



**PASMINCO ROSEBERY MINE**

**LAKE BARRINGTON EL 3/1998  
FINAL REPORT  
FOR THE PERIOD ENDING  
31 JULY 2002**

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## **1. SUMMARY**

In the period 27 February 2002 to 31 July 2002, no fieldwork was completed by Pasminco on EL 3/1998 Lake Barrington.

Given the lack of high priority targets on EL 3/1998, the decreased exploration resources available and a change in strategy, to exploring for targets near existing mine infrastructure, it has been decided to relinquish EL 3/1998 Lake Barrington.

## **2. INTRODUCTION**

This report documents work undertaken on Exploration Licence 3/1998 Lake Barrington for the period February 2002 to 31<sup>st</sup> July 2002.

The EL covers 66 km<sup>2</sup> of Cambrian Mt Read Volcanics, and is located 15km west of Sheffield (Figure 1). The principal target of exploration on the licence is volcanic hosted auriferous base metal massive sulphide, similar to mineralisation at Rosebery and Hercules in Western Tasmania.

### **2.1 Attribution**

The following personnel were responsible for the work carried out within the Lake Barrington licence area during the reporting period:

Senior Geologist:                      Andrew McNeill - Pasminco Rosebery Mine

### 3. LAND TENURE

EL 3/1998, Lake Barrington (Figure 1), was granted to Pasminco Australia Limited, on 27<sup>th</sup> March 1998 for a five-year term and covered an area of 15.75 km<sup>2</sup>. ELA 26/1998 (Gowrie Park) and EL 16/1999 (Cethana) were consolidated into EL 3/1998 on 15/3/99 and 3/12/99 respectively giving a total current area of 65.75 km<sup>2</sup>.

The current tenement excludes a 0.048 km<sup>2</sup> Mining lease (41M/82) for gravel, immediately south of the junction of the Cethana and Old Lorinna Roads.

The tenement is subject to a number of land classifications. The current land tenure includes land vested in the Hydro-Electric Commission in the area immediately surrounding Cethana Dam and high voltage Transmission Lines, State Forest, Forest Reserves, informal reserves, private land holdings, un-allocated Crown Land and the Mt Roland Regional Reserve. All land tenures are available for exploration under the Mineral Resources Development Act.

The history of tenement holdings in the Lake Barrington area are detailed below in Table 1.

**Table 1: Tenement holdings in the Lake Barrington-Cethana Areas.**

Prospects: 1= West Cethana, 2= East Cethana, 3= Staverton, 4= Gowrie Park, 5= Mt Roland Prospect. 6= Lake Barrington

Company	Tenement	Granted	Relinquished	Prospects	Previous Tenement
Asarco	EL 7/73	1973	JV with CRA in 1976	All	Nil
CRA	EL 7/73	JV in 1976	1988	4,5	Nil
CRA	EL 10/76	1976	1987	1,2,3,6	Nil
Noranda/ Plutonic JV	10/88	1988	1998	1,2,3,6	EL 10/76
Aberfoyle	11/88	1988	1993	4,5	EL 7/73
RGC Exploration	32/94	1994	1999	4,5	EL 7/73
Pasminco Exploration	3/98	1998	-	1,2,3	EL 10/88 EL 10/76
Pasminco Exploration	26/98	1998	-	4	EL 32/94
Pasminco Exploration	16/99	1999	-	-	Various

#### 4. GEOLOGY

The regional geology of EL 3/98 is described on the Sheffield 1:63,360 Geological map sheet and explanatory report (Jennings et al., 1959; Jennings et al., 1979). Although establishing the overall regional geology, the description and sub-division of the Cambrian – Ordovician sequences is now dated and new geological coverage at 1:25,000 has been initiated by MRT. At the time of writing the Wilmot and Cethana sheets (McClenaghan and Green, 1999) covering the entire tenement had been published.

The regional geological framework of the Mt Read Belt (MRB) is subdivided, from an exploration perspective, into three elements. The central MRB covering the area of outcrop from south of Queenstown to north of Hellyer, the northern MRB covering the area from Back Bluff eastwards through Gowrie Park and Mole Creek, and the Southern MRB comprising areas west and south of Macquarie Harbour. EL 3/98 is in the central part of the northern MRB.

Basement in the Central and Northern MRB is of Precambrian age, comprising predominantly greenschist facies meta-sediments with minor basalts and dolerites. Higher-grade amphibolite and eclogite facies are also present within the Precambrian. This Precambrian basement termed the Tyennan Block, lies to the south of the Lake Barrington licence (Fig 2).

Cambrian volcanism and sedimentation developed on the Precambrian continental crust and, in the Central MRB, is subdivided into the Eo-Cambrian tholeiitic Crimson Creek Formation (CCF), the mid to late Cambrian Dundas Group and the predominantly calc-alkaline, Mt Read Volcanics (MRV).

The CCF was deposited in shallow but rapidly subsiding basins comprising basaltic lavas and volcanoclastics, turbidites, carbonates, chert and minor evaporites. This formation is not exposed in the licence area. Ultramafic cumulates and volcanic equivalents were thrust onto the CCF in the mid Cambrian. They are absent from the licence area.

The MRV, in the Central MRB, form a 200 km long by 20 km wide north-south trending belt along the eastern side of the Dundas Trough, adjacent to and in some areas on lapping and intruding the Precambrian basement. The northern extension of the MRV swings eastwards around the northern margin of the Tyennan Precambrian block. The volcanics include intermediate to felsic lavas, subvolcanic porphyries and granites, volcanoclastics and basement-derived sedimentary rocks. The MRV host five economically significant volcanic hosted massive sulphide deposits all of which lie in the Central MRB.

During late CVC to early Tyndall Group time, Cambrian granitoids intruded the volcanic pile. The majority of the granitoids occur along the eastern margin of the volcanics and stitch the volcanics to the Tyennan Block.

Cambrian volcanism and sedimentation was followed by predominantly basement derived late Cambrian to Devonian age sedimentation, including siliciclastic conglomerate, sandstone and limestone. These sequences occur within, and peripheral to, the licence.

At least two phases of regional compression were associated with the mid Devonian Tabberabberan Orogeny. The development of folding, cleavage and regional thrusts in lower Palaeozoic rocks were associated with this event. Fold trends in the licence area are approximately E-W.

Deformation was followed by the extensive intrusion of Devonian to Carboniferous granitoids of batholithic proportions. One such intrusion, the Dalcoath Granite, and associated hornfels aureole, outcrop south of the licence. The Devonian granites are associated with carbonate replacement Sn mineralisation at Renison Bell and Mount Bischoff, and the Pb-Zn-Ag vein deposits of Zeehan and possibly the Tullah Fields. A similar setting may be interpreted for the base metal vein deposits in the Round Hill workings. After substantial erosion of this terrane, extensive Tertiary flood basalts and subvolcanic sediments were deposited. Basalt flows cover much of the northern part of the licence.

## 5. PREVIOUS EXPLORATION

Previous exploration is documented in Denwer (2000) and Murphy et al. (1999) and will only be briefly summarised herein. Asarco, CRA, Noranda, Aberfoyle Plutonic and RGC have all held part of the current tenement area. Exploration programmes completed include mapping, soil geochemistry, IP and TEM surveys, DIGHEM, helicopter borne magnetics, 16 percussion holes for 1244 metres and 23 diamond drill holes for 4256.1 metres.

A summary of work carried out in the Lake Barrington area by Pasmaenco during the life of EL 3/1998 is presented as Table 2.

**Table 2: Previous Exploration completed on Lake Barrington EL3/1998 by Pasmaenco.**

<b>Date</b>	<b>Exploration Activities</b>	<b>Results</b>
1998/1999 (Murphy et. al 1999)	A literature review of previous exploration.  Compilation and digitising of most previous soil geochemical data into a GIS platform.  Re-processing and imaging of the 1990 heli magnetics	The extent of the Cethana Alteration Zone (CAZ) requires large volumes of fluids to have passed through these rocks. The fluids evidently carried base metal sulphides (stringer type veins), but the metals may have been deposited elsewhere. However, the depth potential of the CAZ requires further evaluation (initially through partial leach soil sampling). Two exploration plays arise from the potential of metal deposition elsewhere in the area. One is a Devonian play and the other is an ostensibly Cambrian play.

Date	Exploration Activities	Results
	<p>The entire Cethana proportion of the EL was mapped at 1:5000 scale using an ortho photo mosaic.</p> <p>A geological interpretation was completed.</p>	<p><b>Devonian Play</b></p> <p>Southward directed fluid migration expelled from the felsic pile during ductile and brittle shearing. Fluids exited through the Moina/Owen siliciclastics, mixed with meteoric and magmatic fluids and were trapped in fold and fault positions. This would explain the existence of the Round Hill series of workings and suggest the need to re-evaluate this area for Pb, Ag and Zn potential.</p> <p><b>Cambrian Play</b></p> <p>This relates to the contact of the felsic sequence and the overlying magnetite bearing epiclastics, and implies the alteration (CAZ) is a Cambrian footwall system. If a correlation is made with western Tasmania stratigraphy, it is suggested this contact is equivalent to the base of Tyndall Group (similarity to Zig Zag Hill Formation? White and McPhie, 1996). It is also apparent that this contact has not previously been explored to any significant degree within the EL area. RGC held the adjoining EL to the east (Gowrie Park, currently Pasminco EL 26/98) and targeted this stratigraphic position, although results were not encouraging from the work they undertook. The recognition of a possible Cambrian age granite in West Cethana could impact on the prospectivity of this area.</p>
<p>1999/2000 (Denwer 2000).</p>	<p>A literature review of previous exploration.</p> <p>Orientation Partial leach sampling programme involving the cutting of four grid widely spaced lines for 7.1 km and assaying soil samples using conventional and partial leach techniques.</p> <p>Cutting, partial leach sampling of soils and mapping of a 9.5 kilometre grid at the Days Rd Prospect.</p> <p>Relogging of all holes (18 holes for 2672m) completed on the CAZ.</p> <p>Continued 1:5000 scale mapping of the tenement.</p> <p>Pb isotope study at the Round Mountain Workings.</p> <p>Stitching of the Plutonic airmag and the RGC ground magnetics.</p>	<p>Stratigraphic relationships are uncertain in the West Cethana through to Gowrie Park area but mapping during 1998-99 (Murphy et. al 1999) indicates that the rhyolitic volcanics are younging to the north. This mapping also demonstrated that the mineralisation (and alteration) within the Cethana Alteration Zone is related to strike extensive shear zones with a dilemma of what came first; the alteration or the shearing.</p> <p>Plutonic tried to evaluate a higher exhalative stratigraphic position (their six hole RC program of 1996-97) and RGC identified and drilled a contact between felsic and andesitic volcanics to the east at Gowrie Park (Gregory 1997). It is apparent from our mapping that, if an exhalative position to this footwall alteration exists, then it lies further north than the area tested by Plutonic, at the transition from the felsic sequence to the andesitic sequence. The lithologies at this boundary, seen in the creek north of Olivers Road, are strongly cleaved and chlorite altered. Some historical copper prospecting in the immediate area was reported (by a landholder) and fragments of clayey azurite (?) were retrieved from a recently dug pit.</p> <p>In addition, the heli-magnetics indicates the presence of discrete magnetic features along strike of this contact to the east, which need to be, evaluated in future programs.</p> <p>It was very encouraging that during orientation soil sampling that a significant conventional and partial leach soil anomaly was discovered at the Days Road Prospect. This has provided some confidence in the model and the partial leach sampling technique.</p>
<p>2000/2001</p>	<p>Mapping and geological interpretation.</p>	<p>Mapping over the first three years of the licence has resulted in the</p>

Date	Exploration Activities	Results
(Denwer and Simpson, 2001)	<p>Collection and analysis of 1856 B-horizon partial leach soil samples.</p> <p>Ground EM at the Hereford Prospect</p> <p>Drilling of a 348.7m drill hole at the Hereford Prospect (previously the Days Rd Prospect).</p>	<p>recognition of a sequence of andesitic/intermediate epiclastics and lavas immediately overlying a quartz feldspar-phyric sequence. This contact was interpreted as a potential ore horizon. B-horizon partial leach sampling has concentrated on this horizon. A large coherent multi-element anomaly (Pb, Ag, Zn, Cd, Ba and As) was confirmed in the partial leach data at the Hereford Prospect. Samples of vuggy limonitic veined andesite over the anomaly are themselves anomalous in Pb, Zn and Mn. A fixed loop surface EM survey was completed at the Hereford Prospect to test for a conductive EM source with negative results. Despite the lack of EM response it was decided to persevere and drill the anomaly. A 348.7m diamond drill hole (HPD1) was completed at the prospect.</p> <p>HPD1 failed to intersect any significant mineralisation. A series of discontinuous carbonate veins are anomalous in Zn, Ba and Mn. The partial leach anomaly is clearly a response to this vein set. This vein set was commonly observed over the surface expression of the partial leach anomaly and appears to be intimately associated with the andesite lava.</p> <p>A further 7 anomalies have been defined in the partial leach data. These require a limited degree of follow-up with some additional sampling and geological mapping, prior to a decision on further testing by ground EM and (or) diamond drilling.</p>
2001/2002 McNeill (2002)	No fieldwork was completed	No results to report.

## **6. WORK COMPLETED IN THE CURRENT REPORTING PERIOD**

### **6.1 Fieldwork**

No fieldwork was completed during the reporting period. Previously it had been proposed that the 7 partial leach soil anomalies (Figure 2) identified by Denwer and Simpson (2001) be followed-up by additional sampling and geological mapping prior to a decision on further testing by ground EM and (or) diamond drilling. This work was not completed.

## **7. CONCLUSIONS AND RECOMMENDATIONS**

No fieldwork was completed by Pasminco on EL 3/98, Lake Barrington, in the period 27 February 2002 to 31 July 2002. The lack of fieldwork was a direct result of a severely reduced exploration budget and resources culminating, in September 2001, with the disbanding of the Exploration Division and the transfer of responsibility for district exploration to Rosebery Mine.

The lack of high priority targets for follow-up on EL 3/1998 Lake Barrington combined with reduced exploration resources and a trend to refocus Pasminco's exploration effort in Tasmania on targets closer to existing mining infrastructure, has led to a recommendation that the tenement be relinquished.

## **8. ENVIRONMENT AND REHABILITATION**

An approximately 450m long access track, drill pad and sump were cleared for DDH HPD1 (Denwer and Simpson, 2001). The majority of this work was on private property (UPI 1923, PID 6492536) owned by Mr. Roy Davies. At the completion of drilling the sump was infilled, however, at the request of the landowner the access track was left open to allow access to this previously inaccessible block.

## 9. EXPENDITURE

Total expenditure for all work undertaken by Pasminco Exploration on EL 3/1998 Lake Barrington for the 5-month period 27 February 2002 to 31 July 2002 was \$2,877. A summary of the expenditure breakdown is given below.

Personnel	\$538
Travel and Accommodation	\$0
Geoscience Consultants	\$0
Geochemical Consultants & Assays	\$0
Other Contractors	\$0
Geophysical Surveys & Contractors	\$0
Drilling Contractors	\$0
Stores & Supplies	\$0
Vehicles Plant & Equipment	\$0
Land	\$2,286
Computing	\$0
Office	\$0
Administration Fee 10%	\$53
<b>Total Project Expenditure</b>	<b>\$2,877</b>

## 10. KEYWORDS AND LOCALITY

### Keywords

COPPER, ZINC, LEAD, GOLD, ANDESITE, RHYOLITE, VOLCANICS, FAULT, SHEAR ZONE, FOLD, PYRITE, CHLORITE, SERICITE, GEOCHEM SOIL, GEOL MAPPING DETAILED, GEOPHYS MAGNETICS, ALTERATION, ORE POTENTIAL, NORTHERN MT READ VOLCANICS, CETHANA, ROUND HILL, DAYS RD PROSPECT.

### Locality

1:250,000	Burnie SK55-3
1:100,000	Forth 8115 Mersey 8114
1:25,000	Cethana 4240 Wilmot 4241

## 11. REFERENCES

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