

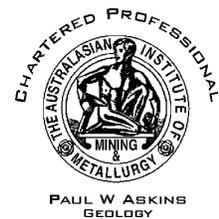


Geotech International Pty Ltd

**Annual Report**  
**for EL2/2016 Royal George**  
**for the Period 25 October 2016 to 24 October 2017**

**Date: October 2017**

**Author:**  
**P W ASKINS, MSc MAusIMM CP Geo**



## **ABSTRACT**

This report describes the investigations and activities completed within EL2/2016 during the period 25 October 2016 to 24 October 2017.

The Tenement is located 90km SE by road from Launceston.

The Tenement covers many occurrences of tin in quartz veins and greisen systems prospective for lithium.

Work done by Geotech International Pty Ltd during the period consisted of

- Assemble and organise past exploration data.
- Assess prospectivity for lithium.

**KEYWORDS**

NE Tasmania  
 Geology  
 Mineralisation  
 Tin  
 Lithium  
 Exploration Licence

**SUMMARY OF ACTIVITIES for EL2/2016 Royal George  
for the Period 25 October 2016 to 24 October 2017**

Work done by Geotech International Pty Ltd during the period consisted of

- Assemble and organise past exploration data.
- Assess prospectivity for lithium.

**CO-ORDINATES**

All lat/long co-ordinates in this report refer to the GDA94 Datum, unless stated otherwise.  
 All AMG co-ordinates in this report refer to the GDA94 - Zone55, unless stated otherwise.

**FILE SUMMARY LIST**

| File name                | Format | Contents      |
|--------------------------|--------|---------------|
| EL2-2016_2017_report.pdf | pdf    | Annual Report |

## **CONTENTS**

- 1.0 Introduction
- 2.0 Geological setting and mineralisation
- 3.0 Review of previous work
- 4.0 Exploration completed during the report period
- 5.0 Prospectivity for Lithium Deposits
- 6.0 Proposed Future Work
- 7.0 Expenditure
- 8.0 References

## **TABLES**

- Table 1 Tenement Details

## **FIGURES**

- Figures 1-4

### 1.0 INTRODUCTION

This report describes the investigations and activities completed within EL2/2016 during the period 25 October 2016 to 24 October 2017.

The Tenement is located 90km SE by road from Launceston, in north-east Tasmania.

Table 1 - Tenement Details

| Tenement                 | Holder                                   | Date Granted    | For          | Size              |
|--------------------------|--|-----------------|--------------|-------------------|
| EL2/2016<br>Royal George | Geotech<br>International Pty<br>Ltd 100% | 25 October 2016 | All Minerals | 60km <sup>2</sup> |

The bulk of the underlying land is Private Land or Reserves unrestricted for exploration.

The project lies within the Tasmania 1:25,000 map sheets of Roys and St Pauls Dome.

Access is via sealed roads, formed local roads and other rough tracks.

The Tenement covers a number of quartz cassiterite vein systems, and tin bearing greisens.

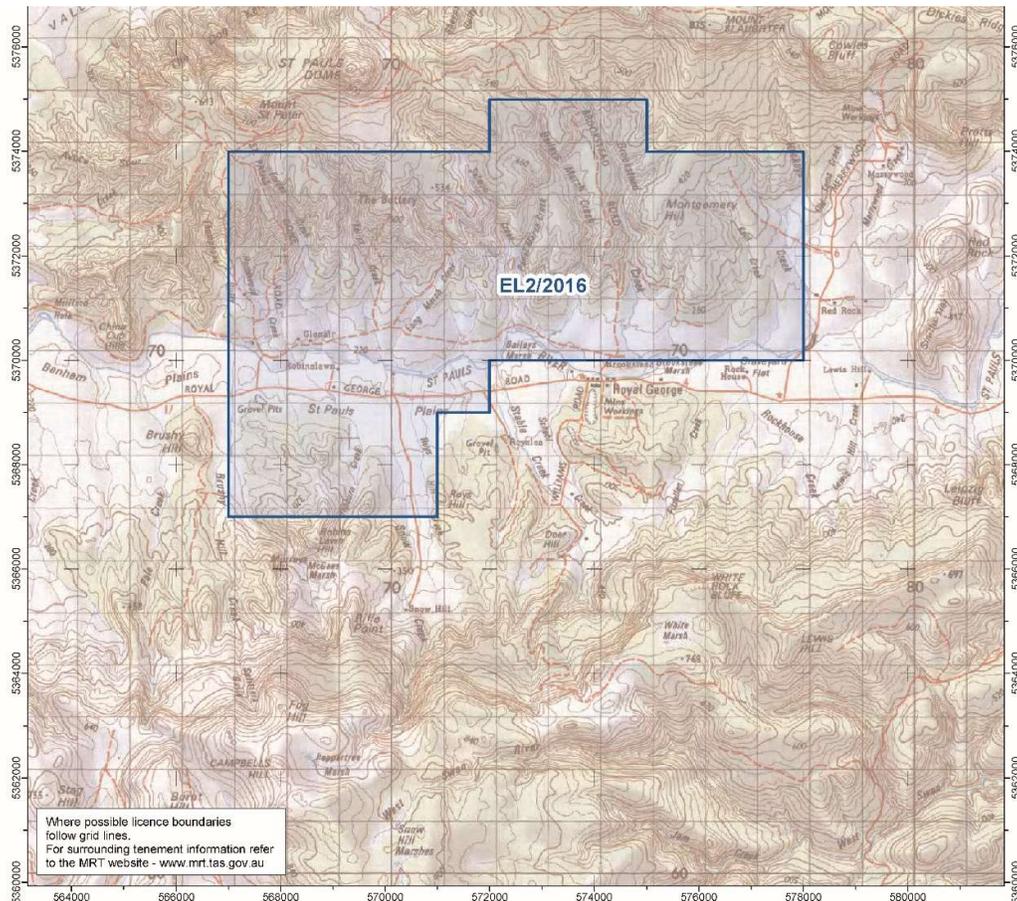


Fig. 1 Tenement Location.

## **2.0 GEOLOGICAL SETTING and MINERALISATION**

The Tenement covers part of the Devonian Ben Lomond Batholith, where specialised fractionated granites occur. These granites were the source of fluids responsible for known tin deposits including the greisen hosted Roy's Hill deposit and the Brookstead quartz vein systems. All mineralisation occurs in the apical parts of the granite bodies near or in the overlying Silurian Mathinna Bed clastic metasedimentary rocks.

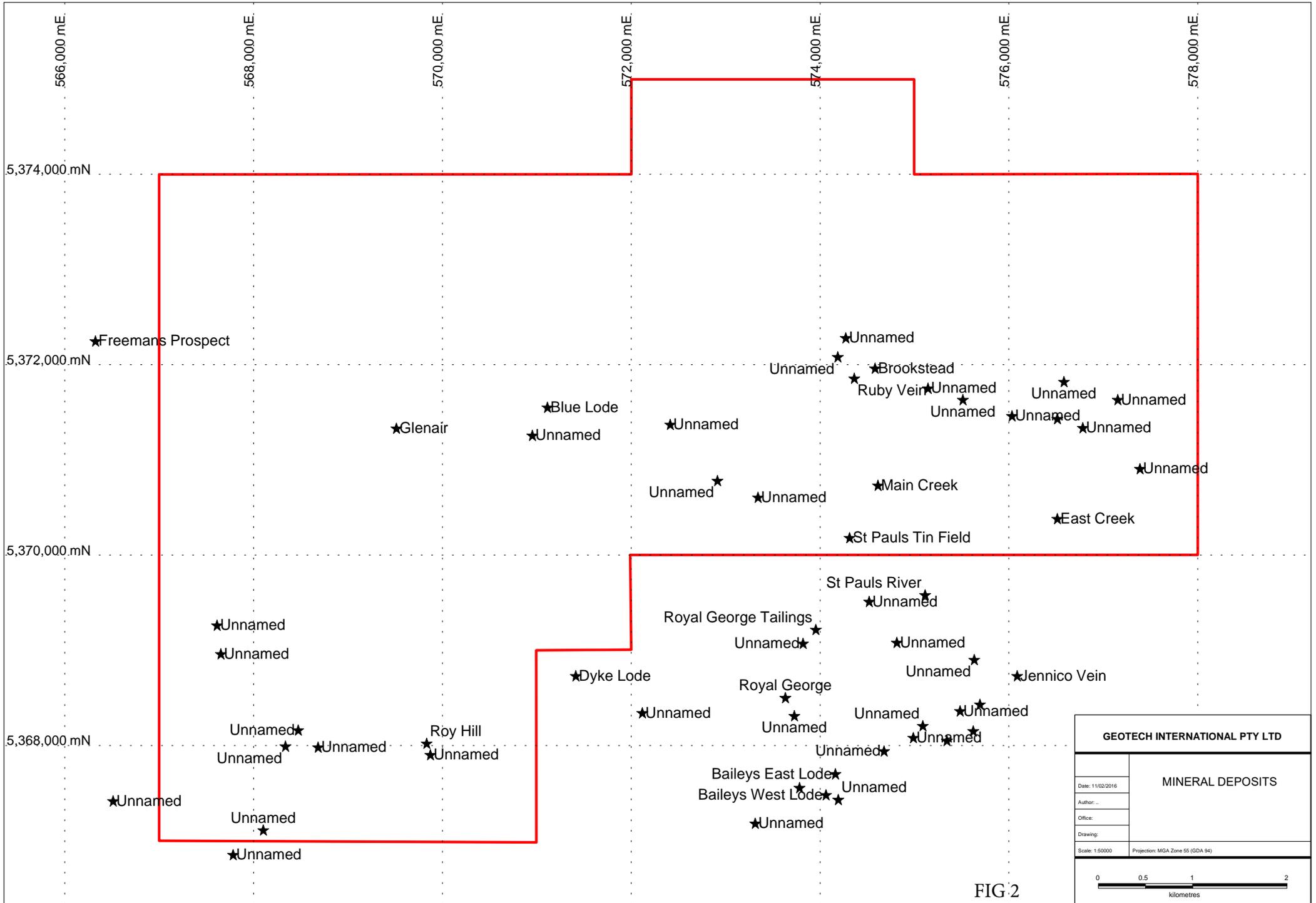
Unconformably overlying the Devonian and Silurian rocks are flat lying unmineralised Permian clastic rocks.

In the Tenement area along the St Pauls River Valley the Permian sequence has largely been eroded away.

Minor Tertiary basalt, with other unconsolidated Tertiary and Quaternary colluvium and alluvium, occupies part of the valley.

Fig 2 shows the distribution of known deposits. Fig 4 shows MRT mapped geology at 1:25 000 scale.

Past production of tin from the area is modest and most has come from the Royal George deposit, located in competitor ground about 2km SE of the Tenement.



|                                      |                                  |
|--------------------------------------|----------------------------------|
| <b>GEOTECH INTERNATIONAL PTY LTD</b> |                                  |
| <b>MINERAL DEPOSITS</b>              |                                  |
| Date: 11/02/2016                     |                                  |
| Author: ...                          |                                  |
| Office:                              |                                  |
| Drawing:                             |                                  |
| Scale: 1:50000                       | Projection: MGA Zone 55 (GDA 94) |
|                                      |                                  |

FIG-2

### **3.0 REVIEW OF PREVIOUS WORK**

A systematic appraisal of past work is underway and will be reported upon in the next annual report. Most work has centred on exploration for tin.

## **4.0 EXPLORATION COMPLETED DURING THE REPORT PERIOD**

### **4.1 Assemble and Organize Past Data.**

All available relevant open file data, Mineral Resources Tasmania reports and datasets and University theses have been assembled and a review is underway.

### **4.2 Review of Prospectivity for Lithium**

A desktop compilation of exploration history and desktop reviews of prospectivity for several commodities are planned. Lithium was chosen as the first commodity for review, and results are summarised in Section 5 below.

## 5.0 PROSPECTIVITY FOR LITHIUM DEPOSITS

### 5.1 Analogy with the Cinovec deposit.

The famous Cinovec lithium deposit near Zinnwald on the Czech Republic- German border has obvious geological similarities to deposits in the tenement area. The lithium is contained in zinnwaldite, a lithium mica.

At Cinovec a pervasively altered and greisenised lithium-albite granite (with quartz, topaz, zinnwaldite and cassiterite) occurs in the upper part of a cupola, (European Metals, 2017).

Cinovec is an historic mine containing a significant undeveloped lithium-tin resource with by-product potential including tungsten, rubidium, scandium, niobium and tantalum. It is a globally significant hard rock lithium deposit with a total Inferred Mineral Resource of 514.8Mt @ 0.43% Li<sub>2</sub>O. Within this resource lies one of the largest undeveloped tin deposits in the world, with total Indicated and Inferred Mineral Resources of 79.7Mt grading 0.23% Sn for 183kt of contained tin.

Metallurgical pilot testing of the Cinovec South ore in the 1970s achieved good recoveries (96% Sn and 84% W) using gravity and gravity/flotation flow sheets. Zinnwaldite reports to the gravity reject, from which it can be concentrated by magnets. Lithium carbonate was produced on industrial scale during mining in the 1970s.

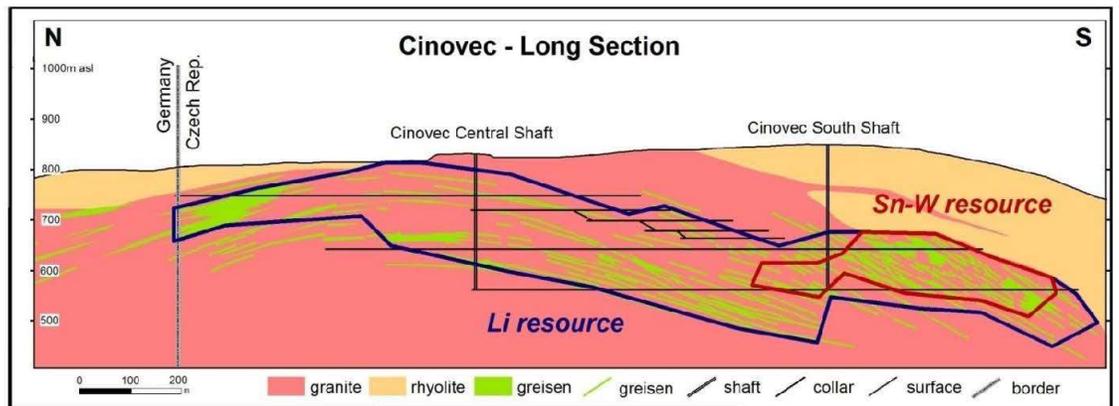


Fig 3. Cinovec schematic long section

It is interesting that much of the Cinovec lithium resource carries little or low grade tin, so the known low grades of tin in greisens in the Mt Paris area need not be discouraging for lithium potential.

### 5.2 Previous records of and exploration for lithium in the Tenement.

Zinnwaldite is known in the Mt Paris Pluton to the north, Higgins, (1990), but none is yet reported in the Ben Lomond Pluton.

The MRT RockChem database includes samples collected in and near the tenement, analysed for lithium. These were derived from De Graaf, (1983).

De Graaf, (1983) and (1984) reported on 7 alkali granite and greisen samples and one quartz vein collected in the Ben Lomond Batholith near and in the tenement. Most of the samples were from the Royal George tin deposit. The granites contain fluorite, topaz, and tourmaline so are highly fractionated. Lithium content varies from 90 to 230ppm-these values are high compared to Li content of non-specialised granites in the MRT RockChem database; such non-specialised granites generally contain less than 60ppm Li. The mica in the greisens is described as muscovite; zinnwaldite if it exists was not recognised. The location of the samples is shown on Fig 4.

Twelvetrees, (1899), reported bronze coloured micas, which he thought were lithia micas, in greisens at the Roy's Hill tin mine and the St Paul's tin mine.

Reid, (1923), and Reid & Henderson (1929), reported that greisen accompanying the tin bearing quartz veins at the Brookstead tin mine contained lithia micas.

An indirect reference to lithium in the greisens is in Petterd (1897), "*Zinnwaldite* (Lithia muscovite). Occurs in granite, and thus forms the common white mica of the stanniferous rocks of the East Coast."

Despite a thorough search of all past reports I can find no mention of previous company exploration specifically for lithium.

Lithium analyses were included in a suite of other analyses for two samples collected for uranium exploration by Minemakers, Fulton (2010). One sample, (to the south of the tenement), of sericitic granite contained 137ppm Li. The location of the samples is shown on Fig 4.

### 5.3 Potential for lithium

Lithium in commercially important concentrations could occur in the Tenement in lithium micas such as zinnwaldite and lepidolite.

Micas in greisens are abundant in the Tenement, but it is not known to what extent zinnwaldite is present as the dominant mica. As stated previously lithia micas are recorded but generally past descriptions of the mica in hand specimen and thin section refer only to white mica. Lepidolite because of its pink colour would probably have been recorded if it were present in the area, but zinnwaldite without chemical analysis can be difficult to identify and so may have been unrecognized. Most zinnwaldite can be a buff to bronze colour so especially in weathered rocks its identity can be masked.

Assuming that indeed the greisens are rich in zinnwaldite then the largest individual greisen bodies or the best swarms of greisens should be sought.

The most impressive known single body of greisen in the area is at the Roy's Hill Mine. Here a partly exposed flat lying greisen occurs as an altered carapace of granite, beneath the contact with Mathinna beds, in turn also overlain unconformably by Permian sandstone. From mapping by Whitaker (1986) an area about 200m by 125m appears to contain greisen of thickness greater than 3m, at depths less than 10m; more greisen under thicker cover

presumably extends further south. The greisen contains about 25% micas and about 0.3% tin, so if the mica is zinnwaldite the prospect holds commercial promise.

The best known swarm of greisen veins appears to be at Brookstead, where an obvious exploration target would be a granite hosted sheeted quartz-cassiterite vein system with zinnwaldite making up the micas in the accompanying greisen alteration.

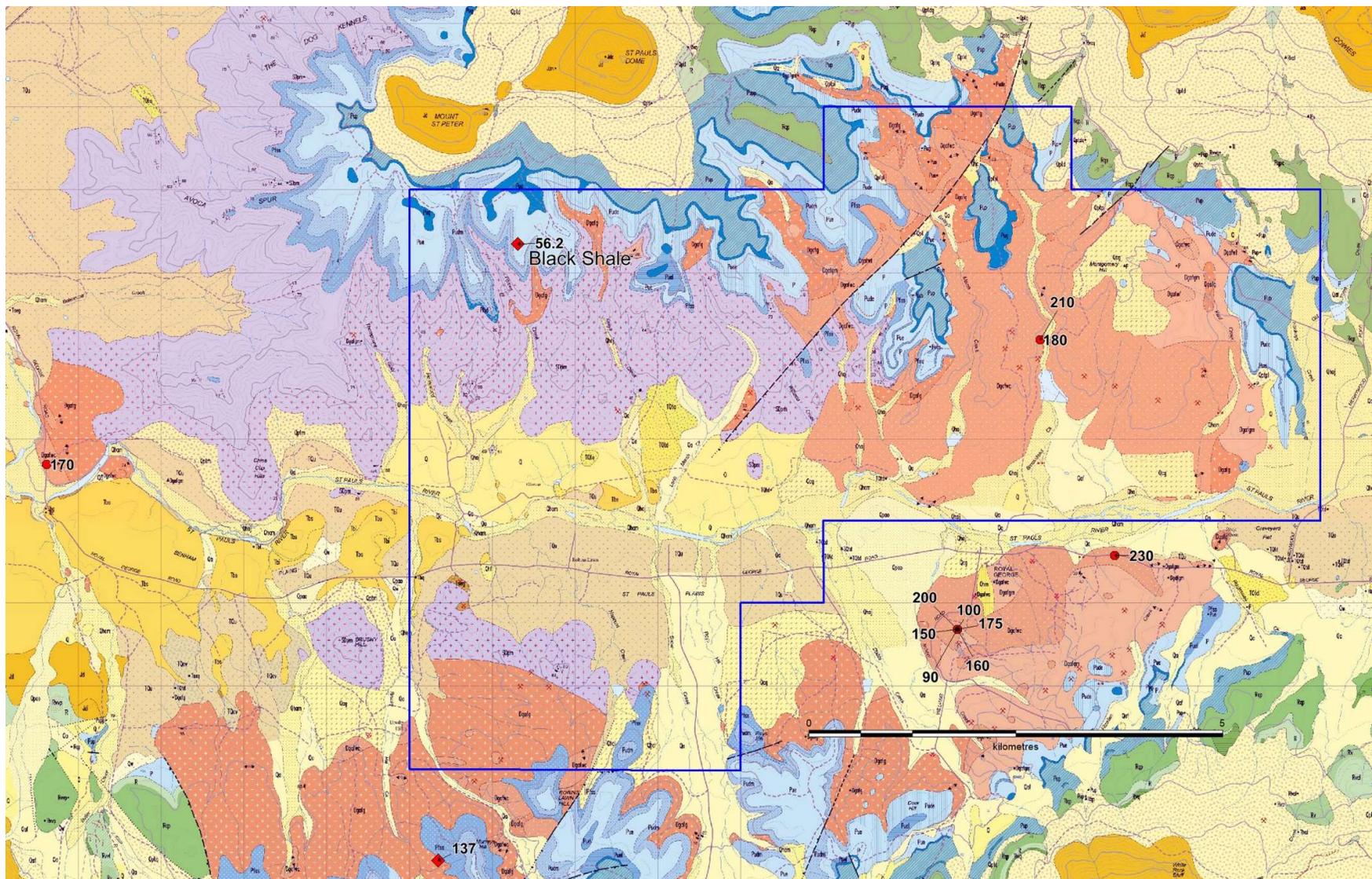


Fig 4 Lithium ppm in Rocks. All available published analyses. All are granite or greisen samples except the one labelled black shale. Red circles De Graaf 1984, Red diamonds Fulton 2010.

## 6.0 PROPOSED FUTURE WORK

This proposed to be

- Conclude review of past exploration.
- Field investigation and sampling of identified lithium targets at Roy's Hill and Brookstead.
- Desktop review of prospectivity of the area for tin and other commodities.

## 7.0 EXPENDITURE

Expenditures have been reported via MRT Quarterly Returns.

## 8.0 REFERENCES

De Graaf, L, 1983. Regional Study of the Ben Lomond Granite, The Shell Co Aust Ltd, TCR83-2062.

De Graaf, L, 1984. A preliminary Regional Assessment of the Granites and Tin Potential of NE Tasmania, The Shell Co Aust Ltd, TCR 84\_2088.

European Metals, 2017. Cinovec Lithium / Tin Project, <http://europeanmet.com/projects-cinoveclithiumtinproject.html>

Fulton, R, 2010, Exploration Licence 59/2007 Royal George annual and final report to 26 November 2010. Minemakers TTT Pty Ltd. TCR10\_6181.

Higgins, NC, 1990. Comment on "Origin of alkali-feldspar granites: An example from the Poimena Granite, northeastern Tasmania, Australia" *Geochimica et Cosmochimica Acta* V54 No 8 pp 2305-2311.

Petterd, WF, 1897. Notes on some recently discovered and other minerals occurring in Tasmania. Source unknown.

Reid, AM, 1923, Report on the Brookstead tin mine. Unpublished record, Tasmania Department of Mines, 12p, UR1923\_125\_136.

Reid, A.M., Henderson, Q.J., 1929, Avoca Mineral District, Tasmania Geol. Surv. Bull. 40.

Twelvetreets, WH, 1899. Notes on Some Tin Mines in the St Paul's River Valley, near Avoca. Tasmanian Secretary for Mines Report 1899-1900, Report OS-143.

Whitaker, AJ, 1986. Progress Report on Exploration for the period 18/7/85 to 31/12/85 and Final Report, EL30/84 Avoca. Shell Co Aust Ltd, TCR86\_2556.