



PASMINCO MINING ROSEBERY

QUEENSBERRY (HENTY RIVER) EL 11/2001

**ANNUAL REPORT
FOR THE PERIOD ENDING 3rd JULY 2003**

Author: A. W. McNeill

Date: 12th August 2003

Submitted To: Geology Superintendent – Pasma Rosebery Mine

Copies To: Mineral Resources Tasmania
Pasma Rosebery Mine

Submitted By:

Accepted By:

Rosebery Report No: R75

CONTENTS

1101_200307_02_MainReport

1. SUMMARY.....	1
2. INTRODUCTION	2
2.1 Attribution.....	2
3. LAND TENURE.....	3
4. GEOLOGY	3
5. PREVIOUS EXPLORATION	5
6. WORK COMPLETED 2002-2003 REPORTING PERIOD	6
6.1 Data Compilation.....	6
6.2 Partial Leach Soil Geochemistry	6
6.3 Rock Chip Geochemistry.....	7
6.4 Geology.....	7
7. CONCLUSIONS & RECOMMENDATIONS.....	8
8. ENVIRONMENT AND REHABILITATION	8
9. EXPENDITURE.....	9
10. KEYWORDS & LOCALITY	10
11. REFERENCES.....	10

LIST OF TABLES

Table 1	Previous exploration over the area of EL 11/2001 Queensberry
Table 2	Previous exploration on EL 11/2001 Queensberry

LIST OF FIGURES

Figure No.	Title	Scale
<i>1101_200307_03_fig1.pdf</i>	Tenement Location Diagram	1:500,000
<i>1101_200307_04_fig2.pdf</i>	Regional Geology and prospect locations	1:25,000
<i>1101_200307_05_fig3.pdf</i>	Partial leach soils – Raw line profiles	NTS
<i>1101_200307_06_fig4.pdf</i>	Partial leach soils - Raw line profiles	NTS

LIST OF PLANS

<i>1101_2003_07_Plan1.pdf</i>	Partial leach soil sampling – sample locations	1:5,000
<i>1101_2003_08_Plan2.pdf</i>	Outcrop Geology	1:5,000

LIST OF APPENDICES

<i>1101_200307_09_app1.txt</i>	Assay Results – Partial leach soil sampling - DL42
<i>1101_200307_10_app2.txt</i>	Assay Results – Partial leach soil sampling – DL43
<i>1101_200307_11_app3.txt</i>	Assay Results – Rock chip samples

1. SUMMARY

This report details exploration work undertaken on EL 11/2001 Queensberry (Henty River) during the period 3rd July 2002 to 3rd July 2003, the second year of the tenement. During the year work focussed on gridding (7.7 line km), surveying the grid with DGPS, geological mapping, partial leach soil sampling (325 samples, including standards and duplicates, collected and submitted for analysis) and minor rock chip sampling (2 samples analysed).

This work has led to a shift in focus from the immediate vicinity of the Queensberry workings to the area around Melody Creek where volcanics, including probable Lynchford Tuff correlates, are associated with spikily anomalous soil geochemistry. Further work is recommended.

2. INTRODUCTION

This report details exploration work undertaken on Queensberry (Henty River) EL 11/2001 during the period 3 July 2002 to 3 July 2003, the second year of this tenement.

Pasminco's main target on EL 11/2001 is Cambrian Rosebery or Hellyer type, Zn-Pb-Cu-Au-rich VHMS mineralisation hosted by the Mount Read Volcanics (MRV). A secondary target is Pb-Zn Devonian vein style mineralisation of the type found at the Queensberry Mine. The tenement covers a fault-bounded outlier of Cambrian volcanoclastics and sediments that have been correlated with the Tyndall Group (see Section 4 below).

Pasminco plan to systematically explore the EL using a combination of geological mapping and partial leach soil geochemistry, followed-up by ground time-domain EM over areas of interest.

The only access to the tenement is via the Henty Road (B27), linking Zeehan and Strahan, then east and south via the ~9 km long Queensberry Track, which finishes at the Queensberry Mine in the centre of the tenement. Otherwise, the tenement is heavily forested, rugged and difficult to access with no useable exploration grids.

2.1 Attribution

The following personnel were responsible for the work carried out by Pasminco Rosebery Mine on the EL 11/2001 Queensberry licence area during the reporting period:

Senior Geologist: Andrew McNeill – Pasminco Rosebery Mine

3. LAND TENURE

EL 11/2001 Queensberry (10 sq km) was granted to Pasminco on 3 August 2001 for a period of 5 years. The location of the tenement is shown on Figure 1. EL 11/2001 covers ground that fell vacant on the relinquishment of EL 34/88 (Rio Tinto Exploration) in December 1998.

EL 7/2001 falls entirely within the Mt Dundas Regional Reserve all of which is available for exploration under the Mineral Resources Development Act 1995.

4. GEOLOGY

The regional geology of the tenement area is described by the Strahan 1:50,000 Geological Survey sheet and explanatory notes (Baillie et al., 1977 and 1985). Recent regional correlations are shown on Brown et al. (1995) and Corbett (2002) and are discussed in Selley and Meffre (1997).

The geology of EL 11/2001 Queensberry is dominated a major regional fault system, the Firewood Siding Fault (FSF). The FSF extends some 35 km from Queenstown to near Trial Harbour on the west coast, has a general E-W to NNW trend and is offset by several NW to NNE faults, including the South Henty Fault. Stratigraphic and structural relationships indicate the FSF has had a prolonged history, with evidence of movements:

- Later than Jurassic, juxtaposing Permian sediments and Jurassic dolerite against Ordovician to Devonian sediments to the west of EL 11/2001 (Blissett and Guilline, 1962).
- In the Devonian, as indicated by the development of F₃ structures adjacent to the FSF. Devonian movement on the FSF appears to be sinistral (Baillie and Williams, 1975; Selley and Meffre, 1997)
- In the Late Cambrian, based on thickness variations in Denison Group correlates to the north of the fault (Baillie, et al., 1985) and the effect of the fault on interpreted Cambrian folds (Selley and Meffre, 1997). Selley and Meffre (ibid) conclude that there is no structural or stratigraphic evidence that the FSF was active in the Middle Cambrian i.e., time of VHMS formation. However, the localisation near Pearl Creek to the east of EL 11/2001, of “Middle Cambrian mafic volcanic units along the present trace of the FSF may provide evidence of an ancient syn-magmatic fracture system” (Selley and Meffre, 1997).

The geology of EL 11/2001 can be subdivided into 3 lithological domains:

1. Correlates of the Devonian Bell Shale, interbedded quartz sandstone and mudstones south of the FSF.
2. A ~2.7 sq km fault bounded block of Mount Read Volcanic (Tyndall Group) correlates in the Firewood Siding Fault system. Additional areas of Tyndall Group correlates have been interpreted along the FSF immediately east and west of EL 11/2001 by Corbett (2002).

3. A marine sedimentary sequence north of the FSF, with fossils of Upper Cambrian age that is correlated with the Denison Group.

Of these three, domain 2 is considered VHMS prospective. Lithologies from domain 2 have been described in some detail by Baillie et al (1985) and include siltstone, slate, lithicwacke (with a minor volcanogenic component) and volcanoclastics. The volcanoclastics are feldspar-quartz-phyric crystal-rich sandstones, shard-rich ashy siltstones and lesser coarse sandstones, with a volcanolithic component. Poor outcrop and complex structure have prevented the location or tracing of any marker horizons (Baillie et al., 1985).

Known economic mineralisation on the tenement area is restricted to the Queensberry Mine, discovered in 1891 and worked prior to 1924, producing approximately 767t of Pb-Ag ore. More recently drilling (8 shallow holes) and surface sampling (Lennox, 1970) allowed the calculation of an 'inferred resource' of 28,300t @ 0.32% Cu, 11.53% Pb, 8.76% Zn and 52 g/t Ag (Green in Baillie et al., 1985). Only two Au assays of the ore are available and are in the range 0.2-0.3 g/t Au (Mathison, 1988). The geology of the Queensberry mine has been described in detail by Reid (1927), Forsythe (1968a), Lennox (1970) and Green (in Baillie et al., 1985). The deposit comprises 4 lodes (a fifth was known during initial mining but, has not been relocated in recent times) most of which have a northerly strike and west dip. Mineralogically the lodes comprise pyrite, arsenopyrite, sphalerite, chalcocopyrite, galena, tetrahedrite and bournonite in a quartz-siderite gangue. Green (in Baillie et al., 1985) considered the mineralogy, coarse grain size, textures and paragenetic sequence of minerals was very similar to that of the Zeehan mineral field and concluded that the Queensberry Mine was a Devonian fissure fill deposit.

5. PREVIOUS EXPLORATION

The area of EL 11/2001 Queensberry has a long and complex tenement history, with the area of the Queensberry Mine held under a series of ML's from 1896 until 1994 (ML 27M/83) with the mining leases enclosed by a series of Special Prospectors Licences (SPL25 and 62) and Exploration Licences (ELs 4/78, 10/85 and 34/88). Modern exploration commenced in the 1960's and is summarised in Table 1. Previous exploration by Pasminco on El 11/2001 is summarised in Table 2.

Table 1 Previous exploration on the area of EL 11/2001 Queensberry

Reporting Period/Tenement	Work Completed
1968 ML 11/12M66 SPL 25 (Forsythe, 1968a,b)	Queensberry Mine: 7 km of line cutting, mapping, rock-chip, soil and stream sediment sampling was completed. An intense Pb-Zn anomaly west of lodes creek was the main target worthy of follow-up. Regional: establishment of access tracks, reconnaissance mapping, rock-chip and stream sediment sampling. Further work recommended.
1970 ML 11/12M66 SPL 62 (Lennox, 1970)	Detailed investigations of the Queensberry Mine area: Approximately 3300m of trenching and side-cutting over areas of interest, detailed mapping and soil geochemistry and 8 DDH (640.1m total). Initial metallurgical test work was also completed.
1981-1982 ML 11/12M66 (Bendall, 1982)	Mapping and relocating old workings and drill holes; estimation of a resource.
1983-1984 EL 4/78 (Jones, 1984)	Regional stream sediment sampling located a significant anomaly on Malcolm Creek. Airborne magnetic anomalies were followed-up.
1985-1986 EL 10/85 (Bendall, 1986)	Regional scale mapping and track cutting for access; no further outcrops of Cambrian volcanoclastics located.
1987 EL 10/85 (Leaman, 1987)	Reviewed available regional geophysical datasets (magnetics and gravity) and concluded that the mineralisation has a subtle geophysical signature much larger than the known mineralisation. Concluded that prospective corridor within 1500m of FSF. Indicated magnetic anomalies A and B (Amoco's anomalies I and F/G) warranted some ground checking.
1987-1988 EL 4/78 (Mathison, 1988)	Review previous data and field visit to collect samples for Au analysis – best result 0.058 g/t from a dump sample near the main shaft. No further work recommended.
1989-1990 EL 34/88 (Anon, 1990)	An orientation gradient array IP survey was completed over a 300x200m area at Queensberry; results not reported in any detail.
1990-1998 EL 34/88	No Field work. Kratochvil (1991) recommended stream sediment and other geochemical sampling at Queensberry to locate 'leakage' on major faults, but, this was not done as exploration rapidly focussed on the Gordon Limestone.

Table 2 Previous exploration on EL 11/2001 Queensberry

Reporting Period	Work Completed
2001-2002 (McNeill, 2002)	Work on the licence focussed on compiling previous exploration data and reconnaissance field visits were made to locate old workings and to collect rock chip samples for Pb-Isotope analysis. Results of this sampling indicate that the Pb in the known mineralisation at Queensberry Mine has the target Cambrian (Rosebery) signature.

6. WORK COMPLETED 2002-2003 REPORTING PERIOD

6.1 Data Compilation

Compilation of previous exploration data, commenced in the previous reporting period, was not significantly advanced but, should be completed in the coming year.

6.2 Partial Leach Soil Geochemistry

Sampling on EL 11/2001 was completed on lines 5345000mN, 53454000mN and 5345800mN (3.9 km total) that were cut during the reporting period.

Randomised sample numbers were used in partial leach sampling to reduce the effect of analytical variations. The partial leach soil samples were collected at 25m intervals, at or near a grid peg, and involved digging a hole with a pick, removing the organic rich A-horizon and collecting approximately 500g of sample from the nominal B horizon. The samples were then placed in ziplock plastic bags and, once returned to the field office, the bags were stored open to prevent anaerobic reactions. When a batch of 200 to 300 samples was collected, the sample bags were sealed and the samples despatched to Amdel in South Australia for analysis by partial leach technique DL42. Elements determined were Ag, As, Au, Ba, Bi, Cd, Cu, Co, Mo, Ni, Pb, Ni, Y, Zn, Zr and the rare earth elements Ce, Eu, Gd, La and Sm. The pH of the leachate, after digestion, was also determined. Results are included as Appendix 1 and 2 and sample locations are shown on Plan 1.

Three duplicate and two standard samples were collected per 100 samples. The field duplicates were also analysed in duplicate to allow assessment of both the sample and laboratory variance. Additionally at each sample site a small amount of soil was collected and stored in a chip tray for reference and to allow soil colour to be recorded. Soil colour was assigned from a Munsell Colour chart with 19 colours and was then assigned to one of six colour groups.

The 325 samples (including duplicates and standards) collected on EL 11/2001 were analysed as part of four batches (SDS 4531, 4532, 4536 and 4537). At the time of writing final data had only been received from the first three batches; initial results had been received from the final batch, however, analytical problems necessitated re-analysing some data and results have yet to be received. The following discussion will deal only with data from SDS 4531 and 4532 (over line 5345000mN).

No samples are obviously contaminated, however, 26 samples, 17% of the data set, have a low (pH<8.0) post-digest pH. At these 'low' pHs the speciation of reagents in DL42 may change and the resulting assays may be unreliable. Many of the low-pH samples had high Pb and Zn results that could be important in the interpretation of the dataset. These 26 samples would previously not have been considered in the analysis of the data set. However, test work at Amdel indicated that decreasing the sample:liquid from 10:1 (method DL42) to 5:1 (method DL43) could buffer the solution to a higher, acceptable, final pH (for samples with a post-digest pH of >7.2)

and not significantly affect the precision of the analysis. Accordingly 25 samples (note sample 358053 was not re-assayed in error), with low post-digest pH, were re-assayed with the new protocol with the result that 19 had post-digest pHs of >8.0. In the interpretation discussed below the low (pH 6.8-7.95) samples from the original dataset have had their assay results replaced by the re-assayed data and those samples with low pH's after analysis by DL43 have been deleted, giving a dataset of 146 samples.

Line profiles of the raw data are presented as Figures 3-4. The Queensberry mineralisation (lode 1) shows up as a sharp Pb-Zn-As-Au-Ag anomaly. Other anomalies include a broad zone of spiky high Cu-Pb-Zn-As-Au-Ag in the volcanic dominated area east of 7250E, a strong Cu-Zn spike at 6100E and a zone of elevated Zn-Pb-Cu around 5200E. Bi data for the line is unusually spiky and uninformative. A more detailed interpretation will be completed when all data has been received and will be included in the next annual report.

6.3 Rock Chip Geochemistry

During the geological mapping program two rock chip samples were collected from outcrop in Melody Creek and submitted for analysis by Analabs (Cu, Pb, Zn, Ag, Fe and Mn by GA102; As, Ba, Mo, Sb, Sn and Tl by X401 and Au by F614). Sample locations and results are included as Appendix 3. The quartz vein with puggy and gossanous material is anomalous in Zn (0.1%) and weakly anomalous in Cu (307 ppm) and Au (0.01 ppm). The weakly sericitic quartz-feldspar-phyric host to the vein was not anomalous in base or precious metals.

6.4 Geology

All lines cut during the reporting period were geologically mapped. Results are presented as Plan 2. Outcrop is generally poor, with exposure restricted to the flanks of steep gullies and the creeks and themselves. The mapped geology can be divided into two major domains; predominantly sedimentary, west of approximately 376700E, and predominantly volcanic east of this point.

The sedimentary domain includes grey to black shale, micaceous sandstone and greywacke, and lithicwackes (often with considerable volcanogenic component). In the area just east of the Queensberry Mine, lithologies are dominated by crystal-rich (feldspar>quartz-phyric) volcanoclastic sandstones.

The volcanic domain comprises three main lithologies (in interpreted stratigraphic sequence):

- Grey-green, fine grained, feldspar>quartz-phyric volcanoclastic sandstone and siltstone (a fairly non-descript unit)
- Cream to light green, massive shard-rich volcanoclastic siltstone.
- Green-brown, chlorite spotted, variably magnetic, feldspar>quartz-phyric volcanoclastic sandstone overlain by brown-red soils. Possible correlate of the Lynchford Tuff.

Additionally, a strongly quartz-phyric (quartz phenocrysts to 4 mm diameter), sericite altered volcanic (?intrusive) crops out in Melody Creek on the southernmost mapped line. Insufficient mapping has been done to determine the extent of this lithology. No convincing bedding has been seen, however, the distribution of the Lynchford Tuff correlate is consistent with the shallow dips shown on Baillie et al (1977).

The eastern boundary of the fault wedge is defined on line 5345800mN by float of quartz-sandstone and outcrop of siliceous pink conglomerate (Pioneer beds correlate?) east of 386200mE. The boundary is not as well defined on the other mapped lines, however, the distribution of volcanic lithologies suggests the contact has a NW trend as shown on Baillie et al. (1977).

7. CONCLUSIONS & RECOMMENDATIONS

During the second year of EL 11/2001 Queensberry (Henty River) work focussed on gridding (7.7 line km), surveying the grid with DGPS, geological mapping, partial leach soil sampling (325 samples, including standards and duplicates, collected and submitted for analysis) and minor rock chip sampling (2 samples analysed).

Results from an initial 3.7 km long reconnaissance line (5345000mN), located approximately 100m north of the Firewood Siding Fault led to attention being focussed on the eastern part of the tenement, around Melody Creek. The results of all follow-up soil sampling are yet to be received, however, mapping indicates that the area east of approximately 376700E is underlain by predominantly volcanic rocks of the Mount Read Volcanics and therefore may be prospective for Rosebery type, Zn-Pb-Cu-Au-rich VHMS mineralisation.

It is therefore recommended that:

- Compilation of previous data, including DGPS surveying of old drill holes, be completed.
- Outstanding soil assays be interpreted prior to follow-up mapping and rock chip sampling of the Melody Creek drainage, to better define the distribution of the volcanic rocks and locate any outcropping alteration or mineralisation.
- Total digest soil sampling and additional rock chip sampling be completed to follow-up the partial leach soil results.

8. ENVIRONMENT AND REHABILITATION

The short (20m) section of access track repaired in the first year of the tenement was washed out during heavy rain in July-October 2002. It was repaired again, with new drainage, in November 2002 and appears to be holding up well at the time of writing.

9. EXPENDITURE

Expenditure on EL 11/2001 during the 12 month period ending 3rd July 2003 was **\$38,324**. A detailed breakdown of this expenditure is presented below.

Personnel	\$3,597
Travel & Accommodation	\$0
Consultants & Contractors	\$17,036
Geological Consultants	\$0
Geochemical Consultants & Assays	\$10,417
Geophysical Surveys & Contractors	\$0
Drilling	\$0
Stores & Supplies	\$240
Vehicles Plant & Equipment	\$1,559
Land	\$418
Computing	\$1,282
Office	\$21
Administration Fee	\$3,484
Total Tenement Expenditure	\$38,324

10. KEYWORDS & LOCALITY

Keywords

Queensberry Mine, Tyndall Group, Lynchford Tuff, Firewood Siding Fault, rock chip sampling, partial leach soil sampling, geological mapping.

Locality

1:250,000	QUEENSTOWN SK55-5
1:100,000	CAPE SORELL 7913
1:25,000	PROFESSOR 3634

11. REFERENCES

- Anon, 1990. Exploration Licence 34/88 - Zeehan Second Annual Report for Period 1st November 1989 to 31st October 1990. Unpub. Major Mining Limited Report (TCR90-3198).
- Baillie, P.W., and Corbett, K.D., et al., 1977. Strahan, Geological Atlas 1:50,000 series, Sheet 7913N, Geological Survey of Tasmania, Department of Mines, Hobart.
- Baillie, P.W., Corbett, K.D., and Green G.R., 1985. Geological Survey Explanatory Report – Strahan, Geological Atlas 1:50,000 series, Sheet 7913N, Geological Survey of Tasmania, Department of Mines, Hobart.
- Baillie, P.W., and Williams, P.R., 1975. Sedimentary and structural features of the Bell Shale correlate (Early Devonian), Strahan Quadrangle, western Tasmania. Pap. Proc. Roy. Soc. Tasm. 109:1-15.
- Bendall, M.R., 1982. Report on Queensberry Mine, Zeehan 1981/82. Unpub. Bendalls Mining Company Pty Ltd. Report (TCR82-1795).
- Bendall, M.R., 1986. Henty River EL 10/85 Annual Report December 1986. Unpub. Oceania TAS Pty. Ltd. report (TCR86-2615).
- Blissett, A.H., and Guilline, A.B., 1962. Geological Atlas 1 mile Series. Zone 7, sheet 50. Zeehan. Department of Mines Tasmania.
- Brown, A.V., Calver, C.R., Corbett, K.D., Forsyth, S.M., Goscombe, B.A., Green, G.R., McClenaghan, M.P., Pemberton, J., and Seymour, D.B. (comp.), 1995. Geological Atlas 1:250,000 digital series. Geology of Southwest Tasmania, Tasmanian Geological Survey.
- Corbett, K.D., 2002. Updating the Geology of the Mount Read Volcanic Belt. Tasmanian Geological Survey Record 2002/19, Mineral Resources Tasmania, Hobart.

- Forsythe, D.L., 1968a. Progress report on optioned leases no. 111M/66 and 12M/66 (old Queensberry Mine). Henty River prospect (SPL No. 25), Tasmania. Unpub. New Consolidated Goldfields (A/asia) Pty. Ltd. (TCR68-517).
- Forsythe, D.L., 1968b. Progress Report on the Henty River Prospect (S.P.L. No. 25) Tasmania. Unpub. New Consolidated Goldfields (A/asia) Pty. Ltd. (TCR68-519).
- Jones P.A., 1984. Part Relinquishment Report, Zeehan EL 4/78, Tasmania. Unpub. Amoco Report 398 (TCR84-2174).
- Kratochvil, M., 1990. Exploration Licence 34/88 Henty, Tasmania Statutory Progress Report for the Period Ending 9th November 1991. Unpub. CRA Exploration Proprietary Limited Report 17635 (TCR90-3312).
- Leaman, D.E., 1987. Regional Geophysical Assessment Henty River EL 10/85. Unpub. Report for Bendall M.R. (TCR87-2745).
- Lennox, M.J., 1970. Summary report the Queensberry Marquis Area (Queensberry Mine). Unpub. Minops Pty Ltd. Report (TCR70-631).
- Mathison, I.J., 1988. Exploration Licence 4/78 Zeehan, relinquishment report, including report on exploration activity, 30th April 1987 – 31st May 1988. Unpub. EZ Company Report T232 (TCR88-2828).
- McNeill, A.W., 2002. Queensberry (Henty River) EL 11/2001, Annual Report for the period ending 3rd July 2002. Unpub. Pasminco Rosebery Mine Report R70.
- Reid, A.M., 1927. Preliminary report on Queensberry Mine, western district. Unpub. Rept. Dept. Mines Tasm. 1927A: 1-4.
- Selley, D., and Meffre, S., 1997. Structure and sedimentology of Middle and Upper Cambrian strata adjacent to the Firewood Siding Fault. Final Report CODES/AMIRA project P291A Structure and mineralisation of western Tasmania, pp 77-102.