

**Annual Report on Exploration  
EL 11/2016 “Lake Margaret”  
April. 2017 to April. 2018**

## **Executive Summary**

Work carried out on EL 11/2016 has consisted of the compilation of previous exploration data, specifically drill hole, geophysical, geochemical and geological data and the commencement of the creation of a 3D model of the geology and geophysics of the licence to allow focused targeting beneath the glacial cover.

That work is ongoing and incomplete. It will be reported on the 2018/19 annual report. Some preliminary details are given.

None of the work to date has diminished the prospectivity of the tenement.

At this stage favoured drill holes are:

1. Deep drillhole through the glacial moraine to between LMD1/LMD1A and Tyn 16 to test the 2.5km strike length of the Holy Host Horizon obscured by the glacial cover.
2. The strong chargeability anomaly at Langdons between drillholes TYN11 and BLD893 with 450m strike length of untested strike of the Holy Host Horizon.
3. At Langdons prospect a hole to target the outcropping Great Lyell Fault/Holy Host Horizon position on the flanks of the Tyndall Range to test the theory that the glacial erratic has travelled downslope (as is a reasonable conclusion given the spread of mineralised erratics in the glacial cover). Bass's hole LMD2 did not test the ideal position by ~300-400m down-dip.

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## 1.0 Introduction

### 1.1 Introduction

This report details exploration activity carried on EL 10/2016 “Lake Margaret” during the period April 8<sup>th</sup> 2017 to April 8<sup>th</sup> 2018.

### 1.2 Location/Access/Land Usage

EL 11/2016 “Lake Margaret” lies midway between the Mt Lyell copper+gold mine to the south and Henty gold mine to the north. The licence covers a section of the north-south trending Tyndall Range and the foot slopes down to the Yolande River. The target horizon lies along the base of the slope.

The land is Crown Land and part of the Tyndall Regional Reserve for the most part with the northwest corner Future Productive Forest land. Access to the northern end is by the HEC powerline track which turns off the Henty-Anthony Road near the Tyndall Creek bridge, or by the Lake Margaret township road to the south.

Vegetation is largely heath with some pockets of rain forest on the lower slopes with alpine vegetation along the range.



*Figure 1.1: EL 11/2016 “Lake Margaret” looking south along the western slopes of the the Tyndall Range with the powerline to the left and the target horizon along the base of the slope.*

### 1.3 Tenure

The licence was granted in April, 2017 to Moina Gold Pty Ltd as a partially successful tender for ERA 1103. This report details work from the licences first year of tenure.

### 1.4 Exploration Rationale

EL 11/2016 “Lake Margaret” contains 5 km’s of the Holy Host Horizon, the seafloor in Middle Cambrian time when there was active bimodal volcanism with accompanying hydrothermal fluids both venting onto the seafloor and altering the rocks beneath it with the formation of the polymetallic sulphide orebodies of Hellyer, Que River and the Tasman and Crown lenses (at Mt Lyell) largely by the former exhalative processes, and Henty, Hercules, Rosebery and Mt Lyell largely by the latter replacement and processes. Significant parts of this horizon are obscured by glacial gravels, other parts in rainforest or on mountain slopes impeding exploration.

A second lower mineralised horizon is suggested by the presence of mineralised clasts in a mass flow unit outcropping in the Lake Newton spillway to the north of the licence but potentially extending into the EL.

EL11/2016 has excellent potential to host an economic precious and/or base metal resource.

Historically exploration has focused on discovering massive sulphides and particularly using EM methods. The recognition that epithermal and footwall alteration style (sulphide, silica) mineralisation are possible alternatives means IP and CSAMT are more relevant geophysical tools.

Advances in the mapping of alteration facies utilising Short Wavelength Infra-Red spectroscopy and trace element “pathfinder” litho geochemistry have allowed for geochemical vectoring within footwall alteration systems.

## **1.5 Geology**

The licence covers a steeply dipping belt of Cambrian Mt Read Volcanics in fault juxtaposition against Ordovician siliclastics. These older rocks are obscured for the most part by a veneer of glacial gravels.

Geologically the Lake Margaret tenement contains some of the most prospective ground in the Mt Read Volcanics outside of current mine leases. The stratigraphic zone around the contact between the overlying basal Tyndall Group and the underlying Central Volcanic Complex is the host to mineralisation at Henty and Mount Lyell south of the Henty Fault and Hellyer, Que River, Rosebery and Hercules north of the Henty Fault. It is known colloquially amongst Tasmanian geologists as the Holy Host Horizon.

The tenement also contains the horizon on which massive sulphide clasts outcrop in the spillway to the Newton Creek dam, immediately to the north of the Lake Margaret tenement.

The tenement also contains a glacial erratic with ore grade (5.6% Cu + 0.6g/t Au) copper+gold in a high sulphidation epithermal assemblage. The source of this erratic is unknown, however, further scattered clasts over a small area nearby support a local source.

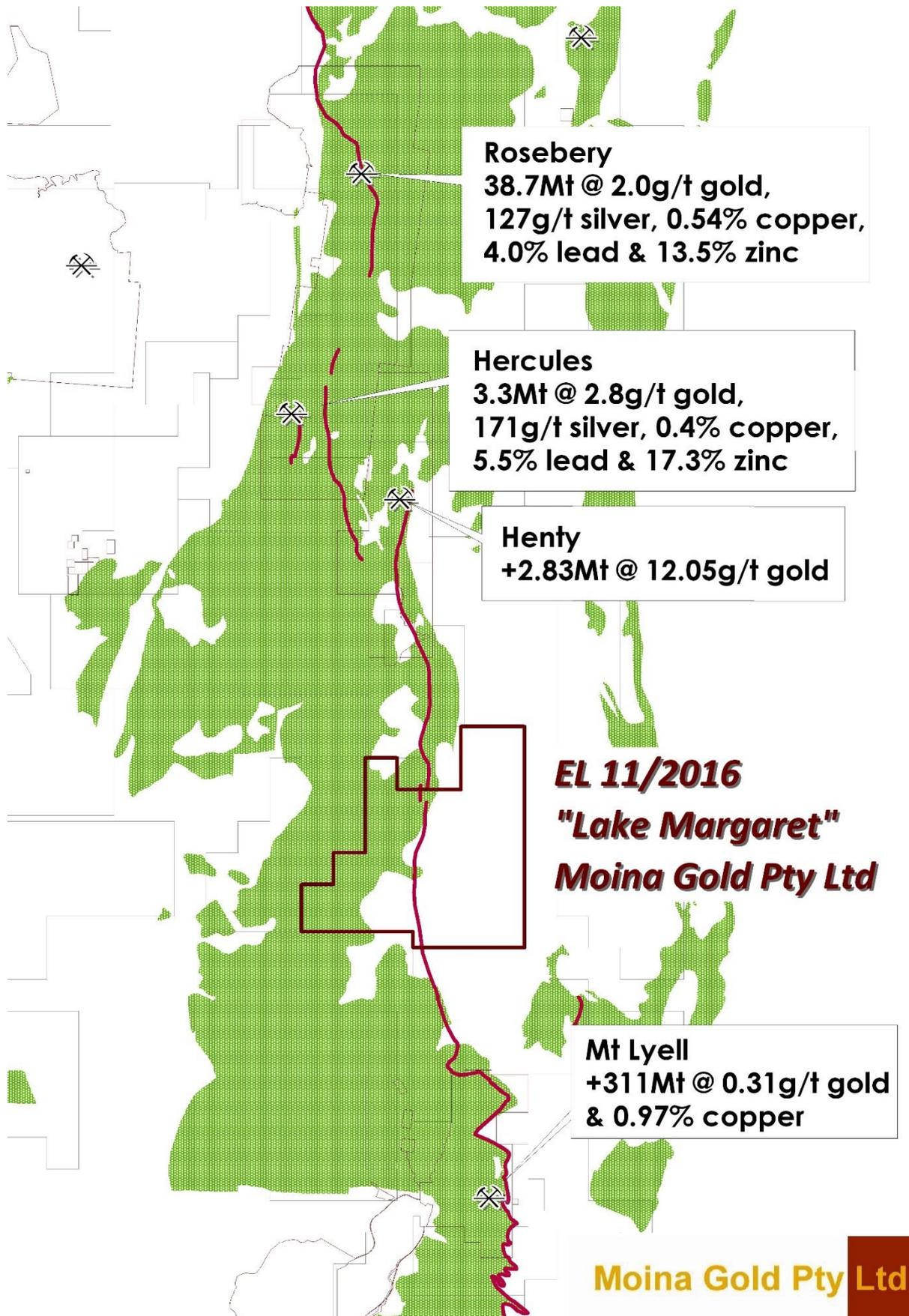


Figure 1.2: Location of EL 11/2016 "Lake Margaret" with respect to the other polymetallic volcanic hosted sulphide deposits in the Mt Read Volcanics (green fill).

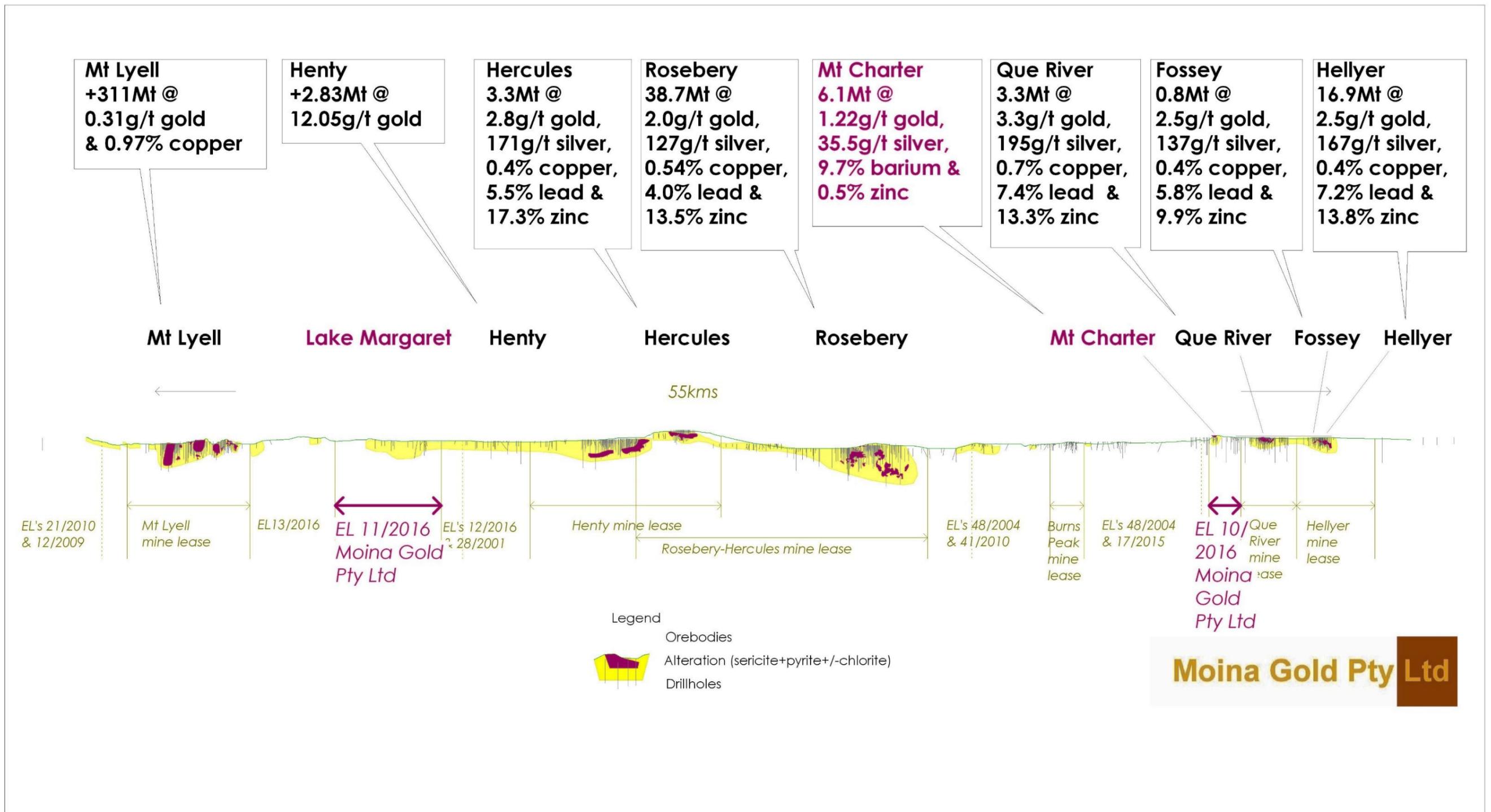


Figure 1.3: North-south (looking west) long section of the Mt Read Volcanics 'Holy Host' horizon showing orebodies (maroon), alteration (yellow) and drill traces and the location of EL 11/2016 "Lake Margaret". The figure was produced for a general audience and is approximate as suggested by the size of Henty ore blobs w.r.t. Rosebery's. Alteration extent is generalised and approximate.

## **2.0 Review of Previous Work (after MacDonald, 2017)**

The country covered by EL 11/2016 "Lake Margaret" has been a major focus of exploration on the west coast due to its position between Mt Lyell and firstly Rosebery/Hercules, and later Henty.

Much of the prospective sequence is covered by glacial gravels which handicap exploration. For this reason exploration has been largely geophysically driven with conceptual geological models based on stratabound "VHMS" Pb-Zn-Ag mineralisation, and disseminated VHMS footwall "Mt Lyell type" Cu-Au. The main phases of modern exploration were:

From the mid 1960's until 1986 the Mt. Lyell Mining and Railway Company and related company Goldfields Exploration undertook systematic mapping and stream sediment sampling followed by soil sampling, IP and EM surveys over several grids (on ELs 41/71, EL 9/66 and EL 10/69). Specific targets generated in this work were drilled at the Zig Zag Hill, Beatrice, Basin Lake and Leech Hill prospects (see figures 3 and 4).

BHP Minerals (EL 102/87) conducted a blanket UTEM survey of the Mount Read Volcanics designed to test for volcanogenic massive sulphides to 200-300m depth over the southern half of the Lake Margaret property in 1988-1990. No significant conductors deemed worthy of drilling were detected.

In 1992, RGC Ltd (the successor to Goldfields Exploration) entered into a farm-in agreement with BHP in EL 102/87 but focused their initial efforts elsewhere within that tenement( Beatrice and Zig Zag Hill prospects).

During the period 1988-1998, the northern part of the Lake Margaret tenement was explored by Billiton followed by then farm-in partners Aberfoyle and Resolute. Work completed included an airborne magnetic-radiometric survey, ground magnetics, gravity, CSAMT, IP and EM over various targets. Drilling focused on testing of geochemical and geophysical anomalies at Basin Lake and Leech Hill.

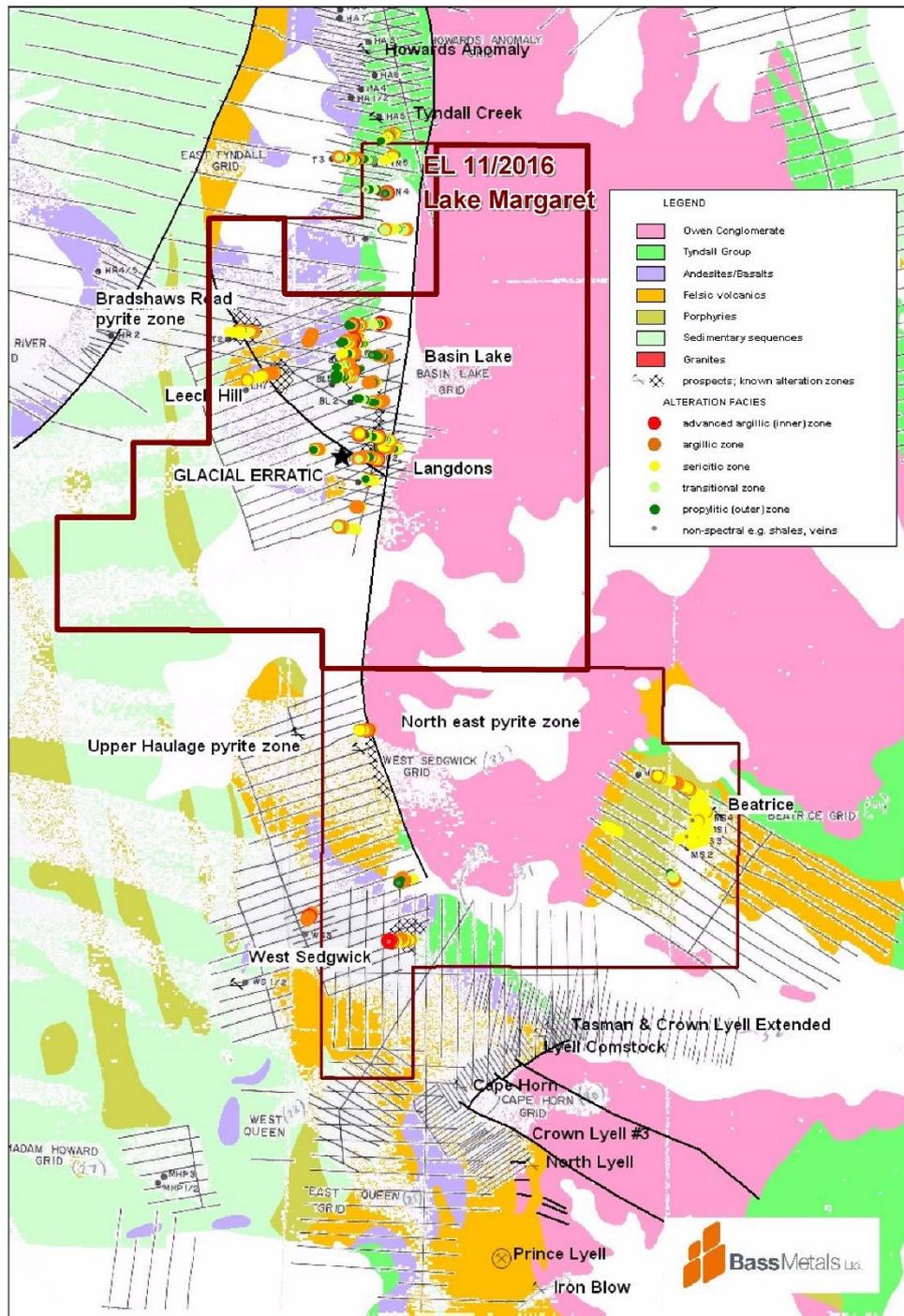
During this time the southern area was held and explored by Goldfields Exploration and its successors AurionGold and Placer Dome. A series of target areas were followed up with dipole-dipole IP. Five holes were drilled in this period (TYN17-21).

During this period an outcropping glacial erratic (figure 2.2) of intensely hydrothermally altered volcanic was discovered. The mineral assemblages are of high sulphidation type with average copper grades of 5.6%, gold 0.6g/t and silver 29g/t.

The mineralogy of this erratic – an intensely silicified rock with pyrite, enargite and tennantite and trace covellite, stannoidite and mawsonite is very similar to the mineralogy at North Lyell and the high copper grade part of the Iron Blow. The fact that this mineralisation occurs in glacial float suggests that the original source may be outcropping but covered by glacial deposits.

In 2004 Copper Strike pegged the area which became ERA 1033 as EL 35/2004. Copper Strike were interested in the relatively limited prior exploration in the Comstock Valley, partly as a consequence of the glacial till cover and the possible extension of Pb-Zn mineralisation at the Tasman Crown from the Mine Lease northwards, as well as several pyritic alteration zones lying along the Great Lyell Fault (eg "North East Pyrite Zone") which have been inadequately tested.

Copper Strike carried out a systematic review of previous exploration, reprocessing and reinterpretation of the WTRMP 2001-02 helicopter EM survey, a dipole-dipole IP survey and diamond drill hole LMD01/1A located to test an IP anomaly. The hole intersected pyrite-chlorite-sericite-quartz-siderite alteration but low associated base metal values. Recommendations to extend the IP survey to the north (i.e. into EL 11/2016) were not followed up and Copper Strike relinquished the ground in 2009.



**Figure 2.1: Bass Metals SWIR drill hole alteration assemblages superimposed on compiled historic grids (pre 1987), prospects and geology. Thick maroon outline is EL 11/2016, thinner maroon line was area of ERA1033.**



**Figure 2.2: Glacial erratic of intensely advanced argillically altered volcanic assaying 5.6% Cu and 0.6g/t Au.**

Bass Metals successfully tendered for the ground and explored it under EL 28/2009. Bass undertook a regional scale Short Wave Infra Red (SWIR) study of hydrothermal alteration in all drillcore from the tenement in combination with core sampling and analysis for trace element using ICPMS/OES.

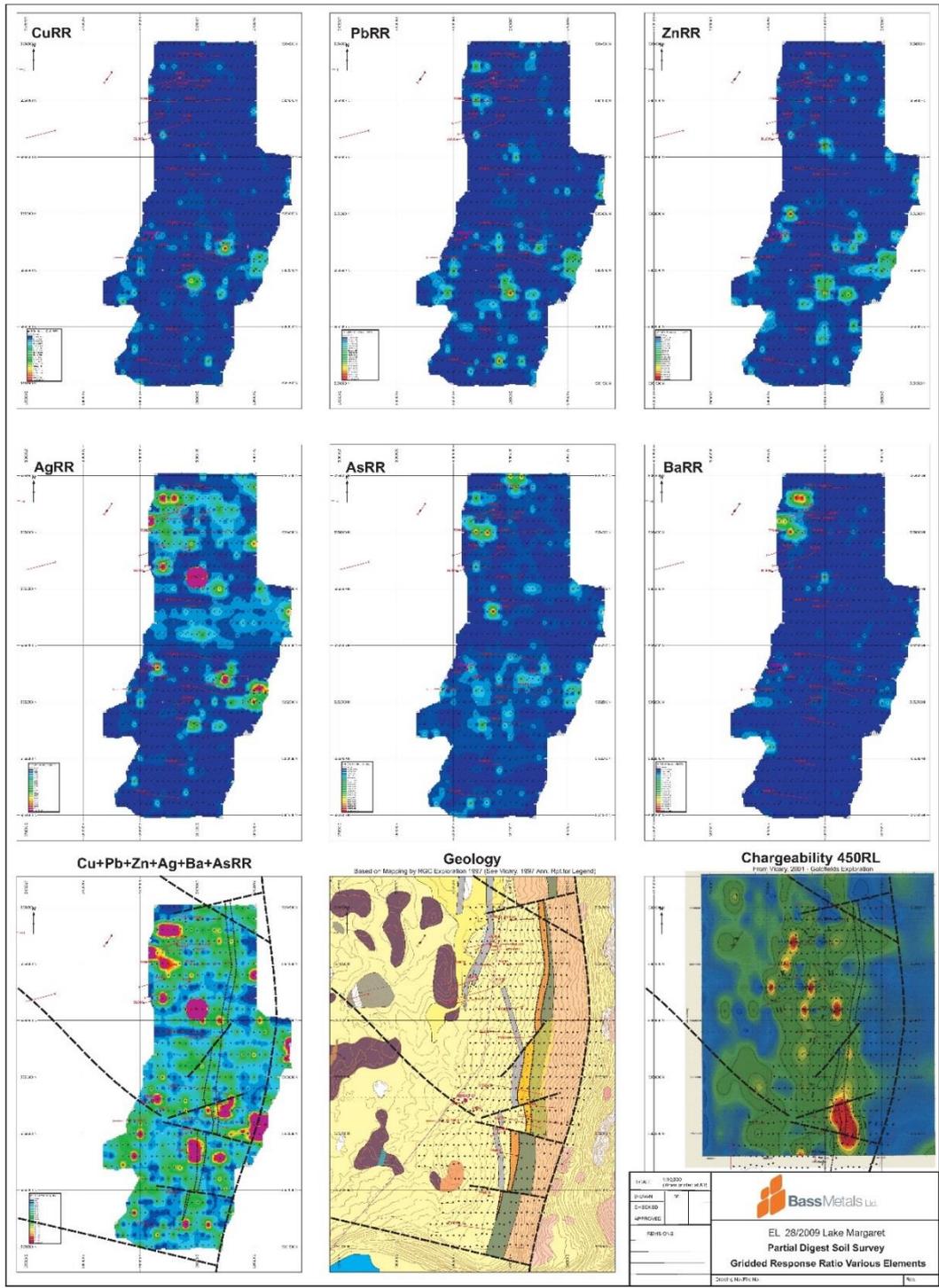
Bass collected 8777 spectral measurements from 56 holes and 1467 lithogeochemical samples.

High-sulphidation epithermal type alteration minerals were mapped in a number of drillholes at Basin Lake and Langdons consistent with the high-sulphidation copper sulphide minerals described from the boulder of high grade copper ore and supporting the interpretation that the source of the boulder is proximal. Favourable argillic alteration is also mapped at West Sedgwick in drill holes W5A, W6, W7 and W8 and at the North East Pyrite Zone in drillhole LMD1.

Field mapping of glacial erratics to determine the spatial distribution of altered and mineralised types was carried out followed by a 3 hole diamond drilling program (totalling 448.6m) designed to test the upslope potential source of the erratic on the Great Lyell Fault where it intersects the Lynchford Member. Unfortunately the hole was not optimally position testing the target position 350m below its surface outcrop.

An MMI soil survey in 2011 on the projection of the Great Lyell Fault in the northern part of the licence did define anomalous responses at a number of localities (see figure 6). This survey was extended in 2013 to cover a strike of 2.5km's.

The MMI anomaly associated with Great Lyell Fault and previously detected in 2011 was repeated by the most recent survey. However, the anomaly did not extend further to the south and its small strike length of between 100-200m was argued as not warranting further investigation. For financial reasons Bass surrendered the tenement in 2016.



**Figure 2.3: Compilation of Basin Lake/Langdons exploration data consisting of MMI soil sampling results, geology and IP (Bass Metals). Note anomalous geochemistry in Langdons area with coincident IP anomaly (lower right hand side in chargeability image).**

### **3.0 Exploration Completed April 2017 to April 2018**

Work carried out on EL 11/2016 has consisted of the compilation of previous exploration data, specifically drill hole, geophysical, geochemical and geological data and the commencement of the creation of a 3D model of the geology and geophysics of the licence to allow focused targeting beneath the glacial cover.

That work is ongoing and incomplete. It will be reported on the 2018/19 annual report. Some preliminary details are given in the next section.

#### 4.0 Discussion of Results

Some early images of the compilation work which were generated for a general audience are shown below. These figures show the results of Bass Metals SWIR alteration study. The drill trace data displayed does not distinguish between HW and FW rocks and thus is not truly representative though there are more HW samples than FW. Alteration vectoring suggests deeper and into the area between TYN16 to the north and LMD1/LMD1A to the south beneath the glacial cover in one of the last untested sections of the Mt Read Volcanics 'holy host' horizon.

There is also vectoring towards the IP anomalies in the Langdons – Basin Lake area.

At this stage favoured drill holes are:

4. Deep drillhole through the glacial moraine to between LMD1/LMD1A and Tyn 16 to test the 2.5km strike length of the Holy Host Horizon obscured by the glacial cover.
5. The strong chargeability anomaly at Langdons between drillholes TYN11 and BLD893 with 450m strike length of untested strike of the Holy Host Horizon.
6. At Langdons prospect a hole to target the outcropping Great Lyell Fault/Holy Host Horizon position on the flanks of the Tyndall Range to test the theory that the glacial erratic has travelled downslope (as is a reasonable conclusion given the spread of mineralised erratics in the glacial cover). Bass's hole LMD2 did not test the ideal position by ~300-400m down-dip.

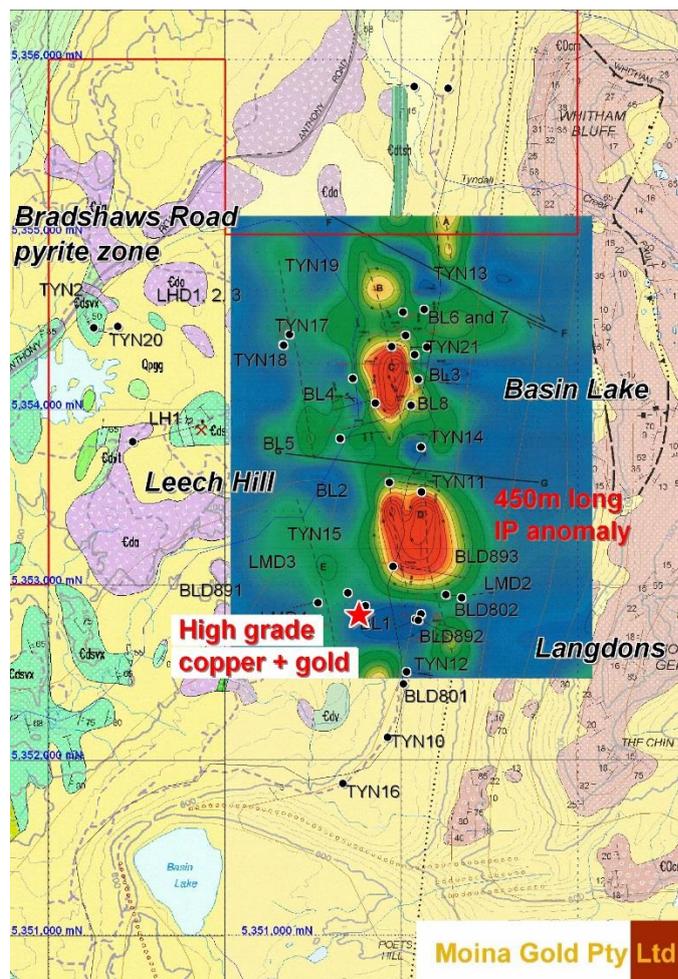
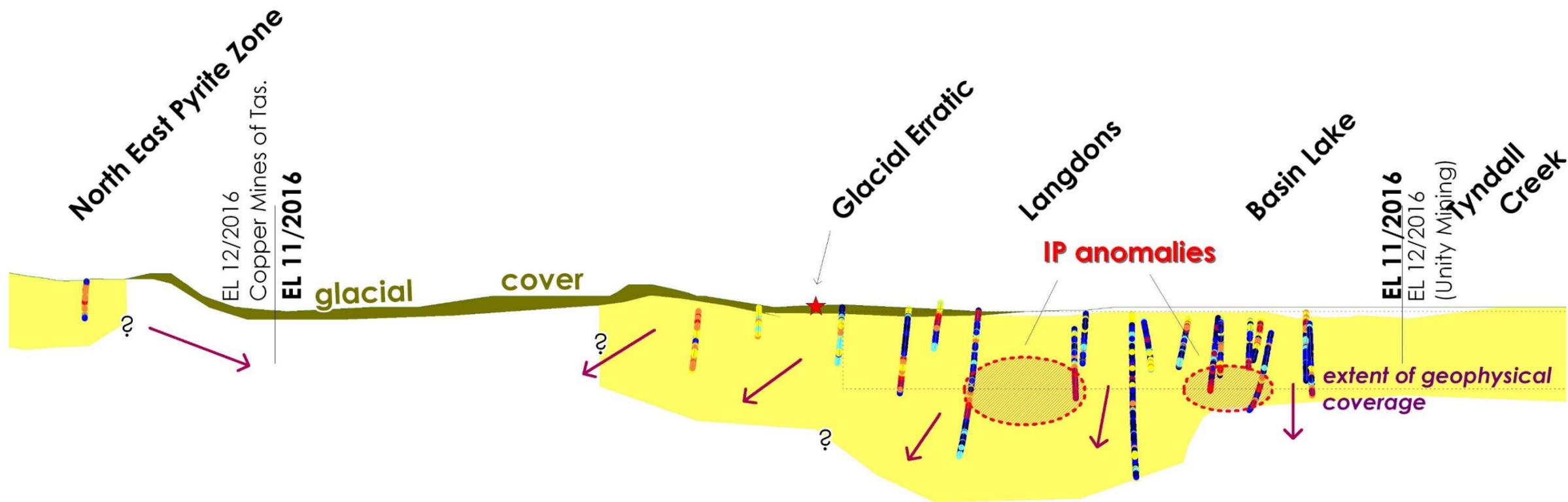


Figure 4.1: EL 11/2016 "Lake Margaret" northern section showing drill holes and traces and the inversion of the dipole-dipole IP survey at 250m below surface showing the tw strong chargeability anomalies, all on 1:25,000 MRT geology.



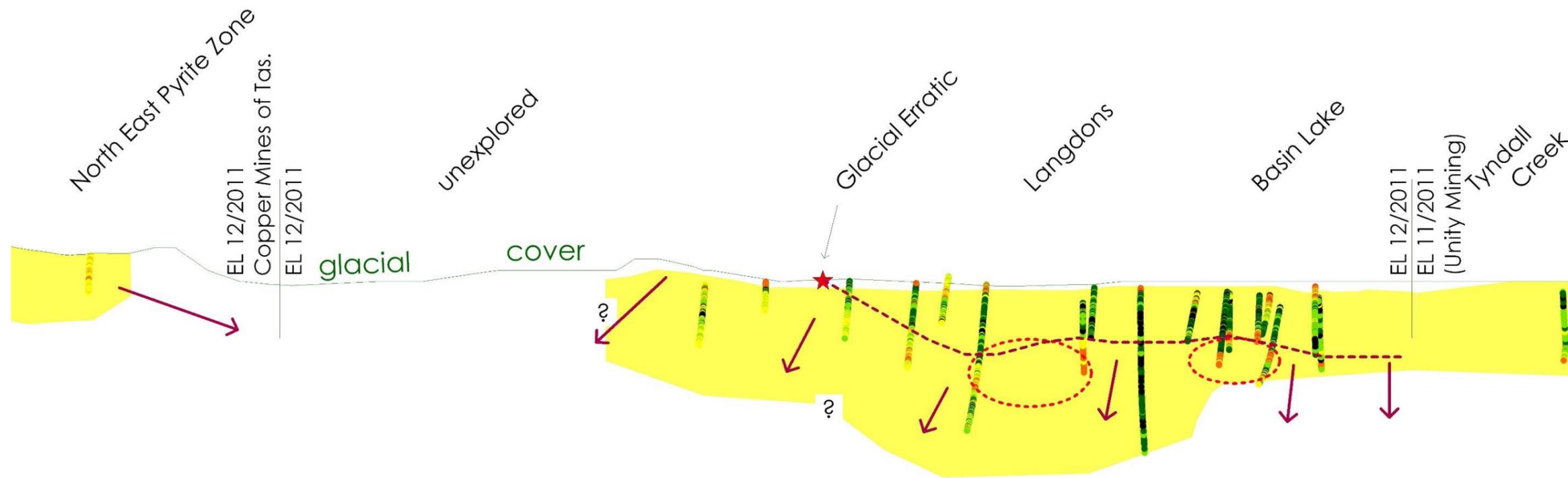
White Mica SWIR Spectra  
by wavelength Al<sub>2</sub>O<sub>3</sub> 2200nm feature

- 2,220 to 2,225
- 2,215 to 2,220
- 2,210 to 2,215
- 2,205 to 2,210
- 2,200 to 2,205
- 2,198 to 2,200
- 2,190 to 2,198
- all others



**Moina Gold Pty Ltd**

**Figure 4.2:** Long section (looking west) showing SWIR spectra colour coded by 2200nm Al<sub>2</sub>O<sub>3</sub> feature on drill traces with the apparent vectoring. Also shown are IP anomalies at Basin Lake and Langdons prospects. Very generalised approximate area of known alteration is shown in yellow.



- Alteration
- advanced argillic
  - argillic
  - sericitic
  - sericite+chlorite
  - propylitic
  - alteration extent

**Moina Gold Pty Ltd**

Figure 4.3: Long section (looking west) showing alteration assemblage, as determined by SWIR spectroscopy, on drill traces with apparent vectoring, also IP anomalies at Basin Lake and Langdons prospects. Very generalised approximate area of known alteration is shown in yellow.

## **5.0 Conclusions**

The modelling work to date has not diminished the prospectivity of the tenement

## **6.0 Proposed Work**

The proposed work is to complete the 3D modelling work and design the optimal drill holes for subsequent drilling.

## **7.0 Environmental Management**

There has been no active fieldwork and thus no environmental impact requiring management.

## 8.0 Expenditure

	\$
Geology	3,000
Geochemistry	500
Geophysics	1,000
Remote Sensing	0
Drilling	1,000
Gridding	0
Land Access	0
Rehabilitation	0
Feasibility Studies	0
Other	0
Administration	1,000
Total	6,500

## **9.0 References**

MacDonald, G. (2017). Documentation Accompanying Application for ERA 1033 Lake Margaret, unpublished report for Moina Gold Pty Ltd