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E.L. 9/76

BLUE TIER AREA

PROGRESS REPORT

OPEN FILE

Submitted by:

May, 1984

J.W. Beddows

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Geologist

Copies to: GFEL (2)

Hellyer Mining and Exploration Pty. Ltd (1)

Tasmanian Mines Department (1)

CONTENTS

	<u>PAGE</u>
SUMMARY	
1. INTRODUCTION	1.
2. LAND TENURE	2.
3. EXPENDITURE	3.
4. PREVIOUS WORK	3.
4.1 Exploration at the Anchor Mine	3.
4.2 Exploration on the Licence Area	4.
5. WORK COMPLETED APRIL-MAY, 1984	4.
6. RESULTS	6.
6.1 Gough's Lode Area	6.
6.2 North Liberator Area	6.
7. CONCLUSIONS	7.

APPENDICES

APPENDIX 1 Expenditure

APPENDIX 2 Diamond Drill Hole Logs (1984) - BT178-BT180

SUMMARY

Three diamond drill holes, totalling 412m, were completed in the southern part of E.L. 9/76 in April-May, 1984. These holes were designed to test two areas for open cuttable, greisen-style tin mineralization in concealed cupolas of the Alkali Granite. The two target areas were the Gough's Lode area, north-west of the Anchor Mine, and the North Liberator area, 2.5 km further west.

Drilling in the Gough's Lode area failed to intersect Alkali Granite in either of the two holes completed there. Given the geometric constraints imposed on the shape of the Alkali Granite roof by other drill intersections and the known outcrop pattern, an Anchor-sized, open cuttable mineralized cupola cannot be present in this area.

In the North Liberator area, the hole drilled intersected weakly greisenized Alkali Granite. Unfortunately the greisen proved to be tin poor (average grade, 55 ppm Sn). The depth of the Alkali Granite intersection suggests that the Alkali Granite roof forms a "spur" from the Crystal Hill dome. Consequently, an Anchor-sized, open cuttable mineralized cupola cannot be present in this area, either.

LIST OF FIGURESFigure

1. Locality Map (In text).
2. Drill hole locality plan (1:20,000)
3. Structural contours at the top of the Alkali Granite, Blue Tier Area (1:20,000)
4. Structural contours at the top of the Alkali Granite, Sheet 4 (1:5,000)

1. INTRODUCTION

E.L. 9/76, the Blue Tier Exploration Licence area, covers 76 km² of elevated terrain situated approximately 30 km northwest of St Helens in N.E. Tasmania (Figure 1). The area enclosed by the licence includes the Anchor Mine and other numerous small mines of the Blue Tier Tinfield. The mines in the area are no longer active, but production from the tin field between 1870 and 1930 was about 4,000 tonnes of tin. The Anchor Mine accounted for some 2,350 tonnes or about 59% of production from the area (Ross, 1983).

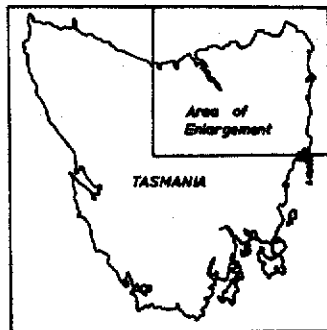
The Blue Tier is a large steep-sided plateau which is about 700m above sea level and about 500m above the surrounding country. The lower slopes are covered with extensive eucalypt, wattle and myrtle forests. The upper slopes and plateau, with an average rainfall between 1500 and 2000 mm/year, are covered mainly by rainforest, scrub myrtle and grasslands. The entire region has been extensively logged.

E.L. 9/76 includes a portion of a large Devonian granite mass, the Blue Tier Batholith, as shown in Figure 1.

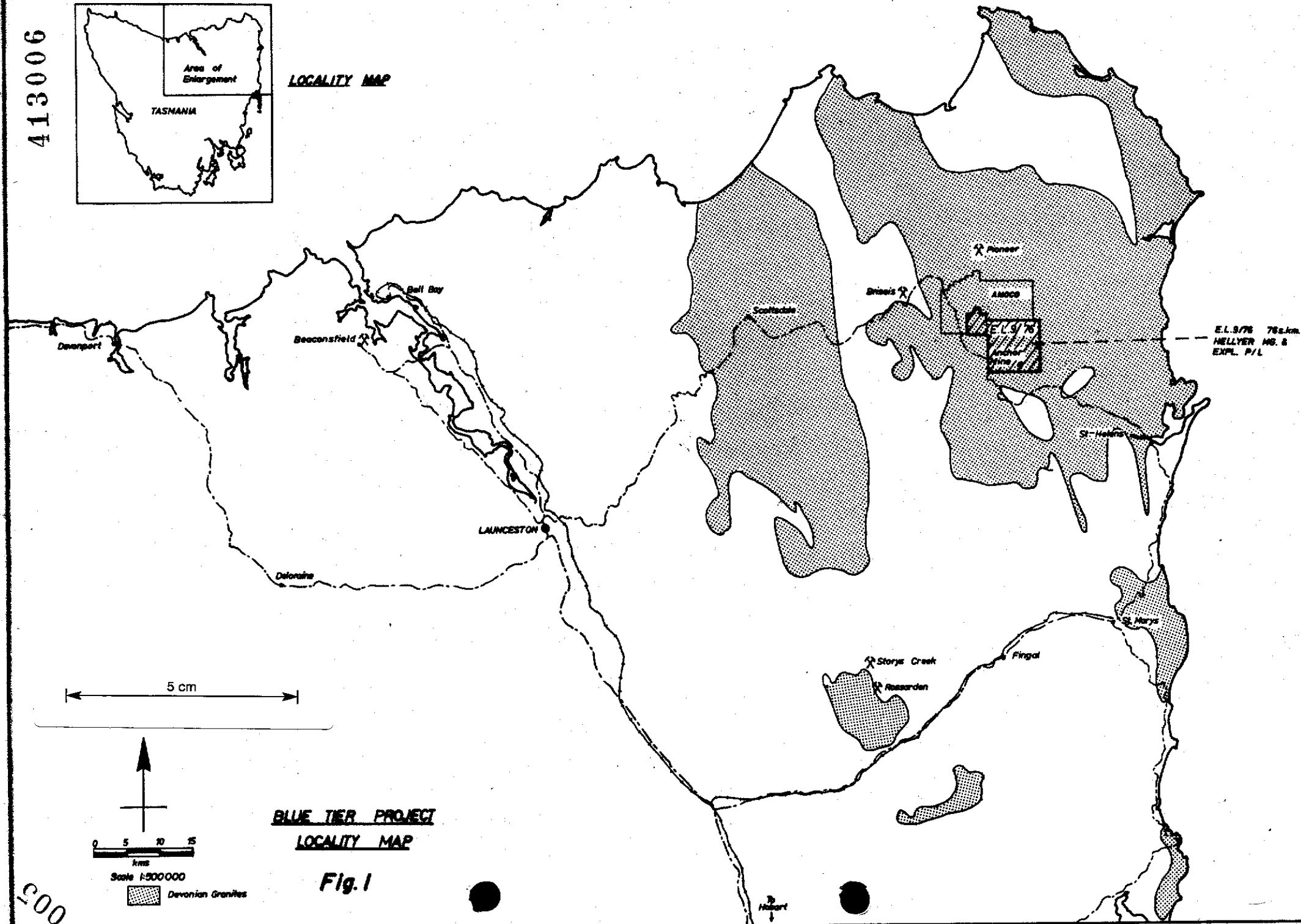
This granite mass is comprised of two major rock types in the licence area, (a) Poimena Adamellite (Dg-p, Dg-fp), which is a convenient name given to a variety of porphyritic, tin poor granites and (b) Alkali Granite (Dg-a) which consists of equigranular, tin-bearing leucogranites. The Alkali Granite intrudes the Poimena Adamellite. A variety of stanniferous deposits are present:-

- (1) Vein style mineralization-occurs in both rock types.
- (2) Greisenized Cupolas - occur only in the Alkali Granite.

413006



LOCALITY MAP



BLUE TIER PROJECT
LOCALITY MAP

Fig. 1

500

- (3) Alluvial deposits - formed by erosion of the above two.

In all three cases the ore mineral is cassiterite.

Exploration in the area since the 1960's has concentrated primarily on the greisen deposit at the Anchor Mine, firstly by Aberfoyle and later when Renison Ltd. began exploration in late 1977 in joint venture with Hellyer Mining and Exploration P/L. In mid-1981 a potential deposit had been assessed and delineated but was considered to be too small. Since that time exploration has continued on surrounding areas in an attempt to define additional deposits to supplement the Anchor resource.

This year, as proposed by Roberts and Cartwright (1984), a three hole drilling program was designed to test the remaining prospective areas. These areas were the North Anchor area (around Gough's Lode) and in the North Liberator area. Results of this drilling program are detailed in this report.

2. LAND TENURE

E.L. 9/76 is held by Hellyer Mining and Exploration Pty. Ltd., and is explored under a Joint Venture Agreement with Renison Ltd. Current project equity is Renison 60%, Hellyer 40%. The Licence operator is Gold Fields Exploration Pty. Ltd.

A number of small mining leases are held in the Licence area and these are detailed by Roberts (1982). The mining leases previously held over the Cambria Workings are now incorporated in E.L. 9/76.

3. EXPENDITURE

Expenditure on this area for the ten months to the end of April 1984 amounted to \$135,406. Only part of this was used during the program described in this report, the rest being spent on the previous exploration program completed in July-September, 1983. Although complete cost figures are not yet to hand, the cost of the recent program is estimated at approximately \$30,000.

4. PREVIOUS WORK

Exploratory work carried out on E.L. 9/76 can be divided into two categories (a) exploration around the Anchor Mine, and (b) exploration over the rest of the Licence area.

Details of all work completed on the Blue Tier area before Renison Ltd. commenced work in 1977 are shown in Ross (1978).

4.1 Exploration at the Anchor Mine

- (a) Diamond Drilling. Five drilling programs, comprising 83 exploration and 16 bulk sample holes (for metallurgical testing), have been completed at the Anchor Mine.
- (b) Other Work. This included metallurgical testing of ore from the Anchor, and an Indicative Feasibility Study.

It was decided, however, that the Anchor deposit was of insufficient size for development, and exploration efforts were directed to other areas of the Exploration Licence in order to locate additional

resources to supplement the Anchor. A multi-element lithogeochemical survey over the Anchor Mine was carried out to determine if there is a halo effect around mineralization and whether it may be used for exploration. The halo effect proved to be only limited (Cartwright, 1983).

4.2 Exploration elsewhere on the Licence Area

A photogeological study was done in 1979 and the results proved to be disappointing as different granite types could not be distinguished photogeologically. Then in 1979, 1980 and 1981 the majority of the E.L. was systematically ground surveyed over cut lines. This ground survey included geochemical samples and some geological mapping (Roberts, 1982).

A regional drilling program based primarily on the results of the ground surveys was undertaken to find stanniferous greisen bodies (Roberts, 1982). Although unsuccessful in accomplishing its aim it delineated areas of potential for this type of deposit. These areas of potential were drilled in a thirteen hole program in 1983 (Cartwright, 1983). The results were again disappointing.

5. WORK COMPLETED APRIL-MAY, 1984

The work completed in the April-May, 1984 period consisted entirely of a three hole drilling program. These three holes, numbered BT 178 to BT 180 and totalling 411.7m, were based on the proposals outlined by Roberts and Cartwright (1984). The drilling contractor was Associated Diamond Drillers.

Two holes were drilled in the North Anchor area around Gough's Lode and the other in the North Liberator area.

Access to the first two holes was by a single bulldozed track of about 2 km length which ran from an existing track which accessed Poimena Rd. The second hole was accessed from Lottah Rd by a logging track and about 250 m of bulldozed track. All the bulldozing was done by Mr. P. Grose (contractor). Owing to wind and rain, a bulldozer was required to clear the track into the first two holes, to shift the rig between BT 178 and 179, and then to remove the rig from the final site (BT 180). This work was done under contract by St Helens Readymix Concrete Company.

BT 178 and 179 in the Gough's Lode area were each triconed for the first 4m and then cored, firstly in NQ for 30.0m and 25.0m respectively, and then BQ to the bottom. BT 180 was cored from the surface using HQ for 0.0-3.0m NQ for 3.0-11.5m and BQ to the end. The hole collars were located using tape, compass and clinometer surveys. A total of 32 samples from BT 180 from greisenized Poimena and Alkali Granite were assayed for Sn and WO₃ at the Renison Assay Laboratory. Drill Logs and profiles are attached as Appendix 2.

6. RESULTS6.1 Gough's Lode Area

B.T. 178 was drilled at the centre of an interpreted Alkali Granite cupola just south of Gough's Lode. The hole encountered 151.0m of Poimena Adamellite. Hence the interpreted Alkali Granite cupola was either further to the north and west or to the east but not large enough to be of interest.

In the drilling proposal (Roberts and Cartwright, 1984) it had been suggested that, if B.T. 178 was completed in Poimena Adamellite at 150m, there would be insufficient room for an open cuttable Anchor-sized deposit in the Gough's Lode area. After reconsidering the evidence, it was decided that there could be room for an open cuttable ore body of the size wanted north-west of B.T. 178 so B.T. 179 was drilled. Unfortunately it also failed to encounter the Alkali Granite over its length of 121.0m.

So, these two holes have essentially closed off the possibility of there being an open cuttable, Anchor-sized body in the North Anchor-Gough's Lode area. There is still the possibility of a smaller cupola under the private property to the east and south of B.T. 178.

6.2 North Liberator Area

The hole drilled in this area, B.T. 180, was also positioned at the centre of an interpreted Alkali Granite cupola, north west of the Crystal Hill Alkali Granite dome. The hole struck weakly greisenized

Alkali Granite at 139.7m.

The greisenized Alkali Granite was assayed for tin and tungsten, as was a patch of greisenized Poimena Adamellite at 20.0m down hole. The assay results were very disappointing with a peak of 180 ppm Sn reached in the Alkali Granite. The average grade of tin in the greisenized Alkali Granite was about 55 ppm. Tungsten values were very similar with an average grade of 60 ppm. The assays returned from the greisenized Poimena Adamellite were even lower with tin averaging 40 ppm and tungsten 30 ppm.

The R.L. of the roof of the Alkali Granite also indicates that the area was not cupola as had been suggested but represents a spur from the Crystal Hill Dome on the flanks of the Australia Dome.

7. CONCLUSIONS

The results from the holes drilled in the Gough's Lode area indicated that there is not an Anchor-sized, mineralized Alkali Granite cupola there. The area seems to overlie a small "valley" in the roof of the Alkali Granite between a possible small cupola to the east of B.T. 178 and the rise in structural contours to the west. The size of the cupola that can be interpreted between Gough's Lode and the previous holes in the North Anchor area is unlikely to be large enough, even at its greatest possible extent, to be of interest. The veins in Gough's Lode area probably represent leakage from the small cupole to the east.

In the North Liberator area the hole struck the Alkali Granite at 99m, which means that the Alkali Granite at this point is actually a spur coming off the Crystal

Hill Dome and on the flank of the Australia Dome. The Alkali Granite is only weakly greisenized and contains very little tin and tungsten (maximum value 180 ppm). Due to the morphology of the roof of the Alkali Granite and its tin content, the area can be eliminated as a prospective area for an Anchor-sized deposit.

REFERENCES

- Cartwright, A.J., 1983: E.L. 9/76 Blue Tier Area, Progress Report, December 1983, Unpublished Report, G.F.E.L.
- Roberts, P.A., 1982: E.L. 9/76 Blue Tier Area, Progress Report. Unpublished Report, Renison Ltd.
- Roberts, P.A. and Cartwright, A.J., 1984: E.L. 9/76 Blue Tier Area, Diamond Drilling Proposal, Unpublished Report, G.F.E.L.
- Ross, A.F., 1978: E.L. 9/76 Blue Tier Area. Annual Report 1977-78, Unpublished Report, Renison Ltd.
- Ross, A.F., 1983: The Anchor Tin Deposit. Unpublished MSc Thesis, James Cook University.

APPENDIX 1

1983-84 EXPENDITURE

BLUE TIER AREAEXPENDITURE FOR TEN MONTHS TO END APRIL, 1984GEOLOGY

- Salaries	21,827
Salary on-costs	7,640
Transport	539
Miscellaneous	1,266
Travel	1,655
Stores	709
	<u>33,636</u>

GEOCHEMISTRY

- Assays	1,113
Stores	209
	<u>1,322</u>

DRILLING

- Miscellaneous	26
Assays	4,425
Outside Contractors	70,682
Stores	980
	<u>76,113</u>

SITE PREPARATION

- Outside Contractors	<u>2,610</u>
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SURVEYING

- Outside Contractors	<u>2,690</u>
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MOTOR VEHICLE EXPENSES6,725ADMINISTRATION COSTS12,310TOTAL : 135,406

APPENDIX 2

DIAMOND DRILL HOLE LOGS (1984)

BT 178 - 180

GOLD FIELDS EXPLORATION PTY. LIMITED
DRILL CORE RECORD

HOLE NO.:	BT 178
STATE :	TASMANIA

Y. PRESH

PROJECT	BLUE TIER	PURPOSE
DESIGNED BY	A. J. CARTWRIGHT	To test possibility of mineralized alkali granite cupola in the area south of Gough's Lode.
LOGGED BY	J. W. REDDONS	
COMMENCED	9/4/84	
COMPLETED	26/4/84	

LOG SUMMARY	0.0 - 28.0 MODERATELY WEATHERED POIMENA ADAMELLITE.
	28.0 - 134.7 WEAKLY ALTERED AND GREISENIZED POIMENA ADAMELLITE.
GENERAL COMMENTS	134.7 - 151.0 WEAKLY TO MODERATELY ALBITIZED POIMENA ADAMELLITE.

ESSAY SUMMARY

[illegible]

CATION

NORTHING	36415
EASTING	844490
R.L. (approx)	510
GRID	A.M.6
LENGTH	151.0

HOLE CONDITION

SIZE	
Hole Size	Depth
TRICONE	0.0-4.0
NQ	4.0-30.0
BQ	30.0-151.0

SIGNIFICANT CORE LOSS INTERVALS

[illegible]

POOR GROUND CONDITION ZONES

[illegible]

HOLE CONDITIONS AFTER COMPLETION

Hole open. Approx. 25m. casing down
hole.

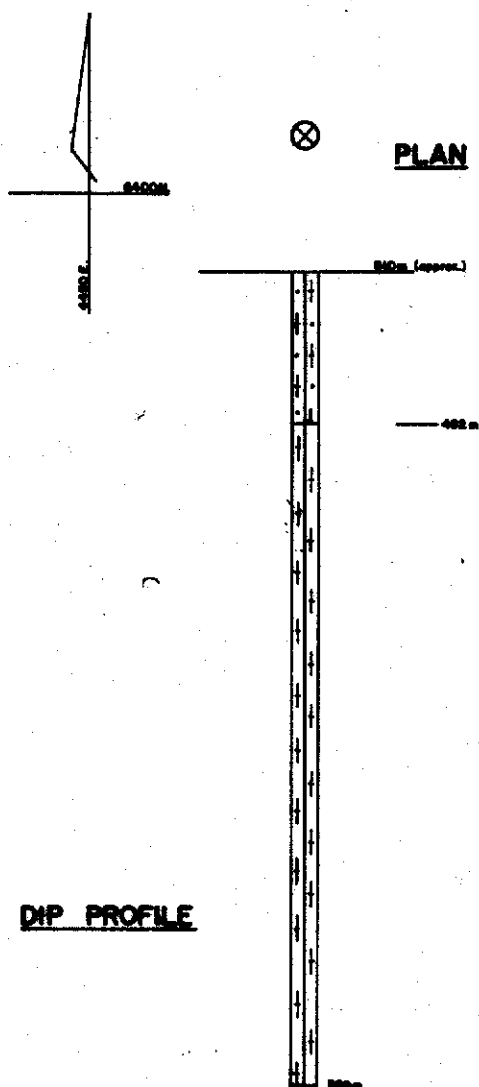
IRVEY DATA (Note: Bearing type must be same as Project Grid Type)

[illegible]

HOLE NO. BT 178

GOLD FIELDS EXPLORATION PTY. LIMITED
DIAMOND DRILL HOLE PLOTSCALE 1:1000
METRES

5 cm



019

GOLD FIELDS EXPLORATION PTY. LIMITED

PROJECT: BLUE TIER

HOLE NUMBER: B.T. 178 Page: 1.

Y. PRESS

[illegible]

413021

GOLD FIELDS EXPLORATION PTY. LIMITED
DRILL CORE LOG AND ASSAY DATA

HOLE NUMBER: B.T. 178

Page: 2.

PROJECT: BLUE TIER

IX. REFERENCES

[illegible]

413023

HOLE NO. BT 179

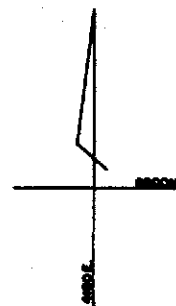
GOLD FIELDS EXPLORATION PTY. LIMITED
DIAMOND DRILL HOLE PLOT

SCALE 1:1000



METRES

5 cm

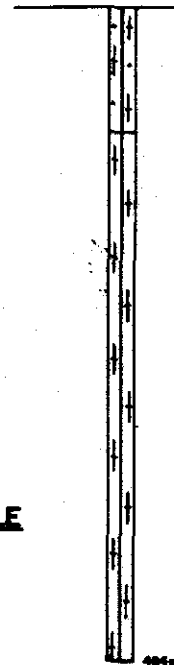


PLAN

245m (approx.)

100m

DIP PROFILE



HOLE NUMBER: B.T. 179 Page: 2.

Page: 2.

PROJECT:

[illegible]

413028

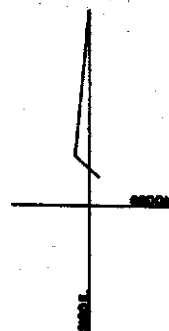
HOLE NO. BT 180

GOLD FIELDS EXPLORATION PTY. LIMITED
DIAMOND DRILL HOLE PLOT

SCALE 1:1000



5 cm



6045 N.
2000 E.



PLAN

840m (approx.)

844m

<0.02%

840m

<0.02%

830m

DIP PROFILE



Y. PRESS

[illegible]

029

413030

GOLD FIELDS EXPLORATION PTY. LIMITED
DRILL CORE LOG AND ASSAY DATA

PROJECT: BLUE TIER

HOLE NUMBER: B.T. 180

Page: 2.

LV. PRESS

INTERVAL		RECOVERY		DESCRIPTION	ASSAY DATA									
From	To	m	%		Sample No.	From	To	Rec. %	Sn	WO ₃				
24.9	31.98	6.43	91	Weakly altered and greisenized grey-green, medium grained porphyritic granite. Feldspars up to 3cm long, quartzes grey to clear and biotite makes up the remaining mineralogy. Edges of crystals are becoming less distinct due to greisenizing effect and sericitic alteration of feldspars produce the green colour.	3718	20.0	22.0		50	30				
					3719	22.0	24.0		50	30				
					3720	24.0	26.0		30	40				
					3721	26.0	28.0		30	20				
					3722	28.0	30.0		30	30				
					3723	30.0	32.0		70	20				
31.98	33.56	1.58	100	Very fine grained white granite with aggregate of biotite up to 1cm across. The rock is composed entirely of pinkish-white feldspars and quartz. Probably an aplite, and has veins of pegmatite cutting it at 31.98, 32.58, 33.17, 33.53m for 2-3cm.										
33.56	99.0	66.44	100	Grey, porphyritic, medium grained granite. Occasional white feldspar up to 5cm long but more commonly 1-3 cm. Quartz is grey in phenocrysts but clear in ground mass. Small aplite vein or dyke about 20cm wide cuts core at 46.12. Due to the presence of a nearly vertical vein or joint system the granite between 73.32 and 98.2 has been weakly altered and a thin coating of sericite coats the vein surface. The majority of feldspars in the groundmass are now tinged green due to the sericitic alteration. A 4cm wide pegmatite vein cuts core at 97.95m.										
				99.0-99.6 CONTACT ZONE	3724	99.0	100.0		60	70				
					3725	100.0	101.0		60	30				
99.0	99.6	0.6	100	Pegmatitic contact zone between the granite described above and the alkali granite. The first 25cm is comprised entirely of coarsely crystalline pink feldspar and grey quartz. The remainder of the contact is comprised of patches of pegmatite and intervals of Poimena and alkali granite. A quartz filled vein network runs through the zone and limonite is developed around them.	3726	101.0	102.0		50	50				
					3727	102.0	103.0		50	60				
					3738	103.0	104.0		50	90				
					3729	104.0	105.0		50	60				
					3730	105.0	106.0		50	70				
					3731	106.0	107.0		50	40				
					3732	107.0	108.0		180	70				
				99.6-121.56 WEAKLY GREISENIZED ALKALI GRANITE	3733	108.0	109.0		50	120				
					3734	109.0	110.0		50	80				
99.6	104.48	4.88	100	Pinkish-white slightly greisenized alkali granite. Pinkish coloration due to the presence of some pink as well as the more common white. Quartz is white to clear and a green or brown biotite is	3735	110.0	111.0		50	50				
					3736	111.0	112.0		50	50				
					3737	112.0	113.0		40	30				

030

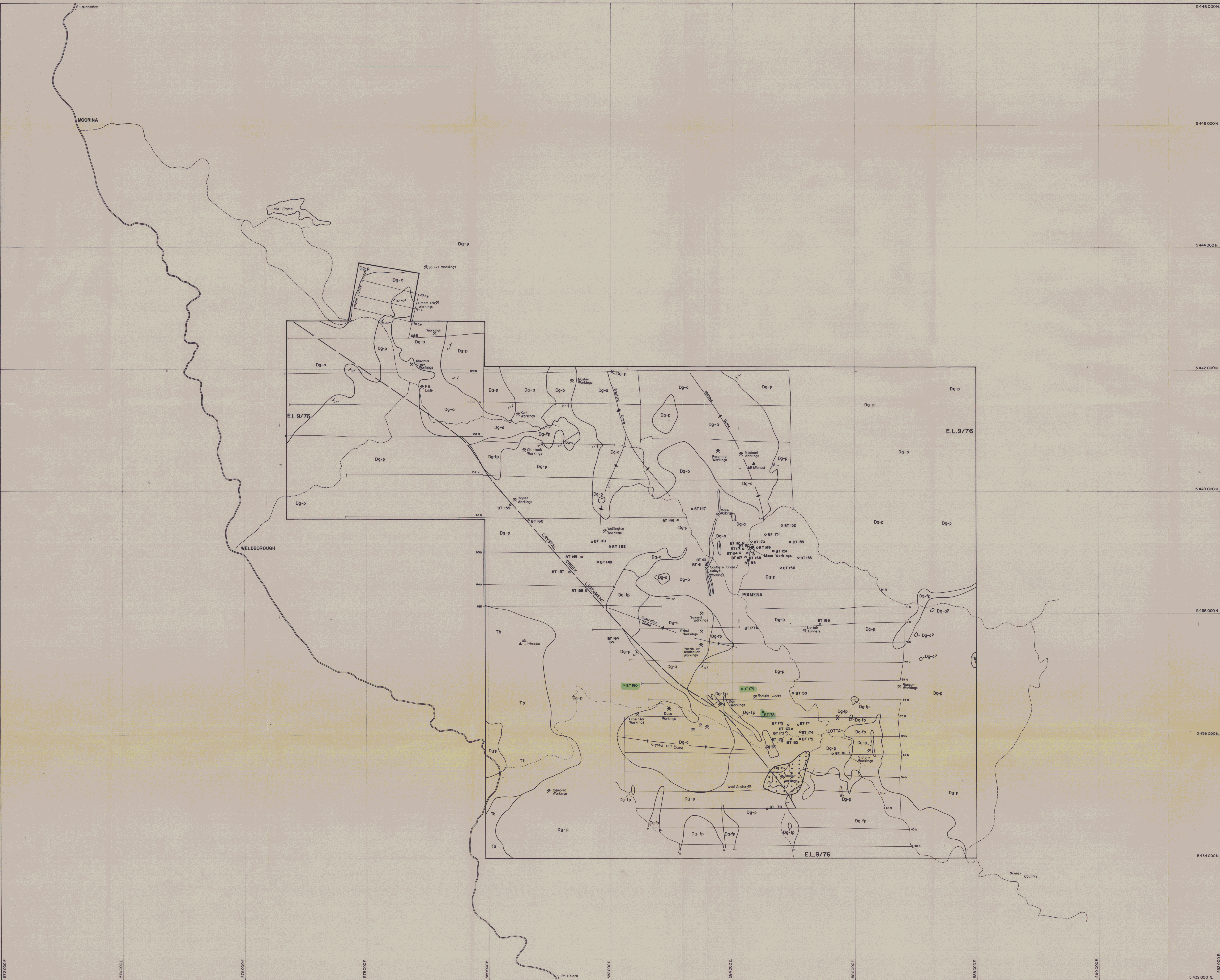
GOLD FIELDS EXPLORATION PTY. LIMITED

PROJECT: BLUE TIER

HOLE NUMBER: B.T. 180

Page: 3.

[illegible]



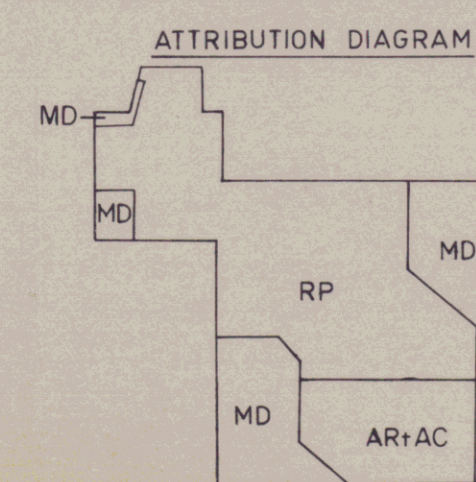
Drill Holes
BT • Renison/Goldfields Drilling

Area of Detailed Drilling
at the Anchor Mine

- LEGEND**
- Quaternary [Dq] Alluvium, colluvium
Tertiary [Ts] Gravel, sand, clay
Tertiary [Tb] Basalt
Tertiary [Ta] Agglomerate and tuff
Siluro-Devonian [Dg] Mathinna Beds
- BLUE TIER COMPOSITE BATHOLITH**
- [Dg-a] Alkali Granite - similar to granite in Anchor Mine, medium grained
[Dg-fp] Fine to medium grained, includes all other leucocratic types, e.g. quartz-feldspar porphyry, diorite etc.
[Dg-p] Poimena Adamellite - mesocratic, porphyritic, dioritic, granitic, gabbroic
[Dg-g] Granodiorite
- [Dg-a] Apparent domal feature in roof of small granite
[Dg-a] Dip of granite contact
[Dg-a] Interpreted geological contact
[Dg-a] Photo-lineament
[Dg-a] Old Workings
[Dg-a] Cut Grid Line
[Dg-a] Vehicle Track
[Dg-a] Sealed Road
[Dg-a] Licence Boundary

413032

5 cm



MAPPING BY
R. Pothock (contract geologist)
A. Ross
Mines Department
(1:50,000 mapping)
A. CARTWRIGHT

REVISIONS		SCALE 1:20,000 METRES	
GEOLOGIST		DATE	
DRAUGHTSMAN		DRAWING No.	
DATE		2	
REVISIONS		J.W.S. June 1981	



Drill Holes
BT o Renison/Goldfields Drilling

Area of Detailed Drilling at the Anchor Mine

Structural Contours at the top of the Alkali Granite

Top of Alkali Granite Contact - 100m below surface

LEGEND

Quaternary
Tb Alluvium, colluvium
Tb Gravel, sand, clay
Tertiary
Tb Basalt
Tb Agglomerate and tuff
Siluro-Devonian
Tb Mathinna Beds

BLUE TIER COMPOSITE BATHTHOLITH

Dg-a Alkali granite - similar to granite in Anchor Mine, medium grained
Dg-p Fine to medium grained, includes all other leucocratic types, e.g. quartz-feldspar porphyry, etc.
Dg-q Devonian
Dg-pa Paimona Adamellite - megacrystic porphyritic biotite granite/adamellite
Dg-g Granodiorite

Apparent Domes feature in roof of alkali granite
Dip of granite contact
Interpreted geological contact
Photo-lineament
Old Workings
Cul Grid Line
Vehicle Track
Sealed Road
Licence Boundary

ATtribution DIAGRAM

MAPPING BY:
RP R. Patlock (contract geologist)
AR A. Ross
MD Mines Department
AC A. CARTWRIGHT

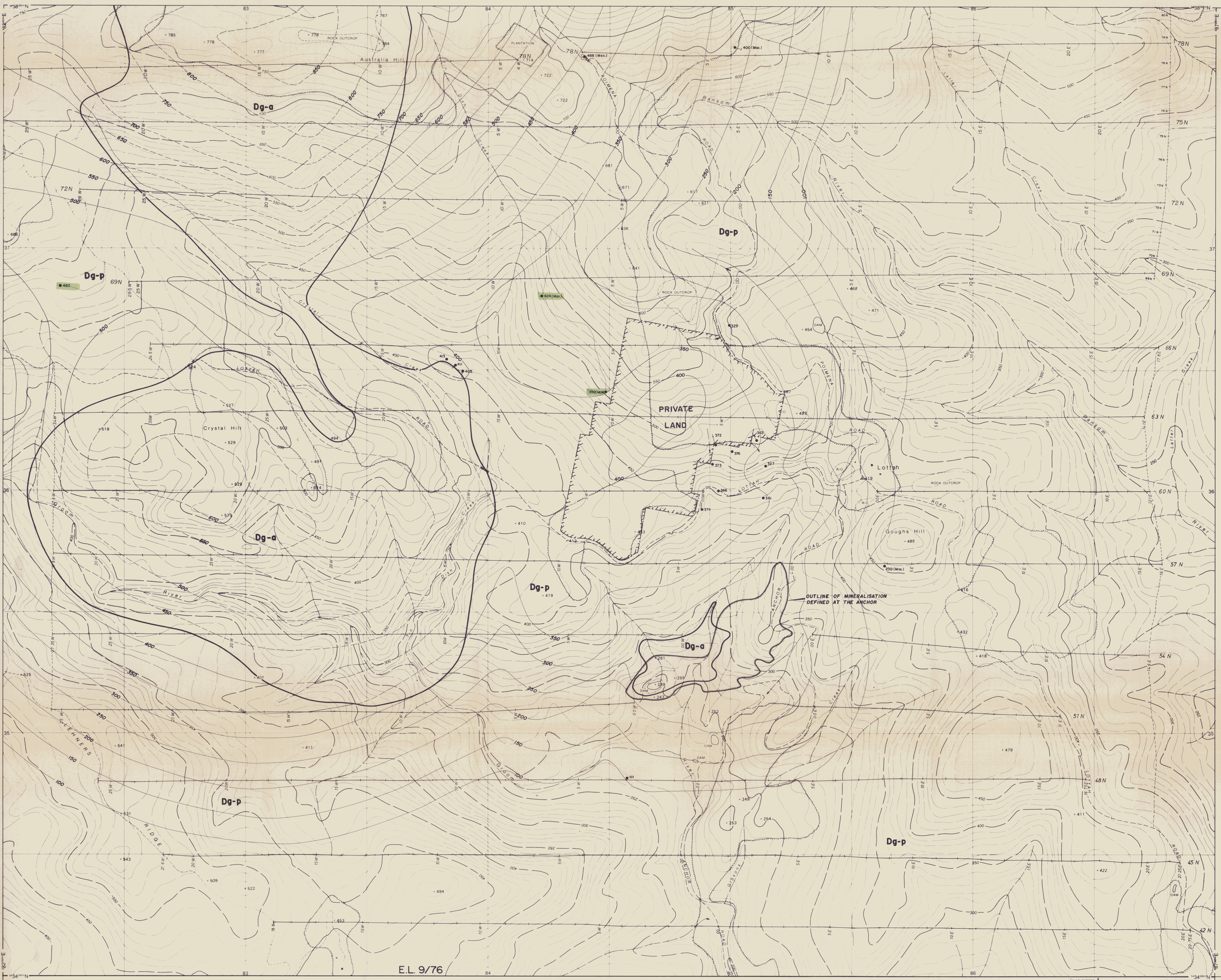
RENISON LIMITED

**BLUE TIER AREA
STRUCTURAL CONTOURS AT THE
TOP OF THE ALKALI GRANITE**

GEOLOGIST P.A.R./A.J.C.
DRAUGHTSMAN T.G.D.S./S.J.F.
DATE APRIL 1982
REVISIONS A.J.C. Nov 83
J.W.B. June 1984

SCALE 1:20,000 METRES

DRAWING No. 3



— GEOLOGICAL CONTACT

— 600 — STRUCTURAL CONTOURS AT THE TOP OF THE ALKALI GRANITE

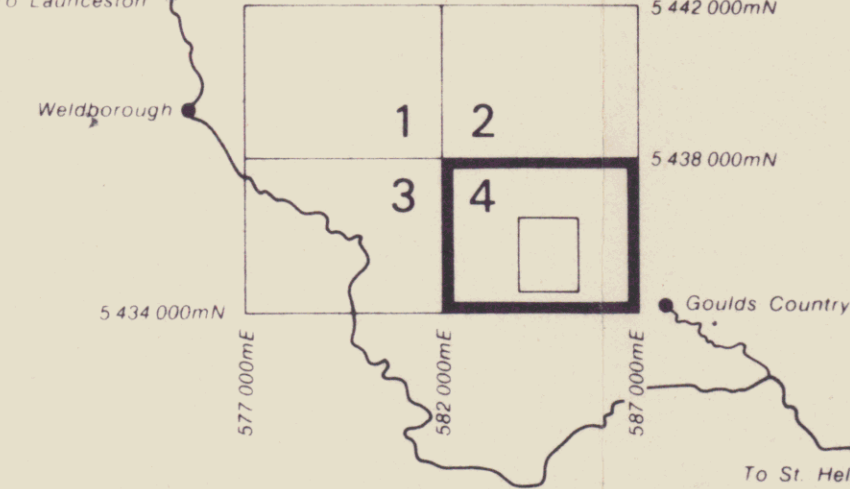
Dg-a ALKALI GRANITE

Dg-p POIMENA ADAMELLITE

413034

5 cm

LEGEND	
Sealed Road	Unsealed Road
Major Track	Minor Track
Watercourse	Bridge
Building	Fence
Power Line	Timber Boundary
(P.D.)	Precision Doubtful
(I.D.)	Interpretation Doubtful
Contour	Form Line
+ 494	Spot Elevation
+ 826	Approx. Spot Elevation
N.B.	Form lines and spot elevations indicate lower reliability due to dense vegetation cover
Datum	Horizontal: Australian Map Grid
	Vertical: Australian Height Datum
Grid Interval	500 metres



RENISON LIMITED

BLUE TIER AREA

STRUCTURAL CONTOURS AT THE TOP OF THE ALKALI GRANITE AND DRILLING RESULTS

GEOLOGIST: A.J.C.

DRAUGHTSMAN: S.J.F.

DATE: Dec., 83

REVISIONS: JWB June 1984

DRAWING No. 4

SCALE 1:5,000 METRES

Mapping photogrammetrically compiled by Associated Aerial Surveys Pty. Ltd.
Compilation date November 1978 from aerial photographs dated 12.12.1977