

---

# TECK AUSTRALIA PTY LTD

ABN 35 091 271 911

## Reward Project

BRIDGING REPORT FOR THE PERIOD 2<sup>nd</sup> JULY 2011 TO 23<sup>rd</sup> MARCH 2012

### EL10316

Operator: Teck Australia Pty Ltd, Level 2/35 Ventnor Avenue, West Perth WA 6005, Australia

Tenure holder: Rox Resources, Level 1, 30 Richardson Street, West Perth, WA, 6005

([admin@roxresources.com.au](mailto:admin@roxresources.com.au))

Compiled by: G. Amalric, I. Dalrymple - Teck Australia Pty Ltd

Date: 23<sup>rd</sup> March 2012

Target Commodities: Zn, Pb, Ag

Bauhinia Downs 250K Mapsheet  
Glyde, Borroloola, Batten and Mallapunyah 100K Mapsheets.  
GDA 1994 Zone 53

Distribution: Department of Resources- Minerals and Energy (Northern Territory)  
Rox Resources  
Teck Australia

---

### **Acknowledgement and Warranty**

1. Subject to 2, the tenure holder acknowledges that this Report, including the material, information and data incorporated in it, has been made under the direction or control of the Northern Territory (the State) within the meaning of section 176 of the Copyright Act 1968 (Cwth).
2. To the extent that copyright in any material included in this Report is not owned by the State, the tenure holder warrants that it has the full legal right and authority to grant, and does hereby grant, to the Territory, subject to any confidentiality obligation undertaken by the Territory, the right to do (including to authorise any other person to do) any act in the copyright, including to:
  - use;
  - reproduce;
  - publish; and
  - communicate in electronic form to the public, such material, including any data and information included in the material.
3. Without limiting the scope of 1 and 2 above, the tenure holder warrants that all relevant authorisations and consents have been obtained for all acts referred to in 1 and 2 above, to ensure that the doing of any of the acts is not unauthorised within the meaning of section 29(6) of the Copyright Act (Cwth).

### **Declaration**

To the best of our knowledge, this document conforms to the format outline for an annual report, as shown by the Northern Territory Geological Survey- Minerals and Energy Division website.

---

## Contents

ABSTRACT.....	3
INTRODUCTION.....	4
LOCATION AND ACCESS .....	4
TENURE INFORMATION .....	5
EXPLORATION RATIONALE .....	6
GEOLOGY.....	6
WORK COMPLETED.....	9
1. Historical Data Review .....	9
2. Geophysical Activities – IP .....	10
3. Geophysical Activities – EM .....	12
4. Geophysical Activities – Ground Gravity.....	16
5. Geophysical Activities – Falcon .....	21
6. Geophysical Activities – Ground Magneitc Survey .....	26
7. Surface Geochemistry .....	29
DRILLING .....	32
HERITAGE & COMMUNITY .....	33
PROPOSED WORK .....	34
CONCLUSIONS & RECOMMENDATIONS .....	34
Appendix 1 – Results for the Myrtle IP survey.....	35

---

## **ABSTRACT**

This document is submitted as a bridging report for EL10316, a part of the Reward Project. Exploration activities for this license year were impacted by a number of factors, including: wet season and issues with finding contractors and suppliers.

EL10316 forms part of the greater Reward project area owned by Rox Resources. Teck Australia Pty Ltd has signed an agreement that gives the option to earn 70% through exploration expenditure with an option to form a JV. Teck commenced research work on the area in 2011. EL10316 is prospective for SEDEX (sediment-hosted) style zinc-lead mineralisation. Included within the tenement is the Myrtle deposit, a significant SEDEX style zinc-lead deposit with a resource of 43.6 million tonnes grading 4.09% Zn and 0.95% Pb. Also within the tenement are the Berjaya, Boko, Reward and Buffalo Lagoon prospects.

Work undertaken includes commencement of one diamond hole, surficial geochemistry, ground IP, ground EM, ground gravity and a heritage clearance survey at the Myrtle Prospect, and a Falcon airborne gravity survey over the tenement. Additional office based work included literature searches, database compilation, historical data research.

---

## INTRODUCTION

This report summarises the exploration activities conducted on E10316 during the reporting period July 22<sup>nd</sup> 2011 to March 23<sup>rd</sup> 2012. EL23515 is part of an integrated exploration project titled the 'Reward Project' (also referred to as the Myrtle-Reward Project).

Exploration License EL10316 is centered approximately 700 kilometers southeast of Darwin, and some 15km south of the McArthur River zinc-lead mine (Figure 1). During 2008/2009 Rox Resources demonstrated the economic potential of the Myrtle zinc-lead deposit and signed an agreement with the Australian subsidiary of Canadian-based Teck Resources, Teck Australia Pty Ltd to explore the Reward Project. EL10316 is part of the tenement package included in that agreement.

During the reporting period, field activities included to a heritage survey, an airborne Falcon survey, ground gravity, ground MLEM, ground IP, surface geochemistry and diamond drilling.

## LOCATION AND ACCESS

Access to the tenement from Darwin is via the Stuart Highway south to Daly Waters (approximately 550km), thence eastward via the Carpentaria Highway to the McArthur River mine (approximately 400km). Alternatively, access from Mount Isa is via the Barkly Highway and then either the Ranken Road or Tablelands Highway to Cape Crawford. Driving time from Mount Isa is typically 8 to 10 hours.

Vehicle access within the tenement is by way of graded station tracks and fence lines. Track condition is variable depending upon the season; many areas become waterlogged and boggy during the wet season and bull dust rapidly forms in the pale clayey soils during the dry season.

The nearest township is Borroloola, located approximately 110km to the north-northeast by road. Borroloola has a permanent population of about 700 people, the majority of whom are indigenous residents.

The McArthur River is the major drainage system in the area (figure 2), passing through the tenement and all other watercourses within the tenement drain into the river either directly or via major tributaries.

Land use in the local region is predominantly cattle grazing on large pastoral holdings. Mining, fishing and tourism are also active within the region. EL23515 is located entirely within the boundary of the McArthur River Station. The pastoral lease is owned by Mount Isa Mines Pty Ltd, a wholly owned subsidiary of Xstrata PLC and the operator of the McArthur River mine. McArthur River Station is over 8,000km<sup>2</sup> in area and stocks approximately 10,000 head of beef cattle.



Figure 1 Location of the Reward Project.

### TENURE INFORMATION

EL10316 was granted on 22<sup>nd</sup> July 2002 and currently consists of 115 sub blocks, covering an area of 377 km<sup>2</sup>. The co-ordinates of the tenement are as follows:

Commencing at a point being the intersection of latitude 16°25'S longitude 135°54'E, thence east to longitude 135°59'E, south to latitude 16°27'S, east to longitude 136°00'E, south to latitude 16°34'S, east to longitude 136°05'E, south to latitude 16°35'S, east to longitude 136°09'E, south to latitude 16°40'S, west to longitude 135°59'E, north to latitude 16°35'S, west to longitude 135°54'E, north to latitude 16°33'S, west to longitude 135°53'E, north to latitude 16°31'S, east to longitude 135°54'E, and north to the point of commencement, all within the latitudes and longitudes being geodetic and express in terms of the Australian Geodetic Datum as defined on p.4984 of Commonwealth Gazette, No 84, 6th October 1966.

Sub-blocks comprising the tenement are as follows:

- SE53 Block 407 e, k, p, u, z
  - 408 a, b, c, d, f, g, h, j, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z
  - 479 e, j, k, o, p, u, z
  - 480 a, b, c, d, e, f, g, h, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z
  - 481 v, w, x, y, z
  - 552 e, k, p, u, z
  - 553 a, b, c, d, e, f, g, h, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z
  - 554 a, b, c, d, f, g, h, j, l, m, n, o, q, r, s, t, v, w, x, y
- Area = 115 sub-blocks.



Figure 2 Tenement location map.

## EXPLORATION RATIONALE

The Reward Project area is prospective for Proterozoic stratabound Zn-Pb-Ag deposits, similar to the HYC deposit known as McArthur River Mine. Parts of the area are underlain by the Barney Creek Formation which hosts the McArthur River deposit. Several major, basin-controlling faults traverse the area and the relationships of these faults with the sedimentary sequences for an integral part of the exploration strategy. EL10316 also contains several other Zn-Pb prospects including Berjaya, Barney Creek, Reward, and Buffalo Lagoon which attest to the tenement’s high prospectivity. Teck has commenced a multi-disciplinary exploration strategy in the Reward Project area designed to systematically test geological features and concepts identified through comprehensive targeting exercises.

## GEOLOGY

The Reward Project area is located within the McArthur Basin, a north-westerly extension of the Proterozoic rocks that comprise the Mt Isa Block (Figure 4). The McArthur Basin hosts numerous base metal and diamond occurrences, the largest of which is the McArthur River zinc-lead mine with initial resources evaluated at 234 million tonnes at 9.3% Zn, 4.1% Pb and 60 g/t Ag. The current mining reserve is 43 million tonnes grading 10.2% Zn, 4.4% Pb and 45 g/t Ag. The Myrtle prospect is hosted by the same stratigraphic units as the McArthur River Mine

and currently has a mineral resource of 43.6 million tonnes at 4.09% Zn, 0.95% Pb (Rox Resources Limited ASX Release 15 March 2010).



Figure 3 Regional geology.

Exploration License EL10316 comprises several main stratigraphic units, which are summarized below. A geological map is presented in figure 4. A brief stratigraphic column of the local geology is:

The Lynott Formation contains thinly bedded and laminated, medium to dark grey, variably pyritic, carbonaceous dolomitic siltstone and minor dolomitic siltstone, sandstone and breccia. Traction current-generated sedimentary structures, load casts and soft sediment slump folds commonly occur within the unit.

The Reward Dolomite in the tenement area is a thick unit comprising massive to (less commonly) thinly bedded



dolostone, algal dolostone and dolomitic siltstone with black shaley flakes and fragments of carbonaceous siltstone that conformably overlies the Barney Creek Formation. It may also include monomictic breccia which may be matrix or clast supported. The unit is characterised by chert or dolomitic nodules, which are generally 1-10mm in size. The unit commonly exhibits load casts, water escape structures, sedimentary dykes, soft sediment slump folds and convoluted bedding.

The Barney Creek Formation comprises massive to thinly bedded and laminated, variably pyritic, carbonaceous dolomitic siltstone and minor dolomitic siltstone, sandstone, breccia and tuffaceous siltstone. Interbedded and interlaminated green-grey siltstone and dolostone occurs at the base of the Barney Creek Formation in parts of the Glyde and Myrtle sub-basins. The Barney Creek Formation has been interpreted to have been deposited in a moderate to deep water, reasonably placid environment, dominated by periodic emplacement of dolostone rich turbidities and mass flow units. The Barney Creek Formation includes the target HYC Shale Member, which comprises very thinly laminated **pyrite ± sphalerite ± galena** mineralisation (as found at the HYC and Myrtle deposits) and black, carbonaceous, dolomitic siltstone with minor matrix to clast supported breccia, granular siltstone and sandy siltstone. The upper contact of the HYC Shale is characterised by the appearance of massive to laminated pyritic carbonaceous dolomitic siltstone.

The Teena Dolomite is a thick unit of interbedded massive to laminated, light grey to pinkish grey dolostone, algal and stromatolitic dolostone, dolomitic siltstone, dolomitic breccia and peletal sandstone. The unit conformably overlies the Emmerugga Dolomite and has a gradational upper contact. The upper dolomitic unit of the Teena displays characteristic coxco textures.

The Emmerugga Dolomite is represented in the tenement area by the Mitchell Yard Dolomite, which is the upper part of the unit. It consists of massive light grey dolostone and algal dolostone and minor algal plate breccia. The upper contact is characterised by a change from laminated algal and stromatolitic dolostone (Teena) to massive dolostone (Mitchell Yard).

Table 1 Stratigraphic Column for the middle McArthur Group.

Lynott Formation	Hot Spring Member
	Caranbirini Member
	Reward Dolomite
Barney Creek Formation	HYC Pyritic Shale Member
	Cooley Dolomite Member
	W-Fold Shale Member
Teena Dolomite	Coxco Dolomite Member
	Lower undifferentiated member
Emmerugga Dolomite	Mitchell Yard Member

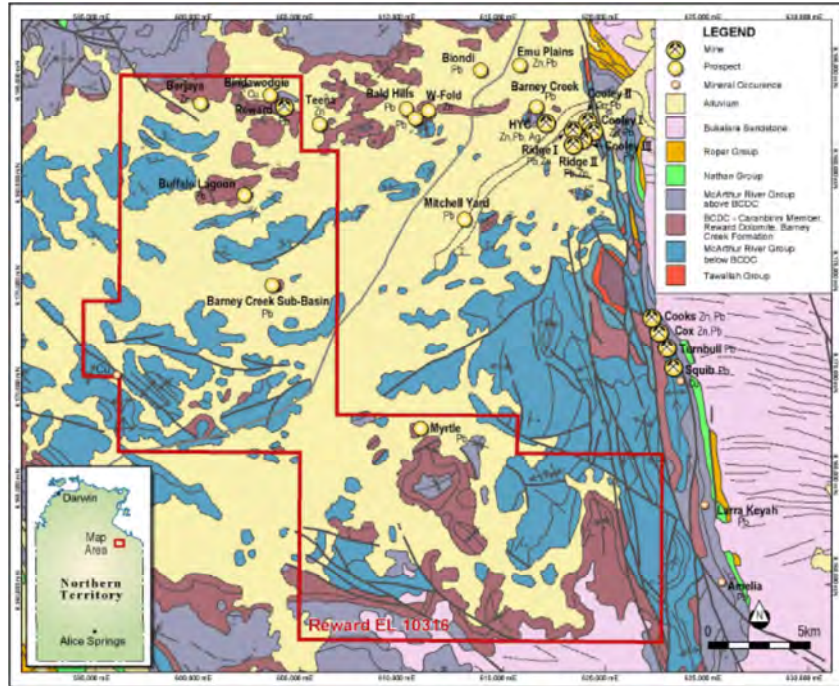


Figure 4 Outline of EL 10316 on geological map.

## WORK COMPLETED

### *Historical Data Review*

Significant work has been done on several prospects other than Myrtle in the Reward tenements, which include EL10316. A compilation of all known drilling was ongoing at the time of writing this report. A reinterpretation of the drill logs reported in company reports in addition with the lithofacies architecture presented for the Barney Creek Depositional Sequence in Winefield (1999), a reinterpretation of the McArthur Basin has begun with an emphasis on determining which sub-basins have the potential host SEDEX mineralisation associated with thickened Barney Creek Formation.

A compilation of significant exploration by multiple companies has been completed and numerous, well logged RC and diamond drill holes have been used to explore the tenements in the last 60 years. Collars for these holes are shown in Figure 5. This work is ongoing at the time of this report but the potential of the identified Berjaya, Boko, Leila and Reward prospects to host significant SEDEX mineralisation has been evaluated as not warranting further exploration. Further investigations into Barney Creek, Buffalo Lagoon and Amelia sub-basins on EL10316 will be continued into the next year. If warranted, these areas may have further geophysical or geochemical work completed in order to further refine the targets before drilling.



Figure 5 Drill hole collars for located RC and diamond drill holes sourced from open file reports. Holes around the Myrtle prospect are not shown. EL numbers are shown in red.

### *Geophysical Activities – IP*

In 2011, a resistivity/induced polarisation survey was carried out at the Myrtle prospect. The survey consisted of 4 lines of IP in pole-dipole configuration. This survey intended to characterise an electrical response of the known Pb Zn mineralisation and further investigate the basin for prospective chargeable zones. The south western end of line 11000 reported as planned in 2011 was not completed due to steep terrain. Completed sample lines with stations are shown in figure 6.

Survey specifications are shown below.

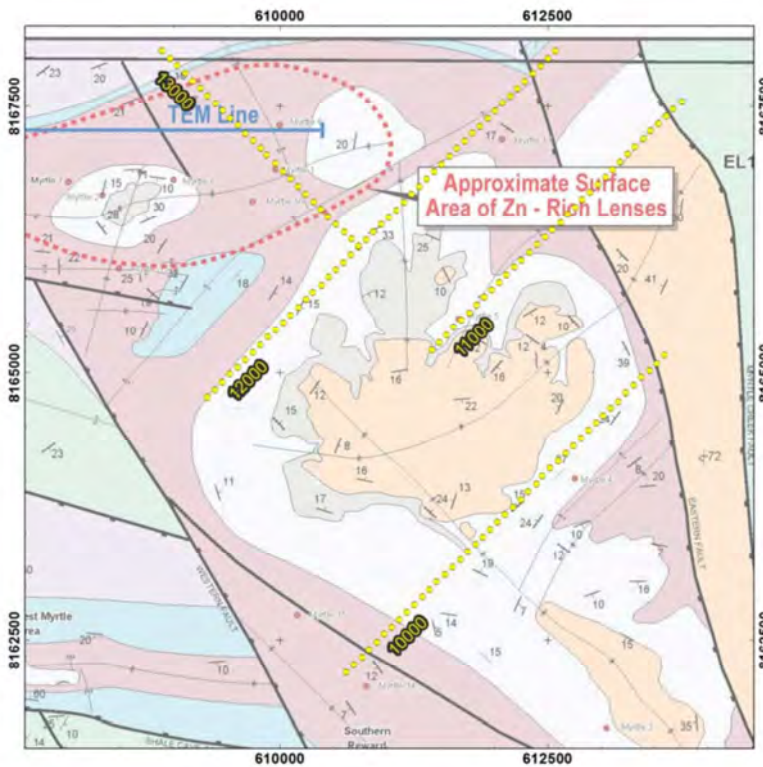


Figure 6 IP survey lines and stations over the Myrtle prospect.

#### Survey Specifications

Contractor	Planetary Geophysics
Dates	23 <sup>rd</sup> July – 1 <sup>st</sup> Aug
No. Lines	4
No. Stations	151
Configuration	Pole-Dipole
Dipole spacing	100 metres
<i>n</i> level	<i>n</i> =8
Transmitter	GDDTXII-5000W
Receiver	Elrec Pro-10
Remote electrode location	608080mE, 8163040mN

A stratigraphic interpretation of the inversion sections was completed and showed that the Barney Creek formation was not electrically conductive however the dolomitic units are more resistive, particularly the Teena Dolomite. The penetration of the survey was not deep enough to delineate the deepest sections of Barney Creek formation in the centre of the Myrtle sub-basin however the resistivity was useful in mapping stratigraphy at depth. The inversion models and interpreted stratigraphy for line 13000 are presented in figure 7 below but the results for all sections are in Appendix 1. The chargeable zone identified in this section corresponds with known mineralisation defined by drilling.

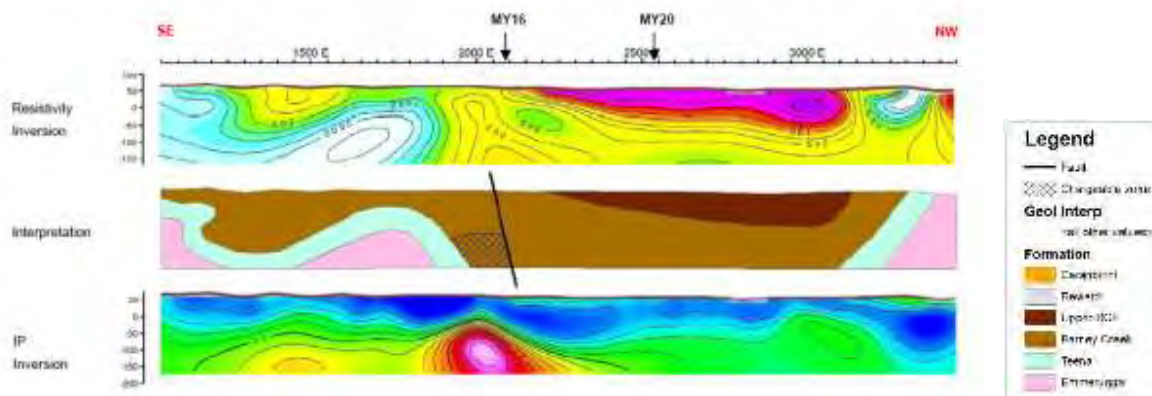


Figure 7 Inversion models and interpreted stratigraphy from 2011 IP survey.

No other highly chargeable anomalous zones were defined. Several chargeable anomalies were interpreted to lie at the base of the BCF, but are not considered to be prospective due to their limited extents.

Pole-dipole resistivity was extremely useful in mapping stratigraphy. The results of this survey will be used to vector follow-up work to appropriate locations, based on the depth and extents of the prospective Barney Creek formation.

#### *Geophysical Activities – EM*

An opportunity arose in August 2011 to trial an electromagnetic survey over the Myrtle prospect. The intention of the survey was to compare the effectiveness of EM with IP over a known occurrence of SEDEX mineralisation in out tenure area. Airborne EM surveys have been shown to identify the pyritic ore horizon at HYC but the lower grade or less fine mineralisation at Myrtle had not been effectively tested.

The survey specifications are detailed below.

#### Survey Specifications

Contractor	Outer Rim Exploration Services
Dates	20th – 23rd August 2011
Survey type	Moving-loop
Configuration	Inloop
Lines	1
Stations	27
Station spacing	200 metres
Transmitter	Crone 120V
Base frequency	150ms
Current	~20 amperes
Loop size	200m x 200m



Turns 1  
 Receiver Crone  
 Sensor#1 LandTEM SQUID (high temperature, liquid N)  
 Sensor#2 Crone PEM Coil

The Outer-Rim crew only bought 400 metres of wire to site (even though a minimum of 800m was specified in the contract. This was the reason that the Tx loop was single turn instead of double turn. It is also the reason that the loop size was not able to be increased to 200x200m when this was requested.

Stacked profiles and inversions are shown in figures 8 – 11.

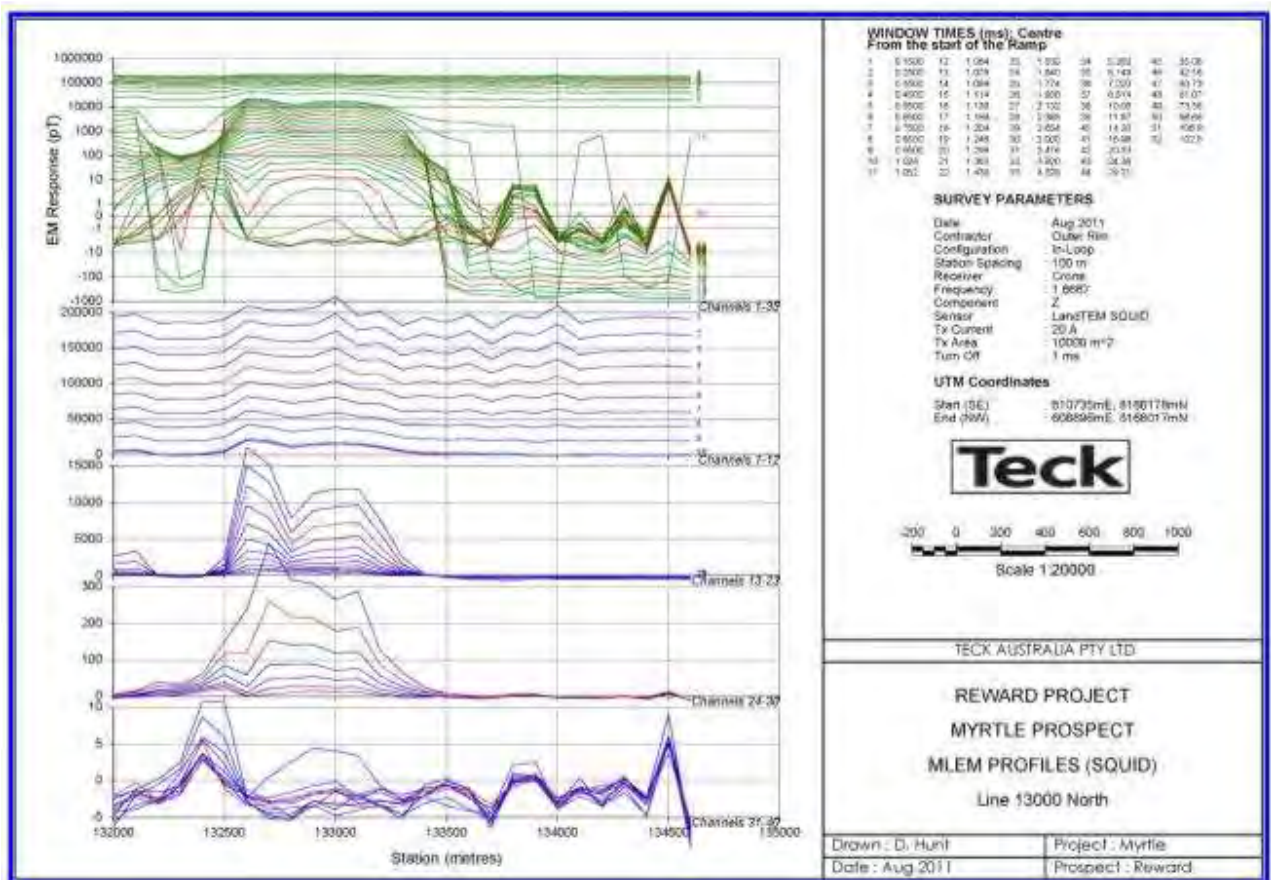


Figure 8 Stacked EM profiles (SQUID Sensor)

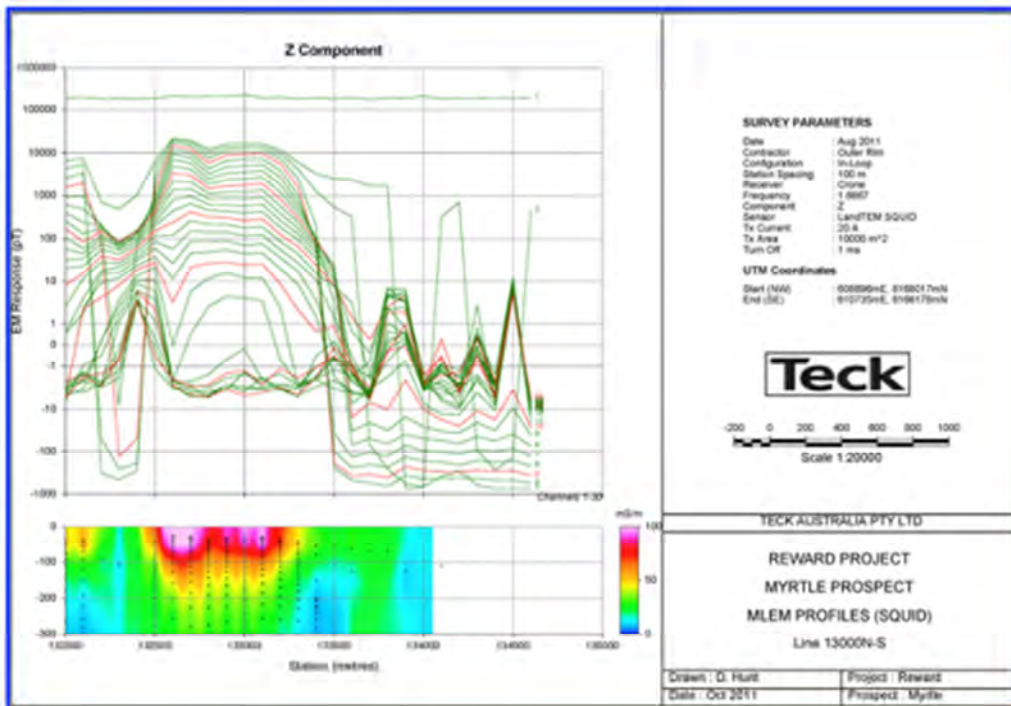


Figure 9 EM profiles and conductivity-depth inversion (SQUID Sensor)

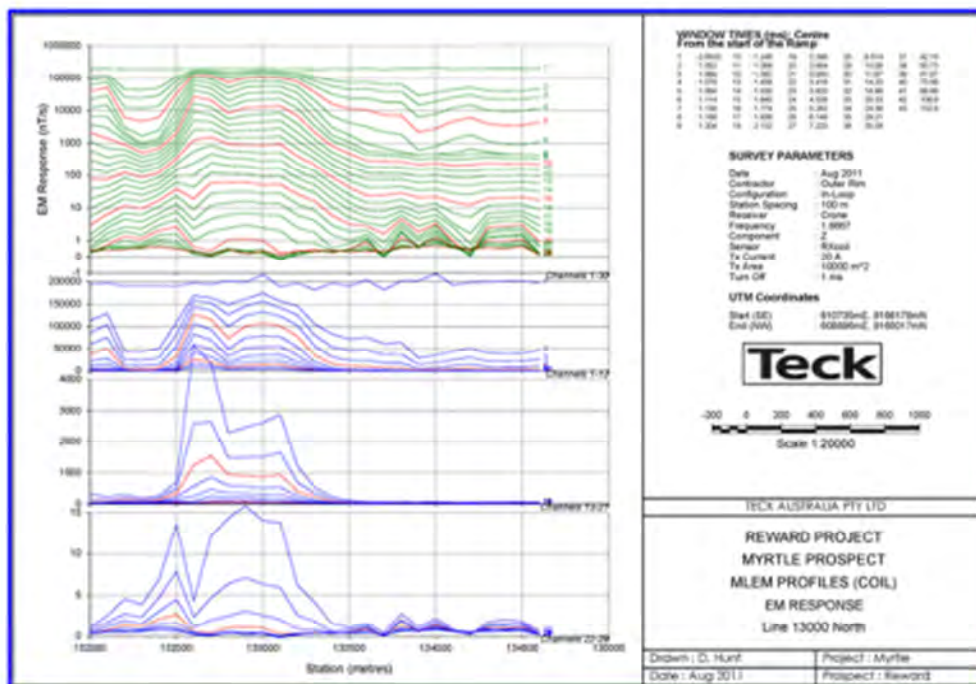


Figure 10 Stacked EM profiles (coil sensor)

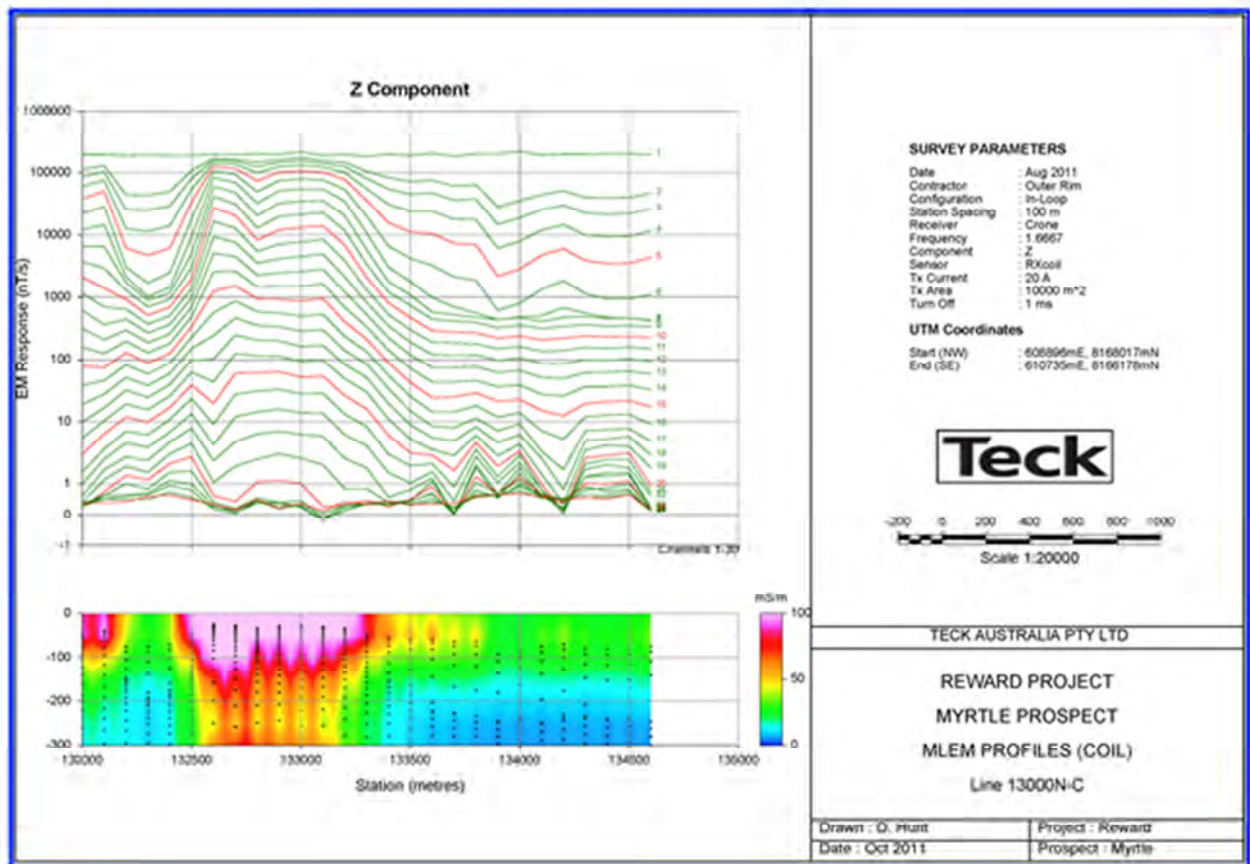


Figure 11 EM profiles and conductivity-depth inversion (coil sensor)

A line with 27 stations separated at 200m was tested over the known mineralisation at Myrtle. The sample line tested was the same as the 13000 IP line discussed previously. The SQUID data was affected by strong IP effects, which were considered to be coherent geological noise. A comparison of the IP with the EM results shows that where the IP chargeability responds to mineralisation, there is no corresponding response in the MLEM data to indicate that the mineralisation is responding to inductive EM methods (figure 12). It was concluded that while EM may be effective at detecting high grade mineralisation such as that seen at HVC, EM is ineffective at detecting Myrtle style mineralisation.

Moving loop electromagnetics is not recommended for further use at Myrtle.



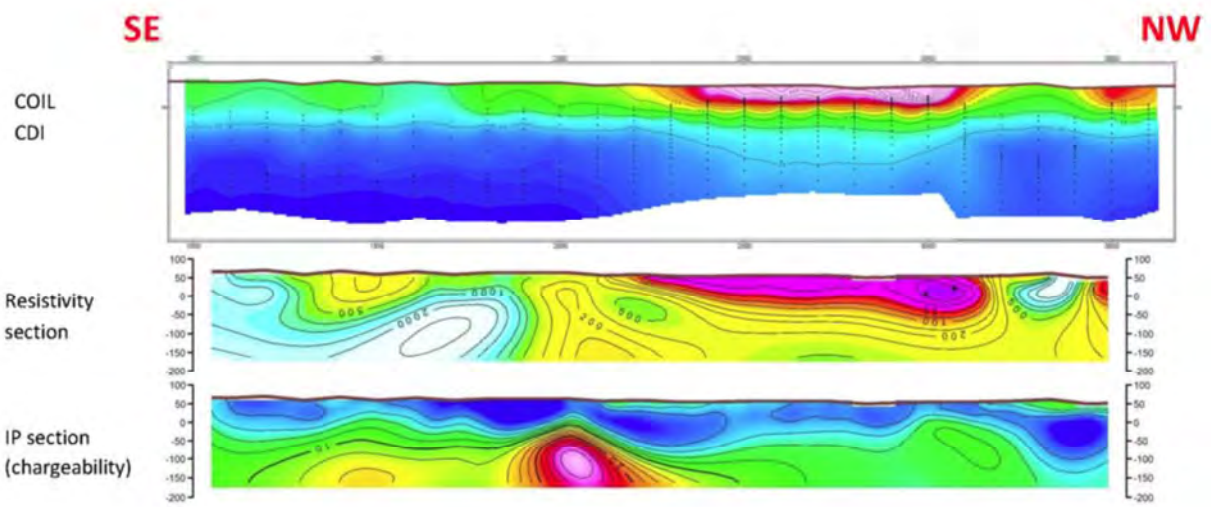


Figure 12 A comparison of the 13000 line IP and EM results.

#### *Geophysical Activities – Ground Gravity*

A 935 site ground gravity survey was completed at the Myrtle prospect in 2011. The sites surveyed are shown in figure 13.

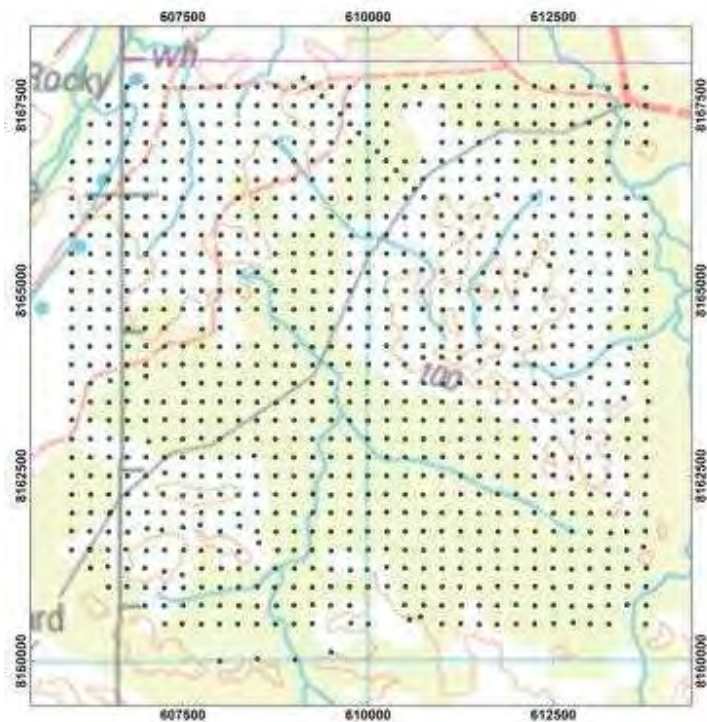


Figure 13 Ground gravity stations for the 2011 program at Myrtle.

### Survey Specifications

Contractor	Haines Surveys
Dates	5 <sup>th</sup> – 28 <sup>th</sup> August 2011
No. Stations completed	935
Reading time	1 x 40sec
Repeats	47 (5%)
Gravimeter	Scintrex CG-5
Serial No.	19401
Navigation	Trimble RTK & post-processed
Base location	609874mE, 8165214mN

The survey grid was tied into the AFGN network via the gravity station at Cape Crawford. Gravity reductions were done by Teck. The Bouguer correction was applied using a density of 2.5 g/cc, as this value produced the result which correlated least with topography. Terrain corrections were also done using the SRTM elevation regional grid.

A series of images and geophysical products were generated from this survey. The bouguer corrected density images of this survey are presented in figure 14. While rough terrain and access difficulties hampered this survey, the data has been successful in mapping density contrasts in lithology and has been of use in drillhole targeting.

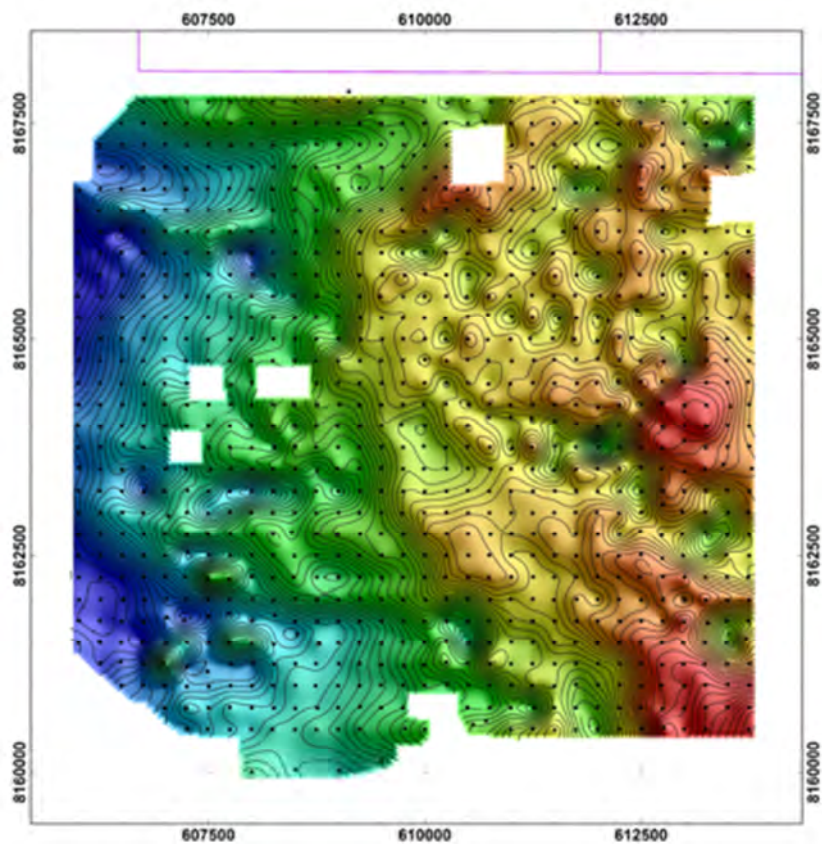


Figure 14 Colour-shaded image of terrain-corrected Bouguer anomaly (2.5g/cc) at Myrtle.

Most of the residual gravity highs in this image are due to the denser dolomitic units outcropping, or where they are structurally thickened, such as in the hinges of antiforms (figure 15). The Teena ridge (T) is an example of dolomite in the hinge of an antiform forming a gravity residual high. There is a similar antiformal feature at (R). The Southwest-Myrtle sub-basin (S) contains several strong discrete gravity highs, for reasons which are not fully understood.

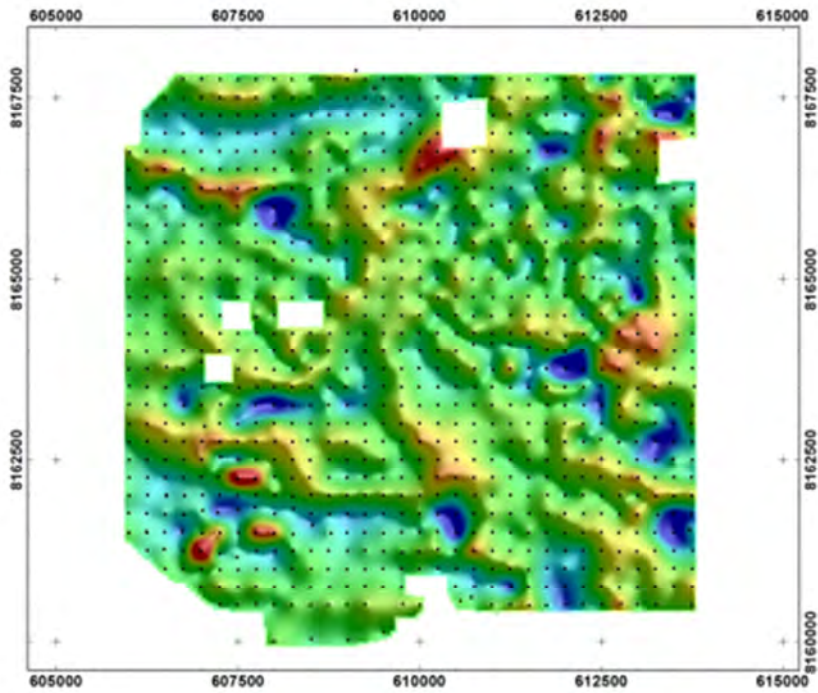


Figure 15 Colour-shaded image of terrain-corrected residual (Hanning, 128) Bouguer anomaly (2.5g/cc)

The survey area can be roughly divided into five regions (Figure 16), which are summarised below:

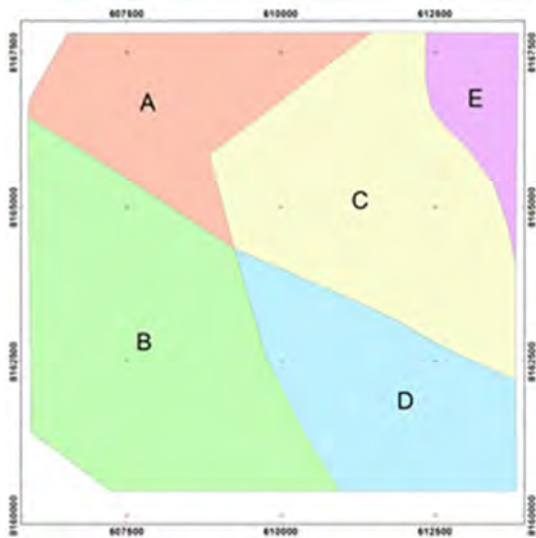


Figure 16 Gravity interpretation regions.

---

A:

Myrtle sub-basin, a northeast-trending syncline, appears as an elongate gravity low in the northwest of the area. The basin is around 1.8km wide at its widest point. A ridge of high gravity at the northern edge of the survey area indicates that the basin does not extend northwards. This interpretation is significant as it places constraints on the size of the basin and hence may limit the potential size of the Myrtle discovery.

B:

The east-west trending Southwest-Myrtle Sub-basin is located in the south of this region. With the aid of an outcrop map, several fold axes have been drawn on the interpretation plan (Figure 17). There is tighter folding towards the south, probably with more upright limbs based on the strength of the residual gravity anomalies. In this region much of the target Barney Creek formation has been eroded, so it is categorised as low prospectivity.

C:

This region is characterised by higher Bouguer gravity response. Structurally it is a broad, doubly plunging syncline with resistant Caranbirini formation at the surface. The Barney Creek formation outcrops at the periphery of this feature, but this is largely truncated by the Eastern and Western Faults.

D:

A plunging anticline, similar to region C but offset by a fault with southeast-northwest orientation. There is less geological control in this region, as it is further from the main area of interest in the Myrtle sub-basin.

E:

The Eastern fault does not have a clear expression in the gravity data. The Eastern fault has been defined in the interpretation plan, largely from information in the IP data (Hunt, 2012). There is a fairly sharp bend in the interpreted fault, and it is possible that a jog exists at this point.

The gravity features in the small region east of the Eastern Fault have not been interpreted, as it is not possible to see them in their broader context until further data acquisition has been completed.



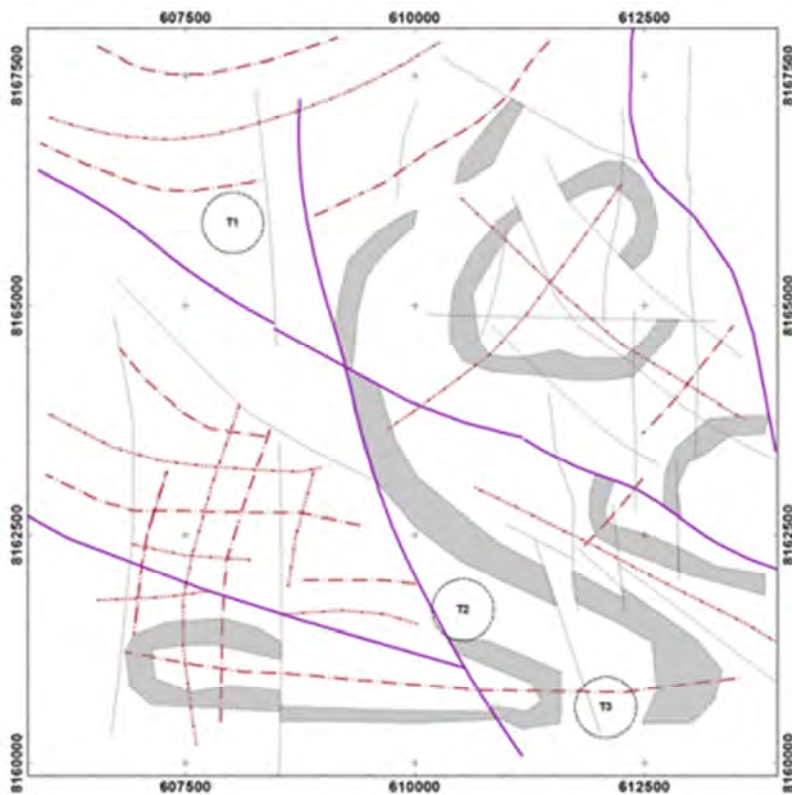


Figure 17 Gravity interpretation plan.

The gravity data has been useful for structural interpretation and drill targeting. Following the success of this survey, gravity surveying is recommended for use as a fundamental component of future SEDEX exploration programs at Reward.

#### *Geophysical Activities – Falcon*

Fugro was contracted to survey the Reward Project area of interest, part of which covers EL10316. Acquisition of data started on February 7<sup>th</sup> 2012 and finished on February 12<sup>th</sup>. The Fugro airborne survey used a CESSNA Grand Caravan aircraft to acquire FALCON™ Airborne Gravity Gradiometric, Magnetic and DTM data. A total of 1052km of flight lines was flown consisting of 928km of acquisition lines and 124 km of tie lines. The total flightpath flown is shown in figure 18 but this includes data in EL10316 as well as adjacent tenements also managed by Teck.

---

## Survey Specifications

- Total Kilometres (km) 1052.2
- Nominal Terrain Clearance (m) 80
- Traverse Line Direction (deg.) 0 / 180
- Traverse Line Spacing (m) 400
- Tie Line Direction (deg.) 90 / 270
- Tie Line Spacing (m) 3500

The following parameters were recorded during the course of the survey:

- FALCONTM AGG data: recorded at different intervals.
- Airborne total magnetic field: recorded with a 0.1 s sampling rate.
- Aircraft altitude: measured by the barometric altimeter at intervals of 0.1 s.
- Terrain clearance: provided by the radar altimeter at intervals of 0.1 s.
- Airborne GPS positional data (latitude, longitude, height, time and raw range from each satellite being tracked): recorded at intervals of 1 s.
- Time markers: in digital data.
- Ground total magnetic field: recorded with a 1 s sampling rate.
- Ground based GPS positional data (latitude, longitude, height, time and raw range from each satellite being tracked): recorded at intervals of 1 s.
- Aircraft distance to ground: measured by the laser scanner system, scanning at 20 times per second (when in range of the instrument and in the absence of thick vegetation).

The Falcon  $G_{DD}$  data was processed according to the flow chart in figure 19.

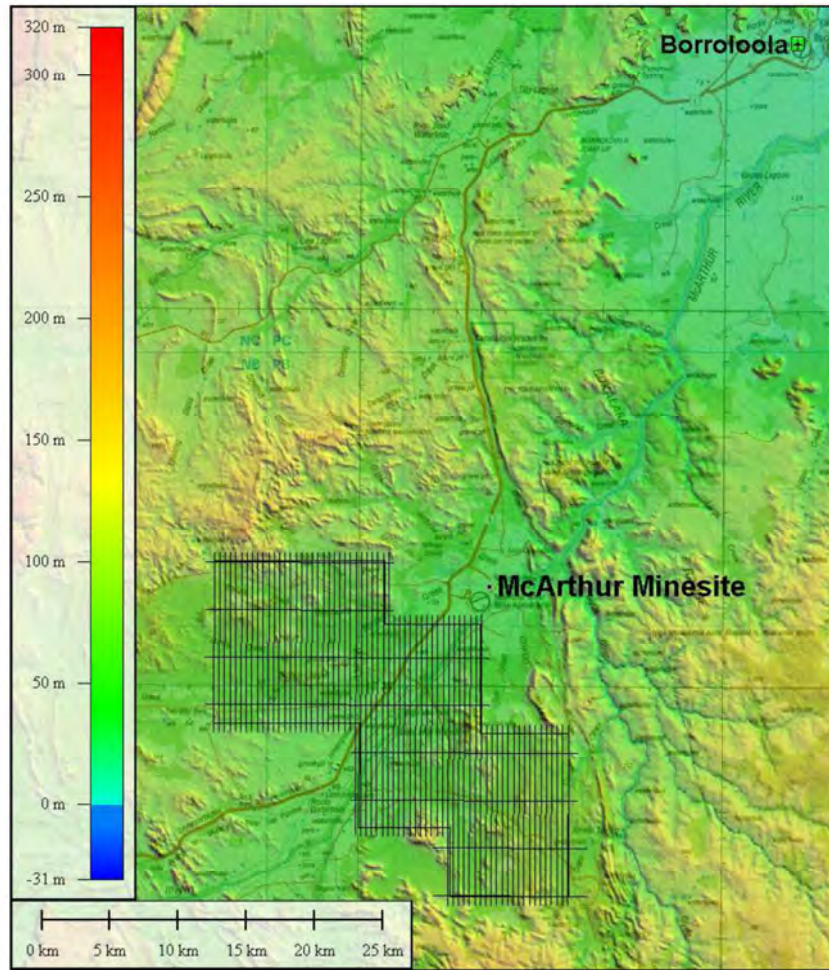


Figure 18 Flight lines for the 2012 Falcon survey.



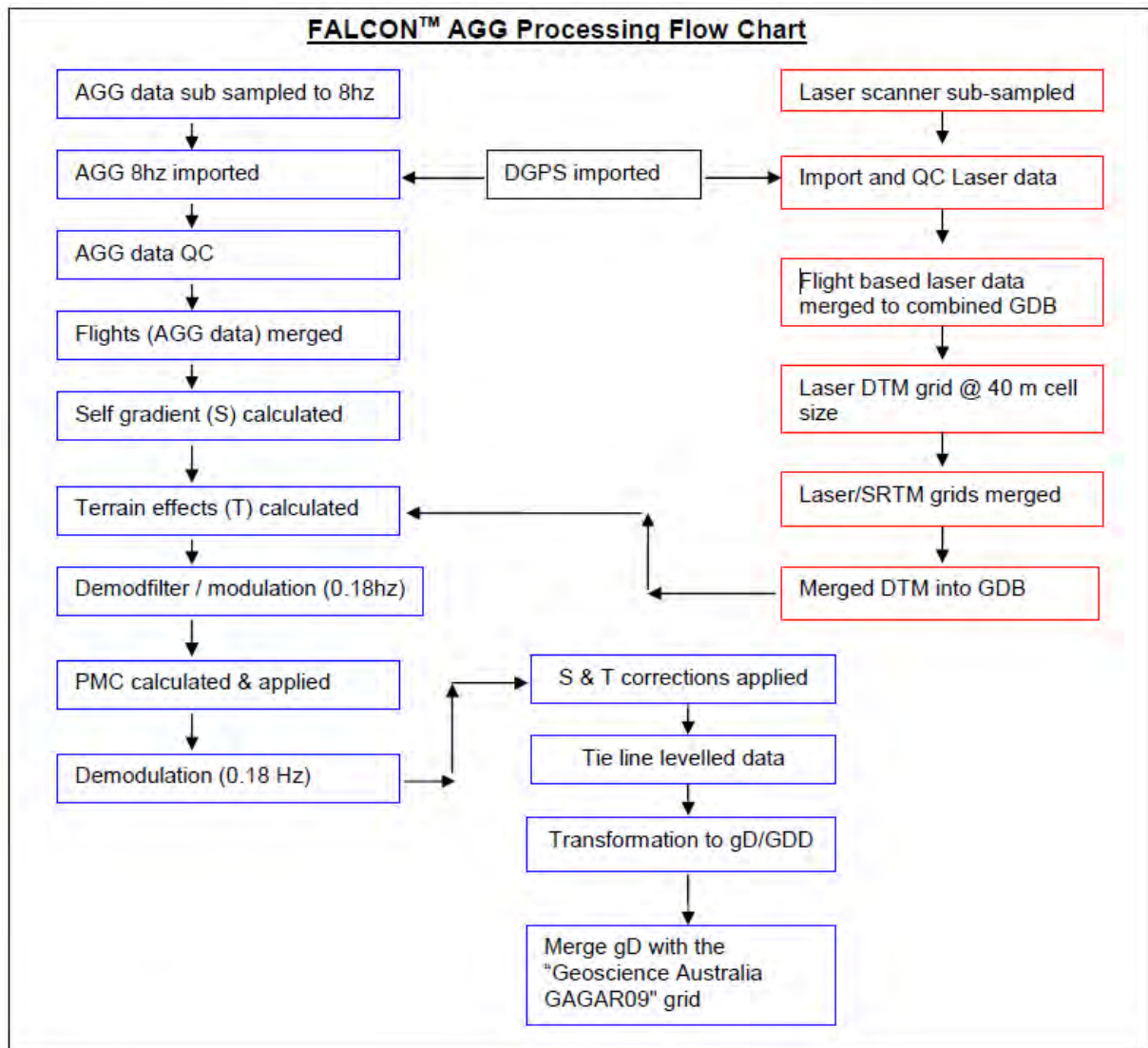


Figure 19 Processing flowchart for falcon G<sub>DD</sub> data.

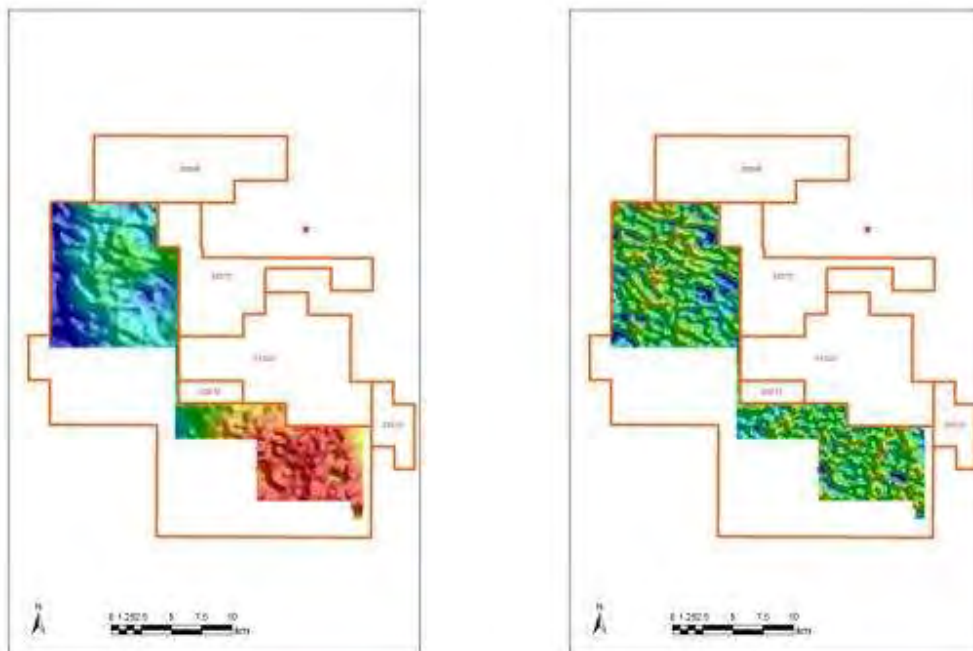


Figure 20 Preliminary images of the Falcon gd (left) and gdd (right) images of Falcon data for EL10316.

#### Interpretation of Falcon AGG data:

The final AGG data has only recently been received from Fugro Airborne Surveys. Further processing is currently being undertaken by Geo-Intrepid consultancy, and these results are not due until May 2012. Preliminary data for EL10316 is presented in Figure 20. A brief preliminary interpretation has been attempted on the provisional data. the main elements of the interpretation are:

- The amplitude of the Gdd anomalies are higher in the north-western portion of the survey, indicating the presence of denser strata, or a more deformed package with steeper dips
- There are several N-S oriented structures in the eastern section of the survey grid, which correspond to major faults or splays associated with the regionally significant Emu fault.
- Through the middle of the area there is a wide NE trending fault zone which controls the local course of the McArthur River. In the conformed Gd data, this is the centre of a deep regional gravity low.
- There are several discrete gravity gradient anomalies which may be prospective as direct-detection Pb-Zn sulphide targets.

The data is of excellent quality. No significant problems were encountered during acquisition. The conformed AGG data matches well to the ground gravity results that we have from the south of the survey area.

### *Geophysical Activities – Ground Magnetic Survey*

A trial ground magnetics survey was carried out at the Myrtle prospect during August of 2011. The main aim of the survey was to determine the magnetic signature of the Pb-Zn mineralisation which had been previously delineated at Myrtle. The data acquisition was carried out by Teck geophysicist while on a site visit with an EM crew working at the prospect.

Petrophysics have shown that the mineralised HYC shale equivalent from Myrtle is anomalously magnetic compared with associated stratigraphy (figure 21).

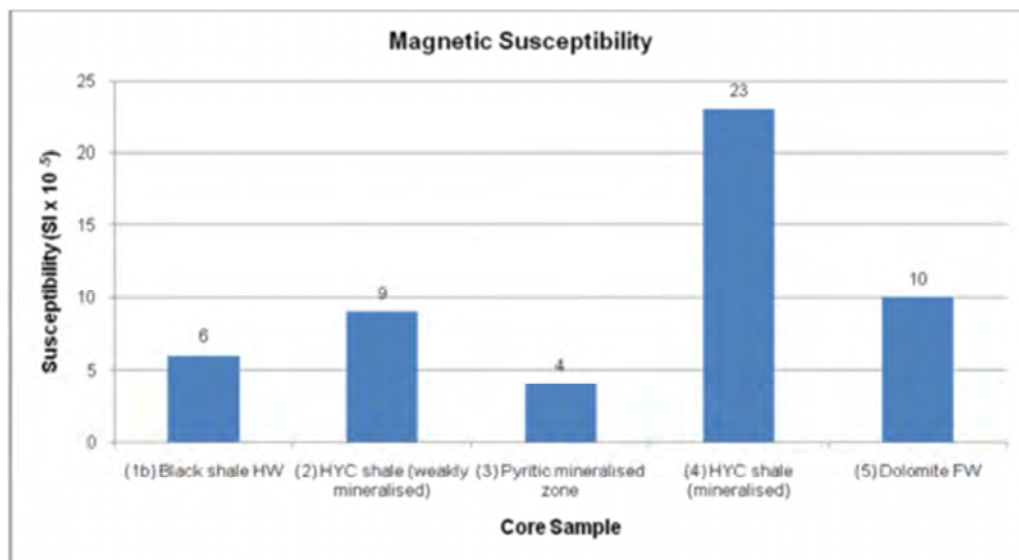


Figure 21 Results of Myrtle core sample magnetic susceptibility tests done by Don Emerson, from Morell & Peters (2009).

#### Survey Specifications

Acquisition	Teck
Dates	18th & 19th August 2011
No. Lines	5
Line km	~12 km
Magnetometer	Gem GSM-19W Overhauser
Cycle rate	1 Hz
Base Magnetometer	Gem GSM-19T Proton
Base station location	613240mE, 8167410mN

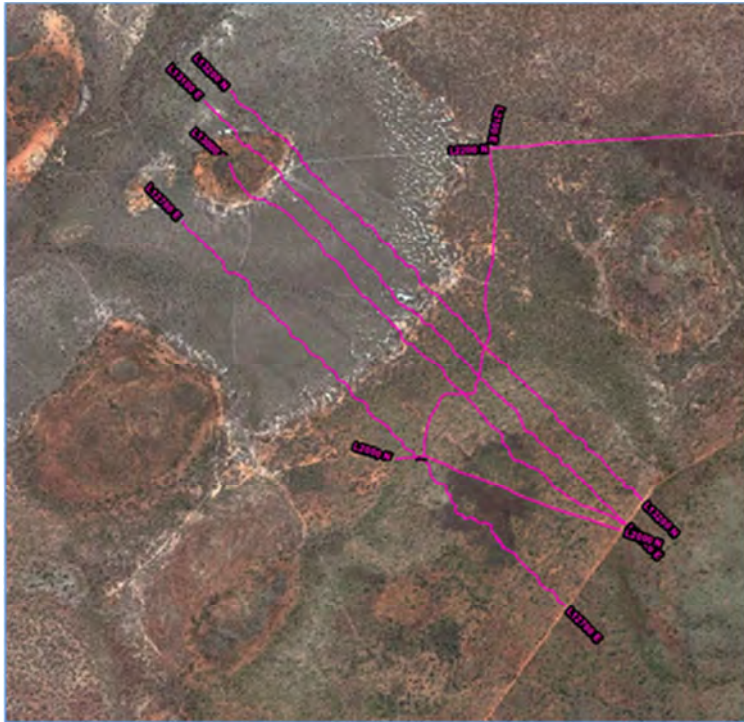


Figure 22 Line path of completed ground magnetics on aerial photograph.

Four of the planned NW-SE lines were completed, along with three line segments along bush tracks. Figure 22 shows the surveyed linepaths on an aerial photograph map. The TMI profiles show very little variation in magnetic intensity over the survey area. As an example, line 13100, shown in Figure 23, has an amplitude range of  $\sim 25\text{nT}$  over a distance of 2500m. Noise levels are in the range of 2-3nT. This is probably due to small items of magnetic material on the clothing of the operator, and this noise is easily filtered out from the data which was acquired at 1 sample per second (1Hz).

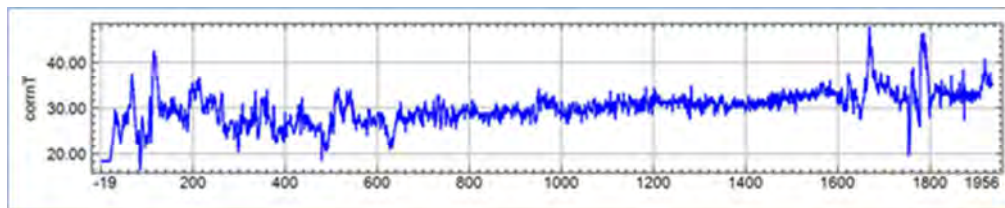


Figure 23 TMI profile of line 13100

The data was diurnally corrected, cultural anomalies were removed and a 21point median filter was applied. A Gaussian residual was applied to the gridded data to remove the regional trend (figure 24).

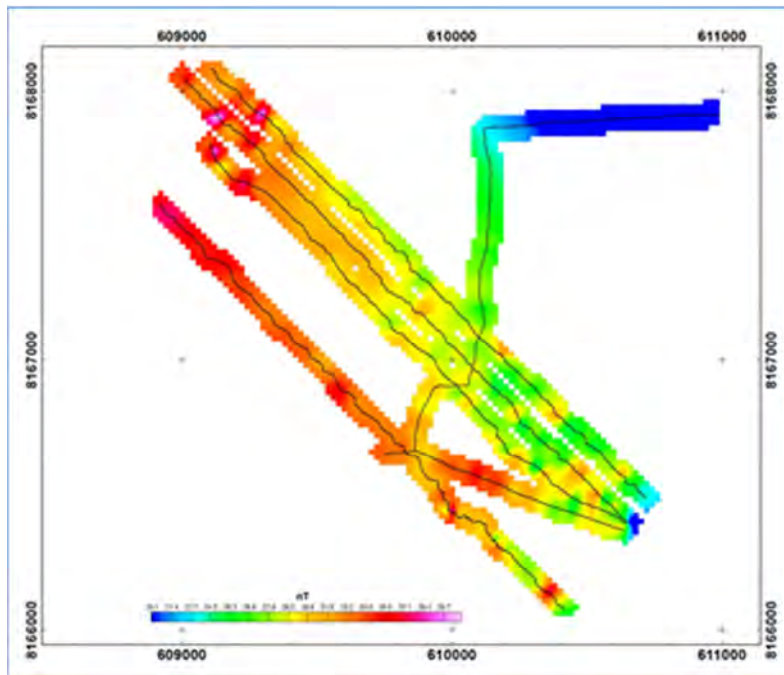


Figure 24 TMI image, 21 point median filter.

This survey has only generated a limited amount of data, so discussion relating to the geological interpretation will be kept to a minimum. Figure 24 shows a residual TMI image.

In the northwest of the survey area (**A**), there is a set of discrete magnetic anomalies which coincide with the mapped position of the Teena dolomite outcrop. With only three lines crossing this feature, it is not clear exactly what the shape of the overall magnetic feature is. But it is likely that the Teena dolomite is showing a distinct signature that is mappable by ground magnetics. Similarly, there is a covered Teena dolomite unit inferred at the **B** position. There are also subtle structural expressions present in the data, e.g. the NW trending feature at **C**.

The indications are that ground magnetics would be a useful means of mapping the sub-basins which host Pb-Zn mineralisation at Myrtle.

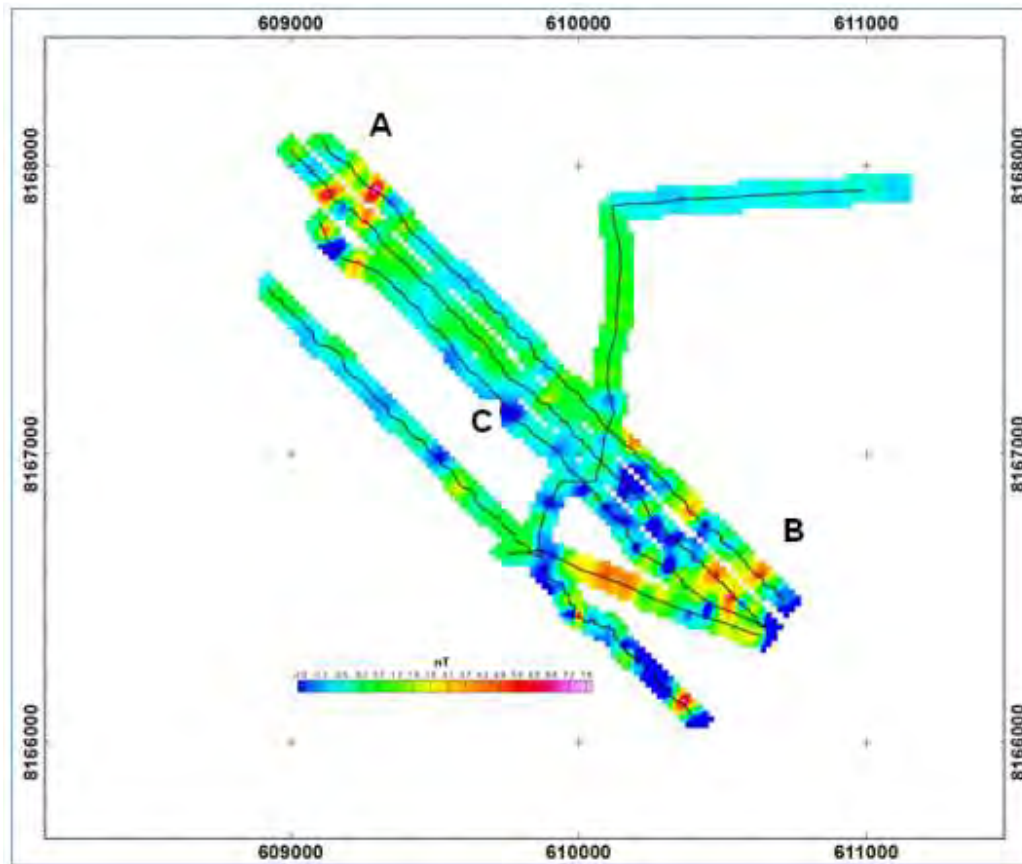


Figure 25 TMI image, 2km Gaussian residual

The known Pb-Zn mineralisation at Myrtle does not have a coherent magnetic signature. A line of ground magnetics has been run over a strong IP anomaly (coincident with Zn drill intersections) with no particular magnetic response noted.

Magnetics may be useful for mapping basin morphology & structures. The Myrtle area is characterised by very low magnetic gradients, so would benefit from the higher sensitivity provided by ground magnetic surveying. The cost-effectiveness of ground magnetics compared to airborne surveying would depend on the total survey area desired. If a large amount of magnetics were required, an airborne gradiometry survey may be warranted.

More work is needed to characterise the magnetic response of key lithologies.

### *Surface Geochemistry*

In September 2011, a surface sampling program was executed on EL10316. Eight lines separated by 500m with samples every 150m were sampled over the known extent of mineralisation and extending



out (Figure 26). There is one gap in the sampling lines in the 6<sup>th</sup> line which is coincident with a hill containing a site of cultural significance. While the sampled area is largely coincident with the Rox Resources Niton based survey, this survey will collect multi-element aqua regia data and several partial digestions.

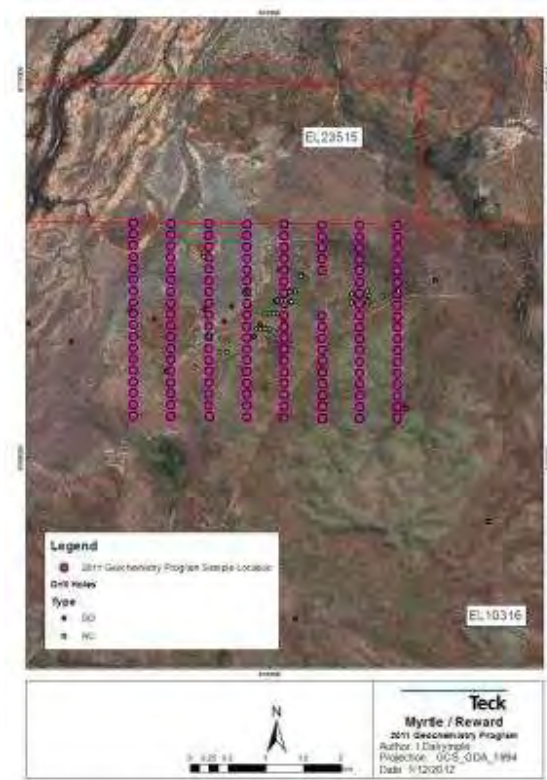


Figure 26 Locations of surface geochemistry sample sites for the 2011 Myrtle program. Drill holes are shown for reference.

A 145 sample sites were sampled during this program. At each site a soil sample was collected and sieved at the field camp to <250µm. These samples were sealed and boxed for analysis. If present at each site, a termite mound sample and a vegetation sample was collected. The termite mounds were relatively prolific in all areas except for over the black plain soils where there were none. The vegetation species chosen was a species of eucalypt that was found in all areas except over the black plains soils. The only vegetation consistently found on the black plain soils was a species of Bauhinia which was not found growing away from these areas. Vegetation sampling was conducted by collecting 4 sprigs of fresh healthy looking leaves without gumnuts or flowers and bagging them in their entirety. These samples were transported and stored separately to the soil or termite samples. As Zn tends to accumulate in the core of the termite mounds, the mounds were sampled by breaking off the upper portion of the mound and breaking the sample up into half fist sized pieces. 4 intact pieces were collected for analysis. Each soil sample was digested and analysed by the Ultratrace1 package as a baseline and also by a suite of partial digestions performed in batch (non-sequential) mode.

At Myrtle, there is no apparent advantage in using alternate sampling media rather than soils as opposed to other sites evaluated. In the case of vegetation, I believe this is a consequence of complicated biological processes operating in the eucalypts combined with variable depth to basement. The termite mounds in other areas have been shown to enhance the size of mineralisation and retain mobile elements such as Zn in their core. While the amount of Zn in the termite mounds is indeed higher than in the soils, there is so much Zn retained in the soils that this is not a relevant issue. This, combined with a highly variable depth to unweathered rock complicates the interpretation of the data as termite mounds on barren outcrop have higher inclusion of unweathered material than those over deeply weathered areas.

The presence of mineralisation at surface in some ways makes Myrtle a difficult case study for the application of weak leach techniques to exploration however there are several very significant positives to come out of this work. The Zn anomaly can be increased an order of magnitude relative to background by the use of these techniques and several situations seem to increase the footprint of anomalism (figure 27).

The black plain soils seem to offer both a challenge and an opportunity. There seems to be reasonable evidence that the black plain soils are not providing a good host for Zn or Tl and it therefore appears that they are an impenetrable barrier to exploration.

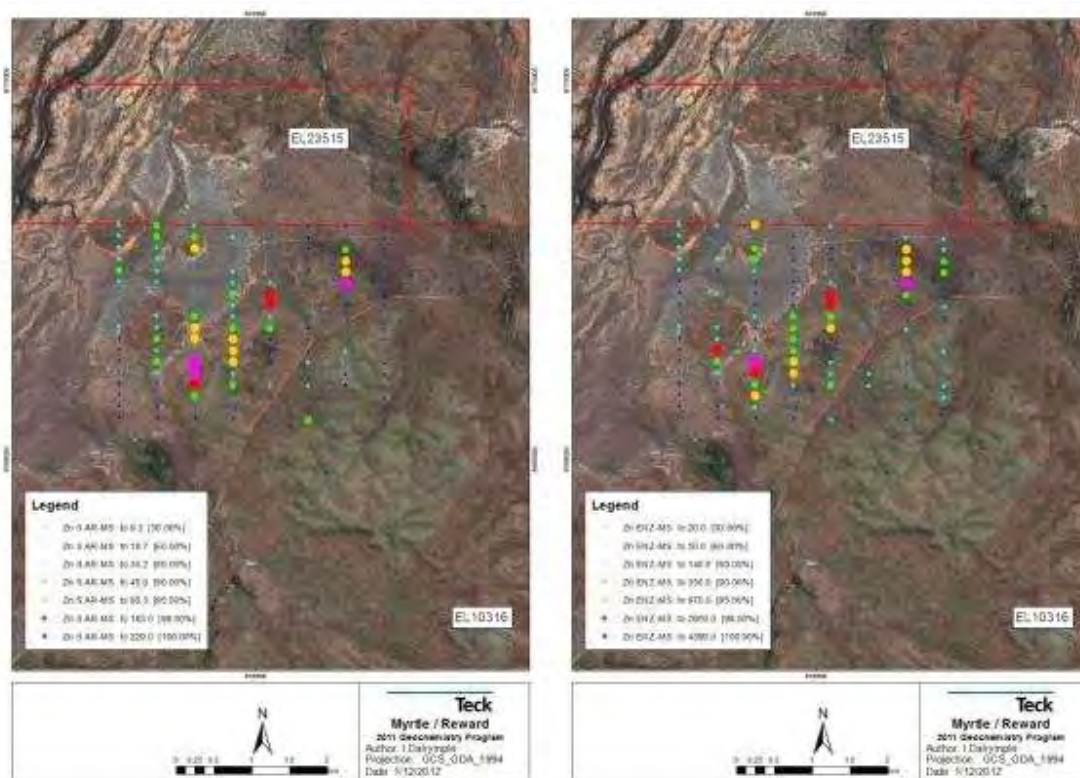


Figure 27 Results for Zn extracted in aqua regia (left, Zn in ppm) and in a partial digestion (right, Zn in ppb)



## DRILLING

A single drill hole was commenced at the Myrtle prospect in November. Winmax Drilling Pty Ltd. began drilling MY022 in 16/11/2011 (see table 2). This hole was not completed to the target depth because of bad weather. The hole will be continued in the coming field season.

Table 2 Collar details for diamond drilling at the Myrtle prospect.

Hole Type	Hole	MGA East	MGA North	Azi (mag)	Dec	Final Depth (m)
Diamond	MY022	610768	8167765	0	-75	-227.5

The hole drilled 34.4m of cover and then Reward dolomite to 41m. The remainder of the hole to 227.5m was in Barney Creek Formation. Summary logs are presented in table 2.

Table 3 Summary log for diamond drill hole MY022.

From	To	Stratigraphy	Description	Mineralisation
34.4	41	Reward Dolomite	pale grey dolomitic unit, locally weathered pink. Interbeds of coarse silt to medium sand (beds<10 cm thick). Beds are often graded with scoured surfaces. Multiple, mostly monomictic pebbly conglomerates with clasts <1cm. Poorly sorted sedimentary breccia @ 36 m; polymictic with coarse sand, some pebbles - possibly oncolites - and elongate rounded lithic clasts (<7cm). Below wave base storm event related?	
34.4	50.3	Barney Creek Formation	pale to dark grey silicified siltstone unit. Interlaminae and interbeds reflect alternate carbonate, siliciclastic and organic inputs of silty to fine sand material.	diss py < 2%
50.3	53.3	Barney Creek Formation	dark grey to pale black carbonaceous mudstone/siltstone unit with scarce carbonate input. Weathering of pyrite bands has produced a white powdery oxide.	ms py <20%
53.3	141	Barney Creek Formation	pale to dark grey silicified siltstone unit. Interlaminae and interbeds reflect alternate carbonate, siliciclastic and organic inputs of silty to fine sand material.	diss py < 2%

141	157.5	Barney Creek Formation	dark grey to pale black carbonaceous mudstone/siltstone unit with high pyritic content. Pyrite bands consist of micro scale wavy laminae interspaced by wispy organic clasts. Pyrite and organic content decrease whilst carbonate content and grain size increase towards gradational bottom contact.	ms py <40 %
157.5	181	Barney Creek Formation	light to dark grey calcareous siltstone unit. Organic content decreases whilst frequency of carbonate beds increases with depth. Meso scale slumping and slump faulting textures are present. A large open slump fold occurs from 169 to 171 m, with a roughly subhorizontal axis. Pyrite bands occur irregularly.	ms py < 20%
181	183.9	Barney Creek Formation	White to pale grey volcanoclastic unit? Grades from medium sand (qtz + clays after feldspars? + grey phase - not organic) with flame and loading structures to hardened silts with a tuffaceous look but no apparent phenocrysts. Top and bottom contacts are sharp and have been sampled for thin section cutting.	
183.9	203.6	Barney Creek Formation	light to dark grey calcareous siltstone unit with interbeds of medium sands. Thin to medium beds of carbonates; variable organic content and associated pyrite bands. Large nodules/concretions (<10cm) occur at the top and bottom of the unit. Cherty beds (<5cm) and thin pale grey and friable tuff bed (<5cm) occur from 202.1 to 203.1m.	ms py < 20%

No samples have yet been taken for assay. This will be done once the hole has been completed in the upcoming field season. As the hole has not been completed and the full thickness of Barney Creek formation has not been tested, no full interpretation of the hole is presented although it is acknowledged that the presence of oncoloids and flat pebble conglomerates at the base of the Reward Dolomite might suggest a shallower facies than the mineralised sequence at Myrtle.

## HERITAGE & COMMUNITY

In June 2011, a community meeting was held in Borroloola with senior members of the Gurdanji native title group. The purpose of the meeting was to firstly introduce Teck as a new operator, to explain program of works for the remainder of the year and to organise informal and formal heritage surveys of the project area. Considerable delays were experienced to Teck's exploration as a consequence of the Northern Land Council's difficulties in organising dates for these meetings and a formal heritage survey was arranged for November.

---

During July 2011, several of the Gurdanji traditional owners paid an informal visit to EL10316. The purpose of the visit was to familiarise themselves with the AAPA cleared area (in EL10316) where the IP and gravity surveys were about to commence and observe the rehabilitation of previous drill sites. No objections were raised in relation to the work program.

In November 2011, the NLC facilitated a heritage clearance survey with helicopter support which surveyed an area north and east of the current certified area, the results of which are currently being certified by the AAPA.

An additional sacred site clearance request was sent by Teck to the NLC in February 2012 where Teck would like to conduct exploration activities in the 2012 and later field seasons.

### **PROPOSED WORK**

A heritage survey covering some parts of EL10316 is planned and covers parts of this license (see Community Relations and Heritage Surveys section below).

As has been previously mentioned, a historical works review is underway to identify areas of prospectivity for SEDEX deposits for areas other than Myrtle. This work will be the centrepiece for targeting further work in the greater Reward Project. This will include a full interpretation of the Falcon gravity data that has been collected over much of this tenement. It is likely that any further identified targets will be followed up with a geological survey to confirm the previously logged surface geology and to confirm the existing geological mode. This would be followed ground or airborne geophysical surveys (IP being the most likely) and surface geochemical programs. If there is a compelling case or the geochemical and geophysical surveys can be completed in a timely manner, there is the potential to drill any targets that develop also. EL10315 contains several known prospects and is highly prospective for SEDEX deposits and a strong focus on fast exploration and drill testing is intended for the regional targets.

MYR022 will be drilled through the full width of Barney Creek Formation and samples will be taken for assay.

Several other drill holes are planned at Myrtle but the locations to be drilled are dependant on a review of the Falcon data which is ongoing and the final granting of the AAPA certificate that was applied for last year.

### **CONCLUSIONS & RECOMMENDATIONS**

EL10316 has some highly prospective ground for SEDEX mineralisation similar to that seen at the McArthur River Mine.

Geophysical test work completed in 2011 has shown gravity and IP to be effective in identifying stratigraphic changes in the McArthur Basin but none of these techniques seem to directly identify mineralisation, however they are useful in defining basin geometry. Geochemistry seems to have the capacity to identify mineralisation through moderate to thin cover with the use of partial extractions but only where there is mineralisation exposed at the top of Proterozoic sediment, with more modern cover overlying it. Careful examination and reinterpretation of historical drill logs may provide a better understanding of geological depositional facies which may identify the locations with the greatest potential to host SEDEX mineralisation. Continuing drilling several holes at Myrtle should test the remaining sub-basin positions and identify any potential for a large SEDEX system to exist there.

## Appendix 1 – Results for the Myrtle IP survey

### Line 10000

Diamond drillhole MY4 is close to line 10000, near stn3900. The stratigraphy log can be summarised simply as:

0 - 18m	Reward
18 - 97m	BCF
97m – EOH	Teena

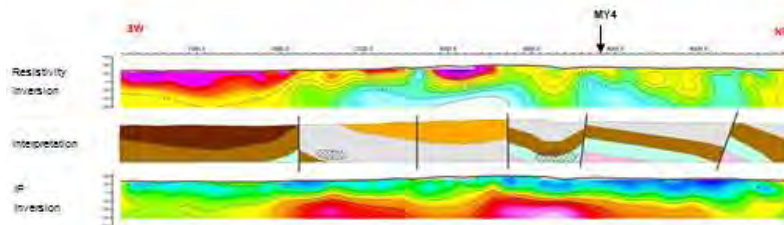
Based on this log, low resistivities are expected beneath stn3900, as the upper Barney Creek formation is close to the surface. However, the resistivity section shows relatively high resistivity values around the MY4 location. If this geological logging is correct, then it seems that the conductive shales of the upper BCF are absent from the stratigraphy in this part of the prospect.

The upper BCF does occur on line 10000, at the southwestern end of the line. The interpretation of a thick sequence of conductive upper BCF has been made based on the mapped outcrop. The conductive Caranbirini sequence in the central part of the line has also been interpreted based on outcrop mapped close to the line.

The fault interpreted at stn3350 has a significant throw. The stratigraphy of the section to the northeast of this fault is unclear, due to the resistivity section being poorly defined.

The Eastern Fault, which has been interpreted on the two lines to the north as a normal fault (eastern block downthrown) is likely to be pass to the northeastern end of line 10000.

The origin of the southwestern chargeable anomaly is unknown. The northeastern chargeable anomaly is probably due to disseminated sulphides at the base of BCF in small syncline feature. The small size and moderate chargeability of this feature means that is not of interest.



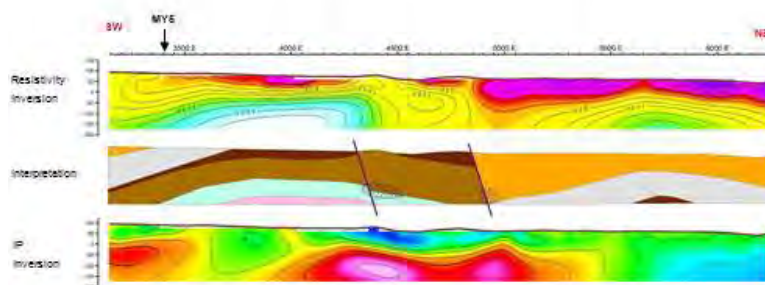
### Line 11000

Diamond drillhole MY5 is close to line 10000, near station3400. The stratigraphy log can be summarised simply as:

0 - 190m	Reward
190 - 368m	BCF
368m - EOH	Teena

The southwestern end of the line starts close to the centre of the syncline, in the youngest stratigraphy, the Caranbirini formation. Progressing towards the northeast, the thickness of the strata increases. The normal fault at stn4800 has significant throw, which preserves Caranbirini formation at the surface. This is interpreted to be the Eastern Fault (see Figure 5). The resistivity data suggest an anticlinal structure northeast of this major fault. In this northeastern section the target stratigraphy (BCF) is much deeper, lessening the appeal of this area.

The chargeable zones in the centre of the line are related to the basal BCF unit. They also appear to be related to the interpreted faults. This mid-section may represent a target for mineralisation, although the prospectivity is downgraded by the lower IP response compared to line 13000.

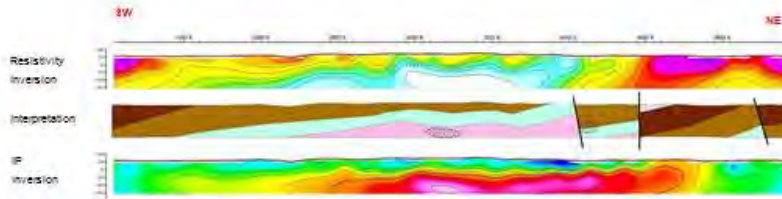


### Line 12000

This interpretation is not constrained by drillhole information (as MY11 lithology log could not be found). This line intersects the NW-SE line 13000 at stn3000, and the two interpretations are geologically consistent.

The southwestern portion of the section, up to stn 4000, is composed of gently dipping strata, with Teena dolomite close to the surface contributing to the high resistivity in the central part of the line. Normal faulting in the northeastern section has exposed conductive upper BCF at the surface.

The zone of highest chargeability is likely to be an artefact of the inversion process – this chargeable zone is not supported strongly by the raw data. This feature appears in a resistive zone below the Teena formation. It is interpreted that this chargeability high is probably from a source which is offset from line 12000.



### Line 13000

Diamond drillholes MY16 and MY20 are both close to line 13000, close to stations 2100 and 2550 respectively.

MYR20 is logged as BCF for the entire length of the hole (430m). Carbonaceous shales have been logged at the top of MYR20, where a conductivity anomaly is located in the resistivity inversion sections. Hence the BCF formation has been split into two sub-units for the purposes of the interpretations, with 'upper BCF' being an anomalously conductive unit.

The stratigraphy log for MYR16 can be summarised simply as:

0 - 322m	BCF
322m - EOH	Teena

This indicates that the position of the prospective HVC shale unit (basal BCF) is below the depth of IP investigation at this point.

Beneath stn1800 there is a high resistivity feature. This is interpreted to be thickened section of Teena dolomite, within a small anticline known as the 'Teena Ridge', which outcrops to the west of the line. This feature can also be seen in the ground gravity data as a northeast-trending residual gravity high (Hunt, 2012)

The Teena formation surfaces again at the northwestern end of the line, again as a discrete high-resistivity feature. The resistivity inversion section suggests a dip towards the southeast. The gravity data over this area also indicate that the sub-basin's northern margin is close to the northwestern end of line 13000 (Hunt, 2012). This interpretation is significant as it places constraints on the size of the basin and hence may limit the potential size of the Myrtle discovery.

A fault has been interpreted from the resistivity section, at stn2050. This is likely to be a minor fault however, and is not significant in relation to the stratigraphic interpretation.

There is a single strongly chargeable zone in the IP section. The location of this anomaly corresponds with the Pb-Zn mineralisation defined by drilling. There may be further zones of high chargeability along strike (deeper towards northwest), but the depth penetration of the survey was not sufficient to image this.

