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PROJECT NAME: COMSTAFF PROPRIETARY LIMITED

TITLE: INTERPRETATION OF BUTLERS ROAD GRID RESULTS AND INTERIM REPORT

EL 5/63 AREA 1

AREA NAME/S, STATE 1:250,000 SHEET NO/S & COORDINATES: 1:250 000 sheets K55-03 (Burnie) K55-05 (Queenstown)

COMMODITY/IES: Sn, Pb, Ag (Cu, Zn)

TEXT PAGES NO: 5

PLAN NOS: See List of Plans

TABLE NOS: 2

APPENDICES: 2

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AUSTRALIAN ANGLO AMERICAN LIMITED

Incorporated in the State of Victoria

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COMSTAFF PROPRIETARY LIMITED

INTERPRETATION OF BUTLERS ROAD GRID RESULTS

EL 5/63 AREA 1

REPORT STRUCTURE

The following text synthesises the results of exploration at Butlers Road. In addition, for the record, an Interim Report is appended which summarises the status of the programme at the time the project geologist left Comstaff. It is a useful report on the targets, prior to execution of the GENIE EM survey, and supplements the contents of the monthly reports.

INTRODUCTION

Phase 1 of exploration at Butlers Road is completed. The programme was designed to investigate 5 DIGHEM ^{II} anomalies: 2690C, 2710C, 2710B, 2730E and 2740G. The techniques applied were geological mapping (1:2500 scale), soil, stream silt and rock geochemistry, ground magnetic surveys and a GENIE EM survey. All target conductors have been located. The geological environment is mapped as one of complexly shaped granitic intrusions into Crimson Creek formation metasediments and basic volcanics with tourmaline greisen alteration. Geochemically anomalous economic elements are tin, lead and silver with minor copper and zinc associations.

It is recommended that drilling be undertaken to test for economic concentrations of polymetallic vein or greisen style mineralisation.

RESULTS

The conductors can be classified into two types:-

1) Shallow flat lying source - 2740G.

2) Subvertical - 2690C, 2710C, 2710B and 2730E.

There are some differences between the interpretations of the GENIE EM profiles by DBT and by Scintrex - but these are largely in detail rather than effect. Their interpretations are appended and the selected ground positions are illustrated on the accompanying interpretive plans.

RAAM suggested that a pseudo radial symmetry in the DIGHEM responses could be seen north of the Butlers Road granitic cupola. This is again seen in the GENIE data, for the subvertical conductors.

The southern conductor, 2740G is quite different to the others both in its interpreted shape, being flat lying, and in its geological/geochemical context.

The characteristics of the Conductors can be tabulated as follows:

CONDUCTOR	SHAPE	GEOLOGY	GEOCHEMISTRY	MAGNETICS
2690C	broad near vertical. NE-SW on 2 Lines	metasomatised, tourmalinised sediments	on a contact between adjacent As, Sn anomalies with NE-SW trend	crosses boundary between two magnetic provns MP4/2
2710C	possibly vert to E dip. On two lines NNW-SSE	basaltic and metasomat tourmalinised sediments	not anomalous to weakly anomalous in tin	in a single magnetic prov without an independent signature (MP4)
2710B	possibly vert to E dip. On 2 lines NW-SE	hornfelsed to metasomatised, tourmalinised sediments	correlates directly with a tin anomaly	sub// and close to the boundary between 2 mag provinces (MP3/4)
2730E	single line no other parameters	hornfelsed sediments, near porphyry dyke and basalt	not anomalous, near an arsenic zone	within a magnetic province (MP3)
2740G	2 line response near surface sub horizontal	hornfelsed sediments between the granitic cupola and the main granite body	coincides with an arsenic corridor and has a trace of tin	coincides with an expression of magnetic province 1

The important element in an understanding of the GENIE conductors is their apparent relationship to the mixed diciplines applied to the gridded area. Although this is not consistently clear the pattern is repeated sufficiently to merit consideration as an explanation of the effects and possibly illustrating targets worthy of further testing.

GEOLOGY

Based on very sparse outcrop and float mapping it has been possible to demonstrate that the "nose" of Meredith Granite is present in the grid as a cupola between lines 5600 and 6000N with protrusions northwards from the main body onto line 5000N.

The granite invades pelitic sediments of the Crimson Creek formation with basaltic interleaves. Subdivision of the host sediments has been done on magnetic susceptibilities and alteration phenomena. The relevance, or significance of the former is not known. Alteration however is clearly important and shows a spatial relationship to the granite. It includes:-

1) tourmalinised, microgranular quartz rock and thoroughly metasomatised argillaceous rocks.

2) tourmalinised volcanomict to lithic sandstones, siltstones and wackes.

Two areas within the mapped granites have accepted intense tourmalinisation and greisen alteration.

Structurally only brittle fracturing of the hornfelsed sediments can be recorded along with a predominantly N-S foliation to the tourmaline/quartz impregnation of the granites.

Geology : Genie

Extrapolating 2690C, 2710C and 2710B southward they focus at a point between 2600 and 2700m along Butlers Road where the most intense tourmalinisation of the granitic rocks is mapped. At the anomaly locations themselves interpreted lithotypes include both altered and only hornfelsed sediments. No geological features specifically distinguish the anomalies.

Anomaly 2740G overlies mapped hornfelsed sediments; a specific search traverse failed to find distinguishing features. On a broader scale the anomalies flat lying characteristics would be consistent with it reflecting a conductor near the interface between a linking bridge of granite between the Butlers Road cupola and the main granite mass.

GEOCHEMISTRY

The suite of elements analysed shows a close correlation in behaviour of Pb and Zn and a tendency for Cu to follow them. Pb has been chosen to plot and represent this suite. As, Sn and Ag have also been plotted. The latter was chosen owing to some very high values in soil (17 ppm) but no pattern is obvious.

Peak Pb and As values coincide with tourmalinisation of granite along Butlers Road and with the granite in the extreme SW corner of the grid.

Tin values are generally anomalous in the absence of previously described elements. A few high values occur in the Pb/As anomalies but the majority of responses occur to the north, on line 6200N with lesser effects on 6000N and 6400N.

Envelope contours have been chosen to illustrate patterns of distribution within which statistically derived greater than anomalous threshold values occur. The contours have been drawn with an informal rolling mean type of approach. For arsenic the pattern obviously emphasises the area of principal anomalism over the Butlers Road cupola. But perhaps more importantly shows tongues of values radiating outwards to the north and a neck of values reaching southward to the main granitic mass. For tin the near antipathetic relationship of peak values to arsenic holds good. Further, the 'radial' pattern is enhanced and almost all values of significance lie outside the arsenic field.

Geochemistry : Genie

The radial anomalies interpreted from the GENIE EM survey (2690C, 2710C, and 2710B) correlate extremely well with the radial pattern of geochemical responses in tin (arsenic) north of the granite cupola. GENIE anomaly 2740G, correlates with the neck of anomalous arsenic values which link the cupola with the main granite mass.

MAGNETICS

The profiles of the magnetic traverses have been classified into 4 styles, Magnetic Province 1 to 4.

MP 1 is a low amplitude disturbed pattern.

MP 2 is an extremely high amplitude disturbed pattern.

MP 3 is a flat, quiet profile.

MP 4 is an area with a strong magnetic signature but an undisturbed profile.

One can see no clear correlation between the Magnetic Provinces and the geology, geochemistry or GENIE anomalies. It might be tempting to correlate 2740G with Magnetic Province 2 on lines 5000N and 5200N but the province persists northwards in the absence of the GENIE effect. The relationship on lines 5000 and 5200 may therefore be coincidental.

DISCUSSION

Discounting the Magnetics at this stage the other techniques applied suggest that the Meredith Granite and its Butlers Road cupola were responsible for the introduction of Sn, Pb (Cu, Zn, Ag) As mineralisation. The metals were accompanied by solutions which greisenised the granitic rocks, metasomatised the country rock and deposited large quantities of quartz and tourmaline proximally.

Metal zonation northwards from the cupola is apparent proceeding from Pb/As out to Sn. The penetration of solutions away from the cupola could be fracture controlled giving the radial aspect to the geochemistry and these same fracture systems may be the cause of the GENIE EM effects.

In the absence of mapped carbonate horizons in the country rock the chances of developing a significant replacement style of tin mineralisation are low, but vein style, mixed metal, with both lateral and vertical facies changes in mineral species present would be expected. The conductive parts of the interpreted fracture systems are in the tin anomalous facies - EM effects are not present nearer the cupola. The minerals causing the conductivity are not known, but the notorious contributor to EM interpretation difficulties, carbonaceous shales, have not been found at Butlers Road.

The relationship of the flat conductor, 2740G, to the area may be important. Geologically, hornfelsed, crackle fractured, tourmalinised sediments outcrop at target. Nothing of a conductive nature can be observed. It is tempting to interpret the conductor as an accumulation of metal on the interface of the granitic bridge between the cupola and the main body to the south. From an economic stand point galena, amongst the anomalous suite of elements, provides the most acceptable conductive medium, though the anticipated associated greisen alteration would contribute to the effect.

CONCLUSION

The most attractive target is the shallow 2740G conductor. It is proposed that no further work be done on the Butlers Road target until a line of 3 x >50m holes has been drilled across the target on line 5400. The objective would be to ascertain whether the anomaly represents a sealed greisen system in which accumulation of Cu, Pb, Zn, Ag and Sn occurred to potentially economic levels.

for R W L SHAW
November 1984.

APPENDIX 1

BUTLERS ROAD

DISCUSSION

There were six lines and an approximate total of 7.6 kilometres surveyed on this prospect. Line spacings were generally 200 metres, but no line at 5800N was prepared, leaving a 400 metres gap.

The main feature of this area (Zone A) is a conductive system running between about 6200N/6500E and 5400N/5700E, which is roughly north-east south-west. The anomaly does not consistently have the same profile shape but varies considerably. The most outstanding expression is at 5400N/5700E where without detailing work, it is impossible to distinguish between the anomaly being about 70 to 100 metres wide and flat lying, or two near vertical sources close to the surface and about 50 metres apart. No continuation of this conductor was evident on line 5200N, indicating its probable termination. However, two westerly dipping conductors were seen at 5200N/5620E and 5200N/5790E.

North-east along the conductor at 5600N/5950E the shallow expression in the profile implies a possible deepening of the conductor, or a decrease in the conductivity thickness ratio. It would be useful to compare this with the topography to determine possible overburden thickness. Detailing would be useful here to resolve this.

At 6000N/6290E and 6200N/6510E the conductor is clearly indicated as broad and having a near vertical or possibly easterly dip. It is suggested by

the data that the conductor continues to cross line 6400N at about 6650E. Further reconnaissance is recommended to determine this.

Other Features

On the northern three lines several surficial conductors were noted. These tend to be concentrated in the northern central area, and it is difficult to delineate these north south (due to line spacing) and could possibly be related to increased overburden/weathering and hence might appear related to topography.

Surface Conductor Locations:-

6400N 5630E - 5990E

6200N 5450E - 5770E, 6290E - 6610E (End of line)

6000N 5330E - 5530E, 5630E - 5690E

Several semi-vertical conductive features occur elsewhere on the grid, but since the line spacing is so great, it is difficult to establish continuity and hence the direction of the conductors. The more notable of these are as follows.

On line 6400n at 5570E a possible vertical to easterly dipping conductor appears. This is adjacent to a second conductor at about 5790E of similar dip but is overlain by a surface conductor.

On line 6200N there are two conductors at 5310E and 5850E. It is difficult to elaborate without further information.

CONCLUSIONS AND RECOMMENDATIONS

A main conductive system from 5400N/5700E and 6200N/6510E is complex as it appears to either flatten out from being semi-vertical or to split into two. This conductor may be due to faulting and/or mineralisation, but until geological evidence proves otherwise, it should be regarded as significant. It is recommended that detail work be done on lines 6000N and 5400N to give more precisely the nature and orientation of the source. It is understood that while no line has been cut along 5800N there is a vehicle track. Perhaps this could be surveyed too at the time of detailing. Since the anomaly is open to the north, an extension of line 6400N should be considered if the anomaly is to be pursued.

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REPORT A24

1984 GENIE EM SURVEY OF BUTLERS ROAD GRID - COMSTAFF

INTRODUCTION

DIGHEM anomalies 2700C, 2710B, 2710C, 2730E and 2740G were selected as worthy of follow up. In September 1984 a Genie EM survey using 100m coil separation and 3737 Hz was carried out over the following lines:-

5200N	5050E - 6150E
5400N	5050E - 6170E
5600N	5050E - 6110E
6000N	5050E - 6550E
6200N	5050E - 6610E
6400N	5050E - 6630E

Line 5800N was omitted due to an error on the part of the contractor. Readings were taken every 20m.

RESULTS

The quality of the data is adequate. The repeatability of the data is generally within ±one degree. There is good agreement between the ground EM results and the DIGHEM data. The data were also examined by D Webb of Scintrex. His analysis (appended) is in substantial agreement with that presented here.

Anomaly 2700C This anomaly is observed on the two lines - on 6200N at 6500E and on 6000N at 6290E. The conductor is near vertical possibly with a steep easterly dip. The conductor plunges to the north. The depth to the top is 15m on line 6000N and 30m on line 6200N.

2710B, 2710C These anomalies are quite close together and hence it is difficult to extract quantitive information from the Genie results. DIGHEM anomaly 2710B appears to correlate with a near vertical ground EM conductor at 5740E on line 6200N and 5570E on line 6400N. DIGHEM anomaly 2710C appears to correlate with a near vertical ground EM conductor at 5850E on line 6200N and at 5790E on line 6400N. This group of responses could equally well be explained by a horizontal conductor from 5750E to 5850E on line 6200N and from 5600E to 5780E on line 6400N. In either case the responses are greater on line 6400N indicating a southerly plunge.

2730E This anomaly is obseved on the ground only on line 6200N at 5320E. It has steep dip probably to the west. The depth of burial is 30-35m.

2740G This anomaly is observed on the ground at 5700E on lines 5200N and 5400N. The response is due to a horizontal conductor. It is less than 10 metres from surface on line 5400N and 20-25m deep on line 5200N.

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CONCLUSIONS

All DIGHEM anomalies in the area have been satisfactorily located on the ground by the Genie Survey. Except for anomaly 2730E which occurs only on a single line all DIGHEM responses have been sufficiently well defined that no further geophysical work is necessary.

Anomalies 2700C and 2740G are due to near surface sources. Therefore the costeaning should be the next stage of investigation for these anomalies.

D B Trussell
October 1984

APPENDIX 2

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COMSTAFF PROPRIETARY LIMITED

ARTHUR RIVER EL 5/63 AREA 1

BUTLERS ROAD INTERIM REPORT

INTRODUCTION

This document records the work done and results achieved to September 1984 by RAAM. Essentially the first phase of work is complete, awaiting only a GENIE EM survey to locate the DIGHEM " targets accurately on the ground. The Stage 2 grid covering an outlying, but related DIGHEM " conductor is cut, and can be surveyed if Stage 1 results are encouraging.

1. WORK DONE

Stage 1

Grid Cutting

10.322 km of grid were cut to cover DIGHEM conductors 2710B (part of), 2710C, 2690C, 2730E and 2740G.

All cut tracks and Butlers Road were tape and compass surveyed. Surveys are presented on a four part 1:2500 series map base.

Geochemistry

Rock

Three sets of rock specimens for geochemistry have been submitted as follows:-

1. Submission 83/99 - 16 samples - 1 magnetic hornfels, 15 (thought to be from the road - from the category "Highly Tourmalised Quartz Porphyry - Greisen" on the Interpretation Geology Map - SE sheet) tourmalised granitic rocks. Analysed for Ag, Al, As, Au, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, K, La, Mg, Mn, Mo, Na, N, Pb, Sn, Ta, T, W, Y, Zn.

2. Submission 84/73 - 32 samples - a variety of rock types from Butlers Road - Presented Map 1 - 10 000. Analysed for Ag, As, Cu, Mo, Ni, Pb, Sn, W and Zn. Supplementary Au, and Bi.

3. Submission 84/99 - 12 samples - a variety of rock types from BRG - locations shown on same map as (2). Analysed for Ag, As, Bi, Cu, Mo, Ni, Pb, Sn, W and Zn.

Stream Sediment Samples - 24 samples from stream intersections with the grid; 18 samples from Wayne's Tributary, all of which were analysed for Ag, As, Cu, Pb, Sn, W and Zn.

Soil Geochemistry - C horizon

1) Butlers Road 1400m to 3540m - 108 samples 84/98.

2) Butlers Road grid - 6 lines - 497 samples 84/95, 84/98 all analysed for Ag, As, Cu, Ni, Pb, Sn, W, Zn.

Geophysics

Ground Magnetics

The sections covered by the soil augering were also traversed with the proton magnetometer. Readings were recorded at 10m intervals for the grid and at sample points along the road. Magnetic susceptibility readings were taken as geological mapping proceeded.

Geology

Field mapping traverses were made of: the complete length of Butlers Road; portions of the HV transmission line, Campbells Creek; all grid lines, base line and tieline. Numerous rock specimens were collected, these are now housed in four core trays in the core shed. Ten rock specimens were submitted for petrological descriptions.

Stage 2

Grid Cutting

7.625 km of grid cutting plus a short track to Philosophers Falls, and an approximate 600m section of the Magnet water race between lines 6800N and 7200N and line 5800N complete the Stage 2 programme.

Surveying of the cut lines is partially complete.

Geochemistry

No work has yet been undertaken.

Geophysics

No work has yet been undertaken.

Geology

Field mapping of line 7200N, and portions of L 6800 and B/L 5000E extension have been undertaken.

RESULTS

Progress results for many aspects of the investigation are contained in the monthly reports for May, June, July and August of 1984.

Geochemistry

Rock - Results have been previously discussed at length. Of the nine mapping units used in construction of the geological interpretation maps only three can be equated to soil, stream and rock geochemically anomalous values. These are postulated to form a continuum from the late stage alteration phase of the granitic body with intense tourmalinisation and lesser muscovite greizenisation, through highly altered sediments readily permeable to emanating fluids that have thoroughly metasomatised the existing rock, in so doing, obliterating any sedimentary textures present. Many of the pelitic rocks appear to be less affected by such fluids and are intermediate between the above described tourmaline quartz rock and hornfelsed pelites and arenites. In these there is abundant fine interstitial tourmaline and some coarse dravite grains. Granitic quartz-tourmaline veins and veinlets are quite common.

The range in geochemical rock values for these three mapping units together with values for four other units is shown in Table 2. A correlation coefficient of greater than 0.85 is recorded in the more mineralised formation, highly tourmalinised granitic rocks, for Sn, Ag, As, Pb, Zn and Bi.

Stream Sediment - Results for these samples is shown on 1:2 500 maps. They are generally supplemental to the soil geochemical sampling. A series of samples was taken along the upper reaches of Campbells Creek in an effort to locate Campbells Galena Prospect. Observations up a cut creek track (Waynes Tributary Track) suggested that the small workings described in Nye (1923) would be difficult to locate. Creek float is variable but is generally supportive of the view of nearby granitic occurrences. The rock types suggested by Nye (1923) have little similarity with those observed.

The values from the stream sediment samples mirror those obtained from nearby soils (L5200N). Follow-up of the anomaly has not been done.

Soil - All results from the grid which contain the full suite of elemental results have been put on computer file - BRGSOIL:DAT - on disk Geochem Program/Data Disk - formatted 15/6/84 - Arthur R, Ramsay, BRG. Plotted results are on 1:2 500 plans.

From the computer treatment the following is available:-

- correlation co-efficient matrix - Table 1

- Element Means, Standard deviations and peak values

- Log Probability Statistics Base for Lepeltier Plots - Sn, Pb, As, Ag plotted (see map sheets 1:2 500, sheet 5 for anomalous values - probable and possible).

GEOPHYSICS

Data from the ground magnetometer surveys have been plotted on stacked profiles. Discussion relating to these profiles is contained in the more integrated next section - geology.

GEOLOGY

Nine mapable rock type units are portrayed on the geological interpretation maps. As previously noted some differentiation can be made using geochemical criteria. Magnetics have also been shown to be a useful tool. With the aid of ground magnetometer values highly magnetic hornfels has been differentiated from slightly magnetic hornfels. It has been noticed that both may sometimes occur together, perhaps interbedded. A summary of magnetic properties for each rock unit can be found in Table 5. Included in this summary are notes on anomalous magnetic behaviour over mapped geological units.

- **The DIGHEM Conductors.** These appear to parallel the "grain" of the area. This statement is so qualified because of limited structural knowledge. Outcrop is rare, and where found is usually massive or metasomatised so destroying the original structure.

DIGHEM Conductor 2740G - is clearly related to a large magnetic anomaly but there is no anomalous geochemical response. Anomaly 2740G is the second strongest with respect to resisitivity (5-9 mhos). This closely corresponds to the large anomaly on line 5400N.

DIGHEM Conductor 2730E - has no geochemical or magnetic reinforcement. It appears to closely parallel a "sill-like" dolerite body. It might also be an edge effect associated with the postulated apophysis of the granitic body.

DIGHEM Conductor 2710B - is the first of three conductors radial to the granitic body lying immediately to the south. It has only been partially investigated by the Stage One programme as two of the three correlated conductive responses are gridded. A postulated fault (supportive evidence from the aero magnetic data) intersects this conductor to the north of line 6200. It is thus possible that this three-anomaly conductor is due to two independent phenomena. Anomalies 2700D and 2710B may be a linked bedrock conductor to the north of the fault whilst 2720D is a thicker conductor near the high tin area.

DIGHEM Conductor 2710C - is a less definite conductor parallel but to the east of 2710B. Anomaly 2710C has the strongest response of any at Butlers Road. It is interestingly positioned in the zone of alteration with high Sn soil geochemistry surrounding the northern margin of the granite. The "tail" of this conductor is weak. It may lie on the northern side of the fault. Ground magnetometer results do not enhance this conductor.

DIGHEM Conductor 2690C - This short conductor is the third of the series radial to the granite body. No certain explanation for the existence of this conductor can be advanced. It is similar but of lower ranking to 2710C with anomalous Sn soil geochemistry and common tourmaline-quartz replacement of the host rock. The 6200N magnetic profile suggest a thin rock unit coincident with the anomaly trend. Limonite-gossans have also been found in the vicinity of this conductor.

FOLLOW-UP RECOMMENDATIONS

Ground EM to provide a fourth tool for the interpretation of the conductor. Genie work should cover all Stage 1 and extend to Stage 2 grid if warranted.

R W L SHAW
R A A MUNRO
September 1984.

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WORKING PLANS ON FILE IN WARATAH

5 cm

1:2 500

*1. Sheets NE,SE,(SW) - Stage 1 - Sn, Ag, As, Pb Geochem Results - trnspncy
2. Sheets NE,SE,SW - " 1 - Geological Details " - trnspncy
3. Sheets NE, SE - " 1 - Auger sample rock chips Details- trnspncy
*4. Sheets NE, SE,(SW) " 1 - Geological Interpretation " - trnspncy
5. Sheets NE, SE " 1 - Anomalous Sn, Ag, As, Pb " - paper
6. Sheets NE, SE " 1 - Working Plan - Geology - trnspncy
7. Sheet NE, SE, SW SE - Contour plan

Magnetometer 1:2 500 Profiles to Remain as a Field Record of RAA's Work

1. L5200N - Ground Mag - High Geochem Values - all elements - trnspncy
2. L5400N - " " - " " " " " - "
3. L5600N - " " - " " " " " - "
4. L5800N - Ground Magnetometer (Road Projected) - "
5. L6000N - " " - High Geochem Values all elements "
6. L6200N - " " - " " " " " "
7. L6400N - " " - " " " " " "

1:2 500 Stacked Profiles - Draftsperson produced

*1. L5200N - To date - Magnetometer, Topography, Sn, Ag - Transparancy
+2. L5400N - " " - " " " " - "
+3. L5600N - " " - " " " " - "
+4. L6000N - " " - " " " " - "
*5. L6200N - " " - " " " " - "
+6. L6400N - " " - " " " " - "

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1:10 000

5 cm

1. Rock Geochemistry - Pye Diagrams/Loc/Early Interp Geology - trnspncy
2. DIGHEM Conductors - attributes "
3. DBT Interpretation (Geological) of DIGHEM Survey TAS/2/3746 "
4. Arthur River/Magnet - Sheet 2868 - Geological Interpretation "

* = Fairdrawn attached to Nov ' 84 report.
\+ = Bases only for update as required in the future.

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Rock Geochemistry. - Range of values by Lithology

Rock type.	No. samples.	Sn	Ag	Pb	As	Zn	Cu	Ni	W	Mo	Bi.
Dolerite	7	x - 12	x - 0·5	10-45	x-12	50-210	15-50	5-45	x-22	x	x
Hornfelsed argillites	4	x - 8	x - 0·5	10-200	x	40-140	10-40	30-105	x	x	x
Hornfelsed magnetic sediments	4	x - 8	x	x - 20	x	60-140	10-70	60-215	x	x	x
Tourmalinised hornfelsed seds.	4	x - 87	x - 5·5	20-1300	x-1000	95-875	25-370	5-125	x-22	x-40	x
Metasomatised tourmalinised seds.	5	62-873	x - 13	5-1700	6-890	10-810	5-130	5-70	x-115	x	x-30
Tourmalinised granitics.	24	x-7·79%	x-400	5-8100	x-2·8%	5-1175	5-330	x-70	x-443	x-135	x-2330
Granitics.	5	5-40	x-0·5	x-150	x-24	20-65	5-40	5-15	x-12	x	x-150

* all values in ppm unless otherwise stated.

X = below level of detection.

Rock Magnetics.

Rock type.	Characteristic Gamma.	Susceptibility Range	Susceptibility Mean.	General Remarks and Anomalies.
Dolerite	63000	20 - 1500	120	See line 6400, variable, not spiked, not easy to define the unit with magnetics.
Metasomatised basics.	62,200	40 - 160	100	See line 6400, very spiky response, shallow!
Hornfelsed argillites	61700 - 62000	80 - 500	70	Flat to slightly spiked. Anomalously spiked on part of lines 5200N and 5400N.
Hornfelsed magnetic sediments.	59000 - 66000	500 - 20,000	2500	Extremely spiked pattern.
Tourmalinised hornfelsed sediments	61400 - 61700	20 - 6000	50	See lines 5200N, 5400N - slightly spiked.
Metasomatised tourmalinised seds.	61500 - 61800	0 - 30	5	See lines 6200N, 6000N. Anomaly between DIGHEM targets 2710B and 2710C.
Tourmalinised granitics.	61400	0 - 30	5	See line 5800N. Flat pattern.
Granitics.	61500 - 61700	0 - 30	5.	Line 6000N - Anomalously spiked for granite " 5800N, 5200N flat to very flat.

TABLE TO ACCOMPANY INTERIM REPORT SEPT 1984
Based on data by R.A.A.M.

CONSTAFF PTY LTD.
EL 5/63 AREA 1.
ARTHUR RIVER.
BUTLERS ROAD PROSPECT.

ROCK TYPE CLASSIFICATION BY GEOCHEMISTRY AND MAGNETICS.

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ELEMENT	MEAN	STANDARD DEVIATION	PEAK VALUE	PLOT.
Cu	46	59	950	
Pb	138	259	3700	390, 670.
Zn	185	167	1600	
Ag	0·4	1·3	17	2·3, 9·5
Sn	41	65	503	150, 215
W	3	6	31	
As	79	101	1460	270, 315.
Ni	55	59	1050.	

* values in ppm , 378 samples.

CORRELATION COEFFICIENT MATRIX

THRESHOLD VALUE = .1

FILENAME : A:BRGSOIL.DAT

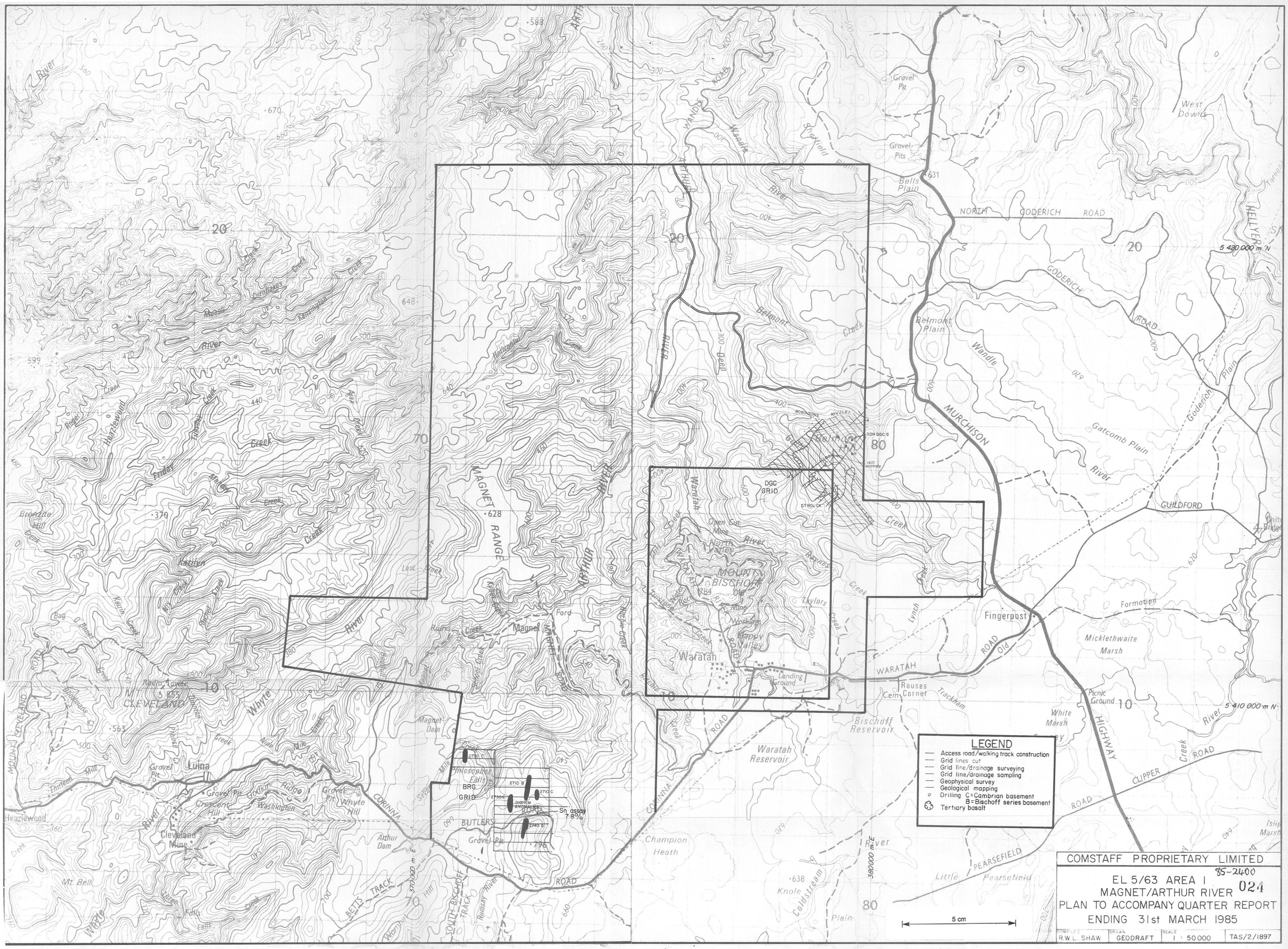
	Cu	Pb	Zn	Ag	Ni	Sn	W	As
Cu	1	.23	.26	0	.2	0	0	.28
Pb	.23	1	.71	0	0	.27	.13	.24
Zn	.26	.71	1	.12	.17	0	.18	.18
Ag	0	0	.12	1	0	0	0	0
Ni	.2	0	.17	0	1	-.15	0	0
Sn	0	.27	0	0	-.15	1	.23	0
W	0	.13	.18	0	0	.23	1	0
As	.28	.24	.18	0	0	0	0	1

TABLE TO ACCOMPANY BUTLERS ROAD INTERIM REPORT. SEPT '84.
COMPILED FROM DATA BY R.A.A.M.

COMSTAFF PTY LTD.
EL 5/63 AREA 1.
ARTHUR RIVER
BUTLERS ROAD PROSPECT.

SOIL GEOCHEMICAL STATISTICS

166025



COMSTAFF PROPRIETARY LIMITED

85-2400

EL 5/63 AREA I
MAGNET/ARTHUR RIVER
PLAN TO ACCOMPANY QUARTER REPORT
ENDING 31st MARCH 1985

024

COMPILED	DRAWN	SCALE	
R.W.L. SHAW	GEODRAFT	1 : 50 000	TAS/2/1897

166026

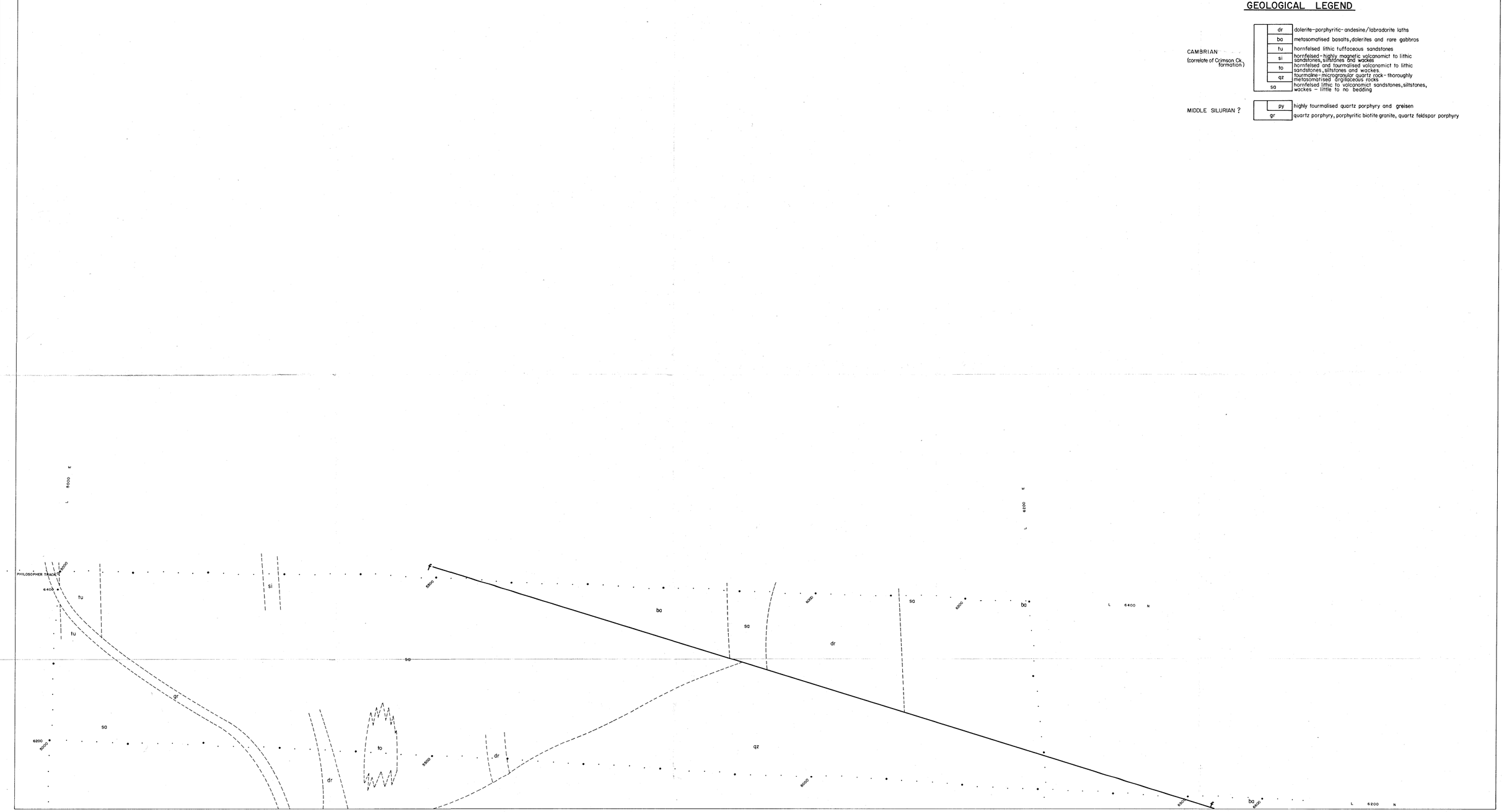
GEOLOGICAL LEGEND

CAMBRIAN (correlate of Crimson Ck formation)

dr	dolerite–porphyritic–andesine/labradorite laths
ba	metasomatised basalts, dolerites and rare gabbros
tu	hornfelsed lithic tuffaceous sandstones
si	hornfelsed–highly magnetic volcanomict to lithic sandstones, siltstones and wackes
to	hornfelsed and tourmalised volcanomict to lithic sandstones, siltstones and wackes.
qz	tourmaline–microgranular quartz rock–thoroughly metasomatised argillaceous rocks
sa	hornfelsed lithic to volcanomict sandstones, siltstones, wackes – little to no bedding

MIDDLE SILURIAN ?

py	highly tourmalised quartz porphyry and greisen
gr	quartz porphyry, porphyritic biotite granite, quartz feldspar porphyry



4166	4167
4168	4169

5 cm

N

COMSTAFF PROPRIETARY LIMITED

LEASE No	EL 5/63
AREA	1
AMENDMENTS	1 8 2 9 3 10 4 11 5 12 6 13 7 14

BUTLERS ROAD GRID – BRG 025

GEOLOGICAL INTERPRETATION PLAN

85-2400

COMPILED	R.A.A. MUNRO
DRAWN	J. HARDISTY
DATE	21/11/84
SCALE	1 : 2500
REF No	TAS/2/4167

166027

BUTLERS

CAMPBELLS CREEK

WAYNES TRIBUTARY TRACK

372 000 m E

373 000 m E

5 407 000 m N

5 cm

4166	4167
4168	4169

N

COMSTAFF PROPRIETARY LIMITED

LEASE No.	EL 5/63
AREA	I
AMENDMENTS	8, 9, 1, 2, 3, 4, 5, 6, 7

BUTLERS ROAD GRID – BRG 026

GEOLOGICAL INTERPRETATION PLAN

85-2400

COMPILED	R A A MUNRO
DRAWN	J. HARDISTY
DATE	21/11/84
SCALE	1 : 2500
REF No.	TAS/2/4169

166027A

MP2

2690 C

Magnetic province

Genie anomaly

Tin anomaly > 100 ppm

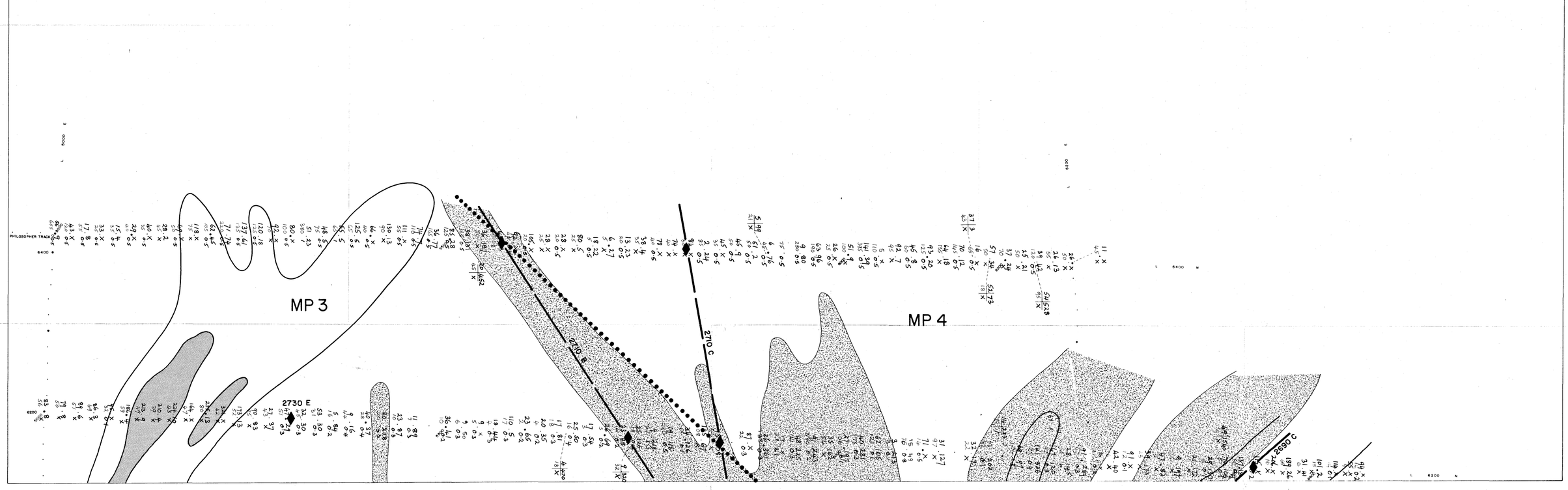
Arsenic anomaly > 200 ppm

Arsenic anomaly 100–200 ppm

Proposed drillhole

315 / 270	As	Sn	215 / 150
670 / 390	Pb	Ag	9·5 / 2·3

Sample result layout with statistical geochemical thresholds for soils



4170	4171
4172	4173

5 cm

N

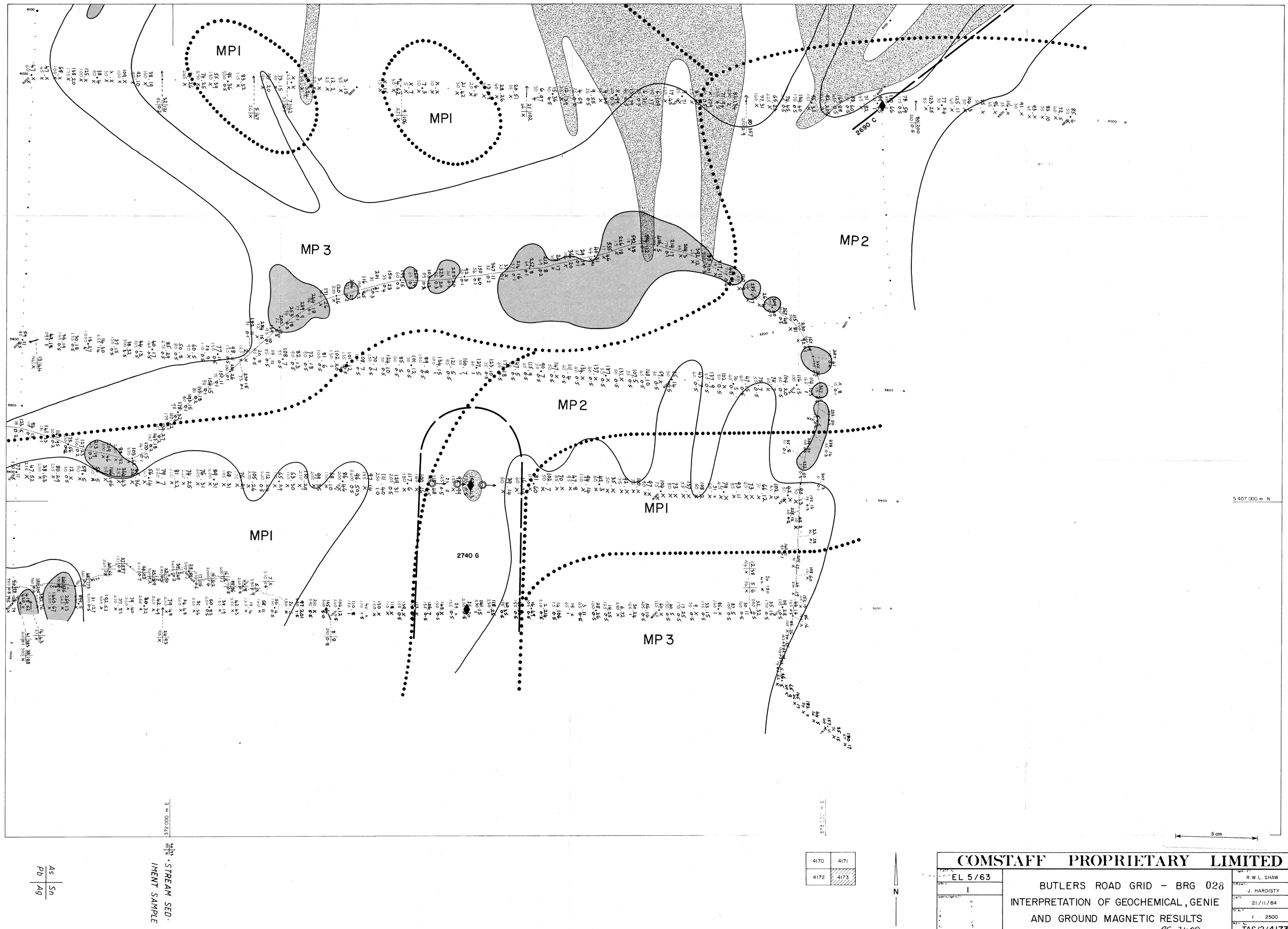
COMSTAFF PROPRIETARY LIMITED

PROP. No.	EL 5/63
AREA	1
COMPILED	R.W.L. SHAW
DRAWN	J. HARDISTY
DATE	21/11/84
SCALE	1 : 2500
REF. No.	TAS/2/4171

BUTLERS ROAD GRID - BRG 027

INTERPRETATION OF GEOCHEMICAL, GENIE AND GROUND MAGNETIC RESULTS

85-2480



166028

COMSTAFF PROPRIETARY LIMITED

EL 5/63

BUTLERS ROAD GRID - BRG 028

INTERPRETATION OF GEOCHEMICAL, GENIE AND GROUND MAGNETIC RESULTS

85-2408

DRAWN	R.W.L. SHAW
TRACED	J. HARDISTY
DATE	21/11/84
SCALE	1 : 2500
REF. No.	TAS/2/4173

166029

GEOCHEMISTRY
ppm

1000
500
0

As
Sn

GENIE
apparent dip angle

+60
+40
+20
0
-20
-40
-60

65 000
64 000
63000
62 000
61 000
60 000
59 000

GROUND MAGNETICS
nT

66 856
87 754
65 350

TOPOGRAPHY
/GEOLOGY

BUTLERS RD 318m

5000
5500
6000
6200

5 cm

COMSTAFF PROPRIETARY LIMITED

LEASE No	EL 5/63
AREA	1
AMENDMENTS	1 8, 2 9, 3 10, 4 11, 5 12, 6 13, 7 14

BUTLERS ROAD GRID - BRG 023
COMPOSITE SECTION OF LINE 5400 N (E)
TOPO, MAG, GENIE, GEOCHEM, GEOLOGY
85-2400

COMPILED	R. A. A. MUNRO
DRAWN	J. HARDISTY
DATE	20/10/84
SCALE	1 : 2500
REF No	TAS/2/4124

166030

GEOCHEMISTRY
ppm

1000
500
0

As
Sn

GENIE
apparent dip angle

+60
+40
+20
0
-20
-40
-60

GROUND MAGNETICS
nT

65 000
64 000
63 000
62 000
61 000
60 000
59 000

TOPOGRAPHY
/GEOLOGY

CK
CK
CK
CK
CK
CK

5000
5500
6000
6500
6600

5 cm

COMSTAFF PROPRIETARY LIMITED

LEASE No: EL 5/63
AREA: 1
AMENDMENTS: 1 2 3 4 5 6 7 8 9 10 11 12 13 14

BUTLERS ROAD GRID - BRG 030
COMPOSITE SECTION OF LINE 6200 N (E)
TOPO, MAG, GENIE, GEOCHEM, GEOLOGY
35-2400

COMPILED: R. A. A. MUNRO
DRAWN: J. HARDISTY
DATE: 20/7/84
SCALE: 1 : 2500
REF. No: TAS/2/4127