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EXPLORATION LICENCE 18/80

ARTHUR RIVER, TASMANIA

FINAL REPORT

JUNE, 1983

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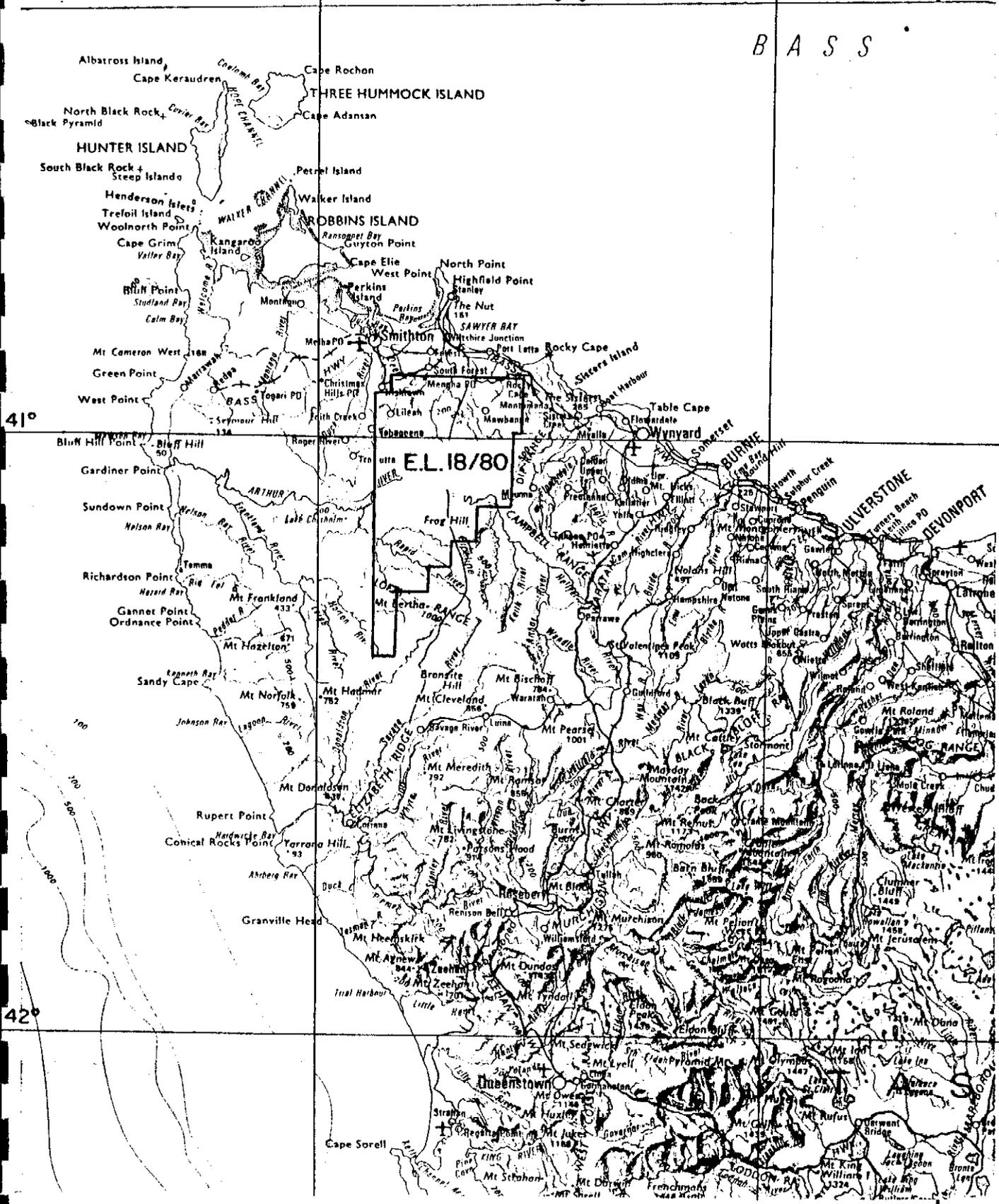
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Centre
Melbourne

Date
6-9-82

THE BROKEN HILL PROPRIETARY CO. LTD.
E.L. 18/80, ARTHUR RIVER, TAS.
LOCATION MAP

Project No.

Drawing No.
A4-2095

EXPLORATION LICENCE 18/80ARTHUR RIVER, TASMANIAFINAL REPORT1. GENERAL

Exploration Licence 18/80 of 1010 square kilometres was granted to The Broken Hill Proprietary Company Limited on 4th August, 1980, and was relinquished on 9th February, 1983.

2. EXPLORATION PHILOSOPHY

Our principal target within the licence area was a skarn or massive sulphide hosted tin-tungsten deposit of the Renison/Cleveland style. The area was selected on the following basis:

- (a) its close proximity to a major tin-tungsten belt of mineralisation;
- (b) stream geochemical anomalies for tin and tungsten had previously been recorded from the area;
- (c) dolomite and dolomitic sediments are present; and
- (d) felsic intrusives with associated tin-tungsten mineralisation had been reported in adjacent licence areas.

The possibilities for Carlin style gold, diamonds, Mississippi Valley lead-zinc and sedimentary copper deposits were also taken into consideration.

3. SUMMARY OF WORK COMPLETED

- (a) Preliminary literature review.
- (b) Stream sampling consisting of 235 minus 40 mesh samples and 174 pan concentrate samples.
- (c) Rock chip sampling (39 samples) and petrographic studies.

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- (d) Orientation gravel sampling for heavy mineral analysis (23 x 20 kilogram samples, AE0033-55).
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- (m) Ground follow-up of 3 airborne geophysical anomalies (aeromagnetic and INPUT).

4. RESULTS

4.1 Geology

4.1.1 Lileah Region

Geological mapping at 1:25,000 scale was carried out by two vacation students in the north-west of the licence area in 1980-81.

Figure 2 is a copy of the map produced.

A summary of their findings is as follows:

QUATERNARY

Several types of presumed Quarternary sediments were found.

agglomerate - consisting of poorly sorted angular to rounded fragments approximately 2-5mm diameter, mainly of quartz, cemented by hematite.

dune sands - generally well-sorted, fine quartz sands containing a considerable quantity of coarse dark minerals possibly including cassiterite and/or chromite.

residual and alluvial gravels - mainly derived from the underlying bedrock. Chert breccias are especially well developed in areas underlain by Smithton Dolomite.

CAMBRIAN

The Cambrian is represented in the area by tuffaceous siltstones, greywackes and black shales.

In the Edith Creek and Greens Creek sections, Cambrian sediments consist of interbedded brown and grey siltstone, greywacke and black shale. Along the railway line south-east of Lake Mikany they are found as interbedded red tuffaceous siltstone, black and grey siltstone, greywacke and basic volcanic breccia.

PRECAMBRIAN

Smithton Dolomite - The Smithton Dolomite overlies the conglomerate and quartzite unit

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with apparent conformity. It consists of interbedded blue-grey to black cherty dolomite and shale. Bedding is generally near horizontal but in some outcrops (e.g. to the west of Lake Mikany) is highly deformed, with the shale metamorphosed to slate. The dolomite is often oolitic and contains intra-clasts.

Conglomerate and Quartzite (unassigned) - Formerly assigned to the Bryant Hill Quartzite, (see Kinnane, ANZEC report, 1972), this unit is considered to be petrologically distinct although it occupies the same stratigraphic position (see under Structure). It consists of white saccharoidal quartzite with conglomerate horizons. The conglomerate is composed of poor to moderately sorted, well-rounded quartzite and metasandstone pebbles generally displaying some degree of alignment. Occasional clasts of siltstone resembling Cowrie Siltstone have also been observed, indicating an age post-dating the Cowrie Siltstone and suggesting the existence of an angular unconformity separating these two units.

Cowrie Siltstone - This unit consists predominantly of finely laminated grey and light yellow siltstone. Some sequences (e.g. Gibsons Creek and Harbour Creek sections) have interbedded laminated grey quartzite horizons averaging one metre in thickness and containing pyrite.

IGNEOUS ROCKS

Tertiary - Basalt covers much of the area mapped. Several varieties are recognisable including fine-grained vesicular basalts (e.g. near Deep Creek) to dolerites.

STRUCTURE

Although mostly masked by basalt, some aspects of the regional structure of the underlying Precambrian and Cambrian sequences of the area can be understood by extrapolation of the structure of the surrounding areas where these rocks are exposed.

To the south-east of the area, the exposed Cowrie Siltstone sequences structurally trend north-east. A series of anticlines and synclines with wavelengths of less than a kilometre and fold axes trending north-east are evident in the Harbour Creek section.

A large scale anticline with a steeply plunging fold axis located near South Forest has affected the Cowrie Siltstone and the overlying conglomerate and quartzite unit, and probably the Smithton Dolomite and Cambrian sediments in the north-east of the mapped area. The eastern limb of this fold passes under a cover of alluvium and basalt further to the east. The western limb has been truncated by a north-easterly striking fault.

The area forms part of the Rocky Cape Geosyncline, a north-easterly trending trough considered to have formed during the Upper Precambrian.

ECONOMIC GEOLOGY

Sediments of presumed Upper Precambrian age in the Arthur River area towards the south of the lease are predominantly black shales with considerable quantities of sedimentary

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pyrite, suggesting that they were deposited in a closed basin with very restricted circulation. Several conflicting theories about the evolution of the geosyncline have been proposed, the most economically interesting being that it formed between two rifted older Precambrian blocks. Such rift zones are believed to be favourable sites for the formation of stratiform massive sulphide ore deposits. The presence of such enormous quantities of sedimentary pyrite (confined to distinct bedding planes and thus episodic) is unusual and may be relevant.

Such speculation aside, the possibility that Devonian-type granite underlies or outcrops within the lease area cannot be ruled out.

Kinnane (1972, ANZEC report, p 18) states that, of the several mineral occurrences known to exist in the area, "perhaps the most significant of these are the copper deposits". Several copper-gold mines are known to have existed in the area. Small quantities of copper salts were detected in faulted Precambrian sediments exposed in a quarry off the Tayatea Road approximately 2 kilometres south-east of the Rapid River Road junction (grid reference (Q483456), sheet 7915 (1977)). Native copper was also found in a quartzite fault breccia in Dip River approximately 3 kilometres south-west of Mawbanna (grid reference 600622, sheet 7916 (1977)). "Ironstone" floats of limestone were found to the west of the mapped area (grid reference 415615 sheet 7916 (1977)) and at Mengha (grid reference 517707, sheet 7196 (1977)). These may have been derived by leaching of the basalt. (The occurrence

of laterite to the east of the mapped area indicates some areas of basalt have been subjected to leaching).

4.1.2 Photogeology Study

A photogeological map of the licence area was prepared (Figure 3) incorporating detailed mapping from the northern part of the area by Mines Department officers and by company personnel. A number of features worthy of ground follow-up, such as circular structures, vegetation anomalies, lineaments and domes were recognised during the study of both the aerial photographs and the Landsat satellite image of the area. The report on this photogeological assessment is in Appendix 1.

4.1.3 Southern Region

The most recent fieldwork to be carried out in the licence area took place during December, 1982. Contract geologist D. Steele spent two weeks in the southern part of the area following up eight geophysical anomalies (Figure 4) which were isolated from the Esso, Rio Tinto data. His report is included as Appendix 2.

Anomalies 1, 3 and 8 proved reasonably accessible. Road exposures were geologically mapped, selected drainages sampled and some rock chip samples and material for petrological work were collected. No significant results were obtained. Magnetic anomaly 7 coincides with a mapped amphibolite trending through a small basalt capped hill and is therefore explained. Anomalies 2, 4, 5 and 6 proved inaccessible in the short time available.

Results from the petrology, stream and rock chip sampling were received after D. Steele's report was written.

All petrological samples were taken from the vicinity of Anomaly 1 and consist of siltstones and altered igneous rocks.

Although the number of analytical samples collected was minimal, no significant anomalous geochemical results were obtained. Moderately high chromium values (Anomalies 1 and 3) relate to ultrabasic rock types identified in the vicinity.

Geochemistry results and petrological descriptions are in Appendix 2.

4.2 Geochemistry

Table 1 is a summary of all sample series used in E.L. 18/80.

4.2.1 Stream Sampling

A stream sediment sampling programme consisting of 235 minus 40 mesh samples and 174 pan concentrate samples was completed in the period December, 1980 to February, 1981. Samples were forwarded to Comlabs (Adelaide) for analysis for tin, arsenic, tungsten, barium, antimony, strontium, copper, lead, zinc, nickel, chromium, silver, molybdenum and gold. Tin, tungsten, arsenic, antimony, barium and strontium were analysed by method XRF1, silver and molybdenum by method AAS3, copper, nickel, lead and zinc by method AAS1, chromium by method AAS2, and gold by method AAS5.

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Fifteen sites were re-sampled to check anomalies detected on the first pass. Results for sample 180A initially anomalous with respect to copper (170 ppm), arsenic (14 ppm) and zinc (120 ppm), were not confirmed by resampling (viz: copper 20 ppm, zinc 30 ppm and arsenic 2 ppm). Similarly, an anomaly of 4200 ppm lead in pan concentrate sample 120B was not confirmed by resampling (35 ppm in -40 mesh fraction).

Orientation sampling confirmed the result that the sediments of the Arthur River itself are highly anomalous with respect to tin, tungsten, arsenic, and base metals.

Tin in samples other than from the Arthur River ranged from less than 4 to 24 ppm with most values being less than or equal to 10 ppm.

Arsenic in samples other than from the Arthur River ranged from less than 2 to 50 ppm.

Tungsten results varied from less than 10 to 30 ppm, the bulk of the results being less than or equal to 15 ppm.

Copper varied from less than 2 to 170 ppm with streams draining Tertiary basalt being higher in background (15-60 ppm) than those draining Precambrian sediments (2-15 ppm).

All results of this programme are in Appendix 5 and are plotted on Figures 6-11.

A pan concentrate sample (MRL 1278) from the Arthur River at Tayatea bridge (Figure 5) was analysed in detail by BHP mineralogist W. Ringenbergs (see Appendix 3). The study

revealed the presence of common angular topaz crystals and rounded finely crystalline topaz masses with minor angular tourmaline and minor cassiterite (composite with topaz or tourmaline, angular single grains, or monominerallic aggregates).

Previous panning by a company geologist had revealed sub-angular cassiterite up to 0.5mm in size.

A follow-up pan concentrate sample AR3 from the Arthur River contained an abundance of limonite with cassiterite occurring as rare individual crystals and monominerallic aggregates, grain size ranging from 30 to 150 um. Details of AR3 are in Appendix 3.

Orientation gravel sampling for heavy mineral analysis took place during late 1980. A total of twenty-three 20 kilogram samples (AE0033-55) were collected inside the exploration licence (Figure 5) but to date no further work on the samples has been attempted as they are still at the BHP diamond laboratory in Perth waiting to be processed.

4.2.2 Tayatea Quarry

Grab samples of siltstone from the Tayatea road metal quarry, where showings of malachite and chalcocite have been noted, returned copper values between 145 and 10,500 ppm. Leached, oxidized samples ranged from 145-260 ppm copper, 16-240 ppm lead and 40-46 ppm zinc. Arsenic (10-85 ppm), antimony (<4 to 14 ppm) and molybdenum (8-50 ppm) were also anomalous.

Petrographic work on four rocks (TAY1-4) from the quarry confirmed the presence of carbonate in the siltstones. Some of these rocks were classed as dolomitic pelites, which significantly increased the area of potential host rocks for skarn or replacement style mineralisation. During this programme five rock samples from the Rapid River road (RR1-5) were also collected for petrographic analysis.

4.2.3 Neasey Plains Area

Field work in this area concentrated on an Esso INPUT anomaly designated as a pyritic, black shale horizon (Figure 12). Bedrock in the area includes black pyritic shales, siltstones and amphibolite.

Two soil sample traverses were completed with 23 samples sieved to minus 40 mesh and analysed for base and precious metals, arsenic, antimony, tin, tungsten and uranium. Trace lead (to 245 ppm), copper (to 135 ppm), zinc (to 100 ppm), arsenic (to 101 ppm) and gold (to 0.02 ppm) were recorded.

In addition five stream (NPA 6a, 7a, 10a, 14a, 15a), six rock chip (ARA 43-48) and three petrology (NPA 4, 7, 14) samples were taken from the vicinity. Stream and rock chip samples were not anomalous with respect to base metals, tin or tungsten. Trace molybdenum to 21.5 ppm and uranium to 7.2 ppm were recorded in black shale samples.

The three petrology samples were described as low grade metapelites. The presence of pyrite along bedding planes is believed to be the cause of the INPUT anomaly.

4.2.4 Black River Area

Interest in the area stemmed from anomalous lead-silver values previously reported in the area on the west bank of the Black River. Follow-up sampling included bank (BR1-11 suffixed by a), stream sediment (b), pan concentrate (c) and petrological (5A, 5B) sampling (Figure 13). All samples failed to indicate the presence of mineralisation.

Petrology samples BR5A and 5B were originally thought to be of possible granitic origin but the results showed them to be from a more basic suite defining them as a "granophyre" and a uralitized microgabbro.

A quartz-talc = siderite = pyrite rock which crops out in the Pine Corner Road area was also sampled. Samples were anomalous with respect to gold, arsenic, antimony, copper, zinc and barium (ARA6-9, AR3A to E, ARA 39-41).

4.2.5 Lawson Rivulet Area

An attempt to locate and sample a deposit of limonite (reported by McNeil, Tas. Mines Dept. Tech. Report No. 5, 1960) in a tributary of the Lawson Rivulet was unsuccessful. Stream samples from the upper part of the tributary (T67153C to E, Figure 5) were not anomalous with respect to any of the elements determined (Appendix 5).

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4.3 Geophysics

No surveys were flown over the area by B.H.P. All geophysical data were obtained from the Rio Tinto aeromagnetic survey (1956) and the Esso INPUT survey (1974). In both surveys, flight path recovery was very poor making it extremely difficult to locate anomalies on the ground.

Re-evaluation of the two surveys located eight anomalies worthy of follow-up but as already documented, only three anomalies were accessible. A summary of the data obtained from the two surveys is represented in Figure 4.

5. EXPENDITURE

Expenditure debited to E.L. 18/80 was:

Wages and Salaries	\$44,277
Messing and Accommodation	4,749
Fares and Mobilisation	1,319
Transport	5,195
Surveying and Aerial Photographs	3,245
Consultants	2,391
Mobilisation of Equipment	337
Sample Analysis	9,251
Tenement Fees, Licences etc.	9,794
Occupancy and Location Expenses	171
Vehicles	2,412
Administration and Overheads	8,315
Other Items	7
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	\$91,463
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6. CONCLUSIONS

The philosophical grounds on which the Arthur River area was selected have been mentioned earlier in the report. These were rather broad in concept and have not been upgraded during the course of our exploration. The licence area is 30-40 kilometres northwest of the important Heemskirk-Meredith-Housetop Granite trend, and 20-30 kilometres east of the sporadic tin mineralisation along the Balfour lineament.

The initial stream sediment sampling programme, largely in the northern half of the licence area, failed to define anomalous values worthy of follow-up. The only exception was significant tin in pan-concentrate samples from the Arthur River itself. These partially angular cassiterite grains were subsequently explained as being derived from Mt. Bischoff, with fresh cassiterite being liberated by the continual break-up of quartz-topaz-cassiterite aggregates.

A photogeological study was made but the thick vegetation and lack of geological marker horizons limited the usefulness of this technique. Geological mapping was initiated in the north but was not followed through in the absence of encouragement from geochemical results. The difficulties and expense involved in effectively mapping such a large and inaccessible area are obvious.

An attempt was made to follow-up the most significant geophysical anomalies, as defined by earlier Esso INPUT and RTZ aeromagnetic surveys. In the event only three anomalies proved to be reasonably accessible and ground work failed to give encouragement. The data used to define the anomalies are not of high quality. Given the prevalence of graphitic/pyritic shales (conductors) and amphibolites (commonly magnetic) it is likely that the unexplained anomalies fall into one of these categories.

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A detailed programme to accurately locate and follow-up these anomalies by line cutting, gridding and ground geophysics was not considered warranted.

From the information we have available it is concluded that there is very little chance that we have overlooked a significant near surface replacement cassiterite-sulphide deposit. By the same token, in view of the inaccessibility of large parts of the area, it is clear that the total licence area has not been thoroughly tested.

A decision was made to relinquish the Exploration Licence, based on results to date, problems of access, and the low technical ranking of this area compared with other licences held by BHP in Tasmania and interstate.

This report is submitted to the
Mines Department as required by
Schedule A of Exploration Licence
18/80.

TABLE 1

SAMPLE SERIES

<u>STREAM SEDIMENT</u>		<u>Location</u>
T67001A - T67236A	(236)	General area
T67153C, D, E	(3)	Lawson Rivulet
ARA1 - 5	(5)	General area
ARA1B - 5B	(5)	General area
BR4b, 5b, 8b, 9b - 11b	(6)	Black River area
NPA6a, 7a, 10a, 14a, 15a	(5)	Neasey Plains area
T67100C, 101C, 108C, 113C, 115C, 118C, 120C, 124C, 181C, 205C, 206C, 211C, 218C	(13)	General area
T67300 - 310 (even)	(6)	Southern region
<u>PAN CONCENTRATE</u>		
T67001B - T67234B (excluding 007, 11, 38, 43, 45, 52, 56, 57, 58, 60, 61, 74, 75, 78, 84, 87, 88, 96, 99, 105-107, 110, 111, 116, 119, 122- 127, 129-133, 135-138, 142, 162, 166, 167, 175, 177, 182, 188, 193, 194, 202, 210, 219, 226, 230-232)	(174)	General area
ARA1A - 5A (= ARA10 - 14)	(5)	General area
ARA10 - 14	(5)	General area
BR4c, 5c, 9c-11c	(5)	Black River area
T67301P - 311P (odd)	(6)	Southern region

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ROCK CHIPLocation

T67500 - 505	(6)	Southern region
ARA6 - 9 (= BR2 - 5)	(4)	Black River area
ARA15 - 19	(5)	General area
ARA20 - 26	(7)	Tayatea Quarry
ARA39 - 41	(3)	Black River area
ARA43 - 48 (NPA4, 11, 14)	(6)	Neasey Plains area
AR1A - C	(3)	Tayatea Quarry
AR2	(1)	Tayatea Bridge
AR3A - E	(5)	Pine Corner Road Quarry

SOIL

NPA1 - 23	(23)	Neasey Plains area
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PETROLOGY

PT1 - 16	(16)	Southern Region
TAY1 - 4	(4)	Tayatea Quarry
RR1 - 5	(5)	Rapid River Road
NPA4, 7, 14	(3)	Neasey Plains area
BR5A, 5B	(2)	Black River area

GRAVEL

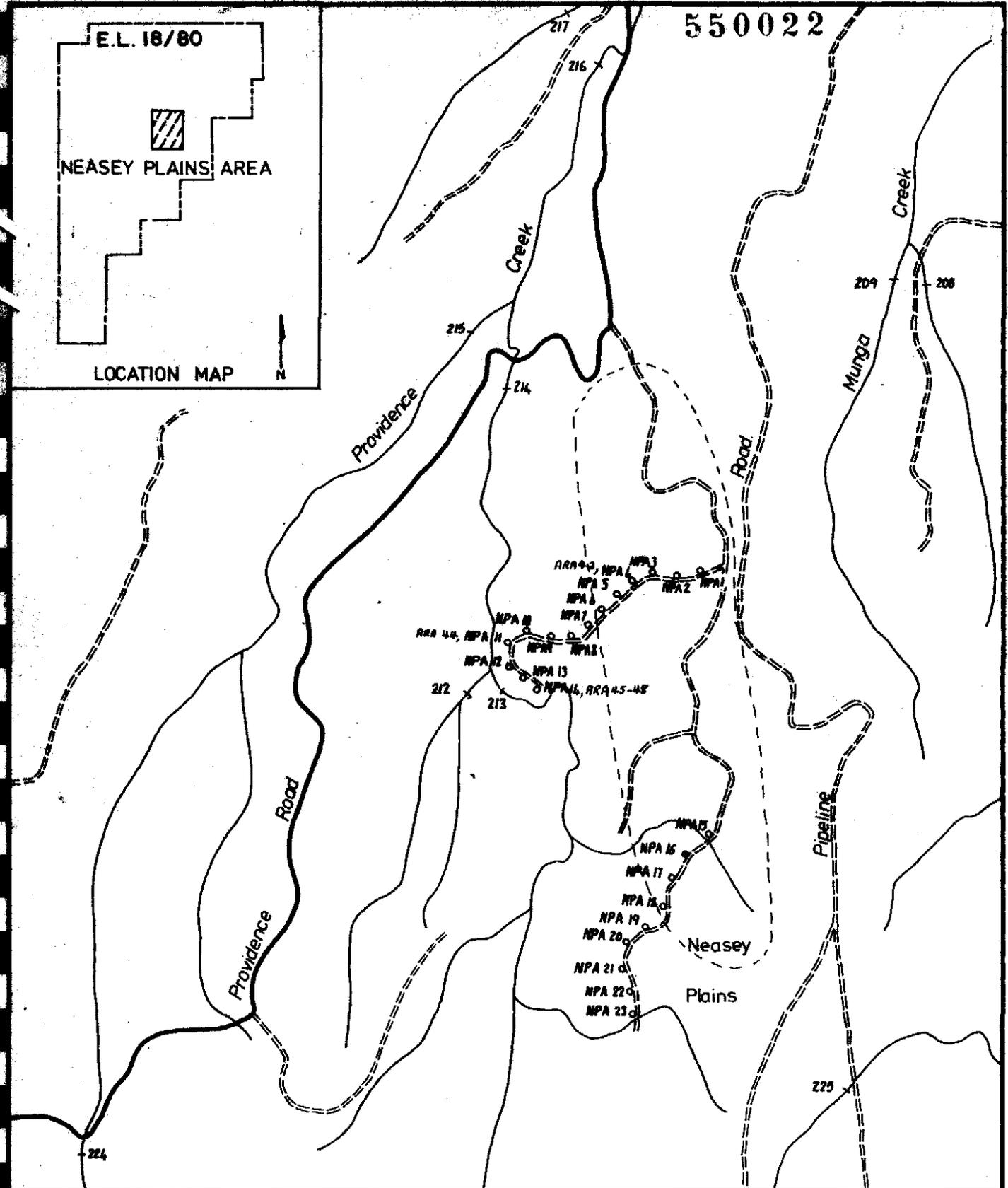
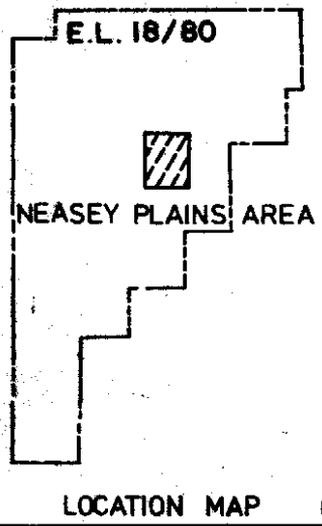
MRL12781	(1)	Arthur River - Tayatea Bridge
AE0033 - 55	(23)	General area
AR3	(1)	Arthur River

BANK

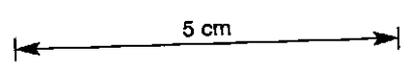
BR1a - 5a, 8a, 9a - 11a	(9)	Black River area
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- - - Interp. by black shale horizon (Esso 1974)
- ~ Stream sample locations
- o Soil sample locations (ARA rock)



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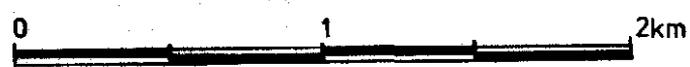


FIG. 12

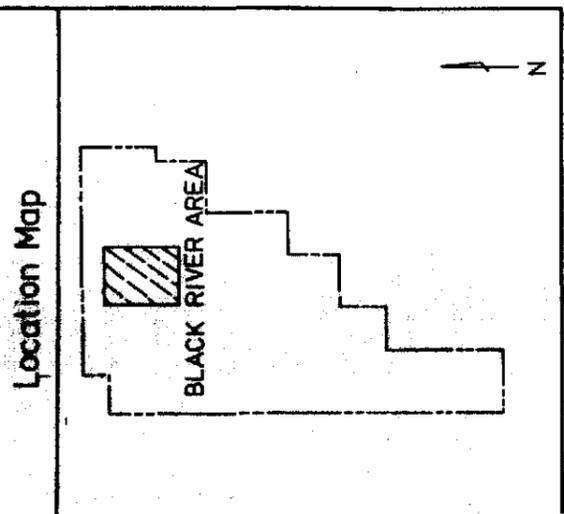
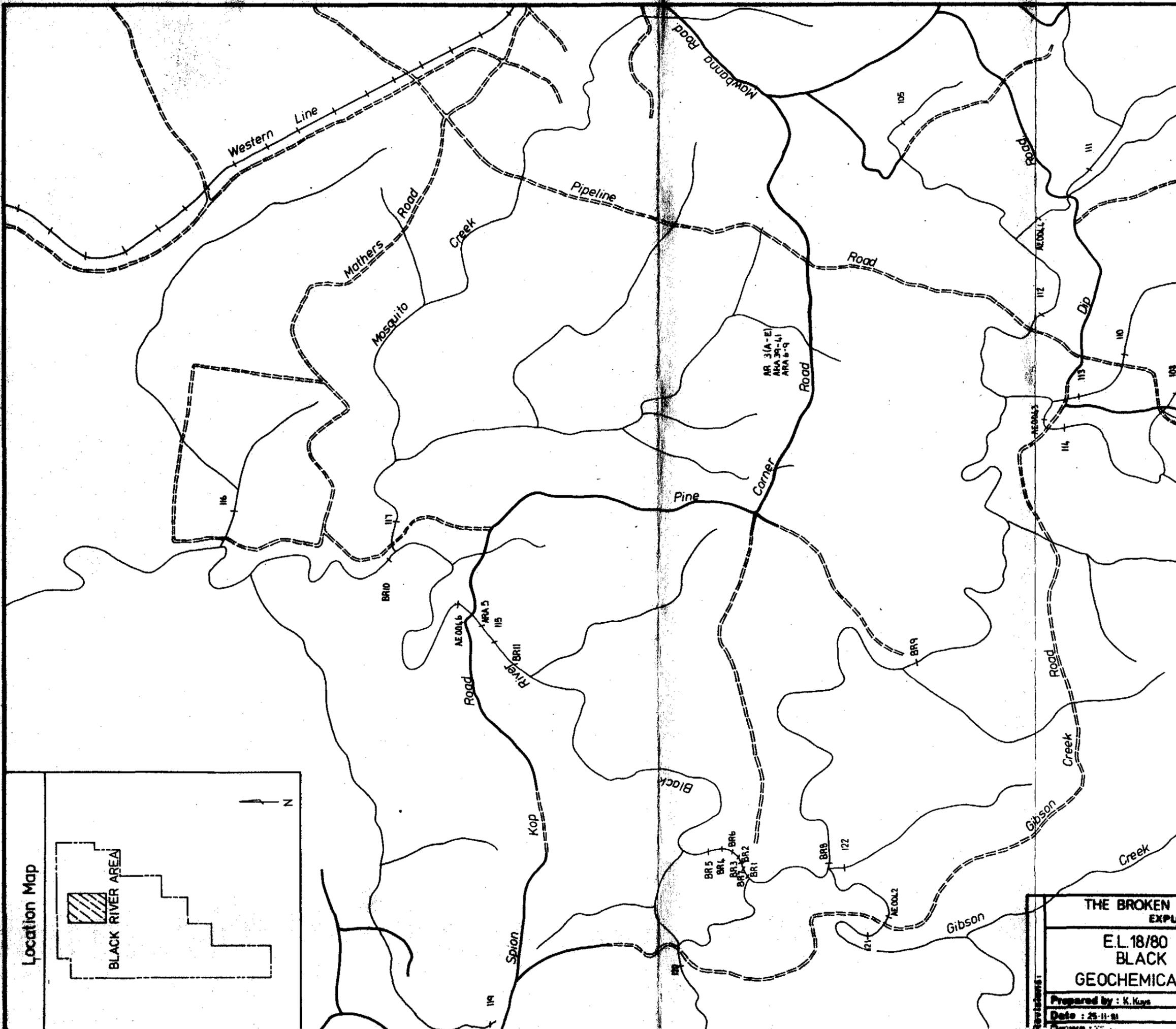
Centre:
Hobart

Date:
25.11.81

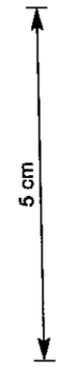
THE BROKEN HILL PROPRIETARY CO. LTD.
E.L.18/80 ARTHUR RIVER TASMANIA
NEASEY PLAINS AREA
GEOCHEMICAL SAMPLE LOCATIONS

Project N^o:
T670

Drawing N^o:
A4-18/80-3



- Stream Sample locations.
- Rock sample locations
- Soil sample locations
- Gravel sample locations



THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT	
E.L.18/80 ARTHUR RIVER BLACK RIVER AREA GEOCHEMICAL SAMPLE LOCATIONS.	
Prepared by : K. Kays	Centre : Hobart
Date : 25-11-81	Project No.
Drawing No. A3-18/80-7	

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APPENDIX 1

Photogeology Report

REPORT
PHOTOGEOLOGY OF THE ARTHUR RIVER E.L.
TASMANIA

by

C. Maffi

1. INTRODUCTION

The airphotos available for this study were 1:40,000 scale black and white copies of the Tasmanian Lands Department coverages Sandy Cape/Arthur River flown in 1974 and North West flown in 1980.

I was not very well impressed by the quality of the photos: most of them have poor contrast and are too dark, particularly their eastern halves. The southwestern quarters of many photos show a whitish area, due to the back-scattering of sun light from low lying haze. These defects may have hindered the detection of subtle ground details during photointerpretation.

The study consisted of preliminary photogeology, field check and final photogeology.

As there was not enough time to compile a photogeological map, I present the results on overlays attached to the airphotos. To help in positioning the photogeological information I have traced on the overlays selected drainage channels.

Most of the information on the photogeological overlays should be straight-forward and self-explanatory. The purpose of this report is to add just a few comments and explanations. The legend is at the end of the report.

2. PRECAMBRIAN

In the northeast part of the E.L. area, Lennox et al. (in press) have mapped three formations: Cowrie Siltstone, Detention Quartzite and Inby Siltstone. The Detention Quartzite and Inby Siltstone show distinct geomorphological characters and it was not difficult to photointerpret their boundaries. Southwards their characters become indistinct and I could not trace their boundaries.

In the west-central part of the E.L. (photos SC/AR 1/11-13, 2/21, 3/10-12 and 4/9-11), I have plotted on the photos the boundaries traced by Longman and Matthews (1961) between Green Siltstone, Black Siltstone, Siltstone and Quartzite, and Smithton Dolomite. On the airphotos there is not much evidence on which to base this separation and I could not extend it outside the photos listed above.

The black shales visible on the ground in several places along the Tayatea Road (photos SC/AR 2/21-19) are not distinguishable on the airphotos from the siltstones, mudstones and shales which form the bulk of the Undifferentiated Precambrian (Bu).

I did not see on the airphotos any feature related with the Black Slate boundary mapped from geophysical data by Neale and Won (1974).

The general bedding trend of Buswings from about 60° E in the north to about 20° E in the south. There is some evidence (curving trend lines, a few opposing dip slopes) suggesting that Bu is folded, tightly in some places, with fold axes parallel to the general trend.

Probably many trend lines I annotated on are dolerite dykes.

Two dominant trends of faulting are present, one parallel and the other perpendicular to the bedding trend. Jointing is predominantly perpendicular to the bedding trend.

The east-west fault visible on photos NW 4/19-21 is shown in Lennox et al. (in press) to extend westward and disappear under the Tertiary basalt. My photo study could not confirm this.

A remarkable lineament is visible on both Landsat image 97-89 and topographic maps along the Rapid River. On the airphotos this lineament does not appear to be a continuous linear feature, but a belt of parallel joints, suggesting that, perhaps, a system of tensional stress is present, but faulting has not taken place.

3. CAMBRIAN

Apart from photogeological unit Cv (Cambrian Volcanics) which displays fairly distinct geomorphological features, I could not see on the airphotos any of the Cambrian boundaries mapped by Williams and Turner (1973) or by Lennox et al. (in press). One reason could be the complete alteration of the natural vegetation by human intervention, particularly in the northwestern part of the area.

Bedding information is not well displayed either. As a test, I plotted the dip symbols from published maps onto photos NW 3/12 and 4/13 (red pen symbols) and found that only very few of them corresponded with features visible on the airphotos.

027

4. TERTIARY BASALT

The boundary between Tb and the other rock units is generally well displayed on the airphotos. I checked my preliminary interpretation along the road Trowutta - Lileah - Mengha - Forest - Black River (photos SC/AR 1/11-13, NW 4/13-15, NW 3/10-06) and found the boundary correct in most places. I am fairly confident that, also where I did not check it, the Tb boundary is correct, except where I used the - ? - symbol.

The base of the basalt follows a pre-existing topographic surface. Where it is visible on the airphotos, the thickness of the basalt varies from a few metres to about 80 m. This is consistent with published data (e.g. Longman and Matthews, 1961, p. 49).

A couple of possible volcanic vents are visible in the northwest corner of the area (photo NW 4/13). They are located along a major northwest-trending fault system, also visible as a linament on Landsat image 97-89.

5. REFERENCES

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029

LEGEND

—————?————— Outcrop/non-outcrop boundary

—————?————— Lithological and/or geomorphological boundary

F —————?————— F Fault

L ————— L Lineament

----- Joint, minor fault

⊙ C.F. Circular feature

Horiz. 0°-10° 10°-35° 35°-90° Vert.

+	T	||	|||	)
(generally used on dip slopes)				) Estimated dip
				) of beds
~	~	~	—+)
(generally used along edge of beds))

—————•—————?————— Possible dykes

—————?————— Trend lines, edge of beds; dykes in some areas.

Selected drainage channels

Field observations are annotated in black pencil. Dip information from other maps is annotated in red ink.

<u>Photogeol. unit</u>	<u>Possible geological equivalent</u>
Cz	Cainozoic, undifferentiated - Alluvium, colluvium, soil etc.
Trrc	Alluvial terraces.
Tb	Tertiary Basalt.
Eu	Cambrian, undifferentiated - Siltstone, mudstone, greywacke; minor basic volcanics.
Ev	Cambrian Volcanics - Basalt, tuff; minor siltstone, greywacke.
Bu	Precambrian, undifferentiated - Siltstone, mudstone; minor quartzite, sandstone. Many trend lines annotated on areas probably are dolerite dykes.
Brd	Detention Quartzite - Quartzite, minor siltstone.
Bri	Irby Siltstone - Siltstone, mudstone.
?	Unknow.

26 November, 1981

CM:jiw 0022R

031

APPENDIX 2

Report on the Exploration of Eight Geophysical Anomalies
in E.L. 18/80

032

REPORT ON THE EVALUATION OF EIGHT
GEOPHYSICAL ANOMALIES IN EL 18/80
ARTHUR RIVER, N.W. TASMANIA

D.A. STEELE
DECEMBER 1982

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FIGURES

1. E.L. 18/80 Arthur River, Tas. Location of Geophysical Anomalies.
2. Anomaly 1 Lithologies and Sample Location
3. Anomaly 1 Structural Geology
4. Anomaly 3 Lithologies and Sample Location
5. Anomaly 3 Structural Geology
6. Anomaly 8 Geology

034

1. INTRODUCTION

In mid December, 1982, the evaluation of eight geophysical anomalies was commenced in the central south west portion of B.H.P.'s Arthur River Licence area (EL 18/80) (figure 1) in an effort to locate carbonate hosted cassiterite deposits.

The work comprised the sampling and panning of selected drainages, rock chip sampling and geological mapping along roads and tracks in the vicinity of those anomalies that were readily accessible.

Access to the general area is good using Forestry Commission roads and tracks. These supply good rock exposure throughout most of the area.

Vegetation is either thick impenetrable scrub rainforest or less commonly open button grass plain. The nature of the scrub generally makes any work off the tracks impossible without some form of clearing.

2. GENERAL GEOLOGY

The general geology of the area of interest comprises late-Precambrian Smithton Dolomite in the northwest, through middle(?) Precambrian shales and quartzites of the Rocky Cape Group which dominate the area, to Precambrian shales and low grade metamorphic phyllites of the "Arthur Lineament" to the east.

Intense tight folding with short wavelength and long amplitudes along north-south trending axes developed a penetrative north-north east trending cleavage in the shales which has latter been locally folded by more open style folds trending south east.

The only intrusive rocks in the area are Cambrian-Late Precambrian(?) amphibolite/basic dykes, trending north-north easterly and apparently intruding along the penetrative cleavage developed in the shales.

3. THE ANOMALIES

3.1 General

Eight anomalies for ground follow-up were derived from a Rio Tinto airborne magnetic survey (1956) and an ESSO INPUT EM Survey (1974). These fell into three broad categories;

- i) aeromagnetic anomalies (numbers 1, 3, 4 and 7);
- ii) INPUT anomalies (numbers 2, 6 and 9);
- & iii) coincident aeromagnetic/INPUT anomalies (number 5).

Of these, anomalies 2, 4, 5, 6 and 7 could not be ground located due to inaccessibility, although anomalies 2, 4 and 7 could be reached given time to cut lines and clear existing access.

The sources of anomalies 5 (mag/INPUT) and 6 (INPUT) are unknown. Anomalies 2 (INPUT) and 4 (magnetic) could be due to black shale and amphibolite/ basic material respectively which are known to occur in the general vicinities of these anomalies. An amphibolite dyke is the most probable source of linear magnetic anomaly 7, a conclusion supported by a high chromium value (3,800 ppm) from a sampled drainage of this anomaly (see ANZECO report, 1972).

The remaining anomalies, numbers 1, 3, and 8, were reasonably accessible and selected drainages were sampled and roads were mapped in an effort to adequately explain these anomalies. The data for each anomaly are presented below.

3.2 Anomaly 1

3.2.1 Location

This magnetic anomaly (no INPUT coverage) is located on the south side of Lawson Riverlet, approximately 1 km southeast of Milkshake Hill (figure 2). The anomalous area is covered by thick scrub and line cutting was required to reach the drainage from the road.

3.2.2 Geology

The lithologies exposed along the Rapid River Road are dominated by an interbedded shale and siltstone sequence. Cream, locally brown, shales dominate with 1/2-1 metre grey siltstone interbeds. Cleaved, laminated dark grey to grey shales and brown sandstone rarely occur (figure 2).

Bedding orientations generally dip shallowly east to south east and strike east to northeast. Dip reversals are rare (figure 3). Two small upright, openstyle anticlines plunge shallowly to the southeast. Flame structures and current bedding indicate no overturning of the sequence.

Well developed joint sets strike east and southeast, and dip variably but steeply between N-S and NE-SW respectively. Thin quartz fissures occur within the Se striking joint set. Ferruginization of sediments adjacent to these fissures is common.

Only small patches of white quartz float were observed along the cut line across the anomaly. Outcrop in Lawson Riverlet is of cream siltstone and shale in the vicinity of the stream sample site.

To the north of Lawson Riverlet, the sequence is dominated by a central band of black shale, locally pyritic, grading into grey to cream shales with minor interbedded grey siltstone to the east and west. The black shale does not outcrop along the Rapid River Road traverse (figure 2).

Bedding orientations are more variable but generally shallower in dip compared with those south of the riverlet.

A number of small faults were located in the area but displacements along these appear to be negligible.

Three or four steeply dipping northnortheasterly trending amphibolite dykes cut the area. They vary in width from 5 to 25 metres and the larger ones can be traced over strike lengths in excess of 2 kilometres. As can be seen from figure 2, minor offsets are likely along the dykes.

The anomalous area occurs along the projected strike line of one of these dykes. Due to the variability in magnetic susceptibility of dyke material ($15-1100 \times 10^{-5}$ SI units), it is quite probable that the magnetic anomaly is caused by a highly magnetic zone within the dyke.

3.2.3 Sampling

Two stream sediment samples were obtained from Lawson Riverlet. No heavy minerals were observed during the panning of one of these samples. One rock chip sample was taken of a gossanous fault gangue in the Rapid River Road. Samples for petrological examination were also collected. Refer to figure 2 for sample locations.

3.3 Anomaly 3

3.3.1 Location

Anomaly 3 is a magnetic anomaly (no INPUT coverage) and is located approximately 3 kilometres southsoutheast of the Holder Road - Pipeline Road intersection (figure 4). Access over the anomaly is reasonable, the area having been logged and burst some 2-3 years ago.

3.3.2 Geology

The lithologies around the anomaly consist of ferruginous, interbedded cream to grey shales and siltstones with rare sandstones in the west, through laminated black shales, locally pyritic, to grey shales and occasional phyllites in the east (figure 4). The western sequence is strongly jointed, sets trending east and south easterly and steeply dipping, and locally massively bedded generally striking east to northeast, dipping variably to the southeast. Westerly dips occur only on a small scale (figure 5).

The eastern sequence consists essentially of grey to brown shales and phyllites with well developed, penetrative cleavage. Bedding dips consistently 60-80° SE and strikes northnortheasterly. The penetrative cleavage trends NNE and dips variably but steeply to the east and west. Kink zones and crenulations are common and plunge shallowly to the south.

Iron stained quartz veining occurs across the anomaly occupying two joint sets, one dipping shallowly south to southwesterly and tending to be lensoidal, the other, vertical, striking southeasterly and being thinner but more continuous.

039

- 6 -

A number of faults and shears were located (figure 5) but displacements were not determinable.

At least four north northeast trending amphibolite dykes were found along the road cuttings (figure 4). Since these project close to the anomaly, one of these could be the source of that anomaly.

3.3.3 Sampling

Six stream sediment samples were taken from drainages around the anomaly. No heavy minerals were detected during panning. Rock chip sampling was undertaken at three localities (figure 4). Sampled were a ferruginous quartz vein, a blue/green sheared(?) shale - possibly cupriferous, and some ferruginous nodules located close to a black shale outcrop. Selected petrology samples were also taken (Appendix 1).

3.4 Anomaly 8

3.4.1 Location

This is an INPUT EM anomaly and is located approximately 1 1/2 kilometres south of the 28 km post on the Savage River Iron Ore Pipeline Road. Thick scrub exists on either side of the road with the only rock exposures occurring as cuttings along the pipeline.

3.4.2 Geology

A 2 1/2 kilometre traverse along the road indicated that the only lithologies in the area are shales varying from iron stained grey to black with very minor cream siltstone (figure 6). Bedding generally strikes north-south and dips steeply to the east and west. A penetrative cleavage dips very steeply west, and strikes in a northnortheasterly direction. Minor crenulations in the grey shales plunge shallowly southsouthwest.

No shears or faults were located on the traverse.

A small "pond" of Tertiary(?) basalt occurs about 500 m to the south of the anomaly.

The existence of abundant black shale, although not pyritic, is probably sufficient to explain this anomaly.

3.4.3 Sampling

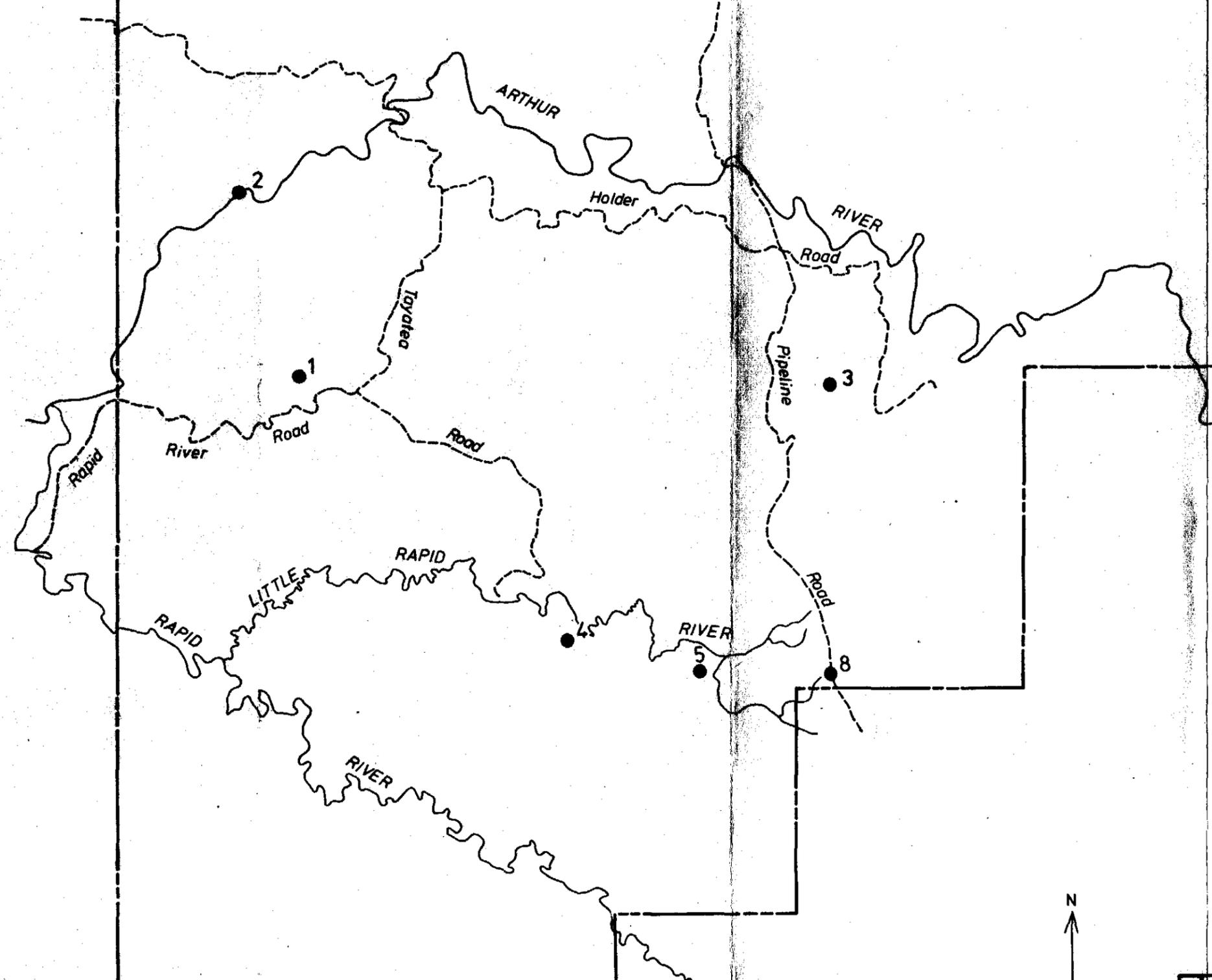
No sampling was warranted at this anomaly.

4. SUMMARY

All of the accessible anomalies can be adequately explained by geological features located by the mapping. Of those not located on the ground, most anomalies can be explained as caused by either black shale or amphibolite since these lithologies occur throughout the area. No carbonate bearing horizons were located during the field work.

At the time of writing, results from the stream sediment sampling, rock chip sampling and petrological investigation are not yet available. Consequently, it is not possible to "write-off" any or all of these anomalies until this information is available.

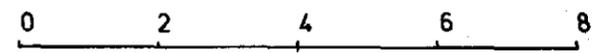
360000mE



54 40 000mN



Scale 1: 100,000

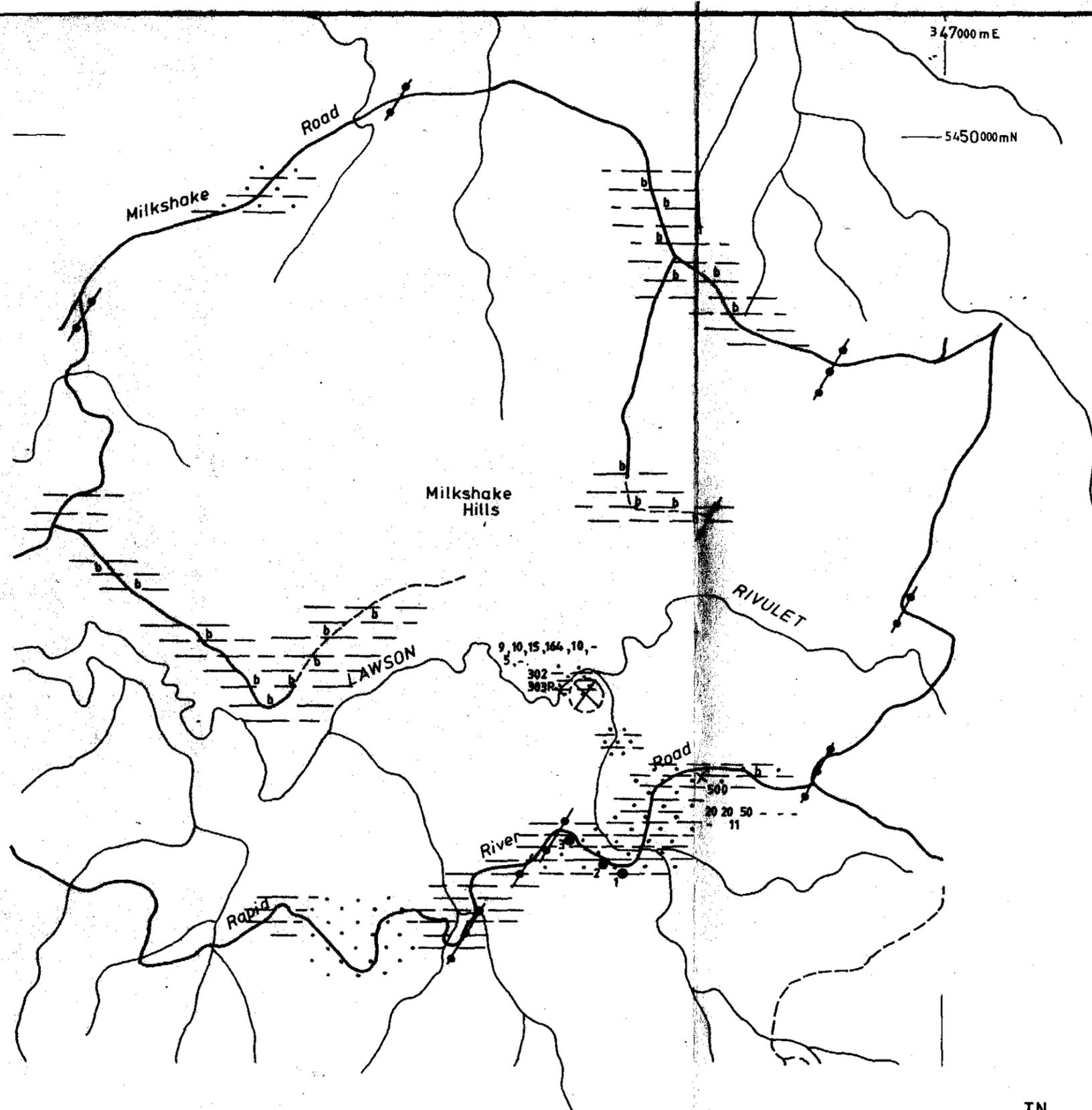


THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT			
E.L.18/80, ARTHUR RIVER, TAS			
LOCATION OF GEOPHYSICAL ANOMALIES			
Prepared by : D.A.S	Centre : Hobart		
Date : 22.12.82	Project No.	Drawing No.	
		A3-	

042

550043

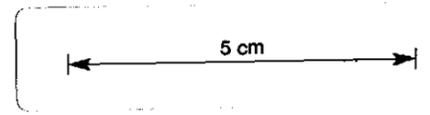
FIGURE 2



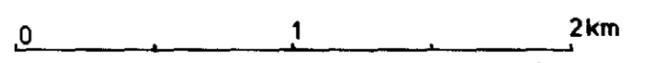
Analytical results

	Cu	Pb	Zn	Cr	Sn	W	Ag	As
	11	23	-	7	-	-	45	7

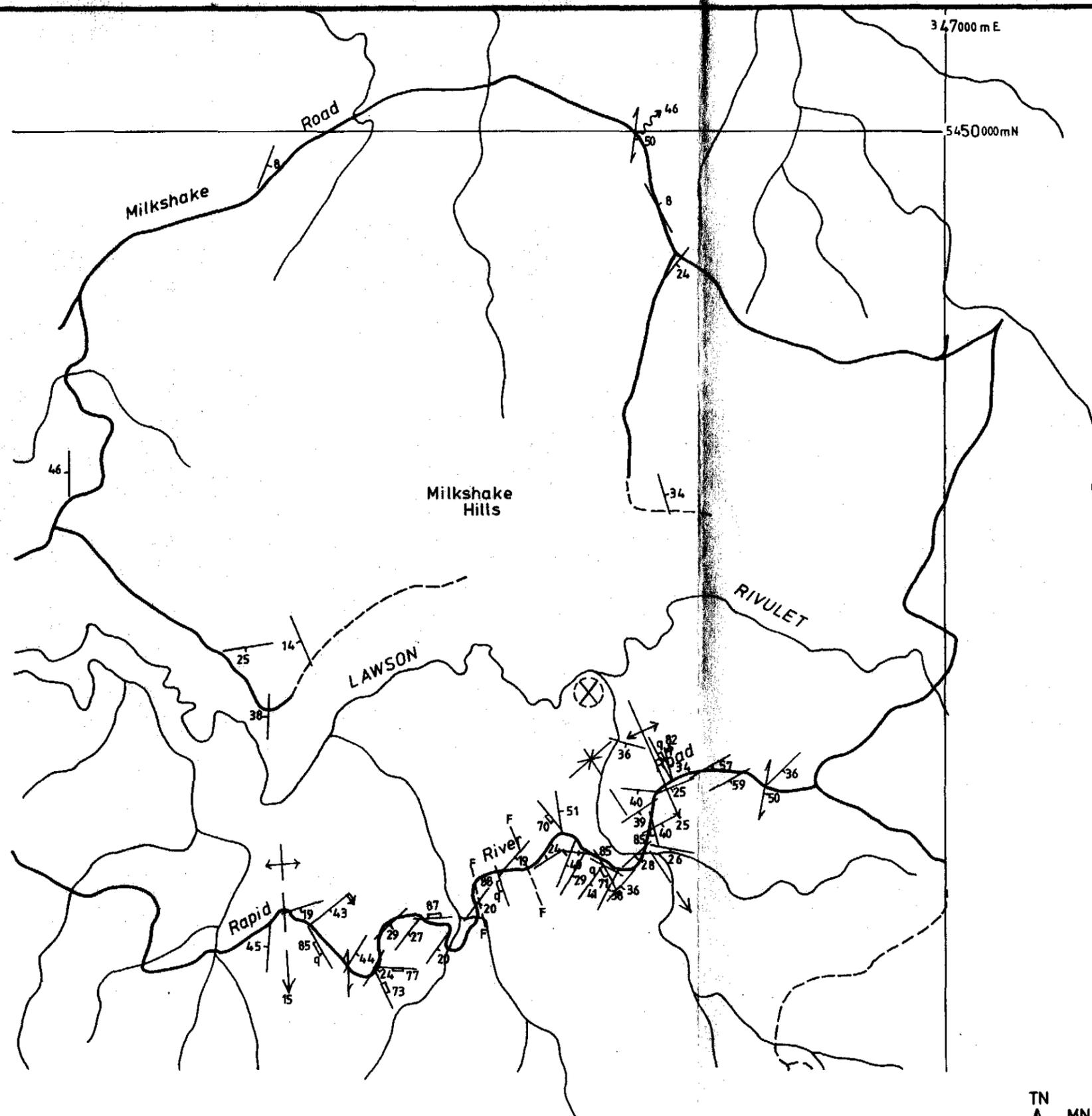
- Interbedded quartzite and shale sandstone dominant
- Interbedded siltstone and shale siltstone dominant
- Mainly shale locally black (b) minor siltstone and quartzite interbeds
- Amphibolite/basic intrusive dyke
- Approximate location of anomaly
- Stream sediment sample locality even no -80 mesh odd no pan conc.
- Rock chip sample locality
- Petrological sample locality



1:25,000

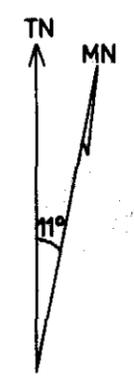
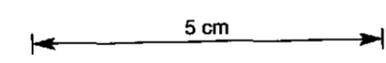
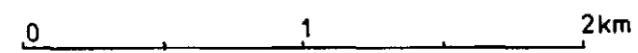


THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT		
EL 18/80 ARTHUR RIVER ANOMALY ONE LITHOLOGIES AND SAMPLE LOCATIONS		
Prepared by: D.A. STEELS	Centre: H28A&T	
Date: 21.12.81	Project No.: T676	Drawing No.: A3
Drawn: H14&T		



-  Dip and strike of bedding
-  Dip and strike of jointing
-  Dip and strike of cleavage
-  Plunge of anticline
-  Plunge of syncline
-  Fault
-  Plunge of slickenslides
-  Facing

1:25,000



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EXPLORATION DEPARTMENT

EL 18/80 ARTHUR RIVER
ANOMALY ONE
STRUCTURAL GEOLOGY

Revisions:	Prepared by: D. A. STEELE	Centre: HQ-AGT
	Date: 7-1-85	Project No. T670
	Drawn: HQ-AGT	Drawing No. A3-

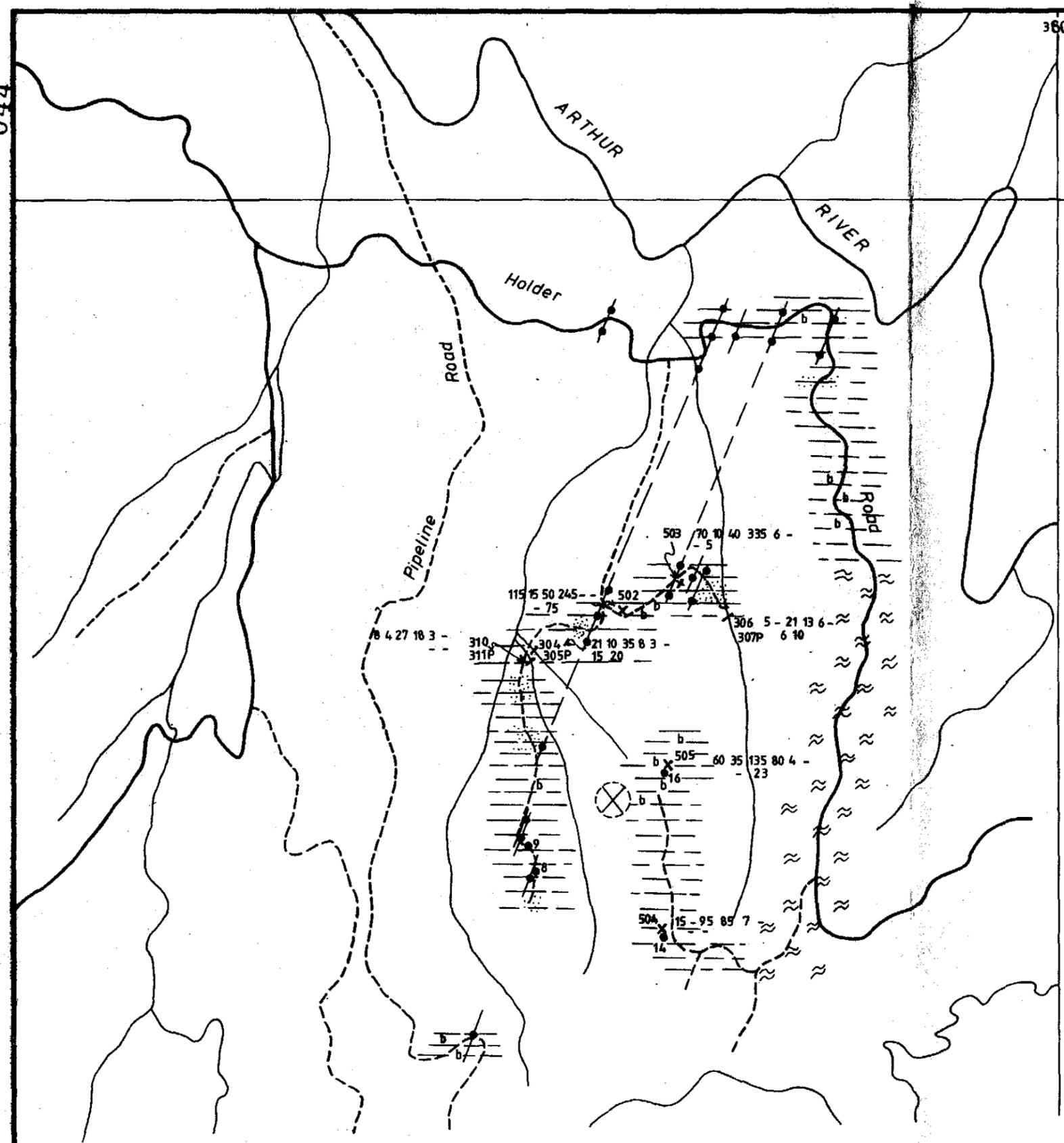
044

360000mE

550045

FIGURE 4

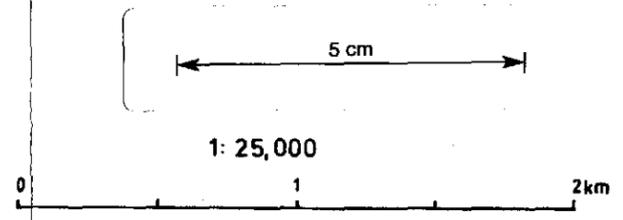
5450000mN



Analytical results

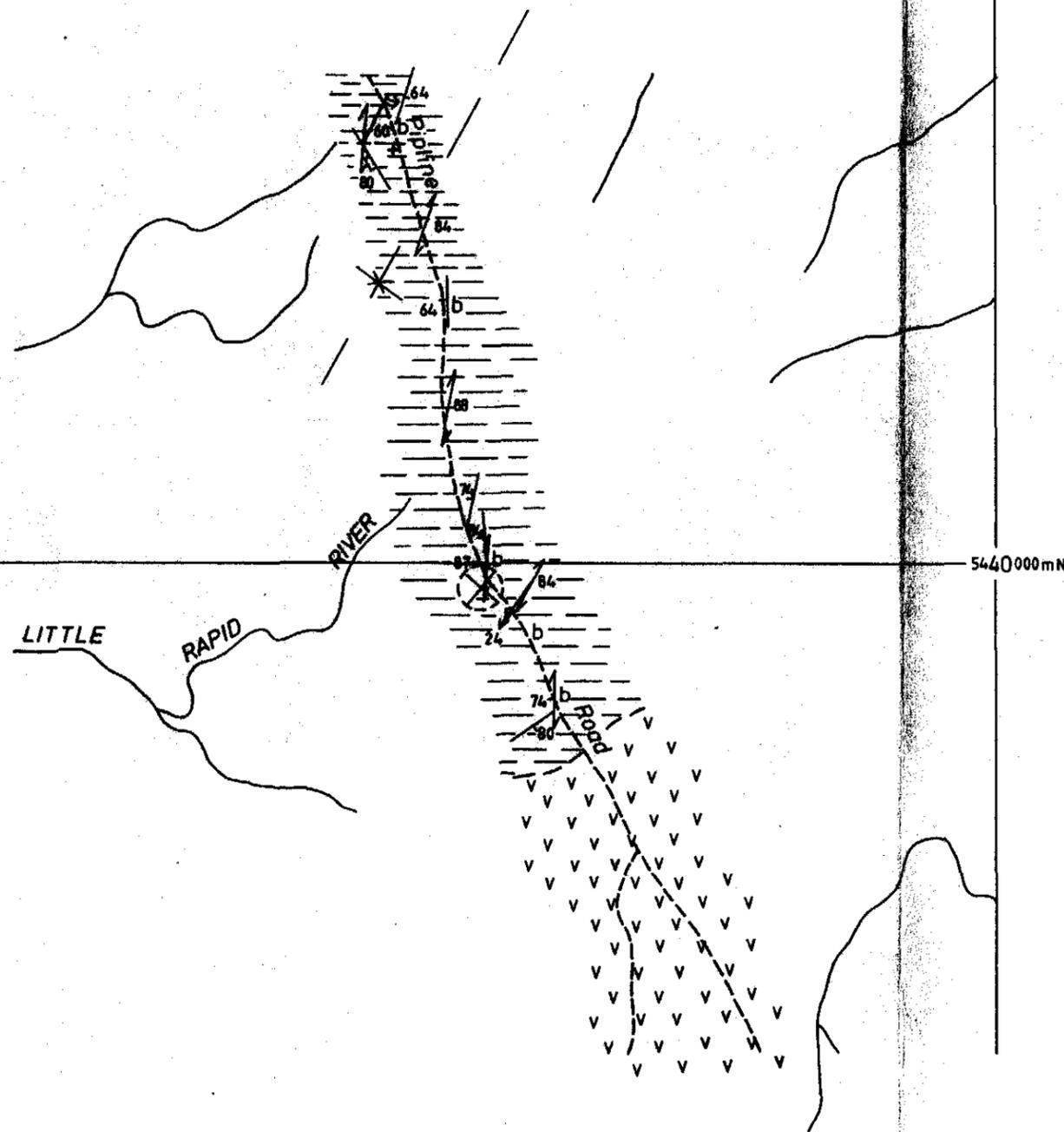
	Cu	Pb	Zn	Cr	Sn	W	Ag	As
	115	15	50	56	-	-	-	75

- Shale locally silty(spotted) black shale indicated (b)
- Phyllite well developed cleavage. Silty horizons throughout.
- Amphibolite/basic intrusive dyke
- Approximate location of anomaly
- Stream sediment sample locality even no-80 mesh odd no pan conc.
- Rock chip sample locality
- Petrological sample locality



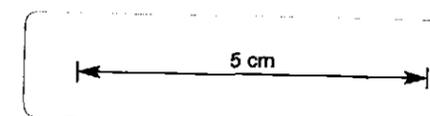
THE BROKEN HILL PROPRIETARY CO. LTD.			
EXPLORATION DEPARTMENT			
EL 10/80 ARTHUR RIVER			
ANOMALY THREE			
LITHOLOGIES AND SAMPLE LOCATIONS			
Prepared by: D.A.S	Centre: Hobart		
Date: 21.12.82	Project No.	Drawing No. A2	
Drawn: Hilary			

360000mE

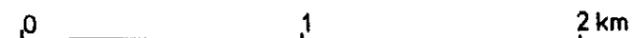


LEGEND

- Grey shale rare thin grey to white siltstone interbeds
Locally black shale (b) (pC)
- Basalt (Tertiary)
- Approximate location of anomaly
- Dip and strike of bedding
- Facing
- Cleavage, dip and strike, vertical
- Dip and strike of jointing
- Plunge of crenulations
- Inferred syncline
- 28 km post (on Pipeline Road)



1:25,000



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EXPLORATION DEPARTMENT

EL 18/80 ARTHUR RIVER
ANOMALY 8
GEOLOGY

Prepared by: D.A.S.	Centre: Hobart
Date: 21.12.82	Project No. Drawing No.

APPENDIX 1

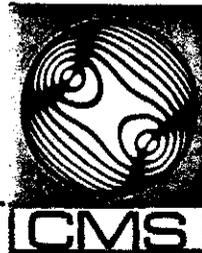
<u>Sample No.</u>	<u>Location</u>	<u>Type</u>
T67-302	Lawson Rivulet, draining Anomaly 1	Stream sed. -80 mesh
-303P	"	" Pan Core
-304	Tributary of Munga C, draining NW side of Anomaly 3	" -80 mesh
-305P	"	" P.C.
-306	Trib of East Munga Ck, draining NE side of Anomaly 3	" -80 mesh
-307P	"	" P.C.
-308	Little Rapid River, draining anom. 4, 5, & 8	" -80 mesh
-309P	"	" P.C.
-310	Trib of Munga Ck, draining W side of anomaly 3	" -80 mesh
-311P	"	" P.C.
T67-500	Rapid River Rd. Sst/sh outcrop - Fe gauge	Rock chip Anomaly 1
-502	Holder Spur 14 - sheared shale	" Anomaly 3
-503	" - Fe quartz vein	" "
-504	Holder Spur 15 - sheared shale - Cu? stained	" "
-505	Anomaly 3, Fe nodules near black shale	" "
T67-PT1	?Intrusive - Rapid River Rd.	Petrology Anomaly 1
2	Greywacke - "	" "
3	Spotted shale - "	" "
5	Sandstone - "	" "
8	Sst, Fe stained	" "
9	Grey cleared shale	" "
14	Sheared shale - Cupriferous?	" "
15	Fe nodules	" "

048

APPENDIX 2

Petrology

049

Central Mineralogical Services

39 Beulah Road
Norwood, S.A. 5067
Telephone 42 5659

Mr. D.A. Steele
Exploration Office
The Broken Hill Proprietary Co. Ltd.
G.P.O. Box 1207
HOBART / TAS. 7001

25th January, 1983

REPORT CMS 82/12/33

YOUR REFERENCE: Letter dated 22.12.1982
DATE RECEIVED: 24th December, 1982
SAMPLE NOS.: PT 1 - PT 16
SUBMITTED BY: D.A. Steele
WORK REQUESTED: Petrology


H.W. Fander, M. Sc.

REPORT CMS 82/12/33Rock Samples PT 1 - PT 16

Eleven rock samples were received for petrological examination, with special reference to potential host rocks, particularly carbonates, for metasomatic Sn mineralisation. Thin-sections were prepared of all rocks; where sulphides were seen, these were identified under the stereobinocular microscope only at this stage.

Summary

This suite consists of a variety of igneous, pyroclastic and sedimentary rocks; the igneous and pyroclastic rocks are generally severely altered and classification/interpretation is tentative or broad, and some of the sediments are weakly metamorphosed.

One rock (PT 6) is a thoroughly silicified carbonate breccia; it is believed, from textural evidence, that this rock was brecciated prior to being silicified. It was probably a fairly featureless chemical sediment with chert bands.

The pyroclastic rocks are thoroughly altered, as is commonly the case with this group; thus, diagnostic textures are variably preserved and it is possible that PT 2 is partly clastic, just as PT 7, 8 and 9 could contain an ash component. None of the pyroclastics resemble, say, units of the Crimson Creek formation, but PT 5 could be part of the Mt. Read Volcanics.

H.W. Fander, M. Sc.

Sample No.	Rock Type - Composition	Fabric	Minor Minerals	Comments
PT 1 (T.S. 45008)	<u>Argillised Porphyritic Trachyte</u> . Sericitised small feldspar phenocrysts set in matted mass of altered fine feldspar, minor quartz, leucoxenised magnetite.	Random, fine-grained fabric, phenocrysts mostly $\frac{1}{2}$ to 1 mm. Minor intrusive.	A few small chlorite patches after ferromagnesian minerals.	Fresh rock was largely feldspathic, leucocratic, hence inferred trachyte, though complex alteration precludes exact classification.
PT 2	<u>Altered Ash</u> . Now composed of fine quartz and clays, with wisps and stylolitic veins of carbon, small albite concretions, fine detrital minerals.	Bedded, with fine nodular development (soft pebbles), soft-sediment deformation.	Crosscutting quartz veinlets. A few small chert concretions.	Probably subaqueously deposited in reducing environment. Albite is diagenetic. Shows the usual alteration.
PT 3	<u>Nodular Metasiltstone</u> . Small subspherical chert nodules set in a fine semi-schistose mass of illite-sericite flakes, micro-crystalline quartz.	Two directions of preferred orientation, at 40° . Uniform, fine-grained.	Fine limonite films and streaks. Thin layers of fine heavy minerals.	Weakly metamorphosed sediment of partly chemical, partly clastic formation. Featureless.
PT 5	<u>Altered Tuff</u> . Mostly argillised, silicified shards, fragments of glassy and scoriaceous lavas, altered crystal fragments, all pervasively ferruginised.	Medium/fine-grained, with coarser lithic grains. Faintly bedded.	Limonite veins; goethite patches.	No doubt of pyroclastic nature of this rock, but composition not known. Unlike Crimson Creek pyroclastics.
PT 6	<u>Silicified Carbonate Breccia</u> . Large and small angular fragments of extensively silicified carbonate mosaics, with quartz cement and quartz veining.	Original rock was medium-grained, crystalline and uniform. Relict carbonate textures.	Fragmented cherty bands or lenses. Relict ultrafine carbonate in quartz.	Rock may have been brecciated, cemented by carbonate before being silicified. Most details of original rock obliterated.
PT 7	<u>Argillaceous Siltstone</u> . Silt-sized subangular quartz grains, shreds of white mica, abundant matrix-cement of very fine kaolinite-illite.	Uniform, virtually structureless, with only faint bedding.	Detrital heavy mineral grains (zircon, tourmaline). Quartz veinlets.	Orthodox, featureless clastic sediment. Well-indurated but not metamorphosed.
PT 8	<u>Argillaceous Siltstone</u> . Framework of silt-sized subangular quartz and white mica shreds, with matrix of semi-schistose illite-sericite flakes.	Uniform, with scattered clay pellets, faint bedding, superimposed semi-schistose fabric.	Quartz veins and patches, with oxidised pyrite crystals.	Very similar to PT 7, but incipiently metamorphosed, with phyllitic fabric developed.
PT 9	<u>Phyllite (Metasiltstone)</u> . Silt-sized quartz grains, fine quartz streaks, and muscovite flakes in a schistose fine matted mass of sericite flakes.	Strong preferred orientation, but very fine-grained. Uniform.	Small cavities representing leached pyrite, with fibrous quartz rims.	Low-grade, mainly dynamic metamorphism of pyritic shale/siltstone. Featureless rock.

Sample No.	Rock Type - Composition	Fabric	Minor Minerals	CENTRAL MINERALOGICAL SERVICES Comments
PT 11	<u>Pebbly Lithic Sandstone.</u> Pebbles, granules of siltstone, shale/argillite; host rock of rounded quartz grains with fine quartzose-kaolinitic cement.	Pebbles are mostly flat, subparallel; deformed and indented, i.e. soft when deposited.	Chert pebbles and concretions.	Rock incorporates pebbles and grit-sized grains of finer-grained rocks which were semi-consolidated when deposited. 052
PT 14	<u>Altered ?Microsyenite.</u> Small random laths of completely argillised feldspar, with interstitial pale chlorite after ?ferromagnesian minerals.	Medium-grained, with random fabric. A few feldspar phenocrysts.	Ultrafine secondary leucoxene released from ferromagnesian.	Exact composition not known because of alteration, but in intermediate range. Minor intrusive.
PT 16 (T.S. 45018)	<u>Altered ?Microdiorite.</u> Argillised plagioclase laths, abundant chloritised ferromagnesian minerals, leucoxenised primary oxide opaques.	Medium-grained, with random fabric, verging on coarse-grained.	Pervasive ferruginisation. Quartz veins.	Completely altered. Similar to PT 14 in some respects, but believed to be more basic; perhaps doleritic.

550053

APPENDIX 3

Analysis Results
Stream Sediments
Pan Concentrates
Rock Chips

054

REGION: *ARTILLER RIVER* PROJECT NO.: *T670* PROSPECT: *EZ 18/80* GRID CO-ORDS: LOCAL A.M.G.

DESCRIPTION Sample Type: *ROCK CHIP* Rock Type: *VARIOUS* Soil/Sediment Size Fraction: *—*

S00 Anomaly 1; Rapid hi rd - Gossanous gouge in ferruginous sandstone.
S01 Anomaly 9; Sumac Spur 4-4 - Fe stained, sheared dolomite.
S02 Anomaly 3; Holder Spur 14 - Fe stained, sheared? shale.
S03 Anomaly 3; Holder Spur 14 - Limonite quartz vein in shale, sandstone sequence.
S04 Anomaly 3; Holder Spur 15 - Blue-green (Cu-stained?) sheared shale.
S05; Anomaly 3; Ferruginous nodules within black shale horizon.

ANALYSIS Laboratory Batch No Date Analysed

Element Method Sample #	Sn	W	Cu	Pb	Zn	Ag	As	Cr									
T67/S00	-	-	20	20	50	-	11	-									
S01	3	-	-	-	5	-	-	110									
S02	-	-	115	15	50	-	75	245									
S03	6	-	70	10	40	-	5	335									
S04	7	-	15	-	95	-	-	85									
S05	4	-	60	35	135	-	23	80									

REMARKS:

Project No: _____
 Sample No: *A4-*
 THE BROCKEN HILL PROPRIETARY CO. LTD.
GENERAL SAMPLE DESCRIPTION
 Date: _____

Logged or Sampled by: *D. A. STEELE* Date: *14-17/12/82*

550055

ANALABS

A division of MacDonell Thompson & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

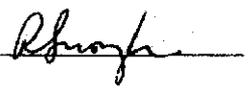
CLIENT ORDER No.

PAGE

T67		14.4 08 1738			5.1.83		006605			1 OF 1	
TUBE No.	SAMPLE No.	µP (gr)	Sn	H							
1											
2	303P	58.89	5	X							
3	305P	40.63	15	20							
4	307P	43.11	6	10							
5	309P	50.71	6	X							
6	311P	16.66	X	X							
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23	DETECTION		3	10							
24	DIGESTION										
25	METHOD		402	401							

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 -- = element not determined

AUTHORISED OFFICER



ANALABS

ANALYTICAL DATA

SAMPLE PREFIX REPORT NUMBER REPORT DATE CLIENT ORDER No. PAGE

T67 999.0 08 1739 30.12.82 006606 1 of 2

LINE	SAMPLE	Fe	Al	Mn	Ca	Mg	Na	K	Si	Other
1	500	20	20	50	X	X	11	X	X	
2	501	X	X	5	X	110	X	3	X	
3	502	115	15	50	X	245	75	X	X	
4	503	70	10	40	X	335	5	6	X	
5	504	15	X	95	X	85	X	7	X	
6	505	60	35	135	X	90	23	4	X	
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20	STD FS4	300	100	770	0.5	1200	20			
21	RPT 500	20	15	50	X	5	11			
22										
23	DETECTION	5	5	5	0.5	5	1	3	10	
24	DIGESTION	101	101	101	101	101	101			
25	METHOD	101	101	101	101	101	114	402	401	

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 — = element not determined

AUTHORISED OFFICER

APPENDIX 3

Heavy Mineral Analysis

059

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT
Petrology Section

Memo to: A.D. Goode - Camberwell.

Date 12th March, 1981.

Our Ref: WHR/KM

Your Ref: M570

Subject: E1/15. Mineragraphy of H.M. Concentrates from
Arthur River, Tasmania (MRL 12781).

File: PM9

Date:

Heavy Mineral concentrate from Arthur River was examined optically and zinc block tests carried out. The sample proved positive for cassiterite and the possible tin associates, topaz, apatite and rutile. The mineralogy is summarised in the table below.

MINERAL	QUANTITY	SIZE mm	ANGULARITY	COMMENTS
Monite	Dominant	< 200	Well rounded to subangular.	Brown masses, often polished.
Topaz + Topaz (?) Masses	Subdominant	< 100 < 200	Angular Rounded	Transparent well formed colourless to orange crystals. Finely crystalline rounded white masses, same RI as good crystals of Topaz.
Chromite	Minor	< 60	Angular	Usually well formed black octahedra.
Apatite	Minor	< 160	Angular individuals and subrounded masses.	Blue hexagonal crystals and blue masses of small hexagonal crystals. Pleochroic blue-violet cores*
Almandine	Rare	< 160	Angular to subrounded	Pink to reddish pink grains.
Amphibole	Rare	< 160	Subangular	Green translucent, 120° cleavage.
Pyroxene	Rare	< 160	Subangular	Olive green glassy, ribbed.
Rutile	Rare	< 160	Angular	Red to black, subhedral, striated.
Sphene	Rare	< 160	Subangular	Brown lozenge shaped.
Cassiterite	Minor	< 30 (rare individuals. Usually in composite grains (<200) or monominerallic aggregate (<60)).	Angular individuals and subrounded masses.	Grey to brown, rarely as subhedral individual crystals, often as composite grains with massive topaz or apatite. Also as monominerallic aggregates. Give positive zinc block reaction.

* Heinrich, E.Wm. (1965) Microscopic Identification of Minerals,
McGraw-Hill 1965.

W.H. RINGENBERGS.

W.H. Ringenbergs
cc: Mr. R. Hine
Mr. J. Harms
Mrs. D. Jenkinson

061
BHP MELBOURNE
RESEARCH
LABORATORIES
Petrology Section

245-273 Wellington Road
Clayton, Victoria 3168
P.O. Box 264, Clayton
Telephone 560-7066

Memo to: DR. A.D. GOODE - CAMBERWELL

Date 27th April, 1981

Our Ref: WHR:KM:DK

Your Ref: M574

Subject: MINERAGRAPY OF H.M. CONCENTRATES FROM ARTHUR RIVER,
TASMANIA (MRL 12781). FURTHER WORK

File: PM9

Date:

Further work on certain minerals of interest from the sample MRL 12781 (described in Memo M570, dated 12.3.1981), has necessitated a revision of that memo.

The mineral identified as Apatite failed to respond positively to the Ammonium Nitro-molybdate test for phosphates and following XRD and SEM work, is now positively identified as ferrian dravite. This mineral, when pale blue in colour and affected by weathering resembles apatite in form and colour, has similar optical properties and has a hardness well below 7, the usual hardness of tourmaline.

The identity of the white finely crystalline topaz masses has been confirmed by XRD.

This memo contains all the information in M570 in a revised form and may be used to replace the original.

W.H. Ringenberg.
Petrologist.

W. Ringenberg

cc: Mr. R. Hine,
Mr. J. Harms,
Mrs. D. Jenkinson

062
 BHP MELBOURNE
 RESEARCH
 LABORATORIES

 245-273 Wellington Road
 Clayton, Victoria 3168
 P.O. Box 264, Clayton
 Telephone 560-7066

Memo to: Dr. A.D. Goode - Camberwell.

Date 27th April, 1981.

Our Ref: WHR:DK

 Subject: E1/15. Mineragraphy of H.M. Concentrates from
 Arthur River, Tasmania (MRL 12781). Further Work.

Your Ref: M570/M574

File: PM9

Date:

A heavy mineral concentrate from Arthur River was examined optically and zinc block tests were carried out. The sample proved positive for cassiterite and for the possible tin associates, topaz, and rutile. Blue hexagonal prisms which closely resemble apatite in appearance and optical behaviour, did not give a positive response to the Ammonium nitro-molybdate test for phosphates.

The X-ray Diffraction pattern of this mineral most closely fits that of the tourmaline group member, ferrian dravite $(Na, Ca)(Mg, Fe)_3(Al, Fe, Ti)_6B_3(Si_2O_9)_3(OH, F)_4$. SEM elemental analysis indicates this mineral contains major aluminium, silicon and iron, minor magnesium and sodium, and traces of calcium and potassium. This analysis agrees with the result expected from a ferrian dravite.

The XRD pattern obtained from the white finely crystalline rounded masses confirms their identity as topaz.

The mineralogy is summarised in the table below.

MINERAL	QUANTITY	SIZE μm	ANGULARITY	COMMENTS
Limonite	Dominant	< 200	Well rounded to subangular.	Brown masses, often polished.
Topaz +	Subdominant	< 100	Angular.	Transparent well formed colourless to orange crystals.
Topaz Masses		< 200	Rounded	Finely crystalline rounded white masses, same RI as good crystals of Topaz.
Chromite	Minor	< 60	Angular	Usually well formed black octahedra.
Ferrian Dravite (Tourmaline)	Minor	< 160	Angular individuals and subrounded masses.	Blue hexagonal crystals and blue masses of small hexagonal crystals. Pleochroic blue-violet cores.
Almandine	Rare	< 160	Angular to subrounded	Pink to reddish pink grains.
Amphibole	Rare	< 160	Subangular	Green translucent, 120° cleavage.
Pyroxene	Rare	< 160	Subangular	Olive green glassy, ribbed.
Rutile	Rare	< 160	Angular	Red to black, subhedral, striated.
Sphene	Rare	< 160	Subangular	Brown lozenge shaped.

063

MINERAL	QUANTITY	SIZE μm	ANGULARITY	COMMENTS
Cassit- erite	Minor	< 30 (rare individuals. Usually in composite grains (<200) or monomin- erallic aggregate (<60).	Angular individuals and subrounded masses.	Grey to brown, rarely as subhedral individual crystals, often as composite grains with massive topaz or dravite. Also as monominerallic aggregates. Give positive zinc block reaction.

W.H. Ringenbergs,
Petrologist.



cc: Mr. R. Hine,
Mr. J. Harms,
Mrs. D. Jenkinson.

065

..2..

The original sample from Arthur River was re-examined in order to compare the colour, roundness and abundance of the cassiterite with that occurring in sample AR 3. The sample was screened at 0.85mm, 0.42mm and 0.15mm enabling closer examination of the small quantities of concentrate occurring in the coarser fractions. The distribution of cassiterite grain size therefore is recorded as covering a wider range than detailed in memo M574.

+0.85mm	Dominant Topaz	As fine grained to granular masses, subangular to rounded.
	Minor Ferrian dravite	Fine grained subrounded to well rounded masses.
	Trace Limonite	
	Chromite	
	Cassiterite-quartz intergrowths	As inclusions in one quartz grain. Grey brown in colour. Protruding ends rounded off almost level with quartz.
+0.42 -0.85mm	Co-Dominant Limonite Topaz	Fine grained to granular or acicular masses, angular to subrounded masses. Occasional euhedra.
	Minor Ferrian dravite	Blue masses, fine grained to acicular, subangular to rounded.
	Trace Cassiterite	In aggregates with quartz topaz or dravite. Angular to subrounded aggregates. Protruding cassiterite is somewhat worn and slightly rounded.
	Trace Orthopyroxene	Yellow-green. Layered appearance, very good cleavage.

-0.42mm +0.15mm Mineralogy is as recorded in memo M574 and similar to that described above with additional traces of carbonate almandine, rutile and sphene. Greyish, greenish to brown cassiterite occurs as composites, monominerallic aggregates and individual crystals. Of 300 grains examined, six cassiterite bearing composites were found. No monominerallic cassiterite occurred in this small sample. Cassiterite crystals in composites usually <120 .

066

..3..

AR 3

Cassiterite is 300, -0.42 +0.15mm grains.

Monominerallic cassiterite - 0 Composite grains with quartz and/or -3
Dravite and/or Topaz

AR 3 Composites Included +0.85mm Cassiterite euhedra
quartz; also with (<200 μ m), protruding
dravite and topaz ends usually rounded
in -0.85mm. off.

Individuals rare in +150-420 μ m range.
Monomin. Agg. rare in +150-420 μ m range.

+0.85mm Dominant Limonite
Minor Topaz Commonly rounded, very finely
crystalline to fibrous aggregates.
Ferrian dravite Blue subangular to subrounded
aggregates.
Trace Cassiterite-quartz Some small (<200 μ m)
intergrowths cassiterite crystals embedded
in quartz. These are generally
rounded off where they protrude.
The cassiterite is greenish
grey to brown in colour.

+0.42 -0.85mm Abundant Limonite Topaz Rounded masses of commonly
fibrous to acicular, very fine
crystals. Radiating texture
in some cases. Granular
aggregates less common. Minor
apparently unworn, sharply
angular, individual crystals
and crystal fragments.
Minor Ferrian dravite Blue generally fine grained
aggregates. Subangular to
subrounded. Edges of crystals
and broken fragments generally
show some wear. Some aggregates
are composed of radiating
acicular crystals.

067

..4..

Carbonate ?siderite Cleavage fragments generally show rounded edges.

+0.42 -0.85mm	Cassiterite (intergrowths)	Small greenish-grey to brown grains of cassiterite are intergrown with quartz, topaz and more rarely dravite. No monominerallic aggregates observed.
	Trace Tourmaline ?schorl Orthopyroxene	Black, brownish or greenish. Yellow-green in colour.
-0.42	Mineralogy similar to that described above + minor Ferrian dravite	As well formed, fractured hexagonal prisms.
	Trace Almandine Zircon	Cassiterite occurs as rare individual crystals and monominerallic aggregates as well as composite aggregates with quartz, topaz and dravite. The grains comprising the aggregates usually appears to range in size from 30 to 150 μ m. The colour is dominated by greenish-grey, brownish grey and brown tones. Of 200 grains counted, six cassiterite bearing composite aggregates were found.

068

APPENDIX 4

Petrology

069

⑥ THE BROKEN HILL PROPRIETARY CO. LTD.
MELBOURNE
RESEARCH LABORATORIES Petrology Section

245-273 Wellington Road
Clayton, Victoria 3168
P.O. Box 264, Clayton
Telephone 560-7066

Our Ref: CJA:IS
Your Ref:

2nd June 1981

Mr. R. Hine,
Senior Geologist,
The Broken Hill Proprietary Co. Ltd.,
GPO Box 1140C,
Hobart,
Tasmania 7001

Dear Rick,

In reference to your letter 11/3/81 and W. Fander's report CMS 81/3/52.

The fibrous radiating mineral in TAY 4 has been identified by X-Ray
Diffraction as Wavellite.

I apologise for the delay in forwarding you the results.

Regards,

Chris Alenson

Chris Alenson

REPORT CMS 81/3/52

Sixteen specimens were received for petrological examination and are briefly described in the accompanying tables. Descriptions incorporate data from K-staining and limited carbonate-staining tests together with observations from stereobinocular and petrological microscopic examination of representative thin-sections and offcuts.

The bulk of this suite can be readily lithologically categorised. A few specimens, however, and particularly TAY 2, are somewhat problematical due to marked alteration and weathering. These may warrant further examination, preferably on fresher material, if critical to interpretation of field observations.

Of the TAY 1, 2, 3 group, only TAY 1 carries evidence of a primary carbonate component. Minor traces of degraded alteration carbonate are evident in TAY 2; TAY 3 is devoid of carbonate.

D. Cowan, B. Sc.

Sample No.	Classification - Composition	Fabric	Accessories	Comments
RR 1/MRL 12877	Degraded "Picrite". Frequent iddingsite-montmorillonite (after olivine), montmorillonite (after pyroxene) aggregates. Thoroughly montmorillonised matrix with disseminated martite-magnetite.	Relict, strongly porphyritic, medium-grained fabric. Faint pseudomorphed feldspar laths.	Minor traces chromiferous magnetite.	Relict fabric suggestive of a porphyritic minor intrusive. ?Deuteric alteration enhanced by weathering.
RR 2/MRL 12878 (T.S. 36517)	Uralitic Microgabbro. Variably saussurite-stained, albitised labradorite and marginally actinolite (trend hastingsite)-pseudomorphed pigeonite, disseminated leucogenised opaques.	Weakly feldspar-porphyrictic, doleritic (subophitic).	Sparse quartz-alkali feldspar mesostasis. Rare pyrite.	Minor or marginal intrusive fabric. Feldspar phenocrysts preferentially sericitised.
RR 3/MRL 12879 (T.S. 36518)	Dolomitic Pelite. Frequent leached, partly quartz-kaolin infilled carbonate rhombs in weathered quartz-sericite matrix with faint relict pelite, ?felsite clasts, ?abraded shards.	Silty to sandy clastic fabric, pelitic matrix. Evenly disseminated degraded carbonate rhombs.	Sparse clastic muscovite flakes, leucogenised opaques, carbonaceous pelite clasts.	Problematical interpretation due to alteration/weathering, but evidently a dolomitic, reworked, tuffaceous sandy silty pelite.
RR 4/MRL 12880	Dolomite. Fine-grained to microgranular dolomite with patchy incipient clay staining.	Patchy relict faint bedding laminations. Mildly brecciated, dolomite-healed.	Rare, extremely fine-grained, oxidised pyrite.	Diagenetically mildly brecciated, partly recrystallized, incipiently argillaceous dolomite. Affinities with VIC 1.
RR 5/MRL 12881	"Chert Breccia". Abundant clasts crypto- to microcrystalline, weakly argillaceous chert; cherty, quartz-cemented, with disseminated late cavity fillings, slightly coarser quartz.	Random, millimetric-scale, ovoid to platy, massive to faintly laminated, pelletal clasts.	Traces carbonaceous matter (clasts). Frequent microscopic silicified carbonate rhombs.	?Syneresis brecciation of slightly impure (argillaceous, carbonaceous, dolomitic) chert.
TAY1/MRL 12882	Dolomitic Pelite. Frequent leached/partially infilled carbonate rhombs (+ pyrite, ?cordierite) in sericite/minor microcrystalline quartz matrix.	Faintly sub- to millimetric laminated/incipiently graded, with discordant weak slaty cleavage.	Traces carbonaceous matter. Sparse detrital muscovite, sericitised ?shard fragments.	Close affinities with RR 3, but relatively pelitic. Former presence of cordierite is speculative, but consistent with variations in shape of
TAY2/MRL 12883	Degraded ?felsite. Fe-stained kaolin with evenly disseminated quartz, chloritic clots, subordinate, partly degraded phlogopite flakes, leucogenised opaques.	Chloritised "phenocrysts", homogeneous, more or less structureless matrix.	Minor traces oxidised, very fine (secondary) carbonate.	Considered as altered/thoroughly weathered, igneous; probably felsic intermediate ?minor intrusive. Finer detail obliterated.
TAY3/MRL 12884	Sericitic Pelite. Weakly orientated sericite with subordinate to minor silt-sized relict clastic quartz, muscovite, splintery sericitic feldspar, sericitic microfelsite clasts.	Relict sub- to millimetric pelitic banding. Weak discordant slaty cleavage, minor late	Conspicuous clastic leucogenised semi-opaques.	Poorly resolved, reworked, tuffaceous features similar to RR 3, TAY 1. Fabric reflects sub-greenschist ("load or burial") metamorphism.
TAY4/MRL 12885 (T.S. 36524)	Carbonaceous, Pyritic Pelite. Fine silt-sized quartz and semi-sericitic white mica. Abundant ultrafine carbonaceous matter, pyrite. Sparse Stilbite veinlets.	Pelletal, soft-pebble conglomerate-like overprint on fine silty pelitic.	Frequent fine silt-sized clastic white mica flakes.	Fabric consistent with compacted (consolidated) slump breccia. Essentially unmetamorphosed. Conspicuous "syngentic" pyrite.

Sample No.	Classification - Composition	Fabric	Accessories	Central Mineralogical Services Comments
NPA 7 MRL 3.597	Metapelite. Fine to semi-sericitic muscovite with subordinate closely intergrown quartz, vague but pervasive sericitic spotting; minor weathered/ferruginised biotite.	Strongly spotted hornfelsic with vague relict pelitic bedding.	Disseminated leucoxenic semi-opaques. Isolated vague corroded relics cordierite.	Marginal albite-epidote hornfels facies contact-metapelite. No tangible metasomatic features (e.g. tourmalinisation). "Retrograde" sericitisation cordierite.
NPA 14 MRL 3.598	Carbonaceous Pelite. Sericitic, weakly carbonaceous, weakly pyritic, weakly (quartz, muscovite) silty shale flanked by beds of relatively strongly carbonaceous/pyritic shale.	Massive to weakly laminated. Relatively carbonaceous units, shale breccia in part. Incipiently sheared.	Quartz and chlorite as pressure shadows on pyrite.	Non-calcareous. Weakly metamorphosed with "metablastic" growth of syngenetic pyrite, formation of pressure shadows along incipient discordant slaty cleavage.
BR 5A MRL 13.594	"Granophyre". Saussuritised/albitised plagioclase, subordinate extensively uraltised pigeonitic clinopyroxene, minor partly uraltised hornblende laths with pervasive quartz-orthoclase mesostasis.	Essentially dioritic with micrographic ("granophyric") mesostasis.	Disseminated leucoxenic opaques, traces pyrrhotite. Patchy chlorite, traces zoisite (after uraltite)	Medium-grained minor or marginal intrusive. Compositionally quartz-orthoclase dioritic/trend monzonitic, but of differentiated basic character.
BR 5B MRL 13.595	Uralitised Microgabbro. Saussuritised/albitised plagioclase laths, subordinate extensively uraltised pyroxene, minor uraltic hornblende laths with pervasive quartz/minor alkali feldspar mesostasis.	Essentially doleritic (subophitic) with weakly granophyric mesostasis.	Disseminated leucoxenic opaques, traces pyrite. Patchy late chlorite, traces epidote, garnet.	Close affinities with 13.594, slightly relatively basic (less differentiated) in comparison; similarly altered. Late microscopical hydrogarnet in chloritised uraltite.
NPA 4 MRL 13.596	Saussuritised Microgabbro. Saussuritised/albitised plagioclase laths, fresh to weakly uraltised pigeonitic clinopyroxene with sparse chlorite-alkali feldspar mesostasis. Sporadic veinlets zoisite.	Coarsely ophitic, doleritic.	Disseminated leucoxenic opaques, traces pyrrhotite, chalcopyrite.	Affinities with 13.594, 13.595, but with relatively orthodox "doleritic" composition, fabric. Selective replacement of feldspar by saussuritic prehnite.

Samples MRL 13.597, and 13.598 are low-grade metapelites, marginally hornfelsed (13.597) to incipiently sheared (13.598).

Samples MRL 13.594, 13.595, and 13.596 represent a differentiated basic to intermediate intrusive, ranging compositionally from quartz-gabbroic to quartz-orthoclase-dioritic. Fabrics are slightly variable, but compositional affinities are consistent and identify the three rocks as closely related.

073

APPENDIX 5

Analysis Results

084

REGION: NW TAS		PROJECT NO.: T670	PROSPECT: NEAST TRAIN	GRID CO-ORDS:	LOCAL AMG.												
DESCRIPTION	Sample Type: Rock	Rock Type: Dolerite/Black Slate	Soil/Sediment Size Fraction:														
	<p>ARA 43: Wild/fresh dolerite, v. weakly magnetic, minor dissemin pyrite, po (NPA 4 site); essentially hbl? - plug rock.</p> <p>44: Black slate with dissemin pyrite & pyrite mesh beds (NPA 11 site)</p> <p>45: layered slate white to light grey, some limonite alb- pyrite (NPA 14 site)</p> <p>46: Hard black slate minor pyrite beds, some leaching of pyrite locally.</p> <p>47: Black slate as above, c. 9% msh, v. minor copper-staining.</p> <p>48: " " " layered py mesh beds & nodules, graphitic.</p>																
ANALYSIS	Laboratory ANALABS	Batch No 14-4 08 707	Date Analysed 4/12/81														
Element	Cr	Fe	Co	Ni	Cu	Zn	As	Mo	Ag	Au	Pb	Sb	U	Sn	W		
Method	AAS									AG20	AAS	AAS(ii)	Fluor ^{Al}	XRF	XRF		
Sample No	ARA 43	55	4.95%	35	95	95	130	18	bid	<0.5	bid	50	<1	0.6	<3	<10	
	44	20	6400	20	70	75	65	43		0.5	...	70	6	5.2	<3	..	
	45	15	7850	bid	25	20	15	20	21.5	.	..	45	3	5.5	<3	..	
	46	35	2.45%	20	85	70	60	44	bid	.	..	35	5	5.4	3	..	
	47	55	2.30%	10	90	40	35	25	13.5	.	..	40	4	7.2	<3	..	
	48	50	6550	10	170	95	55	41	bid	.	..	45	5	3.8	<3	..	
REMARKS:	<p>_____</p> <p>_____</p> <p>_____</p>																
	Logged or Sampled by: R. Hine H. Kays										Date: 23/12/81						

Project No: _____
 Drawing No: A4-
 THE BROKEN HILL PROPRIETARY CO. LTD.
 GENERAL SAMPLE DESCRIPTION
 Date: _____

550075

075

REGION: NWTAS PROJECT NO: T670 PROSPECT: LAWSON RIV'T GRID CO-ORDS.: LOCAL A.M.G.

DESCRIPTION Sample Type: Stream Rock Type: Soil/Sediment Size Fraction: - 40 mesh.

T67 153 C, D, E stream samples collected to follow up limonite occurrence reported by I.M.D. in trib. of Lawson R. (old sample site: 153A,B)

Project No:
Drawing No: A4-

ANALYSIS Laboratory ANALABS Batch No 1A-4-08-707 Date Analysed 4/12/81

Element	Cr	Fe	Co	Ni	Cu	Zn	As	Mo	Ag	Au	Pb	Sb	U	Sn	W		
Method Sample No										1620		411/1	A/FLU	XRF	XRF		
T67 153 C	245	1900	bld	15	5	10	1	bld	bld	bld	10	<1	<0.1	<3	<10		
D	240	1700	"	15	10	25	bld	"	"	"	25	"	"	"	"		
E	250	1850	S	10	5	10	"	"	"	"	10	"	0.1	"	"		
153 A*	10	NR	NR	<4	4	2	<2	<4	<1	<0.05	<4	<4	NR	<4	15		
B*	12	"	"	<4	8	4	"	"	"	"	<4	"	NR	"	<10		

THE BROKER MILL PROPRIETARY CO. LTD.
GENERAL SAMPLE DESCRIPTION

REMARKS: * Comlabs results A= stream sed B= pan con. 1980

Logged or Sampled by: R.H., K.K. Date: 23/12/81

Centre:
Date:

550076

077

REGION: NW TOLS	PROJECT NO.: T670	PROSPECT: Black River	GRID CO-ORDS.:	LOCAL A.M.G.													
DESCRIPTION	Sample Type	Rock Type	Soil/Sediment Size Fraction														
	a = bank , b = stream sed c = pan concentrate.																
ANALYSIS	Laboratory ANA/LABS	Batch N°	Date Analysed														
Element Method Sample N°	Cr	Fe	Co	Ni	Cu	Zn	As	Mo	Ag	Au	Pb	Sb	U	Sn	W		
BR 9a	95	1357	bld	30	10	20	2	bld	bld	bld	15	<1	0.6	<3	<10		
9b	155	5000	..	20	5	15	1	..	..	..	10	<1	0.7	8	<10		
9c	210	3800	..	10	15	15	bld	..	..	..	10	<1	0.4	<3	<10		
BR 10a	315	1557	10	30	10	25	2	bld	..	..	10	3	1.2	3	<10		
10b	120	2400	bld	15	5	10	bld	..	..	..	10	<1	0.5	4	<10		
10c	180	2600	..	20	10	10	..	..	..	..	10	<1	0.7	3	<10		
BR 11a	135	1457	10	30	15	20	2	bld	..	..	20	<1	1.0	3	<10		
11b	175	3500	bld	20	10	15	bld	..	..	..	5	<1	0.4	4	<10		
11c	245	3350	..	15	10	25	..	..	..	..	15	<1	0.6	8	<10		
Logged or Sampled by: R.H. K.K.																	
Date: 23/12/81																	

Project N°:
Drawing N°: A4-

THE BROKEN HILL PROPRIETARY CO. LTD.
GENERAL SAMPLE DESCRIPTION

Centre:
Date:

550078

REGION: <i>NWTAS</i>	PROJECT NO.: <i>T670</i>	PROSPECT: <i>Black River</i>	GRID CO-ORDS.:	LOCAL A.M.D.													
DESCRIPTION	Sample Type: <i>Stream sed.</i>	Rock Type:	Soil/Sediment Size Fraction: <i>- 40 mesh</i>														
	<i>BR 6 - sediment in dry gully</i>																
	<i>BR 7 -</i>																
	<i>BR 8a bank sample, BR 8b stream sed.</i>																
ANALYSIS																	
Laboratory <i>ADVAZABS</i>		Batch No	Date Analysed														
Element	Cr	Fe	Co	Ni	Cu	Zn	As	Mo	Ag	Au	Pb	Sb	U	Sn	W		
Method Sample #										<i>LG20</i>		<i>AM/1</i>		<i>XRF</i>	<i>XRF</i>		
<i>BR6</i>	<i>100</i>	<i>1.5%</i>	<i>bld</i>	<i>20</i>	<i>10</i>	<i>25</i>	<i>6</i>	<i>bld</i>	<i>bld</i>	<i>bld</i>	<i>25</i>	<i><1</i>	<i>0.2</i>	<i>6</i>	<i><10</i>		
<i>BR7</i>	<i>150</i>	<i>2.35%</i>	<i>75</i>	<i>50</i>	<i>45</i>	<i>75</i>	<i>12</i>	<i>..</i>	<i>..</i>	<i>..</i>	<i>50</i>	<i><1</i>	<i>1.0</i>	<i><3</i>	<i><10</i>		
<i>BR8a</i>	<i>290</i>	<i>6900</i>	<i>10</i>	<i>25</i>	<i>10</i>	<i>20</i>	<i>1</i>	<i>..</i>	<i>..</i>	<i>..</i>	<i>15</i>	<i><1</i>	<i>0.7</i>	<i>3</i>	<i><10</i>		
<i>BR8b</i>	<i>135</i>	<i>3750</i>	<i>bld</i>	<i>15</i>	<i>10</i>	<i>15</i>	<i>bld</i>	<i>bld</i>	<i>..</i>	<i>..</i>	<i>bld</i>	<i><1</i>	<i>0.4</i>	<i><3</i>	<i><10</i>		
REMARKS:																	
Logged or Sampled by: <i>R.H./K.K.</i>										Date:							

Project No: _____
 Drawing No: *A4-*
 THE BROKEN HILL PROPRIETARY CO. LTD.
GENERAL SAMPLE DESCRIPTION
 Cont'd: _____
 Date: _____

REGION: NWTAS	PROJECT NO: T670	PROSPECT: Neasy Plains	GRID CO-ORDS:	LOCAL A.M.G.													
DESCRIPTION	Sample Type: Soil	Rock Type:	Soil/Sediment Size Fraction: - 40 mesh														
	NPA 12 red-yellow clay some quartz & amphibole in float																
	NPA 15 yellow-grey clay on weathered siltstone																
	NPA 15 23 yellow-grey clay rich in black pyritic slates																
ANALYSIS																	
	Laboratory ANALABS	Batch No	Date Analysed														
Element	Cr	Fe	Co	Ni	Cu	Zn	As	Mo	Ag	Au	Pb	Sn	Sb	W	U		
NPA 12	285	5.60%	10	55	30	20	20	x	1.0	0.021	40	6	<1	<10	0.6		
13	30	1.45%	15	10	5	5	11	x	x	0.016	20	10	4	"	1.1		
14	20	14.0%	x	10	10	5	27	*	x	x	30	3	<1	"	1.6		
15	40	2.95%	5	30	20	20	20	x	x	x	25	10	"	"	2.6		
16	35	1.65%	5	20	15	10	35	x	x	x	20	5	2	"	3.2		
17	45	2.30%	5	15	5	5	15	x	x	x	20	<3	<1	"	1.7		
18	30	1.35%	x	20	10	5	14	x	.9	x	5	10	"	"	2.1		
19	55	2.20%	10	10	10	10	43	x	x	x	10	8	"	"	2.5		
20	60	14.50	x	10	5	5	7	x	.5	x	5	4	"	"	2.5		
21	65	5450	x	10	15	5	20	5.0	1.0	x	35	7	3	"	6.0		
22	50	5600	15	10	15	5	14	x	.5	x	25	6	4	"	3.2		
23	85	8300	5	15	20	5	10	1.5	x	x	5	8	6	"	2.8		
Logged or Sampled by: R.H. K.K.										Date: 23/12/81							

Project No: _____
 Drilling No: A4-
 THE BROKEN HILL PROPRIETARY CO. LTD.
 GENERAL SAMPLE DESCRIPTION
 Centre: _____
 Date: _____

REGION: NW TAS										PROJECT NO.: T670			PROSPECT: Neasy Plains				GRID CO-ORDS.:			LOCAL A.M.G.		
DESCRIPTION		Sample Type: SOIL			Rock Type:			Soil/Sediment Size Fraction: -40 mesh					Project No.:		Drawing No. A4-							
<p>- follow-up Esse E.M. anomalies in Neasy Plains area.</p> <p>- NPA 4 red soil on weathered amphibolite & excess pyrochlore, 40 mesh exposure</p> <p>- NPA 11 grey laminae pyritic black shale</p>																						
ANALYSIS		Laboratory ANALABS				Batch No 14-4-08-707		Date Analysed 4/12/81			THE BROKEN HILL PROPRIETARY CO. LTD. GENERAL SAMPLE DESCRIPTION											
Element	Cr	Fe	Co	Ni	Cu	Zn	As	Mo	Ag	Au							Pb	Sn	Sb	W	U	
Method	AAS								AAS	LG20							AAS	XRF	A11	XRF	A1/FLX	
Sample #	NPA 1	30	2.05%	5	15	10	15	7	x	1.0							x	15	5	<1	<10	1.2
2	30	1.90%	10	15	5	15	8	x	1.0	x							10	15			1.3	
3	15	2.60%	x	25	x	20	8	x	1.0	x							20	9			1.5	
4	40	14.2%	80	60	135	100	12	x	.5	x							245	10			1.5	
5	20	1.90%	5	10	5	10	11	x	1.5	x							30	10			1.2	
6	20	6300	10	5	x	5	4	x	1.0	x							15	15			0.8	
7	120	7.20%	15	30	45	40	15	x	.5	x							50	20			1.2	
8	15	2.85%	10	15	20	15	11	x	1.0	x							20	20		10	1.2	
9	10	4.60%	15	15	15	60	7	x	1.0	x							45	4		<10	1.2	
10	20	2.15%	10	15	10	5	45	x	1.0	x	60	8			4.2							
11	45	2.76%	10	15	30	10	101	x	1.5	x	120	15			5.9							
x = below lower detection limit.										Logged or Sampled by: R.H., K.K.			Date: 23/12/81									
Centre:										Date:												

550083

083



COMLABS Pty Ltd

COMPUTERISED ANALYTICAL LABORATORIES

OUR REF.: COM 800666
 YOUR REF.: Order No. T670/500
 Sheet No. 000631

305 SOUTH ROAD
 MILE END SOUTH
 STH. AUST. 5031
 TEL.: (08) 43 5722
 TELEX: AA 89323

Mr. R. Hine,
 B.H.P. Exploration Co. Ltd.,
 G.P.O. Box 1140L,
HOBART. TAS. 7000.

5.2.81

Dear Sir,

RE: JOB COM 800666

Enclosed are the assays for the samples delivered to our laboratory on
 the 19th December, 1980.

Yours sincerely,

Harry Fishman
 Managing Director

c.c: Mr. A. Goode
 Mr. E. Bumstead

A = T670/500

b = T670/500

084

550085



COMLABS Pty Ltd
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB COM 800666

Results in ppm

<u>SAMPLE</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ni</u>	<u>Cr</u>	<u>Ag</u>	<u>Mo</u>	<u>Au</u>
ARA 20	210	95	46	40	65	<1	<4	<0.05
1	250	70	40	40	85	<1	<4	<0.05
2	145	240	40	32	65	<1	<4	<0.05
3	260	16	46	30	60	<1	<4	<0.05
4	4900	130	55	70	85	<1	18	<0.05
5	270	60	140	75	85	<1	8	<0.05
6	1.05%	70	90	28	70	<1	50	<0.05
7	150	50	380	260	105	<1	4	<0.05
8	1.50%	<4	44	34	180	3	<4	<0.05
9	710	<4	185	140	370	<1	<4	<0.05
30	310	6	210	160	360	<1	<4	<0.05
1	8000	6	70	55	210	2	<4	<0.05
2	1000	<4	240	165	220	<1	<4	<0.05
3	510	8	230	140	210	<1	<4	<0.05
4	380	22	590	340	280	<1	<4	0.15
5	125	20	220	230	290	<1	<4	<0.05
6	105	20	75	60	280	<1	<4	<0.05
ARA 37	80	10	60	50	210	<1	<4	<0.05
T67001A	46	14	210	110	290	<1	<4	<0.05
2	60	16	85	120	290	<1	<4	<0.05
3	60	18	110	195	310	<1	<4	<0.05
4	60	14	110	200	350	<1	<4	<0.05
5	22	6	60	80	200	<1	<4	<0.05
6	48	10	140	170	810	<1	<4	<0.05
7	46	8	155	185	320	<1	<4	<0.05
8	65	10	195	260	800	<1	<4	<0.05
9	18	6	50	40	320	<1	<4	<0.05
010	55	16	110	105	270	<1	<4	<0.05
T67011A	32	34	60	150	220	<1	<4	<0.05



COMLABS Pty Ltd

COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORTJOB COM 800666Results in ppm

<u>SAMPLE</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ni</u>	<u>Cr</u>	<u>Ag</u>	<u>Mo</u>	<u>Au</u>
T67012A	22	4	85	100	140	<1	<4	<0.05
3	16	4	24	14	180	<1	<4	<0.05
4	14	4	38	20	890	<1	<4	<0.05
5	20	<4	48	50	380	<1	<4	<0.05
6	12	<4	22	20	730	<1	<4	<0.05
7	10	<4	18	14	220	<1	<4	<0.05
8	40	10	46	85	370	<1	<4	<0.05
9	14	<4	44	46	175	<1	<4	<0.05
020	12	<4	16	14	240	<1	<4	<0.05
1	16	<4	16	18	180	<1	<4	<0.05
2	12	<4	16	14	170	<1	<4	<0.05
3	18	<4	16	14	260	<1	<4	<0.05
4	14	<4	14	10	170	<1	<4	<0.05
5	38	<4	115	100	610	<1	<4	<0.05
6	28	6	105	140	440	<1	<4	<0.05
7	40	14	70	100	470	<1	<4	<0.05
8	16	<4	16	20	190	<1	<4	<0.05
T67029A	16	<4	18	12	180	<1	<4	<0.05
T67001B	32	<4	185	60	290	<1	<4	<0.05
2	46	10	80	120	330	<1	<4	<0.05
3	55	4	115	195	320	<1	<4	<0.05
4	34	8	90	100	1050	<1	<4	<0.05
5	22	4	44	32	330	<1	<4	<0.05
6	50	10	150	180	970	<1	<4	<0.05
8	50	110	180	200	1300	<1	<4	<0.05
9	20	<4	44	34	480	<1	<4	<0.05
10	80	480	115	130	260	<1	<4	<0.05
12	22	<4	90	70	220	<1	<4	<0.05
T67013B	18	540	22	100	140	<1	<4	<0.05



COMLABS Pty Ltd

COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORTJOB COM 800666Results in ppm

<u>SAMPLE</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ni</u>	<u>Cr</u>	<u>Ag</u>	<u>Mo</u>	<u>Au</u>
T67014B	12	<4	24	34	610	<1	<4	<0.05
5	14	<4	42	38	540	<1	<4	<0.05
6	12	4	38	36	1300	<1	<4	<0.05
7	12	6	20	16	220	<1	<4	<0.05
8	34	12	55	65	440	<1	<4	<0.05
9	16	<4	50	60	260	<1	<4	<0.05
020	14	<4	12	16	195	<1	<4	<0.05
1	12	<4	10	14	175	<1	<4	<0.05
2	10	<4	12	14	175	<1	<4	<0.05
3	12	<4	12	14	175	<1	<4	<0.05
4	12	<4	24	14	115	<1	<4	<0.05
5	30	6	130	100	540	<1	4	<0.05
6	18	<4	60	90	230	<1	<4	<0.05
7	42	16	70	90	690	<1	6	<0.05
8	16	12	16	18	165	<1	<4	<0.05
T67029B	14	<4	12	14	140	<1	<4	<0.05

087

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COMLABS Pty Ltd

COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORTJOB COM 800666Results in ppm

<u>SAMPLE</u>	<u>Sn</u>	<u>W</u>	<u>As</u>	<u>Sb</u>	<u>Ba</u>	<u>Sr</u>
ARA 20	6	10	18	4	480	14
1	8	<10	16	10	420	18
2	<4	10	10	4	460	16
3	<4	<10	16	6	350	16
4	<4	<10	85	14	260	90
5	6	20	60	<4	340	30
6	6	<10	60	10	360	8
7	4	<10	28	20	3300	38
8	<4	<10	<2	6	<10	2450
9	<4	20	40	10	160	60
30	8	<10	26	8	70	40
1	<4	<10	<2	<4	30	2200
2	<4	10	18	<4	80	44
3	6	<10	20	4	50	20
4	6	<10	36	4	20	12
5	6	<10	12	4	310	10
6	<4	<10	46	6	320	6
ARA 37	<4	<10	28	4	300	4
T67001A	12	<10	16	14	90	34
2	6	<10	10	14	90	55
3	8	<10	12	12	115	85
4	6	<10	10	4	95	105
5	4	15	8	8	35	30
6	4	10	14	6	120	95
7	<4	<10	8	<4	220	75
8	<4	<10	6	<4	95	125
9	<4	10	8	<4	110	22
010	14	<10	10	12	230	210
T67011A	<4	15	6	6	95	48

088

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COMLABS Pty Ltd
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORTJOB COM 800666Results in ppm

<u>SAMPLE</u>	<u>Sn</u>	<u>W</u>	<u>As</u>	<u>Sb</u>	<u>Ba</u>	<u>Sr</u>
T67012A	14	10	6	6	85	30
3	<4	<10	2	8	65	16
4	6	15	4	4	40	2
5	<4	<10	3	8	85	24
6	<4	<10	2	16	50	8
7	<4	<10	<2	<4	125	12
8	<4	20	22	<4	70	34
9	14	10	4	6	105	34
020	<4	10	4	12	90	10
1	6	<10	<2	10	105	18
2	<4	<10	2	<4	110	14
3	8	10	2	12	75	12
4	8	<10	2	6	55	6
5	4	<10	10	6	65	150
6	<4	<10	6	6	45	110
7	<4	20	16	6	70	105
8	<4	15	<2	6	40	24
T67029A	4	10	<2	18	50	10
T67001B	8	<10	14	8	50	16
2	6	15	8	<4	95	48
3	<4	<10	8	6	55	70
4	<4	<10	10	4	60	80
5	<4	<10	2	8	15	16
6	8	<10	16	<4	85	105
8	12	<10	8	4	60	135
9	6	15	4	8	90	30
10	14	<10	8	16	330	195
12	10	<10	4	4	45	16
T67013B	12	<10	<2	10	60	18

089

550090

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COMLABS Pty Ltd

COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORTJOB COM 800666Results in ppm

<u>SAMPLE</u>	<u>Sn</u>	<u>W</u>	<u>As</u>	<u>Sb</u>	<u>Ba</u>	<u>Sr</u>
T67014B	4	<10	2	<4	50	4
5	<4	<10	<2	10	75	18
6	18	<10	2	4	15	4
7	4	<10	2	8	80	10
8	<4	<10	24	8	150	36
9	<4	<10	5	12	125	34
020	6	<10	<2	10	70	10
1	6	<10	2	10	115	26
2	<4	15	<2	10	105	18
3	8	10	2	16	50	10
4	<4	<10	<2	16	60	4
5	12	<10	8	<4	45	145
6	<4	10	<2	6	30	85
7	<4	<10	20	16	40	110
8	<4	10	<2	8	40	38
T67029B	6	10	3	10	55	14

Method of Analysis - Cu, Pb, Zn, Ni : AAS 1/1A
 Cr : AAS 2
 Ag, Mo : AAS 3
 Au : AAS 5
 Sn, W, As, Sb, Ba, Sr : XRF 1

080

**COMLABS Pty Ltd**

COMPUTERISED ANALYTICAL LABORATORIES

OUR REF.: COM 810068
YOUR REF.: Project No. T670/500
Sheet No. 000632

305 SOUTH ROAD
MILE END SOUTH
STH. AUST. 5031
TEL.: (08) 43 5722
TELEX: AA 89323

Mr. R. Hine,
B.H.P. Exploration Pty Ltd.,
G.P.O. Box 1140L,
HOBART. TAS. 7001.

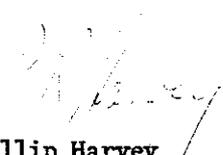
20.2.81

Dear Sir,

RE: JOB COM 810068

Enclosed are the assays for the samples delivered to our laboratory on
the 28th January, 1981.

Yours sincerely,


Phillip Harvey
Laboratory Manager

c.c: Mr. A. Goode
Mr. E. Bumstead



COMLABS Pty Ltd

COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORTJOB COM 810068Results in ppm

<u>SAMPLE</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ni</u>	<u>Cr</u>	<u>Ag</u>	<u>Mo</u>	<u>Au</u>
T67030A	12	4	12	6	38	<1	4	<0.05
1	10	4	14	10	24	1	4	<0.05
2	30	8	90	125	290	1	<4	<0.05
3	16	4	40	80	70	<1	<4	<0.05
4	34	8	85	150	175	<1	<4	<0.05
5	18	<4	28	40	80	<1	<4	<0.05
6	50	8	110	175	260	<1	<4	<0.05
7	38	4	110	140	115	1	<4	<0.05
8	46	16	70	125	165	1	<4	<0.05
9	34	4	80	160	180	<1	<4	<0.05
040A	28	4	95	120	136	<1	<4	<0.05
1	34	8	100	150	120	<1	<4	<0.05
2	20	4	32	50	95	<1	<4	<0.05
3	32	12	42	65	160	1	<4	<0.05
4	24	8	70	125	230	1	<4	<0.05
5	55	12	90	180	210	1	<4	<0.05
6	18	<4	18	48	145	1	<4	<0.05
7	24	<4	80	90	65	1	<4	<0.05
8	16	<4	20	40	185	<1	<4	<0.05
9	18	<4	18	40	70	<1	<4	<0.05
050A	16	<4	26	38	75	<1	<4	<0.05
1	34	4	80	70	120	<1	<4	0.35
2	60	12	80	140	150	1	<4	<0.05
3	14	12	6	22	30	1	<4	<0.05
4	12	4	8	6	30	1	<4	<0.05
5	10	<4	8	6	38	<1	<4	<0.05
6	14	4	10	10	38	1	<4	<0.05
7	8	<4	8	6	18	<1	<4	<0.05
T67058A	18	16	36	20	18	<1	4	<0.05

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COMLABS Pty Ltd

COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORTJOB COM 810068Results in ppm

<u>SAMPLE</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ni</u>	<u>Cr</u>	<u>Ag</u>	<u>Mo</u>	<u>Au</u>
T67059A	10	<4	4	6	12	<1	<4	<0.05
060A	8	<4	4	<4	38	<1	<4	<0.05
1	8	<4	6	<4	10	<1	<4	<0.05
2	10	<4	6	4	75	<1	4	<0.05
3	20	4	20	14	55	<1	4	<0.05
4	12	<4	8	4	8	1	<4	<0.05
5	20	4	140	175	150	1	<4	<0.05
6	26	16	75	50	36	<1	4	<0.05
7	8	<4	8	14	18	<1	<4	<0.05
8	6	<4	4	4	14	<1	<4	<0.05
9	6	<4	2	<4	16	<1	<4	<0.05
070A	4	<4	4	4	16	<1	<4	<0.05
1	8	<4	4	4	16	<1	<4	<0.05
2	10	<4	16	26	46	<1	<4	<0.05
3	6	<4	4	4	16	<1	<4	<0.05
4	12	4	30	32	48	<1	<4	<0.05
5	30	8	120	120	250	<1	<4	<0.05
6	8	<4	6	16	28	<1	<4	<0.05
7	6	<4	4	4	22	<1	<4	<0.05
8	14	4	24	6	20	<1	<4	<0.05
9	6	<4	6	<4	24	<1	<4	<0.05
080A	4	<4	4	<4	12	<1	<4	<0.05
1	6	<4	4	<4	50	<1	<4	<0.05
2	4	<4	4	<4	85	<1	4	<0.05
3	4	<4	4	<4	14	<1	<4	<0.05
4	8	4	10	4	115	<1	4	<0.05
5	4	<4	2	<4	14	<1	<4	<0.05
6	6	<4	6	4	70	<1	4	<0.05
T67087A	8	4	8	<4	70	<1	4	<0.05

ANALYTICAL REPORTJOB COM 810068Results in ppm

<u>SAMPLE</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ni</u>	<u>Cr</u>	<u>Ag</u>	<u>Mo</u>	<u>Au</u>
T67088A	8	<4	6	4	50	<1	<4	<0.05
T67089A	22	24	30	16	22	<1	<4	<0.05
T67030B	8	4	6	<4	14	<1	<4	<0.05
1	4	4	12	8	16	<1	<4	<0.05
2	30	4	130	125	400	<1	<4	<0.05
3	12	<4	50	44	105	<1	<4	<0.05
4	32	8	80	115	240	<1	<4	<0.05
5	18	4	32	12	145	<1	4	<0.05
6	36	4	130	140	320	1	<4	<0.05
7	30	4	125	105	130	<1	4	<0.05
9	30	8	125	140	130	<1	<4	<0.05
040B	26	4	120	100	210	<1	<4	<0.05
1	34	4	170	170	220	<1	<4	<0.05
2	18	8	28	28	120	<1	<4	<0.05
4	24	<4	80	95	250	<1	<4	<0.05
6	16	<4	16	16	340	<1	<4	<0.05
7	34	<4	155	160	210	<1	<4	<0.05
8	14	<4	34	24	810	1	<4	<0.05
9	18	<4	20	30	210	1	<4	<0.05
050B	20	<4	48	40	220	<1	<4	<0.05
1	48	8	115	80	250	<1	<4	<0.05
3	14	40	<2	<4	85	<1	4	<0.05
4	12	8	<2	4	10	<1	<4	<0.05
5	8	4	<2	<4	12	<1	4	<0.05
9	6	<4	<2	<4	8	<1	4	<0.05
062B	6	<4	<2	<4	10	<1	<4	<0.05
3	12	4	4	8	18	<1	4	<0.05
4	8	4	<2	<4	10	<1	<4	<0.05
T67065B	26	8	170	150	135	<1	4	<0.05

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COMLABS Pty Ltd
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORTJOB COM 810068Results in ppm

<u>SAMPLE</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ni</u>	<u>Cr</u>	<u>Ag</u>	<u>Mo</u>	<u>Au</u>
T67066B	44	20	100	32	36	<1	6	<0.05
7	8	<4	<2	8	26	<1	<4	<0.05
8	6	<4	<2	<4	44	<1	<4	<0.05
9	8	<4	<2	<4	28	<1	<4	<0.05
070B	8	<4	<2	<4	28	<1	<4	<0.05
1	6	4	<2	4	18	<1	<4	<0.05
2	14	<4	6	28	36	1	<4	<0.05
3	6	<4	<2	<4	10	<1	<4	<0.05
6	6	<4	<2	<4	16	<1	<4	<0.05
7	2	4	2	<4	12	<1	<4	<0.05
9	4	4	2	<4	6	<1	<4	<0.05
080B	6	<4	2	<4	28	<1	<4	<0.05
1	4	4	4	<4	30	<1	<4	<0.05
2	4	<4	2	<4	32	<1	<4	<0.05
3	2	4	2	<4	12	<1	<4	<0.05
5	2	<4	2	<4	22	<1	<4	<0.05
6	4	4	4	<4	36	<1	<4	<0.05
T67089B	20	120	24	8	22	<1	4	<0.05

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COMLABS Pty Ltd
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORTJOB COM 810068Results in ppm

<u>SAMPLE</u>	<u>As</u>	<u>Sb</u>	<u>Am</u>	<u>Ba</u>	<u>Sr</u>	<u>Sn</u>	<u>W</u>
T67030A	<2	4		100	16	<4	<10
1	4	6		200	24	<4	<10
2	6	<4		110	60	<4	<10
3	4	<4		120	24	<4	<10
4	6	8		80	75	<4	<10
5	12	<4		75	16	4	10
6	6	<4		120	75	<4	<10
7	2	<4		110	75	<4	<10
8	5	8		60	95	<4	<10
9	6	<4		50	70	<4	15
040A	2	<4		40	36	8	<10
1	8	<4		65	45	8	<10
2	3	<4		35	30	<4	<10
3	10	<4		30	25	<4	<10
4	4	<4		25	36	<4	<10
5	6	6		65	100	<4	<10
6	5	<4		<10	6	<4	<10
7	3	<4		50	30	<4	<10
8	<2	<4		<10	4	<4	10
9	<2	<4		35	10	<4	<10
050A	4	<4		10	10	6	<10
1	26	<4	0.25	85	26	<4	<10
2	12	<4		80	40	<4	<10
3	4	8		75	42	<4	<10
4	<2	14		100	12	<4	<10
5	2	4		85	10	<4	<10
6	4	<4		150	14	<4	<10
7	3	<4		160	16	<4	10
T67058A	10	<4		200	22	<4	10

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COMLABS Pty Ltd
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB COM 810068

Results in ppm

<u>SAMPLE</u>	<u>As</u>	<u>Sb</u>	<u>Ba</u>	<u>Sr</u>	<u>Sn</u>	<u>W</u>
T67059A	2	<4	140	10	<4	<10
060A	<2	10	100	6	<4	15
1	<2	6	170	16	<4	<10
2	<2	<4	45	8	10	15
3	3	<4	80	34	4	20
4	<2	10	100	18	8	<10
5	4	6	85	55	<4	<10
6	20	<4	360	28	<4	<10
7	<2	<4	<10	10	6	<10
8	<2	<4	<10	<4	<4	<10
9	<2	<4	<10	<4	<4	<10
070A	<2	<4	<10	<4	<4	<10
1	2	<4	25	6	<4	<10
2	<2	6	<10	<4	<4	<10
3	<2	10	<10	<4	8	<10
4	<2	<4	180	14	<4	20
5	8	4	80	24	<4	15
6	<2	6	10	<4	<4	<10
7	<2	6	<10	<4	8	<10
8	<2	8	110	14	6	<10
9	2	<4	10	4	<4	<10
080A	<2	<4	<10	<4	<4	<10
1	<2	<4	<10	<4	<4	<10
2	<2	<4	<10	<4	<4	<10
3	<2	<4	<10	<4	<4	<10
4	3	<4	110	26	<4	15
5	<2	<4	<10	<4	<4	<10
6	2	10	30	4	<4	<10
T67087A	3	<4	100	26	<4	<10

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COMLABS Pty Ltd

COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORTJOB COM 810068Results in ppm

<u>SAMPLE</u>	<u>As</u>	<u>Sb</u>	<u>Ba</u>	<u>Sr</u>	<u>Sn</u>	<u>W</u>
T67088A	5	<4	95	10	<4	25
T67089A	18	4	230	20	<4	15
T67030B	4	10	70	18	<4	10
1	4	<4	150	18	<4	<10
2	14	<4	100	70	<4	<10
3	10	8	130	24	<4	<10
4	10	6	40	65	<4	<10
5	26	<4	60	10	<4	<10
6	5	<4	80	65	<4	<10
7	6	4	65	75	<4	15
9	8	<4	65	85	8	15
040B	6	4	25	40	<4	10
1	16	<4	85	75	10	<10
2	4	<4	35	28	<4	<10
4	8	<4	20	36	<4	25
6	6	4	<10	6	<4	<10
7	8	<4	40	32	<4	<10
8	4	<4	<10	6	<4	<10
9	8	<4	55	10	<4	<10
050B	6	<4	15	10	<4	<10
1	48	4	150	24	<4	<10
3	16	<4	<10	100	8	15
4	6	<4	110	14	<4	<10
5	3	4	70	10	6	<10
9	3	<4	100	10	6	<10
062B	<2	<4	35	4	<4	10
3	3	<4	80	28	<4	<10
4	3	<4	100	14	<4	<10
T67065B	14	<4	100	90	<4	<10

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COMLABS Pty Ltd

COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB COM 810068

Results in ppm

<u>SAMPLE</u>	<u>As</u>	<u>Sb</u>	<u>Ba</u>	<u>Sr</u>	<u>Sn</u>	<u>W</u>
T67066B	50	<4	400	26	<4	<10
7	<2	<4	15	18	<4	<10
8	<2	<4	25	<4	8	<10
9	<2	<4	20	<4	<4	<10
070B	<2	4	<10	<4	12	10
1	2	<4	20	4	10	<10
2	3	<4	10	4	4	10
3	<2	6	25	<4	<4	<10
6	<2	<4	15	<4	4	<10
7	<2	<4	<10	<4	<4	<10
9	<2	<4	<10	<4	<4	15
080B	<2	<4	30	<4	6	<10
1	<2	<4	20	4	<4	<10
2	<2	<4	25	<4	4	10
3	<2	12	<10	<4	4	<10
5	<2	<4	<10	<4	<4	<10
6	<2	10	40	4	10	<10
T67089B	8	<4	340	18	<4	<10

Method of Analysis - Cu, Pb, Zn, Ni : AAS 1
 Cr : AAS 2
 Ag, Mo : AAS 3
 Au : AAS 5
 As, Sb, Ba, Sr, Sn, W : XRF 1



COMLABS Pty Ltd
COMPUTERISED ANALYTICAL LABORATORIES

OUR REF.: COM 810243
YOUR REF.: Project No. T670
Sheet No. 000639

305 SOUTH ROAD
MILE END SOUTH
STH. AUST. 5031
TEL.: (08) 43 5722
TELEX: AA 89323

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Mr. R. Hine,
B.H.P. Exploration Co. Ltd.,
G.P.O. Box 1140L,
HOBART. TAS. 7001.

24.3.81

Dear Sir,

RE: JOB COM 810243

Enclosed are the results for samples delivered to our laboratory on the 11th March, 1981.

The stream sediments were sieved to 45# which is the closest metric equivalent of 40#.

Yours sincerely,

Harry Fishman
Managing Director

c.c: Mr. A. Goode
Mr. E. Bumstead

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COMLABS Pty Ltd
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB COM 810243

Results in ppm

<u>SAMPLE</u>	<u>Sn</u>	<u>As</u>	<u>W</u>	<u>Ba</u>	<u>Sb</u>	<u>Sr</u>
T67090A	<4	<2	<10	15	<4	3
91	<4	2	10	45	<4	32
2	<4	2	<10	95	<4	28
3	<4	4	<10	25	<4	6
4	4	<2	15	120	<4	32
5	10	<2	<10	100	<4	16
6	<4	5	<10	140	<4	22
7	6	10	<10	70	<4	34
8	12	<2	<10	70	<4	10
9	<4	16	<10	160	6	46
T67100A	12	6	<10	170	<4	38
1	<4	4	<10	240	<4	10
2	<4	4	15	150	<4	18
3	<4	3	15	130	<4	12
4	6	<2	10	90	4	18
5	<4	4	<10	70	<4	30
6	10	<2	<10	95	<4	6
7	4	2	<10	110	4	12
8	<4	2	<10	75	<4	22
9	8	<2	20	130	<4	16
10	10	6	10	190	<4	42
1	4	<2	<10	45	<4	14
2	<4	2	<10	65	<4	12
3	14	<2	<10	140	<4	14
4		Insufficient Sample				
5	<4	8	10	230	<4	18
6	14	3	<10	400	<4	85
7	6	3	<10	110	<4	14
T67118A	6	<2	<10	120	<4	24

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COMLABS Pty Ltd

COMPUTERISED ANALYTICAL LABORATORIES

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ANALYTICAL REPORTJOB COM 810243Results in ppm

<u>SAMPLE</u>	<u>Sn</u>	<u>As</u>	<u>W</u>	<u>Ba</u>	<u>Sb</u>	<u>Sr</u>
T67119A	<4	2	<10	100	<4	70
20	<4	4	20	140	<4	18
1		Insufficient Sample				
2	8	<2	<10	190	<4	22
3	10	<2	<10	210	<4	22
4	14	4	10	55	<4	14
5	12	3	<10	110	<4	20
6	12	<2	<10	65	6	12
7	10	<2	<10	65	<4	8
8	<4	<2	<10	40	<4	6
9	12	<2	10	150	<4	20
30	8	3	<10	90	4	14
1	10	3	<10	130	<4	22
2	10	<2	10	130	<4	16
3	6	<2	<10	<10	6	18
4	6	2	<10	30	<4	6
5	8	2	<10	55	<4	14
6	10	5	10	230	<4	36
7		Insufficient Sample				
8	12	2	<10	110	<4	20
9	<4	4	<10	150	<4	30
40	4	<2	<10	100	<4	26
1	10	<2	<10	90	4	14
2	6	4	<10	170	<4	12
3	6	3	10	180	<4	22
4	6	4	<10	200	<4	28
5	8	4	20	130	<4	24
6	<4	3	<10	65	<4	10
T67147A	6	3	<10	50	<4	8

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COMLABS Pty Ltd

COMPUTERISED ANALYTICAL LABORATORIES

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ANALYTICAL REPORTJOB COM 810243Results in ppm

<u>SAMPLE</u>	<u>Sn</u>	<u>As</u>	<u>W</u>	<u>Ba</u>	<u>Sb</u>	<u>Sr</u>
T67148A	<4	2	15	70	<4	22
9	<4	4	20	100	<4	14
50	<4	<2	<10	130	<4	20
1	10	<2	<10	160	<4	12
2	14	3	<10	250	<4	20
3	<4	<2	15	55	<4	6
4	<4	<2	<10	160	<4	18
5	8	<2	<10	260	<4	26
6	6	2	<10	190	10	16
7	6	2	<10	130	<4	6
8	<4	<2	<10	110	<4	14
9	6	4	<10	240	4	34
60	<4	<2	<10	170	<4	18
1	4	3	15	70	<4	42
2	8	6	15	460	<4	24
3	<4	6	<10	90	<4	26
4	<4	2	<10	160	<4	20
5	6	<2	15	20	10	3
6	<4	2	<10	100	<4	12
7	4	<2	<10	65	<4	18
8	4	3	<10	55	<4	10
9	<4	3	<10	65	<4	12
70	4	<2	<10	65	8	14
1	6	3	<10	240	<4	28
2	<4	10	10	140	<4	14
3	12	2	<10	60	<4	12
4	6	5	<10	65	6	10
5	8	5	15	140	<4	8
T67176A	6	<2	<10	340	<4	26

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COMLABS Pty Ltd
COMPUTERISED ANALYTICAL LABORATORIES

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ANALYTICAL REPORTJOB COM 810243Results in ppm

<u>SAMPLE</u>	<u>Sn</u>	<u>As</u>	<u>W</u>	<u>Ba</u>	<u>Sb</u>	<u>Sr</u>
T67177A	<4	4	<10	460	<4	20
8	8	3	<10	120	<4	14
9	<4	4	<10	80	<4	16
80	12	6	15	120	6	14
1	<4	14	<10	120	<4	12
2	12	6	<10	180	<4	26
3	<4	4	<10	25	<4	6
4	10	12	<10	130	<4	10
5	<4	3	15	65	<4	5
6	<4	3	<10	210	<4	14
7	10	<2	<10	30	<4	8
8	<4	<2	<10	40	<4	10
9	8	<2	<10	85	<4	12
90	<4	<2	<10	25	<4	12
1	12	<2	<10	130	<4	15
2	<4	<2	<10	25	<4	4
3			Insufficient Sample			
4	8	3	<10	20	<4	14
5	<4	3	<10	110	<4	18
6	8	3	10	90	6	14
7	6	2	15	75	<4	14
8	8	<2	<10	80	<4	12
199	4	3	10	90	<4	16
T67200A	12	<2	<10	100	<4	14
1	4	<2	20	110	<4	34
2	12	<2	<10	230	<4	30
3	8	3	<10	85	<4	15
4	10	4	10	250	<4	22
T67205A	24	5	30	100	<4	22

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COMLABS Pty Ltd
COMPUTERISED ANALYTICAL LABORATORIES

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ANALYTICAL REPORTJOB COM 810243Results in ppm

<u>SAMPLE</u>	<u>Sn</u>	<u>As</u>	<u>W</u>	<u>Ba</u>	<u>Sb</u>	<u>Sr</u>
T67206A	4	2	10	100	<4	24
7	<4	2	20	230	<4	30
8	6	<2	<10	230	<4	34
9	8	3	15	150	<4	26
10	8	3	15	240	<4	18
1	8	<2	10	110	<4	18
2	10	4	10	100	<4	12
3	10	12	<10	210	12	24
4		Insufficient Sample				
5	8	2	<10	200	<4	22
6	8	6	20	90	<4	18
7	6	6	<10	130	<4	75
8	8	6	<10	120	<4	20
9	<4	2	<10	130	<4	10
20	6	<2	<10	120	8	14
1	6	<2	<10	140	<4	6
2	6	4	<10	70	<4	38
3	16	10	20	420	<4	28
4	10	4	<10	150	<4	14
5	8	<2	<10	130	<4	12
6	6	4	<10	160	<4	18
7	<4	<2	10	85	<4	14
8	10	5	<10	80	<4	8
9	4	2	<10	170	<4	18
30	10	4	<10	240	<4	26
1	16	<2	<10	200	<4	20
2	6	<2	<10	130	<4	12
3	8	5	<10	35	6	6
T67234A	10	4	15	85	<4	36

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COMLABS Pty Ltd
COMPUTERISED ANALYTICAL LABORATORIES

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ANALYTICAL REPORTJOB COM 810243Results in ppm

<u>SAMPLE</u>	<u>Sn</u>	<u>As</u>	<u>W</u>	<u>Ba</u>	<u>Sb</u>	<u>Sr</u>
T67235A	<4	<2	15	90	<4	<2
T67090B	10	<2	<10	<10	<4	3
91	<4	5	<10	80	<4	38
2	<4	3	<10	85	<4	22
3	8	2	20	35	<4	5
4	6	<2	<10	110	4	32
95	<4	<2	<10	60	<4	12
97	6	6	<10	70	<4	70
98	6	3	15	80	<4	12
100	6	5	<10	90	<4	28
1	6	8	15	180	<4	8
2	6	5	10	100	<4	16
3	8	<2	<10	55	<4	6
104	6	<2	<10	60	<4	14
108	16	<2	<10	85	<4	16
9	4	<2	<10	85	<4	14
112	<4	4	<10	65	<4	14
3	<4	<2	<10	230	<4	12
4	4	3	<10	75	<4	16
15	<4	26	<10	200	<4	14
17	6	2	<10	110	<4	10
18	<4	<2	<10	85	<4	24
20	<4	<2	<10	200	6	12
21	12	<2	<10	95	4	18
128	6	2	<10	45	<4	6
134	6	<2	10	8	<4	6
139	10	6	<10	110	<4	26
40	4	4	<10	80	4	24
T67141	8	<2	10	120	<4	12

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COMLABS Pty Ltd
COMPUTERISED ANALYTICAL LABORATORIES

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ANALYTICAL REPORTJOB COM 810243Results in ppm

<u>SAMPLE</u>	<u>Sn</u>	<u>As</u>	<u>W</u>	<u>Ba</u>	<u>Sb</u>	<u>Sr</u>
T67143B	<4	<2	<10	150	<4	18
4	<4	<2	<10	100	<4	16
5	8	<2	<10	140	<4	20
6	8	5	<10	48	<4	6
7	6	2	<10	25	<4	5
8	<4	2	<10	35	<4	12
9	6	14	<10	75	<4	14
50	8	<2	<10	140	<4	18
1	6	<2	<10	170	<4	10
2	10	<2	<10	180	<4	10
3	<4	<2	<10	25	<4	3
4	<4	<2	<10	60	<4	10
5	<4	3	<10	170	<4	16
6	10	<2	<10	85	<4	8
7	10	4	<10	95	<4	5
8	8	<2	15	75	<4	12
9	14	<2	<10	130	4	24
60	<4	<2	<10	95	<4	10
61	<4	<2	10	60	<4	40
63	<4	<2	<10	40	<4	16
4	8	<2	<10	140	10	18
165	<4	<2	<10	10	<4	3
168	<4	<2	10	50	6	8
9	<4	<2	<10	40	<4	8
70	6	<2	<10	65	8	14
1	<4	3	<10	130	18	20
2	<4	10	<10	85	<4	10
3	14	4	20	60	<4	10
T67174B	<4	4	<10	45	10	8

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COMLABS Pty Ltd
COMPUTERISED ANALYTICAL LABORATORIES

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ANALYTICAL REPORTJOB COM 810243Results in ppm

<u>SAMPLE</u>	<u>Sn</u>	<u>As</u>	<u>W</u>	<u>Ba</u>	<u>Sb</u>	<u>Sr</u>
T67176B	18	2	<10	210	8	34
78	4	5	<10	85	8	14
9	6	5	<10	30	14	14
80	<4	14	<10	85	<4	14
81	6	16	<10	190	10	14
83	<4	3	<10	50	<4	12
4	10	24	10	100	24	12
5	4	<2	<10	50	12	8
6	<4	3	<10	10	<4	6
87	4	<2	<10	<10	8	26
89	4	<2	<10	75	4	10
90	10	<2	<10	20	<4	4
1	6	2	10	90	6	10
92	8	<2	<10	35	4	3
95	10	2	<10	35	4	12
6	8	3	10	55	8	14
7	6	<2	<10	80	8	10
8	8	2	<10	70	6	10
199	6	4	<10	48	14	12
T67200B	10	<2	<10	90	<4	14
201	10	3	<10	85	6	60
203	6	2	<10	35	14	14
4	<4	3	20	100	<4	10
5	8	4	<10	55	12	8
6	6	<2	<10	60	4	18
7	<4	3	10	150	4	28
8	<4	3	<10	85	8	16
09	8	3	<10	100	<4	22
T67211B	8	4	15	75	4	14

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COMLABS Pty Ltd
COMPUTERISED ANALYTICAL LABORATORIES

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ANALYTICAL REPORT

JOB COM 810243

Results in ppm

<u>SAMPLE</u>	<u>Sn</u>	<u>As</u>	<u>W</u>	<u>Ba</u>	<u>Sb</u>	<u>Sr</u>
T67212B	20	3	15	10	20	6
3	10	8	15	170	6	22
4	<4	<2	15	75	<4	22
5	<4	4	15	100	4	14
6	4	4	10	60	12	18
7	8	<2	10	120	10	12
218	<4	3	<10	45	4	12
220	<4	2	<10	40	12	8
1	<4	<2	10	100	4	4
2	<4	<2	<10	50	12	34
3	10	8	10	400	<4	18
4	6	3	<10	85	8	6
5	8	3	<10	15	12	3
227	6	4	<10	75	6	10
8	<4	10	<10	60	6	5
229	14	8	15	130	8	12
233	<4	<2	<10	20	6	4
T67234B	10	3	<10	28	<4	85

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COMLABS Pty Ltd
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORTJOB COM 810243Results in ppm

<u>SAMPLE</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ni</u>	<u>Cr</u>	<u>Ag</u>	<u>Mo</u>	<u>Au</u>
T67090A	6	<4	4	<4	4	<1	<4	<0.05
1	30	8	65	150	190	<1	<4	<0.05
2	12	4	55	125	40	<1	<4	<0.05
3	4	<4	8	8	8	<1	<4	<0.05
4	12	<4	60	175	50	<1	<4	<0.05
5	16	<4	20	16	20	<1	<4	<0.05
6	4	<4	22	8	24	<1	<4	<0.05
7	26	4	60	140	170	<1	<4	<0.05
8	4	<4	18	16	18	<1	<4	<0.05
9	18	20	28	24	34	<1	<4	<0.05
100	18	<4	44	20	26	<1	<4	<0.05
1	12	<4	20	8	14	<1	<4	<0.05
2	8	<4	12	<4	8	<1	<4	<0.05
3	6	8	12	<4	4	<1	<4	<0.05
4	4	4	16	4	8	<1	<4	<0.05
5	16	4	40	60	70	<1	<4	<0.05
6	2	<4	6	<4	8	<1	<4	<0.05
7	4	<4	6	<4	8	<1	<4	<0.05
8	8	<4	16	4	10	<1	<4	<0.05
9	6	<4	14	<4	8	<1	<4	<0.05
110	18	12	44	28	36	<1	<4	<0.05
1	10	<4	18	8	14	<1	<4	<0.05
2	2	<4	12	8	26	<1	<4	<0.05
3	8	<4	18	8	34	<1	<4	<0.05
4	12	<4	16	8	20	<1	<4	<0.05
5	16	4	20	4	14	<1	<4	<0.05
6	12	8	46	12	10	<1	<4	<0.05
7	16	8	14	4	8	<1	<4	<0.05
T67118A	8	<4	20	4	16	<1	<4	<0.05

ANALYTICAL REPORTJOB COM 810243Results in ppm

<u>SAMPLE</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ni</u>	<u>Cr</u>	<u>Ag</u>	<u>Mo</u>	<u>Au</u>
T67119A	32	4	120	180	160	<1	<4	<0.05
120	18	8	28	24	48	<1	<4	<0.05
1	20	8	16	4	38	<1	<4	<0.05
2	10	12	14	<4	4	<1	<4	<0.05
3	8	8	14	<4	8	<1	<4	<0.05
4	14	8	14	<4	10	<1	<4	<0.05
5	6	<4	14	8	8	<1	<4	<0.05
6	10	<4	16	<4	6	<1	<4	<0.05
7	2	<4	4	<4	4	<1	<4	<0.05
8	<2	<4	4	<4	4	<1	<4	<0.05
9	4	<4	6	<4	6	<1	<4	<0.05
130	4	<4	6	<4	20	<1	<4	<0.05
1	6	4	10	<4	10	<1	<4	<0.05
2	4	<4	6	<4	4	<1	<4	<0.05
3	4	<4	4	<4	14	<1	<4	<0.05
4	4	<4	4	<4	4	<1	<4	<0.05
5	<2	<4	4	<4	6	<1	<4	<0.05
6	12	8	34	16	12	<1	<4	<0.05
7	22	16	55	24	28	<1	<4	<0.05
8	10	<4	16	8	14	<1	<4	<0.05
9	10	8	32	8	18	<1	<4	<0.05
140	10	<4	18	16	14	<1	<4	<0.05
1	6	4	10	<4	6	<1	<4	<0.05
2	12	<4	8	<4	20	<1	<4	<0.05
3	10	4	12	<4	10	<1	<4	<0.05
4	8	8	16	<4	8	<1	<4	<0.05
5	8	8	10	<4	8	<1	<4	<0.05
6	6	<4	4	<4	8	<1	<4	<0.05
T67147A	6	<4	6	<4	6	<1	<4	<0.05



COMLABS Pty Ltd
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB COM 810243

Results in ppm

<u>SAMPLE</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ni</u>	<u>Cr</u>	<u>Ag</u>	<u>Mo</u>	<u>Au</u>
T67148A	6	4	6	<4	8	<1	<4	<0.05
9	6	4	10	<4	10	<1	<4	<0.05
150	4	<4	16	<4	10	<1	<4	<0.05
1	145	<4	4	<4	10	<1	<4	<0.05
2	2	<4	6	<4	8	<1	<4	<0.05
3	4	<4	2	<4	10	<1	<4	<0.05
4	6	<4	2	<4	<4	<1	<4	<0.05
5	4	<4	4	<4	<4	<1	<4	<0.05
6	4	<4	4	<4	<4	<1	<4	<0.05
7	4	<4	2	<4	<4	<1	<4	<0.05
8	2	<4	4	<4	<4	<1	<4	<0.05
9	4	<4	20	<4	4	<1	<4	<0.05
160	4	<4	6	<4	<4	<1	<4	<0.05
1	12	16	6	<4	8	<1	<4	<0.05
2	14	12	24	4	6	<1	<4	<0.05
3	14	16	14	<4	8	<1	<4	<0.05
4	2	<4	2	<4	<4	<1	<4	<0.05
5	2	<4	2	<4	<4	<1	<4	<0.05
6	6	<4	6	<4	<4	<1	<4	<0.05
7	2	4	2	<4	6	<1	<4	<0.05
8	<2	<4	2	<4	4	<1	<4	<0.05
9	4	<4	4	<4	6	<1	<4	<0.05
170	4	<4	2	<4	<4	<1	<4	<0.05
1	8	12	22	4	10	<1	<4	<0.05
2	12	4	14	4	<4	<1	<4	<0.05
3	4	<4	4	<4	24	<1	4	<0.05
4	18	<4	12	<4	12	<1	4	<0.05
5	22	<4	8	<4	<4	<1	<4	<0.05
T67176A	2	<4	22	8	4	<1	<4	<0.05

ANALYTICAL REPORTJOB COM 810243Results in ppm

<u>SAMPLE</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ni</u>	<u>Cr</u>	<u>Ag</u>	<u>Mo</u>	<u>Au</u>
T67177A	2	<4	14	4	6	<1	<4	<0.05
8	4	<4	36	12	240	<1	4	<0.05
9	6	<4	40	1	65	<1	<4	<0.05
180	16	4	36	12	80	<1	<4	<0.05
1	170	12	120	140	100	<1	<4	<0.05
2	28	12	46	55	65	<1	<4	<0.05
3	4	4	16	4	80	<1	4	<0.05
4	22	20	18	4	4	<1	2	<0.05
5	12	12	8	<4	24	<1	4	<0.05
6	6	12	14	<4	12	<1	<4	<0.05
7	4	8	10	12	22	<1	<4	<0.05
8	8	8	16	28	14	<1	<4	<0.05
9	8	4	20	48	20	<1	<4	<0.05
190	32	<4	46	100	65	<1	<4	<0.05
1	4	4	12	<4	4	<1	<4	<0.05
2	2	<4	8	4	6	<1	<4	<0.05
3	26	16	55	44	110	<1	<4	<0.05
4	8	8	18	16	30	<1	<4	<0.05
5	6	8	10	<4	6	<1	<4	<0.05
6	8	8	10	<4	18	<1	<4	<0.05
7	6	4	6	<4	28	<1	4	<0.05
8	6	12	6	<4	16	<1	<4	<0.05
9	6	4	6	<4	14	<1	<4	<0.05
200	6	8	18	<4	6	<1	<4	<0.05
1	4	12	16	<4	<4	<1	<4	<0.05
2	6	8	12	<4	4	<1	<4	<0.05
3	6	8	8	<4	16	<1	<4	<0.05
4	6	8	12	<4	6	<1	<4	<0.05
T67205A	6	8	10	<4	28	<1	<4	<0.05

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ANALYTICAL REPORTJOB COM 810243Results in ppm

<u>SAMPLE</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ni</u>	<u>Cr</u>	<u>Ag</u>	<u>Mo</u>	<u>Au</u>
T67206A	4	8	10	<4	6	<1	<4	<0.05
7	12	8	16	<4	<4	<1	<4	<0.05
8	6	8	20	<4	4	<1	<4	<0.05
9	6	8	14	<4	10	<1	<4	<0.05
210	10	12	18	8	10	<1	<4	<0.05
1	12	16	20	4	6	<1	<4	<0.05
2	4	8	8	<4	20	<1	<4	<0.05
3	12	12	14	8	8	<1	8	<0.05
4	10	4	10	<4	8	<1	<4	<0.05
5	6	8	10	<4	4	<1	<4	<0.05
6	4	<4	6	<4	4	<1	<4	<0.05
7	28	4	42	32	12	<1	<4	<0.05
8	12	8	16	8	4	<1	<4	<0.05
9	6	<4	4	4	<4	<1	<4	<0.05
220	6	<4	2	<4	4	<1	<4	<0.05
1	4	<4	4	<4	<4	<1	<4	<0.05
2	4	28	<2	<4	<4	<1	<4	<0.05
3	6	12	42	4	8	<1	<4	<0.05
4	10	8	6	<4	<4	<1	<4	<0.05
5	4	<4	<2	<4	<4	<1	<4	<0.05
6	4	<4	2	<4	4	<1	<4	<0.05
7	20	8	4	<4	8	<1	<4	<0.05
8	20	8	4	<4	4	<1	<4	<0.05
9	4	4	2	<4	30	<1	<4	<0.05
230	6	4	8	<4	26	<1	<4	<0.05
1	6	4	<2	<4	50	<1	4	<0.05
2	2	4	<2	<4	4	<1	<4	<0.05
3	6	<4	2	<4	20	<1	<4	<0.05
T67234A	4	8	6	<4	6	<1	<4	<0.05

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COMLABS Pty Ltd

COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORTJOB COM 810243Results in ppm

<u>SAMPLE</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ni</u>	<u>Cr</u>	<u>Ag</u>	<u>Mo</u>	<u>Au</u>
T67235A	4	4	<2	<4	34	<1	<4	<0.05
T67090B	2	<4	<2	<4	10	<1	<4	<0.05
1	28	8	65	145	210	<1	<4	<0.05
2	8	4	40	70	50	<1	<4	<0.05
3	4	<4	4	4	18	<1	<4	<0.05
4	6	<4	32	70	50	<1	<4	<0.05
095	2	<4	4	4	20	<1	<4	<0.05
097	28	4	50	125	140	<1	<4	<0.05
098	4	4	10	8	20	<1	<4	<0.05
100B	12	8	26	12	16	<1	<4	<0.05
1	12	4	14	4	14	<1	<4	<0.05
2	6	<4	8	<4	10	<1	<4	<0.05
3	4	<4	6	<4	16	<1	<4	<0.05
104	2	<4	6	<4	8	<1	<4	<0.05
108	6	8	10	<4	24	<1	<4	<0.05
9	4	<4	6	<4	14	<1	<4	<0.05
112	2	<4	8	<4	26	<1	<4	<0.05
3	6	<4	10	<4	26	<1	<4	<0.05
4	4	<4	4	<4	12	<1	<4	<0.05
115	24	8	14	4	14	<1	4	<0.05
117	6	8	6	<4	12	<1	<4	<0.05
118	4	8	12	<4	26	<1	<4	<0.05
120	10	4200	26	20	30	<1	<4	<0.05
121	2	8	4	<4	24	<1	<4	<0.05
128	2	4	4	<4	10	<1	<4	<0.05
134	2	<4	<2	<4	14	<1	<4	<0.05
139	8	8	22	4	20	<1	<4	<0.05
140	8	8	8	4	16	<1	<4	<0.05
T67141B	4	<4	6	<4	20	<1	<4	<0.05

ANALYTICAL REPORTJOB COM 810243Results in ppm

<u>SAMPLE</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ni</u>	<u>Cr</u>	<u>Ag</u>	<u>Mo</u>	<u>Au</u>
T67143B	6	<4	8	<4	8	<1	<4	<0.05
4	6	<4	8	<4	12	<1	<4	<0.05
5	6	<4	8	<4	10	<1	<4	<0.05
6	8	<4	8	<4	12	<1	<4	<0.05
7	<2	<4	20	<4	<4	<1	<4	<0.05
8	10	<4	8	<4	16	<1	<4	<0.05
9	10	<4	18	<4	10	<1	<4	<0.05
150	8	<4	14	<4	6	<1	<4	<0.05
1	6	<4	8	<4	8	<1	<4	<0.05
2	8	<4	8	<4	12	<1	<4	<0.05
3	8	<4	4	<4	12	<1	<4	<0.05
4	8	<4	8	<4	14	<1	<4	<0.05
5	6	4	6	<4	10	<1	<4	<0.05
6	12	4	12	<4	10	<1	<4	<0.05
7	8	<4	6	<4	12	<1	<4	<0.05
8	8	4	6	<4	10	<1	<4	<0.05
9	6	<4	8	<4	8	<1	<4	<0.05
160	8	4	8	<4	12	<1	<4	<0.05
1	16	16	8	<4	12	<1	<4	<0.05
163		12	16	<4	10	<1	<4	<0.05
4	8	<4	4	<4	4	<1	<4	<0.05
165	8	<4	2	<4	8	<1	<4	<0.05
168	6	<4	4	<4	12	<1	<4	<0.05
9	6	<4	4	<4	8	<1	<4	<0.05
170	8	<4	4	<4	14	<1	<4	<0.05
1	10	16	14	<4	12	<1	<4	<0.05
2	32	4	8	4	12	<1	<4	<0.05
3	8	4	2	<4	12	<1	<4	<0.05
T67174B	16	4	8	<4	10	<1	<4	<0.05

ANALYTICAL REPORTJOB COM 810243Results in ppm

<u>SAMPLE</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ni</u>	<u>Cr</u>	<u>Ag</u>	<u>Mo</u>	<u>Au</u>
T67176B	<2	<4	10	4	12	<1	<4	<0.05
178	24	<4	50	16	65	<1	<4	<0.05
9	6	4	60	16	110	<1	<4	<0.05
180	14	8	46	16	80	<1	<4	<0.05
181	170	12	135	170	100	<1	<4	<0.05
183	6	8	18	4	90	<1	<4	<0.05
4	24	20	16	4	8	<1	12	<0.05
5	10	8	6	<4	10	<1	<4	<0.05
6	4	<4	4	8	18	<1	<4	<0.05
187	6	4	18	20	34	<1	<4	<0.05
189	4	<4	12	36	20	<1	<4	<0.05
190	10	<4	14	36	40	<1	<4	<0.05
1	4	4	4	<4	10	<1	<4	<0.05
192	<2	<4	<2	<4	10	<1	<4	<0.05
195	2	<4	<2	<4	14	<1	<4	<0.05
6	4	4	4	<4	10	<1	<4	<0.05
7	2	4	2	<4	8	<1	<4	<0.05
8	6	12	6	4	22	<1	<4	<0.05
9	4	4	4	<4	12	<1	<4	<0.05
200B	4	8	20	<4	12	<1	<4	<0.05
201	6	16	16	<4	10	<1	<4	<0.05
203	8	4	8	<4	10	<1	<4	<0.05
4	4	4	2	<4	12	<1	<4	<0.05
5	4	<4	8	<4	20	<1	<4	<0.05
6	4	<4	4	<4	22	<1	<4	<0.05
7	10	<4	10	<4	12	<1	<4	<0.05
8	4	<4	8	<4	14	<1	<4	<0.05
209	4	<4	6	<4	10	<1	<4	<0.05
T67211B	8	<4	8	<4	10	<1	<4	<0.05

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550118



ANALYTICAL REPORT

JOB COM 810243

Results in ppm

<u>SAMPLE</u>	<u>Cu</u>	<u>Pb</u>	<u>Zn</u>	<u>Ni</u>	<u>Cr</u>	<u>Ag</u>	<u>Mo</u>	<u>Au</u>
T67212B	6	<4	4	<4	8	<1	<4	<0.05
3	8	<4	14	4	14	<1	4	<0.05
4	6	<4	8	<4	14	<1	<4	<0.05
5	14	<4	10	<4	22	<1	<4	<0.05
6	6	<4	8	<4	14	<1	<4	<0.05
7	4	<4	8	<4	18	<1	<4	<0.05
218	20	<4	20	8	12	<1	<4	<0.05
220	6	<4	2	<4	16	<1	<4	<0.05
1	4	<4	6	<4	20	<1	<4	<0.05
2	4	24	2	<4	20	<1	<4	<0.05
3	6	4	46	8	16	<1	<4	<0.05
4	8	<4	4	<4	10	<1	<4	<0.05
225	4	<4	<2	<4	14	<1	<4	<0.05
227	14	<4	6	<4	24	<1	<4	<0.05
8	16	<4	6	<4	6	<1	<4	<0.05
229	12	<4	8	4	14	<1	<4	<0.05
233	10	<4	6	<4	30	<1	<4	<0.05
T67234B	2	24	6	<4	20	<1	<4	<0.05

Method of Analysis - Sn, As, W, Ba, Sb, Sr : XRF 1
 Cu, Pb, Zn, Ni : AAS 1
 Cr : AAS 2
 Ag, Mo : AAS 3
 Au : AAS 5

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 Phone (090) 21 1416
 Phone (077) 43 6837
 Phone SUVA 361712

ANALYTICAL REPORT

This report must be read in conjunction with the results given for JOB No. 14.1.01.2656

Client: B.H.P. Exploration Mel Res Labs

(1) P.O. Box 264 Order No. 000388 Date Received 20.5.80
CLAYTON VIC 3168 Reference: Results Required
 Delivered by: Total No. of Samples 4

(2) SAMPLE NUMBERS	STATE OF SAMPLES	Average Weight	PRETREATMENT								ANALYSIS						
	Refer to section (5) for terminology		Dry	Crush	Split	Pulverize	Sieve	Evaporate	(See remarks)	Other	None	Refer to section (5) for terminology		Preparation	Method	Coefficient variation (%)	
ARA 1 5A	HM					1								Sn, W	PP	XRF	
														Al		LG50	

(3) Number of pages of results: 2
 Date Reported: 9-6-80
 Results to: (1) as above (2) _____
 Per: _____
 Number of Copies: 3

(4) Remarks:

Sect 1

(5) STATE OF SAMPLES	ANALYSIS - PREPARATION				ANALYSIS - METHOD		
whole core	WC	perchloric acid	A1	cold acid	CA	atomic absorption	AAS
split core	SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
cutting	CU	nitric acid	A3	other mixed acids	MA	spectrophotometry	SPEC
rock	RO	aqua regia	A4	alkaline attack	AA	colorimetry	COL
soil	SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
pulp	PU	HF mixture	A6	ignition	IG	titration	TTN
water	WA	HF under pressure	A7	pressed powder (XRF)	PP	other chemicals means	CHEM
tissue	TI	fusion	A8	glass fusion (XRF)	GF	miscellaneous	MISC
stream sediment	SS					fluorescence	FLUOR
heavy mineral	HM						

Authorized Officer: *[Signature]*

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Code No. 14-1012656
Page No. _____
Order No. 000333

XRF RESULT SHEET

	SAMPLE No.	Sn	W						
1	ARA1A	720	X						
2	2A	2.43%	X						
3	3A	60	X						
4	ARA5A	40	X						
5									
6									
7									
8									
9									
10									
11									
12									
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	Detection								

RESPONSIBLE OFFICER: [Signature]
21 6 80

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
- = element not determined

120

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Code No. 14-1-01-2656
 Rack No. _____
 Page No. 1
 Order No. 200388

GEOCHEMICAL RESULT SHEET

TUBE No.	SAMPLE No.		As						
1	ARA 1A		X						
2		2A	0.201						
3		3A	X						
4	ARA 5A		X						
5									
6									
7									
8									
9									
10									
11									
12									
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Detection									
Standard	2015		0.615						
Repeat--									
Repeat--									
Method		1050							

RESPOA LE OFFICER
[Signature]
 26/5/80

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

121

550122

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ANALYTICAL REPORT

This report must be read in conjunction with the results given for JOB No. 14.1.01.2508

Client: B H P Mel Res Labs
 (1) 245 Wellington Street Order No. 000385 Date Received 9.5.80
CLAYTON VIC 3168 Reference: Results Required:
 Delivered by: Total No. of Samples 5

(2) SAMPLE NUMBERS	STATE OF SAMPLES	Average Weight	PRETREATMENT								ANALYSIS				
	Refer to section (5) for terminology		Dry	Crush	Split	Pulverize	Sieve	Evaporate	Other (see Remarks)	None	Refer to section (5) for terminology	Preparation	Method	Coefficient of variation (%)	
<u>ARA 1 - 5</u>	<u>SO</u>						<u>1</u>					<u>Cu, Pb, Zn, Co, Ag, Cr, Ni</u>	<u>AL/2</u>	<u>AAS</u>	
												<u>Mo, Bi</u>			
												<u>Sn, W, Sb, As, Rb, Ba</u>	<u>PP</u>	<u>XRF</u>	
												<u>Au</u>		<u>IG50</u>	
												<u>B</u>	<u>A8</u>	<u>COL</u>	
												<u>Be</u>	<u>A8</u>	<u>AAS</u>	

(3) Number of pages of results: 3
 Date Reported: 6-6-80
 Results to: (1) as above (2) _____
 Per: _____
 Number of Copies: 3

(4) Remarks: B, Au to follow

Sheets

(5) STATE OF SAMPLES	ANALYSIS - PREPARATION				ANALYSIS - METHOD	
whole core WC	perchloric acid	A1	cold acid	CA	atomic absorption	AAS
split core SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
cutting CU	nitric acid	A3	other mixed acids	Ma	spectrophotometry	SPEC
rock Ro	aqua regia	A4	alkaline attack	AA	colorimetry	COL
soil SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
pulp PU	HF mixture	A6	ignition	IG	titration	TTN
water WA	HF under pressure	A7	pressed powder (XRF)	PP	other chemicals means	CHEM
tissue TI	fusion	A8	glass fusion (XRF)	GF	miscellaneous	MISC

Authorized *McL...*

122

550123

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Code No. 14/012508

Page No. _____

Order No. 000395

XRF RESULT SHEET

	SAMPLE No.	As	Rb	Sn	Sb	Ba	W			
1	ARA1	X	15	85	8	70	X			
2	2	750	85	1.5%	75	130	X			
3	3	8	80	95	X	180	X			
4	4	630	90	7600	55	240	X			
5	ARA5	20	90	340	5	240	X			
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	Detection	5			5		10			

RESPONSIBLE OFFICER:

J. McLean
5/6/80

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
- = element not determined

123

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Code No. 141 01 2508
 Rack No. L 146
 Page No. 1
 Order No. 000 385

GEOCHEMICAL RESULT SHEET

TUBE No.	SAMPLE No.	Cr	Co	Ni	Cu	Zn	Ag	Mo	Bi	Pb
1	ARA1	2.35%	48	88	15	220	3.5	1.0	X	8
2	2	510	20	26	260	1370	3.5	3.0	48	265
3	3	99	16	29	20	50	0.2	1.0	X	11
4	4	420	23	51	220	4000	3.4	0.5	20	280
5	5	131	10	25	35	220	0.2	2.0	X	21
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Detection		1	1	1	1	1	0.1	0.5	1	1
Standard	FSS	680	48	455	160	105	0.8	100	103	12
Repeat-	ARA1	2.4%	49	90	15	230	X	1.0	X	7
Repeat-										
Method								At.	At.	

RESPON LE OFFICER
 [Signature]
 16/1/80

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

124

550125

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Code No. 141 012508
Rack No. _____
Page No. _____
Order No. 000 335

ASSAY RESULT SHEET

TUBE No.	SAMPLE No.	Be							
1	ARA - 1	10							
2	2	40							
3	3	X							
4	4	30							
5	ARA - 5	10							
6									
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8									
9									
10									
11									
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Detection			S						
Standard	BeO		3.2%						
Repeat -	ARA 1		10						
Repeat -									
Method			AB/AS						

D. West
21 5 80

RESPONSIBLE OFFICER

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
- = element not determined

125

550126

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Code No. 14-1-01-2508
 Rack No. _____
 Page No. 1
 Order No. 000385

GEOCHEMICAL RESULT SHEET

TUBE No.	SAMPLE No.	Au	Ag						
1	ARA 1	X	-						
2	2	1.5	X						
3	3	1.5	X						
4	4	0.014	-						
5	ARA 5	1.5	1.5						
6									
7									
8									
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Detection		0.005	0.05						
Standard	LOW	0.680							
Repeat-	ARA 4	0.023							
Repeat-									
Method	LG50		1/10						

RESPC ALE OFFICER *[Signature]*
 11.1.6.1.80

Results in ppm unless otherwise specified
 T = element present, but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

126

550127

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Code No. 141 01 2508
 Rack No. 99 B
 Page No. 1
 Order No. 000385

GEOCHEMICAL RESULT SHEET

TUBE No.	SAMPLE No.		Bi	Cu	Pb	Zn	Co	Ag	Cr	Ni
1	ARA 1	+80 [#]	14	13	7	93	25	0.1	1.8%	42
2	2		155	560	385	850	17	1.2	680	12
3	3		x	7	6	21	7	x	23	13
4	4		85	425	360	7600	16	3.2	660	22
5	ARA 5	+80 [#]	2	6	4	19	4	>	27	7
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Detection			1	1	1	1	1	0.1	1	1
Standard	FS	S	x	142	10	102	48	0.6	700	470
Repeat-	ARA 1	+80 [#]	12	8	7	93	26	0.1	1.75%	42
Repeat-										
Method			A1/2							

RESULTS IN PPM UNLESS OTHERWISE SPECIFIED
 T = ELEMENT PRESENT; BUT CONCENTRATION TOO LOW TO MEASURE
 X = ELEMENT CONCENTRATION IS BELOW DETECTION LIMIT
 - = ELEMENT NOT DETERMINED

RESPONSIBLE OFFICER [Signature]
 19 / 6 / 80

127

550128

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Code No. 141 01 2508
 Rack No. L63B
 Page No. 2
 Order No. 000335

GEOCHEMICAL RESULT SHEET

TUBE No.	SAMPLE No.		Mo						
1	ARA 1	+80 ⁿ	10.0						
2	2		1.5						
3	3		x						
4	4		0.5						
5	ARA 5	+80 ⁿ	x						
6									
7									
8									
9									
10									
11									
12									
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40									
Detection			0.5						
Standard	Mo		100						
Repeat—	17K-91	+80 ⁿ	100						
Repeat—									
Method			11/6						

RESPONSIBLE OFFICER [Signature]
19/6/80

Results in ppm unless otherwise specified
 T = element present, but concentration too low to measure
 X = element concentration is below detection limit
 — = element not determined

550130

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Code No. 14-1012509Page No. 2Order No. 337

XRF RESULT SHEET

	SAMPLE No.	Sn	W						
1	ARA 10	0.029	0.012						
2	11	4.47	0.024						
3	12	7.22	0.045						
4	13	0.014	X						
5	ARA 14	0.002	X						
6									
7									
8									
9									
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	Detection	0.001	0.005						

RESPONSIBLE OFFICER.....

Results in % unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

130

550131

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Code No. 14-101-2507
Rack No. _____
Page No. _____
Order No. 000387

GEOCHEMICAL RESULT SHEET

TUBE No.	SAMPLE No.								
1	ARA	10	X						
2		11	0.517						
3		12	0.137						
4		13	ES						
5		14	ES						
6									
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9									
10									
11									
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40									
Detection			0.005						
Standard	LOG		0.612						
Repeat-	ARA	10	X						
Repeat-									
Method			ES						

RESISTIBLE OFFICER
[Signature]
16.5.80

Results in ppm unless otherwise specified
T = element present, but concentration too low to measure
X = element concentration is below detection limit
- = element not determined

TELEX ALSEV 42344

Batch No. 1 D128-3 Client: BHP COMPANY LIMITED, Area Contact: DR. R. HINE
 Address: P.O. BOX 559 Address: G.P.O. BOX 1140 L,
 Date Received 21/04/81 CANBERWELL HOBART TAS. 7001
 Date Completed 08/05/81 VIC

Order No. 1 T670 - 000645 Sample Type: STREAM SEDIMENT No. of Samples: 15

SAMPLE NO.	G.M.L.A.B.S.										
	Cu	Pb	Zn	Ag	Mo	As	Sb	Au	Sn	W	ELEMENTS UNITS
	M	M	M	M	M	M	M	M	M	M	METHODS
	1	1	1	1	2	5-B	8	120	XRF 1A	XRF 1A	
T67-236A	10	20	10	1	10	3	10	<0.1	<5	<10	
100 C	20 18	20 <4	10 44	1 <1	10 <4	2 6	10 <4	<0.1 <0.05	<5 12	<10 <10	
101 C	20 12	30 <4	20 20	1 <1	10 ..	7 4	40 <4	<0.1 ..	10 <4	<10 <10	
108 C	20 8	25 <4	20 16	1 ..	15 ..	2 2	20 <4	<0.1 ..	<5 <4	<10 <10	
111 C	20 10	20 <4	25 18	1 ..	10 ..	2 <2	30 <4	<0.1 ..	<5 4	<10 <10	
113 C	20 8	30 <4	35 18	1 ..	10 ..	1 <2	40 <4	<0.1 ..	5 14	<10 <10	
115 C	15 16	20 4	20 20	1 ..	10 ..	3 8	20 <4	<0.1 ..	<5 <4	<10 10	
118 C	10 8	20 <4	20 20	1 ..	10 ..	1 <2	20 <4	<0.1 ..	5 6	<10 <10	
120 C*	25 18	35 8	50 28	1 ..	10 ..	3 4	110 <4	<0.1 ..	<5 <4	<10 20	
124 C	10 14	30 8	20 14	2 ..	10 ..	1 4	20 <4	<0.1 ..	<5 14	<10 10	
181 C	20 170	25 12	30 120	1 ..	10 ..	2 14	40 <4	<0.1 ..	<5 <4	<10 <10	
205 C	10 6	25 8	15 10	1 ..	10 ..	2 5	10 <4	<0.1 ..	15 24	<10 30	
206 C	10 4	20 8	10 10	1 ..	15 ..	2 2	10 <4	<0.1 ..	<5 4	<10 10	
211 C	20 12	30 16	20 20	1 ..	10 ..	2 <2	20 <4	<0.1 ..	5 8	<10 10	
218 C	20 12	30 8	20 16	1 ..	10 ..	4 6	30 <4	<0.1 ..	5 8	<10 <10	

*120B previous report 4200 ppm Pb in ppm conc.

UNITS LEGEND ----- m - Parts per million b - Parts per billion % - percent
 g - Grams a - Absorbance

Signature: A.F. Turley

Computer Measures System

132

LABORATORY REPORT

77 COLONELBYE ROAD,
WOOLLOONGABBA, Q 4102
Ph 07 3916799
TELEX ALSEV 42344

Batch No.: D128-4 Client: BHP COMPANY LIMITED, Area Contact: DR. R. HINE
Address: P.O. BOX 559 Address: G.P.O. BOX 1140 L,
Date Received 21/04/81 CAMBERWELL HOBART TAS. 7008
Date Completed 08/05/81 VIC
Order No.: T670 - 000645 Sample Type: STR. SED. No. of Samples: 15

SAMPLE NO.	Ba		ELEMENTS UNITS METHODS
	m	%	
	XRF 1A		
T67-236A	100		
100 C	140	170	
101 C	220	240	
108 C	110	75	
111 C	120	45	
113 C	150	140	
115 C	200	230	
118 C	120	120	
120 C	240	140	
124 C	160	55	
181 C	60	120	
205 C	140	100	
206 C	110	100	
211 C	120	110	
218 C	180	120	

Campaner Resour. Comm.

UNITS LEGEND ----- m - Parts per million b - Parts per billion % - percent

550133

CONSULTING CHEMISTS & ANALYSTS

OFFICE & LABORATORY
 44 Balaclava Street
 WOODLONGABBA Q 4102
 Ph (07) 391 6799
 A/H 355 0776
 TELEX ALSEV 42344

133

LABORATORY REPORT

Batch No.: D113-2

Client: BHP COMPANY LIMITED,

Area Contact:

Address: G.P.O. BOX 86 A,

Address:

Date Received 11/06/80

MELBOURNE,

Date Completed 11/06/80

VIC.

Order No.: 000614

Sample Type: SOIL, ROCKS

No. of Samples: 4

SAMPLE NO.

Ba

B

ELEMENTS
 UNITS
 METHODS

m

m

150

151

ARA 6

<20

<0.1

ARA 7

<20

<0.1

ARA 8

<20

0.1

ARA 9

<20

<0.1

UNITS LEGEND ----- m - Parts per million
 g - Grams

b - Parts per billion
 a - Absorbance

% - percent

Signature: *[Handwritten Signature]*

550134

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ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

550135

SAMPLE PREFIX
REPORT NUMBER
REPORT DATE
CLIENT ORDER No.
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14.4 00 707

2.2.82

005078

1 OF

TUBE No.	SAMPLE No.	U								
1	HRH 43	0.6								
2	HRH 44	5.2								
3	HRH 45	5.5								
4	HRH 46	5.4								
5	HRH 47	7.2								
6	HRH 48	3.8								
14	NPH 1	1.2								
15	NPH 2	1.3								
16	NPH 3	1.5								
17	NPH 4	1.5								
18	NPH 5	1.2								
19	NPH 6	0.8								
20	NPH 7	1.2								
21	NPH 8	1.2								
22	NPH 9	1.2								
23	NPH 10	4.2								
24	NPH 11	5.9								
25	NPH 12	0.6								

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

AUTHORISED OFFICER

135

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550136

ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

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2.2.82

005078

2 OF

TUBE No.	SAMPLE No.	U							
1	NPH 13	1.1							
2	NPH 14	1.6							
3	NPH 15	2.6							
4	NPH 16	3.2							
5	NPH 17	1.7							
6	NPH 18	2.1							
	NPH 19	2.5							
8	NPH 20	2.5							
9	NPH 21	6.0							
10	NPH 22	3.2							
11	NPH 23	2.6							
12	BR 1H	1.5							
13	BR 2H	1.6							
14	BR 3H	1.4							
15	BR 4H	1.0							
16	BR 5H	0.2							
17	BR 6H	0.2							
18	BR 7H	1.0							
19	BR 8H	0.7							
20	BR 9H	0.6							
21	BR 10H	1.2							
22	BR 11H	1.0							
23	BR 4B	0.4							
24	BR 5B	0.6							
25	BR 8B	0.4							

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

AUTHORISED OFFICER

B. Don

138

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550137

ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

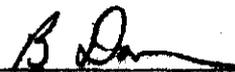
CLIENT ORDER No.

PAGE

			14.4 08 767	2.2.82	085078	OF		
TUBE No.	SAMPLE No.	U						
1	BR 9B	0.7						
2	BR 10B	0.5						
3	BR 11B	0.4						
4	BR 4C	0.6						
5	BR 5C	1.5						
6	BR 9C	0.4						
	BR 10C	0.7						
8	BR 11C	0.6						
9	NPA 6A	0.2						
10	NPA 7A	0.6						
11	NPA 10A	0.8						
12	NPA 14A	0.2						
13	NPA 15A	0.6						
14	T67153C	X						
15	T67153D	X						
16	T67153E	0.1						
17								
18								
19								
20								
21								
22								
23	DETECTION	0.1						
24	DIGESTION	RI						
25	METHOD	RI/FDI						

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

AUTHORISED OFFICER



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550138

ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

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CLIENT ORDER No.

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005078

1 OF 3

TUBE No.	SAMPLE No.	Sn	Sb	W						
1	HRA 43	X	X	X						
2	HRA 44	X	6	X						
3	HRA 45	X	3	X						
4	HRA 46	3	5	X						
5	HRA 47	X	4	X						
6	HRA 48	X	5	X						
7										
8										
9										
10										
11										
12										
13										
14	NPA 1	5	X	X						
15	NPA 2	15	X	X						
16	NPA 3	9	X	X						
17	NPA 4	10	X	X						
18	NPA 5	10	X	X						
19	NPA 6	15	X	X						
20	NPA 7	20	X	X						
21	NPA 8	20	X	10						
22	NPA 9	4	X	X						
23	NPA 10	8	X	X						
24	NPA 11	15	X	X						
25	NPA 12	6	X	X						

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

AUTHORISED OFFICER

B. Don

138

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550139

ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

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005078

2 OF 3

TUBE No.	SAMPLE No.	Sn	Sb	H						
1	NPH 13	10	4	X						
2	NPH 14	8	X	X						
3	NPH 15	10	X	X						
4	NPH 16	5	2	X						
5	NPH 17	X	X	X						
6	NPH 18	10	X	X						
7	NPH 19	8	X	X						
8	NPH 20	4	X	X						
9	NPH 21	7	3	X						
10	NPH 22	6	4	X						
11	NPH 23	8	6	X						
12	BR 1A	5	X	X						
13	BR 2A	8	4	10						
14	BR 3A	7	X	10						
15	BR 4A	5	X	X						
16	BR 5A	8	3	X						
17	BR 6A	6	X	X						
18	BR 7A	X	X	X						
19	BR 8A	3	X	X						
20	BR 9A	X	X	X						
21	BR 10A	8	3	X						
22	BR 11A	3	X	X						
23	BR 4B	6	X	X						
24	BR 5B	5	X	X						
25	BR 6B	X	X	X						

Results in ppm unless otherwise specified

- T = element present; but concentration too low to measure
- X = element concentration is below detection limit
- = element not determined

AUTHORISED OFFICER

B. Don

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550140

ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

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PAGE

		14.4 88 787			4.1.81		885878		3 OF 3	
TUBE No.	SAMPLE No.	Gr	Sb	W						
1	BR 9B	8	X	X						
2	BR 10B	4	X	X						
3	BR 11B	4	X	X						
4	BR 4D	8	X	10						
5	BR 5C	X	X	X						
6	BR 9C	X	X	X						
7	BR 10C	3	X	X						
8	BR 11C	8	X	X						
9	NPH 6A	5	X	X						
10	NPH 7A	8	X	X						
11	NPH 10A	7	X	10						
12	NPH 14A	9	X	X						
13	NPH 15A	3	X	X						
14	T 67153C	X	X	X						
15	T 67153D	X	X	X						
16	T 67153E	X	X	X						
17										
18										
19										
20										
21										
22										
23	DETECTION	3	1	10						
24	LIGATION		H11							
25	METHOD	KRF	H11/1	KRF						

Results in ppm unless otherwise specified

Y = element present; but concentration too low to measure

X = element concentration is below detection limit

- = element not determined

AUTHORISED
OFFICER*B. Dore*

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A division of MacDonald Hamilton & Co. Pty. Ltd.

550141

ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

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005078

1 OF 8

TUBE No.	SAMPLE No.	Cr	Fe	Co	Ni	Cu	Zn	Pb	Mo
1	ARR 43	55	4.95%	35	95	95	130	18	X
2	ARR 44	20	6400	20	70	75	65	43	X
3	ARR 45	15	7850	X	25	20	15	20	21.5
4	ARR 46	35	2.45%	20	85	70	60	44	X
5	ARR 47	55	2.30%	10	90	40	35	25	13.5
6	ARR 48	50	6550	10	170	95	55	41	X
8									
9									
10									
11									
12									
13									
14	NPA 1	30	2.05%	5	15	10	15	7	X
15	NPA 2	30	1.90%	10	15	5	15	8	X
16	NPA 3	15	2.60%	X	25	X	20	8	X
17	NPA 4	40	14.2%	80	60	135	100	12	X
18	NPA 5	20	1.50%	5	10	5	10	11	X
19	NPA 6	20	6300	10	5	X	5	4	X
20	NPA 7	120	7.20%	15	30	45	40	15	X
21	NPA 8	15	2.85%	10	15	20	15	11	X
22	NPA 9	10	4.60%	15	15	15	60	7	X
23	NPA 10	20	2.15%	10	15	10	5	45	X
24	NPA 11	35	2.70%	10	15	30	10	101	X
25	NPA 12	285	5.60%	10	55	30	20	20	X

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

AUTHORISED OFFICER

B. D.

141

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A division of MacDonald Hamilton & Co. Pty. Ltd.

550142

ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

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PAGE

TUBE No.	SAMPLE No.	Cr	Fe	Co	Ni	Cu	Zn	Pb	Mn
		14.4 08 707			4.12.81		005078		2 OF 2
1	NPA 13	30	1.45%	15	10	5	5	11	X
2	NPA 14	20	1.40%	X	10	10	5	27	X
3	NPA 15	40	2.95%	5	30	20	20	20	X
4	NPA 16	35	1.65%	5	20	15	10	35	X
5	NPA 17	45	2.30%	5	15	5	5	15	X
6	NPA 18	30	1.35%	X	20	10	5	14	X
7	NPA 19	55	2.20%	10	10	10	10	43	X
8	NPA 20	60	1450	X	10	5	5	7	X
9	NPA 21	65	5950	X	10	15	5	20	5.0
10	NPA 22	50	5600	15	10	15	5	14	X
11	NPA 23	85	8300	5	15	20	5	10	1.5
12	BR 1a /	75	7250	15	20	5	5	3	X
13	BR 2a /	135	9300	10	25	5	10	3	X
14	BR 3a /	110	3.60%	10	25	10	10	5	X
15	BR 4a /	105	5700	10	15	5	5	2	X
16	BR 5a /	70	8100	5	25	5	20	1	X
17	BR 6a /	100	1.50%	X	20	10	25	6	X
18	BR 7a /	150	2.35%	75	50	45	75	12	X
19	BR 8a /	200	6900	10	25	10	20	1	X
20	BR 9a /	95	1.35%	X	30	10	20	2	X
21	BR 10a /	315	1.55%	10	30	10	25	2	X
22	BR 11a /	135	1.45%	10	30	15	20	2	X
23	BR 4b /	165	3150	X	20	X	5	1	X
24	BR 5b /	165	3550	X	15	15	15	X	X
25	BR 6b /	135	3750	X	15	10	15	X	X

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

AUTHORISED OFFICER

B. Dora

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

550143

ANALYTICAL DATA

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TUBE No.	SAMPLE No.	Cr	Fe	Co	Ni	Cu	Zn	Mn	Mo
1	BR 9b /	155	5000	X	20	5	15	1	X
2	BR 10b /	120	2400	X	15	5	10	X	X
3	BR 11b /	175	3500	X	20	10	15	X	X
4	NPA 6a /	155	6500	X	15	5	15	4	X
5	NPA 7a /	230	8500	X	25	5	25	3	X
6	NPA 10a /	155	2500	X	15	5	15	2	X
7	NPA 14a /	250	7150	X	20	10	20	5	X
8	NPA 15a /	230	6250	X	20	15	15	13	X
9	T671530 /	245	1900	X	15	5	10	1	X
10	T671530 /	240	1700	X	15	10	25	X	X
11	T67153E /	250	1850	5	10	5	10	X	X
12									
13	BR 4c /	250	3300	X	20	5	10	X	X
14	BR 5c /	195	2650	X	20	10	10	X	X
15	BR 9c /	210	3800	X	10	15	15	X	X
16	BR 10c /	180	2600	X	20	10	10	X	X
17	BR 11c /	245	3350	X	15	10	25	X	X
18									
19									
20									
21									
22									
23									
24									
25									

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

AUTHORISED OFFICER



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A division of MacDonald Hamilton & Co. Pty. Ltd.

550144

ANALYTICAL DATA

SAMPLE PREFIX

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005078

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TUBE No.	SAMPLE No.	Cr	Fe	Co	Ni	Cu	Zn	Pb	Mn
1	STD FS4	1450	7.20%	120	1650	290	685	25	X
2	RPT HRA 43	60	4.50%	35	90	95	125	14	X
3	RPT NPA 7	145	7.30%	20	35	50	35	13	X
4	STD FS4	1350	6.30%	100	1650	295	675	22	X
5	RPT BR 5a	75	7950	X	20	5	15	1	X
6	RPT T67153D	245	1750	X	10	10	25	X	X
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23	DETECTION	5	50	5	5	5	5	1	0.5
24	DIGESTION	A1	A1	A1	A1	A1	A1	A1	A1
25	METHOD	A1/1	A1/1	A1/1	A1/1	A1/1	A1/1	A1/3	A1/6

Results in ppm unless otherwise specified

- T = element present; but concentration too low to measure
- X = element concentration is below detection limit
- F = element not determined

AUTHORISED OFFICER

B. Dan

144

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A division of MacDonald Hamilton & Co. Pty. Ltd.

550145

ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

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4.12.81

00507e

5 OF 8

TUBE No.	SAMPLE No.	Hg	Pb	Pb					
1	HRH 43	X	X	50					
2	HRH 44	0.5	X	70					
3	HRH 45	0.5	X	45					
4	HRH 46	0.5	X	35					
5	HRH 47	0.5	X	40					
6	HRH 48	0.5	X	45					
8									
9									
10									
11									
12									
13									
14	NPH 1	1.0	X	15					
15	NPH 2	1.0	X	10					
16	NPH 3	1.0	X	20					
17	NPH 4	0.5	X	245					
18	NPH 5	1.5	X	30					
19	NPH 6	1.0	X	15					
20	NPH 7	0.5	X	50					
21	NPH 8	1.0	X	20					
22	NPH 9	1.0	X	45					
23	NPH 10	1.0	X	60					
24	NPH 11	1.5	X	120					
25	NPH 12	1.0	0.021	40					

Results in ppm unless otherwise specified

- T = element present; but concentration too low to measure
- X = element concentration is below detection limit
- = element not determined

AUTHORISED OFFICER

B. Dorr

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

550146

ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

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005078

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TUBE No.	SAMPLE No.	Hg	HU	Pb					
1	NPA 13	X	0.016	20					
2	NPA 14	X	X	30					
3	NPA 15	X	X	25					
4	NPA 16	X	X	20					
5	NPA 17	X	X	20					
6	NPA 18	0.5	X	15					
7	NPA 19	X	X	10					
8	NPA 20	0.5	X	5					
9	NPA 21	1.0	X	35					
10	NPA 22	0.5	X	25					
11	NPA 23	X	X	5					
12	BR 1a	X	X	X					
13	BR 2a	X	X	5					
14	BR 3a	X	X	20					
15	BR 4a /	X	X	10					
16	BR 5a /	X	X	15					
17	BR 6a /	X	X	25					
18	BR 7a /	X	X	50					
19	BR 8a /	X	X	15					
20	BR 9a /	X	X	15					
21	BR 10a /	X	X	10					
22	BR 11a /	X	X	20					
23	BR 4b /	X	X	X					
24	BR 5b /	X	X	10					
25	BR 6b /	X	X	X					

Results in ppm unless otherwise specified

T = element present; but concentration too low to measure

X = element concentration is below detection limit

- = element not determined

AUTHORISED OFFICER

B. Don

146

550147

ANALABS

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ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

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TUBE No.	SAMPLE No.	Hg	Pb	Pb					
1	BR 9b <	X	X	10					
2	BR 10b /	X	X	10					
3	BR 11b /	X	X	5					
4	NPA 6a /	X	X	10					
5	NPA 7a /	X	X	20					
6	NPA 10a /	X	X	15					
7	NPA 14a /	X	X	15					
8	NPA 15a /	X	X	10					
9	T67153C <	X	X	10					
10	T67153D <	X	X	25					
11	T67153E /	X	X	10					
12									
13	BR 4c /	X	X	5					
14	BR 5c /	X	X	5					
15	BR 9c /	X	X	10					
16	BR 10c /	X	X	10					
17	BR 11c /	X	X	15					
18									
19									
20									
21									
22									
23									
24									

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

AUTHORISED OFFICER *B. Dan*

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

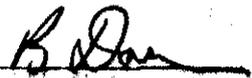
CLIENT ORDER No.

PAGE

		14.4 08 707			4.12.81		005078		8 OF 8	
TUBE No.	SAMPLE No.	Hg	Pb	Pb						
1	STD FS4	0.5	-	110						
2	RPT ARA 43	X	-	45						
3	RPT NPA 7	X	-	60						
4	STD FS4	1.5	-	105						
5	RPT BR 53	X	-	25						
6	RPT T67153D	X	-	30						
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	0.5	0.008	5						
24	DIGESTION	A1		A1						
25	METHOD	A1/1	LG20	A1/1						

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

AUTHORISED OFFICER



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TELEX ALSEV 42344

148

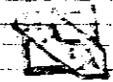
LABORATORY REPORT

Batch No.: C144 Client: BHP COMPANY LIMITED, Area Contact: DR. RICK HINE.
Address: G.P.O. BOX 86 A, Address: G.P.O. BOX 1140 L,
Date Received 25/03/80 MELBOURNE. HOBART, TAS. 7001.
Date Completed 09/05/80 VIC.
Order No.: 000613 Sample Type: ROCK, SOIL, S/S No. of Samples: 45

SAMPLE NO.	Cu	Pb	Zn	Ag	Ni	Co	Mn	As	Sb	Au
	M	M	M	M	M	M	M	M	(M) B	(M) W
	1	1	1	1	1	1	2	5-B	8-A	120-A
AR 2 ✓	240	40	210	2	50	40	5	26		10
AR 3 ✓	0.84	% 20	105	2	25	40	2	2		10

UNITS LEGEND --- M - Parts per million B - Parts per Billion % - percent
g - Grams a - Absorbance

Signature: *[Handwritten Signature]*



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LABORATORY REPORT

Batch No.: C144 Client: BHP COMPANY LIMITED Area Contact: DR. RICK HINE
 Address: G.P.O. BOX 86 A Address: G.P.O. BOX 1140 L
 Date Received: 25/03/80 MELBOURNE, VIC. HOBART, TAS. 7001
 Date Completed: 23/05/80

Order No.: 000613 Sample Type: ROCK, SOIL, S/S No. of Samples: 45

SAMPLE NO.	Cu	Pb	Zn	Ag	Ni	Co	Mn	As	Sb	Au	ELEMENTS
	M	M	M	M	M	M	M	M	M	M	UNITS
	1	1	1	1	1	1	2	5-B	8-A	120-A	METHODS
AR 2	248	48	210	2	50	40	5	26	1	10	
AR 3	0.84	% 20	105	2	25	40	2	2	<1	10	

UNITS LEGEND ----- m - Parts per million b - Parts per billion % - percent
 g - Grams a - Absorbance

Signature: *[Handwritten Signature]*



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LABORATORY REPORT

Batch No.: L245 Client: BHP COMPANY LIMITED, Area Contact: DR. RICK HINE.
 Address: P.O. BOX 559 Address: G.P.O. BOX 1140 L,
 Date Received 26/11/80 CAMBERWELL HOBART, TAS. 7001.
 Date Completed 05/01/81 VIC

Order No.: T600 - 00062B Sample Type: ROCKS No. of Samples: 16

SAMPLE NO.	Cu	Pb	Zn	Ag	Ni	Cr	Co	Sb	Sn	W
	m	m	m	m	m	m	m	m	m	m
	1	1	1	1	1	1	1	8	XRF 1A	XRF 1A
ARA 15	500	75	80	2				10	<5	
ARA 16	20	15	10	1				10	10	
ARA 17	65	35	55	1				10	<5	
ARA 18	2	10	5	1				<10	5	
ARA 19	10	35	25	1				10	10	

UNITS LEGEND ----- m - Parts per million b - Parts per billion Z - percent
 g - Grams a - Absorbance

Signature: *A. J. Finlayson*

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Ph 07 3916799
TELEX ALSEV 42344

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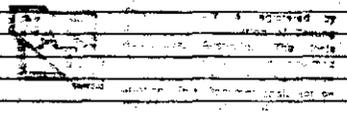
Batch No.: D128-A Client: BHP COMPANY LIMITED, Area Contact: DR. R. HINE
Address: P.O. BOX 559 Address: G.P.O. BOX 1140 L,
Date Received 21/04/81 CAMBERWELL HOBART TAS. 7001
Date Completed 08/05/81 VIC
Order No.: T670 - 000645 Sample Type: ROCK No. of Samples: 5

SAMPLE NO.	Sn	W	ELEMENTS
	m	m	UNITS
	XRF 1A	XRF 1A	METHODS

ARA 42 (5 (10

UNITS LEGEND ----- m - Parts per million b - Parts per billion % - percent
g - Grams a - Absorbance

Signature: *[Handwritten Signature]*



550155

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LABORATORY REPORT

Batch No.: B126 Client: BHP COMPANY LIMITED, Area Contact: DR. R. HINE
Address: P.O. BOX 559 Address: G.P.O. BOX 1140 L,
CAMBERWELL HOBBART TAS 7001
Date Received 17/02/81
Date Completed 04/03/81 VIC
Order No.: T640/000635 Sample Type: S.SED/ROCK/SOIL No. of Samples: 37

SAMPLE NO.	Cu	Pb	Zn	Ag	Au	As	Mo	Sn	W	Ni	ELEMENTS
	μ	μ	μ	μ	b	μ	μ	μ	μ	μ	UNITS
	1	1	1	1	120-A	5-B	2	XRF-1A	XRF-1A	1	METHODS
ARA 40	40	15	10	1	105	30	5	<5	<10	15	
ARA 41	35	45	40	3	30	160	<2	<5	<10	55	

UNITS LEGEND ----- μ - Parts per million b - Parts per billion % - percent
g - Grams a - Absorbance



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LABORATORY REPORT

Ph 02 3525577
TELEX ALSEV 42344

Batch No.: H158 Client: BHP COMPANY LIMITED Area Contact: DR. R. HINE
Date Received: 20/08/81 Address: P.O. BOX 559 Address: G.P.O. BOX 1140 L,
Date Completed: 16/10/81 CAMBERWELL HOBART TAS. 7001
VIC 3124
Order No.: 005063 Sample Type: ROCK CORE No. of Samples: 16

SAMPLE NO.	Cu	Pb	Zn	Ag	Mo	As	Sb	Au	Sn	W	ELEMENTS UNITS
	m	m	m	m	m	m	m	m	m	m	
	1	1	1	1	2	5-B	XRF 1A	120	XRF 1A	XRF 1A	METHODS
BR 1	30	0.13	% 680	3	<2	40	<4	<0.1	5	<10	
BR 2	25	190	510	2	10	35	<4	<0.1	<5	<10	
BR 3	20	0.11	% 0.13	% 2	10	4	<4	<0.1	5	<10	

UNITS LEGEND ----- m - Parts per million b - Parts per billion % - percent
g - Grams a - Absorbance

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LABORATORY REPORT

Batch No.: B126-1 Client: BHP COMPANY LIMITED, Area Contact: DR. R. HINE
 Address: P.O. BOX 559 Address: G.P.O. BOX 1140 L,
 CAMBERWELL HOBART TAS 7001
 Date Received 17/02/81
 Date Completed 04/03/81 VIC
 Order No.: T640/000635 Sample Type: S.SED/ROCK/SOIL No. of Samples: 37

SAMPLE NO.	Sb	Ce	Cr	Ba	Sr	ELEMENTS
	m	m	m	m	m	UNITS
	B	1	1	XRF-1A	XRF-1A	METHODS

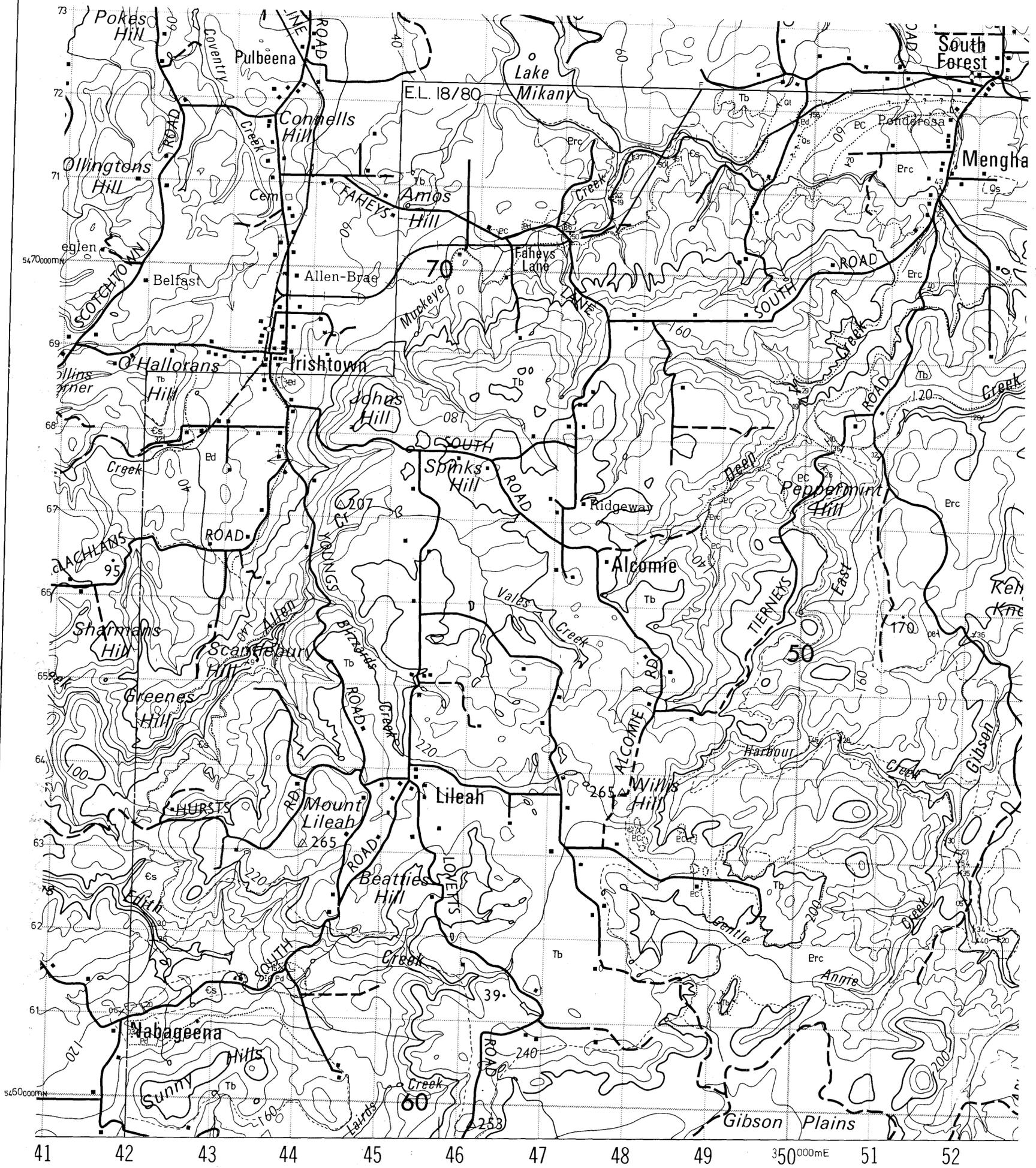
ARA 38	30	10	145	60	10
ARA 39	4504	35	55	20	10

UNITS LEGEND ----- m - Parts per million b - Parts per billion % - percent
 g - Grams a - Absorbance

Signature: *[Handwritten Signature]*



550159



CONTOUR INTERVAL 20 METRES

10'

PRODUCED BY LANDS DEPARTMENT TASMANIA.

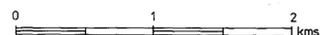
SEDIMENTARY ROCKS	
QUATERNARY	<p>qs dune sand - well sorted quartz sands containing dark minerals.</p> <p>al agglomerate - poorly sorted angular and rounded fragments mainly of quartz, cemented by hematite.</p>
CAMBRIAN	<p>Es tuffaceous siltstone, graywackes and blackshale.</p>
	<p>Ed Smithton Dolomite - interbedded blue-grey to black cherty dolomite and shale.</p>
PRECAMBRIAN	<p>Ec Conglomerate and Quartzite (unassigned) white saccharoidal quartzite with conlomerate horizons.</p> <p>Erc Cowrie Siltstone correlate - predominantly finely laminated grey and light yellow siltstone with sequences of laminated quartzite.</p>
TERTIARY	<p>Tb basalt</p>

KEY TO SYMBOLS

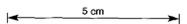
- 40 strike and dip of bedding
- geological boundary
- fault
- extent of mapped geology

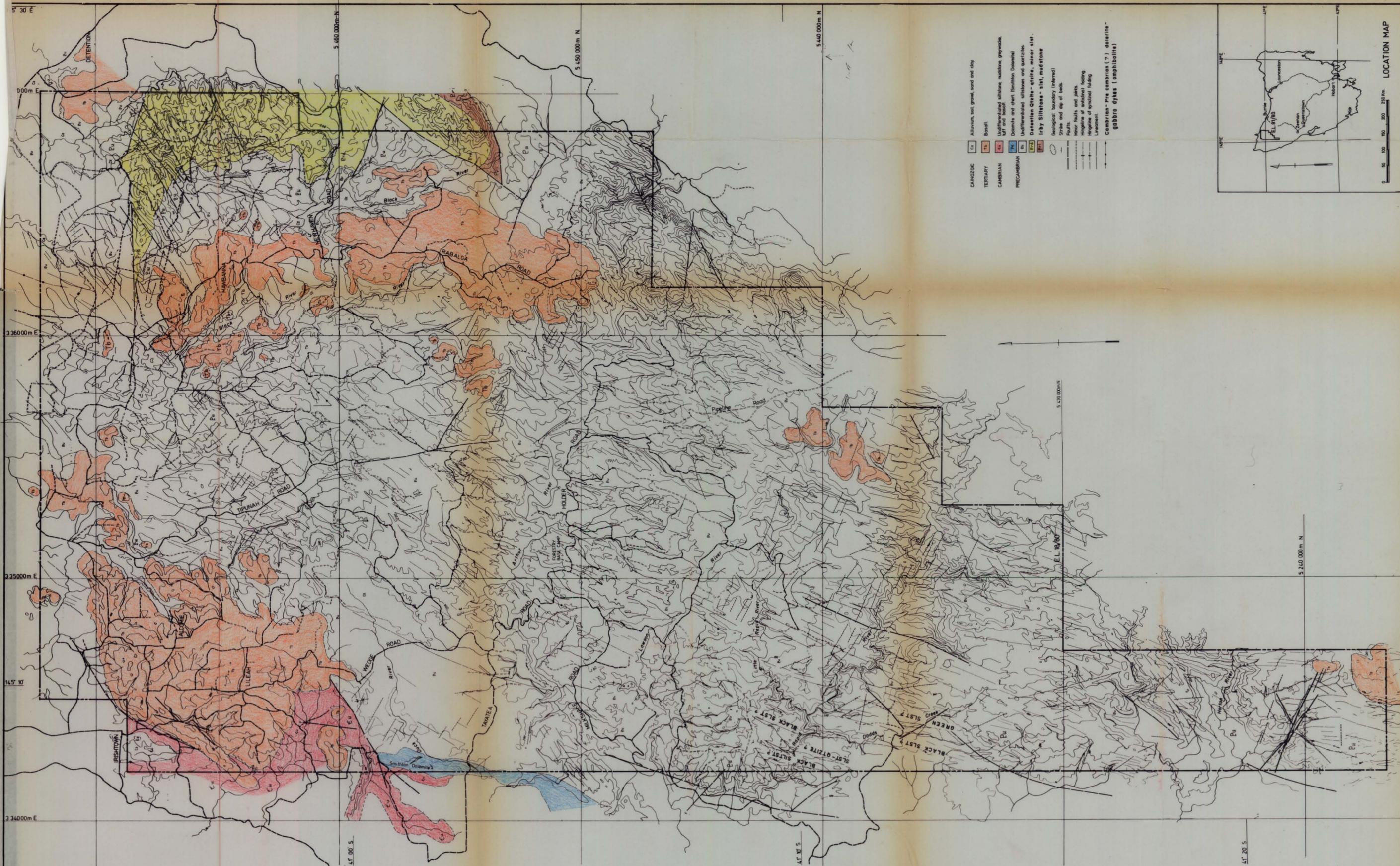


SCALE 1: 25 000

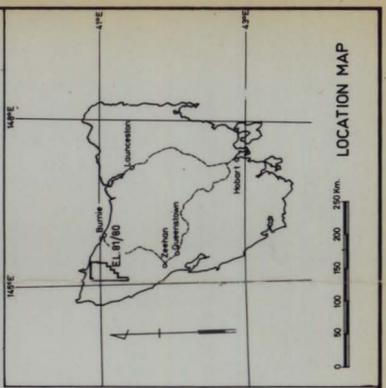


EL 18/80, ARTHUR RIVER, TAS.
 GEOLOGY - LILEAH REGION
 S. HUNNS JAN '81





- CAMBODIC** Cx Alluvium, silt gravel, sand and clay
- TERTIARY** Tc Basalt
- CAMBRIAN** Ca Undifferentiated siltstone, mudstone, greywacke, silt and bogal
- PRE-CAMBRIAN** Ca Diabase and chert (Smithton Dolerite)
- Ca Undifferentiated siltstone and quartzite
- Ca Detention Quartzite - quartz, minor silt
- Ca Irby Siltstone - silt, mudstone
- Geological boundary (inferred)
- Strike and dip of beds
- Faults
- Minor faults and joints
- Homogeneity of structural loading
- Heterogeneity of structural loading
- Lineament
- Cambrian - Pre cambrian (?) dolerite - gabbro dykes (amphibolite)



5 cm

Scale 1:100000

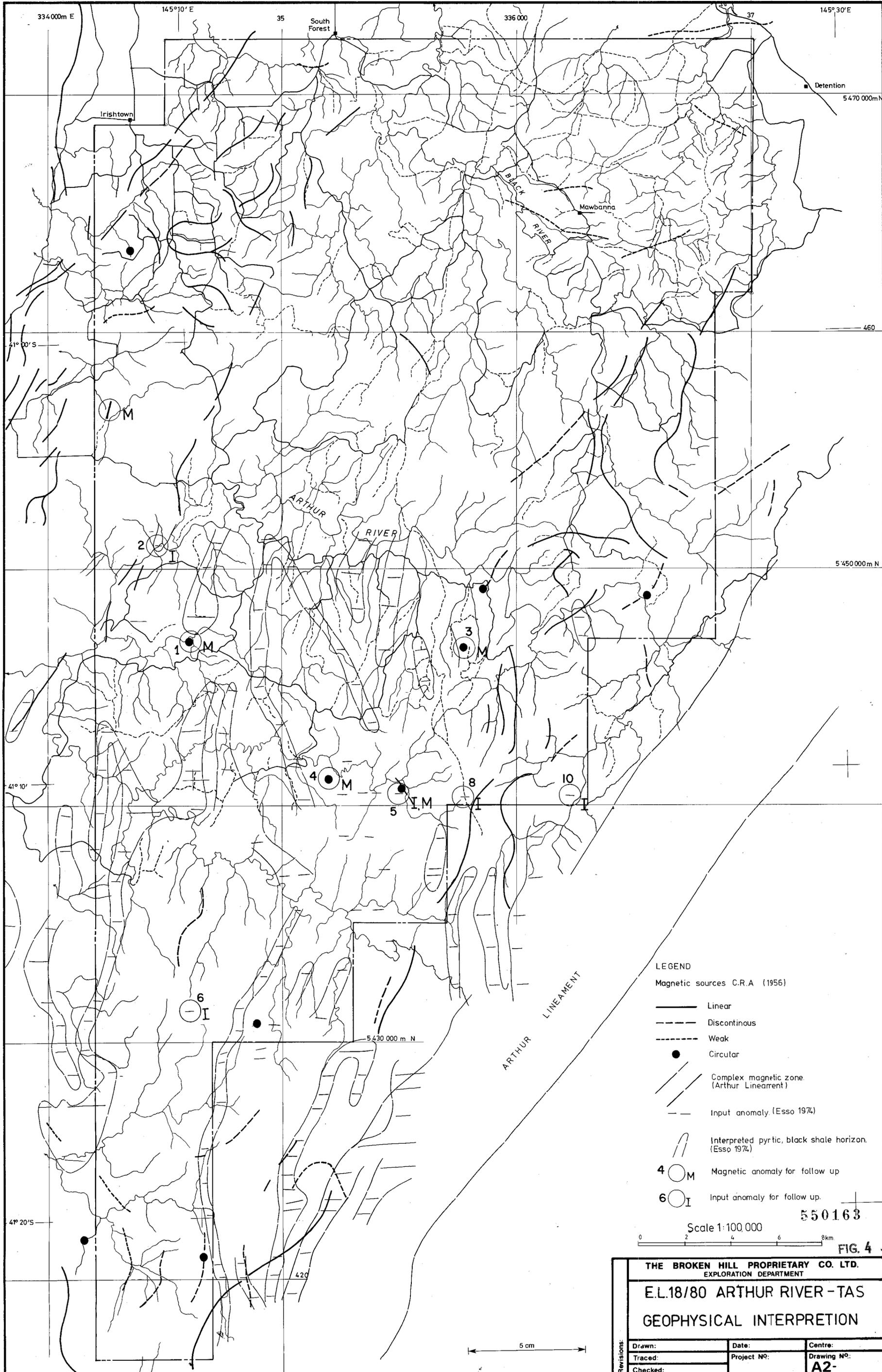


550162
Contour Interval 40m

FIG. 3

THE BROKEN HILL PROPRIETARY CO LTD EXPLORATION DEPARTMENT			
E.L.18/80, ARTHUR RIVER, TAS.			
INTERPRETED GEOLOGY			
Based on aerial photographs by G. Hill			
Drawn: C.M.I.K.K.	Date: 08-0-80	Centre: Hobart	
Traced: S. HERBER	Project No: T670	Drawing No: AO-	
Checked: O.T.C.			

3158

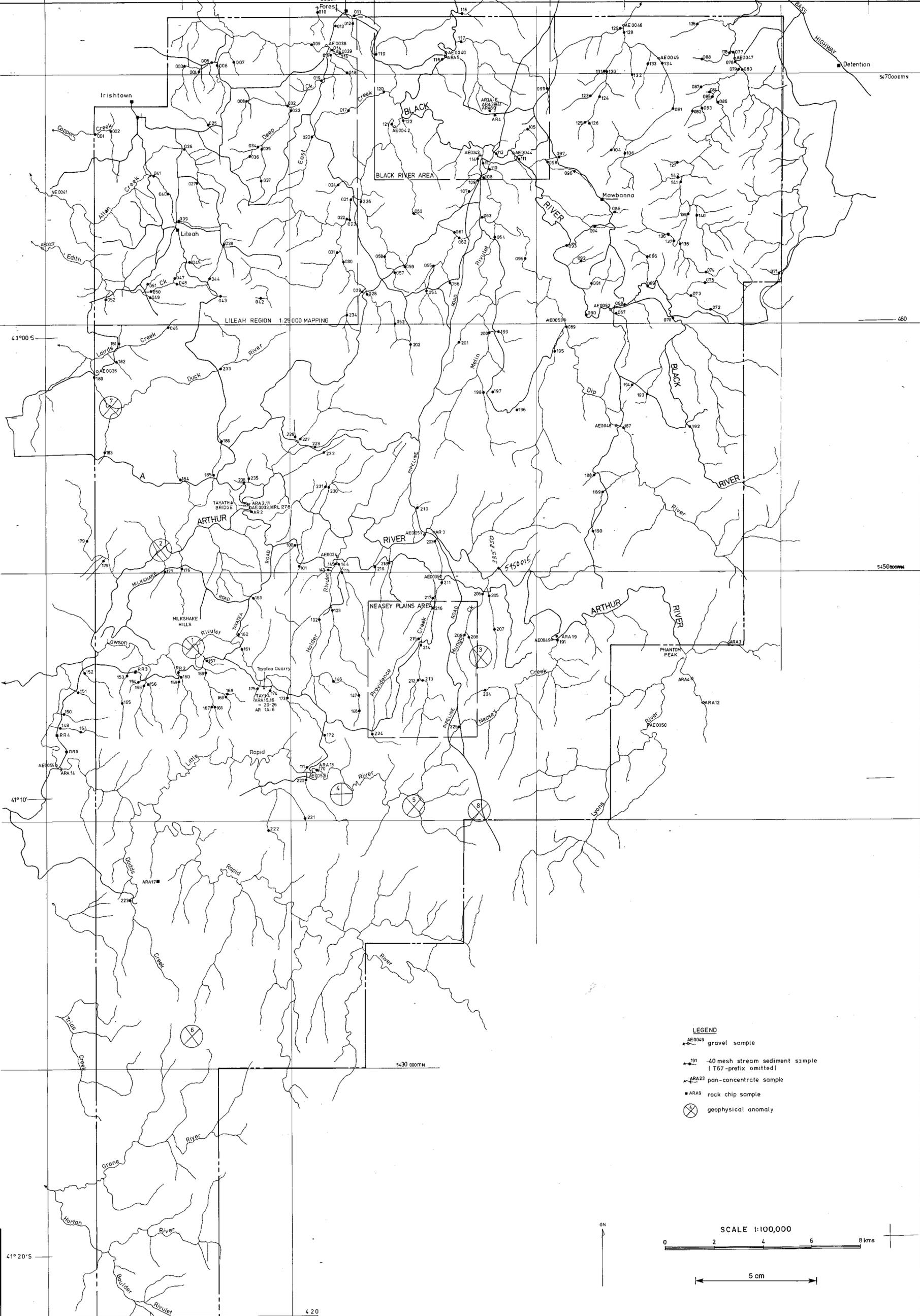


LEGEND
 Magnetic sources C.R.A (1956)

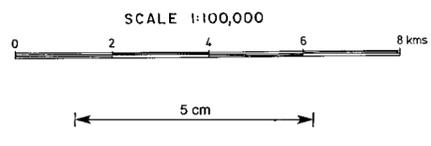
- Linear
- - - Discontinuous
- - - Weak
- Circular
- Complex magnetic zone (Arthur Lineament)
- - - Input anomaly (Esso 1974)
- Interpreted pyritic, black shale horizon (Esso 1974)
- 4 ○ M Magnetic anomaly for follow up
- 6 ○ I Input anomaly for follow up.

550163
 Scale 1:100,000

THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT		
E.L.18/80 ARTHUR RIVER - TAS GEOPHYSICAL INTERPRETION		
Drawn:	Date:	Centre:
Traced:	Project No.:	Drawing No.:
Checked:		A2-



- LEGEND**
- AE0049 gravel sample
 - 101 -40 mesh stream sediment sample (T67-prefix omitted)
 - ARA23 pan-concentrate sample
 - ARA9 rock chip sample
 - ⊗ geophysical anomaly



Revisions:

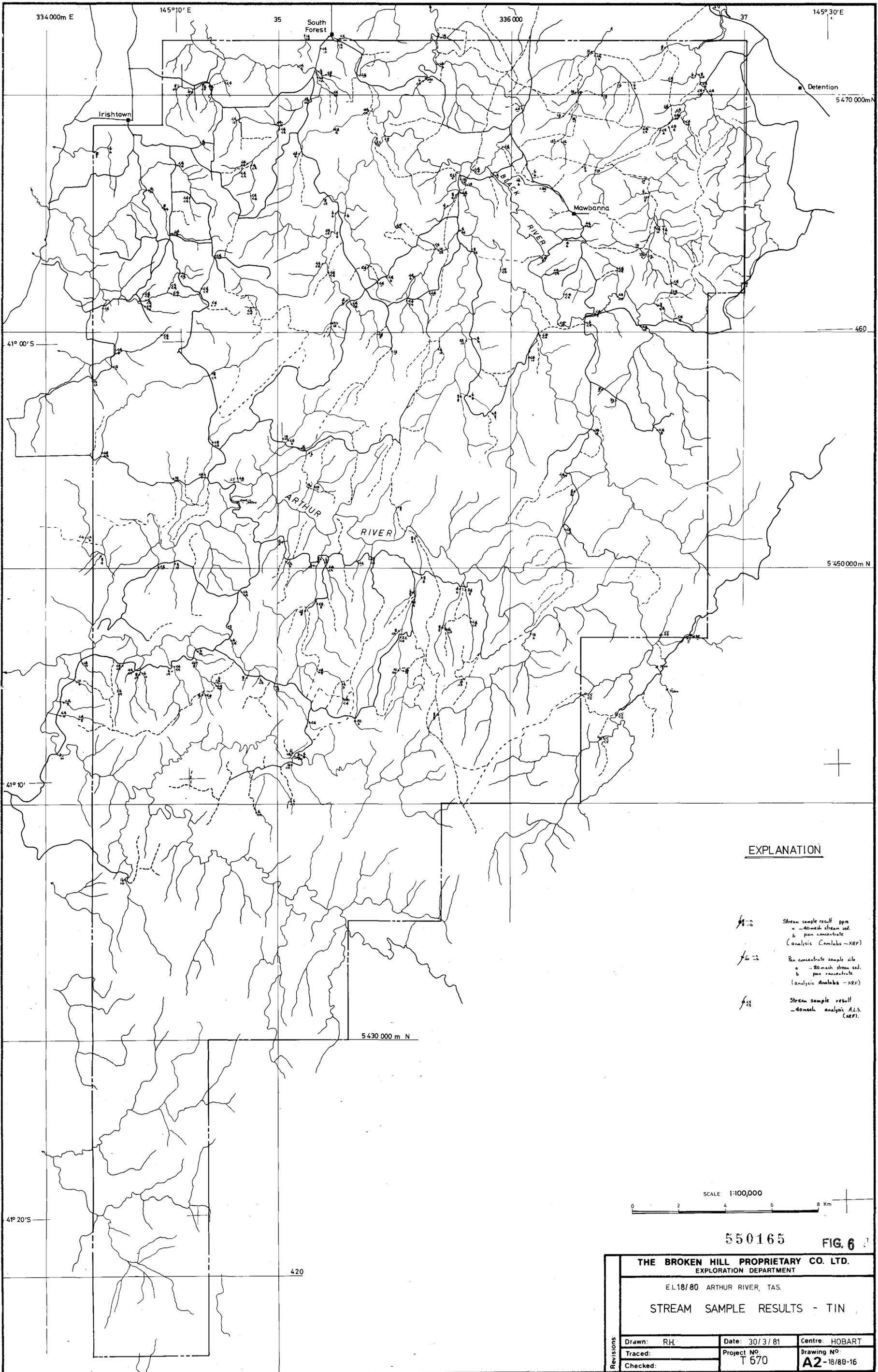
DATE	BY	REVISION
16/70	DAVID	PROJECT
16/70	DAVID	PROJECT

THE BROKEN HILL PROPRIETARY CO. LTD.
 ELIABO ARTHUR RIVER, TAS.
 GEOCHEMICAL SAMPLE LOCATIONS
 AND GEOPHYSICAL ANOMALIES

Project No. 4018/80-5
 Drawing No. 3160

550164

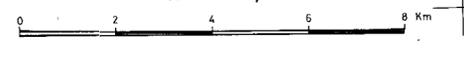
FIG. 5



EXPLANATION

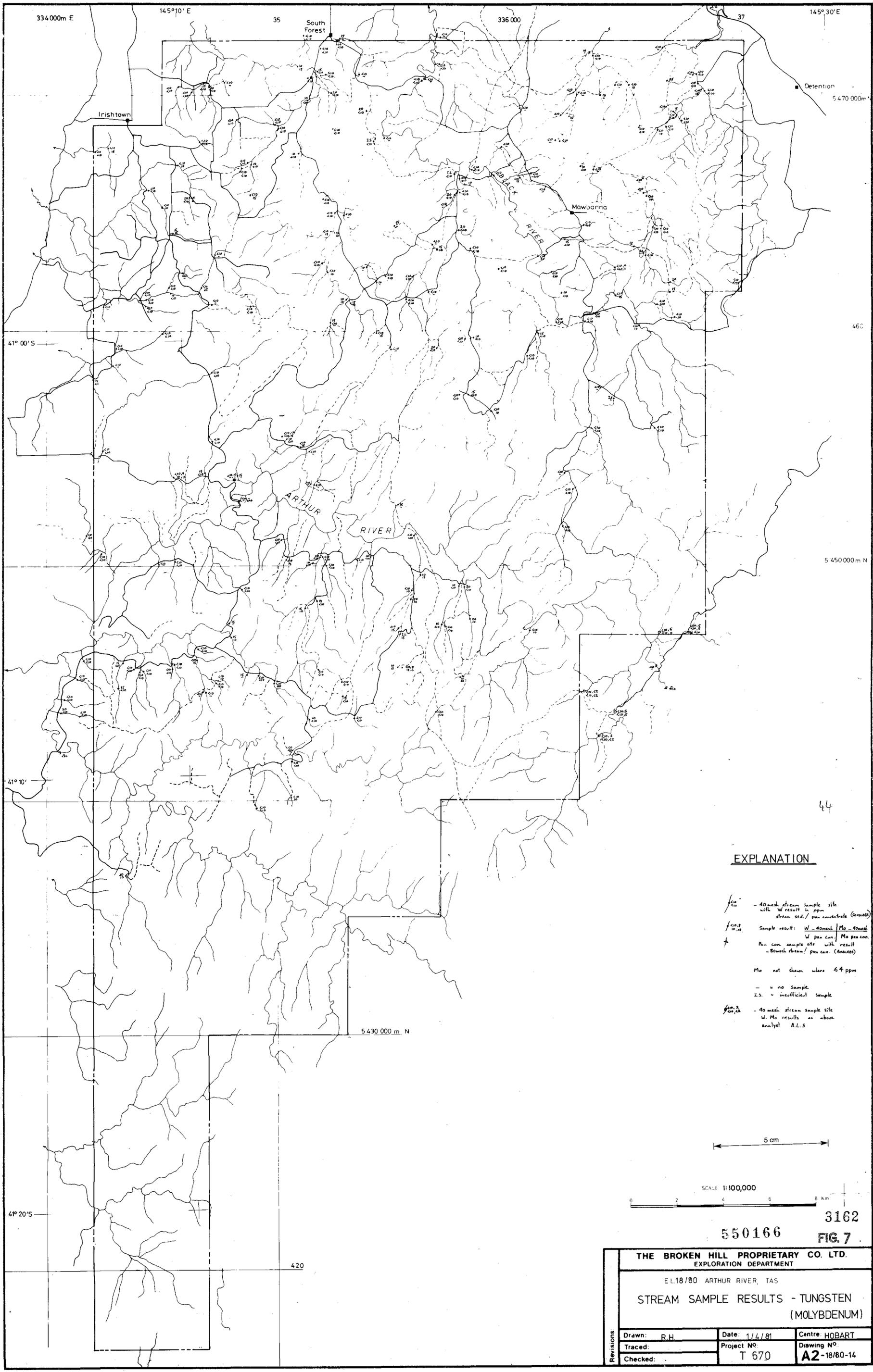
- Stream sample result ppm
 a - 40mesh stream sed.
 b - pan concentrate
 (analysis Comlabs - XRF)
- Pan concentrate sample site
 a - 20mesh stream sed.
 b - pan concentrate
 (analysis Amelabs - XRF)
- Stream sample result
 - 40mesh analysis A.L.S.
 (XRF)

SCALE 1:100,000



550165 FIG. 6

THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT		
EL18/80 ARTHUR RIVER, TAS.		
STREAM SAMPLE RESULTS - TIN		
Drawn: RH	Date: 30/3/81	Centre: HOBART
Traced:	Project No: T 670	Drawing No: A2-18/80-16
Checked:		

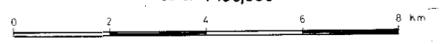


EXPLANATION

- \int_{50} - 40 mesh stream sample site with W result in ppm stream sed. / pan concentrate (GMSAS)
- $\int_{50} \int_{100}$ Sample result: W - 40 mesh / Mo - 40 mesh W pan con. / Mo pan con.
- \int Pan con. sample site with result - 40 mesh stream / pan con. (GMSAS)
- Mo not shown unless ≤ 4 ppm
- = no sample
- I.S. = insufficient sample
- $\int_{50} \int_{100} \int_{20}$ - 40 mesh stream sample site W. Mo results as above analyst A.L.S.

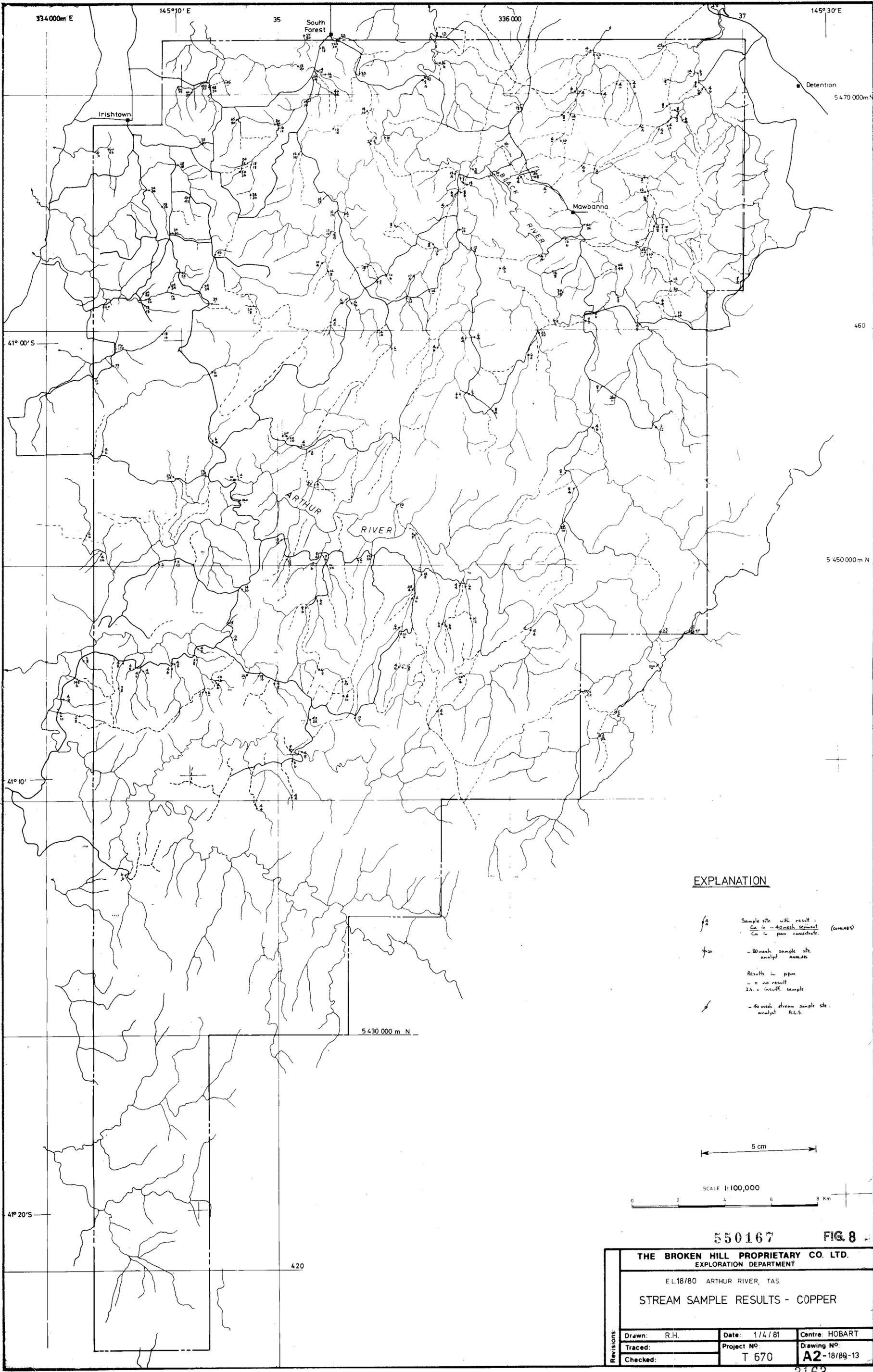
5 cm

SCALE 1:100,000



3162
550166
FIG. 7

THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT		
E.L.18/80 ARTHUR RIVER, TAS		
STREAM SAMPLE RESULTS - TUNGSTEN (MOLYBDENUM)		
Drawn: R.H.	Date: 1/4/81	Centre: HOBART
Traced:	Project No.: T 670	Drawing No.: A2-18/80-14
Checked:		

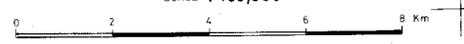


EXPLANATION

- Sample site with result :
 Cu in -40 mesh sediment (COMASS)
 Cu in pan concentrate.
- 80 mesh sample site
 analyst ANALAS
- Results in ppm
 - = no result
 IS. = insuff. sample.
- 40 mesh stream sample site
 analyst A.L.S.

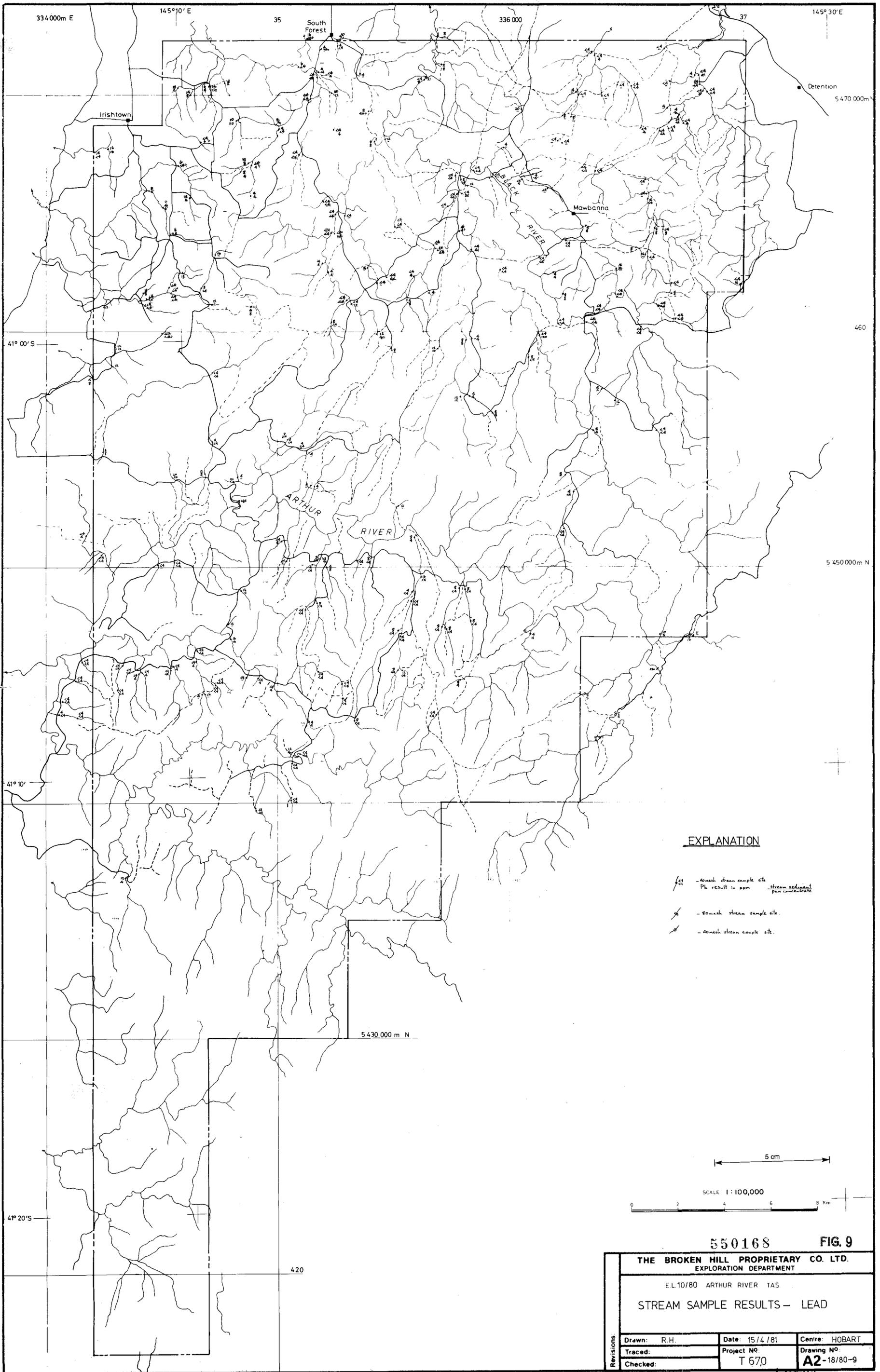
5 cm

SCALE 1:100,000



550167 FIG. 8

THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT		
EL.18/80 ARTHUR RIVER, TAS. STREAM SAMPLE RESULTS - COPPER		
Drawn: R.H. Traced: Checked:	Date: 1/4/81 Project No: T 670	Centre: HOBART Drawing No: A2-18/89-13



EXPLANATION

- 10-mesh stream sample site
 Pb result in ppm stream sediment pan concentrate
- 60-mesh stream sample site
- 40-mesh stream sample site

5 cm

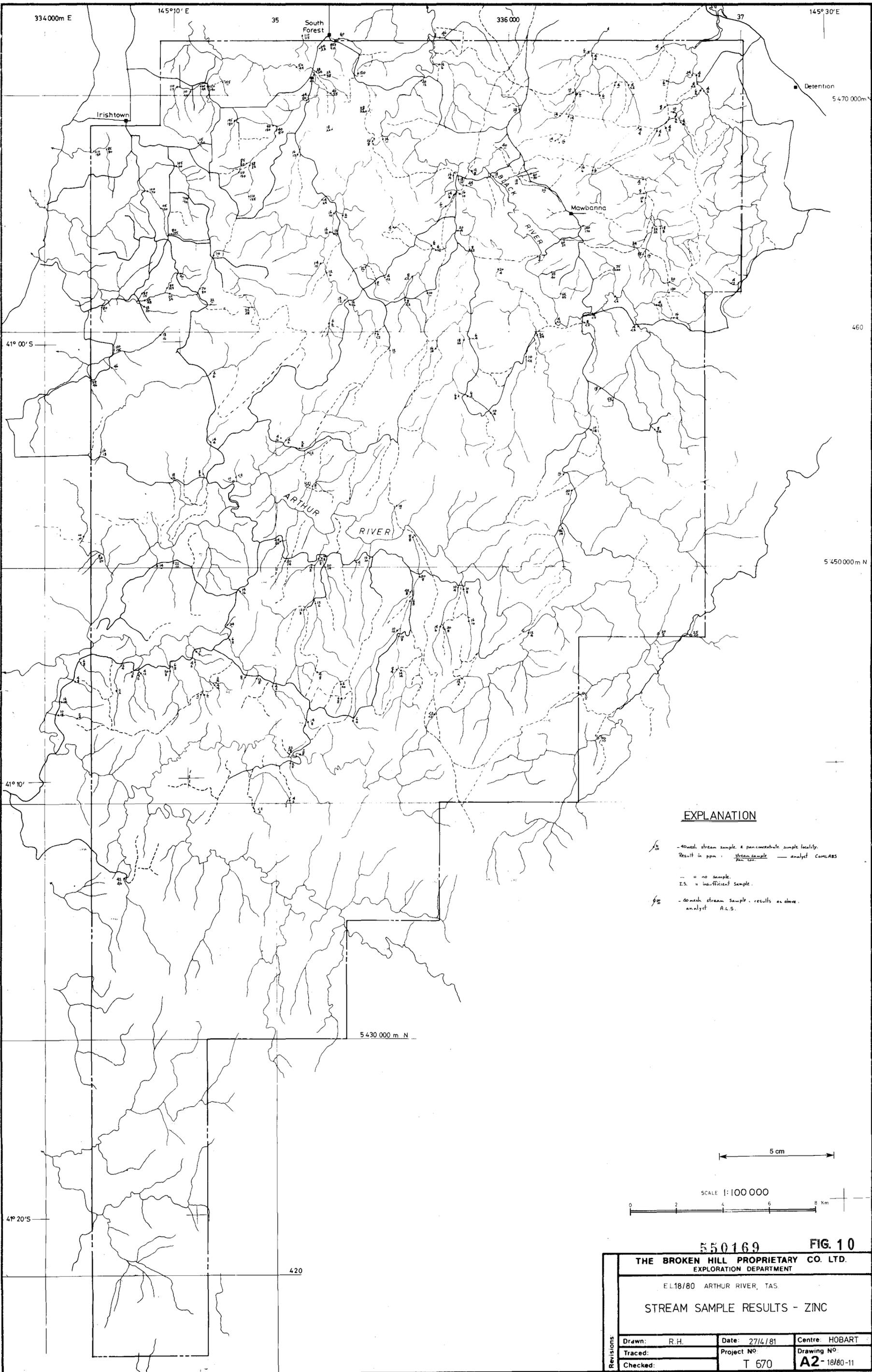
SCALE 1:100,000

0 2 4 6 8 Km

550168 **FIG. 9**

THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT		
E.L.10/80 ARTHUR RIVER TAS		
STREAM SAMPLE RESULTS - LEAD		
Drawn: R.H.	Date: 15/4/81	Centre: HOBART
Traced:	Project No: T 670	Drawing No: A2-18/80-9
Checked:		

3164



EXPLANATION

- 
 - stream sample & panconcentrate sample locality.
 Result in ppm = $\frac{\text{stream sample}}{\text{pan. con.}} \times \text{analyt COMLABS}$
- 
 = no sample.
- 
 = insufficient sample.
- 
 - doresh stream sample. results as above.
 analyt A.L.S.

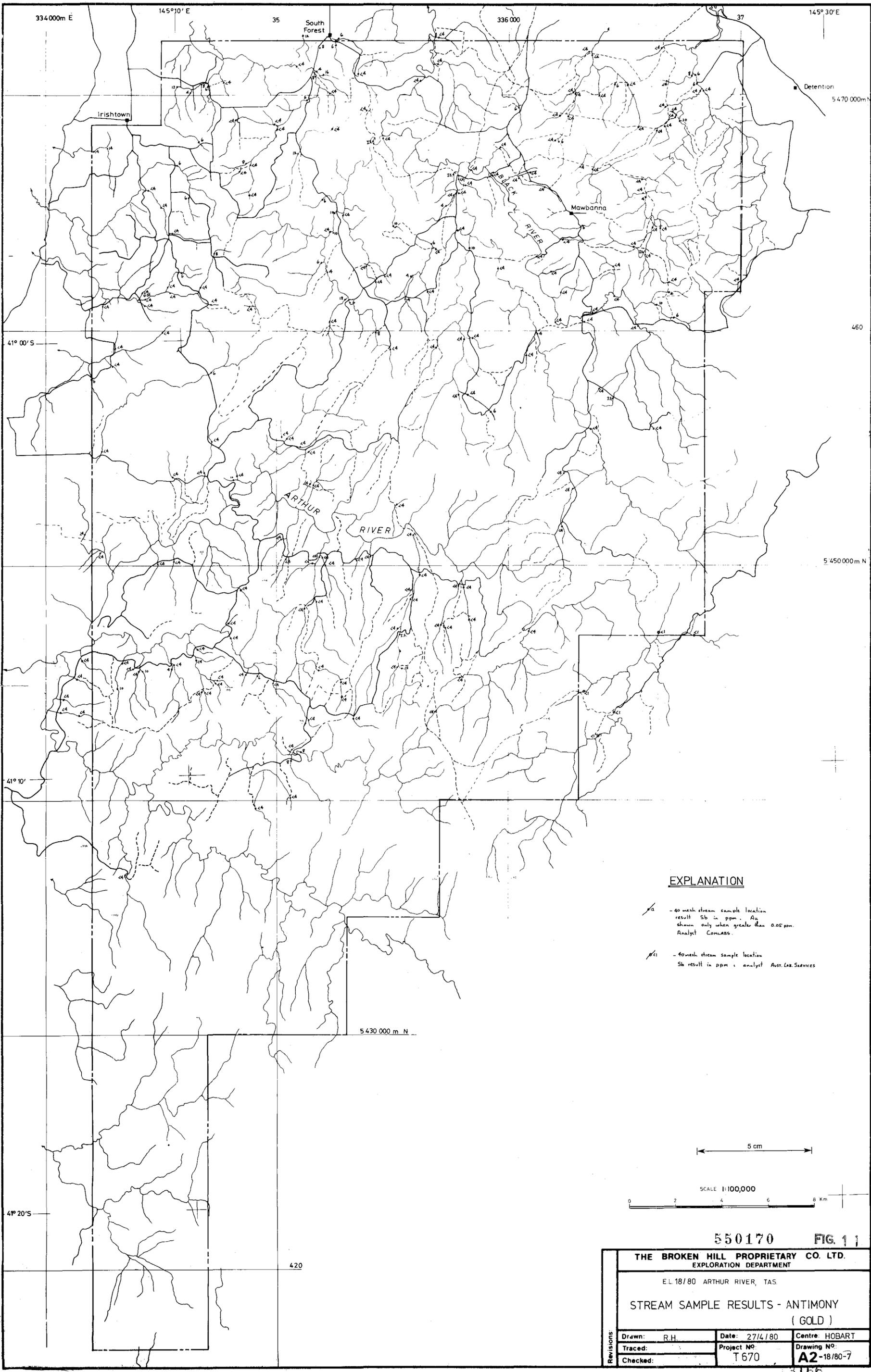
5 cm

SCALE 1:100 000



550169 **FIG. 10**

THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT		
E.L.18/80 ARTHUR RIVER, TAS		
STREAM SAMPLE RESULTS - ZINC		
Drawn: R.H.	Date: 27/4/81	Centre: HOBART
Traced:	Project No: T 670	Drawing No: A2-18/80-11
Checked:		

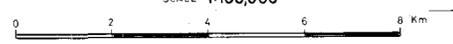


EXPLANATION

- 10 - 40 mesh stream sample location
result Sb in ppm. Au shown only when greater than 0.05 ppm.
Analyt COMLAB.
- 11 - 40 mesh stream sample location
Sb result in ppm. analyt Aust. Lab. Services

5 cm

SCALE 1:100,000



550170 FIG. 11

THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT		
EL 18/80 ARTHUR RIVER, TAS.		
STREAM SAMPLE RESULTS - ANTIMONY (GOLD)		
Drawn: R.H.	Date: 27/4/80	Centre: HOBART
Traced:	Project No: T 670	Drawing No: A2-18/80-7
Checked:		