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I.C. Doc. No. 9707



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PROJECT NAME:

COMSTAFF PROPRIETARY LIMITED

TITLE:

BULGOBAC - QUE REGION

REVIEW OF GEOCHEMISTRY

DWG
MICROFILMED

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

COMMODITY/IES:

TEXT PAGES NO:

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PLAN NOS:

TABLE NOS:

APPENDICES:

AUTHOR/S:

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DATE:

3rd July 1979

OPEN FILE

AUSTRALIAN ANGLO AMERICAN LIMITED

Incorporated in the State of Victoria

COMSTAFF PROPRIETARY LIMITEDBULGOBAC - QUE REGIONREVIEW OF GEOCHEMISTRYINTRODUCTION

The area under review is the southeast portion of EL 5/63 part 2, and all of EL 5/63 part 3.

Previous reports on the area are as follows:-

1. Pigott, G.F. 1971 : Bulgobac/Que Regional Programme Summer 1971.
2. Chisholm, T. 1971 : Mackintosh Regional Programme, 1971 Winter Field Season Report.
3. Orr, D.B. 1978 : Preliminary Assessment of the Mount Block Area.
4. Orr, D.B. 1978 :: Preliminary Assessment of the Hatfield, Que River and Coldstream Drainage Basins.
5. Hall, D.B. 1979 : Review of Sock Creek Data.
6. Hall, D.B. 1979 : Report on Exploration at Mt. Block Grid DAC.

GEOLOGY

The region is underlain by the Mt. Read Volcanics, between the Ordovician conglomerates and Precambrian metamorphic rocks to the east, and the Dundas Group sediments to the west of the Owen Shear.

Massive acid to acid-intermediate intrusive and extrusive rocks make up the bulk of the sequence, with interbedded sedimentary and tuffaceous units. Intrusive contacts between the porphyritic rocks and the sediments south and west of Bulgobac attest to the intrusive nature of the rocks. The sedimentary units have an overall NE-SW strike and a NW dip.

STREAM GEOCHEMISTRY

The whole area was subjected to a stream sediment sampling programme, with all major creeks and rivers, and tributary creeks, being sampled at 500 feet (150m) intervals. The -80# fraction was analysed for Cu, Zn, Ag and Ni on all samples, with Pb analyses on approximately 30% of the samples. The sample sites are shown on TAS/2/1402, the 1 : 1000 imperial sheet of the area. Results are presented on plans TAS/2/1283 and 1284. Heavy concentrate samples were also taken at some stations and analysed for a suite of elements: results are presented on TAS/2/1282.

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2.

Several anomalies are present, essentially Pb and Zn, with minor Cu and Ni.

ANOMALY FOLLOW-UP WORK

1. EL 5/63 : Part 2 : Bulgobac Area

The anomalous zones are shown on Plan No. TAS/2/1636. *int. cont*

1.1 Anomalous Area Q1

Two individual tributary samples gave anomalous Zn (410 and 1400 ppm), Pb (400 ppm, nd*) and Cu (40 and 120 ppm).

Left and right hand bank sampling (Plan No. TAS/2/1293) of both surface and auger samples gave no anomalous results. The tributaries drain a ridge, upslope and to the east of the Emu Bay Railway, but there is a possible discrepancy in plotting of the sample sites. Low order anomalies in the Que River are probably related to contamination from the railway.

Only reconnaissance mapping has been carried out in the area during the stream sediment sampling programme, which shows massive acid volcanic units (porphyry, or porphyritic rhyolite) to the east of the railway. If the anomalous values are not due to the railway, which appears likely, then they represent something within the acid volcanics. It is possible that mineralization similar to the Sock Creek prospect is present in the volcanics, particularly as it is close to the sediment-intrusive contact.

It is not considered that the anomaly is of any further significance.

1.2 Anomalous Area Q2.

This represents a single point low order Pb/Zn anomaly, (Pb 200 ppm, Zn 180 ppm) in a north flowing tributary of the Que River. It is not deemed to be due to contamination from the railway, as other samples upstream towards the railway are not anomalous. The sample is from close to the intrusive contact between shales, greywackes and siltstones to the west, and porphyry to the east, and drains from the acid volcanics to the southeast.

No follow up work has been done on the area, but stream mapping, and detailed mapping of the Que River failed to find any mineralized source for the anomaly.

No work can be recommended.

*nd = not determined

1.3 Anomalous Area Q3.

This is a single sample anomaly on Bulgobac Creek immediately below the Emu Bay Railway. Values are Cu : 65 ppm, Pb : 750 ppm, and Zn : 1000 ppm.

Follow up bank sampling upstream produced no anomalous values. Ballast samples on the railway at the creek crossing gave values of Cu : 1150 ppm, Pb 2.2%, Zn : 1.2% (TAS/2/1292). The stream anomaly can be directly related to contamination from the railway.

1.4 Anomalous Area Q4.

A single point anomaly with 490 ppm Zn, 360 ppm Pb and 1.8 ppm Ag, occurring on a very small tributary, with a small drainage area. Nothing of significance occurs on the other side (west) of the watershed. A very small galena fragment has been seen in a fracture in the potassic rhyolite to the west of the anomaly, and minor disseminated pyrrhotite is also present. Left and right bank soil sampling of the creek produced no anomalous results (TAS/2/1294-1295). A petrological description of a specimen from the area gave a tuff lava of sodic rhyolite composition.

Bulgobac Grid 4 was erected on a 500 feet square basis, around the anomaly, and was soil sampled at 50 feet intervals. No geochemical anomalies were found (TAS/2/1291).

The stream sediment anomaly is unexplained, but is not thought to represent sulphide mineralization in the vicinity.

2. EL 5/63 : Part 3 : Sock Creek - Que Area

This area has been reviewed by D.B. Orr, 1978, who gave the various anomalous zones an S prefix, see map TAS/2/1637.

2.1 Anomalous Zone S1.

This zone consists of three anomalies, on a NNE-SSW strike. Hash Creek in the north, Sock Creek in the centre, and Green Creek in the south.

The Sock Creek anomaly has been reviewed separately, (Hall 1979).

The Hash Creek area was outlined by low order lead and zinc anomalism in the reconnaissance stream sediment sampling programme. Follow-up close-spaced (100 feet) sampling confirmed the anomalism.

Four E-W grid lines were cut, sampled and mapped (TAS/2/1274). Some of the lines were also surveyed with ground magnetometer (TAS/2/1289) and Crone EM (TAS/2/1275). A similar rock sequence to Sock Creek is present, but with no evidence of base metal mineralization. The soil sampling failed to give any anomalous values (TAS/2/1418, 1419, 1420). The geophysical surveys failed to give any response that could be indicative of sulphides.

The Green Creek area, SSW of Sock Creek, produced low order lead and zinc anomalies (Pb : 120 ppm, Zn : 480 ppm). A small grid erected over the creek area, failed to produce a source for the anomalies, and only low order values for Cu, Pb and Zn are present in the soils (TAS/2/1418, 1419, 1420). The creek flows northwards, and drains the southern part of the Sock Creek mineralized zone, which may be the source of the values.

In view of the nature of the Sock Creek mineralization, these anomalies are not significant, and in all probability do not reflect massive sulphide deposits.

2.2 Anomaly S2

This represents a series of low order lead/zinc values at 500 feet intervals in a south flowing creek, (Pb : < 280 ppm, Zn : < 150 ppm). The creek is draining from the Tertiary basalt, through massive acid intrusive/extrusive rocks. There is no direct evidence of sedimentary or pyroclastic units in the area.

The anomalous values are interpreted as being due to the basalt, and there is no evidence to suggest a massive sulphide source.

2.3 Anomalous Zone S3.

This is a zone of anomalous geophysics (Input Zone CS 30A), with some associated stream sediment anomalies. The zone straddles the Murchison Highway, which in this area is the eastern boundary of the tenement.

Input anomaly DAB, within the CS 30A zone, corresponds to a zone of weak stream sediment geochemistry in Big Creek (Bulgobac Creek?), which crosses the Highway about 1.5 km south of the Que River Mine road. Low order lead/zinc values are present (Pb : 155 pm, Zn : 270 ppm). The creek flows through a thick unit of grey to black siltstones and slaty shales, which are well exposed on the Highway.

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A three line grid, DAB grid, was cut in the area, and a standard Input anomaly follow-up programme carried out. Low soil geochemical values were obtained, but costeaning was carried out to expose the contact zone of the sediments and acid volcanics. The costeans were channel sampled, but they gave only background values for Cu, Pb and Zn. An inspection and rapid mapping of the costeans shows a sequence of pyritic slaty black shales overlain by waterlain quartz felspar tuffs, fine agglomerates, acid ash flow tuffs, and another thinner unit of faulted grey to black siltstones. All the sediments dip west at shallow angles $<35^{\circ}$ and the steep parallel cleavage indicates a syncline to the west.

There is no indication of base metal sulphides in any of the sediments exposed in the costeans, or in the road cuttings on the Highway.

The geology to the south of DAB has been complicated by faulting, and massive acid volcanic intrusives. However, there is significant development of well bedded fine grained sandstone, well exposed in a roadside quarry at 387000E, 5390700N. Graded bedding, ripple marks etc., indicate a westerly dip of up to 45° .

A similar rock has been recorded as micaceous quartzite on the access road into Sock Creek, but is not evident in the DAB grid area. It possibly represents a distinct shallow water lain unit, or a lateral facies change from the deeper water sediments seen to the north.

No indications of base metal sulphides have been seen in the sequence, or recorded in the vicinity. The regional stream sediment sampling programme failed to give any anomalous values that could be indicative of a base metal source. The Input EM response - zone CS 30A - can be directly related to the grey and black siltstones and shales, which are strongly pyritic in places.

In view of the negative evidence available for the presence of base metal sulphides associated with the volcano-sedimentary rock units, no further work can be recommended in this area.

It is possible that small discrete sulphide bodies may be present in the shales and siltstones, but there is no indirect method of finding them, due to the strong background response the pyritic shales would give to Induced Polarization. Also, the target objective is such that the work carried out to date in this area should have given some response to a large, multi million tonne deposit.

3. EL 5/63 : Part 3 : Mt. Block Area

Three anomalous areas are shown on Plan TAS/2/1637, as M1, M2 and M3. Sample sites and results are on Plans TAS/2/1406, 1305.

3.1 Anomaly M1

This stream sediment anomaly occurs just outside the eastern boundary of the lease, on Mullabadine Creek just above its confluence with the Mackintosh River. Low order Cu anomalies were present in the original reconnaissance sampling, and in the follow-up close spaced (100 feet) sampling, with maximum values of Cu : 95 ppm, Pb : 410 ppm, Zn : 220 ppm.

Creek mapping discovered some old workings in the form of two adits, and some pitting. The adits were mapped in 1972 (TAS/2/400) and showed a sequence of quartz-sericite schists and grey to black siltstones, variably cleaved. The quartz sericite schists are apparently altered rhyolite. The rocks have steep dips with a synclinal axis striking E of north through Adit No.1. Disseminated pyrite is present in the slaty siltstones and the schists, and in a fine grained quartzite unit. Chalcopyrite is associated with quartz veining in the shales.

The mineralization is probably related to the dynamic metamorphism that produced the schists and slates. As this anomaly is along strike from the Tullah ore deposits, it is probably related to the same phase of mineralization. The Farrell Slates are well exposed to the south of M1, but are barren of base metal sulphides.

Some gridding and soil sampling was carried out around the anomaly, but no anomalous values were present.

3.2 Anomaly M2.

This is a Zn anomaly with minor lead and silver (Zn : 1140 ppm, Pb : 127 ppm, Ag : 2.5 ppm) upstream from the M1 anomaly. The anomaly is associated with clastic sediments, just to the east of a fault (Hall 1979 : DAC Report). No base metal mineralization was sighted on the DAC grid, and the stream sediment values are not considered significant.

3.3 Anomaly M3.

This was a significant stream sediment anomaly in the reconnaissance phase of sampling, with 8000 ppm Zn, 150 ppm Cu, 13 ppm Ag. Follow-up close spaced stream sediment sampling upstream from the initial sample point, failed to give any anomalous values.

The anomaly is in a swamp area, and a grid was cut, and soil samples taken. A weak Zn anomaly was present on the east side of the creek (TAS/2/510) associated with rhyolitic rocks. Some sediments are noted in the vicinity with a steep easterly dip. Some Banka sampling was carried out which failed to find any anomalous geochemistry. Some petrographic work done on the rocks indicates rhyolitic tuff-lava, and vitric welded tuff. This would imply a subaerial environment of deposition, which is not a suitable environment for the presence of massive sulphide deposits.

CONCLUSIONS AND RECOMMENDATIONS

All geochemical data have been studied in association with the geology and any other follow up work carried out.

The anomalies in the Bulgobac area are due to contamination from the Emu Bay Railway. Only Q4 can be said to have a primary source, which can be discounted as a prospective target for further exploration.

In the Sock Creek-Que area, anomaly S1 has been fully tested without discovering a massive sulphide deposit. The mineralization is essentially hydrothermal, associated with massive porphyry intrusives. Anomaly S3 has only weak geochemistry, possibly affected by the proximity of the Murchison Highway. Substantial developments of pyritic black shales provide a good target for exploration, but testing at DAB, and mapping of road exposures, has failed to prove the presence of any base metal sulphides.

In the Mt. Block area, the three anomalies are not significant, and recent work on grid DAC failed to find any sulphides.

No further detailed work can be recommended in these areas on the basis of the stream sediment geochemistry, and the soil and auger geochemical sampling carried out on the grids erected over the stream anomalies.

D.B. Hall

Written by
D. B. Hall
SENIOR GEOLOGIST

3.7.1979
DBH:pmck

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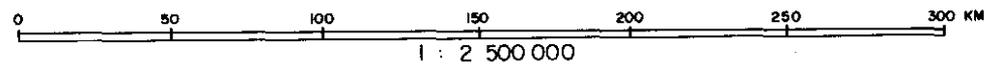
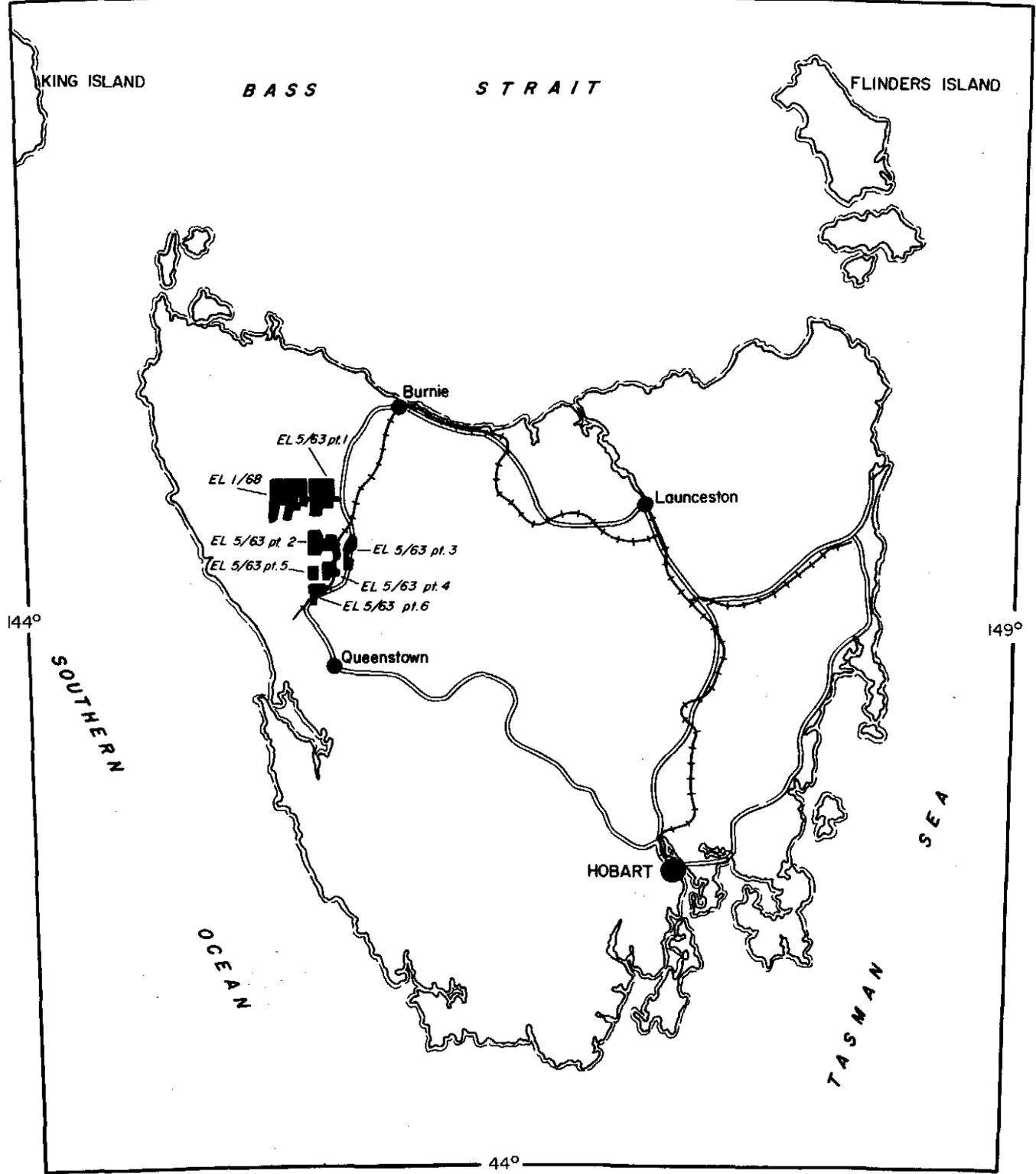
LIST OF MAPSBULGOBAC - QUE REGION

Category	Plan No.	Title	Scale
Location	TAS/2/1586	Location of Comstaff Leases in Tasmania	1:2 500 000
"	TAS/2/1408	Comstaff Project Map	1:250 000
Geochemistry	TAS/2/1418	Sock Creek Grid - Geochemistry Soil Sampling Cu Results	1:5 000
"	TAS/2/1419	Sock Creek Grid - Geochemistry Soil Sampling Zn Results	1:5 000
"	TAS/2/1420	Sock Creek Grid - Geochemistry Soil Sampling Pb Results	1:5 000

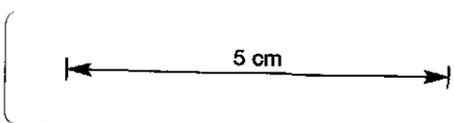
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39° 30'



- Major roads
- Major railways
- Major towns
- Comstaff lease areas

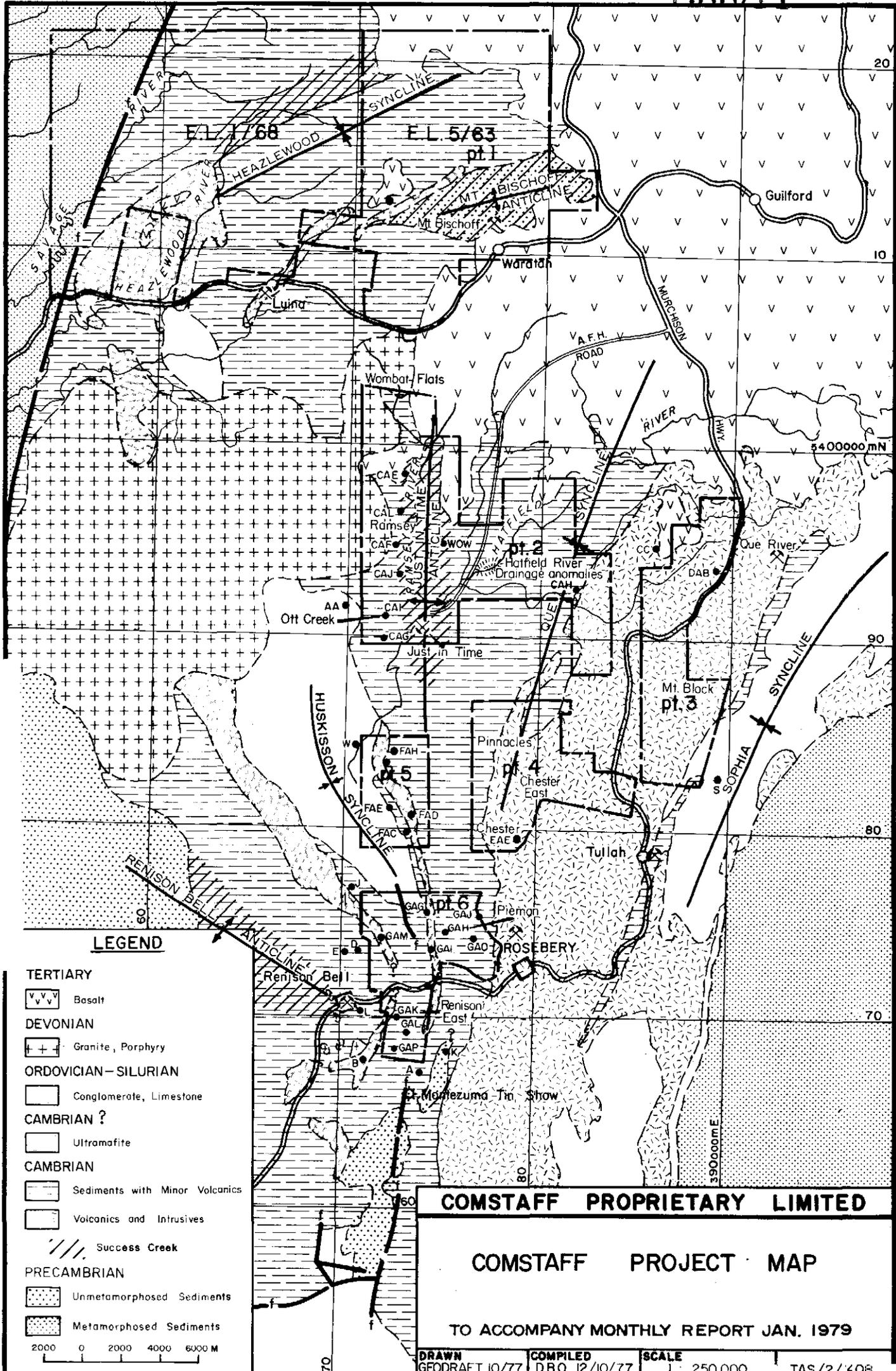


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LOCATION OF COMSTAFF LEASES

IN TASMANIA

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LEGEND

- TERTIARY**
- Basalt
- DEVONIAN**
- Granite, Porphyry
- ORDOVICIAN-SILURIAN**
- Conglomerate, Limestone
- CAMBRIAN ?**
- Ultramafite
- CAMBRIAN**
- Sediments with Minor Volcanics
- Volcanics and Intrusives
- Success Creek
- PRECAMBRIAN**
- Unmetamorphosed Sediments
- Metamorphosed Sediments

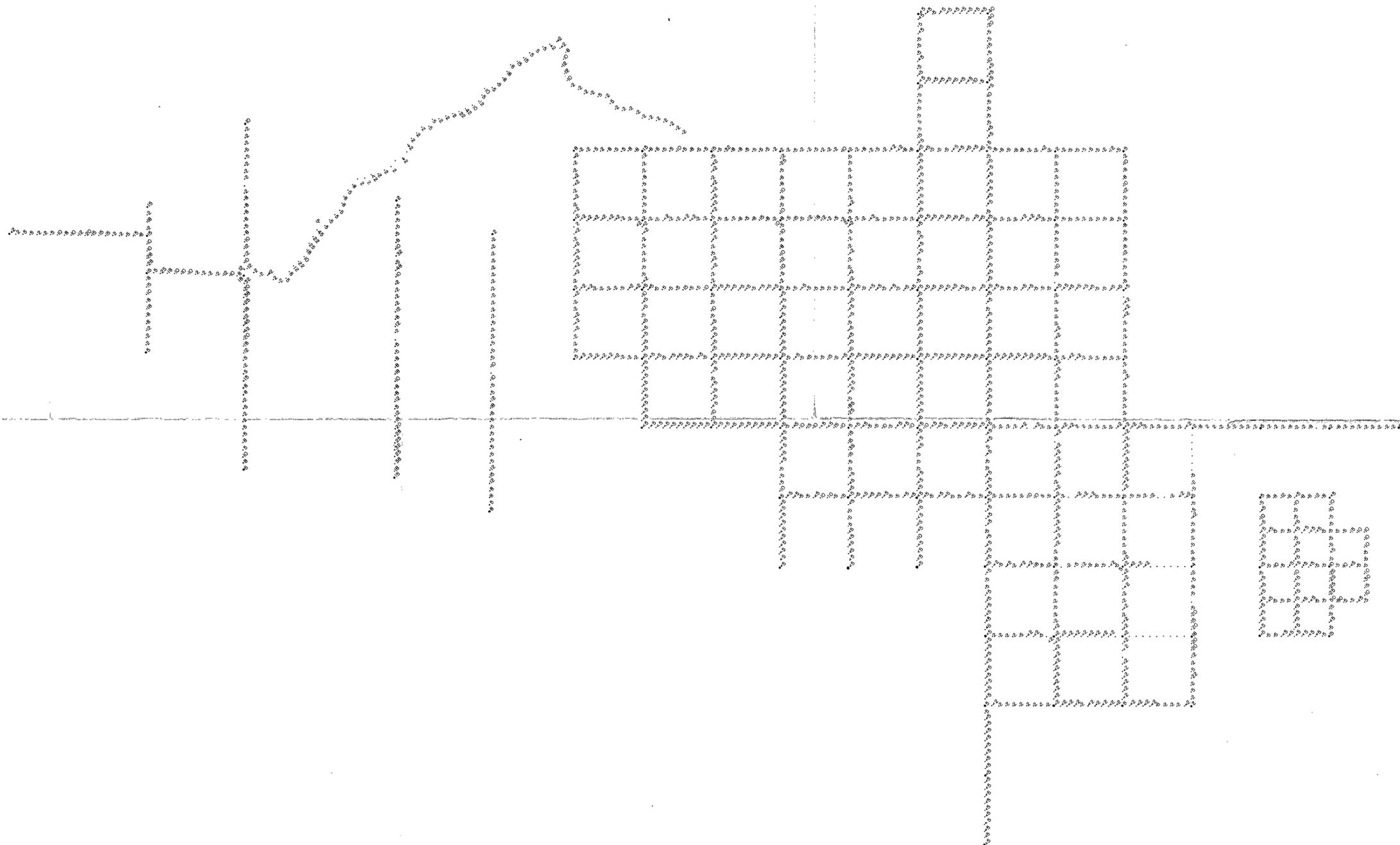
2000 0 2000 4000 6000 M

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COMSTAFF PROJECT MAP

TO ACCOMPANY MONTHLY REPORT JAN. 1979

DRAWN GEODRAFT 10/77	COMPILED DBO 12/10/77	SCALE 1 : 250 000	TAS/2/40R
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HASH CREEK

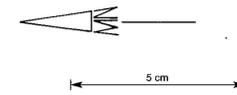
SOCK CREEK

GREEN CREEK

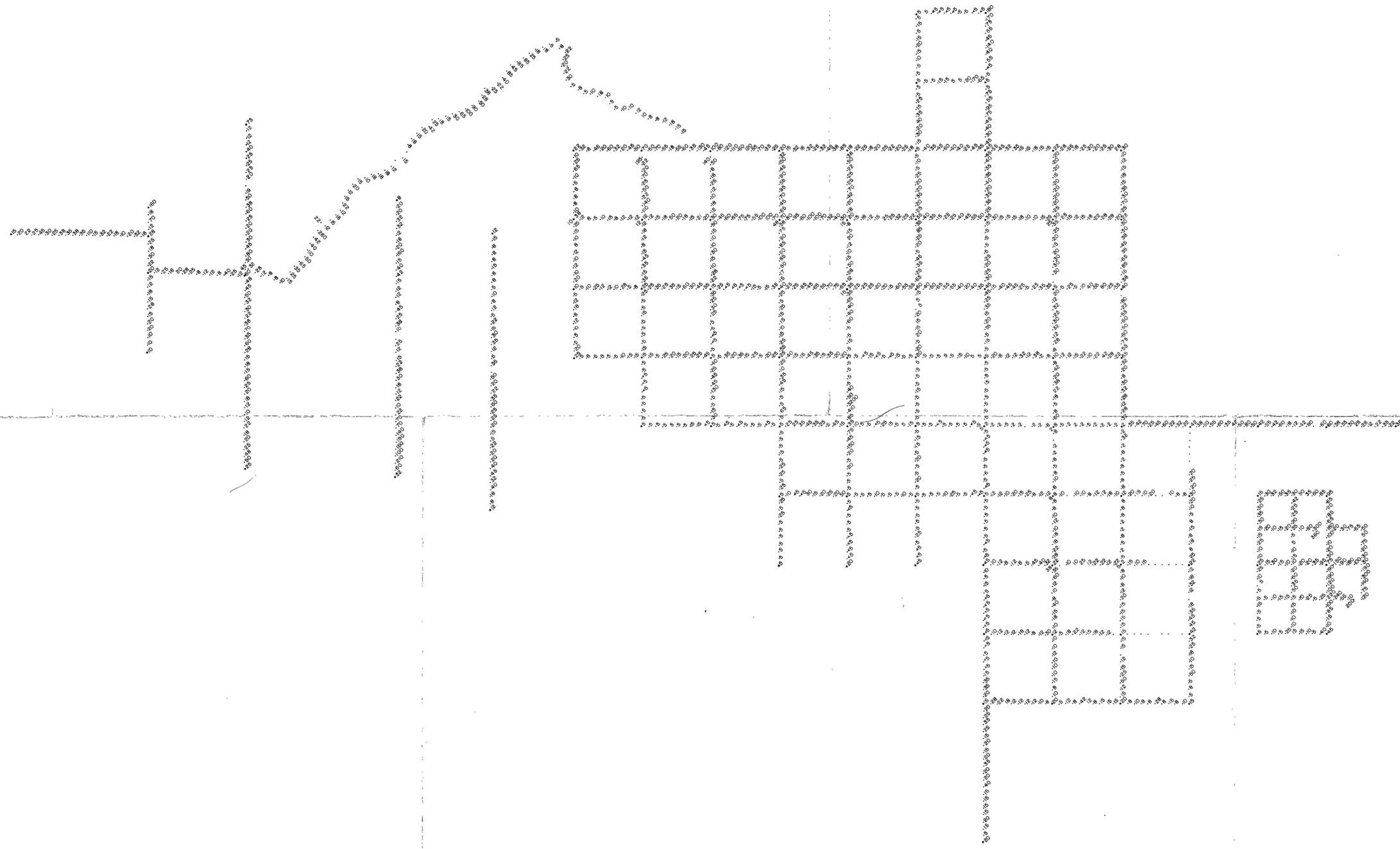
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NOTE - Sample values are in ppm



COMSTAFF PTY LTD				011
PROJECT	SOCK CREEK GRID	SCALE	1: 5 000	
AREA	HASH CREEK, SOCK CREEK, GREEN CREEK	COMPILED		
DATA	GEOCHEMICAL SOIL SAMPLING COPPER RESULTS	DRAWN	GEODRAFT (20)	
		ADDITIONS		
		REF. No.	TAS/2/1418	



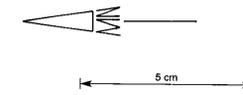
HASH CREEK

SOCK CREEK

GREEN CREEK

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NOTE - Sample values are in ppm



		COMSTAFF PTY LTD		012
PROJECT	SOCK CREEK GRID	SCALE	1:5 000	
AREA	HASH CREEK, SOCK CREEK, GREEN CREEK	COMPILED		
		DRAWN	GEODRAFT (22)	
DATA	GEOCHEMICAL SOIL SAMPLING ZINC RESULTS	ADDITIONS		
		REF No.	TAS/2/1419	



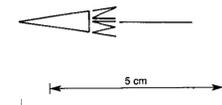
HASH CREEK

SOCK CREEK

GREEN CREEK

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NOTE - Sample values are in ppm



		COMSTAFF PTY LTD		013
PROJECT	SOCK CREEK GRID	SCALE	1:5 000	
AREA	HASH CREEK, SOCK CREEK, GREEN CREEK	COMPILED		
DATA	GEOCHEMICAL SOIL SAMPLING LEAD RESULTS	DRAWN	GEODRAFT (2)	
		REF No.	TAS/2/1420	