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REF. NO. 4938/82			

*D.J.J.
Process file*

PROJECT NAME: AUSTRALIAN ANGLO AMERICAN PROSPECTING
PROPRIETARY LIMITED - AMDEX RINGAROOMA

TITLE: JOINT VENTURE
EXPLORATION PROPOSALS

(These proposals are intended to be the basis of exploration extending over several years)

OPEN FILE

AREA NAME/S, STATE 1:250,000 SHEET NO/S & COORDINATES: Ringarooma, Tasmania

COMMODITY/IES: Tin
TEXT PAGES NO: 11
PLAN NOS: See attached list
TABLE NOS:
APPENDICES:
AUTHOR/S: Bruce D Mellor
DATE: 11 March 1982

AUSTRALIAN ANGLO AMERICAN LIMITED

Incorporated in the State of Victoria

AUSTRALIAN ANGLO AMERICAN PROSPECTING
PROPRIETARY LIMITED - AMDEX RINGAROOMA

JOINT VENTURE

EXPLORATION PROPOSALS

(These proposals are intended to be the basis of exploration extending over several years)

1. MAJOR TENEMENTS

The major tenements are:

EL 28/76
EL 5/81
EL 2/77
AP 1/80

2. OBJECTIVE

The objective is to locate reserves of alluvial cassiterite which may be economically mined.

3. PROSPECTING SUB-DIVISIONS

For consideration of prospecting potential and programmes, the area controlled by the Joint Venture can be sub-divided as follows:

3.1. Ringarooma Basin (from Arba to Mt Cameron)

3.1.1. Areas not covered by Tertiary Basalt:

- a) Eastern Portion - Mt Cameron to Herrick.
- b) Western Portion - Arba to Derby.

3.1.2. Area covered by Tertiary Basalt.

3.2. Boobyalla Valley Basin

3.2.1. Upper Boobyalla - Upstream from East Banca.

3.2.2. Middle Boobyalla - From East Banca to the grid 60mN.

3.2.3. Lower Boobyalla - From Grid 60mN to the EL boundary.

3.3. White Rocks Basin

3.4. Scotia Lead (AP 1/80)

4. PROSPECTING PROPOSALS

4.1. Area 3.1.1. (a) Eastern Ringarooma Basin

This area has had three major producing mines namely the Endurance Mine, the Dorset Flats dredging area and the Pioneer Mine. About 16 - 20 sq km of Tertiary sediments have not been tested for cassiterite mineralisation.

4.1.1. Tenements

The basin is covered by Exploration Licence 2/77, which is held by Kibuka Mines Pty Ltd on behalf of the Joint Venture. Excluded from EL 2/77 are several mining tenements located along the eastern margin. The major tenements are (from north to south).

- A) BMI tenements at the base of Mt Cameron and covering the Endeavour, Clifton, Clarence and Hasties Leads.
- B) Tenements held by Moor and Wines, at the head of the Corduroy Creek Lead.
- C) Tenements held by Grove, at the head of the Eastern Lead.
- D) Kibuka Mines Pty Ltd tenements covering the Pioneer Lead.
- E) Mines Department Reserve, covering holes drilled on the Golden Sovereign and Herrick Leads.
- F) A tenement held by Machen over the Echo Mine.

4.1.2. Work Done

Most of the eastern margin has been tested and/or mined. The plan shows the basement contours of the various leads, based on the known drilling. The outline of the contours more or less defines the extent of the drilling. In addition to the drilling directed specifically towards following known leads, the Mines Department has conducted research aimed at defining the structure of the basement. This work has included a seismic survey and drilling of deep holes in the west of the basin. The picture which emerges is of a fairly flat basin, deepest in the northwest and against the Granite margin, with fairly steep eastern margin. The slope is universally towards the deepest part of the basin in the central west (app. 575000E 5456000N). No satisfactory drainage from this basin has been located.

3.

4.1.3. Prospecting Objectives

Future prospecting should aim at:

- a) Defining the structure of the basement of the basin by combined geophysics and drilling.
- b) Defining the down stream routes of the known leads, and testing them for cassiterite mineralisation.
- c) Searching for an escape drainage from the basin by detailed geological survey of the western margin of the basin.

4.1.4. Geophysics

The possible value of a seismic survey as an aid to defining the structure of the basement is being investigated.

The use of geophysics has not been favoured because it was considered that the major feature to be defined would be the interface between the weathered and unweathered granite, rather than the basement of the Tertiary sediment. This feature may be of doubtful use in detailing the path of a mineralised lead; but in the regional sense, that is, in the 16 sq km of untested basin, this feature would be of use, assuming that the depth of weathered granite would be more or less uniform.

4.1.5. Geological Survey

The geological survey of the western margin of the basin has commenced. This is aimed at investigating the possibility of a connection between the Ringarooma and Boobyalla Basins either westerly through the granite at about E75 N56 or northerly through the granite from under the basalt at about E71 N55. Follow up drilling will probably be needed to test for Tertiary sediments and tin mineralisation below surface granitic soils.

The results of this work will have a bearing on the prospecting of Area 3.2.2. (Middle Boobyalla), (see section 4.5.).

4.

4.1.6. Drilling Proposals4.1.6.1. Basin Structure

Knowledge of the basement structure is important, as it will allow better placement of holes designed specifically to locate tin bearing beds. If seismic surveys are not used, or prove to be ineffective, drilling will be necessary. To obtain a reasonable cover, a density of one hole per square kilometre will be necessary, and this will require nineteen holes.

Number of Holes -	19
Maximum depth -	130m
Minimum depth -	30m
Average depth, say	80m
Total metres (19 holes x 80m) =	1520m
Cost (at \$50/m) =	\$76000

This programme would absorb too large a proportion of available budget, so a less ambitious Stage 1 programme must be considered. A line of five holes along E77 and spaced 1 km apart would give a reasonable profile across the northern part of the basin where the grain of the basement ridges and valley should have an east-west orientation i.e. at right angles to the line of holes.

In the southern part of the basin i.e. south of the projected basement high to the north of Pioneer Mine, proposed drilling (see section 4.1.6.2.) to trace the extension of the Pioneer Lead will provide useful information on the basement structure.

Four additional holes (E74 N51, E74 N52, E76 N51 and E76 N52) would provide valuable information on the basement structure within this basin and also on the projected basement structure under the basalt to the west:

Number of holes -	9
Average depth -	80m
Total Metres	720m
Cost (at \$50/m) =	\$36000

The rest of the holes at 1 km centre can be drilled as Stage 2, if warranted.

5.

4.1.6.2. Land Extensionsa) Echo Lead (Plans TAS-10-8 to 11)

Drilling by the Mines Department has shown the extension of the Echo Lead as shown by the contours on Plan TAS-10-8.

The low grade ($50\text{g SnO}_2/\text{m}^3$) combined with the high overburden to ore ratio, due to the rise of topography, would prevent economic mining of the Echo Lead far ahead of the mine face. The basement contours of the bed, based on the Mines Department drilling, show the gradient of the bed is fairly steep, and the drilling in Davids Creek suggests the gradient may flatten out as the lead approaches Davids Creek, which may allow the deposition of cassiterite. Therefore, a line of six holes, at 160m intervals is proposed adjacent to the road west from Herrick, and continuing up the bed of the creek as shown on Plan TAS-10-8.

Number of Holes -	6
Average Depth -	70m
Total metres -	420m
Cost (at \$50/m) =	\$21000

b) Davids Creek (Plan TAS-10-8)

Last years programme to drill a line of holes at intervals of 160m up the bottom of Davids Creek was not completed because of difficulties encountered in drilling. Of the nine holes attempted, only one was completed. The justification for these proposed holes still exists, and they should be drilled. The timing should be late in the dry season, when a lowered water table would help to alleviate drilling difficulties.

Number of Holes -	20
Average Depth -	80m
Total Metres -	1600m
Cost (at \$50/m) =	\$80000

c) Herrick & Golden Sovereign Leads
(Plan TAS-10-8)

The Mines Department has not quoted grades for the holes drilled in these leads, but it is probable the grades were too low to justify assay of the samples. For this reason testing of extensions of these leads is not justified at this time.

d) Pioneer Lead (Plan TAS-10-18)

Drilling to trace the Pioneer Lead has shown a flattening of the gradient down stream, and a virtual end to tin mineralisation, although the Lead appears to continue without change in sedimentary character. Tin mineralisation may be repeated by a change of gradient further down the lead, and it is proposed to drill a series of lines of holes at 0.5 km intervals to the west of the Pioneer Lead to trace the lead and test it for mineralisation. The first line of holes will be located approx 0.5 km from the last line of Pioneer Drilling, with five holes spaced 160m apart. The location of the holes in the second and third line of holes will be dictated by the results of the drilling in the first line of holes.

Number of Holes -	15
Average Depth -	80m
Total Metres -	1200m
Cost (at \$50/m) =	\$60000

e) Eastern Lead - Corduroy Creek Lead
(Plan Tas-10-18)

The system of leads is not well prospected, many of the holes being auger holes, which give no real indication of grade from below the water table, and some of the vital churn drill holes failed to bottom, so that grade indications are not reliable. Consequently, further drilling will be needed to more definitely define the location and grade of the leads. This phase of testing will probably require about 20 holes. Further work is required to determine the best locations for these holes, and so Plan TAS-10-18 does not show locations for these proposed twenty holes.

7.

To follow the lead down stream from the area already tested will require lines of holes at 0.5 km intervals, with holes spaced at 160m intervals on the lines. The first line will require ten holes. The hole locations for the second and third lines will depend on the results of the first line of holes, but five to seven holes will be required in each line.

	<u>Within Drilled Area</u>	<u>To Trace Lead Extension</u>
Number of Holes	20	24
Average Depth	40m	80
Total Metres	800m	1920m
Cost (at \$50/m) =	\$40000	\$96000

f) Possible Lead E790 N545 (Plan TAS-10-18)

The distribution of granite outcrops and the trend of the upper Eastern Lead suggests there may be a lead south of the Eastern Lead, and north of the Granite outcrop. A line of four holes is proposed to test this possibility.

Number of Holes -	4
Average Depth -	50m
Total Metres -	200m
Cost (at \$50/m) =	\$10000

g) Endurance, Clarence and Hasties
Leads (Plan TAS-10-18)

These leads are within ground held by BMI and are not included within the Joint Venture. About half of the Endurance Lead has been tested by Churn Drilling which has established the grade of the deposit. The rest of the Endurance Lead has been outlined by auger drill holes, which have located the Lead, but given no indication of the grade in the lead. It is quite likely that the extensions of the combined leads trend to the south across the BMI border into ground held by the Joint Venture.

8.

4.2. Area 3.1.1. (b) Western Ringarooma Basin (Plans TAS-10-17/18)

This area lies within EL 28/76. The main prospect area is the Arba area. Some fifty holes have been drilled here, and these have eliminated most of the possibilities of economic mineralisation. The Six Monthly Report for EL 28/76 to 22 December 1981 gives details of the present situation.

Drilling here is designed to test the extent and grade of the perched mineralisation indicated by the 1981 drilling, and to further define the basement structure. In detail, the programme includes:

- a) To test the perched mineralisation.
 - Nine holes at 50m interval on a line between the Roma and Groper ponds. The central hole should be extended to basement.
- b) To define the basement structure and test for mineralisation.

1 Hole at E563300 N5443950
 1 Hole at E563590 N543580
 (Redrill Mines Department 1937 No 4 Hole)

Drilling - 8 Holes at 12m	=	96m
3 Holes at 60m	=	180m
Total metres	=	276m
Cost (@ \$50/m)	=	\$13800

Consideration must be given to determining the viability of mining possible extensions to the Arba Lead below the basalt capping of Arba Hill. Physical work on the ground would require negotiations with the holder of the Mineral Lease covering the hill.

Consideration must be given to the need for exploration

- i. To the north of the Ringarooma River (approximately E562500 N5445000) to test for the presence of the Proto-Ringarooma River.
- ii. Downstream from the long bridge east of Arba, to test below the river flats for mineralisation and basement structure.

On present indications, neither proposition has much appeal.

4.3. Area 3.1.2. Ringaromma Basin Covered by Basalt (Plan TAS-10-18)

Prospecting here is not an attractive proposition because of the physical difficulty of drilling through the hard basalt cover, than the semi-consolidated sediments under the basalt. Also, the depth of cover of any deposit located would make economic mining difficult.

This area covers three tenements, EL 28/76, 5/81 and 2/77. Renewal of EL 5/81 by the Mines Department commits the Joint Ventures to the drilling of two holes to test the basement profile where the basin is narrow. Holes locations are:

E(m)	N(m)	Approx Depth (m)	Cost (\$)
67100	47550	175	
67350	47200	<u>175</u>	
Total		350 (@ \$50/m) =	\$17 500

Within EL 28/76, near Derby, the Breisis Lead is known to extend under the basalt. To date, no research has been done on the potential for prospecting the extensions of this lead under the basalt.

4.4. Area 3.2.1. Upper Boobyalla (Plan TAS-10-18)

Lines of drill holes were drilled at Trout Creek and Gellibrand Plains. In all holes, the tin content was low, and, at Gellibrand Plains, the gold content was low.

At Gellibrand Plains the line of holes did not completely span the width of the Tertiary sediments, and five holes are proposed to complete the testing of this possibility.

Number of Holes -	5
Average Depth -	40m
Total Metres -	200m
Cost (@ \$50/m) =	\$10000

4.5. Area 3.2.2. Middle Boobyalla

a) East Banca BMI Tenements

At East Banca, auger drilling by BMI has defined a gutter. Whether tin is present in the gutter is not known, and drilling to test for tin mineralisation is needed.

The area is within tenements held by BMI, and is excluded from the Joint Venture.

b) Eastern Section

As explained in Section 4.1.5., it is possible that there is a channel through the granite from the east or the south. It is also possible that leads similar to the Hasties exist. Geological survey at present in progress may indicate the need for drilling to confirm the existance of Tertiary channels. Search should be made for Hasties type deposits by Heavy Mineral Concentrate stream sampling, although, considering the past history of mining and prospecting in the area, it is most probable that this type of work has been done in the past, presumably with negative results.

4.6. Area 3.2.3. Lower Boobyalla

This area contains the Monarch Mine, and the Clarence Lead, and may have potential for further prospecting. No research has been done on the area so far, consequently no valid prospecting programme can be presented at this stage.

4.7. Area 3.3. White Rocks Basin

No research has been done on the area, and no prospecting programme is presented at this stage.

4.8. Area 3.4. Scotia Lead AP 1/80

W K Lee's economic and technical feasibility study of the lead indicates that mining of the lead is not economically possible and that the deposit may have significance only when considered as a component of an overall reserve of several deposits. He considers further drilling cannot be recommended.

The drilling at the northern end of the Scotia Lead during 1981 raised several questions.

(1) Grade

The grade indicated by the Jetstream rig may be about half the actual grade, and check drilling is needed to determine the actual grade.

(3) Extent

Mineralisation has not been closed off to the east of the line of 1981 drill holes.

11.

(3) Basement Anomaly

There is a marked rise in the level of the basement towards the north, plus a change in basement rock type from Mathinna Beds in the south to Dolerite and 'clay' in the north. It is conceivable that the faulting, warping or sedimentary variation causing the anomaly could act as a trap for a cassiterite deposit and this possibility should be tested.

Drilling proposals are:

- a) Redrill SRC1 to check the indicated grade.
- b) Drill holes along the line to the east of SRC6 to test the full width of the mineralisation.
- c) Drill two holes between SRC1 and the next line of holes to the south to test for enhanced mineralisation and to try to elucidate the structure of the basement.

Number of Holes -	6
Average Depth -	40m
Total Metres -	240m
Cost (@ \$50/m) =	\$12000

Bruce D Mellor

BDM:AML

16 March 1982

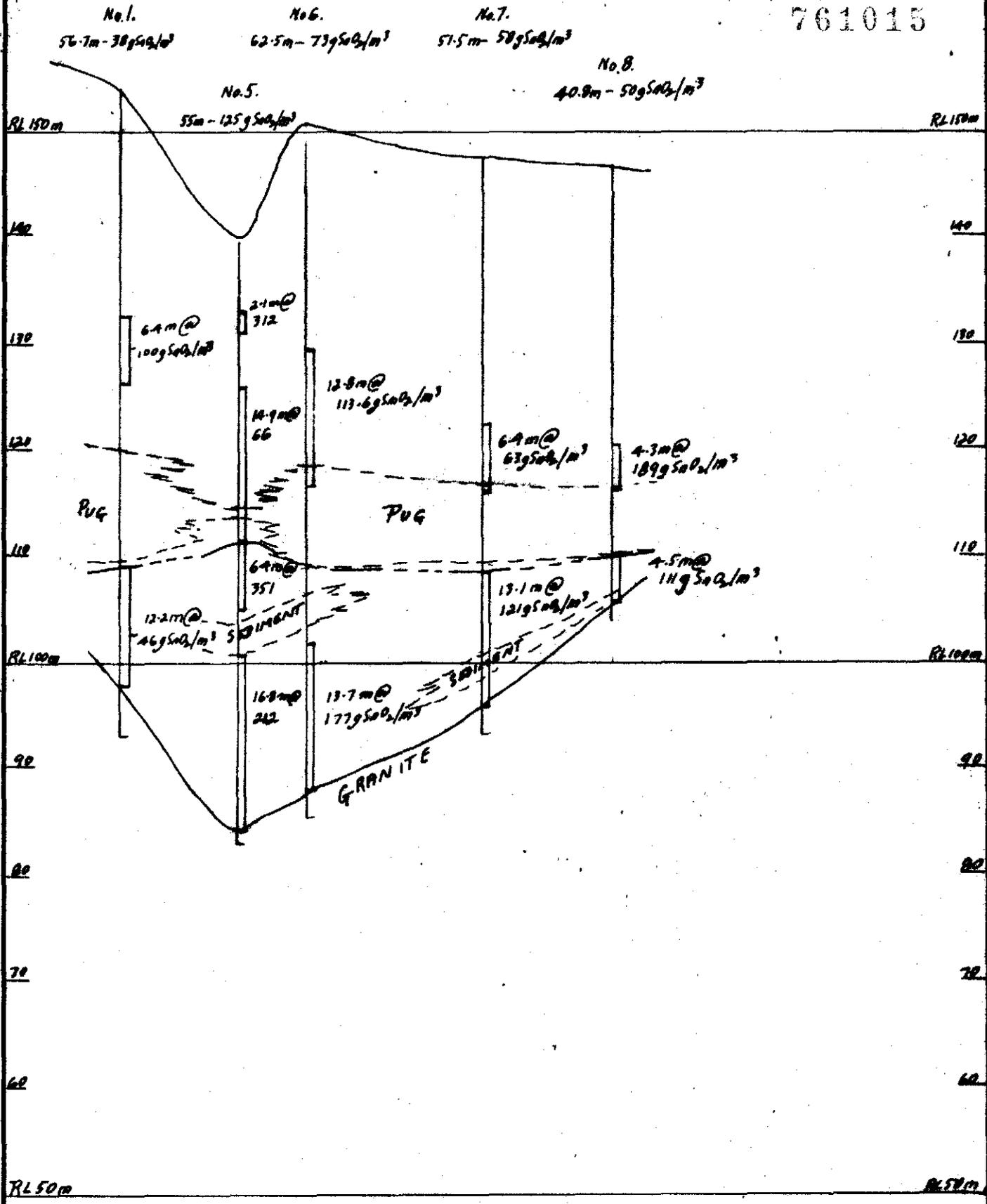
SUMMARY OF DRILLING PROPOSALS

Location	No. of Holes	Total Metres	Cost \$
3.1.1. (a) Eastern Ringarooma Basin			
1. To determine Basin Structure			
Stage 1	9	720	36 000
Stage 2	10	800	40 000
2. To test Lead Extensions			
(a) Echo	6	420	21 000
(b) Davids Creek	20	1 600	80 000
(c) Herrick, Golden & Sovereign	Nil	-	-
(d) Pioneer	15	1 200	60 000
(e) Eastern:			
To test known leads	20	800	40 000
To test extensions	24	1 920	96 000
(f) Possible Lead, E790 N545	4	200	10 000
3.1.1. (b) Western Ringarooma Basin			
Arba	11	276	13 800
3.1.2. El 5/81	2	350	17 500
3.2.1. Upper Boobyalla	5	200	10 000
3.2.2. Middle Boobyalla	Nil	-	-
3.2.3. Lower Boobyalla	Nil	-	-
3.3. White Rocks Basin	Nil	-	-
3.4. Scotia, AP 1/80	6	240	12 000
TOTAL	132	8 726	436 300

L I S T O F P L A N S

<u>Plan Number</u>	<u>Title</u>	<u>Scale</u>
TAS-10- 8	Dauids Creek, Geology	1:10 000
TAS-10- 9	Echo Mine, Section Holes 1, 5 to 8	H-1:2 500 V-1:500
TAS-10-10	Echo Mine, Section Holes 10 to 13	H-1:2 500 V-1:500
TAS-10-11	Echo Mine, Long Section	H-1:10 000 V-1:2 000
TAS-10-17	Arba Basement & Contours	1:5 000
TAS-10-18	Ringarooma, Geology & Drilling Proposals	1:50 000
TAS-10-19	Gellibrand Plains, Geology	1:10 000
TAS-10-20	Scotia Lead, (Northwest)	1:1 500

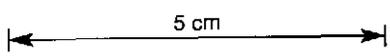
761015



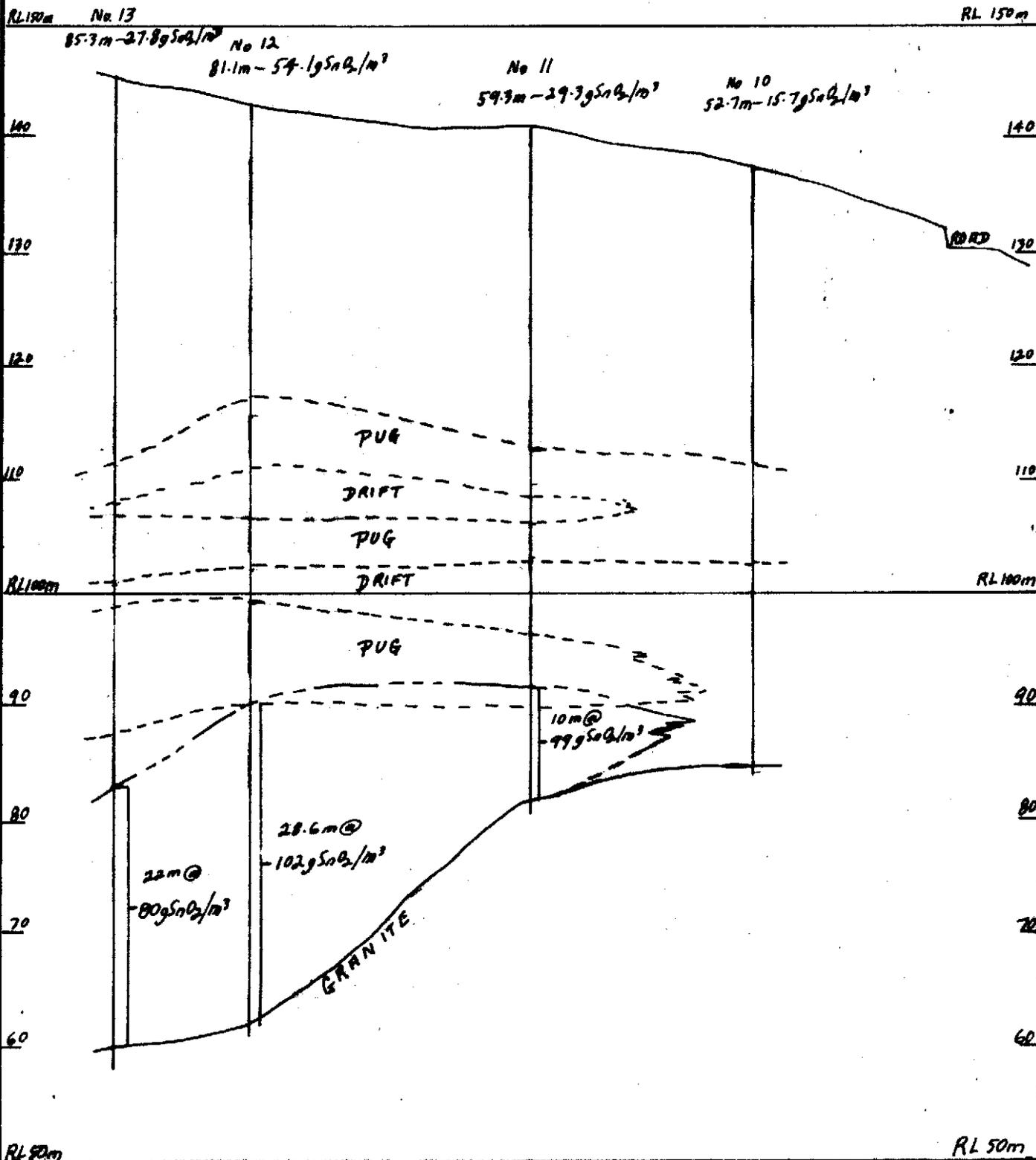
MEAN GRADE
 138gSO₂/m³

BASIC MINERALISATION

AUSTRALIAN ANGLO AMERICAN LIMITED
 ECHO MINE
 SECTION HOLES Nos 1, 5 to 8



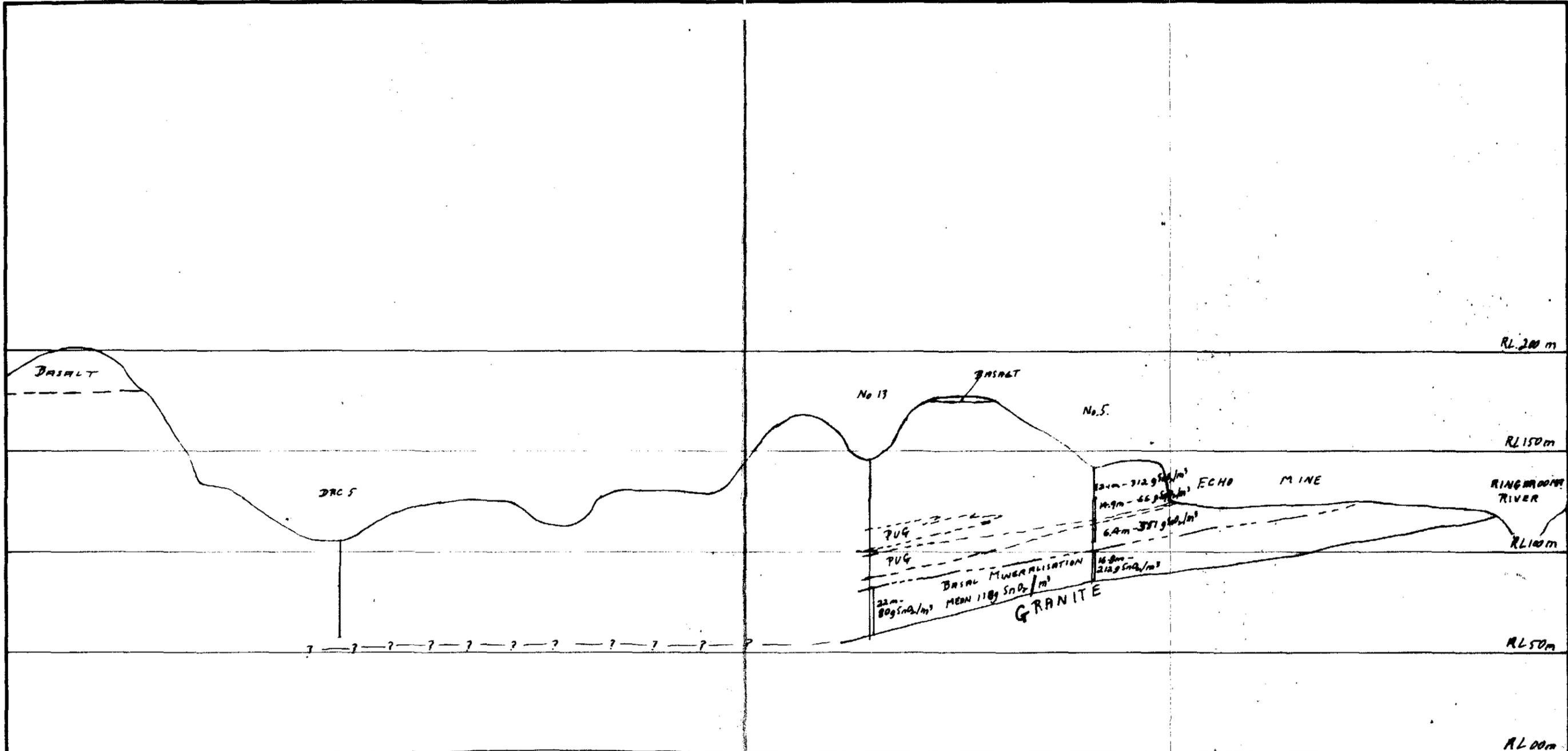
COMPILED J.R.M. | DRAWN 10-2-72 | SCALE H 1: 2500 | TMS-10-9



MAIN GARDIE
94.5g SnO₂/m³ → DRIFT MINERALISATION

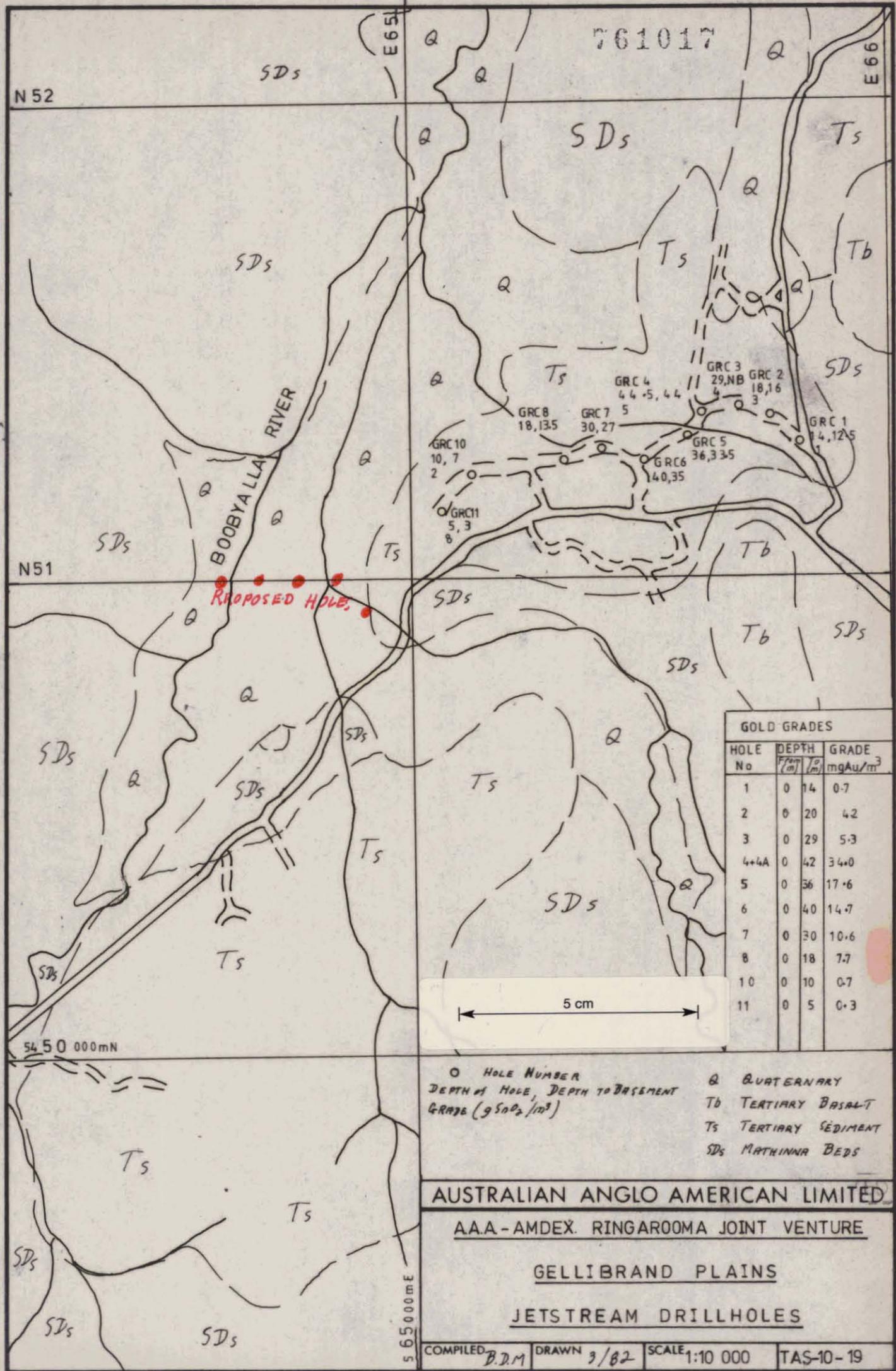
5 cm

AUSTRALIAN ANGLO AMERICAN LIMITED			
ECHO MINE			
SECTION HOLES Nos 10 to 13			
COMPILED	DRAWN	SCALE	TAS-10-10
J.M.	10-2-82	H-1: 2500 V-1: 500	



5 cm

AUSTRALIAN ANGLO AMERICAN LIMITED			
ECHO MINE			
LONG SECTION			
COMPILED JRM	DRAWN 10-2-82	SCALE H 1: 10 000 V 1: 5 000	TAS-10-11



761017

N52

SDs

SDs

Ts

SDs

BOOBYALLA RIVER

GRC 4
44.5, 44

GRC 3
29, NB

GRC 2
18, 16

GRC 8
18, 13.5

GRC 7
30, 27

GRC 5
36, 33.5

GRC 1
14, 12.5

GRC 10
10, 7

GRC 6
140, 35

GRC 11
5, 3

N51

PROPOSED HOLE

GOLD GRADES			
HOLE No	DEPTH (m)	GRADE (g SnO ₂ /m ³)	
		T ₁	T ₂
1	0	14	0.7
2	0	20	4.2
3	0	29	5.3
4+4A	0	42	34.0
5	0	36	17.6
6	0	40	14.7
7	0	30	10.6
8	0	18	7.7
10	0	10	0.7
11	0	5	0.3

5 cm

54 50 000mN

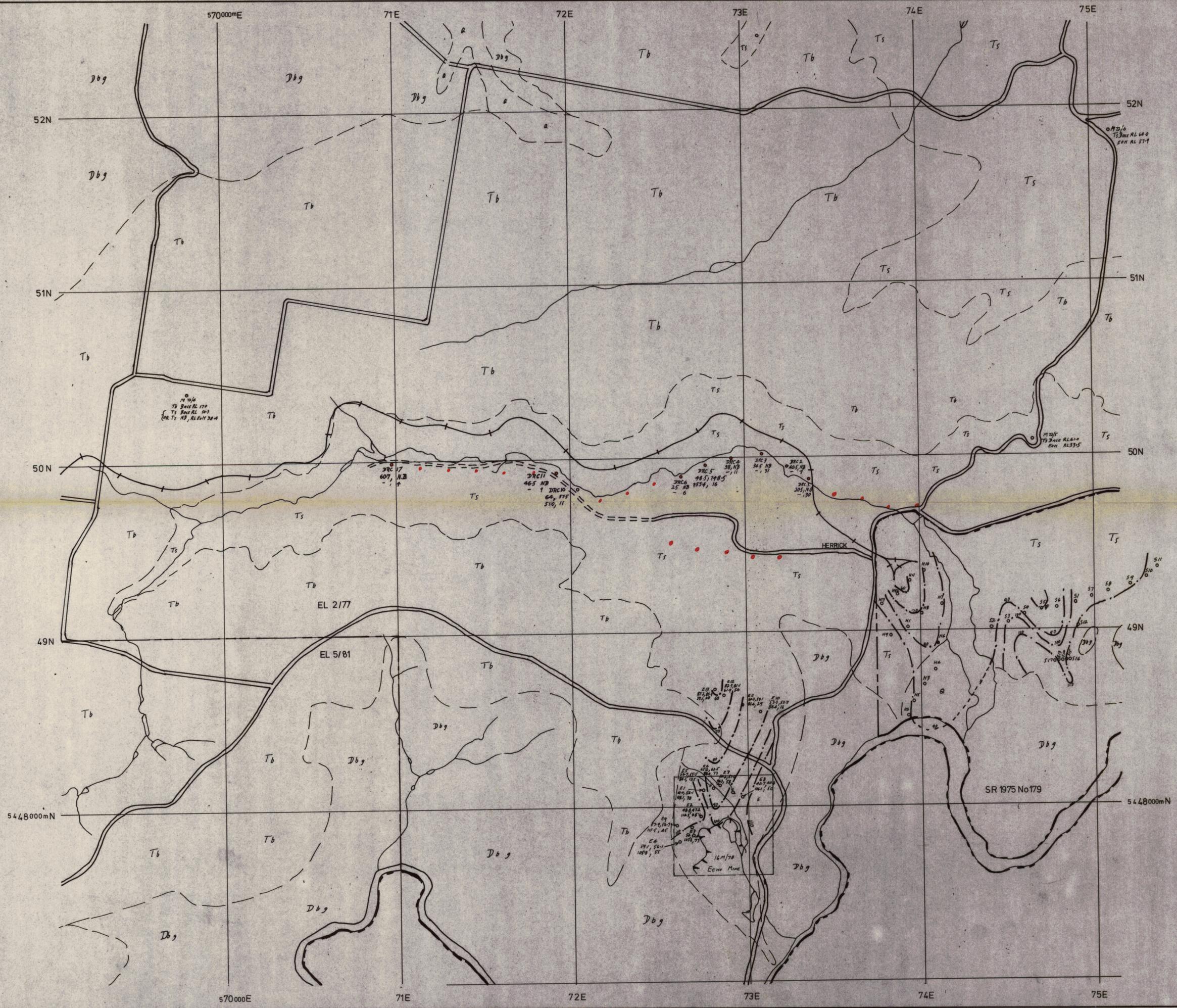
○ HOLE NUMBER
 DEPTH of HOLE, DEPTH TO BASEMENT
 GRADE (g SnO₂/m³)

Q QUATERNARY
 Tb TERTIARY BASALT
 Ts TERTIARY SEDIMENT
 SDs MATHINNA BEDS

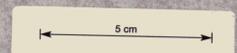
AUSTRALIAN ANGLO AMERICAN LIMITED
 AAA-AMDEX. RINGAROOMA JOINT VENTURE
 GELLIBRAND PLAINS
 JETSTREAM DRILLHOLES

COMPILED B.D.M. DRAWN 3/82 SCALE 1:10 000 TAS-10-19

5 65 000mE

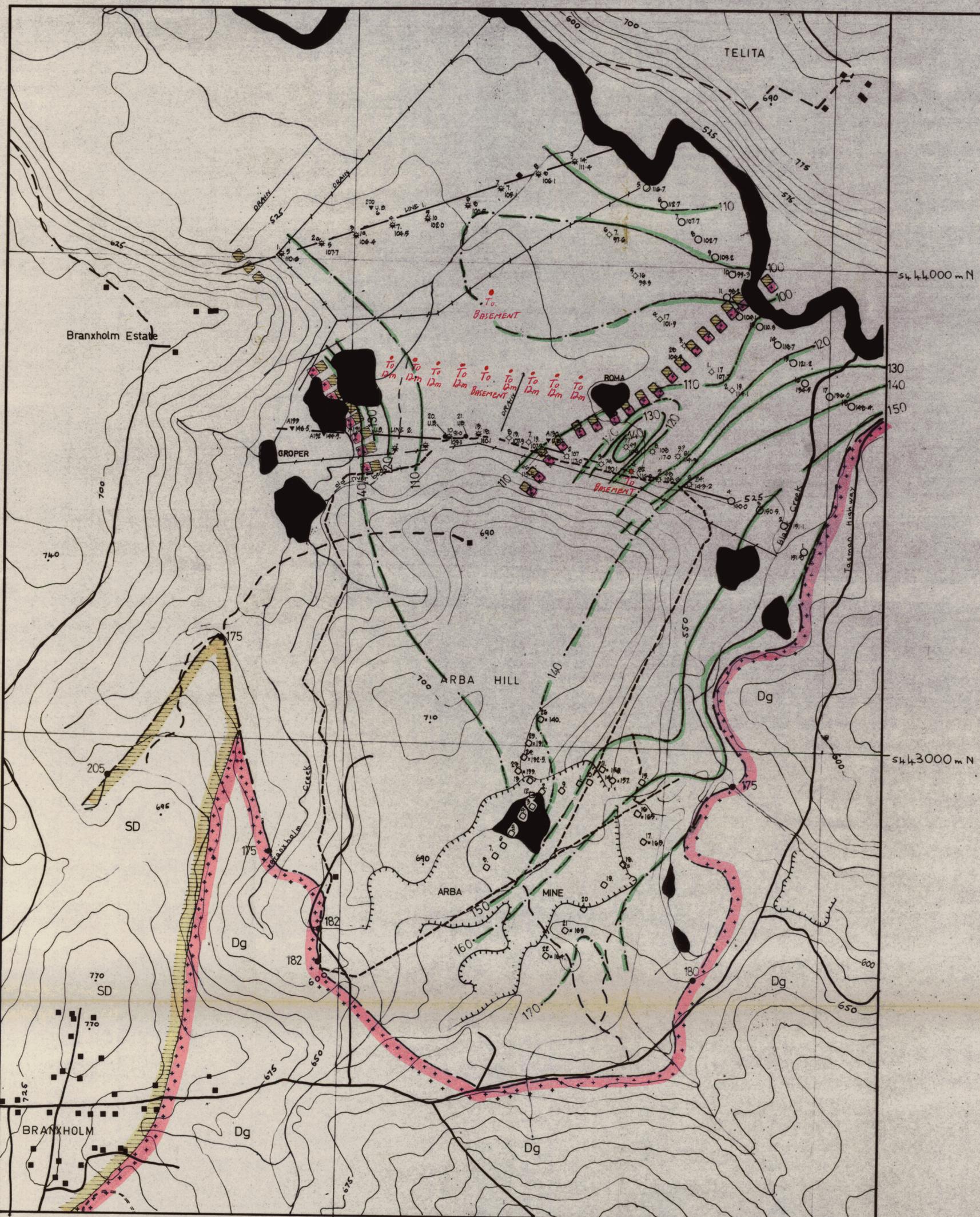


- a QUATERNARY SEDIMENTS
- T_b TERTIARY BASALT
- T_s TERTIARY SEDIMENTS
- Dbg BLUE TERN DIORITOLITE
- DRC10 DRILL HOLE NUMBER
- 64, 575 DEPTH OF HOLE
- 510 E.L. OF BENCH
- 510 DEPTH TO BASEMENT (IF NOT DETERMINED)
- 510 GRADE OF HOLE (g. sec./m)
- (10) DISSEMINATED CONTACT, DEPTH IN METERS
- E.L. BOUNDARY
- MAJOR MINING TRANSECT
- PROPOSED HOLES



761018 82-1777

AUSTRALIAN ANGLO AMERICAN LTD	
PROJECT	RINGAROOMA
AREA	DAVIDS CREEK
DATA	GEOLOGY
COMPILED	32/1
SCALE	1:10 000
DRAWN	12/6/82
AMENDED	REF No TRS-10-B



TITLE : S 63000 m E S 64000 m E

BASEMENT GEOLOGY AND CONTOUR INTERPETATION

<p>— SURFACE MATHINNA GROUP</p> <p>— BASEMENT CONTOURS (10m INTERVALS) (two levels of confidence)</p> <p>--- LIMITS OF BEDROCK OUTCROP</p> <p>• 180 SPOT HEIGHTS (m)</p>	<p>— SURFACE GRANITE ROCKS</p>	
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AUSTRALIAN ANGLo AMERICAN LTD. - AMDEX MINING LTD. EXPLORATION.

DRILL HOLE LOCATION MAP - ALL DRILLING - ARBA AREA - BRANXHOLM N.E. TASMANIA.

Drill Hole Positions Showing : Company, Hole Number, Grade and Basement R.L.

Drilling Company Legend

✱	AUSTRALIAN ANGLo AMERICAN	-	1991.
○	TASMANIAN DEPARTMENT OF MINES	-	1976-77.
●	UTAH DEV. CO. ROTARY HOLES	-	1989.
▼	UTAH DEV. CO. AUGER HOLES	-	1989.
▽	UTAH DEV. CO. PERCUSSION HOLES	-	1989.
◇	BRIELEY CONS. N.L. HAND PLANT	-	1990.
✱	TASMANIAN DEPARTMENT OF MINES	-	1997.
◇	TASMANIAN DEPARTMENT OF MINES	-	1991.

Drill hole Legend

2. —	DRILL HOLE NUMBER.
○ 107	GRADE SURFACE TO BASEMENT. 95.00/m?
○ 117.0	BASEMENT R.L. (m)
•	PROPOSED HOLE

General Information

— CROSS SECTION (FIGURE 9). ORIENTATION.

--- BOUNDARIES OF MINERAL LEASE 100 P/A - ARBA TIN PTY. LTD.

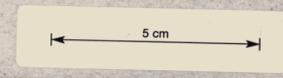
■ BUILDINGS.

— OLD MINE FACES.

— FENCE LINES (SURVEYED).

GRID: APPROXIMATE. A.M.S.

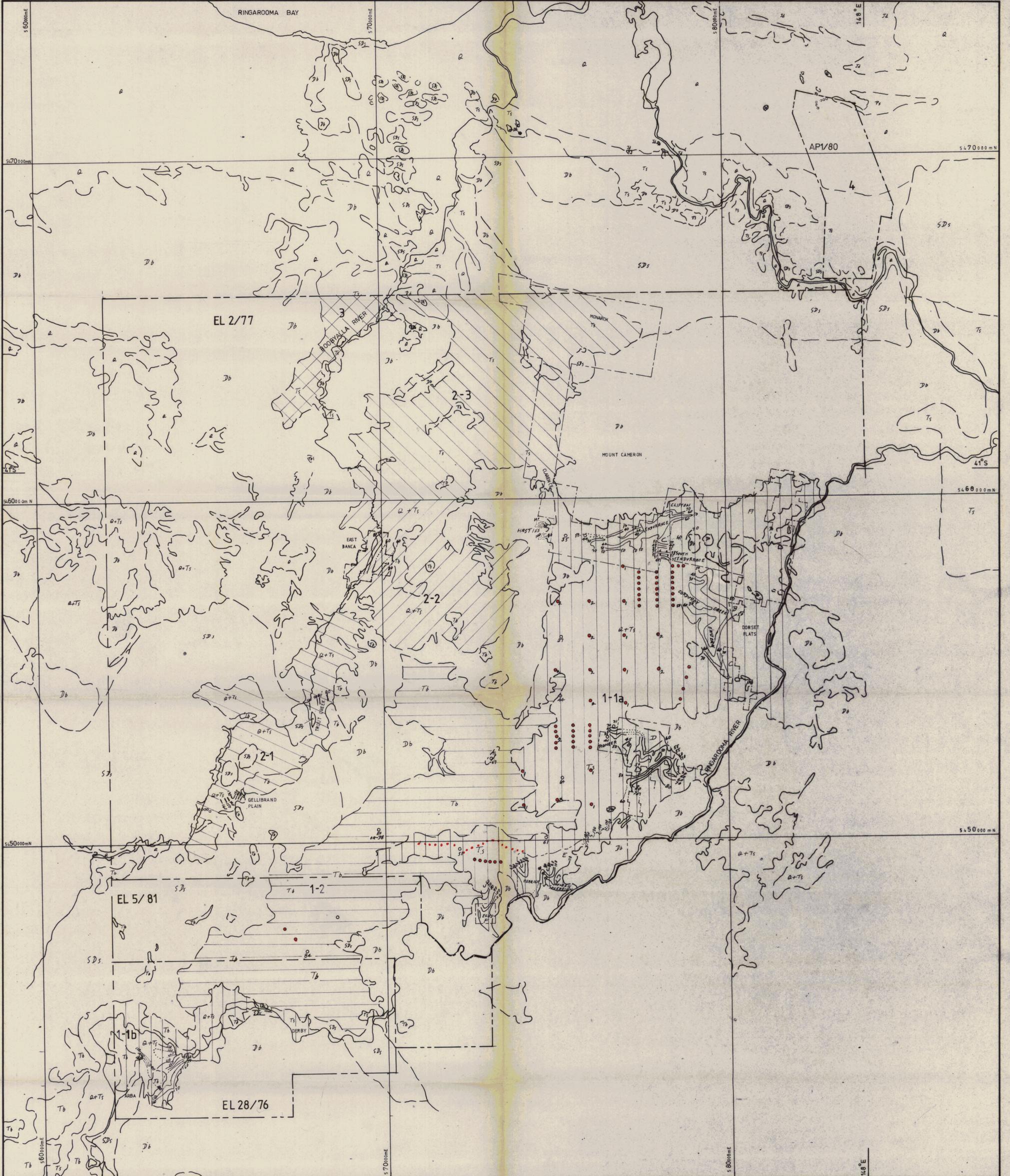
0 100 200 300 400 m.



CONTOUR INTERVALS : 25 FEET.
DATE : 17-12-01.
SCALE : 1 : 5,000.

DRAWN : d.j. DATA : R. MUNRO.

TAS-10-17
FIGURE 6.



COMPLETED DRAWN 3/82 REF NO TAS-10-18	SCALE 1:50 000	DRILLING PROPOSALS	PROJECT AAA-AMDEX JV RINGAROOMA	AREA RINGAROOMA	DATA DRILLING PROPOSALS	AUSTRALIAN ANGIO AMERICAN LTD 82-1777
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Q QUATERNARY SEDIMENT Tb TERTIARY BASALT Ts TERTIARY SEDIMENT Jd JURASSIC DOLERITE Ps PARMEENAR SUPERGROUP Db BLUE TIER BATHOLITH SDs MATHINNA BEDS	--- EL BOUNDARY - - - MAJOR ML BOUNDARY	761020 5 cm	20 BASEMENT CONTOURS, RL IN METRES ASL 20 BASEMENT CONTOURS, LESS RELIABLE 20 DRILL HOLE, BASEMENT RL IN METRES o PROPOSED DRILL HOLE o STAGE 1 o STAGE 2	RINGAROOMA BASIN BOOBYALLA BASIN WHITE ROCKS BASIN SCOTIA LEAD	NO BASALT COVER EASTERN PORTION NO BASALT COVER WESTERN PORTION BASALT COVERED UPPER MIDDLE LOWER AP 1/80
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Geology copied from Mines Dpt 1:50 000 Ringarooma & Boobyalla plans.

