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Second Report on Geological Mapping at the Howard
Anomalies, West Tasmania
Rio Tinto Southern Proprietary Limited*
King, D.

RIO TINTO SOUTHERN PTY. LIMITED
MELBOURNE, AUSTRALIA

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SECOND REPORT ON GEOLOGICAL MAPPING
AT THE HOWARD ANOMALIES, WEST TASMANIA.

by

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P L A N S

	<u>Scale</u>
No. T.712 Geological, Geophysical and (Revised) Geochemical Plan, Howard Area, Southern Portion.	1" to 400'
" T.716 Geological and Geophysical Plan, Howard Area, Northern Portion.	1" to 400'

INTRODUCTION

Detailed geological mapping of the area covered by geophysical surveys at Howard was completed during the period 23rd-31st January, 1961. This work involved additional observations in the vicinity of the Southern Anomaly as recommended in Report No. 39/1960, and an extension of earlier mapping recorded on Plan No. T.712 to cover the gridded area lying to the north of the grid origin which is situated near Newton Creek.

Enlarged aerial photographs at a scale of 400 ft. to 1 inch were used as a base for the mapping work. One of these enlargements covers the area south of the grid origin and was used in the compilation of Plan No. T.712. A second enlargement covering the area north of the origin was used in the preparation of the accompanying Plan No. T.716. While a slight variation in scale exists in adjoining positions of the two plans owing to distortion near the edges of the enlargements, the true positions of the grid and rock exposures are shown on both relative to mapped topographic features.

POSITIONING OF THE GEOPHYSICAL GRID & ANOMALIES

The grid for the geophysical work was laid out three years ago using prominent stakes pegged at 100 ft. intervals (pased) along traverses at approximately 400 ft. spacing. In most cases the grid co-ordinates marked on the pegs have become illegible through exposure to the elements, but sufficient peg co-ordinates were identified to enable all the grid stations to be relocated where required.

The geophysical grid was not surveyed and is idealised on the geophysical plans. (See R.T.A.E. Report No. 28/1959 "Geophysical Surveys, Howard, Tasmania," by J. Boniwell.) In places the positions shown are correct to within 100 feet relative to the baseline, but a large inaccuracy exists in that portion of the grid between the baseline and sub-baseline which were shown as being 1,740 feet apart on the geophysical plans (e.g. T.476) and 2,200 feet apart on a later geochemical plan T.671 (Geochemical information from this plan is now included on Plan T.712). The actual location of the baseline and sub-baseline was established during the present survey by mapping the peg positions on the 400 ft. scale aerial photos. They were found to be 2,010 feet apart on line 4S and diverging to 2,220 feet apart at line 16N. A distance of 2,000 feet between the baselines along 4S was confirmed by chaining. At 12N the baselines are a chained distance of 2,078 feet apart.

These inaccuracies in the plans supplied with the geophysical report made it necessary to refer back to the original field records as a means of determining the peg positions at which the anomalies occur. The following lists supplied by the Senior Geophysicist (E. McCarthy) shows the stations at which the principal E.M. anomalies were recorded.

Southern Anomaly

64S, 155OW. (A);	60S, 125OW. (A);	56S, 130OW. (B);
52S, 125OW. (C);	48S, 115OW. (B);	44S, 135OW. (A);
40S, 115OW. (B);	36S, 135OW. (A);	32S, 135OW. (B);
28S, 125OW. (C);	24S, 110OW. (C);	20S, 115OW. (C);
16S, 120OW. (C);	12S, 115OW. (C);	8S, 140OW. (B);

Eastern Anomaly

52S, 145OE. (B); 48S, 145OE. (A); 44S, 145OE. (A);
40S, 150OE. (B); 36S, 145OE. (A); 32S, 150OE. (A);
28S, 130OE. (AA); 24S, 130OE. (B); 20S, 140OE. (C).

Tyndall Anomaly

4S, 195OW. (B); 00, 165OW. (A); 4N, 180OW. (B).

(Grading Symbols: AA, very good; A, good; B, medium;
C, fair.)

The true positions of these anomalies are shown on Plans Nos. T.712 and T.716.

The original numbering of grid stations was renewed on the baseline and sub-baseline pegs and along several of the traverse lines crossing the anomalous areas, namely 60S, 56S, 44S, 40S, 4S and 12N.

GENERAL GEOLOGY

As described in a previous report (39/1960, Report on Geological Investigations at the Howard Southern Anomaly, West Tasmania, by D. King), the geophysical surveys at Howard were purposely confined to an area underlain by a thick assemblage of Cambrian volcanic rocks which are bordered to the west by an older Cambrian sedimentary succession and to the east by Ordovician Owen Conglomerate.

In the southern part of the area, (Plan T.712), a major fault (Tyndall Fault) has brought lower to middle Owen Conglomerate (mainly Tyndall Conglomerate) into abrupt contact with the volcanics.

North of Newton Creek (Plan T.716), the volcanics are bordered to the east by steeply dipping and overturned Jukes Breccia (Lower Ordovician), succeeded by coarse, basal Owen Conglomerate. Here the actual contact of the volcanics and the Jukes Breccia is concealed but their notable angular relation as shown on the plan is considered to reflect an unconformity rather than a fault.

The Tyndall Fault is exposed at successively higher stratigraphic levels along its northerly strike. Thus north of Newton Creek, the fault is marked by a well defined tectonic break between the basal Owen Conglomerate and the Julia Quartzites which are a little higher in the Owen Conglomerate succession.

The volcanics are concealed beneath superficial swamp or glacial deposits throughout most of the surveyed area. The observed outcrops are generally massive but evidence of bedding was found in a number of widely scattered localities and revealed consistent strikes of about 340 degrees (true) and steep easterly dips. This uniform trend is particularly well shown by a bedded and readily distinguishable agglomeratic formation which has been mapped in close proximity to the baseline from 5600S to 1600N, beyond which it passes under glacial cover. (The geophysical survey grid was deliberately laid out with the baselines parallel to this general strike direction).

Reference was made in the earlier report to a well defined zone of schists which were traced coursing 330 to 350 degrees along the valley of the southern tributary of Newton Creek (and with which the Southern Anomaly is clearly associated). The schistose zone is up to 600 feet wide in places (e.g. lines 40 to 44S) with dips varying from vertical to steep east. The same zone of schists was observed to extend northerly of the confluence of Newton Creek and its southern tributary to the valley in which the Tyndall Mine workings are located. Particularly good exposures of the schists were seen in Newton Creek during dry conditions prevailing at the time of the field work. (See revised Plan T.712 attached). Here, as also in the southern tributary, the schists are highly chloritic and are intersected by numerous quartz veins. Tuffaceous slates and cherty slates are also present as narrow intercalations in the schists and it is apparent that the shearing has essentially been confined to a slaty sedimentary sequence intercalated within the volcanics.

TYNDALL MINE WORKINGS

An examination of the old Tyndall Mine revealed that the workings are now largely collapsed and overgrown with dense vegetation. Sizeable specimens of galena and chalcopyrite occur closely associated with quartz on the small dump at the northern shaft (00, 1250W) and a pit has been sunk on a small patch of gossan about 300 feet south-south-west of the shaft. No other surface evidence of mineralization could be found.

CONCLUSIONS

The anomalies at Howard occur in areas of poor outcrop and the following conclusions have been arrived at after considering all available geological data.

Southern Anomaly

Additional work has strengthened my opinion that the Southern Anomaly which extends for more than 5200 feet is the most promising of those located by the geophysical surveys at Howard. Here the individual anomalous stations are all confined to a strong shear zone which must be considered a favourable setting for mineralization. The plan showing the true positions of the anomalous centres on each traverse (Plan T.712, revised 6/2/61) would suggest that there are more than one en echelon conductors represented within the schist zone, and that some become undefined along strike due to increase in the thickness of cover (mainly glacial).

While there is evidence in places that schists of slaty composition may account for the anomalies (e.g. 16S, 1200W; 24S, 1100W) the presence of known mineralization in the area has also to be considered. The copper-lead showings of the Tyndall Mine occur on the same structure 1200 feet along strike beyond the northern limit of the anomaly, and sporadic occurrences of limonitic and hematitic gossans near some anomaly stations have already been reported. Trenching which is being carried out in barytic and hematitic gossanous clays at co-ords. 60S, 1420W will have a considerable influence in deciding upon any further work which may be justified.

The zone could not be written off on the limited outcrop evidence and it has to be decided whether the geophysical results are sufficiently interesting to warrant the cost of drilling.

Eastern Anomaly

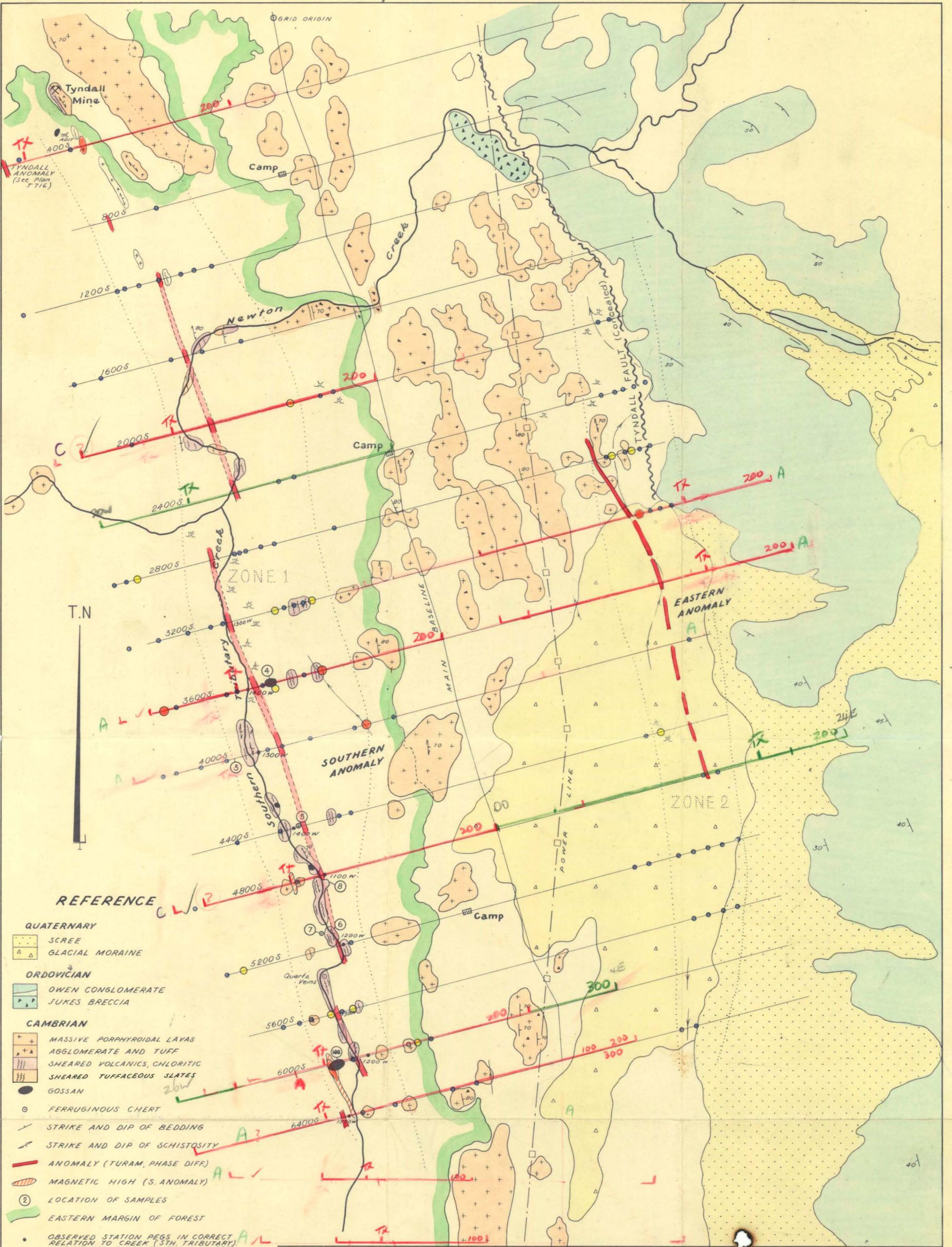
See previous report by D. King.

Tyndall Anomaly

This anomaly persists over a length of only 1,200 feet and is about 400 feet west of the Tyndall Mine workings. No outcrops were found in the area but it may be reasonably assumed to lie within the same schist zone. The geochemical results in this area should be replotted to match the accompanying geological plans before any further consideration is given to this indication.

20/3/61.

D. King,
Geologist.



REFERENCE

- QUATERNARY**
- SCREE
 - GLACIAL MORAINES
- ORDOVICIAN**
- OWEN CONGLOMERATE
 - JUKES BRECCIA
- CAMBRIAN**
- MASSIVE PORPHYROIDAL LAVAS
 - AGGLOMERATE AND TUFF
 - SHEARED VOLCANICS, CHLORITIC
 - SHEARED TUFFACEOUS SLATES
 - GOSSAN
 - FERRUGINOUS CHERT
 - STRIKE AND DIP OF BEDDING
 - STRIKE AND DIP OF SCHISTOSITY
 - ANOMALY (TURAM, PHASE DIFF.)
 - MAGNETIC HIGH (S. ANOMALY)
 - LOCATION OF SAMPLES
 - EASTERN MARGIN OF FOREST
- OBSERVED STATION PEGS IN CORRECT RELATION TO CREEK (SOUTH TRIBUTARY). HORIZONTAL DISTANCE BETWEEN PEGS APPROXIMATELY 100 FEET.

GEOCHEMICAL TESTING RESULTS

- MINERALISED ZONE**
- LOW
 - MEDIUM
 - HIGH
- SWAMP**
- CREEK**

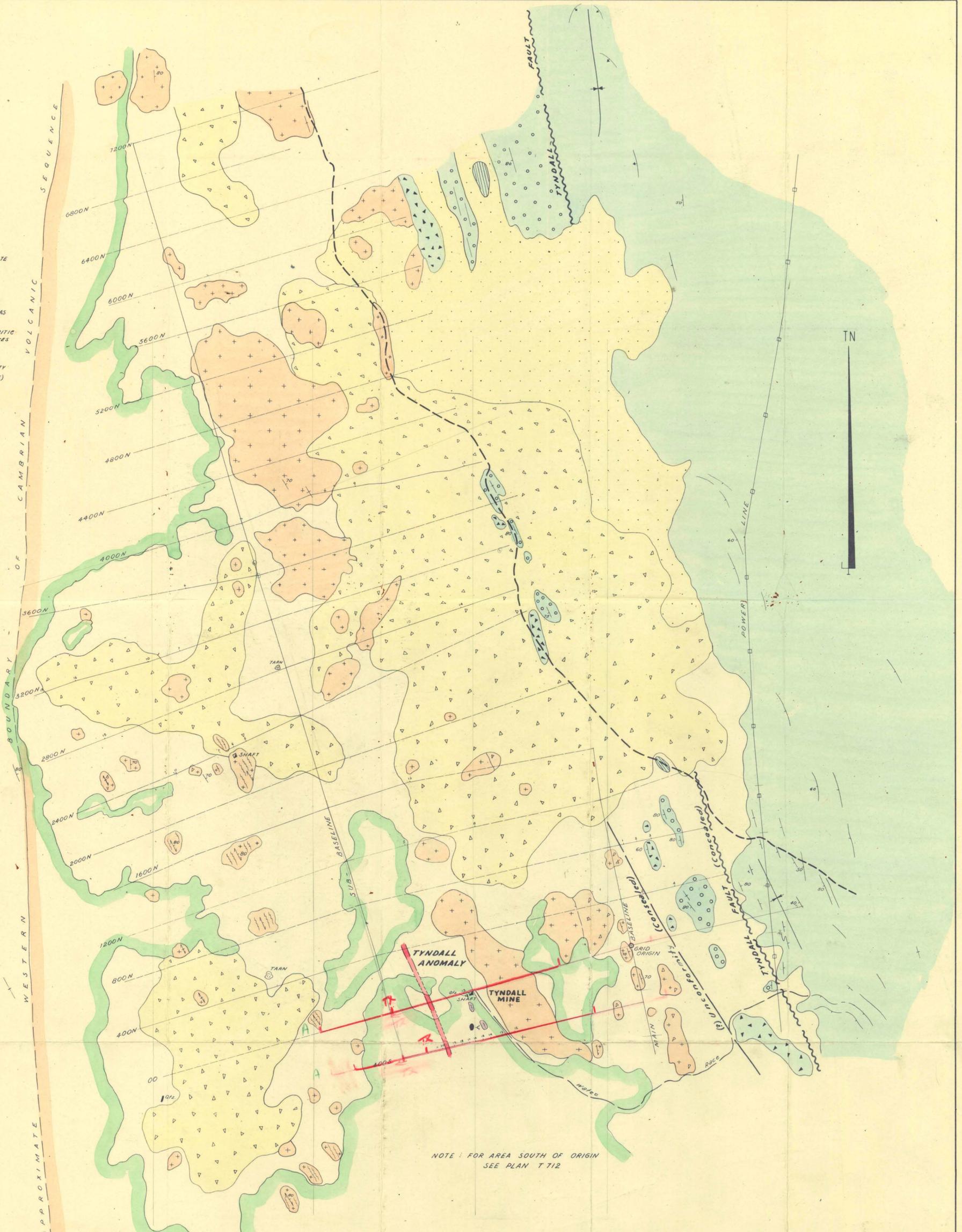
GENERALISED CROSS-SECTION ALONG LINE 6400S

APPROX. POSITION EASTERN ANOMALY (LINES 2800-4800S)

5 cm
06-5282

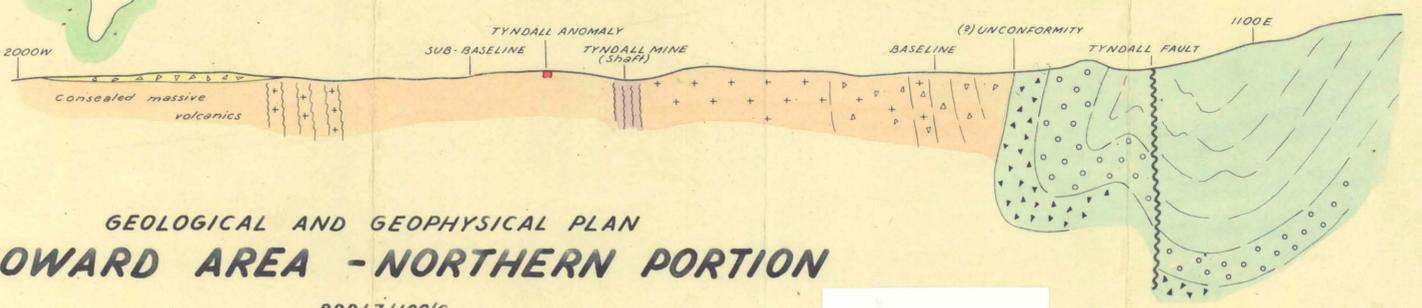
RIO TINTO SOUTHERN PTY. LTD.
GEOLOGICAL, GEOPHYSICAL & GEOCHEMICAL PLAN HOWARD AREA - SOUTHERN PORTION WEST TASMANIA
 April 1961
 D. King, 25-10-60
 SCALE: 400' = 1" PRP/7/100/C PLAN N° 712

- REFERENCE**
- QUATERNARY**
- PEATY SOIL
 - SCREE
 - GLACIAL MORAINE
- ORDOVICIAN**
- OWEN CONGLOMERATE
 - QUARTZITE AND CONGLOMERATE SUCCEEDING BASAL BEDS
 - SLATE BAND
 - BASAL CONGLOMERATE
 - JUKES BRECCIA
- CAMBRIAN**
- MASSIVE PORPHYROIDAL LAVAS
 - AGGLOMERATE AND TUFF
 - SHEARED VOLCANICS, CHLORITIC
 - SHEARED TUFFACEOUS SLATES
 - GOSSAN
 - STRIKE AND DIP OF BEDDING
 - STRIKE AND DIP OF SCHISTOSITY
 - ANOMALY (TURAM, PHASE DIFF)
 - MARGIN OF FOREST
- GRID LINES**
- ACCURATELY POSITIONED
 - APPROXIMATELY POSITIONED



NOTE: FOR AREA SOUTH OF ORIGIN
SEE PLAN T 712

GENERALISED CROSS-SECTION ALONG OO LINE



**GEOLOGICAL AND GEOPHYSICAL PLAN
HOWARD AREA - NORTHERN PORTION**

PRP/7/100/C
Scale: 1 inch = 400 feet

5 cm
06-5282

PLAN No T 716