



"Heazlewood" Annual Report May 2013 - May 2014

EL 50/2011



Heazlewood tracks investigated in 2013.

John McDougall

Consulting Exploration Geologist

PO Box 90, Sandy Bay, Tas, 7006

May 2014

Abstract

The Heazlewood River project is contained in Exploration Licence 50/2011. The licence was granted after tender by Aus Tin Mining (formerly AusNiCo) for Exploration Release Area 882. Aus Tin Mining are focussed on locating Avebury style Nickel mineralisation. The key criteria are identified in the report.

A literature review identified a group of five potential Avebury style targets. These prospects were field checked and re-prioritised. The priority target amongst these is the area described as anomaly E. This anomaly is a broad VTEM anomaly associated with magnetic ultramafic rocks south of the Lord Brassey Nickel mine. The rocks are magnetite altered serpentinites and dunites, possibly close to a fold closure and adjacent to a large shear in the Nickel Creek catchment which has abundant magnetite developed on the eastern (probable hang wall) side.

Other areas in the tenement may have similar prospectivity, however a definitive test of the magnetic and EM anomalous target (Anomaly E) is proposed.

A ground based IP survey is planned to assess the orientation of any sulphide bodies within the prospective zone at Anomaly E and follow up drilling of any generated targets is proposed for the upcoming summer field season. An application to amend the licence boundary to include a further strip of ground to the south of the current licence boundary was granted and it is proposed that part of the tenement is dropped.

Table of Contents

Abstract.....	2
Introduction	5
Tenure.....	5
Location and Access.....	6
Topography.....	7
Vegetation and Soil.....	7
Land Classification.....	7
Targeting.....	8
Geology	9
Early Cambrian Ultramafics	9
Crimson Creek Formation	10
The Meredith Granite	10
Tertiary Basalts.....	10
Alteration	10
Mineralisation	10
PGE mineralisation.....	10
Nickel Sulfide in fracture systems:.....	10
Previous Work / Exploration History	11
AMAX (1969).....	11
Comstaff /Anglo (1960 - 1984).....	11
Theseus (1971).....	12
Metals Exploration (1985-89)	12
CRA (1993-96).....	13
MRT (2000-2001)	13
Allegiance (2002-2005)	13
Bass Metals (2006-2011).....	14
Work completed	15
Literature review.....	15
Field Reconnaissance.....	16
Summary of prospectivity of investigated sites.....	16
Discussion.....	17
Current Assessment	17
Conclusions	17

Environment	18
Expenditure.....	18
References	19
Keywords.....	19
List of Digital Files	19
Appendix 1 - Assessment of "North-eastern Block" of EL50/2011.....	20
Figure 1 - Licence Tenure with respect to the National Park and Fossicking area.	5
Figure 2 - Location of EL50/2011 on 1:100k topographic base.	6
Figure 3 - Location of amendment (granted) to EL50/2011 on 1:100k topographic base.	6
Figure 4 - Position of Lord Brassey above serpentinitised ultramafics (Newnham 2001)	11

Introduction

Tenure

This is the second annual report for the Heazlewood project. The project is contained in Exploration Licence 50/2011. The licence was granted on the 21st of May 2012 after the successful tender by Aus Tin Mining for Exploration Release Area 882. The licence is bound by the Savage River National Park to the north and there is an area of restricted activity within the Lord Brassey Mine fossicking area to the south.

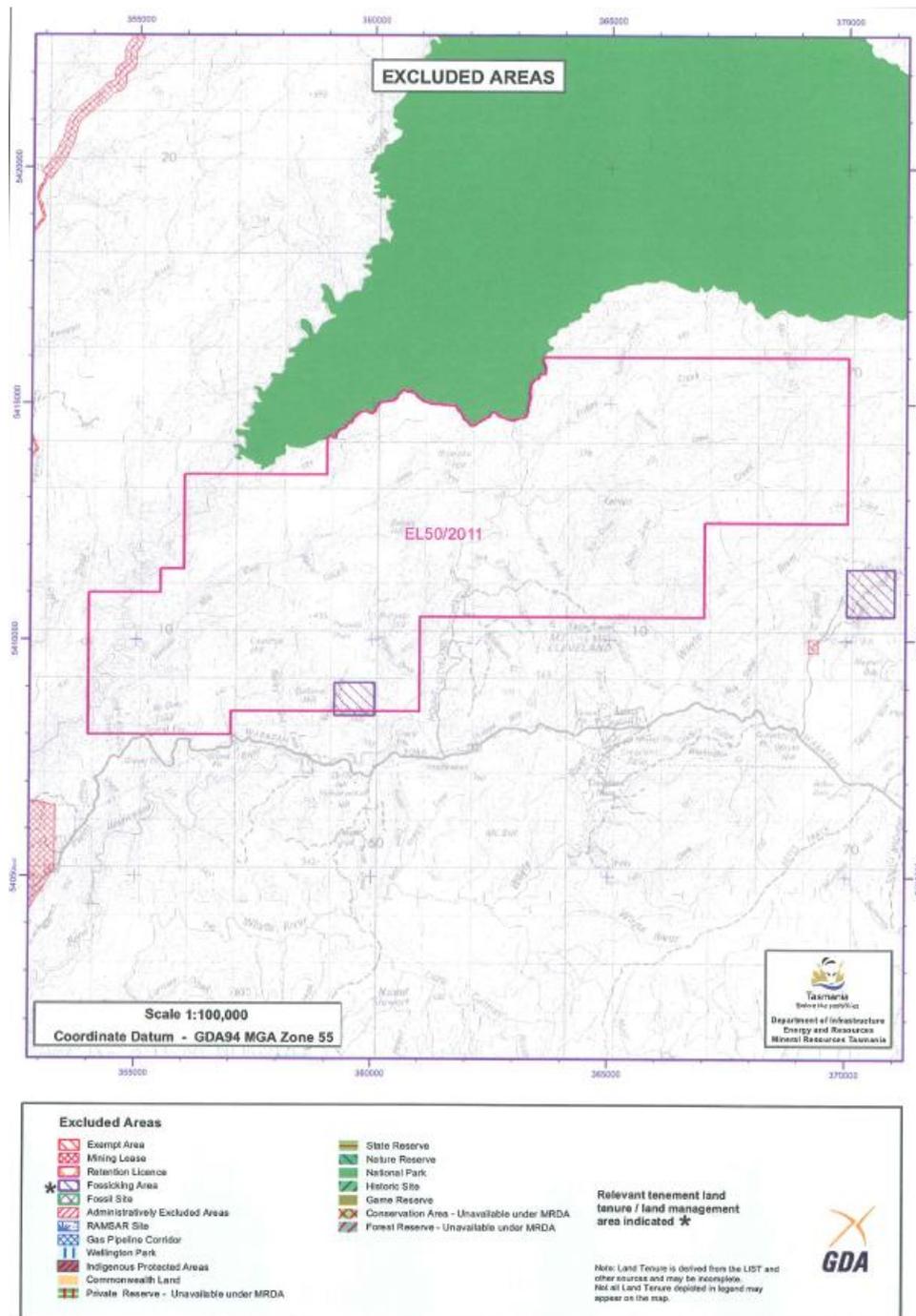


Figure 1 - Licence Tenure with respect to the National Park and Fossicking area.

Location and Access

EL50/2011 is located about 25km west of Waratah. Access to the tenement can be gained via the sealed Waratah Road which runs between Savage River in the west and joins the north-south Murchison Highway to the east.

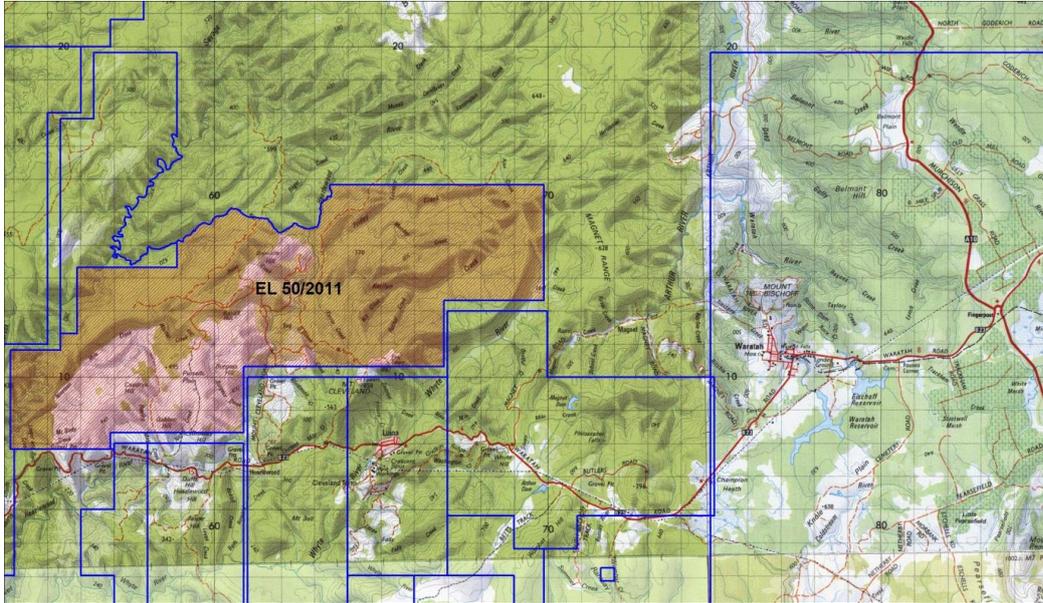


Figure 2 - Location of EL50/2011 on 1:100k topographic base.

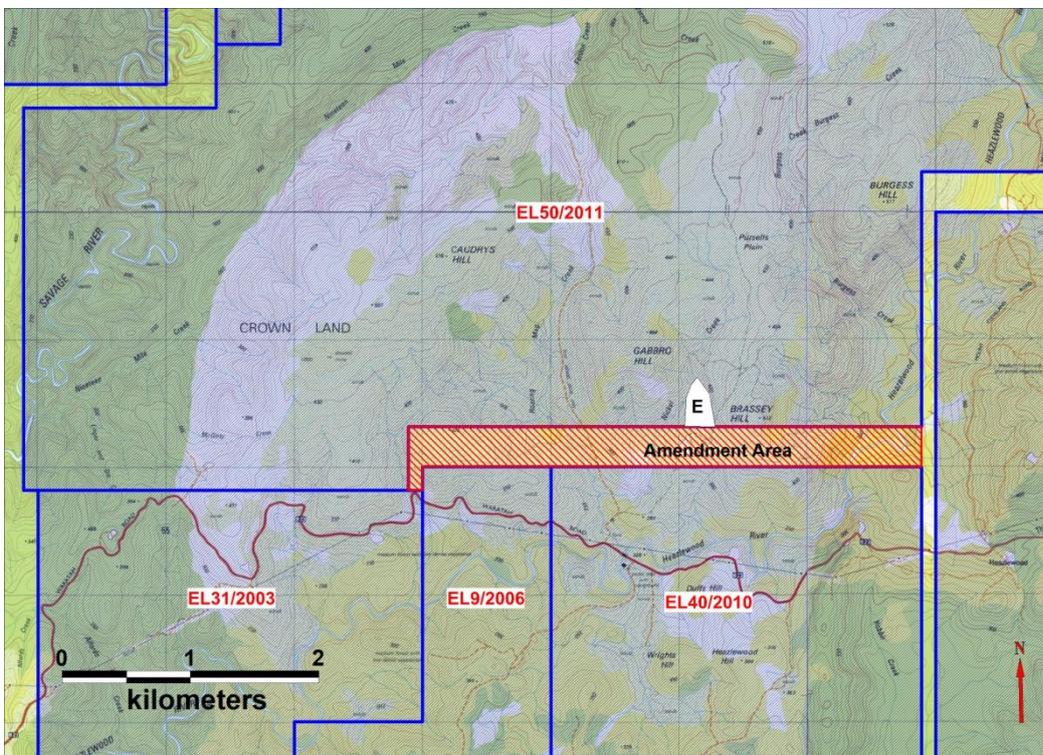


Figure 3 - Location of amendment (granted) to EL50/2011 on 1:100k topographic base.

Topography

The topography of the tenement is variable with most of the tenement occurring between 300 and 600m above sea level. The valleys of the Heazlewood River, Roaring Meg Creek, Burgess Creek and watersheds in the north west half of the tenement are all relatively steeply incised. Hills are generally moderately steep with the exception of steep slopes on the ridges on Brassey, Burgess and Gabbro and Caudry's Hill where steep slopes are hard to traverse. The highest point is at Mt Cleveland (887m) and the watershed to the north of here is also very steep.

Vegetation and Soil

Adding to the difficulty of the steeper slopes is the types of vegetation. The tenement is dominated by medium height dense scrub with common Hakea, Banksia and Eucalyptus nitida (peppermint) over storey. The lower scrub levels are dominated by bauera, cutting grass and occasionally melaleuca and sags. The northern and north-western areas around Basalt Hill and Mt Cleveland are dominated by tall eucalypt forest with rainforest species commonly lining the valleys.

Soil is usually well developed on valley slopes except over the ultramafics where rocky boulder scree is common. On some of the peaks of the hills eg: Brassey Hill there is only a skeletal soil and a low density Banksia scrub is present. There is some button grass development within the vicinity of Purcell's Plain and lower Nickel Creek.

Two listed threatened flora species occur in the tenement:

Micranthemum serpentinum is a Tasmanian endemic shrub restricted to serpentine outcrops in the State's west and is listed under the Threatened Species Protection Act 1995 as rare. Flowers appear from September to November, however the species can be identified without flowers

Epacris glabella, are recorded from various locations throughout the area. *Epacris glabella* is a 1–2 m tall shrub with white flowers, peak flowering occurs in spring. Populations known on Brassey Hill, Gabbro Hill and 19 Mile Creek. *Epacris glabella* is known to be susceptible to the exotic soil-borne disease *Phytophthora cinnamoni* (root rot). The species is listed under the federal EPBC act (1999) as endangered.

Previous explorers have been required to conduct flora surveys for ground disturbing works and where affected have had to hold a permit to take *Epacris* and *Micranthemum* in the planned work area. A permit is applied for through the Threatened Species Section-Department of Primary Industries, Parks, Water and Environment. There are *Phytophthora cinnamoni* management zones within the tenement and there are requirements for washing down vehicles, boots and equipment to be free of extraneous soil.

Land Classification

The licence is covered by the Savage River Regional Reserve (approx 2/3), State Forest (1/3) and associated informal reserves usually associated with drainage features. Exploration and mine development are provided for under all these land classifications but programs which involve ground disturbance require approval from the government inter-departmental Mineral Exploration Working Group (MEWG)

Targeting

The target within EL50/2011 is Avebury style mineralisation (and to a lesser extent tin deposits like Renison or Mt Bischoff). The Avebury style of deposit is remobilised nickel sulfide deposits formed when Carboniferous granites intrude ultramafic formations, thereby producing quantities of magnetite, pyrrhotite and pentlandite which accumulate in trap sites towards the top of altered ultramafic piles.

Avebury style deposits are essentially nickel sulfide skarn deposits formed as the result of extensive serpentinisation of ultramafic formations by major hydrothermal events capable of providing the chemical and physical environment necessary to remobilise, transport and deposit nickel sulfides and iron oxides. The mineralising system always contains magnetite which is variably accompanied by sulfide, and sometimes this sulfide includes the nickel sulfide - pentlandite. The magnetite is formed as a result of serpentinisation of olivine rich ultramafic rocks e.g. dunite, and olivine-pyroxene varieties e.g. harzburgite.

It was thought that to be a source rock for the formation of an Avebury style deposit, the dunite/pyroxenite must also contain nickel, possibly at low levels within the lattices of the principal components of the ultramafics, so that it is released upon serpentinisation. If nickel is not present in the source rocks, then only magnetite and pyrrhotite would form as a result of the hydrothermal alteration. It is now recognised (Keays and Jowitt, 2012) that Nickel is also remobilised from a probable primary magmatic source at depth at Avebury.

Development of Avebury style deposits requires that the ultramafic source rock is extensively altered i.e. serpentinised by a major hydrothermal event which contributes heat, hydrothermal fluids and sulfur to the alteration process. Serpentinisation of a dunite (and to a lesser extent a pyroxenite) will result in the formation of serpentine minerals accompanied by variable amounts of talc and carbonate.

The sulfur source is still possibly the hydrothermal fluids i.e. from the Meredith Granite, however enough sulfur may be scavenged from the ultramafic pile and associated primary mineralisation. If sulfur is not present in the hydrothermal system, then pyrrhotite and pentlandite cannot form, in which case the nickel would probably be deposited in various nickel silicates and the iron will concentrate as magnetite.

For major mineral deposits to form the metals must be transported by the hydrothermal fluids and concentrated in "trap sites" prior to deposition. If the hydrothermal system is essentially a large convection cell, then deposition will be focused near the top of the cell.

Fluid movement paths within the cell will be influenced by structures (faults) and country rock geometry. Trap sites, or mineralisation repositories, may be formed by a combination of structural settings and essentially non-permeable country rocks eg: hornfelsed sediments or volcanics.

If the nickel bearing fluids are not focused, they will continue to circulate within the slowly cooling hydrothermal cell, eventually forming large low grade disseminated deposits within the altered ultramafics or in fracture systems in the enclosing rock formations.

If the nickel sulfides are accumulated in repositories near the top of hydrothermal cells, it is necessary that these sites be largely preserved from subsequent erosion i.e. the best deposits will probably be concealed deposits.

In summary the Avebury model requires the following:

- Granite < 5 kms of current surface
- extensive alteration of ultramafics with resultant production of magnetite
- evidence of extensive hydrothermal processes, including addition of sulfur to the system
- development of substantial structures within the hydrothermal environment to facilitate movement and focusing of hydrothermal fluids
- presence of trap sites for mineralised fluids and subsequent preservation of these sites

Geology

EL50/2011 is largely underlain by a layered sequence of middle-late Cambrian ultramafic and mafic bodies forming the Heazlewood River Complex (HRC)

The ultramafics are interpreted as tectonically emplaced in the mid-Cambrian. They overlie lower Cambrian Success Creek Group sediments to the west, and are irregularly overlain to the east by Cambrian low titanium-bearing tholeiitic basalts and andesites which are probably genetically related to the ultramafic formation event.

Extensive tectonism in the upper Devonian-Carboniferous was accompanied by intrusion of the Meredith Granite. Major folding and faulting took place along NW and NNE trends.

Early Cambrian Ultramafics

In the early phases of the Tyennan Orogeny, the east-facing Tasmania passive margin is thought to have collided with an oceanic arc, resulting in the obduction of mafic-ultramafic complexes. The original shallow-dipping geometry of the allochthonous sheets has been substantially disrupted by later Cambrian and Devonian deformation, so that the present surface occurrences are typically steeply dipping and fault bounded.

Three ultramafic-mafic rock associations are commonly in fault juxtaposition within the complexes: layered Pyroxenite-Dunite, layered Dunite-Harzburgite and layered Pyroxenite-Peridotite and associated Gabbro (Seymour *et al*, 2006). The ultramafic complexes on the tenement generally have primary layering trending in a north-east direction.

A 1990 account of the geology of the HRC was summarised by Peck and Keays (1990) that summary is presented below.

- The largest (50 sq km) and least dismembered ultramafic complex in Tasmania.
- Initially emplaced during the Middle Cambrian and subsequently re-emplaced during an episode of compressional deformation during the Devonian
- Consists of 5 km (max.) of layered ultramafic cumulates and cross cutting gabbroic rocks and 3 km (max.) of overlying low-Ti tholeiitic basalt and boninite (Brown, 1986).
- Hosts a tonalite complex and probable tectonic melanges (Creenaune, 1980).
- Cumulate layering is well developed in many parts of the complex and trends NE with near vertical dips (young to the East).
- Variably serpentinised.
- Cut by many faults and shear zones which trend NW, N and NE (parallel to layering).
- A major NS fault divides the complex into western and eastern sections

Crimson Creek Formation

The Crimson Creek Formation occurs in the north-western part of the tenement and represents a correlate of the Upper Neoproterozoic- Lower Cambrian Togari Group sedimentary and mafic volcanic succession. The group can be subdivided into four main phases of sedimentation; a lower dolomitic succession with basal siliceous conglomerate-sandstone, a phase of mafic rift volcanism and associated volcanoclastic sedimentation, renewal of shallow-marine carbonate sedimentation, and at the top, a Cambrian phase of deep-water siliciclastic sedimentation (Seymour *et al*, 2006).

The Meredith Granite

World-class tin and tungsten ore bodies, as well as many lead, silver, gold, zinc, copper and bismuth deposits of different styles, are genetically and spatially related to the emplacement of high-level Middle Devonian to Early Carboniferous granitoids in Western Tasmania. Nickel skarn is known to be associated with the Heemskirk granite at Avebury. The Meredith Granite although not known to outcrop on the tenement is likely to occur at depth below the southern half of the licence.

Tertiary Basalts

Radiometric dates from basalts across Tasmania indicate an age range of between 16.4Ma and 64.5Ma (Everard *et al.*, 2004). The basalts on the tenement are unfoliated, massive and generally thin flows with amygdaloidal upper surfaces.

Alteration

In the south (closest to the granite), serpentinisation of the ultramafics is pervasive. Where the ultramafics are dunites or harzburgite, this alteration is accompanied by the extensive formation of magnetite. This is reflected in the aeromagnetics. Magnetite is also evident in altered serpentinites in the Wilson soil anomaly area on the flanks of an apparent fold closure.

Mineralisation

PGE mineralisation

The Heazlewood area is well known for its PGE mineralisation and in the early 1900's, the area was the world's largest producer of osmium and iridium (Osmiridium). Most production came from alluvial deposits at prospects such as Purcell's, Fenton's and Caudry's. It was thought to be derived from nearby dunite formations. At Caudry's unpayable amounts were mined from shears in a small open cut.

Nickel Sulfide in fracture systems:

Most mineralisation can be directly attributed to, but is not limited to, ultramafic lithologies. Mineral occurrences include Ni, Cr and Pt, Os, and Ir; as well as Pb, Zn, Au and Cu.

There are several recordings of nickel sulfide on EL 50/2011 all of which are minor.

At Purcell's, the serpentinite is cut by small magnetite-pyrite pentlandite veinlets.

At Fenton's Knob, a small crackle-breccia in serpentinitised dunites contains interstitial pentlandite. Best assay of grab sampling by CRA was 1.2% Ni.

At the Lord Brassey Mine approximately 300m of driving was put in on one level along a NW trending fault zone. Extensive silica-carbonate alteration occurs along this fault, accompanied by

heazlewoodite (Ni₂S₃) and the secondary nickel mineral zaraitite. High grade nickel samples can be obtained in the Lord Brassey Mine, but the mineralised shoots are very thin and discontinuous. Collective exploration evidence suggests the nickel mineralisation in the above three localities is probably hydrothermally remobilised nickel concentrated along structural or breccia zones.

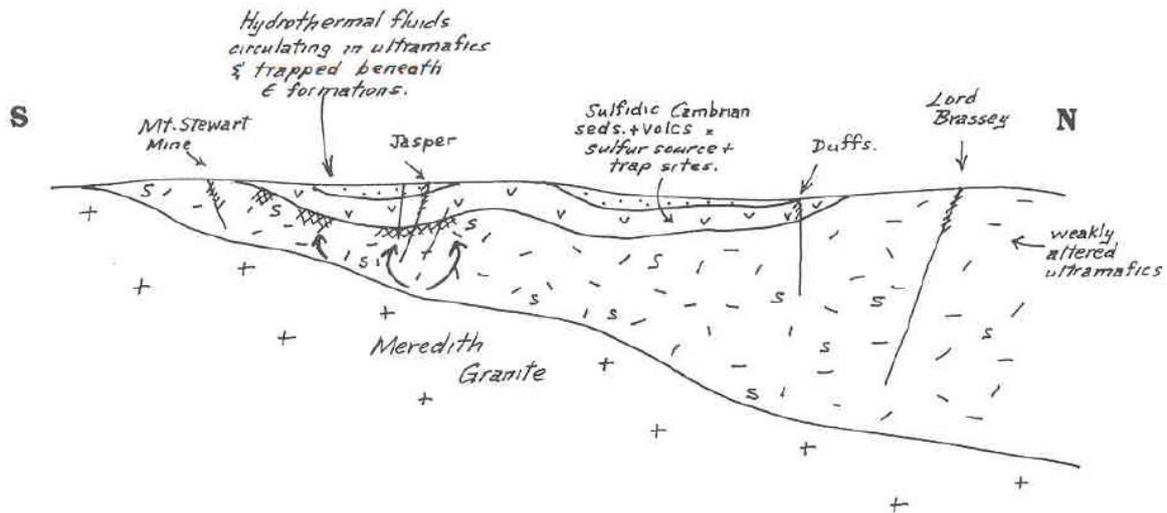


Figure 4 - Position of Lord Brassey above serpentinised ultramafics (Newnham 2001)

Previous Work / Exploration History

AMAX (1969)

AMAX explored in SPL 37 which was focussed on the Lord Brassey area for Nickel this included:

- ground magnetic survey
- geochemical soil sampling
- IP survey (numerous anomalies defined)
- 4 cored drill holes to test IP anomalies.

They identified narrow veins of nickel sulfide in NW trending shear zones in both the Lord Brassey Mine and NE of that mine. Nickel sulfides were closely associated with magnetite. They also located several narrow zones of minor Ag-Pb-Zn mineralisation to the south and east of the Lord Brassey.

Their 4 cored drill holes (DDH H1 to H4) failed to intersect significant mineralisation, the best value being one sample of 0.24% Ni as non-sulfide Nickel.

Comstaff /Anglo (1960 - 1984)

- 4 soil lines were sampled at Caudrey's and assayed for Ni and Co. The best anomaly at the end of northern soil line 4 (4500ppm Ni and 600ppm Co) had a coincident Self Potential and magnetic anomaly.

- The peak Ni in the trench dug to test this is 5900ppm Ni and 350ppm Co with no obvious correlation to rock type, however no sulphides were observed and may relate to Nickel in silicate redistributed in shears.
- One geochemical anomaly was located in Friday & Tea Creek, this was recommended for soils, elements included Cu, Zn, Ni, Ag and Sn and was attributed to sulphide in dolerites.
- Ni was found to correlate with the serpentinite in soils
- Dighem Anomaly 44A had Ni in soil to 5200ppm, stream sediments elevated in Nickel and up to 26.5% Cr in Panned Concentrate. The DIGHEM anomaly suggested a thin body with a discrete strike length of <200m at approx 36m depth. A 60 degree diamond drill hole was recommended. Ground EM indicated a good conductor at 50m with a steep dip, the EM is located between 2 magnetic anomalies and sulphide is present in float.

The focus of Comstaff/Anglo changed to their base metal prospects

- Two holes drilled into graphitic black shales looking for Pb/Zn (Dighem 19A, 29A)
- All previous work was written off
- Relinquished in June 1984

Theseus (1971)

Theseus continued working in the Lord Brassey area on SPL37 when Amax pulled out, re-sampling the main Lord Brassey adit and drilling two holes (TDH1&2) beneath the mine. These holes intersected only minor mineralisation.

- TDH 1 obtained two intersections: 5 feet @ 0.5%, and 5 feet @ 0.9% Ni (considered sub-economic). The log indicates the 0.9% sample is Heazlewoodite, core is unavailable.
- TDH 2 encountered no mineralisation. This may test the soil peaks NE of the mine. Two Ni peaks in soil West of the mine remain untested

They concluded: *“The sulfide mineralisation was probably introduced at a later date, possibly early in the deformation event. Serpentinisation of the host rock post-dates the sulfide mineralisation and it is possible that there may have been remobilisation of the sulfides subsequent to emplacement.”*

Metals Exploration (1985-89)

Metals Exploration undertook substantial exploration programs in the Heazlewood area over a four year period. Their initial target was PGEs but after 1988, they switched their attention to base-precious metal exploration.

Their initial PGE search was concentrated in the Fenton's, Purcell and Lord Brassey areas where they undertook extensive mapping, geochemical (rock, soil and stream sediment) surveys, trenching, percussion and core drilling programs.

Major programs included:

- Caudreys: extensive trenching, 13 percussion holes
- Purcells: 17 percussion holes
- Lord Brassey: 2 kms trenching, 44 percussion holes

- Fentons: 3.6 kms trenching, 1 cored hole

Whilst some patchy encouragement was derived from this work, results were generally disappointing. The best Ni result was on the Lord Brassey grid where percussion hole BRP 6 intersected 3m @ 0.44% Ni.

CRA (1993-96)

CRA acquired EL36/1992 in 1993 and had two target models:

- low grade remobilised Ni sulfides in ultramafics
- hydrothermal Cu-Au in mafic/ultramafic formations

Their target of low grade remobilised Ni sulfides was the closest work to the Avebury model undertaken by any previous workers. However, CRA did very little to pursue the target model beyond sediment sampling. In the second year of tenure they moved their focus to the Copper-Gold.

- 2 catchments identified with >3000ppm Ni close to Fenton's Knob, covering a variably serpentinised orthopyroxenite sequence and include several alluvial Ir-Os-Au workings
- Fenton's Knob itself presents as Fe, Co, Ni anomalous in drainage
- The southern catchment is suggested as Ni as silicate which apparently accounts for the anomalism, the lateritically weathered rocks have Ni as silicate values up to 0.69% while Ni values for fresh rocks are significantly lower.
- Duff's prospect was written off as narrow Devonian system
- All stream sediment anomalies were followed up and bulk grade Ni was considered unlikely near surface

MRT (2000-2001)

As part of a western Tasmanian regional minerals program, MRT completed an aeromagnetic - radiometric survey of the Heazlewood area.

Results were released in November 2001. Flight lines were E-W and 200m apart with a sensor height of 60 m.

Allegiance (2002-2005)

- Allegiance acquired tenement EL14/2001
- Target style was to be Nickel rich Dunite/Olivine pyroxenites in a roof pendant within 2-3km of Meredith Granite
- Higher fluid flow known near steeper edges of the Devonian/Carboniferous Granites
- Iron and Ni remobilised during serpentinisation
- Model has Lord Brassey over the top of serpentinised ultramafics
- Only conducted an initial review and then held the ground with little follow up

Noted Historical Nickel Sulfide in fracture systems:

- At Purcell's, the serpentinite is cut by small magnetite-pyrite-pentlandite veinlets.

- At Fenton's Knob, a small crackle-breccia in serpentised dunites contains interstitial pentlandite. Best assay of grab sampling apparently previous to CRA was 1.2% Ni.
- At the Lord Brassey Mine approximately 300 m of driving were put in on one level along a NW trending fault zone. Extensive silica-carbonate alteration occurs along this fault, accompanied by heazlewoodite (Ni₂S₃) and the secondary nickel mineral zaraitite. High grade nickel samples can be obtained in the Lord Brassey Mine, but the mineralised shoots are very thin and discontinuous.
- Collective exploration evidence suggests the nickel mineralisation in the above three localities is probably hydrothermally remobilised
- Recommended relinquishment of the EL50_2011 area due to distance (assumed 8km depth) of granite

Bass Metals (2006-2011)

Originally acquired by Discovery Nickel in 2005, Bass Metals managed the tenement from 2006

- (Kalla, 2006) Suggested best models were PGE, Chromite, Replacement Sn and Structurally controlled Au, despite writing off nickel exploration Bass went on to explore for nickel.
- Line cutting and first pass multi-element soil sampling program. The program consisted of a total of 20.2km of line cutting giving 512 geochemical samples. These were dispatched for multi-element analysis (Au, Pd and Pt by Fire Assay Lead Collection (FA5MS), and Ag, As, Co, Cr, Cu, Ni, Pb & Zn by method B/OES. Followed by infill soil sampling of the northern part of the Heazlewood soil grid (Wilson Prospect). In response to the generated areas of interest an infill geochemistry program was undertaken extending the soil lines to total 10.8km giving an extra 200 samples submitted for assay
- Access field trips to establish pedestrian access to soil lines.
- Field trip in the vicinity of the Fenton's and 19 Mile Creek workings
- Rock Chip Sampling - Western 4WD track southern lines between Lord Brassy and Caudry's, Lord Brassy/North Brassy Ni-Co-Cr anomaly, Heazlewood 4WD track to Burgess Creek Pt-Pd anomalies
- Rock Chip Sampling - Eastern Heazlewood Rd 4WD track to Wilson Anomaly
- VTEM survey conducted in 2008 (TCR 08-5734)

VTEM Receiver

- Coil diameter 1.2 metre
- Number of turns 100
- Effective area 113.1 m²
- Sampling interval 0.1 s
- Nominal terrain clearance 34 m

Magnetometer

- Type Geometrics
- Model Optically pumped Caesium vapour
- Sensitivity 0.02 nT
- Sampling interval 0.1 s

- Cable length 13 m
- Nominal terrain clearance 68 m
- HJD001 was drilled at the Wilson Anomaly to 296.5m. From the collar to 14m, banded serpentinite was intersected and from there on the core comprised serpentinite with discrete zones of disseminated chromite. No sulphides were observed.
- It was decided that due to the lack of alteration/mineralization observed within this drill hole that no samples would be sent for assay. The Niton XRF machine was used as an assay tool. The planned second drill-hole was not drilled due to the lack of anomalous results.
- Fenton's anomaly modelled as west dipping from VTEM, Ground EM follow up indicated a conductive target at ~100-150m with a possible anomalous conductive sulphide source although not necessarily a highly conductive target like massive nickel sulphide. After processing the data, the target was identified as not having typical nickel sulphide style conductivity i.e. typically with extremely high conductivity – thickness product)
- A single -70 Hole HFD001 was drilled to 344.4m, an in hole conductor was indicated by down hole EM, however only clay-pug faults were intersected from ~170m. From this depth, frequency of silica-carbonate veining increased. Trace amounts of disseminated sulfides have been observed at 182m associated with more intense veining and very trace disseminated sulphide (possibly chromite) in the interval 230 –250m. Ni Peak Ni values were 0.23%, despite interpreted pentlandite.

Work completed

Literature review

A literature review of the 50 relevant Exploration Company Reports and any relevant Mines Department Reports was completed in March and April of 2013 to identify key prospects for Avebury style mineralisation. A summary of previous work is presented above. Unfortunately much of the modern data was not available as the 'closed file' nature of the reports had not been changed and much of the key new data e.g. modern soil sampling was initially unavailable resulting in a delay to field checks of the identified prospects.

Recent articles have also been published on Avebury, the key findings being that Modest to strong correlations between Cu, Au, Pd, REE, Sn, Mo, W and Ni confirm that the mineralization is hydrothermal in origin. In situ metasomatism of a magmatic Ni sulfide deposit is however ruled out on the basis of poor or negative correlations between Ir, Ru, Rh and Pt when compared to Ni. Although the sulfide-free ultramafic rocks have high Ni contents, this Ni would have been unavailable to the ore-forming fluids as it was hosted in inaccessible sites, such as oxides and silicates. The strong correlations between Au, Pd and Ni suggest that the source of the Ni was magmatic sulfides somewhere at depth that not only have high Ni but also elevated Pd and Au contents (Keays and Jowitt, 2012).

On this basis, the exploration characteristics of the target type (Avebury Style) do not change, however the second possibility of sulfur saturated magma deeper in the ultramafic pile must also be considered.

Field Reconnaissance

See last year's annual report.

Summary of prospectivity of investigated sites

Fentons Knob - Local breccia in Dunite identified by CRA was not identified in the field, possibly due to rounding of CRA's field coordinates. The breccia although not significant in size is evidence of remobilised nickel sulphide and is a low-moderate priority for follow up. Limonite bearing shears and joints were present at the site investigated, however no discernible sulfides were located.

Fentons EM - the target EM zone was clearly contained within the massive 'harzburgite' identified up slope of the drill pad, however the target is partly downgraded by drill core analysis that indicates no visible sulfide at the target depth despite an 'in hole' EM conductor.

Fentons - This area is characterised by a relatively large unexplained area of silicification and possible tourmalinisation. This may be partially coincident with a circular magnetic low feature, however the mineralising potential of the alteration does not seem significant with no sulfide identified in silica altered samples. One sample has probable tourmaline veining associated with the silicified and weakly limonitic float, however the alteration is not apparent in outcrop, only the 'boulder lag' adjacent to the creek. The lack of sulfide in the alteration package makes this a low priority.

Caudrys - The shearing and Osmiridium bearing nature of the Caudrys prospect were investigated to see if the area had any prospectivity for nickel mineralisation associated with the two lines of magnetic anomalies in the area. There are no signs of nickel minerals in the shears and the nature of the magnetic anomaly appears to be associated with a sheared dunite. The discontinuous nature of the magnetic features lends itself to interpretation that where the NW trending shears intersect the bounding fault and basal dunite, there is local magnetite alteration. The area is a low priority as alteration is too localised to be a worthy target.

Anomaly E - Investigation of anomaly E (named after the elevated EM south of Brassey Hill) was investigated and a range of rock types encountered. The probable dunite and harzburgite sequence is variably magnetic and magnetite is well developed in the veining that accompanies shearing in Nickel Creek, which appears to bound the magnetite altered dunite/serpentinite unit. This unit is the same as the dunite-harzburgite that contains nickel sulfide in shears at Lord Brassey Mine. The unit is considered prospective despite the lack of visible sulfide in the field. Flat dips on 'primary' layering in the finer grained units also lend themselves to an interpretation of a fold closure. The anomaly is considered a high priority and an IP survey is recommended.

Burgess Hill - Elevated VTEM not that dissimilar to anomaly E occurs on Burgess Hill, this is accessed from the west off Purcell's Plains. The anomalism is discreet and is recommended to be investigated if the northern part of Anomaly E generates chargeable targets in the IP survey.

Other areas of interest that require investigation is the location of Bass Metals rock chip HZ006 and the apparent coincident copper (Weber and Murphy, 1997) and nickel anomalism (Piggott, 1981) at the north western end of the historic anomaly 44A grid defined by Comstaff in the 1970's. This has not been field checked this season.

Discussion

The possibility of an Avebury style model has been considered by previous explorers, however several factors have hindered the effective nature of investigation. Bass Metals did not collect sulfur data for their soil program and nickel silicate and sulfide responses cannot be easily distinguished. The EM data has been tested at Fenton's however a somewhat ambiguous result from drilling has left questions as to the nature of the broad EM anomalies. The identified 'possible pentlandite' in this drill core was not able to be viewed as a pallet of core is currently unaccounted for and resides somewhere in the Bass Metals yard, it is hoped that this will be located and lodged with MRT soon. The possibility of geological noise or banded magnetite response cannot be completely ruled out, however a strong conductor on the southern licence boundary associated with an adjacent VTEM survey gives the strong possibility of a buried nickel sulphide body at anomaly E. This being said, copper and lead anomalism at Duffs Hill and Mt Jasper do not preclude another sulphide source. Anomaly E meets the criteria for an Avebury style target with a sizeable fault for fluid migration, a potential trap site where flat dips have been noted, magnetite alteration and elevated EM potentially indicating sulphide.

Current Assessment

The nature of Nickel anomalism in the south of the licence remains a focus for Aus Tin Mining. The Anomaly E area is to be retained for further investigation. In addition to this an assessment of the "North -eastern block" of the tenement was conducted with respect to tin prospectivity. A summary report is attached as Appendix 1.

Conclusions

Field and drill core assessment of the recent Bass Metals work has downgraded the priority of the Wilson and Fenton's EM prospects. The highest priority target is the area south of Brassey Hill which Aus Tin Mining have termed Anomaly E. This area will be the initial focus of ongoing work. The potential for erosion of primary sulphide bodies at Fenton's Knob has led to the dropping of this target and Anomaly 44 has not been investigated to the point where a target can be discerned.

A ground based IP survey is planned to assess the orientation of any sulphide bodies within the prospective zone (Anomaly E) and follow up drilling of any generated targets is proposed for the upcoming summer field season. An application to amend the licence boundary to include a further strip of free ground to the south of the current licence boundary was granted and a work program will be submitted to MRT in due course.

If the IP proves successful in identifying targets in the VTEM anomalous areas, selected anomalies accompanied by magnetic highs should be followed up on the ground with mapping, geophysical (IP) and possibly systematic rock chip geochemical surveys. The main example would be the Burgess Hill area.

Environment

The area investigated in the field is known to contain areas of dieback related to of Phytophthora cinnamoni (root rot), this fungus persists in soil transported between sites. Boots and the vehicle were cleaned before entering the EL in order to stop the introduction of Phytophthora cinnamoni. Trips to muddy sites eg: Wilsons Track were accompanied by scrubbing down of equipment at the Heazlewood River crossing. A high pressure hose was also used on the vehicle at Waratah.

Expenditure

Actual Expenditure for the year 2013/14 was \$12,500 and was for the review and synthesis of data from field reconnaissance and historical reports for the identification of "Avebury" style target designated Anomaly E, located south of Lord Brassey.

Estimated ongoing expenditure for year 2014/15 is likely to include:

Botanical Survey if required <\$15,000

Grid Cutting <\$20,000

A 5 line x 1km pole-dipole IP survey <\$60,000

Drilling and Assay > \$80,000

Further Field Reconnaissance and Assay <\$20,000

Administrative Costs <\$30,000

References

Bates, 2011, Heazlewood Project (Savage River Group) Tasmania, EL31/2003 Partial Relinquishment Report, 22nd March 2011 – 15th June 2011 (TCR 11-6262)

Carthew, 1989, Annual Heazlewood Prospect EL21/85 Annual Report for the period ending 1.12.89 (TCR 89-3054)

Kalla, 2006, Exploration Licence EL31/2003 – Heazlewood, Tasmania, Annual Report for the period ended 26th March 2006, Bass Metals Limited. (TCR 06-5320)

Keays and Jowitt, 2012, The Avebury Ni deposit, Tasmania: A case study of an unconventional nickel deposit. *Ore Geology Reviews* 52, 2013 (pp 4-17)

Maher S., 1994 EL 36/1992 Heazlewood, Final and third Annual Report for the Period Ending 5 March 1996. (TCR 95-3777)

Metals X, 1986, Heazlewood Prospect EL21/85 Annual Report for the period ending 1.12.86 (TCR 87-2644)

Newnham, 2003, EL14/2001 Heazlewood, Annual Report year ending 14 September 2002 (TCR 02-4765)

Piggott, 1981, Report accompanying licence renewal application for EL 1/68, Tasmania, Comstaff Pty Ltd 21.5.1981 (TCR 81-1605)

Peck and Keays, 1990, Insights into the behaviour of precious metals in primitive, S-undersaturated magmas: Evidence from the Heazlewood River Complex, Tasmania, *Canadian Mineralogist* Vol 28, 1990 (pp553-557)

Seymour et al. 2006, The Geology and Mineral Deposits of Tasmania: a summary, Bulletin 72 MRT

Weber and Murphy, 1997, Heazlewood EL23/1996, Annual and final report for the period ending October 1997 (TCR 97-4807)

Keywords

Heazlewood River Complex, Serpentinite, Harzburgite, Nickel, Avebury, PGE's, VTEM, Magnetite

List of Digital Files

EL502011_201405_01_Report.pdf

EL502011_201405_02_Appendix1.pdf

Appendix 1 - Assessment of "North-eastern Block" of EL50/2011