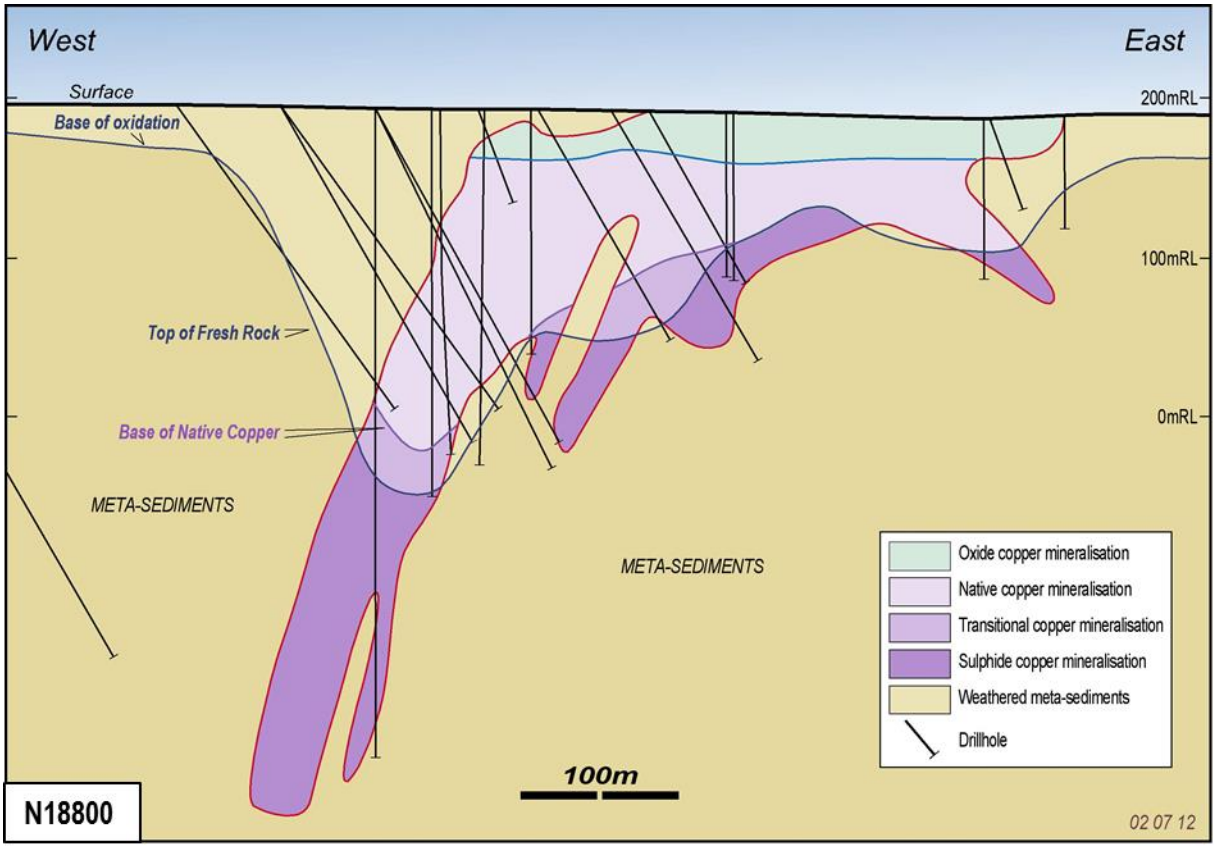

Figure 15: Geological cross sections through the Blackard deposit (see Figure 14 for location)

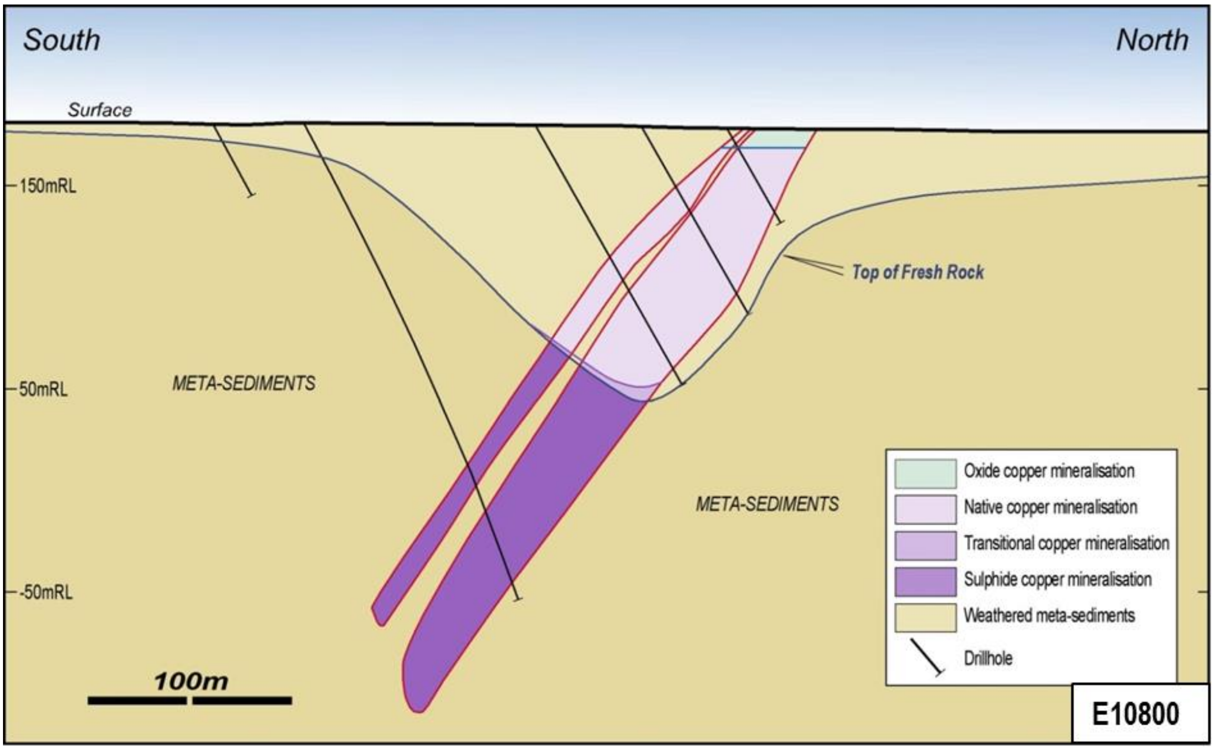

Figure 16: Geological cross sections through the Legend deposit (see Figure 14 for location)

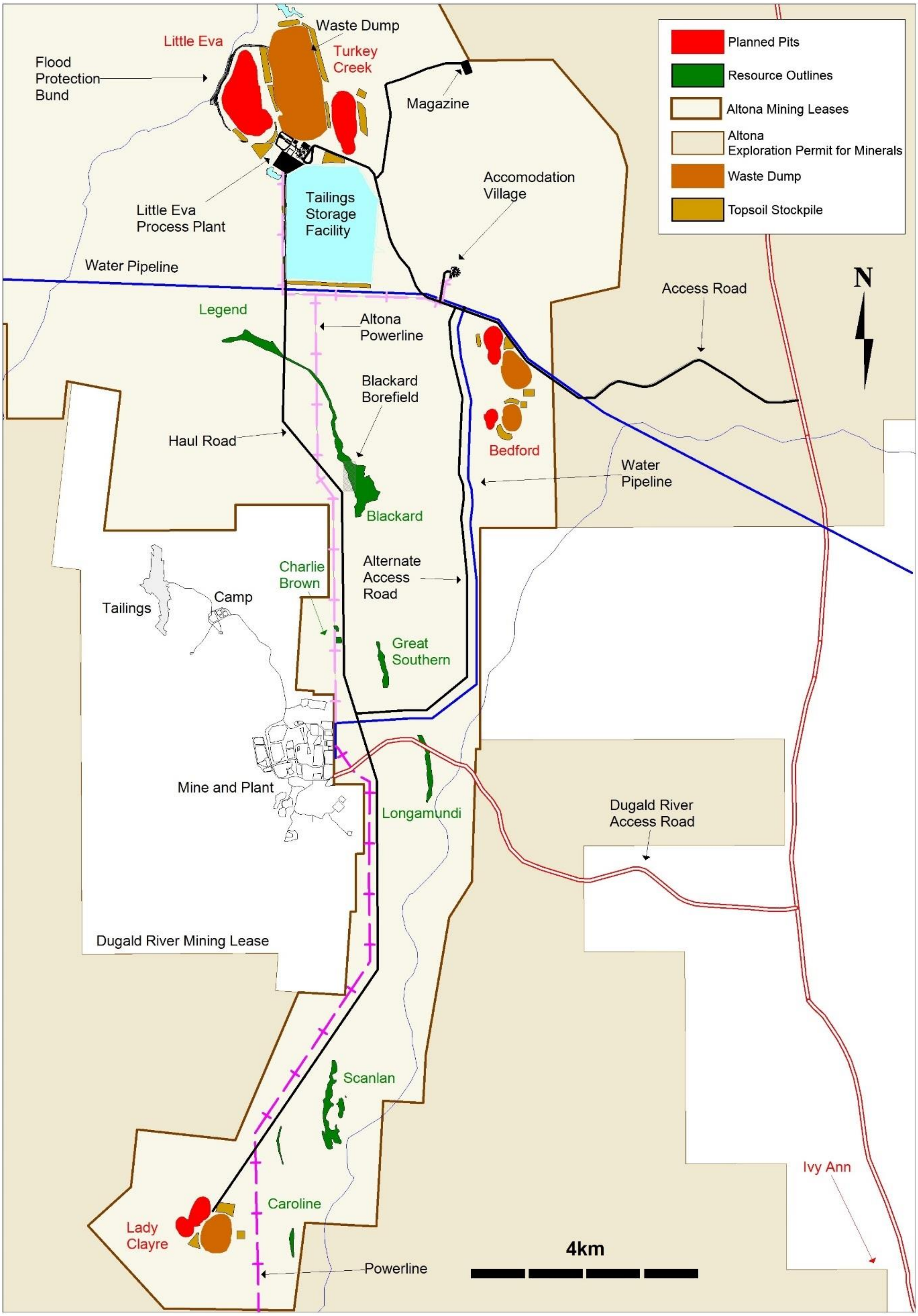

Figure 17: Cloncurry Project infrastructure layout

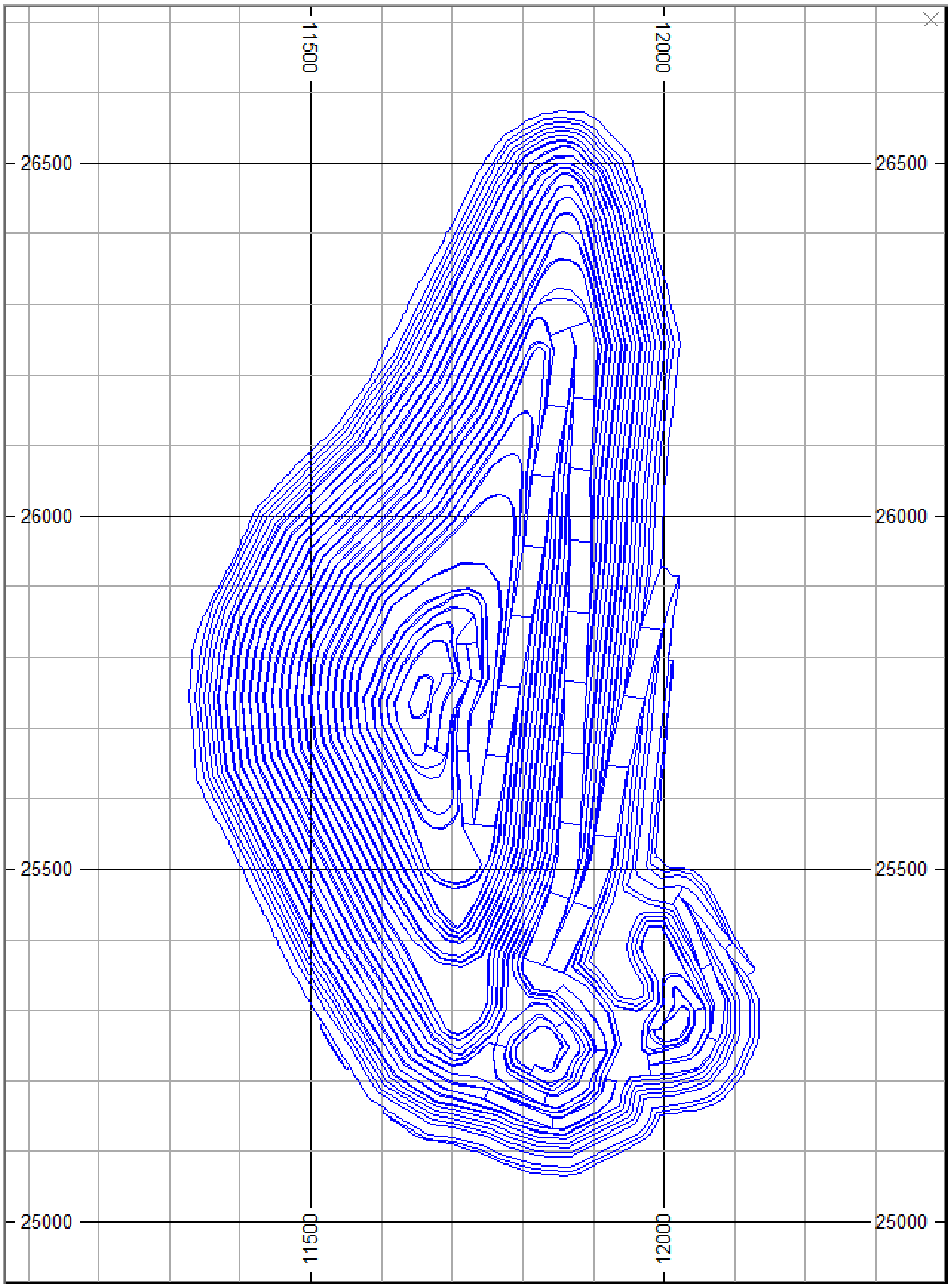

Figure 18: Little Eva pit design

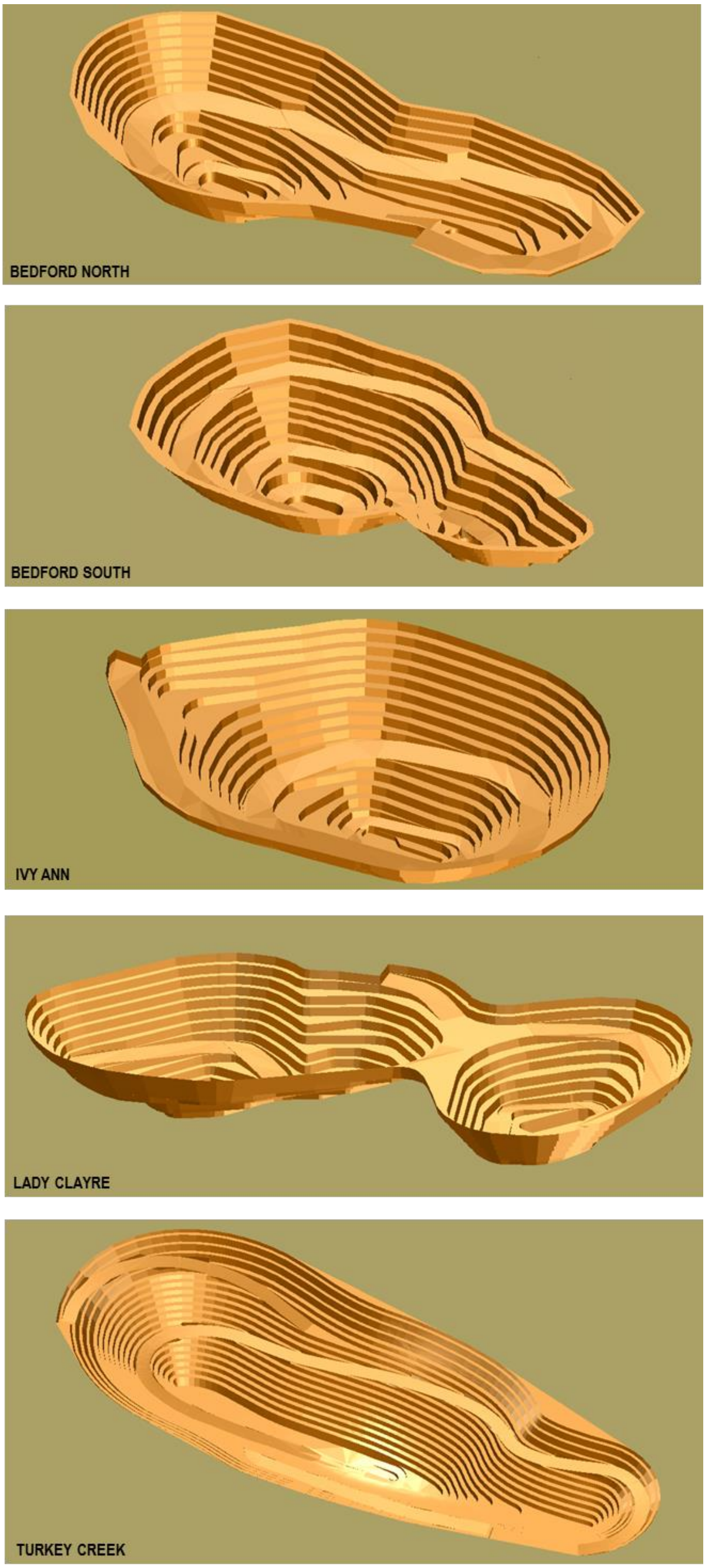

Figure 19: Satellite pit designs (at varying scales)

APPENDIX 4: PRIOR MINERAL RESOURCE AND ORE RESERVE DISCLOSURE

ASX Release Date	Title of ASX Release	Outline of Relevance
26 July 2011	Roseby Resource passes one million tonnes of contained copper	Initial resource estimate for Little Eva deposit with 2004 JORC Table 1.
19 December 2011	Little Eva turns one hundred	Resource estimate update for Little Eva deposit with reference 26 July 2011 ASX release.
23 April 2012	Further resource upgrades at Roseby Project	Resource estimates for Bedford, Ivy Ann and Lady Clayre deposits with relevant 2004 JORC Table 1.
14 May 2012	Little Eva: A new large scale copper development	Definitive Feasibility Study. Includes a JORC 2004 Reserve estimate for the project and an updated resource estimate for Little Eva.
3 July 2012	15% Resource Upgrade at Roseby Project	Resource estimates for the Blackard and Scanlan deposits with relevant 2004 JORC Table 1.
22 August 2012	Further Resource Upgrade at Roseby Project	Resource estimate for the Legend deposit with 2004 JORC Table 1.
13 March 2014	Cost Review Delivers Major Upgrade to Little Eva	Update of 14 May 2012 release to ASX.
27 May 2014	JORC 2012 Resource Estimate for the Little Eva Deposit	Resource estimate for the Little Eva deposit with 2012 JORC Table 1.
18 March 2015	Maiden Resource Estimate for Turkey Creek	Resource estimate for the Turkey Creek deposit with 2012 JORC Table 1.
21 June 2016	Turkey Creek - First Reserve estimates	Reserve estimate for Turkey Creek with JORC 2012 Table 1.
9 March 2017	Cloncurry Project: Bedford Resource Upgrade	Resource estimate for the Bedford deposit with 2012 JORC Table 1.
2 August 2017	Updated DFS delivers Bigger and Better Cloncurry Copper Gold Project	Update of prior studies.

The company confirms that it is not aware of any new information or data that materially affects the information included in the previous market announcements. The company confirms that all material assumptions and technical parameters underpinning the Mineral Resource and Ore Reserve estimates in the previous market announcements continue to apply and have not materially changed. The company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified.

APPENDIX 5: TABLE 1 OF THE 2012 EDITION OF THE JORC CODE FOR CLONCURRY COPPER PROJECT MINERAL RESOURCES AND ORE RESERVES

The table below is a description of the assessment and reporting criteria used in reporting the Exploration Results that reflects those presented in Table 1 of The Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves.

Section 1: Sampling Techniques and Data

Criteria	Commentary
Sampling techniques	*General* • Resource estimates were primarily based on reverse circulation (RC) and diamond (DD) drilling. • A nominal amount of rotary air blast (RAB) percussion (PERC), air core (AC) and rotary (RDH) drilling was included for select deposits (~3% of total resource drilling). All mineralisation delineated by these drill types is classified as Inferred Resources. • The majority of drilling was conducted by five companies CRAE 1978 to 1996, Bolnisi 2002 to 2003, Universal 2002 to 2010, Xstrata 2005 to 2011 and Altona 2011 to 2015. • RC drilling typically utilised face sampling hammers (5.375", 5.5" or 6") and DD drilling mainly provided NQ or HQ core, with rare BQ or PQ core samples. • Samples were routinely collected on consecutive 1m intervals representative of the intersected geology. • Approximately 2-4kg sample weights were obtained from each interval. Each sample was dried, crushed and pulverised to produce a representative charge for geochemical analysis. • Altona, Universal, Xstrata and Bolnisi RC samples were collected directly using a cyclone and cone or triple deck riffle splitter. A small number of wet intervals were sub-sampled with a scoop or spear (4%). • Altona, Universal, Xstrata and Bolnisi DD core sampling was guided by geology, with quarter or half core submitted for analysis. • CRAE sampling procedures are not available (~22% of total resource estimation dataset). • Where necessary, sub-standard data was excluded from the estimation process due to low sample quality (e.g. costean, auger), assay quality (e.g. partial or incomplete) or sample representivity (e.g. drillholes oriented sub-parallel to mineralisation dip). *Ivy Ann* • The early phase of drilling at Ivy Ann was conducted by Dominion, Bruce Resources and Pan Australian (1992 to 1996). Sampling procedures utilised by these companies are not available (57% of Ivy Ann resource estimation dataset). *Longamundi* • Early drilling in addition to CRAE was conducted at Longamundi by Ausminda (1965 to 1966). Sampling procedures utilised by CRAE and Ausminda are not available (66% of Longamundi resource estimation dataset). *Lady Clayre* • Early drilling in addition to CRAE was conducted at Lady Clayre by Ausminda (1966) and Pasminco (1998). Sampling procedures utilised by CRAE and

Criteria	Commentary
	Ausminda are not available (58% of Lady Clayre resource estimation dataset).
Drilling techniques	*General* • RC holes were drilled using 5.375”, 5.5”, or 6” face sampling hammers. • HQ and NQ core sizes were predominantly used in diamond drilling. • Most oriented diamond core has been marked using inner tube inlaid systems such as ‘Ezy-Mark’. • RAB, AC, PERC and RDH drilling specifications are not available. *Little Eva* • The resource estimation dataset incorporates 390 RC and 42 DD drillholes for a total of 67,277m. • Drilling was completed by Altona 32%, Universal 58%, Xstrata 1% and CRAE 9% (metres). *Bedford* • The resource estimation dataset incorporates 24 RAB, 99 RC and 2 DD drillholes for a total of 11,060m. • RAB drilling accounts for 8% of drilled metres (13 holes within resource area) and was only utilised in the absence of RC or DD sampling, where the tenor and thickness of mineralisation is consistent with results from adjacent drill sections and overlying Cu-in-soil geochemistry. • Drilling was completed by Altona <1%, Universal 98% and CRAE 2% (metres). *Lady Clayre* • The resource estimation dataset incorporates 97 RC, 31 DD and 2 PERC drillholes for a total of 21,433m. • Drilling was completed by Altona 6%, Universal 30%, Pasminco 6%, CRAE 57% and Ausminda 1% (metres). *Ivy Ann* • The resource estimation dataset incorporates 70 PERC and 69 RC drillholes for a total of 11,833m. • PERC drilling accounts for 24% of drilled metres and was only utilised in Ivy Ann North (~7% of total Mineral Resource), where RC sampling is absent. • Drilling was completed by Altona 24%, Universal 19%, Bruce Resources 16%, Dominion 21% and PanAust 20% (metres). *Turkey Creek* • The resource estimation dataset incorporates 51 RC drillholes for a total of 7,596m. • Drilling was completed by Altona 96% and Xstrata 4% (metres). *Blackard* • The resource estimation dataset incorporates 226 RC and 73 DD drillholes for a total of 50,309m. • Drilling was completed by Altona 9%, Universal 33%, Xstrata 21%, Bolnisi 25% and CRAE 13% (metres). *Legend* • The resource estimation dataset incorporates 5 AC, 27 RC and 5 DD drillholes for a total of 4,846m. • AC drilling accounts for ~6% of drilled metres. • Drilling was completed by Universal 23%, Xstrata 17% and CRAE 60% (metres). *Scanlan* • The resource estimation dataset incorporates 151 RC and 12 DD drillholes for a

Criteria	Commentary
	total of 17,710m. • Drilling was completed by Universal 41%, Xstrata 5% Bolnisi 2% and CRAE 52% (metres). *Longamundi* • The resource estimation dataset incorporates 7 AC, 19 RDH, 84 RC and 10 DD drillholes for a total of 9,218m. • AC and RDH drilling accounts for ~11% of drilled metres. • Drilling was completed by Bolnisi 34%, CRAE 45% and Ausminda 21% (metres). *Great Southern* • The resource estimation dataset incorporates 9 AC and 30 RC drillholes for a total of 3,332m. • AC drilling accounts for ~6% of drilled metres. • Drilling (metres) was completed by Bolnisi 49% and CRAE 51%. *Caroline* • The resource estimation dataset incorporates 8 AC, 2 PERC, 9 RC and 2 DD drillholes for a total of 2094m. • AC and PERC drilling accounts for ~30% of drilled metres • 100% of drilling was completed by CRAE. *Charlie Brown* • The resource estimation dataset incorporates 1 AC and 12 RC drillholes for a total of 1,067m. • AC drilling accounts for ~3% of drilled metres • 100% of drilling was completed by CRAE.
Drill sample recovery	*General* • In most drillholes DD core recovery was measured or RC sample recovery visually estimated. • Recoveries are considered to be excellent averaging >90%, and typically 100%. Lower recoveries were occasionally observed in the hole collars (top few metres). • The majority of samples were recorded dry. • Individual RC samples were collected into the cyclone prior to cone splitting. • Cyclone and splitters were routinely cleaned to limit contamination. • RC sample bias due to preferential loss/gain of fine/coarse material is considered within acceptable limits across all deposits. • Best practice methods were used for diamond coring to ensure the return of high quality core samples. • Data on core and RC sample recovery from CRAE, Bolnisi, Pasminco, Dominion, Bruce Resources, Pan Australian and Ausminda drilling is largely unavailable.
Logging	*General* • Drillholes were logged by geologists at the rig (RC) or at local central exploration hubs (DD) using company standard logging procedures. • Logging was qualitative and quantitative including a combination of colour, lithology, mineralisation, alteration, sulphide and oxide mineralogy, sulphide and oxide amount, texture, grain size and structure. • Universal, Xstrata and Altona utilised digitial logging systems. Earlier drilling was logged onto paper and transferred to a digital form for loading into the database. • Geotechnical logging was completed for select diamond core at Little Eva, Turkey Creek, Legend, Blackard, Longamundi and Scanlan. • Representative drill core and RC chips have been retained.

Criteria	Commentary
	• Geological logging was routinely carried out on resource drill holes. *Little Eva* • A re-logging campaign was completed during 2013 in conjunction with the 2014 resource update. A total of 48,725m equating to 75% of the resource estimation dataset, were systematically re-logged to ensure internal consistency. *Lady Clayre* • Re-logging has been completed for close to 100% of the drilled metres but post-dates the current resource estimate. *Ivy Ann* • Most logging is unavailable for Dominion, Bruce Resources and Pan Australian drillholes.
Sub-sampling techniques and sample preparation	*General* • RC chip samples were typically split at an 87.5% : 12.5% ratio using cyclone and cone or riffle splitter to obtain a ~2-4kg sub-sample for analysis. Occasional wet intervals were sub-sampled using a scoop or spear (4%). • DD core intervals were halved or quartered to produce sub-samples for analysis. • CRAE, Dominion, Bruce Resources, Pan Australian and Ausminda sampling procedures are not available (27% of total resource drilling and 11% of Little Eva resource drilling). • Samples were sent to extenal laboratories for sample preparation and analysis. All were large independent certified commercial laboratories that use industry standard preparation including drying, crushing and pulverisation. • Typical sub-sample sizes >2kg are considered representative for typical copper mineralisation in the Cloncurry Copper Project area. • For RC chips, field duplicate preparation involved riffle splitting of calico bag or bulk RC samples. For DD core, field duplicate preparation involved splitting of core sub-samples. • Duplicate data displays acceptable accuracy and precision. • Duplicates were typically collected at a ~1 : 20 ratio. Bolnisi and Universal collected duplicates at a ~1 : 40 ratio from 2002 to 2006. Duplicate data is unavailable for CRAE, Bolnisi, Dominion, Bruce Resources, Pan Australian and Ausminda drilling.
Quality of assay data and laboratory tests	*General* • Different commercial laboratories, analytical methods and QAQC procedures were employed by different operators of the various drilling campaigns over the last 40 years. • Altona, Universal and Xstrata utilised ALS and SGS for routine drill sample analyses, with other laboratories used as required (Ammtec and Ultratrace). • Samples were dried, crushed and pulverised at the respective laboratories; base metals were assayed via standard multi-element methods (acid digests with either AAS or ICP-AES/OES finishes with samples reporting at more than 1% copper re-assayed using ore grade methods optimised for precision and accuracy at high concentrations); and, gold via Fire Assay (either AAS or ICP-OES finishes or Aqua Regia Digest with AAS or ICP-MS finishes). • Data reported from Aqua Regia and Mixed Acid digestion should be considered as representing only the leachable portion of a particular analyte. Four Acid digestion is considered near total. • Altona, Universal and Xstrata implemented and maintained a programme of

Criteria	Commentary
	quality control involving field duplicates, blanks and certified reference materials (CRMs) for copper and gold, to monitor laboratory accuracy and precision for each sample batch. The CRM expected analyte grades were unknown to the laboratory at the time of testing. Duplicates and CRMs for copper and gold were typically inserted into the sampling sequence at a ~1:20 ratio, with Blanks inserted at a ~1:40 ratio. • Bolnisi utilised duplicates and copper CRMs inserted at a ~1:40 ratio. • Pasminco utilised duplicates and copper CRMs inserted at ~1:25 and ~1:50 ratios. • Information regarding QAQC by CRAE, Dominion, Bruce Resources, Pan Australian and Ausminda is not available (26% of total resource drilling). Hard copy records show that CRMs were inserted at various intervals, however no record was retained of CRM specifications. • Reviews of QAQC datasets were reported routinely by Altona's database administrator. • For each resource estimate the relevent QAQC data was reviewed internally by Altona and/or externally by independent consultants Optiro. In each case the performance of the standards and blanks was appropriate, with only minor issues affecting very small percentages of the data. • No geophysical tools were used to determine the results reported here. *Little Eva* • The resource estimation dataset comprises 61,954 drill sample analyses. • Sample batches contained a total of 1,550 blank, 4106 CRM and 3108 duplicate samples. *Bedford* • The resource estimation dataset comprises 9,991 drill sample analyses. • Sample batches contained a total of 312 blank, 877 CRM and 535 duplicate samples. *Lady Clayre* • The resource estimation dataset comprises 15,587 drill sample analyses. • Sample batches contained a total of 134 blank, 487 CRM and 444 duplicate samples. *Ivy Ann* • The resource estimation dataset comprises 8,131 drill sample analyses. • Sample batches contained a total of 136 blank, 367 CRM and 306 duplicate samples. *Turkey Creek* • The resource estimation dataset comprises 7,602 drill sample analyses. • Sample batches contained a total of 117 blank, 403 CRM and 412 duplicate samples. *Blackard* • The resource estimation dataset comprises 30,611 drill sample analyses. • Sample batches contained a total of 434 blank, 682 CRM and 1049 duplicate samples. *Legend* • The resource estimation dataset comprises 3,087 drill sample analyses. • Sample batches contained a total of 27 blank, 60 CRM and 62 duplicate samples. *Scanlan* • The resource estimation dataset comprises 9,418 drill sample analyses.

Criteria	Commentary
	• Sample batches contained a total of 159 blank, 249 CRM and 334 duplicate samples. *Longamundi* • The resource estimation dataset comprises 4,035 drill sample analyses. • Sample batches contained a total of 50 duplicate samples. *Great Southern* • The resource estimation dataset comprises 1,592 drill sample analyses. • Sample batches contained a total of 50 duplicate samples. *Caroline* • The resource estimation dataset comprises 802 drill sample analyses. *Charlie Brown* • The resource estimation dataset comprises 472 drill sample analyses.
Verification of sampling and assaying	*General* • Significant intersections were not selectively sampled. • Assay validation checks have been completed at multiple stages through resource development. • Field sample logs were collected using paper ledgers or laptops. Sample logs were uploaded into the company Datashed database and validated by company database personnel. • Assay files were mainly received in digital format from Laboratories. Historic paper delivered assay results have been retained in hard copy format and/or converted to scanned digital versions. Subpopulations of historic database records have been verified against original paper records. • Data was uploaded into the Altona Datashed database and validated by company database personnel. No manual data inserts took place. • No adjustments have been applied to the results. • DD holes have been twinned with RC holes during resource drilling at select deposits (Little Eva, Blackard and Legend). In general comparison of results between twin holes is acceptable, although some variation exists in the tenor and location of mineralisation. In most cases this can reasonably be attributed to differences in downhole deviation, survey issues and/or small scale variability consistent with the observed and modelled geological variability. In isolated cases diamond drilling suggests thin, high grade material may be reflected as broader, moderate tenor mineralised zones in RC twin holes.
Location of data points	*General* • The majority of collar locations have been surveyed by licensed surveyors or Altona personel using a Differential Global Positioning System (DGPS) with approximately 0.1m or better horizontal accuracy. Elevation accuracy is considered to be less than 0.5m. • Downhole surveys have been completed using a variety of methods including down-hole cameras and gyroscopic surveying (gyro) systems, with a minority of holes having collar orientations only. • Drillhole data and resource models for Little Eva, Bedford and Turkey Creek utilise the GDA94 MGA Zone 54 Grid. Drillhole data and resource models for Lady Clayre and Ivy Ann utilise the ADG84 AMG Zone 54 Grid. *Little Eva* • The DTM was derived from survey data in the form of 0.5m contours, developed by licensed surveyors. DGPS collar survey locations were used to validate this

Criteria	Commentary
	surface with an average deviation of 16cm. • 91% of drillhole collars were surveyed by licenced surveyors or Altona using DGPS with ≤3m horizontal accuracy. 9% of holes were located by GPS and the remainder had no survey method recorded. • 7% of holes have no downhole survey, with only a compass survey at the drillhole collar. This was common practice for historic holes drilled prior to the 1998. 5% of holes have no downhole survey, with a gyro survey at the drillhole collar. 0.7% of holes have no downhole survey, with only a nominal (planned) collar survey. 65% of holes have magnetic downhole camera surveys, at approximately 30m intervals. 22% of holes have downhole Gyro surveys, usually at 5m intervals. • Variable quantities of magnetite in Little Eva host rocks affects magnetic survey readings. *Bedford* • The DTM was constructed from 1m contour data derived from high resolution airborne radar altimetry (50m line spacing) and modified to incorporate collar survey RLs. • 98% drillhole collars were surveyed by licenced surveyors or Altona using DGPS with ≤3m horizontal accuracy. The remaining holes were located by GPS. • 19% of holes have no downhole survey, with only a compass survey at the drillhole collar. 2% of holes have no downhole survey, with a gyro survey at the drillhole collar. 3% of holes have no downhole survey, with only a nominal (planned) collar survey and 2% have no downhole survey, with only an unknown collar survey method. 54% have magnetic downhole camera surveys, usually at 5m intervals but anywhere between 1m to 105m intervals. 20% of drillholes have downhole Gyro surveys, usually at 5m intervals. • Variable quantities of magnetite in Bedford host rocks affects magnetic survey readings. *Lady Clayre* • The DTM was constructed from 1m contour data derived from high resolution airborne radar altimetry (50m line spacing) and modified to incorporate collar survey RLs. • 91% of drillhole collars were surveyed by licenced surveyors or Altona using DGPS or by traditional surveying methods with ≤3m horizontal accuracy. 2% of holes were located by GPS and the remainder had no survey method recorded. • 45% of holes have no downhole survey, with only a compass survey at the drillhole collar. 3% have no downhole survey, with only an unknown collar survey method. 42% have magnetic downhole camera surveys, mostly at 5m intervals. 9% of drillholes have downhole Gyro surveys, usually at 5m intervals. *Ivy Ann* • The DTM was constructed on the basis of collar survey RLs. • 21% of drillhole collars were surveyed by licenced surveyors or Altona using DGPS with ≤0.1m horizontal accuracy. 3% of holes were located by GPS and the remainder had no survey method recorded. • 4% of holes have no downhole survey, with only a compass survey at the drillhole collar. 73% have no downhole survey, with only an unknown collar survey method. 11% have magnetic downhole camera surveys, at 45m intervals on average, but anywhere between 12m and 105m intervals. 12% of drillholes have downhole Gyro surveys, usually at 5m intervals.

Criteria	Commentary
	• Variable quantities of magnetite in Ivy Ann host rocks affects magnetic survey readings. *Turkey Creek* • The DTM was constructed from 1m contour data derived from high resolution airborne radar altimetry (50m line spacing) and modified to incorporate collar survey RLs. • 96% of drillhole collars were surveyed by Altona using DGPS with ≤0.05m horizontal accuracy. The remaining holes were surveyed by Xstrata using a hand-held GPS. • 12% have magnetic downhole camera surveys, at approximately 30m intervals. 88% of drillholes have downhole Gyro surveys, usually at 3m intervals. *Blackard* • The DTM was constructed from 1m contour data derived from high resolution airborne radar altimetry (50m line spacing). • 82% of drillhole collars were surveyed by licenced surveyors using DGPS or by traditional surveying methods with ≤3m horizontal accuracy. 18% of holes were located by GPS and the remainder had no survey method recorded. • 42% of holes have no downhole survey, with only a compass survey at the drillhole collar. 0.3% of holes have no downhole survey, with only a nominal (planned) collar survey. 56% have magnetic downhole camera surveys, usually at 10m or 30m intervals. 2% of drillholes have downhole Gyro surveys at 5m intervals. *Legend* • The DTM was constructed from 1m contour data derived from high resolution airborne radar altimetry (50m line spacing). • All but three drillhole collars were surveyed by licenced surveyors using DGPS or by traditional surveying methods with ≤1m horizontal accuracy. Of the remaining holes one was located by GPS and two have no method recorded. • 78% of holes have no downhole survey, with only a compass survey at the drillhole collar. 22% have magnetic downhole camera surveys, usually at 30m intervals. *Scanlan* • The DTM was constructed from 1m contour data derived from high resolution airborne radar altimetry (50m line spacing). • 93% of drillhole collars were surveyed by licenced surveyors using DGPS or by traditional surveying methods with ≤0.05m horizontal accuracy. 2% of holes were located by GPS and the remainder had no survey method recorded. • 6% of holes have no downhole survey, with only a compass survey at the drillhole collar. 59% have no downhole survey, with only an unknown collar survey method. 35% have magnetic downhole camera surveys, mostly at 10m intervals. *Longamundi* • The DTM was constructed from 12m by 12m gridded elevation data, derived from high resolution airborne radar altimetry (50m line spacing). • 74% of drillhole collars were surveyed by licenced surveyors using DGPS or by traditional surveying methods with ≤3m horizontal accuracy. 6% of holes were located by GPS and the remainder had no survey method recorded. • 7% of holes have no downhole survey, with only a compass survey at the drillhole collar. 70% of holes have no downhole survey, with only a nominal (planned)

Criteria	Commentary
	collar survey. 23% have magnetic downhole camera surveys, at 50m to 170m intervals (105m intervals on average). *Great Southern* • The DTM was constructed from 12m by 12m gridded elevation data, derived from high resolution airborne radar altimetry (50m line spacing). • 79% of drillhole collars were surveyed by licenced surveyors using DGPS or by traditional surveying methods with ≤3m horizontal accuracy. The remainder of the holes had no survey method recorded. • 23% of holes have no downhole survey, with only a compass survey at the drillhole collar. 41% have no downhole survey, with only an unknown collar survey method. 36% have magnetic downhole camera surveys, at 2m to 168m intervals (50m intervals on average). *Caroline* • The DTM was constructed from 12m by 12m gridded elevation data, derived from high resolution airborne radar altimetry (50m line spacing). • 71% of drillhole collars were surveyed by licenced surveyors using DGPS or by traditional surveying methods with ≤0.05m horizontal accuracy. The remainder of the holes had no survey method recorded. • 67% of holes have no downhole survey, with only a compass survey at the drillhole collar. 33% have no downhole survey, with only an unknown collar survey method. *Charlie Brown* • The DTM was constructed from 12m by 12m gridded elevation data, derived from high resolution airborne radar altimetry (50m line spacing). • 77% of drillhole collars were surveyed by licenced surveyors using DGPS or by traditional surveying methods with ≤0.05m horizontal accuracy. The remainder of the holes had no survey method recorded. • 8% of holes have no downhole survey, with only a compass survey at the drillhole collar. 92% have no downhole survey, with only an unknown collar survey method.
Data spacing and distribution	*General* • Drill spacing at each deposit is deemed sufficient to establish geological and grade continuity appropriate for the given estimation methodology and resource classification applied. *Little Eva* • Drilling has typically been completed at 30m to 50m intervals along 50m spaced sections oriented approximately 080° (MGA Grid). This drilling density is prevalent over 1.3km of strike length equating to ~95% of the Mineral Resource. • Hole orientation varies througout the deposit; 50% of the drilling is oriented east along section at -55° to -60° dip, 33% is subvertical, 13% is oriented west along section at -55° to -60° dip and 4% is oriented in other directions. • CRAE composited 5,586 1m RC chip samples into 2m intervals for analysis, representing 9.6% of sampled metres. Universal also composited 1m samples into 2m intervals in 2002. Specific intervals of interest were then re-analysed at 1m intervals following reciept of the intial assay results. Holes drilled after 2002 were sampled at 1m intervals with no compositing applied. *Bedford* • Drilling has typically been completed at 25m intervals along 25m to 50m spaced east-west sections (MGA Grid). Section line spacing increases to 50m to 100m

Criteria	Commentary
	outside the main mineralised zones. • Drilling was oriented east at -60° dip. • The majority of samples were collected at 1m downhole intervals (~91%) without compositing. *Lady Clayre* • Drilling has typically been completed at 30m to 60m intervals along 50m spaced sections oriented along two distinct grid orientations (Zone A and Zone F Local Grids). • In Zone A drilling was oriented 075° to 081° east-northeast (MGA Grid) at -60° to -65° dip (53% of drilling). In Zone F drilling was oriented 120° to 130° southeast (MGA Grid) at -60° dip (23% of drilling). 24% of drilling is aligned in other directions. • The majority of samples were collected at 1m downhole intervals (~70%) without compositing. *Ivy Ann* • Drilling has typically been completed at 20 to 50m intervals along 50m spaced sections oriented approximately 086° (MGA Grid). Section line spacing increases to 100m in Ivy Ann North. • 15% of the drilling is oriented east along section at -50° to -60° dip, 82% is oriented west along section at -50° to -75° dip and 3% is oriented in other directions. • The majority of samples were collected at 1m downhole intervals (~63%) without compositing. *Turkey Creek* • Drilling has typically been completed at 50m intervals along 100m spaced sections oriented along two distinct grid orientations (Southern Zone and Northern Zone) • In the Southern Zone drilling was oriented east at -60° dip (86% of drilling). In the Northern Zone drilling was oriented north at -60° dip (14% of drilling) (MGA Grid). • Consistent 1m sample intervals were maintained through the mineralised domains. Unmineralised samples (determined in the field using a Niton handheld XRF device) were composited for check analysis into 3m intervals. *Blackard* • Drilling has typically been completed at 30m to 40m intervals along 50m spaced east-west sections (MGA Grid). Section line spacing increases to between 100m and 200m in the north of the deposit towards Legend. • 35% of the drilling is oriented east along section at -55° to -70° dip, 62% is subvertical, 2% is oriented west along section at -65° to -70° dip and 1% is oriented in other directions. • The majority of samples were collected at 2m downhole intervals (~58%). *Legend* • Drilling has typically been completed at 50m intervals along 75m to 100m spaced sections mainly oriented north-south but changing to 050° northeast at the deposits eastern extent (MGA Grid). • 62% of the drilling is oriented north along section at -60° dip, 11% is subvertical, 22% is oriented northeast along section at -60° dip and 5% is oriented in other directions. • Just over half of samples were collected at 1m downhole intervals (~51%). *Scanlan*

Criteria	Commentary
	• Drilling has typically been completed at 40m intervals along 50m to 200m spaced sections approximately 080° (MGA Grid). • 15% of the drilling is oriented east along section at -55° to -70° dip, 73% is subvertical, 11% is oriented west along section at -65° to -70° dip and 1% is oriented in other directions. • The majority of samples were collected at 2m downhole intervals (~67%). *Longamundi* • Drilling has typically been completed at 40m to 50m intervals along 50m to 100m spaced sections approximately 080° (MGA Grid). • 65% of the drilling is oriented broadly west along section at -55° to -70° dip, 26% is subvertical and 9% is oriented in other directions. • The majority of samples were collected at 2m downhole intervals (~78%). *Great Southern* • Drilling has typically been completed at 40m to 50m intervals along 50m to 100m spaced sections approximately 080° (MGA Grid). • 86% of the drilling is oriented broadly west along section at -60° dip, 11% is subvertical and 3% is oriented in other directions. • The majority of samples were collected at 2m downhole intervals (~94%). *Caroline* • Drilling has typically been completed at 20m to 50m intervals along 100m to 200m spaced sections approximately 080° (MGA Grid). • 49% of the drilling is oriented broadly west along section at -55° to -60° dip, 41% is subvertical and 9% is oriented in other directions. • The majority of samples were collected at 1m downhole intervals (>90%) without compositing. *Charlie Brown* • Drilling has typically been completed at 20 to 50m intervals along 200m spaced sections approximately 080° (MGA Grid). • 80% of the drilling is oriented broadly west along section at -60° dip, 5% is subvertical and 15% is oriented in other directions. • The majority of samples were collected at 2m downhole intervals (~97%).
Orientation of data in relation to geological structure	*General* • No bias is considered to be caused by drilling direction. *Little Eva* • Nominal east-west drill sections are normal to the strike of mineralisation. • The dip of the mineralisation varies from 50° to the east to subvertical. Local grade continuity follows the dip of the mineralisation in the north and moderate to steep, broadly west dipping local grade continuity is evident in the central and southern domains. The bulk of the drilling intersects local grade continuity at 60° to 90° angles and true widths are estimated to vary from 80-100% of downhole intercepts. • A small number of drillholes were drilled parallel to mineralisation, mostly in the strongly mineralised northern portions of the deposit. These drillholes were excluded from the resource estimation dataset. *Bedford* • Mineralisation in Bedford South strikes north-northeast, changing to a northerly orientation in Bedford North. Both zones exhibit steep westerly dips. Drilling was completed to the east at -60° dip approximately normal to strike, such that with

Criteria	Commentary
	changing mineralisation dip, true widths are estimated to vary from 80-100% of downhole intercepts. _Lady Clayre_ • Mineralisation in Zone A strikes north-northwest and dips 35° to 70° to the west. Drilling was completed approximately normal to strike, oriented east-northeast with -60° to -65° dip. • Mineralisation in Zone F strikes northeast and dips 35° to 85° to the west. Drilling was completed approximately normal to strike, oriented southeast at -60° dip. • The bulk of the drilling intersects local grade continuity at 60° to 90° angles and true widths are estimated to vary from 80-100% of downhole intercepts. _Ivy Ann_ • Mineralisation strikes north and exhibits steep easterly dips. Most drilling was completed to the west at -50° to -60° dip approximately normal to strike, such that with changing mineralisation dip, true widths are estimated to vary from 80-100% of downhole intercepts. _Turkey Creek_ • Mineralisation strike is approximately north-south and swings to the east in the northern part of the deposit. Drilling was towards the west or north as deemed appropriate. Drilling was completed generally at -60° dip and with changing mineralisation dip true widths are estimated to be 80% of the down hole intercepts in the north, 90% in the central area and 80% in the south. _Blackard_ • Nominal east-west drill sections are normal to the strike of mineralisation. • The dip of the mineralisation varies from 65° west to subhorizontal. Local grade continuity follows the dip of the mineralisation. The bulk of the drilling intersects local grade continuity at 60° to 90° angles and true widths are estimated to vary from 80-100% of downhole intercepts. _Legend_ • Nominal north to northeast oriented drill sections are normal to the strike of mineralisation. • Dip varies from -45° to -55° to the south or southwest depending on mineralisation strike. Local grade continuity follows the dip of the mineralisation. The bulk of the drilling intersects local grade continuity at 60° to 90° angles and true widths are estimated to vary from 80-100% of downhole intercepts. _Scanlan_ • Nominal east-west drill sections are normal to the strike of mineralisation. • The dip of the mineralisation varies from subvertical to subhorizontal. Local grade continuity follows the dip of the mineralisation. The bulk of the drilling intersects local grade continuity at 45° to 90° angles and true widths are estimated to vary from 70-100% of downhole intercepts. _Longamundi_ • Nominal east-west drill sections are normal to the strike of mineralisation. • Dip varies from -60° to -85° to the east. Local grade continuity follows the dip of the mineralisation. The bulk of the drilling intersects local grade continuity at 60° to 90° angles and true widths are estimated to vary from 80-100% of downhole intercepts. _Great Southern_ • Nominal east-west drill sections are normal to the strike of mineralisation.

Criteria	Commentary
	• Dip varies from -50° to -70° to the east. Local grade continuity follows the dip of the mineralisation. The bulk of the drilling intersects local grade continuity at 60° to 90° angles and true widths are estimated to vary from 80-100% of downhole intercepts. *Caroline* • Nominal east-west drill sections are normal to the strike of mineralisation. • Steep to moderate east dips. Local grade continuity follows the dip of the mineralisation. The bulk of the drilling intersects local grade continuity at 60° to 90° angles and true widths are estimated to vary from 80-100% of downhole intercepts. *Charlie Brown* • Nominal east-west drill sections are normal to the strike of mineralisation. • Dip varies from -45° to -60° to the east. Local grade continuity follows the dip of the mineralisation. The bulk of the drilling intersects local grade continuity at 60° to 90° angles and true widths are estimated to vary from 80-100% of downhole intercepts.
Sample security	*General* • Samples were collected into numbered calico bags at the drill site during the drilling operation. Unique sample numbers were retained during the whole process. Current procedures use pre-numbered bags. • Samples were transported to the Company depot at the end of each working day and secured. • All samples were then catalogued and sealed prior to dispatch. Samples were delivered to laboratories as they were collected using reputable commercial freight companies.
Audits or reviews	*General* • QA/QC samples were routinely monitored by the database manager and geologist on a batch and campaign basis. The accuracy of key elements such Cu and Au was acceptable and the field duplicate assay data was unbiased and shows an acceptable level of precision. • A comprehensive audit of sampling, assaying and QAQC procedures used by Universal was carried out by independent consultants McDonald Speijers in 2006 with no significant adverse findings. • QAQC procedures were assessed as part of a broader review of Altona's assets carried out by independent consultants Optiro in 2009. With the exception of the early work by CRAE, Dominion, Bruce Resources and Pan Australian, which is poorly documented, procedures employed at the deposits were found to meet acceptable industry standards.

Section 3: Estimation and Reporting of Mineral Resources

Criteria	Commentary
Database integrity	*General* • Data used for estimation is stored within a SQL Server database and is managed using DataShed software. The structure of the drilling and sampling data is based on the Maxwell Data Model. • Drillhole data was primarily captured directly into digital logging systems and

Criteria	Commentary
	uploaded to the database by the database administrator (standard procedures since 2005). • Laboratory data has primarily been received in digital format and uploaded directly to the database (standard procedures since 2002). • In both cases the data was validated on entry to the database, by a variety of means, including the enforcement of coding standards, constraints and triggers. These are features built into the data model that ensure that the data meets essential standards of validity and consistency. • Original data sheets and files have been retained and are used to validate the contents of the database. • Further validation of existing collar, survey and downhole data was completed for each resource estimation dataset. Validation steps included: Drillhole collar locations compared to the topographic surface, downhole deviations of all drillhole traces examined and problematic surveys excluded, assay data checked for overlapping and missing samples, checks for downhole information beyond end of hole depth, all data (e.g. assay, bulk density, RQDs, core recovery) checked for incorrect values by deriving minimum and maximum, lithology data checked to ensure use of standard rock type codes only, meta-data fields checked to ensure they were populated and that the data recorded was consistent.
Site visits	*General* • The Competent Persons are regular visitors to site.
Geological interpretation	*General* • The Cloncurry Copper Project is situated within the Mary Kathleen Domain and to a lesser extent the Canobie Domain of the late Palaeoproterozoic Eastern Fold Belt of the Mount Isa Inlier. • Copper deposits within the Project are variants of Iron-Oxide-Copper-Gold (IOCG) style hydrothermal mineralisation. • Deposits fit into two categories, 'copper-gold' and 'copper-only'. The copper-gold deposits (e.g. Little Eva, Bedford, Lady Clayre and Ivy Ann) are typical of IOCG deposits in the Eastern Mt Isa Inlier. The copper-only deposits (e.g. Turkey Creek, Blackard, Scanlan, Longamundi, Great Southern, Caroline and Charlie Brown) are a distinct stratabound mineralisation style unique to the Roseby Schist host rocks. • At Little Eva, Bedford and Turkey Creek, geological models are well supported by various datasets, including geochemical surface sampling, field mapping, airborne geophysics, ground geophysics, drillhole logging and sampling. Combined with a good understanding of regional geology, confidence in the geological framework that supports domaining in these resource estimates is moderate to high. • Geological interpretation and domaining for the Blackard, Legend and Scanlan resource estimates are grade and geology based. Confidence in the geological framework that supports domaining in these resource estimates is moderate. • Geological interpretation and domaining in the Ivy Ann, Lady Clayre, Longamundi, Great Southern, Caroline and Charlie Brown resource estimates are predominantly grade based. Confidence in the geological framework that supports domaining in these resource estimates is moderate to low. • Geological interpretation was completed on a sectional basis, from which polylines were interpolated to create 3D solid wireframes for lithology and mineralisation and surfaces for weathering interfaces. • Statistical and geostatistical analysis verified the domain definition by confirming

Criteria	Commentary
	statistical homogeneity and the presence of distinct continuity characteristics. *Little Eva* • Confidence in the geological interpretation of the deposit is moderate to high. The spatial extent and geometry of separate lithological components is well constrained by comprehensive drillhole relogging completed in 2013. This information is supplemented by surface mapping and geophysical interpretation of airborne magnetics. • The deposit is subcropping on a flat plain with thin (<3m) residual soil and alluvium cover. • The deposit is 1.4km in length and between 20m to 370m wide with mineralisation from surface and open below the current limit of drilling at 350m vertical depth below surface. • Mineralisation is hosted within a body of subvolcanic intrusive rocks that strike north, with easterly 60° dipping contacts in the north and subvertical and westerly dipping contacts centrally and to the south. • The intrusive rocks are dominantly intermediate in composition, fine to medium grained with feldspar porphyrtic and amygdaloidal textures but also include a minor porphyritic felsic intrusion along the deposits western margin. • In plan, the intrusive package has a lensoidal shape, imbricated by mineralised breccias and post mineral faulting and is enclosed by metasedimentary rocks. The western contact between intrusives and metasediments is, in part, highly strained and fractured. Copper mineralisation is rare within the metasediments. • Copper-gold mineralisation is strong and relatively narrow in the north and is progressively weaker and wider in the southern half of the deposit. Higher grade mineralisation in the north occurs in stacked zones of breccia, veining and fracturing. Intervening material is lower grade with disseminated and veinlet hosted mineralisation. Low to moderate grade mineralisation dominant in the south is generally more evenly distributed in fractures, veinlets and disseminations. • Host rocks are variably altered by multiple stages of alteration. Early high temperature alteration assemblages of amphibole, magnetite and biotite (dark grey coloured) are overprinted by assemblages comprising albite, hematite, magnetite, carbonate ± chalcopyrite (red coloured). • The dominant ore mineral is chalcopyrite with rare bornite, chalcocite, pyrite and molybdenite and occurs as disseminations, veinlets, veins and breccia infill. The chalcopyrite is coarse-grained with 0.5mm to 3mm being typical for disseminated mineralisation and clots up to 2cm in veins and breccia infill. Gold occurs as very fine (2 to 9µm) electrum particles associated with chalcopyrite and pyrite. • A 15m to 25m zone of weathering with oxide mineralisation blankets the deposit. It includes a zone of complete oxidation and a thin transition zone with minor secondary and remnant primary copper sulphides. Copper oxide mineralisation is dominated by malachite, chrysocolla, copper-iron oxide with rare occurrences of azurite and native copper. The transition zone is dominated by malachite, minor degraded chalcopyrite and rare native copper. • For descriptive and modelling purposes the deposit is split into four major domains using grade constraints in conjunction with lithological contacts between the igneous package and metasedimentary rocks. • Northern Domain: Intermediate host rocks that are narrow, tabular and taper to the

Criteria	Commentary
	north. Consistent high tenor mineralisation (~1% avg. copper grade typical) in comparatively narrow (20m to 40m) breccia zone. Mineralisation and host rock contacts strike north with ~55° east dip (modelled using >0.15% copper cut-off). • Central Domain: Felsic porphyritic tabular body on the western margin of the dominant intermediate host rock. Stacked sheets of high tenor mineralisation in narrow (10m to 40m) fracture zones and breccias (~0.8% avg. copper grade typical), within pervasive background moderate tenor mineralisation (0.3% to 0.5% avg. copper grade typical). Mineralised sheets strike approximately 010° with west ~65° dip (modelled using >0.5% copper cut-off). • Southern Domain: Intermediate host rock. Lenses of moderate tenor mineralisation (0.3% to 0.5% copper) in 10m to 40m thick fracture and breccia zones within pervasive low tenor mineralisation (modelled using <0.15% copper cut-off). More strongly mineralised zones strike between 340-020 ° with west ~20° dip. • Southeastern Domain: Intermediate host rock. Discrete zones of low to moderate tenor mineralisation (0.3% to 0.4% average copper grade typical). Mineralised zones strike 340° with west ~70° dip or 260° with south ~30° dip (modelled using >0.15% copper cut-off). • All domains were further subdivided using a top of fresh rock surface to separate oxide mineralisation and primary sulphide mineralisation. • There are currently no alternative detailed interpretations of Little Eva geology. The geological interpretation has been refined and is believed to be robust. *Bedford* • Confidence in the geological interpretation of the deposit is moderate to high. Good local constraints exist on the spatial extent and geometry of separate lithological and structural components through the integrated analysis of surface mapping, surface geochemistry, surface geophysics, drill hole logging, downhole geochemistry, magnetic susceptibility and radiometrics. Drilling and high resolution soil sampling (10mE by 25mN) provide good deposit scale constraints on the geometry and continuity of mineralisation. • Mineralisation occurs at surface, is exposed in sub-crop, and is confirmed through drilling in the main zones down dip to ~140m vertical depth below surface. • The deposit is hosted within a steep west dipping shear zone striking north to north northeast. The shear zone varies from 50m to 120m wide with internal arrays of mineralised structures. • Mineralisation has been defined in two separate zones, 'Bedford North' and 'Bedford South', however the associated shear zone is through going. The overall deposit extends over a strike length of 2.5km; the northern zone 1.15km and southern zone 850m long. Within the shear zone individual mineralised structures associated with ore grade mineralisation (~1% average copper grade typical) are planar and have true widths ranging from 5 to 12m. • Host stratigraphy comprises a north to north northeast striking, moderate to steep west dipping interlayered sequence of amphibolite and biotite schist, underlain by psammite and intruded concordantly by narrow planar granite and pegmatoidal dykes/sills. • In Bedford South mineralised structures are interpreted to be bedding/foliation parallel. In Bedford North the main mineralised structures are interpreted to trend north-south stepping across north-northeast striking stratigraphy, with the

Criteria	Commentary
	development of a set of secondary north-northeast linking structures along bedding/foliation. Moderate to shallow northerly plunging ore shoots are interpreted to be the result of the low angle intersection of transgressive mineralised structures and more competent stratigraphy. • Magnetite-biotite alteration and quartz veining are concentrated in the ore zones, above a strongly feldspar-hematite altered foot wall. • The dominant ore mineral is coarse grained chalcopyrite (with minor magnetite, pyrite, pyrrhotite and gold) which occurs within quartz veins, breccia fill and disseminations within the host shear zone. • An irregular 20 to 30m thick zone of weathering with oxide mineralisation blankets the deposit. Although the top of fresh rock is well defined, variability of copper mineral species within the weathering profile is not well understood. • The main mineralisation domains were defined using grade constraints. A nominal cut-off grade of 0.3% Cu was used to define boundaries between strongly mineralised structures and a weakly-mineralised low grade envelope, which was itself separated from unmineralised rock by a 0.1% Cu grade shell. • Three main geological domains were defined based on observed internal consistency in geological characteristics: north-south trending mineralised structures, north-northeast trending linking mineralised structures and low grade envelopes. • All domains were further subdivided using a top of fresh rock surface to separate oxide mineralisation and primary sulphide mineralisation. • There are currently no alternative interpretations of the main north-south trending mineralised structures. The arrangement of north-northeast trending linking mineralised structures in the footwall of Bedford North, is one of several possible realisations of the current data. These structures are a minor component of the Mineral Resource and adopting an alternative interpretation is unlikely to have a significant impact. *Lady Clayre* • The geological interpretation and resulting domaining utilised in the Lady Clayre resource estimate is primarily grade based. Underlying geological controls on mineralisation are poorly constrained, meaning confidence in the current interpretation is moderate to low. • Mineralisation occurs at surface, is exposed in sub-crop, and is confirmed through drilling ~400m vertical depth below surface. • Mapping and surface sampling has defined multiple zones of surface mineralisation. Zones A and F have been the focus of drilling, which has delineated a series of moderate to steep dipping planar mineralised bodies. • Zone A mineralisation strikes north-northwest, dips 35° to 70° to the west and extends along strike for 700m. • Zone F mineralisation strikes north-east, dips 35° to 85° to the west and extends along strike for a total of 480m. • Lady Clayre is located in a structurally complex area with evidence for a number of ductile and brittle deformation events. Copper-gold mineralisation is structurally controlled, associated with faulting/shearing in a folded sequence of shale, metasiltstone, schist and dolomite. • The metasedimentary package is intruded by intensely altered, narrow (0.5m to 5m) sheets of mafic intrusive.

Criteria	Commentary
	• Alteration mineral assemblages associated with mineralisation are dominated by carbonate, feldspar, quartz and tremolite. • The main sulphide ore mineral is chalcopyrite often associated with lesser pyrite and/or pyrrhotite. Molybdenite is also occasionally abundant. Mineralisation is coarse-grained, occurring in sulphide or carbonate-sulphide vein arrays and as sulphide disseminations in intensely altered rocks. Breccia infill can also be locally significant. • An irregular 15m to 25m thick zone of weathering with oxide mineralisation blankets the deposit. The dominant copper oxide mineral is malachite with limonite and goethite. • Zone A mineralisation has been interpreted into 11 structures; the main zone, which has been split into a north and south lode, 6 hangingwall structures and 3 footwall structures (modelled using range of copper cut-offs >0.1%). Mineralisation outside of these structures was modelled into a low-grade domain using a 0.1% copper cut-off. Conditional Indicator Kriging (CIK) was then used to delineate internal ore and waste zones. • Zone F mineralisation has been modelled into 3 main lodes, separated by north-south striking faults, 36 hangingwall lodes and 8 footwall lodes (modelled using range of copper cut-offs >0.1%). Lodes were collated into a total of 9 domains based on orientation and relationship to the main mineralised horizon. • The arrangement of mineralised structures is one of several possible realisations of the current data. Adopting an alternative interpretation may have an impact on the Mineral Resource. *Ivy Ann* • The geological interpretation and resulting domaining utilised in the Ivy Ann resource estimate is primarily grade based. Underlyeing geological controls on mineralisation are poorly constrained, meaning confidence in the current interpretation is moderate to low. • Mineralisation occurs at surface, is locally exposed in sub-crop, and is confirmed through drilling to ~125m vertical depth below surface. • The deposit is hosted within steep east-dipping structures striking north to north-northeast. Mineralisation has been defined in two separate deposits, Ivy Ann and Ivy Ann North. The overall mineralisation extends over a strike length of 3km. • The main Ivy Ann deposit is defined over a strike length of 630m with a width of 20m to 130m and east 75° dips. It is a wedge-shaped body striking north-south subparallel to host lithologies. • The Ivy Ann North deposit is defined over a 420m strike length with a width of 10m to 30m and east 80° dips. It is a lenticular body striking north-northeast with numerous lenses. • Copper-gold mineralisation is fault hosted and associated with breccias and networks of veins and micro-veinlets within a folded sequence of psammite and amphibolite. Fold axes are north-south with interpreted moderate southward plunges (>45°). • Alteration mineral assemblages associated with mineralisation are dominated by albite, quartz, hematite, biotite and magnetite. Breccias are best developed in albite-quartz-hematite altered rocks at fold hinges. • The metasediments, fault zones and fold axes are cut by a swarm of thin (<5m thick) west-northwest trending pegmatite dykes.

Criteria	Commentary
	• Main sulphide ore minerals are chalcopyrite with lesser pyrite, pyrrhotite. Sulphide grain size is relatively coarse. • An irregular 15m to 30m thick zone of weathering with oxide mineralisation blankets the deposit. The dominant copper oxide mineral is malachite present with goethite and hematite and lesser amounts of chrysocolla, tenorite and cuprite. • Ivy Ann mineralisation has been interpreted into 6 structures; Ivy Ann Main, 1 footwall and 2 hangingwall structures and 2 minor structures located 330m to the northwest (modelled using range of copper cut-offs >0.1%). Mineralisation outside of these structures was modelled into a low-grade domain using a 0.1% copper cut-off. Conditional Indicator Kriging (CIK) was then used to delineate internal ore and waste zones. All structures were collated into one domain for variography and estimation purposes. • A total of 14 mineralised structures were interpreted at Ivy Ann North (modelled using range of copper cut-offs >0.1%). All structures were collated into a single mineralised domain for variography and estimation purposes. • There are currently no alternative interpretations of the main Ivy Ann mineralised structure. The arrangement of other mineralised structures, is one of several possible realisations of the current data. These structures are a minor component of the Mineral Resource and adopting an alternative interpretation is unlikely to have a significant impact. *Turkey Creek* • Confidence in the geological interpretation of the deposit is moderate to high. The spatial extent and geometry of separate lithological components is well constrained by geological surface mapping and detailed logging of RC chips, supported by soil geochemistry and geophysical interpretation, including magnetics. • The deposit extends over 1.8km in length. Mineralisation occurs at surface, is exposed in sub-crop, and is confirmed through drilling in the main zone down dip to ~140m vertical depth below surface. • Mineralisation is interpreted to be stratabound, hosted within a sequence of interbedded metasediments (biotite-schists, biotite-scapolite metasediments and marble). • Mineralisation has a simple tabular geometry that displays strong continuity, with true widths varying from approximately 10m to 30m (southern end) to 30m to 50m (northern end). The main portion of the deposit is oriented north and dips 60° to the east; at its northern end, the strike of the mineralisation and host stratigraphy is folded sharply east and dips steeply south. The broader mineralised sheet displays an upper and lower zone of stronger copper mineralisation. • The host rocks are variably altered to carbonate and albite-hematite assemblages. • Copper sulphide mineralisation is dominated by bornite, with subordinate chalcopyrite and chalcocite, all occur as disseminations or in carbonate veinlets. Copper sulphides in the upper zone are dominated by chalcopyrit and bornite, and in the lower zone by chalcocite and bornite. • A consistent 20m to 30m thick zone of weathering with oxide mineralisation blankets the southern zone. It includes a zone of complete oxidation and a thin transition zone with minor secondary and remnant primary copper sulphides. Weathering is incisive in the north, locally extending to 90m below surface. • The main mineralisation domains were defined using grade constraints in

Criteria	Commentary
	conjunction with lithological contacts. A nominal cut-off grade of 0.2% Cu was used to define boundaries between mineralised and weakly-mineralised or unmineralised domains. • Two main geological domains (Southern Zone and Northern Fold Area) were defined. The Southern Zone was sub-divided into a central low grade domain and two higher grade domains (footwall and hanging wall). • All domains were subdivided using a base of oxidation surface to separate oxide mineralisation and primary sulphide mineralisation. • There are currently no alternative detailed interpretations of Turkey Creek geology. The geological interpretation has been refined and is believed to be robust. *Blackard* • The geological interpretation and resulting domaining utilised in the Blackard resource estimate is primarily grade based. Underlyeing geological controls on mineralisation are poorly constrained, however grade continuity is generally high relative to drill density, meaning confidence in the current interpretation is moderate. • The deposit extends over 3.1km in length. Mineralisation is locally exposed in sub-crop, and is confirmed through drilling in the main zone down dip to ~420m vertical depth below surface. • Mineralisation is interpreted to be stratabound, hosted within a folded sequence of interbedded metasediments (biotite-schists, biotite-scapolite metasediments and marble). • Mineralisation has a folded tabular geometry that is sub-parallel to bedding in a shallowly north plunging anticline, indicating that mineralisation has been folded or emplaced in conducive sections of the folded stratigraphy. The main zone west of the interpreted fold axis strikes north-south and dips 65° west, with true widths varying from approximately 40m to 60m. The strike of this zone swings to north-northwest at the northern limit of the deposit. The main zone east of the interpreted fold axis strikes north-south and dips 60° east, with true widths varying from approximately 10m to 20 m. • The host rocks are variably altered to carbonate and albite-hematite assemblages. • Copper sulphide mineralisation is dominated by bornite, with subordinate chalcopyrite and occurs as disseminations or in carbonate veinlets. • Blackard has a well-developed weathering profile that features three distinct zones; an oxide zone at surface (20m to 30m thick), an underlying native copper zone (40m to 160m thick) and a locally developed transition zone at depth (<1m to 15m thick). • Copper in the oxide zone occurs in iron oxides and malachite. In the native copper zone, metallic copper is dominant (accounting for an estimated 65% of the contained copper). Significant copper also occurs in the lattice of a mineral referred to as 'hydrobiotite' which is not recoverable by flotation. The transition zone contains minor secondary and remnant primary copper sulphides (chalcocite, cuprite, tenorite, bornite and chalcopyrite). • Mineralisation domains were defined using grade constraints. A nominal cut-off grade of 0.15% Cu was used to define boundaries between mineralised and weakly-mineralised or unmineralised rock. • Blackard mineralisation was interpreted to comprise 2 main zones, with the

Criteria	Commentary
	remaining mineralisation divided into 16 subordinate zones, typically oriented sub-parallel to the main mineralisation domains. • All domains were further subdivided based on the weathering profile, in order to separate mineralogically distinct mineralisation types. • Current Blackard domaining is based on one of a series of possible geological interpretations. Adopting an alternative interpretation may have an impact on the Mineral Resource. *Legend* • The geological interpretation and resulting domaining utilised in the Legend resource estimate is primarily grade based. Underlyeing geological controls on mineralisation are poorly constrained, however grade continuity is generally high relative to drill density, meaning confidence in the current interpretation is moderate. • Lithology, alteration, weathering, ore texture and mineralogy are comparable to the detailed description provided for Blackard deposit. Only features specific to the Legend deposit are listed here. • The deposit extends over 1.1km in length. Mineralisation is locally exposed in sub-crop, and is confirmed through drilling in the main zone down dip to ~250m vertical depth below surface. • Mineralisation has a tabular geometry that is sub-parallel to bedding. Strike varies from west-northwest to west creating a crescent-like shape in plan. Mineralisation dips broadly south at ~45°, with true widths varying from approximately 50m to 70m. • Weathering zones were interpreted to have the following thicknesses: 10m to 20m oxide zone, 50m to 140m native copper zone and <1m to 10m transition zone. • Mineralisation domains were defined using grade constraints. A nominal cut-off grade of 0.15% Cu was used to define boundaries between mineralised and weakly-mineralised or unmineralised rock. • Legend mineralisation was interpreted to comprise 2 main zones, with the remaining mineralisation divided into 2 subordinate zones oriented sub-parallel to the main mineralisation domains. • Domains were further subdivided based on strike orientation and weathering zone. • Current Legend domaining is based on one of a series of possible geological interpretations. Adopting an alternative interpretation may have an impact on the Mineral Resource. *Scanlan* • The geological interpretation and resulting domaining utilised in the Scanlan resource estimate is primarily grade based. Underlyeing geological controls on mineralisation are poorly constrained, however grade continuity is generally high relative to drill density, meaning confidence in the current interpretation is moderate. • Lithology, alteration, weathering, ore texture and mineralogy are comparable to the detailed description provided for Blackard deposit. Only features specific to the Legend deposit are listed here. • The deposit extends over 1.65km in length. Mineralisation is locally exposed in sub-crop, and is confirmed through drilling in the main zone down dip to ~200m vertical depth below surface. • Mineralisation has a folded tabular geometry that is sub-parallel to bedding in an

Criteria	Commentary
	upright gently north plunging synform-antiform pair. Mineralisation strike is broadly north-south, whilst dip varies greatly due to the folding. The western synform is tight to isoclinal, whilst the antiform to the east is broad, creating flat-lying geometries in the centre of the deposit and a shallow easterly dip along the eastern margin. True widths vary between approximately 10m and 70m. • Weathering zones were interpreted to have the following thicknesses: 5m to 20m oxide zone, 30m to 130m native copper zone and <1m to 10m transition zone. • Mineralisation domains were defined using grade constraints. A nominal cut-off grade of 0.15% Cu was used to define boundaries between mineralised and weakly-mineralised or unmineralised rock. • Scanlan mineralisation was interpreted to form a semi-continous mineralised horizon, divided into four domains based on orientation and structural location: Western Trough – western limb dipping towards the east, Western Trough – eastern limb dipping steeply towards the west, Central Flats - flat orientation and Eastern Trough – shallowly dipping to the east. • All domains were further subdivided based on the weathering profile, in order to separate mineralogically distinct mineralisation types. • Current Scanlan domaining is based on one of a series of possible geological interpretations. Adopting an alternative interpretation may have an impact on the Mineral Resource. *Longamundi* • The geological interpretation and resulting domaining utilised in the Longamundi resource estimate is primarily grade based. Underlyeing geological controls on mineralisation are poorly constrained, whilst drilling is sparse, meaning confidence in the current interpretation is moderate to low. • Lithology, alteration, weathering, ore texture and mineralogy are comparable to the detailed description provided for Blackard deposit. Only features specific to the Longamundi deposit are listed here. • The deposit extends over 1.1km in length. Mineralisation is well exposed in sub-crop, and is confirmed through drilling in the main zone down dip to ~160m vertical depth below surface. • Mineralisation has a simple tabular geometry that is sub-parallel to bedding and strikes north-northwest with a -60° to -85° east dip. True widths vary between approximately 10m and 60m and are typically more limited at depth. • Weathering zones were interpreted to have the following thicknesses: 30m to 60m oxide zone and 60m to 120m native copper zone. A transition zone was not modelled. • Mineralisation domains were defined using grade constraints. A nominal cut-off grade of 0.3% Cu was used to define boundaries between mineralised and weakly-mineralised or unmineralised rock. • Longamundi mineralisation was interpreted to form a single continous moderate to steep east dipping sheet. • This domain was further subdivided based on the weathering profile, in order to separate mineralogically distinct mineralisation types. • Current Legend domaining is based on one of a series of possible geological interpretations. Adopting an alternative interpretation may have an impact on the Mineral Resource. *Great Southern*

Criteria	Commentary
	• The geological interpretation and resulting domaining utilised in the Great Southern resource estimate is primarily grade based. Underlyeing geological controls on mineralisation are poorly constrained, whilst drilling is sparse, meaning confidence in the current interpretation is moderate to low. • Lithology, alteration, weathering, ore texture and mineralogy are comparable to the detailed description provided for Blackard deposit. Only features specific to the Great Southern deposit are listed here. • The deposit extends over 900m in length. Mineralisation is well exposed in sub-crop, and is confirmed through drilling in the main zone down dip to ~140m vertical depth below surface. • Mineralisation has a simple tabular geometry that is sub-parallel to bedding and strikes north-northwest with a -50° to -70° east dip. True widths vary between approximately 20m and 60m. • Weathering zones were interpreted to have the following thicknesses: 20m to 60m oxide zone and 40m to 90m native copper zone. A transition zone was not modelled. • Mineralisation domains were defined using grade constraints. A nominal cut-off grade of 0.3% Cu was used to define boundaries between mineralised and weakly-mineralised or unmineralised rock. • Great Southern mineralisation was interpreted to largely form a continous moderate to steep east dipping sheet. A small sub-parallel footwall zone was also modelled in the south and grouped with the main zone for estimation purposes. • The domain was further subdivided based on the weathering profile, in order to separate mineralogically distinct mineralisation types. • Current Great Southern domaining is based on one of a series of possible geological interpretations. Adopting an alternative interpretation may have an impact on the Mineral Resource. *<u>Caroline</u>* • The geological interpretation and resulting domaining utilised in the Caroline resource estimate is primarily grade based. Underlyeing geological controls on mineralisation are poorly constrained, whilst drilling is sparse, meaning confidence in the current interpretation is moderate to low. • Lithology, alteration, weathering, ore texture and mineralogy are comparable to the detailed description provided for Blackard deposit. Only features specific to the Caroline deposit are listed here. • Two distinct linear zones of mineralisation are evident. The Northern Zone extends over 650m in length, separated from the Southern Zone by ~1km, which itself has a strike length of 500m. Mineralisation is exposed in sub-crop, and has been confirmed through drilling down dip to ~120m vertical depth below surface. • Mineralisation appears to have a simple tabular geometry that is sub-parallel to bedding and strikes broadly north-south with steep to moderate east dips. True widths vary between approximately 10m and 30m. • Weathering zones were interpreted to have the following thicknesses: ~50m oxide zone and ~60m native copper zone. A transition zone was not modelled. • Mineralisation domains were defined using grade constraints. A nominal cut-off grade of 0.3% Cu was used to define boundaries between mineralised and weakly-mineralised or unmineralised rock. • Longamundi mineralisation was interpreted to form a single continous moderate to

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	steep east dipping sheet. • This domain was further subdivided based on the weathering profile, in order to separate mineralogically distinct mineralisation types. • Current Caroline domaining is based on one of a series of possible geological interpretations. Adopting an alternative interpretation may have an impact on the Mineral Resource. *Charlie Brown* • The geological interpretation and resulting domaining utilised in the Charlie Brown resource estimate is primarily grade based. Underlyeing geological controls on mineralisation are poorly constrained, whilst drilling is sparse, meaning confidence in the current interpretation is moderate to low. • Mapping and drillhole logging indicates mineralisation is associated with strongly quartz-feldspar altered variants of metasedimentary rocks similar to those at other 'copper-only' deposits. Brittle textures such as brecciation and veining are also more prevalent and whilst vertical zonation in copper minaralogy defines typical oxide, native copper and primary zones, Charlie Brown rock chips return anomalous gold. • The deposit is 250m in length. Mineralisation is locally exposed in sub-crop, and is confirmed through drilling in the main zone down dip to ~100m vertical depth below surface. • Mineralisation has a simple tabular geometry that strikes broadly north-northwest with a -45° to -60° east dip. True widths vary between approximately 15m and 40m. • Weathering zones were interpreted to have the following thicknesses: 15m to 20m oxide zone and 60m to 80m native copper zone. A transition zone was not defined. • Mineralisation domains were defined using grade constraints. A nominal cut-off grade of 0.1% Cu was used to define boundaries between mineralised and weakly-mineralised or unmineralised rock. • Mineralisation was not extrapolated between adjacent 200m spaced sections, instead interpreted to form three sheet-like moderate east dipping bodies with limited (50m) strike continuity. • Domains were further subdivided based on the weathering profile, in order to separate mineralogically distinct mineralisation types. • Current Charlie Brown domaining is based on one of a series of possible geological interpretations. Adopting an alternative interpretation may have an impact on the Mineral Resource.
Dimensions	*Little Eva* • The deposit strikes broadly north over a length of 1.4km. The deposit is 20m to 370m wide with mineralisation intersected from surface to the current limit of drilling at ~350m vertical depth. • The dip of the mineralisation varies from 50° to the east to subvertical. • The deposit remains open to the south along strike and at depth. *Bedford* • The main zone of mineralisation extends over a north-south strike length of 2.5km, including a distinct 1.15km long northern zone 'Bedford North' and 850m long southern zone 'Bedford South'. The deposit is 50m to 120m wide with mineralisation intersected from surface to the current limit of drilling at ~140m

Criteria	Commentary
	vertical depth. • Mineralisation dips west at 70° to 80°. • The deposit remains open to north and south along strike, down dip and between the two zones. *Lady Clayre* • The main structure in Lady Clayre Zone A strikes north for an overall strike length of 700m and dips 50° to 70° west. Hangingwall and footwall lodes have a similar strike but dip more shallowly to the west, between 35° and 65°. The main structure is separated into two lodes of 250m and 350m in strike. All other secondary lodes are between 20m and 260m in length. Mineralisation has been intersected from surface to the current limit of drilling at ~350m vertical depth. • Lady Clayre Zone F strikes northeast for an overall strike length of 480m and dips 75° to 85° west. The three main lodes each vary between 60m and 250m and are interpreted to be offset along strike by a series of faults. The hangingwall and footwall lodes range from 20m to 100m along strike. Mineralisation width varies from 2m to 55m. Mineralisation has been intersected from surface to the current limit of drilling at ~220m vertical depth. • The deposit remains open in all directions along strike and at depth. *Ivy Ann* • The main zone of Ivy Ann mineralisation strikes broadly north over a length of 630m. The deposit is 20m to 130m wide with mineralisation intersected from surface to the current limit of drilling at ~125m vertical depth. • Ivy Ann North strikes north-northeast over a length of 420m. The deposit is 10m to 30m wide with mineralisation intersected from surface to the current limit of drilling at ~120m vertical depth. • Mineralisation dips steeply east. • The deposit remains open to the north, south and at depth. *Turkey Creek* • The deposit is 1.8km in length and between 30m to 50m wide with mineralisation intersected from surface to the current limit of drilling at ~140m vertical depth. • The main Southern Zone dips to the east -60°. The Northern Fold Area dips steeply south. • The deposit remains open to the east and at depth. *Blackard* • The deposit is 3.1km in length and between 50m (in north) to 350m (in centre) wide with mineralisation intersected from surface to the current limit of drilling at ~420m vertical depth. • Dip varies from 65° west in the main western zone, to 60° east along the deposits eastern margin. • The deposit remains open to the south, east and at depth. *Legend* • The deposit is 1.1km in length and between 5m to 80m wide with mineralisation intersected from surface to the current limit of drilling at ~250m vertical depth. • Mineralisation dips broadly south at approximately -65°. • The deposit remains open at depth. *Scanlan* • The deposit is 1.65km in length and between 90m (in north) to 550m (in centre) wide with mineralisation intersected from surface to the current limit of drilling at

Criteria	Commentary
	~200m vertical depth. • Mineralisation dip varies greatly due to folding. The western synform is tight to isoclinal, whilst the antiform to the east is broad, creating flat-lying geometries in the centre of the deposit and a shallow easterly dip along the eastern margin • The deposit remains open to the north, south and at depth. *Longamundi* • The deposit is 1.1km in length and between 40m to 90m wide with mineralisation intersected from surface to the current limit of drilling at ~160m vertical depth. • Mineralisation dips broadly east at -60° to -85°. • The deposit remains open to the north and at depth. *Great Southern* • The deposit is 900m in length and between 30m to 90m wide with mineralisation intersected from surface to the current limit of drilling at ~140m vertical depth. • Mineralisation dips broadly east at -50° to -70°. • The deposit remains open to the north and at depth. *Caroline* • The deposit is 650m in length and between 20m to 75m wide with mineralisation intersected from surface to the current limit of drilling at ~120m vertical depth. • Mineralisation exibits steep to moderate east dips. • The deposit remains open to the north, south and at depth. *Charlie Brown* • The deposit is 250m in length and between 65m to 100m wide with mineralisation intersected from surface to the current limit of drilling at ~100m vertical depth. • Mineralisation dips broadly east at -45° to -60°. • The deposit remains open to the north, south and at depth.
Estimation and modelling techniques	*General* • In all resource estimates sample data was flagged from estimation domain wireframes. Zonal compositing was then applied to 1m (Little Eva, Bedford, Lady Clayre, Ivy Ann, Turkey Creek and Scanlan) or 2m (Blackard, Legend, Longamundi, Great Southern, Caroline and Charlie Brown) down hole lengths. • Statistical and geostatistical properties of samples within each domain were then characterised, prompting a range of optimisation processes as required such as declustering, top-cut analysis, contact analysis and domain revision. • Quantitative kriging neighbourhood analysis (QKNA) was performed to optimise certain parameters in all kriging based estimates such as block size, search distance and sample number. • Grade estimation for Little Eva, Bedford, Lady Clayre, Ivy Ann, Turkey Creek, Blackard, Legend and Scanlan utilised non-linear estimation techniques to produce recoverable resources. This approach estimates the average grade and proportion of each panel recoverable above a series of cut-off grades at selective mining unit (SMU) scale. This enables assessment of recoverable resources within a panel when drill coverage is insufficent for effective direct estimation into small SMU blocks. • This estimation type is appropriate for the nature of mineralisation and specific data-block configurations at each deposit. • Localised Multiple Indicator Kriging was applied at Little Eva. Reasons for selection of this specific estimation method include improved resistance to outliers and treatment of multi-population domains.

Criteria	Commentary
	• Uniform Conditioning techniques were applied at Bedford, Lady Clayre, Ivy Ann, Turkey Creek, Blackard, Legend and Scanlan. This type of estimation method was deemed more appropriate than MIK due to the presence of a 'diffuse' grade model, in which grade decreases systematically from high-grade zones to the border of the deposit. • Grade estimation for Longamundi, Great Southern, Caroline and Charlie Brown utilised Inverse Distance Weighting. All Mineral Resources for these deposits are classified as Inferred. • Hard boundary estimation was applied for most estimation domains. Exceptions in certain models included all weathering contacts (Longamundi, Great Southern, Caroline and Charlie Brown), the specific weathering contact between native copper and transition zone material (Blackard, Legend and Scanlan) or occasions were a single domain was split into subdomains due to changes in orientation (Lady Clayre, Legend and Scanlan). • Model validation steps included comparison of block model grades against input drillhole data both visually in plan/section and using swathe plots. Comparisons were also carried out between domain wireframe and domain block model volumes, average domain composite (declustered) and domain block grades, as well as between grade-tonnage curves for different estimation methods. All validation procedures produced acceptable results. • No by-product metallurgical assumptions have been built into the estimates. These are not relevant to the extraction of copper and gold by conventional means. • No ore loss due to deleterious elements or other non-grade variables of economic significance was modelled. • Previous Mineral Resource estimates have been published for Little Eva, Bedford, Lady Clayre and Ivy Ann. • As there has been no modern mining to date, no reconcilliation data is available. *Little Eva* • The geological model and Mineral Resource estimate was completed by Altona and first reported on 14 May 2012. • 11 unique estimation domains. • Composites were declustered using 50mE by 50mN by 40mRL cell declustering. • Extreme outliers of the gold sample population were top cut. No top-cut was applied to copper, however top-cuts were used for the maximum data value allowed for upper tail extrapolation during Multiple Indicator Kriging post-processing. Top-cuts were selected based on histogram and log probability plots, changes in the coefficient of variation, spatial location and clustering of high grade samples, as well as mean and variance plots to test the sensitivity of mean grade to top-cutting. • Directional variograms were modelled for whole domains and indicator variograms for selected indicator percentiles (up to 11). Modelled indicator variograms showed 50-70m variogram ranges with 20-45% nugget variances. • Drilling has typically been completed at 30-50m intervals along 50m spaced sections. • Multiple Indicator Kriging was used to estimate copper grades into parent blocks (25mE by 25mN by 10m) using up to eleven indicator cut-offs with associated indicator variograms per domain for primary mineralisation. Ordinary block kriging

Criteria	Commentary
	was used to interpoloate indicators. • Two estimation passes were used for all domains. Search ellipse orientations were the same as directional variogram orientations. No octant restrictions were used, and as such the maximum distance of extrapolation from data points is equal to the search dimensions for each estimation pass. The first pass has search dimensions of 150m by 150m by 30m with a minimum of 12 and a maximum of 24 samples. The second pass searched 250m by 250m by 50m with a minimum of 6 and maximum of 24 samples. Most of the blocks were informed in the 1st pass and commonly the 24 sample restriction was met before reaching maximum search distances. • Indicators were post-processed to calculate e-type mean grades (for validation) and the grades and fractions above cut-offs for a selective mining method. An Indirect lognormal support correction was applied for the change of support from points to SMU (6.25mE by 6.25mN by 5mRL). The distribution above the topmost threshold was modelled using a hyberbolic extrapolation which was fitted to the actual composite data from the bin threshold up to a top cut value. The Multiple Indicator Kriged copper grades at the panel support were post-processed to yield specific SMU block grades using an algorithm based upon Localised Uniform Conditioning. Ordinary Kriging estimates for copper were made at the SMU scale to provide a ranking model for this post-processing step. • Gold grades were estimated at SMU support using a collocated cokriging method, which preserves the generally-high copper-gold correlation. • Software utilised in resource modelling included Supervisor (variography), Isatis (variography, gold estimation and copper post-processing), Surpac with GSLIB front-end interface (block modelling and copper estimation). *Bedford* • The geological model and Mineral Resource estimate was completed by Altona and first reported on 9 March 2017. • 6 unique estimation domains. • The influence of extreme outliers was reduced by top-cutting, with top-cut levels determined by a combination of qualitative (grade histograms, lognormal probabilty plots) and quantitative analysis (decile analysis). Top-cuts were applied to nine gold and two copper samples, <1.5% of samples in affected domains. • Contact analysis verified the selection of hard domain boundaries. • Variography was completed to characterise copper and gold continuity in each sulphide domain. Nugget varies greatly as a proportion of overall variance in different domains, recording changes in the degree of small scale variability and/or errors. High influence is modelled in the north-south mineralised structures, accounting for ~30% of copper and 13% of gold variability. Geometric anisotropy is consistent with the geological model, with variogram reference planes striking north to north-northeast and dipping steeply west (70-80°). A shallow (20-25°) northerly plunge is also evident on this plane. Directional variogram model ranges for copper include: North-south mineralised structures - 54m along strike, 90m down dip, 3.8m across plane. North-northeast linking mineralised structures - 52m along strike, 30m down dip, 4m across plane. Low grade envelope - 55m along strike, 40m down dip, 6m across plane. • Drillhole spacing ranges from 25m to 100m along strike and 25m along section. • Grade estimation was initially into 10mE by 20mN on 10mRL parent blocks via

Criteria	Commentary
	Ordinary Kriging. • Three estimation passes were completed with search ellipse orientations derived from principal directions of continuity in the variogram. Search distances and sample numbers in the first search were optimised by domain type using QKNA (50m by 80m by 10m with a minimum of 10 and a maximum of 40 samples). These distances were doubled and subsequently trippled in the second and third estimation passes. • Search parameters in the second and third estimation passes for the north-south trending mineralised structures were further optimised, with reduced minimum and maximum sample numbers improving local accuracy at the transitions between dense and sparse sample data (minimum of 4, maximum of 16). • Post-processing of the ordinary kriged panel data by Uniform Conditioning was applied to copper, estimating the average grade and proportion of each panel recoverable above a series of cut-off grades at SMU scale (5mE by 5mN by 5mRL). This method does not attempt to specify the actual locations of economically extractable SMU blocks within a panel. • Software utilised in resource modelling included Leapfrog (geological modelling), Datamine (block modelling) and Isatis (estimation and post-processing). *Lady Clayre* • The geological model and Mineral Resource estimate was completed by Optiro and first reported on 23 April 2012. • 18 unique estimation domains. • The influence of extreme outliers was reduced by top-cutting. Top-cut levels were determined using a combination of top-cut analysis tools (grade histograms, log probability plots and CVs). • Directional variograms were modelled using traditional variograms or a normal score transformation. In general the grade continuity was good (copper variogram ranges of 45m to 60m along strike, 45m down dip, 12m to 21m across plane) but varied according to the drilling density within each domain; some domains are very sparsely sampled and this is reflected in the classification. • Drillhole spacing is typically 50m along strike and 30m to 60m along section. • Grade estimation was initially into 20mE by 20mN by 5mRL parent blocks via Ordinary Kriging. • Three estimation passes were used; the first search was based upon the variogram ranges for each domain in the three principal directions; the second search was typically one and a half times the initial search and the third search was two times the initial search. A minimum of 8 and a maximum of 50 samples were considered in estimation. Reduced sample numbers were required for estimation in the second and third passes. • Most blocks were estimated in the first pass; however, some more sparsely-sampled domains were predominantly estimated on the second or third pass. Unestimated blocks were set to the average grade of each domain. Estimation pass and assigned grades were accounted for in classification. • Post-processing of the Ordinary Kriged panel data by Uniform Conditioning was applied to copper, estimating the average grade and proportion of each panel recoverable above a series of cut-off grades at SMU scale (2.5mE by 2.5mN by 5mRL). This method does not attempt to specify the actual locations of economically extractable SMU blocks within a panel.

Criteria	Commentary
	• Software utilised in resource modelling included Datamine (geological modelling, block modelling and estimation) and Isatis (post-processing). *Ivy Ann* • The geological model and Mineral Resource estimate was completed by Optiro and first reported on 23 April 2012. • 4 unique estimation domains. • The influence of extreme outliers was reduced by top-cutting. Top-cut levels were determined using a combination of top-cut analysis tools (grade histograms, log probability plots and CVs). • Directional variograms were modelled using traditional variograms or a normal score transformation. In general the grade continuity was good (copper variogram ranges of 80m along strike, 50m down dip, 34.5m across plane) but varied according to the drilling density within each domain; some domains are very sparsely sampled and this is reflected in the classification. • Drillhole spacing is typically 50m along strike and 30m to 60m along section. • Grade estimation was initially into 20mE by 20mN by 5mRL parent blocks via Ordinary Kriging. • Three estimation passes were used; the first search was based upon the variogram ranges for each domain in the three principal directions; the second search was typically one and a half times the initial search and the third search was two times the initial search. A minimum of 10 and a maximum of 50 samples were considered in estimation. Reduced sample numbers were required for estimation in the second and third passes. • Most blocks were estimated in the first pass; however, some more sparsely-sampled domains were predominantly estimated on the second or third pass. Unestimated blocks were set to the average grade of each domain. Estimation pass and assigned grades were accounted for in classification. • Post-processing of the Ordinary Kriged panel data by Uniform Conditioning was applied to copper, estimating the average grade and proportion of each panel recoverable above a series of cut-off grades at SMU scale (2.5mE by 2.5mN by 5mRL). This method does not attempt to specify the actual locations of economically extractable SMU blocks within a panel. • Software utilised in resource modelling included Datamine (geological modelling, block modelling and estimation) and Isatis (post-processing). *Turkey Creek* • The geological model was developed by Altona and the Mineral Resource estimate completed by Optiro and first reported on 18 March 2015. • 8 unique estimation domains. • Data has a low coefficient of variation and grade top-cuts were not applied. • Contact analysis verified the selection of hard domain boundaries. • Copper mineralisation continuity was interpreted from variogram analyses to have an along strike range of 150m to 250m, down dip range of 20m to 55m and across strike range of 5m to 13m. • Drillhole spacing ranges from 50m to 100m along strike and 25m to 50m along section. • Grade estimation was initially via Ordinary Kriging into parent blocks of 10mE by 50mN by 10mRL within the Southern Zone and into 10mE by 25mN by 10mRL parent blocks within the Northern Fold Area.

Criteria	Commentary
	• Three estimation passes were used; within the Southern zone the first search was based upon the variogram ranges in the three principal directions; the second search was two times the initial search and the third search was six times the initial search, with reduced sample numbers required for estimation. • Data from the Northern fold area was unfolded and block grades estimated in unfolded space. Three estimation passes were used; first search was based upon the variogram ranges in the three principal directions; the second search was two times the initial search and the third search was ten times the initial search. A minimum of 10 and maximum of 32 samples were considered in estimation. Reduced sample numbers were required for estimation in the second and third passes. Post-processing of the Ordinary Kriged panel data by Uniform Conditioning was applied to copper, estimating the average grade and proportion of each panel recoverable above a series of cut-off grades at SMU scale (5mN by 6.25mE by 2.5mRL). A localised uniform conditioning algorithm was then used to re-state the uniform conditioning panel grade-tonnage curve, by assigning grades to SMU blocks based on a ranking derived from an SMU-scale ordinary kriging estimate. • Software utilised in resource modelling included Surpac (geological modelling), Datamine (block modelling and estimation) and Isatis (post-processing). _Blackard_ • The geological model and Mineral Resource estimate was completed by Optiro and first reported on 3 July 2012. • 15 unique estimation domains. • Data has a low coefficient of variation and grade top-cuts were not applied. • Directional variograms were modelled using traditional variograms or a normal score transformation. In general the grade continuity was good (copper variogram ranges of 107m to 330m along strike, 50m to 90m down dip, 30m to 50m across plane) but varied according to weathering zone. • Drillhole spacing is typically 50m along strike and 30m to 40m along section. • Grade estimation was initially into 25mE by 25mN by 10mRL parent blocks via Ordinary Kriging. • Three estimation passes were used; the first search was based upon the variogram ranges for each domain in the three principal directions; the second search was typically one and a half times the initial search and the third search was five times the initial search. A minimum of 8 and a maximum of 32 samples were considered in the first two estimation passes, with minimum sample number reduced to 1 in the final pass. • Most blocks were estimated in the first pass; however, some more sparsely-sampled domains were predominantly estimated on the second or third pass. Grades for unestimated blocks were calculated using a nearest neighbour algorithm. Estimation pass and assigned grades were accounted for in classification. • Post-processing of the Ordinary Kriged panel data by Uniform Conditioning was applied to copper, estimating the average grade and proportion of each panel recoverable above a series of cut-off grades at SMU scale (2.5mE by 2.5mN by 5mRL). This method does not attempt to specify the actual locations of economically extractable SMU blocks within a panel. • Software utilised in resource modelling included Surpac (geological modelling,

Criteria	Commentary
	block modelling and estimation) and Isatis (post-processing). *Legend* • The geological model and Mineral Resource estimate was completed by Optiro and first reported on 22 August 2012. • 15 unique estimation domains. • Data has a low coefficient of variation and log-probability plots are acceptable, however top-cuts of 2-3% copper were applied to three samples. • Directional variograms were modelled using traditional variograms or a normal score transformation. In general the grade continuity was high (copper variogram ranges of 200m to 500m along strike, 115m down dip, 10m to 40m across plane). • Drillhole spacing is typically 75m to 100m along strike and 50m along section. • Grade estimation was initially into 10mE by 5mN by 5mRL parent blocks via Ordinary Kriging. • Three estimation passes were used; the first search was based upon the variogram ranges for each domain in the three principal directions and allowed a minimum of 40 and maximum of 60 samples. The second search was used the same parameters with a lower minimum sample number of 20. The third search had a 10km limit in all directions and allowed an even lower minimum of 3 samples. • Post-processing of the Ordinary Kriged panel data by Uniform Conditioning was applied to copper, estimating the average grade and proportion of each panel recoverable above a series of cut-off grades at SMU scale (2.5mE by 2.5mN by 5mRL). This method does not attempt to specify the actual locations of economically extractable SMU blocks within a panel. • Software utilised in resource modelling included Surpac (geological modelling, block modelling and estimation) and Isatis (post-processing). *Scanlan* • The geological model and Mineral Resource estimate was completed by Optiro and first reported on 3 July 2012. • 11 unique estimation domains. • The influence of extreme outliers was reduced by top-cutting. Top-cut levels were determined using a combination of top-cut analysis tools (grade histograms, log probability plots and CVs). 54 samples were top-cut. • Directional variograms were modelled using traditional variograms or a normal score transformation. In general the grade continuity was good (copper variogram ranges of 85m to 220m along strike, 38m to 110m down dip, 19m to 60m across plane). • Drillhole spacing is typically 50m to 200m along strike and 40m along section. • Grade estimation was initially into 25mE by 10mN by 5mRL parent blocks via Ordinary Kriging. • Three estimation passes were used; the first search was based upon the variogram ranges for each domain in the three principal directions; the second search was typically one and a half times the initial search and the third search was two times the initial search. A minimum of 8 and a maximum of 50 samples were considered in all estimation passes. • Post-processing of the Ordinary Kriged panel data by Uniform Conditioning was applied to copper, estimating the average grade and proportion of each panel recoverable above a series of cut-off grades at SMU scale (2.5mE by 2.5mN by

Criteria	Commentary
	5mRL). This method does not attempt to specify the actual locations of economically extractable SMU blocks within a panel. • Software utilised in resource modelling included Surpac (geological modelling, block modelling and estimation) and Isatis (post-processing). *Longamundi, Great Southern, Caroline and Charlie Brown* • Geological models and Mineral Resource estimates were completed by McDonald Speijers and first reported on 26 July 2011. • 3 unique estimation domains. • Data has a low coefficient of variation and grade top-cuts were not applied. • Drillhole spacing at Longamundi is typically 50m to 100m along strike and 40m to 50m along section. • Drillhole spacing at Great Southern is typically 50m to 100m along strike and 40m to 50m along section. • Drillhole spacing at Caroline is typically 100m to 200m along strike and 20m to 50m along section. • Drillhole spacing at Charlie Brown is typically 200m along strike and 20m to 50m along section. • Grade estimation was into 10mE by 12.5mN by 5mRL parent blocks via Inverse Distance Weighting. • Two estimation passes were used; search ellipse dimensions in the first pass were assigned as 60m by 60m by 5m, with all dimensions trippled in the second pass. Search elllipsoid orientation was guided by average dip and dip direction values for a given domain, which were interpolated into every block prior to estimation based on dip and strike trend data defined during wireframe construction. A minimum of 8 and a maximum of 24 samples were considered in both estimation passes. • Datamine was the pincipal software tool utilised in modelling and estimation.
Moisture	*General* • Tonnes have been estimated on a dry basis. • Moisture content has not been tested.
Cut-off parameters	*General* • Mineral Resources are reported above a 0.2% (Little Eva) or 0.3% (Bedford, Lady Clayre, Ivy Ann, Turkey Creek, Blackard, Legend, Scanlan, Longamundi, Great Southern, Caroline and Charlie Brown) copper cut-off grade to reflect current commodity prices and open pit mining.
Mining factors or assumptions	*General* • Planned extraction is by open pit mining. • Reported recoverable resource estimates assume vaying degrees of selectivity based on anticipated SMU size: Little Eva - 6.25mN by 6.25mE by 5mRL. Bedford - 5mN by 5mE by 5mRL. Turkey Creek - 5mN by 6.25mE by 2.5mRL. Lady Clayre, Ivy Ann, Blackard, Legend and Scanlan - 2.5mE by 2.5mN by 5mRL. • Mining factors such as dilution and ore loss have not been applied.
Metallurgical factors or assumptions	*General* • No metallurgical assumptions have been built into the resource models. • Extensive mineralogical and metallurgical testwork has been completed on Little Eva sulphide ore. Testwork indicates that an estimated 96% copper and 85% gold recovery will be achieved resulting in economic concentrate grades of some 25% copper and 4g/t gold.

Criteria	Commentary
	• Preliminary metallurgical and mineralogical testing on sulphide mineralisation from Bedford, Lady Clayre, Ivy Ann and Turkey Creek indicate similar recoveries and concentrate grades can be achieved, although Turkey Creek has no gold credits. • Metallurgical testwork indicates low recoveries of 55-65% copper for the native copper zone material in Blackard. Such recoveries would be expected in similar material at the Legend, Scanlan, Longamundi, Great Southern, Caroline and Charlie Brown. No metallurgical testwork has been carried out on sulphide material at these deposits but initial testwork on similar sulphide 'copper-only' mineralisation at Turkey Creek indicates high recoveries of around 90% may be achievable.
Environmental factors or assumptions	*General* • The Little Eva, Bedford, Lady Clayre and Turkey Creek Mineral Resources are included as authorised mining activities under the granted Little Eva Project Environmental Authority (EA) EPML00899613. • Ivy Ann deposit is covered by a separate EA EPSX02622114 permitting exploration. • Baseline and ongoing studies form part of EA requirements. • Analysis of simulated tailings fluids and solids prepared through laboratory scale test work indicates favourable environmental results for the Little Eva deposit. Simulated sulphide and oxide tailings were found to be benign in terms of potential for formation of acidic, saline or metalliferous drainage. No adverse environmental considerations have therefore been built into the Little Eva resource model • By nature of similar setting to Little Eva, in-part shared host rocks and low sulphide content, no adverse environmental considerations have been built into the Bedford, Lady Clayre, Ivy Ann, Turkey Creek and Bedford resource models. • Blackard, Legend, Scanlan, Longamundi, Great Southern, Caroline and Charlie Brown all lie within the current EA area (EPML00899613) but are not part of the mine plan/layout.
Bulk density	*Little Eva* • 1,862 measurements using Archimedes Principle method on drillcore. Samples were sourced from multiple holes across the extent of the deposit (1,000m of strike length and 200m of depth extent) in both oxide and sulphide zones. • Average values by material type: Fresh intermediate rock 2.8t/m^3, fresh felsic intrusive 2.63t/m^3, and fresh meta-sediments 2.7t/m^3. Nominal value of 2.5t/m^3 assigned in oxide zone. *Bedford* • 23 measurements using Archimedes Principle method on drillcore. Samples were primarily collected from partially weathered rock. Excluding two outliers an average density of 2.78t/m^3 was returned. • Assigned values by material type: Oxidised rock 2.4t/m^3, and, fresh rock 2.8t/m^3. These values are considered conservative. *Lady Clayre* • Based on physical measurements on core samples of similar rocks from the neighbouring Little Eva deposit. • Assigned values by material type: Oxidised rock 2.4t/m^3, Fresh rock 2.65t/m^3. *Ivy Ann* • Based on physical measurements on core samples of similar rocks from the neighbouring Little Eva deposit.

Criteria	Commentary
	• Assigned values by material type: Oxidised rock 2.4t/m^3, Fresh rock 2.65t/m^3. *Turkey Creek* • Based on physical measurements on core samples of similar rocks from the neighbouring Little Eva deposit. • Assigned values by material type: Oxide mineralised metasediments 2.5t/m^3; and, mineralised fresh metasediments 2.7t/m^3. *Blackard, Legend and Scanlan* • No bulk density data available. • Assigned values by material type: Oxide zone 2.08t/m^3, native copper zone 2.18t/m^3, transition zone 2.36t/m^3 and sulphide zone 2.5t/m^3. *Longamundi, Great Southern, Caroline and Charlie Brown* • No bulk density data available. • Assigned values by material type: Oxide zone 2.11t/m^3, native copper zone 2.24t/m^3 and sulphide zone 2.58t/m^3.
Classification	*General* • Mineral Resources have been classified in the Measured, Indicated and Inferred categories, in accordance with the 2012 Australasian Code for Reporting of Mineral Resources and Ore Reserves (JORC Code). • A range of criteria have been considered in determining classification including data quality, confidence in the geological model, geological continuity, grade continuity, drillhole spacing, estimation technique and estimation parameters such as search strategy and conditional bias measures. • The classification considers all available data and reflects the Competent Persons views of the deposits. *Little Eva* • Measured: Defined in areas of 50mE by 40mN drill spacing with low variance in grade and good grade and geological continuity. • Indicated: Defined in areas of 50m by 40m drill spacing where grade variance is moderate. • Inferred: Defined generally in areas of 100m by 100m drill spacing. Modelled to 250m below surface. *Bedford* • Measured: None defined • Indicated: Defined in areas where drill spacing is 25m by 25m or less, extending to a down dip extent of up to 25m below drilling. Block grades were primarily calculated in the first estimation pass. Further drilling is percieved unlikely to result in material change. • Inferred: Defined in areas where extension of mineralisation is supported by sparse drill data (50-100m spacing along strike) and good continuity in Cu-in-soil anomalism. A significant proportion of block grades have been calculated in later estimation passes. *Lady Clayre* • Measured: None defined • Indicated: Defined generally in areas of 40m by 40m drill spacing. • Inferred: Defined generally in areas of 100m by 100m drill spacing. *Ivy Ann* • Measured: None defined • Indicated: Defined generally in areas of 40m by 40m drill spacing.

Criteria	Commentary
	• Inferred: Defined generally in areas of 100m by 100m drill spacing. *<u>Turkey Creek</u>* • Measured: None defined • Indicated: Defined in areas where drill spacing is 100m by 50m or less, within a down dip extent of up to 25 m below the drilling and where grade variance is moderate • Inferred: Defined in areas where extension of mineralisation is supported down dip and within the eastern extent of the Nothern Fold Area. *<u>Blackard</u>* • Measured: None defined. • Indicated: Defined generally in areas of 40m by 40m drill spacing. • Inferred: Defined generally in areas of 100m by 100m drill spacing. *<u>Legend</u>* • Measured: None defined. • Indicated: None defined. • Inferred: Defined generally in areas of 100m by 100m drill spacing. *<u>Scanlan</u>* • Measured: None defined. • Indicated: Defined generally in areas of 50m by 25m drill spacing. • Inferred: Defined generally in areas of 100m by 50m drill spacing or greater. *<u>Longamundi, Great Southern, Caroline and Charlie Brown</u>* • Measured: None defined. • Indicated: None defined. • Inferred: Estimated blocks within modelled mineralisation domains.
Audits or reviews	*<u>General</u>* • All Mineral Resource estimates have been reviewed internally by Altona staff. • Independent consultants Optiro conducted an external review of the Little Eva resource estimate.
Discussion of relative accuracy / confidence	*<u>General</u>* • No production data is yet available for comparison. • Relative accuracy and confidence has been assessed either by review of block kriging variance and variability statistics of indervidual block estimates and/or empirically by comparative review of drillhole and model data. • The resource estimates consist of material in the Measured, Indicated and Inferred categories and are considered to reflect local estimation of grade.

Section 4: Estimation and Reporting of Ore Reserves

(Criteria listed in section 1, and where relevant in section 3, also apply to this section)

Criteria	Commentary
Mineral Resource estimate for conversion to Ore Reserves	*<u>General</u>* • The stated Mineral Resource for each deposit is inclusive of the corresponding Ore Reserves. *<u>Little Eva</u>* • The geological model and Mineral Resource estimate was completed by Altona and first reported on 14 May 2012. *<u>Bedford</u>*

Criteria	Commentary
	• The geological model and Mineral Resource estimate was completed by Optiro and first reported on 23 April 2012 (since superseded by new and expanded Mineral Resource estimate). *Lady Clayre* • The geological model and Mineral Resource estimate was completed by Optiro and first reported on 23 April 2012. *Ivy Ann* • The geological model and Mineral Resource estimate was completed by Optiro and first reported on 23 April 2012. *Turkey Creek* • The geological model for Turkey Creek was developed by Altona. The Mineral Resource estimate was completed by Optiro and first reported on 18 March 2015.
Site visits	*General* • The Competent Persons are regular visitors to site.
Study status	*General* • A Definitive Feasibility Study (DFS) was carried out in 2011/12 for the Cloncurry Copper Project (reported 14 May 2012 and referred to then as the Little Eva Project). • A cost update was completed in 2014 (reported 13 March 2014). • A 2017 DFS has been completed (reported 2 August 2017) to provide an up to date status of the Project prior to development. It consolidates and integrates all technical work of prior studies with a number of significant developments that impact on costs, revenues and design. • Changes include new Resource estimates and geological/geotechnical models for the Little Eva and Bedford deposits, Mineral Resource and Ore Reserve estimates for the Turkey Creek deposit, metallurgical testwork of Turkey Creek ore, inclusion of the Turkey Creek deposit in the mine plan, re-design and re-location of infrastructure and waste dumps to accommodate Turkey Creek, updated Environmental Authority to reflect inclusion of Turkey Creek, a reduction in engineering and construction costs and changes to macro-economic assumptions. • The 2017 study has determined a mine plan that is technically achievable and economically viable. Material modifying factors have been considered.
Cut-off parameters	*General* • Mining cut-off grades for Little Eva, Bedford, Lady Clayre and Ivy Ann were back calculated from the mine schedule generated from the block model and pit design. • A similar breakeven cut-off grade was calculated for Turkey Creek based on the value of the combined revenue stream after deducting processing and selling costs. • The copper price used was derived from information on consensus pricing. This value varied over the mine valuation period. • Material above 'Run Of Mine' (ROM) ore cut-off grade will be processed by the plant as mined. • Material above 'low grade ore' cut-off grade (calculated breakeven grade), but below the ROM ore cut-off grade, will be stockpiled and processed later in the processing schedule.

Criteria	Commentary
	Little Eva • The low grade ore cut off is 0.16% copper. *Bedford* • The low grade ore cut-off grade is 0.17% copper. *Lady Clayre* • The low grade ore cut-off grade is 0.20% copper. *Ivy Ann* • The low grade ore cut-off grade is 0.22% copper. *Turkey Creek* • The low grade ore (breakeven) cut-off grade is 0.16% copper.
Mining factors or assumptions	*General* • The Ore Reserves are reported within pit designs. Designs are based on bulk open pit mining using conventional drill and blast, load and haul practices. • Underlying pit optimisations were carried out on the Measured, Indicated and Inferred Mineral Resource categories. • Optimisations incorporated a pre-strip of oxidised rock and copper oxide mineralisation. *Little Eva, Bedford, Lady Clayre and Ivy Ann* • Pit optimisations, pit designs, mine schedules and Ore Reserve estimates were completed by independent consultants Optiro and first reported on 14 May 2012. • The 2012 Little Eva, Bedford, Lady Clayre and Ivy Ann resource models required pre-conditioning for use in the mining stage of the study. The process involved conversion from a recoverable resource model into a parcel model, application of mining costs and Net Smelter Return (NSR). • Recoverable resource models generally cannot be used directly in optimisation programmes or for scheduling without some conditioning. Optiro used a series of in house scripts to convert them into a sub-celled parcel model, where the parcels generated reflect the grade tonnage information, while honouring rock characteristics and resource classifications. The output was a stack of subcells replacing a single panel, each with a single copper grade rather than the proportion and average grade above cut-off provided by the recoverable resource model. The conversion was done so that the metal and tonnage balance remained the same for each panel. A comparison of grade tonnage information was carried out between the original and conditioned models with values within acceptable limits of error. • A series of pit optimisations were completed for each deposit based on 2012 DFS input parameters. These optimisations were used to determine where starter pit and subsequent cut-backs would commence, as well as the final pit extents. • For the Little Eva pit design, expected poorer ground conditions on the western pit wall resulted in the haul road being maintained on the eastern wall using a series of switchbacks. In general, the ramps (30m wide) were assumed to be at a maximum 10% gradient and suitable for safe two-way operation of 140t capacity trucks allowing for windrows and drains. The lower portion of the pit has been designed as a single access ramp (15m

Criteria	Commentary
	wide) to reflect lower traffic intensity and minimise waste development. Similar ramp dimensions were utilised for the the Bedford, Lady Clayre and Ivy Ann pit designs, however a spiral configuration was assumed viable. • A minimum mining width of 60m was adopted for the base of the Little Eva pit and between subsequent pushbacks. Minimum mining widths adopted at Ivy Ann, Lady Clayre and Bedford vary between 26m and 32m. • The overall pit slopes used were 40° in the oxide zone and 43° in fresh rock, as per the 2012 DFS Geotechnical Report supplied by George Orr and Associates. *Turkey Creek* • Pit optimisations were carried out based on input parameters from the original DFS and 2014 update. Pit optimisations were undertaken by independent consultants Optiro and Orelogy. Orelogy developed pit designs and mine schedules. Ore Reserve estimates were completed by Orelogy and first reported on 21 June 2016. • The 2015 Turkey Creek resource estimate generated a SMU block model that could be used directly in optimisation programmes and scheduling without significant pre-conditioning. • Integration of the Turkey Creek deposit into The Project involved a series of optimisations based on input parameters from both the 2012 DFS and the 2014 update. • It was assumed that all haul roads used by mine equipment need to accommodate 90t dump trucks. Dual lane pavement width is 3.5-4 times the truck width (24m wide) using a 10% gradient. For the benches at the pit bottom, a single lane ramp pavement width of 2 times the truck width was adopted at 12.5% gradient to reflect the lower traffic intensity and minimise waste development. A spiral ramp configuration was assumed viable. • A minimum mining width of 45m was adopted for the base of pits and between subsequent pushbacks. A narrower width has been allowed for the final, one bench “goodbye” drop cut at the very base of the pit, on the assumption that late in the mine life these can be mined with a small fleet of smaller trucks. • The overall pit slopes used for the pit optimisation were those used for the Little Eva pit design of 40° in the oxide zone and 43°in fresh rock. • No geotechnical assessment has been conducted however geotechnical logging indicate conditions equal to or better than those seen at Little Eva. Summary of pit optimisation input parameters: • Direct mining costs inclusive of Load & Haul, Drill & Blast of A$2.60/t (Little Eva, Bedford, Lady Clayre, Ivy Ann) A$2.77/t (Turkey Creek) at the surface plus a vertical incremental cost per 10m bench of + A$0.0852/t (Little Eva starter pit), + A$0.077/t (Little Eva final pit, Bedford, Lady Clayre, Ivy Ann)+ A$0.072/t (Turkey Creek). • Ore haulage costs from pits to the Little Eva plant of + A$1.00/t (Bedford 6.5km) + A$3.15/t (Lady Clayre 21km) + A$6.00/t (Ivy Ann 40km) + A$0.072/t A$1.00/t (Turkey Creek 2km). • Mining recovery 96% . • Dilution 6%.

Criteria	Commentary

	• Processing costs are AU$9.63/t (Little Eva, Bedford, Lady Clayre, Ivy Ann) and AU$10.26/t (Turkey Creek) which is inclusive of:
	  - General and Administration
	  - Sustaining Capital
	  - Grade Control
	  - Ore haulage cost.
	• Processing recovery for copper 95.8% and gold 85% (Little Eva, Bedford, Lady Clayre, Ivy Ann) and copper 96% (Turkey Creek).
	• 25% copper in concentrate with a moisture content of 9%.
	• Concentrate transport and shipping $122.29/t (Little Eva, Bedford, Lady Clayre, Ivy Ann) and A$132.75/t (Turkey Creek) concentrate.
	• Concentrate treatment charge of A$70.59/t (Little Eva, Bedford, Lady Clayre, Ivy Ann) and A$93.75/t (Turkey Creek) concentrate.
	• Refining costs of A$156.23/t (Little Eva, Bedford, Lady Clayre, Ivy Ann) and A$206.68/t (Turkey Creek) copper metal.
	• Copper price of A$8818/t and gold price of A$1411/t (Little Eva, Bedford, Lady Clayre, Ivy Ann) A$8,267/t (Turkey Creek).
	• Copper payability of 96.5 % and for gold 72 %.(Little Eva, Bedford, Lady Clayre, Ivy Ann) and copper payability 96% (Turkey Creek) copper metal.
	• Relevant State, vendor and native title access agreement royalties.

Metallurgical factors or assumptions	*General* • Cloncurry Copper Project ore will be processed through the proposed Little Eva Process Plant at a rate of 7 million tonnes per annum via a flotation circuit to produce a copper concentrate. • The concentrate is expected to contain gold which will be a smelter credit. • The plant utilises simple proven industry standard technology. • Little Eva ore constitutes approximately 60% of proposed plant feed and the bulk of feed (90%) in the first 10 years. Little Eva has been the focus of detailed metallurgical testwork that is the primary input for metallurgical recoveries used for pit optimisation (96% copper and 85% gold). • Testwork carried out to date indicates that ore from the Bedford, Lady Clayre, Ivy Ann and Turkey Creek deposits will perform similarly to Little Eva ore with respect to copper and (where relevant) gold recovery, however this work has not been carried out to the same level of detail. • No significant concentrations of deleterious elements have been identified in testwork concentrates. *Little Eva* • The predominant copper mineral in sulphide ore is chalcopyrite that is coarse grained and readily liberated and recovered by established standard flotation techniques. • At a relatively coarse rougher grind size (P80 of 212µm) and with a rougher concentrate regrind cleaner stage, a saleable concentrate grade of 25% copper and 4 to 5g/t gold is produced with recoveries of 96% copper and 85% gold. • The metallurgical character of the ore has been derived from mineralogical studies, grind liberation tests, and extensive flotation tests that include bench scale variation and closed cycle tests and culminating in a bulk test on a representative ROM sample.

Criteria	Commentary
	• The vast majority of sample material used in metallurgical testwork was full or part diamond drill core. A small proportion of early comminution testwork was completed on RC drill chips. • Samples tested were sourced from the entire range of depths within the planned pit. The majority of testwork has been completed on material from the Central domain (ROM and low-grade ore) and the Southern domain (predominantly lower grade ore) with less work in the higher grade Northern domain. *<u>Bedford</u>* • Two flotation tests completed on composite samples of RC drill chip samples with head grades of 1.4% and 1.58% copper. • Samples were ground to P80 of 75µm and achieved average rougher flotation recoveries of approximately 99% for copper and approximately 80% for gold and graded around 15% copper. *<u>Lady Clayre</u>* • Locked cycle flotation tests completed at grind sizes (P80) between 60µm and 90µm gave copper recoveries between 89% and 95% from head samples assaying between 0.5% copper and 1.23% copper and 0.2g/t gold and 2g/t gold. • Two flotation tests have been completed on composite RC drill chip samples with head grades of 0.93% and 0.87% copper. Samples were ground to P80 of 75µm and achieved average rougher flotation recoveries 97% copper / 96% gold and 84% copper / 78% gold. • Comminution testwork has been conducted on six drillcore samples including Bond Ball Work index and Bond Abrasion studies. Work indices are within the range of values measured for Little Eva samples. *<u>Ivy Ann</u>* • Seven flotation tests completed on RC drill chip composite samples with head grades of 0.08% to 3.64% copper. • Samples were ground to P80 of 212µm (rougher grind) and 38µm (cleaner regrind) and achieved modest concentrate copper grades ranging from 14.1% to 30.5% and copper recoveries ranging between 42.3% and 88.9%, while gold recoveries range from 60% to 70%. • Results are considered acceptable for RC chip samples, testwork upon drill core is expected to yield increased performance. *<u>Turkey Creek</u>* • Two programmes of testwork have been conducted to date and indicate that at a finer grind size Turkey Creek ore should perform similarly to Little Eva ore with respect to copper recovery. The first testwork programme utilised composite RC samples and the second used DD drillholes targeting representative geometallurgical domains within the optimised pit shell. • Results showed copper sulphides could be recovered into rougher concentrates at around 93% copper recovery. Optimum response (91 to 95% copper recovery) was at a grind size P80 of 106 µm and 75 µm. • At the optimum rougher stage grind sizes of P80 of 106 µm to 75 µm concentrate grades of 8.5 - 12.1 % copper approximated those achieved on the Little Eva Ore of 8.7 - 14.7 % copper at a grind size P80 of 212 µm.

Criteria	Commentary
	• A finer grind gave a higher concentrate grade which was supported by mineralogical analysis which showed copper mineral (chalcocite, bornite, and chalcopyrite) grain sizes predominantly in the 200 to 30 µm range. • A single unoptimised cleaner test was conducted on a rougher concentrate sample at a 106 µm with regrind at a P80 of 35 µm. A high grade concentrate of 32.6% copper was achieved. • Characterisation of the breakage behaviour of mineralisation types from Turkey Creek was undertaken on diamond drillcore. Bond work indices (BRMWi 19.9 and BMWi 14.9) for sulphide ore from Turkey creek are lower than the average determined for Little Eva ore (20.4 and 18.0 respectively).
Environmental	_General_ • Mining projects in Queensland require an EA from the Department of Environment and Heritage Protection that regulates the environmental management of the project. • An EA has been approved for Little Eva, Bedford, Lady Clayre and Turkey Creek permitting the grant of Mining Leases. Ivy Ann is not covered by a Mining Lease. • The initial EA application process included a voluntary Environmental Impact Statement and Environmental Management Plan. A Major Amendment application to the EA was submitted and approved in 2016, which reflects the inclusion of Turkey Creek in the 2017 DFS mine layout and plan. • MBS Environmental are engaged as environmental consultants to Altona; managing environmental surveys, EA submissions and providing support with the collection and preparation of precribed routine baseline monitoring.
Infrastructure	_General_ • Details of the proposed project are described more fully in ASX release of 2 August 2017. • The project is located in an established mining district with close access to required infrastructure. It is approximately 65km by road to Cloncurry. • Concentrate trucked 65km to Cloncurry in half containers on existing sealed roads within 10km of the plant; containerised rail to Townsville port. • Power supply is to be provided via a proposed 9km line from the Dugald River mine substation. The 220KV power line to bring power from Cloncurry to Dugald River substation is part of the MMG Dugald River Project which was approved for development in mid-2015. • Ground water will be sourced primarily from pit dewatering bores at active pits supplemented by permitted dewatering of the Blackard resource. Blackard is not currently included in the mine plan. Back up water can be purchased from the Lake Julius - Ernest Henry water pipeline which is 2.5 km from the plant. • A fly-in fly-out work force is to be complemented by local drive in-drive out employees from Cloncurry and Mt Isa. Accommodation will be on site in a 220 man village or in Cloncurry. • DFS mine site infrastructure layouts and designs have been revised by Knight Piesold (tailings storage facility, drainage diversions) and Orelogy

Criteria	Commentary
	(waste dumps) to incorporate mining of Turkey Creek.
Costs	*General* • Appropriate cost estimation techniques were used throughout the studies. • Costs were correctly apportioned to either capital or operating cost categories. • The mining costs were provided by reputable mining contractors based on a mining schedule developed prior to the addition of Turkey Creek. • The processing, engineering and other costs were obtained from quantities determined from material take off, direct costs and schedules of rates or spare and first fill requirements. • Allowances have been made for royalty charges where appropriate. • No allowances were necessary for deletarious elements.
Revenue factors	*General* • Head grade and metal production were estimated from the mining and production schedules. • Any forward commodity price, exchange rate, transport and treatment charge projections were based on the assessment of relevant market information.
Market assessment	*General* • There are currently no offtake agreements in place and these will be secured closer to a final investment decision. • It should be noted that Altona have experience in this market, having successfully secured offtake agreements for a previous mining operation. • Based on transportation logistics, the most suitable market for the Cloncurry Copper Project concentrates will be Asian smelters. • The Mt Isa copper smelter is a more obvious destination but the facility is scheduled for closure in 2022 and it seems unlikely that it will be available for much of the project life. • Buyers could be Asian smelters directly or trading houses. The concentrate grade of 25% copper is attractive as is the 4g/t gold credit. The concentrate is clean with no penalty elements further enhancing its marketability. • Concentrate markets are large and liquid, global volumes produced each year are in the order of 80 million tonnes. The Project production of 150,000 tonnes is not material to world markets. • There is extensive market commentary from research houses, banks and others on the looming supply deficit for copper. The building of many new smelters in Asia means that these smelters will be competing for concentrate feed. There is a trend for concentrate market share to increase at the expense of copper cathode. Copper concentrate markets are expected to remain strong for a considerable time.
Economic	*General* • Various inputs for economic analysis are as listed under Mining factors or Assumptions. • As financial inputs are in real dollars, a real weighted average cost of capital (real discount rate) for the project was calculated and compared to values derived by independent experts in published reports for similar projects in Australia. The selected real discount rate (weighted average

Criteria	Commentary
	cost of capital) of 7.5% was within the range used by independent experts for similar and recent Australian projects. • The Cloncurry Copper Project is an Australian project and its costs are denominated in Australian dollars. From January 2014 to present the Australian inflation rate has ranged from 1% to 3%. The Governor of the Reserve Bank and Commonwealth Treasurer have set a target of achieving an inflation rate of 2 to 3% on average over each inflation cycle. The inflation rate chosen of 2.6% sits within this range and is acceptable as the projects construction and operational life will extend over a period greater than a single inflation cycle. • In the last quarter of 2016 a number of banks were forecasting the A$ to weaken against the US$ to 0.70. It has also been forecasted that the A$ may fall as low as 0.60 by year 2020. Adopting these low rates would result in significantly higher A$ denominated revenues with little impact on costs consequently improving project economics. However, given the volatility of the A$ to US$ exchange rate and the 14 year project life, a conservative exchange rate of A$:US$0.75 has been adopted. • The discount rate calculation assumes a cost of debt of 6% with a 10% leverage to debt. The interest rate is comparable to the independent expert who assessed the Nova Project in 2016. • The Project is in Queensland Australia and sits within an Australian registered company which will be subject to Commonwealth of Australia income tax at a flat rate of 30%. • Project Post Tax NPV is most sensitive to variation (+/- 10%) in exchange rate (+A$162.6m / - A$121m), copper price (+A$151.6m / - A$136.6m), copper recovery (+A$137.2m / - A$119.5m) and copper grade (+A$122.4m / - A$94m).
Social	*General* • All access, heritage and compensation agreements required with key stakeholders at Little Eva, Bedford, Lady Clayre and Turkey Creek are in place. • Further agreements will be required as part of any Mining Lease application for Ivy Ann.
Other	*General* • Natural risks such as flooding, have been considered in the design and work undertaken to mitigate against any ill effects from up to a 1 in 100 year event. • It is considered that the current planning and layout can be developed into a viable operation. However, there are several opportunities which can be explored prior to implementation which, if completed, will improve the outcome. • All legal social and government factors have been reviewed and do not show any signs of hindering the viability of the project. • All titles have been checked against the Government of Queensland's database and appear in order. The primary permits required are already in place. It is not expected that any outstanding permits or required amendments will be an issue as no negative receptors have been identified.

Criteria	Commentary
Classification	*General* • Only sulphide ore classifed as Measured and Indicated Mineral Resources and processed in the mining schedule was converted to Ore Reserves. • A minor component of Inferred Resources sit within designed pits and are included in the mining schedule later in the project life. These 'Mineable Inferred Resources' make up ~4% of ROM ore and are included in production targets but excluded from the Project Reserve statement. *Little Eva* • Measured Resources have all been converted to Proven Ore Reserves, except for 6.6% classified as Probable where blocks sit on the final pit shell boundary and have a higher mining risk. • Indicated Resources within the pit design and processed in the mining schedule have all been converted to Probable Ore Reserves. *Bedford* • Indicated Resources within the pit design and processed in the mining schedule have all been converted to Probable Ore Reserves. *Lady Clayre* • Indicated Resources within the pit design and processed in the mining schedule have all been converted to Probable Ore Reserves. • Some 2 million tonnes at 0.49% copper and 0.21g/t gold of inferred resources are included in production targets as 'Mineable Inferred Resources'. *Ivy Ann* • The majority of Indicated Resources within the pit design and processed in the mining schedule have been converted to Probable Ore Reserves. • The mine schedule includes additional low-grade Indicated Resources that are stockpiled but not processed. This material is excluded from the reported Reserve (0.4 million tonnes at 0.22% copper and 0.05g/t gold). *Turkey Creek* • Turkey Creek Mineral Resources are classified as Indicated and Inferred. • The overall pit comprises 3 stages of mining. Stage 1 and 2 pits are based on a pit shell optimised on Indicated Mineral Resources only. • Indicated Mineral Resources within the first two stages have all been converted to Probable Ore Reserves. • All Inferred Mineral Resources and Indicated Mineral Resources within the third stage (2 million tonnes at 0.47% copper) are included in production targets as 'Mineable Inferred Resources'.
Audits or reviews	*General* • Internal peer reviews were undertaken. • Current market conditions (lower operating costs and lower metal prices) have been assessed and are judged to have an overall positive or neutral impact. • The 2015 Orelogy study to produce a pit design and Ore Reserve for Turkey Creek also reviewed pit optimisations and designs for the other deposits. Orelogy identified a number of opportunities to improve optimisation inputs applicable to the different pits including the use of skin rather than global dilution, refinement of starter pit locations and modification of various other design parameters.

Criteria	Commentary
	Little Eva • Previous Ore Reserves were declared for Little Eva based on a feasibility study prepared by Universal Resources in October 2009. • Since this study was undertaken the Mineral Resource has increased substantially with expanded drilling data, whilst costs and other input parameters have been changed to adhear to prevalent market conditions. These substantial changes reduce the relavence of direct comparisons of reserve estimates. *Bedford* • No previous Ore Reserves have been declared for Bedford. *Lady Clayre* • No previous Ore Reserves have been declared for Lady Clayre. *Ivy Ann* • No previous Ore Reserves have been declared for Ivy Ann. *Turkey Creek* • No previous Ore Reserves have been declared for Turkey Creek. • Preliminary pit optimisations conducted by Optiro are consistent with the outcomes of more extensive work by Orelogy.
Discussion of relative accuracy / confidence	*General* • No production data is yet available for comparison. • The assigned Reserve Classification reflects the Competent Person's assessment of the accuracy and confidence levels in the estimate. • The confidence levels reflect production volumes on a Life of Mine and annual basis.

Abbreviations:

DGPS – Differential Global Positioning System; IOCG – Iron-Oxide-Copper-Gold; SMU – Selective Mining Unit; RC – Reverse Circulation; RAB – Rotary Air Blast; PERC – Percussion; AC – Air Core; RDH – Rotary; DD – Diamond; EA – Environmental Authority