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COMSTAFF PROPRIETARY LIMITED

E. L. 5/63

MT. CHARTER AREA REGIONAL PROGRAMME  
WINTER 1970.

**OPEN FILE**

**MICROFILMED**

ANGLO AMERICAN CORPORATION (AUSTRALIA) LIMITED

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E.L. 5/63 MT. CHARTER AREA

REGIONAL PROGRAMME

1. GENERAL

The Charter area is centered round Mts. Charter and Block in the south eastern corner of E.L.5/63 approximately 20 miles from Waratah. The Murchison Highway provides the main access through the area, while use has been made of the few logging tracks which are still drivable.

Henderson (1938) reported workings in the area for silver, gold, and barytes and because of this a regional programme centered on the upper reaches of the Que river was carried out during the summer season of 1969/1970. This programme outlined a lead/zinc anomaly associated with a shear zone in the Reid volcanics on the eastern border of the exploration licence. Follow up work on this area continues.

An old barytes prospect apparently occurs on the northern slopes of Mt. Block, which area has not yet been covered by the Charter regional programme.

Work undertaken to date has involved a reconnaissance programme of geochemical stream sediment sampling and geological mapping over 35 miles of stream beds.

The area is one of fairly rugged relief, waterfalls being common along stream courses, with, in most cases, extremely thick vegetation ("horizontal" growth) necessitating a cut path along river banks. Hill slopes are covered with temperate rain forest (gum, myrtle and pine) with minor flat lying areas of button grass plain and/or swamps. Drainage of the area is by two river systems, one flowing west into the Huskisson, the other south into the Pieman.

Work on the Charter Regional programme commenced in July and was stopped mid-way through September, and was in the nature of an experiment in that stream sampling had not previously been carried out in winter. This was due to:

- (a) inclement weather,
- (b) suggested unreliability of stream sediment sampling in winter.

On sampling results obtained, winter and summer sampling programmes yield similar results. Inclement weather will remain the main difficulty for working in winter, not because of time lost, but rather for the demoralising conditions endured by personnel involved.

## 2. GEOCHEMISTRY: (Map No.2)

Coarse, active stream bed material was collected at 500' intervals along stream beds, involving a total of 378 samples. This material was dried and sieved, the -80 mesh fraction being sent off for analysis by AAS for copper, nickel, zinc, silver and molybdenum and colorimetrically for tin. Selected samples, those from along the larger streams were analysed by AAS for bismuth and antimony. Samples showing higher zinc and silver values were subsequently analysed for lead.

Histograms of population against ppm were drawn up for all the above elements, samples involved having come from three separate programmes over Cambrian rocks in the Charter area, namely:

Summer 1968/69	Que river reconnaissance,
Summer 1969/70	Que river regional
Winter 1970	Chester regional.

### 2.1. Zinc (Map No.3)

Values range from 6 to 900 ppm, with a background of  $\pm$  30 ppm. A break in the decay curve occurs at 180 ppm and values between 180 ppm and 280 ppm are regarded as possibly anomalous. Values over 280 ppm are regarded as probably anomalous. Five zinc values greater than 280 ppm were noted in four areas.

- 2.1.1. A single value of 900 ppm zinc and 2.8 ppm silver (with insufficient sample for a lead determination) is situated 600' north of a shear in acid volcanics (Anomaly C5). This sample was taken from a site close to the Murchison Highway and as such may be subject to contamination.
- 2.1.2. A single value of 700 ppm zinc and 225 ppm lead is on acid volcanics, again from a sample site close to

the Murchison Highway (Anomaly C4).

- 2.1.3. A single value of 360 ppm zinc is on fine grained tuff(?) from a sample site 800' south and downslope from the Murchison Highway (Anomaly C3). A rock sample of coarse grained tuff from this area contained blebs of sphalerite.
- 2.1.4. Two values of 360 and 370 ppm zinc are associated with an intrusive quartz-dolerite sill (Anomaly C1).

2.2. Silver (Map No.3)

Values range from 0.1 to 3.2 ppm with a background of  $\pm .025$  ppm. A break in the decay curve occurs at 2.5 ppm and values above this are regarded as possibly anomalous. Three values over 2.5 ppm were noted in separate areas.

- 2.2.1. As under Zinc (2.1.1.).
- 2.2.2. A value of 3.2 ppm silver and 310 ppm lead in acid volcanics, associated with which is a possibly anomalous zinc value of 210 ppm (Anomaly C6).
- 2.2.3. A value of 2.6 ppm silver over quartz-dolerite float with low order zinc at 100 ppm (Anomaly C2).

2.3 Lead (Map No. 3)

70 samples, possibly anomalous in zinc and silver, were analysed for lead. These, plus samples taken during earlier programmes were plotted on a histogram (population/ppm).

Values range from 6-700 ppm with a background of  $\pm 30$  ppm. The decay curve reaches 0 at approximately 240 ppm, values above this being regarded as possibly anomalous. Values over 400 ppm are regarded as probably anomalous, but no samples from the Charter programme exceeded this value. One value of possibly anomalous lead was noted as under Silver (2.2.2.).

2.4. Copper

Values range from 2 to 100 ppm with a background of  $\pm 5$  ppm. The histogram shows a normal decay curve with no anomalous values present.

2.5. Nickel (Map No.3)

Values range from 2 to 76 ppm with a background value of 5 ppm. The decay curve has a break at 70 ppm and values above this are regarded as possibly anomalous. Four values over 70 ppm were obtained, all of which are associated with the quartz-dolerite intrusion (Anomaly C1). It is considered that these values simply reflect the basic rock type and as such are not significant.

2.6. Tin (Map No.3)

Values range from 0.2 to 50 ppm with a background of  $\pm$  6 ppm. The histogram for tin shows a rather uneven distribution of values above 24 ppm. Values over 30 ppm are regarded as possibly anomalous.

Ten values exceed 30 ppm, five of which are isolated single values occurring over a variety of formations and are not regarded as significant. One area of five possibly anomalous values over Quaternary deposits contained values up to 50 ppm.

2.7. Molybdenum, Antimony and Bismuth

Sample values for all the above elements are generally below detection limits, ranges of values obtained are as follows:-

	<u>High</u>	<u>Low</u>	<u>Detection Limit</u>
Mo	1	Less than 1	1
Sb	-	Less than 8	8
Bi	20	Less than 10	10

3. GEOLOGY (Map No.4)

The Mt. Charter area is situated in the NW sector of a large north trending Cambrian formation measuring 55 miles X 8 miles stretching from Macquarie Harbour in the south to a point 10 miles south of Waratah. Notable economic deposits within this formation include Mt. Lyell (Cu, Au, Ag), Rosebery-Hercules (Pb, Zn, Ag), Renison Bell (Sn), and Mt. Farrell (Pb, Sn, Ag).

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Formations encountered during the present programme consist mainly of acid to intermediate, often porphyritic volcanics with minor intercalated grey and black shales. In the NE section of the area a younger quartz dolerite intrudes the above formations. Tertiary basalt mantles all the above formations to the North. Quaternary deposits make up the youngest formations in the area and consist of conglomerate "erratics", boulder beds and alluvium.

### 3.1. Volcanics

These formations include extrusive igneous rocks and pyroclastics, all of which have undergone varying degrees of alteration. From mapping to date the SW portion of the area has an abundance of the former, with roughly equal portions of both types in the NW portion. Descriptions of specimens sent off for petrological work are as follows:

#### 3.1.1. Extrusive igneous

Acid varieties from the SW portion of the area are described as dacitic lava flow breccias and porphyritic rhyolites. These rocks consist of sodic-feldspar and quartz with minor carbonate, chlorite, sericite and limonite.

Two specimens, again from the south-west have been described as acid/intermediate welded ash flows (?) and consist of grains of quartz and opaques set in a matrix of fine feldspar (?) and micaceous minerals.

Intermediate varieties come from localities in both areas. Three specimens are described as porphyritic and one is equigranular. Plagioclase is the major constituent with chlorite, quartz, mica, and in one case clinopyroxene as minor constituents.

One specimen from the south-west portion of the area is described as a basic/intermediate porphyritic, amygdaloidal volcanic rock. This rock consists of plagioclase phenocrysts, now altered to white mica, calcite and chlorite pseudomorphous after prismatic hornblende (?) and calcite-filled amygdales in a

groundmass of feldspar, chlorite (?) and calcite.

3.1.2. Pyroclastics

Three specimens sent off were described as tuffs, all from the NE portion of the area. All are acid in composition, contain irregular fragments, with varying amounts of devitrified material. Constituents include fragments of quartz, feldspar, quartz-muscovite, microdiorite, microsyenite, biotite, chlorite and carbonate in a siliceous matrix. One specimen had been partly replaced by chlorite accompanied by sphalerite up to 1.2 mm in size, the only specimen in which mineralisation was noted.

3.2. Grey and Black Slates

Grey slates (?) occur in thin bands, intercalated with the volcanics and it is thought that these are probably finer tuffaceous horizons rather than true slates. They consist of fine grained, finely banded siliceous material. There is a sizeable area of black carbonaceous slate in the north-west portion of the area, carrying disseminated pyrite, and in one locality banded pyrite. Two varieties occur, one a true slate with slaty cleavage; the other is more compact and blocky, with conchoidal fracture.

3.3. Quartz-dolerite

A large amount of float and two outcrops of quartz-dolerite were noted in the NW portion of the area. A specimen of this rock was sent off for petrological description and was described as "consisting of serpentine-chlorite pseudomorphs after euhedral olivines, sub to euhedral clinopyroxene, minor orthopyroxene, interstitial laths of andesine=labradorite and irregular patches of quartz".

3.4. Quaternary Deposits

The youngest deposits in the area consist of alluvium, fluvioglacial boulder beds, and moraine debris in the form of conglomerate boulders, the latter reaching large proportions. These deposits are found in the low lying

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"button grass" plains; some conglomerate boulders also occur as "erratics" overlying volcanics and black slates.

3.5. Structure

Little structural information has been noted in the Charter area, mainly due to the large area of uninformative volcanics.

The NE portion of the area joins with the geological mapping undertaken on the Que regional programme. Within this area the black slates have provided most of the structural information. Over the southern three-quarters of the area strikes trend NE with dips varying between 27° and 43° to the NW. Along the northern border of the area mapped, just before the older formations are covered by Tertiary basalt, strikes trend E to NE with shallow dips between 8° and 17° to the S and SE. Possibly these sets of measurements form the two limbs of an asymmetrical syncline, the axial plane of which trends NE. However, more information would be required to substantiate this. A quartz-dolerite dyke (?) intrudes the slates and volcanics and, on the basis of two outcrops mapped, trends NNE.

In the SE only three elements of structure were noted in fairly close proximity. One dip and strike of "layering", possibly bedding in tuffs, trends NE and dips 35° to the NW and a shear zone 3000' to the E, in rhyolite, has the same trend with a vertical dip. A fault 1200' south of the shear zone trends NE and dips to the NW.

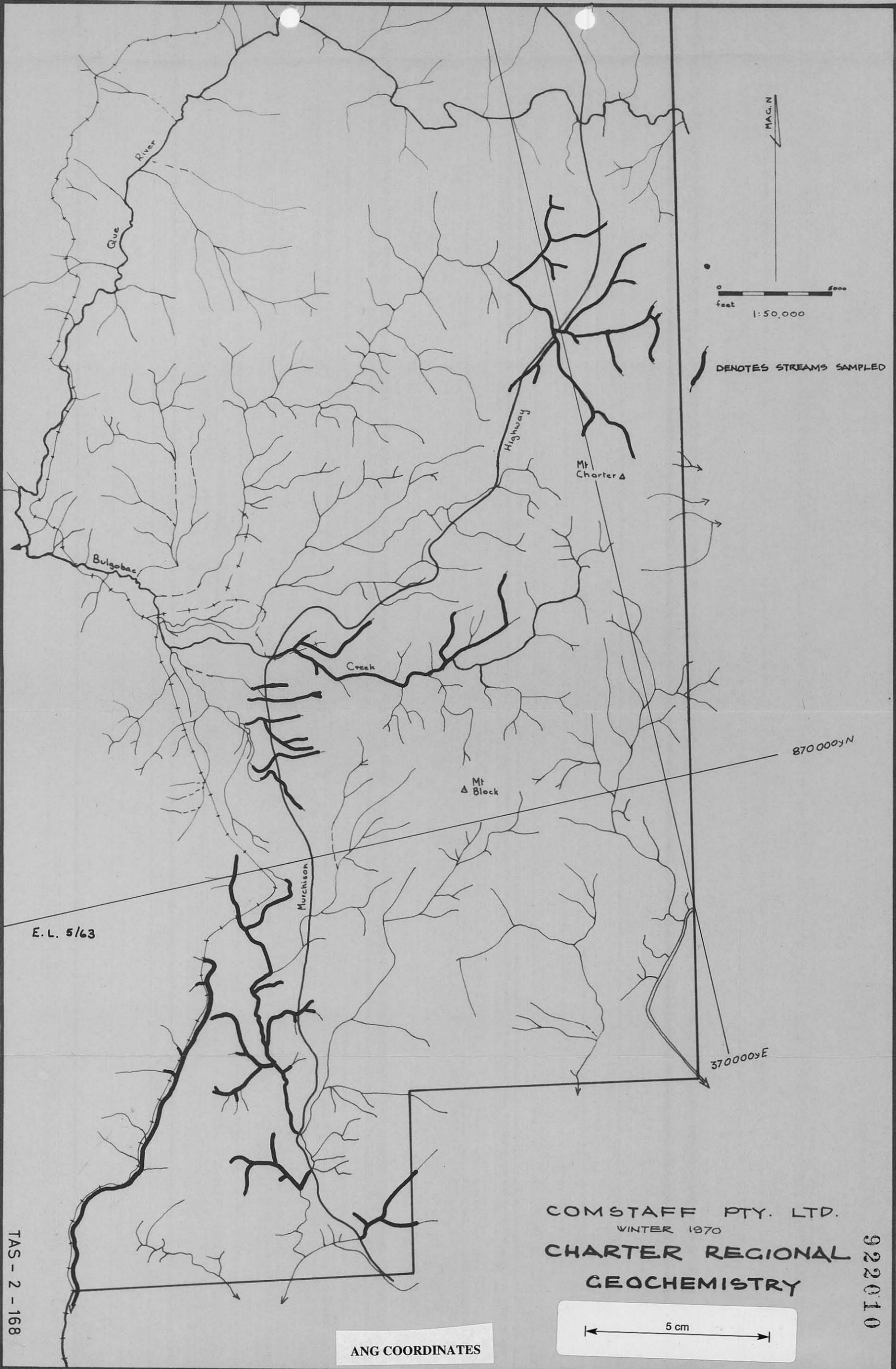
4. PLANS

<u>Plan No.</u>	<u>Title</u>	<u>Scale</u>
1	Locality Plan - Mt Charter Region	
2	Charter Regional Geochemistry	1:50,000
3	Charter Regional Geochemical Anomalies	1:50,000
4	Charter Regional Geology	1:50,000

*Romana Armfield*  
for T. CHISHOLM

January 1971.





0 5000  
feet  
1:50,000

DENOTES STREAMS SAMPLED

870000yN

370000xE

E.L. 5/63

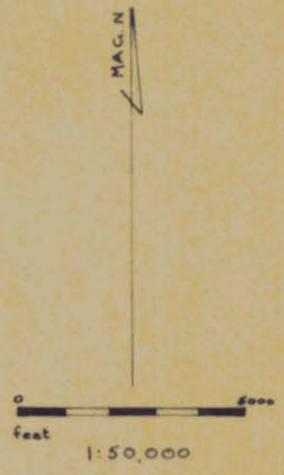
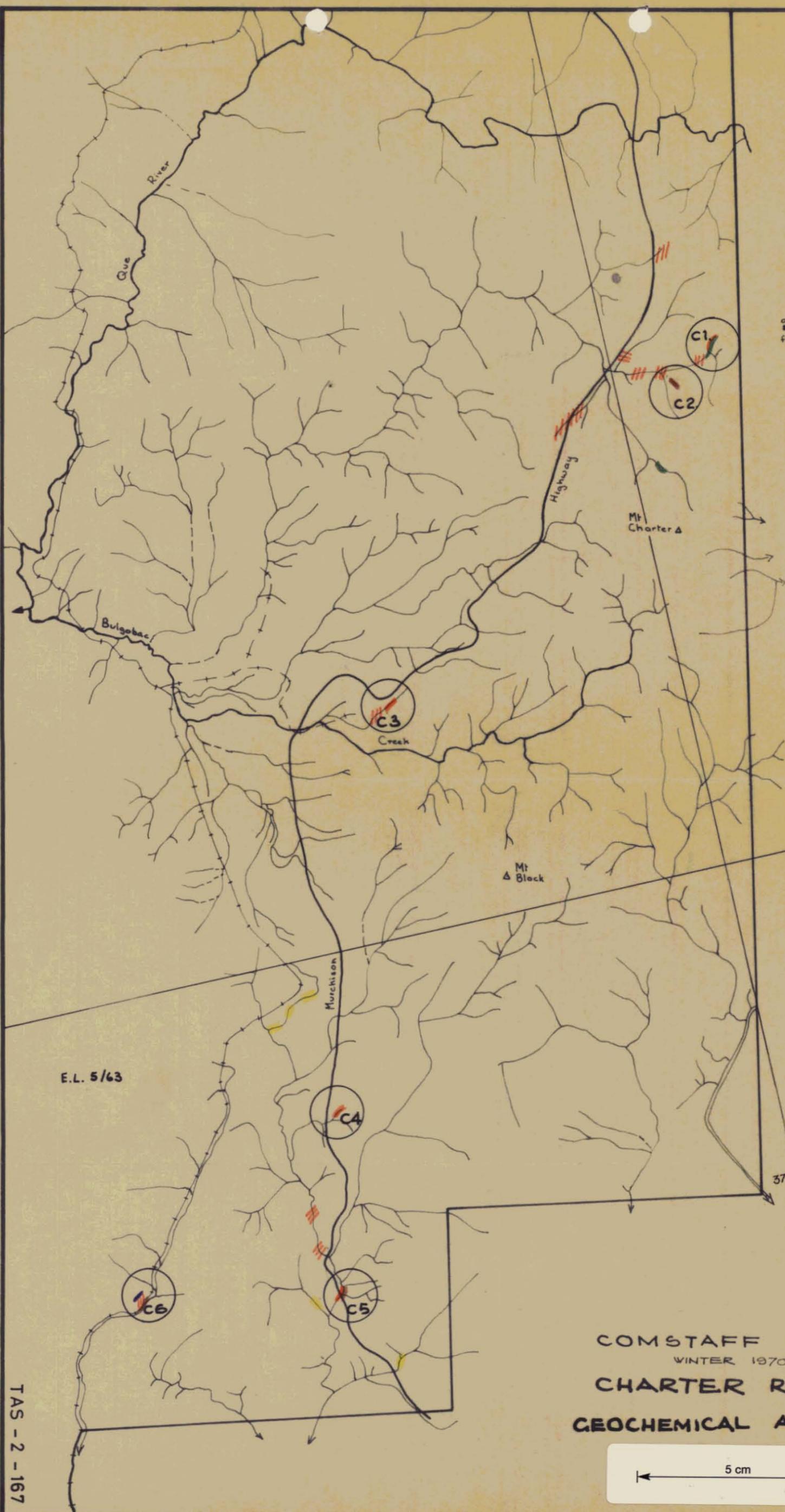
COMSTAFF PTY. LTD.  
WINTER 1970  
CHARTER REGIONAL  
GEOCHEMISTRY

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5 cm

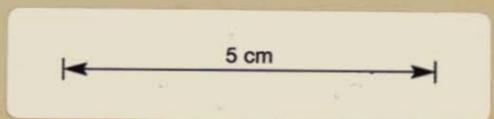
ANG COORDINATES

TAS - 2 - 168  
MAP No. 2 71-718



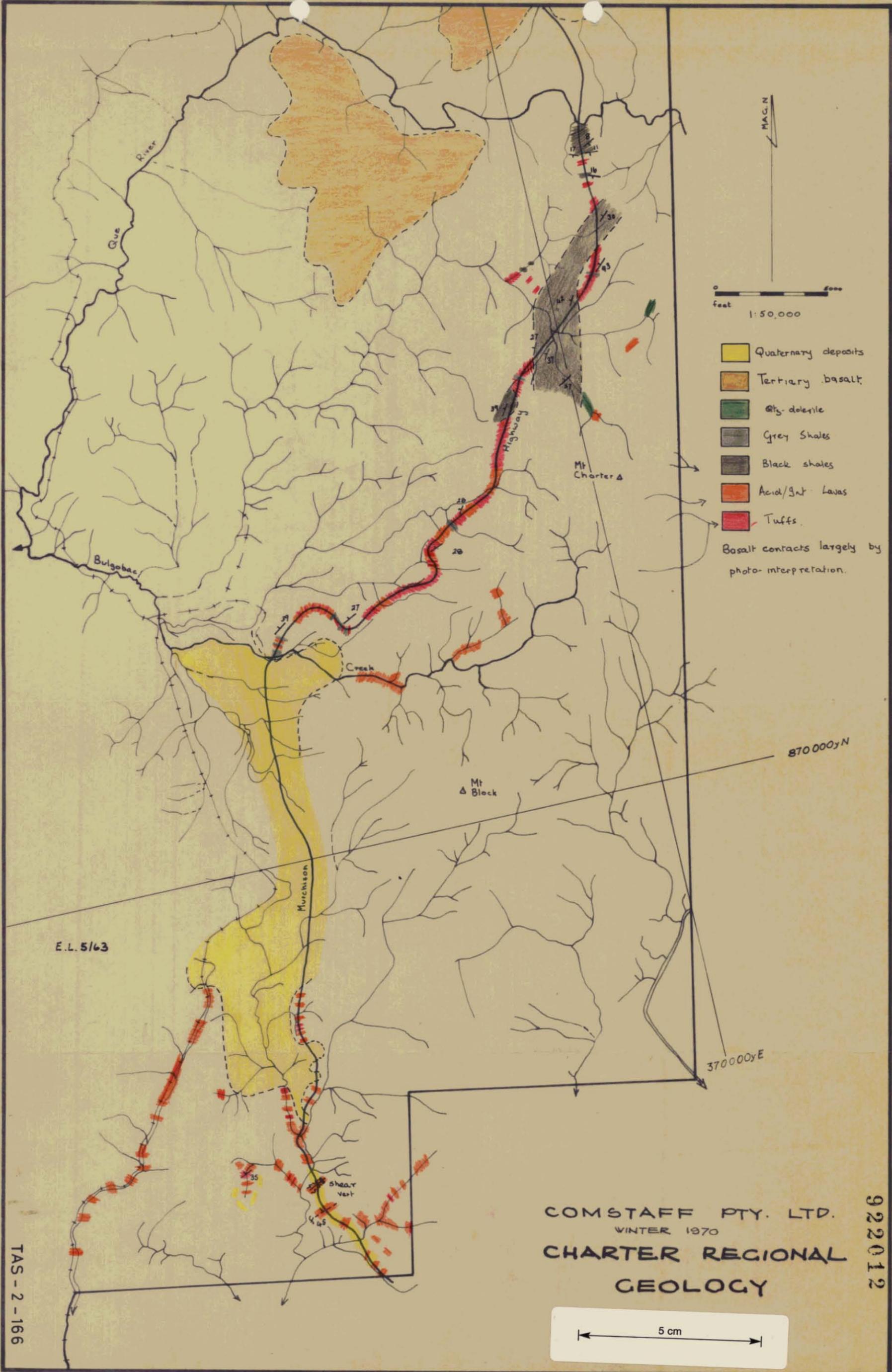
ZINC		> 280 p.p.m. > 180 p.p.m.
SILVER		> 2.5 p.p.m.
TIN		> 30 p.p.m.
NICKEL		> 70 p.p.m.
LEAD		> 240 p.p.m.

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WINTER 1970  
CHARTER REGIONAL  
GEOCHEMICAL ANOMALIES



71-718  
MAP No. 3  
TAS-2-167

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0 1000  
feet  
1:50,000

- Quaternary deposits
- Tertiary basalt
- @ty. dolerite
- Grey Shales
- Black shales
- Acid/Gnt. Lavas
- Tufts.

Basalt contacts largely by photo-interpretation.

MAG. N

E.L. 5163

870 000yN

370 000yE

71-718  
MAP No. 4

TAS - 2 - 166

COMSTAFF PTY. LTD.  
WINTER 1970  
CHARTER REGIONAL  
GEOLOGY

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5 cm