

**MICROFILMED**

E.L. 34/87 - BULL CREEK

ANNUAL REPORT 1989

**89-3061**

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Distribution: Department of Mines  
CRA Exploration Pty. Ltd.  
RGC Exploration Pty. Ltd. (2)

September, 1989.

GFEL Report No. T/89/5

SUMMARY

E.L. 34/87 covers an area of 21 sq. km. in Northern Tasmania. Renison Limited entered into an agreement with CRA Exploration Pty. Limited on 1st June, 1988, whereby Renison, through RGC Exploration Pty. Limited, would operate the licence.

RGCE are exploring for gold mineralisation and Renison style tin mineralisation related to the intrusion of the Devonian Dolcoath Granite. All investigations are blind due to the extensive coverage of the licence by Tertiary Basalt.

A regional geophysical appraisal of the currently available magnetic and gravity data was completed by Dr. D. Leaman of Leaman Geophysics. He states that known mineral deposits possess observable magnetic signatures; that the Dolcoath Granite's emplacement was structurally controlled; that some of these structures are related to mineralised sites which are exposed; that the basalt is generally thin (<50 metres) and that at least one deep lead is suggested (300 metres deep). David believes he has been able to identify areas that may contain mineralisation. However, drilling is required to provide controls on the interpretation and also to allow further processing of the gravity and magnetic sets of data.

A regional mapping and stream sediment sampling programme was completed by Mr. Walter Herrmann. A total of 26 sites were sampled in active streams. Minus 200 mesh and panned concentrate fractions were obtained and analysed. The geological mapping was limited in its effectiveness over this licence due to the large coverage by Tertiary Basalt. No obvious windows in the basalt were identified and it is concluded that generally it is quite thick. The previously undifferentiated Cambrian felsic volcanics surrounding the licence have been examined in detail and distinct units identified.

An aeromagnetic survey was planned and mobilised. It was however cancelled due to severe magnetic storm activity and deteriorating weather conditions.

Landowners have been contacted and supplied with information outlining the operation of an exploration licence in Tasmania and the Company, RGC. Notices of "Intention to Enter Private Property" were presented to those landowners whose properties were covered by the regional mapping and stream sediment sampling programme.

The work planned for 1989/90 includes combining the geophysical appraisal of David Leamans with the regional geology and stream sediment analysis data to generate targets for ground follow-up and probable drilling.

Expenditure for the year ending September, 1989 is \$26,915.  
Proposed expenditure for the 1989/90 period is \$50,000.



LIST OF FIGURES

<u>Figure No.</u>	<u>Title</u>	<u>Scale</u>
1	Locality Plan (in text)	1:250,000
2	E.L. 34/87 - Granite Model (in text)	1:50,000

LIST OF PLANS

<u>Plan No.</u>	<u>Title</u>	<u>Scale</u>
1	E.L. 34/87 - Stream Sediment Sample Locations	1:25,000
2	E.L. 34/87 - Interpreted Geology	1:25,000

1.

1. INTRODUCTION

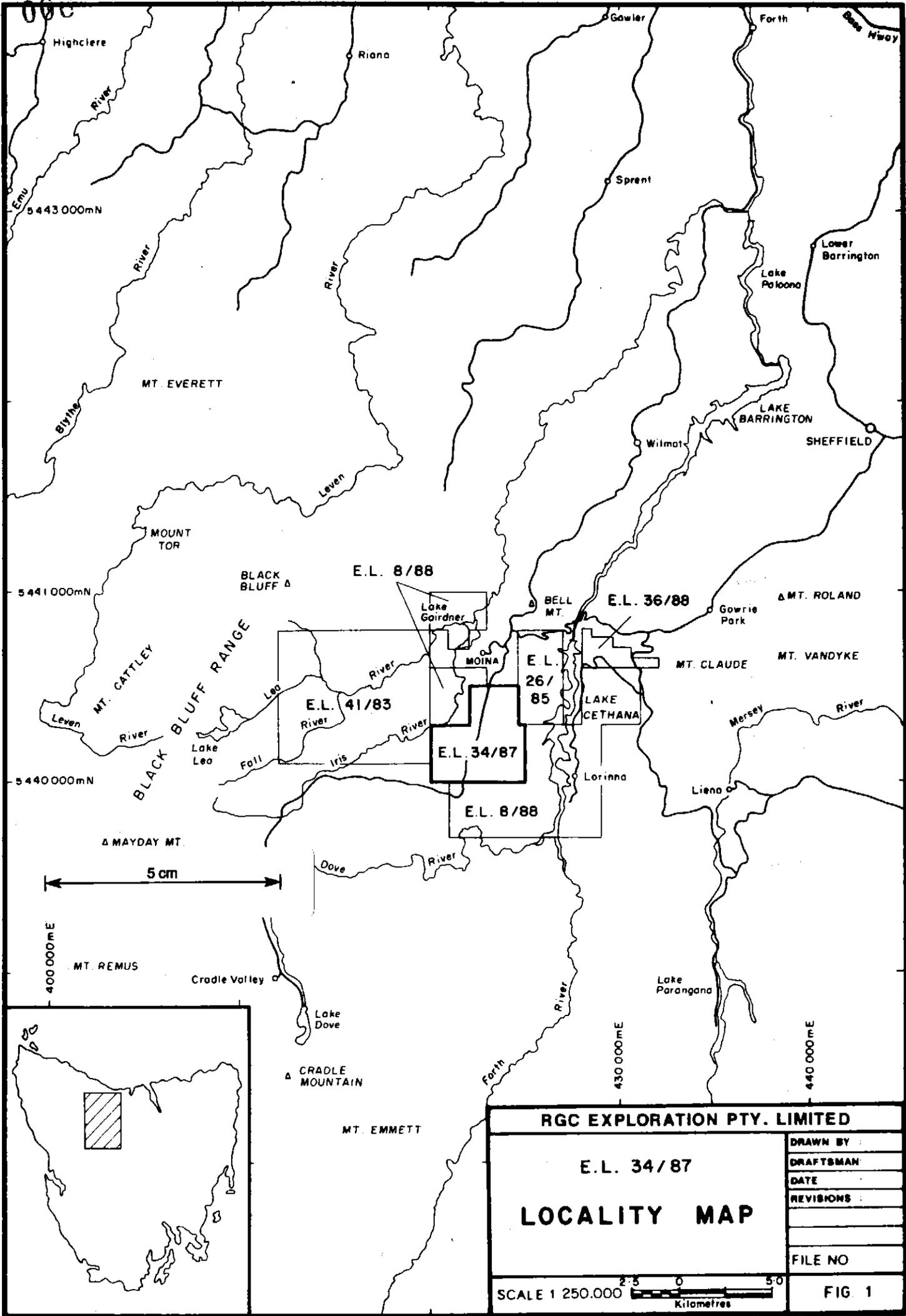
EL 34/87 covers an area of 21 sq. km. south of Moina in northern Tasmania (Figure 1). Lake Gairdner lies to the north and Lake Cethana to the east. Bull Creek flows through the area with the Iris River encroaching on the most north-westerly corner. The Cradle Mountain Road bisects the licence from north to south.

The vegetation is variable, showing climatic and altitude control. In the more protected, wetter valley bottoms thick myrtle-sassafras-fern rain forest gives way to minor zones of horizontal scrub along the stream courses. Elsewhere thick eucalypt and wattle forest with a dense undergrowth characterised by tea-tree and Bauera dominates the lower slopes and extends onto the upper slopes. The higher, flatter areas are vegetated by open eucalypt forest with generally relatively open undergrowth, apart from occasional stands of dense tea-tree. A portion of the land is open for grazing, and some is dominated by regrowth scrub.

Throughout outcrop is poor, restricted essentially to stream beds and road cuttings.

The licence falls within the northern portion of the Mt. Read volcanic belt where the Cambrian and Ordovician rocks structurally turn east-west around the northern end of the Precambrian Tyennan Block. Tertiary basalt and Quarternary sediments form the majority of the surface exposure on the licence. Previous detailed exploration activity has been minimal as a consequence.

This report reviews the regional work undertaken over E.L. 34/87 during the last twelve months.



<b>RGC EXPLORATION PTY. LIMITED</b>	
<b>E.L. 34/87</b>	
<b>LOCALITY MAP</b>	
	DRAWN BY
	DRAFTSMAN
	DATE
	REVISIONS
	FILE NO
SCALE 1 250,000  Kilometres	
<b>FIG 1</b>	

2.

2. LAND TENURE

E.L. 34/87 was granted on 29th September, 1987, to CRAE.

A Heads of Agreement over E.L. 34/87 was signed on 1st June, 1988, between CRAE and Renison Limited. RGC Exploration Pty. Ltd. is to carry out exploration on the licence under the terms of the Agreement. When expenditure on exploration by RGCE has reached \$40,000, Renison will be able to earn a Participating Interest (PI) in the licence of 51% upon written notification to CRAE. CRAE then has 14 days in which to indicate, in writing, whether or not they wish to start contributing to the exploration costs. If not, further expenditure by RGCE will allow Renison to increase their PI.

Approximately 14 sq. km. of the land covered by E.L. 34/87 is privately owned. The remaining land is primarily uncommitted Crown Land.

3.

3. EXPENDITURE

Expenditure on E.L. 34/87 by RGC Exploration Pty. Ltd. during the period from October, 1988 to September, 1989 is \$26915. This includes an estimated amount for September, 1989 of \$3000.

A break-down of the expenditure is presented in Appendix 1.

4.

4. PREVIOUS WORK

The area occupied by E.L. 34/87 was never exposed to detailed exploration by previous explorers because of the widespread Tertiary Basalt cover.

The possibility of windows occurring within the basalt cover was suggested by regional -20 mesh stream and rock geochemistry undertaken by Comalco (E.L. 7/74) in 1974/75. Anomalous Cu, Pb, Zn & Ag results were obtained near Daisy Dell and along the Bismuth Creek Fault Zone. A localised -80 mesh stream sediment programme was completed by Shell in 1979 and ground follow-up of anomalous values uncovered Moina Sandstone outcropping. Samples from the outcrop returned fluorine and tourmaline values which suggests a granitic mineralising system nearby. However, no further work was undertaken.

In 1980 Shell flew a regional aeromagnetic and radiometric survey. It covered the now E.L. 34/87. Results show the basalt having areas of high relief and rapid fluctuations. CRAE in 1986/87 reinterpreted Shell's data and identified several anomalies within E.L. 34/87. These were gridded and ground magnetic traverses completed. The data suggests that some anomalies may have a deep source; i.e. within the lithologies under the basalt. These may be akin to the known mineralisation styles known to exist and associated with the Devonian Dolcoath Granite in other areas.

5.

5. WORK COMPLETED 1988/895.1 Regional Geophysical Appraisal

Dr. David Leaman of Leaman Geophysics in Hobart was consulted to complete an appraisal of the currently available regional magnetic and gravity data. The aims were to:

- (i) identify the location and trends of major structures;
- (ii) locate zones altered by the intrusive;
- (iii) define the roof character of the Dolcoath Granite;
- (iv) determine the thickness of the basaltic cover, and
- (v) predict the sub-basaltic lithologies.

These features are essential in locating gold deposits of the styles known to be related to the Dolcoath Granite. The appraisal was carried out over the entire Moina/Lorinna region. What is reported here is that which relates solely to E.L. 34/87.

David produced five stage reports. Following is a review of each of these reports. The review imparts the work reported by David. No assessment has been made to date as to the validity of his views.

5.1.1 Report 1 - Magnetic Data: Initial Review

The study in this report was not exhaustive or definitive but represents a broad look at the following:

- (a) relationships between lithologies and the magnetic field;
- (b) identifying lithologies beneath basalt or other cover;
- (c) indication of the nature of the basalt cover;
- (d) magnetic responses (if any) of known mineralised sites;
- (e) regional structural trends.

The 1980 Shell aeromagnetic survey data was used wherever possible. Gaps were filled by the 1985 Department of Mines survey. In order to mate the surveys, every second line in the Shell data was used. All presentations of the field have been reduced by 1750nT from the stated IGRF plus constant generated by the contractors.

The data was then considered in both raw and various processed forms. The raw data was used to review the source and prospect signatures. One processed form was to a fixed level of 1200m elevation to gain a regional impression of structure and of lithological units. This improves definition of deep or gross sources. First and second vertical derivatives of this data were also generated. The other processed form was an original tuned, auto-correlated spectral analysis followed by a weight adjustment of the energy spectrum. This was done to provide some assessment of the Tertiary basalt. However, results are crude as no

7.

information on the properties of the basalt in the areas examined exists.

Observations & Results:

(a) Cambrian - the felsic volcanic rocks do not offer a consistent pattern, suggesting at least two gross members.

Ordovician - these rocks offer no pattern and the variations that do exist most probably represent concealed Cambrian units.

Tertiary - the basalt is strongly but variably magnetised.

The aeromagnetic profiles indicate that points of interest have low to moderate amplitudes and relatively high frequencies, but are superimposed on large, longer wavelength features.

(b) No definitive indication of lithologies below the basalt cover is obtainable. The basalt does, however, consistently give low amplitude, high frequency effects and the magnetic field is obviously controlled by deeper sources. The data does imply a thick concealed Cambrian mafic unit. It appears to be close to the basement, is block bounded and may be generally present over the whole region but thin in places due to form, folding or truncation.

(c) The spectral analysis profiles suggest the basalt cover may be generally less than 50-70 metres thick and often absent. Several flows are indicated in some areas which may relate to thicker pockets. However, due to the absence of any control on the thickness of basalt in the area, the reliability of the interpretation is unknown.

8.

(d) Examination of the magnetic contours showed few indications of magnetic signatures related to known mineralised sites. Profiles of the raw data were generated at approximately 100 metres clearance. These revealed a characteristic and comparable response for every prospect/site sampled by them. Responses were then identified that have no known mineralisation. None of these fall within E.L. 34/87.

It is appreciated that changes in the host rock volume are more likely to produce recognisable effects in the magnetic field at 100 to 200 metres than any changes which may mirror ore.

(e) Some N-S features are indicated and are unrelated to line bias. The more persistent structures are NW-SE or NE-SW. There is little surface evidence of the NE-SW set. E-W elements are also present but are less obvious. Most structures appear to be directly correlatable with underlying implied gross features re-activated during the Tabberabberan orogeny.

#### 5.1.2 Report 2 - Gravity Data: Initial Review

This report is an interpretation upgrade of a provisional interpretation of the Dolcoath Granite based on Tasmanian Government data carried out in 1987. It also provides a view of the granites relationship to known mineralised sites, and assumes it to be a single mass with uniform density. Detailed modelling is not part of this initial review. New gravity data was collected by the Department of Mines in August at a partial cost to RGCE. This data, along with what was already existing, is used in this review and gives a satisfactory cover of the area even though it is gappy.

The raw Bouguer anomalies (reduced at density 2.67 t/cu.m) have not been used for this analysis. A crustal geological filter (MANTLE 88) has been applied enabling the generation of residual anomalies free of the risk of unstated mathematical effects. 3-D analysis has been used throughout. The model has been tested by a series of randomly located profiles. The profile values have been continued to a fixed level (800m ASL) to remove the need for model projection to an irregular surface but at the price of some small loss in precision (this loss is less than the precision envelope of the original data values). This allows the structure contours of the model to be fixed throughout the computation. Model testing has been based on these profiles rather than contour plots.

The effect due to other granites has been assessed and their influence on the profiles taken into account.

#### Observations and Results:

These relate to the same aims defined in the review of the magnetic data.

(a) Cambrian - the felsic rocks may generally produce a neutral response.

Ordovician - these also produce a neutral response.

Devonian - the dominance of the granite limits any evaluation of other units.

Tertiary - effects a negative response.

There is a strong correlation between these rocks and the residual field.

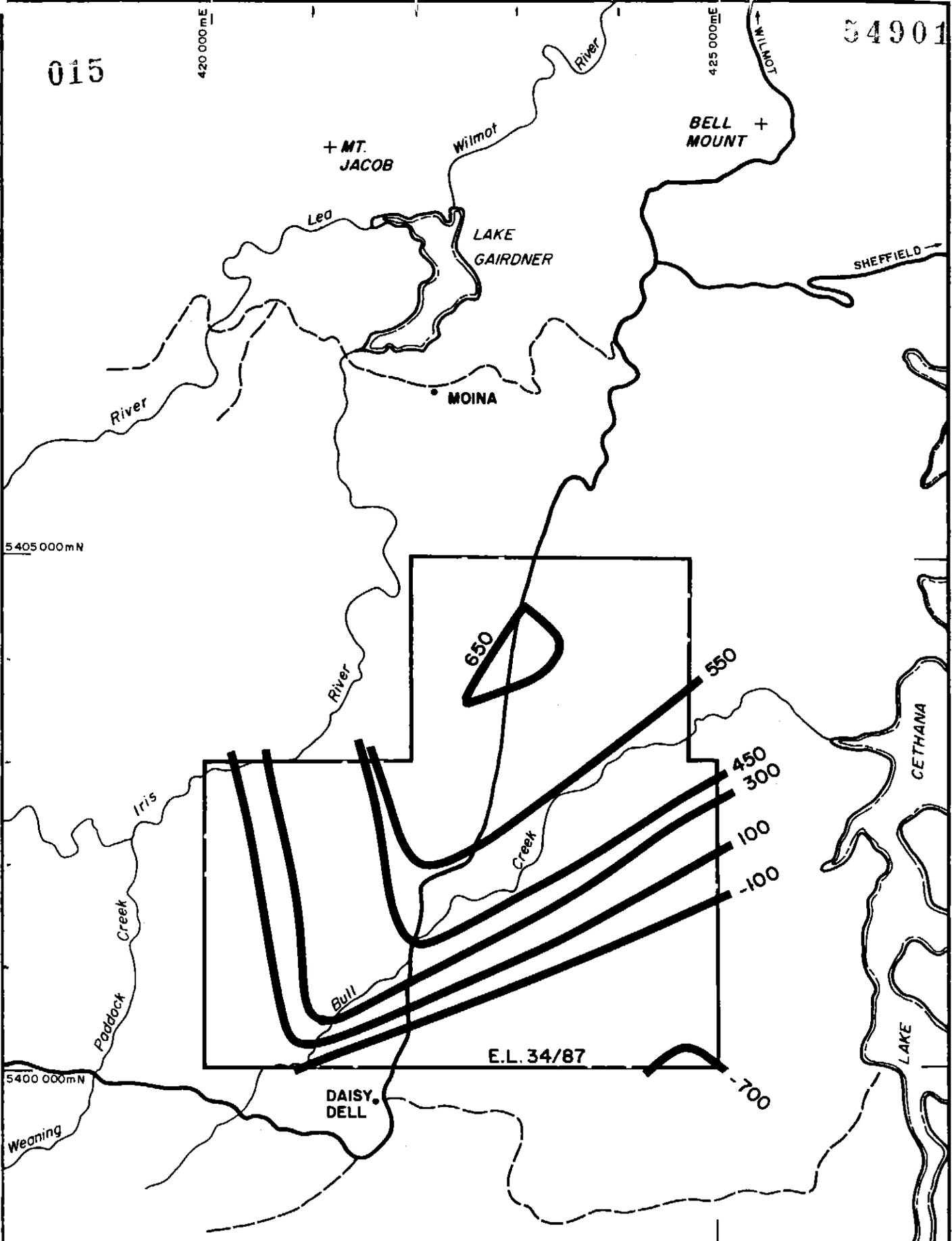
(b) The main unit identified beneath the cover is the Dolcoath Granite. The model derived is basically sound and satisfactorily defines the general form; steep sided and relatively small. Figure 2 refers to

015

420 000mE

425 000mE

349016

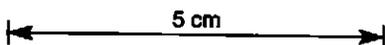


5405 000mN

5400 000mN

**LEGEND**

300  Structure contour & R.L.

 5 cm

**RGC EXPLORATION PTY. LIMITED**  
INCORPORATED IN NEW SOUTH WALES

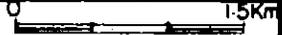
FIG. 2	COMPILED	M.J.F
	DRAWN	M.O.W.
	DATE	Nov.89
	CHECKED	
	1:250 000 Reference	

E.L.34/87

**GRANITE MODEL**

HASE PLAN No  
OVERLAY PLAN No

SCALE 1:50 000

 1.5km

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the current model integration over E.L. 34/87.

(c) Several profiles showed evidence of features that could estimate to zones of greatest thickness in the basalt (deep leads?). The basalts negative response is a result of sediment and altered material combined with fresh basalt. The total thickness in the lead may not exceed 50-100 metres.

(d) The current interpretation and coverage of the gravity data is inadequate for any specific description or discussion of individual prospects.

(e) The general sets of trends evident are NE-SW, NW-SE and E-W. There does appear to be a relationship between the trends suggested and the form of the granite. That is, the shape of the granite suggests fracture control of the intrusion.

### 5.1.3 Report 3 - Integration of Initial Reviews

An assessment of conclusions and an indication of future directions.

#### Discussion

The magnetic field is noisy, erratic, full of character and reflects relatively shallow contrasting sources. However, it yields no direct indication of the granite.

The gravity field is dominated by the granite. Minor perturbations in the field represent the thin roof rocks.

There is considerable scope for further exploration. Analysis of both data sets together can be used to sharpen the view of the form of the granite roof and its metamorphism.

11.

Secondary problems, such as resolution of Tertiary materials, also require use of both methods; magnetics to indicate form of deposits and gravity to check the estimates.

Many observed structural trends are similar, within reason, for both sets of data. This indicates that both methods are seeing the same geology and that the model is consistent.

The basic relationships between granite, its shape and depth, and trend data explains the known mineralisation in first order terms. This justifies the initial study. These also hint for the location of other mineralised sites lying beneath basalt cover. Edge and corner effects seem to be related to known mineralisation in areas not covered by basalt. Ultimately, any specific targetting will depend either on the detailed definition of the granite roof form from combined analysis or subtle magnetic signatures.

#### 5.1.4 Report 4 - Magnetic Data: Analysis 418 - 424 000mE

This report represented the first specific regional/anomaly analysis. Responses were recovered or identified after the assessment and exclusion of aberrant or irrelevant effects. Two particular aspects were considered; the effect of terrain clearance and the refinement of the Tertiary lead interpretation.

The area selected, 5400-5410 000mN, overlies a wholly concealed angular granite roof form (Figure 2) and may be highly prospective. It is also representative of the region as a whole and any technical refinements can be extrapolated. Also, it has never been explored in detail. However, the assessment is not exhaustive. It was designed to evaluate sources of error and their scale of impact.

12.

The entire data set of the Shell aeromagnetic survey was considered in the raw form and in various processed forms. These were drupe corrected, where a true drupe of 100 metres was calculated. And secondly, fixed level spectral analysis undertaken where the data was processed to a reference level of 900 metres to maximise resolution. Judgements are made to form processing parameters used in spectral analysis.

### Observations and Results

- (i) The effect of drupe correction. The data was corrected to a true 100 metre drupe and the results compared with the observed profiles. In each case the difference is small. It is concluded that drupe processing is not justified. Processing at higher levels would only result in a loss of resolution. This result is relevant to the Shell survey only.
- (ii) Signature of mineralised sites. The use of the entire data set and consideration of the effect source depth may have upon the observed responses have been stressed. It is apparent that only subtle responses occur. What is required is these sites be subjected to surface verification. Below is a list of sites of possible exploration interest.

<u>Northing</u>	<u>Easting</u>	<u>Comment</u>
5402500	420250	Tb edge?
5402500	421600	Tb edge?
5404800	422000	Altered segment Lower Ord.?
5403700	422000	Tb effect?
5403000	422000	Tb edge?
5404700	422200	Sub-tertiary source?
5402500	422300	Sub-tertiary source?
5401800	422300	Sub-tertiary source?

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5401000	423000	Sub-tertiary source?
5402200	423600	Sub-tertiary source?
5401800	423600	Sub-tertiary source?
5405000	423700	Sub-tertiary source?
5402200	424000	Sub-tertiary source?

(iii) Tertiary basalt and other sources. Profiles were adjusted to the lowest fixed levels consistent with stable processing. These have been analysed to assess source forms and distribution. It should be noted that all analysis of the data remains uncontrolled. The review of the additional lines and the inclusion of the granite model has confirmed the general view for the Tertiary section offered in the previous initial reviews. Also, the data suggests the roof of the granite might be extremely irregular and very shallow. It may locally form basement for Tertiary cover.

(iv) Anomaly responses and their relation to the Granite. Some clearly anomalous sources have been indentified by the present analysis. They occur beneath the basalt adjacent to the granite. Most sites relate to the edge and SW corner of the granite crest. These may reflect simple hornfelses or something more economically interesting.

#### 5.1.5 Report 5 - Gravity Data: Analysis 418 - 424000mE

This report represents a fine-tuning of the initial gravity review by testing various suggestions and implications raised in the previous reports.

### Observations and Results

The granite model was revised by four new profiles, specifically selected for review of the structural issues within the area of analysis. It is considered that ribs can be resolved on the steep contacts of the granite and that anomalous magnetic responses have been identified to the immediate east in every case. Ribs have been inferred near 5403000mN, 422000mE and north of Daisy Dell.

The magnetic implication of a very shallow pinnacle to the granite west of its current outcrop is supported gravimetrically. Still, there appears to be 70-100 metres of cover, perhaps half of which is Tertiary.

A Tertiary model was prepared and tested. The model was one of constricted leads and channelling, and out of necessity complex. It has proved to be a satisfactory part of the model. Still, control is required. It does however verify that the Tertiary rocks form a veneer in most places, with a major lead extending E-W at about 540100mN, thickness of material around 300 metres. The granite will form the bedrock to the lead north of Daisy Dell.

#### 5.1.6 Recommendations

Drilling is required. The nature of the indicated sources must be evaluated. While drilling should be directed at potential target zones, a range of lithological and structural aspects should be also tested. The gravity data and granite model should be reviewed prior to drilling to select optimum sites and orientations. Density and susceptibility measurements should be collected for all materials encountered in drilling.

## 5.2 Regional Geology

A programme of stream sediment sampling and reconnaissance geological mapping was carried out by Walter Herrmann from March to June 1989 in the Moina-Lorinna Region, including E.L. 34/87. Panned concentrates and - 200 mesh fractions of stream sediment were collected. The samples have been analysed by neutron activation analysis. Geological mapping was confined to convenient exposures and is compiled onto a 1:25,000 scale geological interpretation plan (Plan 2).

### 5.2.1. Stream Sediment Sampling

Panned concentrates and - 200 mesh stream sediments were collected from active streams at 26 locations to provide a reasonable coverage over most of the area (Plan 1). Preferred locations were just upstream of tributary confluences and at nominal intervals of about 1km along streams. Sites were tagged and flagged.

The samples were collected into a small plastic vial after a series of sieving and dewatering techniques. Each vial contained up to 50 gms of material. The vials were then sent to Becquerel Laboratories, Lucas Heights in N.S.W., where they were analysed by neutron activation. The only preparation required was drying and weighing of the sample and the vial prior to the sample filled vial being placed into the nuclear reactor. This procedure is expected to greatly reduce possible contamination of the samples as it effectively goes straight from the field into the reactor.

Assay results are tabulated in Appendix 2.

### 5.2.2. Geological Mapping

Geological exposures in stream beds, etc., were routinely examined as they were encountered en-route to stream sample locations. Observations were recorded in the field onto transparent film overlays of 1:10,000 scale monochrome air photo enlargements. A 1:10,000 scale "fact" map was then prepared and the interpretation was compiled onto a 1:25,000 scale plan (Plan 2).

Approximately 90% of the area within E.L. 34/87 is covered by Tertiary basalt (Tb). Its typical form is massive or columnar jointed fine-grained weakly olivine and pyroxene phyrlic, weakly vesicular dark grey basalt presumably representing a series of thick flows. In places around Bull Creek between the Cradle Mountain and Dolcoath Hill Roads there are spectacular volcanic breccias composed of angular and irregular fragments of glassy often very vesicular dark basalt. Zeolites often infill vesicles and inter-fragment spaces (5-20% of volume). Minor occurrences of unlithified gravels, sand and micaceous silt were observed in a couple of localities either at the base or as thin interflow horizons of the basalt. The interpreted basalt contacts indicate that the flows were extruded onto a topographically irregular surface. The present thickness of the basalt is therefore quite variable. No obvious windows of sub-basalt lithologies were found. All of this suggests that there could be a substantial thickness of basalt covering this licence.

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Along the eastern licence boundary, Ordovician Moina Sandstone (Os) is assumed to pass conformably into limestone (Ol); correlate of the Ordovician Gordon Group. The Limestone in turn is assumed faulted with the sandstone (Os) to the north; probably a thrust fault with the sandstone overthrust onto limestone. Good exposures along the Dolcoath Hill Road north of Bull Creek has helped an interpretive delineation of a sequence of felsic volcanics including welded vitric crystal tuffs (Cxt) and fine epiclastic sediments (Ce). The crystal tuffs (Cxt) are prominent in the southern parts around Bull Creek and are invariably quartz phyrlic. They mostly have a dark greenish-grey to almost black colour and consist of small to medium sized crystals of clear quartz, occasional feldspar and small pumaceous or glassy fragments set in a dark welded glassy or siliceous matrix. Most are perceptibly magnetic. They are usually quite massive and do not display recognisable flow/compaction foliation or significant cleavage development. To the south, the Cxt unit passes into a sequence of quartz-sericite schists (Cqs) that is extensively cleaved. It outcrops in Bull Creek, a few metres down stream from where the Dolcoath Hill Road crosses and directly underlies outcropping Tertiary Basalt. It is assumed that this is a cleaved-sericitised equivalent of Cxt. On the Dolcoath Hill Road at about 425000mE/5404300mN, where the trace of the Bismuth Creek Fault crosses the road, there is a 20 metre wide zone of "phyllic" (quartz+sericite) alteration with up to 2% disseminated (oxidised) pyrite. The Cxt unit is succeeded northwards and apparently overlain by an extensive group of felsic epiclastics varying from coarse pebbly breccias through medium grained felsic wackes to very fine grained felsic siltstones; all but the latter are quartz phyrlic. This sequence in places is quite tightly folded.

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In the northwestern part of the licence, south of Lake Gairdner, the Iris River cuts through a broad anticlinal structure on the eastern flank of Stormont. A thin (<10 metre) basal unit of siliciclastic pebbly conglomerate (Oc) is overlain by moderately to shallowly dipping ortho-quartzite and sandstone. This contact would appear to be unconformable to the underlying Cambrian (?) volcanics. The volcanics were not mapped in detail (due to high river levels) but outcrop near Hinman Creek includes dark grey quartz phyric crystal vitric tuff (or rhyolite?) and medium grained stratified felsic wackes which are identical to those mapped in the Dolcoath Hill Road area.

### 5.3 Aeromagnetic Survey

An aeromagnetic survey was planned to cover all of the northern Tasmania tenements being explored by RGC Exploration Pty. Ltd. The aim was to obtain the best data currently possible to enhance David Leaman's appraisal of the area. Geoterrex was contracted to tow by helicopter a cesium vapour magnetometer. Unfortunately, after being mobilised, a combination of severe magnetic storm activity and degenerating weather conditions prevented the survey being flown.

### 5.4 Contact of Landowners

All landowners were contacted prior to any field work starting. Those living in Tasmania were visited and the operation of an Exploration Licence was explained to them; questions were discussed. In particular, their rights in respect to an E.L. and a profile of RGC, the Company. Those landowners interstate were sent information detailing the same. All persons contacted appreciated our approach. Later, when field work was to begin, notices of "Intention to Enter Private Land" were sent to them.

6. WORK PROPOSED 1989/90

The activities planned for the next twelve months will mainly involve integrating the regional exploration data recently acquired, in order to define targets for ground follow-up and probable exploration drilling. Exploration in this area focuses on the generation of gold targets underlying the Tertiary basalt cover, with potential for mineralised skarns and structures related to the Devonian granite intrusion.

In particular, it is proposed to implement the following:

- (i) Appraisal and integration of the regional exploration data obtained and compiled during the 1988/89 period, in conjunction with a review of the historical exploration documentation. The new data comprises regional mapping/stream sediment sampling and structural/geophysical evaluation of the Moina-Lorinna area, including the Bull Creek sector. This work will aim at generating targets for follow-up.
- (ii) Ground reconnaissance of target areas defined by the regional appraisal. It may be necessary to carry out some small-scale gridding, grid mapping, and ground geophysics, prior to the definition of drill targets.
- (iii) Early-stage exploration drilling to check the relative thickness of basalt cover, determine the underlying lithologies, and concurrently designed to intersect possible mineralised bodies.

A dual-purpose rig will be used, with a broad metreage estimate of 250m percussion and 150m diamond drilling.

7. REFERENCES

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- Report 2 - Gravity Data: Initial Review
- Report 3 - Integration of Initial Reviews
- Report 4 - Magnetic Data: Analysis  
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to 30/6/89

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APPENDIX 1

EXPENDITURE

APPENDIX 1E.L. 34/87 BULL CREEKEXPENDITURE: OCTOBER, 1988 TO SEPTEMBER, 1989

<u>ITEM</u>	<u>COST (\$)</u>
Salaries, Wages & On-costs	8063
Travel & Accomodation	344
Consultants & Contractors	8938
Sample Prep & Analysis	708
Stores & Supplies	136
Vehicles, Plant & Equipment	960
Land Acquisition & Tenement Costs	410
Miscellaneous Costs	<u>1909</u>
	21468
Estimated expenditure for September, 1989	<u>3000</u>
	\$24468
Overheads (10%)	<u>2447</u>
TOTAL	\$26915

APPENDIX 2

ASSAY RESULTS

PROJECT: NORTHERN TASMANIAN NEUTRON ACTIVATION DRAINAGE SURVEYS

SAMPLE NUMBER	TNORTH met res	TEAST met res	KIND	AL PPM	KF PPM	SS PPM	RS PPM	MO PPM	BA PPM	FE %	SC PPM	RG PPM	BN PPM
✓T 17113	400026	422161	-200#	56	18	-0.2	4.9	-4	262	8.98	16.4	-5	-352
✓T 17114	400033	422030	-200#	11	8	-0.1	3.4	-3	260	12.02	24.1	-6	-318
✓T 17115	400004	422094	-200#	90	22	1.4	97.6	-4	139	7.33	9.9	-5	-337
✓T 17116	401212	422196	-200#	12	9	0.6	6.2	-2	166	8.04	19.6	-2	-166
✓T 17117	401207	421879	-200#	13	3	-0.1	0.7	-1	47	8.17	23.9	-2	-146
✓T 17118	401817	422016	-200#	-6	4	1.1	0.6	-2	-44	6.76	23.3	-2	-164
✓T 17119	400591	421300	-200#	11	5	-0.2	1.6	-2	104	10.15	23.3	-3	-171
✓T 17121	400634	421360	-200#	-5	4	1.7	0.6	-2	61	8.94	22.0	-2	-149
✓T 17122	400025	420914	-200#	-5	3	0.3	1.7	-1	49	7.54	20.0	-2	-125
✓T 17123	399964	420941	-200#	-5	3	0.5	0.6	-1	51	10.63	29.9	-2	-137
✓T 17124	400006	421054	-200#	-6	3	0.9	2.7	-2	177	6.06	20.0	-2	-182
✓T 17125	400437	424573	-200#	-0	3	-0.4	1.0	-2	147	7.80	22.1	-2	-160
✓T 17126	403199	424310	-200#	19	2	-0.1	1.3	-4	-61	6.76	23.6	-4	-310
✓T 17127	401533	424255	-200#	-6	9	-0.1	-0.5	-2	138	4.66	15.6	-2	-161
✓T 17128	401197	424597	-200#	22	10	0.3	1.9	-1	166	7.30	17.1	-2	-352
✓T 17129	401059	424608	-200#	-3	8	-0.3	2.6	-1	167	6.32	18.5	-2	-133
✓T 17130	400624	424812	-200#	-5	6	0.3	3.5	-2	211	7.75	19.5	-2	-142
✓T 17131	400695	422403	-200#	-6	3	-0.2	1.6	-2	65	6.62	21.9	-2	-154
✓T 17132	400970	422454	-200#	16	2	3.2	-2.0	-5	226	6.05	18.7	-5	-200
✓T 17140	403249	424695	-200#	-5	5	-0.3	1.3	-5	434	5.93	16.9	-5	-205
✓T 17149	403137	424663	-200#	11	3	-0.2	1.2	-5	125	7.14	18.9	-5	-274
✓T 17150	402730	423707	-200#	14	4	-0.2	1.5	-5	231	7.30	20.7	-5	-246
✓T 17356	404850	422902	-200#	-5	4	0.4	1.3	-2	243	7.21	20.5	-2	-101
✓T 17357	404396	422135	-200#	-5	4	0.3	2.7	-2	132	6.02	22.7	-2	-269
✓T 17358	404444	422182	-200#	-4	4	0.3	1.6	-2	137	5.71	14.9	-1	-87
✓T 17359	404391	422034	-200#	-5	3	0.4	-0.7	-2	373	9.61	27.2	-2	-123
✓T 17213	400025	422151	PC	-2	12	0.3	3.0	-1	54	1.43	3.3	-0	99
✓T 17214	400033	422030	PC	-5	19	-0.2	0.6	-2	117	7.10	17.4	-2	-126
✓T 17215	400004	422094	PC	3	13	0.4	7.6	-0	53	0.93	1.7	-0	140
✓T 17216	401212	422196	PC	-2	17	0.2	1.8	-1	63	2.18	3.7	-1	-71
✓T 17217	401207	421879	PC	-1	2	0.3	1.0	-1	109	15.20	18.2	-2	-126
✓T 17216	401817	422016	PC	-1	6	-0.1	-0.3	-1	120	10.16	22.4	-2	-124
✓T 17219	400591	421300	PC	-5	5	-0.1	-0.5	-1	123	12.72	26.0	-2	-132
✓T 17221	400634	421360	PC	-1	4	-0.1	-0.3	-2	63	11.26	26.1	-2	-132
✓T 17222	400025	420914	PC	-6	4	-0.1	2.4	-2	-40	13.12	37.6	-2	-142

Laboratory:	BECC											
Method:	INAA30											
Det. Limit:	5.000	1.000	0.100	0.100	10.000			0.050	0.100	5.000		

031

PROJECT: NORTHERN TASMANIAN NEUTRON ACTIVATION DRAINAGE SURVEYS

SAMPLE NUMBER	TNORTH met res	TEAST met res	KIND	AU PPM	BF PPM	SB PPM	AS PPM	MO PPM	BA PPM	FE %	SC PPM	AG PPM	SN PPM
✓ T 17223	389964	420941	PC	-5	2	-0.1	-0.5	-1	181	10.65	25.7	-2	271
✓ T 17224	400006	421054	PC	-5	2	0.3	3.2	-2	232	10.14	17.0	-2	-133
✓ T 17225	402437	424873	PC	-4	2	-0.1	0.6	-1	385	6.04	13.9	-1	150
✓ T 17226	402199	424319	PC	-1	3	-0.1	-0.6	-2	217	7.91	14.3	-2	-136
✓ T 17227	401533	424255	PC	-3	18	0.3	1.3	-1	189	1.53	5.3	-1	-85
✓ T 17228	401187	424597	PC	-1	7	0.3	1.9	-1	209	4.76	6.8	-1	-84
✓ T 17229	401099	424608	PC	-5	32	1.2	0.8	-2	111	1.78	5.4	-1	-123
✓ T 17230	400624	424812	PC	-3	4	0.5	1.2	-1	189	5.58	10.3	-1	-91
✓ T 17231	400685	422409	PC	-4	2	-0.2	2.6	-1	193	12.69	13.9	-2	182
✓ T 17232	400978	422454	PC	-3	1	-0.2	1.7	-3	428	9.50	11.6	-5	-141
✓ T 17248	403248	424695	PC	-5	15	1.0	1.2	-5	538	6.63	16.2	-5	-200
✓ T 17249	403197	424668	PC	-5	2	-0.2	2.0	-4	152	9.32	14.4	-5	-241
✓ T 17250	402730	422787	PC	-3	1	1.1	-0.7	-3	130	8.08	14.7	-5	-200
✓ T 17456	404650	422902	PC	-0	2	0.4	1.1	-1	216	10.43	19.9	-1	89
✓ T 17457	404396	422139	PC	-2	14	0.2	0.4	-1	62	5.12	10.0	-0	-54
✓ T 17458	404444	422182	PC	-3	1	-0.0	-0.2	-1	-21	13.43	23.5	-1	147
✓ T 17459	404591	422024	PC	-2	8	1.1	1.5	-1	423	5.80	11.0	-1	-60

Laboratory:	BECO										
Method:	INAA30										
Det. Limit:	5.000	1.000	0.100	0.100	10.000			0.050	0.100	5.000	

549032

PROJECT: NORTHERN TASMANIAN NEUTRON ACTIVATION DRAINAGE SURVEYS

SAMPLE NUMBER	TNORTH met res	TEAST met res	KIND	W PPM	ZN PPM	CR PPM	CO PPM	IR PPM	CE PPM	CS PPM	EU PPM	BR PPM	IR PPM
T 17113	400026	422161	-200#	-2	234			758					
T 17114	400033	422030	-200#	-2	268			383					
T 17115	400004	422094	-200#	-4	108			785					
T 17116	401212	422196	-200#	-3	187			503					
T 17117	401207	421879	-200#	-3	225			255					
T 17118	401817	422016	-200#	-1	295			343					
T 17119	400591	421300	-200#	-1	281			124					
T 17121	400634	421360	-200#	-1	284			177					
T 17122	400028	420914	-200#	-2	225			331					
T 17123	399964	420941	-200#	-1	224			207					
T 17124	400006	421054	-200#	-1	232			288					
T 17125	402437	424873	-200#	-3	175			-54					
T 17126	402195	424319	-200#	-2	173			567					
T 17127	401533	424255	-200#	-1	128			322					
T 17128	401157	424937	-200#	-0	214			497					
T 17129	401099	424608	-200#	-4	199			548					
T 17130	400824	424812	-200#	-1	178			119					
T 17131	400595	422409	-200#	-1	231			211					
T 17132	400978	422454	-200#	-2	196	338.8	46.2	-177	18	-1.6	1.6	174	-24.0
T 17148	403248	424595	-200#	-2	290	188.6	36.1	-131	40	5.5	1.5	148	-18.0
T 17149	403157	424559	-200#	-2	238	259.7	42.6	-475	21	-1.2	1.5	101	-16.0
T 17150	402730	423767	-200#	-2	272	263.6	47.3	-268	30	3.3	1.2	69	-19.0
T 17355	404850	422902	-200#	-4	417	304.2	44.4	173	20	0.6	1.3	113	-3.1
T 17357	404396	422139	-200#	-4	426	324.8	49.8	171	21	1.3	1.5	121	-3.2
T 17358	404444	422182	-200#	-3	269	258.9	49.6	234	32	1.3	1.4	175	-6.0
T 17359	404551	422034	-200#	-1	373	392.5	65.8	205	35	0.6	2.2	134	-3.7
T 17213	400025	422161	PD	-0	25			510					
T 17214	400033	422030	PD	-3	111			725					
T 17215	400004	422094	PD	-1	10			571					
T 17216	401212	422196	PD	-1	34			626					
T 17217	401207	421879	PD	-1	232			-83					
T 17218	401817	422016	PD	-3	244			271					
T 17219	400591	421300	PD	-1	233			304					
T 17221	400634	421360	PD	-2	253			-66					
T 17222	400028	420914	PD	-1	255			440					

Laboratory:	BECO										
Method:	INAA30										
Det. Limit:	2.000		0.100	0.100		1.000	0.100	0.100	1.000	0.100	

549033

## PROJECT: NORTHERN TASMANIAN NEUTRON ACTIVATION DRAINAGE SURVEYS

SAMPLE NUMBER	TNORTH metres	TEAST metres	KIND	W PPM	ZN PPM	CR PPM	CO PPM	ZR PPM	CE PPM	CS PPM	EU PPM	BR PPM	IR PPM
T 17113	400026	422181	-200#	-2	234			758					
T 17114	400033	422030	-200#	-2	269			353					
T 17115	400004	422094	-200#	4	100			785					
T 17116	401212	422196	-200#	-3	187			503					
T 17117	401207	421879	-200#	-3	225			235					
T 17118	401817	422016	-200#	-1	255			343					
T 17119	400591	421300	-200#	-1	281			124					
T 17121	400634	421360	-200#	-1	284			177					
T 17122	400028	420914	-200#	-2	225			361					
T 17123	399964	420941	-200#	-1	224			207					
T 17124	400006	421054	-200#	-1	232			288					
T 17125	402437	424573	-200#	-3	176			-64					
T 17126	402195	424319	-200#	-2	173			567					
T 17127	401533	424255	-200#	-1	128			322					
T 17128	401197	424597	-200#	-0	214			497					
T 17129	401095	424608	-200#	4	199			548					
T 17130	400624	424812	-200#	-1	178			119					
T 17131	400655	422409	-200#	-1	231			211					
T 17132	400976	422454	-200#	-2	155	338.8	45.2	-177	18	-1.6	1.6	174	-24.0
T 17148	403248	424695	-200#	-2	290	188.6	36.1	-131	40	5.5	1.5	148	-18.0
T 17149	403157	424558	-200#	-2	238	259.7	42.8	-475	21	-1.2	1.6	101	-16.0
T 17150	402750	423767	-200#	-2	272	263.8	47.3	-268	30	3.3	1.2	68	-19.0
T 17355	404550	422902	-200#	-4	417	304.2	44.4	173	29	0.6	1.3	113	-3.1
T 17357	404398	422136	-200#	-4	420	324.8	49.6	171	21	1.3	1.5	121	-3.2
T 17358	404444	422162	-200#	-3	289	238.9	45.0	234	32	1.3	1.4	175	-6.0
T 17359	404551	422034	-200#	-1	373	392.5	85.8	205	36	0.6	2.2	134	-3.7
T 17213	400026	422181	PC	-0	23			510					
T 17214	400033	422030	PC	-3	111			725					
T 17215	400004	422094	PC	-1	10			571					
T 17216	401212	422196	PC	-1	34			626					
T 17217	401207	421879	PC	-1	232			-63					
T 17218	401817	422016	PC	-3	244			271					
T 17219	400591	421300	PC	-1	233			304					
T 17221	400634	421360	PC	-2	253			-66					
T 17222	400028	420914	PC	-1	265			440					

Laboratory:	BICC	BCCO	BEDF	BECV	PECO	BECG	BEDD	BEDG	BCCS	BECO
Method:	INAA30	INAA20	INAA20	INAA50	INAA50	INAA30	INAA30	INAA30	INAA30	INAA30
Det. Limit:	2.000		0.100	0.100		1.000	0.100	0.100	1.000	0.100

## PROJECT: NORTHERN TASMANIAN NEUTRON ACTIVATION DRAINAGE SURVEYS

SAMPLE NUMBER	TNORTH metres	TEAST metres	KIND	W PPM	ZN PPM	DR PPM	CO PPM	ZR PPM	CE PPM	CB PPM	EU PPM	BR PPM	IR PPM
T 17223	399954	420941	PC	-2	244			238					
T 17224	400006	421054	PC	-1	234			235					
T 17225	402437	424673	PC	-1	114			123					
T 17226	402195	424315	PC	-1	144			435					
T 17227	401833	424255	PC	-2	120			555					
T 17228	401157	424597	PC	-0	57			432					
T 17229	401033	424603	PC	-3	177			1143					
T 17230	400624	424812	PC	-0	73			227					
T 17231	400595	422409	PC	-1	159			313					
T 17232	400976	422454	PC	-1	98	249.4	38.7	238	5	1.1	0.2	15	-11.0
T 17248	403248	424895	PC	11	244	281.4	52.7	544	47	3.9	1.1	8	-14.0
T 17249	403157	424668	PC	-2	246	338.6	92.7	-112	9	-1.1	0.4	6	-14.0
T 17250	402720	423767	PC	-1	201	256.6	65.7	-148	12	-0.8	0.5	8	-10.0
T 17456	404650	422902	PC	-0	254	424.2	51.9	211	4	0.6	0.6	15	-2.3
T 17457	404396	422139	PC	-0	132	545.4	55.0	398	19	1.0	0.4	9	-1.6
T 17458	404444	422182	PC	-2	181	1308.2	172.3	118	2	0.3	0.5	4	-2.4
T 17459	404591	422034	PC	5	152	343.1	31.9	352	34	4.7	0.7	12	-1.8

Laboratory:	BECC									
Method :	INAA30									
Det. Limit:	2.000		0.100	0.100		1.000	0.100	0.100	1.000	0.100

**035** PROJECT: NORTHERN TASMANIAN NEUTRON ACTIVATION DRAINAGE SURVEYS

SAMPLE NUMBER	TNORTH metres	TEAST metres	KIND	RB PPM	SE PPM	LA PPM	LU PPM	SM PPM	YB PPM	TA PPM	TH PPM	U PPM
T 17113	400026	422151	-200#									
T 17114	400033	422030	-200#									
T 17115	400004	422054	-200#									
T 17116	401212	422156	-200#									
T 17117	401207	421879	-200#									
T 17118	401817	422016	-200#									
T 17119	400591	421300	-200#									
T 17121	400634	421350	-200#									
T 17122	400028	420914	-200#									
T 17123	399964	420941	-200#									
T 17124	400006	421054	-200#									
T 17125	402427	424673	-200#									
T 17126	402199	424319	-200#									
T 17127	401533	424255	-200#									
T 17128	401197	424597	-200#									
T 17129	401099	424506	-200#									
T 17130	400624	424812	-200#									
T 17131	400695	422409	-200#									
T 17132	400976	422454	-200#	-20.0	-5.5	11.4	0.2	3.5	1.5	3.3	2.1	-2.0
T 17148	403246	424655	-200#	36.0	-5.0	23.3	0.3	4.9	1.6	1.3	6.8	-2.0
T 17149	403157	424668	-200#	-20.0	-5.3	13.2	0.2	3.8	1.5	-1.1	3.4	-1.6
T 17150	402730	423767	-200#	27.0	-5.9	16.6	0.3	4.4	2.1	2.0	4.2	-2.0
T 17356	404650	422902	-200#	25.9	-1.0	11.6	0.3	4.9	1.8	0.6	3.1	-0.6
T 17357	404390	422139	-200#	13.8	-3.2	13.2	0.3	5.3	1.9	1.5	3.2	-0.6
T 17358	404444	422182	-200#	10.8	-0.8	16.7	0.3	4.8	1.7	0.9	2.6	-0.5
T 17359	404591	422034	-200#	20.8	-1.2	17.4	0.3	6.2	2.3	1.6	2.5	-0.7
T 17213	400026	422151	PC									
T 17214	400033	422030	PC									
T 17215	400004	422054	PC									
T 17216	401212	422156	PC									
T 17217	401207	421879	PC									
T 17218	401817	422016	PC									
T 17219	400591	421300	PC									
T 17221	400634	421350	PC									
T 17222	400028	420914	PC									

Laboratory:	BECO	BECO	BECO	BELG	BECO	BECO	BACO	BECO	BECO
ref:cc	INAA30								
Det. Limits:	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100

E49036

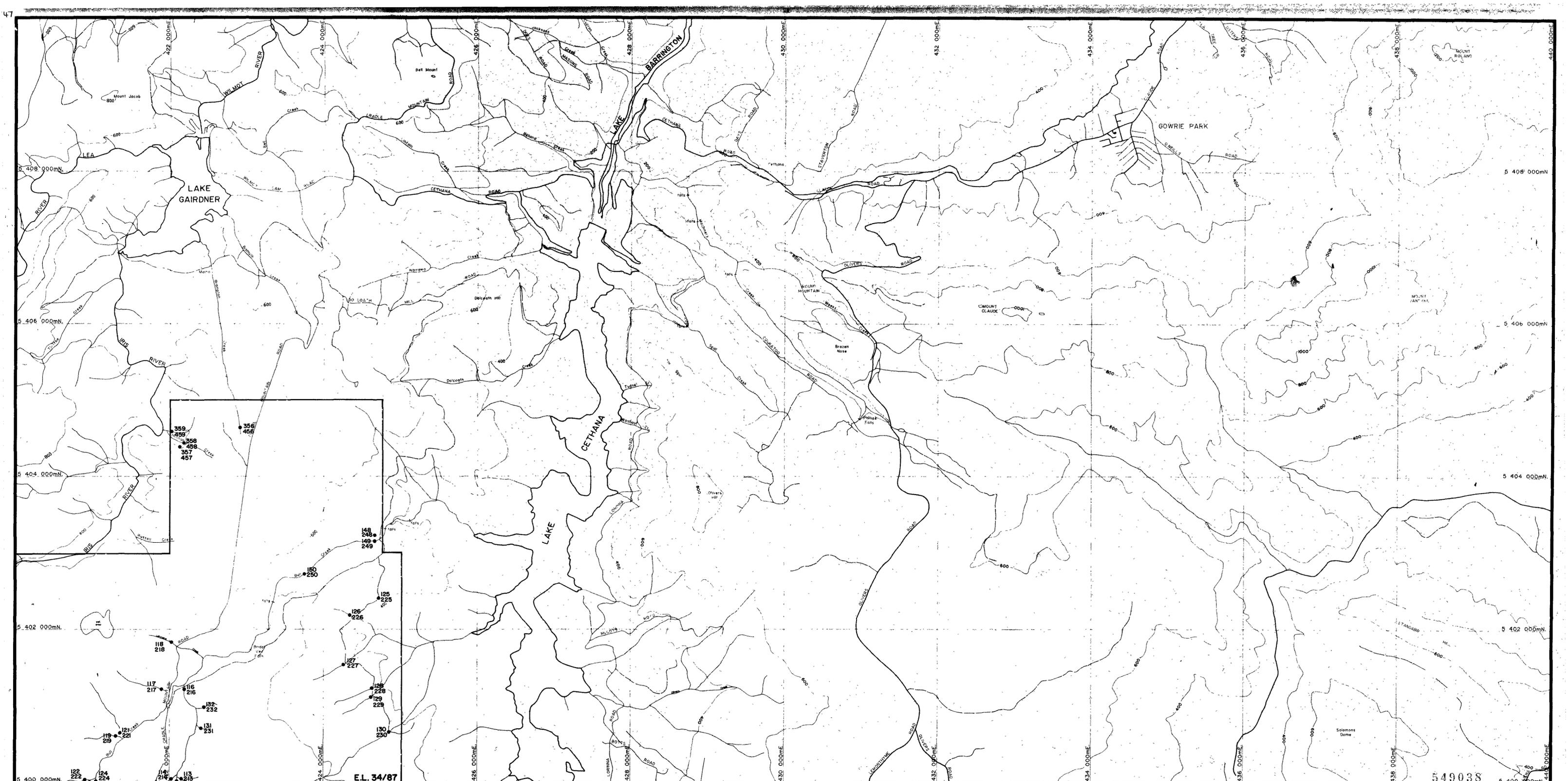
036

PROJECT: NORTHERN TASMANIAN NEUTRON ACTIVATION DRAINAGE SURVEYS

SAMPLE NUMBER	TNORTH metres	TEAST metres	KIND	RB PPM	SE PPM	LR PPM	LU PPM	SM PPM	YB PPM	TA PPM	TH PPM	U PPM
T 17223	399984	420941	PC									
T 17224	400006	421054	PC									
T 17225	402437	424873	PC									
T 17226	402199	424319	PC									
T 17227	401533	424255	PC									
T 17228	401197	424597	PC									
T 17229	401099	424608	PC									
T 17230	400624	424812	PC									
T 17231	400695	422409	PC									
T 17232	400978	422454	PC	31.0	-3.4	3.9	0.1	1.3	0.4	0.9	0.8	-1.2
T 17248	403248	424695	PC	73.0	-4.8	28.9	0.4	5.4	2.0	3.0	11.4	4.8
T 17249	403157	424668	PC	-19.0	-4.4	5.8	0.1	1.7	0.7	-0.9	1.8	-1.7
T 17250	402730	423767	PC	-13.0	-3.2	0.7	0.1	2.1	0.8	0.9	1.5	-1.2
T 17458	404550	422902	PC	6.3	-0.7	4.5	0.1	1.8	0.7	0.4	1.3	-0.3
T 17457	404396	422139	PC	15.8	-0.6	10.3	0.2	2.0	1.0	0.4	2.1	0.3
T 17458	404444	422182	PC	11.1	-0.8	2.9	0.1	1.3	0.5	0.6	0.4	-0.3
T 17459	404591	422034	PC	74.3	-0.6	17.6	0.3	3.3	1.6	0.8	6.4	1.9

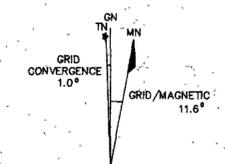
Laboratory:	BECO								
Method:	INAA30								
Det. limit:	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100

549037



NOTE: All samples have prefix: T17 ie • 150 • T17150 • T17250

CODE: Sample No.s T17101-193 and T17301-369 are - 200<sup>g</sup> samples  
 Sample No.s T17201-293 and T17401-469 are panned concentrates



INDEX TO ADJOINING SHEETS

LOONGANA	WILMOT	SHEFFIELD
LAKE LEA	CETHANA	000
PENCIL PINE	LIENA	MOLE CREEK

5 cm

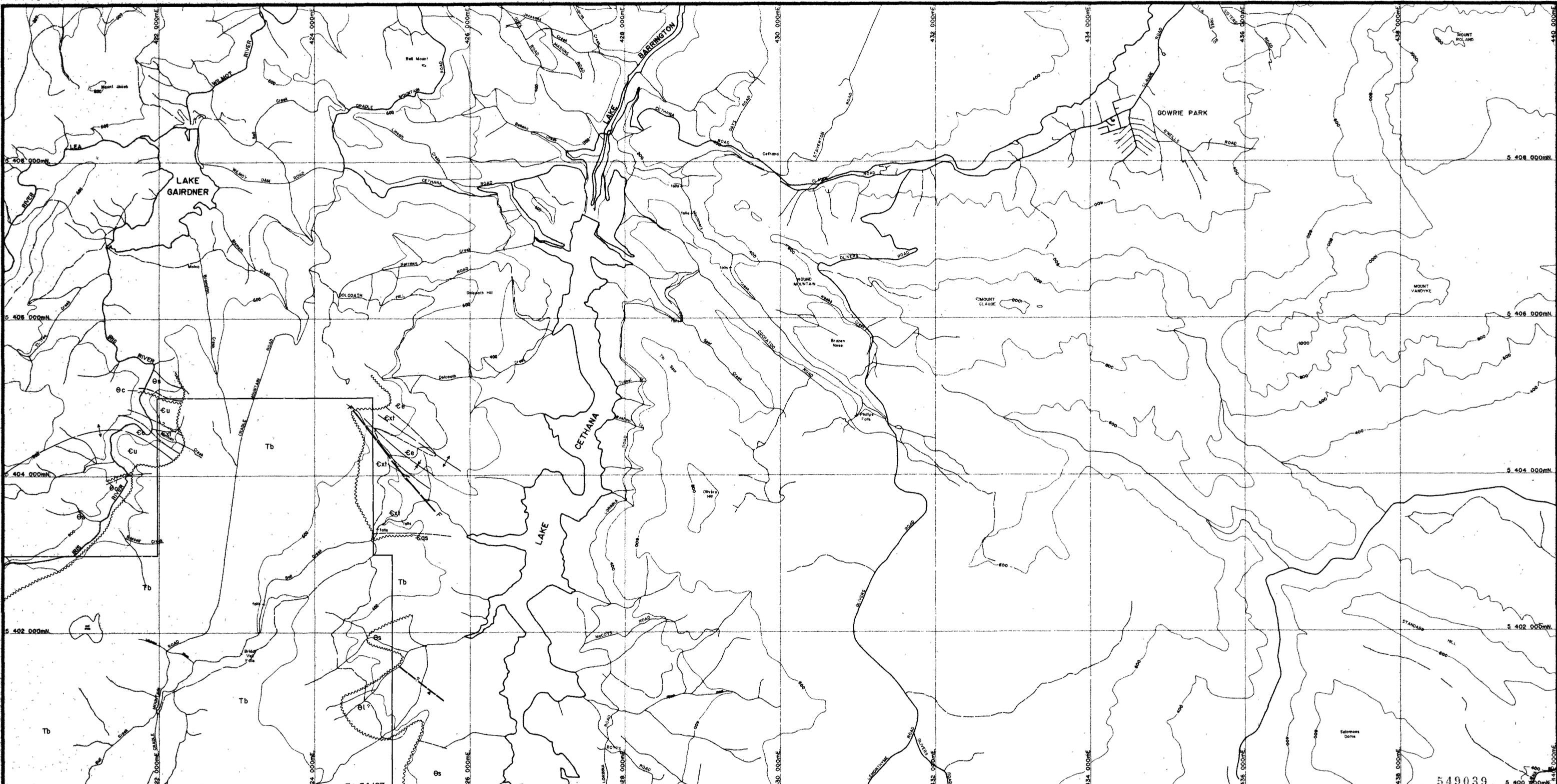
**RGC EXPLORATION PTY. LIMITED**  
 (INC. IN N.S.W.)

COMPILED	M.F.
DRAWN	M.O.W
DATE	SEPT 1989
CHECKED	
1:25,000 REFERENCE	CETHANA

**CETHANA**  
**STREAM SEDIMENT**  
**SAMPLE LOCATIONS**  
 E.L. 34/87

BASE PLAN No. \_\_\_\_\_ SCALE 1:25000  
 OVERLAY PLAN No. \_\_\_\_\_ METRES

FIG. 1

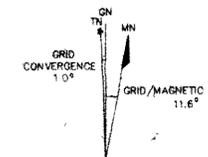


**LITHOLOGICAL REFERENCE**

TERTIARY	Tb	Basaltic extrusives and breccia
ORDOVICIAN	Ol	Limestone, calcareous (metasomatised) sandstone
LATE CAMBRIAN	Os	Orthoquartzite and sandstone, locally bioturbated, minor siliceous siltstone.
TO		
EARLY ORDOVICIAN (= DENISON GROUP)	Oc	Pebbly - cobbly siliciclastic conglomerate

CAMBRIAN	Cqs	Quartz + seriate schist, intensely cleaved foliated quartz phytic felsic volcanic. Mainly derived from Cxt
	Ce	Fine - medium grained felsic epiclastic wacke and medium to coarse grained felsic lithic wacke and breccia
	Cxt	Quartz ± Feldspar phytic felsic vitric crystal tuff and ignimbrite
	Cu	Undifferentiated (unmapped) felsic volcanics

- Geological Boundary
- Trace of unconformity
- Fault inferred
- Thrust fault inferred teeth on downthrown block
- Fold axis with indication of plunge



**INDEX TO ADJOINING SHEETS**

LOONBANA	WILMOT	SHEFFIELD
LAKE LEA	CETHANA	GOS
PENCE PINE	LIENA	MOLE CREEK

5 cm

**RGC EXPLORATION PTY. LIMITED**  
(INC. IN N.S.W.)

COMPILED	M.F.
DRAWN	R.G.S.
DATE	Sept 1968
CHECKED	M.J.F.
1:25,000 REFERENCE	CETHANA

**CETHANA**  
**INTERPRETED GEOLOGY**  
E.L. 34/87  
Mapping by W. Herrmann

BASE PLAN No  
OVERLAY PLAN No

SCALE 1:25 000  
METRES

FIG. 2