RL3/2006 Copper Clays

Final Relinquishment Report

2016

Volume 1/1

Compiled By:

John Hooper-Senior Project Geologist CMT

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Abstract

Retention licence RL3/2006 was issued to Copper Mines of Tasmania Pty Ltd (CMT) in November 2006. The licence is located at the head of the Linda Valley adjacent to the Mount Lyell Mine Lease The intention of retaining the area was to evaluate the resource and extraction potential of Cainozoic (?) copper mineralization hosted within clay lithologies derived from weathering/alteration of the Gordon Group. A scoping study was conducted by external consultants during 2007/2008 indicating that the King Lyell deposit was the most favorable deposit for economic extraction at the prevailing copper prices of the day. In 2011 CMT conducted drilling leading to a greater understanding of grade and geology resulting in the modelling of a potential ore resource in 2014. The 2014 assessment concluded that under the current conditions of mineral resource reporting and classification as guided by the JORC 2012 guidelines in addition to a revised geology model the potential ore inventory was significantly smaller than utilized in the initial scoping study. Under the current Care and Maintenance status of the Mt Lyell mining operation the King Lyell deposit is not considered an asset compatible with the current business strategy. CMT has therefore decided to relinquish the full area covered by RL3/2006.

1.Introduction

RL3/2006 forms a 2km2 retention licence on the eastern boundary of the CMTs Mount Lyell Mine lease (9M/2013) at the head of the Linda Valley. The retention licence covers three known Cainozoic copper clays style copper deposits; Lyell Consols, Lyell Blocks and King Lyell.

These “copper clay” native copper and copper oxide deposits have substantially different mineralogy and metallurgical characteristics than the Prince Lyell underground mine which until 2014 was the primary ore source for CMTs Mount Lyell copper concentrator. The King Lyell deposit was assessed as the only deposit of potential tonnage to be considered for potential future mining (AMC, 2008). Drilling of the King Lyell deposit by CMT during 2005 and later in 2011 increased the confidence for resource modelling and estimation completed in 2013/2014.

This report summarises works completed early during CMT current tenure and details estimation work completed on the deposit during 2014 by Brendan McGee (Senior Mine Geologist). Work during the period ending November 2016 was limited to capping of all locatable drill holes. The author refers the reader to all previous annual reports for hole details and more in depth discussion.

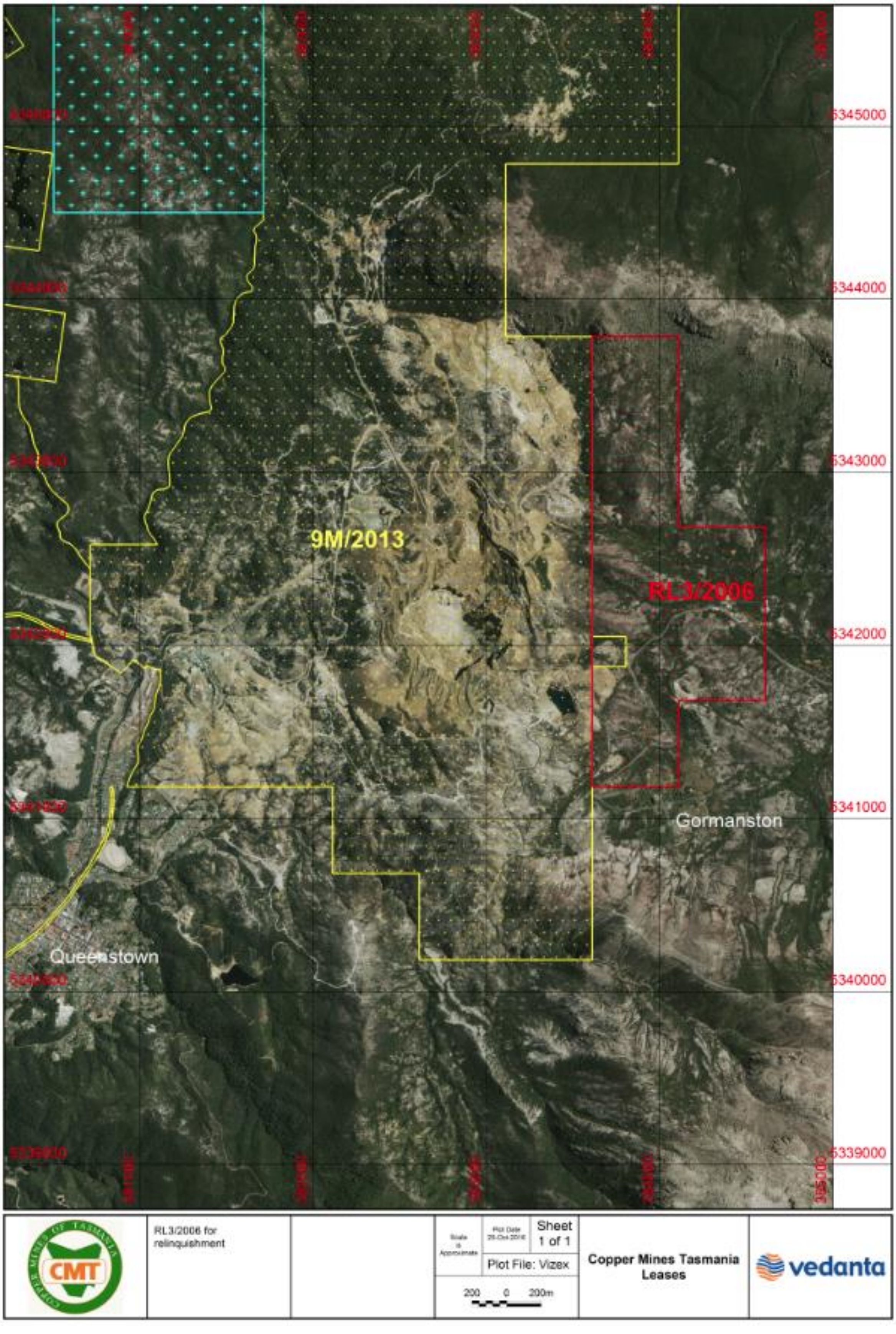
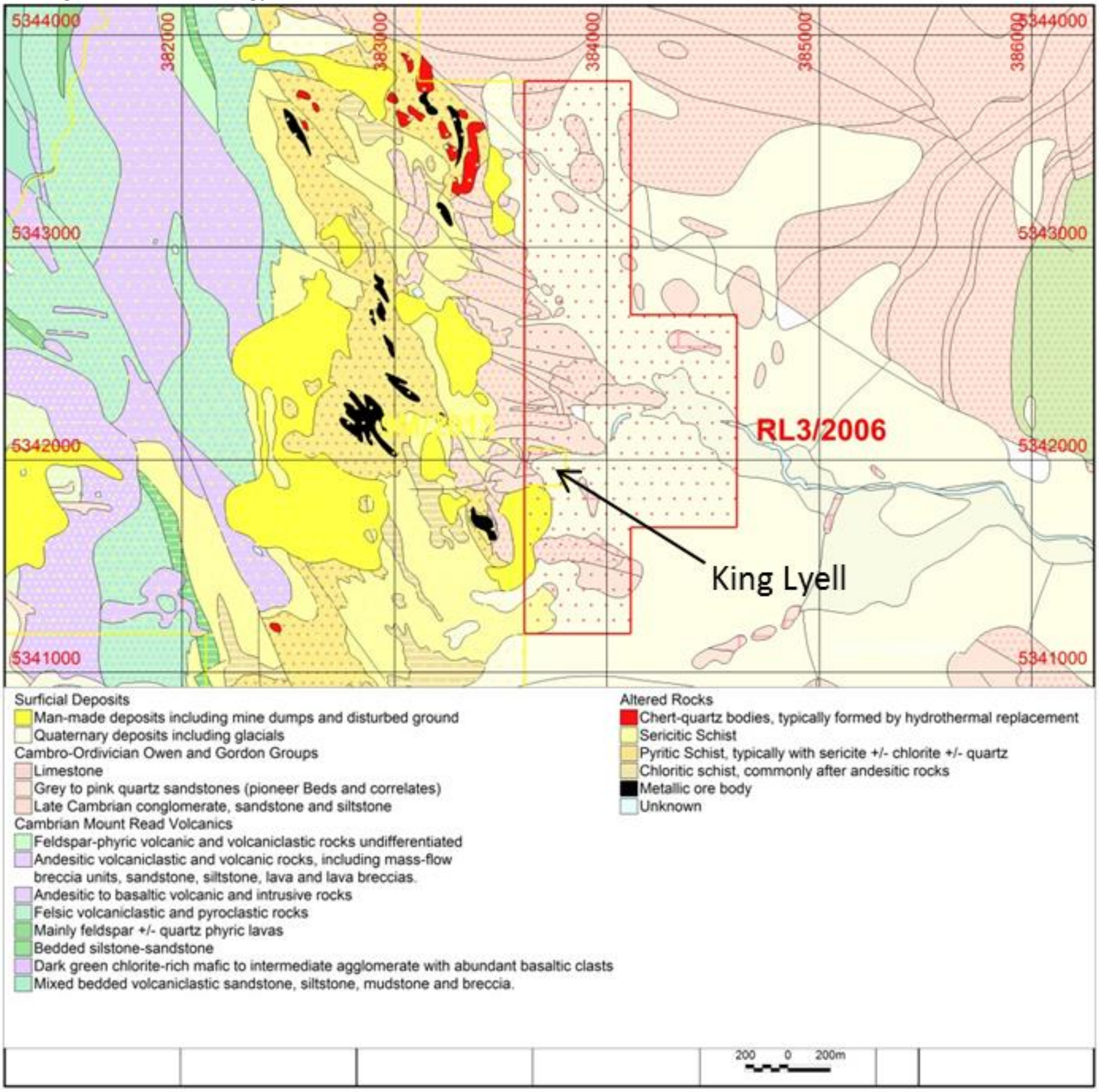


Figure 1. General Location of RL3/2006

2.Geology

The Copper Clays are hosted in highly deformed and intensely weathered limonitic-carbonaceous clays and concretionary iron hydroxides, derived from Gordon Group limestone and shale. It is thought that the Gordon Group protoliths were altered by copper bearing acid waters draining from primary Mt Lyell copper sulphide mineralization up slope (Wills, 1995). The deposits are contained in tightly folded Devonian synclines that plunge gently to the east-southeast and strike parallel to the North Lyell Fault. The synclines form natural depressions in the surface between the more permeable Gordon Group sedimentary rocks and the less permeable Pioneer beds. These synclinal depressions are evident in the current topography where corresponding adjacent anticlines expose the more resistive Pioneer and Owen beds forming ridges between the depressions. The depressions have formed natural preferential water courses for copper bearing acid waters to interact with reactive Gordon Group limestones and shales leading to accumulations of copper bearing minerals. The King Lyell is overlain with up to 60m of glacial, periglacial and anthropogenic material in the east (Figure 2). The cover shallows towards the west where the host rock crops out.

Figure 2 General Geology of the RL3/2006 area



3. Review of Previous Work in the Modern Era

Summary of Previous Work

1996- RC Holes Drilled

1997- Estimate of 1.2Mt @ 1.37% (CMT)

1997- Mining Study (Tony Weston)-uneconomic

2005- 6 Diamond Drill holes completed Validating 1996 RC holes.

2007- AMC engaged for scoping study. Estimate ~2.5Mt @ 0.9%. Economic.

2011- 11 vertical HQ diamond holes drilled

2012- Notice of requirement to spend an additional 15k to hold retain licence

2012/13- Geological Interpretation and Resource estimate completed (400kt @ 0.91%), Re-assays. $9.2k expended.

2014- No work completed

2015- Collar Pipes Installed

2016-Relinquishment

A major CMT desktop study reviewed the geology and mining potential of the copper clays deposits in 1995 (Wills, 1995). In 1996 CMT drilled part of the King Lyell deposit predicted from the Wills 1995 report to contain relatively high grade mineralization. It was also an opportunity to trial modern high air delivery RC percussion drilling on the copper clays, which are renowned as being difficult to effectively drill. The three hole program was moderately successful in terms of sample recovery and rate of penetration but the wet unconsolidated materials resulted in substantial vertical contamination and therefore reported grade intervals may not be very accurate (Morrison, 1996). A 1997 resource estimation of King Lyell, estimated 1.2 million tonnes at 1.37% Cu and a stripping ratio of 2.3:1 (Morrison and Knight, 1997) was formulated. This estimate utilised wireframes created from cross-sections and a longitudinal section created from un-validated historical drilling and the 1996 CMT drilling results.

Further evaluations of the resource potential were conducted by CMT's senior Mining Engineer Tony Weston with a review of preliminary mine economics in 1997. The economics were not favourable and as the Mt Lyell operation temporarily closed in 1998, and subsequently changed hands, no further copper clays exploration was done until 2005.

Six diamond drill holes were drilled at King Lyell during 2005, aimed at testing the reproducibility of historical drilling results and to help define the outer boundaries of the deposit. Two of the six holes intersected mineralised clay, with the best intersection in 05KLD002 being 14m @ 0.51% Cu (Hill, 2006). These results were used to validate a nearby earlier RC hole (96KLC001) which reported values of 8m @1.27% Cu from a similar depth. McArthur Ore Deposit Assessments Pty Ltd conducted a petrographic study on core samples in September 2005, concluding that native copper was the most common copper mineral, but also present were cuprite (mainly rimming native copper, but also commonly liberated), covellite, chalcocite, bornite and chalcopyrite (McArthur,2005). It is not clear whether the copper sulphide minerals are hosted in detrital rock fragments deposited as karst fill talus in the decomposed limestone.

AMC consultants were engaged by Copper Mines of Tasmania during 2007 to undertake a scoping study of the copper clays deposits. The study evaluated the deposits and determined that the King Lyell deposit was the only deposit that justified further attention. The scoping study was completed in February 2008 and covered a geological review, geotechnical and metallurgical assessments, mining options and costs, optimization, conceptual designs for open pit, waste dumps and scheduling, financial and risk analysis. The main conclusions of the scoping study underlined that the King Lyell deposit had sufficient potential to provide a significant minable resource for CMT. More drilling was recommended prior to a pre-feasibility study (AMC, 2008). Surpac 3D modeling of King Lyell was conducted by CMT following the AMC report (Brown, 2008).

A resource drilling program consisting of 11 HQ vertical diamond drill holes was completed during 2011. All holes were rotary-mud pre collared and core recovery through the target sediments was better than on any previous copper clays drilling. Description of the drilling methods, logs and the geology of the sediments are covered in the 2011 and 2012 Annual Reports (Brown, 2011, Morrison, 2012).

All drilling of the King Lyell deposit was confined to the footprint left by a gravel storage facility operated by a previous entity prior to CMTs tenure.

4. 2013/2014 resource modelling update

A geological resource model was constructed by McGee during 2013/2014.

Drilling data used in resource evaluation

Drilling data selected was from three programs, the 1996 (three RC holes), 2005 (six diamond holes) and 2011 (11 combination rotary mud pre-collars with diamond tails) (Table 1). All data previous to these programs has been not considered due to poor recoveries or unreliable surveys

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Hole ID	EOH Depth	Method	Year
96KLC0001	70	Reverse circulation	1996
96KLC0002	67	Reverse circulation	1996
96KLC0003	60	Reverse circulation	1996
05KLD001	32.2	Diamond (HQ3)	2005
05KLD002	72.2	Diamond (HQ3)	2005
05KLD003	42.4	Diamond (HQ3)	2005
05KLD004	48.8	Diamond (HQ3)	2005
05KLD005	46.6	Diamond (HQ3)	2005
05KLD006	93.7	Diamond (HQ3)	2005
DD11CMT007	90	Rotary mud pre-collars with Diamond HQ3 tails	2011
DD11CMT008	99.7	Rotary mud pre-collars with Diamond HQ3 tails	2011
DD11CMT009	87.1	Rotary mud pre-collars with Diamond HQ3 tails	2011
DD11CMT010	74.4	Rotary mud pre-collars with Diamond HQ3 tails	2011
DD11CMT011	87.7	Rotary mud pre-collars with Diamond HQ3 tails	2011
DD11CMT012	82.4	Rotary mud pre-collars with Diamond HQ3 tails	2011
DD11CMT013	68.5	Rotary mud pre-collars with Diamond HQ3 tails	2011
DD11CMT014	95.8	Rotary mud pre-collars with Diamond HQ3 tails	2011
DD11CMT015	59.4	Rotary mud pre-collars with Diamond HQ3 tails	2011
DD11CMT016	60.7	Rotary mud pre-collars with Diamond HQ3 tails	2011
DD11CMT017	51.5	Rotary mud pre-collars with Diamond HQ3 tails	2011

Table 1 Summary of drill holes used in resource evaluation.

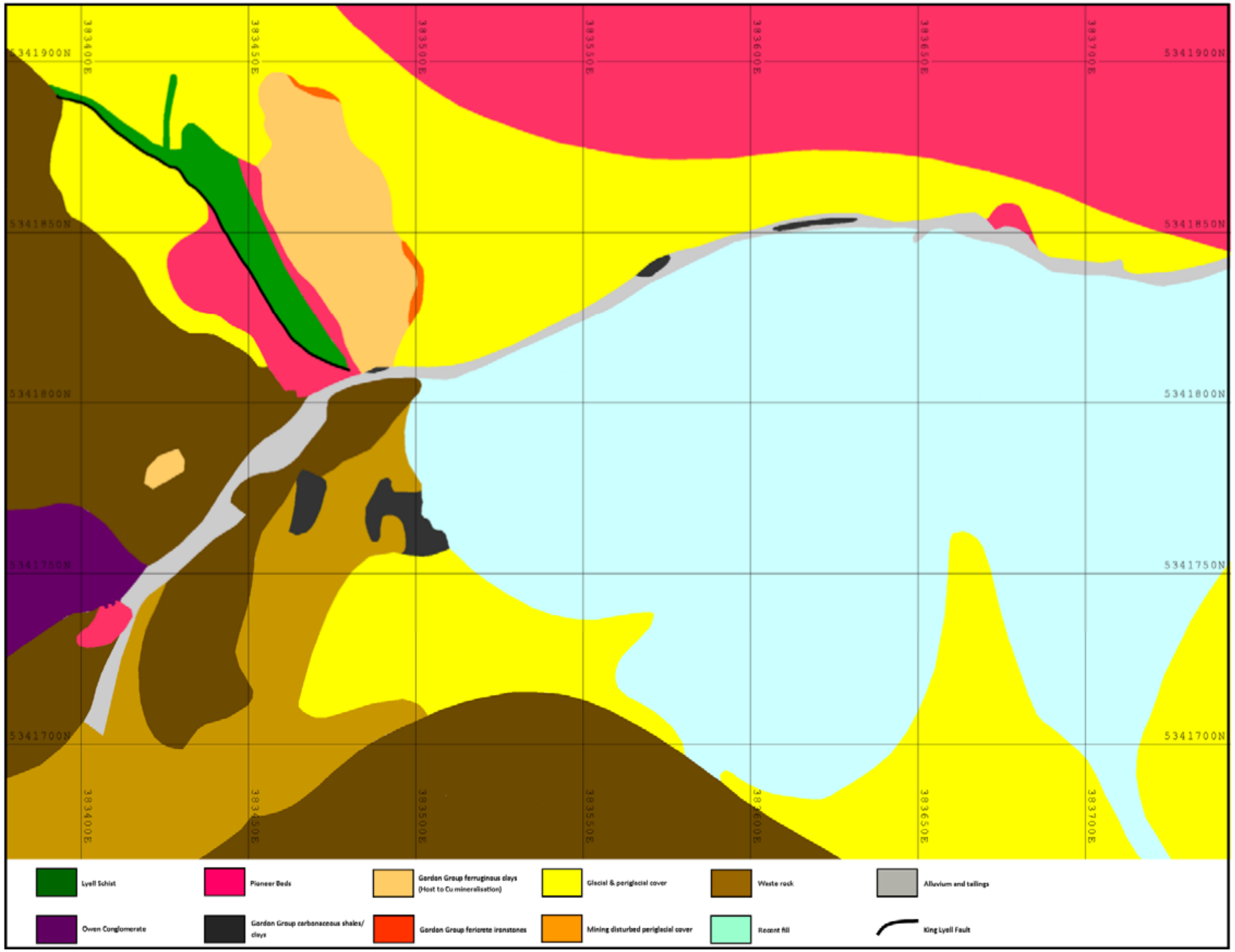

Figure 3 Local surface Geology of King Lyell

Solid Geology Model

<u>King Lyell Fault</u>

Initially, the sub-vertical King Lyell Fault was extended under the cover to the south east to provide a southern boundary to mineralisation. Using this extrapolation as a boundary to mineralisation is a reasonable assumption due to absence of mineralisation found in drill holes 96KLC0003, 05KLD004, 05KLD006, DD11CMT016 and DD11CMT017 (south of boundary, Figure 3).

Using this extrapolation as a fault for solid geology modelling is less robust due to lack of intercepts in drill holes and uncertainty in the geometry of the fault where mapped. Drill intercepts suggest that the Pioneer Beds are increasingly offset to east (south side up) across this zone. This could be a result of faulting or fold asymmetry.

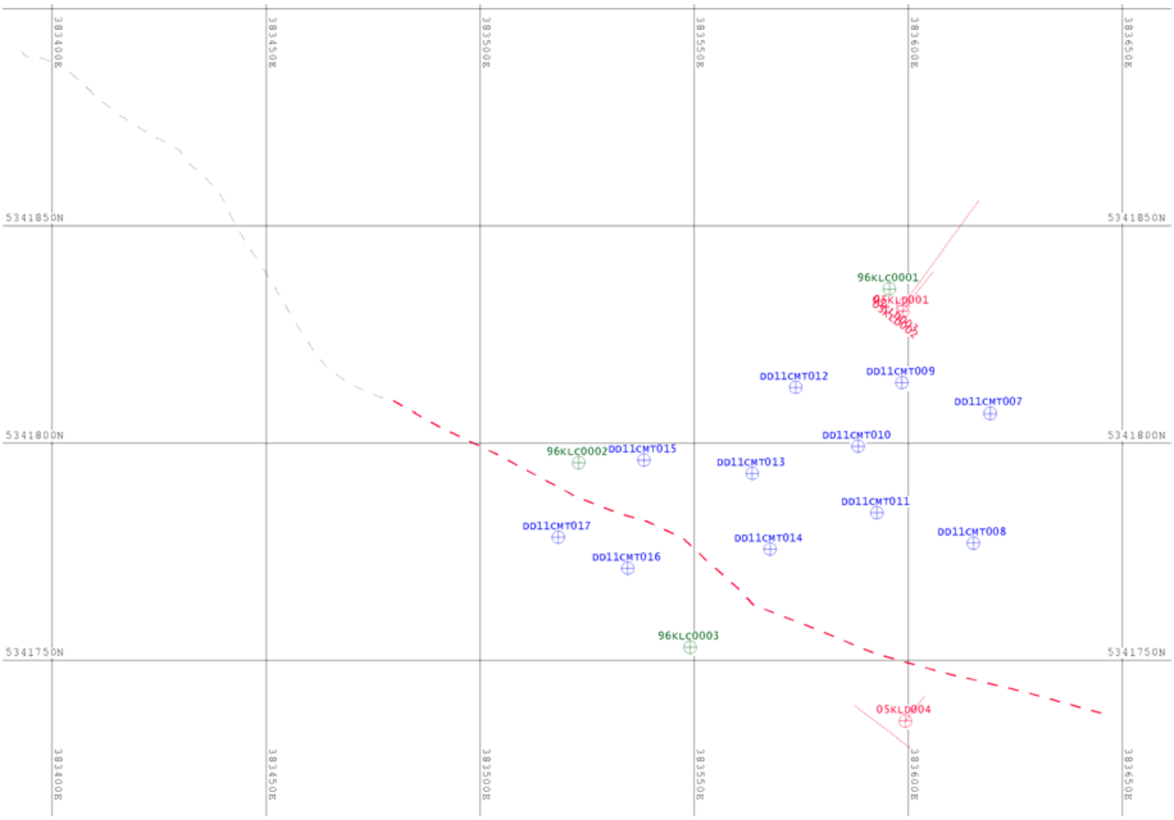

Figure 4 King Lyell Fault as mapped (grey dashed) and King Lyell Fault extension (red dashed). 1996 program=green, 2005 program=red, 2011 program=blue collars.

<u>Pioneer Beds</u>

The top of the Pioneer Beds represent the lower surface of the Gordon Group and hence the lower limit of the King Lyell resource. The upper surface of the Pioneer Beds was modelled using a combination of drill-hole intercepts and surface geology. The model of the Pioneers beds took into account both the form of the tight Devonian folding and the extension of the King Lyell Fault. The geometry of the Pioneer Beds is well understood to the north, south and west, however, due to lack of drilling there remains some uncertainty to the east.

The results of the modelling are displayed in Figure 4. The Pioneer Beds have an overall east-west synclinal form that shallows to the west. There is a subtle antiformal east-west fold in the centre of the syncline. The surface is also modelled with a vertical offset of up to 25m at the eastern end of the King Lyell fault extension.

Copper Clays resource wireframe

The mineralised portion of the copper clays was modelled from both the drill-hole grade and lithology intercepts and the surface geology under the following constraints:

1) The wireframe was to include drill-hole intervals greater than 0.4 % Cu.

2) The wireframe was not to cross to the south of the King Lyell Fault boundary.

3) The wireframe was to remain above the Pioneer Beds surface.

4) The wireframe was to remain below topography.

5) The wireframe was to include surface mapped copper bearing clays.

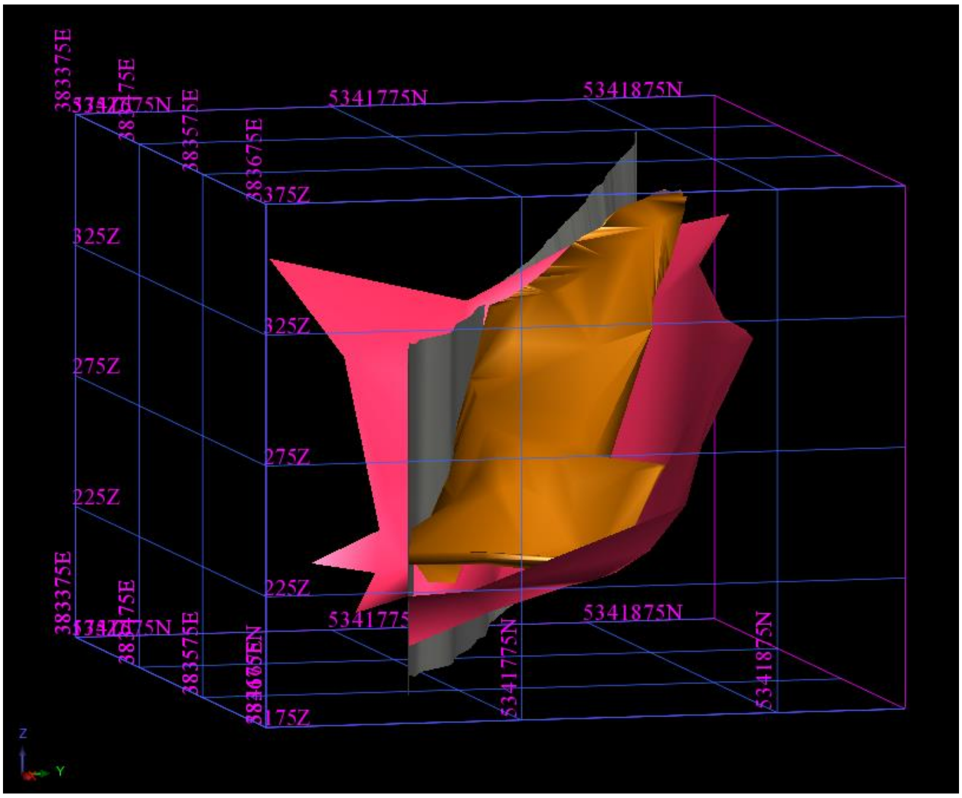

Figure 5 Modelled mineralised wireframe (brown), constrained by Pioneer Beds (pink) and King Lyell Fault (grey)

The resulting wireframe representing the King Lyell resource had a maximum dimensions 220m NW-SE, 90m NE-SW and a maximum thickness of ~20m (Figure 5.). The deposit dips at 30° towards 120° and has antiformal structure, mirroring the subtle antiform of the underlying Pioneer Beds. In the centre of the antiform, the wireframe sits above the top of the Pioneer Beds. The volume of the wireframe is 131,166m^3. It is important to note that the eastern end of the wireframe was modelled entirely on grade due to lack of drill-hole data.

Resource estimation

Resource estimation was carried out in the 315_GRL mine grid.

Block model parameters

	Y	X	Z
Minimum coordinates	6900	3500	2300
Maximum coordinates	7600	5000	2700
User block size	10	10	2
Sub blocking	5	5	1
Rotation bearing	70		
Rotation dip	-30		
Rotation plunge	0		

Estimation parameters

The inverse distance squared method was used for grade estimation inside the mineralised wireframe.

The search directions were oriented along strike and down dip.

Parameter	Magnitude		
	Pass 1	Pass 2	Pass 3
Min number of samples	4	4	2
Max number of samples	30	30	20
Max search radius	50	100	200
Max vertical search distance	10	20	100
Search ellipsoid bearing	160	160	160
Search ellipsoid plunge	-30	-30	-30
Search ellipsoid dip	0	0	0
Ellipsoid Major/semi-major	2	2	2
Ellipsoid Major/minor	4	4	4

Bulk density

Bulk density was estimated using Pass 3 Cu grade search parameters. As the bulk densities measured for the clays has varied dramatically in past studies (from 1.9 t/m^3 to 2.6 t/m^3), two tonnage calculations will be made when stating the resource. The first will be the estimated value by inverse distance squared and the second will be the value AMC assigned (2.2 t/m^3) in the 2008 scoping study.

Results

Pass 3 model is the only model that completely fills the mineralised wireframe with grade (Figure 7). It is expected that the Pass 3 model be accurate for volume, but slightly overestimate grade due to the extrapolation of high grades in northern most drill-holes.

It is reasonable to assume that Pass 1 represents an inferred resource.

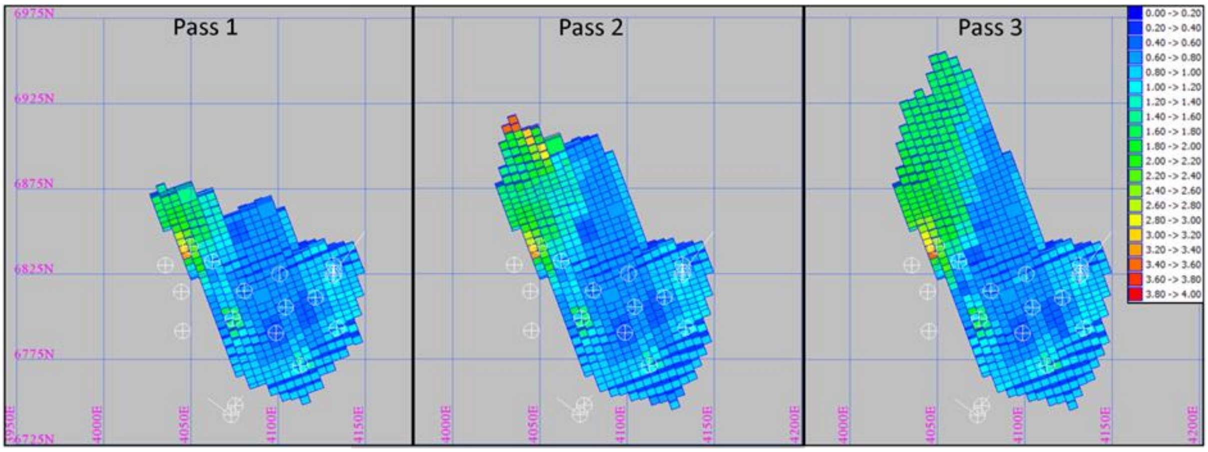

Figure 6 Plan view of results of Pass 1, 2 and 3 search parameters. Drill-hole collars in white. Inset - copper grade legend.

The global resources (inside mineralised wireframe, 0.01 % Cu cut-off) are as follows:

	Interpolated density model			AMC density (2.2 t/m^3)		
	Tonnes	**Cu %**	**Cont Cu (t)**	**Tonnes**	**Cu %**	**Cont Cu (t)**
Pass 1	320,134	0.82	2625	230,890	0.82	1893
Pass 2	379,622	0.85	3226	272,250	0.84	2286
Pass 3	402,134	0.91	3659	287,870	0.90	2590

Table 2 Global resource King Lyell

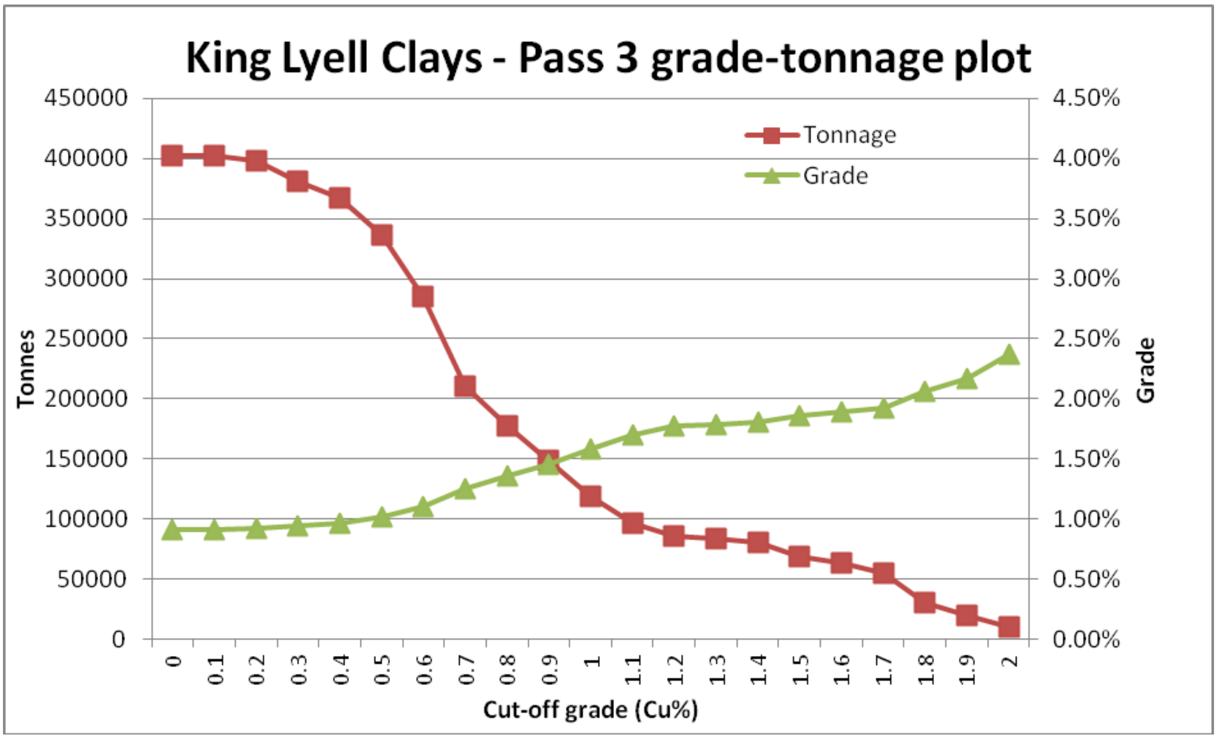

Figure 7 Grade-tonnage plot for Pass 3 search ellipse (Interpolated density values used).

Comparison with previous estimations

Due to the results of the 2011 drilling program, the tonnage of the King Lyell Clays deposit has been dramatically reduced (Table 2).

Year	Author	Model type	Density (t/m^3)	Tonnes (Mt)	Grade (Cu%)	Cont Cu (kt)
1998	CMT		2.55	1.2	1.37	16.4
2008	AMC	Upside model	2.20	2.9	1.07	31.0
2008	AMC	Conservative model	2.20	2.5	0.90	22.5
2013	CMT	Pass 3 (Upside) model	Interpolated	0.4	0.91	3.6

Table 3 Comparison of estimations for the King Lyell Copper Clays.

This reduction in tonnage (volume) in the most recent model is due to the change in the volume of the mineralised wireframe. The change in volume is due to:

1. Previous models have used the assumption that holes without mineralisation have not drilled deep enough and the wireframe has been modelled to pass underneath these holes (Figure 8). The 2011 drilling of two holes that were both absent of mineralised clay and ended in Pioneer Beds provided closure for the current model on the west and south-west margins of the deposit (315_GRL relative).

2. Previous models have utilised drilling data from 1901 that has performed poorly in validation drilling. In these models, a large area of mineralisation has been interpreted on the southern, south-eastern and north western margins (315_GRL relative). Due to the age and questionable validity, these results have not been used in the current modelling/estimation process.

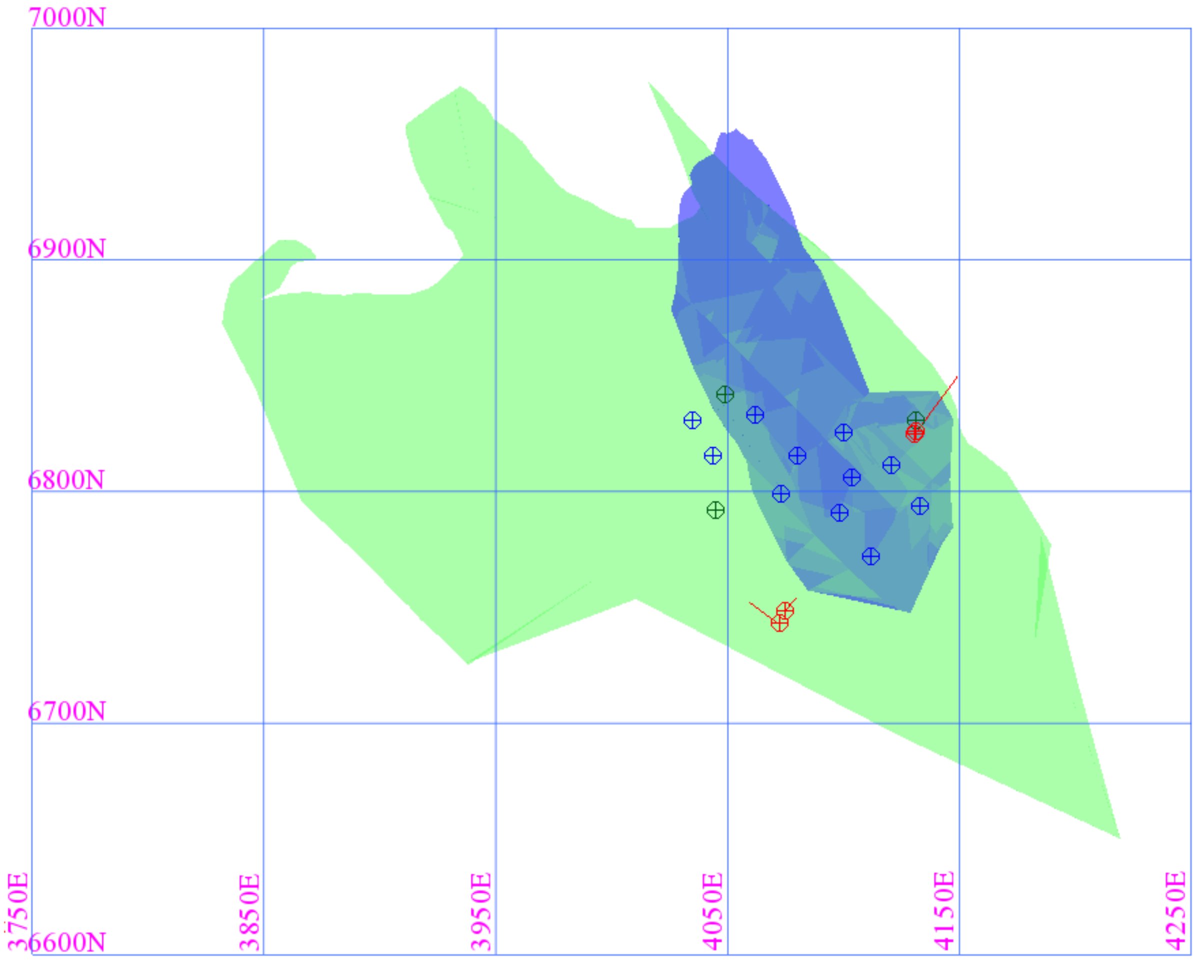

Figure 8 Comparison of previous wireframe (green) and current mineralised wireframe (blue) (plan view).

It is recognized that due to the scarcity of reliable drilling data in the south-east and north-west (GRL relative), that the deposit it open in these directions. It is unlikely that drilling in the north-east will greatly increase the volume of the deposit due to the shallowing nature of the footwall anticline. However, drilling in the south-east may extend the deposit.

The current modelling and resource estimation demonstrates that previous modelling of King Lyell was too optimistic predicting a much larger tonnage resource than can be supported with an acceptable level of confidence, based on the drilling and surface mapping data available. It is unlikely that Ling Lyell will be viable to mine unless a major increase in copper price occurs.

5. Exploration Completed During the Report Period

No exploration activities were completed during the period. Minor rehabilitation activities were undertaken.

6. Environment

CMTs environmental impact within RL3/2006 was confined to the King Lyell area which was a gravel storage facility prior to CMTs tenure and is still covered by ML 2W/1988 managed by Gaspersics Contracting Pty Ltd. CMTs environmental obligation was limited to the rehabilitation of the drill sites restoring them to a pre-existing condition. This has involved the clean-up of cuttings, infill of any sumps and water courses, removal of any plastics related to drilling (poly pipe etc) and permanent capping of all drill holes. Holes were capped by cementation of a closed steel pipe into the collar. Holes are identified by engraved steel tags riveted to the top of the collar pipe.

7. Conclusion

The 2014 King Lyell resource model showed a large reduction in available inventory from that used in the favorable AMC scoping study of 2008. Therefore, without significantly more expenditure on drilling to increase the potential recoverable inventory coupled with the unfamiliar metallurgical characteristics of the deposit, the project remains unviable for CMTs purposes. Planned activities during 2015 were marketing studies for the sale of the tenement, however due to the changes in CMTs circumstances (Extended Care and Maintenance) the project was considered a detraction from current priorities. Consequently the lease was surrendered before the renewal date of November 3, 2016.

8. Expenditure

The total expenditure over the life of CMTs tenure remains at AUD $323,314. No expenditure was recorded against the lease during the final reporting period.

9.References

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