

**Annual Report**  
**EL 30/2006 Golconda**  
**2012/2013**



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Mineral Resources Tasmania

*Photo of quartz veining in Tobacco Creek*

## **Abstract**

Tamar Gold Ltd underwent a change of management in late 2012 and after a review of the ground held a decision was made to only explore areas that were prospective for the Intrusive-related Gold System (IRGS) style of mineralisation. Part of the area covered by EL 30/2006 is regarded as having all the characteristics required to be prospective for IRGS mineralisation.

During the past year a soil sampling program was completed over the Cradle Creek Goldfield. Other work included a regional magnetic compilation, a literature review, a compilation of the hard rock gold prospects and a summary of IRGS mineralisation.

This report concludes with a forward program that includes a 250m diamond drill hole at Cradle Creek.

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## **Appendices**

### Appendix 1

Review of past exploration in the Lisle, Cradle Creek and Golconda Goldfields by John Pemberton.

### Appendix 2

Intrusion-related Gold Systems. A brief summary by Bruce Pertzelt.

### Appendix 3

Lisle IRGS Exploration Project Deposit Summary by John Pemberton.

## Introduction

### Exploration objective

Tamar Gold Ltd underwent a change of management in late 2012 and after a review of the ground held a decision was made to only retain areas that were prospective for the Intrusive-related Gold System (IRGS) style of mineralisation.

Bruce Pertzelt was asked to comment on the IIRGS style of mineralisation (see Appendix 2). As a consequence of his positive summary and the unrecognised potential within some of the ground held by Tamar Gold the company decided to focus its exploration effort on those areas in North East Tasmania that were prospective for IRGS mineralisation.

### Geological setting

The area is dominated by ridges of hornfelsed Mathinna Supergroup sediments surrounding basins which have eroded Lisle Granodiorite on the slopes and floors.

The Mathinna Supergroup (see the MRT revision of the Mathinna Stratigraphy in figure 3 and map in figure 4 below) in the Lisle – Golconda area has now been designated as the Lone Star Siltstone which consists of a sequence of thin bedded siltstones coarsening up to fine grained sandstones (Seymour et al., 2011). They form north north west trending folds with several fold closures and a weak north north west striking cleavage.

Revised stratigraphy for Mathinna Supergroup							
	Group	Formation	Member	Age	Brief description	ASUD status	
Mathinna Supergroup	Panama Group	Sideling Sandstone		Early Devonian (plant fossils)	Dominantly fine-grained sandstone, some interbedded siltstone	Spelling correction & formalisation of existing unit	
		Lone Star Siltstone		Late Silurian (graptolites)	Dominantly thin-bedded siltstone, with interbedded fine-grained sandstone increasing towards top	New formal unit	
		Retreat Formation		Silurian?	Interbedded turbiditic medium to very fine grained sandstone and subordinate siltstone-mudstone	New formal unit	
		Yarrow Creek Mudstone		Silurian?	Dominantly thin-bedded mudstone, with subordinate cross-laminated siltstone	New formal unit	
	<i>Inferred fault contact</i>						
	Tippogoree Group	Turquoise Bluff Slate			Early–Middle Ordovician (graptolites)	Phyllitic dark grey-black slate; recumbent folds and cleavage	Existing formal unit
			Industry Road Member		Early–Middle Ordovician?	Interbedded phyllitic slate and foliated very fine-grained sandstone; ridge-forming; recumbent folds and cleavage	New formal unit
Stony Head Sandstone				Early Ordovician?	Graded thick-bedded fine-grained turbiditic sandstone with minor interbedded pelite; large-scale recumbent folds and cleavage	Existing formal unit	

Figure 1. Stratigraphy Mathinna Supergroup (from Seymour et al, 2011).

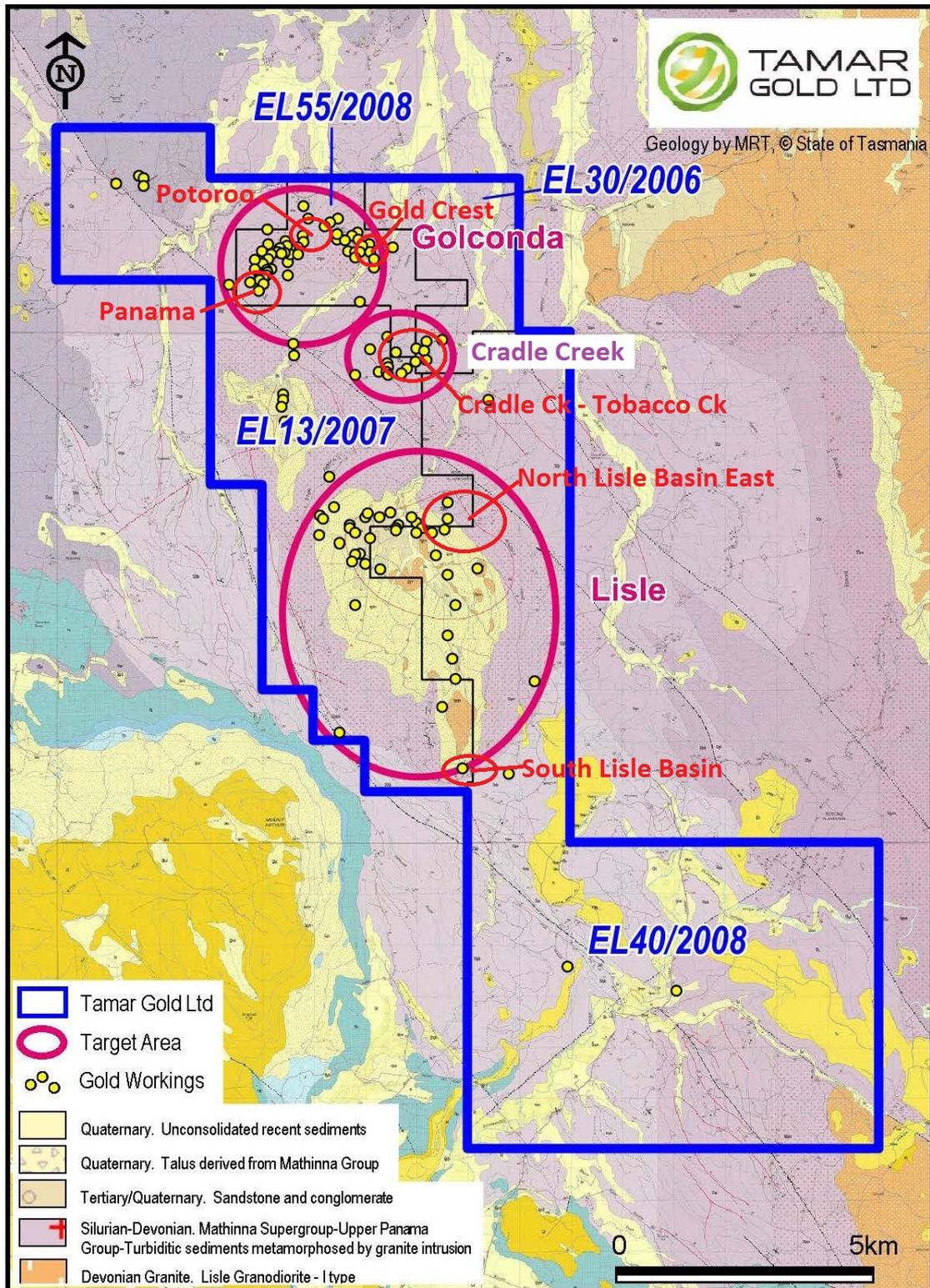
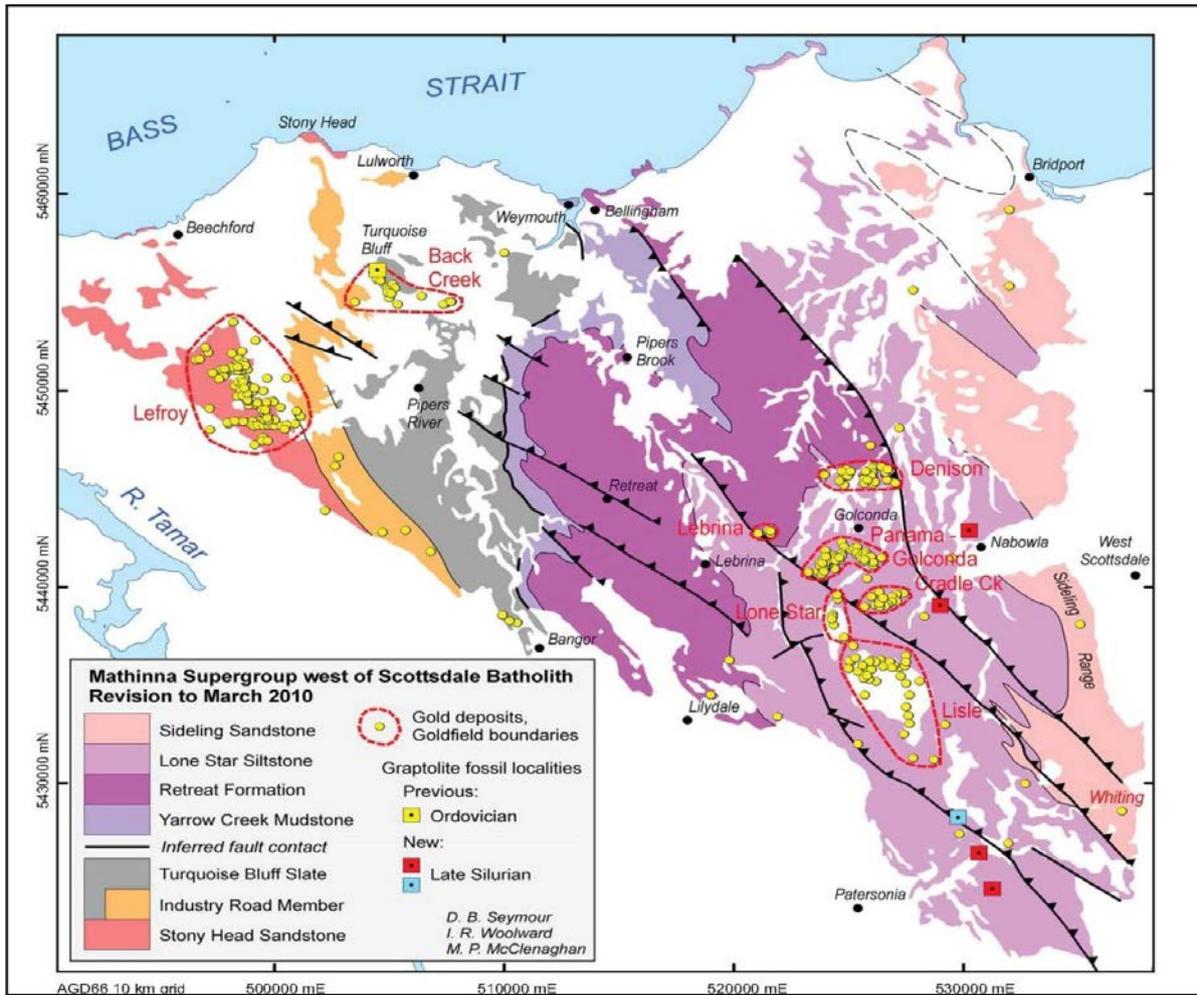
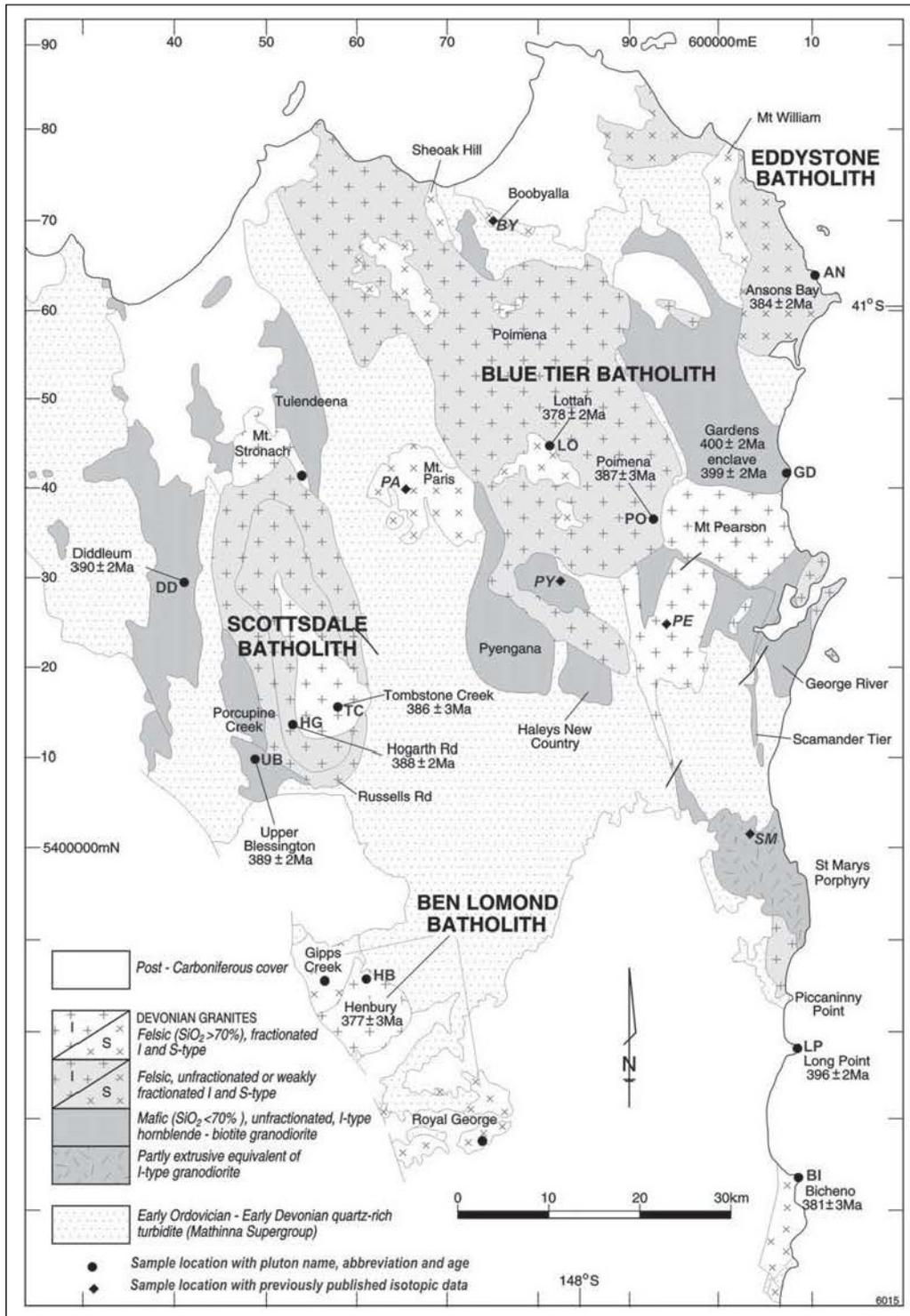


Figure 2. Geology, tenement boundary and areas regarded as being prospective for IRGS.



**Figure 3. Mathinna Supergroup with Lisle, Cradle Creek, Golconda-Panama Goldfields from Seymour et al, 2011.**

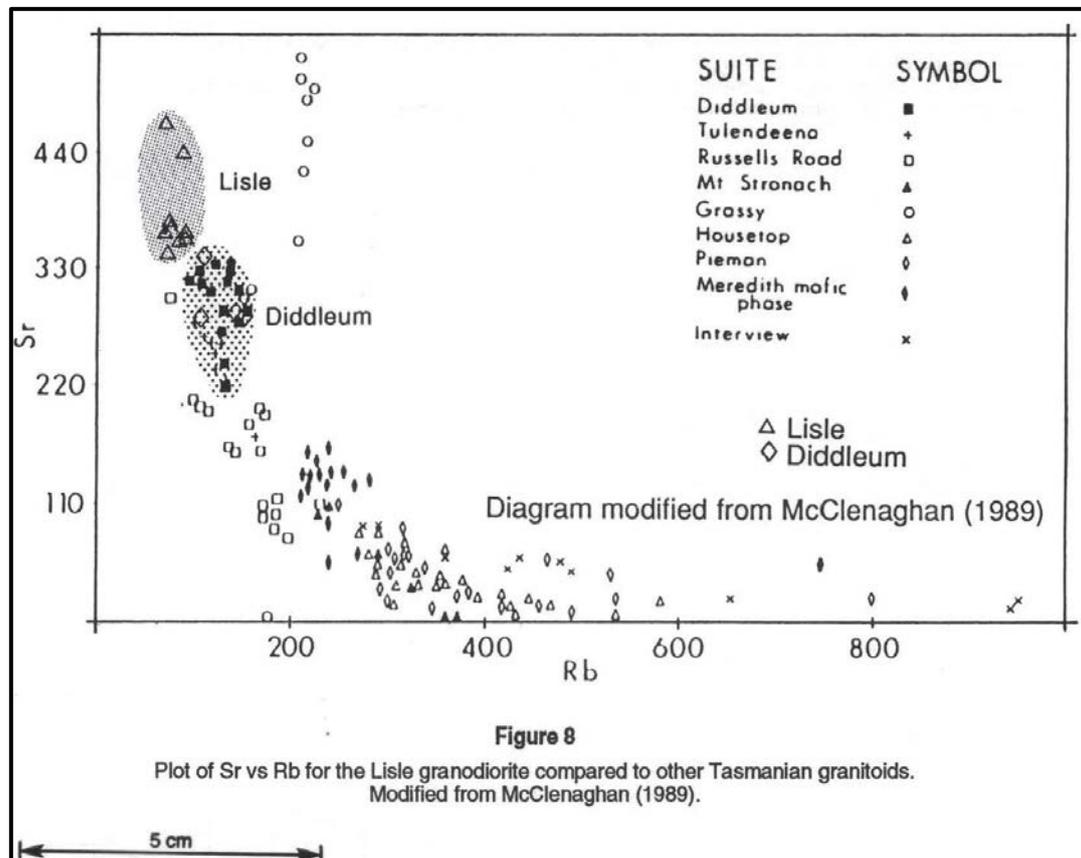
The Lisle Granodiorite is deeply weathered and rarely outcrops. These intrusives are complex and heterogeneous with numerous inclusions of hornfelsed Mathinna Supergroup and dark diorite. Textures vary from equigranular, feldspar-biotite-quartz granodiorites to feldspar-hornblende-biotite porphyritic diorites. Intrusions occur as dykes and small cupolas or porphyritic apophyses.



**Figure 4. North East Tasmania showing Devonian granite batholiths and plutons from Black et al., 2005.**

Roach (1992) analysed 16 samples of the various granodiorites from Lisle, Golconda, Panama and the western margin of the Scottsdale Batholith known as the Diddleum Pluton (see figure 5). There is a clear distinction between the rocks of the Scottsdale Batholith and the granodiorite from the Lisle area. In terms of Rb

and Sr the Lisle granodiorites are the least fractionated of the Tasmanian Devonian Granitoids (see figure 6).



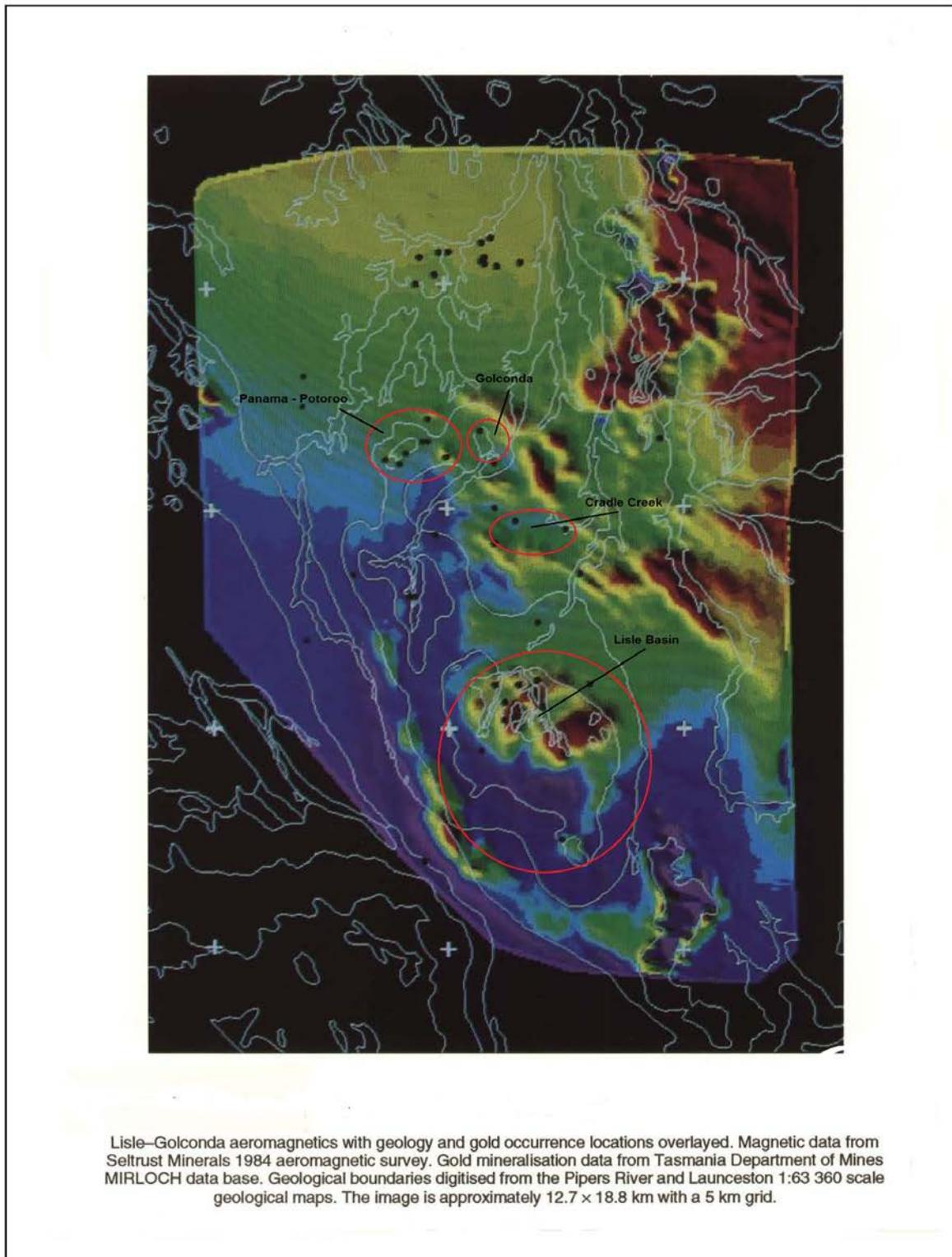
**Figure 5. Sr vs Rb Lisle Granodiorite and other Tasmanian granitoids (from Roach, 1992).**

Callaghan (2003) noted that there is a marked variability of the magnetic susceptibility of the granodiorites. This is probably a reflection of varying geochemistry between the complex intrusives but may also represent areas of magnetite destruction associated with hydrothermal alteration.

In Roach (1992) an image of the Seltrust Minerals (Storer, 1985) aeromagnetics (see figure 6 below) shows the high-frequency negative magnetic anomalies that correspond with the Tertiary basalt flows. The NW-trending highs occur over the Mathinna Supergroup and are parallel to the regional strike. These linear highs are truncated along a NE structural feature.

Roach (1992) discusses the irregular magnetic anomalies associated with the Lisle Granodiorite as seen in the northern part of the Lisle Basin. Both highly magnetic and effectively non-magnetic samples were obtained from this location with the two rock types appearing identical in hand specimen. A zone of magnetic anomalies resulting from the magnetic granodiorite stretches north from the Lisle valley to

Panama. A small anomaly is associated with the outcropping granodiorite at Panama but no anomaly is directly associated with the intrusion at Golconda. Roach (1992) notes that there are two different magnetic types of granodiorite within the Lisle-Golconda area and that the differences are not simply the result of either weathering or alteration.



**Figure 6. Magnetic image from Roach (1992).**

In Bulletin 70 Roach (1992) noted that the Lisle - Golconda goldfields are unusual in North East Tasmania in that in excess of 95% of all the gold recovered comes from alluvial workings. It is estimated that the Lisle field produced 250,000 oz. In total it is estimated that 300,000 oz was produced from all the goldfields with no obvious source for the alluvial gold.

Twelvetrees (1909) and Reid (1926) both commented on the morphology of the gold from Lisle and Roach, 1992, noted;

- That it was extremely fine in grain size, generally less than 0.4 mm in diameter. Nuggets were rare.
- That it was rarely found with vein quartz attached.
- That it was generally of very high fineness.
- Gold concentrations were highest in wash material immediately overlying the weathered granodiorite surface.
- Gold was often concentrated within sediments with either a high organic carbon content or with wash material stained with manganese oxides.

## Tenement information

Tenement number: EL 30/2006  
Tenement name: Golconda  
Tenement location: North East Tasmania  
Reporting period: 13/06/2012 to 13/06/2013  
Tenement Holder: Tamar Gold Ltd.  
Tenement Area: 8 sq km

## Location

EL 36/2006 is located immediately south of the Lilydale/Scottsdale road approximately 20km west of Scottsdale in North East Tasmania.

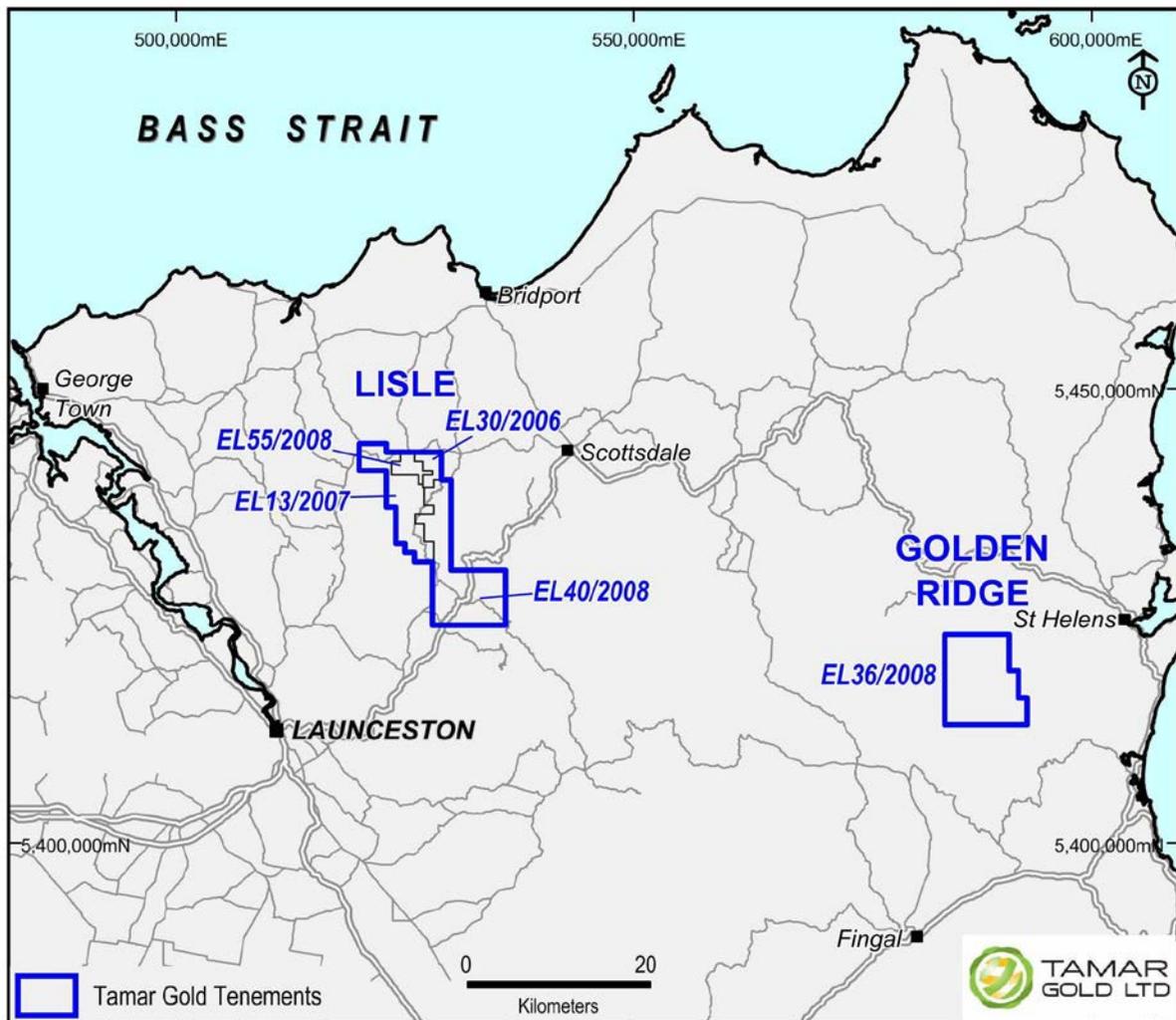


Figure 7. Tamar Gold Ltd tenements in North East Tasmania.

# Tenure

EL 36/2006 is held by Tamar Gold Ltd after completing a purchase agreement with BCD Resources in January 2013.

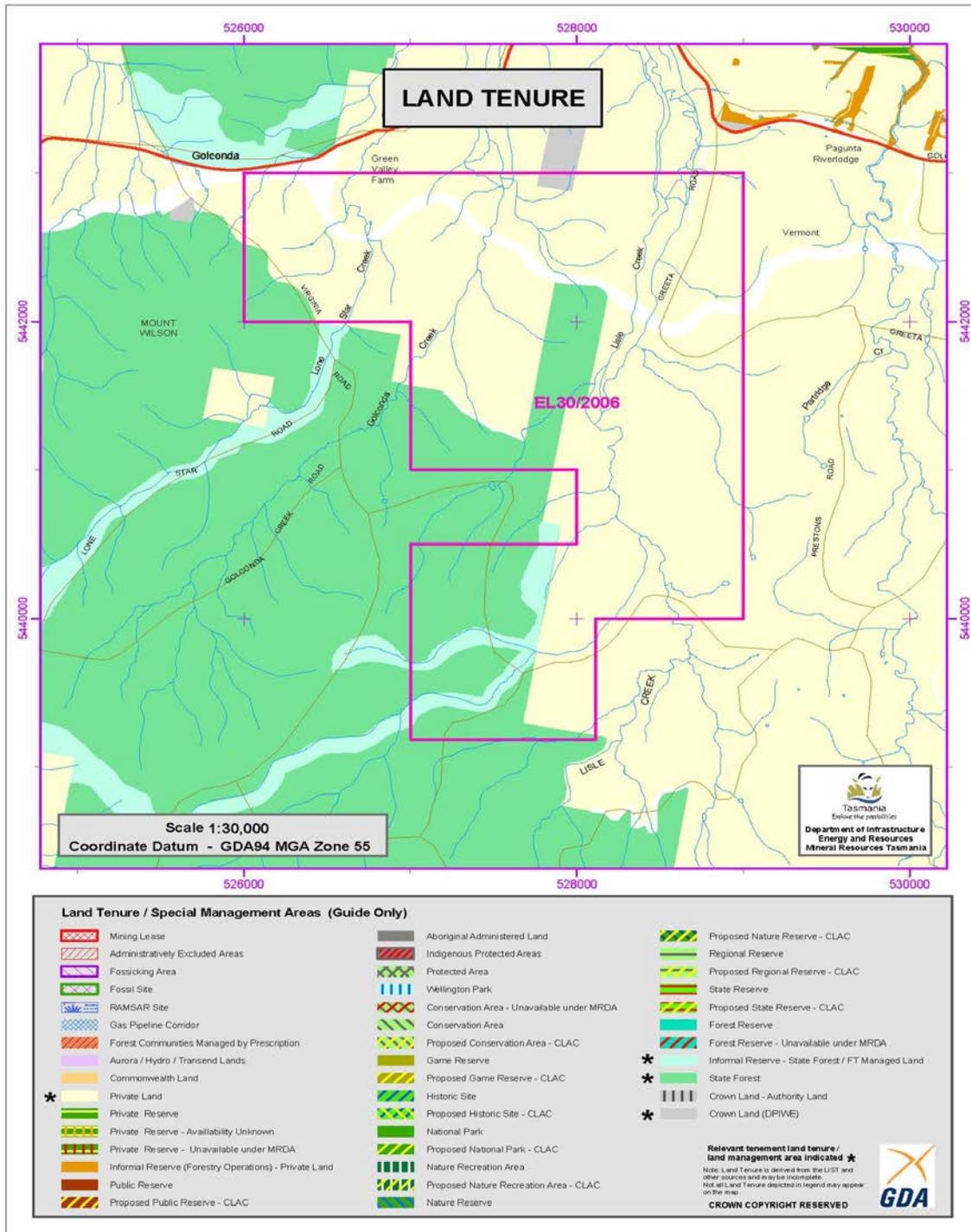


Figure 8. Land Tenure (from MRT).

The land tenure map from MRT shows State Forest with Informal Reserves over the Cradle Creek area in the south west corner. The State Forest is a mixture of pine and eucalypt plantations and regrowth native forest. The majority of the licence is private property.

Access is via a network of all weather gravel forestry roads and exploration vehicle tracks, which all connect to the Lilydale Road, the bitumen road connecting the city of Launceston, some 40 km by road to the southwest, to Scottsdale, 10 km to east.

## **Review of previous work**

(see literature review section below and Appendix 1 for more information)

In the modern era from 1992 to 2007 various incarnations of MacMin NL (Tasmine Pty Ltd, TasEx Resources Ltd, TasGold Ltd, Frontier Resources Ltd) held EL 2/92 which covered the larger Lisle-Golconda area.

Regional soil sampling, structural interpretation, trenching, percussion and diamond drilling were conducted during that period.

## **Exploration completed during the report period**

### **Introduction**

The work that Tamar Gold has completed since November includes:

- A literature review (see Appendix 1).
- A review of IRGS (see Appendix 2).
- Compilation of mineral deposits from the MRT database (see Appendix 3).
- Compilation of the prospect scale magnetics and topography by Phil Muir.
- Soil and panned concentrate surveys over the Cradle Creek Goldfield.

### **Literature review**

A literature review was undertaken in March 2014 (see Appendix 1).

The significant exploration results were;

- At Potoroo PD002 intersected 130m @ 0.21 g/t Au from 19m in granodiorite with disseminated and some veined pyrite and pyrrhotite. There was an interval of quartz-arsenopyrite veining within a faulted zone high in the hole with 6.9m @ 1.4 g/t Au from 32.6m. This hole was drilled in a westerly direction whereas most of the other holes were drilled in north westerly direction. A percussion hole intersected (P017) 44m at 0.4 g/t Au.
- A trench at Potoroo was chip sampled over 64 metres and averaged 0.55 ppm Au. As averaged 1443 ppm for the length of the trench, with values to 1.01% (20 - 22 m).
- At Gold Crest GCD002 had a significant intersection in the granodiorite of 16m @ 0.93 g/t Au from 27m. This hole had a 91m intersection averaging 0.29 g/t gold in granodiorite.
- A steep deep hole at Panama intersected 0.5m @9.1 g/t Au from 61m at the contact of the granodiorite with the Mathinna Supergroup.
- Significant gold mineralisation was intersected from the Enterprise Prospect with a best result of 4m @12.8 g/t Au (E009 6 to 10m)).

### **Review of IRGS**

The summary of IRGS deposits by Bruce Pertzelt is presented in Appendix 2 and discusses their characteristics, features and classification. The following observations on the features of IRGS have confirmed the view held by Tamar Gold

that the Panama – Golconda, Cradle Creek and Lisle Goldfields are prospective for this style of mineralisation:

- Tectonic Setting. Preferred host strata include relatively deep water, reducing sediments and metasediments. Intrusions emplaced into old continent margins behind active plate margins.
- Metal Zonations. Temperature dependent and concentric zones up to a few kilometres out from the pluton margin or just beyond the thermal aureole. Pluton - proximal Au has Bi, Te association; W associated aureole mineralisation will have As or Sb association; distal mineralisation may be related to Ag-Pb-Zn.
- Diversity of Deposits. Several different styles possible; intrusion and/or country rock hosted skarns, replacements, disseminations, stockworks and veins: gold mineralisation characterised by wide range of grades; large tonnages present have a range of 0.8 to 1.5 g/t Au (e.g. Fort Knox).
- Sheeted Veins. This is the most distinctive style in reduced IRGS type; sheeted arrays of parallel, low-sulphide, single-stage quartz veins over 10s to 100s of metres preferentially situated in the pluton's cupola.
- Pluton Features. Indicative of hydrothermal fluid generation; characteristic textures – porphyritic, presence of aplite and or pegmatite dykes, greisen alteration and zonation features.
- Redox State. Felsic, ilmenite-series plutons; no magnetite therefore low magnetic susceptibility and low aeromagnetic response; ferric:ferrous ratios less than 0.3.
- Timing. Mineralisation and associated causative pluton are coeval (events are within 2 million years).

### **Lisle IRGS Exploration Project Deposit Summary**

The Mineral Deposit summary was completed in March 2013 and is presented in Appendix 3.

The information used in this summary came from the MRT Mineral Deposit data base. The notes came from Geological Survey Bulletin 37 by McIntosh Reid (1926). The observations he made at the time are likely to be the most accurate record of the mines and prospects in the Lisle – Golconda area.

The summary is intended for field use as a guide about the hard rock (and some alluvial) prospects and where they are in each goldfield.

## Regional geology, magnetics and topography

The compilation of the regional magnetics, topography and 1:25 000 geology is presented below.

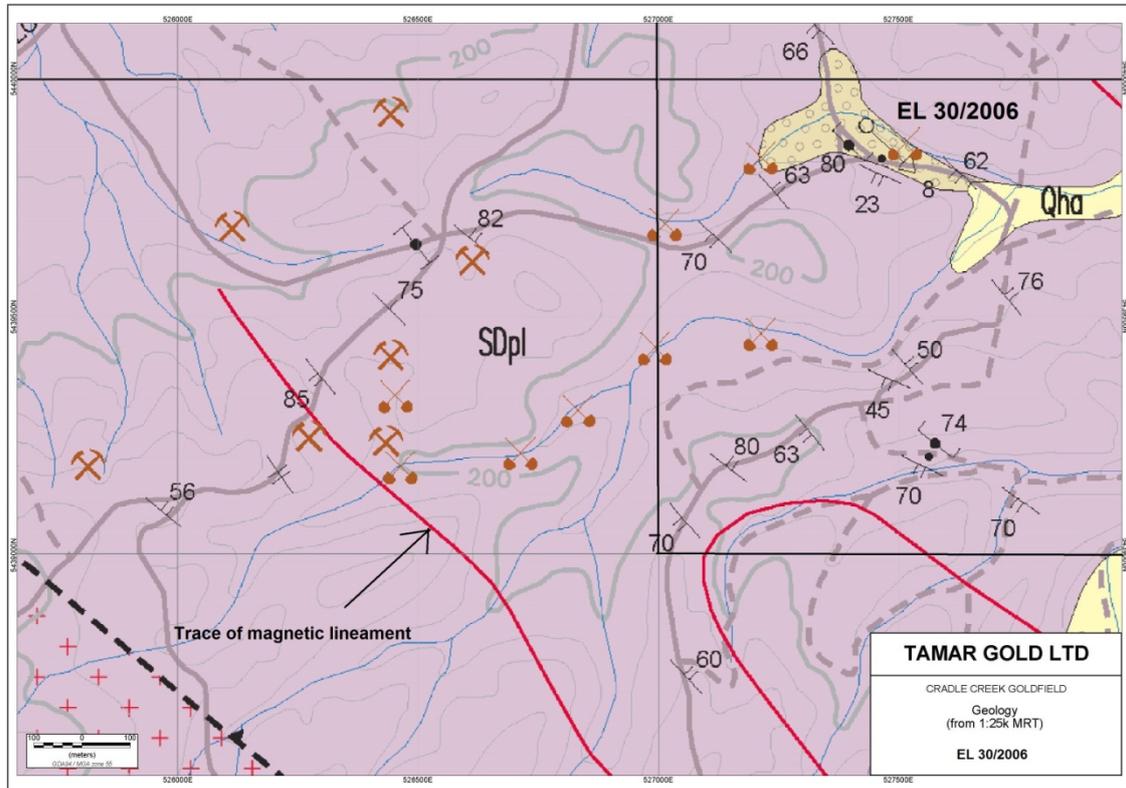


Figure 9. 1:25 000 geology from MRT – see figure 1 for legend.

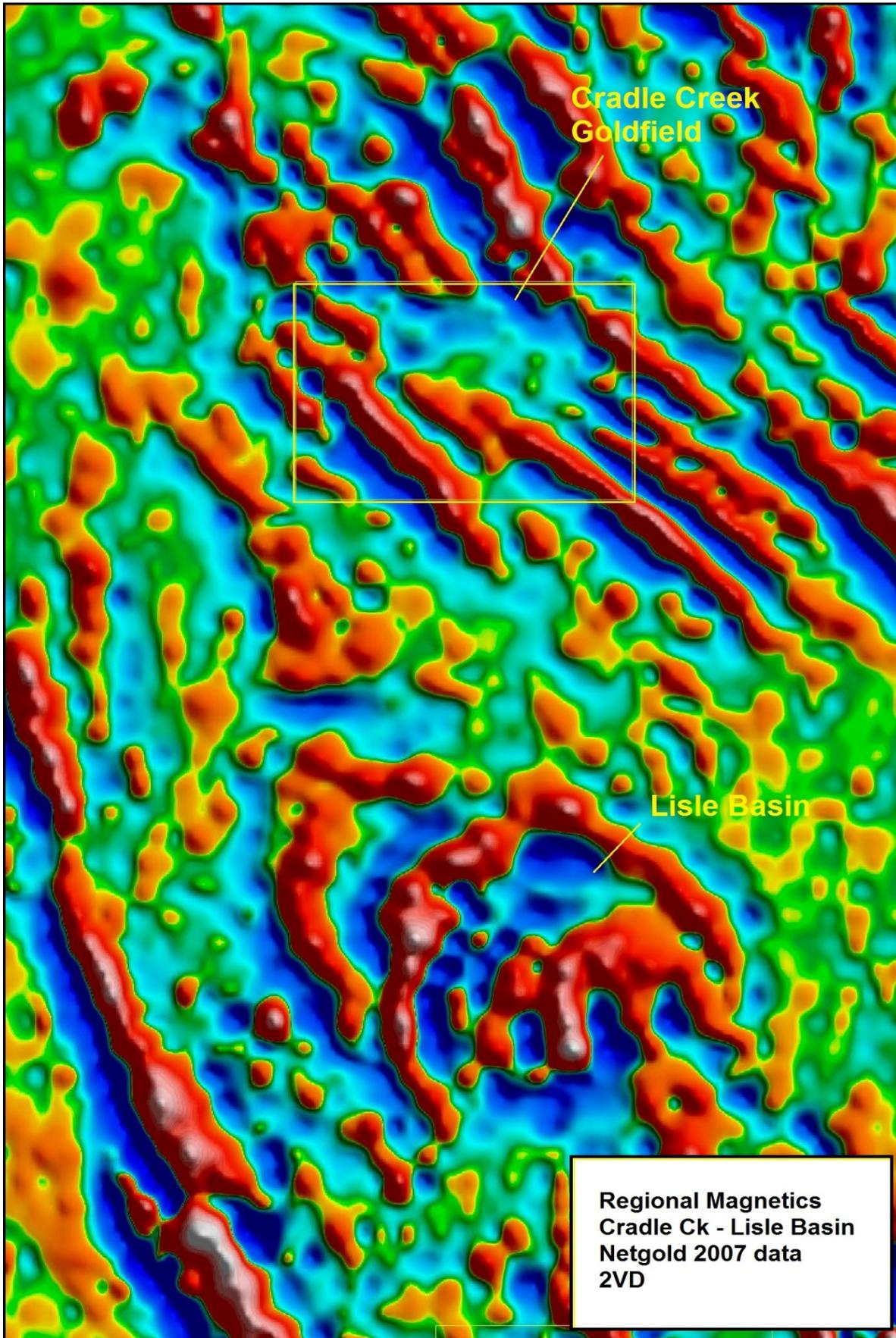


Figure 10. Regional Magnetics – Netgold 2007 data compiled by Phil Muir.

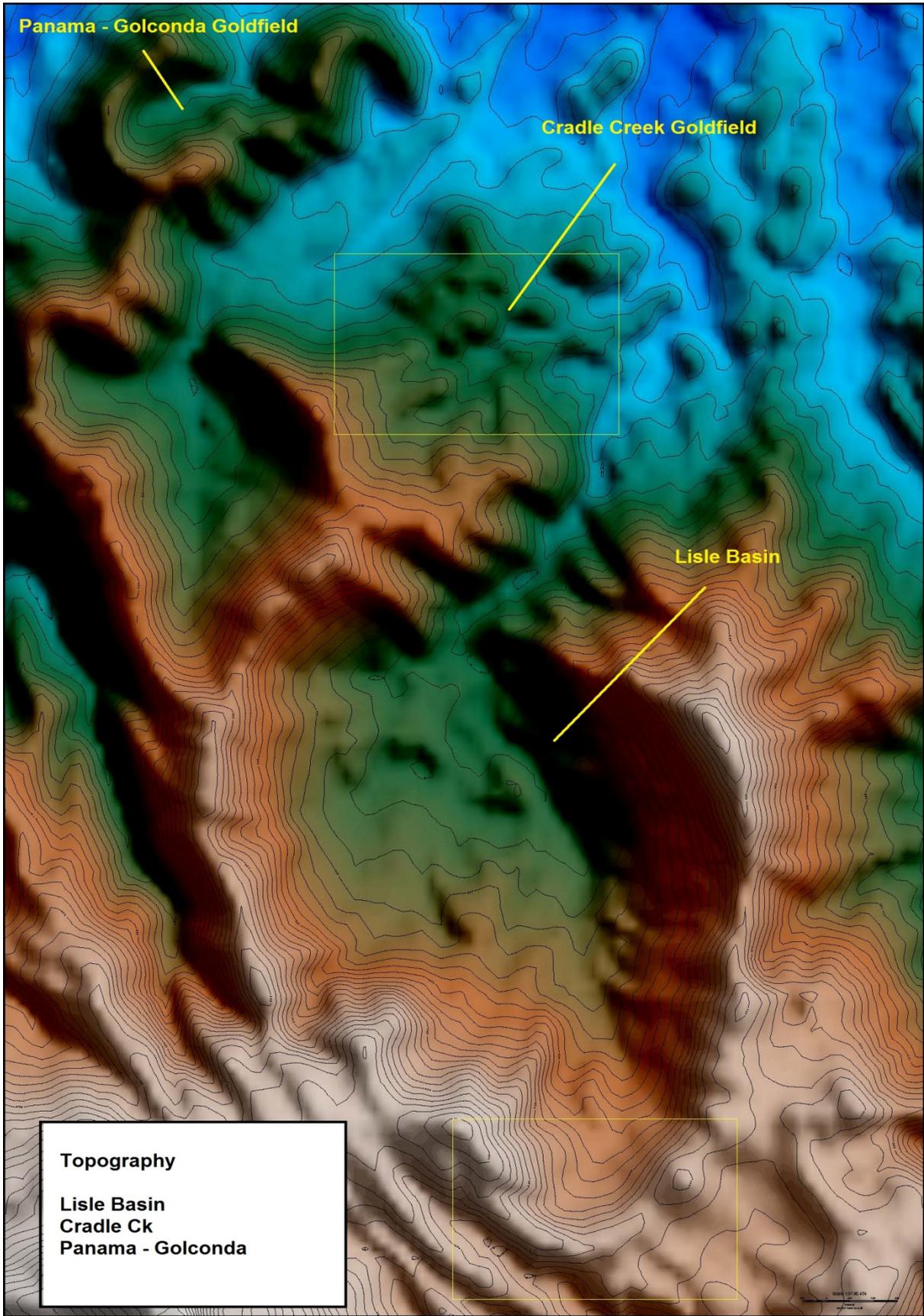


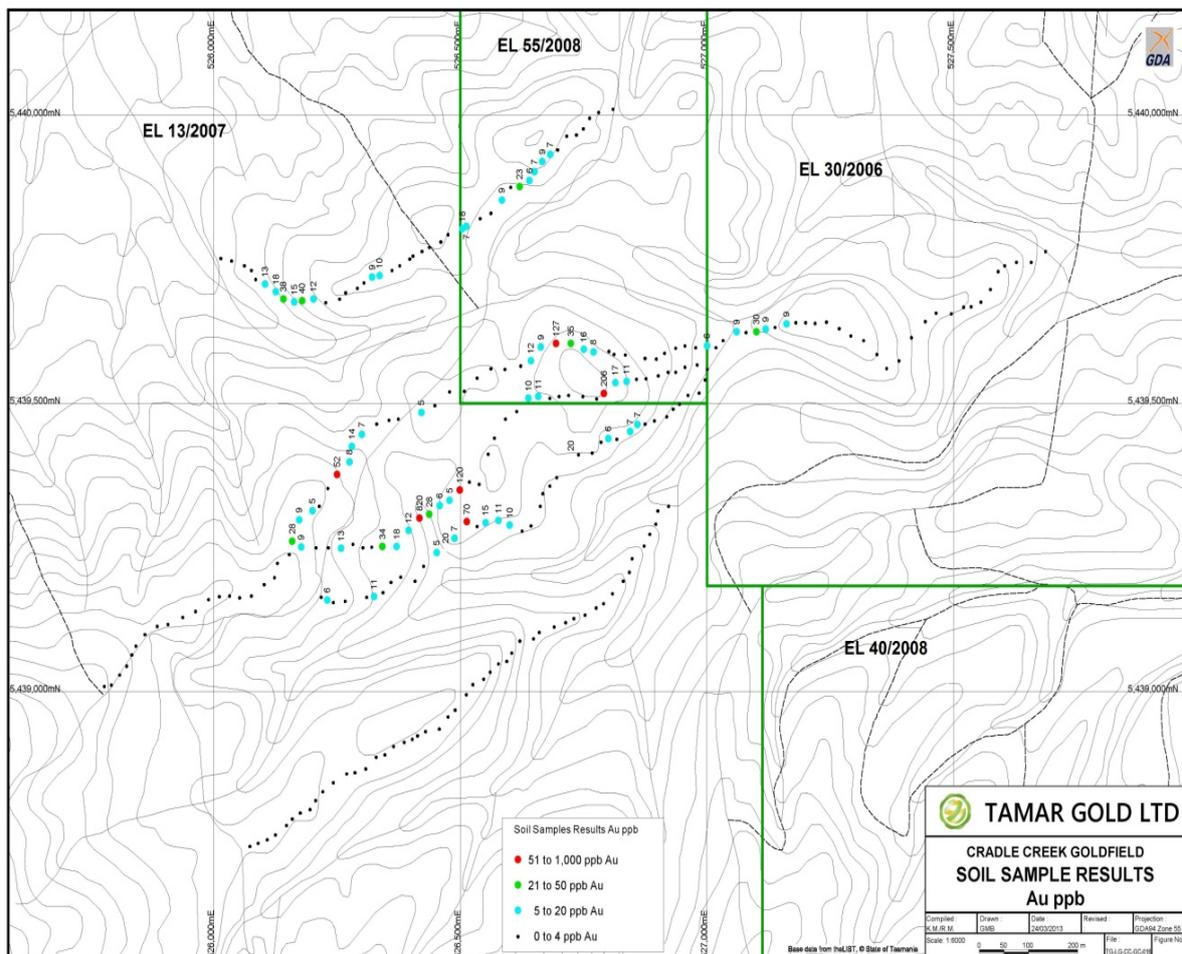
Figure 11. Topography for Lisle area.

## Cradle Creek soil geochemistry

Tamar Gold has recently completed a soil sampling survey over the Cradle Creek Goldfield. The survey was designed to sample the ridges in an attempt to avoid complications from slope deposits.

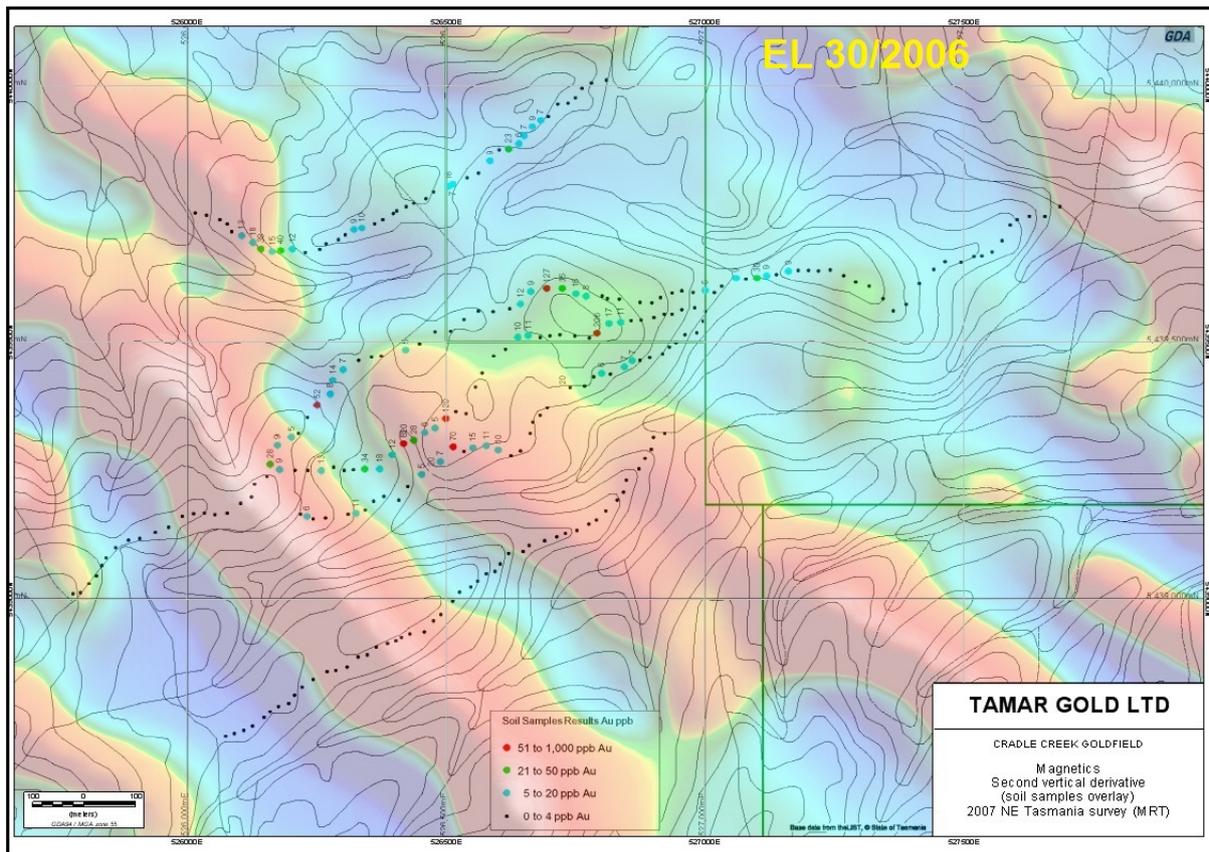
Approximately 40 samples were taken on EL 30/2006. The samples were excavated with a manual trenching tool, organics were scraped away, and from a pad of 30cm x 30cm, at 20cm depth, a combined B/C horizon sample was taken to produce 1-2kg of soil. The entire sample was sent to ALS (Townsville laboratory) where they were dried, pulped and split. Gold was assayed by Fire Assay/AAS (50g charge) at 5ppb level of detection. As, Cu, Pb, and Zn splits were assayed by aqua regia digest/ICP - AES finish and Bi, Mo, Sb, Te by the same digest but an ICP - MS finish.

Preliminary results have been received for gold and are presented below.



**Figure 12. Preliminary plots of Au from Cradle Creek soil sampling.**

The Au in soils geochemistry is presented below over the regional magnetics.



**Figure 13. Magnetics and the Au soil sampling results.**

Bessells Reward and associated hard rock workings have been chip sampled. Cradle Creek and Tobacco Creek have had approximately 30 panned concentrate samples taken with results pending.

## **Discussion of results**

### **Literature review**

The recommendations as presented in the literature review (see Appendix 1) follow:

#### *Cradle Creek Goldfield*

Cradle Creek and Tobacco Creek drain the Bessels Reward workings with gold reported to have been mined from the Lone Star Siltstone. Extensive alluvial workings up these two creeks were targeting the basal wash under thick deposits that suggest mass movement down slope and down the creeks. A soil sample line did not provide any encouragement to Frontier Resources. Reid, 1926, shows a dike like granite body between Cradle and Tobacco Creeks.

1. It is recommended that a more extensive soil sampling program be undertaken over the Cradle Creek Goldfield with lines following the ridge crests.
2. A panned concentrate sampling program should be undertaken up both Cradle and Tobacco Creeks.
3. The regional magnetics should be compiled for this area.

## **Intrusion-related Gold Systems.**

The summary of the IRGS style of mineralisation (see Appendix 3) concludes that:

- The recognition of IRGS deposits in the Tasman terrane of Eastern Australia is of great significance for mineral explorers holding exploration tenements in the States of Queensland, New South Wales, Victoria and Tasmania.
- Sovereign Gold Company Limited, an ASX-listed junior explorer claims a new IRGS discovery at Martins Shaft, a principal prospect in the Uralla Goldfield, SW of Armadale in the New England sector of the Lachlan Fold Belt. (Company announcement to the ASX, October, 2012).
- The recognition of the large Cadia - Ridgeway Gold (Copper) Deposits in Central NSW and the Wonga gold deposit at Stawell (a site mined continuously for 29 years) as having IRGS affinities highlights the potential for similar deposits to be found using judicious application of the IRGS features to contemporary exploration programs. Potential for new gold deposit discoveries in the Palaeozoic miogeosynclinal sedimentary sequences of the Tasman Geosyncline (on both sides of the Tasman) – a province known for its orogenic style turbidite-hosted gold deposits such as Bendigo, Ballarat and McCrae's – is further enhanced by the recognition of IRGS deposits in this terrane.

## **Regional magnetics and topography**

The regional magnetics (figure 10) show the strong north west lineation of the Lone Star Siltstone with closures suggesting large scale folding. An interesting pattern develops over the Cradle Creek Goldfield where this dominant lineation is subdued with an area of relatively low magnetism. This could indicate the effects on the Lone Star Formation of a granodiorite cupola at depth.

The regional topography in figure 11 displays the striking topographic depressions formed by the granodiorite at Panama, Potoroo and Gold Crest – Enterprise. At Cradle Creek there is an area of raised undulating topography over the workings and gold anomaly with east north east drainage lines.

## **Cradle Creek soil and panned concentrate geochemistry.**

It is encouraging to see two zones of anomalous Au from this area as both Cradle Creek and Tobacco Creek have extensive alluvial workings but no soil anomaly has previously been found. The magnetics suggest that there could be an indication of a cupola of granodiorite at depth. The full geochemical results are expected shortly

and it is anticipated that Bi, Mo, and As may allow further delineation of the current Au anomaly. On EL 30/2006 four samples have gold values that could be anomalous.

Visible gold in the panned concentrates should allow the anomalous area to be better defined.

## **Conclusions**

The literature review recognised the potential of the area for IRGS style mineralisation and the summary by Bruce Pertzelt provided encouragement to proceed with a soil sampling program at Cradle Creek. The initial results from Cradle Creek have been positive with two zones of anomalous gold.

### *Cradle Creek Goldfield*

- Alluvial gold field on Mathinna bedrock, with early reports of fine grained low grade gold in siltstone/sandstone on ridges between gullies.
- No modern era confirmation of the play or attempts to drill test the contact.
- Tamar Gold sampling preliminary Au showing two anomalous zones. Drill targets reliant on interpretation of results.

2013/2014 Drilling program:

- 2 x 250m diamond holes at \$400 a meter.
- Some track work required. Water available from Tobacco Ck tributary.

Total \$200 000.

One of these holes could be collared on EL 30/2006

The proposed budget for EL30/2006 is \$100 000.

## **Environment**

The geochemical lines did not require any chain saw cutting and the soil sample sites were excavated to approximately 20cm and back filled on completion.

These and the panned concentrate sample sites do not require any rehabilitation.

## **Expenditure**

Expenditure to June 2013 is estimated to be \$40 000.

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