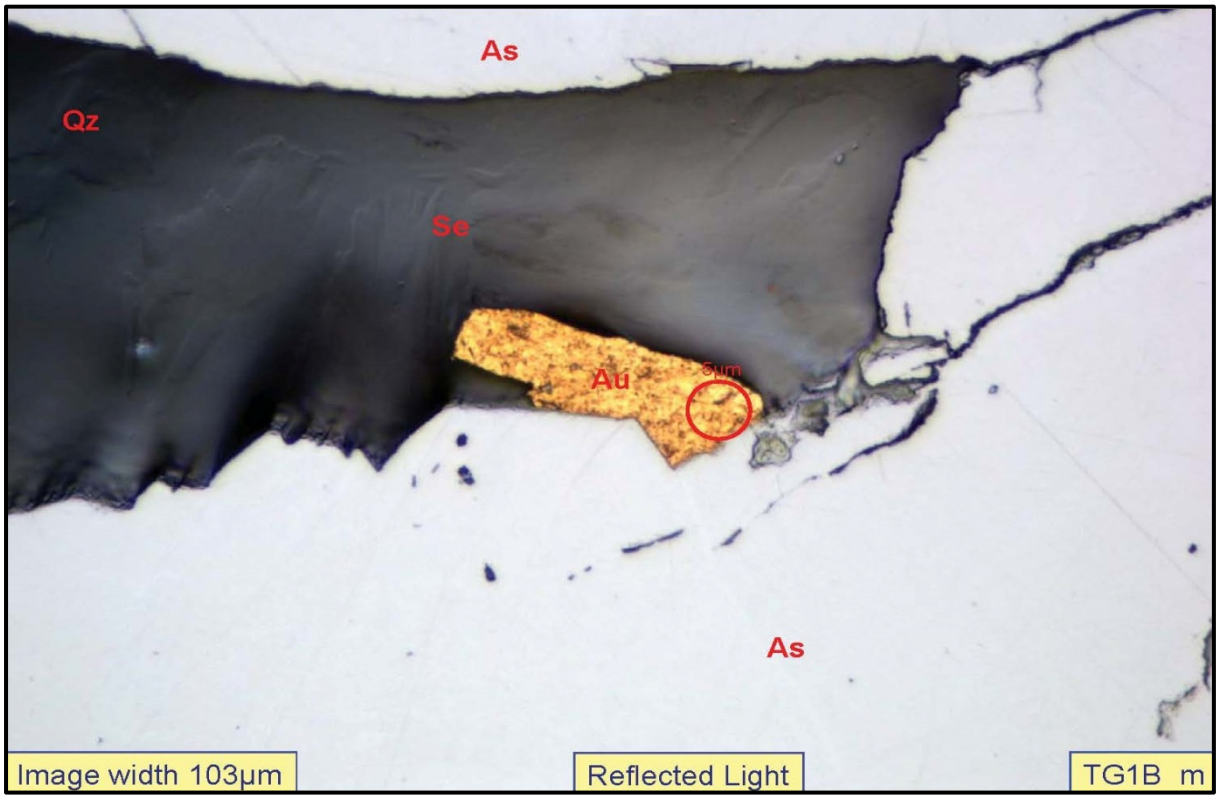
Annual Report

EL 36/2008 Golden Ridge

2012/2013



Authors: **John Pemberton and Ken Morrison**

Date: **April 2013**

Distribution: **Tamar Gold Ltd**
Mineral Resources Tasmania

Photomicrograph from report by Gary McArthur in Appendix 3

Abstract

Tamar Gold Ltd underwent a change of management in late 2012 and after a review of the tenements held a decision was made to only retain the ground that was prospective for the Intrusive-related Gold System (IRGS) style of mineralisation. The area covered by EL 36/2008 is regarded as having all the characteristics required to be prospective for IRGS mineralisation. The Golden Ridge Granodiorite is part of Haleys New Country Granodiorite and is an I type granite with a subdued magnetic signature; it is chemically distinct, has disseminated sulphides and As-Au veining visible at the Trafalgar Mine.

During the past year a regional soil sampling traverse was completed across the base of the Golden Ridge. It identified an As-Au anomaly in the south eastern corner of the Golden Ridge Granodiorite. Other work included a regional magnetic compilation, a literature review, a summary of IRGS mineralisation and a report on the sulphides present in the Golden Ridge Granodiorite from the Trafalgar area.

This report concludes with a forward program that includes 1000m of diamond drilling in the Trafalgar area and further regional geochemical sampling to the north and east.

Contents pg

List of Figures pg

Appendices

Appendix 1

Review of past exploration reports from the Golden Ridge area in the vicinity of EL36/2008 North East Tasmania by J Pemberton.

Appendix 2

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

Appendix 3

Trafalgar Mineralogy March 2013 by Gary McArthur (McArthur Ore Deposit Assessments Pty Ltd).

Appendix 4

Risky Ridge soil and rock chip plots from BCD Resources.

Appendix 5

Soil sampling GDA co-ordinates.

Appendix 6

Soil sampling results.

Appendix 7

Panned concentrate GDA co-ordinates.

Appendix 8

Panned concentrate results.

Appendix 9

Trafalgar rock chip results.

Appendix 10

Laboratory QA information.

Introduction

Exploration objective

Tamar Gold Ltd had a change of management in August 2012. EL 36/2008 was previously held by BCD Resources who had completed a small geochemical survey to the north of Golden Ridge at Risky Ridge with poor results. Tamar Gold requested a literature review (see Appendix 1) to assist in the rationalisation of its extensive ground holdings in North East Tasmania. One of the recommendations from that review was:

> *The gold in granodiorite at Trafalgar could indicate potential for Intrusive-related Gold System style of mineralisation. The Golden Ridge Granodiorite has been chemically mapped as being different from the Pyengana and Poimena and is also an I type granite. It is recommended that advice should be sought on this style of mineralisation and its potential at Golden Ridge.*

Following the recommendations from that review Bruce Pertzel was asked to comment on the Intrusive-related Gold Systems (IRGS) style of mineralisation (see Appendix 2). As a consequence of his positive summary of the IRGS style and its 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 the IRGS style of mineralisation.

Geological setting

The area is dominated by the hornfelsed Siluro-Devonian Mathinna Supergroup which forms the contact aureole of the Haleys New Country Devonian Granodiorite (see regional geology in Fig. 1 and Devonian granite batholiths and plutons in figure 2 below). The striking topographic relief of the southern part of the contact aureole forms Golden Ridge and is comprised of variable metamorphosed siltstones and greywackes. The south eastern part of the Haleys New Country Granodiorite forms a distinct topographic low and has been recognised by Davidson and Roach in Randell (1991) as being of a different composition (see Zr vs MgO in figure 3 below).

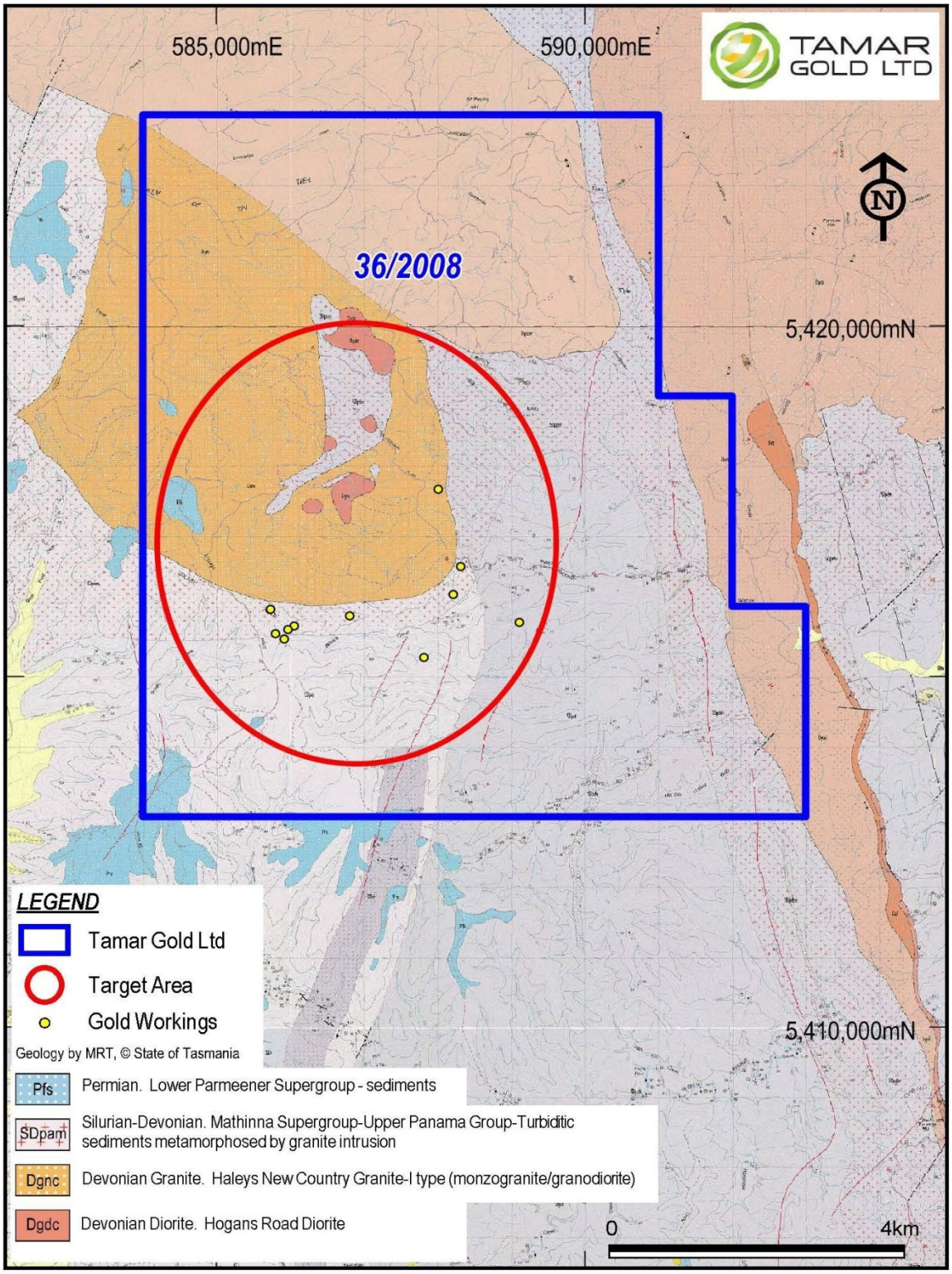


Fig. 1. Geology, tenement boundary and area regarded as being prospective for IRGS.

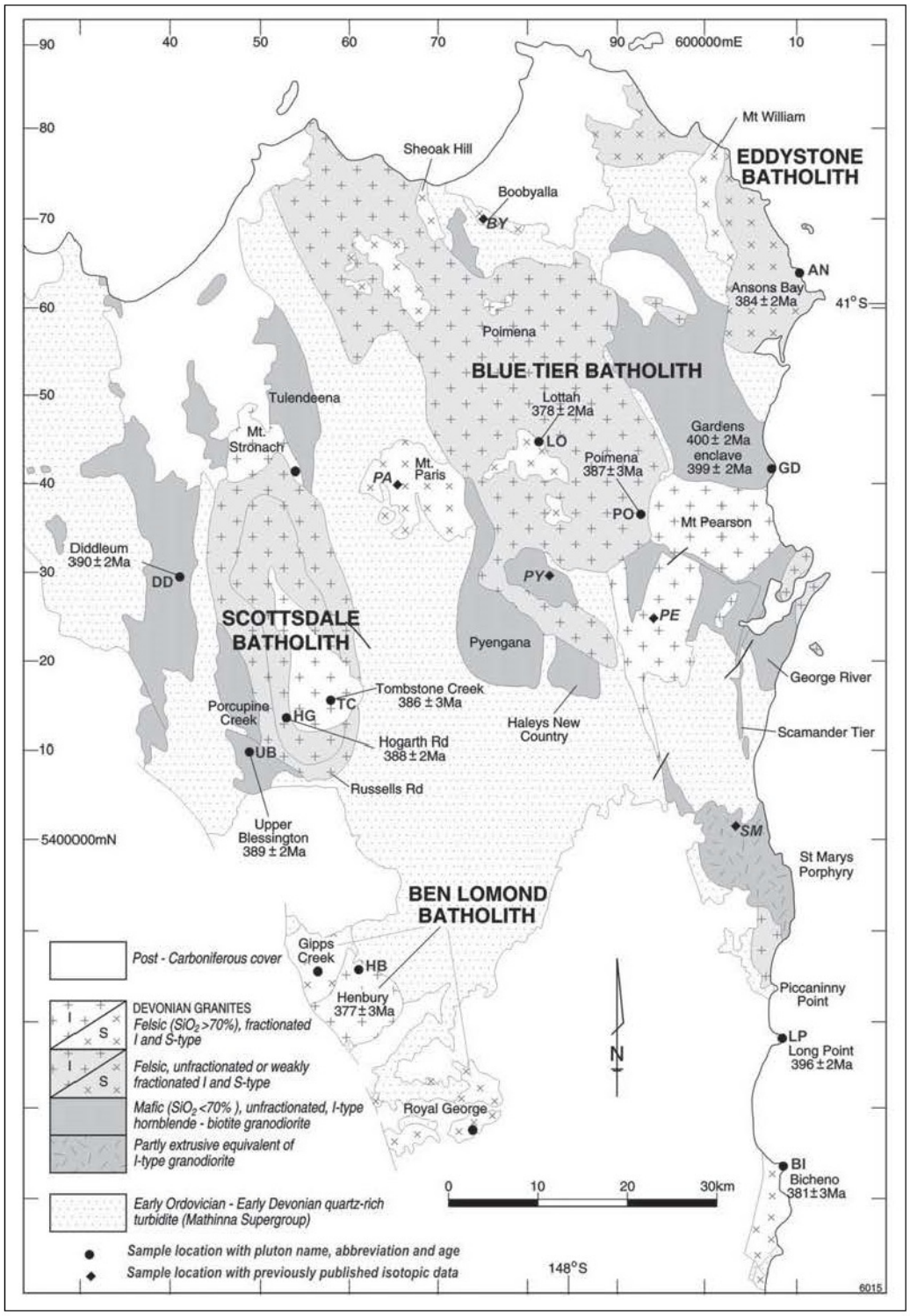


Fig. 2. North East Tasmania showing Devonian granite batholiths and plutons from Black et al. 2005.

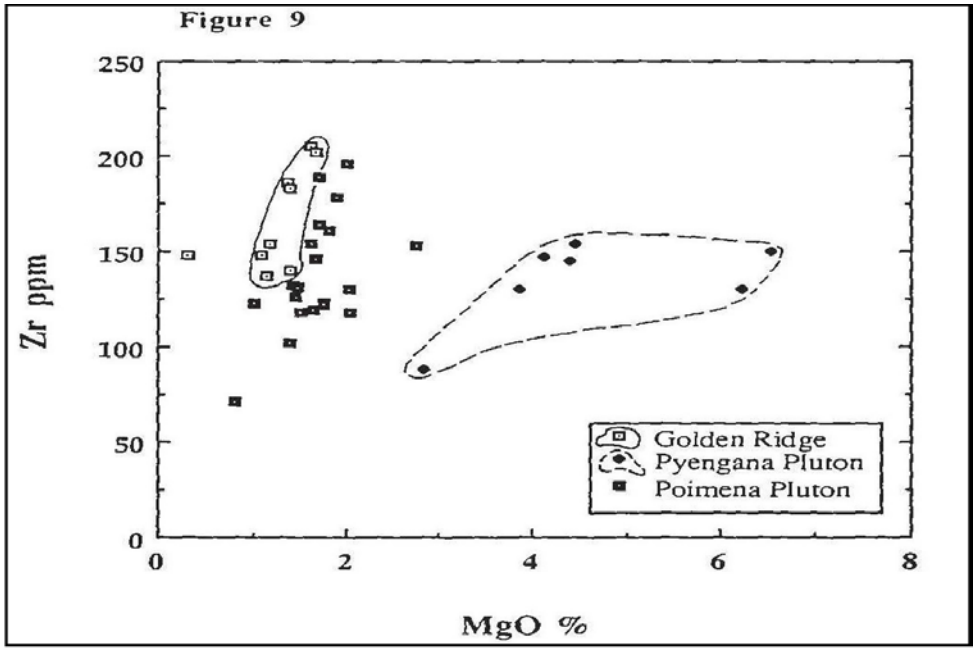


Fig. 3. Zr vs MgO from Davidson and Roach in Randell (1991).

Previous explorers have targeted the Au-As vein style of mineralisation in the hornfelsed aureole to the Golden Ridge Granodiorite (see prospect map below from Morrison, 2000).

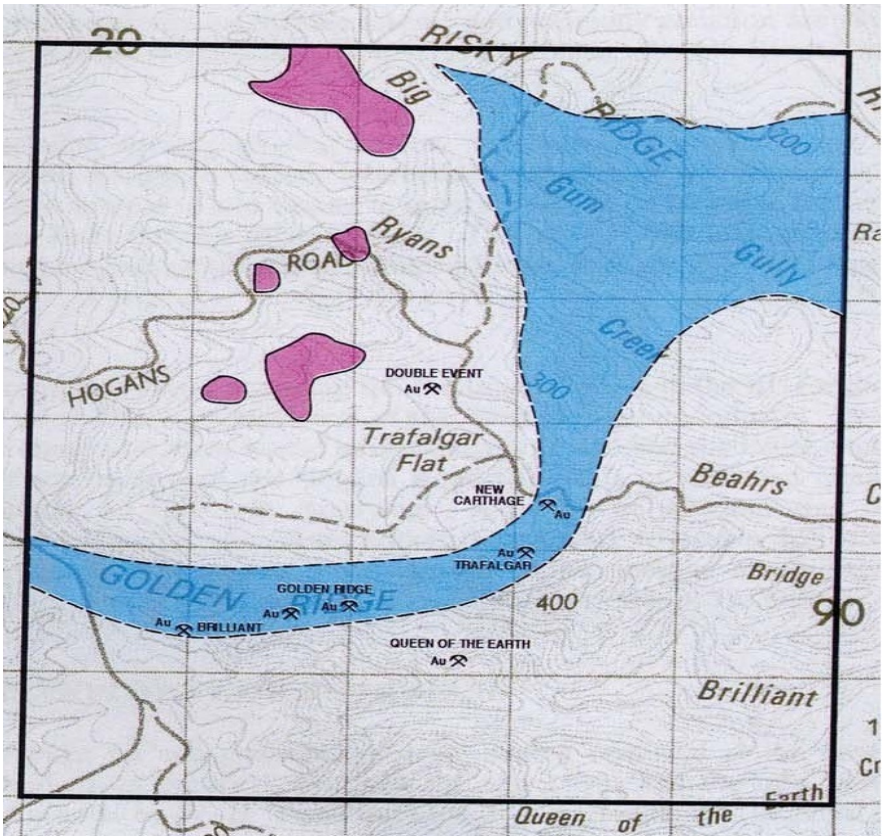


Fig. 4. Prospect map from Morrison, 2000.

Drilling by Billiton Australia and MPI Gold Pty Ltd at Brilliant-New Golden Ridge allowed Garrard (2000) to construct a Surpac model which identified a steeply plunging zone of Au mineralisation of some 25,000 ounces @ 1.6 to 1.9 g/t from surface to 300 metres vertical depth.

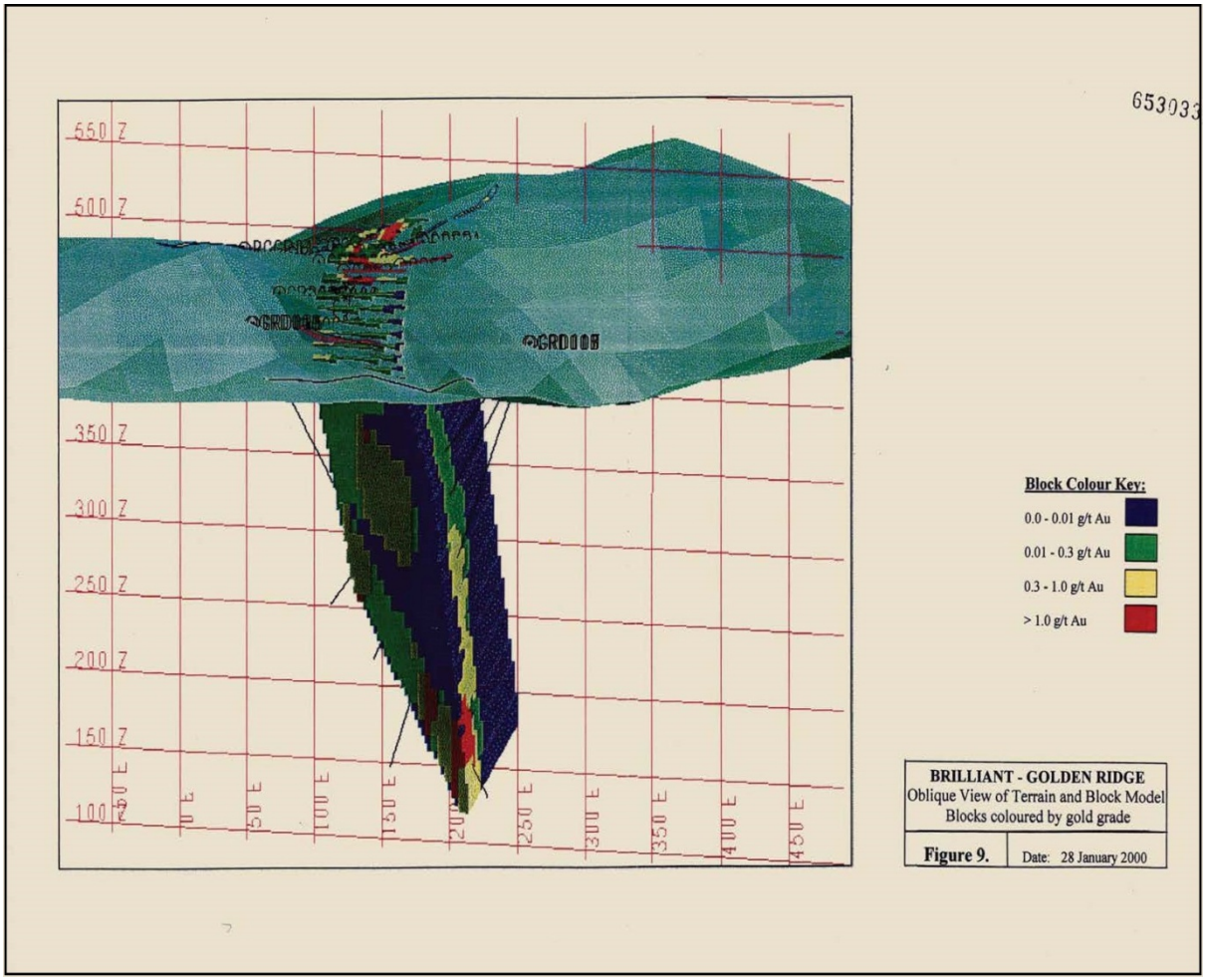


Fig. 5. Block model of Brilliant – New Golden Ridge mineralisation.

At the Trafalgar Mine Au-As veins and disseminated sulphides were mined from within the Golden Ridge Granodiorite and Billiton drilled three percussion holes and Shaws drilled two. One of these holes (RCGR 6) had an intersection of 3m @ 1.46 g/t from within a rock described by Randell, 1993, as mixed granitoid and hornfels.

Tenement information

Tenement number:	EL 36/2008
Tenement name:	Golden Ridge
Tenement location:	North East Tasmania
Reporting period:	31/05/2012 to 31/05/2013
Tenement Holder:	Tamar Gold Ltd

Location

EL 36/2008 is located 13km north west of Upper Scamander in North East Tasmania.

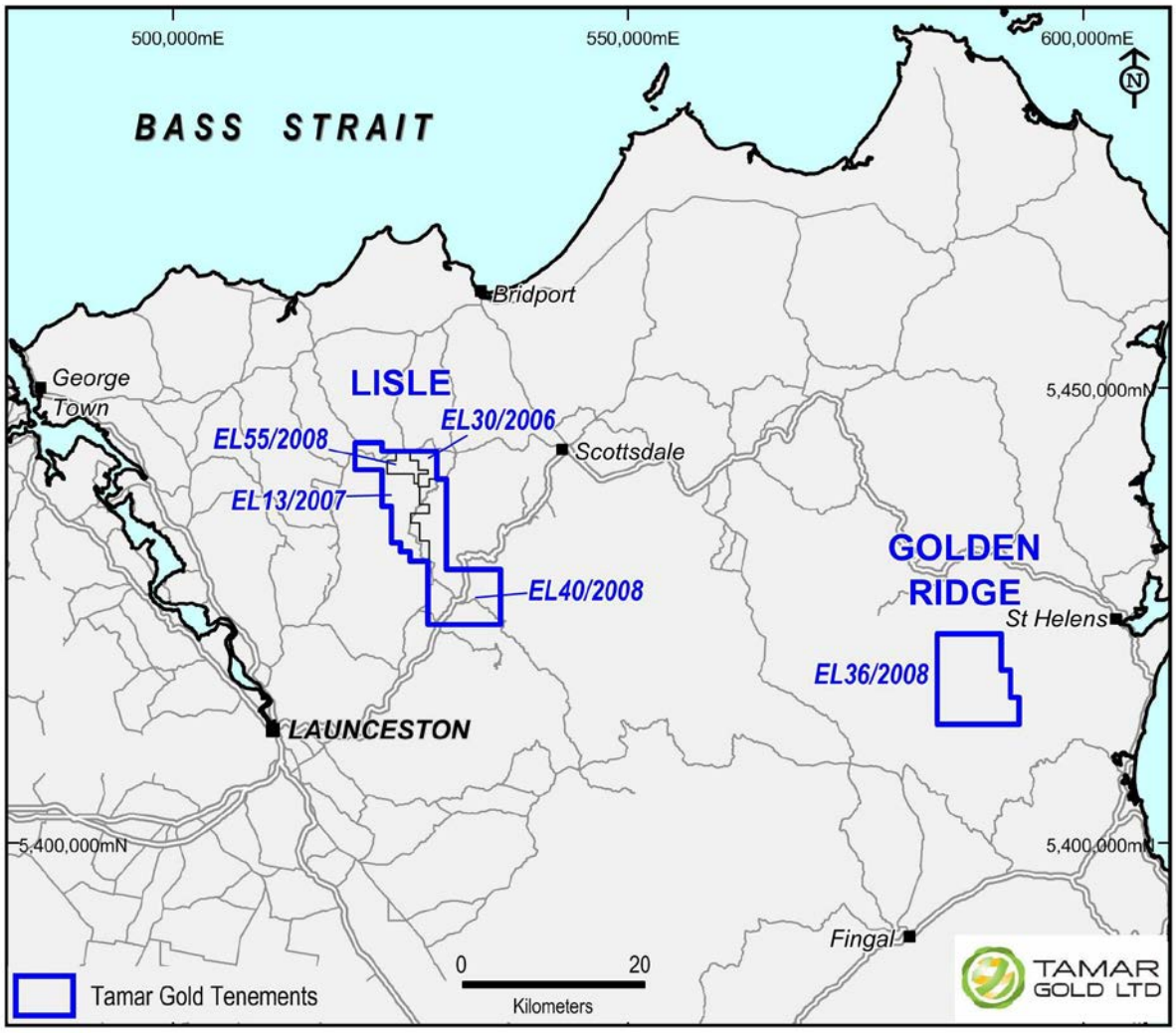


Fig. 6. Tamar Gold Ltd tenements in North East Tasmania.

Tenure

EL 36/2008 is held by Tamar Gold Ltd after completing a purchase agreement with BCD Resources in January 2013. The land tenure is all State Forest.

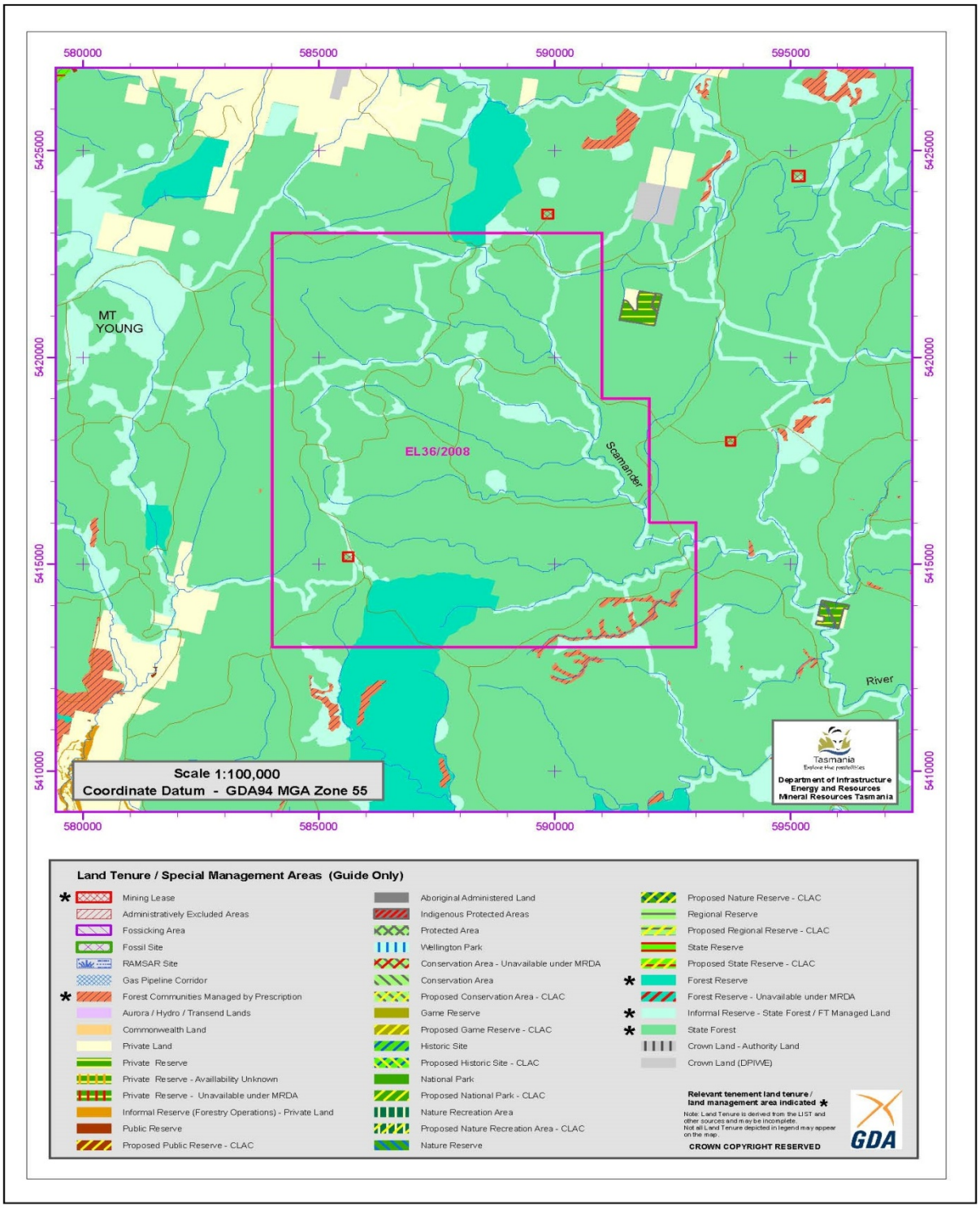


Fig. 7. Land Tenure (from MRT).

The Management Decision Classification system of Forest Tasmania shows State Forest, Informal Reserves, Forest Communities Managed by Prescription and the Evercreech Forest Reserve. All these land tenure types are available for exploration and mining.

Review of previous work

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

BCD Resources completed a geochemical survey across Risky Ridge in 2010/2011. Images of this information have been obtained and are included in this report as Appendix 4. It is interesting that the 4 soil samples that had gold between 0.005ppm and 0.008ppm were taken in the same area as 5 rock chip samples that had gold between 0.02ppm and 0.03ppm.

The most recent exploration in the Golden Ridge area prior to the current tenement was in 2000 (EL 6/99) and reported on by Morrison, 2001. Shaw Excavations Pty Ltd drilled two holes at New Carthage–Trafalgar to test an anomalous line of rock chips taken by Billiton Australia. Shaw commissioned David Garrard (see Garrard, 2000) from SVEDA Pty Ltd to construct a Surpac model of the gold mineralisation intersected by the Billiton JV and MPI in drill holes and costeans in the Golden Ridge-Brilliant area.

MPI Gold Pty Ltd explored EL 12/93 from 1994 to 1997 (see Poltock, 1994, Dugdale, 1995 and Frances, 1996). They were targeting a moderate tonnage and low grade gold deposit and considered the Golden Ridge prospect as one of the few in North East Tasmania where broad intervals of gold mineralisation had been located (costean with 34.5m @ 1.37g/t Au). Ten diamond holes were drilled at the Golden Ridge-Brilliant prospect (see Frances, 1996).

Billiton Australia in JV with Aureole NL and American Horizon Resources JV explored EL 58/88 from 1991 to 1993 (see Randell, 1990, 1991 and 1993). During this period trenching at New Golden Ridge-Brilliant had positive results with 18m @ 1.24g/t and 34.5m @ 1.37 g/t. Drilling at Trafalgar had mixed success with 3m @ 1.46g/t from 92m and at Brilliant the best intercept was 6m @ 4.41g/t.

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 IGRS (see Appendix 2).
- Compilation of the regional geophysics and DTM by Phil Muir.
- Soil and panned concentrates surveys (see Appendix 5 to 10).
- A report on the sulphide mineralogy - Trafalgar Mine (see Appendix 3).

Literature review

A review of the modern era of exploration from 1984 to 2001 was undertaken in late 2012 (see Appendix 1). The significant exploration results are presented below.

- Costeaning at New Golden Ridge assayed 18m @ 1.24 g/t and 34.5m @ 1.37 g/t (Randell, 1991).
- The Golden Ridge Granodiorite is compositionally distinct from the Pyengana Granodiorite. Therefore gold mineralisation at Golden Ridge may be genetically related to a geochemically distinct granitoid (Randell, 1991).
- RC hole RCGR 3 at New Golden Ridge averaged 4.4l g/t Au from 27m to 33m (6m) (Randell, 1993).
- At Trafalgar RCGR 6 assayed 3m @ 1.46 g/t Au from 92m to 95m (Randell. 1993).
- The New Golden Ridge mineralisation extends over a strike of 180m and a maximum width of 35m (Poltock, 1994).
- At the Double Event Prospect a quartz arsenopyrite vein about 0.3m wide, with a vertical dip and striking 060° is hosted in sericitized and deeply weathered granite near the contact. Samples of the vein from dumps assayed up to 22.30 g/t Au and 6.6% As (Poltock, 1994).
- MPI Gold noted that two drainage domains on the stream geochemistry results were not taken into consideration by Billiton (Poltock, 1994).
- At Queen of the Earth two soil sample traverses had samples which assayed up to 0.50 g/t Au (Poltock, 1994).
- Diamond drillholes GRD02 and GRD06 intersected high grade vein type gold mineralisation of up to 59.7 g/t and 29m @1.58 g/t Au (Dugdale, 1995).
- MPI follow up diamond drilling had intersections of 29m @ 1.59 g/t and 4m @ 20.04 g/t (Frances, 1996).
- Surpac modelling used the exploration drilling around the New Golden Ridge-Brilliant workings to identify a steeply plunging envelope of low grade gold

mineralisation containing approximately 25,000 ounces @ 1.6 - 1.9 g/t from surface to 300 metres vertical depth (Garrard, 2000).

Review of IRGS

The summary of IRGS deposits by Bruce Pertzel in Appendix 2 discusses their characteristics, features and classification. The following observations on the features of IRGS have confirmed the view held by Tamar Gold that the Golden Ridge Granodiorite is 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).

Regional exploration

Regional magnetics

The compilation of the regional magnetics from MRT data supports the interpretation of the Golden Ridge Granodiorite having a different geochemical signature from that of the rest of the Haleys New Country Granodiorite.

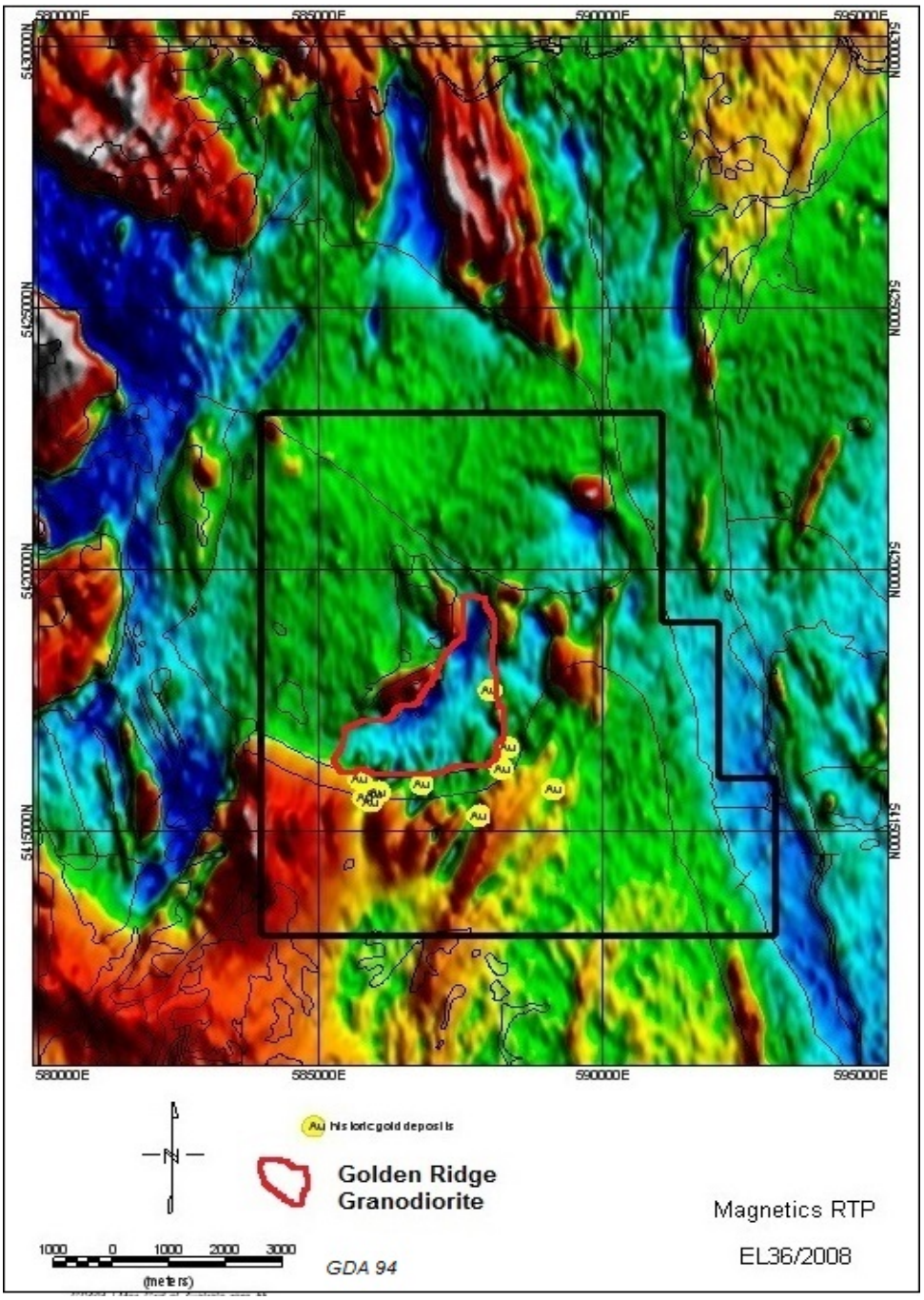


Fig. 8. Regional magnetics EL 36/2008 (data from MRT).

The regional DTM in figure 9 displays the striking topographic depression formed by the Golden Ridge Granodiorite.

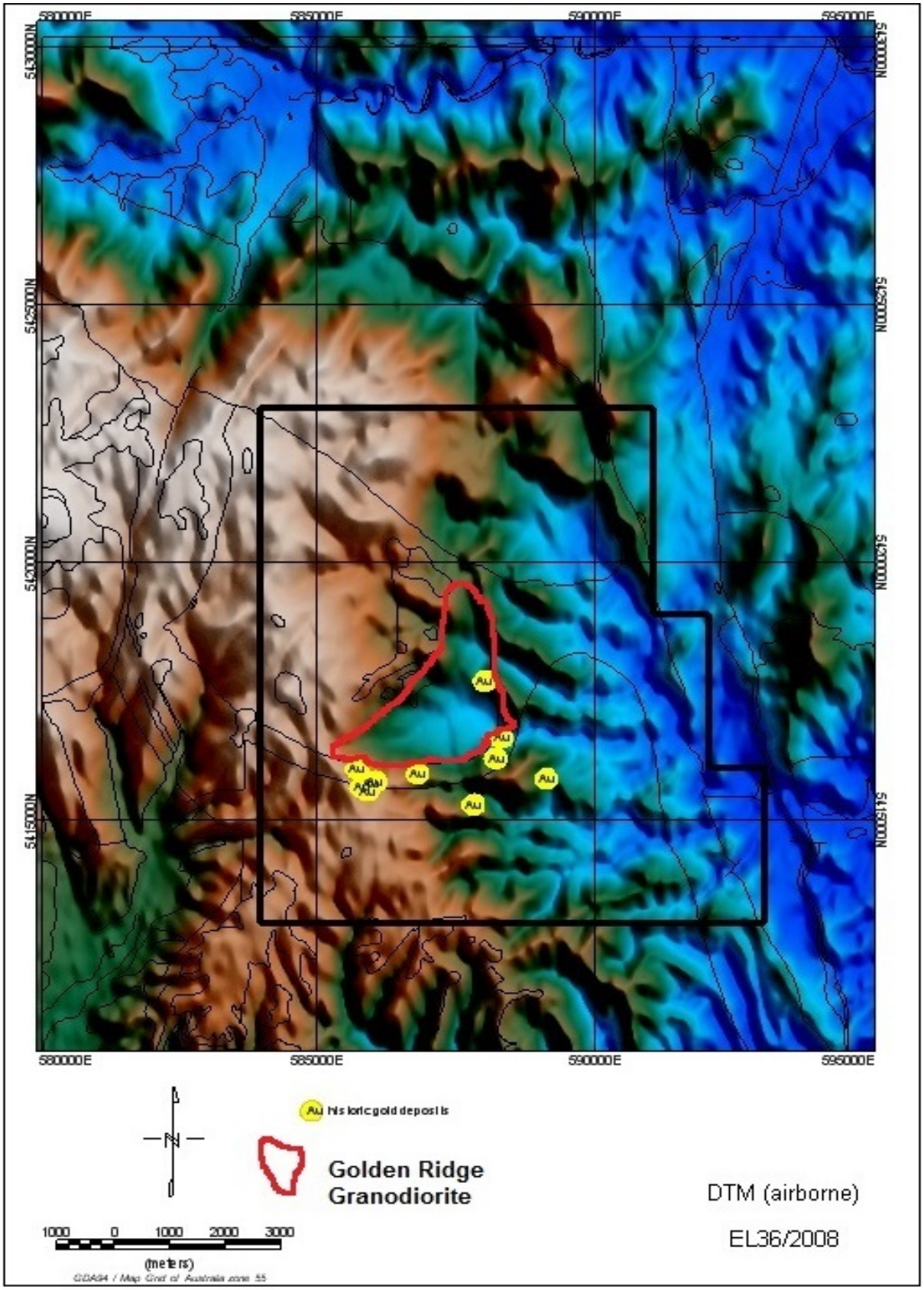


Fig. 9. DTM of EL 36/2008.

Soil Geochemistry
(see Appendix 5, 6 and 10)

After analyses of the past exploration results and the granite chemistry it appeared that the Golden Ridge Granodiorite was prospective for IRGS mineralisation. The vein style Golden Ridge line of prospects was used as vectors to IRGS mineralisation and it was decided to target the contact between the Mathinna Beds and the granodiorite around the base of Golden Ridge and across the Trafalgar Mine area with a line of soil sampling. The intention was to assay for IRGS indicator elements (As, Cu, Pb, Zn, Bi, Mo, Sb and Te) and gold.

A total of 176 samples were taken in December 2012 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. A geologist was present during the traverse to ensure that the sample was taken from granite derived soils and not from Mathinna slope deposits. A further 62 samples have recently been collected to the east of Trafalgar to close off the traverse and results will be presented in the 2013/2014 Annual Report.

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 10ppb 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.

The results are presented below superimposed on the 1:25 000 geology map of the area. All sample data including locality, results, assay technique, detection limits and standards are presented in Appendix 5, 6 and 10.

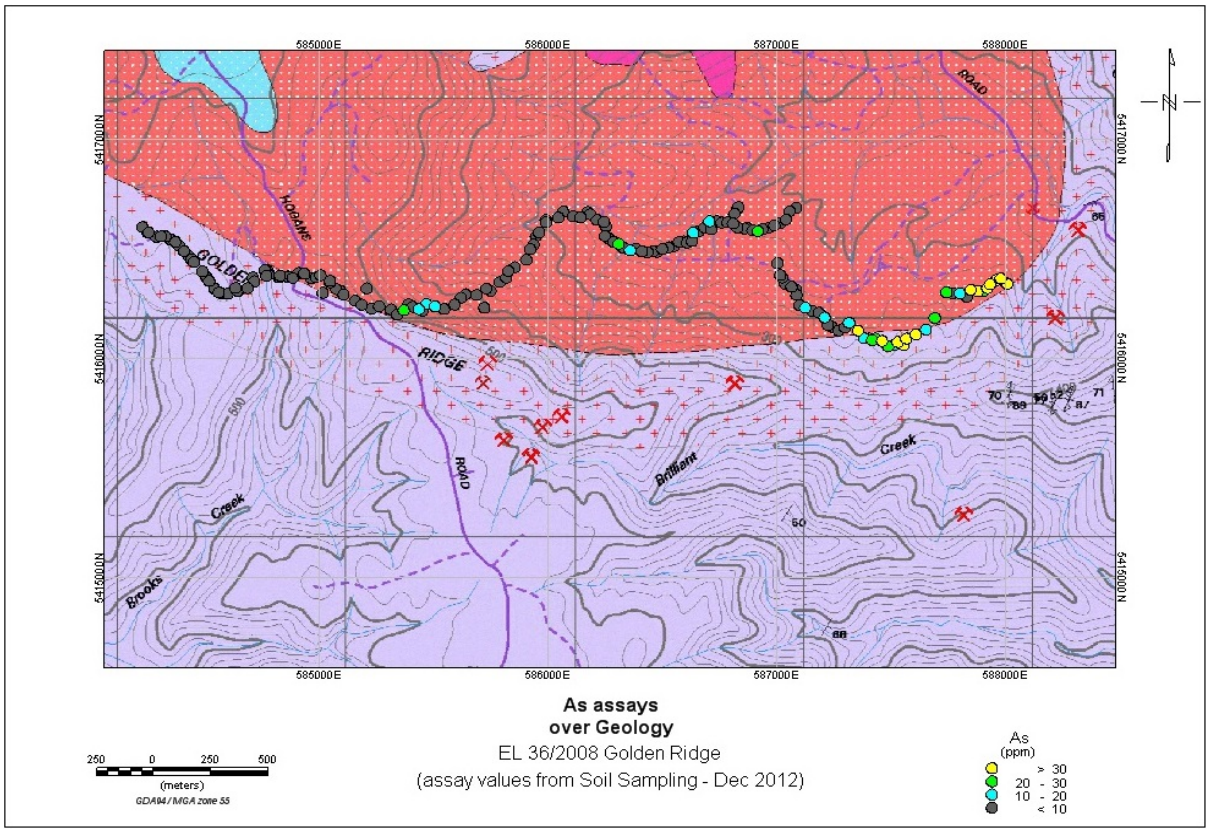


Fig. 10. Soil sample As assays over geology.

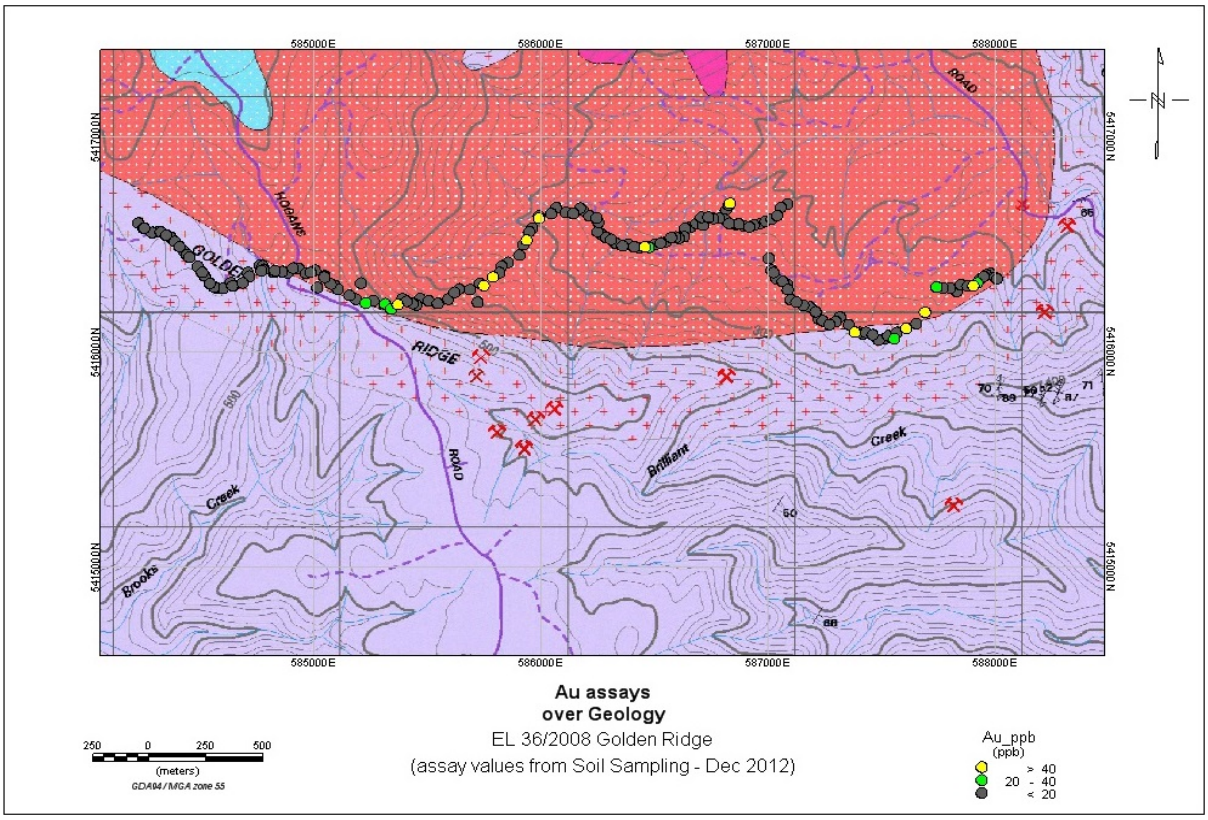


Fig. 11. Soil sample Au assays over geology.

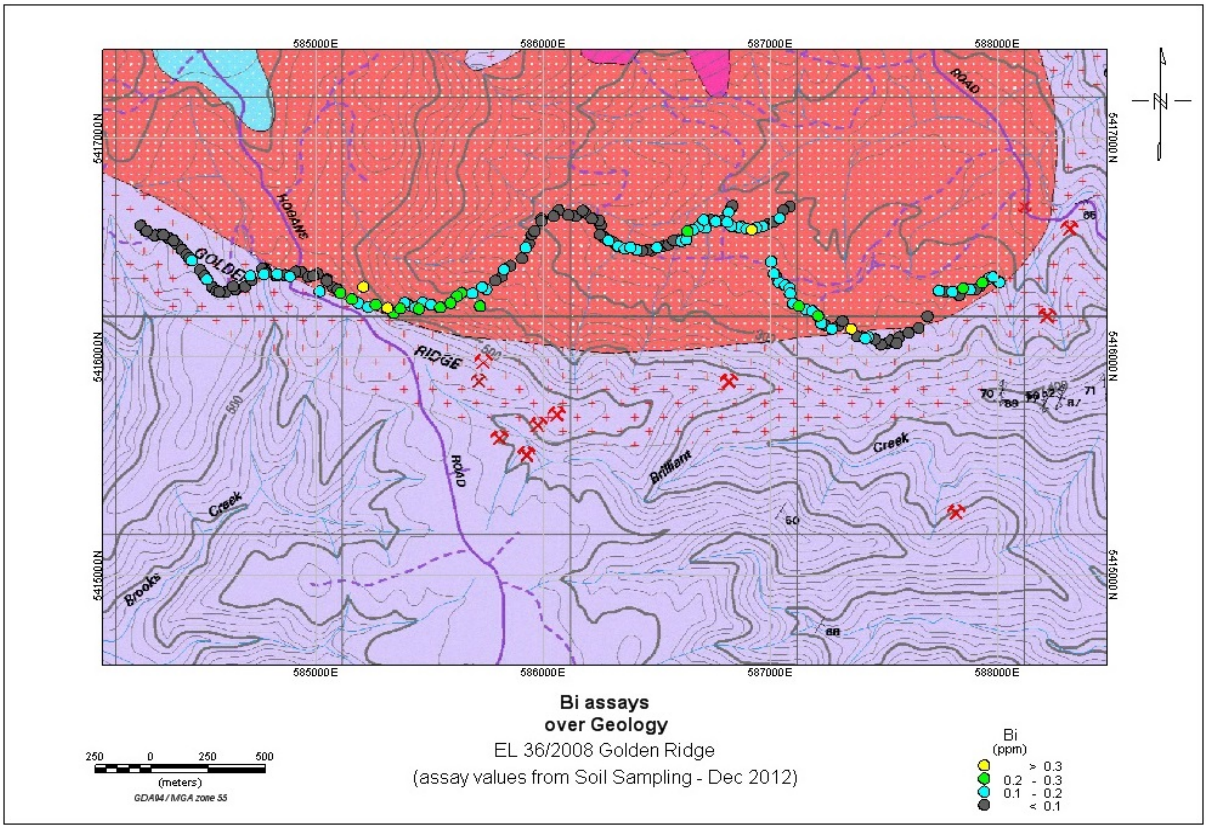


Fig. 12. Soil sample Bi assays over geology.

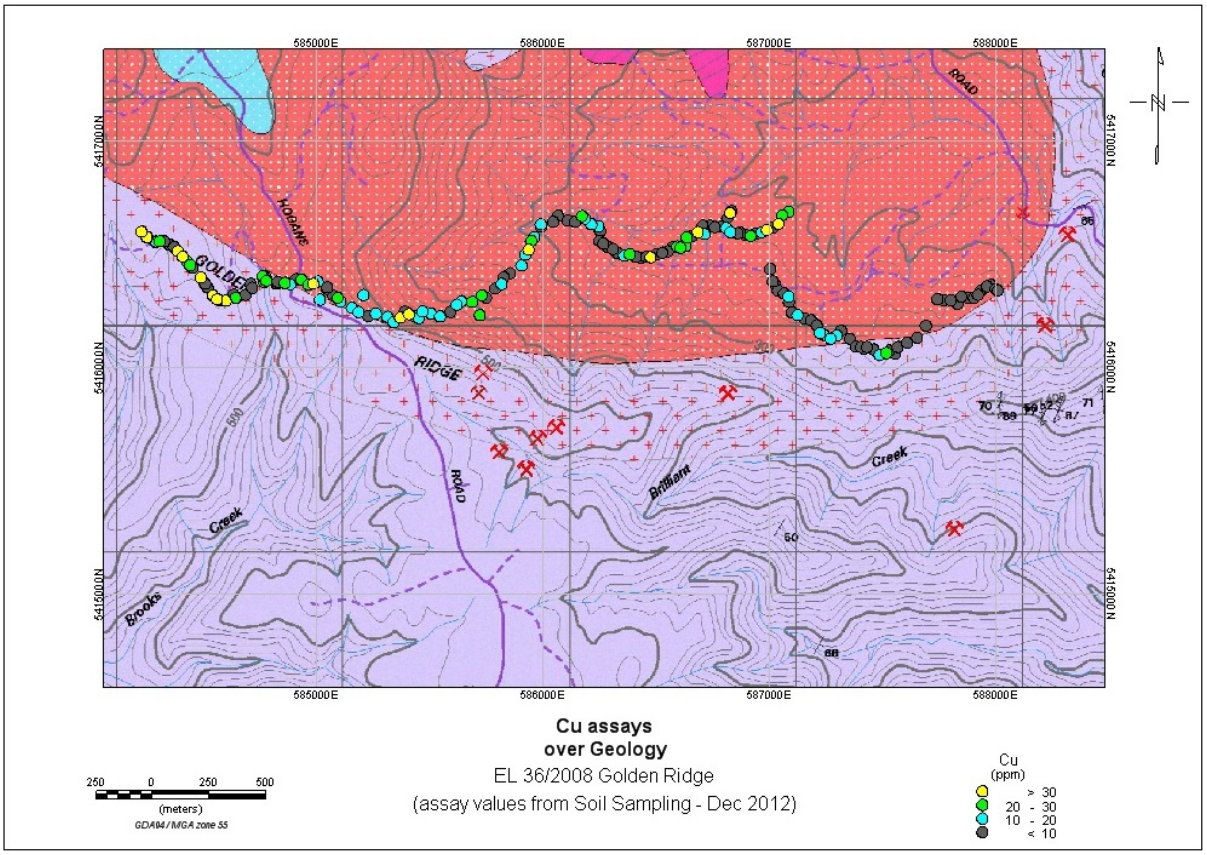


Fig. 13. Soil sample Cu assays over geology.

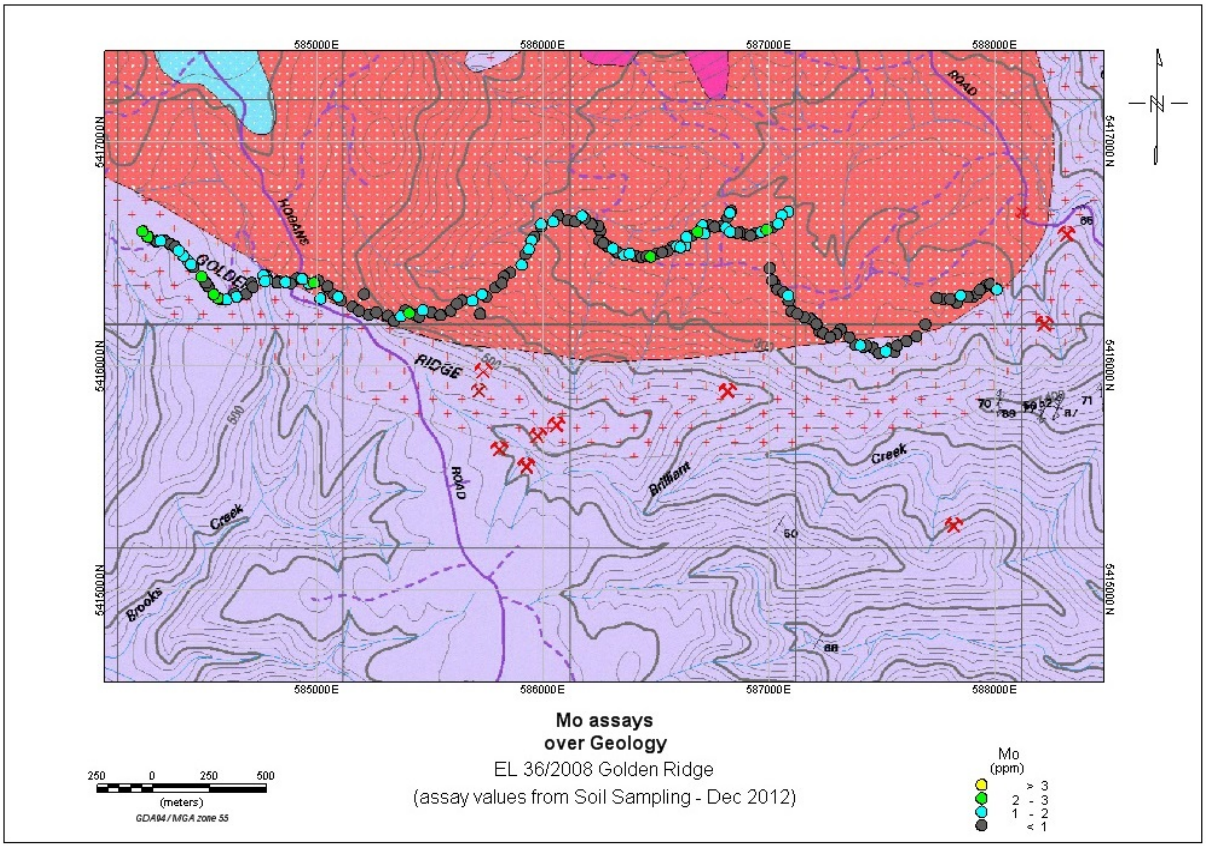


Fig. 14. Soil sample Mo assays over geology.

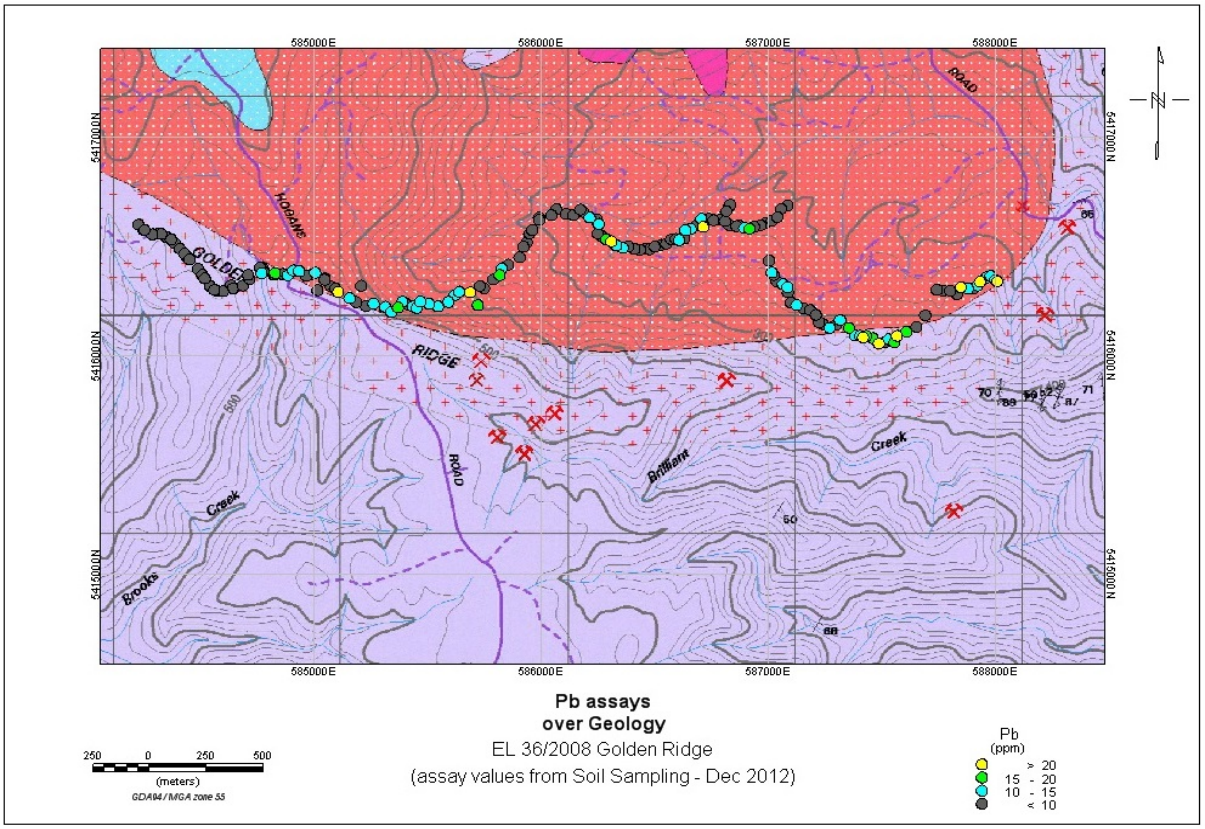


Fig. 15. Soil sample Pb assays over geology.

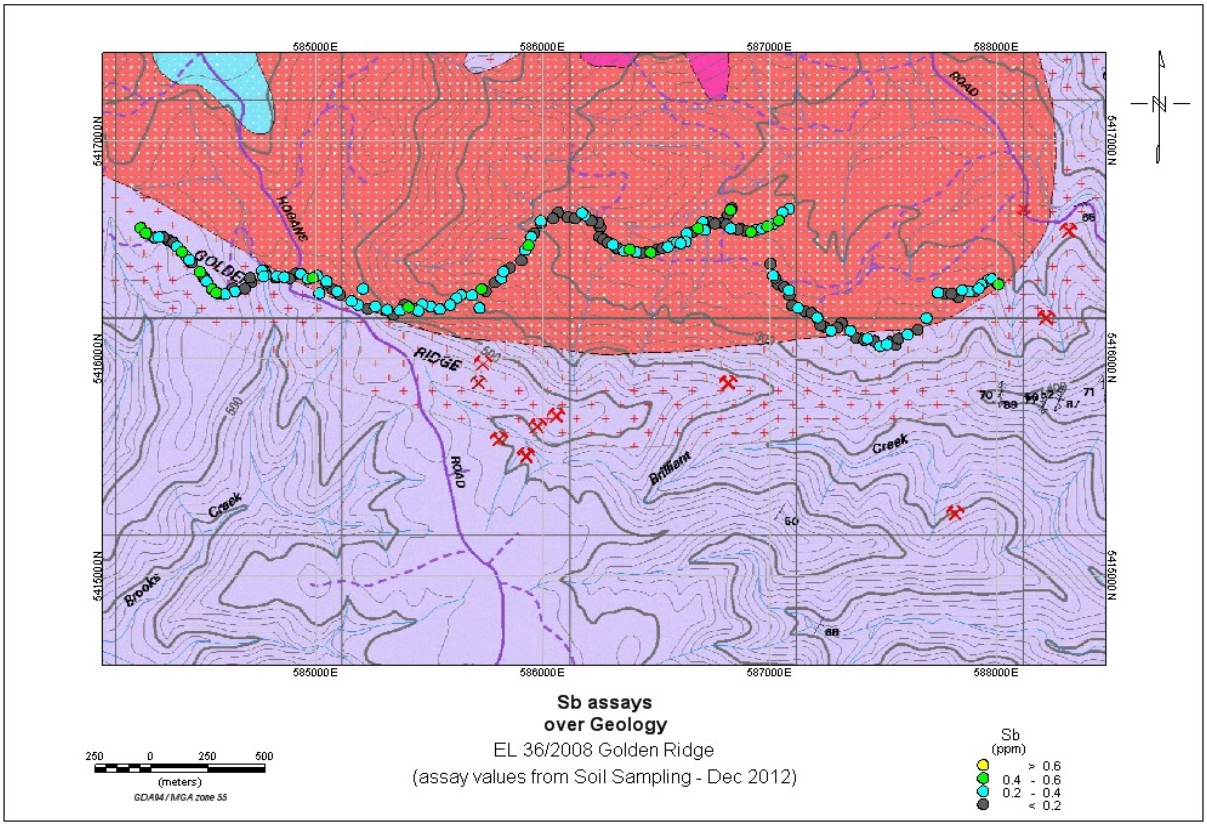


Fig. 16. Soil sample Sb assays over geology.

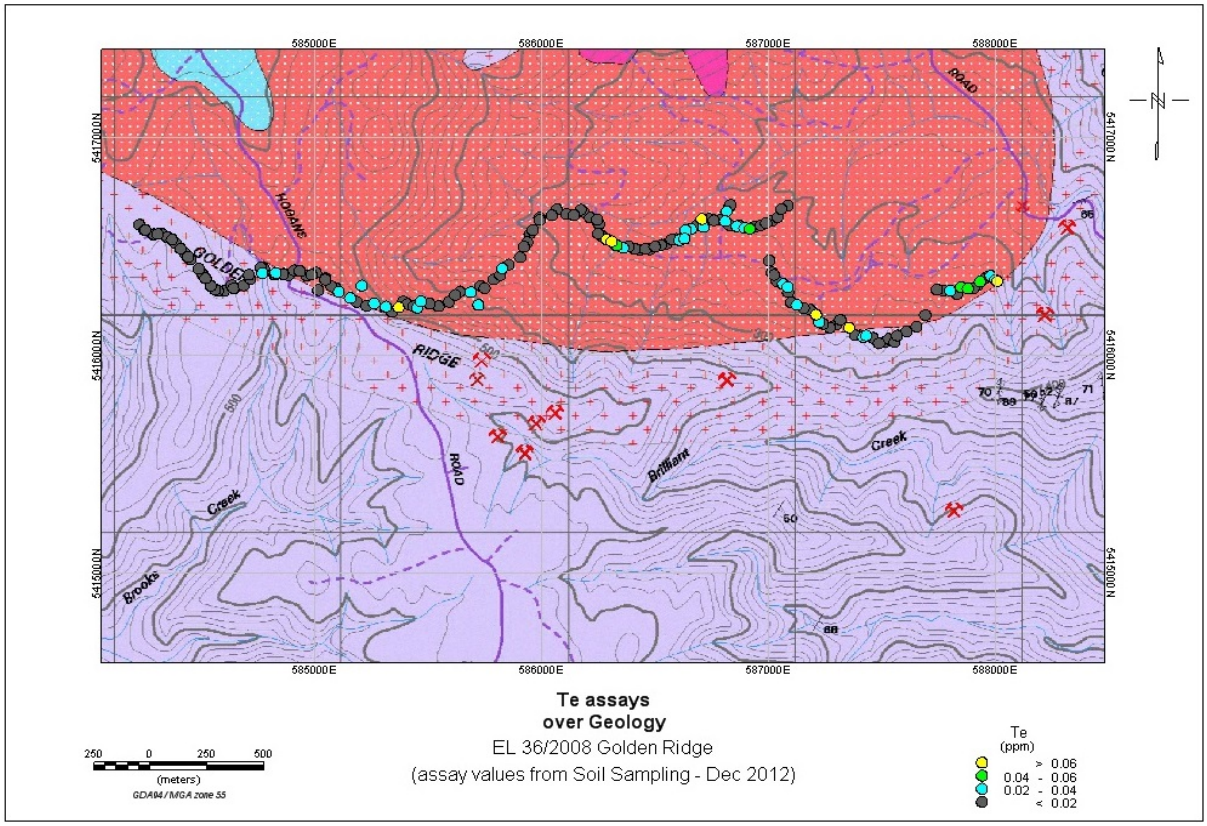


Fig. 17. Soil sample Te assays over geology.

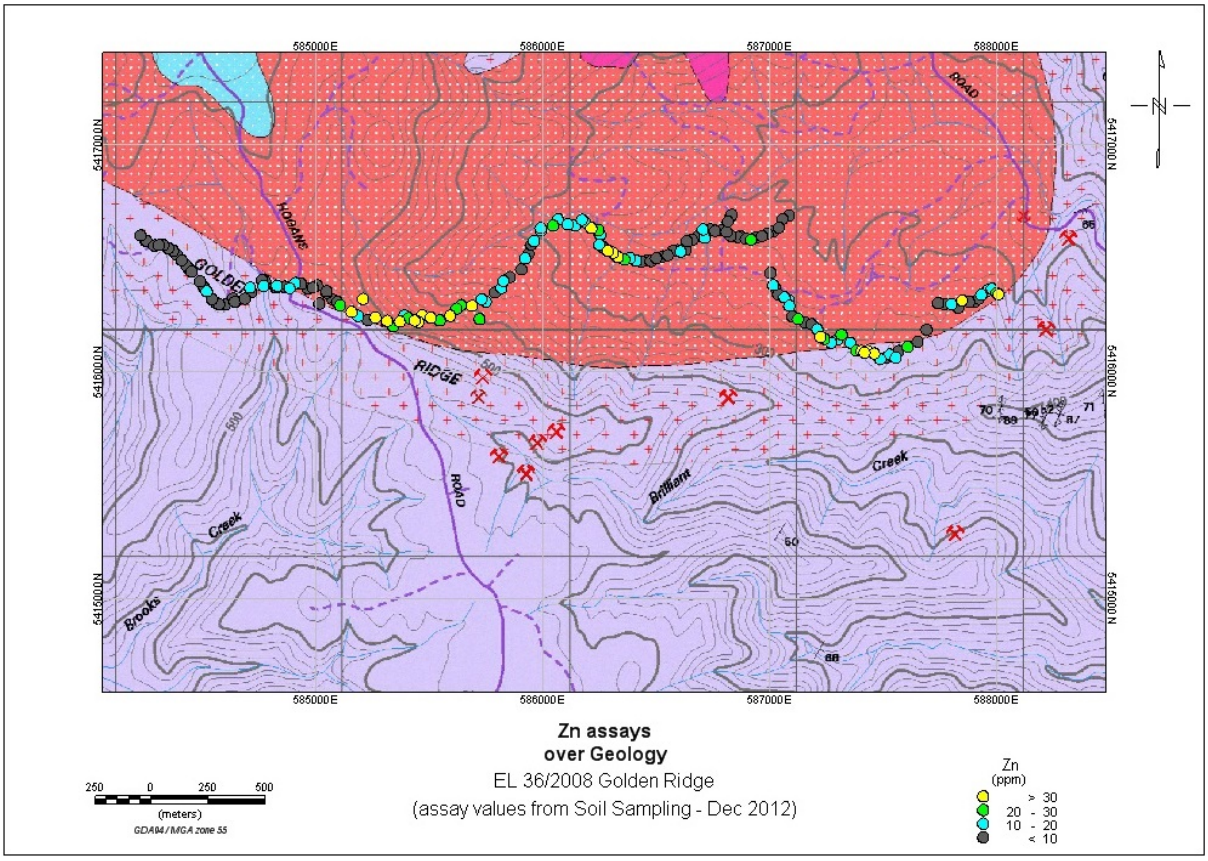


Fig. 18. Soil sample Zn assays over geology.

Panned Concentrate and Rock Chip geochemistry

The panned concentrates were collected at suitable trap sites and 2l of -2mm was taken as the standard measure of sample volume.

Panned Concentrates (18 samples) and Rock Chips (6 - all samples from Trafalgar mullock dump GDA 588215E, 5416522N) were both assayed for gold by Fire Assay/AAS (30g charge) at 10ppb level of detection. The other metals were all done by aqua regia digest/ICP-MS finish. See Appendix 7 for GDA co ordinates and Appendix 8 for results.

The rock chip results are presented in Appendix 9.

The plotted results for gold from the panned concentrate sampling are presented below.

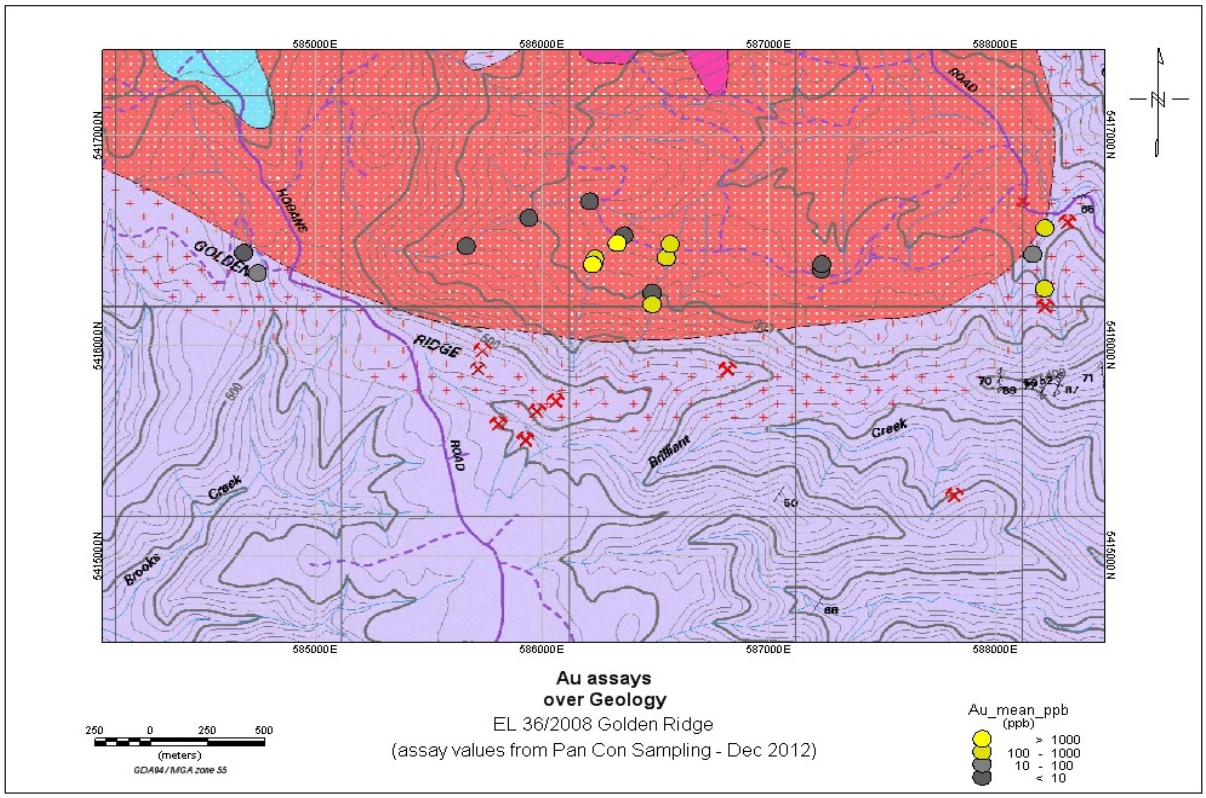


Fig. 19. Panned concentrate Au assays over geology.

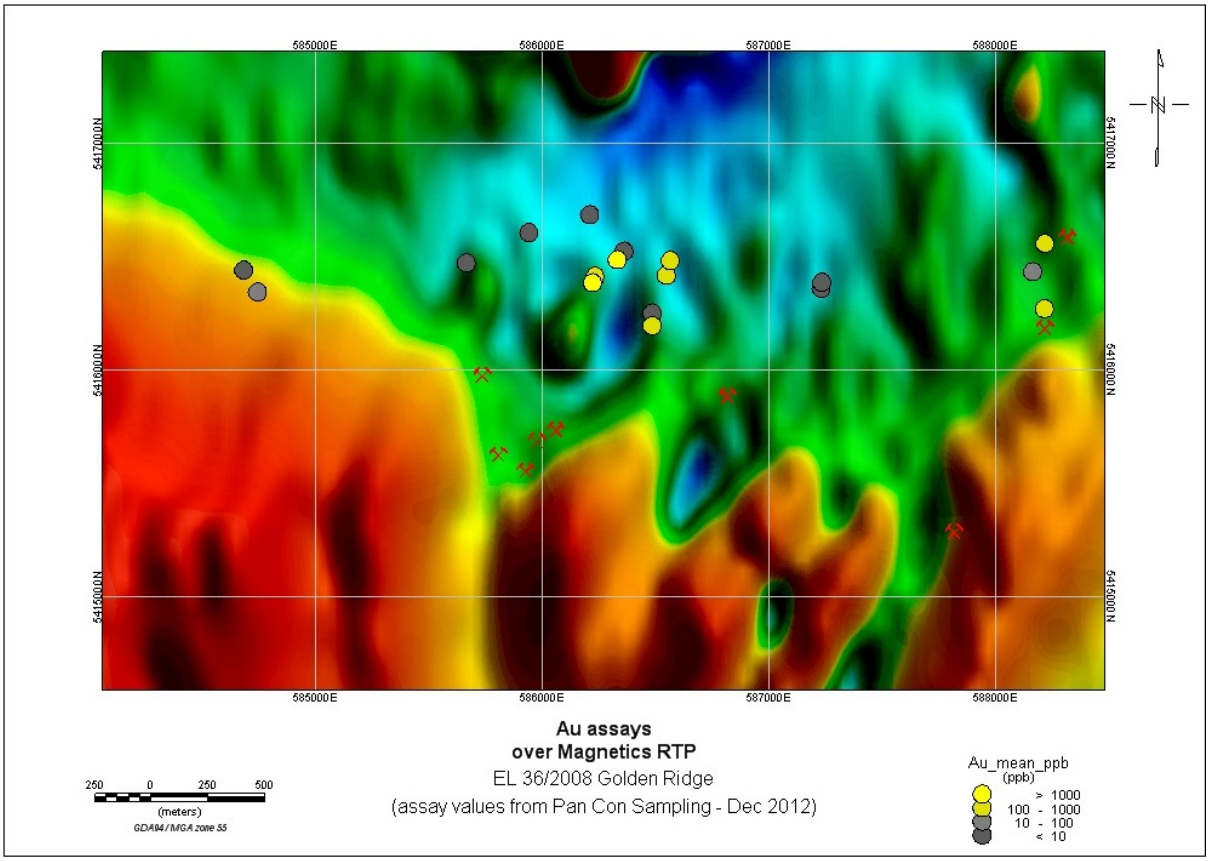


Fig. 20. Panned concentrate Au assays over magnetics.

Trafalgar Mine report on sulphide mineralogy

Two samples of the Golden Ridge Granodiorite from the mullock dump of the Trafalgar Mine were submitted to Gary McArthur for sulphide identification. The report is presented in Appendix 3.

Discussion of results

Literature review

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

- Regional geophysical survey compilation across the Golden Ridge down to Trafalgar and Queen of the Earth. Geophysical advice should be sought from a consultant. IP surveys were mentioned in the reports but not followed up on.
- Drilling at New Golden Ridge to follow up on the existing defined resource. Ken Morrison commented that "Mineralisation is open at depth and to the north east and the distribution of higher grade intersections inside the envelope suggests there is reasonable potential, via infill and extensional drilling, to double the resource and delineate a higher grade deep zone beneath a low grade surficial oxide zone deposit".
- Double Event has only been sampled with no further work. MPI recommended drilling. This prospect warrants a grid based sampling program, geophysics, mapping and drilling.
- The Trafalgar – Queen of the Earth north south trend has anomalous gold which should be followed up by mapping, rock chip sampling and geophysics.
- The drilling at Trafalgar was reported as not being encouraging by Billiton and Shaw's but both had intersections of over 1 g/t Au and both were RC drilling. This style of drilling in nuggetty mineralisation has been known to give the wrong results in Tasmania. Ken Morrison should be consulted on this issue.
- The gold in granodiorite at Trafalgar could indicate potential for Intrusive-related Gold System style of mineralisation. The Golden Ridge Granodiorite has been chemically mapped as being different from the Pyengana and Poimena and is also an I type granite. It is recommended that advice should be sought on this style of mineralisation and its potential at Golden Ridge.

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

In the image in figure 6 the Golden Ridge Granodiorite can be clearly seen to have a much lower magnetic signature than that of the associated Haleys New Country Granodiorite. The Hogans Road Diorites are strongly magnetic on the north west side of the Golden Ridge Granodiorite and the image would suggest that they are also present to the north east under cover.

The Mathinna Supergroup shows a strong north east linear pattern in the south of the area but tends to lose its signature where it is mapped as being hornfelsed and overlying the Golden Ridge Granodiorite.

The magnetics could be interpreted as indicating that the Golden Ridge Granodiorite extends to the north east under hornfelsed Mathinna.

Soil Geochemistry

The soil geochemistry traverse results have recently been received and plotted. An initial examination indicates that there are a number of elements showing a pattern (see Figures 10 to 18).

Arsenic shows a strong grouping of results above 30ppm in the south east corner and less strong on the granite in the western section. Au has a number of results above 40ppb in this south eastern area and also shows one sample above 40ppb and three between 20 and 40ppb in the west. This supports the known Au-As

veining in the Trafalgar Mine area. Both cut off on the Mathinna Beds to the west. Bi tends to follow As and Au with results above 0.03ppm. Te may be following this pattern but with less definition.

Pb and Zn follow a similar pattern to that shown by As and Au. Cu and Mo do not follow this pattern and do extend to the end of the traverse over the Mathinna to the west.

Sb seems to be scattered across the traverse with no real definable pattern.

Panned Concentrates and Rock Chips Geochemistry

The anomalous panned concentrate samples are encouraging in that they demonstrate that there is gold in the creeks in the central section of the area (see figures 19 and 20). No historic workings were noted in this area. Assays to 4.14ppm were obtained. The sampling area was confined by the availability of creeks with suitable trap sites.

Three of the six rock chips from the Trafalgar Mine (see Appendix 9) were anomalous in gold with 0.19, 1.1 and 2.67ppm. Arsenic mirrored this with 5.8, 188 and 119ppm.

Trafalgar Mine report on sulphide mineralogy

The summary from the report by Gary McArthur (see Appendix 3) follows:

The granodiorite is variably altered in both samples with sericite (and minor carbonate) partially replacing feldspars and biotite. In sample TG2 some of the biotites are replaced by chlorite. Rare disseminated pyrite, arsenopyrite and chalcopyrite are seen associated with the sericite alteration, and very rare disseminated sphalerite, galena and pyrrhotite were seen in sample TG1 in carbonate. An arsenopyrite-galena-cerussite veinlet in sample TG1 was host to 5 grains of electrum.

Figures 21 to 23 below show the sulphides and gold in the granodiorite samples from the Trafalgar Mine mullock dumps.

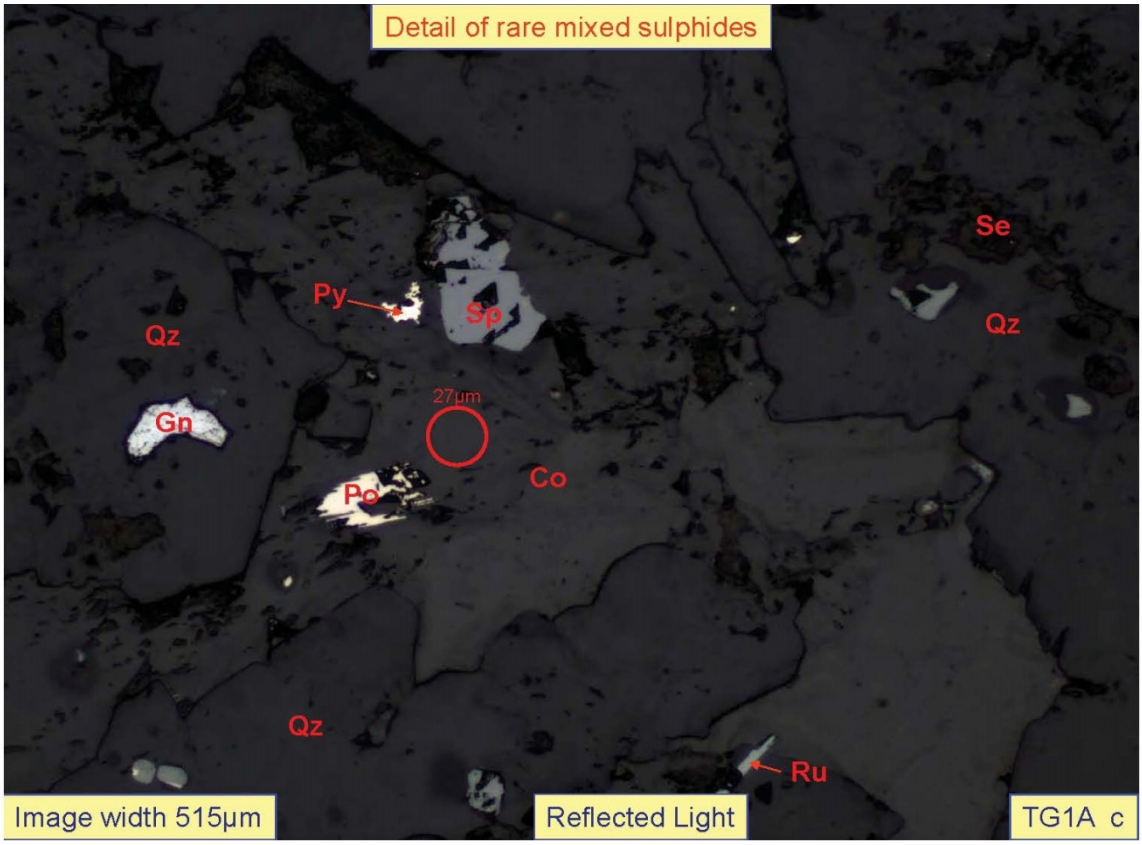


Fig. 21. Image of sulphides.

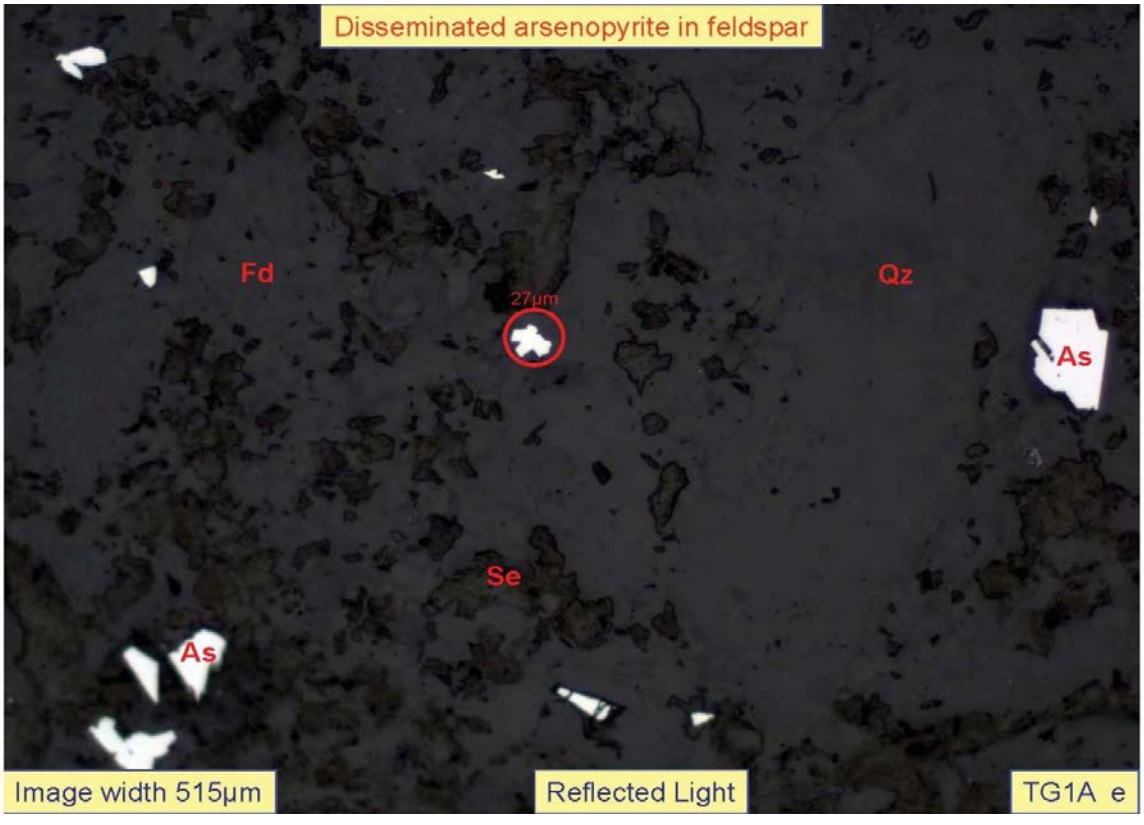


Fig. 22. Image of disseminated arsenopyrite in feldspar.

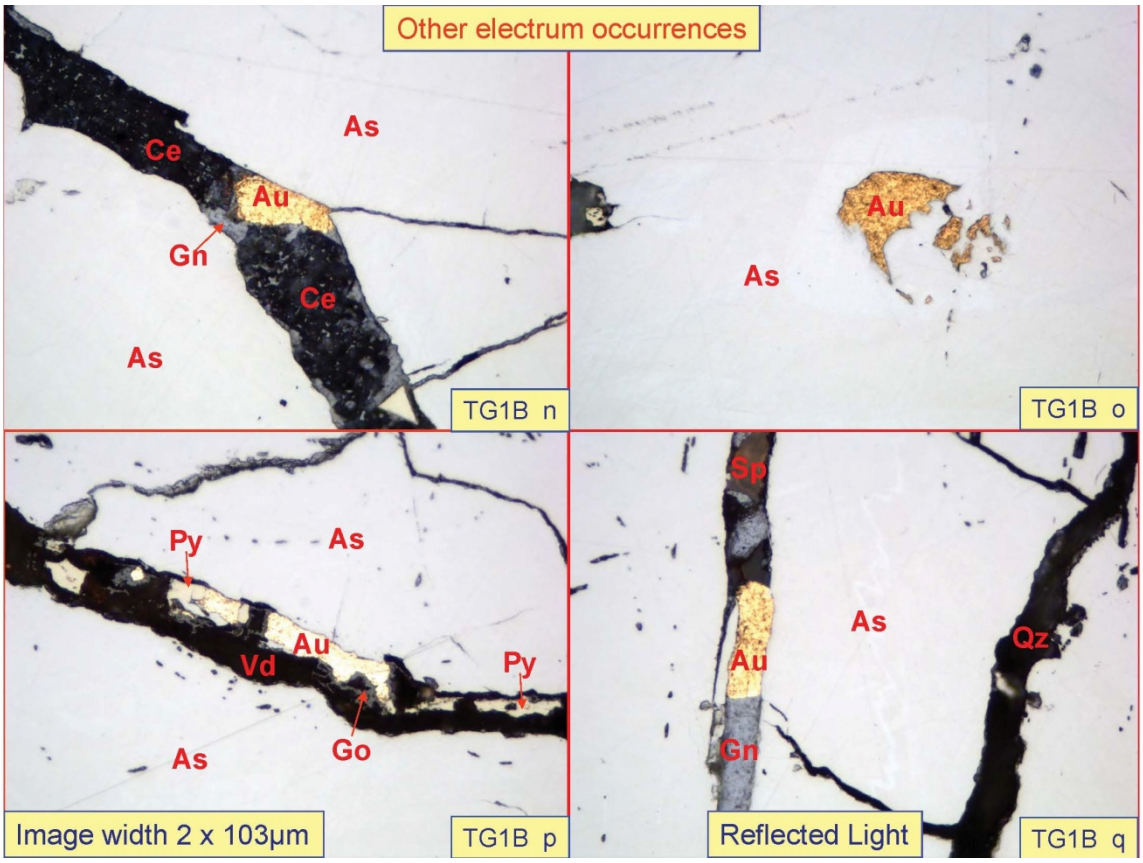


Fig. 23. Gold associated with arsenopyrite.

McArthur described the gold as follows:

- 27µm x 8µm grain hosted by quartz-sericite infilling an interstice in arsenopyrite [49.00X, 13.92Y].
- 21µm x 8µm grain hosted by cerussite infilling a narrow crack in arsenopyrite [47.25X, 14.82Y].
- 12µm x 7µm irregular grain hosted by arsenopyrite [13.98X, 14.49Y].
- 15µm x 2µm grain (high Ag) hosted by quartz infilling a narrow crack in arsenopyrite [16.94X, 16.23Y].
- 8µm x 2µm grain hosted by galena infilling a narrow crack in arsenopyrite [16.71X, 16.10Y].

Conclusions

The literature review recognised the potential of the area for IRGS style mineralisation and the summary by Bruce Pertzel provided encouragement to proceed with a regional exploration program. The results from the geophysics, soil sampling, panned concentrate sampling and the mineralogical work of Gary McArthur have supported a proposal for further work in 2013/2014 licence year.

In the Trafalgar–New Carthage area the following information has provided encouragement to proceed with a drilling program:

- Old workings in granodiorite (Trafalgar) and immediate roof hornfelsed Mathinna Beds (New Carthage).
- Gold-arsenic-lead soil anomaly in granodiorite on the contact with the Mathinna Beds (this work).
- Gold-arsenopyrite vein mineralisation and disseminated sericite-sulphide alteration in granodiorite mullock (report from Gary MacArthur to Tamar Gold).
- Percussion drilling results from Billiton Australia and Shaws had up to 3m intervals of 1.46 g/t.

The currently proposed 2013/2014 drilling program is as follows:

- Drill 4 x 250m diamond holes.
- Two at Trafalgar collared in granodiorite and drilled back towards the Mathinna Beds.
- One from New Carthage back towards the granodiorite.
- One to the south of Trafalgar on the geochemistry anomaly – drilled from granodiorite back towards Mathinna Beds.

Regional work will include geochemical sampling to the north of Trafalgar to cover the Double Event prospect and also to the east to cover the possible extension of the Golden Ridge Granodiorite under the hornfelsed Mathinna Beds. Depending on the results and budget further geochemical surveys to the south of Trafalgar on the Queen of the Earth line will be undertaken.

A budget of $400 000 has been proposed for this work.

Environment

The regional geochemical line did not require any cutting and the soil sample sites were excavated to approximately 20cm and back filled on completion. Most of the samples were taken in a ploughed eucalypt plantation at the base of Golden Ridge.

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

Expenditure

Expenditure to end of February was $67,046.96.

At the time of writing this report an extension to the soil sampling line to the east with an estimate of 60 samples is pending. The cost of this survey and the report compilation are estimated to be $13 000.

Total expenditure for 2012/2013 is estimated to be $80 000.

References

Black L. P., McClenaghan M. P., Korsch R. J., Everard J. L. & Foudoulis C. 2005. The significance of Devonian–Carboniferous igneous activity in Tasmania, as derived from U–Pb SHRIMP dating of zircon. Australian Journal of Earth Sciences 52, 807–829.

Dugdale, J. 1995. Annual Technical Report EL 12/93-Golden Ridge 1995. MPI Gold Pty Ltd.. TCR 95_3801.

Frances, D.J. 1996. Annual Technical Report - EL 12/93 Scamander. MPI Gold Pty Ltd. TCR 96_3916.

Garrard, D.J. 2000. Resource Modelling Report - EL6/99 - Brilliant - Golden Ridge Prospect - NE Tasmania. Shaw Excavations Pty Ltd. TCR 00_4463A.

Morrison, K.C. 2000. Annual Report - Year 1 - Golden Ridge. Shaw Excavations Pty Ltd. TCR 00_4463.

Morrison, K.C. 2001. EL 6/99 Golden Ridge. Shaw Excavations Pty Ltd. TCR 01_4565.

Randell, J.P. 1990. E.L. 58/88 - Golden Ridge Joint Venture Annual Exploration Report for the Period 7th April 1989 to 7th April 1990. Billiton Australia, Aureole NL and American Horizon Resources JV. TCR 90_3095.

Randell, J.P. 1991. EL 58/88 - Golden Ridge Joint Venture Annual Exploration Report for the Period 7th April 1990 to 7th April 1991. Billiton Australia, Aureole NL and American Horizon Resources JV. TCR 91_3232.

Randell, J.P. 1993. EL 58/88 Golden Ridge Joint Venture - Exploration Report for the Period 7th April 1992 to 7th December 1992. Billiton Australia, Aureole NL and American Horizon Resources JV. TCR 93_3424

Poltock, R. 1994. Annual Report EL 12/93 Scamander River 12 Months Ended October 1994. MPI Gold Pty Ltd. TCR 94_3639.