Lottah Mining Pty Ltd

Annual Report

on

Exploration Licence 25/2009

For the period

May 2014 – May 2015

Prepared by:
L Eiseman
A Rae
Lottah Mining Pty Ltd
15th May 2015

For

Lottah Mining Pty Ltd
15 Anglesea St
Wivenhoe, Tasmania 7320

MAP CONVENTIONS

Coordinates in this report and in digital data associated with this report are recorded as AGD_66 Zone 55.

RL's in this report are MSL.

Cross sections are drawn looking west

EXECUTIVE SUMMARY

This report covers exploration activities completed on EL25/2009 Highclere. The EL forms part of a tenement package prospective for Magnetite and Tungsten mineralisation around the House Top Granite in NW Tasmania.

Exploration completed on the Highclere EL over the last 12 months includes a four hole drilling program, geophysical modelling, compilation of historic exploration, reconnaissance and geological mapping.

Four diamond holes were drilled on the Highclere Iron deposit in June-July 2014. All four holes intersected iron mineralisation consisting of hematite and/or magnetite. The deposit is highly weathered to about 50m from surface consisting of indeterminate clay. Patchy magnetite-hematite mineralisation is present within the weathering profile probably representing remnant magnetite skarn.

HOLE ID	Easting	Northing	Depth (m)	DIP	RL	AZM	DATE
DD14HC010	401451.733812	5438382.268309	50.9	-90	385.0	0	20/06/14
DD14HC011	401512.576179	5438377.998759	50.0	-90	386.0	0	26/06/14
DD14HC012	401535.851447	5438405.969915	55.4	-90	385.0	0	01/07/14
DD14HC013	401567.497645	5438427.407662	50.0	-90	373.0	0	04/07/14

Table 1: LMPL 2014 Highclere drilling campaign.

Contents

Table & Figure Contents

1 INTRODUCTION

The Blythe River Iron Project (BRIP) consists of a number of small to medium size magnetite skarn deposits located in NW Tasmania, approximately 30km south of Burnie (Figure 1 and 2). Exploration is focused on resource delineation of semi massive to massive magnetite deposits to provide a resource base for a magnetite mining operation for the iron ore market.

EL 25/2009 hosts the Highclere Iron deposit, a magnetite skarn similar to the Kara skarns located further south.

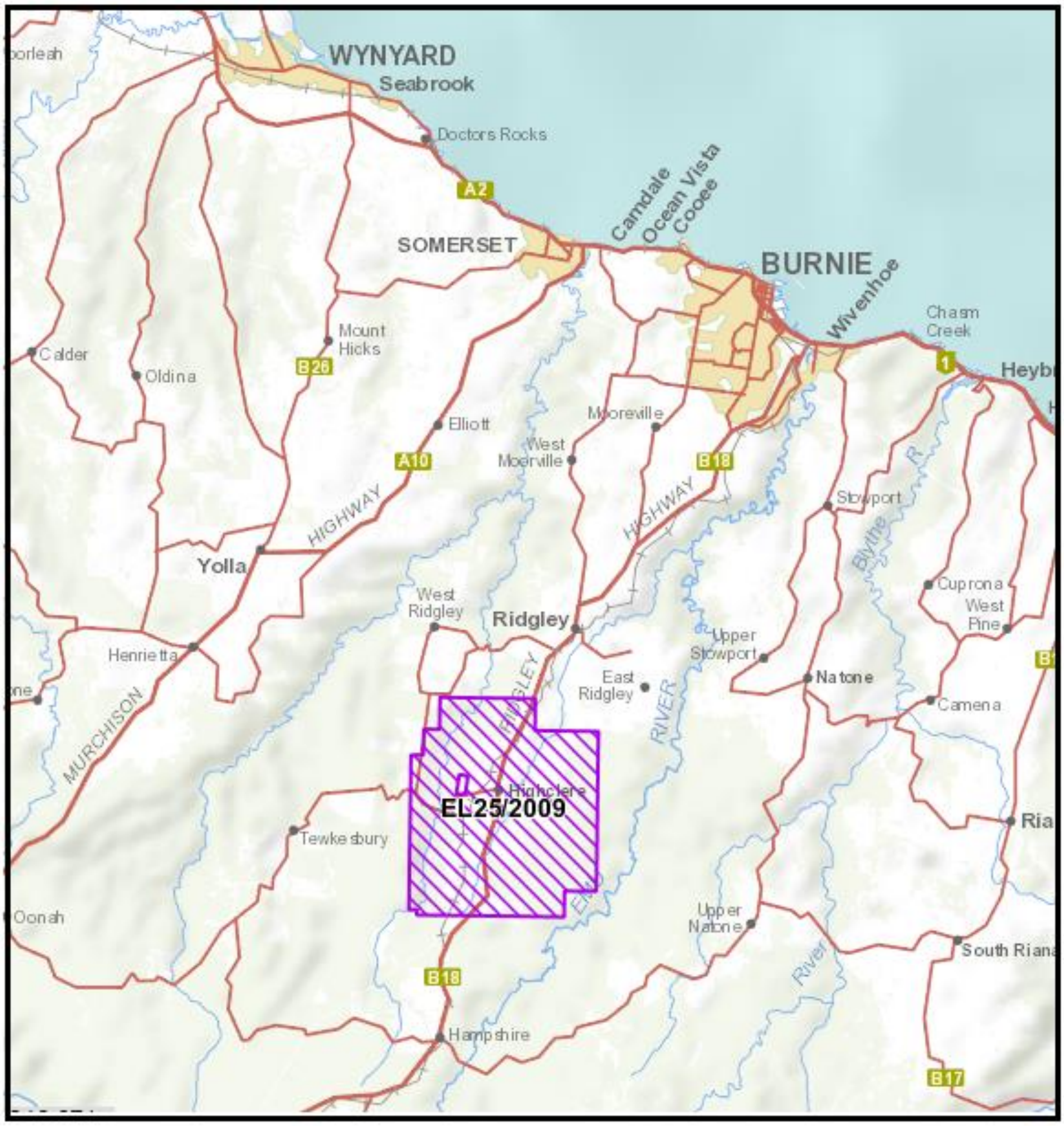

Figure 1: Map showing the location of EL25/2009.

2 REGIONAL GEOLOGY

The Blythe River Iron Project is located on the western margin of the Dial Range Trough and is underlain by lithologies of the Late Proterozoic Oonah Formation, Owen Group Siliciclastics, Gordon Group Limestone, Devonian Granites and Tertiary Basalt (Figure 1). The Dial Trough is a structurally interesting basin that includes a possible Northern Extension of the Hellyer Fault, and significant basin bounding faults on the western and eastern sides. The Devonian post orogenic Housetop Granite dominates the geology to the south of the project area and is considered to underlie much of the southern Dial Trough. The Dial Trough has been poorly mapped and stratigraphic correlations are uncertain for many units.

Oonah Formation

The oldest rocks in the district are the Proterozoic Oonah formation, consisting of polydeformed quartzwacke, siltstone and pelite with lesser dolerite intrusives. These are overlain by a sequence of pelite-carbonate with minor mafic volcanics and conglomerate. This association is host to replacement deposits at Mt Bischoff and near Zeehan and consequently represents a potential host for similar styles of skarn mineralisation.

Mt Read Volcanics

Mt Read Volcanic associations have been correlated with the felsic volcaniclastics of the Western Volcano-sedimentary sequence and the Tyndall Group quartz-feldspar phyric volcaniclastics.

Owen Group

The Late Cambrian to Ordovician Owen Group overlies the Mt Read Volcanics and is comprised dominantly of siliciclastic conglomerate and sandstone. Locally volcanic derived conglomerates are associated with basal members. The Moina Sandstone, comprised of coarse to fine siliciclastic sandstone with minor intercalated conglomerate is the uppermost siliciclastic unit of the Owen Group and has a gradational contact with the overlying Gordon Group.

Gordon Group Limestone

Conformably overlying the Owen Group is the Gordon Group limestone and dolomite sequence which is the host of the Kara district magnetite skarns. The stratigraphic thickness of the limestone is regionally variable ranging between 50-1000m.

Housetop Granite

The Housetop granite outcrops in much of the Blythe River Prospect and is believed to extend below much of the area (Leaman, 1993). Leaman concludes that the Housetop granite is anomalously dense and highly magnetic, which may explain the abundance of iron metasomatism in the district. The granite is responsible for massive Magnetite-SnWO3 mineralisation of the Kara District. The association of Tasmanian Devonian granites with Magnetite, Sn-WO3, Pb-Zn-Ag and Au mineralisation is well documented.

Tertiary Basalt

Basaltic flows are widespread throughout the Blythe River Iron Project area, flooding Tertiary palaeo-topographic lows. The basalts vary widely in thickness and frequently have a high magnetic susceptibility creating difficulties for magnetite exploration below basaltic cover. Recent resource and exploration drilling at the Kara Mine indicates that the magnetite skarn extends below basalt cover.

2.1 LOCAL GEOLOGY

The geology of EL25/2006 is dominated by Tertiary basalt flows covering most of the Paleozoic Geology. Several basement windows expose granite intrusions with adjacent skarn mineralisation associated with metasomatised Ordovician Gordon Group calcareous sediments or Cambrian Dundas Group calcareous volcaniclastics. Two prospective skarns have been identified historically including the Highclere Iron deposit and Buckby's Prospect. Both prospects are hosted in metasomatised calcareous sediments in direct contact with the Housetop Granite.

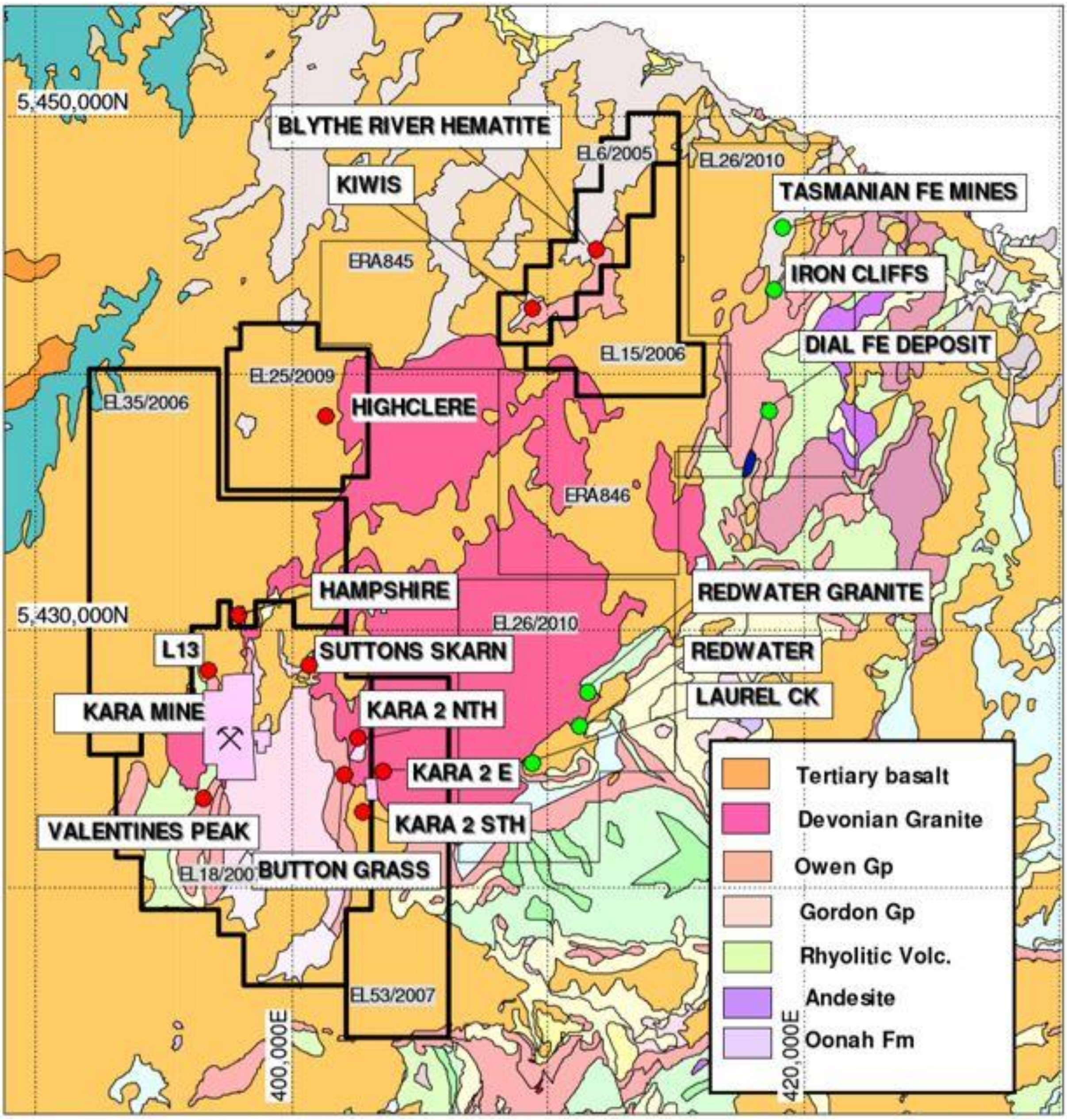

Figure 2. Blythe River Project location, Fe Prospects and MRT 250k Geology. Red dots are Blythe Project Fe prospects, green dots are other regional Fe Prospects.

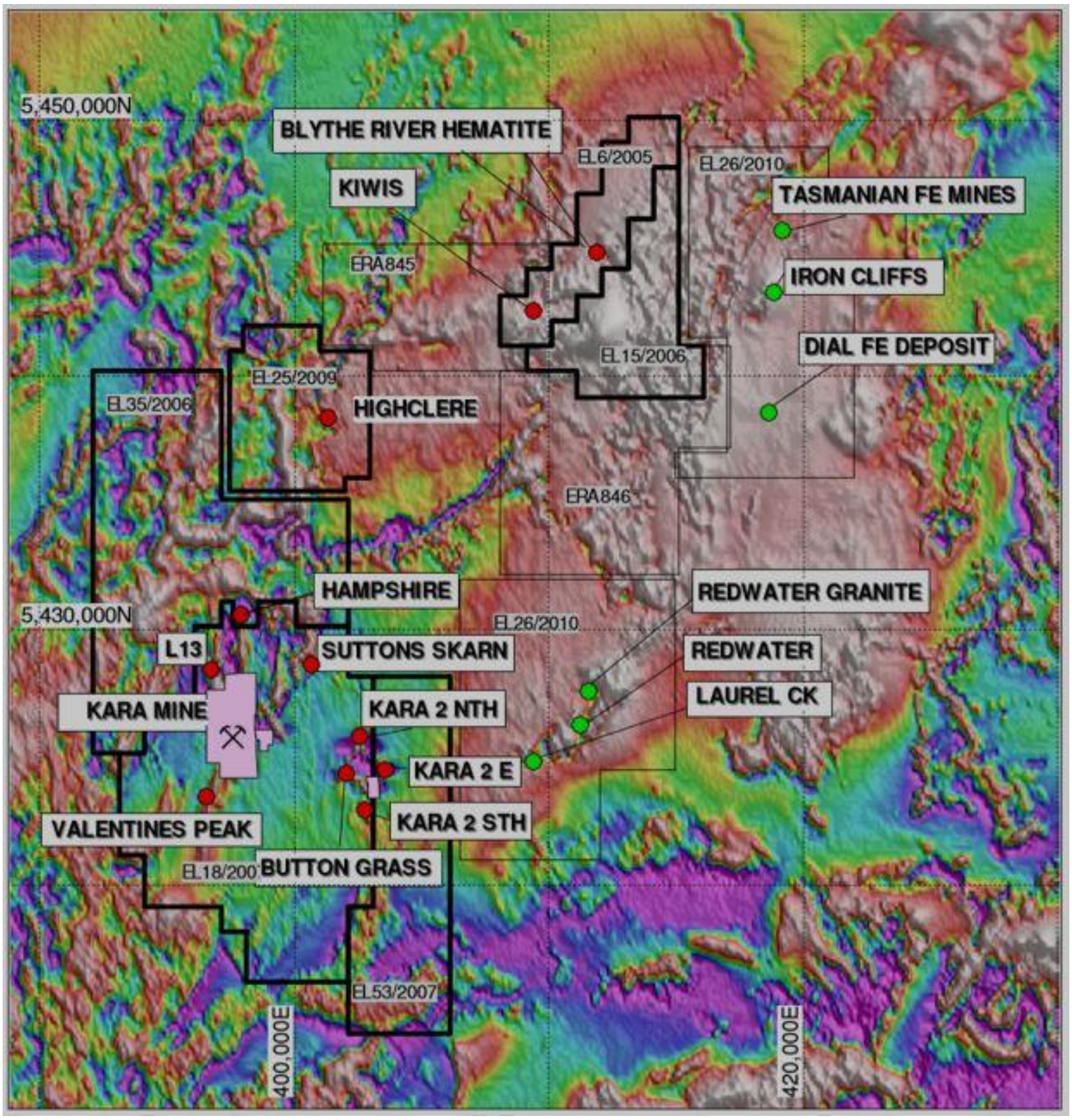

Figure 3. Blythe Project tenements, TMI and prospect locations. Red dots are Blythe Project Fe prospects, green dots are other regional Fe Prospects.

3 EXPLORATION HISTORY

The Tasmanian Mines department assessed the deposit for its iron ore potential in the early 1960's completing an aeromagnetic survey culminating in the drilling of 4 diamond drill holes in 1964. The drill holes intersected nodules and lenses of hematite-magnetite mineralisation hosted in limonitic clay. The Mines Department holes did not appear to extend to the granite basement, most ending at less than 30m depth. Analysis of the Mines Department core has returned high grade iron from a mixture of hematite and magnetite mineralisation:

Hole ID	Depth (m)	Length (m)	Fe %
H1	1.8-25.0	23.2	41.2
H2	0.0-26.5	26.5	58.8
H3	1.8-25.9	24.1	45.6
H4	0.0-21.0	21.0	43.3

Table 2. Iron assays from the Mines Department holes.

Iron assays from the Mines Department holes are encouraging however the recoveries were poor suggesting some of the clay may have washed away, biasing the iron analyses.

The prospect has been explored for its Sn-WO3 potential by ANZECO in the 1970's (Brandt, 1973, 1974), Comalco in the late 1970's (Askins, 1978 and 1980) and Shell in the 1980's (Lawton, 1982).

ANZECO completed systematic grid based ground magnetics, and mapping surveys over the prospect and re-assayed the Mines Department core for Sn-WO3 with only minor tungsten mineralisation observed (Brandt, 1974). Most of the drill core was re-logged as limonitic clay. A series of short auger holes were drilled, most intersecting highly weathered granite with only 6 holes intersecting highly weathered calc-silicate skarn with minor hematite-magnetite mineralisation. The holes were assayed for WO3 and Sn but not Fe. Minor localised Scheelite mineralisation has been described at the prospect (Brandt, 1974).

They concluded that the deposit consists of small roof pendants of highly weathered calc-silicate skarn with minor magnetite mineralisation.

Comalco (Askins, 1978) assessed the potential of the northern part of the Highclere Iron deposit magnetic anomaly with ground based gravity, magnetics and IP. They also re-logged the Mines Department core noting the very low recoveries. They concluded that the discontinuous nature of the magnetic and chargeability - resistivity anomalies suggest there is very limited potential for significant mineralisation from the northern part of the Highclere Iron deposit.

Most of Comalco's work concentrated on Buckby's Prospect located several Kilometres southwest of the Highclere Iron deposit. They completed a similar program of ground based magnetic, IP, soil sampling and geological mapping follow up by diamond drilling. The drill holes intersected a thick sequence of dolomitic limestone and calcareous sediments, variable metasomatised to diopside skarn with minor magnetite and pyrrhotite skarn. All holes ended in granite basement. No significant Sn-WO3 or Fe mineralisation was observed.

Shell/Billiton re-assessed the magnetics of the district, targeting Kara style magnetite skarn mineralisation. They drilled several percussion holes into magnetic anomalies in basalt and one extra hole into the Highclere Iron deposit. They concluded that the magnetic signature of the basalt cover obstructed the delineation of magnetite skarn and discontinued work in the district.

Drill collars from the historic holes have not been surveyed and their locations are imprecise. Historic drill locations have been derived from old paper plans registered in MapInfo. Collar locations will have an estimated error of 20m.

Blythe River Iron Pty Ltd drilled 4 diamond holes into the Highclere Iron Deposit in early 2012. Assays of their drilling is shown below in table 3.

Hole ID	Depth (m)	Length (m)	Fe %
H5	1.4-26.0	24.6	44.6
H6	1.5-13.0	11.5	56.5
	28.0-37.8	10.8	44.1
	42.0-67.0	25.0	48.8
H7	1.5-3.6	2.1	56.8
	8.1-14.4	5.7	59.5

Table 3. Blythe River Iron Pty assay results.

4 WORK COMPLETED

Work completed on EL25/2009 included a four hole drilling program, geophysical modelling, compilation of historic exploration, reconnaissance and geological mapping.

LMPL completed four diamond drill holes on the Highclere tenement between June 2014 - July 2014. The drill holes intercepted predominantly weathered lithologies including varying thickness of magnetite, hematite, goethite, limonite and iron rich clays. Locations of the drill holes are displayed in Figure 4 and located in Table 4. Holes were located by hand held GPS. Drill logs are located in Appendix 1.

HOLE ID	Easting	Northing	Depth (m)	DIP	RL	AZM	DATE
DD14HC010	401451.733812	5438382.268309	50.9	-90	385.0	0	20/06/14
DD14HC011	401512.576179	5438377.998759	50.0	-90	386.0	0	26/06/14
DD14HC012	401535.851447	5438405.969915	55.4	-90	385.0	0	01/07/14
DD14HC013	401567.497645	5438427.407662	50.0	-90	373.0	0	04/07/14

Table 4: LMPL 2014 Highclere drilling campaign.

Drill hole: DD14HC010

DD14HC010 was located 40m east of previous drilling efforts on a magnetic high. The drill hole intercepted hematite between 9.4m-13.3m, 17.8m-32.0m and 34.3m-40.2m. However the hematite was extremely weathered and consisted of large amounts of oxidised clays. The majority of the drill hole had undergone extreme weathering with clay down to 50m.

Drill hole: DD14HC011

DD14HC011 was located 50m east of DD14HC010. The hole intercepted predominately iron oxide rich clays with some areas of highly weathered magnetite and hematite. Magnetite between 4.1m-6.8m, 7.8m-9.3, 16.4m-21.7m, 23.2m-24.1m and 43.8m-44.6m. Hematite between 43.8-44.6m. The majority of the drill hole had undergone extreme weathering with clay down to 50m.

Drill hole: DD14HC012

DD14HC012 was located 50m north-east DD14HC011 on the magnetic high. The hole intercepted predominately clay with some extremely weathered hematite and magnetite. The hole intercepted magnetite between 14.6m-32.8m, 40.0m-4.4m and 49.4m-55.4m. Hematite was intercepted between 10.4m-14.6m.

Drill hole: DD14HC013

DD14HC013 located 50m north-east DD14HC012 on the magnetic high. The hole intercepted clay from 0-50m. The clay had areas rich in magnetite nodules and hematite. However the true extent of the Fe levels are still not known due to the wash/loss of core recovery.

Figure 4. Map of Highclere drill holes (blue are LMPL 2014 drill holes & yellow are historic drill holes).

LMPL contacted GHD to provide geophysical modelling of the Highclere deposit. GHD magnetic geophysical modelling identified a single smooth body with high magnetic susceptibility at significant depth (Anderson, 2015) (refer to figure 5).Geophysical modelling from GHD has also given an approximate volume of causative magnetic anomalies of 18 million cubic metres for the Hampshire tenement (Anderson, 2015).

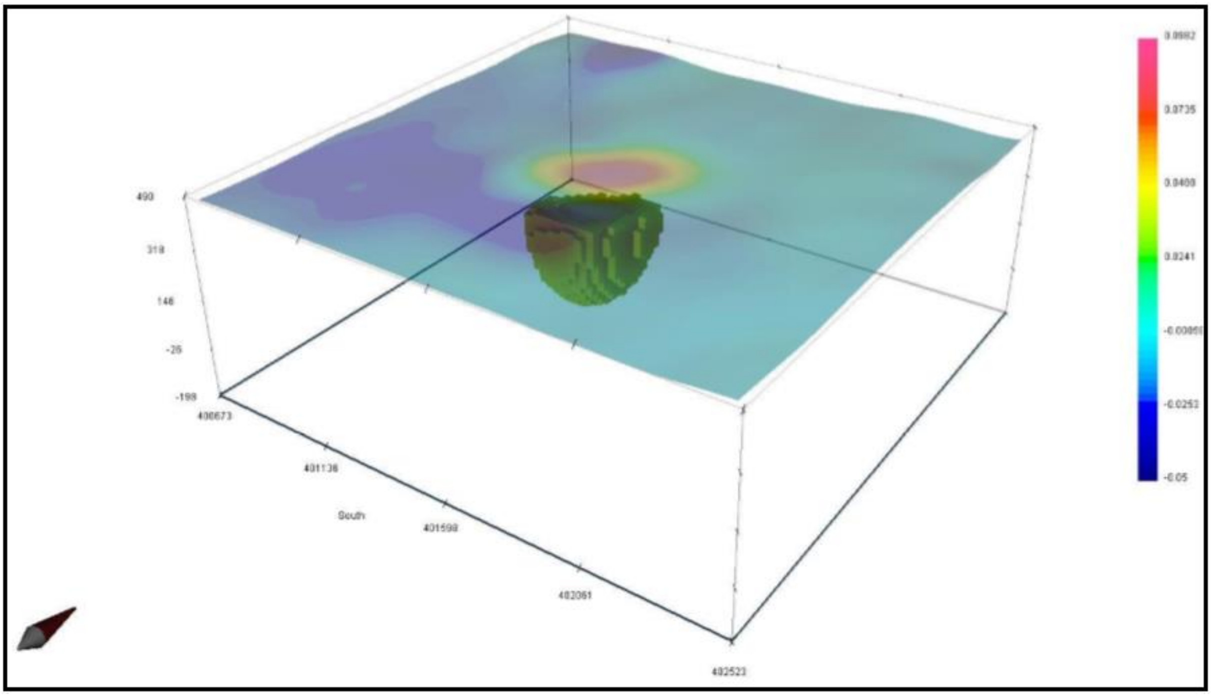

Figure 5. Subsurface model produced magnetic data in the Highclere area, lower cut off 0.05 DC (south-eastern aspect) (Anderson, 2015).

5 BUCKBY'S PROSPECT

Buckby's Prospect was identified by Comalco in the 1980's. The geology of the prospect is dominated by Tertiary basalt flows covering most of the earlier lithologies. A window through the basalt reveals a basement of Cambrian Dundas Group dolomite and dolomitic conglomerate interbedded with acid volcaniclastics intruded by the Devonian Housetop Granite. The geology consists of north striking, moderately west dipping sediments and volcanics intruded by the Housetop Granite on the eastern margin. The dolomites have been variably metasomatised to phlogopite diopside±magnetite±pyrrhotite skarn. The Cambrian carbonate in close proximity to a known tin-tungsten granite encouraged Shell and Comalco to explore the prospect for tin and tungsten mineralisation based on analogies with the Cleveland tin deposit or Dolphin Scheelite mines.

The outcropping Cambrian geology is characterised by a magnetic high of 400m by100m length. Ground magnetic surveys indicate the anomaly is made up of several discreet highs of small size. Soil sampling surveys indicate the prospect to be anomalous in Cu, F and Sn supporting the exploration model of Comalco.

Comalco drilled several diamond drillholes and Shell drilled one into the prospect. Most drill holes intersected metasomatised dolomites with low level tin-tungsten mineralisation. Pyrrhotite bearing carbonates and magnetite skarn was intersected in drillholes KD5 and KD6. Sn and WO3 analyses were low but considered to be anomalous.

The Exploration model employed by Comalco is valid. Further investigation of this style of mineralisation around the Housetop Granite is warranted. The extensive basalt cover will make exploration difficult.

5.1 OTHER

Several other magnetic anomalies were drilled at Nolan's Hill (KD1, KD2), south of Buckby's prospect (KD3) and in the Guide River (GRD1) by Comalco and Shell in the 1980's. The magnetic anomalies were found to be associated with magnetite bearing Tertiary Basalt and no further work is recommended.

6 DISCUSSION

Recent drilling and geophysical modelling has identified a single smooth body with high magnetic susceptibility (Anderson, 2015) (refer to figure 5).Geophysical modelling from GHD has also given an approximate volume of causative magnetic anomalies of 18 million cubic metres for the Hampshire tenement (Anderson, 2015).

The 2014 drilling program combined with historic drilling has identified the deposit to be a deeply weathered clay altered calc-silicate skarn near surface, containing irregular lenses and remnant lag deposits of oxidised hematite, magnetite-limonite. Historic Mines Department drilling returned high grade Fe assays from the surficial magnetite-hematite mineralisation but recoveries were very poor suggesting some of the clays may have washed away during drilling, upgrading the nodular iron mineralisation. Triple tube coring employed in the recent program ensured good recoveries, providing a true sample of the oxidised mineralisation. Recent drilling confirms the high iron grades of the skarn, however the iron is present as several different species within the deeply weathered skarn, principally magnetite, hematite, goethite, limonite and iron rich clays.

7 EXPENDITURE

2014	Q2	$17,210.00
	Q3	$55,562.00
	Q4	$11,500.00
2015	Q1	$11,000.00
Total Expenditure:		$95,272.00

Table 5: 2014-2015 Expenditure

Expenditure for EL25-2009 during the 2014-2015 year was $95,272.00. Proposed expenditure for EL25-2009 in the upcoming year is $25,000.00.

8 PROPOSED WORK PROGRAM

Work planned for EL25/2009 for 2015 - 2016 involves further geological reconnaissance mapping, historic data compilation and target generation. Further exploration drilling may be warranted after higher priority targets in the district have been investigated.

LMPL 2014 drill holes have intersected a mixture of magnetite, hematite, limonite and goethite. The combination of magnetic and non-magnetic iron within the deposit may have been poorly represented in the regional magnetic survey of the region. It is recommended that a gravity survey be undertaken in the future over the Highclere deposit to give a more detailed insight on into the nature of the deposit.

9 ENVIRONMENTAL

All drill sites were rehabilitated after completion of the program. Farm water was used for initiating drilling and then water was recycled from sumps. All sumps were backfilled on completion of drilling. The Boland family was compensated for loss of production from the paddocks used

10 REFERENCES

Anderson, M., 2015, G.H.D: Report for Lottah Mining Pty. Ltd. – Potential Field Geophysical Modelling.

Askins, PW, 1978. EL4/77 Highclere, Report on Exploration to October 1978. Unpublished company report for Comalco Ltd.

Askins, PW, 1980. EL4/77 Highclere, Update on Investigations, northern part of Licence area. May 1980. Unpublished company report for Comalco Ltd

Brandt, RT, 1973. Report on the Results of Exploration on EL1/1969 Tasmania. January 1972 – September 1973. Unpublished company report for ANZECO Ltd.

Brandt, RT, 1974. Report on the Results of Exploration on EL1/1969 Tasmania. September 1973 – June 1974. Unpublished company report for ANZECO Ltd.

Callaghan, T J, 2011. Combined Annual Report for Blythe River Project EL6/2005, EL15/2006, EL37/2006, EL18/2007, EL53/2007 AND EL25/2009. Unpublished company report for Forward Mining Limited.

Callaghan, T J, 2012. Combined Annual Report for Blythe River Project EL6/2005, EL15/2006, EL37/2006, EL18/2007, EL53/2007 AND EL25/2009. Unpublished company report for Forward Mining Limited

Lawton, JJ, 1982. EL4/1977, Progress Report on Exploration during the Period Mach 1980 to August 1982. Unpublished company report for Shell Billiton Ltd.

Turnbull, C. 2006. Highclere project Tasmania, EL4/2005. Annual Progress Report August 2005 – August 2006. Unpublished company report for Bass Metals Ltd.

11 APPENDIX

Drill Hole Logging Codes

Alteration:		Grain Size:		Weathering:	
Ht	Hematite	UF	Ultra fine-grained	X	Extreme Weathering and loss
		VF	Very fine-grained	W	Weathered
		MG	Medium-grained	Y	Partially Weathered
		CG	Coarse-grained	F	Fresh
		VC	Very coarse-grained		

Colour Shade:		Colour 1 & 2	
LT	Light	WHT	White
MD	Medium	GRY	Grey
DK	Dark	BRN	Brown
MOT	Mottled	BLK	Black
		RED	Red
		PPL	Purple
		ORA	Orange
		YEL	Yellow
		GRN	Green

	Depth From	Depth To	Stratigraphy	Lithology	Alteration	Weathering	Crystal Form	Grain Size	Colour Shade	Colour1	Colour2	Visual S%	DH Contact	Structure	Vis mag	Logged By	Logged Dat
01	0	1.3	Tb	CLAY					MD	BRN						Lee	31/07/2014
02	1.3	4.3		CLAY					LT	BRN						Lee	31/07/2014
03	4.3	7.3		LOSS												Lee	31/07/2014
04	7.3	8.6		CLAY					MD	GRY						Lee	31/07/2014
05	8.6	9.4		CLAY					MD	GRY						Lee	31/07/2014
06	9.4	10.2		SKHE		X		FG	LT	PPL						Lee	31/07/2014
07	10.2	11.7		LOSS												Lee	31/07/2014
08	11.7	13.3		SKHE		X		FG	LT	PPL						Lee	31/07/2014
09	13.3	14.8		CLAY					LT	BRN						Lee	31/07/2014
10	14.8	16.3		LOSS												Lee	31/07/2014
11	16.3	17.8		CLAY					LT	PPL						Lee	31/07/2014
12	17.8	19.3		SKHE		X		FG	LT	BRN						Lee	31/07/2014
13	19.3	22.3		SKHE		X		FG	LT	BRN						Lee	31/07/2014
14	22.3	22.6		LOSS					LT	BRN						Lee	31/07/2014
15	22.6	23.8		SKHE		X		FG	LT	BRN						Lee	31/07/2014
16	23.8	25.3		LOSS												Lee	31/07/2014
17	25.3	26.8		SKHE		X		FG	LT	RED						Lee	31/07/2014
18	26.8	32		SKHE		X		FG	LT	PPL						Lee	31/07/2014
19	32	33.4		CLAY					LT	RED						Lee	1/08/2014
20	33.4	34.3		LOSS												Lee	1/08/2014
21	34.3	40.2		SKHE		X		FG	MD	BRN						Lee	1/08/2014
22	40.2	44.6		CLAY					MD	RED						Lee	1/08/2014
23	44.6	47.6		CLAY					LT	WHT						Lee	1/08/2014
24	47.6	49.3		CLAY					MD	WHT						Lee	1/08/2014
25	49.3	50.9		CLAY					DK	BRN						Lee	1/08/2014

DD14HC010

	Depth From	Depth To	Stratigraphy	Lithology	Alteration	Weathering	Crystal Form	Grain Size	Colour Shade	Colour1	Colour2	Visual S%	DH Contact	Structure	Vis mag	Logged By	Logged Dat
01	0	1.4		CLAY				VF	MD	RED						Lee	1/08/2014
02	1.4	2		CLAY				FG	MD	BRN						Lee	1/08/2014
03	2	2.2		LOSS												Lee	1/08/2014
04	2.2	4.1		CLAY				VF	MD	BRN	RED					Lee	1/08/2014
05	4.1	5.5		SKMG	Ht	X		FG	MD	BRN	RED					Lee	1/08/2014
06	5.5	6.8		SKMG	Ht	X		FG	MD	BRN	RED					Lee	1/08/2014
07	6.8	7.8		CLAY				FG	MD	BRN	RED					Lee	1/08/2014
08	7.8	9.3		SKMG	Ht	X		FG	LT	BRN						Lee	1/08/2014
09	9.3	14.4		CLAY				VF	LT	BRN						Lee	1/08/2014
10	14.4	15.8		LOSS												Lee	1/08/2014
11	15.8	16.4		CLAY				VF	MD	BRN						Lee	1/08/2014
12	16.4	17.3		SKMG	Ht	X		FG	MD	BRN						Lee	1/08/2014
13	17.3	18.4		SKMG	Ht	X		FG	MD	BRN	RED					Lee	1/08/2014
14	18.4	21.7		SKMG	Ht	X		FG	MD	BRN	RED					Lee	1/08/2014
15	21.7	23.2		CLAY				VF	MD	BRN	YEL					Lee	1/08/2014
16	23.2	24.1		SKMG	Ht	X		FG	MD	BRN						Lee	1/08/2014
17	24.1	26.1		CLAY				VF	MD	BRN	YEL					Lee	1/08/2014
18	26.1	28.4		CLAY				VF	MD	BRN						Lee	1/08/2014
19	28.4	29.9		CLAY				VF	MD	BRN						Lee	1/08/2014
20	29.9	31.4		CLAY				VF	MD	BRN						Lee	1/08/2014
21	31.4	33		CLAY				VF	MD	BRN						Lee	1/08/2014
22	33	43.1		CLAY				VF	MD	BRN	RED					Lee	1/08/2014
23	43.1	43.8		CLAY				VF	LT	BRN	WHT					Lee	1/08/2014
24	43.8	44.6		SKMG	Ht	X		FG	MD	BRN	RED					Lee	1/08/2014
25	44.6	49.4		SKHE		X		FG	MD	BRN	RED					Lee	1/08/2014
26	49.4	50		CLAY				VF	MD	BRN	RED					Lee	1/08/2014

DD14HC011

	Depth From	Depth To	Stratigraphy	Lithology	Alteration	Weathering	Crystal Form	Grain Size	Colour Shade	Colour1	Colour2	Visual S%	DH Contact	Structure	Vis mag	Logged By	Logged Date
01	0	2.2	Tb	CLAY				VF	LT	BRN						Lee	1/08/2014
02	2.2	2.9	Tb	CLAY				VF	LT	BRN	GRY					Lee	1/08/2014
03	2.9	10.4		CLAY				VF	LT	BRN						Lee	1/08/2014
04	10.4	13.1		SKHE		X		FG	MD	RED	BRN					Lee	1/08/2014
05	13.1	14.6		SKHE		W		FG	MD	BRN						Lee	1/08/2014
06	14.6	17.7		SKMG	Ht	X		FG	MD	BRN	RED					Lee	1/08/2014
07	17.7	32.8		SKMG	Ht	X		FG	MD	BRN	RED					Lee	1/08/2014
08	32.8	40		CLAY				VF	LT	BRN						Lee	1/08/2014
09	40	47.1		SKMG	Ht	X		FG	LT	BRN						Lee	1/08/2014
10	47.1	48.4		SKMG	Ht	X		FG	MD	BRN						Lee	1/08/2014
11	48.4	49.4		LOSS												Lee	1/08/2014
12	49.4	55.4		SKMG	Ht	X		FG	MD	BRN						Lee	1/08/2014

DD14HC012

	Depth From	Depth To	Stratigraphy	Lithology	Alteration	Weathering	Crystal Form	Grain Size	Colour Shade	Colour1	Colour2	Visual S%	DH Contact	Structure	Vis mag	Logged By	Logged Date
01	0	2.1	Tb	CLAY				VF	MD	BRN	GRY					Lee	1/08/2014
02	2.1	5.2		CLAY				VF	LT	GRY	ORA					Lee	1/08/2014
03	5.2	14		CLAY				VF	LT	BRN	YEL					Lee	1/08/2014
04	14	22.3		CLAY				VF	LT	BRN	YEL					Lee	1/08/2014
05	22.3	25.3		CLAY				VF	LT	BRN	RED					Lee	1/08/2014
06	25.3	31.3		CLAY				VF	LT	BRN	WHT					Lee	1/08/2014
07	31.3	35.8		CLAY				VF	LT	BRN						Lee	1/08/2014
08	35.8	40.3		CLAY				VF	MOT	BRN	GRY					Lee	4/08/2014
09	40.3	44.4		CLAY				VF	LT	BRN	YEL					Lee	4/08/2014
10	44.4	50		CLAY				VF	LT	BRN	GRY					Lee	4/08/2014

DD14HC013

Lottah Mining Pty Ltd

Potential Field Geophysical Modelling

Modelling Report - L13, Peak Hill Road, Highclere and Hampshire

March 2015

Table of contents

Table index

Figure index

1. Introduction

1.1 Background

Lottah Mining Pty. Ltd. (LMPL) engaged GHD to perform geophysical modelling of magnetic potential field data within set areas of interest in northern Tasmania. The four areas modelled is this phase of modelling area displayed in Figure 1, and are referred to as L13, Peak Hill Road, Highclere and Hampshire throughout this report.

1.2 Purpose of this report

The purpose of this report is to provide LMPL with details and results of processing and modelling conducted by GHD. Magnetic susceptibility models are produced for the L13, Peak Hill Road, Highclere and Hampshire areas. Deliverables from magnetic potential field modelling are:

- Digital ERMapper grids of elevation and magnetic data used for modelling.
- Isometric view maps of the geological models derived from geophysical modelling.
- Digital version of geological models derived from geophysical modelling suitable for import into Micromine.
- Report detailing methodology, a discussion of results obtained and any recommendations for additional work.

Subsurface models of the subject areas produced will provide a mesh of magnetic susceptibility values that can aid resource estimation and future exploration targeting.

1.3 Scope and limitations

This report: has been prepared by GHD for LMPL and may only be used and relied on by LMPL for the purpose agreed between GHD and the LMPL as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than LMPL arising in connection with this report. The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (Section 1.4). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by LMPL and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

1.4 Assumptions

The following assumptions have been relied upon in preparing this report;

- That potential field magnetic and gravity data provided by LMPL is accurate in value and is correctly geo-referenced.

- That the potential field and elevation data provided by Department of State Growth, Mineral Resources Tasmania (MRT) and Geoscience Australia (GA) is accurate in value and correctly geo-referenced.
- That petrophysical measurements of drill core and chip samples provided by LMPL have been accurately logged and are reflective of the indicated lithologies.
- That petrophysical data of drill core obtained from MRT and GA has been accurately logged and is reflective of the indicated lithologies.

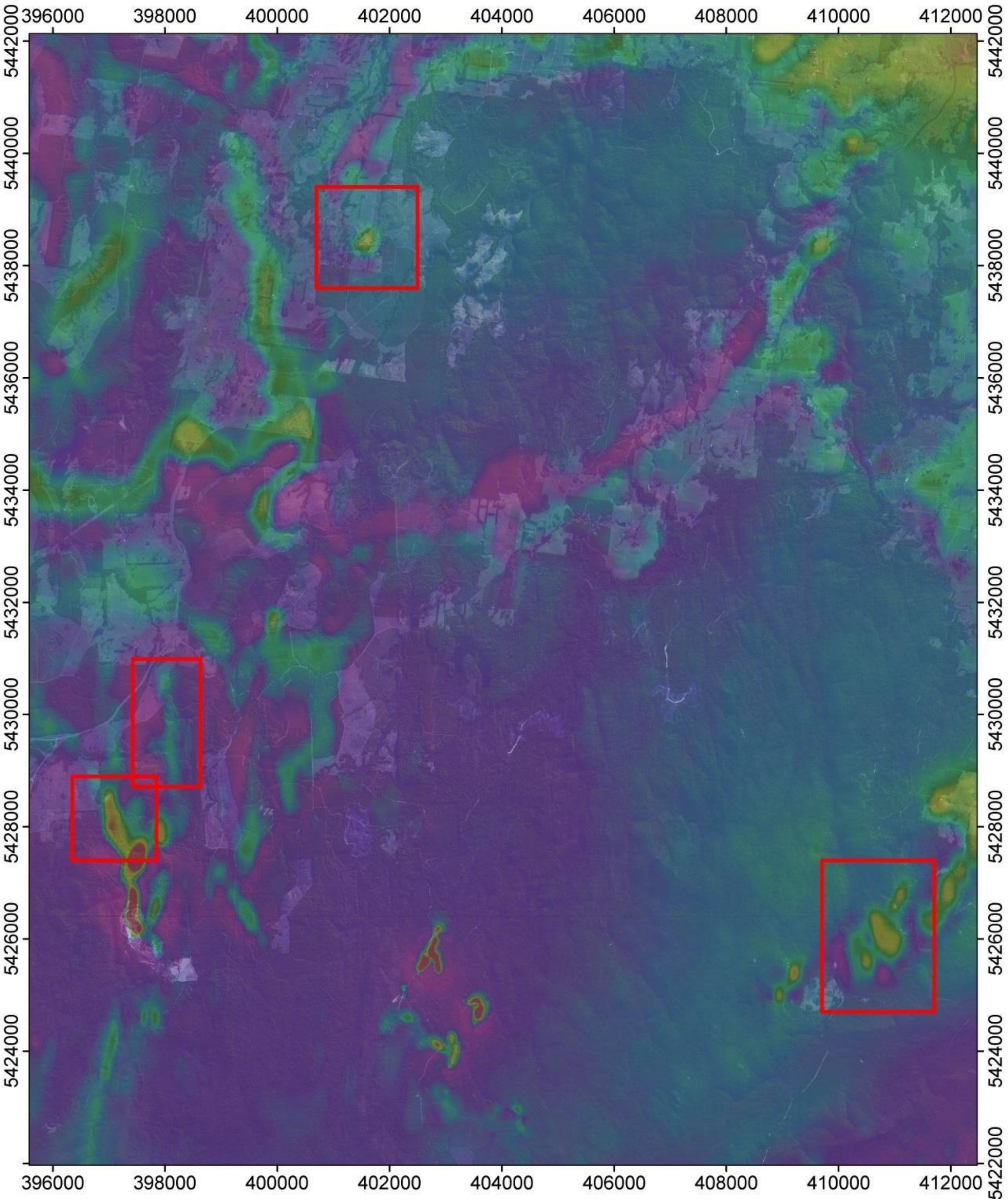

Figure 1 The four areas to undergo unconstrained 3D inverse modelling of potential field magnetic data.

2. Data Preparation

2.1 Data Sources

The recently acquired magnetic data flown by Thomson Aviation and regional magnetic and elevation datasets were utilised in the modelling process. Regional datasets utilised include:

2.1.1 Elevation Data

- MRTASP825.ers (regional dataset, MRT)
- MRTASP823.ers (regional dataset, MRT)
- LiDAR area A, raw data (local dataset, LMPL) • LiDAR area B, raw data (local dataset, LMPL)

2.1.2 Magnetic Data

- 2014 Aerial magnetic data flown by Thomson Aviation
- Area_B_MAG.ers (NW Tasmania Survey 2001, regional dataset, MRT)
- TMI.ers (West Tasmania Survey 2001, regional dataset, MRT)

2.2 Data Processing and Grid Creation

Data preparation included the processing of the collected elevation and magnetic data into a form suitable for standalone interpretation and modelling. The Geocentric Datum of Australia 94 (GDA94) and the Map Grid of Australia (MGA) projection for Zone 55 are used throughout this report. Heights are all specified to Australian Height Datum (AHD). All datasets using alternate datums and/or projections were transformed prior to further processing.

The recently acquired magnetic data was combined with regional datasets. The data was then gridded with the Surfer software package utilising a Kriging interpolation algorithm and a cell spacing of 5 m. Areas of the created grids that lay outside the range of observations were blanked or removed. The following grids were created by this process;

1. Digital elevation model (DEM, m)
2. Total Magnetic Intensity (TMI, nT)

The magnetic grid was further processed to create a residual dataset suitable for incorporating into the University of British Columbia (UBC) geophysical inversion software packages. The residual grid was produced by subtracting a magnetic field intensity of 61,467nT. This value is the calculated magnetic field intensity using the International Geomagnetic Reference Field (IGRF) at the time of the recently flown magnetic survey. The following grid was created by this process:

1. Residual magnetics (nT)

3. Inverse Modelling

3.1 Introduction to Inverse Modelling

In geophysics, inversion modelling is the process of predicting properties of the subsurface utilising observations made from a geophysical survey. The subsurface is discretised into mesh cells and each cell is given a physical property relating to the survey technique. By an iterative process the physical properties of the cells are altered until the calculated response from the modelled subsurface is acceptably consistent with the observed survey values, the difference between the calculated and observed values is termed 'misfit' or 'error'. Figure 2 display a flow diagram depicting the general processing flow of the inversion process.

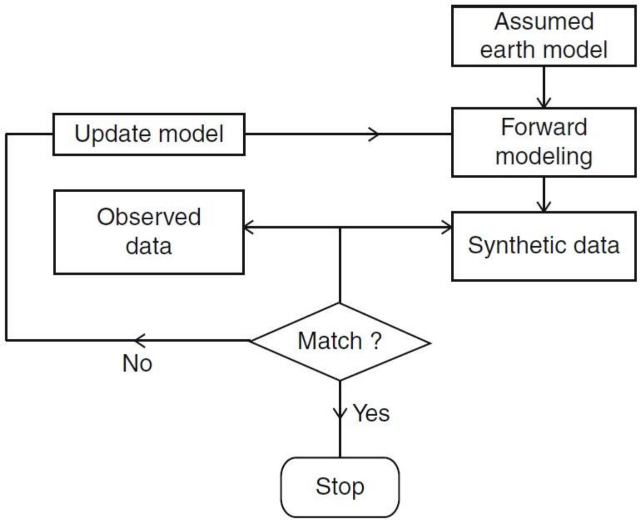

Figure 2 Flow diagram depicting the processing flow of the inversion process

3.1.1 Non-Uniqueness and Equivalent Sources

Key issues that must be taken into account when performing geophysical inverse modelling is non-uniqueness and the concept of equivalent sources. In summary, these issues describe how it is possible for the same calculated response to result from a variety of subsurface models, with differing distributions of the physical property in question.

This problem is known as non-uniqueness, and when assessing models produced from an inversion process it is important that the interpreter acknowledges and takes into account that the subsurface model produced is one of many models that could produce the calculated response. It is therefore a process of geological inference based upon other available information to assess the probability that the geophysical model produced is a valid representation of the subsurface geology and target.

Figure 3 displays an example of this effect of "equivalent sources". Three subsurface bodies are shown of differing volumes and geometries. If the physical property (such as density) of these bodies increases with depth it is possible for all three of these bodies to produce an identical response at the surface from a geophysical survey (response indicated by the red line).

It is critical that this uncertainty is taken into consideration when assessing and interpreting results of geophysical inversion.

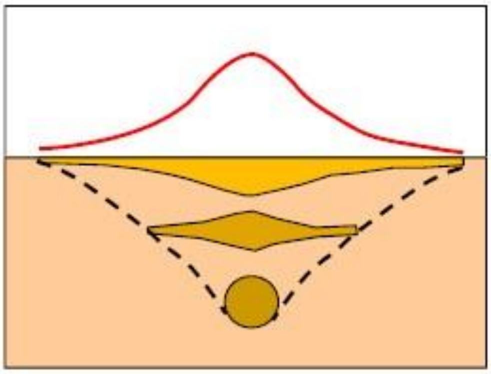

Figure 3 Example of equivalent sources. The same observed anomaly may result from a number of different subsurface bodies.

3.2 Data Extraction

Elevation and potential field data utilised for inverse modelling was extracted from the digital elevation model and residual magnetic grids detailed in section 2.2. Table 1 details the modelling extents of the Rogetta, Cuprona, Camena and Riana modelling areas and the limits of the XYZ Ascii data extracted from the gridded datasets.

Table 1 3D inversion modelling area extents

	Min. Easting (m)	Max. Easting (m)	Min. Northing (m)	Max. Northing (m)
L13	396350	397850	5428900	5427400
Peak Hill Road	409700	411700	5427400	5424700
Highclere	400700	402500	5439400	5437600
Hampshire	397400	398650	5431000	5428700

3.3 Data Reformatting and Error Assignment

The XYZ ASCII data extracted in section 3.2 was imported into Microsoft Excel and reformatted in order to match UBC data formats. Standard deviation error was assigned to observation as constant value and as a percentage of the observed value, as per Table 2. The assignment of standard deviation error to observations ensures errors in observed values and/or spatial location of the observation do not halt or negatively impact the inversion process.

Table 2 Parameters utilised to assign standard deviation error

Data Type	Constant	Percentage (%) of observed value
Magnetics	5 nT	2.5

3.4 Model Discretisation

The subsurface beneath each of the modelling areas was discretised into a network of cells (Figure 4). Larger cells (padding) were added to the extremities of the subsurface models to mitigate edge effects. Table 3 details the number of potential field observations and the number of model cells that are utilised in the inversion process for each of the modelling areas.

Observations are spaced at 5 m intervals and the smallest model cells of the mesh are 25 m long in the horizontal and vertical directions.

The computational time required to complete an inversion is directly proportional to the number of observations and the number of cells in the model. Each cell of the mesh is assigned a magnetic susceptibility value, in SI units. Magnetic susceptibility is directly proportional to the concentration of magnetite. Areas with high magnetic susceptibility values are composed of elevated levels of magnetite.

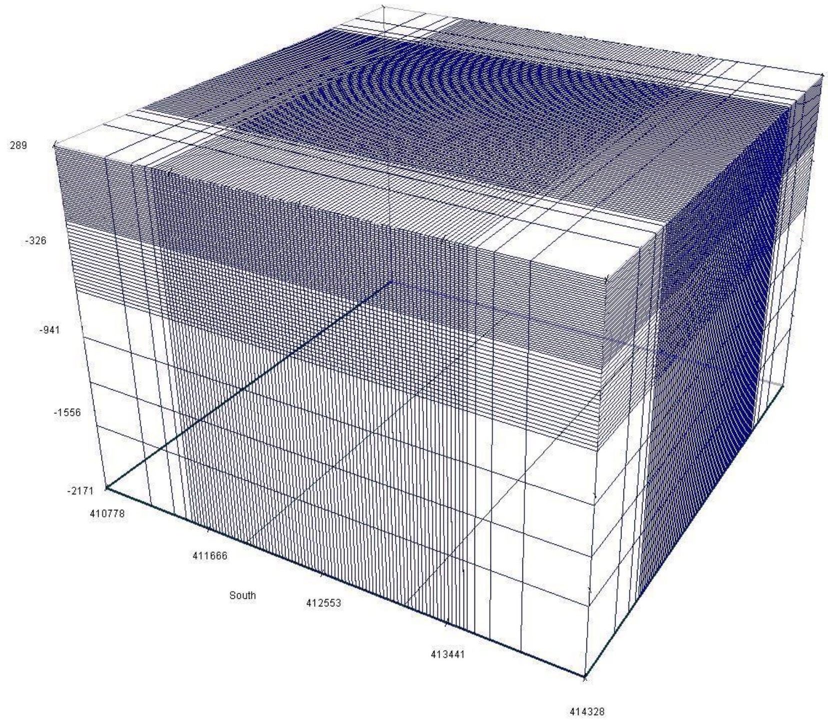

Figure 4 Discretised 3D subsurface model example

Table 3 Number of observations and number of model cells utilised in the inversion process

Area	No. Observations	Min. Obs. Interval	No. Model Cells	Min. Cell Size
L13	90000	5 m	225400	25 m
Peak Hill Road	216000	5 m	870840	25 m
Highclere	129600	5 m	369820	25 m
Hampshire	115000	5 m	428400	25 m

3.5 Inversion Parameters

There are a number of inversion parameters that can be adjusted prior to conducting a modelling inversion. These parameters apply constraints to the resulting subsurface mode. The following parameters were systematically altered in a sensitivity analysis program prior to inversions being run to ensure the resulting subsurface model was geologically plausible. Sensitivity analysis runs included the following:

1. Depth weighing; controls the depth at which causative bodies are formed by allowing for the natural decay of potential fields.
2. Chifact; loosen or tightens the allowable misfit (error) between the observed survey values and the calculated values of the inversion process.
3. Smallness and smoothness; adjusts the allowable transition between the values of adjacent cell, and
4. Bounds; specifies the minimum and maximum value that a mesh cell may be assigned.

The inversion parameters ultimately selected to produce the final magnetic subsurface models for each of the modelling area are detailed in Table 4.

Table 4 Magnetic modelling parameters utilised for the inversion process

Area	Depth weighting factors (exp,z0)	Chifact	Smallness and Smoothness (As, Ae, An, Az)	Bounds (lower SI, upper SI)
L13	1.5, 0.5	1	0.0001, 10, 10, 5	-0.05, 0.75
Peak Hill Road	1.5, 0.25	2.5	0.0001, 50, 50, 1	-0.05, 0.75
Highclere	1.5, 0.5	1	0.0001, 10, 10, 5	-0.05, 0.75
Hampshire	1.5, 0.5	1	0.0001, 10, 10, 5	-0.05, 0.75

4. Results

Magnetic subsurface models produced from inverse modelling are supplied in the accompanying digital media in UBC (.model), Mircomine (.dxf) and ER-Mapper (.ers) formats. The following figures display iso-surfaces of the subsurface models produced. Iso-surface are constructed by assigning upper and/or lower cut off limits that dictate which cells within a model will be displayed. The iso-surfaces displayed are intended to highlight zones of elevated magnetic susceptibility (elevated magnetite content).

4.1 L13

The magnetic susceptibility subsurface model in Figure 5 displays iso-surfaces constructed with a lower cut off of 0.1 SI. L13 is observed as an isolated elongated subsurface body in the centre of the model that trends north- south. The top of the modelled body is relatively flat and is approximately 100 m from the surface. The body in the south-eastern section of the model is the northern extent of Kara and is located outside LMPLs exploration lease. Figure 6 displays a subsurface model that contains only the subsurface body that is located with LMPLs exploration lease, this model has been utilised in volume calculations detailed in Section 4.5 of this report.

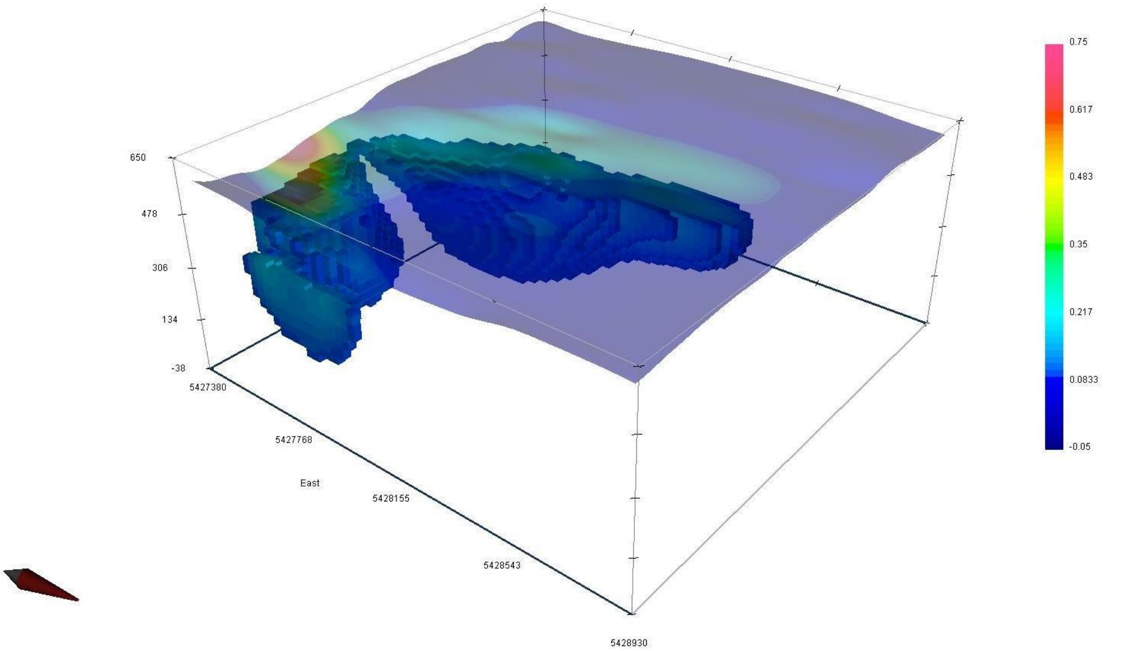

Figure 5 Subsurface model produced from magnetic data in the L13 Area, lower cut off 0.1 SI (north-eastern aspect)

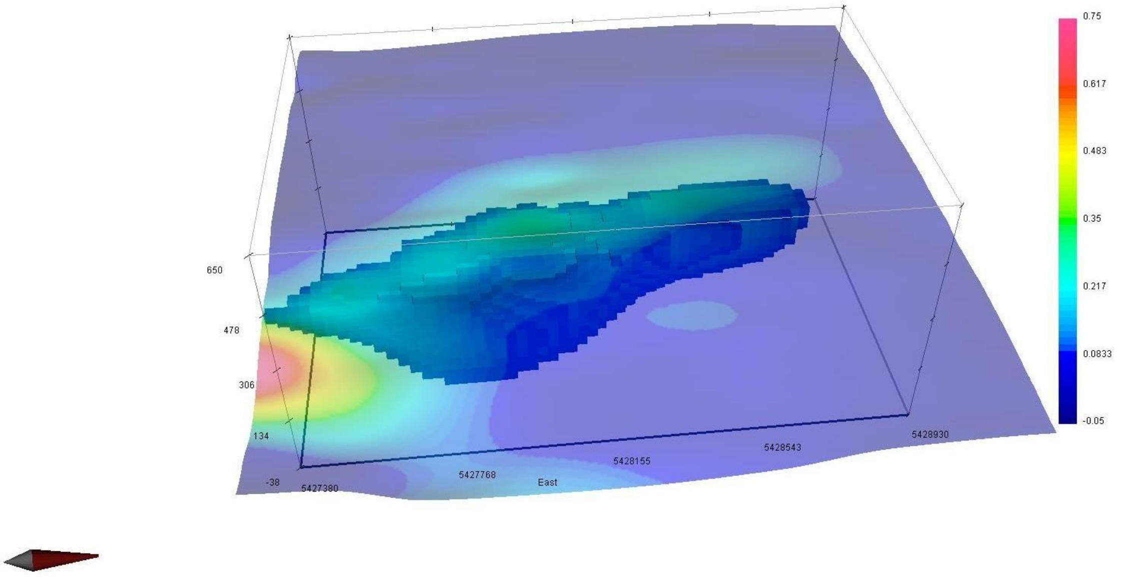

Figure 6 Subsurface model produced from magnetic data in the L13 Area, lower cut off 0.1 SI (eastern aspect). This subsurface model only displays subsurface bodies that are located within LMPLs exploration lease

4.2 Peak Hill Road

The magnetic susceptibility subsurface model in Figure 7 displays iso-surfaces constructed with a lower cut off of 0.05 SI. Four high magnetic susceptibility bodies are observed in the subsurface. The central and western bodies imaged are the most voluminous in size and a tabular in geometry.

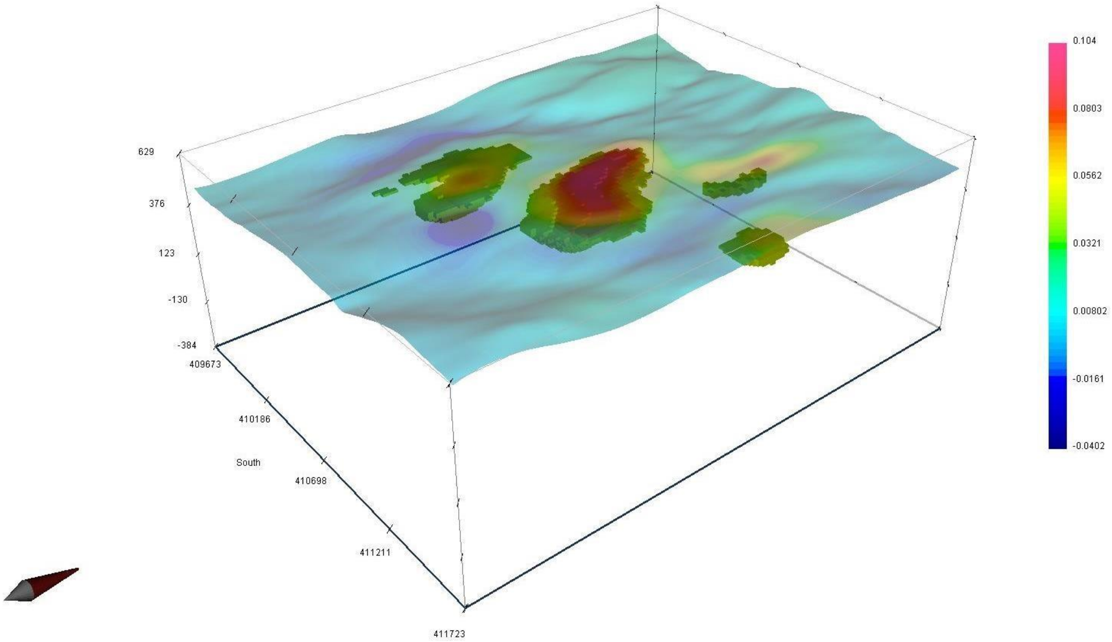

Figure 7 Subsurface model produced from magnetic data in the Peak Hill Road Area, lower cut off 0.05 SI (south-eastern aspect)

4.3 Highclere

The magnetic susceptibility subsurface model in Figure 8 displays an iso-surface constructed with a lower cut off of 0.05 SI. A single smooth body with high magnetic susceptibility values is observed at significant a depth of approximately 150 m and correlates with single anomaly observed in magnetic data for the region.

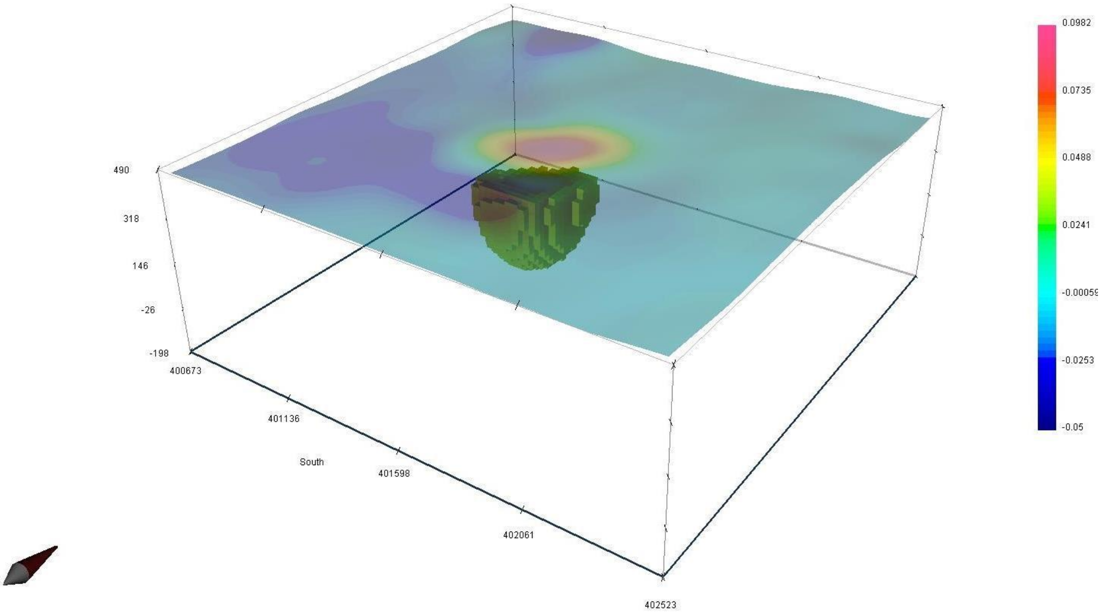

Figure 8 Subsurface model produced from magnetic data in the Highclere area, lower cut off 0.05 DC (south-eastern aspect)

4.4 Hampshire

The magnetic susceptibility subsurface models displayed in Figure 9 display iso-surfaces constructed with a lower cut off of 0.05 SI. An elongated near surface body with elevated magnetic susceptibility value is observed through the centre of the modelling area. This body trends to the north-south and is relatively shallow in depth. A second body is located in the north of the model and is globular in geometry with a flat upper surface.

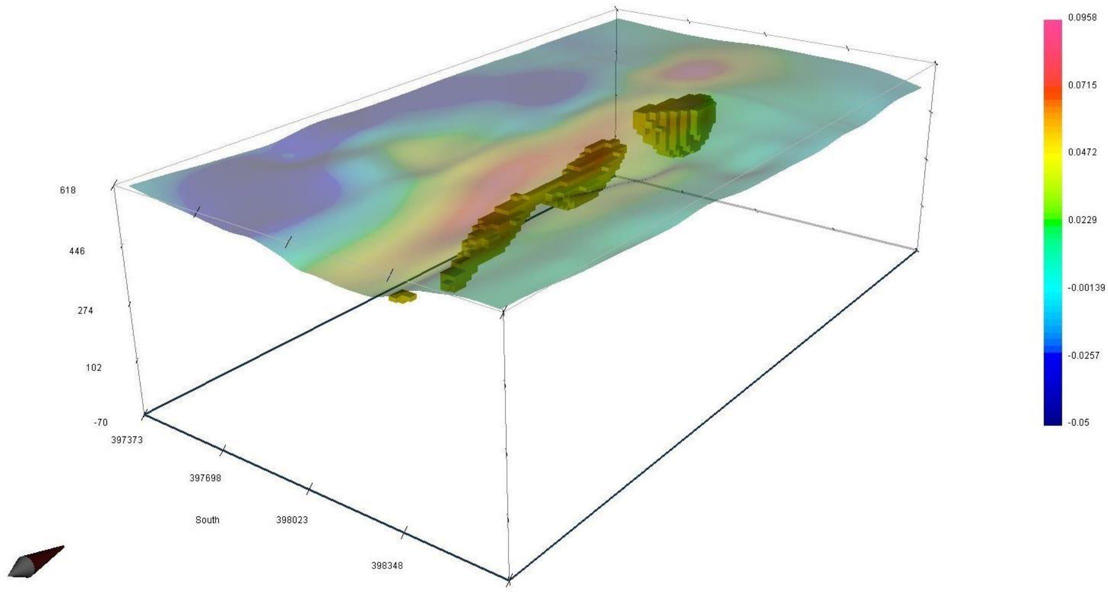

Figure 9 Subsurface model produced from magnetic data in the Hampshire Area, lower cut off 0.0025 SI (south-eastern aspect)

4.5 Anomaly Volumes

To assist in geological modelling and exploration program development, the relative size (in volume) of the causative magnetic anomalies are provided in Table 1. Volumes are based upon the magnetic susceptibility contrast thresholds specified in Section 4.1 through 4.4. Note that these volumes are provided only to assist in illustrating the overall geometry of the magnetic anomalies with respect to each other and should not be used to directly infer tonnage estimates. Volume calculations are based on all high magnetic susceptibility bodies imaged for each respective model.

Table 5 Approximate volume of causative magnetic anomalies

	Volume
L13	58 million cubic metres
Peak Hill Road	38 million cubic metres
Highclere	18 million cubic metres
Hampshire	8 million cubic metres

5. Discussion and Recommendations

5.1 Discussion

The inverse modelling of potential field magnetic data produced high magnetic susceptibility subsurface bodies in each of the study areas. The largest and most distinctive of these bodies was in area L13. This body is located to the north-west of the Kara mine and produced a volume of 58 MCu with a high magnetic susceptibility lower cut-off of 0.1 SI. The surface geometry of this body is relatively tabular and is positioned approximately 100 m from the surface. The long axis of this body runs parallel to unit boundaries and structures identified in 25k geological mapping. This body is spatially located within Cambrian and Ordovician sedimentary units that host skarn magnetisation to the south. The source of this mineralisation is documented as Devonian House Top Granite, low observed gravity values in the area suggests that the study area is underlain by these granitoid intrusives.

The second most voluminous body is imaged in the Peak Hill Road area. The largest of these bodies in this area is located in the centre of the modelled area. This body is observed in the very near surface with a disk like geometry that is favourable to open-cut mining. Bodies in this modelled area are coincident with observed magnetic anomalies and are situated within a northeast trending basalt strip. 25k mapping displays north-west and north-east trending structures, Devonian granite outcrops extensively in close proximity directly to the north-west of the modelled bodies.

Modelling in the Highclere area imaged a moderate volume half sphere shaped body that is coincident with an observed magnetic anomaly. The body correlates spatially with a small outcrop of metamorphosed sediments of the Devonian and Ordovician. 25k geological mapping shows this outcrop is surrounded by Tertiary Basalt. The likely cause of this metamorphism is Devonian granite that outcrops approximately 500 m to the east.

Modelling in the Hampshire area imaged an elongated high magnetic susceptibility body trending north-south. The body is located on the eastern edge of mapped Tertiary basalt and Devonian granitoids are mapped directly to the east. The isolated north body spatially correlates with the Hampshire Iron Ore prospect documented by MRT.

5.2 Summary

Inverse modelling of magnetic potential field data produced a number of isolated bodies with high magnetic susceptibility values. The most voluminous of these bodies is located within the L13 area. It should be noted that the magnetic susceptibility of this body was substantially higher than that of all other bodies modelled.

5.3 Recommendations

The following section outlines recommendations in regards to providing greater geological and geophysical definition of magnetite and haematite mineralisation on LMPL tenements:

5.3.1 Gravity and Magnetic Surveys

GHD recommends conducting high resolution gravity and magnetic surveys over the subsurface body modelled in L13 area. The intensity of the observed magnetics over this area is similar to the observed magnetic intensity for Rogetta North (Kara 2 North) and Rogetta East (Kara 2 East). Data collection for these surveys could be conducted in-house by LMPL to minimise expenditure. It is recommended that a drilling program be developed for this area on completion of the subject surveys.

5.3.2 Re-evaluate and form drilling program

Revised inverse modelling of Rogetta South imaged a much smaller magnetic body in the subsurface and recent drilling has not hit substantial grades or volumes of ore in the area. It is recommended that drilling be stopped at Rogetta South. It is recommended that existing drill core data for Rogetta East be analysed and an evaluation made on future drilling locations to better constrain magnetite mineralisation in this area.

5.3.3 Field mapping at Riana

Modelling results indicate the presence of an elongated near surface distribution of magnetic material. Further field mapping in the area is recommended to evaluate whether drilling any of these anomalies is warranted.

5.3.4 Perform structural analysis of geophysical data

GHD recommend that a structural lineament analysis of gravity and magnetic data be performed to provide better regional definition of major structural features associated with Cambrian and Ordovician host rocks. Limited structural measurements have been recorded due to the majority of the host sequences being situated beneath the Tertiary basaltic cover. Structural analysis should be carried out to assist in identifying:

- Fluid migration pathways.
- Location of host sequences, and
- Interpret shallowing of depth / presence of granitic intrusives.

It is recommended that structural analysis be performed most efficiently as a joint exercise between LMPL geologists and GHD geophysicists

5.3.5 Perform detailed 2D forward modelling and geologically constrained modelling on Rogetta East

GHD recommend that 2D forward modelling using petrophysical constraints on profiles through the Rogetta East ore body be conducted after more detailed data has been collected from gravity and magnetic potential field surveys. This modelling will facilitate improved definition of mineralisation and assist in guiding the drilling program on satellite bodies surrounding Rogetta North.

5.3.6 Perform geochemical analysis of haematite at Cuprona

As discussed in Section 5.1, GHD consider that valuable insight into the formation of haematite mineralisation, particularly at Cuprona be carried out. Specifically, geochemical analysis will assist in determining whether haematite at Cuprona is an oxidation product of weathering of the primary magnetite orebody, or whether the haematite represents primary mineralisation from haematite replacement processes which have been previously proposed.

5.3.7 Perform logistic regression on assay grade and susceptibility data (Rogetta East)

As part of 5.3.5, GHD recommend that logistic regression be perform to establish an accurate relationship between magnetic susceptibility and magnetite grade. This will assist in inferring magnetic resources from geophysical modelling results and should reduce the required quantities of resource drilling and assay for Rogetta East.

GHD

2 Salamanca Square Hobart 7000
GPO Box 667 Hobart 7001
T: 03 6210 0600 F: 03 6210 0601 E: hbamail@ghd.com

G:\32\17262\WP\62762.docx

Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	M. Anderson	H. Tassell		N. Gunadasa		

www.ghd.com