EL 14/2001- HEAZLEWOOD AREA

ANNUAL REPORT

Year Ending
14 September 2002

Prepared for:

Allegiance Mining NL

10 August 2002

Prepared by:
Lindsay Newnham, Bsc, FAusIMM, CPGeo
Newnham Exploration and Mining Services
PO Box 183 Exeter Tasmania 7275
Ph: (03) 6394 3434 Fax: (03) 6394 3435

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1. EXPLORATION PHILOSOPHY and OBJECTIVES

Exploration Licence 14/2001 in the Heazlewood area was acquired because the area was considered prospective for nickel skarn deposits of the *Avebury style.*

Avebury style deposits are hosted by ultramafic bodies lying within the contact aureole of younger granitic intrusives. They are believed to have formed during the hydrothermal alteration of the ultramafic by the granite, resulting in the formation of nickel sulfide concentrations in structural or lithological trap sites.

In the Heazlewood area, the Heazlewood and Mt Stewart ultramafic complexes (probably components of a single ultramafic body) have been intruded by the Meredith Granite. The area thus had the fundamental criteria necessary for the formation of *Avebury style* nickel sulfide deposits.

2. WORK COMPLETED

Existing exploration data in the licence area was reviewed to assess in greater detail the area's prospectivity for *Avebury style* nickel sulfide deposits.

Results of this study are presented in the report:

"EL 14/2001 Heazlewood Area, Tasmania. Review of Exploration Potential for Avebury Style Nickel Sulfide Deposits" December 2001, prepared for Allegiance Mining NL by L A Newnham.

A copy of that report is herein appended.

3. LICENCE REDUCTION

Following completion of the detailed prospectivity review, it was determined that the northern section of the licence area was not highly prospective for the target model.

In response to this determination Allegiance, on 04 February 2002, applied for a reduction in the licence area from 108 sq km to 61 sq km. This reduction was formally granted on 03 July 2002.

4. WORK PLANNED

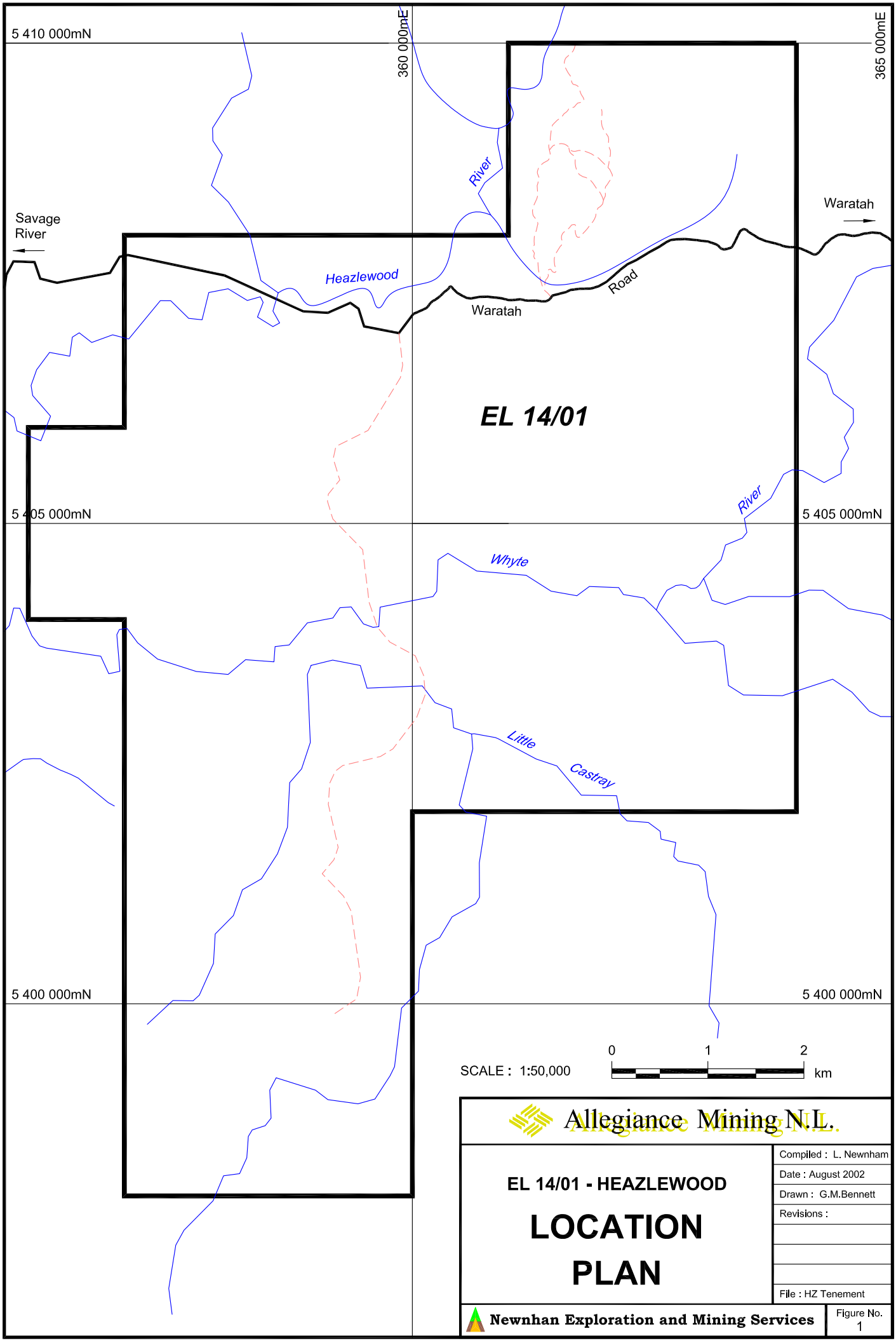
In addition to the *Avebury style* nickel sulfide deposit targets, copper-gold deposits in the basaltic bodies near the Jasper Mine have also emerged as an exploration target.

The direction of future work on the reduced licence area will be influenced by the results of the recently completed MRT airborne EM and magnetic surveys over the area.

The most probable next stages of exploration will be:

(a) completion of a high resolution aeromagnetic survey over the licence

(b) ground investigation of selected targets emerging from this survey



Allegiance Mining N.L.

EL 14/01 - HEAZLEWOOD

LOCATION PLAN

Compiled :	L. Newnham
Date :	August 2002
Drawn :	G.M.Bennett
Revisions :	
File :	HZ Tenement

Newnhan Exploration and Mining Services

Figure No. 1

Appendix: Review Report

Allegiance Mining N.L.

EL 14/2001
HEAZLEWOOD AREA, TASMANIA

REVIEW OF EXPLORATION POTENTIAL FOR AVEBURY STYLE NICKEL SULFIDE DEPOSITS

December 2001

Prepared by:
Lindsay Newnham BSc, FAIMM, CPGeo
Newnham Exploration and Mining Services
PO Box 183, Exeter, Tasmania 7275
PH: (03) 6394 3434 Fax (03) 6394 3435

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1. SUMMARY

Exploration Licence 14/2001 covers an area of 108 sq. kilometres in the Heazlewood district in NW Tasmania.

The area was acquired by Allegiance Mining NL because it was considered prospective for ***Avebury style*** nickel sulfide deposits.

Avebury style deposits are remobilised nickel sulfide deposits formed when Carboniferous granites intruded and serpentinised nickeliferous ultramafic formations, thereby producing quantities of magnetite, pyrrhotite and pentlandite which accumulated in trap sites towards the top of the altered ultramafics.

The Heazlewood area is underlain by a layered sequence of ultramafics (dunite, pyroxenites) overlain by Cambrian basalts, andesites and sediments. A remnant of the Huskisson Syncline (post-Palaeozoic sediments) overlies the Cambrian rocks in the eastern section of EL14/2001.

These formations were intruded by the Carboniferous Meredith Granite, resulting in the development of a major NE trending zone of hydrothermal activity along the northern margin of the granite, extending from Heazlewood to Mt.Bischoff.

The hydrothermal activity has only affected the southern section of the ultramafic complex within a reasonable (practical mining) depth. Most of the prospective rocks within this altered southern section appear to have been extensively unroofed by subsequent erosion (ie) high level mineralised trap sites may have been eroded away.

The two most attractive opportunities for an “Avebury Style” deposit are:

- large aeromagnetic anomaly concealed beneath the faulted western margin of the Huskisson Syncline remnant

- magnetic anomalies representing altered ultramafics (?) beneath Cambrian basalts and sediments in the general Mt.Jasper area.

The Huskisson anomaly may represent an accumulation of magnetite and sulfides within the roofed section of a zone of serpentinised ultramafics.

The Jasper anomalous zone may also represent accumulations of magnetite and sulfide trapped at shallow depths beneath sulfidic Cambrian basalts and sediments.

The following program is recommended to systematically evaluate these opportunities:

(a) relinquish the northern and western sections of the Exploration Licence (approx. 50% of the total area)

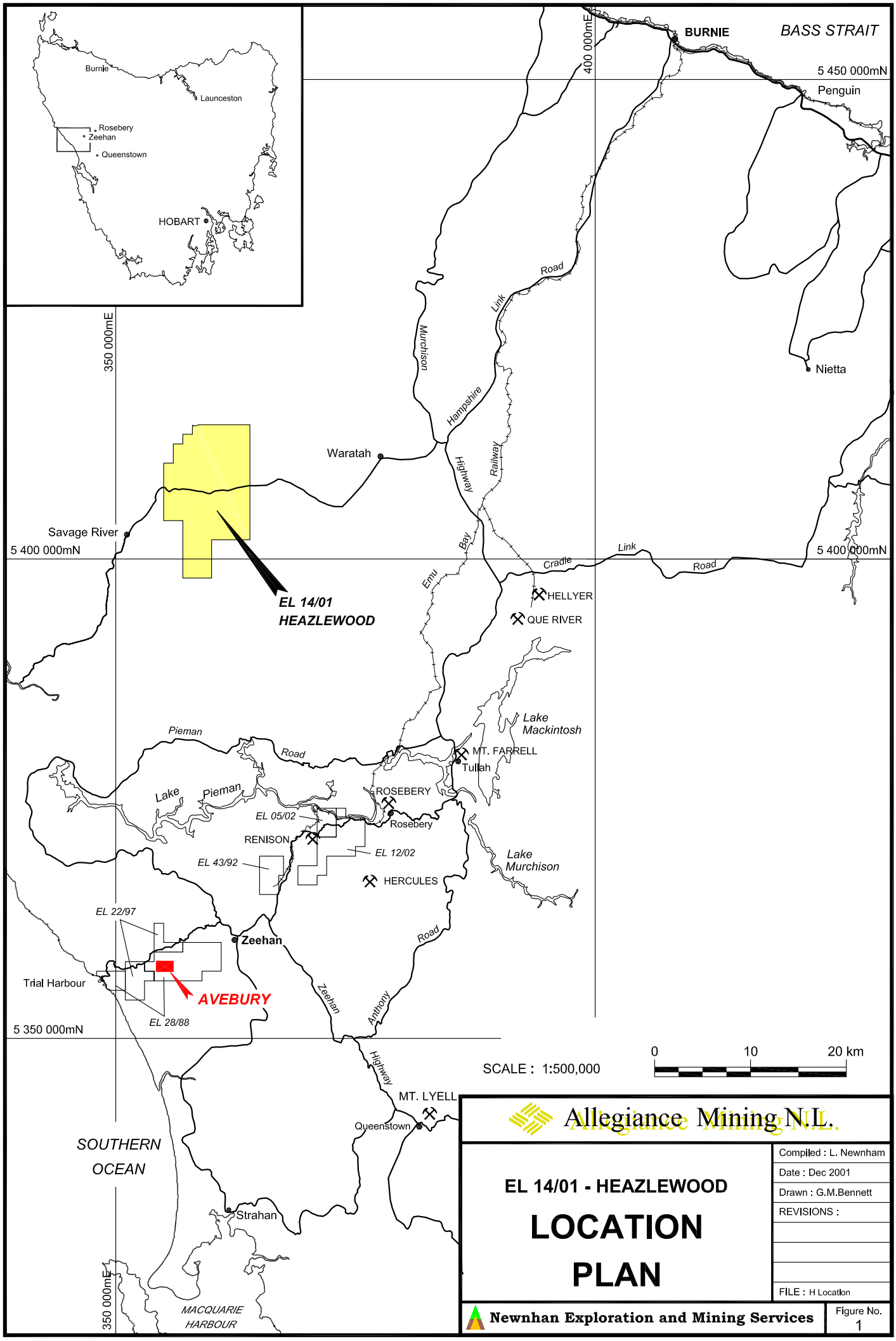
(b) wait for government to complete and release their airborne EM survey data over this area (March 2002), then have their airborne EM, magnetic and radiometric data interpreted. Whilst this is semi-regional data, it is very useful at this stage.

(c) depending on the outcomes of this interpretation ((b) above), complete the following sequential program:

- detailed high resolution airmag survey (50 m line spacing, 50 m height) over the southern retained area

- detailed geological mapping, geochemical and ground EM/IP surveys in small selected areas.

- drill selected targets.


Burnie
Launceston
Rosebery
Zeehan
Queenstown
HOBART
BURNIE
BASS STRAIT
400 000mE
5 450 000mN
Penguin
Nietta
Murchison
Link
Road
Hampshire
Highway
Railway
Waratah
350 000mE
Savage River
5 400 000mN
EL 14/01
HEAZLEWOOD
Bay
Emu
Cradle
Link
Road
HELLYER
QUE RIVER
Lake
Mackintosh
Pieman
Road
MT. FARRELL
Tullah
Lake
Pieman
ROSEBERY
EL 05/02
Rosebery
RENISON
EL 43/92
EL 12/02
HERCULES
Lake
Murchison
EL 22/97
Zeehan
Road
Trial Harbour
AVEBURY
EL 28/88
Zeehan
Anthony
5 350 000mN
Highway
MT. LYELL
Queenstown
SOUTHERN
OCEAN
Strahan
MACQUARIE
HARBOUR
SCALE : 1:500,000
0
10
20 km
Allegiance Mining N.L.
EL 14/01 - HEAZLEWOOD
LOCATION
PLAN
Compiled : L. Newnham
Date : Dec 2001
Drawn : G.M.Bennett
REVISIONS :
FILE : H Location
Newnhan Exploration and Mining Services
Figure No.
1

2. TENURE and LAND CLASSIFICATION

El 14/2001 of 108 sq. kilometres lies approximately 70 kilometres south-west of Burnie in the Heazlewood district (fig 1). It straddles the sealed highway between Waratah and Savage River.

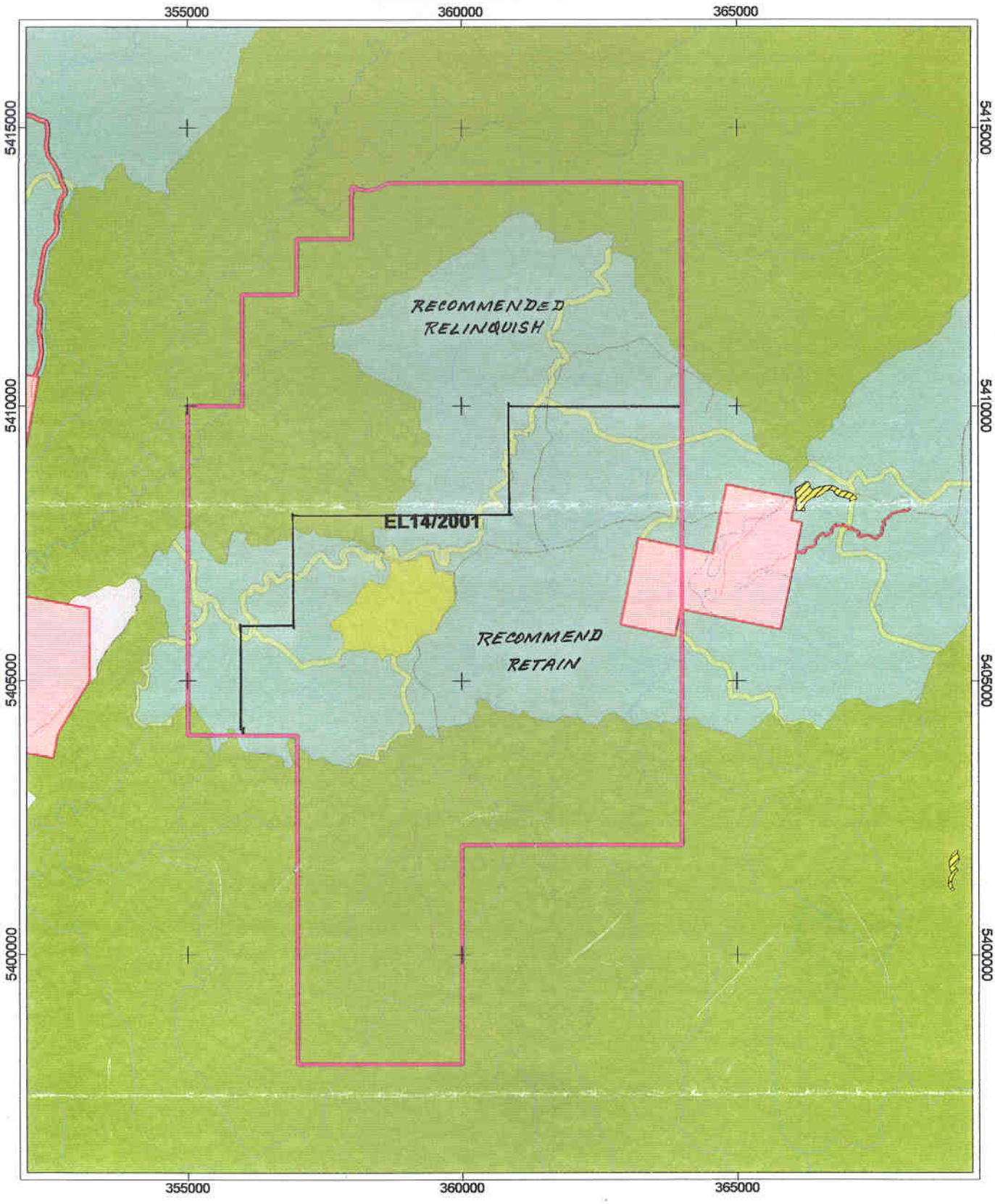
The licence was granted to Allegiance Mining NL on 14 September, 2001 and expires on 14 September 2006. It applies to all category 1 minerals. An existing Mining Lease of 140 ha. covering extensions of the Cleveland Mine is excluded.

Land classification is relatively complex (Fig 2). Most of the licence area is listed on the Register of the National Estate and includes:

- Meredith Range Regional Reserve
- Savage River Regional Reserve
- Heazlewood Hill Conservation Area
- Multiple Use State Forest
- Lord Brassey Fossicking Area
- various informal areas

Some areas are further classified as High Quality Wilderness under the Regional Forest Agreement

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).



Land Tenure

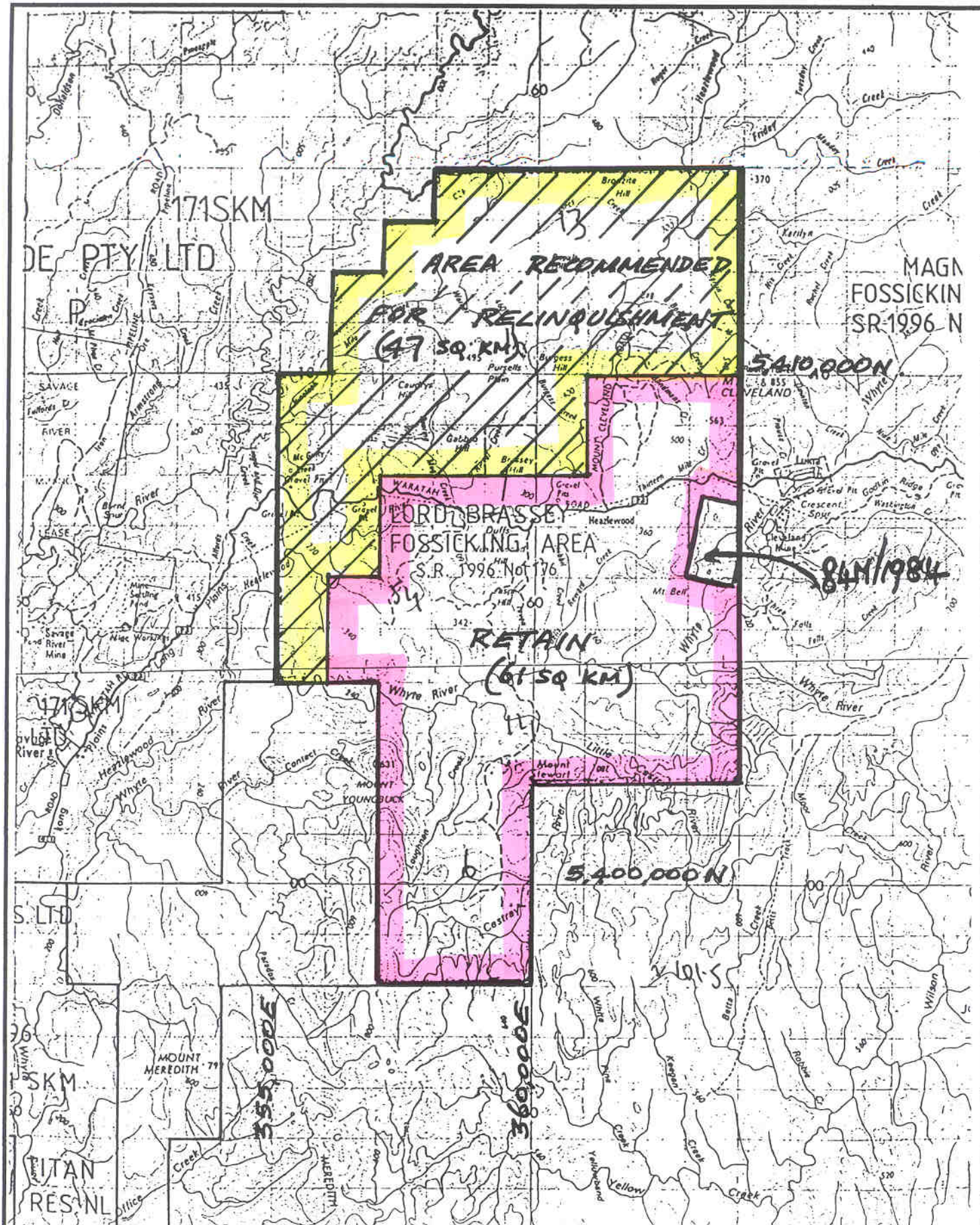
1:100000

- Exploration Licence
- Mining Leases
- WHA
- Private Land Reserve (RFA)
- MDC Informal Reserve
- Sensitive Areas
- Conservation Area
- Wellington Park
- Forest Communities Managed by Prescription
- Forest Reserve
- Game Reserve
- Historic Site
- National Park
- Nature Reserve
- Protected Area
- Nature Recreation Area
- Regional Reserve
- State Reserve
- Aboriginal Administerd Land
- Crown Land
- Commonwealth Land
- Public (Crown) Reserve
- State Forest / Hydro
- Private Land
- State Forest
- HEC

Note: Land Tenure is derived from the LIST and may be incomplete. Not all Land Tenure depicted in legend may appear on map.

HEAZLEWOOD PROJECT
EL 14/2001
LAND CLASSIFICATION

Fig. 2.



NEWNHAM EXPLORATION AND MINING SERVICES		
ALLEGIANCE MINING NL EL 14/2001: HAEZLEWOOD PROJECT **AREA RECOMMENDED FOR RELINQUISHMENT**		
		Scale: 1:100,000
Drawn: LAN	Date: Dec 01	Fig: 3

3. EXPLORATION TARGET

EL 14/2001 was acquired by Allegiance because it was considered prospective for "Avebury style" nickel sulfide deposits.

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 genesis and characteristics of these deposits can be considered under the necessary requirements for source rocks, alteration processes and transport/entrapment.

Source rocks:

Avebury style deposits are dominated by magnetite^{+}/- pentlandite $^{+}$/- pyrrhotite hosted by serpentinite. 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 (eg) dunite, and olivine-pyroxene varieties (eg) harzburgite.

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 can form as a result of the hydrothermal alteration.

In summary, the necessary source rock is a nickeliferous ultramafic formation, probably either a dunite or olivine rich pyroxenite.

Alteration process:

Development of Avebury style deposits requires that the ultramafic source rock is extensively altered (ie) 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. Iron rich fluids are generated during the hydrothermal process, and if sulfur and nickel are present, magnetite, pyrrhotite and pentlandite will form in amounts reflecting the physical and chemical characteristics of the hydrothermal fluids. The sulfur source is probably either the source of the hydrothermal fluids (eg) granite, or adjacent sediments and volcanics affected by the hydrothermal event. The sulfur source is unlikely to be the ultramafics themselves.

If sulfur is not present in the hydrothermal system, then pyrrhotite and pentlandite cannot form, in which case the nickel will probably be redeposited in various nickel silicates and the iron will concentrate as magnetite.

The chemistry of Avebury style deposits is very different to most nickel sulfide deposits because they are formed by later hydrothermal alteration of ultramafic rocks rather than as magmatic accumulations formed during the emplacement of the ultramafic.

> *In summary, for Avebury style deposits to form, the ultramafic source rocks must lie within a major sulfur rich hydrothermal cell, resulting in intense widespread alteration (serpentinisation) of the ultramafics, accompanied by the formation of iron oxide, iron sulfide and nickel-iron-sulfide mineralisation.*

Transport and Deposition:

For major mineral deposits to form, the iron oxides, iron and nickel sulfides produced during the alteration process 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 (ie) the best deposits will probably be concealed deposits.

In summary, faulted trap sites or repositories near the top of roofed serpentinised ultramafics are necessary for the formation and subsequent preservation of Avebury style nickel sulfide deposits.

The Heazlewood area is assessed in terms of the above three prerequisite conditions, firstly in terms of the known geology, secondly the results of previous exploration and thirdly, the direct application of the prerequisite conditions.

4. HEAZLEWOOD GEOLOGY and MINERALISATION

4.1 Geology (Figs 4,5,6,7)

The geology of the Heazlewood area is described in great detail in the literature. It is not intended to attempt a rehash of that material in this report, but rather to focus on those aspects of the area perceived as relevant to the discovery of Avebury style nickel sulfide deposits.

Those requiring a detailed account of the mafic and ultramafic geology of the area are referred to *" Geology of the Dundas-Mt.Lindsay-Mt.Youngbuck Region" by AV Brown, Tas Dept of Mines, Geol Surv Bull 62, 1986.* This volume also contains an exhaustive geological reference listing.

El 14/2001 is largely underlain by a layered sequence of middle-late Cambrian ultramafic and mafic bodies forming the Heazlewood River Complex (HRC) and the Mt. Stewart Complex (MSC).

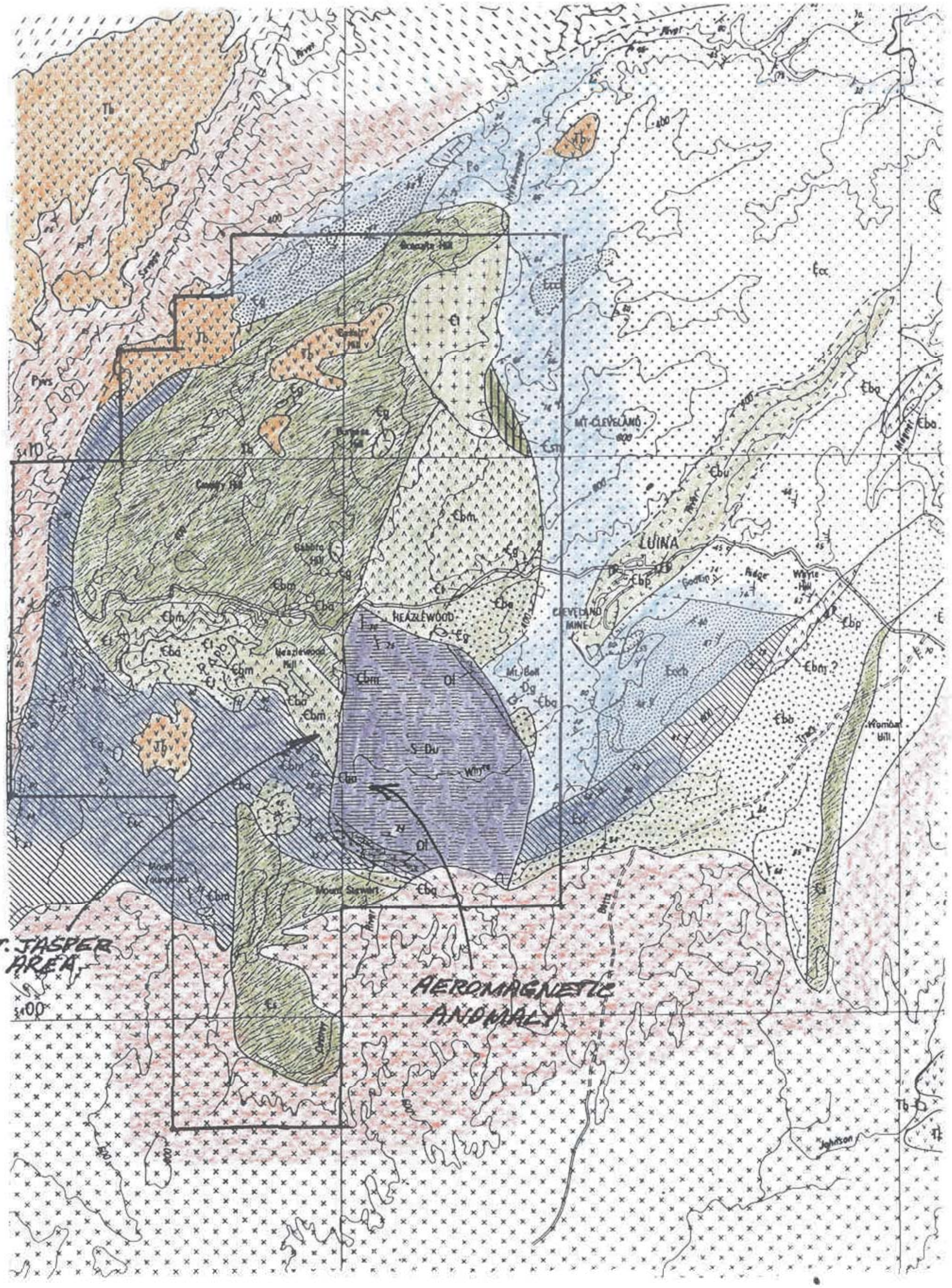
The ultramafic complexes are layered dunite and pyroxenite accumulates, with layering trending in a north-east direction and dipping steeply south-east. The ultramafics are interpreted as tectonically emplaced in the mid-Cambrian. They overlie lower Cambrian Success Creek Group sediments to the west, and are irregularly overlain to the east by Cambrian tholeiitic basalts and andesites which are probably genetically related to the ultramafic formation event.

A sedimentary basin (Huskisson) developed over the area during the Palaeozoic with the deposition of Ordovician conglomerates (Owen), Sandstone (Moina) and limestone (Gordon) followed by Silurian-Devonian shales and sandstones.

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.

The Cambrian basalts and andesites appear to now be in faulted contact

360 000mE



PERMO-CARBONIFEROUS	Pt	Tillite
		Landscape unconformity
SILURO-DEVONIAN	S-Du	Eldon Group and correlates
		Disconformity
ORDOVICIAN	Ol	Gordon Limestone Sub-Group and correlates
	Os	Owen Formation and correlates, including Moina Sandstone
		Disconformity
CAMBRIAN	Єd	Dundas Group and correlates, including Huskisson Group, Єh, and Rosebery Group, Єr.
		Erosional break
EOCAMBRIAN	Ecc	Crimson Creek Formation and correlates, areas of dominantly lava flows Eccb indicated
	Esc	Success Creek Group and correlates
		Landscape unconformity
PRECAMBRIAN	Po	Oonah Formation and correlates
	Pws	Whyte Schist and correlates, including Concert Schist

Igneous Rocks

TERTIARY	Tb	Alkali Olivine and Tholeiitic Basalt, with associated sediment
JURASSIC	Jd	Dolerite
DEVONIAN	Dg	Granitoids
CAMBRIAN	Єg	Gabbro
	Єmrv	Pyroclastic and epiclastic acid to intermediate volcanic rocks (Mt Read Volcanics)
	Єp	Massive ultramafic cumulates
	Єbv / Єbar	Low-Titanium Tholeiite
EOCAMBRIAN	Єbv / Єba	High-Magnesian Andesite, and associated coarse-grained pyroxenite
	Єt	Tonalite and associated rocks
	Єs	Serpentinized ultramafic-mafic rocks, tectonic melange Єsm (!!!) indicated

Geological boundary, including faulted and transitional — approximate
Geological boundary, including faulted and transitional — inferred
Dip and strike of bedding, facing known, facing unknown, overturned, vertical
Dip and strike of banding, sedimentary rocks vertical, igneous rocks, vertical

Note: Geology is a direct reproduction of the "Geological Compilation of the Zeehan-Waratah Area, Dundas Trough" by A. V. Brown, 1984 (Geological Survey of

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EL 14/2001 - HEAZELWOOD

HEAZLEWOOD PROJECT

DISTRICT GEOLOGY

Compiled : L. Newnham
Date : Feb 02
Drawn : G.M.Bennett
Scale : 1:100,000
File :

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Figure No. 4

with the ultramafic units, although this relationship is not always distinct. Similarly the margins of the "roof-pendant" shaped Huskisson Syncline remnant are interpreted as faulted (at least in part) against Cambrian ultramafics and basalts.

4.2 Sub-surface shape of the Meredith Granite (Figs 5,6,7)

The sub-surface shape of the Meredith Granite is important to the target model for two reasons:

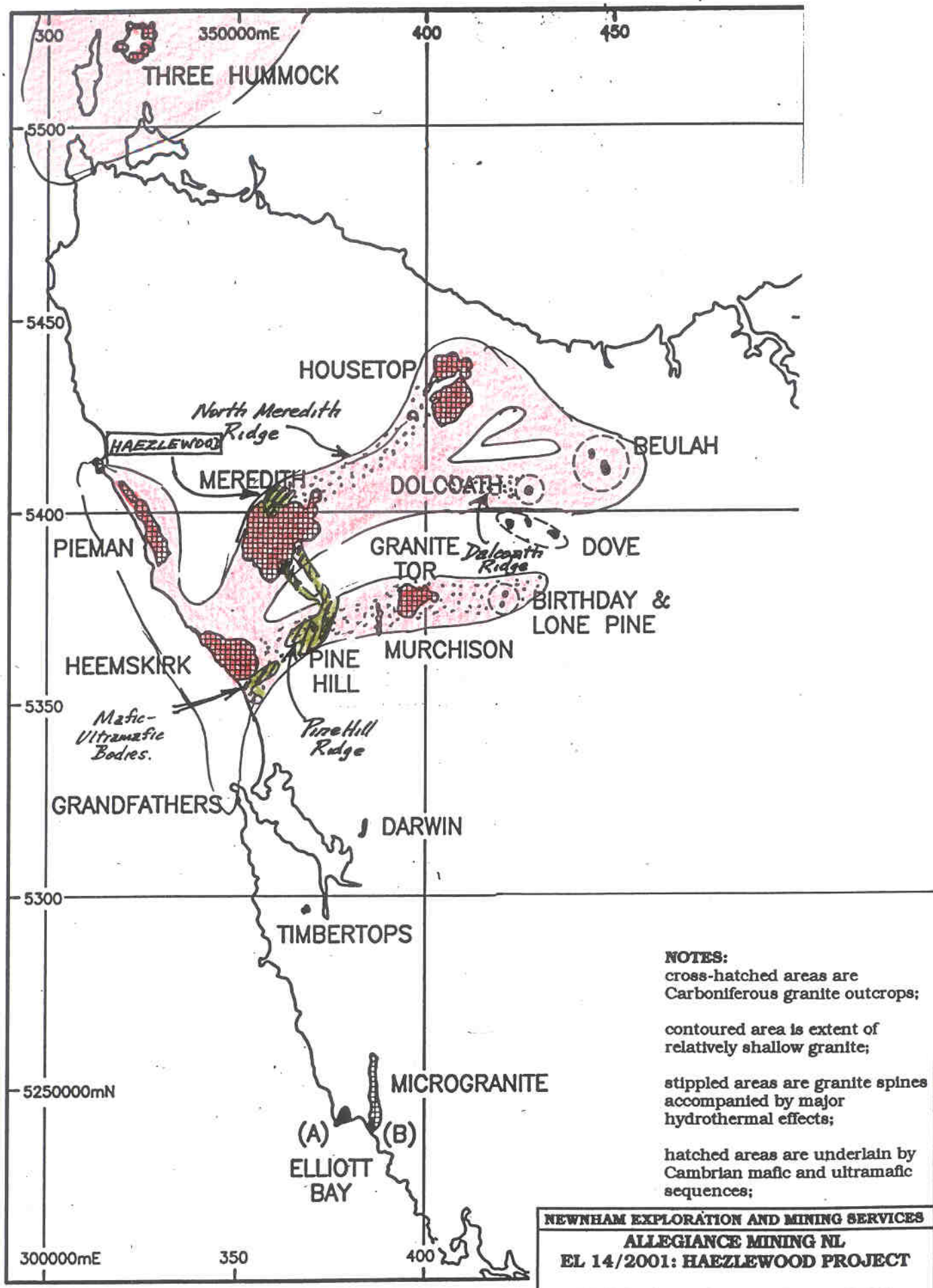
(a) substantial hydrothermal alteration affects rarely extend further than 2-3 kms. from the granite. Thus to search for the target model within a reasonable practical distance from surface, the granite should not be deeper than, say, 3-4 kms of the current surface.

(b) experience in Tasmania suggests that hydrothermal processes are focused either above or adjacent to steep flanks of granite ridges or cupolas, rather than flat or low gradient granite surfaces.

Gravity surveys have provided a reasonable regional picture of the shape of the Carboniferous granites in Tasmania. Figure 5 is adapted by this writer from Leaman to show the general ENE trending shape of relatively shallow granite, known zones of major hydrothermal activity and the locations of the principal ultramafic formations in western Tasmania.

The prime target areas occur where the ultramafic bodies fall within the major hydrothermal zones associated with shallow granite ridges. One such area is Heazlewood.

Figure 6 (again after Leaman) illustrates the shape of the sub-surface Meredith Granite in greater detail. This interpretation shows a NE trending granite spine, plunging to the NE beneath Tertiary basalt. The northern flank of the granite dips to the NW across EL 14/2001 and in the northern half of the licence, it is interpreted as in excess of 8 kms deep. *This substantially reduces the prospectivity of the northern half of the licence for Avebury style deposits.*



NOTES:
cross-hatched areas are Carboniferous granite outcrops;

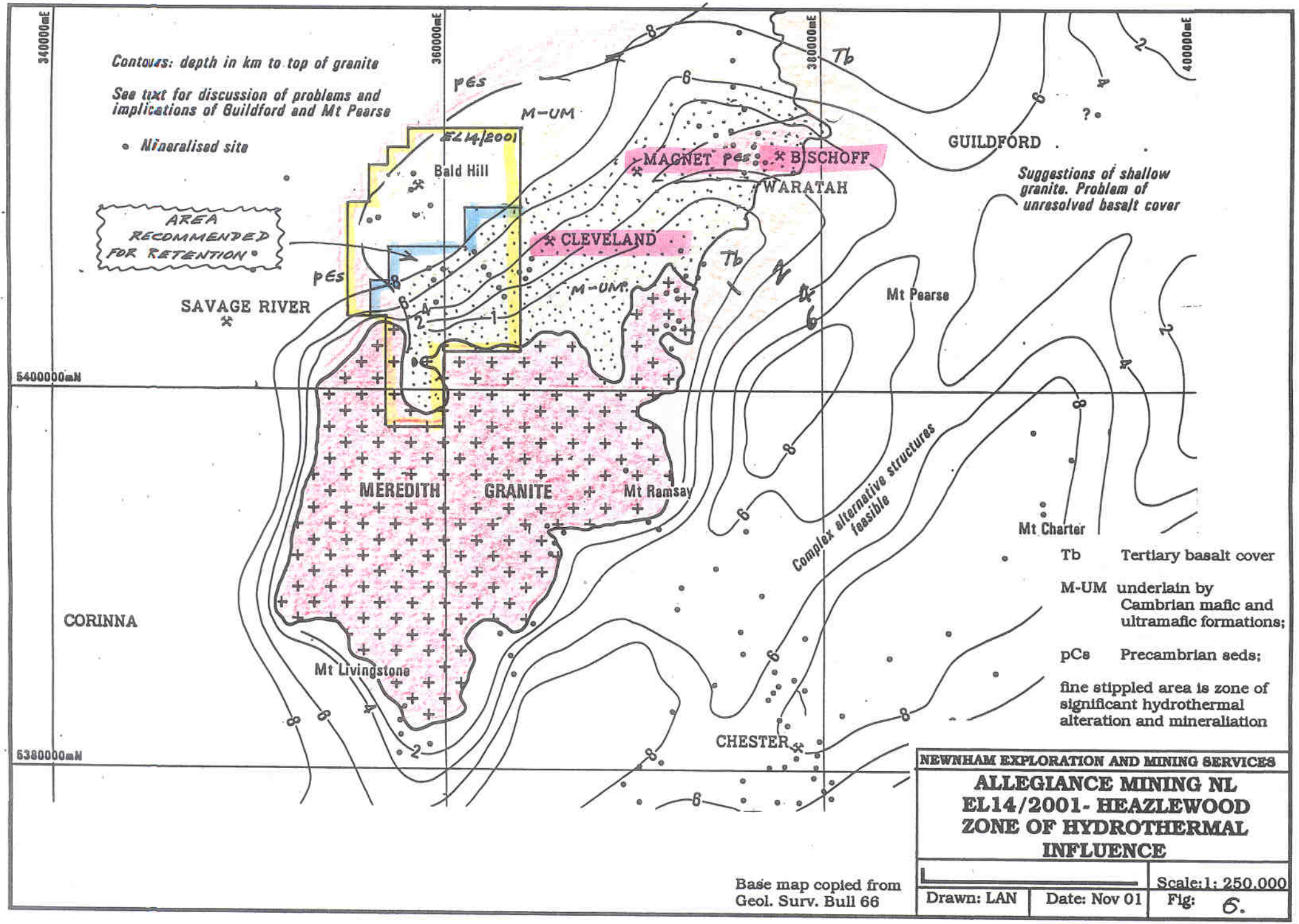
contoured area is extent of relatively shallow granite;

stippled areas are granite spines accompanied by major hydrothermal effects;

hatched areas are underlain by Cambrian mafic and ultramafic sequences;

Basic geology taken from Geol. Surv. Bull 66
Other interpretation added by LAN

NEWNHAM EXPLORATION AND MINING SERVICES		
ALLEGIANCE MINING NL EL 14/2001: HAEZLEWOOD PROJECT REGIONAL GEOLOGICAL SETTING		
		Scale: 1:
Drawn: LAN	Date: Nov 01	Fig: 5



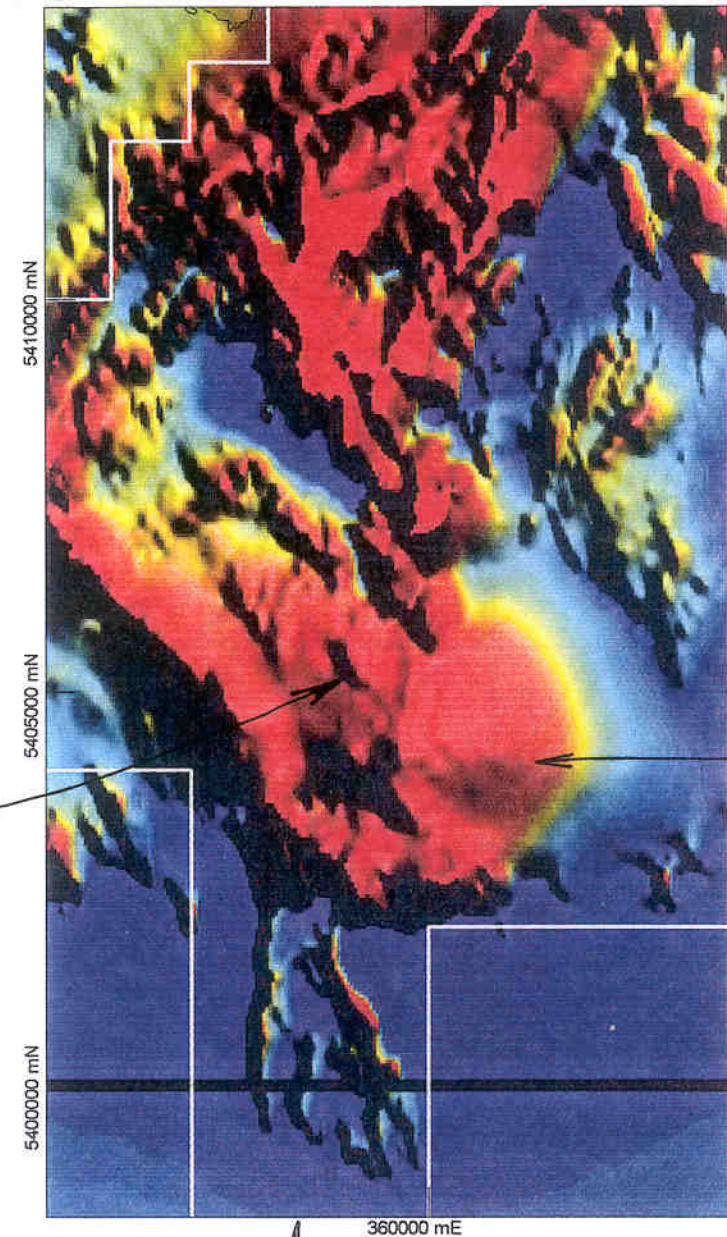
Base map copied from Geol. Surv. Bull 66

NEWNHAM EXPLORATION AND MINING SERVICES

ALLEGIANCE MINING NL EL14/2001- HEAZLEWOOD ZONE OF HYDROTHERMAL INFLUENCE

Scale: 1: 250,000

Drawn: LAN | Date: Nov 01 | Fig: 6.



SCALE : 1:100000

1 0 1 2 km

Allegiance Mining N.L.

EL 14/2001 - HEAZLEWOOD AREA

TOTAL MAGNETIC INTENSITY

NORTH EAST SUN ANGLE

COMPILED : Mines Dept

DATE : 2/12/2001

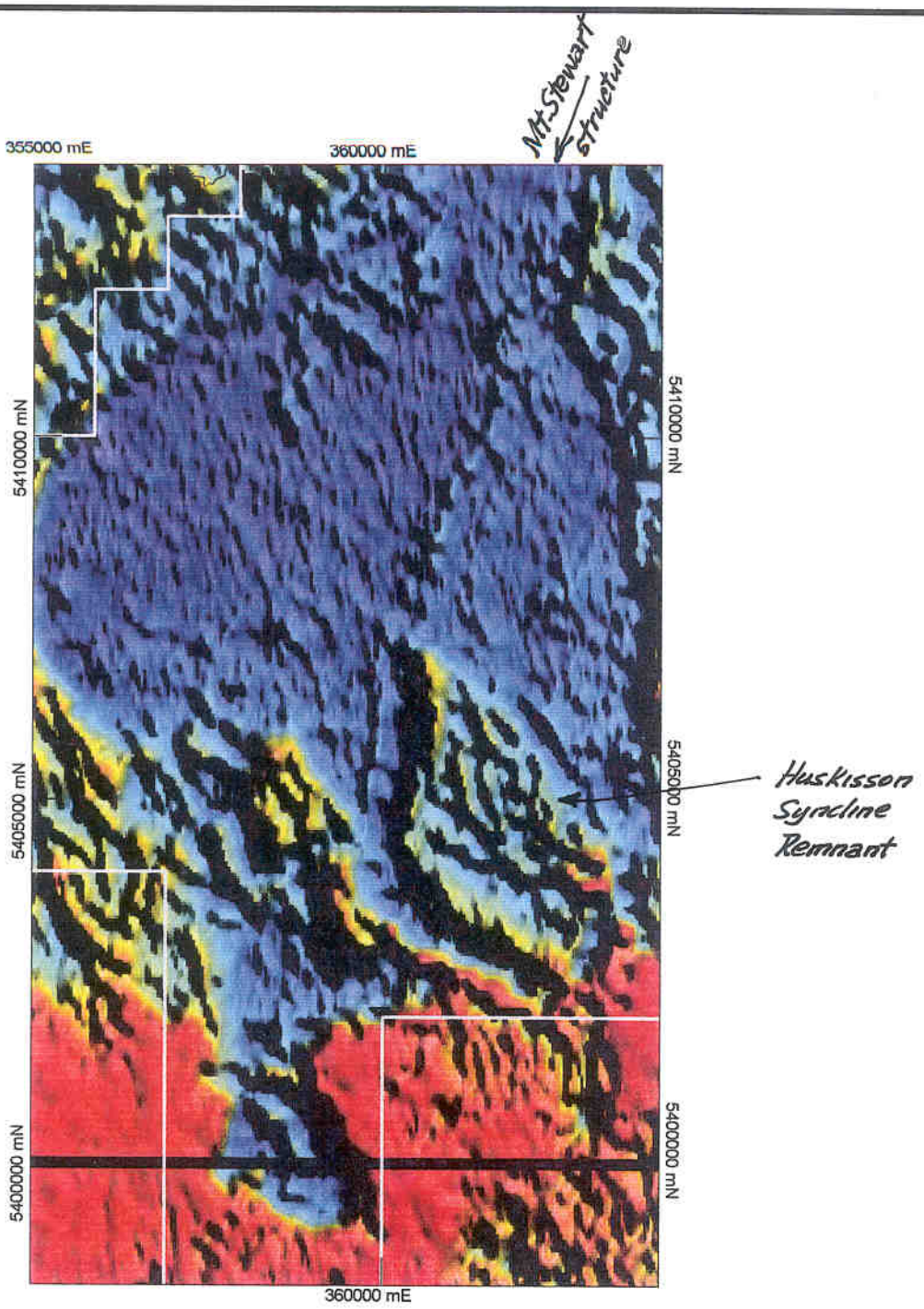
DRAWN : G. Bennett

REVISIONS :

FILE :

Newnham Exploration and Mining Services

Figure No. 8.



SCALE : 1:100000

1 0 1 2 km

Allegiance Mining N.L.

EL 14/2001 - HEAZLEWOOD AREA

RADIOMETRICS

TOTAL COUNT

NORTH EAST SUN ANGLE

COMPILED : Mines Dept

DATE : 2/12/2001

DRAWN : G. Bennett

REVISIONS :

FILE : TC_NEsun 100000.W

Newnham Exploration and Mining Services

Figure No. 9.

4.3 The nature and extent of hydrothermal activity:

The alteration halo associated with the NE trending Meredith Granite spine is characterised by both the extent of associated mineralisation and the alteration of rocks within the halo.

Three substantial mineral deposits are known within this halo, with the following pre-mining resource estimates:

Mount Bischoff	10.3 Mt	1.13% Sn	
Magnet	0.6 Mt	427 g/t Ag	7% Pb 7% Zn
Cleveland	10.3 Mt	0.78% Sn	0.3% Cu

The mineralisation in each of these is interpreted as genetically related to the intrusion of the Meredith Granite. The Magnet deposit occurs in fractures in Cambrian mafic and ultramafic rocks.

Minor nickel sulfide, Cu-Au, Ag-Pb-Zn mineralisation is widespread within EL 14/2001 and is described in greater detail in section 4.4 below.

Alteration of the ultramafics within the licence is extensive and largely reflects proximity to the granite.

In the south (closest to the granite), serpentinisation of the ultramafics is pervasive. If the ultramafics were dunites or harzburgite, this alteration would be accompanied by the extensive formation of magnetite. This is reflected in the aeromagnetics (Fig 8). It is important to note that the airmag data suggests the Mt Stewart complex, which really forms an embayment within the Meredith Granite, is generally not strongly magnetic. This may reflect intense alteration by the granite resulting in magnetite destruction in places.

In the northern section of the licence, extensive silica-carbonate alteration has been recorded but it is patchy and possibly associated with deep penetrating structural zones which facilitated alteration by focusing hydrothermal fluids distal to the granite. In general, the ultramafics in the northern half are less altered than those in the south.

Application of the Avebury model requires extensive serpentinisation of an ultramafic with the generation of iron and remobilisation of nickel within a sulfurous hydrothermal environment. In EL 14/2001, these conditions appear to have prevailed in the southern section of the licence area, but not in the northern and western sections.

4.4 Mineralisation (Fig 7)

The Heazlewood area has had a long and colorful mining history. Within EL14/2001, mineralisation is widespread and can be grouped as:

(i) PGE in layered ultramafics
(ii) Cu-Au in faults and vesicular basalts
(iii) Ag-Pb-Zn veins associated with fractures and faults
(iv) Ni sulfide in fracture systems
(v) W skarns

4.4.1 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.

Hard rock PGE occurrences have been recorded from fracture/fault zones at Caudry's and Mt. Stewart.

Total recorded production is approximately 15,000 oz. Os-Ir.

4.4.2 Cu-Au mineralisation

Cu-Au mineralisation has been recorded and worked at two locations:

- Old Jasper and New Jasper
- Duff's Hill

At **Old Jasper-New Jasper** (Fig 10)**,** Cu-Au mineralisation occurs within a strongly silicified (altered) amygdaloidal basalt. Nye (1923) describes the mineralisation as developed within a pseudo-amygdaloidal hypersthenite overlying, or intruded by, a fine grained ultramafic or hypersthenite, and overlain(?) by fine grained slatey (silicified) sediments.

More recent studies suggest the mineralisation is Cambrian in age and was deposited in the amygdaloidal flow top of a low-Ti Cambrian lava flow which in turn may be the upper member of a layered ultramafic sequence.

Cu is present as chalcopyrite and bornite, with some oxidation to covellite.

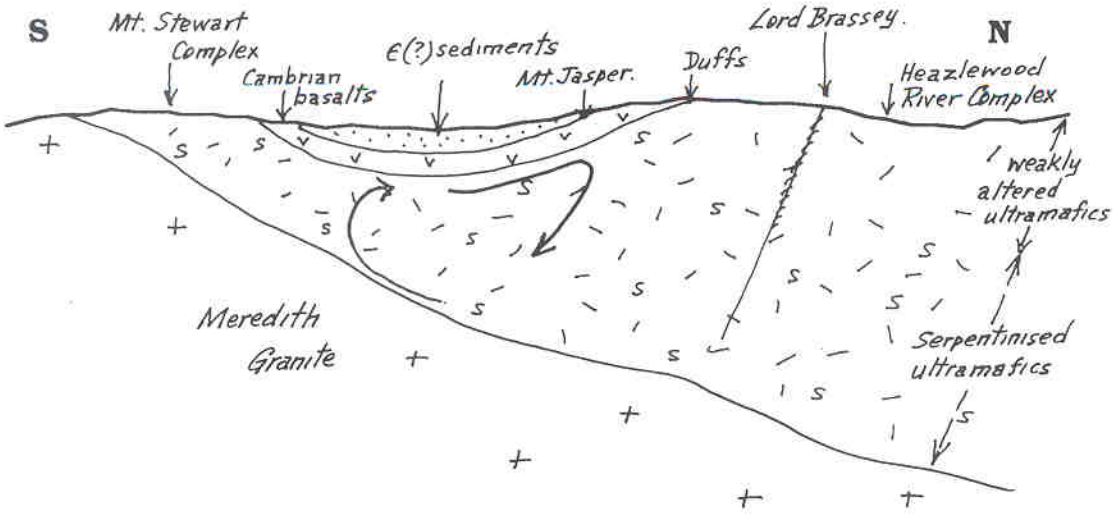
The deposits were developed by a series of shafts and adits at Old Jasper and 500 m. to the south at New Jasper. Total recorded production was 200 tonnes of high grade concentrates (10-35% Cu, 0.5-65 g/t Au, 0.5-130 g/t Ag).

Selected grab sampling by Metals Exploration gave results up to 23% Cu, 14 g/t Au.

The potential of this area for similar mineralisation depends on the extent of the amygdaloidal basalt. Mapping and magnetic evidence suggests they may be quite extensive to the west and south of the Jasper workings beneath cover rocks mapped as possible Success Creek Group sediments, which are older than the mafic/ultramafic sequences. This suggests that either these sediments are younger (ie) not Success Creek Group, or have been thrust over the top.

The implications are that this large area may be prospective for both shallow extensions of Jasper style Cu-Au mineralisation and deeper Avebury style nickel sulfide deposits.

Both of these target types would respond well to EM or IP geophysical surveying.



Conceptual section illustrating the potential of the area west and south of Jasper

At **Duffs Hill,** Cu-Au-Ag-Pb-Zn mineralisation occurs along narrow NW trending fault/shear structures in fine grained basalts of similar type to the Jasper basalts. The mineralisation is thought to have been remobilised during the Carboniferous along discontinuous structures. A number of shallow pits and short adits have been developed, but there is no recorded production.

Dump and adit sampling by CRA revealed best results of:

- Adit (2m sample) 8% Cu, 7.6% Pb, 3.8% Zn, 64 g/t Ag, 5.8 g/t Au
- Dump 18.7% Cu, 2.5% Pb, 1.5% Zn, 180 g/t Ag, 0.5 g/t Au
  16.8% Cu, 0.35% Zn, 164 g/t Ag, 1.4 g/t Au

Duffs Hill and Jasper combined highlight the potential of Cambrian basaltic rocks in the southern section of 14/2001 to host Cu-Au mineralisation which may have been remobilised and further concentrated following intrusion of the Meredith Granite.
These mineralised basalts may also have represented a sulfur source and a trap site for the development of Avebury style deposits in the underlying altered ultramafics.

4.4.3 Ag-Pb-Zn Veins:

A number of Ag-Pb-Zn vein deposits have been historically worked in the southern half of EL14/2001. They include:

- Mt Stewart Mine
- Mt. Wright-Heazlewood Mines
- Godkin Mines

Nye (1923) described the **Mt Stewart Mine** (Fig 11) as a banded quartz-galena-sphalerite zone developed on a NNE trending fault within an intensely silicified schistose rock representing an altered pyroxenite. The lode strikes 20˚ (mag) and dips near vertical to steeply west.

The veins were 0.5-1.0 m. wide and developed on two levels (60 m deep) over a strike length of 300 m. Significant enrichment of silver occurs in the oxidised zone.

Total recorded production was 2,000-3,000 tonnes of high grade ore.

The most significant aspect of Mt Stewart with respect to the Avebury model, is that it may lie on a major NNE trending fault zone which passes along the western margin of the Huskisson Syncline remnant. This structure could represent a significant conduit for mineralising fluids within the Meredith Granite hydrothermal aureole.

The **Mt Wright and Heazlewood Mines** (Fig 10) lie to the NE of the Jasper Mines, on a NW trending fault zone within altered ultramafics. Several shafts, adits and trenches were developed over 500 m. of strike length. The fault zone was typically 1-5 m. wide, but the main vein of galena-sphalerite-quartz-carbonate was 50-75 mm wide with disseminated sulfides through the remainder of the zone. The veins dipped NE at 30˚-60˚.

Total recorded production was approximately 300 tonnes of high grade Ag-Pb concentrates.

The Mt Wright-Heazlewood fault line parallels a number of other significant NW structures in the Heazlewood area and may be a splay off the major NNE structure through the Mt Stewart Mine.

The **Godkin Mine** (Fig 12) refers to an extensive line of workings developed in Ordovician-Silurian sediments on the eastern flank of the Huskisson Syncline remnant. Several kilometres of tunnels and shafts were developed over a strike length of two kilometres. From south to north, the mines were Godkin, Godkin Extended, Discoverer, Bells Reward, Maces Mine.

Two "lines of lode" were worked:

- contact zone between Ordovician-Silurian sediments on the west and pyroxenite on the east
- stratabound conglomeratic zone within sandstone, shales and limestone.

In the main Godkin Mine, the lode occurred on the boundary between sediments and pyroxenite. The sediments were recorded as striking 330˚ and dipping 40-50˚ to the SW, which is opposite to all the other mines in the line of workings to the north (typo error?). There was also a small wedge of pyroxenite within the sediments suggestive of substantial tectonism along this margin.

In the Godkin Extended and Discoverer Mines, the lode was in stratabound black carbonaceous material within a conglomerate at the boundary between sandstone and limestone formations.

In the Bells Reward, the lode was developed in a stratabound clayey zone similar to the Godkin Extended.

At Maces Mine, 300 m. north of Bells Reward, two adits were driven on small galena-sphalerite-quartz-pyrite veins developed on the contact between pyroxenite to the west and syenite to the east.

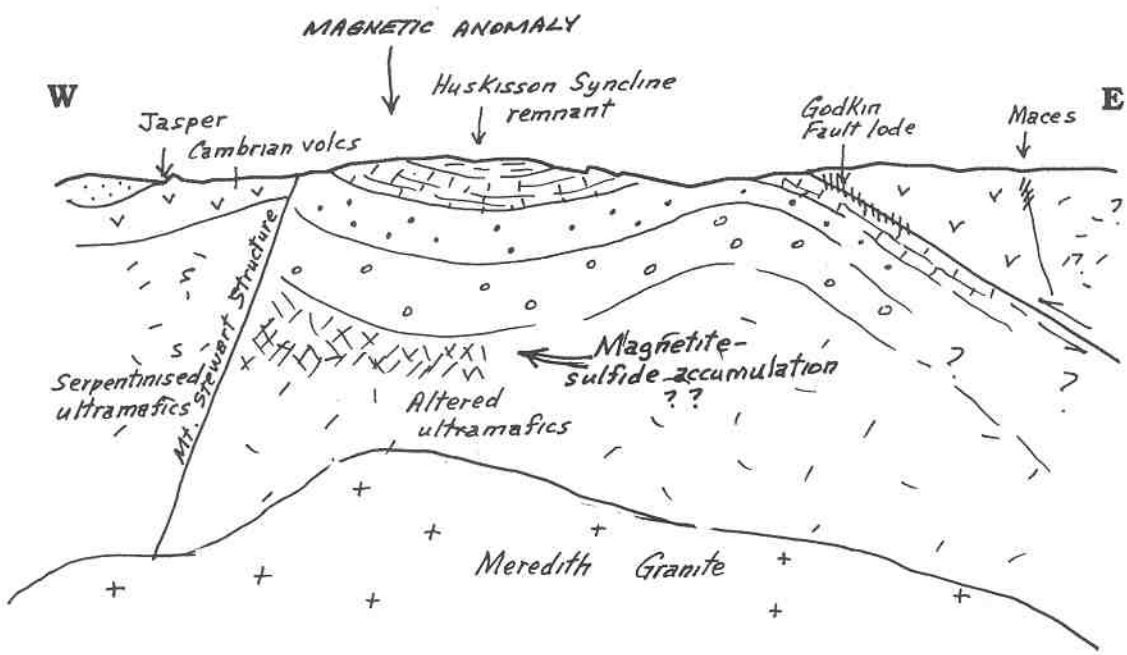
Production from these extensive workings was small, possibly only

300-500 tonnes of high grade Ag-Pb concentrates. Significant secondary enrichment of Ag was reported from these mines.

In summary, the Godkin Workings were developed on two NW trending lines of "lode". One was stratabound in highly decomposed calcareous conglomerate in a limestone-sandstone sequence. Most of the mineralisation in this zone was probably secondary and deposited by circulating acid waters attacking the limestone and becoming neutralised (cf) Mt Lyell copper clays, Grieves, Merton Hill, Coupon. The other lode was developed at the faulted contact between syenite/ pyroxenite and sediments. A possible third style was developed at Maces on the contact between syenite and pyroxenite.

The sediments and faulted contacts generally appear to strike NW and dip NE.

This interpretation is confirmed by EZ drilling in the area, which indicated possible low angle thrusting of the Cambrian ultramafics/mafics over the Ordovician sediments. The east dip of the sediments is contrary to that expected on the eastern side of the Huskisson Syncline remnant and suggests strong folding along a major thrust structure on this margin of the syncline.



Schematic cross-section through Huskisson Syncline remnant

Whilst the Godkin Workings had insignificant production,they are valuable in demonstrating a zone of major tectonism along the eastern margin of the Huskisson Syncline, possibly involving low angled thrusting. A similar effect may exist on the western side near the Mt. Wright-Heazlewood mines.

4.4.4 Nickel Sulfide in fracture systems:

There are several recordings of nickel sulfide on EL 14/2001- all minor and all in the northern section of the tenement.

At **Purcells,** the serpentinite is cut by small magnetite-pyrite-pentlandite veinlets.

At **Fentons Knob,** a small crackel-breccia in serpentinised dunites contains interstitial pentlandite. Best assay of grab sampling by CRA was 1.2% Ni.

At the **Lord Brassey Mine** (Fig 13)**,** 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 (Ni_2S_3) and the secondary nickel mineral zaratite. High grade nickel samples can be obtained in the Lord Brassey Mine, but the mineralised shoots are very thin and discontinuous.

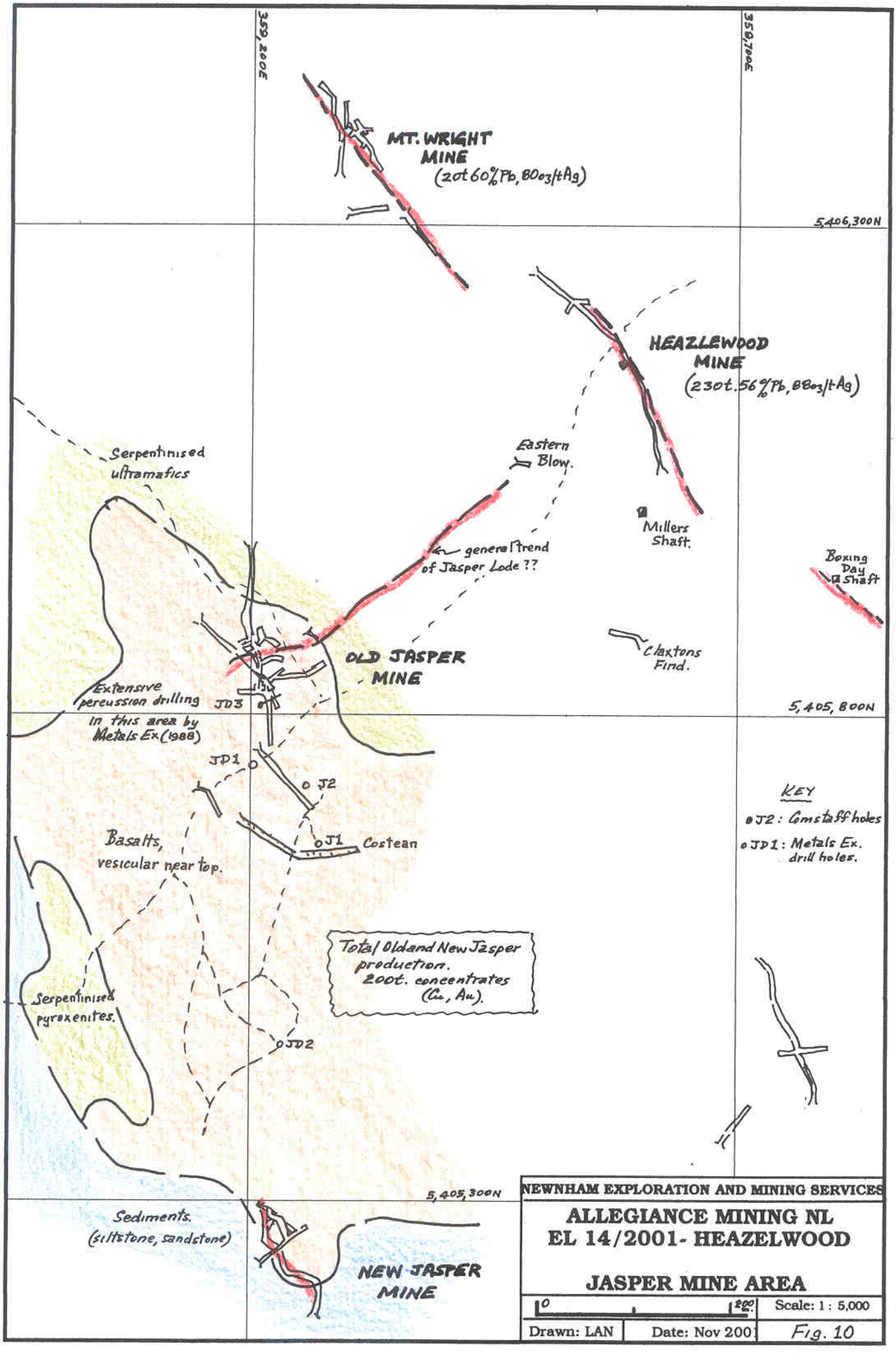
Collective exploration evidence suggests the nickel mineralisation in the above three localities is probably hydrothermally remobilised nickel concentrated along structural or breccia zones.

No nickel sulfide mineralisation has been recorded in the southern section of the licence area.

4.4.5 Tungsten Skarns:

A scheelite bearing magnetite skarn is located at Mt Youngbuck on the western boundary of the licence area close to the Meredith Granite.

Grades are low, and potential appears limited. Divergent views exist on whether the skarn is an altered calcareous sediment or a mafic/ultramafic unit.



NEWNHAM EXPLORATION AND MINING SERVICES

ALLEGIANCE MINING NL
EL 14/2001- HEAZELWOOD

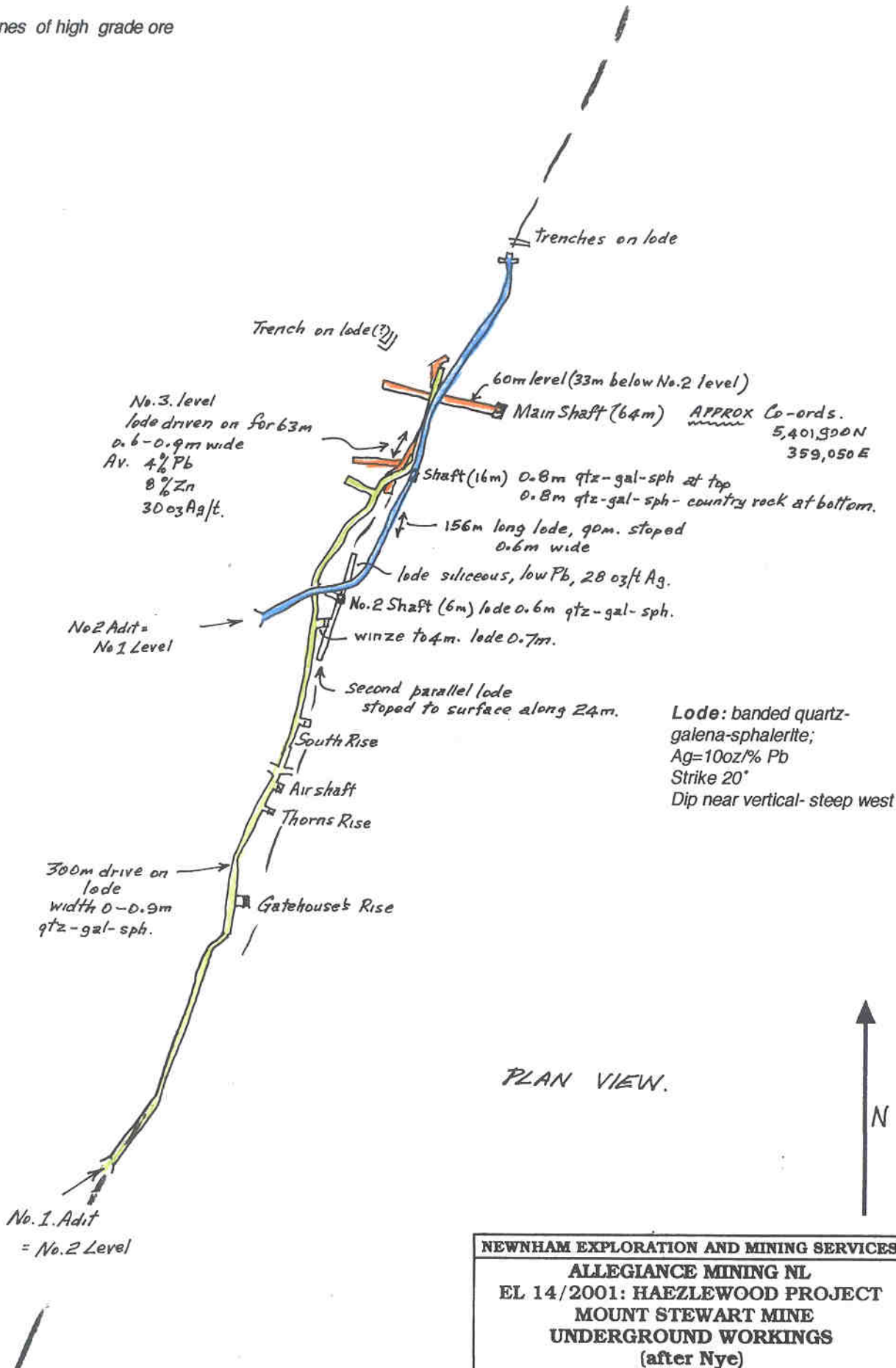
JASPER MINE AREA

0 — 200m — Scale: 1 : 5,000

Drawn: LAN | Date: Nov 2001 | Fig. 10

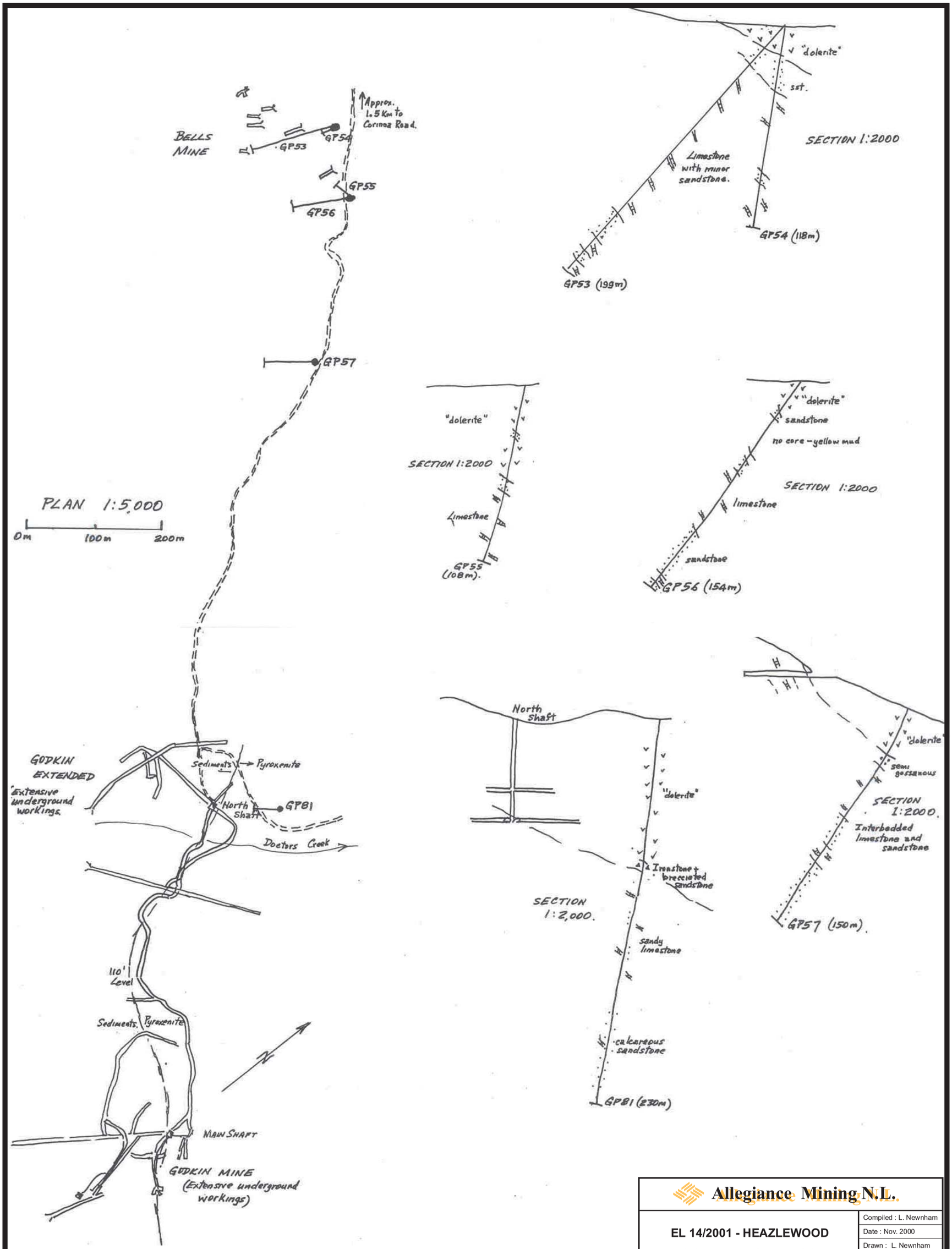
Total production:

2,000-3,000 tonnes of high grade ore



Lode: *banded quartz-galena-sphalerite;*
Ag=10oz/% Pb
Strike 20°
Dip near vertical- steep west

NEWNHAM EXPLORATION AND MINING SERVICES		
ALLEGIANCE MINING NL **EL 14/2001: HAEZLEWOOD PROJECT** **MOUNT STEWART MINE** **UNDERGROUND WORKINGS** **(after Nye)**		
0m. 50 180		Scale: 1:2,000
Drawn: LAN	Date: Dec 01	Fig: 11



Note: The Godkin Workings are extensive and detail is available on smaller scale plans; the locations of the 6 EZ holes are approx only; the locations as shown on this plan were derived from an

Allegiance Mining N.L.

EL 14/2001 - HEAZLEWOOD

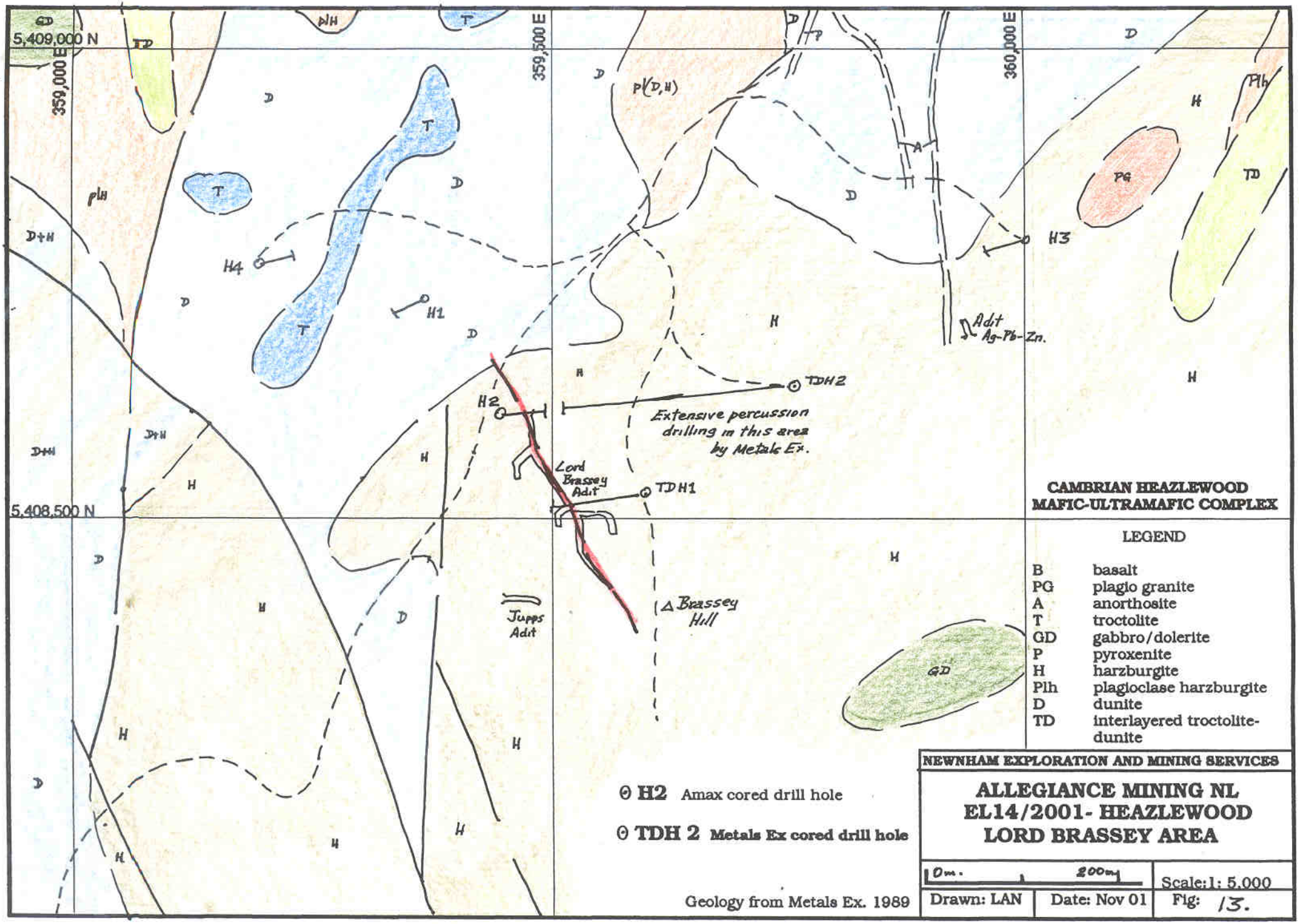
GODKIN WORKINGS

PLAN AND DRILL SECTIONS

Compiled :	L. Newnham
Date :	Nov. 2000
Drawn :	L. Newnham
Scale :	As Shown
File :	

Newnhan Exploration and Mining Services

Figure No. 12


5,409,000 N
5,408,500 N
359,000 E
359,500 E
360,000 E
H4
H1
H2
H3
TDH2
TDH1
Extensive percussion drilling in this area by Metals Ex.
Lord Brassey Adit
Brassey Hill
Jupps Adit
Adit Ag-Pb-Zn.
CAMBRIAN HEAZLEWOOD MAFIC-ULTRAMAFIC COMPLEX
LEGEND
B basalt
PG plagio granite
A anorthosite
T troctolite
GD gabbro/dolerite
P pyroxenite
H harzburgite
Plh plagioclase harzburgite
D dunite
TD interlayered troctolite-dunite
H2 Amax cored drill hole
TDH 2 Metals Ex cored drill hole
Geology from Metals Ex. 1989
NEWNHAM EXPLORATION AND MINING SERVICES
ALLEGIANCE MINING NL
EL14/2001- HEAZLEWOOD
LORD BRASSEY AREA
0m. 200m
Scale: 1: 5,000
Drawn: LAN
Date: Nov 01
Fig: 13.

5. PREVIOUS EXPLORATION

A substantial amount of exploration has been completed on the EL 14/2001 area since 1949. A brief summary of this work follows. Whilst it has been aimed at a wide variety of commodity and deposit models, only minimal work has been directed at nickel exploration, and none towards Avebury style deposits.

5.1 **EZ** (1949-50)

As part of its state wide search for base metal (Cu-Pb-Zn) deposits, EZ drilled six cored holes into the Godkin line of workings in 1949-50. Locations and sections of these holes are shown on Fig. 13. No significant mineralisation was intersected in the holes but they demonstrated three important facts:

- the Ordovician-Silurian sediments on the east side of the Huskisson Syncline remnant dip east (not west).
- "dolerite" (Cambrian basalts or syenite?) have been thrust over the sediments at a relatively shallow angle.
- minor/trace mineralisation was developed on the two historically mined lines of lode (calcareous conglomerate and sediment-mafic contact)

5.2 **Comstaff** (1969-70)

Comstaff explored the Mt Stewart and Mt Jasper areas for nickel and other base metals. They completed various district mapping, gridding, soil sampling and SP surveys with disappointing results.

They drilled one hole, J1, at Mt Jasper. Records are difficult to interpret but apparently no significant mineralisation was intersected. Some plans also show one hole at Mt Stewart but no logs could be found.

5.3 Amax (1969)

Amax explored the Lord Brassey area for nickel. The following work was

completed:

- 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...H4) failed to intersect significant mineralisation (locations on Fig.14), the best value being one sample of 0.24% Ni as non-sulfide Ni.

They concluded:"*.. mineralisation is probably of at least two generations - those directly related to the ultramafics themselves viz. nickel, chromite, osmiridium, and those related to a later probably Devonian, genetic event viz. Cu, Pb, Zn.*"

5.4 **Theseus** (1971)

Theseus continued working in the Lord Brassey area 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.

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.*"

5.5 **ANZECO** (1976)

The Australian and New Zealand Exploration Company undertook a stream sediment survey in the Mt Stewart area searching for tungsten and base metal deposits around the margins of the Meredith Granite.

Results were disappointing and no further work was undertaken.

5.6 **Aberfoyle** (1979-85)

Aberfoyle initially explored the margins of the Meredith Granite for tin and tungsten deposits during the operational phase of their adjacent Cleveland Mine.

When Cleveland closed and the mill was converted to trial treat Hellyer ore, their exploration emphasis in this area switched to base metals (Cu-Pb-Zn).

They flew airmag and Dighem surveys in the Mt Stewart - Mt Youngbuck area. Two major magnetic anomalies were located:

- Mt Youngbuck
- Ifield Creek

Sirotem surveys were undertaken at **Mt Youngbuck** and 2 cored drill holes MY 1, 2 completed. Two scheelite bearing magnetite skarns up to 36 m. wide and 500 m long were identified adjacent to the Meredith Granite. Aberfoyle regarded the skarns as altered sediments.

At **Ifield Creek,** (east of Mt Stewart - fig 7) a magnetite skarn thought to be altered ultramafics was located in an embayment of the Meredith Granite. *This skarn lies close to the contact with the Huskisson Syncline remnant and represents an important discovery which was never drilled and sampled. The implication is that this margin of the syncline may be underlain by altered ultramafics.*

5.7 **Billiton** (1986-88)

Billiton explored the margins of the Meredith Granite for tin and tungsten deposits associated with aeromagnetic anomalies.

One significant such anomaly - **Anomaly A,** lies on the SE corner of the Huskisson Syncline remnant within 300 m. of the Meredith Granite contact, along strike from the Godkin Mine (Fig 7).

Billiton established a small grid over the anomaly and defined the anomaly on two lines with a ground magnetic survey. Surface samples were

submitted for Sn, W, Cu Zn analyses (all low) **but not nickel.** They then hand dug two shallow trenches and exposed skarn rubble on top of ferruginous and manganiferous clays. Samples of this material contained elevated Pb and Zn **but were not assayed for Ni.**

Billiton undertook no further work.

Combined with Aberfoyle's Ifield Creek skarn, the geology beneath this contact zone between the Huskisson Syncline remnant and the Meredith Granite presents some potential Avebury style deposit opportunities.

5.8 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 Fentons, Purcell and Lord Brassey areas (Fig 7) 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 3 m. 0.44% Ni.

In 1988, they switched their efforts to base-precious metal exploration in the **Mt Jasper** area and completed the following:

- gridding
- mapping

- rock chip sampling
- percussion and core drilling

They described the geology of this area as dominated by mafic lavas overlying ultramafic rocks along the southern and eastern margins of the Heazlewood River Complex. The lavas are low-Ti tholeiitic basalts and boninites and are related to the ultramafics. The top of the basalt flows are commonly amygdaloidal.

Dump sampling of the old mines produced a best result of 23% Cu, 200 g/t Ag, 14.2 g/t Au.

They drilled 14 percussion holes (total 483 m) most of which failed to reach target because of drilling difficulties in wet fractured ground. Three cored holes JD 1, 2, 3, totaling 330 m. were completed (Fig 10). JD 1 and JD 2 were stratigraphic holes designed to test a model of flat lying stratabound mineralisation. Only minor mineralisation was intersected. Down hole Sirotem defined a number of steeply dipping anomalies, and one of these was tested with JD 3 at shallow depth. It intersected a 3 m. silicified zone of 10% sulfides, including 0.4 m. 2.2% Cu, 6.5 g/t Ag, 0.28 g/t Au.

5.9 CRA (1994-95)

CRA 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 is the closest work to the Avebury model undertaken by any previous workers. However, CRA did very little to pursue the target model.

Following some district stream sediment sampling, they focused their attention on the Cu-Au potential of the Duff's Hill area. Several short adits were sampled with best results of 2 m. (along vein) 8% Cu, 7.6% Pb, 3.8% Zn, 64 g/t Ag, 5.8 g/t Au.

They concluded the Duffs Hill mineralisation was confined to discontinuous steeply dipping Devonian faults or shears cutting through strongly altered mafic/ultramafic lithologies. They undertook no further work.

5.10 Pasminco (1997)

Pasminco briefly held the area and had 5 main targets:

- Zn skarns in the Meredith Granite aureole
- Zn veins in structural settings
- Sn skarns
- Cu vein systems
- Ni/PGE/Cu mineralisation in HRC and MSC

They completed a GIS layering interpretation of available data but no follow-up field work.

5.11 MRT (2000-2001)

As part of a western Tasmanian regional minerals program, MRT recently completed an aeromagnetic - radiometric survey of the Heazlewood area. Results were released in November 2001. Two views of this data reduced to 1:100,000 scale are presented as Figs 8, 9. Flight lines were E-W and 200 m. apart with a sensor height of 60 m.

MRT plans to cover this same area with airborne EM in summer 2001-2002 with results available in April 2002.

6. APPLICATION OF THE AVEBURY MODEL

The Avebury model requires the following:

- granite < 3-4 kms of current surface
- extensive alteration (serpentinisation) of nickeliferous mafics (boninites ?) or ultramafics (dunites) 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 (non erosion) of these sites

Applying these fundamental requirements to EL 14/2001, the following can be concluded:

(a) the Meredith Granite slopes across EL 14/2001 to the NW and in the northern half is interpreted as being in excess of 6 kms below current surface.

(b) much of El 14/2001 is underlain by ultramafics. District magnetic data suggests the Heazlewood River Complex (HRC) and the Mt Stewart Complex (MSC) are linked beneath relatively shallow cover. The MSC appears to be extensively serpentinised, but in the north where the granite is deeper, the HRC appears less altered with most serpentinisation as described in the literature being confined to shear or fault zones.

The distribution of magnetite formed during serpentinisation, as opposed to magnetite rich formational layering, is unclear from current data. A large magnetic anomaly beneath the western half of the Huskisson Syncline remnant remains unexplained. The area west and south of Mt Jasper which is

underlain by Cambrian volcanics and sediments is magnetically anomalous. The MSC is not as magnetically anomalous as might be expected. This may be due to the shallowness of the granite and resultant magnetite destruction/depletion.

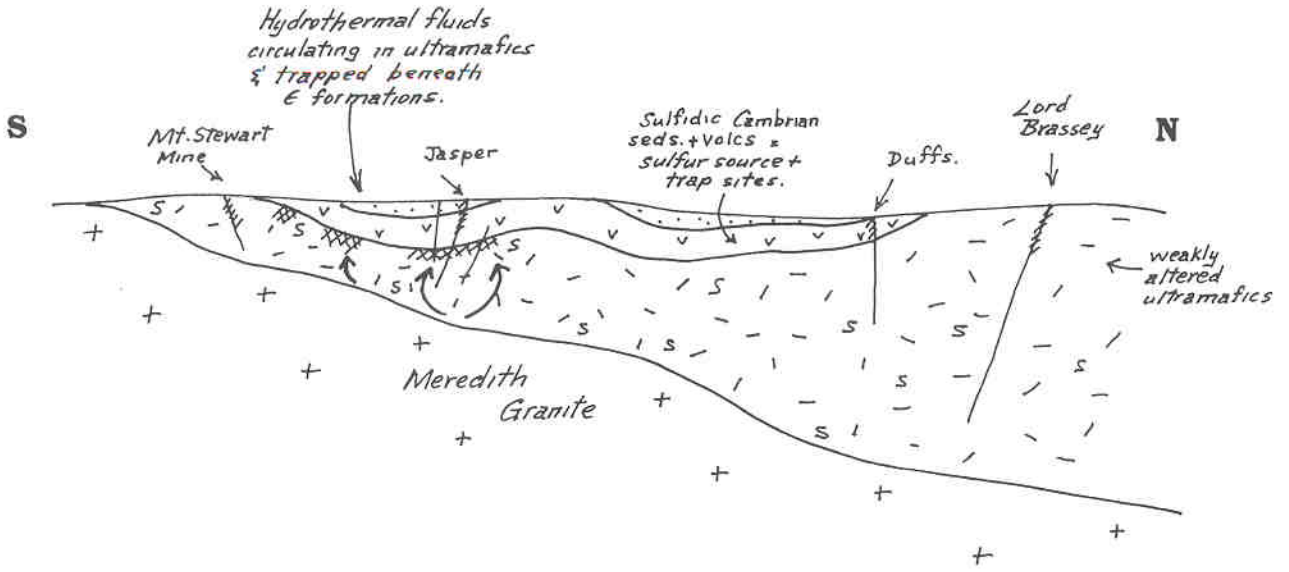
(c) evidence of extensive sulfurous hydrothermal processes is derived from the distribution of known deposits in the district. Within EL 14/2001, the extensive (but minor) sulfide mineralisation present at Mt Jasper, Mt Wright, Heazlewood, Mt Stewart and Godkin Mines, can be interpreted as part of a SW extension of the major hydrothermal system through Bischoff, Mt Magnet and Cleveland. Sulfide occurrences are less common in the northern half of the licence.

(d) there are two major structural trends recognised in this area - NW and NNE. The NW trend structures host the Lord Brassey, Mt Wright and Heazlewood Mines, whilst the NNE trend hosts the Mt Stewart Mine and possibly influence the Jasper Mines. The Godkin Mines are possibly associated with a thrust structure along the eastern margin of the Huskisson Syncline.

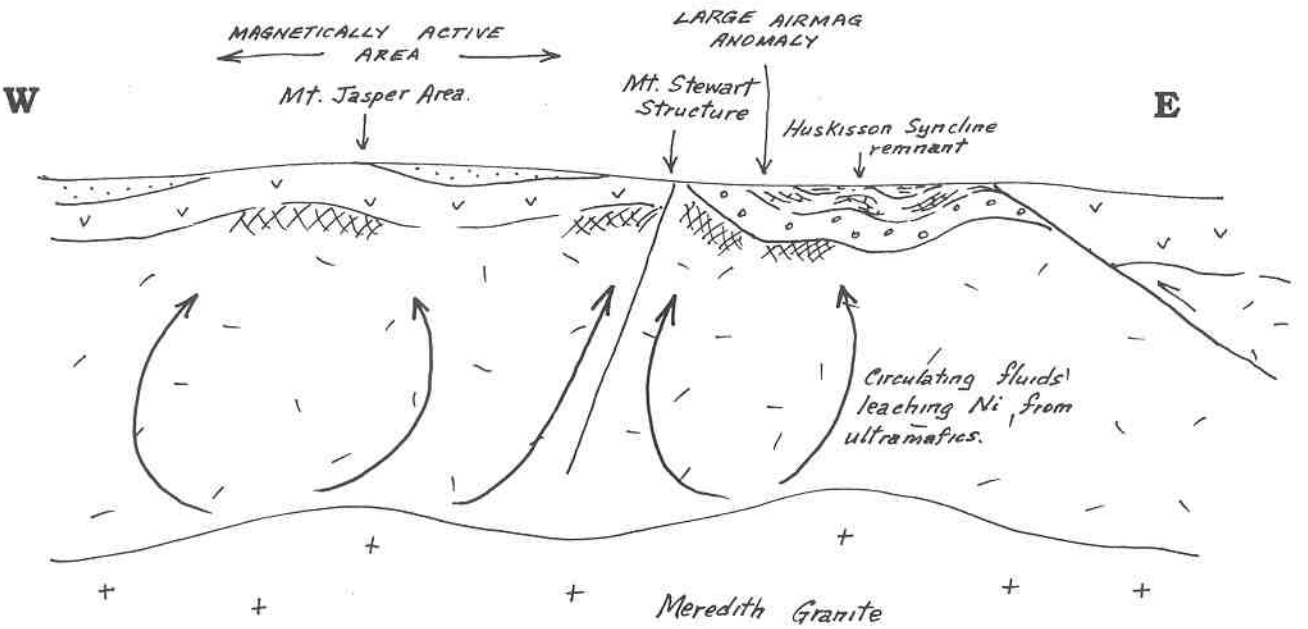
Airmag and radiometric data highlight a significant NNE trending structure which passes (from south to north) through the Mt Stewart Mine, along the western margin of the Huskisson Syncline and north between the layered ultramafics to the west and the Cambrian basalts to the east. The large airmag anomaly beneath the Huskisson Syncline lies immediately east of this structure.

(e) the most likely preserved trap sites exist in the southern section of the licence where the serpentinised ultramafics remain roofed beneath either Cambrian basalts and sediments or Palaeozoic sediments of the Huskisson Syncline remnant.

The sketches below illustrate some of the above features:



Schematic N - S section showing potential of the Jasper area



Schematic E - W section showing potential of Jasper and Huskisson Syncline areas.

7. CONCLUSIONS

On the basis of available evidence, the two most prospective areas within EL 14/2001 for Avebury style nickel sulfide deposits are:

- large aeromagnetically anomalous area beneath the western side of the Huskisson Syncline remnant
- magnetically active ultramafics beneath Cambrian basalts and sediments in the southern half of the EL, principally in the general Mt Jasper area.

7.1 Huskisson Syncline airmag anomaly:

This area is attractive for the following reasons:

- large magnetic anomaly, more suggestive of alteration of ultramafics (with resultant production of magnetite) than "formational".
- adjacent to major NNE trending structure
- concealed beneath Palaeozoic sediments (ie) a potential preserved trap site
- relatively shallow granite in this area.

The shape and size of the anomaly suggests the source may be moderately deep. More detailed magnetic data is required to better define and characterise this magnetic anomaly.

Evidence for the Huskisson Syncline remnant being underlain by altered ultramafics is derived from the Ifield Creek magnetic skarn identified by Aberfoyle on the SW corner of the syncline, and Anomaly A identified by Billiton as a possible magnetic skarn on the SE corner of the syncline.

7.2 Concealed ultramafics in Mt Jasper area.

The general Jasper area is attractive for the following reasons:

- magnetically active, suggesting irregular formation of magnetite

as result of serpentinisation of ultramafics.

- numerous workings in the area on small sulfide deposits, suggesting widespread hydrothermal activity

- Cambrian basalts and sediments may have contributed sulfur to the hydrothermal system, and in the case of the former, boninitic basalts may also have contributed nickel.

- the basalts and sediments overlying the altered ultramafics may have formed trap sites for nickeliferous hydrothermal fluids

- granite is at relatively shallow depth

8. RECOMMENDATIONS

8.1 Programs

The following work programs are recommended:

(a) ***Relinquish approximately 50% of the licence area***

The northern and part of the western section of the licence are interpreted as having low prospectivity for Avebury style deposits within a practical depth of surface.

The area recommended for relinquishment is shown on Fig 3. Relinquishment will both focus future effort on the remaining prospective areas and reduce expenditure commitments.

(b) **Acquire and interpret government airborne geophysical data.**

The Tasmanian and Federal governments are midway through acquiring an airborne EM-magnetic-radiometric coverage over the Meredith Granite aureole. The magnetic and radiometric data is already available and the EM data is anticipated by March 2002.

This data over EL 14/2001 should be acquired and interpreted. Whilst it is semi-regional in nature, it will provide some value to the design of more detailed on-going deposit search programs.

(c) **Complete high resolution airmag survey.**

A high resolution airmag survey should be completed over the retained portion of EL 14/2001. East-west flight lines, 50 m apart with a 50 m. sensor height are recommended.

Results of this survey would facilitate a more comprehensive analysis of the Huskisson and Jasper anomalous areas.

(d) **Complete ground surveys over selected magnetic anomalies.**

Selected anomalies defined by the high resolution airmag survey should be followed up on the ground with detailed mapping, geophysical (EM/IP ?) and geochemical surveys.

(e) **Drill selected targets.**

It can be anticipated that the above airborne and ground surveys will define a number of targets worthy of drill testing.

8.2 Scheduling

EL 14/2001 is a five year licence expiring in 2006. However there is little value to Allegiance in extending the above recommended programs over anything like the full tenure period.

It should be possible to be at the drilling stage by early 2003, given encouragement from the airborne and ground surveys.

8.3 Budget Estimates

- acquire and interpret government airborne geophysical data	$10,000
- high resolution airmag survey	$50,000
- ground surveys	< $75,000
- drilling	> $100,000

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