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PASMINCO EXPLORATION

BULGOBAC RIVER EL 19/94

ANNUAL REPORT FOR THE PERIOD  
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BURNIE  
December  
1995

**96-3818**

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## SUMMARY

Exploration during the year has 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 lithogeochemical study undertaken by Dr Tony Crawford. The study showed that the Mixed Sequence occurs at depths of greater than 900m on the EL.

Such depths are regarded as too great to enable the sampling the Mixed Sequence by diamond drilling. Other favourable indicators in conjunction with stratigraphy would need to be found. It is thought that the most likely source of such indicators would be trends identified by either interpretation of new magnetic data or drilling of alteration and mineralisation in the Bulgobac Hill EL to the south.

No work was carried out on the western side of the Mt Charter Fault, but this area has been noted as worthy of ground investigation.

It is recommended that deep drilling into the Mixed Sequence on the western side of the Mt Charter Fault does not take place unless the new magnetic interpretation or results of work on Bulgobac Hill suggest that it would be warranted. It is also recommended that the rocks on the western side of the Mt Charter Fault be mapped and sampled before the licence is relinquished.

## 1 INTRODUCTION

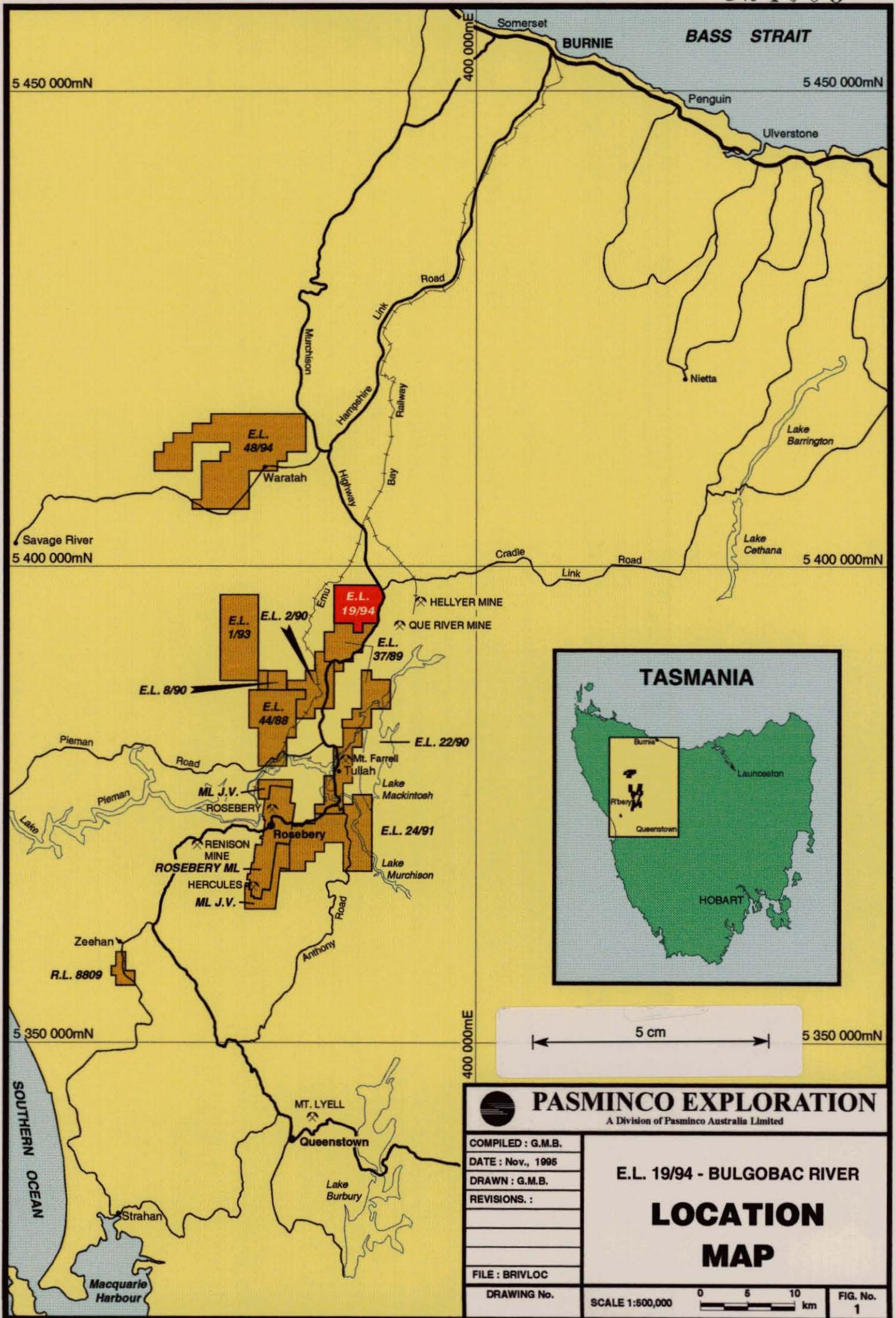
This report details work carried out on the Bulgobac River EL 19/94 from January 1994 to December 1985.

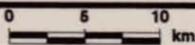
The EL covers an area of Cambrian rocks belonging to the Mt Read volcanics. The Que-Hellyer Volcanics which host the Hellyer and Que River mines extend into the EL. Hellyer mine lies 5km to the East of the EL boundary.

No out cropping 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 contained mineralisation or significant alteration.

The target for this years search has been Que-Hellyer type deposits within the Que Hellyer Volcanics.

Exploration by Pasminco has been carried out in conjunction with exploration on the neighbouring Bulgobac Hill EL 37/89. Of this work, only a lithogeochemical study of rocks from the Placer drill holes relates specifically to the Bulgobac River EL.



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COMPILED : G.M.B. DATE : Nov., 1995 DRAWN : G.M.B. REVISIONS. :  FILE : BRIVLOC	<b>E.L. 19/94 - BULGOBAC RIVER</b>  <b>LOCATION</b>  <b>MAP</b>
DRAWING No.	SCALE 1:500,000 
	FIG. No. 1

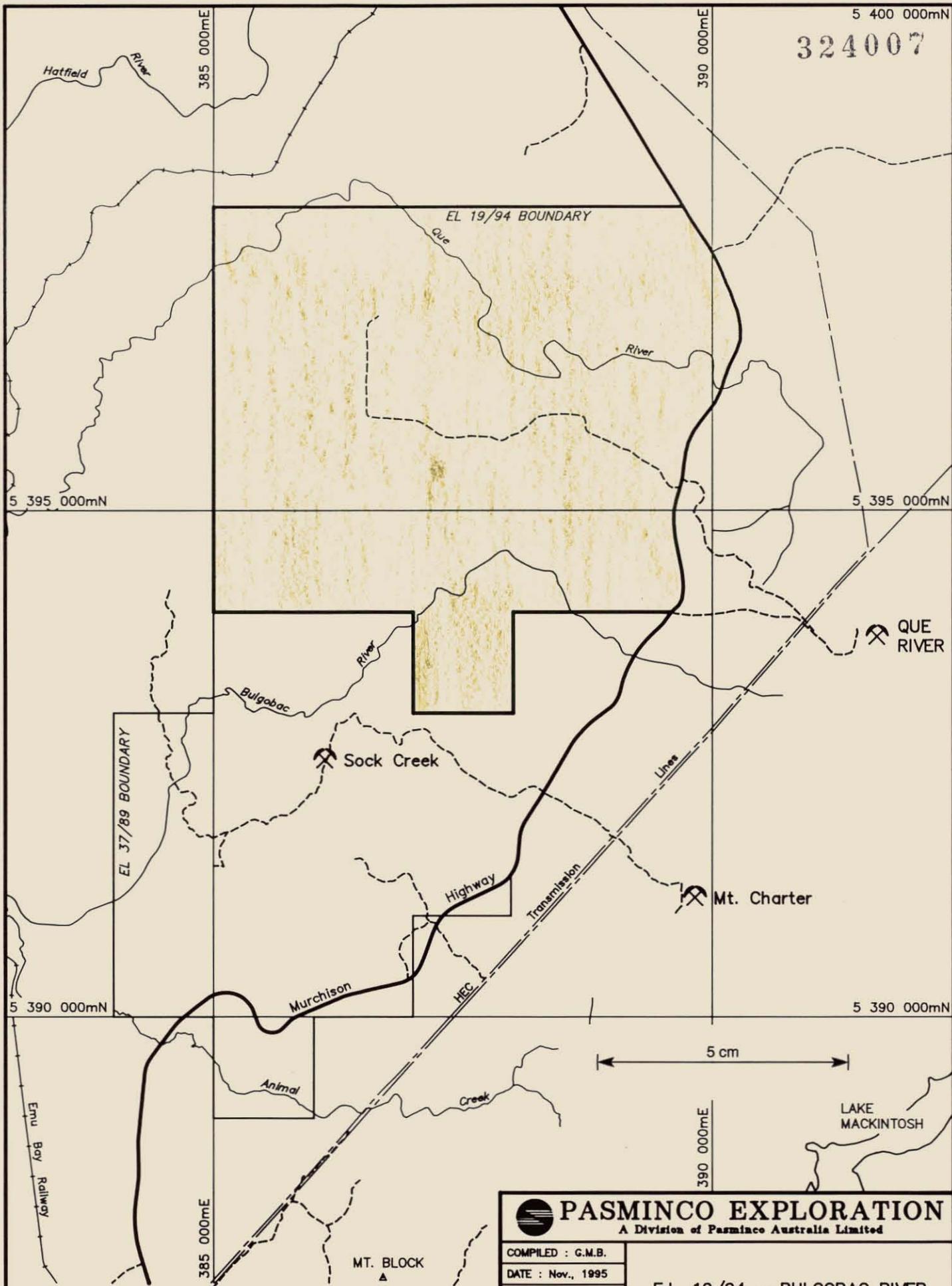
**2 TENURE**

Bulgobac River EL 19/94, covering 21km<sup>2</sup> was granted to Pasmaico Australia Limited in January 1995. The licence is renewable annually on the 6th January.

The licence is on unallocated crown land, designated multiple use forest.

5 400 000mN

324007



EL 37/89 BOUNDARY

EL 19/94 BOUNDARY

**KEY**

 Crown Land - Multiple Use Forest

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DRAWING No. 318-GN-003	SCALE 1:50,000		FIG. No. 2

### 3 GEOLOGY

Two major groups of rocks occur within the EL one group consists only of Tertiary basalt flows which are considered unprospective for base metals. The second group consists of Cambrian rocks belonging to the Mt Read Volcanics. This group can itself be divided into distinct packages occurring on different sides of the major structure within the EL, the NNW-SSE trending Mt Charter Fault.

Figure 5 shows the type of rocks occurring within these two packages and their relationships with one another. The Que and Hellyer ore bodies occur within the Mixed Sequence, which is part of the Que Hellyer Volcanics, 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 to the north west open folds and considerable faulting disrupt the stratigraphy on the eastern side of the fault however. 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 come to the surface beyond the eastern boundary.

On the western side of the Mt Charter Fault, volcanic units do outcrop. 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.



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REVISIONS

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

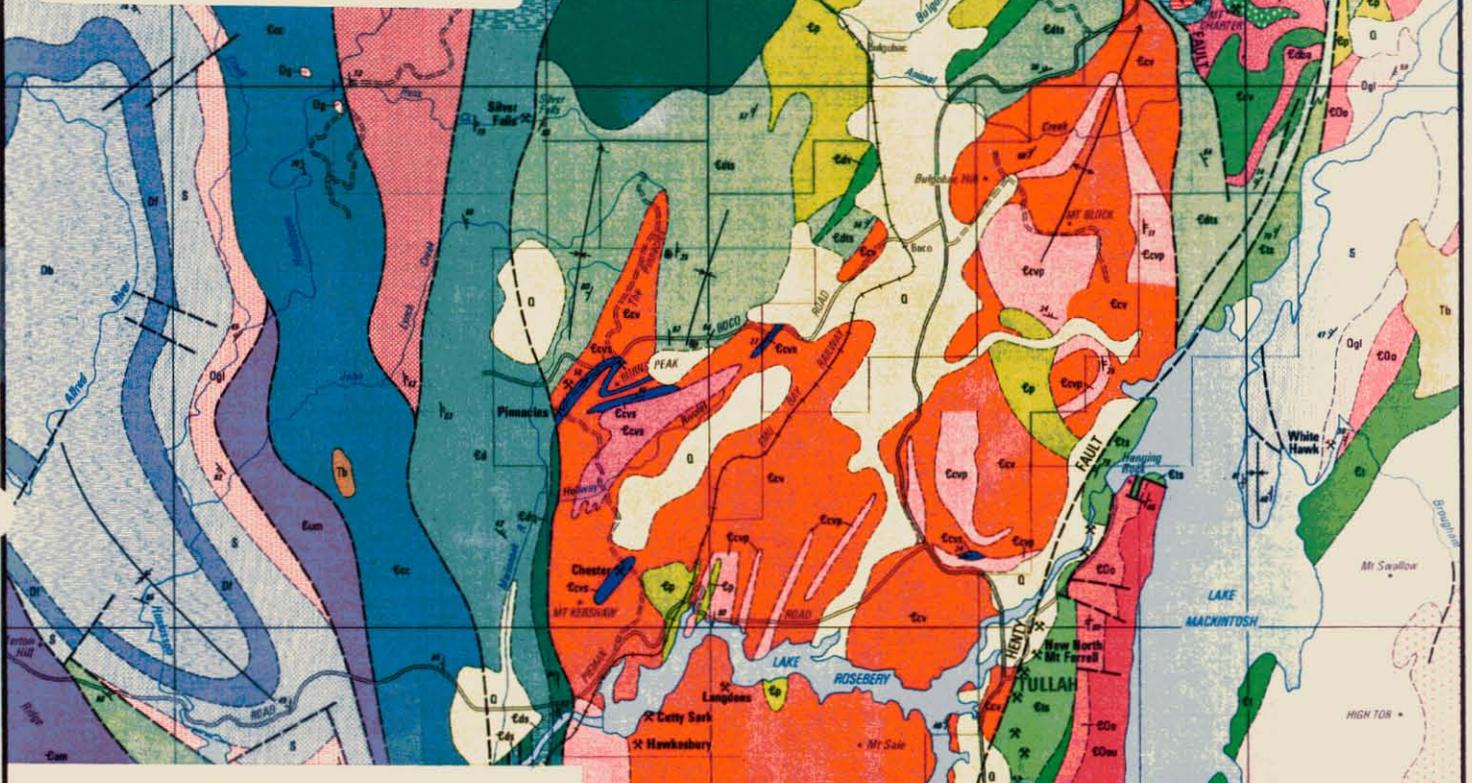
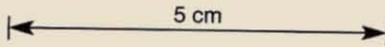
DRAWING No.



FIG. No. 3

**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.



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

**MT. READ VOLCANICS**

**NORTH AND WEST OF HENTY FAULT  
DUNDAS GROUP AND CORRELATES**

Cp	Quartz-feldspar porphyry, mostly intrusive
Cs	Mostly sedimentary rocks - greywacke, siltstone, conglomerate
Eds	Interbedded tuffs and sedimentary rocks
Ed	Quartzwacke-slate-siltstone units, e.g. Stitt Quartzite
Sd	Mostly felsic volcanics - mainly tuffs
Edv	Mixed felsic and mafic volcanics and epiclastic breccias, Que-Hellyer area
Edo	Basaltic to andesitic volcanics

**CENTRAL VOLCANIC COMPLEX**

Cov	Mainly feldspar-phyric volcanics - dacite, rhyolite, minor andesite (Cov)
Cp	Felsic porphyry, mainly intrusive
Cvp	Mainly pyroclastic rocks
Coc	Sedimentary rocks, mainly shale and sandstone
Cva	Andesitic volcanics

**SOUTH AND EAST OF HENTY FAULT  
TYNDALL GROUP AND CORRELATES**

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

**CAMBRIAN INTRUSIVE ROCKS**

Cg	Granite
Cfp	Felsic porphyry
Cgbb	Gabbro
Cum	Ultramafic rocks & serpentinite

**PRECAMBRIAN**

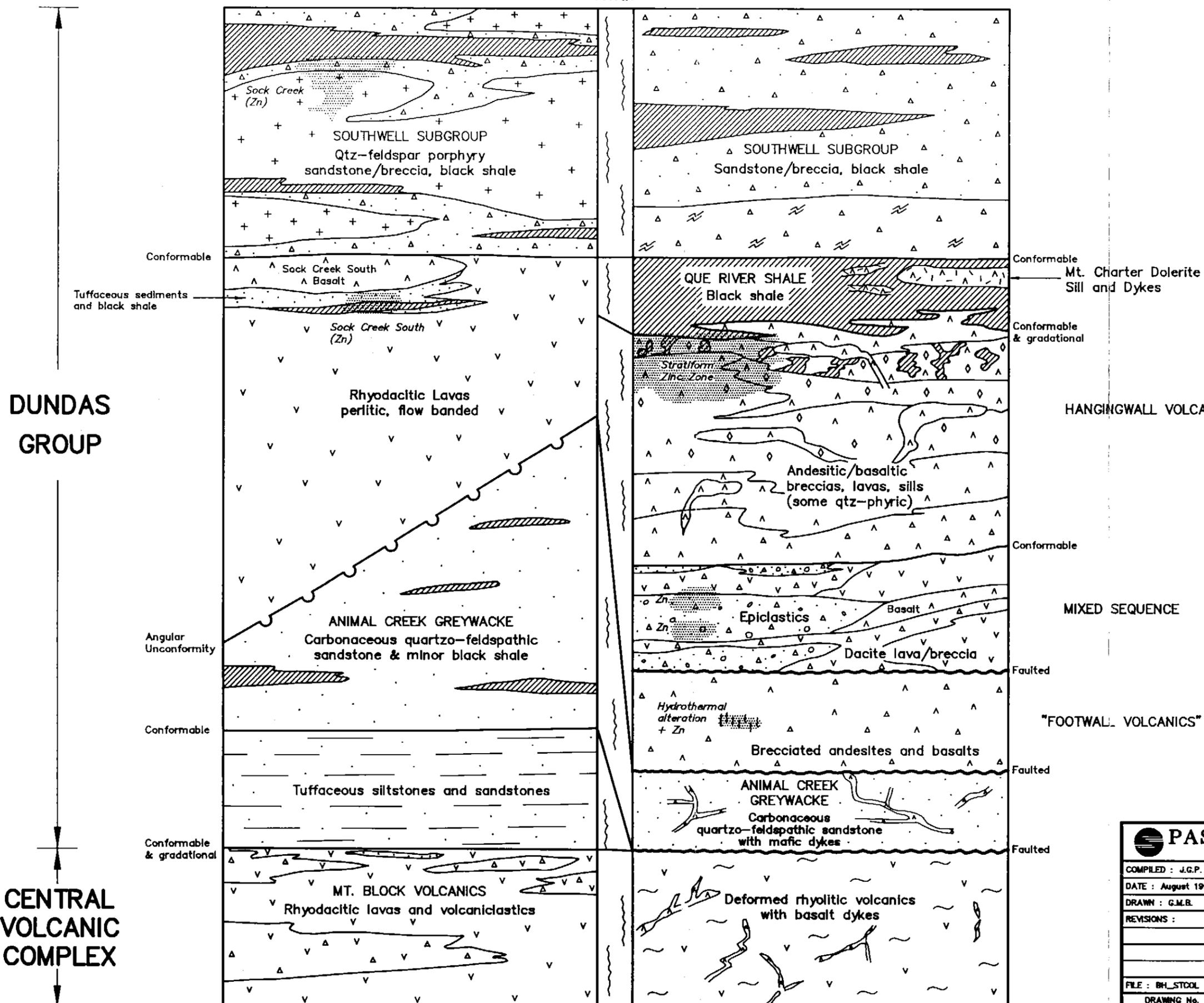
Et	Quartzite-slate sequences - correlates of Oonah Formation
Em	Metamorphosed sequences of Tyennan Region. Major lithological boundary trends shown



**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

QUE - HELLYER VOLCANICS

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<p>COMPILED : J.G.P. DATE : August 1995 DRAWN : G.M.B. REVISIONS :</p>	<p>E.L. 19/94 - BULGOBAC RIVER</p> <p><b>STRATIGRAPHIC COLUMN</b></p>
<p>FILE : BH_STOOL DRAWING No.</p>	<p>NOT TO SCALE</p>
	<p>FIG. No. 5</p>

**4 EXPENDITURE**

Expenditure during the first year of tenure is detailed as follows:

Personnel & Oncosts	869
Travel & Accommodation	45
Analytical Costs	3 380
Drilling (including access & core processing/storage)	30
Other contractors	403
Stores & Supplies	62
Vehicles & Equipment	73
Computing	32
Tenement Costs	615
Office Running Costs	191
<b>Total Direct Costs</b>	<b>5 700</b>
Management Fee	872
<b>TOTAL EXPENDITURE</b>	<b>6 572</b>

## 5 RESULTS

Exploration on the tenement this year has been carried out as part of a wider programme of exploration incorporating the High Point area to the south in the Bulgobac Hill, EL 37/89. The target has been a Que-Hellyer type deposit within the Mixed Sequence of the Que Hellyer Volcanics.

The only part of the exploration programme which specifically involved the Bulgobac River EL was a lithogeochemical study undertaken by Dr Tony Crawford. 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.

The study utilised data from drill holes on the Bulgobac River, Bulgobac Hill (both Pasmenco) 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 4. 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.

Crawfords comprehensive report of his work can be found in Purvis (1995).

## 6 DISCUSSION

### 6.1 Eastern Side of Mt Charter Fault

The results of Crawfords work show that to test the Mixed Sequence on the EL requires deep drilling. This exercise would not be worth undertaking merely for the purpose of sampling The Sequence.

If a drill hole were to be targeted in the area other favourable factors, in addition to stratigraphy, would have to be present to give it any reasonable chance of success. Given that no significant alteration or mineralisation was identified in the Placer drill holes, it seems likely that the identification of trend of alteration or mineralisation within the EL, would come from following favourable indicators north from the Bulgobac Hill EL. Weak sphalerite mineralisation and significant fuchsite and carbonate alteration have been identified in the High Point area on that tenement (Purvis, 1995). At present however, the data is not complete enough to use as a vector to mineralisation or to know whether it is really significant in the search for an economic ore body.

Another possible targeting mechanism would be to use gravity and magnetic data to identify structures that may enhance the prospectivity of the Que-Hellyer Volcanics in certain locations. This method has been tried by the Placer/Aberfoyle JV, who used it to target some of their drill holes.

Further interpretation by Aberfoyle concluded that no structures of economic significance were present (Richardson, 1994). The quality of magnetic data for the area, however is poor and it is possible that important structure may have been missed (R Richardson pers.comm. to JG Purvis, 1995).

A third possible method of target generation would be soil sampling. Conventional analysis of samples could be used to locate anomalies at surface that may arise from the mobilisation of metals along penetrating structures. Alternatively, MMI analysis could be used to locate anomalies resulting from the direct mobilisation of metal ions to the surface. In both cases this method would seem to be a tall order, given the thickness of the overlying cover. If MMI were ever considered it could be tested over the weak zinc zone at High Point first.

## **6.2 Western Side of the Mt Charter Fault**

Although no exploration was undertaken in this area during the reporting period, it does warrant some attention. If a Rosebery model is applied to base metal exploration the explorer is looking for a location where the following conditions apply:

- 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.

Existing mapping implies that the package on the Western side of the Mt Charter Fault fulfils the last three conditions of the model. At present there has not been enough work done in the area to determine whether the first condition is fulfilled and whether the regional mapping is correct. It is known however, that minor lead-zinc mineralisation occurs at Sock Creek in the Western package, south west of the EL boundary.

## 7 CONCLUSIONS

The conclusions to be drawn from the work done so far on the Bulgobac River EL 19/94 are as follows:

- 1 The Que-Hellyer horizon (the Mixed Sequence) is too deep to be a target for exploration in its own right;
- 2 The most likely way of targeting a hole within the Mixed Sequence would be to follow a favourable trend north from the Bulgobac Hill EL 37/89, if such a trend were to be found;
- 3 It is possible that if better quality magnetic data were acquired, favourable structures and possibly alteration zones may be identified within the EL;
- 4 Existing mapping implies that, using a Rosebery Model for exploration, the rocks on the western side of the Mt Charter Fault deserve some exploration attention.

## 8 RECOMMENDATIONS

The following recommendations are made regarding the Bulgobac River tenement:

- 1 No further ground work be undertaken on the eastern side of the Mt Charter Fault unless results from work on the Bulgobac Hill EL 37/89 indicate that any of the ground is prospective;
- 2 Acquisition of good quality magnetic data takes place;
- 3 Mapping and sampling of the rocks on the western side of the Mt Charter Fault be undertaken before the licence is relinquished.

**9 REFERENCES**

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

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

**KEYWORDS & LOCALITY**

## Keywords

ZINC, STRATIGRAPHY, STRUCTURE, VOLCANOGENIC, GEOCHEMISTRY

## Locality

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