68-510

EXPLORATION DEPARTMENT

GEOLOGICAL INVESTIGATIONS

UPPER FORTH MINERAL AREA

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THE BROKEN HILL PROPRIETARY COMPANY LIMITED AUSTRALIA

CONTENTS

PLANS

Fig. 1	Locality Map	A4-1077
Fig. 2	Geological Map-Upper Forth River Area	A4-1064
Fig. 3	Geology of Upper Forth Mineral Area	A3-1053
Fig. 4	Geological Sketch Map Barn Bluff Copper Mine	A4-1073
Figs.5 A,B,C	Geochemical Sample Results copper, nickel, zinc-Barn Bluff Copper Mine	A4-107A-1076
Figs.6 A,B,C	Geochemical Sample Results copper, nickel, zinc - Windorfer Creek area	A4-1080-1082

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INTRODUCTION

Exploration Licence 15/65 was taken out by the B.H.P. Co. Ltd. in August 1965 over an area of 1,700 square miles in north-central Tasmania. As the area was covered by geological maps published by the Tasmanian Mines Department, an initial economic assessment was undertaken by an airborne magnetometer survey in March-April 1966.

Follow up ground work commenced in early 1967 when L. Hollingworth briefly examined parts of the area, and W. Chesnut investigated all but the magnetic anomalies in the Forth Valley.

The aim of the present work was to complete the ground investigations of the magnetic anomalies in the Forth Valley and to examine the Lone Pine Birthday and Barn Bluff prospects.

During March and April 1968, K. Hall and D. Hewitt assisted by J. Collins and R. Greeney, spent three weeks in the area. Access was initially by Land Rover along a recently reopened track on the east bank of the Forth River. A base camp was established at Oakleigh Creek, and from here day trips and fly-camping trips were made into the rugged surrounding country. A hand magnetometer was used to locate the magnetic anomalies and 15 sediment samples were collected from the stream draining the anomalies. Eighteen sediment samples were taken from the streams draining the Barn Bluff prospect.

RESULTS

1. Lone Pine Prospect Fig. 3

This prospect is described by Reid (Department of Mines, Geological Survey, Bulletin No.30) as consisting of a quartz vein three to five inches wide in a small outcrop of granite. The granite is shown on the Mines Department Map as occurring on the east side of the Forth River not far from the junction of the Forth River and Hartnett Rivulet. No granite was found in this vicinity. A small outcrop of granite measuring 90 feet by 60 feet was found about one mile further south. This is presumably the Lone Pine granite. It is a fine to medium grained, light coloured rock consisting of quartz, orthoclase and muscovite. In places it is aplitic with a fine intergrowth of quartz and feldspar crystals.

Several small quartz veins occur striking N 40°W but these are barren. The two shallow open cuts reported by Reid were not located. The rocks surrounding the granite consist of quartzite and schistose quartzite with a fairly uniform strike of N 80°E and a dip to the north of 40°. Jointing is well developed in a N 40°W direction. In the massive quartzite beds the joints are regularly spaced between one and two feet apart. Detrital tourmaline occurs in places along the bedding planes in the quartzite.

The area surrounding the granite was carefully examined but no dolomite could be found. There is no sign of alteration such as occurs at the Barn Bluff deposit.

The steep slope above the road is covered with quartzitic scree. 400 feet above the road and to the NE of the Lone Pine granite a number of very large boulders of a medium grained granite were found. The granite is probably in situ at this point. Elsewhere over the scree covered slope a number of smaller granite boulders were found indicating that a granite mass is probably present close to the surface.

2. Anomaly 127 Fig.2

This is situated at an elevation of 2200'on the steep east side of the Forth River. It is north east of the Lone Pine. By the use of an altimeter and hand magnetometer its approximate position was found. The rocks in the vicinity consist of massive quartzites striking N 60-70°E with a dip of 40°N. Close ground inspection in the area did not indicate the cause of the anomaly.

Why not ground magnetics?

Small granite boulders were found at 2300'. No source could be found for these and it is doubtful if they are in situ at this point. The granite showed no magnetic susceptibility in hand specimens.

3. Birthday Prospect Fig.3

This occurs on the east side of the Forth Valley, ¼ mile NE from where the road crosses Oakleigh Creek. It lies 500 feet east of the road and 200 feet above its level.

The prospect consists of a series of quartz veins with varying amounts of wolfram and traces of other metallic minerals.

The veins occur in Devonian granite which has intruded the Pre-Cambrian quartite and quartz-schist. The granite shows alteration (greisenization) for a few inches either side of the veins.

Reid reported three vein systems but only one was found, presumably the one he referred to as No.2. It is up to one foot wide and can be traced for 300 feet up the hillside (representing about 50 feet vertical extent). It strikes N 35°W, parallel to the jointing in the granite, and dips steeply to the NE. The granite in the vicinity of this vein has withstood erosion slightly better than

the rest of the granite.

Much of the quartz is barren but medium to coarsely crystalline wolfram occurs together with traces of molybdenite, arsenopyrite and pyrite.

4. Barn Bluff Copper Mine Figs.4 & 5

This is situated on Commonwealth Creek, a tributary on the west side of the Forth River. It is in the Cradle Mountains - Lake St. Clair National Park, 4½ miles SE of Barn Bluff.

The general geology consists of E-W striking quartzites and quartz-mica schists dipping to the north between 45 and 60 degrees. Immediately west of the workings there is a local change of strike to N 20°W. Strong fracturing occurs in a N 20-40°W direction.

The workings consist of three tunnels, the largest 448 ft. long, and eighteen open cuts of various sizes. These cover an area of approximately 600 ft. x 450 ft. on a spur between Commonwealth Creek and a small tributary.

Mineralization occurs as impregnation and veins in the quartzites and schists which have been considerably altered near the mine workings. Pyrite, pyrrhotite, specularite, arsenopyrite chalcopyrite and secondary copper minerals are present. Alteration has produced chlorite, epidote, actinolite and talc while quartz and calcite have been introduced.

Reid describes a chloritized basic dyke trending north-west, in the vicinity of the mine. This does not appear to be present. To the west of No.3 Tunnel where the strike changes to N 40°W the rock is a dark green dense chert heavily mineralised with pyrite.

This is possibly the same rock Reid describes as "hard, dense dark-green rock, partly chloritised, strongly impregnated with pyrite" p. 65.

The main object of visiting this mine was to observe the type of mineralisation for guidance in reconnaissance outside the Scenic Reserve. In particular it was hoped to establish if dolomite was present as a host rock. In several places along the roof of No.1 Tunnel small limestone formations were seen and one specimen from this tunnel has subsequently been identified as limestone or dolomite on its reactions with dilute HCI. It is apparent however that dolomite is not present as thick beds in the quartzite sequence. It may occur as local bands, limited in extent.

A number of assays reported by Reid are listed below. No overall grade of material produced are available.

	Cu	Sn	Ag			Au
			oz	dwt	gr	
1	0.16%		1	4	23	Tr
2	0.40		0	16	0	Tr
3	0.10		0	17	3	Tr
4	2.32	0.22%	2	6	14	10 gr
5	1.65	0.27	3	11	3	8 gr

1: Average sample, No.1 tunnel.

2: Average sample, crosscut, No.1 tunnel.

3: Average sample, mineralized bands in chlorite rock, from open cut on north bank of Commonwealth Creek.

4: Ore from open cut No.7.

5: Ore from open cut No.8.

Geochemical stream sediment samples were taken to provide information on background values and decay pattern in such an environment. The creeks are not very satisfactory for sampling, containing little - 80 mesh material. Contamination from the workings is to be expected. Further contamination by bank fall is suspected in other places.

5. Anomaly 3 Fig.2

Anomalies 2 and 3 occur in the south-west corner of the Middlesex one mile sheet to the west of the Forth River. The centre of anomaly 3 occurs near the junction of Weindorfer Creek and a tributary from the west.

They are small and elongated anomalies of about 200 gammas. The geophysical contractors, AMEG Pty. Ltd., suggested they were an expression of basalt. This view proved to be correct.

The lithology surrounding the anomaly consists of schistose quartzite containing bands of harder quartzite up to 4" wide. The strike trends N 80°E. Small quartz veins ½" wide also course in this direction.

The rock type at the ground location of anomaly 3 is basalt of probably Tertiary age. This crops out along Weindorfer Creek and its main tributary from the west. It is also present on the hill to the east of the anomaly.

Anomaly 2 was not located on the ground but it seems probable from photo interpretation that basalt occurs in this area too. The interpreted limits of the basalt appear to conform approximately to the outline of the anomalies. The peak of the anomalies, especially No.2 probably occurs at the point where the basalt is thickest.

CONCLUSIONS

From the detailed work done in the vicinity of the Lone Pine, Birthday and Barn Bluff areas it is apparent that thick beds of dolomite, which could act as a favourable locus of deposition, do not occur in the quartzite and quartz schist sequence of the Precambrian rocks which dominate the area. If dolomite is present at all it is of minor significance.

The Lone Pine and Birthday, originally wolfram prospects are not in themselves of any economic significance.

Anomaly 127 occurs over the quartzite sequence and no geological explanation could be found on the surface.

There is evidence that small granite intrusions occur elsewhere in the area indicating that a large granite mass may be present close to the surface.

Anomalies 2 and 3 are caused by Tertiary basalt.

BIBLIOGRAPHY

Reid, A. McIntosh, 1919 - The Mount Pelion Mineral District - Geol. Surv. Tas. 30.

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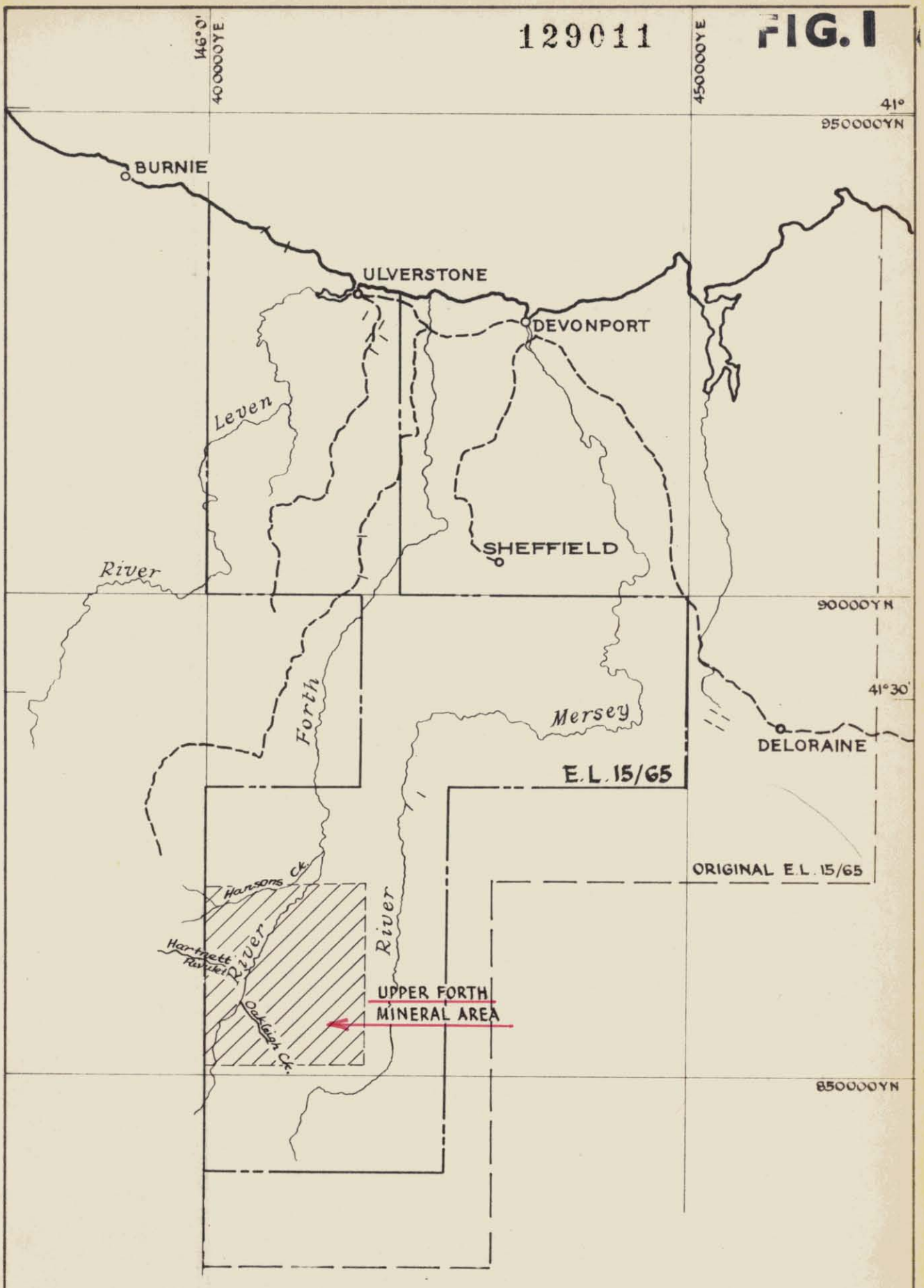
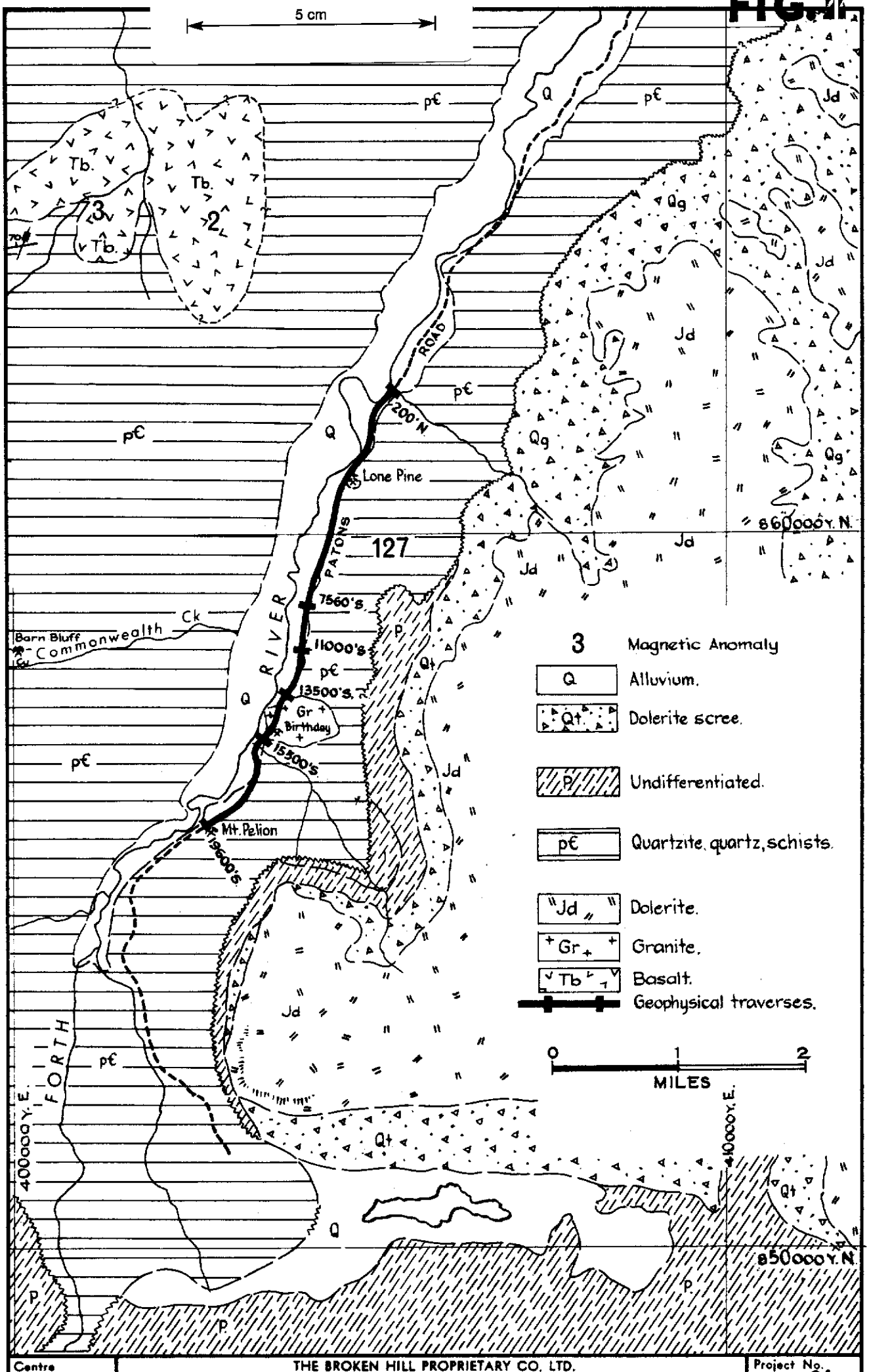
129011

FIG. 1



Centre: Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No. TSh. 20
Date: 25 July 1968	E.L. 15/65, SHEFFIELD – TASMANIA LOCALITY MAP	Drawing No. A4-1077

FIG. 11



Centre Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD. E.L.13/65 SHEFFIELD, TASMANIA. GEOLOGICAL MAP UPPER FORTH RIVER AREA	Project No. T.Sh.21
Date 2·7·68		Drawing No. A4/1064

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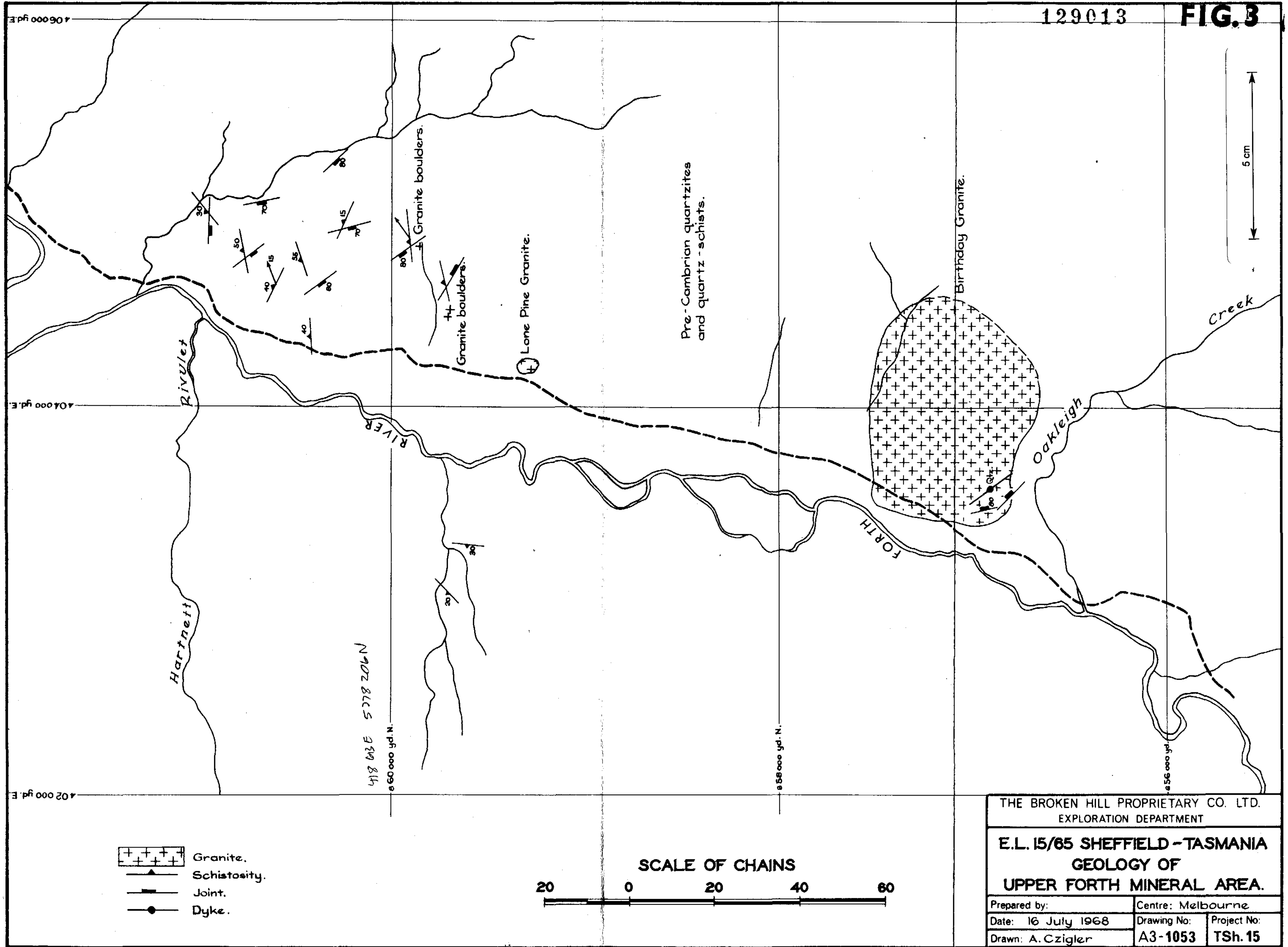
FIG. 3



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E.L. 15/65 SHEFFIELD - TASMANIA GEOLOGY OF UPPER FORTH MINERAL AREA.		
Prepared by:	Centre: Melbourne	
Date: 16 July 1968	Drawing No:	Project No:
Drawn: A. Czigler	A3-1053	TSh. 15

012

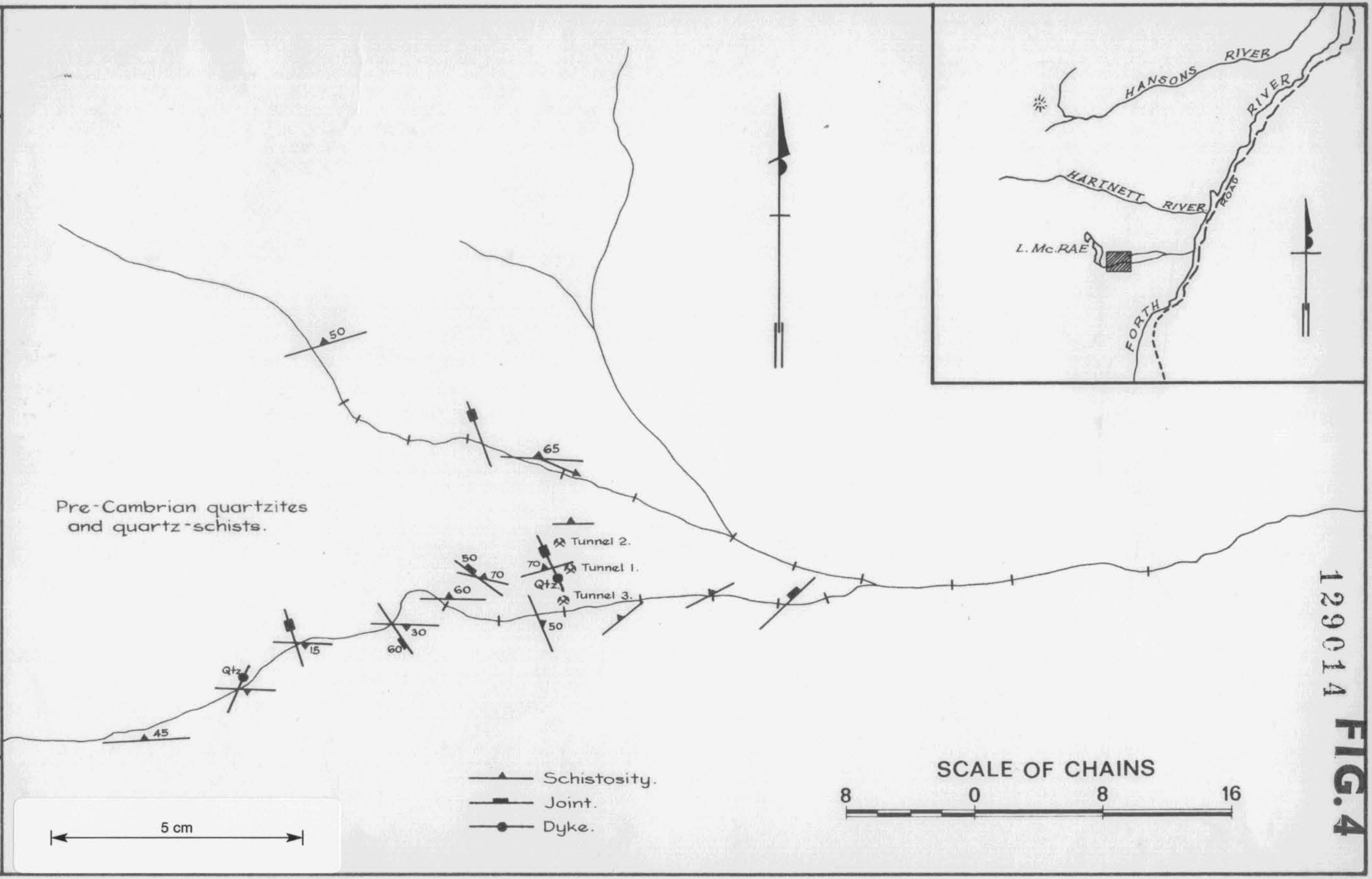

FIG. 4

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E.L. 15/65 SHEFFIELD – TASMANIA
BARN BLUFF COPPER MINE
GEOLOGICAL SKETCH MAP

Project No.
TSh. 16

Drawing No.
A4/ 1073

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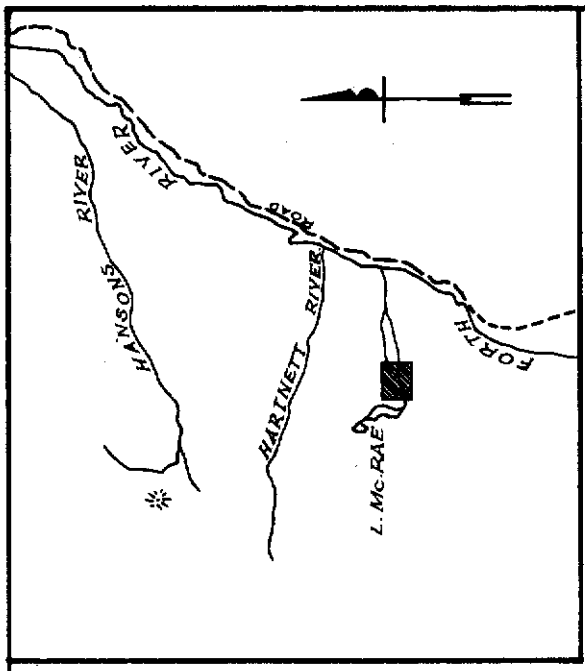
FIG. 5A

129015



SCALE OF CHAINS
16 8 0 8

5 cm

Centre Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD. E.L. 15/65 SHEFFIELD – TASMANIA BARN BLUFF COPPER MINE GEOCHEMICAL SAMPLE RESULTS – P.P.M. COPPER	Project No. TSh. 17
Date 18 July 1968		Drawing No. A4/1074

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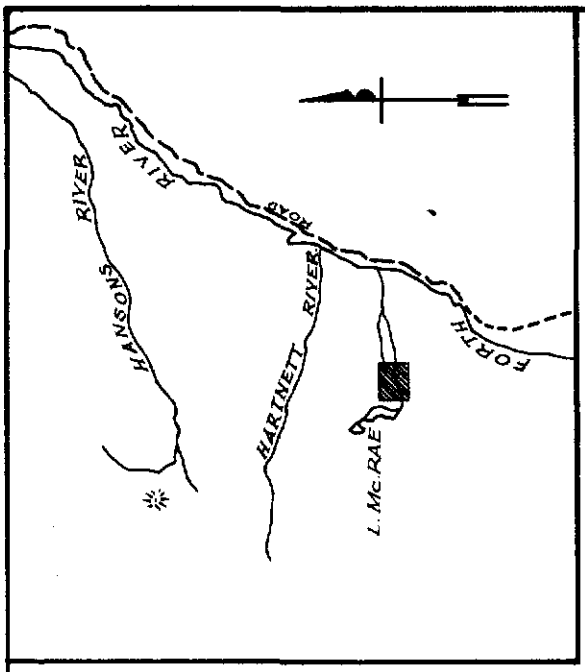
FIG. 5B

129016



SCALE OF CHAINS
16
8
0
8

N.S.

5 cm

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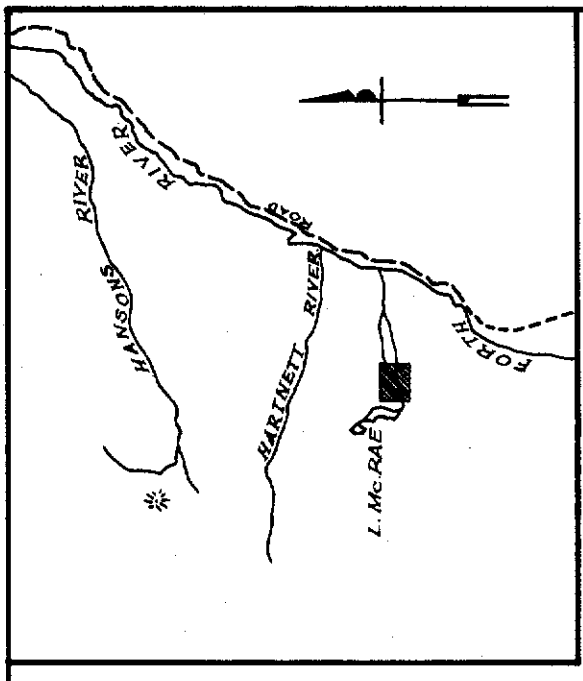
Date 18 July 1968	E.L. 15/65 SHEFFIELD – TASMANIA BARN BLUFF COPPER MINE GEOCHEMICAL SAMPLE RESULTS – P.P.M NICKEL	Drawing No. A4/ 1075

015

FIG. 5C

129017



SCALE OF CHAINS
16 8 0 8

5 cm

Centre Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD. E.L. 15/65 SHEFFIELD – TASMANIA BARN BLUFF COPPER MINE GEOCHEMICAL SAMPLE RESULTS – PPM ZINC	Project No. TSh. 19
Date 18 July 1968		Drawing No. A4/ 1076

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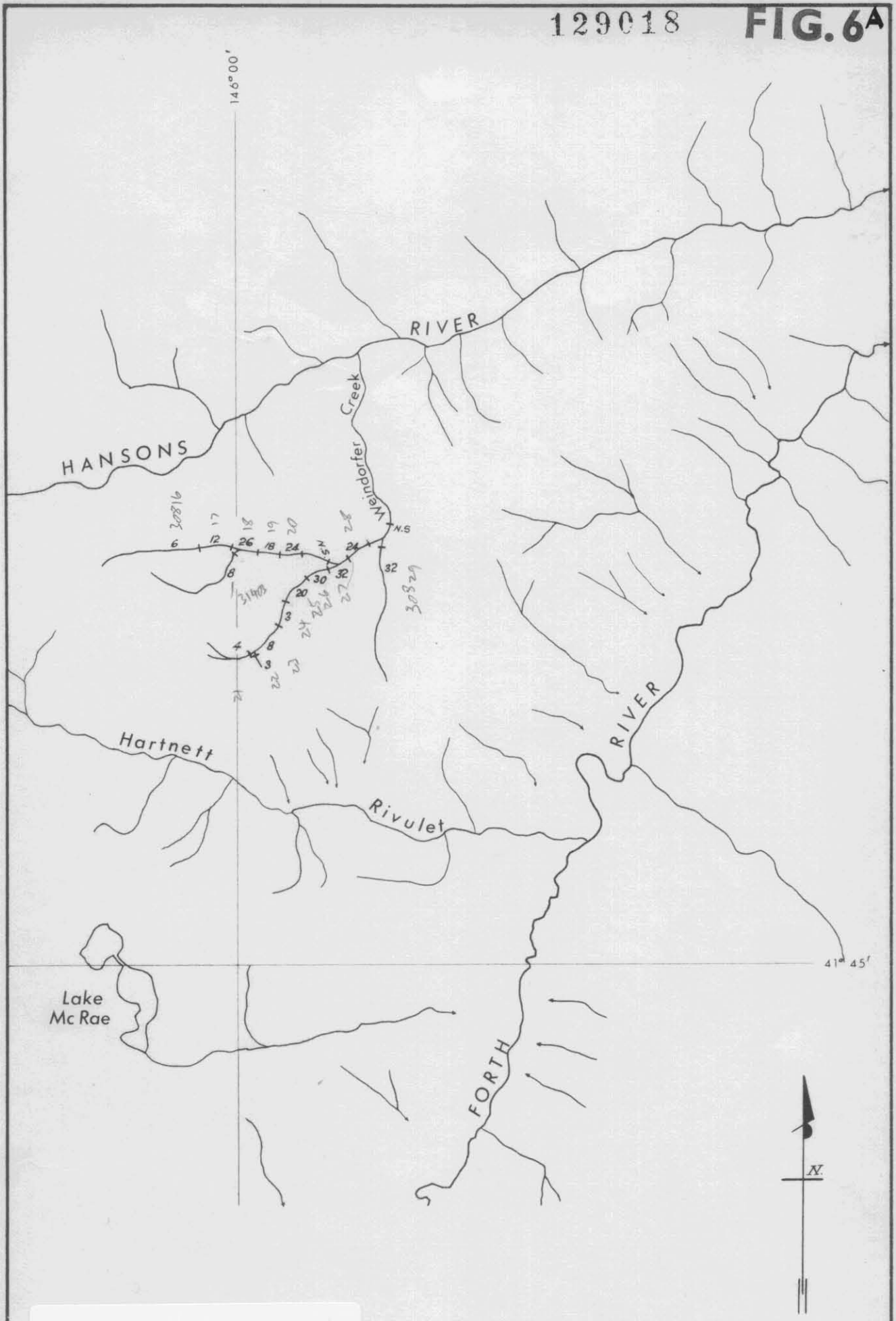
129018 FIG. 6A



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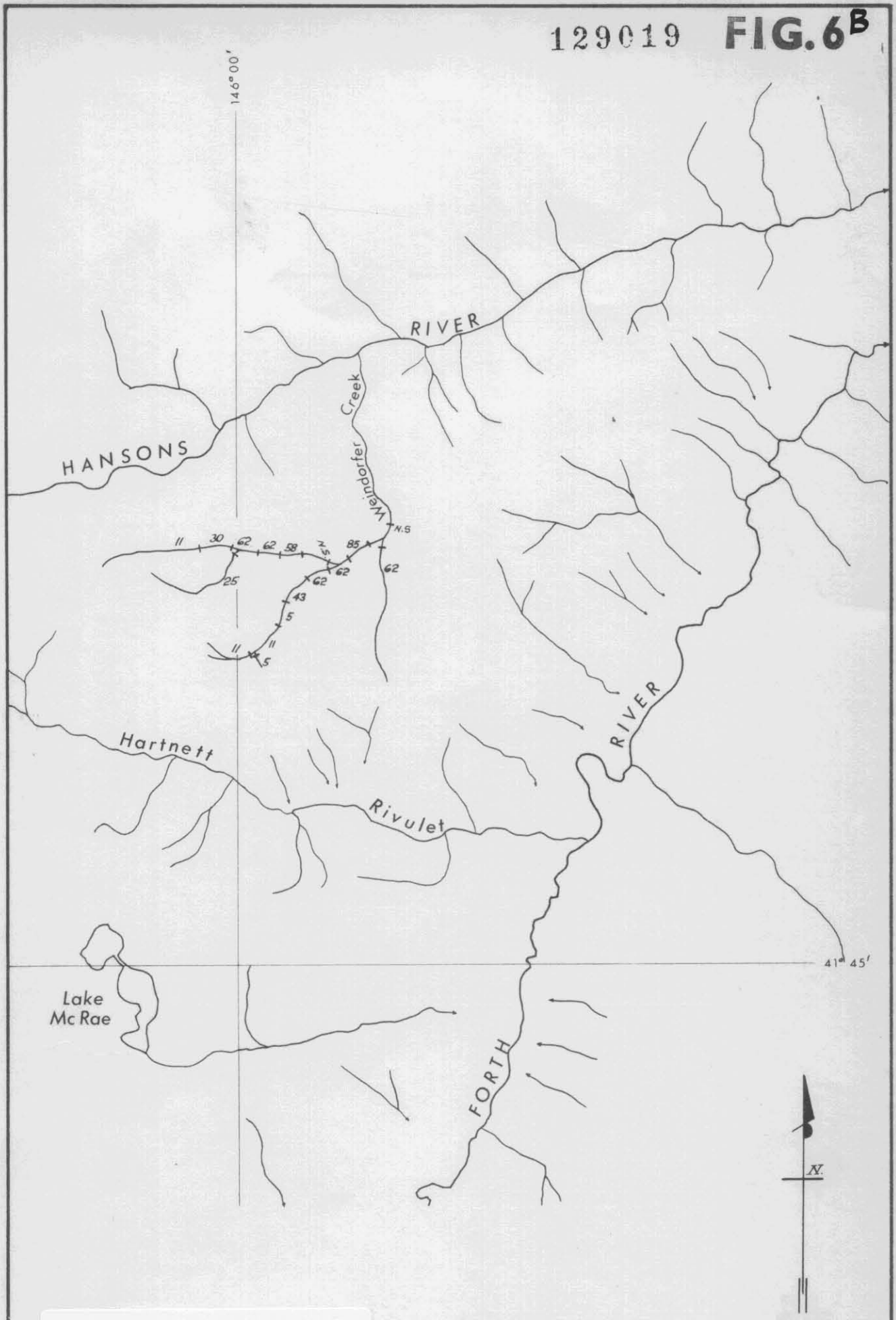
Date 19 July 1968	E.L. 15/65 SHEFFIELD – TASMANIA WEINDORFER CREEK AREA GEOCHEMICAL SAMPLE RESULTS – P.P.M. COPPER	Drawing No. A4/ 1080

017

129019 **FIG. 6B**



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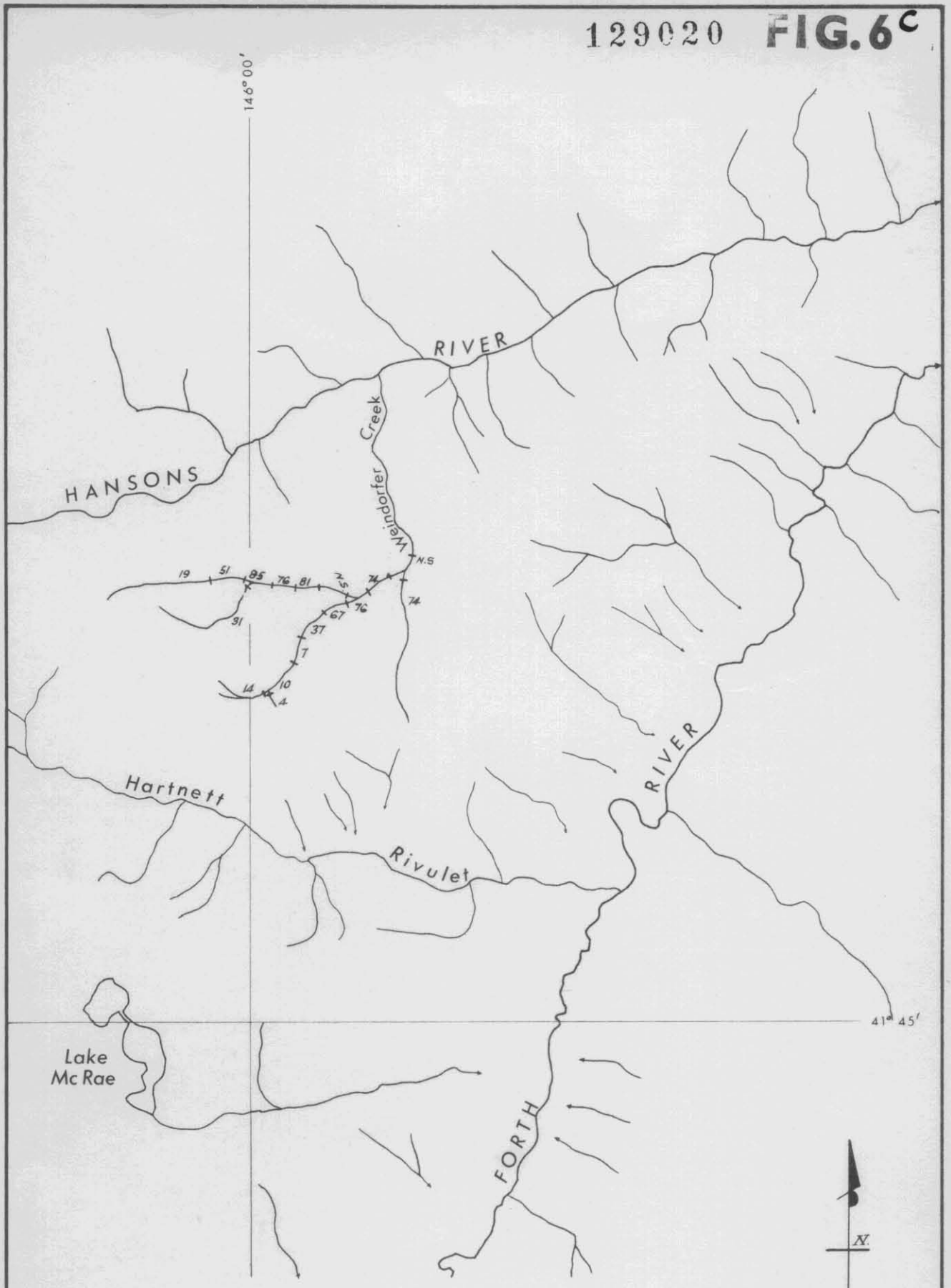
Date 19 July 1968		Drawing No. A4/ 1081

FIG. 6C



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Date 19 July 1968	E.L. 15/65 SHEFFIELD – TASMANIA WEINDORFER CREEK AREA GEOCHEMICAL SAMPLE RESULTS – P.P.M. ZINC	Drawing No. A4/ 1082