

97-4011

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# Aberfoyle Resources Limited

Exploration Division  
ACN 004 664 108

EL4/96  
21 MAY 1997  
See folio 20

## Exploration Licence 4/96 - Henty River

Tasmania  
**MICROFILMED**  
FICHE No.014322-

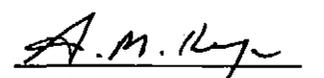
~~Progress Report for the period~~  
May 1996 to May 1997

Volume 1 of 1

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Distribution

- Aberfoyle - Burnie (1/4)
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**APPENDICES:**

Appendix 1	Sirotpe lead isotope report No. 348c
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1. Summary:

Work completed on EL 4/96 - Henty River during the current reporting period was designed to search for VHMS mineralisation of the Que River - Hellyer style. Work concentrated in the area around the Henty Adits.

Three samples from drill hole DDH HR-2 (drilled in 1979 to test the along strike potential of the Henty Adits) were submitted to Sirotope for Pb-isotope determination. Results indicate unequivocal Cambrian signatures for the mineralisation sampled.

Stream sediment sampling was chosen as the next phase of ground exploration for this area. Sampling commenced at the end of the tenement year, and no results are available at the time of writing this report.

385004

**2. Introduction:**

Exploration Licence 4/96 - Henty River was granted to Aberfoyle Resources Ltd on 24 May, 1996. The 45 square kilometre licence is located 10-15 kilometres north-northwest of Queenstown. The licence covers portions of the Henty Gorge and flanking plateau, east to the Anthony Road and southwest towards the Murchison Highway intersection of the Henty River (see Figure 1).

The area was taken up on the basis of perceived potential for Volcanic Hosted Massive Sulphide (VHMS) mineralisation within the Henty Fault Wedge. The geology comprises calc-alkaline andesites and Tyndall Group correlates, and probable Tyndall Group volcanoclastics and tholeiitic basalts to the west of the Henty Fault Wedge. Yolande River Sequence rocks to the east of the South Henty Fault are not considered to be prospective for VHMS mineralisation.

The following report documents exploration on this licence for the period May 24, 1996 to May 23, 1997.

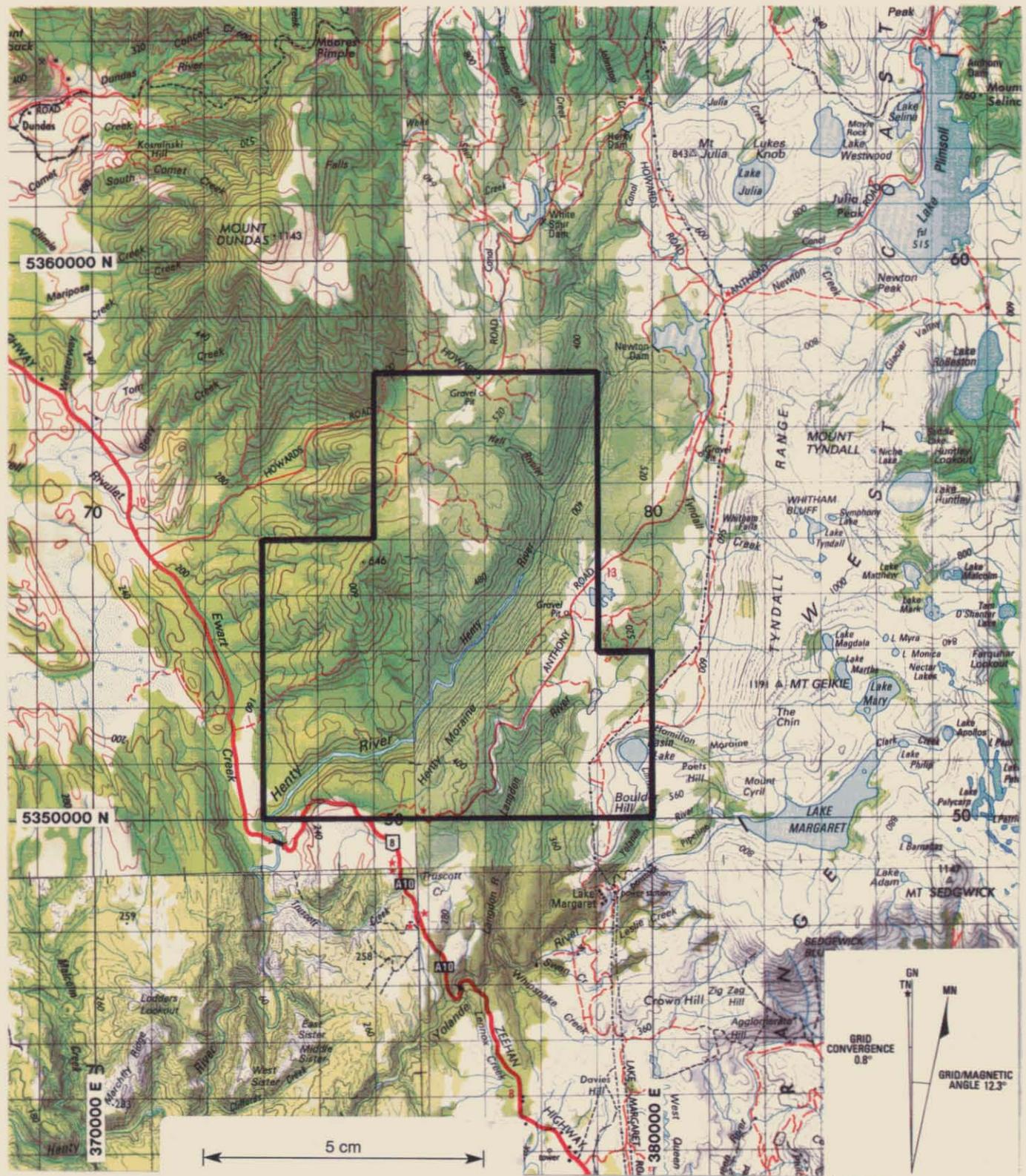
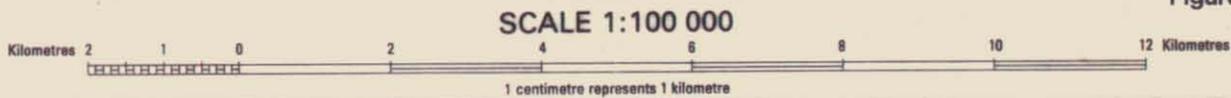


Figure 1



**Aberfoyle Resources Limited**  
EXPLORATION DIVISION

**WESTERN TASMANIA**  
**E.L.4/96 HENTY RIVER**  
**LOCALITY PLAN**

Compiled : **RdeB**  
Drawn :  
Traced : **RdeB**  
Checked : **AMcN**  
Plate No. : **HNT1**

REVISIONS			
Init.	Date	Init.	Date

Location Code :      Scale : **1 : 100000**      Date : **JUNE 1996**

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### 3. Geology:

The Henty Fault Wedge (HFW) sequence can be interpreted to have been deposited within an extensional basin, developed between the North and South Henty Faults during rifting on the Henty Fault system at late CVC to early Tyndall Group time. This would be analogous to the Que-Hellyer Volcanic Basin which formed at around the same time, between the Henty and Mt Charter Faults. Development of a small extensional basin, containing andesitic-basaltic volcanism at this period within Mt Read history is seen by Aberfoyle as a highly prospective setting for VHMS mineralisation of Que River-Hellyer style.

An alternative structural model can be suggested where the North Henty Fault is a moderately west dipping Devonian thrust, linked to the Rosebery Fault, which obscures rather than forms the western margin of the HFW sequence. Under this model, the HFW setting is less analogous to the Que Hellyer Volcanics, but the prospectivity of the host sequence is considered to remain high.

The HFW contains two volcanic packages that are considered by Aberfoyle to be prospective for VHMS mineralisation. The first of these is the calc-alkaline andesites outcropping in the central part of the HFW. Known mineralisation occurs at the Henty River Adits, as galena and sphalerite disseminations and veins within andesitic tuffaceous sediments at the base of about 250 metres of andesitic lavas. A maximum resource of 1.5 million tonnes @ 6% Pb + Zn was interpreted by Mt Lyell on the basis of five diamond drill holes at the prospect.

Overlying and interfingering with the andesites are volcanoclastics derived from felsic to mafic sources. These may be correlates of the Tyndall Group. Therefore the prospective basal Tyndall Group position, which is associated with VHMS mineralisation in the southern Mt Read Belt (e.g Comstock, Howards Anomaly) must be present.

Aberfoyle considers that these andesites and the overlying Tyndall Group correlates represent a prime exploration target that has not been thoroughly tested.

#### 4. Previous Exploration:

Old workings are evidence of prospecting in the licence area carried out at the turn of the century. Modern exploration commenced in the 1970's aimed at locating Mt Lyell and Rosebery style massive sulphide mineralisation.

The Mt Lyell Mining and Railway Co. Ltd. (MLMRC) explored this area as part of EL 41/71, and in 1977/78 evaluated the old adits area by re-sampling, gridding and assaying soil and rock chip samples. This work defined a major base metals anomaly along strike to the north which led to the identification of outcropping mineralisation near the western margin of an altered shale to fine grained felsic tuff unit.

This target was diamond drilled in 1978-79 by MLMRC with two holes completed at and around the adits mineralisation. Hole DDH HR-1 (371 metres) was terminated before reaching the target zone. It still managed to intersect intervals of mineralisation, e.g. 3m @ 1.10% Zn, 4.5m @ 0.2%Zn, 0.4% Pb. DDH HR-2 (231 metres) reached the target and returned assays of 12 metres at 4.2% Pb, 1.8% Zn and 16ppm Ag within andesitic lithic tuffs. Further geochemistry was also completed on the grid during this field season, as was ground geophysics (gradient array IP, magnetics) which defined a trend of anomalous results north of the adits.

During the 1979-80 field season, a similar program was completed, with geochemical sampling continuing and further ground based geophysics completed. One diamond drillhole was drilled, HR-3 (616.7m), which intersected 52 metres of disseminated mineralisation (0.24% Zn) within porphyritic andesitic lavas and agglomerates.

Exploration completed during 1980-81 was restricted to the drilling of two more diamond holes. DDH HR-4 (310.6m) and DDH HR-5 (421.5m) were drilled to test a combined soil geochemical/I.P. chargeability/ground magnetics anomaly approximately one kilometre north of the adits. Both holes were sited at the same collar but drilled in different directions. HR-4 was stopped due to excessive deviation, while HR-5 tested a full section of the target stratigraphy. No assays of significance were returned from either hole.

Only two small surface EM surveys have been conducted in the vicinity of the Henty Adits. The first was an EM-37 survey in 1986 by Cyprus over the Henty River Adits prospect. Results from this work were equivocal, with poor data hampering interpretations. The second was a 1991 Pasmenco UTEM survey over a structurally complex area of chert, andesite and felsic volcanoclastics adjacent to the South Henty Fault (Henty Valley Prospect). Numerous surficial responses were interpreted from the 2 loops of data, all being less than 50 metres deep.

5. Work completed:

5.1 Lead Isotopes:

Three samples from Mt Lyell's drillhole HR-2 (see Plate HNT-3 for location) were submitted to the CSIRO Division of Exploration & Mining, Sydney in late 1996 for Pb-isotope analysis. The aim of the analysis was to differentiate between Cambrian VHMS origins or Devonian vein-style origins for the Henty Adits mineralisation.

Details of sample types and descriptions are listed in Appendix 1, where a copy of the Sirotope report No. 348c is reproduced.

All data lie on a relatively short fractionation trend which passes through the Rosebery ellipse. All samples are therefore indistinguishable from one another and from the Rosebery ores. Thus these samples give a Cambrian Pb-isotope signature typical of the Mt Read Volcanics, and are not products of a Devonian hydrothermal vein system.

5.2 Stream Sediment Geochemistry:

Stream sediment sampling of selected areas within EL 4/96 is currently in progress. No samples have yet been submitted for assay and are therefore unavailable for inclusion in this report.

6. Summary of Expenditure:

Expenditure for the 11 months to 30 April, 1997 is as follows:

Geology	\$ 24665
Geochemistry	\$ 2316
Other Services	\$ 2181
Administration	\$ 4348
<b>TOTAL</b>	<b>\$ 33510</b>

7. Conclusions:

Results to date have confirmed the high prospectivity of EL 4/96 for Cambrian VHMS mineralisation, particularly around the Henty Adits. Once results from the stream sediment survey are received, more detailed follow-up is planned. This may include ground-EM, detailed soil sampling and mapping, and eventual drill testing.



DIVISION OF EXPLORATION AND MINING

EXPLORATION AND MINING REPORT 348C

Pb ISOTOPIC ANALYSIS OF DRILL CORE SAMPLES FROM  
HENTY ADITS, TASMANIA

*G.J. Denton, G.R. Carr, M.J. Korsch and B.L. Gardner*

# Sirotope

Prepared for  
Aberfoyle Resources Ltd

March 1997

**CONFIDENTIAL REPORT**

This report is not to be given additional  
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Division of Exploration and Mining.

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## AIM

To determine by Pb isotopic analysis whether two galena samples and one mixed sulfide sample from drill core at the Henty Adits prospect, Tasmania are of Cambrian VHMS origin or are products of hydrothermal veining associated with Devonian intrusives.

## SAMPLES

The three drill core samples were supplied with the following information.

Sample	Hole	Depth	Description	AMG
628996	HR-2	155.8m	Gn + Sp Vn. Andesitic Volc.	377593E 5354346N
628997	HR-2	156.8m	Remobilised Gn in Co vein	377591E 5354347N
628998	HR-2	160.7m	Disseminated Gn in Andesitic vlc.	377590E 5354348N

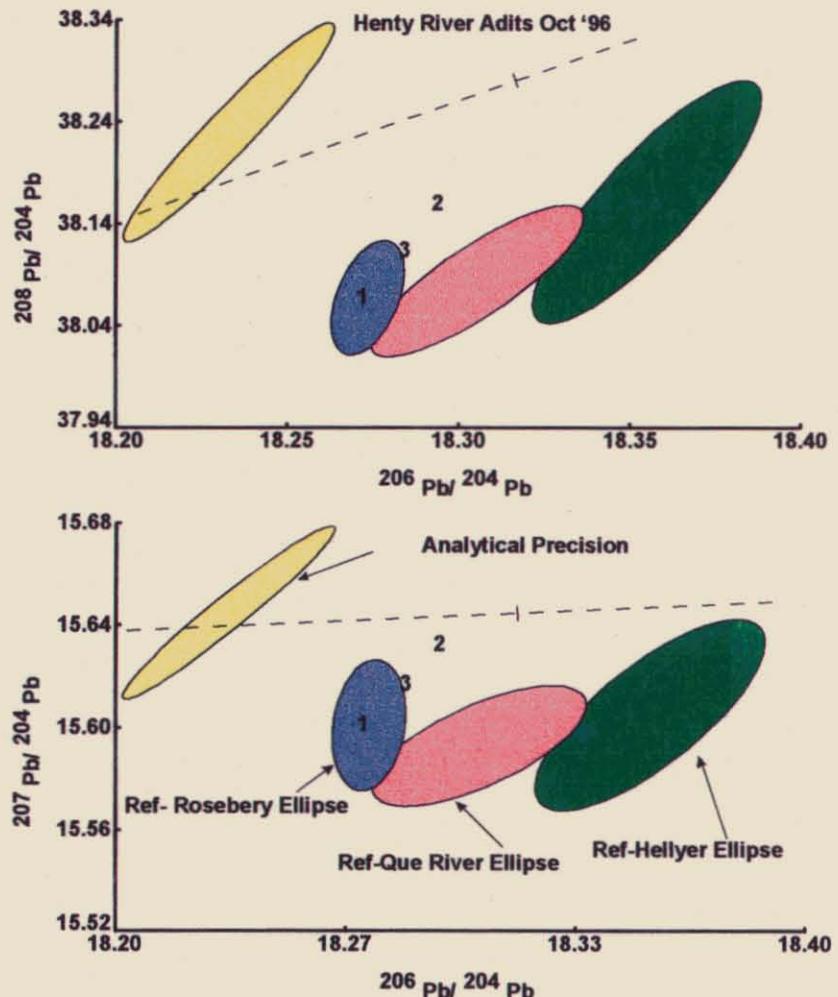
Table 1. Supplied information for three samples sent for Pb isotopic analysis from the Henty Adits, Tasmania.

## RESULTS

Table 2. Results of the Pb isotope analysis of three drill core sulfide samples from the Henty Adits Prospect, Tasmania.

Plot No.	Sample No.	$^{206}\text{Pb}/^{204}\text{Pb}$	$^{207}\text{Pb}/^{204}\text{Pb}$	$^{208}\text{Pb}/^{204}\text{Pb}$	Date	Qty
1	628996	18.272	15.601	38.066	14/10/96	1
2	628998	18.284	15.616	38.112	14/10/96	1
3	628997	18.294	15.632	38.158	14/11/96	2

Figure 1.  $^{208}\text{Pb}/^{204}\text{Pb}$  vs.  $^{206}\text{Pb}/^{204}\text{Pb}$  and  $^{207}\text{Pb}/^{204}\text{Pb}$  vs.  $^{206}\text{Pb}/^{204}\text{Pb}$  plots of the Pb isotopic composition of three sulfide samples from the Henty Adits, Tasmania compared to the Pb isotopic composition of major mineralisation in the Mount Read Volcanics.



**INTERPRETATION**

These samples fall into Category 2 of Appendix 1.

All data lie on a relatively short fractionation trend which passes directly through the Rosebery ellipse. All samples are therefore indistinguishable from one another and from the Rosebery ores.

Thus these samples give Cambrian Pb isotope signatures typical of the Mt Read Volcanics, and are not products of a Devonian vein system.

## Appendix 1 Level of Confidence of Interpretations

Interpretations of the economic significance of exploration samples using Pb isotopes are based on comparisons with a Pb isotope database of other mineralisation within the relevant geological province. The level of confidence of such interpretations is related to the amount and quality of data available and the level of understanding of the relationship between these "signatures" and the nature and timing of mineralisation in the context of the overall tectonic evolution of the province. A threefold classification has been developed to signify the confidence level for interpretations in all Australian geological provinces. Only the Lachlan Fold Belt falls into Category 1. The majority of prospective Australian geological provinces fall into Category 2 and it is the aim of research within the Division of Exploration and Mining to upgrade these to Category 1.

### Category 1 Information

Lead isotopic signatures of each hydrothermal event represented in a geological province can be discretely defined (There are at least 10 examples of each event). There is a very good understanding of the metallogenic history of the prospect region, including the ages of different hydrothermal events and the style of mineralisation that is likely to be associated with each event. Interpretations based on Category 1 information can discriminate between mineralisation or anomalous surface geochemistry that has derived from either;

1. the main mineralisation window of a major mineralising epoch, or
2. minor mineralisation from waxing or waning stages of a major epoch or where only small hydrothermal cells were developed, or
3. minor mineralisation from an overprinted (epigenetic) hydrothermal event, or
4. near surface concentration due to weathering processes (false anomalies)

### Category 2 Information

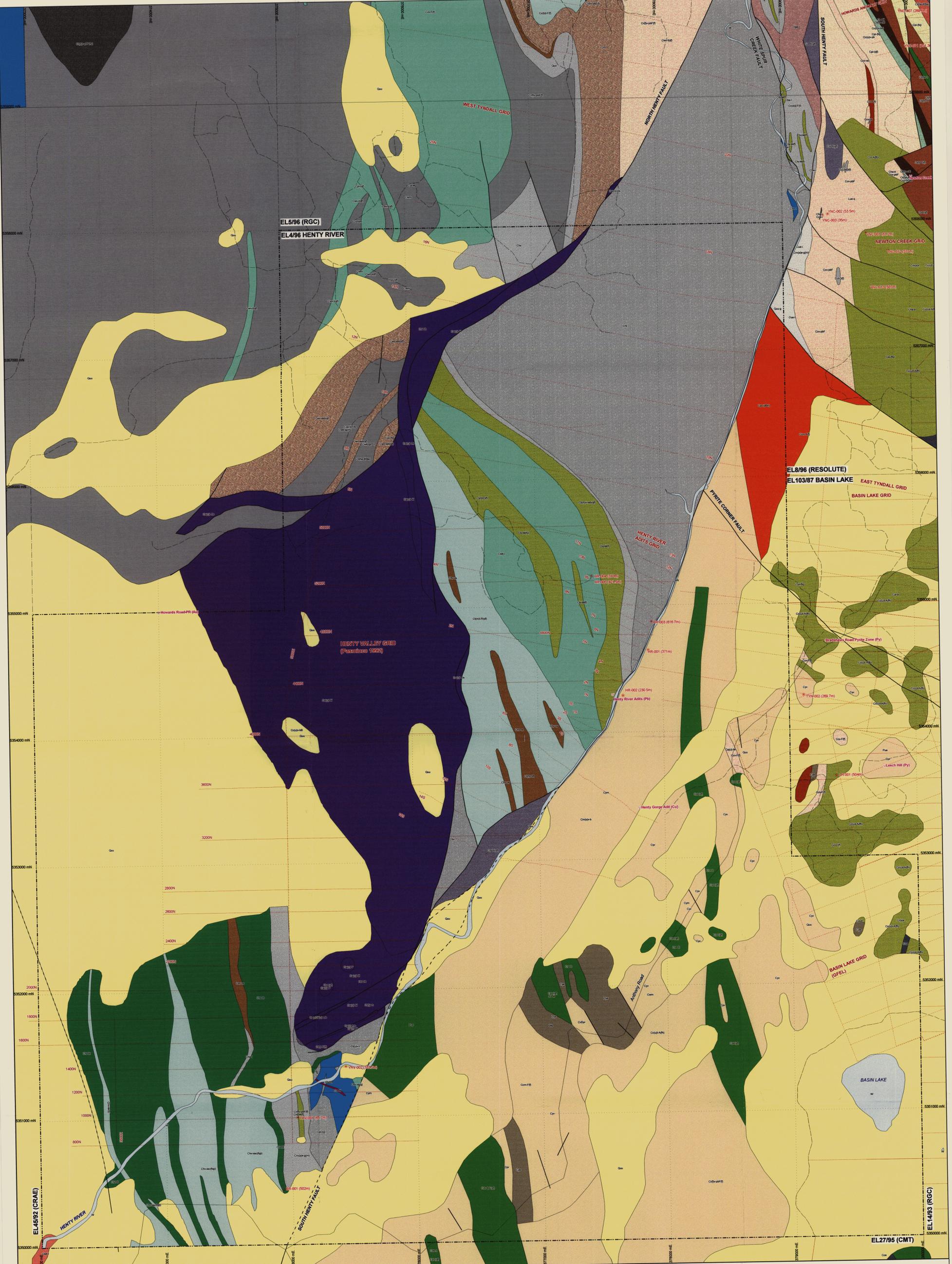
There are a number of known Pb isotopic signatures in a geological province, however, there is an incomplete understanding of the relationship of these signatures to metallogenesis and the timing of hydrothermal activity. Although discrimination of events can be made based on these signatures it is with a significantly reduced degree of confidence. Interpretations based on Category 2 information can discriminate between mineralisation or anomalous surface geochemistry that has derived from either;

1. a major mineralising epoch, or
2. minor mineralisation from an overprinted (epigenetic) hydrothermal event, or
3. near surface concentration due to weathering processes (false anomalies)

### Category 3 Information

Lead isotopic signatures, and/or the metallogenic framework are only poorly understood in the prospect region. Discrimination can be made in some cases based on general principles and on comparisons with other similar, better understood provinces. Interpretations based on Category 3 information can discriminate between mineralisation or anomalous surface geochemistry that has derived from either;

1. small scale hydrothermal cells, or
2. near surface concentration due to weathering processes (false anomalies)



**GEOLOGY**

**COVER**

- Quaternary
- Permian

**NORTHWEST OF HENTY FAULT WEDGE DUNDAS GROUP**

- Quaternary
- Permian

**WHITE SPUR FORMATION**

- Quaternary
- Permian

**ROSEBERY/MERCULES SEQUENCE**

- Quaternary
- Permian

**HENTY FAULT WEDGE**

- Ch-10: Tholeiitic basalt
- Ch-9a: Vitric ash volcanoclastic
- Ch-9b: Vitric ash volcanoclastic
- Ch-8: Vitric ash volcanoclastic
- Ch-7: Vitric ash volcanoclastic
- Ch-6: Vitric ash volcanoclastic
- Ch-5: Vitric ash volcanoclastic
- Ch-4: Vitric ash volcanoclastic
- Ch-3: Vitric ash volcanoclastic
- Ch-2: Vitric ash volcanoclastic
- Ch-1: Vitric ash volcanoclastic

**SOUTHEAST OF HENTY FAULT WEDGE**

**TYNDALL GROUP**

- Ty-1: Vitric ash volcanoclastic
- Ty-2: Vitric ash volcanoclastic
- Ty-3: Vitric ash volcanoclastic
- Ty-4: Vitric ash volcanoclastic
- Ty-5: Vitric ash volcanoclastic
- Ty-6: Vitric ash volcanoclastic
- Ty-7: Vitric ash volcanoclastic
- Ty-8: Vitric ash volcanoclastic
- Ty-9: Vitric ash volcanoclastic
- Ty-10: Vitric ash volcanoclastic

**CENTRAL VOLCANICS**

- Cv-1: Vitric ash volcanoclastic
- Cv-2: Vitric ash volcanoclastic
- Cv-3: Vitric ash volcanoclastic
- Cv-4: Vitric ash volcanoclastic
- Cv-5: Vitric ash volcanoclastic
- Cv-6: Vitric ash volcanoclastic
- Cv-7: Vitric ash volcanoclastic
- Cv-8: Vitric ash volcanoclastic
- Cv-9: Vitric ash volcanoclastic
- Cv-10: Vitric ash volcanoclastic

**CENTRAL VOLCANICS (UPPER)**

- Cv-11: Vitric ash volcanoclastic
- Cv-12: Vitric ash volcanoclastic
- Cv-13: Vitric ash volcanoclastic
- Cv-14: Vitric ash volcanoclastic
- Cv-15: Vitric ash volcanoclastic

**WESTERN SEQUENCE**

- W-1: Vitric ash volcanoclastic
- W-2: Vitric ash volcanoclastic
- W-3: Vitric ash volcanoclastic
- W-4: Vitric ash volcanoclastic
- W-5: Vitric ash volcanoclastic
- W-6: Vitric ash volcanoclastic
- W-7: Vitric ash volcanoclastic
- W-8: Vitric ash volcanoclastic
- W-9: Vitric ash volcanoclastic
- W-10: Vitric ash volcanoclastic

**MAFIC/ULTRAMAFIC COMPLEX**

- M-1: Ultramafic
- M-2: Ultramafic
- M-3: Ultramafic
- M-4: Ultramafic
- M-5: Ultramafic
- M-6: Ultramafic
- M-7: Ultramafic
- M-8: Ultramafic
- M-9: Ultramafic
- M-10: Ultramafic

**Legend**

- Diamond Drill\_hdr
- Mineral Occurrence (commodity)
- FAULT
- CONCEALED FAULT
- GRIDLINE (current)
- GRIDLINE (old)
- ROAD (major)
- ROAD (minor)
- TENEMENT BOUNDARY

**97-4011**

ANNUAL REPORT - EL 4/96  
HENTY RIVER - ABERFOYLE  
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Aberfoyle Resources Limited  
Exploration Division

Western Tasmania

EL4/96 HENTY RIVER

Geology and Previous Exploration

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Date: 14/1/97  
Author: R.H. Ross  
Office: Burnie  
Drawing: HNT3