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**PASMINCO EXPLORATION
BULGOBAC RIVER EL 19/94
ANNUAL REPORT
PERIOD ENDING OCTOBER 1996**

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Author: SM Dibben
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- Melbourne

Submitted by: *SM Dibben*
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December 1996

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ANNUAL REPORT - BULGOBAC RIVER
EL 19/94 - PE OCT'96 - PASMINCO
S.M.DIBBEN

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SUMMARY

Last years exploration focussed on the Que-Hellyer horizon (the Mixed Sequence) which occurs at depth on the eastern side of the Mt Charter Fault. Data from drill holes was utilised, with data from holes on neighbouring licences, in a comprehensive lithochemical study undertaken by Dr Tony Crawford. The study showed that the Mixed Sequence occurs at depths of greater than 900m on the EL.

This year an interpretation of the regional aeromagnetic data was completed to try and locate any large alteration zones associated with Rosebery style mineralisation on the western side of the Mt Charter Fault and to ascertain whether the Mt Charter Fault could be traced from High Point northward into EL 19/94. If the fault could be located then there may be potential to find the Que-Hellyer horizon at depths of less than 900m.

Also to gain a better understanding of the mineralisation style of the area a study of the Que-Hellyer mineralisation was conducted, involving a mine visit to Hellyer.

Exploration work which still needs to be done includes mapping and sampling of the lithologies on the western side of the Mt Charter Fault, ground investigation of the magnetic high defined by the regional aeromagnetic data and the possible acquisition of good quality magnetic data to enable the tracing of the Mt Charter Fault

1 INTRODUCTION

This report details work carried out on the Bulgobac River EL 19/94 from November 1995 to December 1996.

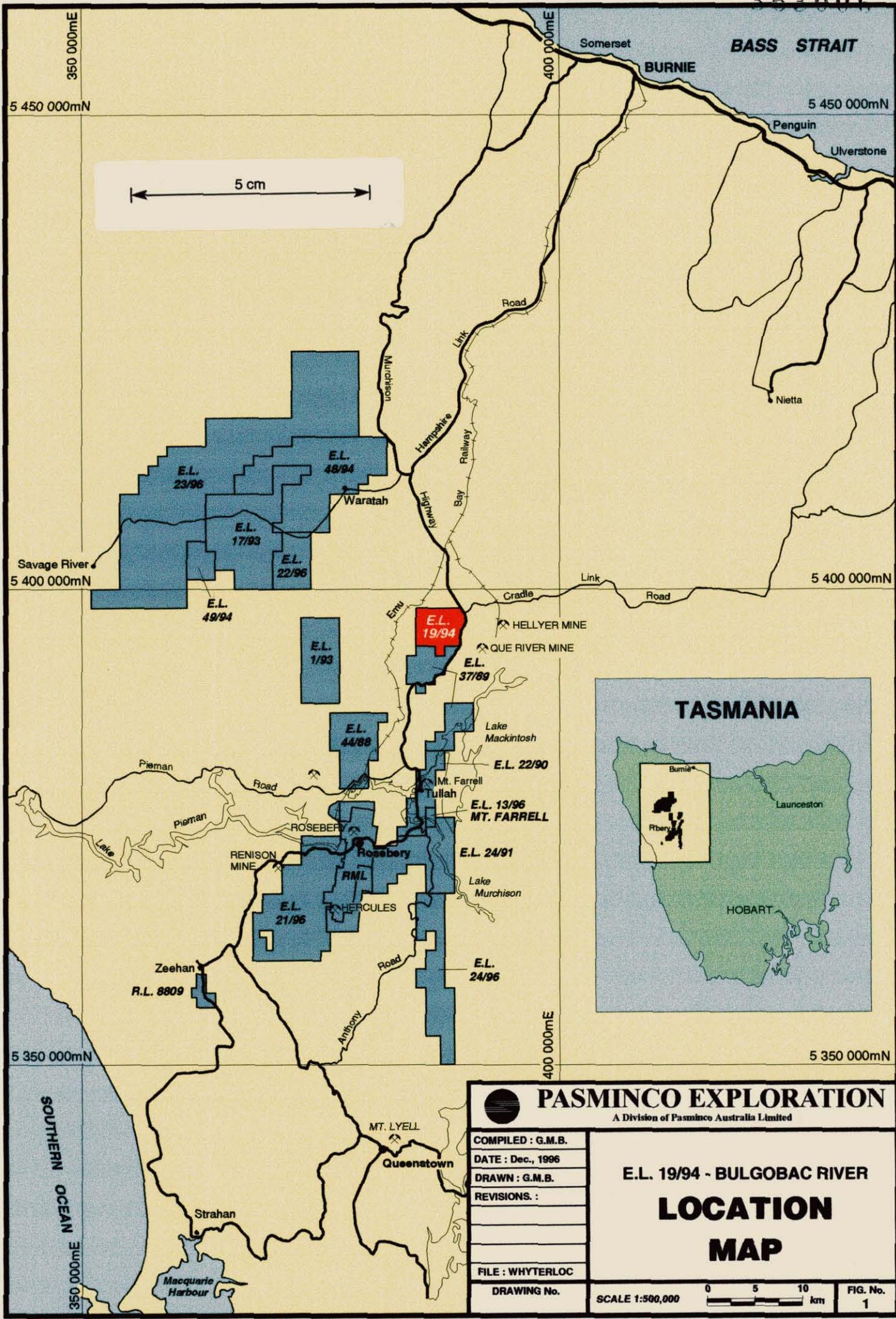
The EL covers an area of Cambrian rocks belonging to the Mt Read volcanics. The Que-Hellyer Volcanics which host the Hellyer and Que River mines extend into the EL. Hellyer mine lies 5km to the East of the EL boundary (Figure 1).

No outcropping mineralisation has been located in the area. Previous work on the licence includes geological mapping, VFL-EM, IP, CSAMT & gravity surveys by CSR and DHEM, UTEM and magnetic surveys by Aberfoyle. Recent work by a Placer-Aberfoyle Joint Venture included the completion of five diamond drill holes, all of which intersected the Que-Hellyer Volcanics at depth (Richardson, 1994). None of the holes contained mineralisation or significant alteration.

Exploration by Pasminco has been carried out in conjunction with exploration on the neighbouring Bulgobac Hill EL 37/89. During the 1994-95 reporting year a lithogeochemical study was undertaken by Dr Tony Crawford to define the depth at which the Mixed Sequence occurs in drill holes on the eastern side of the Mt Charter Fault. The study showed that the Mixed Sequence occurs at depths of greater than 900m.

During 1995-96, exploration by Pasminco has involved a regional aeromagnetic interpretation to try and locate any large alteration zones associated with Rosebery style mineralisation on the western side of the Mt Charter Fault and to ascertain whether the Mt Charter Fault could be traced from High Point northward into EL 19/94. If the fault could be located then there may be potential to find the Que-Hellyer horizon at depths of less than 900m.

Also to gain a better understanding of the mineralisation style of the area a study of the Que-Hellyer mineralisation was conducted, involving a mine visit to Hellyer.



 PASMINGO EXPLORATION A Division of Pasmingo Australia Limited	
COMPILED : G.M.B. DATE : Dec., 1996 DRAWN : G.M.B. REVISIONS : FILE : WHYTERLOC	E.L. 19/94 - BULGOBAC RIVER LOCATION MAP
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	FIG. No. 1

2 TENURE

Bulgobac River EL 19/94, covering 21km² was granted to Pasminco Australia Limited in January 1995. The licence is renewable annually on the 6th January.

The licence is on unallocated Crown Land, designated as multiple use forest (Figure 2).

5 400 000mN

363008

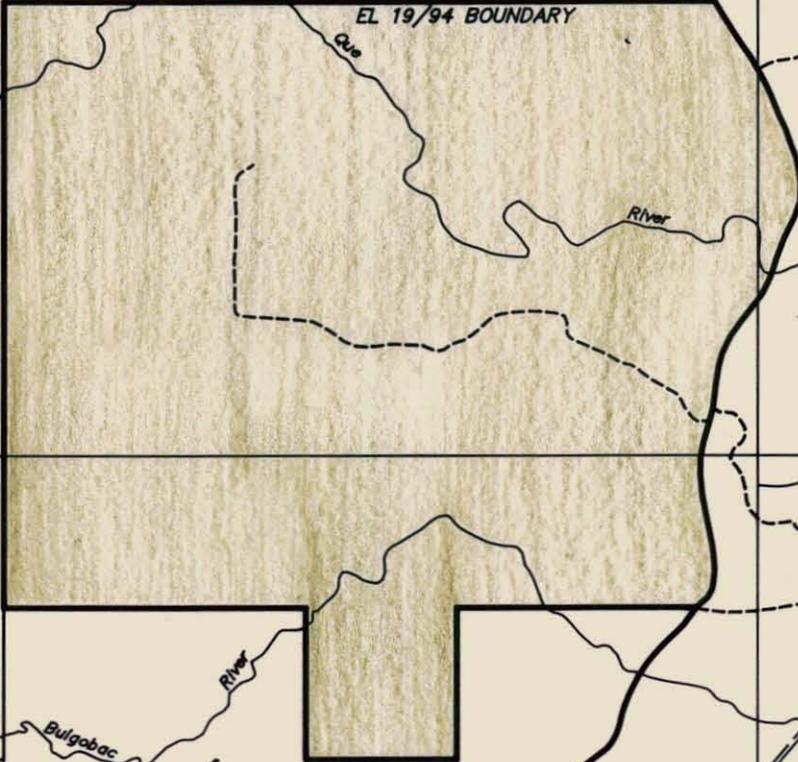
5 cm

385 000mE

390 000mE

5 395 000mN

5 395 000mN



EL 37/89 BOUNDARY

5 390 000mN

5 390 000mN

385 000mE

390 000mE

Emu Bay Railway

KEY

 Crown Land - Multiple Use Forest



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DATE : Nov., 1995

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E.L. 19/94 - BULGOBAC RIVER

LAND TENURE

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FIG. No.
2

3 REGIONAL GEOLOGY

Two major groups of rocks occur within EL 19/94. One group consists entirely of Tertiary basalt flows which are considered to have low prospectivity to host base metal mineralisation. The second group consists of Cambrian rocks belonging to the Mt Read Volcanics. This group can be divided into distinct packages occurring on either side of the major structure within the EL, the NNW-SSE trending Mt Charter Fault (Figure 3).

Figure 4 shows the rock types occurring within these two packages and their stratigraphic relationship with one another. The Que and Hellyer ore bodies occur within the Mixed Sequence, which is part of the Que Hellyer Volcanics and is found on the eastern side of the Mt Charter Fault. The Fault itself is a highly significant structure, characterised by a zone of shearing, fracture, vein and pug development up to 10m wide in places. The difference in thickness and type of Cambrian units either side of the fault may indicate that it was active during Cambrian times.

The dips on either side of the fault are low angle (5-45°) and mostly dip to the north west. Open folds and considerable faulting disrupt the stratigraphy on the eastern side of the fault. The thickness of the Southwell Subgroup and Que River Shale, coupled with the low angle dips on the eastern side of the fault prevent the Que Hellyer Volcanics from outcropping within the EL. They are observed at surface beyond the eastern boundary.

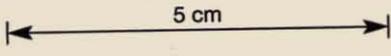
Volcanic units do outcrop on the western side of the Mt Charter Fault. Although these are believed to be time equivalents of the Que-Hellyer volcanics, they are not thought to be geochemical correlates. (A Crawford, pers.comm. to Purvis JG, 1995).

No significant alteration or mineralisation has been identified within the EL boundaries (Lorrigan, 1995).

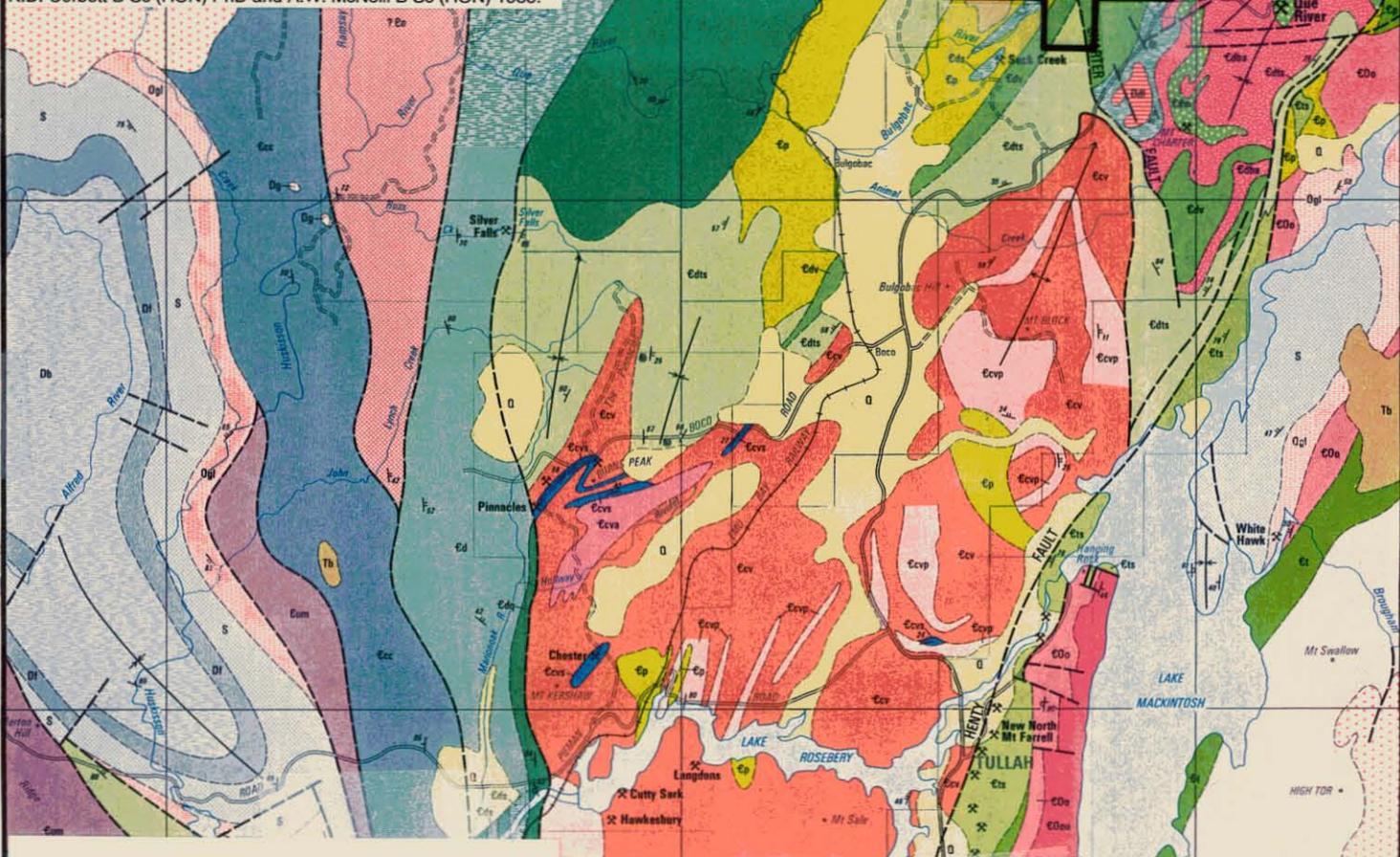
PASMINCO EXPLORATION
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DRAWING No. SCALE 0 2 4 km FIG. No. 3

E.L. 48/94 - BULGOBAC RIVER
REGIONAL GEOLOGY
FROM MAP 6 OF THE
MT. READ VOLCANICS PROJECT



ACKNOWLEDGMENT
Mt. Read Volcanics Project adopted from Map 6 - Geological Compilation Map of the Mt. Read Volcanics & Associated Rocks, from Hellyer to South Darwin Peak.
K.D. Corbett B Sc (HON) PhD and A.W. McNeill B Sc (HON) 1988.



QUATERNARY	Q	Glacial deposits, alluvium, etc.
TERTIARY	Tb	Basalt
	Ts	Sediments - gravel, sand, clays
JURASSIC	Jd	Dolerite
PERMIAN - CARBONIFEROUS	P	Undifferentiated
DEVONIAN	Ddl	Dolerite
	Dg	Granite
DEVONIAN - SILURIAN	Db	Bell Shale
	S-D, Df	Florence Sandstone
	S	Silurian
ORDOVICIAN	Ogl	GORDON GROUP limestone
EARLY ORDOVICIAN - LATE CAMBRIAN	COou	Upper sandstone sequence including Pioneer Beds (COou)
	COo	Undifferentiated conglomerate and sandstone (COo)
	COon	Newton Creek Sandstone (COon) - interbedded sandstone siltstone and conglomerate with marine fossils

MT. READ VOLCANICS
NORTH AND WEST OF HENTY FAULT
DUNDAS GROUP AND CORRELATES

Ep	Quartz-feldspar porphyry, mostly intrusive
Eds	Mostly sedimentary rocks - greywacke, siltstone, conglomerate
Edts	Interbedded tuffs and sedimentary rocks
Ed	Quartzwacke-slate-siltstone units, e.g. Still Quartzite
Edv	Mostly felsic volcanics - mainly tuffs
Edm	Mixed felsic and mafic volcanics and epiclastic breccias, Que-Hellyer area
Edva	Basaltic to andesitic volcanics

CENTRAL VOLCANIC COMPLEX

ECv	Mainly feldspar-phyric volcanics - dacite, rhyolite, minor andesite (ECv)
Ep	Felsic porphyry, mainly intrusive
ECvp	Mainly pyroclastic rocks
ECsl	Sedimentary rocks, mainly shale and sandstone
ECva	Andesitic volcanics

SOUTH AND EAST OF HENTY FAULT
TYNDALL GROUP AND CORRELATES

Et	Mainly sed. rocks, incl Farrell Slates
Et	Mainly quartz-feldspar-phyric volcanic and volcanoclastic rocks (Ct)
EC	Mainly volcanoclastic congl. and sandstone
ECb	Sticht Range Beds - sandstone, siltstone, siliciclastic conglomerate

CAMBRIAN INTRUSIVE ROCKS

Ep	Granite
Ep	Felsic porphyry
Ep	Gabbro
Em	Ultramafic rocks & serpentinite

PRECAMBRIAN

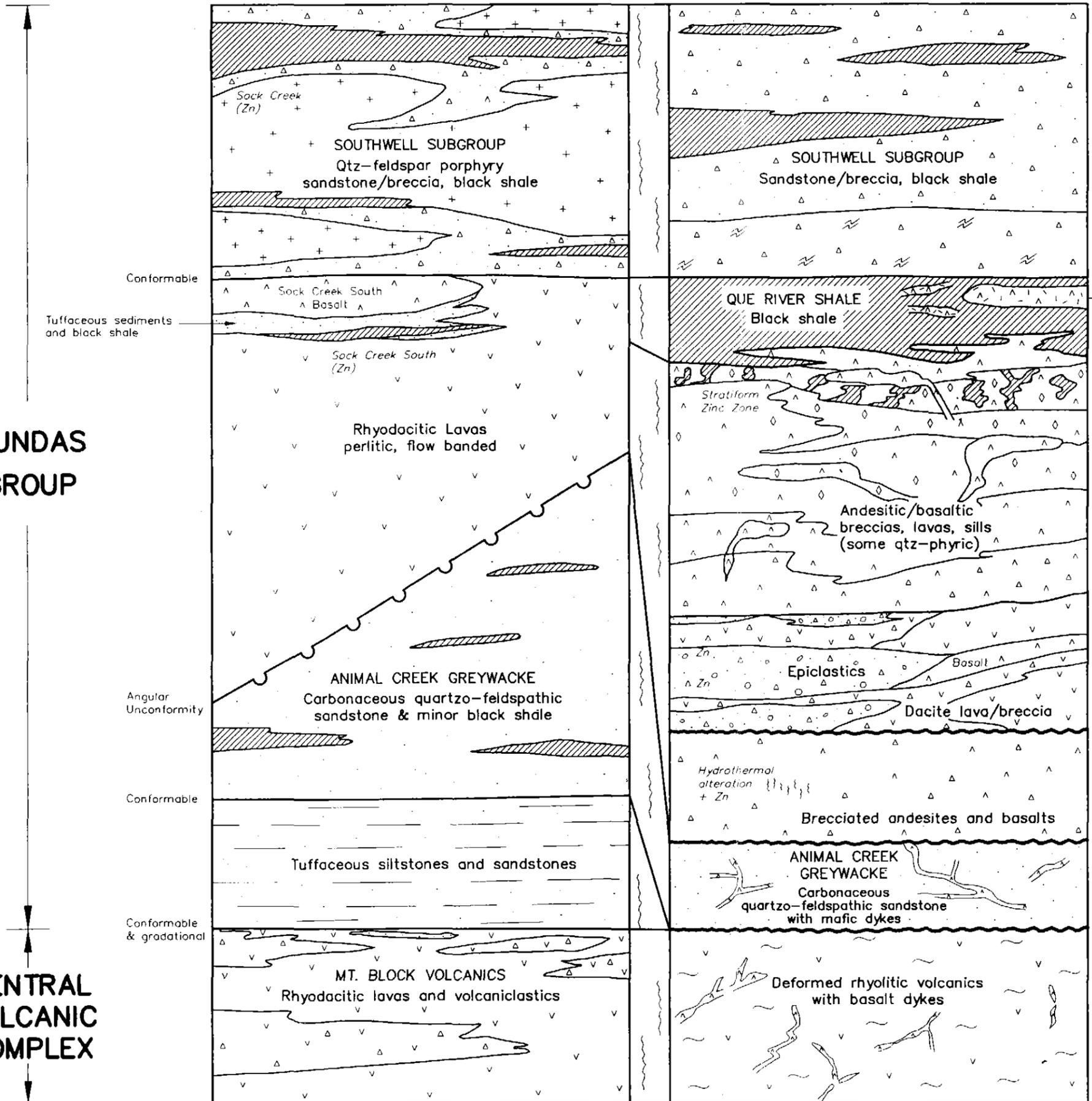
EO	Quartzite-slate sequences - correlates of Oonah Formation
Em	Metamorphosed sequences of Tyennan Regi

Major lithological boundary trends shown

**WEST OF MT. CHARTER FAULT
(MT. BLOCK - SOCK CREEK AREA)**

MT
CHARTER
FAULT

**EAST OF MT. CHARTER FAULT
(HIGH POINT AREA)**



**DUNDAS
GROUP**

**CENTRAL
VOLCANIC
COMPLEX**

Mt. Charter Dolerite
Sill and Dykes

HANGINGWALL VOLCANICS

**QUE -
HELLYER
VOLCANICS**

MIXED SEQUENCE

"FOOTWALL VOLCANICS"

PASMINCO EXPLORATION
A Division of Pasminco Australia Limited

COMPILED : J.C.P.
DATE : August 1995
DRAWN : G.M.B.
REVISIONS

E.L. 19/94 - BULGOBAC RIVER

**STRATIGRAPHIC
COLUMN**

FILE : BR_STCOL
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NOT TO SCALE

FIG. No.
4

4 PREVIOUS EXPLORATION

Previous work on the licence includes geological mapping, VFL-EM, IP, CSAMT & gravity surveys by CSR and DHEM, UTEM and magnetic surveys by Aberfoyle. Recent work by a Placer-Aberfoyle Joint Venture included the completion of five diamond drill holes, all of which intersected the Que-Hellyer Volcanics at depth (Richardson, 1994). None contained mineralisation or significant alteration.

Exploration during 1994-95 specifically involved the Bulgobac River EL included a lithochemical study undertaken by Dr Tony Crawford (Purvis, 1995). The purpose of this study was to define the depth at which the Mixed Sequence occurs in drill holes on the eastern side of the Mt Charter Fault. Although the position of the Sequence can be determined geochemically it is difficult to recognise visually and, as the study showed, has often been incorrectly logged even by geologists familiar with the area (Lorrigan, 1995).

The study utilised data from drill holes on the Bulgobac River, Bulgobac Hill (both Pasmaingo) and Mackintosh (Aberfoyle) ELs. On the Bulgobac River EL, data from the drill holes BRD01, 02 and 05 was examined. The location of these is shown in figure 5. Of the three holes, it was found that only BRD01 had completely tested the Mixed Sequence (from 856-1025m). Another (BRD05) entered the sequence at 1046m and was stopped within it at 1181m. BRD02 was stopped in Hellyer Basalts (above the Mixed Sequence) at 676.6m (Lorrigan, 1995).

5 WORK UNDERTAKEN 1995-96

Exploration by Pasminco during 1995-96 has been carried out in conjunction with exploration on the neighbouring Bulgobac Hill EL 37/89. The target in these two tenements is Que-Hellyer type deposits within the Que Hellyer Volcanics.

Work related specifically to EL 19/94 has included a regional aeromagnetic interpretation and a lithological/mineralisation study of the Que-Hellyer style involving a Hellyer Mine visit.

5.1 Regional Aeromagnetic Interpretation

The initial aims for doing an interpretation of the regional aeromagnetic data was to attempt to:

1) define the northern extension of the Mt Charter Fault to enable exploration similar to that undertaken at High Point on the Bulgobac Hill tenement.

2) to define any large alteration zones on the western side of the Mt Charter Fault which may be associated with a Rosebery style mineralisation. It was noted in Lorrigan (1995) that this area contains the last 3 of the 4 criteria when looking for Rosebery style mineralisation. These criteria include:

- 1 Alteration and anomalous metal occurrences;
- 2 Change from feldspar-phyric to feldspar quartz phyric volcanic rocks;
- 3 Overlying black shales;
- 4 Proximity to a major structure.

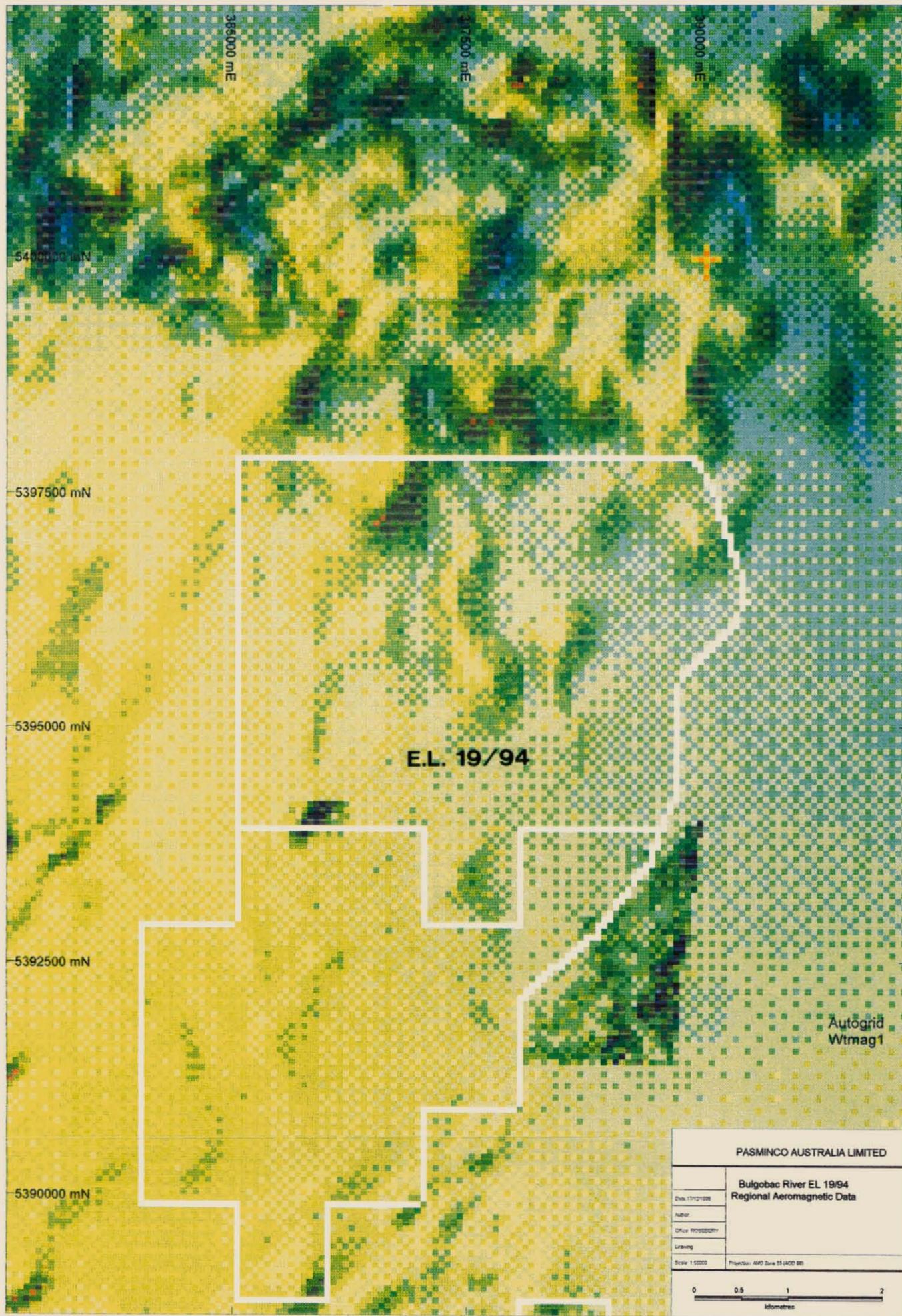
The interpretation of the regional aeromagnetic data over Bulgobac River was conducted using the 1981 West Coast of Tasmania survey. This data was collected along lines spaced 500m apart and flown at an average height of 135m. Due to the large line spacing, the coverage of the EL is restricted to a maximum of eleven lines. This data is best suited for detailing regional features at moderate depths from 150m (Figure 6).

The north end of the EL, extending through to the centre of the tenement, is dominated by high frequency responses which probably relates to Tertiary basalt cover. Correlation between the regional magnetics and the position of the basalts on the geological map is moderate. The remainder of the 'surficial' geology is dominated by quartz-feldspar rich felsic volcanics units and we Quaternary cover, neither of which contains a dominant magnetic signature.

The position of the Mt Charter fault cannot be distinguished from the regional aeromagnetic data. There is however some evidence for a magnetic high around 387500E, 5393500N, close to the position where the Mt Charter fault terminates a felsic lava unit striking NE-SW. More detailed magnetic data is required to determine if any feature exists at this location and to determine the trace of the Mt Charter fault, which was delineated with ground magnetic data collected on ground to the south of the EL?

5.2 Lithological/Mineralisation Study

A lithological/mineralisation study of the Que-Hellyer style of mineralisation commenced this year and involved a visit to Aberfoyle's Hellyer Mine by 4 Pasmenco Geologists as well as a Geological Consultant, Gerald Purvis. A summary of observations from this visit are outlined below.



5 cm

Figure 6

HELLYER MINE VISIT

INTRODUCTION

A visit to Aberfoyle's Hellyer Mine was organised in December 1995, to gain an appreciation of the deposit and its exploration implications. The excursion included visits to four levels underground and examination of drill core which extended through the zones of the mineralisation.

MINE GEOLOGY

SITE 1: 340 level

The footwall feldspar phytic sequence (FPS) exposed in face and in dump material exhibits a moderate to strongly brecciated unit of angular andesite fragments. A weak to partly pervasive overprint of pink, slightly siliceous alteration appears to selectively replace clasts, with clasts showing a progression from unaltered to complete alteration. Barite/carbonate veining is common. The FPS zone, although visibly altered, is not included in the mine defined footwall alteration zone as clast and feldspar textures are visible.

SITE 2: 340 Level

The hangingwall volcanoclastics sequence (HVS) is well exposed in face and backs. The HVS is part of the Mixed Sequence, here being sandy to silty containing larger isolated clasts. It is moderately bedded with some possible cross bedding. A shear zone is developed at the left hand end of the exposed face which overprints sedimentary textures. Mineralisation occurs within the volcanoclastics at this locality, including within some clasts. The clasts display a range of textures, and vary from volcanic clasts to volcanic-sulphide clasts, sulphide clasts and sulphide barite clasts. The current interpretation appears to be that galena-sphalerite-barite clasts were ripped up and slightly relocated on site during the mass flow deposition of the Mixed Sequence. Massive sulphide lenses attenuated in the exposed shear zone indicates that at least some metal was mobile after sedimentation.

A cross-cut at 340 level shows semi-massive barite at the end, described by Aberfoyle geologists as being typical of the Barite cap although out of sequence due to faulting. Massive sulphide is in the cross-cut adjacent to the barite caprock. Barite and pyrite are banded with microscale tension gashes. Very strong brecciation of barite and wallrock in parts is also described as 'typical' barite cap facies by Aberfoyle geologists.

SITE 3: 450 Level

The stringer zone (SZ) is characterised by chlorite-silica-pyrite \pm lesser chalcopyrite and Pb-Zn sulphides (3-4% Zn). Dark green to black chlorite with coarse pyrite is common with irregular pyrite veins and dissemination grading to near massive pyrite. The pyrite appears to overprint a cleaved chloritic rock in a range of ragged replacement textures, and pyrite veins cut carbonate veins/stringers.

In an adjacent cross-cut to the SZ, the stringer envelope zone (SEZ) is defined by a clastic appearance of footwall rocks by the destruction of feldspar. Sericite-silica alteration is pervasive and minor chalcopyrite is present. There is typically a gradational boundary between the SZ and SEZ.

SITE 4: 560 Level

Clear pillow textures were observed within the pillow lava sequence (PLS) of the Hellyer Basalt, hangingwall to the orebody. Textures showed intrapillow sediment wedges and intense green fuchsite alteration of both phenocrysts and the groundmass. Alteration was very patchy despite proximity to ore. Post-alteration barite veining is common.

CORE

HL 193

Fuchsite alteration is fracture controlled, very variable and patchy, strengthening downhole towards the base metal sulphides (BMS). The orebody margins are very abrupt, with veining about the contact but not directly at it. Downhole, the HVS is quite variable in lithology, clast size and shape and contains no significant vein style mineralisation. The HVS is moderately cleaved, with clasts attenuated adjacent to ore.

Ore is moderately banded with pyrite replacing initial alteration spots and sphalerite.

HL746

An increase in cleavage and abrupt margins are observed adjacent to the ore. The lower margin is more abrupt with adjacent massive black chlorite with spotty carbonate alteration. There is an increase in pyrite and silica towards the ore and a corresponding decrease in chlorite. Within the mineralised sequence, microscale 'shrinkage' cracks in the pyrite are believed to be due to the removal of fluid and infilling with (black) silica.

HL 762

The altered footwall clastics in this hole are very similar to the HVS, with rounded clasts and fuchsite alteration. The lower ore contact is faulted, and is very pyritic in the basal 1.5m, grading to banded sphalerite with massive sulphide. The upper contact is sharp. A small mineralised zone at the top of the HVS lies against the Hellyer Basalt.

HL660

A barite zone (Barite cap) at the top of the mineralisation is overlain by very fine grained, strongly banded HVS. Pyrite in the mineralised zone appear to replace sphalerite. A sharp contact separates HVS from overlying PLS.

CONCLUSIONS

Conclusions made from these observations include:

- 1) Pyrite has replaced massive sulphides.
- 2) Some metal was mobile well after sedimentation.
- 3) It is difficult to determine primary fabric from pseudobrecciation and/or alteration.
- 4) At least 2 deformations have occurred: a) cleavage development and b) post mineralisation/pyritisation shrinkage cracks, observed in the pyrite which have been infilled with silica.

6 CONCLUSIONS AND RECOMMENDATIONS

During the 1995-96 year, some progress was made in evaluating the mineralisation potential of the tenement. The following recommendations are made to advance the assessment of mineralisation potential:

- 1 Acquisition of good quality, close spaced, low altitude aeromagnetic data to better define the trace of the Mt Charter Fault and any possible alteration zones.
- 2 Mapping and sampling of the rocks on the western side of the Mt Charter Fault with a Rosebery style of mineralisation in mind.
- 3 Investigate the magnetic high defined by the regional aeromagnetics.

7 EXPENDITURE

Expenditure for the 1995-96 year outlined below is \$15 160.

Personnel & Oncosts	7 198
Travel & Accommodation	1 048
Drilling (including access & core processing/storage)	59
Other contractors	567
Stores & Supplies	341
Vehicles & Equipment	302
Computing	1 660
Tenement Costs	617
Land	397
Office Running Costs	1 318
Management Fee	1 653
TOTAL EXPENDITURE	15 160

8 REFERENCES

Lorrigan, AN., 1995. Bulgobac River EL 19/94, Annual Report For The Period December 1994 - October 1995.

Purvis, JG., 1995. EL 37/89 Annual Report, August 1994 - August 1995. Unpub. Pasmenco Exploration Report 1985.

Richardson, S., 1994. EL 39/85 Relinquishment Report. Unpub. Aberfoyle Resources Limited Report February 1994.

9 KEYWORDS & LOCALITY

Keywords

ZINC, STRATIGRAPHY, STRUCTURE, VOLCANOGENIC, GEOCHEMISTRY

Locality

BURNIE SK55-3; BULGOBAC RIVER, HELLYER, QUE RIVER.