



**Annual Report**  
**for**  
**EL11/2008 Mt Cameron**  
**for the Period 16 December 2013 to 15 December 2014**

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**Date: December 2014**



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## **ABSTRACT**

This report describes the exploration activities completed within EL11/2008 from 16 December 2013 until 15 December 2014.

The Tenement is located west of Gladstone, a small mining town located 140 km east of Launceston.

The tenement covers a number of past producer alluvial tin mines and many known alluvial tin deposits.

The company's main focus was exploration for tin, in alluvial deposits and in bedrock.

The area of the licence was reduced to 27km<sup>2</sup> during the period. The term of the Licence expires on 15 December 2014, so application has been made for renewal.

A field visit to the Mt Cameron northern flank was undertaken. A probable paleochannel was found.

It is postulated that a large paleochannel system runs westward along the northern flank of Mt Cameron in an analogous position to that of the Endurance system to the south of Mt Cameron.

A study of remote sensed imagery north of Mt Cameron was undertaken. Studies of the Clarence Bonser system are underway.

**KEYWORDS**

NE Tasmania  
 Geology  
 Mineralisation  
 Alluvial  
 Paleochannel  
 Primary Deposits  
 Granite  
 Tin

**SUMMARY OF ACTIVITIES for Relinquished portions of EL11/2008 Mt Cameron for the Period 16 December 2013 to 15 December 2014**

Comprised a field visit to the north flank of Mt Cameron, and a desk remote sensing study of the northern part of the Licence. Underway is a review of the Clarence Bonser systems to the west of Mt Cameron and west of Monarch.

**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
EL112008_2014_annual_report.pdf	pdf	Annual Report

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## 1.0 INTRODUCTION

This report describes the exploration activities completed within EL11/2008 from 16 December 2013 until 15 December 2014.

The Tenement is located west of Gladstone, a small mining town located 140 km east of Launceston.

Table 1 – Tenement Details

<b>Tenement</b>	<b>Holder</b>	<b>Date Granted</b>	<b>Original Size</b>	<b>Reduced area (after 15 Dec 2013)</b>
EL11/2008 Mt Cameron	Tin Dragon Pty Ltd 100%	2008 (Categories 1 and 5)	50 km <sup>2</sup>	27 km <sup>2</sup>

The tenement was reduced in size during the period and now also excludes the Gladstone Fossicking Area, so the area now held is shown on Fig 1. The previous area is shown on Fig 2.

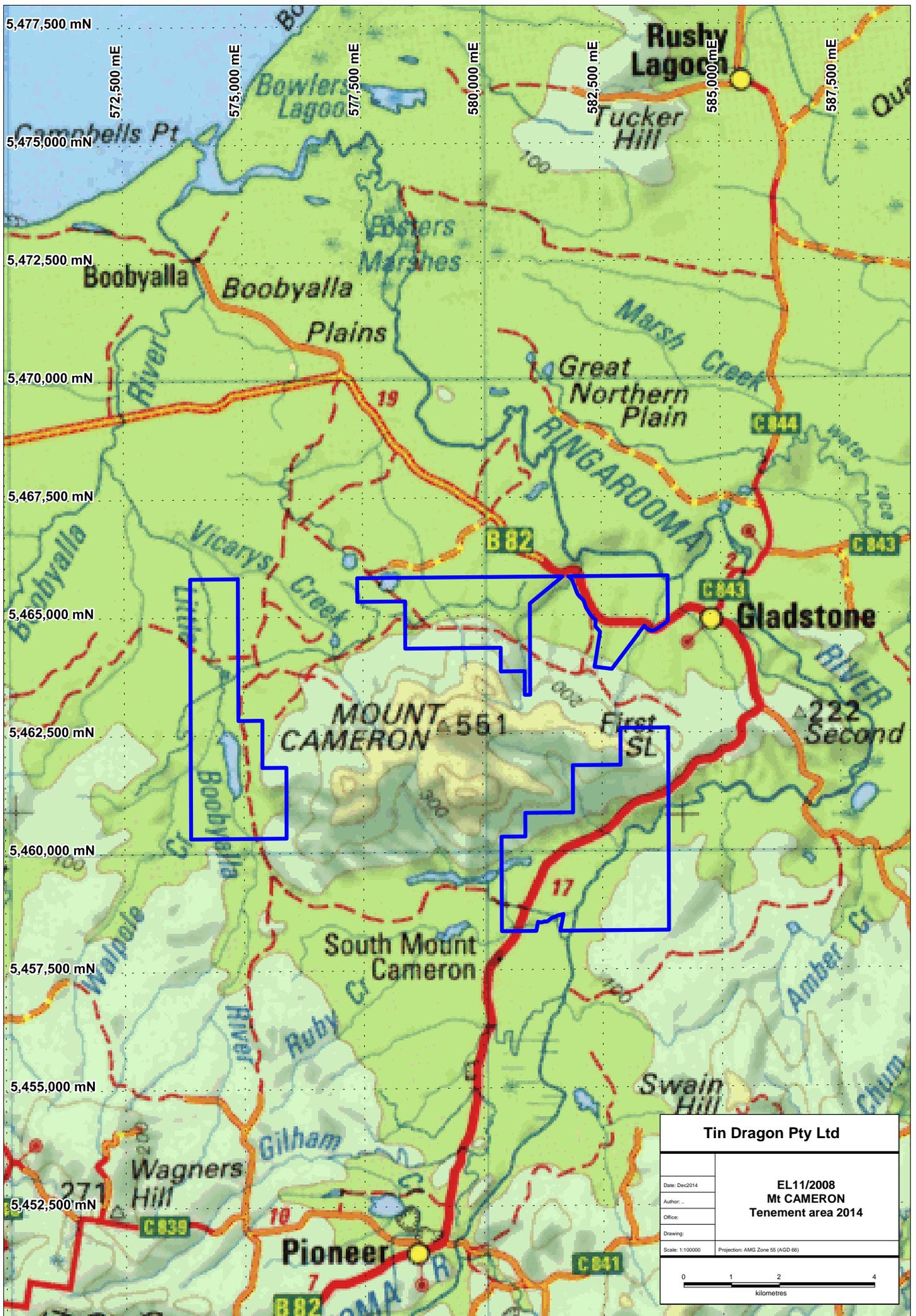
The project lies within the Tasmania NE (SK55-21) 1:250,000 map sheet, and the 1:25,000 map sheets of Gladstone (5846) and Monarch (5646).

The peripheries of the tenement are well served with roads and tracks, but there are no gazetted tracks or roads into the central massif part of the area.

The tenement covers a number of past producer alluvial tin mines and many known alluvial tin deposits.

The company's main focus was exploration for tin, in alluvial deposits and in bedrock.

The renewal term of the Licence expires on 15 December 2014, so application has been made for renewal.



<b>Tin Dragon Pty Ltd</b>	
Date: Dec2014	<b>EL11/2008 Mt CAMERON Tenement area 2014</b>
Author: ..	
Office:	
Drawing:	
Scale: 1:100000	Projection: AMG Zone 55 (AGD 86)

**Fig 1**

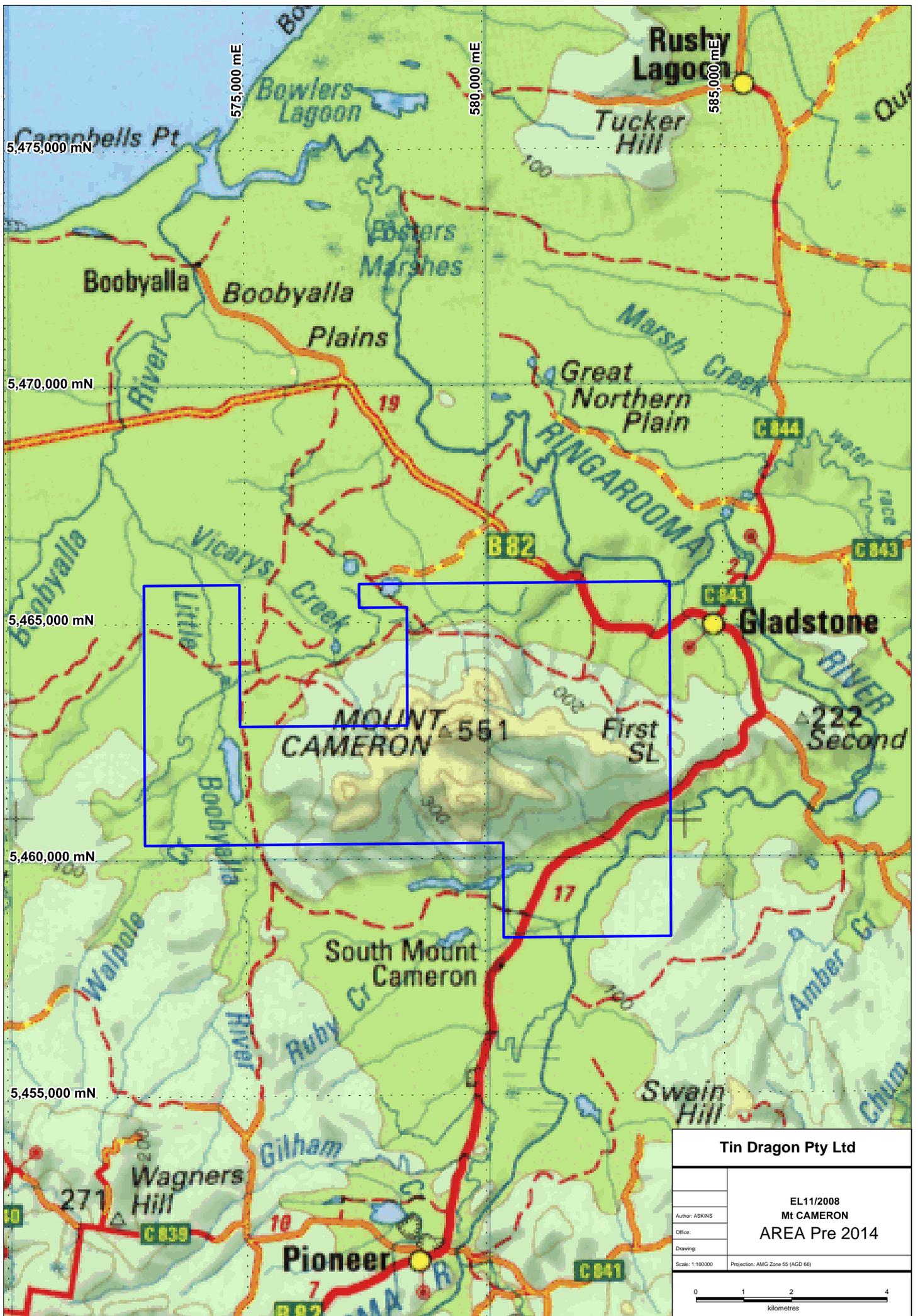


Fig 2

## 2.0 GEOLOGICAL SETTING and MINERALISATION

The Tenement is dominated by the topographically prominent Mt Cameron, consisting of one distinctive major phase of a Devonian granite suite. The phase is easily distinguished from those surrounding it because it has a prominent airborne thorium response, Fig 3.

Mt Cameron stands prominently in an otherwise flat landscape. Geomorphologically this attests to a neotectonic origin; it is interpreted to be a pop-up structure resulting from regional compression. The neotectonics will be no older than Eocene, and the main movement is likely to much younger, namely Miocene or younger, because otherwise erosion would have levelled the hill closer to the prevailing plain level. The bounding faults are not directly mapped though must occur near the change of slopes. These faults will be close to or on the contacts of the thorium rich granite phase.

The central massif area contains no known mineralisation. It is possible that prior to uplift the carapace was mineralised with tin bearing greisen sheets and vein systems, but these have been entirely eroded and thus have contributed the tin (cassiterite) to the peripheral alluvial tin deposits such as Monarch, Endurance and Clarence.

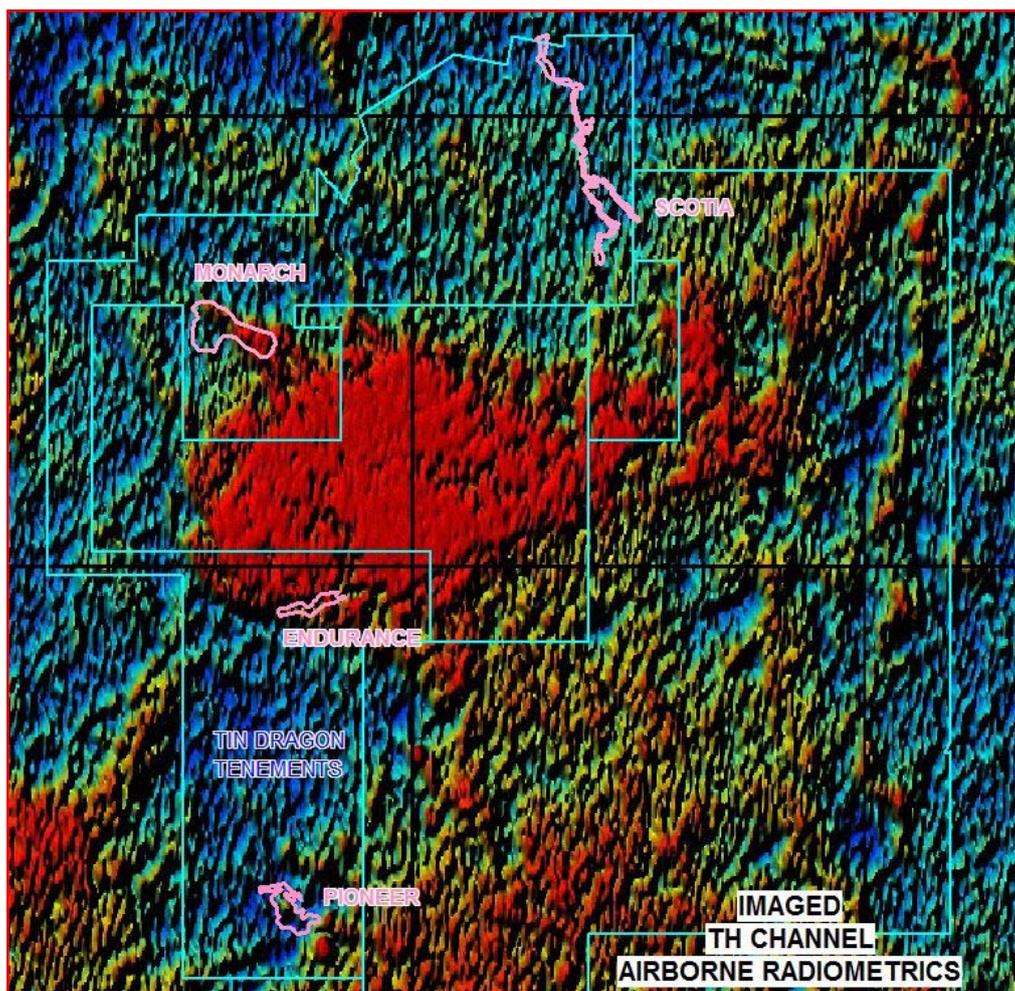


Fig 3. Intense Thorium anomaly corresponding to the Mt Cameron granite body.

### **3.0 PREVIOUS WORK**

Exploration work by other companies, other organisations and by Tin Dragon can be found in the 2009, 2010, 2011 and 2012 Annual Reports, and is not repeated here.

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

Work done by Tin Dragon during the period consisted of a field visit to the north flank of Mt Cameron, and a desk remote sensing study of the northern part of the Licence. Underway is a review of the Clarence Bonser systems to the west of Mt Cameron and west of Monarch; this is a neglected area in appraisals of the tin potential of the region. A review will appear in the next annual report.

## 5.0 FIELD VISIT NORTH FLANK Mt CAMERON

### Field Visit and discovery of a paleochannel

At 583220E/5464030N, and for extensive areas around, the soils are dominated by angular and rounded quartz derived presumably from granite. There are rare rounded small (to 1cm) pebbles of Mathinna Bed quartzite, yet Mathinna beds occur only downslope 600m to the north and none are mapped upslope where a source could be expected. In the roots of fallen trees a better idea of the subsurface material can be gained. There is coarse white quartz presumably derived from quartz veins, and rare small rounded quartzite pebbles. The material is alluvium/eluvium, not granite as mapped on the 25 000 scale Gladstone geological sheet. An unrecognised alluvial paleochannel may exist.

Further east around 584740E/5464220N near unmapped old alluvial workings, there is no basement outcrop, and likewise rounded Mathinna bed quartzite/sandstone pebbles occur. Billy also occurs. The old workings lie in the current drainages, in quite recent alluvium. It seems unlikely that Mathinna bed quartzite is derived from updrainage areas, and the small distance south to the Mt Cameron high slopes seems insufficient to generate such well rounded pebbles. Thus this alluvium is probably reworked material from a paleochannel.

### The Paleochannel Hypothesis

I postulate that a paleochannel runs westward along the northern flank of Mt Cameron in an analogous position to that of the Endurance system to the south of Mt Cameron.

It is postulated to run through to Monarch, and so explains the distal characteristics of the Monarch alluvial body (see below).

The position of the proposed paleochannel is shown on Figs 4 and 5.

This is a very large paleochannel, which if tin bearing will have a potentially large economic impact.

It may have been an ancient iteration of the Ringarooma River, which has been displaced by tectonism north to its current position. The Ringarooma River system is known to carry sapphires, so this would explain the presence of sapphires at Monarch.

Locally where it is cut by existing modern gullies there are known small workings for alluvial tin and topaz. On Th (and U, and K) imagery, Fig.5, local high tenor areas in gullies and creeks give clues to the presence of the interpreted paleochannel. It may not now be continuous because of erosion and tectonism, and so may be absent locally, for example at the east end of Monarch.

### The Monarch Connection

The Monarch Deposit, west of the Mt Cameron licence, sits north of Mt Cameron, isolated from other major paleochannel deposits. Why is it alone? Is it unique, or do similar deposits occur, but as yet are undiscovered?

The position of the Monarch deposit at the northern foot of the Mt Cameron granite massif suggests that Monarch's alluvium and contained cassiterite has a nearby provenance within that massif. A favoured source would be greisen or sheeted vein systems at the original and now eroded carapace of the granite. Because of the pattern of drainages in the massif the source areas can be only a few hundred metres away at most.

If this explanation is correct why are there not more similar deposits on the flank of Mt Cameron towards the east? The source granite suite is geologically identical (as mapped by MRT) and the U- Th-K airborne radiometric signatures are identical, and there are many streams and gullies to erode and deliver alluvium.

The explanation suffers from some considerable problems:

- The cassiterite in the Monarch deposit is fine grained and some is within composite quartz grains. Because there is little or no coarse grained cassiterite, as is known in the other major deposits in the region, there is a strong case to argue that there was a distal rather than proximal source.
- Sapphire is known at Monarch yet there are no known basalt sources nearby. Monarch is not a basalt covered lead, as occurs for example around Derby.
- The gravels of the deposit comprise very well rounded quartz and quartzite pebbles. Whilst there are adjacent metamorphosed Mathinna beds from which to derive the quartzite, the exceptional roundness of the pebbles demands transport from a distance much greater than a proximal few hundred metres.

### **The Neotectonic History and the consequences for paleochannel development**

I have postulated that the entire Mt Cameron massif is a horst, raised up in the Tertiary above its surrounding plains, (Section 2). The plains occupy an old land surface, eroded flat, and Mt Cameron is a rugged juvenile topography.

The Ringarooma River has cut its way into bedrock between South Mt Cameron and Gladstone, rather than meandering through a flat plain as elsewhere. This is evidence that the terrain is still rising there and erosion along the river is keeping pace with the uplift.

The tectonic implications of a Mt Cameron horst on the geological development of the paleochannel tin deposits in the region is doubtless profound, but have received no attention in the literature.

Paleochannels, many of Eocene to Miocene age, and predating or coeval with the progressive raising of Mt Cameron, will have changed direction, been eroded and reworked possibly several times.

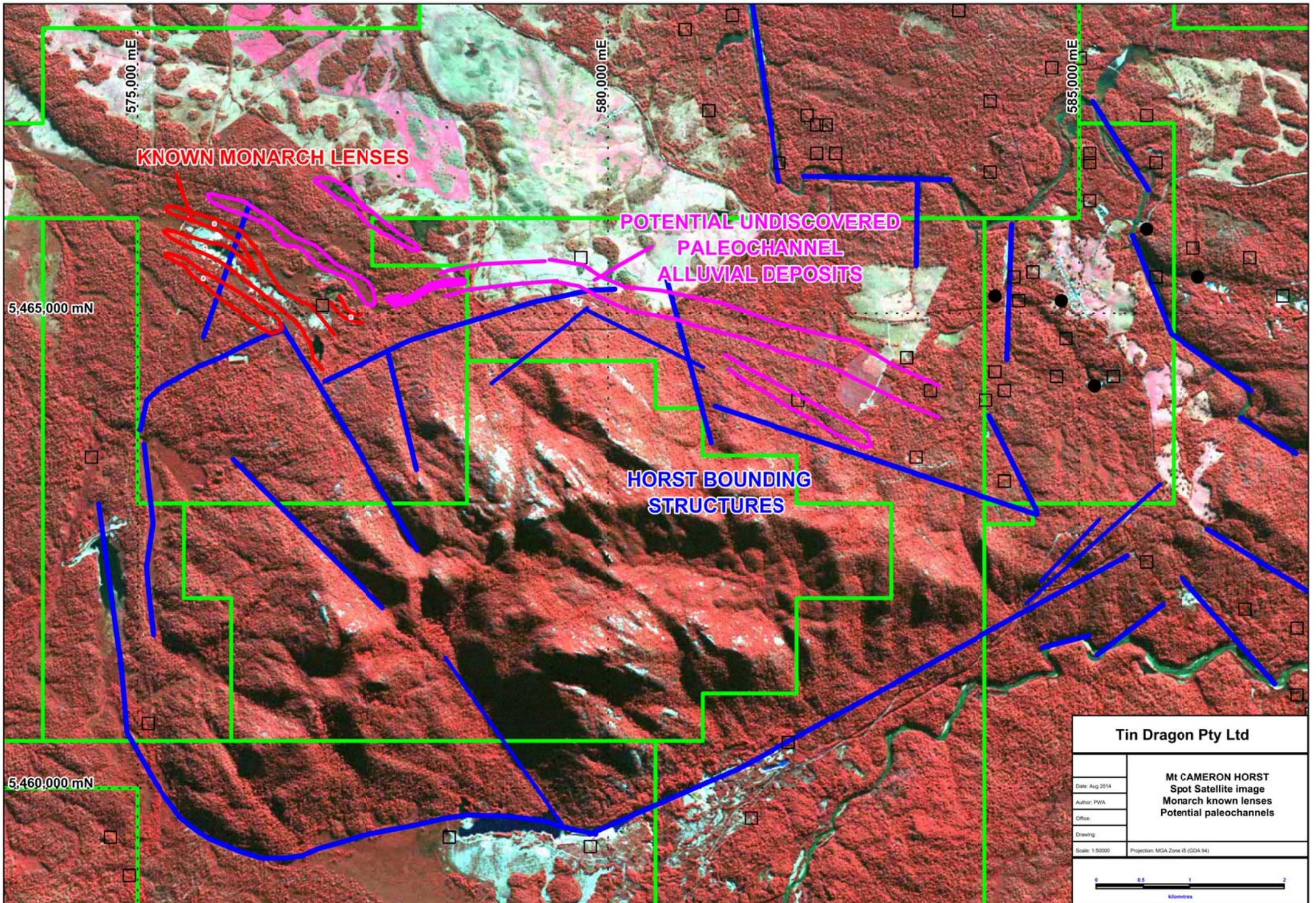
The bounding faults for the Mt Cameron horst are interpreted from a change in slope, from topographic features visible on satellite imagery such as SPOT, and the sharp boundaries in high tenor K-U-Th domains on airborne radiometric data, Figs 4 and 5.

**Potential for new resources**

As discussed above there is a potential for large extensions of Monarch to the east in the dissected paleochannel. Possibly the best potential is eastwards in the Mt Cameron Exploration Licence EL11/2008.

**Future exploration program**

The next phase of exploration should include geological mapping and sampling to seek further evidence of the existence of this large paleochannel, before planning an appropriate evaluation phase.



**Fig 4**

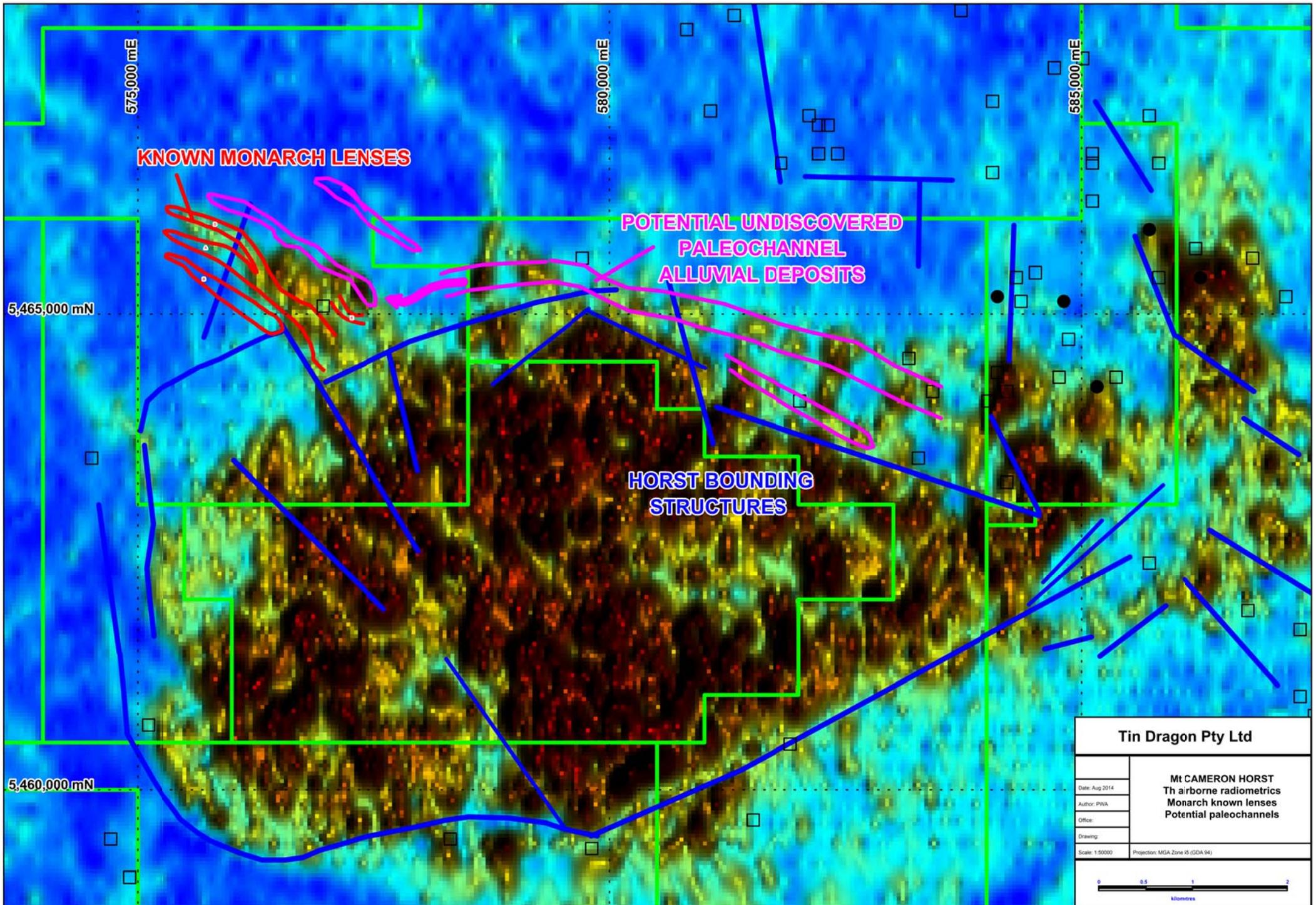


Fig 5

## 6.0 REMOTE SENSING STUDY

The north flank area of Mt Cameron was studied by J Stewart with spot and google imagery. It was found that fracture analysis was particularly difficult, which may reflect the cover of paleochannel material. The zone along the Mathinna bed-granite contact has high potential, Fig 6. Aspects of this study combined with the current study of the neglected Bonser system will appear in the next annual report.

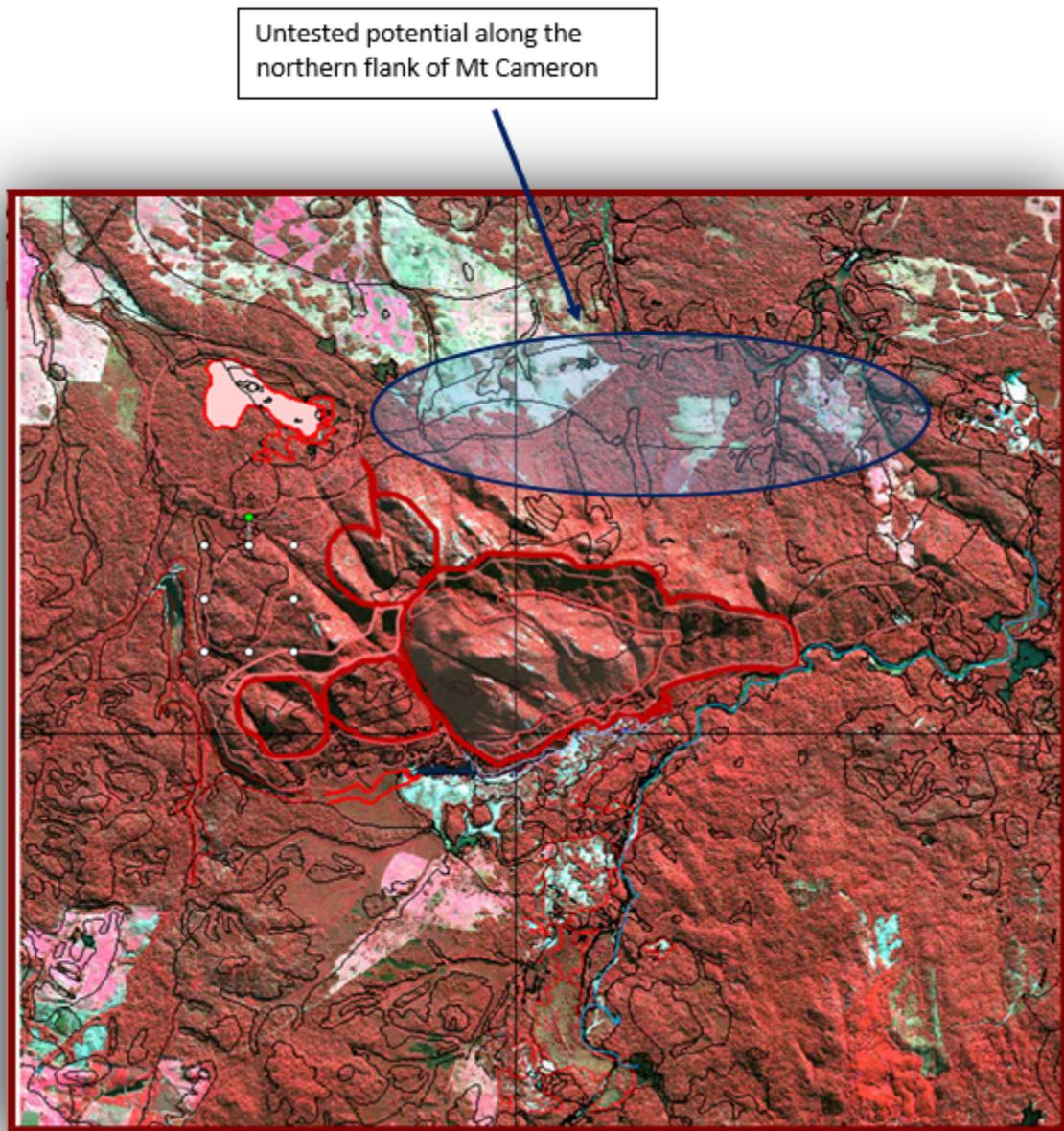


Fig 6

## **7.0 GENERAL CONCLUSIONS**

It is postulated a large tin bearing paleochannel system along the north flank of Mt Cameron may exist. This may be analogous to the economically important known Endurance system on the southern flank.

## **8.0 EXPENDITURE**

Expenditures have been reported via MRT Quarterly Returns.