

MARKET RELEASE 31 October 2017

# **ANNUAL ROCKLANDS RESOURCE UPDATE - 2017**

Queensland copper producer CuDeco Limited (ASX:CDU) announced today that the Annual Rocklands Resource Update for 2017 confirms that options exist for extending the mine life past the current Ore Reserve period.

There has been no additional drilling activity at Rocklands since November 2013 however the Rocklands drill database includes over 400,000 metres of relatively close-spaced drilling that facilitates high-definition modelling of possible future resources beyond the current mining plans.

Importantly, mining to date is showing good correlation between the resource and grade-control estimates, providing additional confidence in the reliability of the Rocklands resource estimation.

For reconciliation purposes, trucked ore records out of the pit are used for comparisons, and the resource is reported at 0.15% Cu to align with current mining. Resource performance is provided in Table 1 (below).

The resource model is predicting marginally high on in-situ tonnes than estimated from grade control (2% more ore). The resource model is underestimating in-situ copper grades compared to grade control estimates (4% lower grades). Both results are considered to be within error (+/- 5%).

**Table 1** - Resource estimate (based on resource drilling) compared to grade-control estimate (based on grade-control drilling):

RESOURC	RESOURCE PERFORMANCE (12 months to end June 2017)								
Resource to Grade Contro	l (ins-situ r	esource es	timate con	npared to i	n-situ grad	e control e	stimate)		
Cut off	Tonnes		Gra	ade			Me	tal	
0.15% Cu	Mt	Cu %	Co ppm	Au g/t	Mag %	Cu Mlb	Co Mlb	Koz	Mt
Resource (undiluted in-situ)	0.99	0.94	497	0.15	13.11	20.5	1.1	4.77	0.13
Grade control (undiluted in-situ)	0.97	0.98	480	0.19	9.14	21.0	1.0	5.93	0.09
Resource to Grade control (after grade control drilling and sampling)	-2%	4%	-4%	21%	-43%	2%	-6%	19%	-46%

\*Note; magnetite grades are not currently being recorded in grade control drilling and as such are being estimated from only historic resource drilling. Grade-control ore block domains can be of a scale that entirely excludes historic resource drilling data, and this may result in insufficient or no informing magnetite samples during grade estimation of certain ore blocks. This has the effect of severely diluting final reported magnetite grades. This circumstance does not affect the other metals being reported, which are all recorded from high-density grade-control drilling.

#### **Depleted Rocklands Resource Update**

Mining Associates Pty Ltd ("MA") was commissioned in October 2017 to provide a depleted Resource Statement on the Rocklands Copper Mine to the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves standards ("JORC Code 2012").

A Resource Estimate was last undertaken by MA in January 2014, which comprised minor updates and amendments from the Resource Estimate and Report publicly released in November 2013. The changes were very minor and MA did not consider them to be material to the project.

The June 2017 estimate has been amended to account for depletion by mining.

The Report follows.

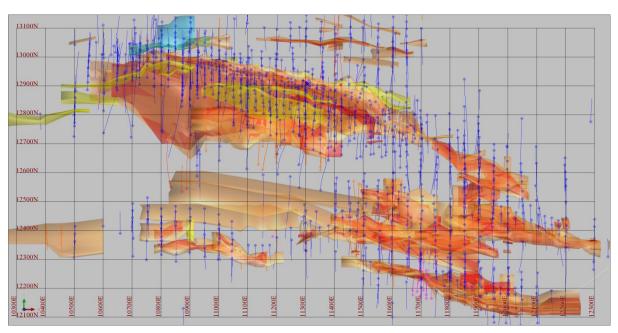
On behalf of the Board.

ENDS.





# Mineral Resource Estimate Update Rocklands Copper Mine, Australia June 2017



Prepared by Mining Associates Pty Ltd

for

**CuDECO Ltd** 

Authors:

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Effective Date: 30<sup>th</sup> June 2017 Reference: MA1728-1-2 Issued: 20 October 2017



#### **EXECUTIVE SUMMARY**

The Rocklands Copper Mine ("Rocklands") comprises multiple lodes of high grade copper-cobalt-gold mineralisation with magnetite and is located about 15 km northwest of Cloncurry, Queensland, Australia. Rocklands lies within a geological region known as the Eastern Fold Belt of the Mount Isa Inlier, which is host to several other major deposits such as Ernest Henry, Osborne and Cannington. The Project is 100% owned by CuDECO Limited ("CuDECO", ASX:CDU), an ASX listed company headquartered in Brisbane, Queensland.

At the request of Mr David Wilson of CuDECO Ltd, Mining Associates Pty Ltd ("MA") was commissioned in October 2017 to provide a depleted Resource Statement on the Rocklands Copper Mine to the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves standards ("JORC Code 2012").

A Resource Estimate was last undertaken by MA in January 2014, which comprised minor updates and amendments from the Resource Estimate and Report publicly released in November 2013. The changes were very minor and MA did not consider them to be material to the project. The June 2017 estimate has been amended to account for depletion by mining.

#### **Geology and Mineralisation**

Copper-cobalt-gold-magnetite mineralisation at Rocklands was first discovered in the Las Minerals zone by CuDECO in 2006 after first acquiring the project rights in 2005. Mineralisation is located mostly within a corridor 3 km long and 1.7 km wide, comprising a number of northwest striking and steeply dipping breccia-fault zones hosted by metamorphosed volcano-sedimentary rocks with significant magnetite content. Rocklands is considered to be an Iron Oxide Copper Gold (IOCG) style deposit and is one of several examples of significant IOCG deposits in the Cloncurry district, including Ernest Henry, Osborne and Eloise.

Copper is the dominant mineralisation at Rocklands with lesser amounts of cobalt, gold and magnetite. Copper mineralisation extends from surface and is still open at depth with overlapping oxide, secondary and primary styles of copper mineralisation.

Mineralisation is hosted both within steeply dipping higher grade breccia zones, commonly also hosted in pre-existing dolerite dykes, and within broader lower grade shallow dipping zones within favourable host sedimentary units.

#### **Work Completed**

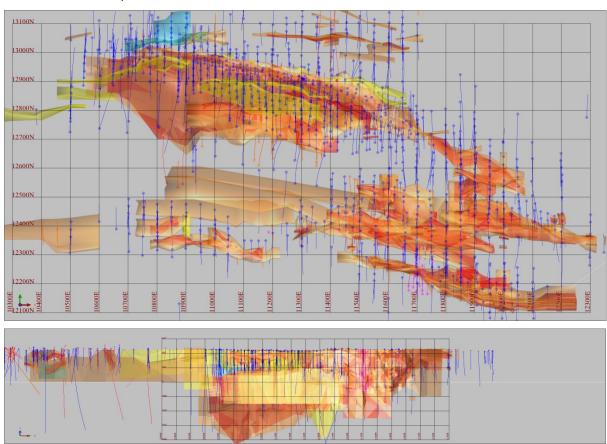
MA initially completed a Mineral Resource Estimate in May 2011. The January 2014 estimate reviewed the same and conducted a complete re-estimation with special attention to new drilling at Fairfield and Rocklands South; updates to Co assays; revision of magnetite estimates based on magnetic susceptibility test work; and further examination of bias issues previously identified with diamond and RC drilling in native copper oxide zones. MA reviewed all aspects of the 185 hole drill programme completed in late 2013. The review included site visits, observing logging and sampling procedures, and examining QAQC and assay results.

Mineralisation at Rocklands has been defined by diamond core and reverse circulation drilling on a pattern of 25 m spaced drill sections reduced to 12.5 m spacing in some areas. Sampling protocols, assay methods and sample QAQC procedures are in accordance with industry best practice and samples are considered by MA to be adequate for the purposes of resource estimation. Mineralisation remains open along strike and at depth, and there is potential for discovery of additional mineralised zones.



#### **Resource Estimates**

Resources were estimated within defined mineralisation wireframe domains based on geology and copper and cobalt grade envelopes. The material between these domains was also estimated on a larger parent block size to define host lithologies for exploration targeting and for waste characterisation purposes. Input data and estimation methods are discussed in JORC Table 1 at the end of this summary.



Plan and Long Section showing copper domains and drilling

Drilling by CuDECO at Fairfield and Rocklands South in 2013 led to a notable upgrade of these significant deposits compared to the 2011 resource models. For the January 2014 estimate, adjustments were made to the estimation methodology, impacting overall grades and also resource categories. No additional exploration work has been incorporated into the model since January 2014, mining activity has been depleted from the resource model.

MA was provided with a surveyed topographic pit surface as built at 31<sup>st</sup> June 2017, which was used to flag depleted blocks in the January 2014 model. The model was then reported using only those blocks that remained in situ at 1<sup>st</sup> July 2017.

The Rocklands Deposit is estimated by MA to contain the following Total, Measured, Indicated and Inferred Mineral Resources listed according to cut-off grades set using a copper-cobalt-gold equivalent (CuEq). Detailed tables in this summary give a break-down by resource category and cu-off grade.



Resource	Assumed	Cut-Off		Tonnes	Es	stimate	d Grad	de	Copper Equivalent	Containe	d Metal
Category	mining type	Cu Eq	Cu	Torines	Cu	Со	Au	Mag	CuEq*	Cu	Au
		%	%	Mt	%	ppm	ppm	%	%	Mlb	Koz
Measured	Open pit	0.2	0.1	37.1	0.63	303	0.14	5.6	0.8	519	165
	Underground	0.6	0.1	1.3	1.36	366	0.22	2.0	1.6	39	9
Sub Total				38.4	0.66	305	0.14	5.5	0.9	558	174
Indicated	Open pit	0.2	0.1	9.3	0.35	254	0.1	6.7	0.5	71	34
	Underground	0.6	0.1	7.0	0.92	257	0.23	1.2	1.1	142	51
Sub Total				16.3	0.59	255	0.16	4.3	0.8	213	86
Inferred	Open pit	0.2	0.1	0.2	0.36	203	0.14	4.9	0.5	2	1
	Underground	0.6	0.1	0.4	0.74	249	0.26	1.3	1.0	7	3
Sub Total				0.6	0.60	232	0.21	2.7	0.8	8	4
Total	Open pit	0.2	0.1	46.7	0.58	293	0.13	5.8	0.8	592	200
	Underground	0.6	0.1	8.7	0.97	273	0.23	1.3	1.2	187	64
<b>Grand Total</b>	Grand Total					290	0.15	5.1	0.9	779	264

Table 1: Resource depleted to 30<sup>th</sup> June 2017

Figures have been rounded to reflect level of accuracy of the estimates

Mineral Resources in the above table are inclusive of Ore Reserves.

MA completed a resource estimate from first principles and notes that the lower cut-off grade of 0.2 % CuEq and 0.1% Cu is appropriate for this scale of deposit to be developed by open pit mining with the main deposits occurring in an area 2 km long by 1 km wide and within an whittle shell, material below the whittle shell is reported above 0.6 % CuEq and 0.1 % Cu.

An additional resource of cobalt or magnetite was also estimated with in the JORC resource category's outside of the CuEq mineralisation domains. The material listed below uses a cut-off of <0.2% CuEq and <0.1% Cu and 10% magnetite. The economics of extracting cobalt and magnetite is very price sensitive to cobalt and magnetite prices. There is no copper or gold in this portion of the mineralisation to off-set cost of extraction.

	Assumed	cut-off		Estima	ated Gr	ade		Copper	Contained Metal
Resource	mining	Magnetite	Tonnes	Cu	Со	Au	Mag	Equivalent	Magnetite
Category	type	%	Mt	%	ppm	ppm	%	%	Mt
Measured	Open pit	10%	9.1	0.03	195	0.02	17	0.14	1.5
Indicated	Open pit	10%	14.0	0.02	191	0.02	19	0.12	2.6
Inferred	Open pit	10%	203	0.02	76	0.01	15	0.06	31.2
<b>Grand Total</b>			227	0.02	88	0.01	16	0.07	35.4

Table 2: Additional magnetite material depleted to 30<sup>th</sup> June 2017

#### Reconciliation

The resource depletion for the 12 months to  $30^{th}$  June 2017 using cut off of 0.2 % CuEq and 0.1% Cu as per the resource definition is 1.1Mt @ 0.88% Cu, 476 ppm Co and 0.14g/t Au for 21 Mlb Cu, 1.13 Mlb Co and 4.87 koz Au. (Table 3)

Production defined ore at 0.15% Cu, only Las Minerals was mined during the period. The material was either stockpiled or milled. Mill reconciliation has proved difficult due to various issues in metal balance accounting at the mill which include:

- Accurate ore selection records from stockpiles are unavailable
- Accurate estimates of in-circuit ore spillage (varies from 5-15% per month) are unavailable
- Accurate estimates of grade estimation at native copper circuit are unavailable
- Accurate grade estimates of native copper concentrate are unavailable

<sup>\*</sup>Copper equivalent CuEg% = Cu % + Co ppm\*0.001232 + Au ppm\*0.518238



- Accurate grade estimates at flotation circuit are unavailable
- Accurate tails grade estimate (partly due to the above) are unavailable

For reconciliation purposes the trucked ore records out of the pit are used and the resource is reported at 0.15% Cu. Summary reconciliation figures for Las Minerale deposit are provide in Table 3. Resource figures are in-situ undiluted model tonnes and grade. Grade control tonnes and grade are estimated after close spaced infill drilling and are in-situ undiluted. Production tonnes and grade are as trucked and include mining losses and dilution. The model is predicting high on production tonnes (9% less mill feed tonnes mined), the realised copper mill feed grade is down on the resource estimated grade (4% less), cobalt is down (4% less) and gold grades are up (12% higher) - see Table 4. Mining loss and dilution occurs between grade control and production.

Table 3: Depleted Resource material, Grade Control and Production figures for 12 months to 30<sup>th</sup> June 2017

Cut off	Tonnes		Gra	ade		Metal				
0.15% Cu	Mt	Cu %	Co ppm	Au g/t	Mag %	Cu Mlb	Co Mlb	Au Koz	Mag Mt	
Resource	0.99	0.94	497	0.15	13.11	20.5	1.1	4.8	0.13	
Grade control	0.97	0.98	480	0.19	9.14	21.0	1.0	5.9	0.09	
Production	0.91	0.90	480	0.17	9.35	18.1	1.0	5.0	0.09	

Table 4: Reconciliations for 12 months to 30<sup>th</sup> June 2017 using 0.15% cut off

Cut off	Tonnes		Grade			Metal			
0.15% Cu	Mt	Cu %	Co ppm	Au g/t	Mag %	Cu Mlb	Co Mlb	Au Koz	Mag Mt
Resource to Grade control	-2%	4%	-4%	21%	-43%	2%	-6%	19%	-46%
Grade Control to Production	-7%	-9%	0%	-12%	2%	-16%	-7%	-19%	-4%
Resource Model to Production	-9%	-4%	-4%	12%	-40%	-14%	-13%	4%	-53%



#### Additional summary resource tables.

>0.2% CuEq and 0.1% Cu above the whittle shell fxpe 35f 49.dtm + underground mineralisation

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		cut-off		Tannas	Es	timat	ed Grad	le	Copper Equivalents		Contained Metal Equivalent		
resource category	Assumed mining type	Cu Eq	Cu	Tonnes	Cu	Со	Au	Mag	CuEq*	CuEq +Ma g*	Cu	CuEq*	CuEq+ Mag*
		%	%	Mt	%	ppm	ppm	%	%	%	Mlb	Mlb	Mlb
Measured	Open pit	0.2	0.1	37.1	0.63	303	0.14	5.6	0.8	0.9	519	696	774
	UG	0.6	0.1	1.3	1.36	366	0.22	2.0	1.6	1.7	39	47	48
Sub Total				38.4	0.66	305	0.14	5.5	0.9	1.0	558	742	822
Indicated	Open pit	0.2	0.1	9.3	0.35	254	0.1	6.7	0.5	0.6	71	108	132
	UG	0.6	0.1	7.0	0.92	257	0.23	1.2	1.1	1.2	142	178	181
Sub Total				16.3	0.59	255	0.16	4.3	0.8	0.9	213	286	312
Inferred	Open pit	0.2	0.1	0.2	0.36	203	0.14	4.9	0.5	0.6	2	3	3
	UG	0.6	0.1	0.4	0.74	249	0.26	1.3	1.0	1.0	7	9	9
Sub Total				0.6	0.60	232	0.21	2.7	0.8	0.9	8	11	12
Total	Open pit	0.2	0.1	46.7	0.58	293	0.13	5.8	0.8	0.9	592	806	909
	UG	0.6	0.1	8.7	0.97	273	0.23	1.3	1.2	1.2	187	233	237
<b>Grand Total</b>				55.4	0.64	290	0.15	5.1	0.9	0.9	779	1039	1146

< 0.2% CuCoAu and 0.1%Cu and >10% Magnetite within pitshell fxpe 35f shell43

	Assumed	sumed cut-off			Estimated Grade				Copper Equiva		Contained Metal Equivalent			
Resource Category	mining	Mag	Cu		Cu	Со	Au	Mag	CuEq*	CuEq+ Mag*	Magnetite	CuEq*	CuEq+Mag*	
	type	%	%	Mt	%	ppm	ppm	%	%	%	Mt	Mlb	Mlb	
Measured	Open pit	10	0.1	176.5	0.02	68.45	0.01	15.2	0.05	0.32	26.78	208.0	1226.7	
Indicated	Open pit	10	0.1	0.1	0.04	88	0.05	19.6	0.1	0.4	0.02	0	1	
Inferred	Open pit	10	0.1	0.6	0.02	37.6	0.02	6.2	0.0	0.2	0.04	1	2	
Total	Open pit	10	0.1	177.2	0.02	68	0.01	15.1	0.1	0.3	26.84	209	1230	
Grand Tota	nl			177.2	0.02	68	0.01	15.1	0.1	0.3	26.84	209	1230	

Figures have been rounded to reflect level of accuracy of the estimates

Mineral Resources in the above table are inclusive of Ore Reserves.

The information in this report that relates to Mineral Resources is based on information compiled by Mr Andrew J Vigar who is a Fellow of The Australasian Institute of Mining and Metallurgy and is employed by Mining Associates Pty Ltd Mr Vigar has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Vigar consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

Respectfully Submitted

Andrew J Vigar Brisbane, Australia 20<sup>th</sup> October 2017

<sup>\*</sup>Copper equivalent CuEq% = Cu % + Co ppm\*0.001232 + Au ppm\*0.518238

<sup>\*</sup>Copper equivalent CuEq+mag% = Cu % + Co ppm\*0.001232 + Au ppm\*0.518238 + magnetite %\*0.035342



#### COMPETENT PERSON'S CONSENT FORM

Pursuant to the requirements of ASX Listing Rules 5.6, 5.22 and 5.24 and Clause 9 of the JORC Code 2012 Edition (Written Consent Statement)

#### **Report Description**

Mineral Resource Estimate Report for the Rocklands Copper Mine, June 2017, Prepared by Mining Associates Limited for CuDECO Ltd Limited, ("the Report").

I, Andrew J. Vigar confirm that I am the Competent Person for the Report and:

- I have read and understood the requirements of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition).
- I am a Competent Person as defined by the JORC Code 2012 Edition, having at least five years' experience that is relevant to the style of mineralisation and type of deposit described in the Report, and to the activity for which I am accepting responsibility.
- I am a Certified Professional Geologist by The Australasian Institute of Mining and Metallurgy
- I have reviewed the Report to which this Consent Statement applies.

I am a consultant working for Mining Associates Limited, and have been engaged by CuDECO Ltd to prepare the documentation for the Rocklands Copper Mine on which the Report is based, for the period ended 30<sup>th</sup> June 2017.

I have disclosed to the reporting company the full nature of the relationship between myself and the company, including any issue that could be perceived by investors as a conflict of interest.

I verify that the Report is based on and fairly and accurately reflects in the form and context in which it appears, the information in my supporting documentation relating to Mineral Resources

#### **CONSENT**

I consent to the release of the Report and this Consent Statement by the directors of: CuDECO Ltd

Signature of Competent Person:

Signature of Witness:

Andrew J **V**igar

BSc FAusIMM

Bsc (Hons) MAusIMM(CP)

Professional Membership: Fellow of Australian

Institute of Mining and Metallurgy

Membership Number: 105789

Date: 20 October 2017

Bellbowrie Qld

Print Witness Name and Residence: (eg town/suburb)



# JORC Code, 2012 Edition – Table 1

Notes on data relating to Rocklands Copper Mine Resource Estimates. Data provided by CuDECO Ltd and verified by MA.

# 1.1 JORC TABLE 1 - SECTION 1 - SAMPLING TECHNIQUES AND DATA

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

Criteria	JORC Code explanation	Commentary
Sampling techniques	Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.  Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.  Aspects of the determination of mineralisation that are Material to the Public Report.  In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.	<ul> <li>The resource estimate is based on drill samples only, no surface samples were used.</li> <li>Representative 1 metre samples were taken from ¼ (NQ, HQ) or ½ (NQ, BQ) diamond core. Reverse circulation (RC) and rotary air blast (RAB) drillingwas used to obtain 1 m and 3 m samples respectively, from which 3 kg was used for sample analysis.</li> <li>RAB samples were deemed to be unrepresentative and prone to bias and were not used for resource estimation purposes.</li> <li>Only assay result results from recognised, independent assay laboratories were used for Resource estimation after QAQC was verified.</li> </ul>
Drilling techniques	Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).	<ul> <li>Diamond (DD) of NQ, PQ, HQ and BQ diameters with standard and triple tube sample recovery and reverse circulation (RC) with "through the bit" sample recovery data were used for geological interpretation and resource estimation.</li> <li>Where high rates of water inflow were encountered, or for drill holes exceeding depth limits of RC drilling, DD tails were added to complete drilling.</li> <li>Current practice is to use DD only in mineralised zones.</li> </ul>
Drill sample recovery	Method of recording and assessing core and chip sample recoveries and	<ul> <li>DD core recovery averaged 98% overall, and exceeded 80% in 96% of the meters drilled in the mineralised zone.</li> <li>RC recovery was recorded as bag size estimate and bag weight for all</li> </ul>



Criteria	JORC Code explanation	Commentary
	results assessed.  • Measures taken to maximise sample recovery and ensure representative nature of the samples.  • Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	<ul> <li>RC -In most cases when chip recovery was poor and sample became wet the hole was stopped and a diamond tail was added.</li> <li>DD - Analysis of recovery results vs grade indicates no significant trend occurs indicating bias of grades due to diminished recovery and / or wetness of samples.</li> <li>RC - Loss of native copper in the weathered portion of the mineralised zones at Las Minerale and Rocklands South was identified and could result in an underestimation of the copper grade when using RC drill data, in certain circumstances. In areas where native copper is prevalent, core samples were given preference for use in estimation.</li> </ul>
Logging	Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.  Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.  The total length and percentage of the relevant intersections logged.	<ul> <li>Drill samples were logged for lithology, mineralisation and alteration using a standardised logging system, including the recording of visually estimated volume percentages of major minerals.</li> <li>Early (2006 to mid 2008) rock chip and core samples were logged on paper and data entry completed by a 3rd Party Contractor and Database administrator in 2008.</li> <li>Since 2008, rock chip and core samples were logged on site directly into Microsoft Excel field data capture templates with self-validating drop down field lists.</li> <li>Drill core was photographed after being logged by the geologist.</li> <li>Drill core not used for bulk metallurgical testing and RC drill chips are stored at the Rocklands site.</li> </ul>
Sub-sampling techniques and sample preparation	<ul> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<ul> <li>All DD core was orientated along the bottom of hole, where possible. A cut line was drawn 1 cm to the right of the core orientation line.</li> <li>Core was cut with a diamond saw, ½ core was used for NQ and BQ analysis, ¾ core was used for HQ and PQ analysis to standardise the sample size per meter.</li> <li>RC samples were split using ariffle splitter attached to the cyclone on the drill rig.</li> <li>Sample intervals in DD and RC were 1 m down-hole in length unless the last portion of DD hole was part of a metre.</li> <li>SGS Minerals Townsville Sample Preparation:</li> <li>All samples were dried.Drill core was placed through jaw crusher and crushed to approx. 8mm.RC chips and core were split if necessary to a sample of less than approximately 3.5kg.</li> <li>Native copper samples were prepared by 2 methods.Grain size of native copper determined which method was used.:</li> <li>Samples where native copper grain size was less than 2mm were disc ground to approximately 180µm.500g was split and lightly pulverised for 30 seconds to approximately 100µm.</li> <li>Samples where native copper grain size was greater than 2mm were put through a roller crusher to approximately 3mm.Samples were sieved at 2mm with copper greater than 2mm hand picked out of sample.Material less than 2mm and residue above 2mm was disc ground to approximately 180µm.500g was split from the sample and lightly pulverised for 30 seconds to approximately 100µm.</li> <li>All other sampled material not containing native copper was pulverised to a nominal 90% passing 75µm.</li> <li>AMDEL Bureau Veritas Mt Isa Sample Preparation</li> <li>After receiving, checking and sorting samples were dried at 103°C for 6 hours.</li> <li>Core samples were put through a jaw Crusher and crushed to approximately -10mm.Sample was split if sample weight over 3kg.</li> <li>Rock chip samples weighing over 3kg were crushed with the use of a Boyde crusher and split with 3kg of material retained.</li> </ul>



Criteria	JORC Code explanation	Commentary
		<ul> <li>Samples were pulverised for 5 minutes in an LMS until 90% passed through -106um. Sample was split with the remaining pulp put in storage.</li> </ul>
Quality of assay data and laboratory tests	The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.  For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.  Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.	<ul> <li>Samples were pulverised for 5 minutes in an LMS until 90% passed through -106µm.Sample was split with the remaining pulp put in storage.</li> <li>Prior to May 2011, Cu and Co grades were determined predominately by 3 acid digest with either a ICP-AES (Inductively-Coupled Plasma Atomic Emission Spectrometer) or AAS (Atomic absorption Spectrometer) determination (SGS methods, ICP22D, ICP40Q, AAS22D AAS23Q, AAS40G).Post May 2011, Cu and Co grades were determined predominantly by 2 acid digest by ICP-OES (Inductively Coupled Plasma Optical Emission Spectrometer) determination at AMDEL Mt Isa laboratory.</li> <li>Prior to May 2011, Au grades were determined by 50g Fire Assay (at SGS Townsville method FAA505).Post May 2011, Au grades were determined by 40g Fire Assay (at AMDEL Adelaide and Mt Isa method FA1).</li> <li>Prior to May 2011, calcium and sulphur grades were determined by ICP – AES, post May 2011, sulphur grades were determined by aqua regia digest by ICP-OES.</li> <li>Magnetite grades were determined by measurements of magnetic susceptibility portion of the magnetite does exist, and hence magnetite grades may be underestimated in certain locations, but no correction has been found reliable at this time. Additional clarification should be available after results of the current bulk-sample programme have been analysed.</li> <li>All analyses were carried out at internationally recognised, independent assay laboratories SGS, ALS, Genalysis, and Amdel Bureau Veritas.</li> <li>Quality assurance was provided by introduction of known certified standards, blanks and duplicate samples on a routine basis.</li> <li>Assay results outside the optimal range for methods were re-analysed by appropriate methods. Copper assay results differ little between acid digest methods but cobalt assay results show a significant underensive re-assaying programme to define As regression fortmula, AS Co assays were corrected to an equivalent ICP grade for estimation purposes. This correction factor affected 39% of samples in min</li></ul>
		within the realm of analytical error, and as such, acceptable.  Field duplicates collected in three retrospective programmes were



Criteria	JORC Code explanation	Commentary
		<ul> <li>An issue was found with early AAS sample grades for cobalt and a large number of these samples have been re-assayed for Co via ICP methods. Enough data exists to define a close correlation between ICP and AAS results such that the remaining AAS assays were corrected using a linear regression formula (Co_ppm_ICP = 1.0764 * Co_ppm_AAS + 16.51). This affects approximately 39% of Co analyses in mineralised zones.</li> <li>A limited check assay program carried out in 2007 on 497 samples suggested that Cu may be understated by approximately 5%.</li> <li>DTR analysis (Davis tube recovery), which indicates magnetite content, has been carried out on 538 samples. Non-linear correlations with magnetic susceptibility readings on pulp samples, core and RC chips were defined and have been used to derive calculated magnetite contents for estimation purposes. An extensive program of magnetic susceptibility and DTR measurements on pulp samples is currently underway, which is expected to further refine calculated magnetite content.</li> </ul>
Verification of sampling and assaying	<ul> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>	<ul> <li>An umpire assay programme of 528 mineralised samples from 173 drill holes was completed by ALS Laboratories in 2007</li> <li>Results between twinned RC and diamond holes are in approximate agreement, when taken into consideration with the natural variation associated with breccia-hosted ore bodies, identified coarse mineralisation, and subsequent weathering overprinting.</li> <li>All assay data QAQC is checked prior to loading into the CuDECO Explorer 3 data base.</li> <li>The CuDECO Explorer 3 data base was originally developed and managed by consulting geologists, Terra Search Pty Ltd, and was subsequently handed over to CuDECO Ltd in mid-2009. The data base and geological interpretation is collectively managed by the CuDECO Resource Committee, and relayed to the Resource Consultants by the nominated member of this committee, Exploration Adviser Mr David Wilson.</li> </ul>
Location of data points	Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.      Specification of the grid system used.      Quality and adequacy of topographic control.	<ul> <li>All drill holes at Rocklands have been surveyed with a differential global positioning system (DGPS) to within 10 cm accuracy and recorded in the CuDECO Explorer 3 database.</li> <li>All drill holes, apart from vertical, have had down hole magnetic surveys at intervals not greater than 50 m and where magnetite will not affect the survey. Surveys where magnetite is suspected to have influenced results have been removed from the Database.</li> <li>Where surveys are dubious the hole was resurveyed, where possible, via open hole in non-magnetic material.</li> </ul>
Data spacing and distribution	Data spacing for reporting of Exploration Results.     Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.     Whether sample compositing has been applied.	<ul> <li>Drilling has been completed on nominal local grid north-south sections, commencing at 100 m spacing and then closing to 50 m and 25 m for resource estimation. Local drilling in complex near-surface areas is further closed in to 12.5m</li> <li>Vertical spacing of intercepts on the mineralised zones similarly commences at 100 m spacing and then closing to 50m and 25m for resource estimation, again some closer spacing is used in complex areas.</li> <li>Drilling has predominantly occurred with angled holes approximately 55° to 60° inclination below the horizontal and either drilling to the local grid north or south, depending on the dip of the target mineralised zone.</li> <li>Holes have been drilled to 600 m vertical depth</li> <li>Drilling is currently focused on the known mineralised zones of Las Minerale and Las Minerale East; Rocklands South and South Extension; Rocklands Central and Le Meridian; Rainden, Solsbury Hill and Fairfield.</li> <li>Data spacing and distribution is sufficient to establish geological and grade continuity appropriate for the Mineral Resource estimation procedure and has been taken into account in 3D space when determining the classifications to be applied.</li> </ul>



Criteria	JORC Code explanation	Commentary
		<ul> <li>Samples were composited to 2m down-hole for resource estimation in the known wireframe constrained mineralised zones and 10m down-hole in the general lithology zone (Inferred only).</li> </ul>
Orientation of data in relation to geological structure	Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.     If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	<ul> <li>Drilling was completed on local grid north-south section lines along the strike of the known mineralised zones and from either the north or the south depending on the dip</li> <li>Vertical to south dipping ore bodies at Las Minerale, Rocklands South Extended, Rainden and Solsbury Hill, were predominantly drilled to the north whilst vertical to north dipping ore bodies at Las Minerale East, Rocklands South, Rocklands Central and Le Meridian were predominantly drilled to the south. Fairfield strikes northeast to the local grid and is vertically dipping, most drill holes intersect at a low-moderate angle.</li> <li>Scissor drilling, (drilling from both north and south), as well as vertical drilling, has been used in key mineralised zones at Las Minerale and Rocklands South to achieve unbiased sampling of possible structures, mineralised zones and weathering horizons.</li> <li>Horizontal layers of supergene enrichment occur at shallow depths in Las</li> </ul>
		Minerale and Rocklands South and a vertical drill program was undertaken to address this layering and to provide bulk samples for metallurgical test work.
Sample security	The measures taken to ensure sample security.	<ul> <li>Samples are either dispatched from site through a commercial courier or company employees to the Laboratories. Samples are signed for at the Laboratory with confirmation of receipt emailed through. Samples are then stored at the laboratory and returned to a locked storage shed on site.</li> </ul>
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	<ul> <li>CuDECO conducts internal audits of sampling techniques and data management on a regular basis, to ensure industry best practice is employed at all times.</li> </ul>
		<ul> <li>External reviews and audits of sampling have been conducted by the following groups;</li> <li>2007 – In July 2007, Snowden were engaged to conduct a review of drilling and sampling procedures at Rocklands, provide guidance on potential areas of improvement in data / sample management and geological logging procedures, and to ensure the Rocklands sampling and data record was appropriate for use in resource estimation. All recommendations were implemented.</li> </ul>
		<ul> <li>2010 – In early 2010 Hellman &amp;Schofield conducted a desktop review of the Rocklands database, as part of their due diligence for the resource estimate they completed in May 2010. Apart from limited logic and spot checks, the database was received on a "good faith" basis with responsibility for its accuracy taken by CuDECO. A number of issues were identified by H&amp;S but these were largely addressed by CuDECO and H&amp;S regarded unresolved issues at the time of resource estimation as unlikely to have a material impact on future estimates.</li> <li>2010 - Mr Andrew Vigar of Mining Associates Limited visited the site in 12 to 15 October, 3 to 5 November and 8 to 10 December 2010 during the compilation of detailed review the drilling, sampling techniques, QAQC and previous resource estimates and 17 to 19 March 2011 to confirm the same for new drilling incorporated into this resource estimate. Methods were found to conform to international best practise, including that required by the JORC standard.</li> </ul>



# 1.2 JORC TABLE 1 - SECTION 2 - REPORTING OF EXPLORATION RESULTS

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

Criteria	JORC Code explanation	Commentary										
Mineral tenement and land tenure status	Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings. The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	<ul> <li>The Rocklands Copper Mine is located within granted mining leases ML90177 and ML90188, and Infrastructure Lease ML90219. Landowner agreements formed part of the granting, and remain current for the duration of the mining leases.</li> <li>Native Title Ancillary agreements have been signed with the Mitakoodi &amp; Mayi peoples and the Kalkadoon peoples, the local custodians of the areas covered by the mining leases.</li> <li>Mining Leases detailed above are granted for a period of 30 years; there is no known impediment to operating for this period of time. The Project operates under a Plan of Operations, the most recent of which was approved on 17<sup>th</sup> October, 2013.</li> </ul>										
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.		Previous reports on the Double Oxide mine by CRA and others between 1987 and 1994 describe a wide shear zone containing a number of sub parallel mineralised zones with a cumulative length of 6 km.									
Geology	Deposit type, geological setting and style of mineralisation.	Hosted within metamorphosed meso-Proterozoic age volcand sedimentary rocks and intrusive dolerites of the Eastern Fold Belt of the Mt Isa Inlier. Dominated by dilational brecciated shear zones containing coarse patchy to massive primary mineralisation, with high-grade supergene chalcocite enrichment and bonanza-grade coarse native copper in oxide. Structures hosting mineralisation are sub-parallel, east southeast striking and steeply dipping. The observed mineralisation, and alteration, exhibit affinities with Iron Oxide-Copper-Gold (IOCG) styledeposits. Polymetallic copper-cobalt-gold mineralisation, and significant magnetite, persists from the surface, through the oxidation profile, and remains open at depth.						of the aining grade native east- , and style ficant and				
Drill hole Information	A summary of all information material to the understanding of the exploration results including a tabulation of the following		<ul> <li>Summary of drilling by type and year is given in the table below. Note that some DD holes are tails on the end of RC pre-collars, such that the number of DD collars is overstated. The total number of drill hole collars and all drilling metres are correct.</li> </ul>									
	information for all Material		Drilling Type		2010	2011	2012	2013	Total	]		
	drill holes:  • easting and northing of the			# holes	1514	499	1668	145	3826			
	drill hole collar		RAB	metres	7820	2819	18741.5	2211	31591.5			
	elevation or RL (Reduced Level – elevation above sea			# holes	239	111	235	28	613			
	level in metres) of the drill hole collar		DD	metres	47286.04	17386.68	24749.41	7507.9	96930.03			
	dip and azimuth of the hole		D.C.	# holes	1491	84	2		1577			
	down hole length and interception depth		RC	metres	221263.1	9850.8	195.7		231309.6			
	hole length.		Contach DD	# holes			8		8			
	If the exclusion of this information is justified on the		Geotech DD	metres			182.6		182.6			
	basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent		Open Hole	# holes			1	6	7			
			Орен нове	metres			285	1394	1679			
			Total	# holes	3109	684	1914	179	5886			
	Person should clearly explain why this is the case.			metres	276369.14	30056.48	44154.21	11112.9	361692.73			
Data aggregation methods	In reporting Exploration     Results, weighting averaging     techniques, maximum     and/or minimum grade     truncations (eg cutting of		<ul><li>Intercepts CuDECO in Informing S geological</li></ul>	n separate Samples w	ASX annovere comp	ouncements osited to	nts and ar two metr	re not rep e lengths	eated here honouring	e. g the		



Criteria	JORC Code explanation	Commentary
	high grades) and cut-off grades are usually Material and should be stated.  • Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.  • The assumptions used for any reporting of metal equivalent values should be clearly stated.	residual sample lengths have been excluded (best fit).  Metal equivalents are not used in domaining, but are reported. The formulae used are as follows  CuCoAu equivalent grades were based on metal prices and metallurgical recoveries provided by CuDECO and refer to recovered equivalents:  Cu 95% recovery US\$2.00 per Pound  Co 90% recovery US\$26.00 per Pound  Au 75% recovery US\$900.00 per Ounce  Magnetite 75% recoveryUS\$195 per Tonne  The recovered copper equivalent formula was:  CuCoAu%= Cu% + Co ppm *0.001232 + Au ppm *0.518238  CuEq%= Cu% + Co ppm *0.001232 + Au ppm *0.518238 + Mag% *0.035342
Relationship between mineralisation widths and intercept lengths	These relationships are particularly important in the reporting of Exploration Results.  If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.  If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').	<ul> <li>Mineralised structures are variable in orientation, and therefore drill orientations have been adjusted from place to place in order to allow intersection angles as close as possible to true widths.</li> <li>Exploration results have been reported by CuDECO in earlier statements to the ASX as an interval with 'from' and 'to' stated in tables of significant economic intercepts. Tables clearly indicate that true widths will generally be narrower than those reported.</li> <li>Resource estimation, as reported later, was done in 3D space.</li> </ul>
Diagrams	Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	<ul> <li>Tabulated intercepts for all drill holes is not considered applicable to a project with over 5000 drill holes and estimated resources. Results of individual drilling programmes with significant intercepts, maps and cross sections have been reported to the ASX by CuDECO at the time of drilling.</li> </ul>
Balanced reporting	Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.	<ul> <li>Resources have been reported at a range of cut-off grades, above a minimum suitable for open pit mining.</li> </ul>
Other substantive exploration data	Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.	<ul> <li>Extensive work in these areas has been completed, and was reported by CuDECO in earlier statements to the ASX.</li> </ul>



Criteria	JORC Code explanation	Commentary
Further work	<ul> <li>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or largescale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	• Mineralisation is open at depth. Current estimates are restricted to those expected to be reasonable for open pit mining. Limited drilling below this depth (-250m RL) shows widths and grades potentially suitable for underground extraction. CuDECO are currently considering target sizes and exploration programs to test this potential to 1,000m from surface.

### 1.3 JORC TABLE 1 - SECTION 3 - ESTIMATION AND REPORTING OF MINERAL RESOURCES

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

Criteria	JORC Code explanation	Commentary
Database integrity	Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.      Data validation procedures used.	<ul> <li>The Rocklands database is a Microsoft Access based Explorer 3 database system.</li> <li>Data is logged directly into an Excel spreadsheet logging system with drop down field lists.</li> <li>Validation checks are written into the importing program in the Explorer 3 data base, an error is triggered if data is not in correct format and ensures all data is of high quality.</li> <li>Digital assay data is obtained from the Laboratory, QAQC checked and imported into Explorer 3.</li> <li>Data tables were exported from Explorer 3 as a sub-set, also in MS Access format, and connected directly to the Gemcom Surpac mine software used by MA for interpretation and resource estimation.</li> <li>Data was validated prior to resource estimation by the reporting of basic statistics for each of the grade fields, including examination of maximum values, and visual checks of drill traces and grades on sections and plans. Errors were reported back to CuDECO for correction in the Explorer3 Database.</li> </ul>
Site visits	Comment on any site visits undertaken by the Competent Person and the outcome of those visits.  If no site visits have been undertaken indicate why this is the case.	• Mr Andrew Vigar of Mining Associates Limited visited the site from 12 to 15 October, 3 to 5 November and 8 to 10 December 2010, and from 17 to 19 March 2011 during the compilation of a detailed review of the drilling, sampling techniques, QAQC and previous resource estimates.Mr. Vigar also visited the site from 24 to 25 September 2013 to confirm the same for new drilling incorporated into this resource estimate.Methods were found to conform to international best practise, including that required by the JORC standard.
Geological interpretation	<ul> <li>Confidence in (or conversely, the uncertainty of ) the geological interpretation of the mineral deposit.</li> <li>Nature of the data used and of any assumptions made.</li> <li>The effect, if any, of alternative interpretations on Mineral Resource estimation.</li> <li>The use of geology in guiding and controlling Mineral Resource estimation.</li> <li>The factors affecting</li> </ul>	<ul> <li>The Rocklands copper-cobalt-gold mineralisation is hosted in a series of subparallel, east south east trending, steeply dipping zones. Mineralised lodes occur within a metamorphosed sedimentary succession of siltstone, sandstone/quartzite, quartz magnetite/jaspilite lenses, calcareous beds and calc-silicates of Proterozoic age. Copper is the dominant mineralisation at Rocklands, lesser amounts of cobalt and gold. Copper mineralisation extends from surface to depth with overlapping oxide, secondary and primary styles of copper mineralisation. Mineralisation appears to be associated with and controlled by steeply dipping, west northwest trending, linear, structures that cut the shallow dipping metasedimentary sequence at a high angle.</li> <li>Orientation and grade of the known mineralised zones are clearly influenced by a combination of steeply dipping structurally controlled features, which may be spatially associated with largely sub vertical dolerite dykes, and shallowly dipping favourable lithological units.</li> </ul>



Criteria	JORC Code explanation	Commentary						
	continuity both of grade and geology.	<ul> <li>Controlling structures are sub-vertical and strike in a north-northwest orientation.</li> </ul>						
		<ul> <li>Copper mineralisation extends from surface and is open at depth with overlapping oxide, secondary and primary styles. Primary sulphide mineralisation occurs at the base of a thick secondary mineralisation sequence of native copper and chalcocite with a minor complete oxidation zone.</li> </ul>						
Dimensions	The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.	The main area of defined mineralisation occurs as a number of sub-para structures over a corridor strike length of 3 km, 1.7 km wide and up 0.64 km down dip, which excludes Solsbury Hill, Fairfield and nea domains situated immediately to north of the main zone. There are a tota 38 currently defined domains, including Solsbury Hill and Fairfield.    Mineralised domain extents (local grid)						
Estimation and modelling techniques	The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.  The availability of check estimates, previous estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.  The assumptions made regarding recovery of byproducts.  Estimation of deleterious elements or other nongrade variables of economic significance (eg sulphur for acid mine drainage characterisation).  In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.  Any assumptions behind modelling of selective mining units.	<ul> <li>mined out areas.</li> <li>The resource estimate has been revised from "first principles" based on review and re-interpretation of the geological controls and using the resul of the extensive recent drilling programs.</li> <li>Mineralised domains were digitised on cross sections defining boundaries for High-grade Cu as &gt;0.5%Cu, Low-grade Cu as &gt;0.1% Cu and Cobalt as &gt;100ppm Co. The domains are nested. There are a total of 38 current defined domains. The intervals for each drill hole for each domain we tagged into database tables and used for compositing and selection informing samples.</li> <li>Grade estimation of copper, gold, cobalt and magnetite in most mineralise domains used ordinary kriging (OK) into a parent block size of 12.5 m (E) to 2 m (N) by 5 m (RL) for all areas except Fairfield. Estimation at Fairfield use a parent block size of 6.25 m (E) by 1 m (N) by 2.5 m (RL).</li> <li>Grade estimation of copper in Las Minerale and Rocklands South high grad domains used multiple indicator kriging (MIK) with cut-offs of 2%, 10% at 20% Cu. Two MIK estimates were obtained using DD-only and RC + D data, so that sampling bias related to drilling method could be minimise. The estimated Cu value assigned in the final block model was based on the conditional bias slope of an OK estimate using DD-only data in the followin manner: If DD IK slope &gt; 0.3, block grade = DD IK grade; if slope &lt; 0.3, block grade = DD-RC IK grade.</li> <li>Defined mineralised domains were constrained with 3D wireframes Resul for Cu were compared with the raw drill data and also with block estimate made using Nearest Neighbour and Inverse Distance squared bloe estimates, the first to test the impact of averaging and clustering, the latt the impact of clustering and the selected variogram. Resource categorie were defined using sampling density, number of informing samples are conditional bias slope of regression.</li> <li>Geological and grade modelling work encompassed all drilling. Modellir work was extended vertically to the limits o</li></ul>						



Criteria	JORC Code explanation	Commentary
	Any assumptions about correlation between variables.      Description of how the geological interpretation was used to control the resource estimates.      Discussion of basis for using or not using grade cutting or capping.      The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	8 m (N) by 20 m (RL) with data available outside of the wireframe domains. Where possible the wireframe domains were extended to these areas, but some areas where drilling and/or geological knowledge was insufficient remained, these areas are known as "undomained". Where grades above cut-off were identified and where these blocks had sufficient informing samples for the tonnage and grade estimates to be reliable, have been included in the inferred category only.  Weathering horizons for oxide and semi-oxide were defined on section by CuDECO using drill lithological logs, as were domains for native copper and chalcocite at Las Minerale and Rocklands South.  Block models were validated by visual and statistical comparison of drill hole and block grades and through grade-tonnage analysis.  Kriged copper estimates were validated against Nearest Neighbour and Inverse Distance Squared copper estimates. These alternative models undertaken by different software and personnel achieved very close agreement with the reported results.
Moisture	Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.	All tonnages are reported on a dry basis.
Cut-off parameters	The basis of the adopted cut-off grade(s) or quality parameters applied.	<ul> <li>Lower cut-off grade for resource reporting of 0.2% CuCoAu and only blocks above -250m RL were applied to blocks in reporting the resource estimates for a range of cut-off grades.</li> <li>Total C1 costs (mining, milling and admin) are approximately \$18 per tonne of ore, which was based onopen pit mining and a strip ratio of 3 to 1. Using weighted average price for Cu Co and Au over the last 5 years and allowing for differential recoveries gives a cut-off of approx. 0.23% CuCoAu.</li> <li>Magnetite only resources are reported above a minimum cut-off of 10%.</li> </ul>
Mining factors or assumptions	Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.	<ul> <li>Preliminary pit optimisation was undertaken using Whittle software by an independent mining engineering consultancy. The aim of this work was to identify the approximate proportion of the modelled estimates that fall inside an optimum pit shell using prevailing metal prices, preliminary metallurgical recoveries and assumed inputs such as pit slopes. This work was not intended to define reserves. The key metallurgical recovery assumptions were 95% for Cu, 90% for Co and 75% for Au as advised by CuDECO, The pit reached a depth of about -180m RL</li> <li>Size of preliminary conceptual pits is strongly affected by inputs, particularly metal recoveries and metal prices which, if unrealised, may result in significant portions of resource estimates not reporting to future open pits.</li> <li>The Xstrata December 2009 Resource Statement for the nearby, and geologically similar, Ernest Henry open cut is for a Total Resource of 21Mt @ 0.9% Cu, 0.5 g/t Au and 18%magnetite using a cut-off grade of 0.27 % Cu. Final depth is 530m below surface.</li> <li>The resource is therefore considered as open pittable above an elevation of -250 m RL, or about 475 m from surface.</li> </ul>
Metallurgical factors or assumptions	The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods,	<ul> <li>Numerous technologies and techniques have been applied to ore samples extracted from across the Rocklands mineralised zones to establish the general amenity of the Rockland's mineral species to efficient recovery to produce quality saleable products, and to determine any potential processing problems.</li> <li>No significant impediments to the efficient recovery of Rocklands copper, cobalt, magnetite and gold minerals have been encountered during the exhausting programme of laboratory and small and large-scale pilot processing testwork.</li> </ul>



Criteria	JORC Code explanation	Commentary										
but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous.  Where this is the case, this should be reported		<ul> <li>No deleterious elements are present in concentrate products produced in test programmes at concentrations in excess of, or near to, concentration which would be likely to attract a penalty from a smelter or other end users</li> <li>Concentrate products are above the minimum specification required achieve full payment from smelters or other end users.</li> <li>The following procedures and processing techniques have been applied Rocklands mineralised zones:</li> </ul>								entrations d users. equired to		
	with an explanation of the basis of the metallurgical assumptions made.	ſ	KUCKI	Zone	Crush	Screen	Leach	Mill	Gravity Conc.	Floatation	Filtration	
				Oxidised	<b>V</b>		<b>V</b>			<b>V</b>		
				Native Copper	1	<b>V</b>		<b>V</b>	<b>V</b>	<b>V</b>	<b>√</b>	
				Chalcocite	1			1		<b>V</b>	<b>√</b>	
				Primary	<b>√</b>			<b>V</b>		<b>V</b>	<b>√</b>	
Environmental factors or assumptions	Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well	E V E F T E T T E T T E T T E T T T T T T T	R The Enviro was i Enviro Proje The F EPML The e at an dispo	Assessment Recovery  Assessment Recommental Manages Seed by the Commental Authority was issued or Project currently 20887913.  Environmental apaverage processe of the associst and tailings steed	eporingement and a second and a second and a second and a second a	ent Plan nsland ( (EA) when the Octoberates under the of 3 waste a	for the Governich ear, 201 ander the tred to 3.0 mile and tail	rironm ne Ro nment nable 1. ne Qu o abov lion to	cklands on 1st d the con eensland we allow onnes pe	75% npact Goup Augus ommel d EA, the Pr	State Copp st 201 nceme Perm	er Project 1 and the ent of the t Number o operate ore and to
Bulk density	advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.  • Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method	t v	under he R were	were 3002 taken for bulk docklands miner used in the bulk	lensi alise den	ty deterred zones sity prog	minations. Both	ons wi h inte e. The	th a sparnal and results	tial dis exter have b	stributi nal la	on across boratories
	used, whether wet or dry, the frequency of the measurements, the	<ul> <li>The mineralised zones exhibited a definable trend of increasing bulk dens with copper and magnetite grade and this has been factored for resource.</li> </ul>										



Criteria	JORC Code explanation	Commentary							
	nature, size and representativeness of the samples.  The bulk density for bulk material must have been	<ul> <li>calculations.</li> <li>Based on the results obtained, the following table is applied to the mineralised zones for resource estimation purposes:</li> </ul>							
	measured by methods that adequately account	Zone Baseline(t/m3) Cu% Factor Magnetite %Factor							
	for void spaces (vugs, porosity, etc), moisture	Oxide 2.38 0.657 0.0279							
	and differences between rock and alteration zones	Semi Oxide 2.70 0.0620 0.0247							
	within the deposit.	Native Copper 2.50 0.0645 0.0267							
	<ul> <li>Discuss assumptions for bulk density estimates</li> </ul>	Chalcocite 2.75 0.062 0.0221							
	used in the evaluation process of the different materials.	Primary         2.9         0.0605         0.0227           Mineralised							
	materials.	Fresh 2.75 0.0625 0.242							
		<ul> <li>The grade formula applied to the zone for resource estimation purposes is as follows:</li> <li>Bulk Density = Baseline + %Cu*Cu Factor + Magnetite%*Magnetite Factor</li> </ul>							
Classification	The basis for the classification of the Mineral Resources into varying confidence categories.  Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).  Whether the result appropriately reflects the Competent Person's view of the deposit.	<ul> <li>Resource classification is based on number of informing samples, kriging conditional bias slope ("Slope") and search distance to informing samples.</li> <li>Blocks within the defined wireframes domains are classified as measured, indicated or inferred based on the following criteria         <ul> <li>Measured - maximum number of informing samples, Slope &gt;0.8</li> <li>Indicated - maximum number of informing samples, Slope &gt;0.4</li> <li>Inferred - block estimated within domain wireframes, minimum of 3 informing samples within maximum search of 300m.</li> </ul> </li> <li>Host lithologies between defined wireframe domains are known as "undomained". Where grades above cut-off of 0.2% CuCoAu were identified and where these blocks had sufficient informing samples for the tonnage and grade estimates to be reliable, have been included in the inferred category only. Search range for this category was reduced to 200 m and minimum number of informing samples increased to 10 as no domain wireframes were used.</li> <li>Magnetite-only material was also allocated in the "undomained" section of the deposit using the same criteria as described above. A cut-off of 10% magnetite was applied.</li> </ul>							
Audits or reviews	The results of any audits or reviews of Mineral Resource estimates.	<ul> <li>CuDECO's internal review and audit of theFebruary 2014 Mineral Resource Estimate consisted of data analysis and geological interpretation of over 210 individual cross-sections, comparing drill-hole data with the resource estimate block model.</li> <li>Good correlation of geological and grade boundaries were observed, however some loss of resolution is observed when high-grade results are present, due to the apparent smoothing of these results into surrounding blocks.</li> <li>No external audits or reviews of the mineral resource estimate were undertaken.</li> <li>Comparison with previous Mineral Resource estimate</li> <li>In May 2011 CuDECO released a mineral resource estimate prepared by Mining Associates Australia.</li> <li>CuEq equivalent grades were based on metal prices and metallurgical recoveries provided by CuDECO and refer to recovered equivalents:         Cu 95% recovery US\$2.00 per Pound         Co 90% recovery US\$26.00 per Pound         Au 75% recovery US\$900.00 per Ounce         Magnetite 75% recovery US\$175 per Tonne         The recovered copper equivalent formulae applied were:         CuEq% = Cu % + Co ppm*0.001232 + Au ppm*0.518238</li> </ul>							



Criteria JORC Code exp	action Commentary
Discussion of relative accuracy/ confidence  • Where appropriate statement of the accuracy and clevel in the Min Resource estimate an approach of deemed appropriate (application of sign geostatistical pito quantify the accuracy of the within stated collimits, or, if succession of the statement specify whether to global or lock estimates, and state the relevation and economic Documentation include assuming made and the pused.  • These statement of the accuracy and clevel in the Min Resource estimate for example, the application of sign geostatistical pito quantify the accuracy of the within stated collimits, or, if succession of the that could affect relative accuracy of the statement specify whether to global or lock estimates, and state the relevation include assuming made and the pused.  • These statement of the accuracy and clevel in the Min Resource estimate of the competent For example, the application of sign geostatistical pito quantify the accuracy of the within stated collimits, or, if succession of the within stated coll	CuEq%+Mag = Cu % + Co ppm*0.001232 + Au ppm*0.518238 +magnetite %*0.035342  **Compared with the 2011 estimate, there is little change in total tonnes, except for depletion. Although tonnes were gained with the addition of Fairfield, adjustments to mineralised domain wireframes based on new drilling resulted in a similar net decrease elsewhere. Measured resource tonnes increased, while Indicated and Inferred tonnes decreased due to additional drilling increasing estimation confidence in some areas.  **There is a substantial increase in copper and magnetite grades. Copper grades at higher CuEq cut-offs (0.4% and 0.8%) were increased due to the effects of sample bias in Las Minerale and Rocklands South high grade oxide zones being mitigated by MIK estimation, and from new high grade intersections of copper in parts of Rocklands South. Magnetite grades have almost doubled as a result of updated factors being used to convert magnetic susceptibility to magnetite content.  **An approach to the resource classification was used which combined both confidence in geological continuity (domain wireframes) and statistical analysis. The level of accuracy and risk is therefore reflected in the allocation of the measured, indicated and inferred resource categories.  **Undomained** material, both copper and magnetite mineralisation is restricted by the current level of drilling. Reporting of this as an Inferred resource was constrained by use of tight estimation parameters. It is expected that further work will extend this considerably.  Using the slope of regression as a guide to classification of mineral resource takes the quality and hence accuracy of the block estimates into consideration.  **Resources estimates have been made on a local basis using a block model with variable block sizes which reflect the informing sample density. The model is suitable for technical and economic evaluation.  **The deposition is a sample density.** The model is suitable for technical and economic evaluation.  **The deposition is a sample de
estimate shoul compared with data, where av	duction

# 1.4 JORC TABLE 1 - SECTION 4 - ESTIMATION AND REPORTING OF ORE RESERVES

No reserves are reported