

**LEVEN RIVER PROJECT  
TASMANIA  
EL53/2004**

**ANNUAL PROGRESS REPORT  
8<sup>TH</sup> AUGUST 2005 TO 7<sup>TH</sup> AUGUST 2006**

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**Distribution:**  
Mineral Resources Tasmania  
Bass Metals Ltd

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**ABSTRACT**

Bass Metals Ltd commenced management of the Leven River exploration licence (EL53/2004) on 8 August 2005. Work conducted on the licence for the year ended 7/08/2006 has included:

- Compilation of historical exploration reports and data
- Acquisition and processing of ASTER satellite data
- Validation and review of existing data and capturing of data in a proprietary Geoinformatics Exploration Inc database system named FracSIS
- Carrying out three dimensional modelling of the captured data
- Target generation and ranking of exploration targets using further proprietary software and Monte Carlo probabilistic algorithms

Bass Metals was aware that ASTER and HyMap data could identify chlorite and sericite alteration at the Mount Lyell field. After some consideration Bass sourced some ASTER satellite data which measures a similar radiation spectrum to the HyMap data though has a lower resolution. Bass hoped that it would be useful in mapping regional alteration trends.

Geoinformatics target generation, interpretation of ASTER data and review of historic exploration data has identified four Rosebery-Hellyer style VHMS targets on the Leven River licence. Proposed ongoing exploration activities will evaluate these targets.

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## **1. INTRODUCTION**

This report is a summary of the exploration activities conducted on the Leven River exploration licence, EL53/2004 (Figure 1), for the period 8 August 2005 to 7 August 2006. The licence covers a total area of 81 km<sup>2</sup>. The Leven River licence is subject to an exploration joint venture agreement between Bass Metals Ltd and Geoinformatics Exploration Tasmania Pty Ltd. Bass is currently managing exploration of the licence from a base at the Hellyer Mine site.

The licence is located in western Tasmania and is dominated geologically by the Cambrian Mt Read Volcanics, Cambro-Ordovician Owen Group sediments and Tertiary basalts.

The Mt Read Volcanics belt is host to a number of large volcanic-hosted massive sulphide deposits in Tasmania, including the Hellyer (Pb-Zn-Ag-Au) and Que River (Pb-Zn) deposits located approximately 10km southwest of the Leven River licence. Exploration at Leven River will target Cambrian VHMS deposits.

### **1.1 Location**

The Leven River licence covers a total area of 81 km<sup>2</sup> and lies approximately 10km northeast of the Hellyer Mine Site in western Tasmania (Figure 1). The licence is shown on the Hellyer & Sophia 1:100,000 scale LTIS map sheets.

The licence overlies open accessible farmland with some state forest reserve and can be easily accessed via a network of secondary roads running off the Cradle Mountain Link Road.

Topographically the licence is generally flat along the western side with hill slopes along the eastern edge of the tenement. Mt Cattley is located 500m east of the licence.

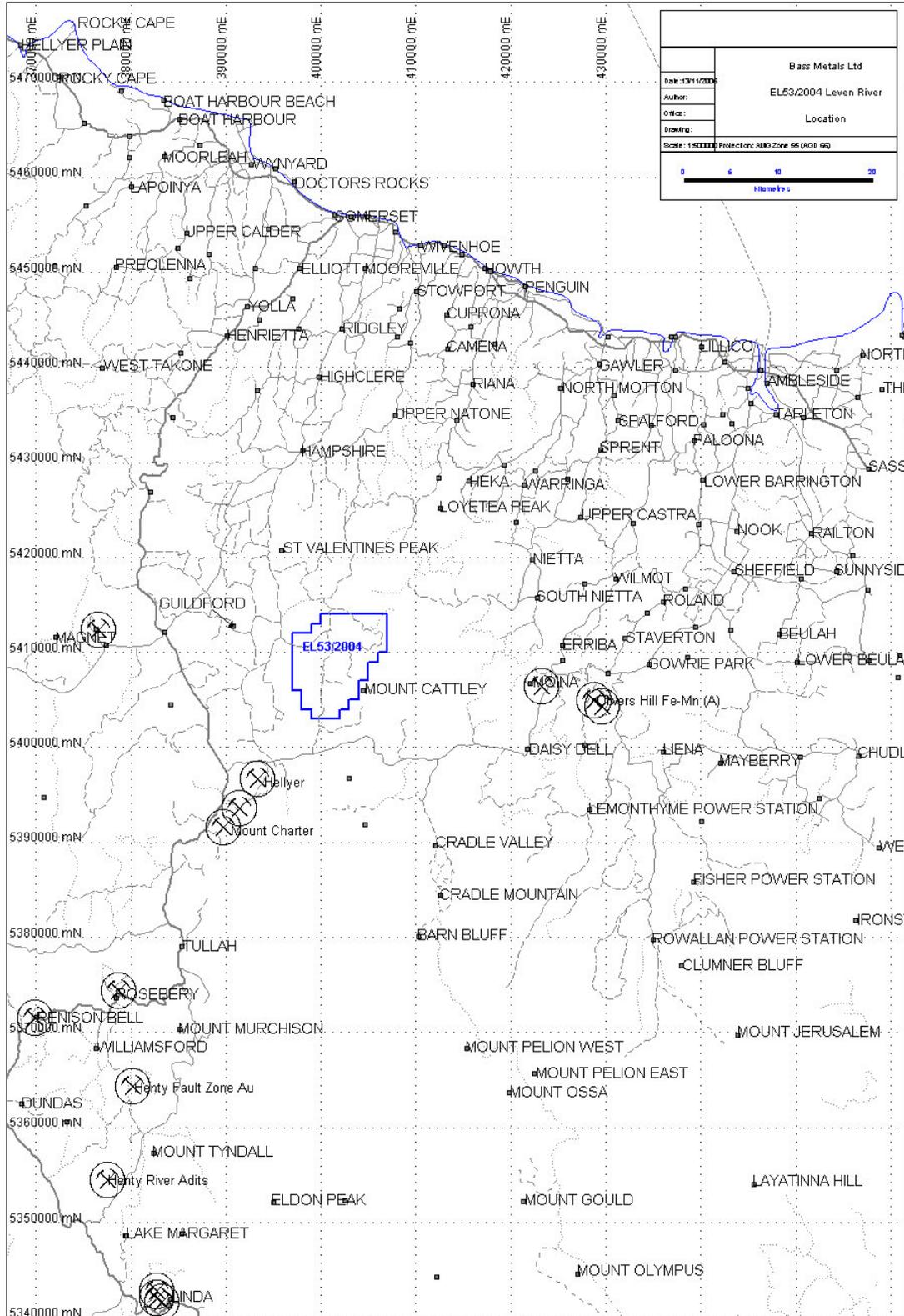


Figure 1. Leven River Exploration Licence (EL53/2004) is located in north-west Tasmania.

## 1.2 Geology Overview

Geologically the licence contains the Mt Read Volcanics belt, sediments of the Cambro-Ordovician Owen Group and Tertiary basalts. Tertiary basalts cover approximately 70% of the Leven River licence. Refer to the Regional Geology Map in Figure 2.

### 1.2.1 The Mount Read Volcanics

The Mt Read Volcanics are a belt of volcanic, volcanoclastic and sedimentary rocks of Mid-Cambrian age. The belt is famous for hosting Tasmania's world-class polymetallic VHMS deposits (eg. Rosebery, Hellyer & Que River). The Leven River licence occurs along strike to the northeast from the Mt Charter, Que River and Hellyer deposits and is mapped as containing the northern continuation of the Que-Hellyer stratigraphy. Units of the younger Tyndall Group of the Mt Read Volcanics are also mapped on the licence. A fault zone associated with the well defined Hellyer-Que River-Mt Charter trend passes through the Leven River licence.

#### *Central Volcanic Complex*

The CVC is dominated by proximal volcanic rocks (rhyolite and dacite flows, domes and cryptodomes and massive pumice breccias) and andesite and rare basalt (lavas, hyaloclastites and intrusive rocks) deposited in a marine environment (Seymour et al., 2006).

#### *Western Volcano-Sedimentary Sequence*

This unit is coeval with the Central Volcanic Complex of the MRV though older than the Tyndall Group. It is described as including beds of lithicwacke turbidite, mudstone (commonly rich in shards), siltstone and shale. It also contains subordinate intrusive and volcanic rocks, which are commonly andesitic (Seymour *et.al.*, 2006).

#### *Tyndall Group*

The Tyndall Group is a unit of quartz-bearing volcanoclastic sandstone and conglomerate. It also contains minor volcanic, intrusive and ignimbritic rocks of mixed felsic and andesitic provenance (Seymour *et.al.*, 2006).

### 1.2.2 The Owen Group

The Owen Group is Cambrian to Ordovician in age and sits unconformably on the Mt Read Volcanics. The unit typically includes large volumes of coarse siliclastic conglomerate composed dominantly of metaquartzite clasts derived from the Tyennan Metamorphics. It also includes turbidite and shallow marine sandstone units (Seymour *et.al.*, 2006). It is not likely to host any exhalative styles of mineralisation such as Taylor and Mathison (1990) report for the younger Gordon Group. However, it could potentially host mineralisation associated with intrusion of Late Devonian–Early Carboniferous granitoids.

### **1.2.3 Tertiary Basalts**

Radiometric dates from basalts across Tasmania indicate an age range of between 16.4Ma and 64.5Ma (Everard *et al.*, 2004). These basalts cover approximately 70% of the central and western licence area making exploration of the underlying Cambrian Mt Read Volcanics difficult. The thickness of these basalt units potentially vary significantly but are interpreted to be generally less than 100m thick.

### **1.3 Exploration Rationale**

EL53/2004 contains 6 known minor mineral occurrences which include the Two Hummocks (Pb), The Hummocks (Ba) and Leven River Bridge (Au) occurrences.

The licence lies approximately 10km northeast of the Hellyer deposit and overlies the interpreted northern continuation of the Que River–Hellyer stratigraphy. A fault zone associated with the well defined Hellyer-Que River-Mt Charter trend passes through the Leven River licence. Several northwest trending faults also cross-cut the Mt Read Volcanics on the licence.

Target generation by Geoinformatics Exploration Inc incorporating recent MRT airborne geophysical data has highlighted VHMS style targets within the licence that have not been adequately tested.

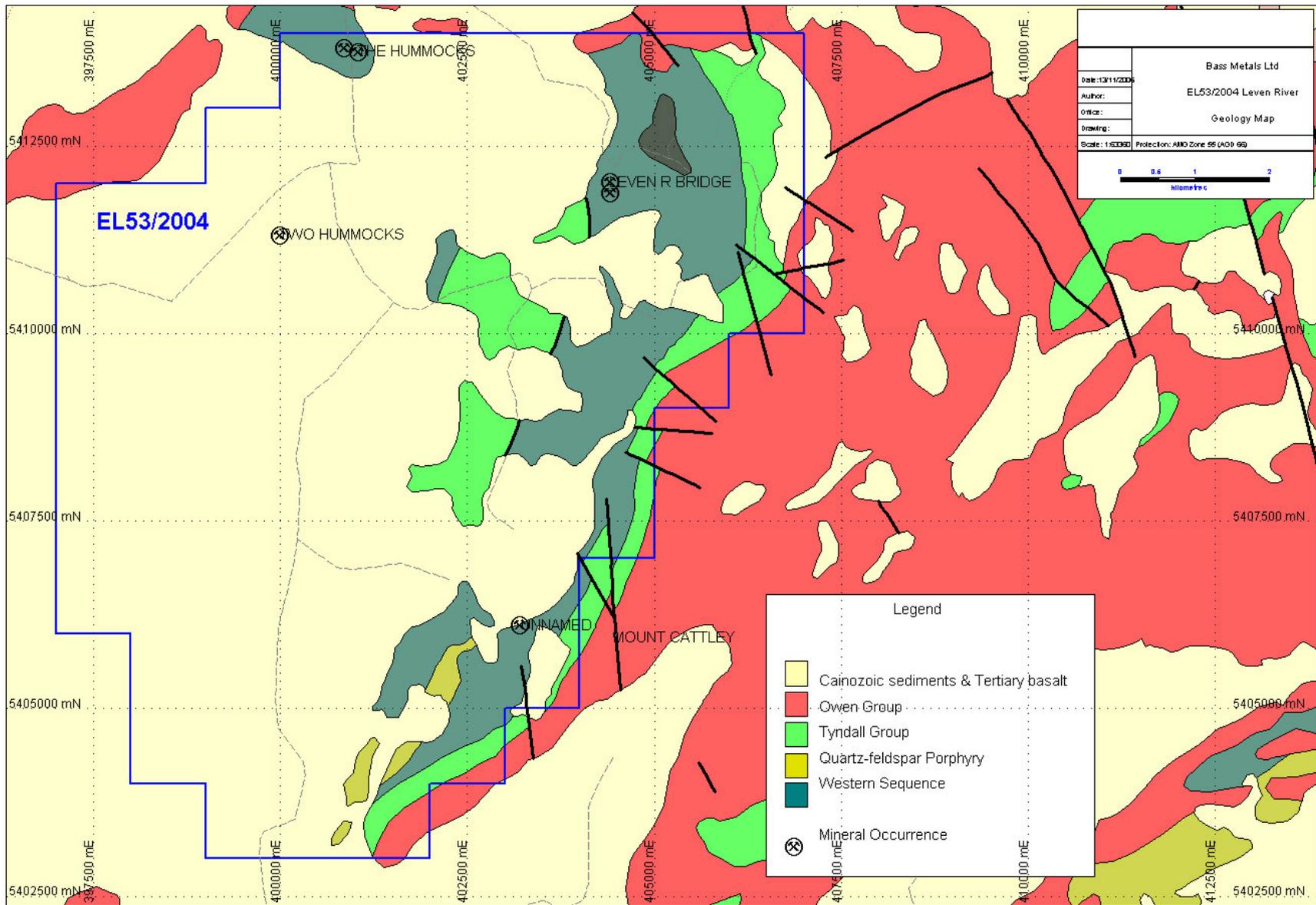


Figure 2. Regional Geology showing Licence Area boundaries, roads and towns.

## 2. WORK COMPLETED

### 2.1 Historical Mining

No mining is recorded within EL53/2004 Leven River but the licence area does contain 6 known minor mineral occurrences which include the Two Hummocks (Pb), The Hummocks (Ba) and Leven River Bridge (Au) occurrences.

The Hellyer (16.5Mt @ 13.9% Zn, 7.2% Pb, 0.38% Cu, 169g/t Ag & 2.55g/t Au), Que River (3.3Mt @ 13.3% Zn, 7.4% Pb, 0.7% Cu, 195g/t Ag & 3.3g/t Au) and Mt Charter (6.1Mt @ 1.2g/t Au & 36g/t Ag) mineral deposits occur 8km, 12km and 15km to the southwest of the Leven River licence respectively. The Hellyer and Que River deposits were mined during the period 1981 to 2000. The Mt Charter deposit has not been mined.

### 2.2 Previous Exploration

Modern exploration over the Leven River licence commenced in the late 1970's although the most comprehensive exploration programmes were completed during the period 1983 through to 1990. The Final Report on the Mt Cattley licence by Aberfoyle Resources Ltd (Hicks, 1996) provides a good summary of historic exploration in the licence area.

A summarised version of the exploration history on the licence is given below:

**Date:** 1978

**Company:** Geopeko Limited

**Exploration Philosophy:** Targeting VHMS deposits.

**Work Completed:** Licence covers part of current Leven River licence but all work concentrated to the west around the Mariner 1-7 prospects.

**Results and Conclusions:** No data from current Leven River licence area.

**Report:** Van Den Bogaart, R. & Buckland, G.L., 1978

**Date:** 1987- 1989

**Company:** Billiton Australia & Shell Metals

**Exploration Philosophy:** Targeting base metal deposits.

**Work Completed:** Auger soil sampling, costeaning & diamond drilling (CRD86-1 & CRD88-1).

**Results and Conclusions:** Soil anomalies defined and some anomalies from costeaning. Lead isotope studies conducted by CSIRO indicate Cambrian age. Downhole EM of CRD88-1 has identified an off hole conductor.

**Report:** Randell, J.P., 1988. Randell, J.P., 1989.

**Date:** 1989 - 1990

**Company:** Billiton Australia & CRA Exploration Pty Ltd

**Exploration Philosophy:** Targeting base metal deposits.

**Work Completed:** TEM surveying, auger soil sampling.

**Results and Conclusions:** No significant conductors identified. Scattered base metal anomalies defined.

**Report:** Randell, J.P. & Hungerford, N., 1989. Randell, J.P. & Hungerford, N., 1990.

**Date:** 1990 - 1991

**Company:** Outokumpu Exploration Australia Pty Ltd

**Exploration Philosophy:** Targeting VHMS deposits.

**Work Completed:** Sampling MRT stratigraphic drill hole MXRD1, downhole TEM survey of MXRD1, sampling and assay of drill holes MCDD4 & MCDD5, diamond drilling of MCCD6.

**Results and Conclusions:** Assays for MCDD5 returned a best result of 1m @ 0.2% Cu, 0.25% Pb, 2.8% Zn, 11g/t Ag and 0.03g/t Au in pyritic sediment from 196.6m. Drill hole MCDD6 passed through 327m of cover including basalt and lignitic sediments prior to intersecting interpreted Cambrian volcanics. Geochemical evaluation of analyses from MXRD1 concluded that the sequence at Mt Cattley is comparable to the sequence at Hellyer-Que River.

**Report:** Herrmann, W., 1990. McKay, G., 1991.

**Date:** 1994 - 1996

**Company:** Aberfoyle Resources Ltd

**Exploration Philosophy:** Targeting Hellyer-Que River style VHMS deposits

**Work Completed:** Surface EM survey to cover the western limb of the Black Marsh Syncline, 600 line km aeromagnetic survey, soil geochemistry, wholerock geochemistry, TMI soil geochemistry & diamond drilling.

**Results and Conclusions:** A rock chip sample of altered siltstone with nodular pyrite from near the Leven River Bridge assayed 0.2ppm Au and 488ppm Pb. EM anomalies identified. Soil geochemistry failed to identify anomalism but the prospective Cambrian stratigraphy in the area is overlain by Tertiary basalt cover.

**Report:** Richardson, S., 1995a. Richardson, S., 1995. McNeill, A.W., 1996.  
Hicks, D.J., 1996.

**Date:** 1999

**Company:** Haslam, C.O.

**Exploration Philosophy:** Targeting Hellyer-Que River style VHMS deposits beneath basalt cover.

**Work Completed:** Literature reviews and MMI sampling over a large area (432 samples collected).

**Results and Conclusions:** Assay results not available.

**Report:** Mineral Strategies, 1999a. Mineral Strategies, 1999.

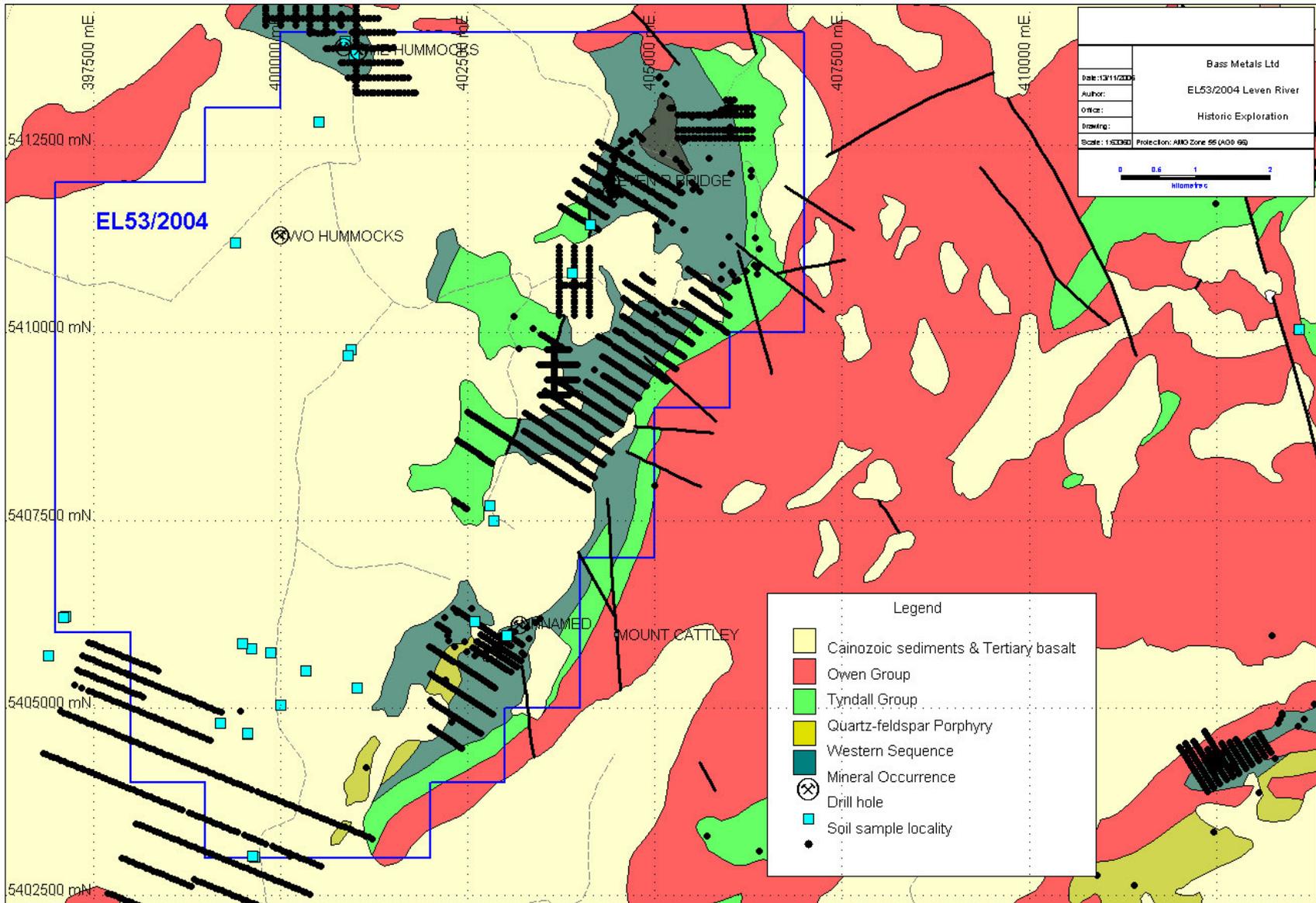


Figure 3. Historical Exploration Activity Map showing old workings and prospects.

### **3. EXPLORATION COMPLETED 8 AUGUST 2005 TO 7 AUGUST 2006**

This section reports on exploration conducted between 8 August 2005 and the 7 August 2006 by Bass Metals and Geoinformatics. Initial work undertaken has consisted of collating previous exploration information in the area as well as acquiring datasets that may be of assistance in targeting VHMS and intrusion-related mineral deposits. The MRT topographic, geophysical and 1:100,000 scale digital geological map series were used as base maps for presenting other historical company datasets. Previous exploration company reports in PDF format were downloaded from the Mineral Resources Tasmania website.

Notwithstanding the significant GIS database that had been compiled at this time, Bass decided to investigate the use of remote sensing in mapping alteration at the licence. Bass had several meetings with Mike Hussey at the CSIRO where it was established that HyMap data was likely to provide the best data source for mapping alteration at the licence. However, after viewing some draft images supplied by Mike Hussey it was decided that vegetation at the licence negatively affected the quality of the data and the data was not purchased.

#### **3.1 TERRA Satellite (ASTER Data)**

Still interested in the idea of using a remote sensing system to map wall rock alteration on a more regional basis, Bass managed to source some ASTER data over the northwest corner of Tasmania. It was decided that the data would be used in a more regional sense than had originally been anticipated.

ASTER is an acronym for 'Advanced Spaceborne Thermal Emission and Reflection Radiometer' and it is an instrument that flies on the Terra Satellite. It collects a similar radiation spectrum to the HyMap instrument but at a lower resolution (4x4m pixels versus 30x30m pixels). Bass had this ASTER data forwarded to Bob Agars at Australian Geological & Remote Sensing Services. A report describing the interpretation methodology utilized is included as Appendix 1.

Bass realised that because of the lower resolution of the ASTER data and the issue of vegetation shielding radiation reflected from the ground surface that the data would be more useful for targeting 'active zones' rather than providing the bulls-eye targets that had originally been hoped for from the HyMap data.

Areas of the Leven River licence (EL53/2004) that are considered to have anomalous alteration types have been marked using a green ellipse outlining their extent (Figure 4).

Three areas of alteration are evident on ASTER images of the Leven River licence. Area 1 covers a 4km x 2km region on the western side of the licence consisting of propylitic (chlorite), iron oxide and carbonate alteration. Area 2 is in the northern part of the licence and covers a 2km x 1km region marked by silica, iron oxide and carbonate alteration. Area 3 occurs along the eastern side of the tenement and is marked by propylitic (chlorite) and silica alteration covering a 3km x 1km region (Figure 4).

## **3.2 Geoinformatics Geological Modelling & Targeting**

Bass Metals utilised consultant geologists Geoinformatics Exploration Inc to compile a 3-dimensional spatial database (GIS).

The Geoinformatics process involves the efficient capture of historical data in proprietary Geoinformatics database and software systems (eg IFS & FracSIS). Proprietary software and methods are then used to generate 3-dimensional geological models and targets (Monte Carlo Ranking). The Wilmot work is part of a larger 'Intervention Project' called the MRVIP (Mount Read Volcanics Intervention Project - Stage 1b). The Stage – 1b Project focuses on all of Bass Metals 13 regional licences. A final Stage-2 Project focused on regional target generation without consideration of licence boundaries though is not reported on here.

The Stage 1b Project attempts to incorporate Geoinformatics understanding of the three dimensional controls on world class VHMS mineralization to rapidly provide Bass with high-quality targets in the Wilmot licence for rapid drill testing and other areas for follow-up field work including soil type geochemistry. Models were also developed for the targeting of intrusive related tin systems (e.g. Renison and Mt Bischoff) and intrusive related nickel skarn systems (e.g. Avebury). Targets were identified and ranked according to probabilistic Monte Carlo analysis of best-available 2D and 3D geoscientific data and allowed an assessment of exploration risk and uncertainty.

Much of the data for the project was obtained from open file reports. A data audit of 1,300 reports was completed by Dan Core, Graeme Cameron, Neville Panizza and Helen Ly. Work on the Stage 1b Project commenced in early February 2006 and was largely complete by July 2006. A target workshop with alliance personnel was held at Hellyer in July 2006 and final targets are being delivered in August 2006.

At Leven River, Geoinformatics targeting has generated four Rosebery-Hellyer VHMS style targets on the licence (Figure 5).

Refer to Appendix 2 for a summary Geoinformatics report.

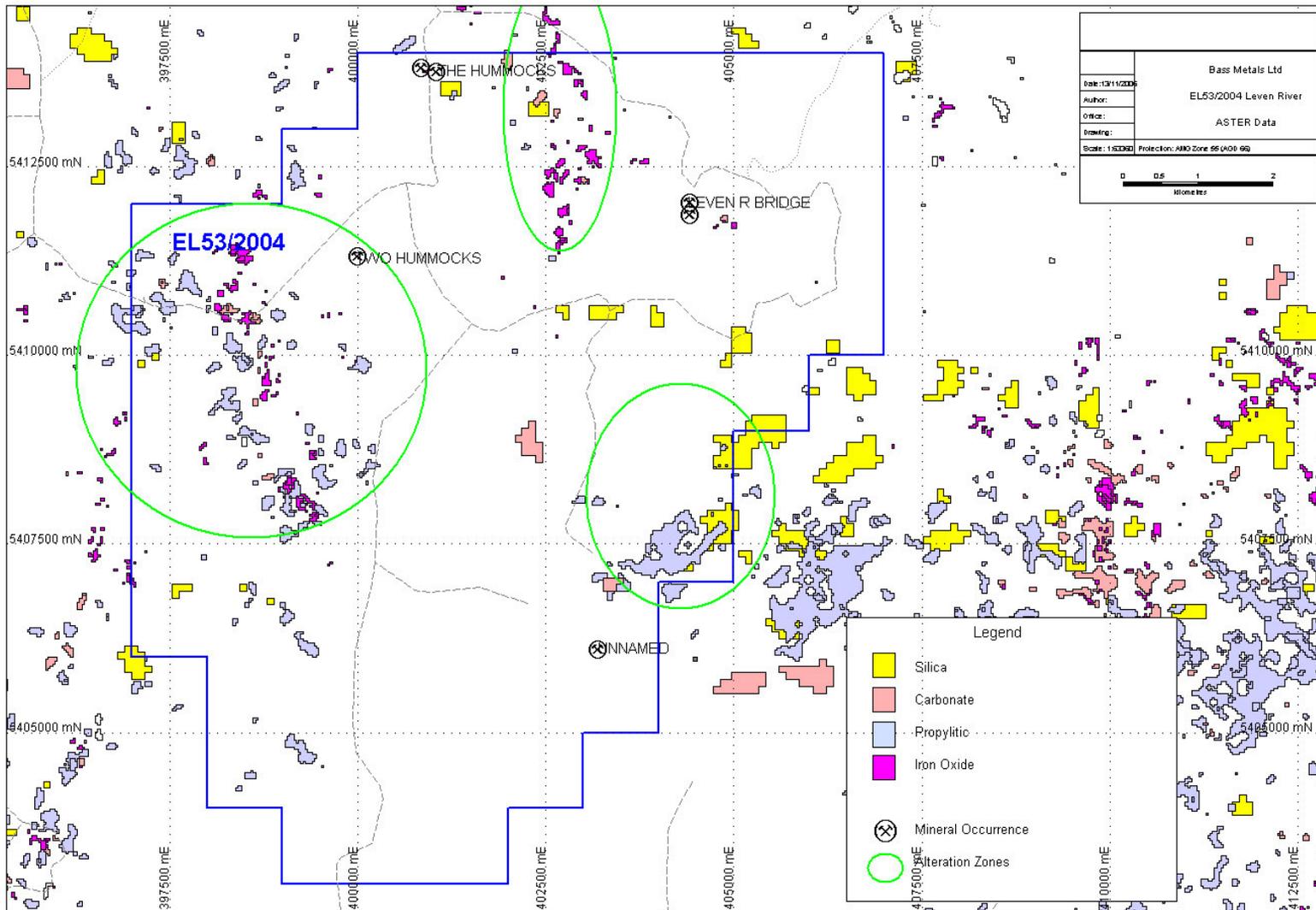


Figure 4. Alteration Map based on processing of ASTER satellite data.

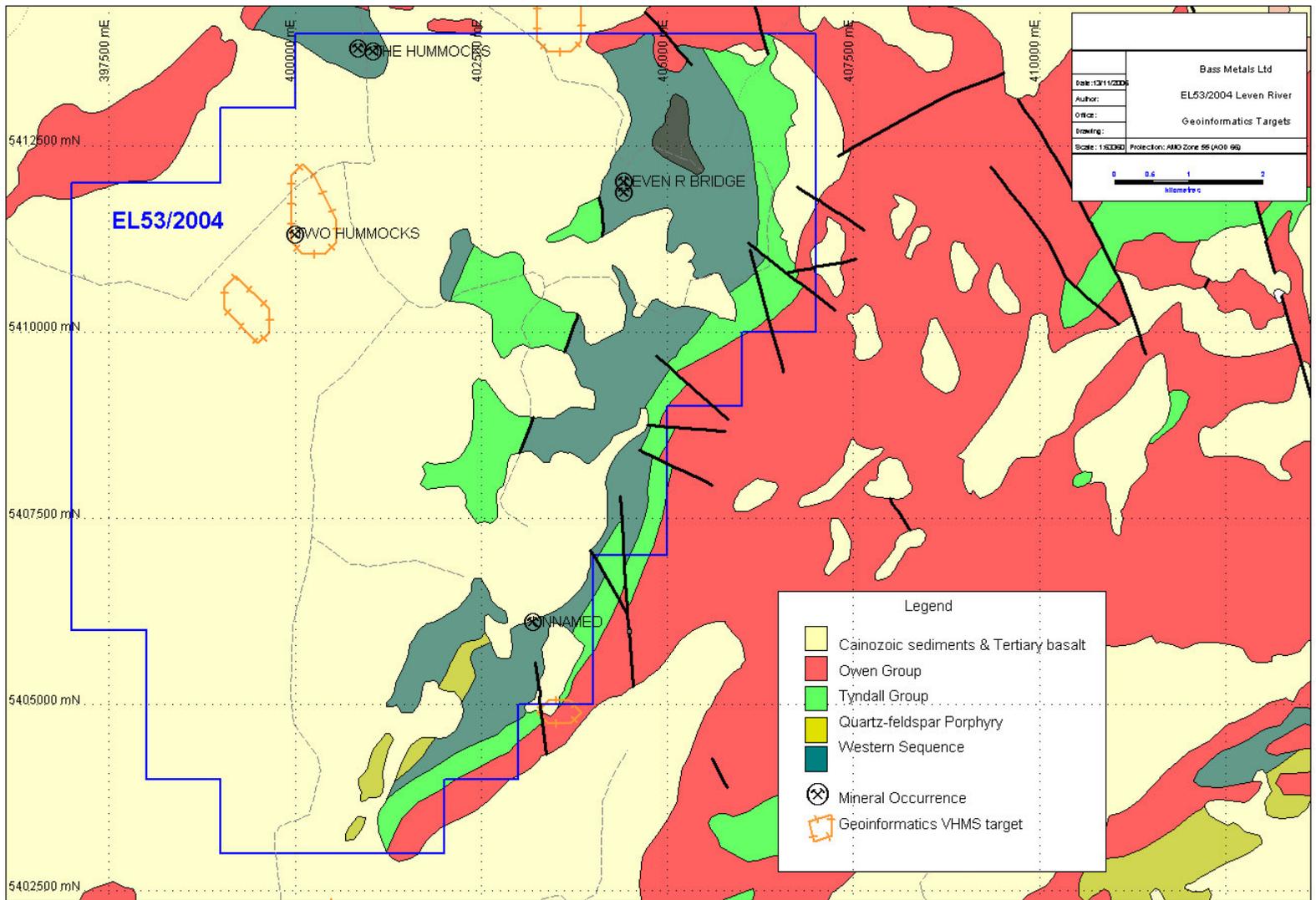


Figure 5. Geoinformatics Generated Targets

#### **4. PROPOSED EXPLORATION**

Proposed exploration over the next year on the EL53/2004 Leven River licence includes geological mapping and rock chip sampling of Geoinformatics generated target areas to confirm that the stratigraphy is comparable to the interpreted Hellyer and Que River stratigraphic positions. Untested EM anomalies will also be field checked.

Data gained by mapping and rock chip sampling of the VHMS targets will be assessed prior to alternative follow-up being proposed.

Further exploration will be dependant on results achieved.

#### **5. ENVIRONMENT**

The company has environmental policies in place that minimize the impact that exploration activities have on the environment. The policies include guidelines on how to reduce the risk of spreading plant diseases and weeds as a result of day-to-day exploration tasks.

No field work has been conducted at the Leven River licence by Bass Metals at this point in time.

## 6. EXPENDITURE

	<b>Aug-05 to Aug-06</b>
<b>Administration</b>	4,137.11
<b>Geology-Personnel&amp; Overheads.</b>	11,384.18
<b>Gridding</b>	
<b>Geochemistry</b>	
<b>Geophysics</b>	
<b>Drilling</b>	
<b>Feasibility Studies</b>	
<b>Rehabilitation</b>	
<b>Safety</b>	339.05
<b>Other - Geoinformatics</b>	25,510.85
<b>Total - Eligible</b>	<b>41,371.19</b>

Table 1. Expenditure 8 August 2005 to 7 August 2006.

Expenditure, for the twelve months 8 August 2005 to 7 August 2006, has primarily been taken up with collation and processing of existing available data, purchase and interpretation of ASTER Satellite data, Geoinformatics Exploration Inc collation and processing costs and mineral deposit targeting activities.

Total expenditure for the period was \$41,371.19.

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**APPENDIX 1**  
**ASTER REPORT**

**APPENDIX 2**  
**GEOINFORMATICS REPORT**