

R. A. Gregory
Exploration Licence 9/2013 Priory
Annual Report Licence Year 3



Ken Morrison
1 November 2016

List of Contents

	Page
Summary	2
1. Introduction	2
1.1 Report Map Datum	2
1.2 Exploration rationale	2
1.3 Geological Setting	3
1.4 Licence Information	3
2. Previous Exploration	4
3. Exploration Completed in the Current Year	8
4. Conclusions and Recommendations	12
5. Environment	12
6. Proposed Year 4 Exploration	13
7. Expenditure	14
8. References	14
Figure 1. EL 9/2013 Regional Location Map	4
Figure 2. EL 9/2013 Detailed EL Location Map	5
Figure 3. EL 9/2013 Topography & Main Prospects Map	6
Figure 4. EL 9/2013 Geology Map	7
Figure 5. EL 9/2013 Logans Prospect Geology & Exploration Targets Map	9

SUMMARY

Exploration during the 2015-2016 licence year consisted of mapping and excavating two bulk sampling pits at Logans prospect and the completion of the first pit at Littlechilds Creek, Priory. All bulk samples testing basal alluvial gravels preserved under shallow overburden sediments on terraces bordering the current creeks.

An estimated combined total of 23 cubic metres of alluvial gravel was recovered from the three sites. The gravel from the two Logans pits was processed on site by a combination of hydraulic sluice box gravity separation and manual sieving, to produce a +3mm washed concentrate. The concentrate was spread on to tables and manually inspected for sapphires. Approximately 190 fragments of rough sapphire were recovered, along with numerous spinel and small zircon indicator minerals. The majority of the stones came from Pit 4. Generally the sapphire colours are reasonable but the majority of the stones are either too small or too fractured and/or dull and cloudy to warrant cutting. No stones of cuttable quality were recovered from Pit 3 but 18 were recovered from Pit 4. A yield of approximately 10% cuttable quality stones is consistent with the earlier results in Pit 2.

The highest concentration of sapphires and indicator minerals was encountered in gravel close to bends in the current creek, and with a high content of rounded siliceous pebbles and a relatively low (but still substantial) content of basalt cobbles and boulders. Many basalt clasts appear angular and not water worn, suggesting a talus source for some of the coherent basalt.

Gravel from the Littlechilds pit is stockpiled at Bells Marsh, where it will be processed along with samples taken at Bells Marsh in 2017.

The disturbed areas surrounding and including the pits and their access tracks have been rehabilitated and made unusable by light vehicles. Further bulk sampling at Logans and a start to testing the Bells Marsh prospect are planned for the 2016-2017 year.

Total expenditure for the current year was \$118,567.

1. INTRODUCTION

1.1 *Report Map Datum*

GDA94 – MGA Zone 55 (Figures 1-5).

1.2 *Exploration Rationale*

The rationale for exploring this EL was originally based on the observation that a number of pipe-like basalt occurrences are known in the Priory area, as are several recorded sites yielding basalt-derived sapphires, zircons and spinels from restricted local occurrences of alluvial sediments and tin mine tailings. The Priory area provides an opportunity to

explore for small scale sapphire deposits close to the eroded remnants of the source extrusions. Because the targets are shallow, near surface alluvial sediments, and the indicator minerals are easily recognised, they can be explored using low cost, low impact traditional prospecting methods, combined with the benefit of modern regional geology maps and aeromagnetic data.

1.3 Geological Setting

The regional geology of the EL is covered by MRT Digital Atlas 1:25,000 scale Blue Tier and Binalong Sheets, extracts from which (minus a legend) are shown on Figure 4. The dominant rock type covering the EL is felsic granite, a part of the Devonian I-type Mt Pearson pluton within the Blue Tier Batholith (Black et al, 2005). Small patches of contact hornfelsed Mathinna Supergroup sandstone and shale overlie the granite, as remnants of the erosional unroofing of the pluton.

The granites and metasedimentary rocks represent basement to the Cenozoic basalts and alluvial sediments which are the important materials for sapphire exploration. Figure 4 and the Blue Tier geology sheet show that the basalts are a very minor part of the regional geology and they often outcrop as small, roughly circular in plan view, pipe-like intrusions. The best exposures of olivine-spinel inclusion-rich amygdaloidal basalt pipes, which appear to be spatially linked to detrital sapphires, are in rehabilitated and active quarries at Logans prospect, and Halfway Hill inside ML 9M/2010, respectively (Figures 3 and 4). These basalts are classed as basanites and are relatively enriched in apatite, nepheline and some rare elements (data provided courtesy of John Everard, MRT), in comparison to northeast Tasmanian basalts generally.

At the regional scale Tertiary and Quaternary alluvial sediments are restricted to narrow terraces of the George River and at the mouths of some tributary creeks, mainly south of the EL boundary. However, in detail a number of gemstone prospects are recognised (Figure 4) in gravels of undifferentiated Cenozoic age, either associated with abandoned placer tin mines (Priory and Bells Marsh) or close to basalt but with no previous mining (Logans and Littlechilds). A basalt source rock has not been located at Littlechilds prospect but is inferred due to the common coarse angular black spinel in the creek gravel.

1.4 Licence Information

EL 9/2013 Priory (see Figures 1-4).

The EL area originally covered 205 km² but partial relinquishment at the end of Year 1 and Year 2 reduced it to the current area of 11 km², comprising two parts.

Categories 1 and 5.

Holder: R. A. Gregory.

Licence Year 3: 7 November 2015 to 7 November 2016.

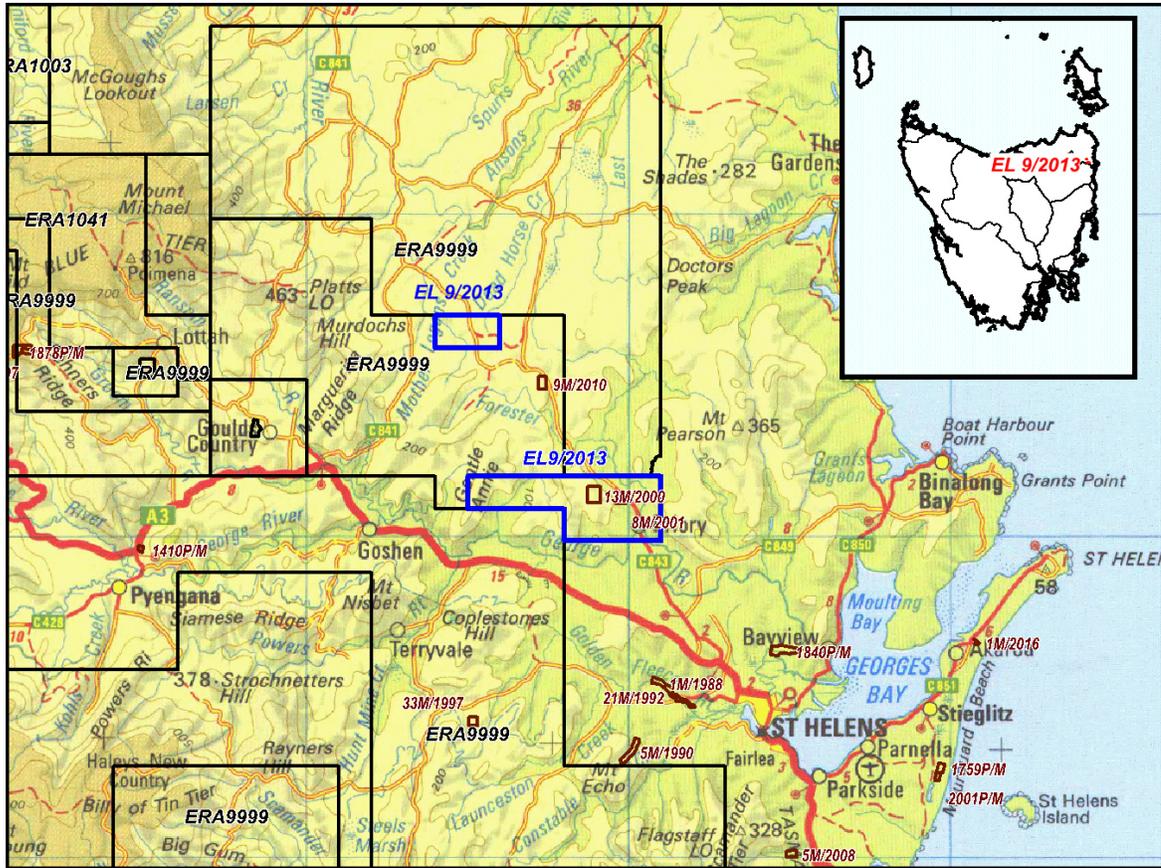
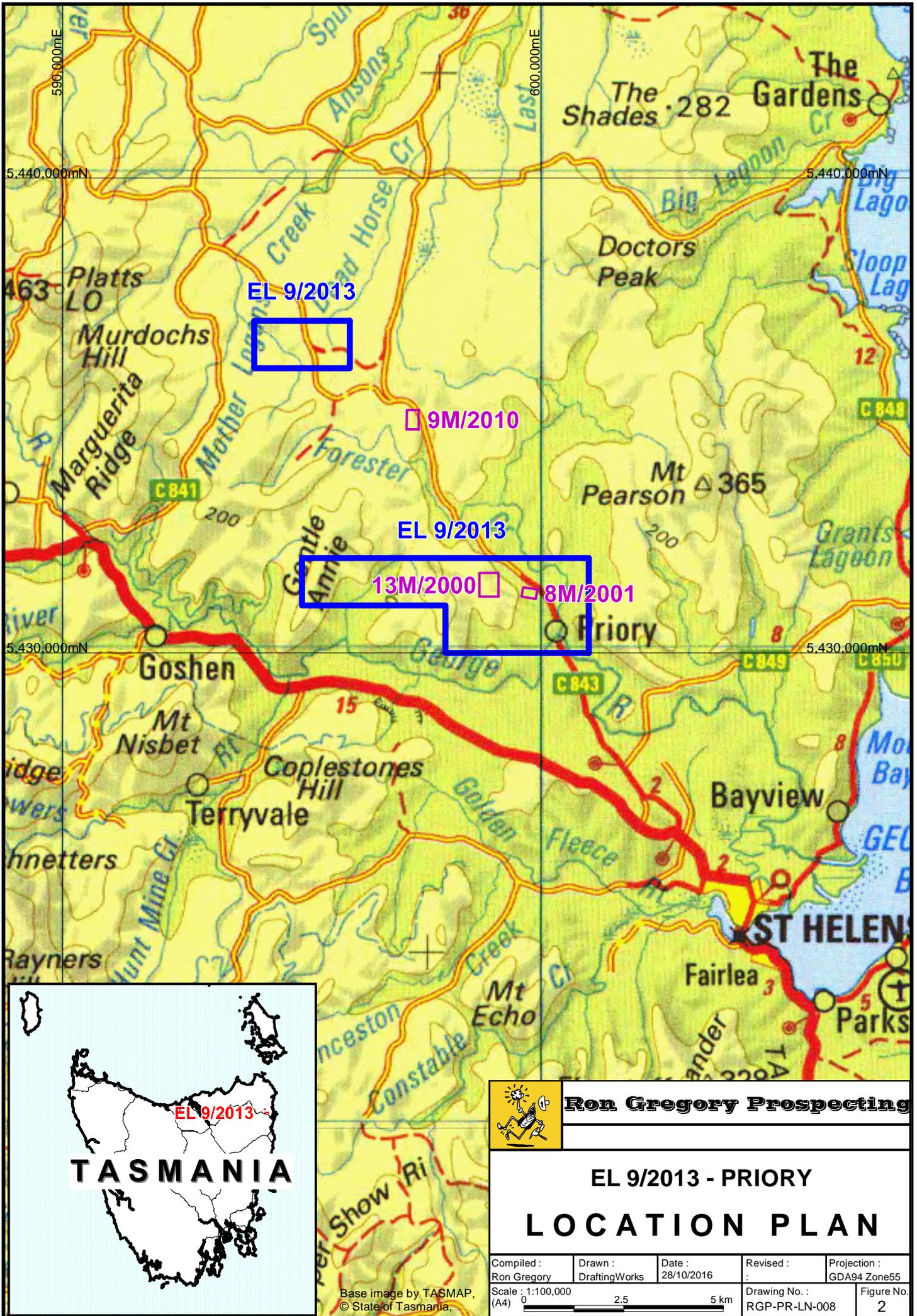


Figure 1 Regional Location Map

2. PREVIOUS EXPLORATION

Exploration prior to the current licence year is summarized in the Year 1 annual report (Gregory, 2015) and the subsequent partial relinquishment reports and Year 2 annual report for EL 9/2013 (Morrison, 2015a, b, c). No records of gemstone exploration within the area currently covered by EL 9/2013 have been located. Van Dieman Mines Pty Ltd, under SEL 22/1999, conducted some exploration for sapphires in the Priory area but their work was located south of Priory and immediately outside of EL9/2013 (Gregory, 2015).

EL 9/2013 exploration in Year 1 consisted of reconnaissance gemstone prospecting and ground checking aeromagnetic features interpreted to potentially by responses from basalt pipes (Gregory, 2015). No new basalt outcrop was discovered and the prospecting work concluded that four high priority targets (Logans, Littlechilds, Priory and Bells Marsh – see Figures 3 & 4) warrant bulk sampling to determine sapphire grade and quality. Additional sites remained to be field checked. Based on a combination of geology, access and land use considerations, part of the EL was relinquished in early 2015.

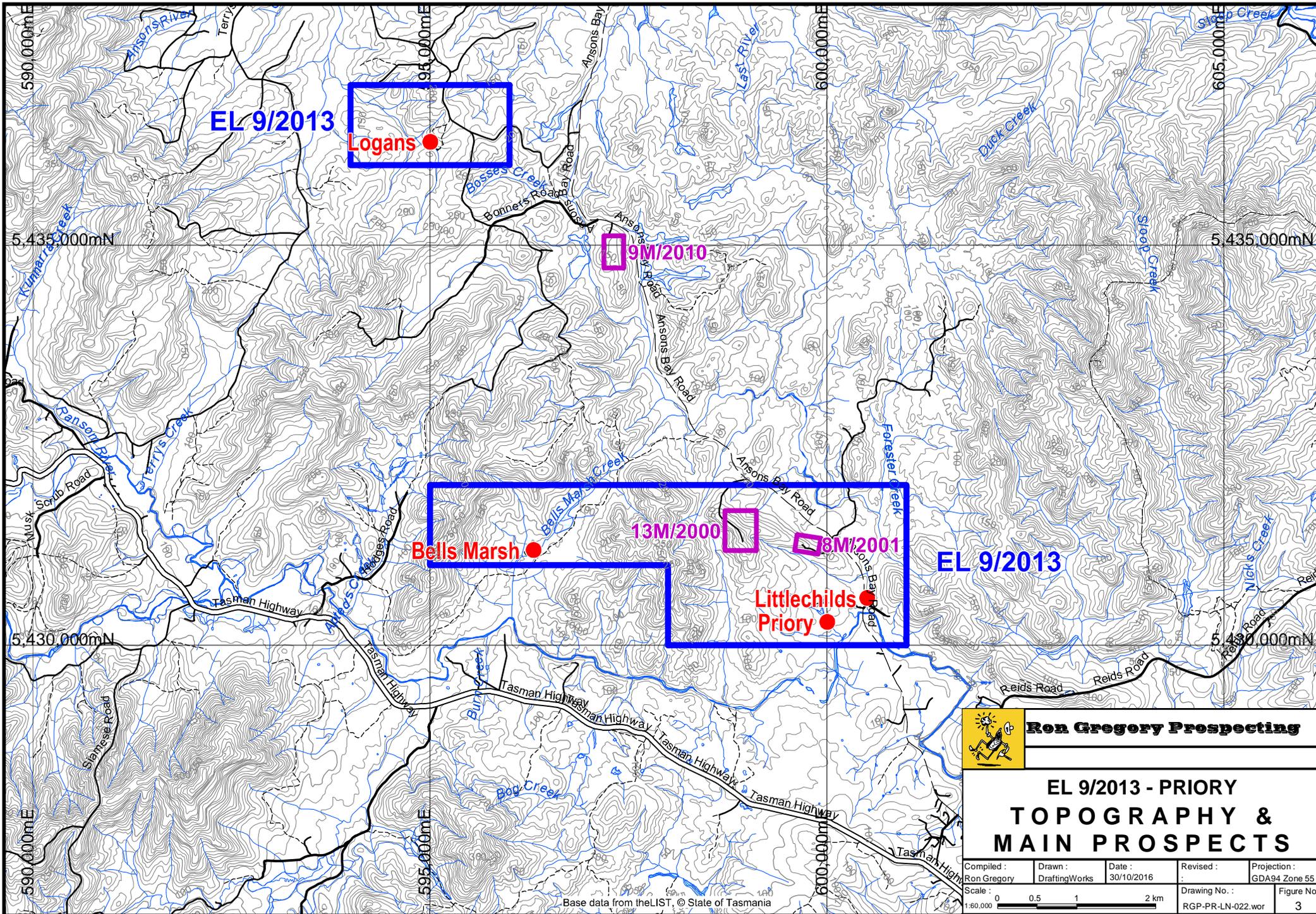


Ron Gregory Prospecting

**EL 9/2013 - PRIORY
LOCATION PLAN**

Compiled : Ron Gregory	Drawn : DraftingWorks	Date : 28/10/2016	Revised : :	Projection : GDA94 Zone55
Scale : 1:100,000 (A4) 0 2.5 5 km		Drawing No. : RGP-PR-LN-008	Figure No. 2	

Base image by TASMAP,
© State of Tasmania.

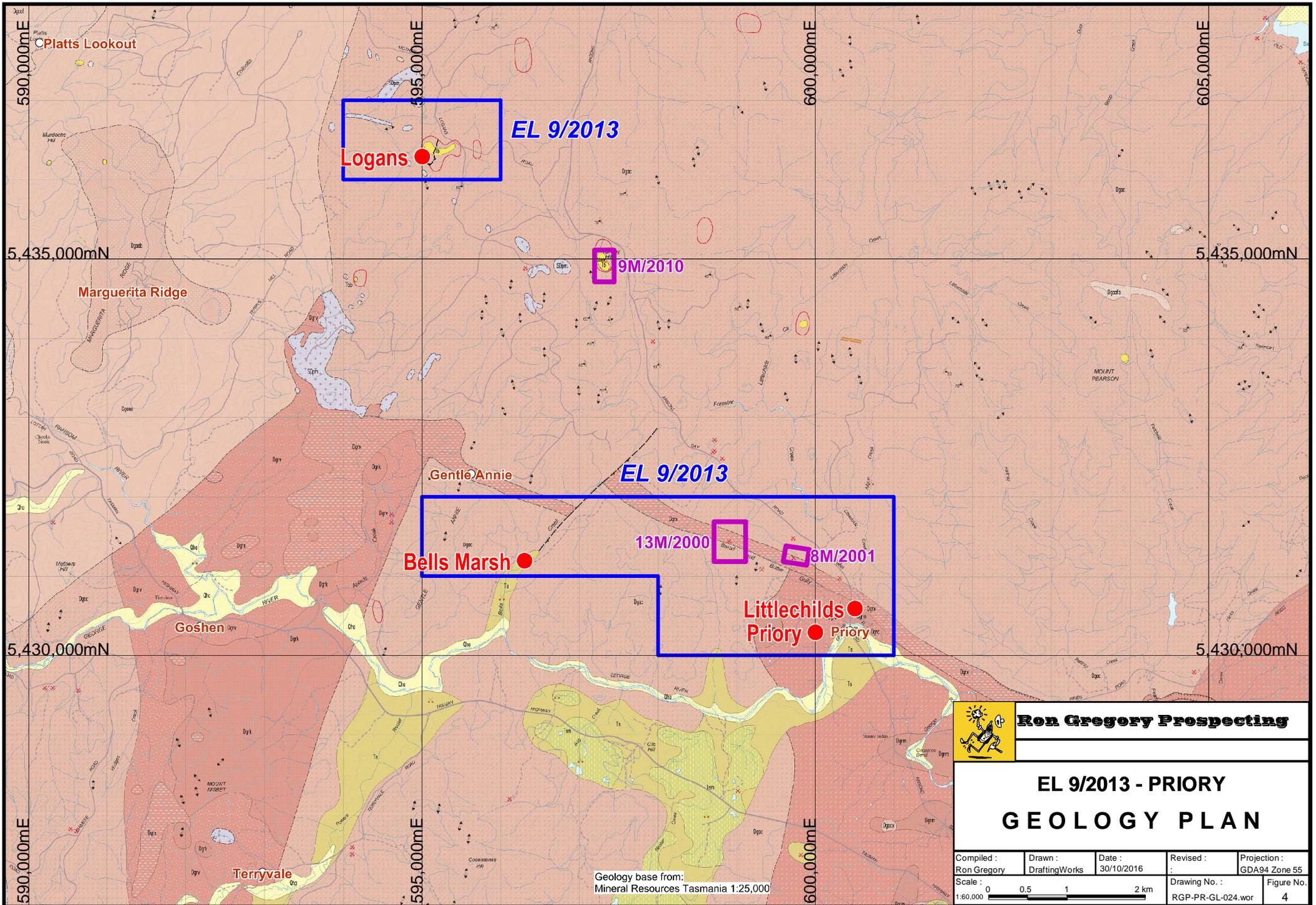


Ron Gregory Prospecting

**EL 9/2013 - PRIORY
TOPOGRAPHY &
MAIN PROSPECTS**

Compiled : Ron Gregory	Drawn : DraftingWorks	Date : 30/10/2016	Revised : :	Projection : GDA94 Zone 55
Scale : 1:60,000			Drawing No. : RGP-PR-LN-022.wor	Figure No. 3

Base data from theLIST, © State of Tasmania



590,000mE
5,435,000mN
5,430,000mN
590,000mE

595,000mE
595,000mE
595,000mE

600,000mE
600,000mE
600,000mE

605,000mE
5,435,000mN
5,430,000mN
605,000mE



Ron Gregory Prospecting

**EL 9/2013 - PRIORY
GEOLOGY PLAN**

Compiled : Ron Gregory	Drawn : DraftingWorks	Date : 30/10/2016	Revised : :	Projection : GDA94 Zone 55
Scale : 0 0.5 1 2 km			Drawing No. : RGP-PR-GL-024.wor	Figure No. 4

Geology base from:
Mineral Resources Tasmania 1:25,000

In licence Year 2 terrace gravels were bulk sampled with two pits at Logans prospect and work commenced on the first pit at Littlechields Creek near Priory (Morrison, 2015b). At Logans, an estimated total 15 cubic metres of basal alluvial gravel, representing previous generations of the drainage system, was sampled and processed on site by wet screening, manual sieving and visual inspection of the resulting +3mm concentrate. Approximately 150 rough sapphire fragments were recovered, yielding 25 cut stones ranging in size from 0.1 to 1.4 carats.

Most of the work at Littlechields Creek was undertaken in licence Year 3.

Completion of the magnetic anomaly screening in Year 2 resulted in a further partial relinquishment (Morrison, 2015c).

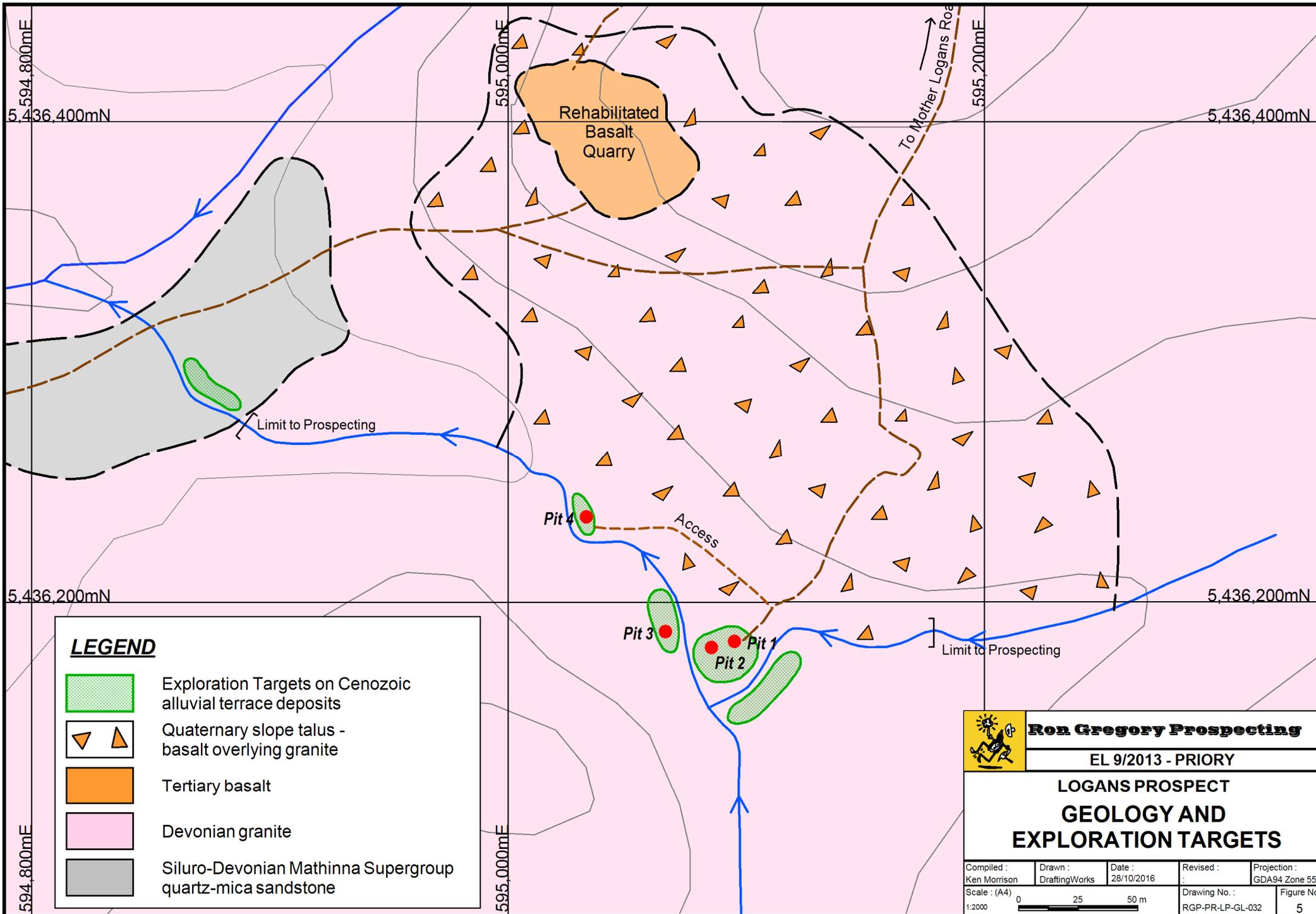
3. EXPLORATION COMPLETED IN THE CURRENT YEAR

Exploration during the 2015-2016 licence year consisted of mapping and excavating bulk sampling Pits 3 and 4 at Logans prospect (Figure 5), and completing the first pit at Littlechields prospect (Figure 3). All three pits sampled basal alluvial gravels preserved under shallow overburden sediments on terraces bordering the current creeks. An estimated total 13 cubic metres of basal alluvial gravel was sampled from the two Logans pits and processed on site, and a 10 cubic metre sample from Littlechields was trucked to a stockpile site at Bells Marsh. The stockpile has not yet been processed.

The earthworks, including subsequent rehabilitation, was conducted by Jason Rattray from Pyengana, using a 7 tonne tracked excavator at Logans, and by East Coast Skips using an 8 tonne excavator at Littlechields.

Figure 5 shows the prospect geology at Logans and the main bodies of terrace gravel targeted for bulk sampling. The bedrock geology consists of Devonian granite basement intruded by a pipe-like Tertiary basalt intrusion, which has been quarried for road gravel and the site rehabilitated, such that actual basalt outcrop is no longer exposed. The raft of micaceous sandstone at the western side of the prospect appears to be a thin erosional remnant remaining after the unroofing of the granite.

The fan of basalt talus extending from the quarry downslope to Logans Creek correlates well with the evidence of historic (pre EL 9/2013) prospecting and fossicking in the creek, with a downstream offset in the line of diggings of about 100 metres, due presumably to fluvial transport of sediment. It is well established that the sapphire, zircon and pleonaste spinel is sourced from Tertiary basalt. Abundant spinel and olivine inclusions are visible in the Logans basalt but to date no in-situ zircon or sapphire has been detected, despite considerable effort made searching for them. A consistent feature of the detrital alluvial sapphire and zircon recovered from the bulk sampling is the near total lack of rounding and abrasion due to water transport. The stones are broken fragments of uneroded crystals, many preserving partial subhedral to euhedral form.



Ron Gregory Prospecting

EL 9/2013 - PRIORY

**LOGANS PROSPECT
GEOLOGY AND
EXPLORATION TARGETS**

Compiled : Ken Morrison	Drawn : DraftingWorks	Date : 28/10/2016	Revised : :	Projection : GDA94 Zone 55
Scale : (A4) 1:2000			Drawing No. : RGP-PR-LP-GL-032	Figure No. 5

The basal alluvial gravel from Pits 3 and 4 is composed of variable proportions of basalt, granite, siliceous contact metamorphic rocks and vein quartz, in a heavy wet matrix ranging from oxidized clay to organic-rich mud. Cobble size and matrix content decrease in the best sorted gravels with the highest gemstone concentration. It is clear that the sapphire and zircon were sourced from the same pipe conduit as the coherent, inclusion-rich basalt but they do not appear to be a modal component of the basalt. It seems likely that the gemstone crystals were extruded in an early explosive facies of friable, easily weathered volcanoclastic basalt and were transported downslope and into the proto drainage system, along with the coherent basalt talus.

The bulk sample gravel was processed on site at Logans by a combination of gravity separation in a portable sluice box and manual sieving (Photo 1). Washed and sized +3mm concentrate was spread out on white tables and visually examined for sapphire (Photo 2), as per the same process used previously (see Year 2 Annual Report – Morrison, 2015b). Approximately 190 pieces of +3mm sapphire were recovered, the large majority coming from Pit 4. No stones of cuttable quality were recovered from Pit 3 but 18 were recovered from Pit 4. At the time of writing, 7 good quality stones ranging from 0.3 to 1.5 carats have been cut and the remainder are in progress. A yield of approximately 10% cuttable quality stones is consistent with the earlier results in Pit 2.

With four test pits now completed at Logans it is clear that more work is needed to resolve the reasons for such wide ranging results from terraces which in terms of their surface morphology and general relationship to the current creek, appear identical to each other. Pits 2 and 4 have yielded encouraging concentrations of cuttable sapphires but Pits 1 and 3 were almost barren (Table 1). An outline of the main factors correlating with the best results to date is included in the following Conclusions and Recommendations section of this report.

Table 1 Bulk Sampling Summary to September 2016

EL 9/2013 Priority - Register of Exploration Pits & Trenches											
Prospect	ID	Date	gda East	gda North	Depth	Width	Length	Azi gda	Process Gravel	Cut Stones	Carats
Logans	Trench#1	Jun-15	595094	5436184	1.5m	1m	9m	244	5 m3	1	1.4
Logans	Trench#2	Oct-15	595080	5436178	1.5m	1m	9m/6m	254/324	10 m3	24	8.1
Logans	Pit#3	Nov-15	595080	5436175	1.5m	3m	3m	n/a	3 m3	0	0
Littlechilds	Pit#1	Jan-16	600558	5430637	3.0m	1.2m	14m	4	10m3	N/A	
Logans	Pit#4	Sep-16	595034	5436230	1.5m	2m	8m	139	10m3	7+	5.2+

(nb Littlechilds Pit#1 material has not yet been processed and Logans Pit#4 sapphires are still being cut)



Photo 1. Sluicing and sieving to produce a rough concentrate..



Photo 2. Manually inspecting rough concentrate for gemstones.

4. CONCLUSIONS & RECOMMENDATIONS

(including conclusions which remain unchanged since Year 2)

- Excavator trenching or pitting to basement on alluvial terraces is the only effective exploration method for testing the sapphire potential of prospects defined to date in EL 9/2013.
- Exploration at Logans indicates local enrichments at encouraging grades in pockets of relatively rounded siliceous gravel and relatively low basalt cobble content. Much of the coarser basalt clasts appear to be angular talus fragments, effectively diluting the better sorted basal alluvial gravel. This suggests at least two generations of alluvial sedimentation and the possibility that most of the gemstones were sourced from an early erupted facies of volcanoclastic basalt, now totally eroded from the site of the basalt pipe immediately upslope from the alluvial prospect.
- Current indications of sapphire grade and quality from Logans suggest that within the relatively high grade pockets of gravel, approximately 10-20 sapphires per cubic metre of gravel were recovered at a 3 mm minimum size cut off, and approximately 10% of these are of sufficient size and quality to yield cut stones in the 0.1-1.5 carat range. These numbers have been updated from similar figures achieved in Year 2.
- Improved grade control during excavating Pits 3 and 4 resulted in less dilution of mineralized gravel by barren overburden and basement, than had occurred in the previous year. There is potential to take this improvement further by excavating several small test pits on a terrace rather than digging a single, larger, trench-like pit across the centre of the terrace. This approach would allow low grade sites to be assessed and backfilled immediately, and sites showing high concentrations of visible spinel, together with better sorted host gravel, could be enlarged until the indicator criteria diminished.
- In summary, field observations and sapphire valuation to date consistently indicate that grade is more important than deposit volume. The best indications of potential economic viability are associated with restricted sites close to bends in the current creek. These sites are characterized by better sorted gravel enriched in heavy minerals, are relatively free of matrix clay and contained in pothole-like depressions in the granite basement.

5. ENVIRONMENT

The disturbed areas surrounding and including the pits have been rehabilitated (Photo 3) and the access track to the Logans sites has been rehabilitated and made unusable by light vehicles. Access to the Littlechilds pit was entirely across dry paddock and no disturbance resulted.

No contamination of Logans Creek or Littlechilds Creek water, or damage to the creek banks, occurred due to the bulk sampling and no litter or hydrocarbon residue remains on any of the sites.

Healthy, weed-free regrowth of the riverine vegetation is progressing well on the sites of Pits 1 and 2 at Logans, following rehabilitation in 2015.

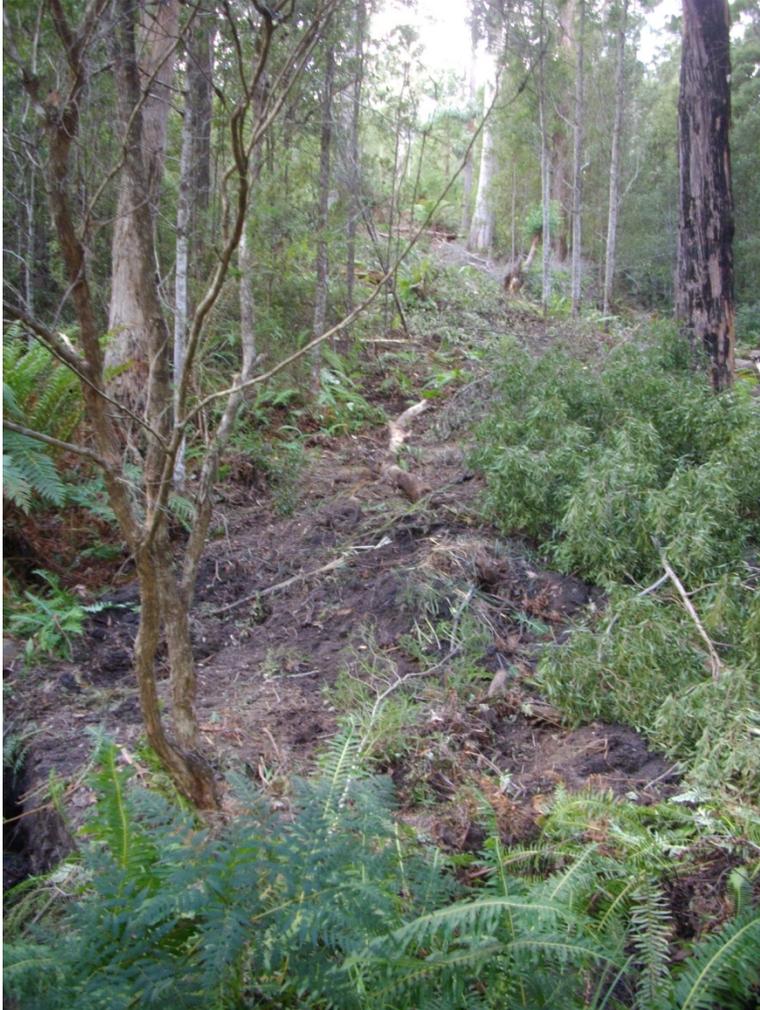


Photo 3 Rehabilitated Pit 3 site, Logans prospect

6. PROPOSED YEAR 4 EXPLORATION

Bulk sampling and sediment processing to determine the potential sapphire and tin grades in gravels at the Bells Marsh prospect will proceed during 2016-2017 (licence Year 4). This will include processing the stockpile of gravel sampled from Littlechilds prospect in early 2016.

Further sampling at Logans prospect is required to quantify the variation in sapphire grade and gemstone value, and to refine the means of segregating waste from mineralized gravel within a body of alluvial terrace sediment. Discussions with MRT on the cases for and against applying for a Mining Lease at Logans will precede the next sampling campaign.

Expenditure of approximately \$50,000 is anticipated to complete the Year 4 work.

7. EXPENDITURE

Expenditure (including GST) for the 12 months ending 30 September 2016 is tabulated below.

Rental/Administration/Office Costs	\$11,500
Geoscientific/Field Work Costs	\$73,105
Earthworks/Rehabilitation Costs	\$8,600
Land Access Costs	\$2,500
Feasibility/Gemology/Evaluation	\$22,862
TOTAL	\$118,567

8. REFERENCES

- Black, L. P., McClenaghan, M. P., Korsch, R. J., Everard, J. L. and 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.
- Gregory, R., 2015. EL 9/2013 Priory Annual Report 2014, Ron Gregory Prospecting.
- Morrison, K., 2015a. Exploration Licence 9/2013 Priory, Partial Relinquishment Report.
- Morrison, K., 2015b. Exploration Licence 9/2013 Priory, Annual Report Licence Year 2.
- Morrison, K., 2015c. Exploration Licence 9/2013 Priory, Partial Relinquishment Report No 2.