STELLAR RESOURCES LIMITED

Rubicon MinTech Ventures Pty. Ltd.

EL 21/2004 DUNDAS

ANNUAL REPORT FOR THE PERIOD
1 June 2008 – 31 May 2009

Compiled by R.K. Hazeldene

DATE: May 2009

SUBMITTED TO: Executive Chairman

DISTRIBUTION:
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Department of Infrastructure, Energy and Resources - Hobart
Stellar Resources Ltd - Melbourne

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ABSTRACT

This Annual Report for EL 21/2004, Dundas, covers the period from 1 June 2008 to 31 May 2009.

EL 21/2004, Dundas, is centred about 7 km east north east of Zeehan Township and covers the old Dundas townsite. Principal access is via the Dundas Road from the Murchison Highway, which parallels the western edge of the licence.

The area was mined originally for lead and silver during the late 1800's. Small-scale mining continues in the area for mineral specimens, particularly for crocoite and stichtite. Modern exploration for tin and Cu-Zn-Ag commenced in the 1930's.

During 2007/08 a program of soil and rock chip geochemistry was completed and two diamond drill holes tested discrete magnetic highs near the north-eastern margin of the Dundas serpentinite. No nickel sulphide or magnetic anomalism was encountered and the core showed no evidence of skarn mineralisation.

During 2008/09 195.6 km of VTEM was flown at 100m-line spacing over a large part of EL 21/2004 by Geotech Airborne Ltd. The historic Razorback and Grand Prize lodes were modelled using 3D computer modelling techniques by PGN Geoscience.

Total expenditure on EL 21/2003 during 2008/09 totalled $80,500.

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1. INTRODUCTION

1.1. EXPLORATION RATIONALE

The Dundas licence was acquired to target two styles of mineralisation compatible with the geology and history of the EL.

- Nickel sulphide deposits with a magnetic signature related to magmatic or hydrothermal alteration in Cambrian ultramafic rocks.
- Tin and tin-copper deposits at the intersection of fault conduits for Devonian granite sourced fluids and carbonate bearing horizons within the Cambrian host rocks.

1.2. GEOLOGICAL SETTING

The regional scale geology within EL 21/2004 (Figure 3) comprises a fault-bounded wedge of serpentinised Early Cambrian dunite juxtaposed against predominantly Middle Cambrian Dundas Group marine sedimentary rocks to the southwest, and predominantly Late Cambrian Owen Group and Late Proterozoic Oonah Formation marine sedimentary rocks to the northeast. The distribution of serpentinite and the contrasting northeast and southwest contact relationships are clearly shown on the aeromagnetic TMI image Figure 4.

Several silver-lead-zinc and tin prospects exist within the EL. Their alteration and ore mineralogy styles and their structural settings are typical of Zeehan and Dundas district mineralisation genetically related to Late Devonian-Early Carboniferous granite batholiths and dykes. The known mineralisation appears to be controlled partly by a major northwest-southeast trending fault structure, which forms the southwest margin of the serpentinite wedge (Figures 3 and 4). There is evidence of metal zonation along the structural trend, with silver-lead-zinc prospects grouped towards the southeast and tin prospects aligned further to the northwest at Razorback and Grand Prize.

At Razorback the Cambrian serpentinite is overlain by a talc-carbonate unit, (the mineralised unit), a shear, the Red Lead Conglomerate and the Hodge Slate. The sequence strikes northwest and is near vertically dipping. Tin mineralisation occurs mainly in the talc-carbonate but some has also been reported in the shear and in the conglomerate. The lode is a vertical, south plunging body of disseminated and massive pyrrhotite up to 19m thick and 130m long. Historic drilling indicates it extends to at least 140m below surface. Mineralisation is cassiterite, with some minor stannite, in association with pyrrhotite, pyrite, arsenopyrite, chalcopyrite, sphalerite and galena.

Grand Prize is located about 1.5km north of Razorback. The rocks are the same as those at Razorback being Cambrian sediments of the Dundas Group overlying basic and ultrabasic igneous rocks. There are mudstones, siltstones, grit and conglomerate but few carbonate bearing units. Mineralisation is controlled by large faults, principal being the 15-30m wide, NNW-trending, west dipping Grand Prize Fault. A smaller sub parallel mineralised structure, the Grand Reward Fault, is 100m to the east of the Grand Prize Fault. The host sediments strike ENE, at 90º to the faults, and dip south at 50º. Mineralisation occurs largely in the faults where their nature is influenced by the varying lithologies forming the fault walls. Cassiterite is the principal mineral in association with pyrite and pyrrhotite but there is also chalcopyrite, sphalerite, galena and arsenopyrite.

1.3. LICENCE

TENEMENT NUMBER: 21/2004

TENEMENT NAME: Dundas

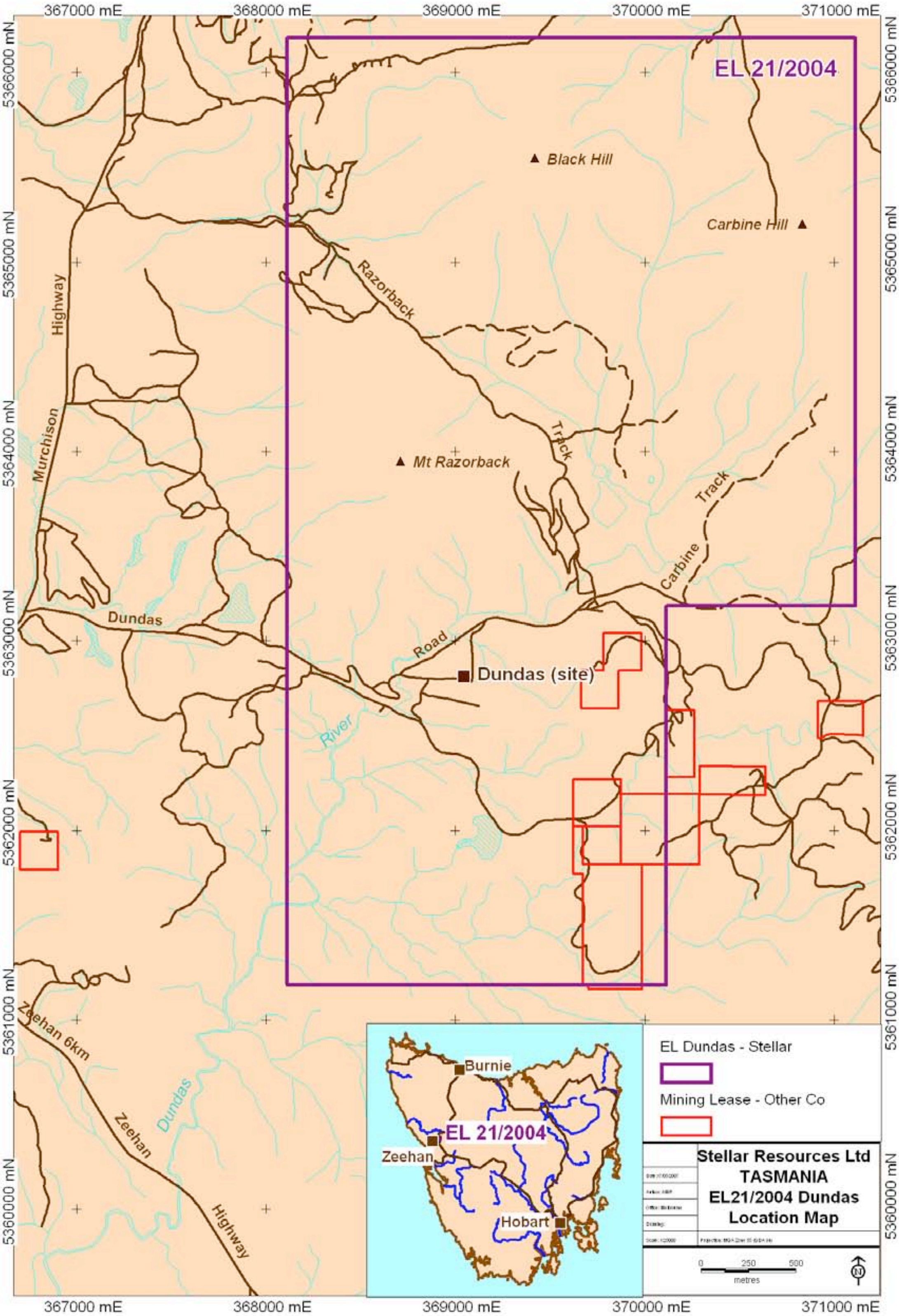
TENEMENT LOCATION: Centred approximately 7km east north east of the town of Zeehan. Primary road access is from the unsealed Dundas Road, which runs easterly through the south/central part of the licence, passing through the site of the historic Dundas Township. The Zeehan Highway passes approximately 1.5km south of the licence (Figure 1). The licence covers 13km^2 from 1.4km east of the Murchison Highway along the Dundas Road, from where it extends 1.8km to the south and 3.2km to the north. Almost all of the EL area is Crown Land, and in accordance with the West Coast Planning Scheme 1999 is covered by “Natural Resources”. Private land and small gazetted public reserves are restricted to the Dundas town site. The Mt Dundas Regional Reserve covers part of the south of the licence (Figure 2).

The topography within the licence ranges from low/undulating to steep. Vegetation coverage includes button grass valleys, tea tree/acacia forest, nothofagus rainforest, wet eucalyptus forest and wet scrub. Access is provided from the all-weather Dundas Road, from which further access is gained to old mining and exploration tracks, which range in condition from good vehicular passage to foot access only. A northwest track gives access to the Razorback mine area and continues further north to the Grand Prize mine area. Other areas are not well serviced by tracks and may at present only be accessible by foot.

REPORTING PERIOD: 26 June 2008 to 25 June 2009.

TENEMENT HOLDER: Rubicon Min Tech Ventures Pty Ltd., a wholly owned subsidiary of Stellar Resources Ltd.

1.4. LOCATION OF LICENCE



- **Figure 1. EL21/2004, Dundas: Location Map.**

1.5. LAND TENURE

SCHEDULE

LAND DISTRICT OF MONTAGU VICINITY OF DUNDAS
MUNICIPALITYOF WEST COAST

EXPLORATION LICENCE 21/2004 13km^2
RUBICON MIN TECH VENTURES PTY. LTD.

Commencing at the northwest corner at grid coordinates 368,000 mE 5,366,000 mN, thence grid east to 371,000 mE, grid south to 5,363,000 mN, grid west to 370,000 mE, again grid south to 5,361,000 mN, again grid west to 368,000 mE aforesaid, thence again grid north to the point of commencement. Coordinate datum - AGD66AMG, Zone 55.

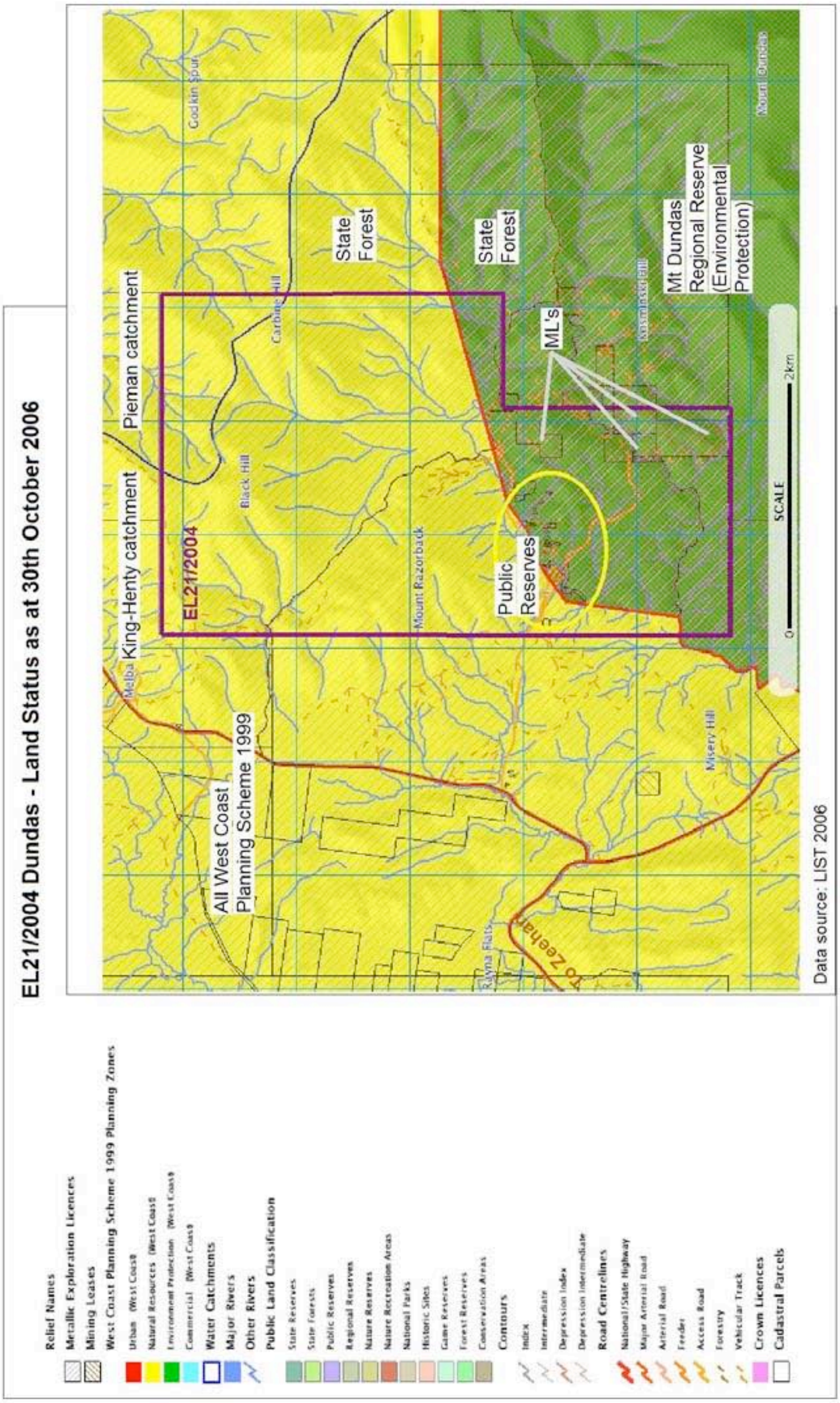
EXCLUSIONS

(a) Any land owned or leased by the Commonwealth of Australia.
(b) Mining Leases amounting to 43ha (more or less) which were applied for or in force prior to the date of application for this licence.
(c) Crown reservations or other land amounting to 3ha (more or less) set apart or dedicated for any public purposes such as public reserves, municipal reserves or roadways unless such areas have been brought under the provisions of the Mineral Resources Development Act 1995.
(d) Areas of private land which either have been, or are in the process of being, purchased by the Crown under the Regional Forest Agreement - Private Forests Reserves Program and / or private land over which the landowners have agreed, or are in the process of agreeing, to place a covenant or management agreement for conservation purposes under the Regional Forest Agreement - Private Forests Reserves Program.

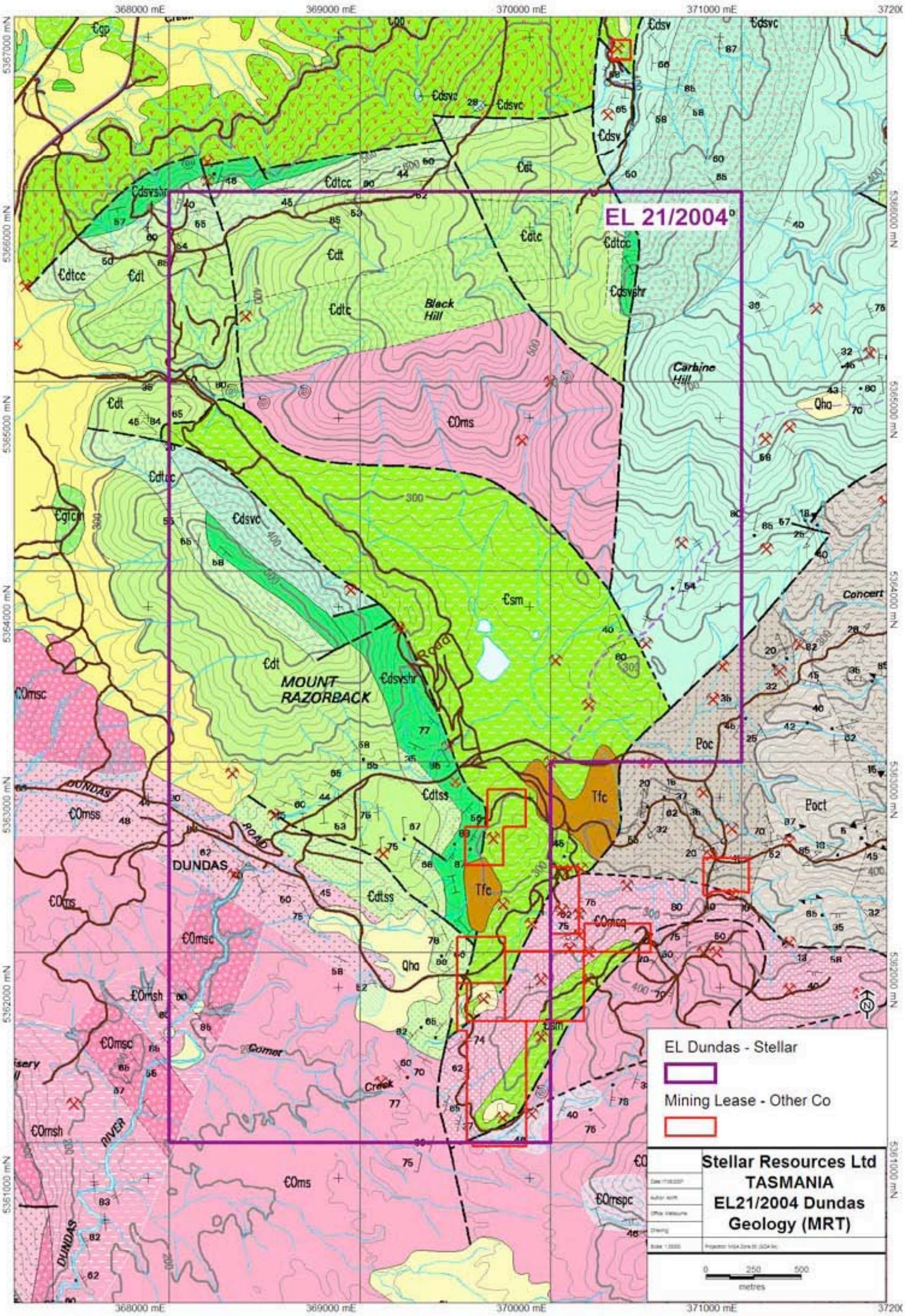
LAND TENURE

The area comprises: Crown Land State/Multiple Use State Forest Mount Dundas Regional Reserve

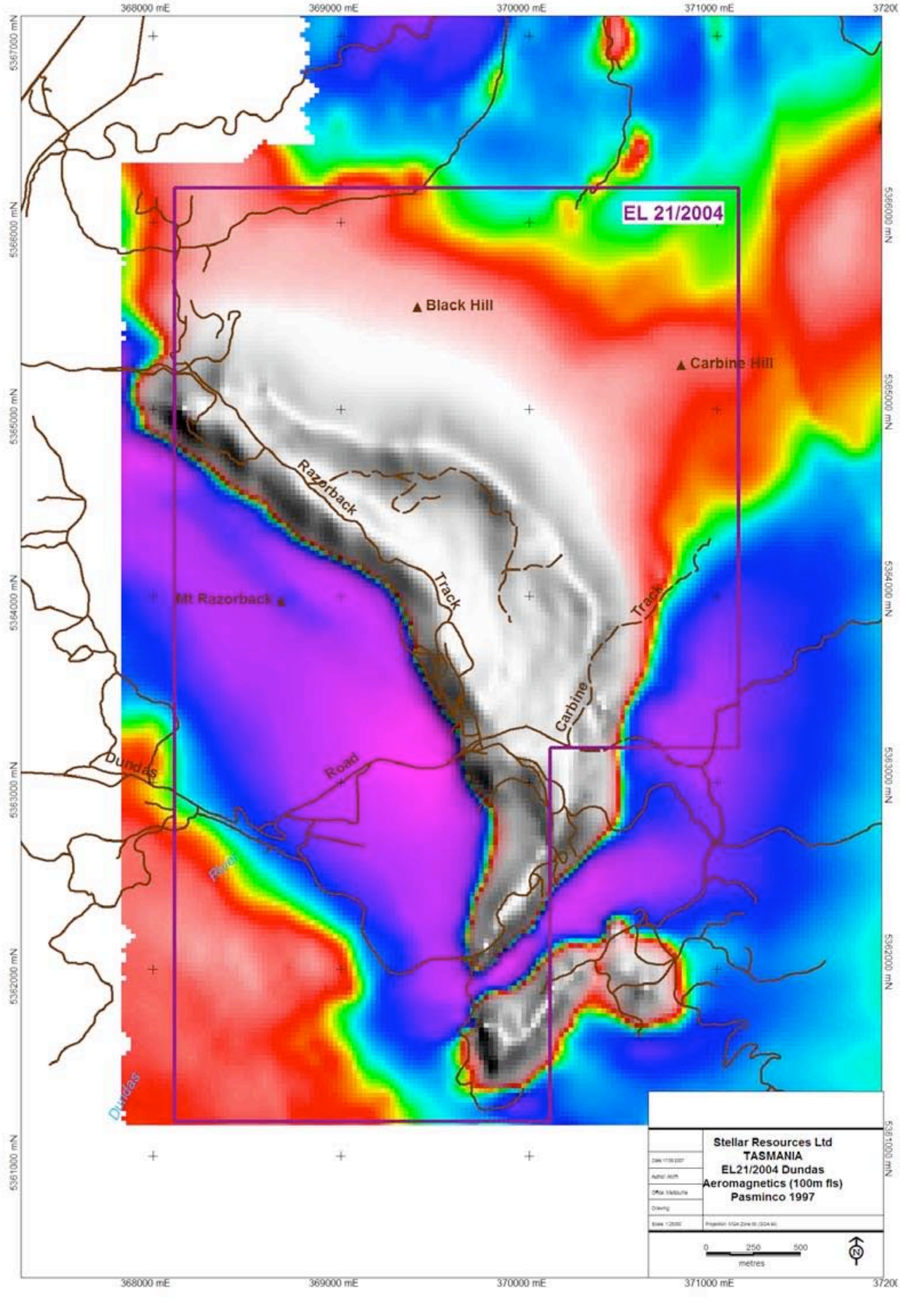
The licence area contains Forest Communities Managed by Prescription.



• **Figure 2. EL21/2004, Dundas: Land Tenure Map.**



- **Figure 3. EL21/2004, Dundas: MRT Geology**



- **Figure 4. EL21/2004, Dundas: Aeromagnetics, (Pasminco magnetics & HEM 1997)**

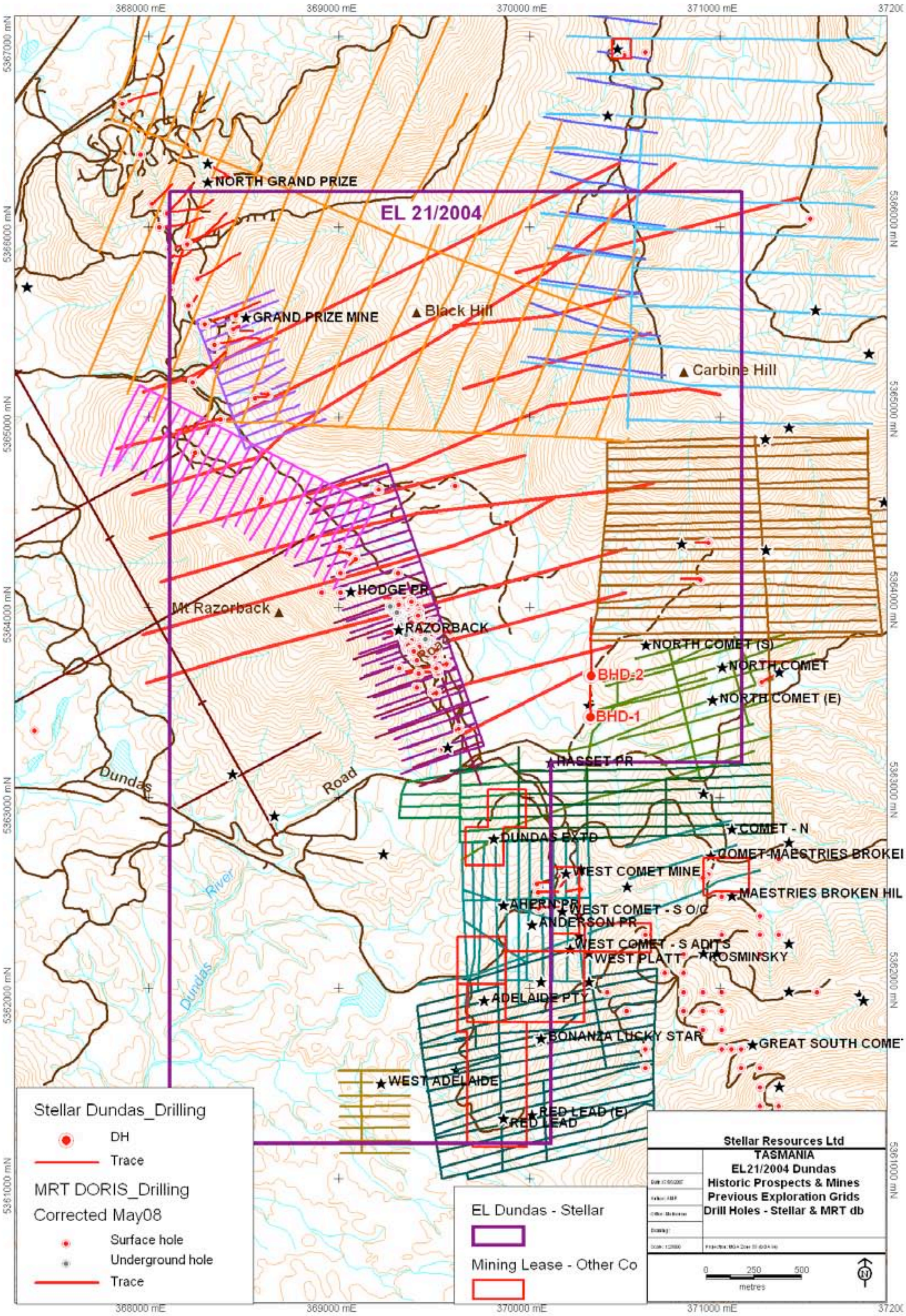
2. REVIEW OF PREVIOUS WORK

The Dundas area has been the focus of extensive exploration activity since the 1930's, when modern exploration commenced. Weber & Murphy (Pasminco 1997) provide a comprehensive summary of previous exploration on the tenement area. Table 1 and Figure 5 give an overview of previous work by other companies.

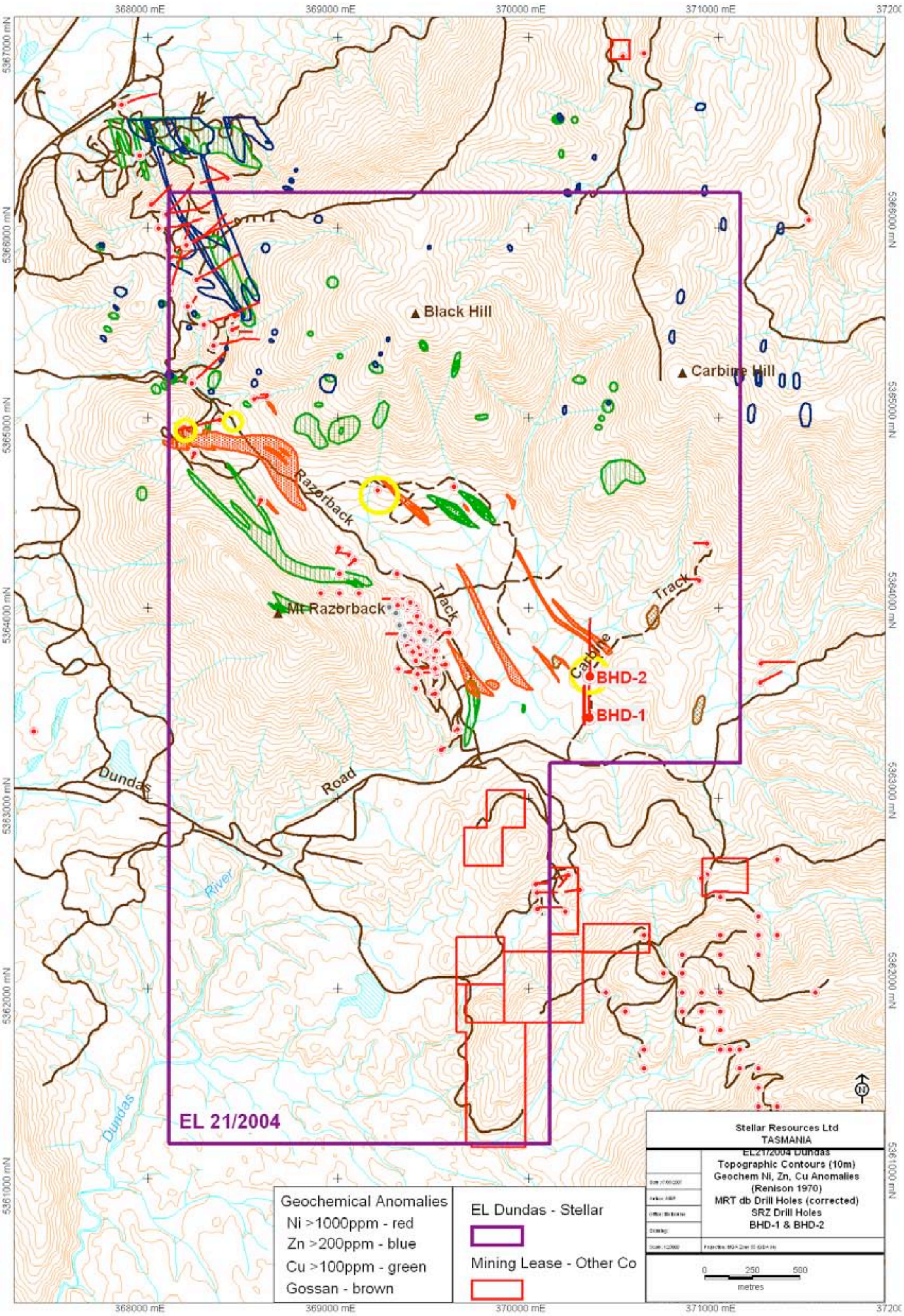
Stellar Resources Ltd commenced exploration on EL 21/2004 in 2006 (Rigg, 2007).

Table 1. Previous Work in EL 21/2004 Area

COMPANY	PERIOD	PROSPECT/ COMMODITY	METHODS	RESULTS
BHP	1959 - 60	Razorback Grand Prize (Sn)	Turam, SP and Magnetics	Inconclusive except over known mineralisation.
PLACER	1964 - 66	Razorback Grand Prize (Sn)	Underground Drilling & Mining	No new ore bodies found. The prospects are not connected.
GEOPHOTO	1968 - 74	Dundas (Pb Zn Ag)	IP, REM, SP, Mag, Mapping, Geochem & 79 Drill Holes	Intensive drilling located Pb Zn Ag in several thin fissure veins separated by barren host rocks. Didn't meet corporate objectives.
CSR	1976 - 87	Nevada Razorback Montezuma Carbine Hill (Sn Cu Pb Zn Au)	EM, Mag, IP, Dighem, Input, Mapping, Stream Geochem, Soil Geochem & 7 Drill holes	Several geochem anomalies identified and followed up but more were drilled. Airborne geophysical anomalies were followed up by 7 unsuccessful holes.
RENISON LTD	1971 - 87	Grand Prize (Fault), North Dundas Grid, Commonwealth Hill, Razorback Grid, Kapi, Carbine Hill, Serpentine Hill, (Sn Cu Asbestos, PGM)	Gridding, mapping, Airborne EM, drilling. Soil/rock geochem. IP, Dighem.	Extremely deep diamond drilling on the Kapi Fault returned in S652: 313.4-313.9m depth - 0.5m @ 2.14% Cu. Grand Prize Fault: S 947A @ 534.8m tourmaline alteration zone. S 969: 406.8-409.8 - 3m @ 5.21% Sn, 0.23% Cu, 13 g/t Ag 408.4-409.8 - 1.4m @ 10.93% Sn
PASMINCO	1996-2001	Pb-Zn	Reconnaissance mapping and GIS. HEM/mag 100m fls survey	Structural interpretation re: Precambrian, EM targets defined and followed-up, some related to shallow glacial cover. Concluded that the Dundas area vein-style deposits could not meet corporate objectives.
DISCOVERY NICKEL	2004 - 06	Dundas ultramafics, (Ni)	Literature/data review; limited rock chip sampling.	Sold/relinquished western Tasmania nickel tenements to pursue overseas projects.
STELLAR RESOURCES LTD.	2006-07	Dundas ultramafics, (Ni)	Literature/data review; GIS capture; rock chip sampling.	Consistent 0.2% Ni background in Dundas serpentinite.
	2007-08	Dundas ultramafics (Ni)	Drilling: BHD 1 & 2	No mineralisation intersected.
	2008-09	Dundas ultramafics (Ni)	VTEM Survey	Anomaly over Razorback Mine
		Razorback & Grand Prize lodes	3D computer modelling	Similar to CRAE (1980) model



• **Figure 5. EL21/2004, Dundas: Previous grids & drilling.**



• **Figure 6. EL21/2004, Dundas: Geochemical Anomalies & Drilling.**

3. WORK COMPLETED DURING THE REPORTING PERIOD

3.1. VTEM SURVEY

195.6 km of VTEM was flown at 100m-line spacing over a large part of EL 46/2003. Refer to Figure 7 for area surveyed.

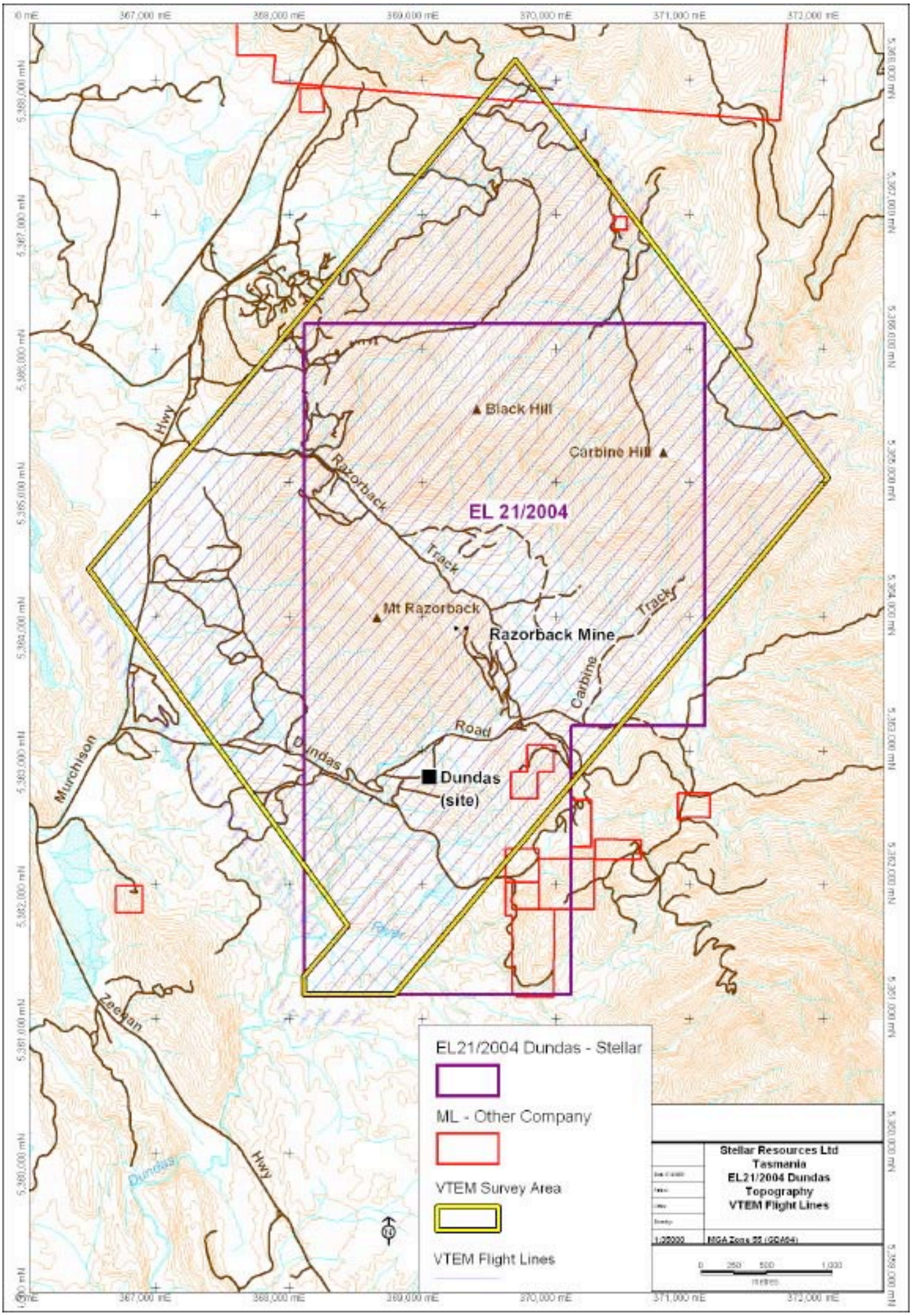
The principle target of the survey was Avebury style nickel mineralisation within the serpentinite and Renison style tin mineralisation in carbonate rich units adjacent to the western boundary of the serpentinite, particularly the Razorback and Grand Prize areas at depth under and along strike from the historic workings.

Refer to Appendix 2 for details of the survey specifications.

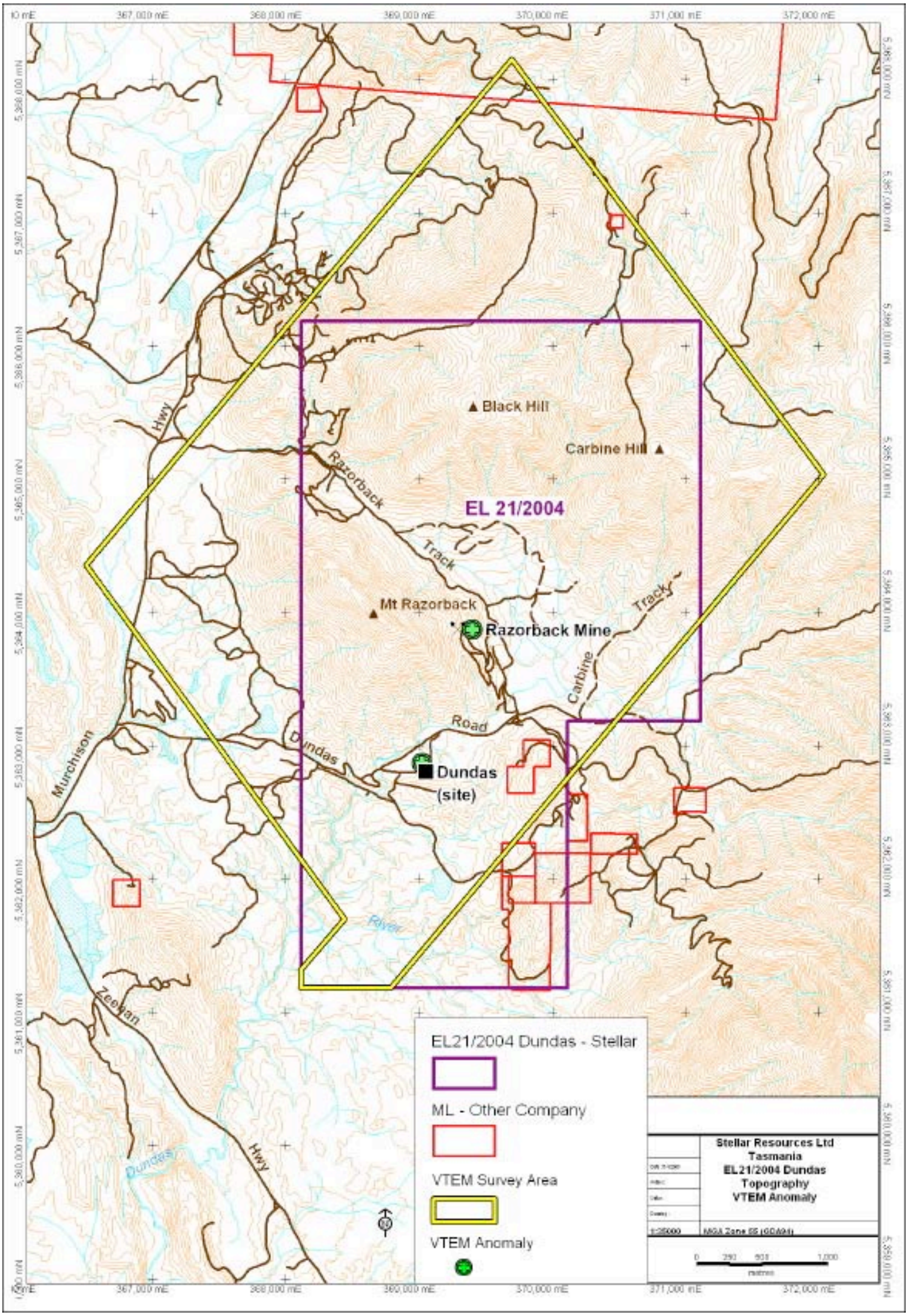
3.2. 3D COMPUTER MODELLING

PGN Geoscience were commissioned to capture, verify, correct and compile historic exploration and mining data from the Razorback and Grand Prize prospects and use this to 3D model the lodes. The objective of the modelling being to identifying any proximal extensions to known mineralisation and to target drilling. The model was constructed using GoCad modelling software

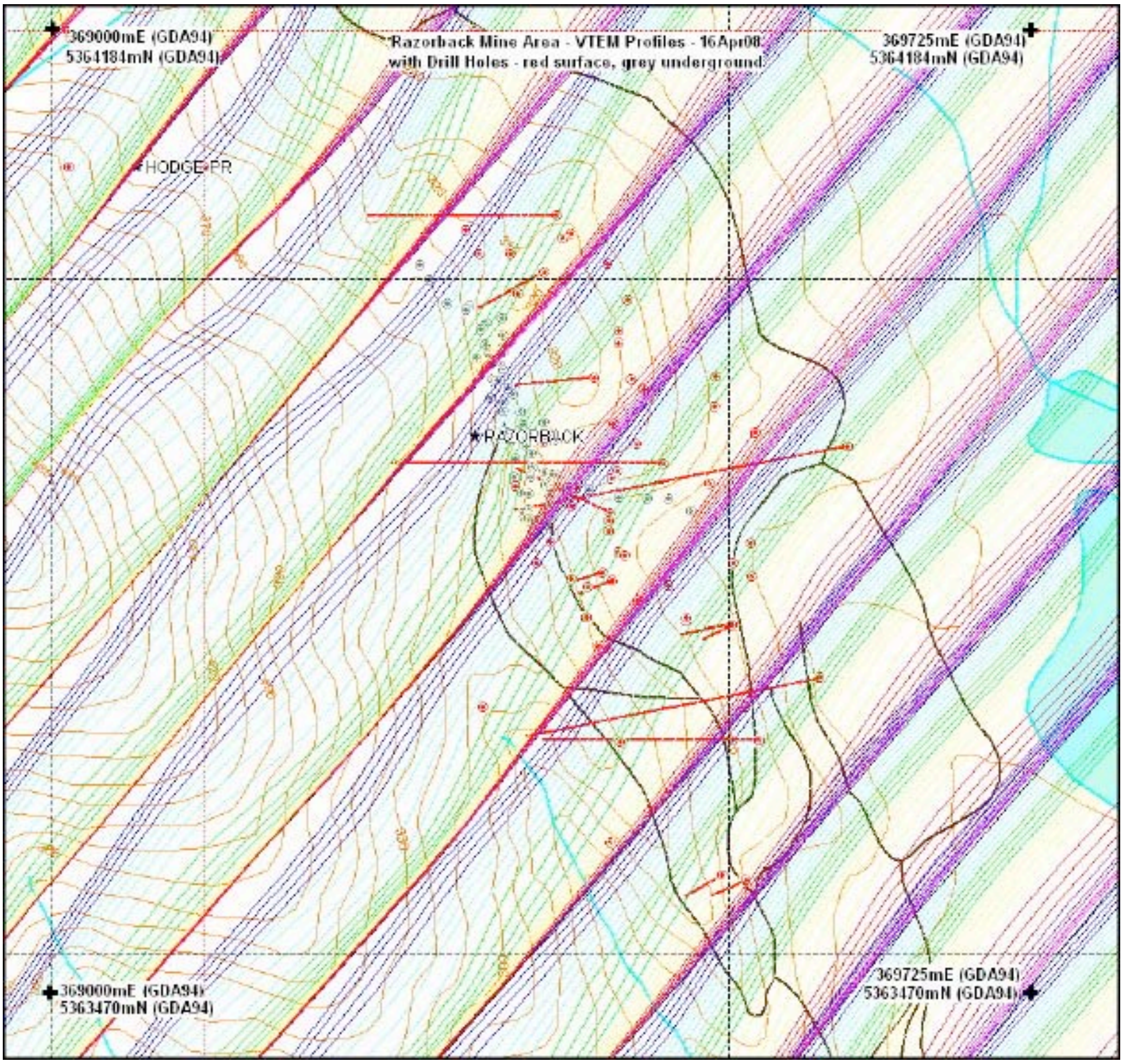
Refer to Appendix 1 for details of the modelling procedures.



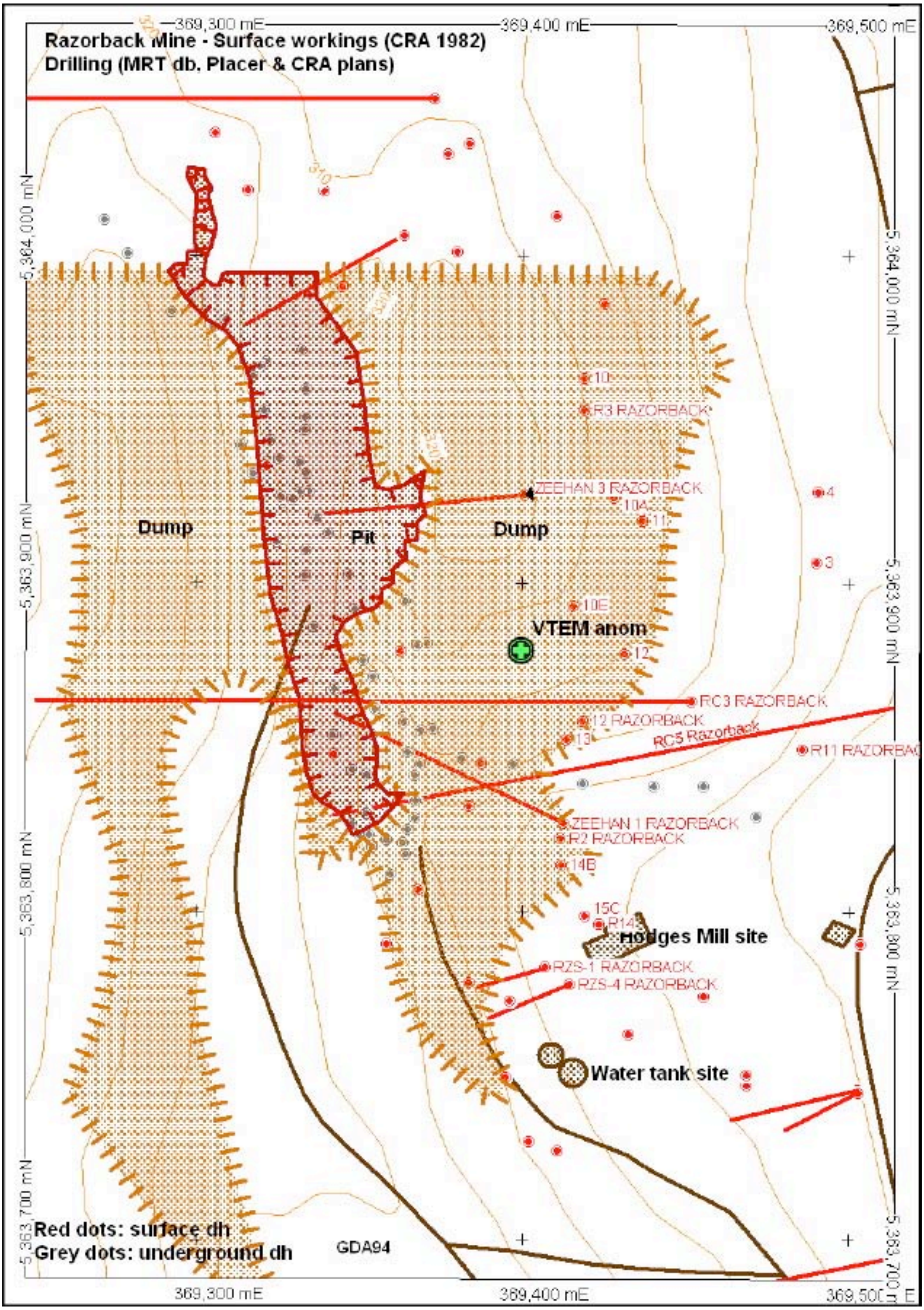
- **Figure 7. EL21/2004, Dundas: VTEM Survey Flight Lines.**



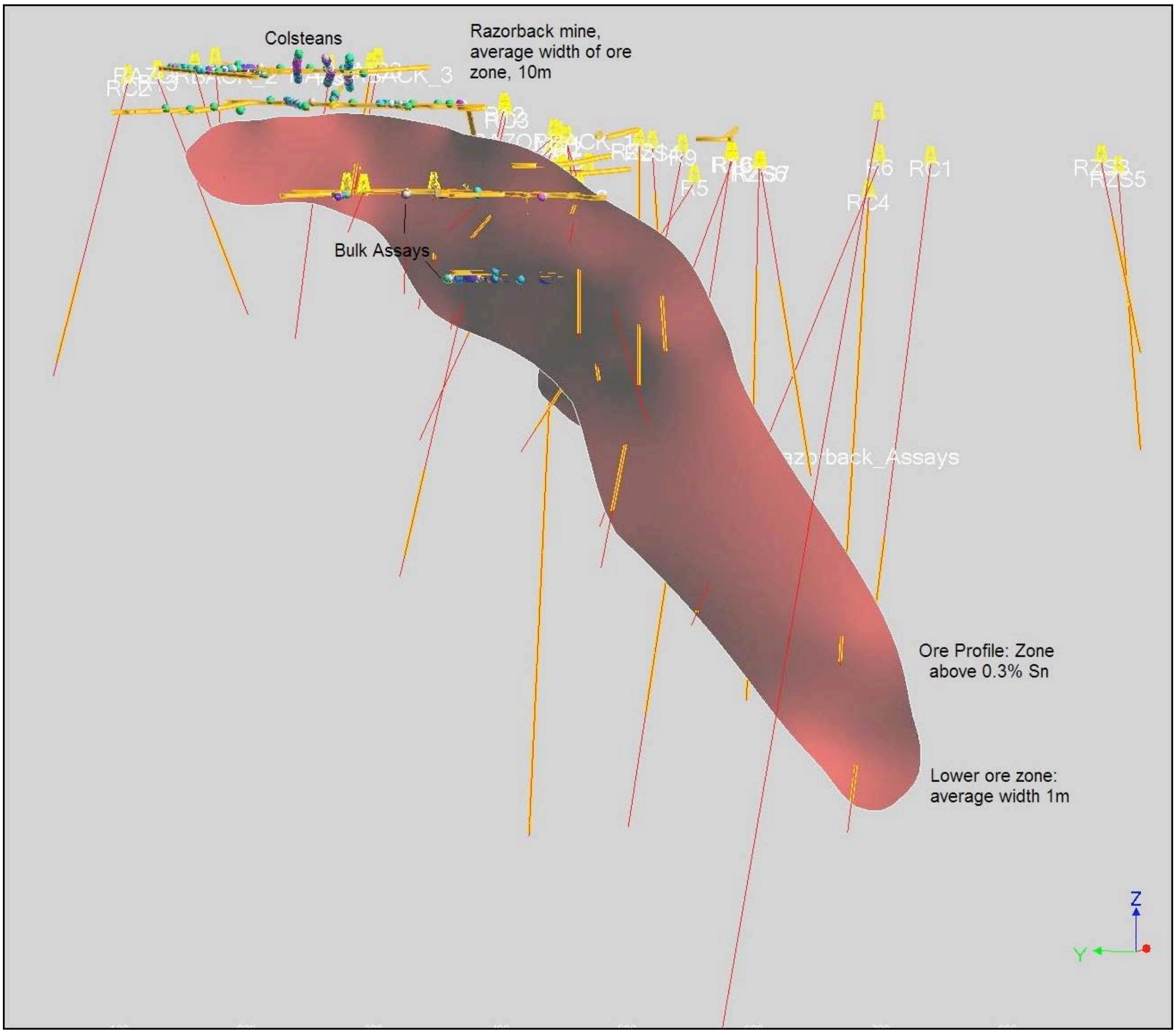
• **Figure 8. EL21/2004, Dundas: VTEM Survey Anomalies.**



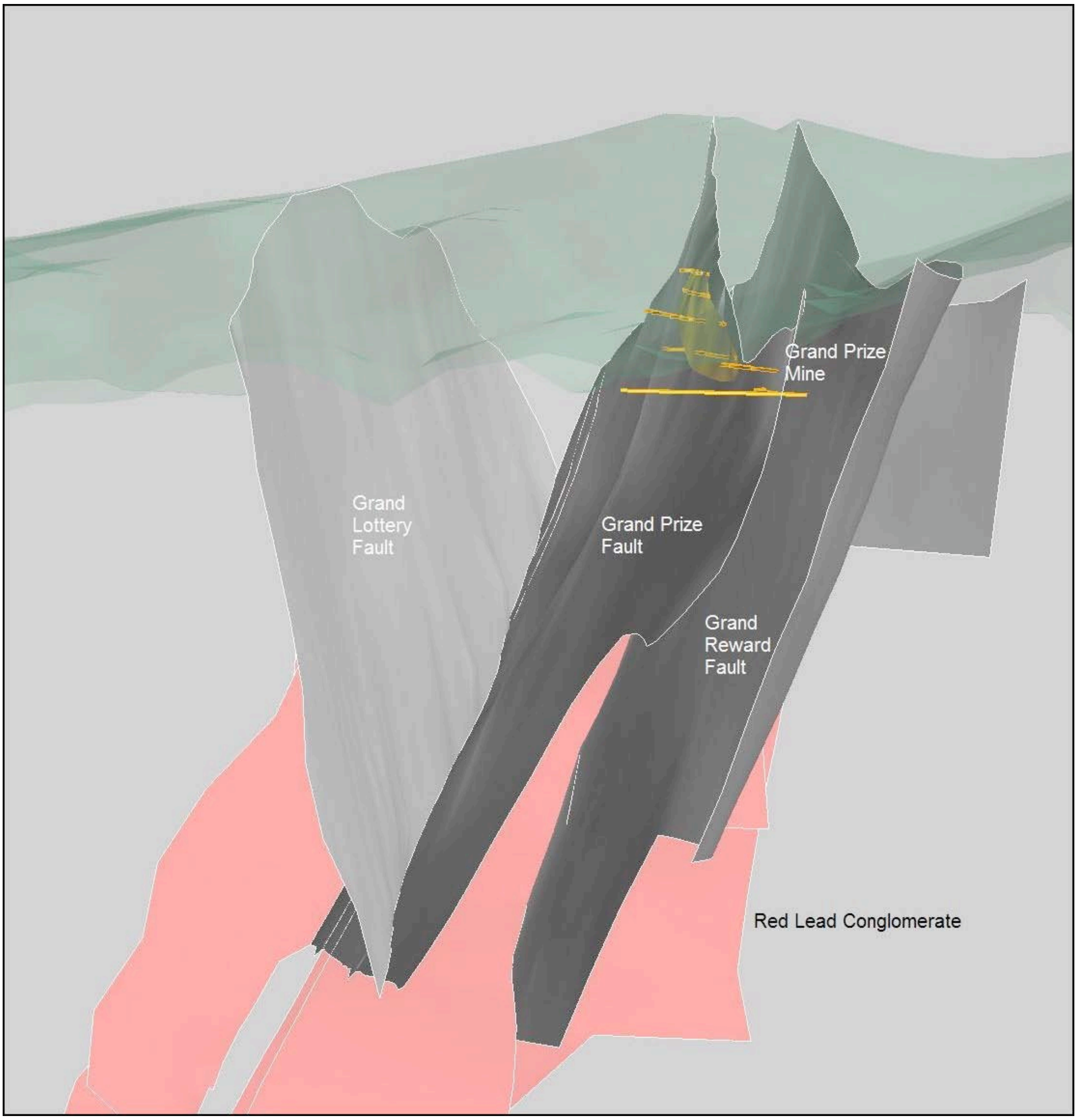
- **Figure 9. EL21/2004, Dundas: VTEM Survey Profiles over Razorback Area.**



• **Figure 10. EL21/2004, Dundas: Razorback Mine Area showing drilling & VTEM Anomaly.**



• **Figure 11. EL21/2004, Dundas: Razorback 3D Model Longitudinal Section.**



- **Figure 12. EL21/2004, Dundas: Grand Prize 3D Model.**

4. DISCUSSION OF RESULTS

4.1. VTEM SURVEY

Only two VTEM anomalies were identified on the licence. Refer to Figure 8. These are:

- Near the Dundas town site; this is considered to be cultural, and
- Directly over the underground workings of the Razorback Mine. Refer to figure 10.

No other anomalies were detected on the EL, not along the western boundary of the serpentinite, north or south of Razorback and no anomalies at Grand Prize.

4.2. 3D COMPUTER MODELLING

The results of the computer modelling at Razorback were similar to the results of the graphic resource estimation by CRA in the 1980's. The model suggests that the Razorback lode is located in a southerly plunging dilation zone on the western boundary of the serpentinite. There may be other similar zones along the contact, north of Razorback, but this concept was not supported by the VTEM results.

5. CONCLUSIONS

Results from both the VTEM survey and the computer 3D modelling were disappointing. Aside from an anomaly over the old workings at Razorback nothing else of significance was noted. The known mineralisation at Razorback is the likely source of the VTEM anomaly and the 3D modelling indicates that the Razorback deposit is limited in size and probably uneconomic.

Overall a disappointing result from the 2008/09 program, which has not enhanced the prospectivity of the licence.

6. ENVIRONMENT

As no fieldwork was carried out during the reporting period no rehabilitation work was required.

7. EXPENDITURE

Job No	Job Details	Department	
Tran. Date	30/4/2008 – 1/5/2009	Doc Ref - Description	Amount
Job Code: 6801	**EL 21/2004 Dundas**		
		Technical	AU$5,230.45
Phase Total		**STAFF COSTS**	**AU$5,230.56**
		Professional Technical	AU$14,568.75
Phase Total		**CONTRACT PERSONNEL**	**AU$14,568.75**
		Geoscientist	AU$25,365.41
		Admin & Computing	AU$1,500.00
Phase Total		**CONSULTANT PERSONNEL**	**AU$26,865.41**
		Analytical/Sample analysis	AU$922.50
Phase Total		**ASSAYS**	**AU$922.50**
		Geophysical Airphoto Surveys	AU$20,537.40
		Other	AU$2,349.67
Phase Total		**DATA ACQUISITION**	**AU$22,887.07**
		Vehicle Costs All	AU$1,570.02
		Office Costs	AU$160.72
		Field Operation Consumables	AU$276.77
Phase Total		**SUPPORT COSTS**	**AU$2,007.51**
		Drafting & Presentation	AU$1,872.50
Phase Total		**DATA PROCESSING**	**AU$1,872.50**
		Pegging Application Forms	AU$848.29
		Legal Costs	AU$0.00
		Rents/ Other Utilities	AU$2,002.48
Phase Total		**TENEMENT COSTS**	**AU$2,850.77**
		Meals and Accommodation	AU$2,760.46
		Airfares	AU$294.47
		Vehicle Hire	AU$180.00
		General Expense	AU$65.45
Phase Total		**TRAVEL**	**AU$3,300.38**
Job Total:		**TOTAL**	**AU$80,505.45**

8. REFERENCES

Bottrill, R., Williams, P., Dohnt, S., Sorrell, S. & Kemp, N.2006 Crocoite and Associated Minerals from Tasmania. Aust Journ of Min, Vol 12, No. 2

Morrison, K., Rigg, A. & Hazeldene, R. 2008 EL21/2004, Dundas, Year 4 Annual Report.

Rigg, A.M. 2007 EL21/2004, Dundas, Annual Report for the Period 26 June 2006 - 25 June 2007.

Weber, G.B. & Murphy, F.C., 1997 Dundas EL 21/96. Annual report for the period ending October 1997. Unpubl. Pasminco Exploration Report VC184.

Keywords

Location:	Dundas
Mineralisation environment:	Hydrothermal
Minerals:	Nickel, Tin, Silver-lead-zinc
Exploration methods:	VTEM
Mine/prospect name:	Black Hill, Razorback Mine
Lithology:	Cambrian Ultramafics, Serpentinite, Chert, Devonian Granite
Geological age:	Cambrian, Devonian

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May 2009

EL 21/2004, DUNDAS – Report on 2009 program

APPENDICES

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May 2009

EL 21/2004, Dundas – Report on 2009 program

Appendix 1: 3D modelling Razorback and Grand Prize Mines, N. Thorpe, PGN Geoscience.

DUNDAS PROJECT

3D modelling Razorback and Grand Prize mines, January-July 2008

Aims of the project:

The aim of the modelling project was to use three-dimensional modelling package to integrate different datasets, and use these to model the regional geology, lithology and geochemistry of the Dundas exploration lease. This model was then utilised in assessing the prospects for future exploration in the tin prospect.

Data available and integrated into the model:

- Geochemical near surface rock chip and soil sampling, both modern and historical datasets.
- Gridded geochemical datasets showing zones of high Sn, Ni, Cu, Zn and Pb concentrations.
- Drillhole locations and paths with logs and assays attached for selected holes.
- Surface geological mapping and interpretations produced from both historical exploration reports and from the MRT.
- Surface fault mapping.
- Physical infrastructure, topography, roads, rail, watercourses, buildings etc.
- Mining infrastructure from the Grand Prize and Razorback mines.
- Underground mapping and drilling data from Razorback and Grand Prize mines.
- Bulk assaying results from the same mines.
- Costean data from the surface of the Razorback deposit.
- A magnetic inversion of the serpentine body hosting the Razorback Sn deposit.
- Reserve estimates produced by CRA in 1981.
- Magnetic and Gravity geophysical datasets.
- Various historical cross sections from the Razorback and Grand Prize deposits produced by previous mining and exploration companies.

Modelled items produced:

- Surface geology projected onto the local topography.
- Modelled lithologies including the Serpentine body as well as detailed zones around the Razorback deposit and the Grand Prize Fault.
- Modelling of the workings and underground developments in the Razorback and Grand Prize mines.
- DSI and Kriging of the Sn and Cu assays and surface sampling.
- In depth modelling of the ore profile of the Razorback deposit, including the CRA reserve model.

Images:

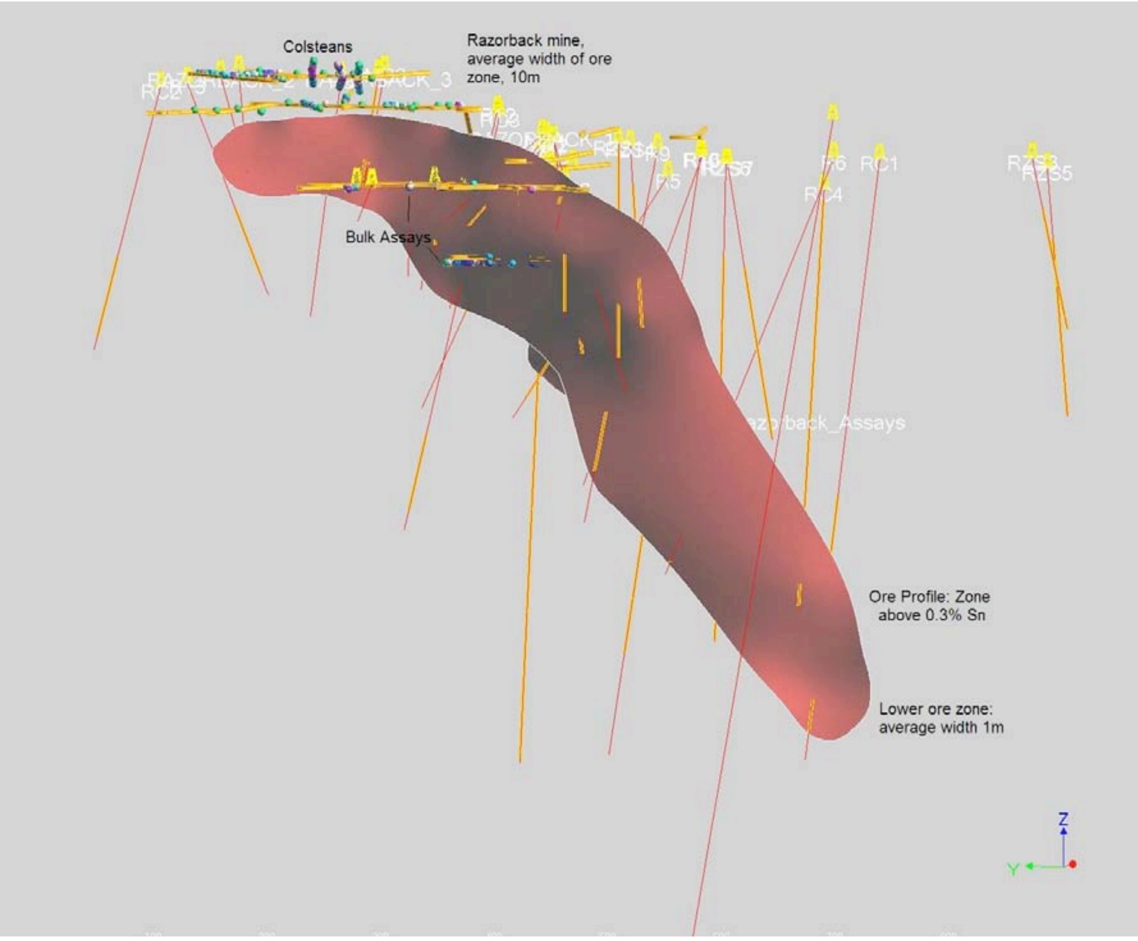

Figure 1: Ore profile showing zones of greater than 0.3% tin mineralisation from historical drilling in the region of the Razorback deposit. Long section view, looking east.

Figure 2: Drilling and zones of available assay data in the Razorback deposit. Long section view looking east.

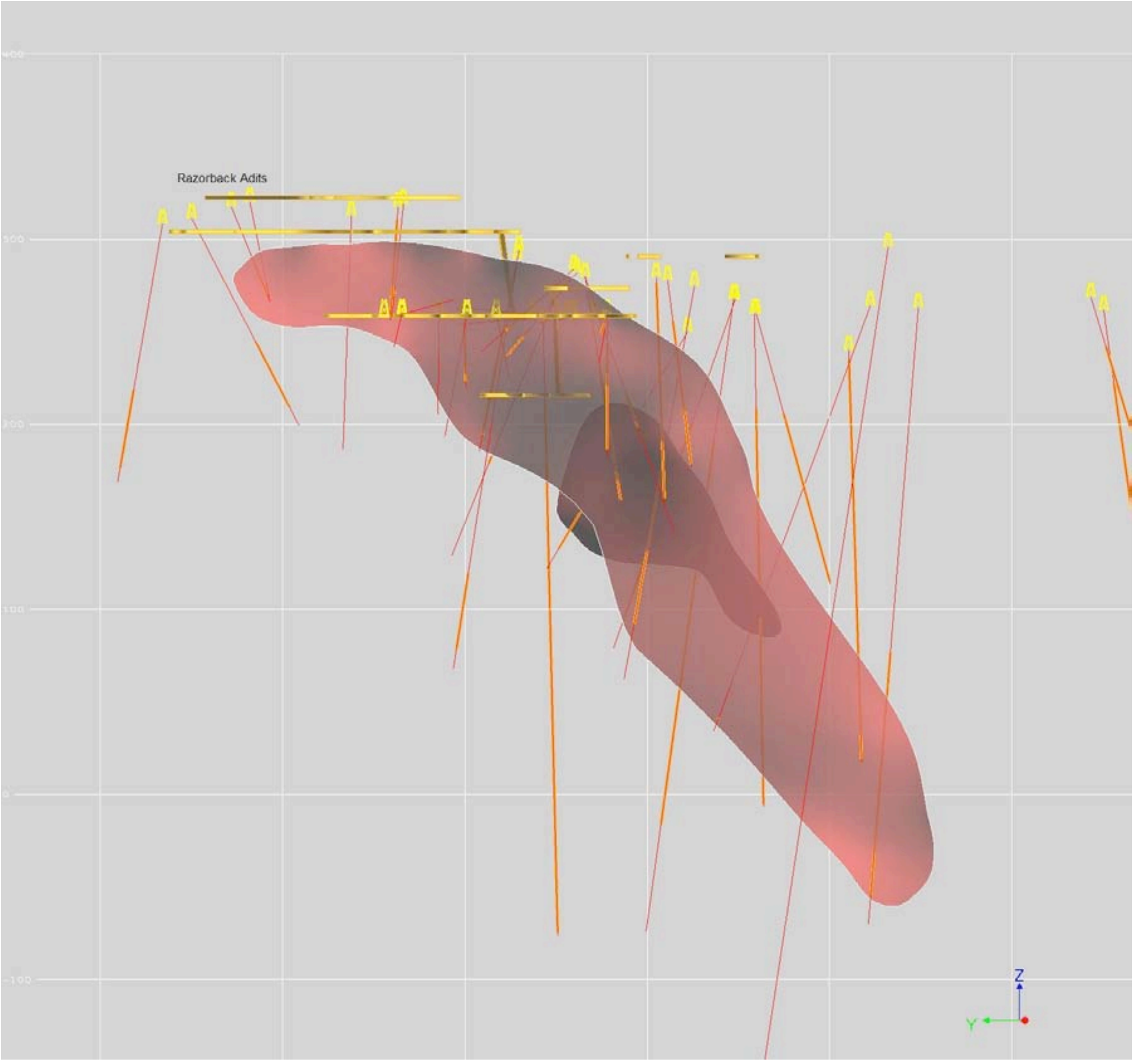

Figure 3: Combined image showing ore zone and drilling in the Razorback deposit. Long section view looking east.

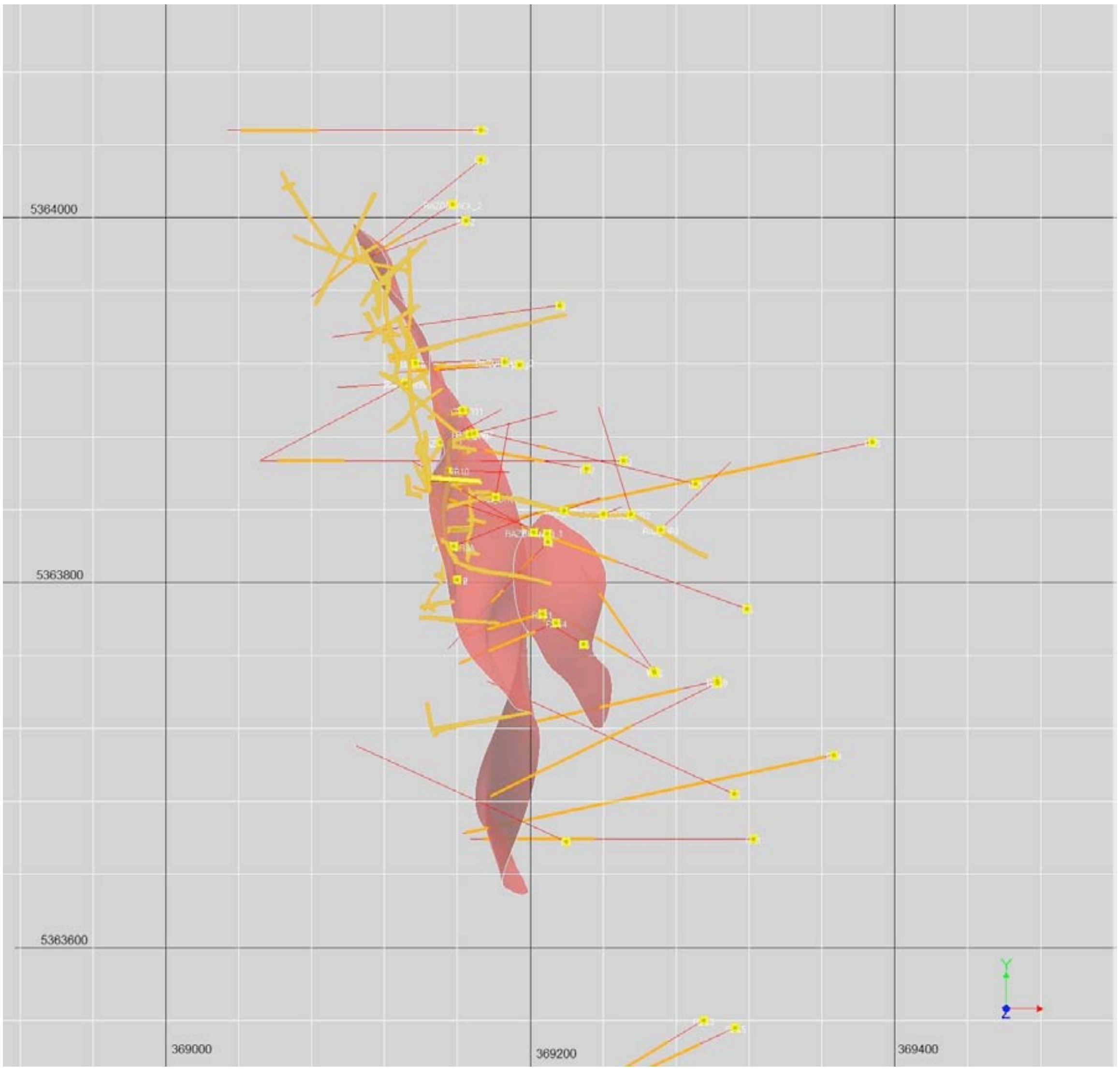

Figure 4: Birds eye view section of the ore profiles.

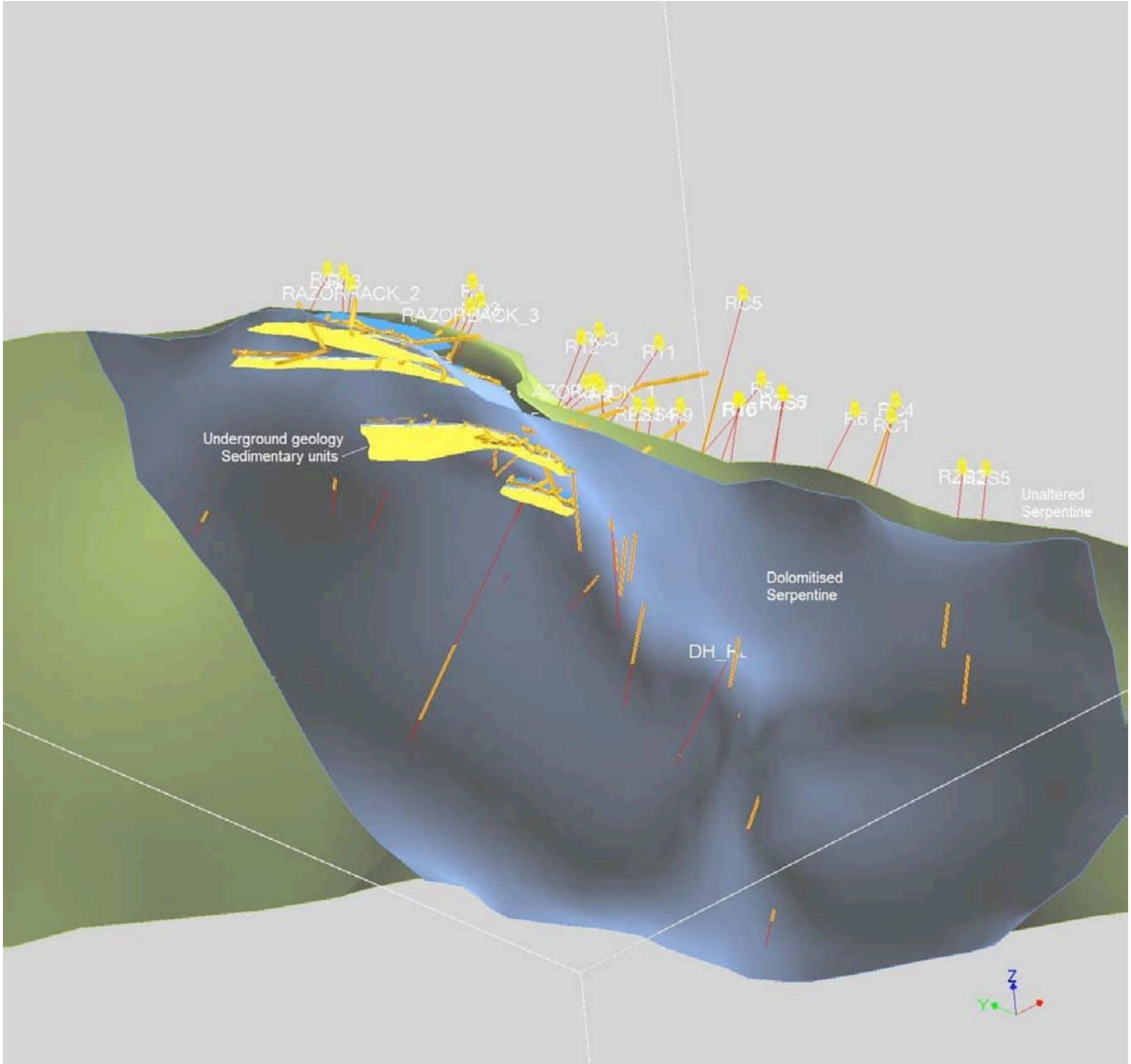

Figure 3: Modelled lithology in the Razorback deposit produced from surface mapping and drill hole logs. Section view looking northeast.

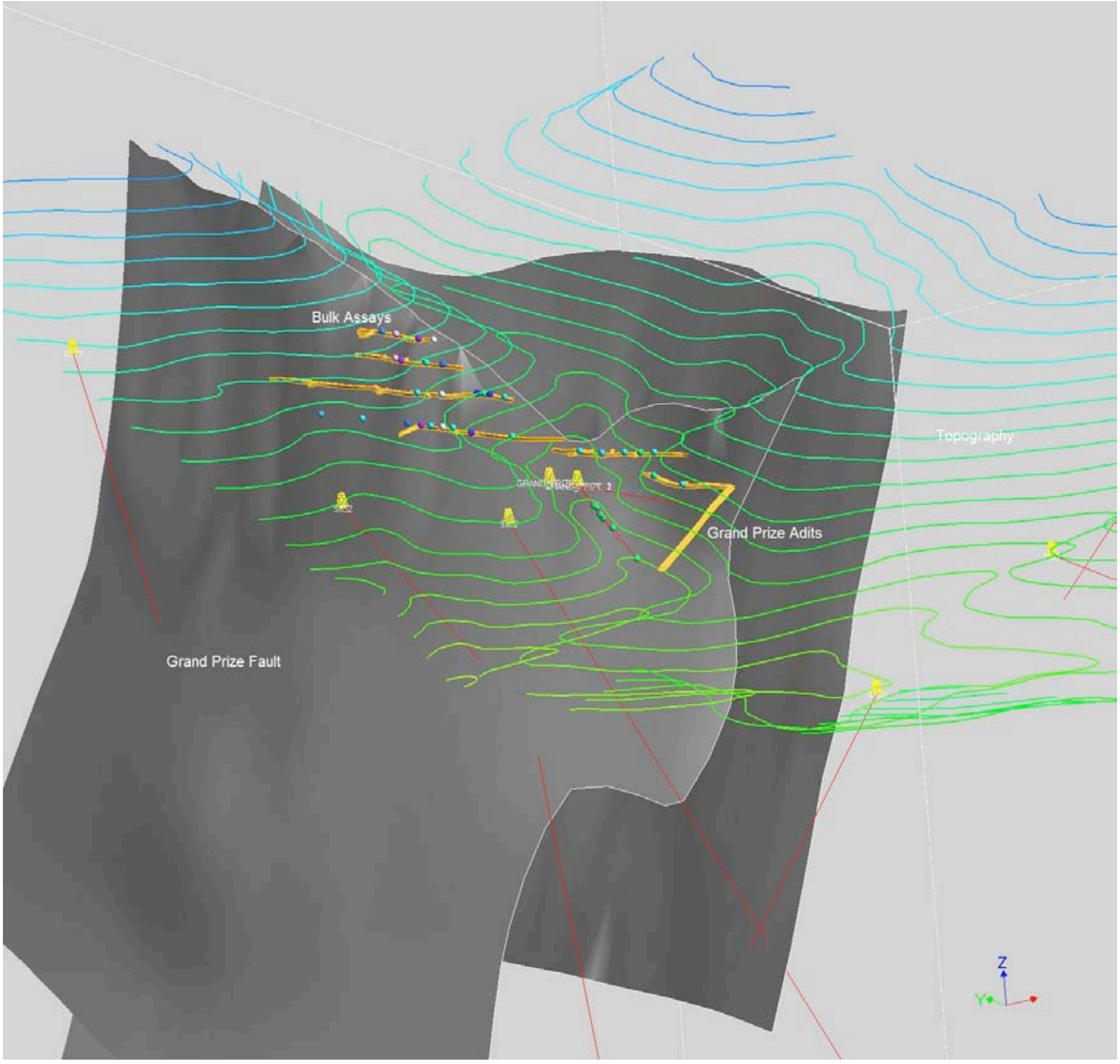

Figure 4: The model of the Grand Prize mine including drill holes and bulk sampling. Long section view looking northeast.

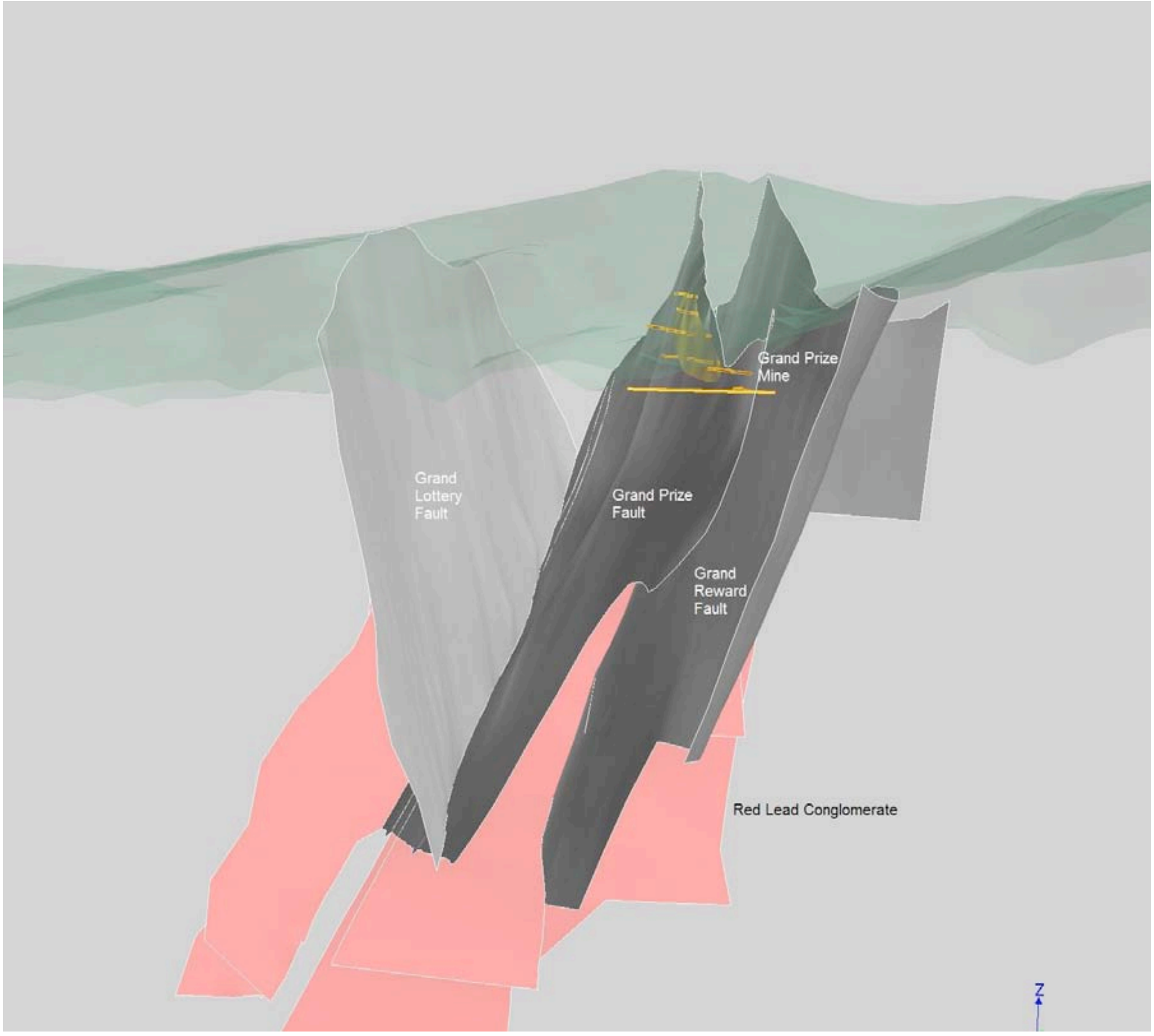

Figure 5: Modelled lithology in the region of the Grand Prize deposit produced from cross sections created by CRA. View looking north.

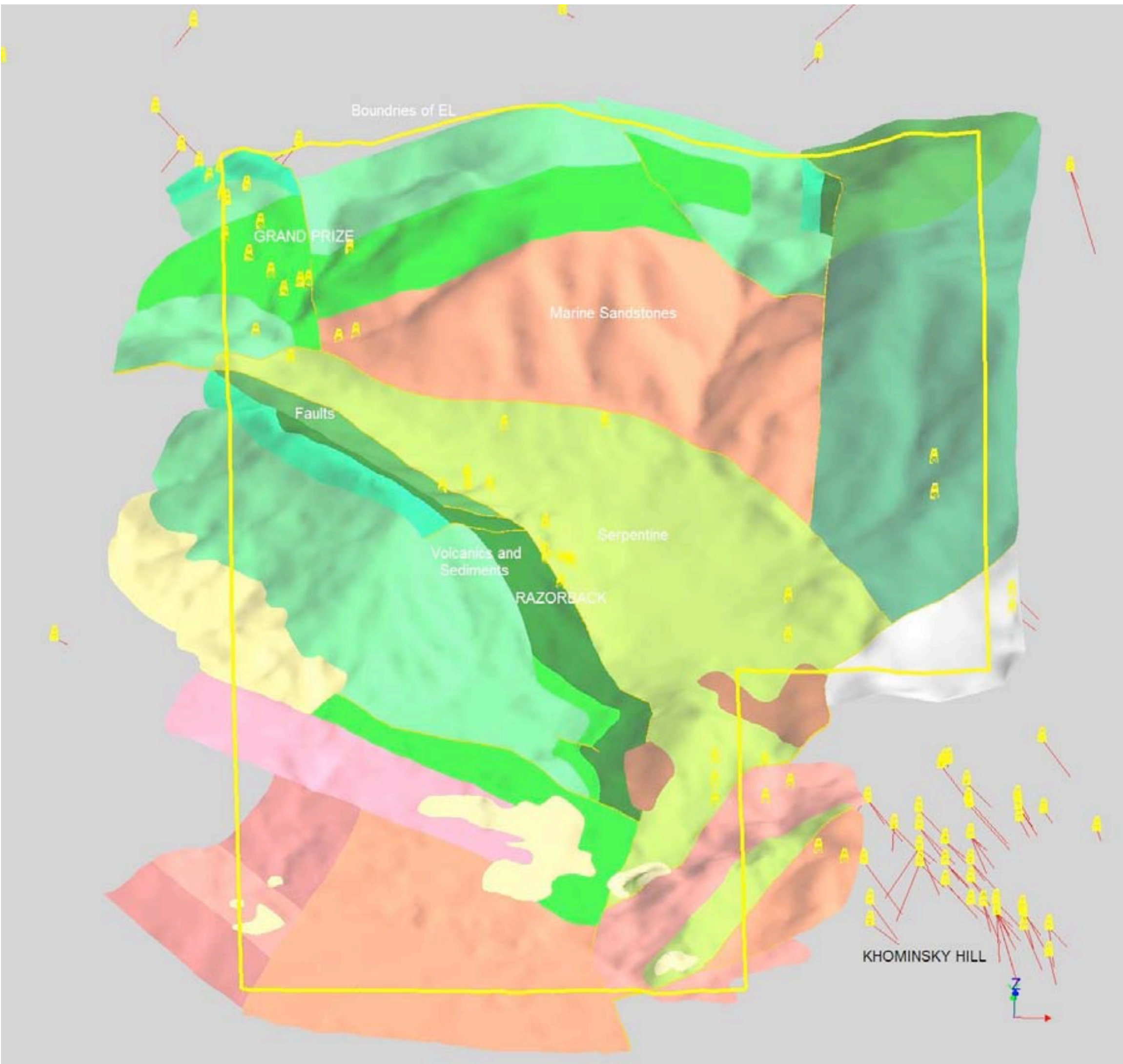

Figure 6: Modelled surface lithology in the EL produced from the MRT database. View looking north.

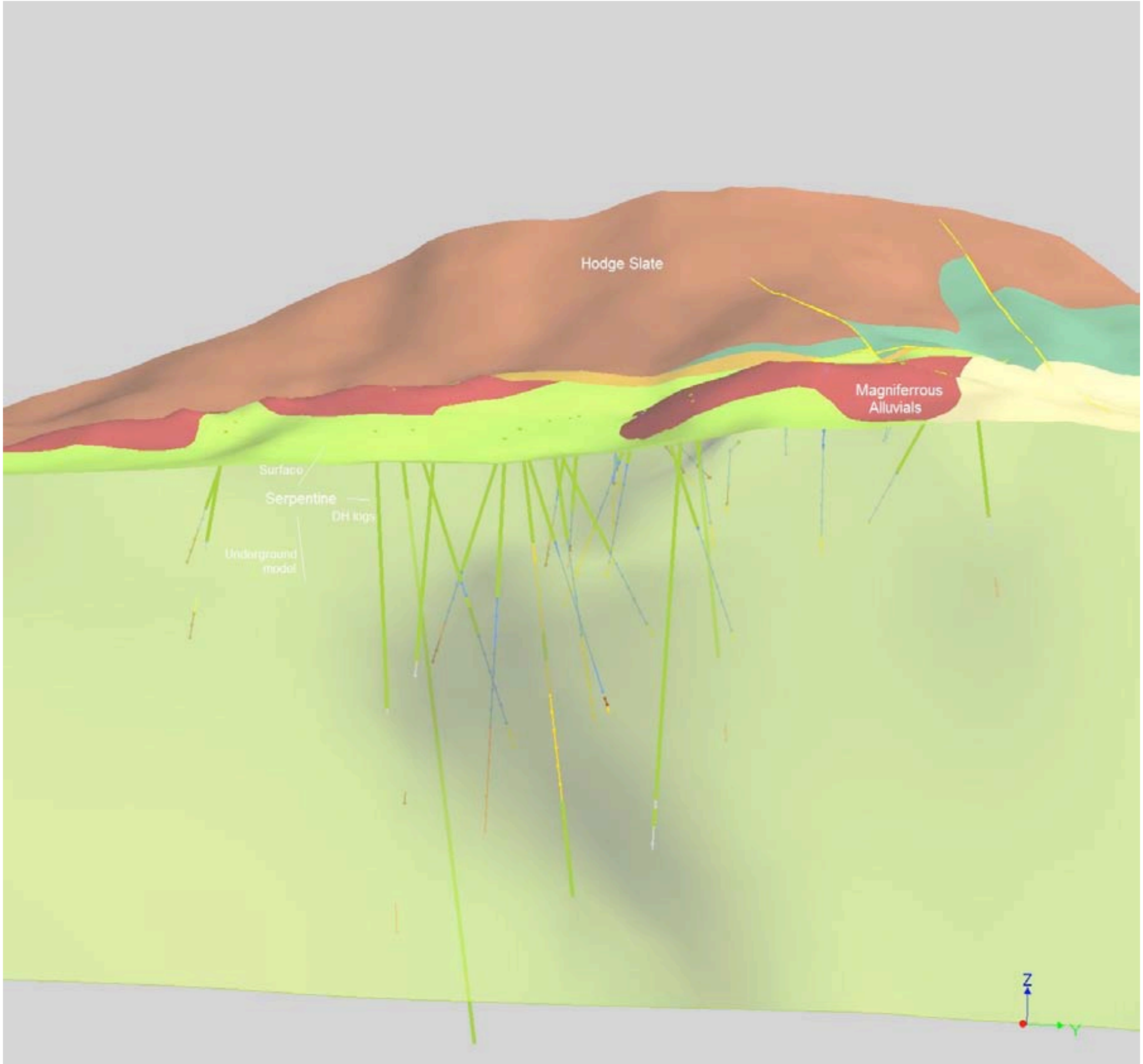

Figure 7: Modelled surface lithology in the EL produced from the MRT database. View looking north.

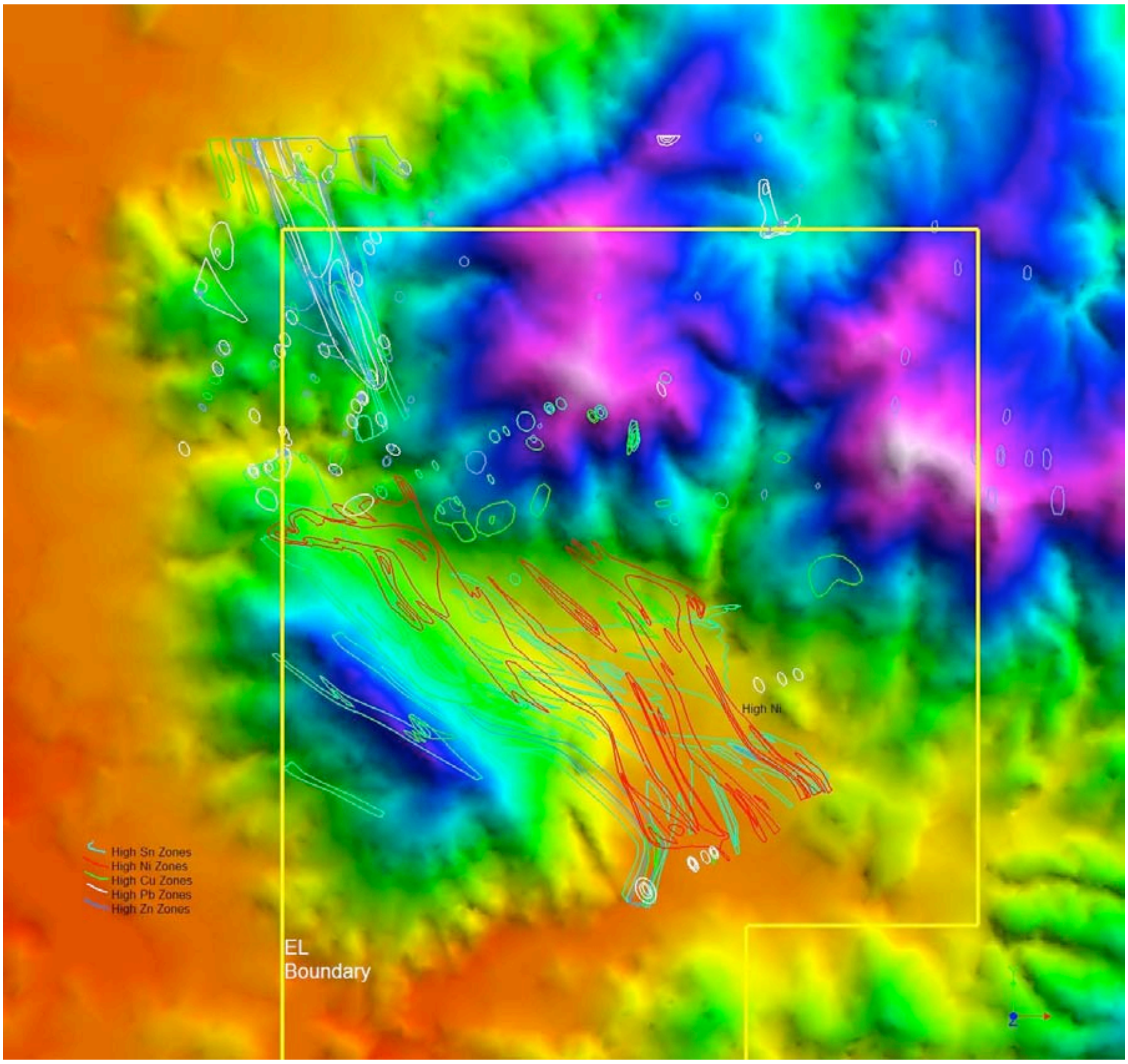

Figure 8: Gridded geochemical datasets projected on the topography. Birdseye view.

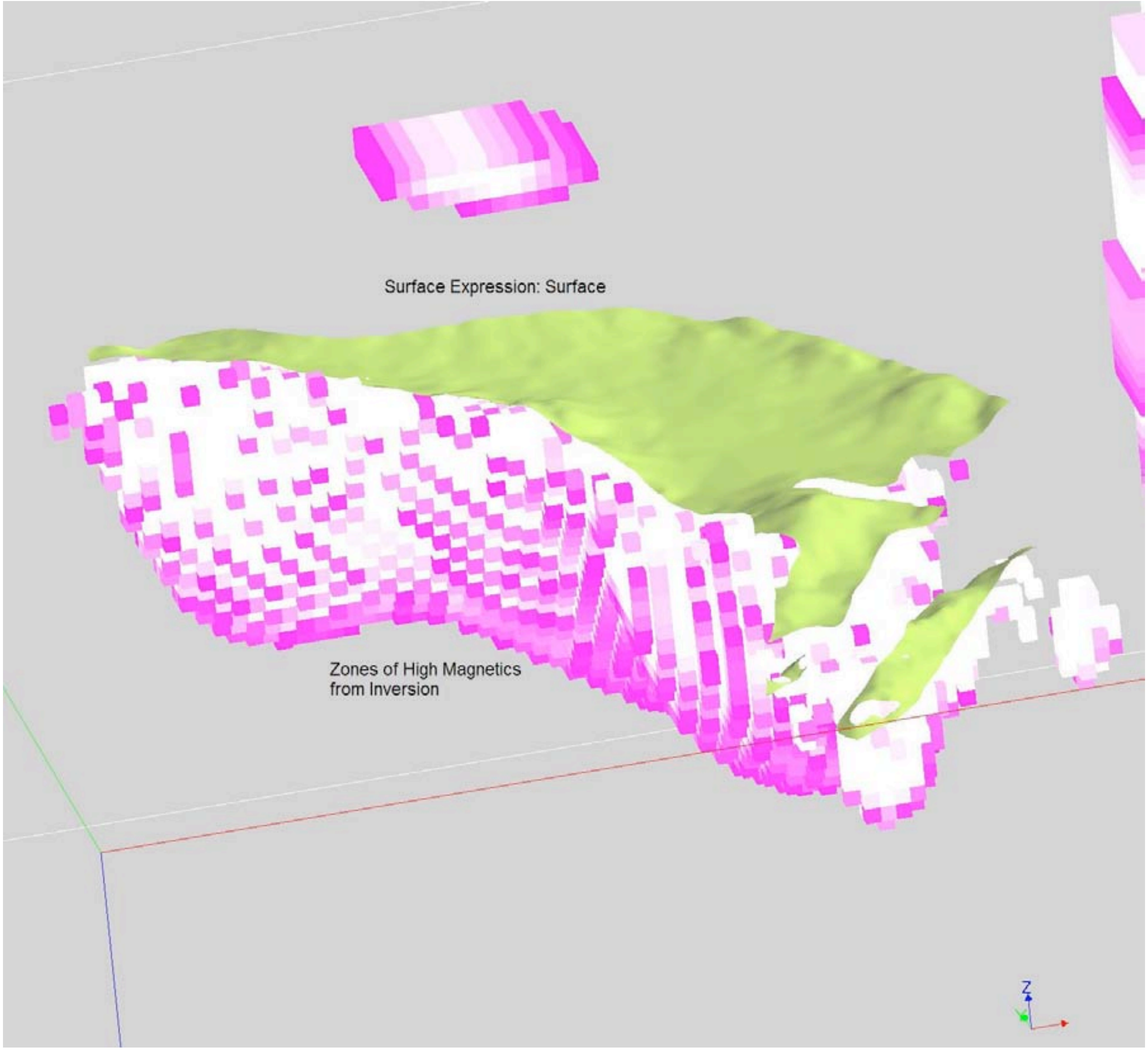

Figure 9: Magnetic inversion in the three dimensional model, with surface expression of the Serpentine located above. View looking northeast.

Model details:

Co-ordinate system: All data was entered in GDA-94 co-ordinate system

Producer: Nicholas Thorp, PGN geoscience.

Number of days worked: 33.5 days plus approximately 5 days assistants digitising etc.

STELLAR RESOURCES LTD

May 2009

EL 21/2004, Dundas – Report on 2009 program

Appendix 2. Survey and Logistics Report on Helicopter Borne Versatile Time Domain Electromagnetic (VTEM) Survey on Tasmanian Project, Australia for Stellar Resources Ltd. Geotech Airborne Ltd.

SURVEY AND LOGISTICS REPORT ON A HELICOPTER BORNE VERSATILE TIME DOMAIN ELECTROMAGNETIC (VTEM) SURVEY

on the

TASMANIA PROJECT

AUSTRALIA

for

STELLAR RESOURCES LTD

by

GEOTECH AIRBORNE LIMITED

Suite 7, Manor Lodge No. 3
Lodge Hill, St. Michael, Barbados
Tel: 1-246-421-8129
Fax: 1-246-417-2999
www.geotechairborne.com
e-mail: info@geotechairborne.com

Project 373
May, 2008

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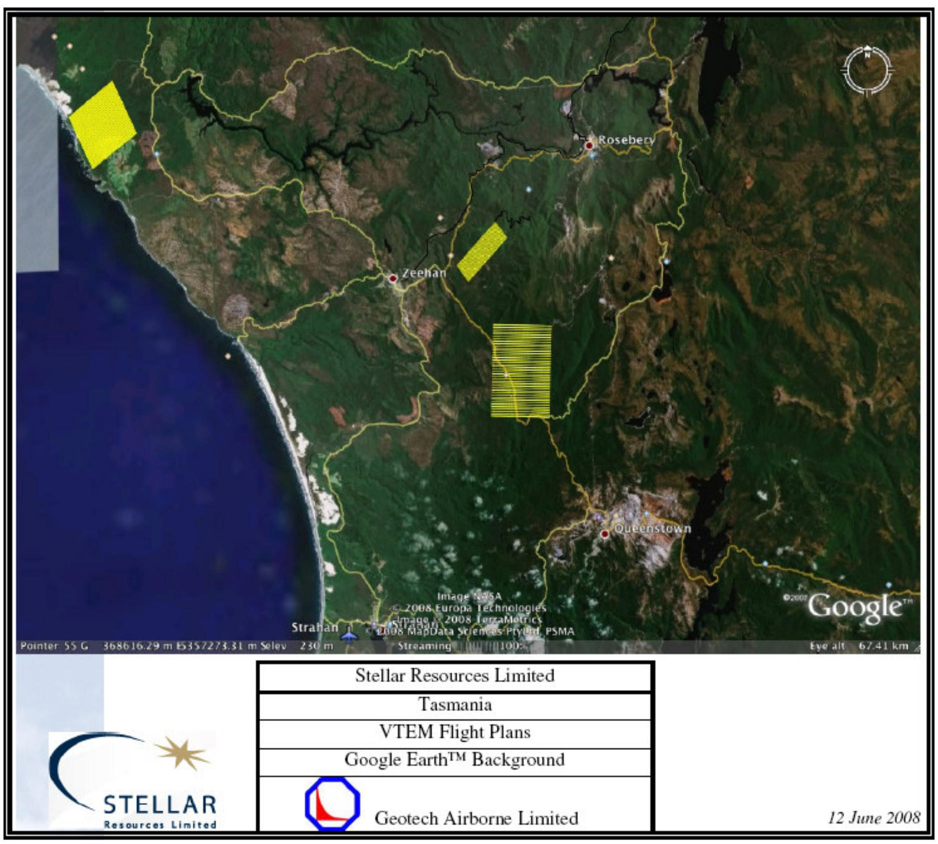
SURVEY AND LOGISTICS REPORT ON A HELICOPTER-BORNE VTEM SURVEY

1. SURVEY SPECIFICATIONS

1.1. General

Job Number	A373
Client	Stellar Resources Limited
Project Area	Tasmania
Location	Australia
Number of Blocks	3
Total line kilometres	648.7
Survey date	12 April to 19 April, 2008
Client Representative	Tom Whiting Tel: +61 8 9249 8814
Client address	Level 7 Exchange Tower 530 Little Collins Street Melbourne, VIC 3000, AUSTRALIA
Client Consultant (if applicable)	N.A.

1.2. VTEM flight plan on Google EARTH™ Background



1.3. Survey block coordinates.

Easting UTM Z 55S	Northing UTM Z 55S
EL46	
337440	5378370
339658	5373888
335800	5370740
333556	5375219
337440	5378370
Easting UTM Z 55S	Northing UTM Z 55S
EL50	
370612	5358184
375612	5358184
375612	5350184
370612	5350184
370612	5358184
Easting UTM Z 55S	Northing UTM Z 55S
EL21	
369692	5368148
372037	5365034
368786	5361184
368112	5361185
368111	5361314
368429	5361688
366497	5364355

1.4. Survey block specifications

Survey block	Line spacing (m)	Line-km (contractual)	Line-km (delivered)	Flight direction	Line number
EL46	100	243	249.1	154°- 334°	L10010 – L10490
	n/a				
EL50	100	200	204	90°- 270°	L20010 – L20400
	n/a				
EL21	100	192	195.6	41°- 221°	L30010 – L30170 L40010 – L40150 L50010 – L50060
	n/a				

1.5. Survey schedule

Date	Flight #	Block	Nominal Production Km flown	Comments
12-Apr-08				Mobilization, reconnaissance
13-Apr-08				Waiting for approval of navigation files
14-Apr-08				Weather day (low clouds)
15-Apr-08	F01, F02, F03, F04	EL46, EL21	305.5	
16-Apr-08	F05, F06	EL46, EL50	222,5	
17-Apr-08				Waiting for instructions for further flights

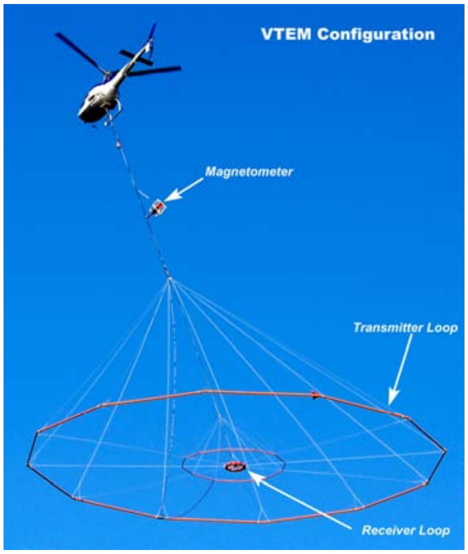
18-Apr-08	F07, F08	EL21	109	EL 21 N and S extensions
19-Apr-08				Demobilzation

2. SYSTEM SPECIFICATIONS

2.1. Instrumentation

Survey Helicopter	
Model	AS 350 B3
Registration	VH-IPW
Operating Company	Air Walser
Nominal survey speed	80 km/h
Nominal terrain clearance	100 m
VTEM Transmitter	
Coil diameter	26 m
Number of turns	4
Pulse repetition rate	25 Hz
Peak current	200 Amp
Duty cycle	36.8 %
Peak dipole moment	424,743 NIA
Pulse width	7.36 ms
Nominal terrain clearance	63 m
VTEM Receiver	
Coil diameter	1.2 metre
Number of turns	100
Effective area	113.1 m^2
Sampling interval	0.1 s
Nominal terrain clearance	63 m
Magnetometer	
Type	Geometrics
Model	Optically pumped cesium vapour
Sensitivity	0.02 nT
Sampling interval	0.1 s
Cable length	13 m
Nominal terrain clearance	88 m
Radar Altimeter	
Type	Terra TRA 3000/TRI 40
Position	Beneath cockpit
Sampling interval	0.2 s
GPS navigation system	
Type	NovAtel
Model	WAAS enabled OEM4-G2-3151W
Antenna position	Helicopter tail
Sampling interval	0.2 s
Base Station Magnetometer/GPS	
Type	Geometrics
Model	Cesium vapour
Sensitivity	0.001 nT
Sampling interval	1 s

2.2. VTEM Configuration

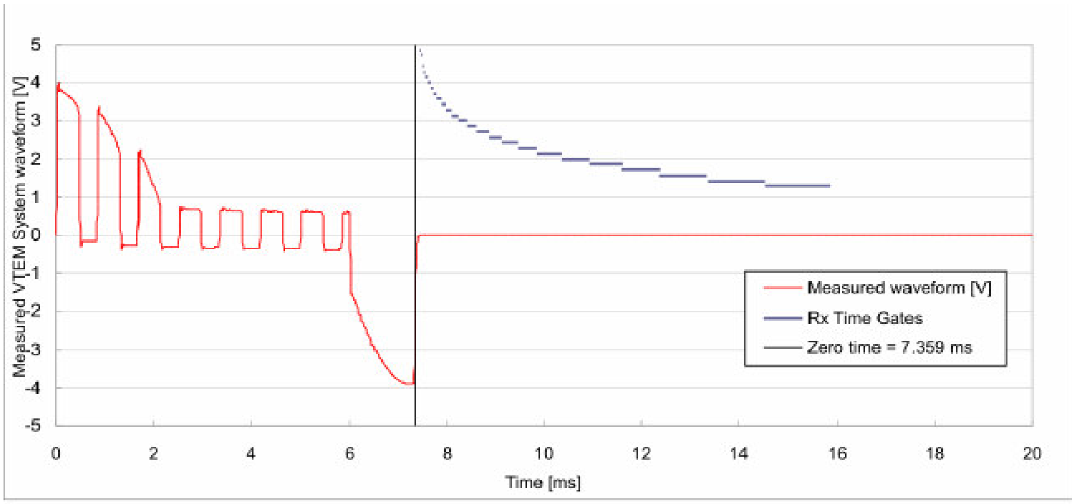


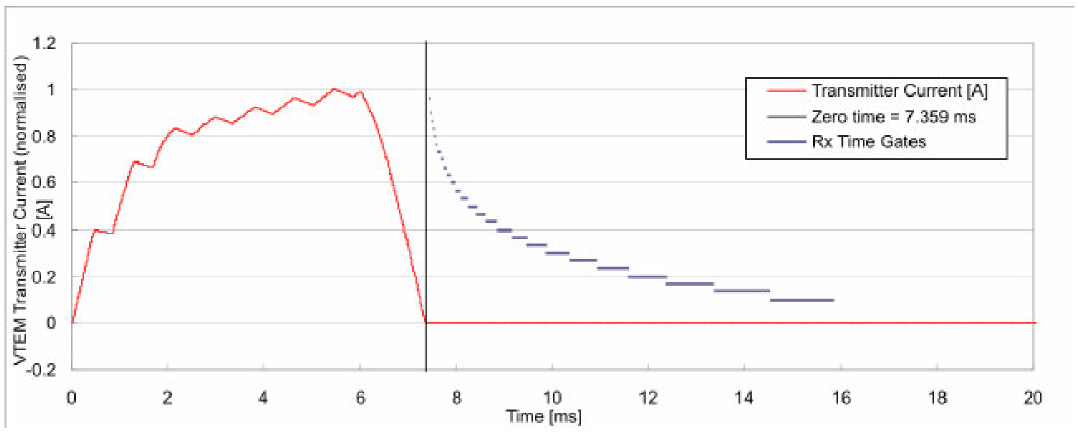
Configuration	
Cable angle with vertical	23 ˚
Cable length (EM receiver)	42 m
Cable length (Magnetometer)	12 m

2.3. VTEM decay sampling scheme

VTEM B-field System Decay Sampling scheme				
Array	Microseconds			
Index	Middle	Start	End	Width
8	83	78	91	13
9	99	91	110	19
10	120	110	131	21
11	141	131	154	24
12	167	154	183	29
13	198	183	216	34
14	234	216	258	42
15	281	258	310	53
16	339	310	373	63
17	406	373	445	73
18	484	445	529	84
19	573	529	628	99
20	682	628	750	123
21	818	750	896	146
22	974	896	1063	167
23	1151	1063	1261	198
24	1370	1261	1506	245
25	1641	1506	1797	292
26	1953	1797	2130	333
27	2307	2130	2526	396
28	2745	2526	3016	490
29	3286	3016	3599	583
30	3911	3599	4266	667
31	4620	4266	5058	792
32	5495	5058	6037	979
33	6578	6037	7203	1167
34	7828	7203	8537	1334

2.4. VTEM Transmitter Waveform over one half-period





3. PROCESSING

3.1. Processing parameters

Coordinates	
Projection	UTM Zone 30 N
Datum	WGS 84
Spheroid	WGS 84
Spherics rejection (EM and Magnetic data)	
Non-linear filter	5 point
Non-linear filter sensitivity	0.0001
Low-pass filter wavelength	25 m
Lag correction of other sensors to EM receiver position	
GPS	8 m
Radar	10 m
Magnetometer	3 m

3.2. Flight Path

The flight path, recorded by the acquisition program as WGS 84 latitude/longitude, was converted into the UTM coordinate system in Oasis Montaj. The flight path was drawn using linear interpolation between x,y positions from the navigation system. Positions are updated every second and expressed as UTM eastings (x) and UTM northings (y).

3.3. Electromagnetic Data

A three stage digital filtering process was used to reject major sferic events and to reduce system noise. Local sferic activity can produce sharp, large amplitude events that cannot be removed by conventional filtering procedures. Smoothing or stacking will reduce their amplitude but leave a broader residual response that can be confused with geological phenomena. To avoid this possibility, a computer algorithm searches out and rejects the major sferic events.

The signal to noise ratio was further improved by the application of a low pass linear digital filter. This filter has zero phase shift which prevents any lag or peak displacement from occurring, and it suppresses only variations with a wavelength less than the specified filter wavelength.

3.4. Magnetic Data

The processing of the magnetic data involved the correction for diurnal variations by using the digitally recorded ground base station magnetic values. The base station magnetometer data was edited and merged into the Geosoft GDB database on a daily basis. The aeromagnetic data was corrected for diurnal variations by subtracting the observed magnetic base station deviations.

A micro-levelling procedure was then applied. This technique is designed to remove persistent low-amplitude components of flight-line noise remaining after tie line levelling.

The corrected magnetic data was interpolated between survey lines using a random point gridding method to yield x-y grid values for a standard grid cell size of a quarter of the line spacing. The Minimum Curvature algorithm was used to interpolate values onto a rectangular regular spaced grid.

3.5. Digital Terrain Model

Subtracting the radar altimeter data from the GPS elevation data creates a digital elevation model. To correct for minor elevation differences that are evident in this data when gridded, Shuttle Radar Topography Mission (SRTM) data have been used.

4. DELIVERABLES

VTEM Survey and logistics report		
Format	PDF	
Copies	2 x Digital (DVD/CD) 2 x Hard copy	
Database		
Format	Digital Geosoft (.GDB)	
Channels	**Name**	**Description**
	x	X positional data
	y	Y positional data
	Lon	Longitude data
	Lat	Latitude data
	Z	GPS antenna elevation (metres above sea level)
	Radar	Helicopter terrain clearance from radar altimeter (metres above ground level)
	RxAlt	EM Receiver and Transmitter terrain clearance (metres above ground level)
	DTM	Digital terrain model (metres)
	Gtime1	UTC time (seconds of the day)
	Mag	Raw Total Magnetic field data (nT)
	MagBase	Magnetic diurnal variation data (nT)
	MagDiu	Total Magnetic field diurnal variation and lag corrected data (nT)
	MagTieL	Tie-line leveled Total Magnetic field data (nT)
	MagMicL	Microleveled Total Magnetic field data (nT) (if required)
	SF[8] to SF[34]	dB/dt, Time Gates 83 µs to 7828 µs (pV/A/m^4)
	PLM	Power line monitor
Grids		
Format	Digital Geosoft (.GRD and .GI)[1]	
Grids	**Name**	**Description**
	Mag_***blk***[2]	Total Magnetic field (nT)
Maps		
Format	Digital Geosoft (.MAP and .GM)[3]	
Scale	1:25 000	
Maps	**Name**	**Description**
	Mag_***blk***	Total Magnetic field colours
	dBdt_Prof_***blk***	VTEM dB/dt profiles, Time Gates 0.234 – 6.578 ms in linear - logarithmic scale

[1] A Geosoft .GRD file has a .GI metadata file associated with it, containing grid projection information.
[2] _***blk*** indicates the block name
[3] A Geosoft .MAP file has a .GM metadata file associated with it, containing projection information.

Waveform		
Format	Digital Excel Spreadsheet (VTEM_Waveform.xls)	
Columns	Name	Description
	Time	Sampling rate interval, 10.416 µs
	Volt	Output voltage of the receiver coil (volt)
	Current	Transmitter current (normalised to 1A peak)

Google Earth Flight Path file	
Format	Google Earth A222_FlightPath.kmz
	Free version of Google Earth software can be downloaded from, ***http://earth.google.com/download-earth.html***

5. PERSONNEL

Geotech Airborne Limited Personnel	
Operator / Crew chief	Paul Stevenson
Operator	Alex Castiglione
Technical Support	Barry McAuliffe
Data Processing (Preliminary)	Stephen Carter
Data Processing (Final) /Reporting	Richard Gürtler
Final data supervision	Malcolm Moreton Data Processing Manager (malcolm@geotechairborne.com)
Overall project management	Keith Fisk Managing Partner and Director (keith@geotechairborne.com)

APPENDIX A

GENERALIZED MODELING RESULTS OF THE VTEM SYSTEM (by Roger Barlow)

Introduction

The VTEM system is based on a concentric or central loop design, whereby, the receiver is positioned at the centre of a 26.1 metres diameter transmitter loop that produces a dipole moment up to 625,000 NIA at peak current. The wave form is a bi-polar, modified square wave with a turn-on and turn-off at each end. With a base frequency of 25 Hz, the duration of each pulse is approximately 7.5 milliseconds followed by an off time where no primary field is present.

During turn-on and turn-off, a time varying field is produced (dB/dt) and an electro-motive force (emf) is created as a finite impulse response. A current ring around the transmitter loop moves outward and downward as time progresses. When conductive rocks and mineralization are encountered, a secondary field is created by mutual induction and measured by the receiver at the centre of the transmitter loop.

Measurements are made during the off-time, when only the secondary field (representing the conductive targets encountered in the ground) is present.

Efficient modeling of the results can be carried out on regularly shaped geometries, thus yielding close approximations to the parameters of the measured targets. The following is a description of a series of common models made for the purpose of promoting a general understanding of the measured results.

Variation of Plate Depth

Geometries represented by plates of different strike length, depth extent, dip, plunge and depth below surface can be varied with characteristic parametres like conductance of the target, conductance of the host and conductivity/thickness and thickness of the overburden layer.

Diagrammatic models for a vertical plate are shown in figures A and G at two different depths, all other parametres remaining constant. With this transmitter-receiver geometry, the classic **M** shaped response is generated. Figure A shows a plate where the top is near surface. Here, amplitudes of the duel peaks are higher and symmetrical with the zero centre positioned directly above the plate. Most important is the separation distance of the peaks. This distance is small when the plate is near surface and widens with a linear relationship as the plate (depth to top) increases. Figure G shows a much deeper plate where the separation distance of the peaks is much wider and the amplitudes of the channels have decreased.

Variation of Plate Dip

As the plate dips and departs from the vertical position, the peaks become asymmetrical. Figure B shows a near surface plate dipping 80º. Note that the direction of dip is toward the high shoulder of the response and the top of the plate remains under the centre minimum.

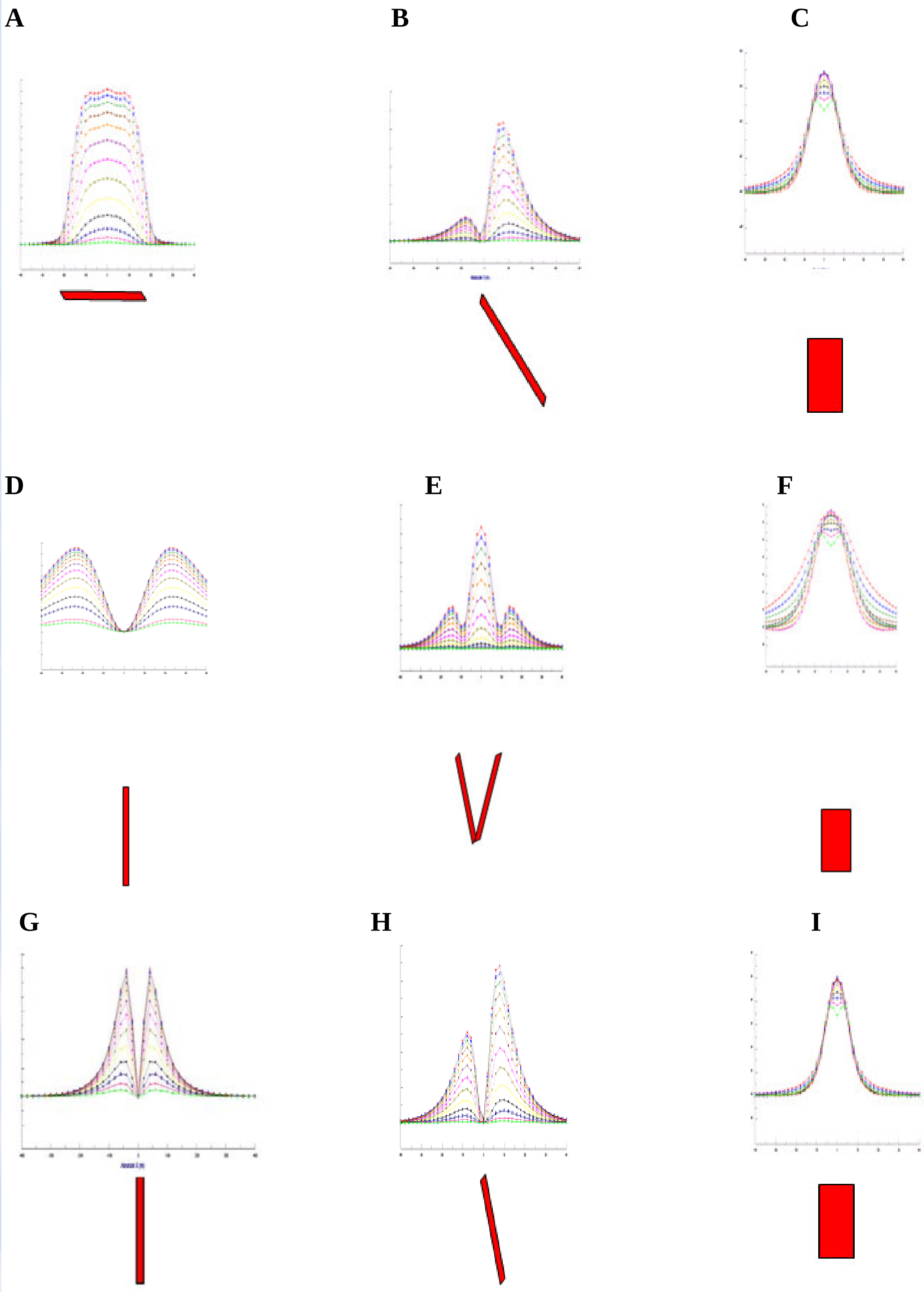
As the dip increases, the aspect ratio (Min/Max) decreases and this aspect ratio can be used as an empirical guide to dip angles from near 90º to about 30º. The method is not sensitive enough where dips are less than about 30º. Figure E shows a plate dipping 45º and, at this angle, the minimum shoulder starts to vanish. In Figure D, a flat lying plate is shown, relatively near surface. Note that the twin peak anomaly has been replaced by a symmetrical shape with large, bell shaped, channel amplitudes which decay relative to the conductance of the plate.

Figure H shows a special case where two plates are positioned to represent a synclinal structure. Note that the main characteristic to remember is the centre amplitudes are higher (approximately double) compared to the high shoulder of a single plate. This model is very representative of tightly folded formations where the conductors where once flat lying.

Variation of Prism Depth

Finally, with prism models, another algorithm is required to represent current on the plate. A plate model is considered to be infinitely thin with respect to thickness and incapable of representing the current in the thickness dimension. A prism model is constructed to deal with this problem, thereby, representing the thickness of the body more accurately.

Figures C, F and I show the same prism at increasing depths. Aside from an expected decrease in amplitude, the side lobes of the anomaly show a widening with deeper prism depths of the bell shaped early time channels.


A
B
C
D
E
F
G
H
I

General Modeling Concepts

A set of models has been produced for the Geotech VTEM® system with explanation notes (see models A to I above). The reader is encouraged to review these models, so as to get a general understanding of the responses as they apply to survey results. While these models do not begin to cover all possibilities, they give a general perspective on the simple and most commonly encountered anomalies.

When producing these models, a few key points were observed and are worth noting as follows:

- For near vertical and vertical plate models, the top of the conductor is always located directly under the centre low point between the two shoulders in the classic **M** shaped response.

- As the plate is positioned at an increasing depth to the top, the shoulders of the **M** shaped response, have a greater separation distance.

- When faced with choosing between a flat lying plate and a prism model to represent the target (broad response) some ambiguity is present and caution should be exercised.

- With the concentric loop system and Z-component receiver coil, virtually all types of conductors and most geometries are most always well coupled and a response is generated (see model H). Only concentric loop systems can map this type of target.

The modelling program used to generate the responses was prepared by PetRos Eikon Inc. and is one of a very few that can model a wide range of targets in a conductive half space.

General Interpretation Principals

Magnetics

The total magnetic intensity responses reflect major changes in the magnetite and/or other magnetic minerals content in the underlying rocks and unconsolidated overburden. Precambrian rocks have often been subjected to intense heat and pressure during structural and metamorphic events in their history. Original signatures imprinted on these rocks at the time of formation have, it most cases, been modified, resulting in low magnetic susceptibility values.

The amplitude of magnetic anomalies, relative to the regional background, helps to assist in identifying specific magnetic and non-magnetic rock units (and conductors) related to, for example, mafic flows, mafic to ultramafic intrusives, felsic intrusives, felsic volcanics and/or sediments etc. Obviously, several geological sources can produce the same magnetic response. These ambiguities can be reduced considerably if basic geological information on the area is available to the geophysical interpreter.

In addition to simple amplitude variations, the shape of the response expressed in the wave length and the symmetry or asymmetry, is used to estimate the depth, geometric parameters and magnetization of the anomaly. For example, long narrow magnetic linears usually reflect mafic flows or intrusive dyke features. Large areas with complex magnetic patterns may be produced by intrusive bodies with significant magnetization, flat lying magnetic sills or sedimentary iron formation. Local isolated circular magnetic patterns often represent plug-like igneous intrusives such as kimberlites, pegmatites or volcanic vent areas.

Because the total magnetic intensity (TMI) responses may represent two or more closely spaced bodies within a response, the second derivative of the TMI response may be helpful for distinguishing these complexities. The second derivative is most useful in mapping near surface linears and other subtle magnetic structures that are partially masked by nearby higher amplitude magnetic features. The broad zones of higher magnetic amplitude, however, are severely attenuated in the vertical derivative results. These higher amplitude zones reflect rock units having strong magnetic susceptibility signatures. For this reason, both the TMI and the second derivative maps should be evaluated together.

Theoretically, the second derivative, zero contour or colour delineates the contacts or limits of large sources with near vertical dip and shallow depth to the top. The vertical gradient map also aids in determining contact zones between rocks with a susceptibility contrast, however, different, more complicated rules of thumb apply.

Concentric Loop EM Systems

Concentric systems with horizontal transmitter and receiver antennae produce much larger responses for flat lying conductors as contrasted with vertical plate-like conductors. The amount of current developing on the flat upper surface of targets having a substantial area in this dimension, are the direct result of the effective coupling angle, between the primary magnetic field and the flat surface area. One therefore, must not compare the amplitude/conductance of responses generated from flat lying bodies with those derived from near vertical plates; their ratios will be quite different for similar conductances.

Determining dip angle is very accurate for plates with dip angles greater than 30º. For angles less than 30º to 0º, the sensitivity is low and dips can not be distinguished accurately in the presence of normal survey noise levels.

A plate like body that has near vertical position will display a two shoulder, classic **M** shaped response with a distinctive separation distance between peaks for a given depth to top.

It is sometimes difficult to distinguish between responses associated with the edge effects of flat lying conductors and poorly conductive bedrock conductors. Poorly conductive bedrock conductors having low dip angles will also exhibit responses that may be interpreted as surfacial overburden conductors. In some situations, the conductive response has line to line continuity and some magnetic correlation providing possible evidence that the response is related to an actual bedrock source.

The EM interpretation process used, places considerable emphasis on determining an understanding of the general conductive patterns in the area of interest. Each area has different characteristics and these can effectively guide the detailed process used.

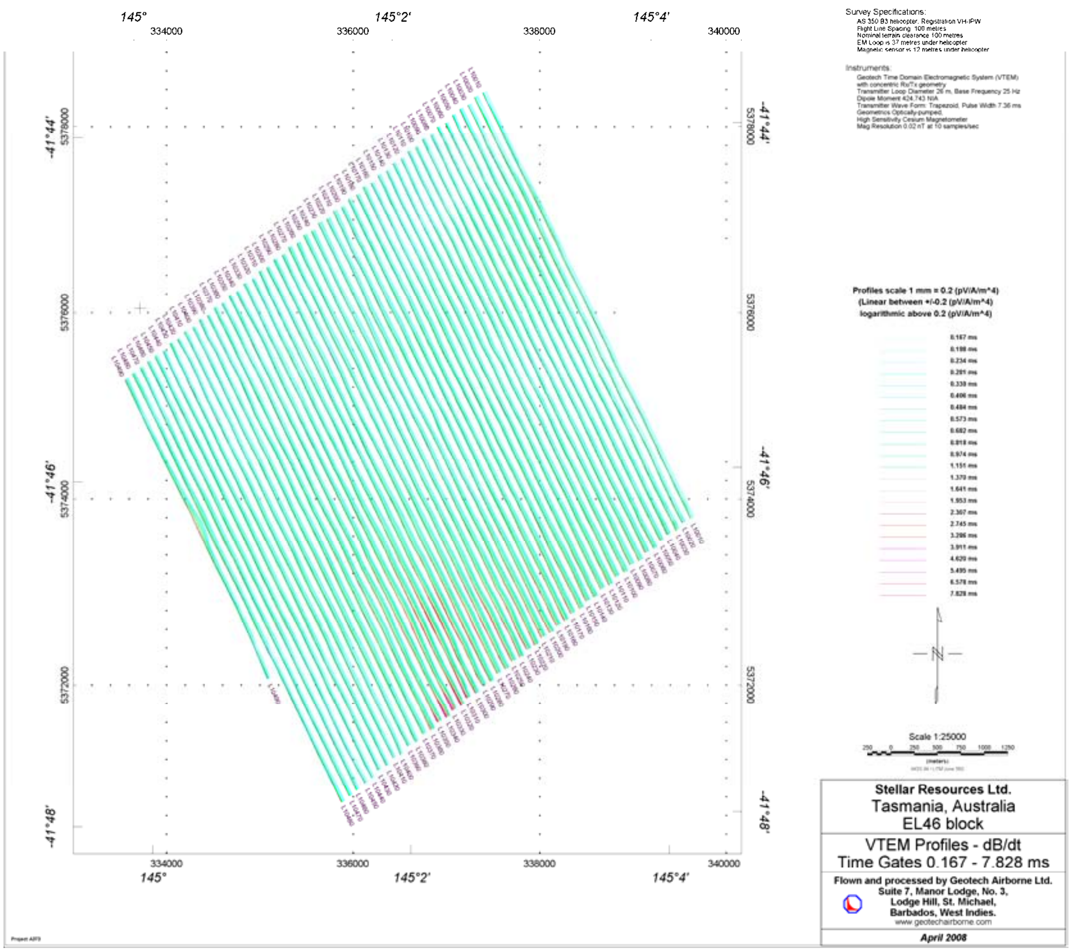
The first stage is to determine which time gates are most descriptive of the overall conductance patterns. Maps of the time gates that represent the range of responses can be very informative.

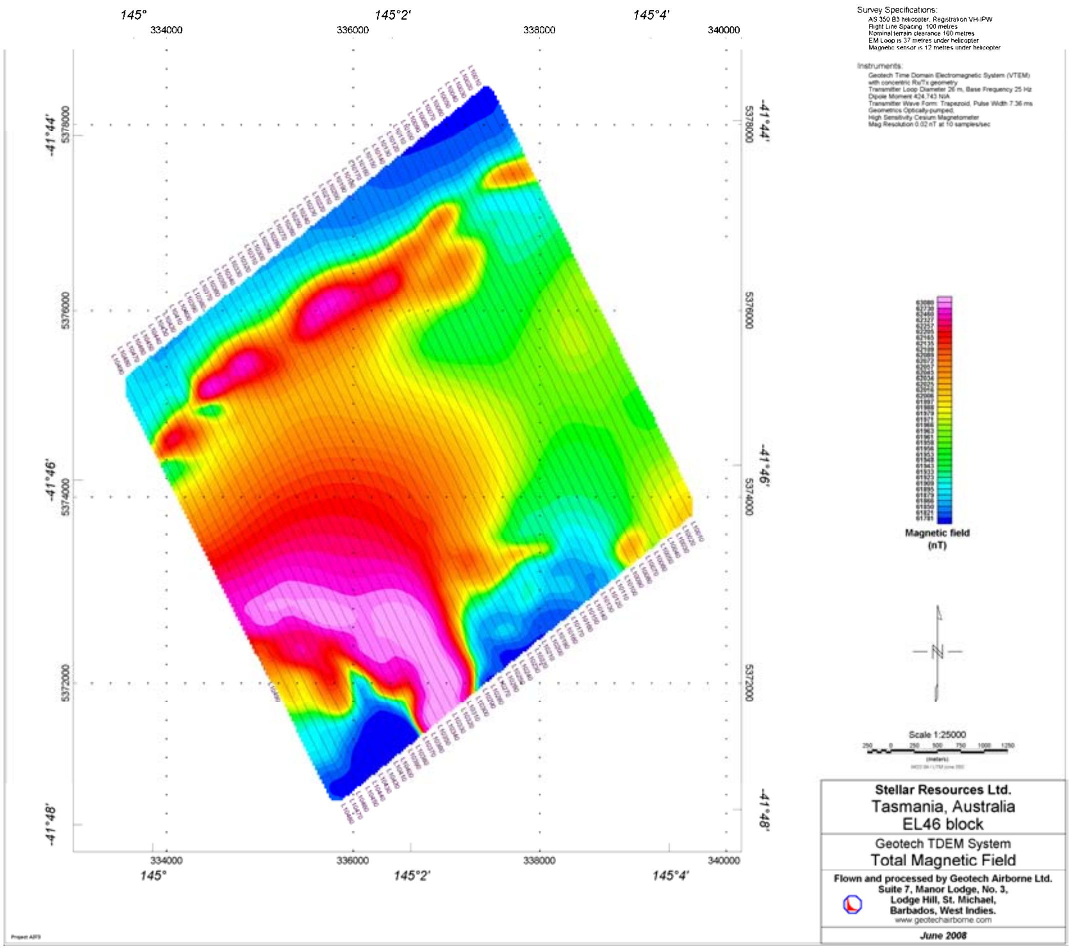
Next, stacking the relevant channels as profiles on the flight path together with the second vertical derivative of the TMI is very helpful in revealing correlations between the EM and Magnetics.

Next, key lines can be profiled as single lines to emphasize specific characteristics of a conductor or the relationship of one conductor to another on the same line. Resistivity Depth sections can be constructed to show the relationship of conductive overburden or conductive bedrock with the conductive anomaly.

APPENDIX B

GEOPHYSICAL MAP IMAGES
(not to scale)


Survey Specifications:
AS 350 B3 helicopter. Registration VH-IPW
Flight Line Spacing 100 metres
Nominal terrain clearance 100 metres
EM Loop is 37 metres under helicopter
Magnetic sensor is 12 metres under helicopter
Instruments:
Geotech Time Domain Electromagnetic System (VTEM)
with concentric Rx/Tx geometry
Transmitter Loop Diameter 26 m, Base Frequency 25 Hz
Dipole Moment 424,743 NIA
Transmitter Wave Form: Trapezoid, Pulse Width 7.36 ms
Geometrics Optically-pumped,
High Sensitivity Cesium Magnetometer
Mag Resolution 0.02 nT at 10 samples/sec
Profiles scale 1 mm = 0.2 (pV/A/m^4)
(Linear between +/-0.2 (pV/A/m^4)
logarithmic above 0.2 (pV/A/m^4)
Scale 1:25000
Stellar Resources Ltd.
Tasmania, Australia
EL46 block
VTEM Profiles - dB/dt
Time Gates 0.167 - 7.828 ms
Flown and processed by Geotech Airborne Ltd.
Suite 7, Manor Lodge, No. 3,
Lodge Hill, St. Michael,
Barbados, West Indies.
www.geotechairborne.com
April 2008



145°
145°2'
145°4'
334000
336000
338000
340000
-41°44'
-41°46'
-41°48'
5378000
5376000
5374000
5372000
Survey Specifications:
AS 350 B3 helicopter. Registration VH-IPW
Flight Line Spacing 100 metres
Nominal terrain clearance 100 metres
EM Loop is 37 metres under helicopter
Magnetic sensor is 12 metres under helicopter
Instruments:
Geotech Time Domain Electromagnetic System (VTEM)
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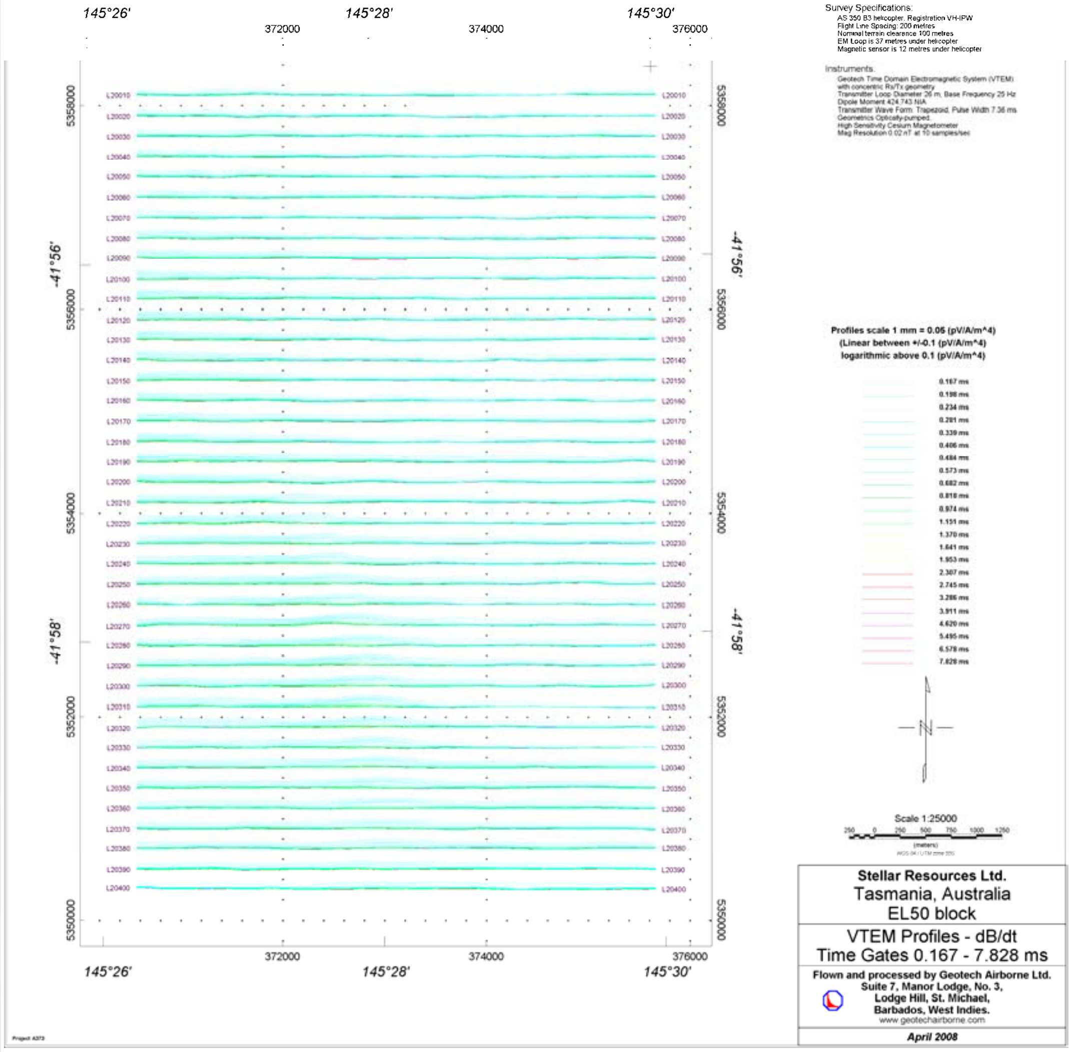
Transmitter Loop Diameter 26 m, Base Frequency 25 Hz
Dipole Moment 424,743 NIA
Transmitter Wave Form: Trapezoid, Pulse Width 7.36 ms
Geometrics Optically-pumped,
High Sensitivity Cesium Magnetometer
Mag Resolution 0.02 nT at 10 samples/sec
Magnetic field
(nT)
Scale 1:25000
250 0 250 500 750 1000 1250
Stellar Resources Ltd.
Tasmania, Australia
EL46 block
Geotech TDEM System
Total Magnetic Field
Flown and processed by Geotech Airborne Ltd.
Suite 7, Manor Lodge, No. 3,
Lodge Hill, St. Michael,
Barbados, West Indies.
www.geotechairborne.com
June 2008



145°26'
145°28'
145°30'
372000
374000
376000
5358000
5356000
5354000
5352000
5350000
-41°56'
-41°58'
Survey Specifications:
AS 350 B3 helicopter. Registration VH-IPW
Flight Line Spacing: 200 metres
Nominal terrain clearance 100 metres
EM Loop is 37 metres under helicopter
Magnetic sensor is 12 metres under helicopter
Instruments:
Geotech Time Domain Electromagnetic System (VTEM)
with concentric Rx/Tx geometry
Transmitter Loop Diameter 26 m, Base Frequency 25 Hz
Dipole Moment 424,743 NIA
Transmitter Wave Form: Trapezoid, Pulse Width 7.36 ms
Geometrics Optically-pumped,
High Sensitivity Cesium Magnetometer
Mag Resolution 0.02 nT at 10 samples/sec
Profiles scale 1 mm = 0.05 (pV/A/m^4)
(Linear between +/-0.1 (pV/A/m^4)
logarithmic above 0.1 (pV/A/m^4)
0.167 ms
0.198 ms
0.234 ms
0.281 ms
0.339 ms
0.406 ms
0.484 ms
0.573 ms
0.682 ms
0.818 ms
0.974 ms
1.151 ms
1.370 ms
1.641 ms
1.953 ms
2.307 ms
2.745 ms
3.286 ms
3.911 ms
4.620 ms
5.495 ms
6.578 ms
7.828 ms
Scale 1:25000
(meters)
Stellar Resources Ltd.
Tasmania, Australia
EL50 block
VTEM Profiles - dB/dt
Time Gates 0.167 - 7.828 ms
Flown and processed by Geotech Airborne Ltd.
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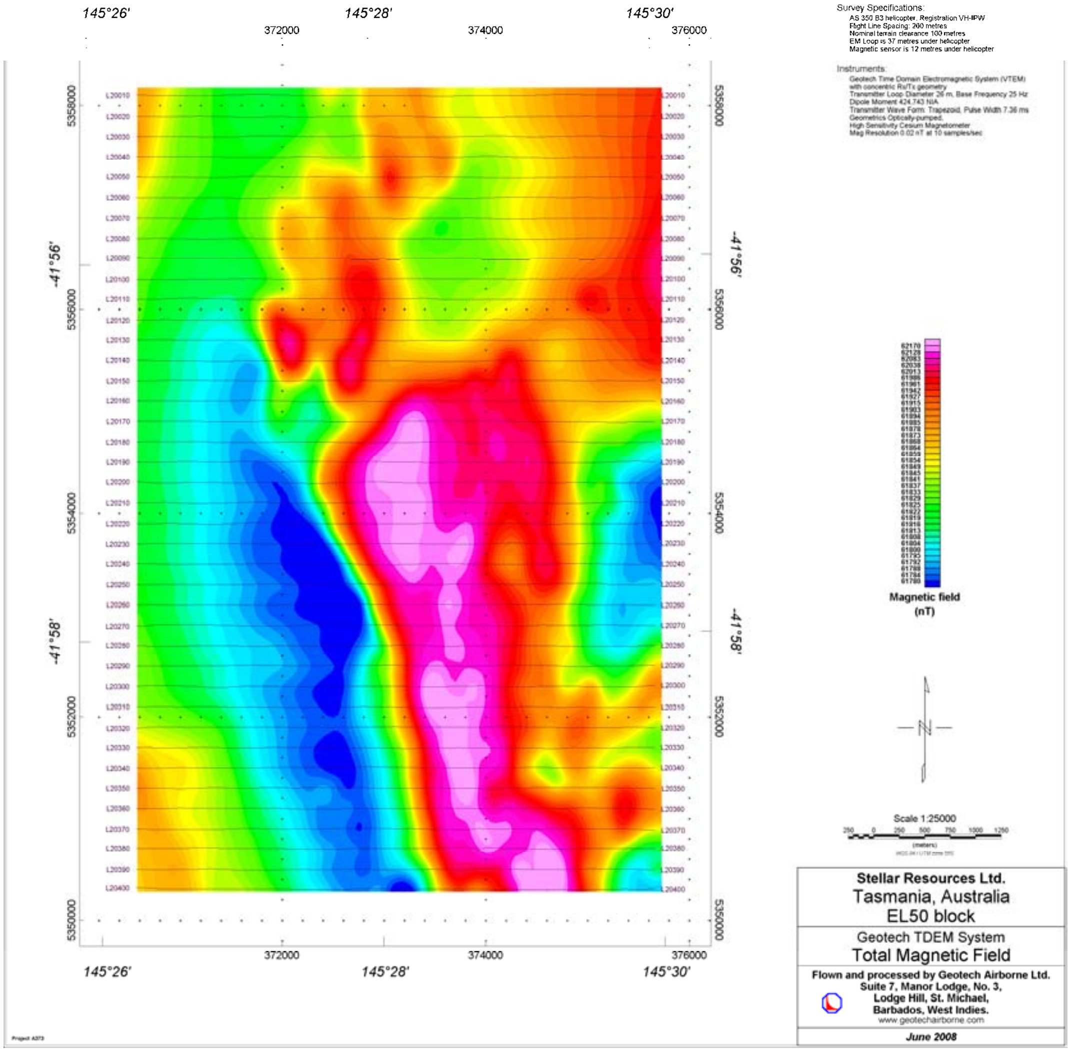
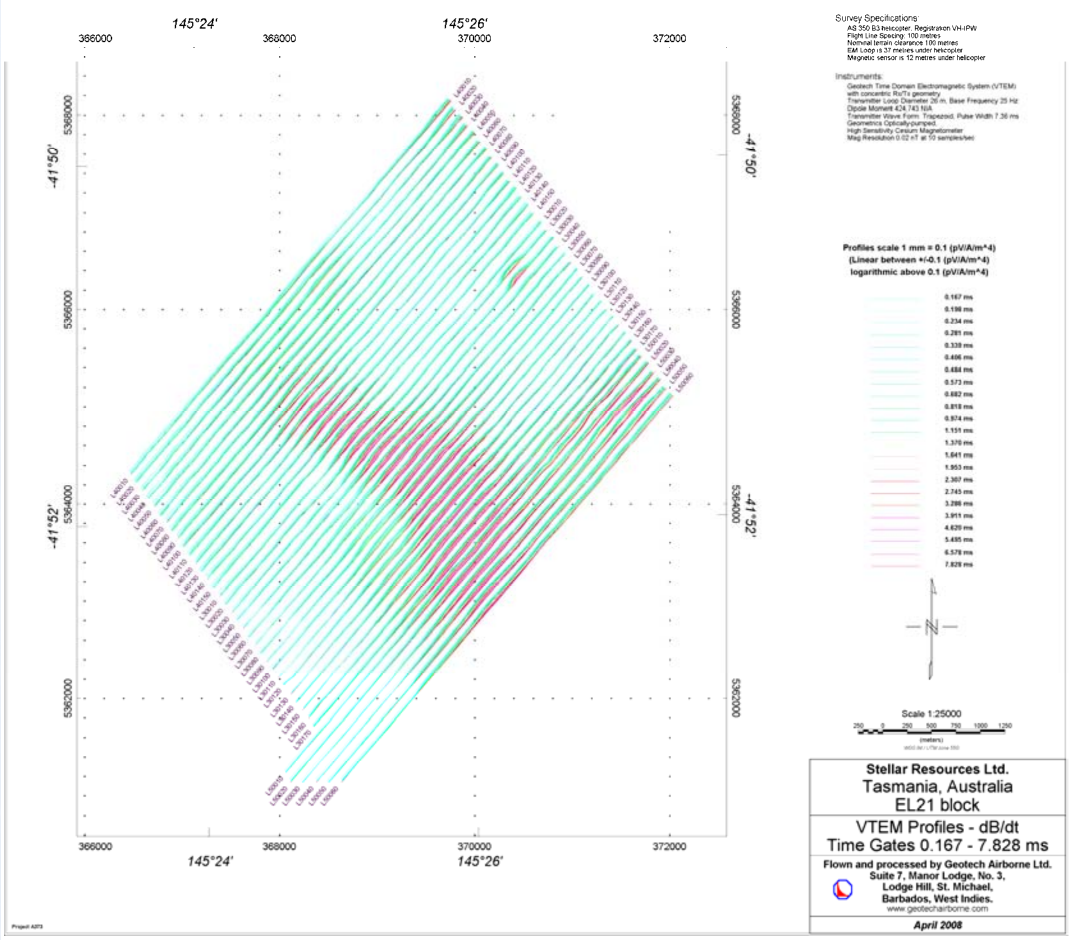
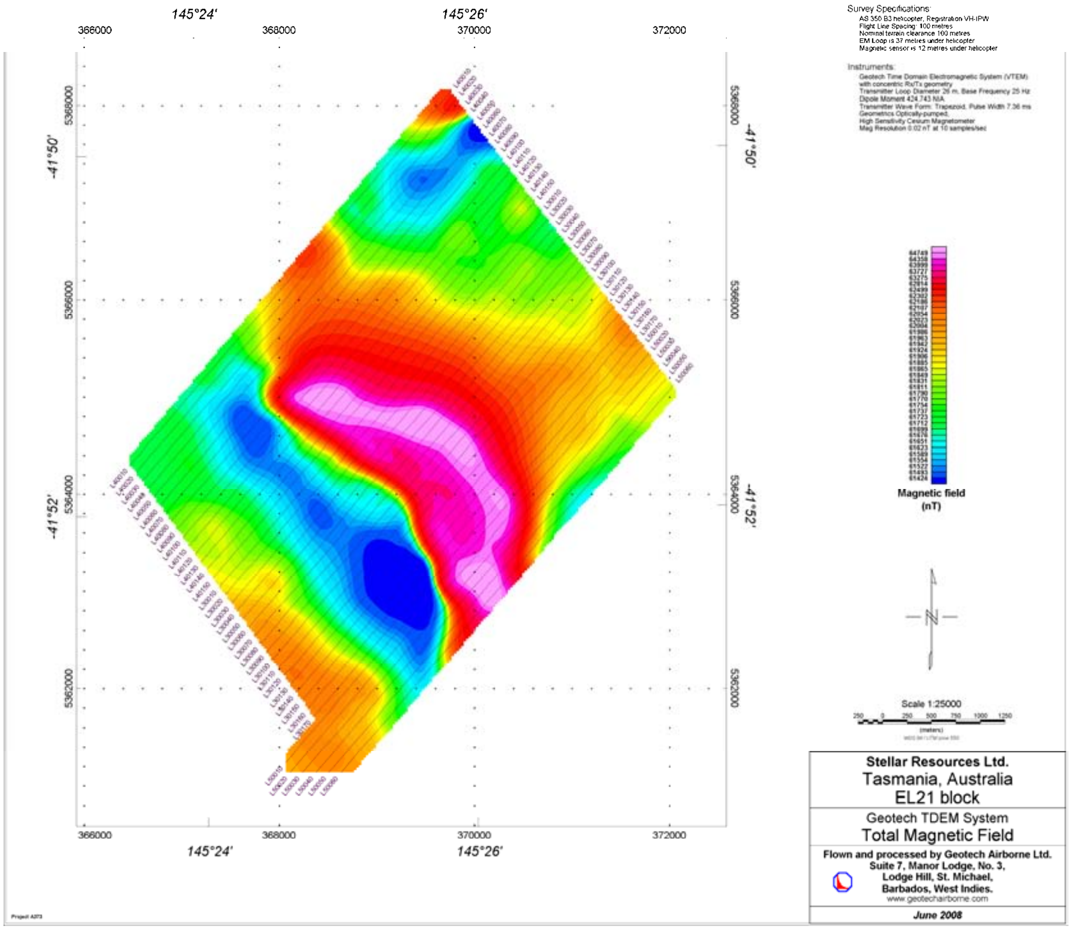

145°26'
145°28'
145°30'
372000
374000
376000
5358000
5356000
5354000
5352000
5350000
-41°56'
-41°58'
Survey Specifications:
AS 350 B3 helicopter. Registration VH-IPW
Flight Line Spacing: 200 metres
Nominal terrain clearance 100 metres
EM Loop is 37 metres under helicopter
Magnetic sensor is 12 metres under helicopter
Instruments:
Geotech Time Domain Electromagnetic System (VTEM)
with concentric Rx/Tx geometry
Transmitter Loop Diameter 26 m, Base Frequency 25 Hz
Dipole Moment 424,743 NIA
Transmitter Wave Form: Trapezoid, Pulse Width 7.36 ms
Geometrics Optically-pumped,
High Sensitivity Cesium Magnetometer
Mag Resolution 0.02 nT at 10 samples/sec
Magnetic field
(nT)
Scale 1:25000
(meters)
Stellar Resources Ltd.
Tasmania, Australia
EL50 block
Geotech TDEM System
Total Magnetic Field
Flown and processed by Geotech Airborne Ltd.
Suite 7, Manor Lodge, No. 3,
Lodge Hill, St. Michael,
Barbados, West Indies.
www.geotechairborne.com
June 2008


145°24'
145°26'
366000
368000
370000
372000
Survey Specifications:
AS 350 B3 helicopter. Registration VH-IPW
Flight Line Spacing: 100 metres
Nominal terrain clearance 100 metres
EM Loop is 37 metres under helicopter
Magnetic sensor is 12 metres under helicopter
Instruments:
Profiles scale 1 mm = 0.1 (pV/A/m^4)
(Linear between +/-0.1 (pV/A/m^4)
logarithmic above 0.1 (pV/A/m^4)
-41°50'
-41°52'
5368000
5366000
5364000
5362000
Scale 1:25000
Stellar Resources Ltd.
Tasmania, Australia
EL21 block
VTEM Profiles - dB/dt
Time Gates 0.167 - 7.828 ms
Flown and processed by Geotech Airborne Ltd.
Suite 7, Manor Lodge, No. 3,
Lodge Hill, St. Michael,
Barbados, West Indies.
www.geotechairborne.com
April 2008


145°24'
145°26'
366000
368000
370000
372000
5368000
5366000
5364000
5362000
-41°50'
-41°52'
Survey Specifications:
AS 350 B3 helicopter, Registration VH-IPW
Flight Line Spacing: 100 metres
Nominal terrain clearance 100 metres
EM Loop is 37 metres under helicopter
Magnetic sensor is 12 metres under helicopter
Instruments:
Geotech Time Domain Electromagnetic System (VTEM)
with concentric Rx/Tx geometry
Transmitter Loop Diameter 26 m, Base Frequency 25 Hz
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High Sensitivity Cesium Magnetometer
Mag Resolution 0.02 nT at 10 samples/sec
Magnetic field
(nT)
Scale 1:25000
(meters)
Stellar Resources Ltd.
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