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CSR LIMITED - MINERALS DIVISION
EXPLORATION GROUP

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PROGRESS REPORT ON
EXPLORATION OF E.L. 11/78,
GEORGE RIVER, TASMANIA
6 MONTHS TO 14TH SEPTEMBER, 1981

30-10-81

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CONTENTS

	<u>PAGE NO.</u>
1. INTRODUCTION	1
2. SUMMARY	2
3. LOCATION AND ACCESS	4
4. PREVIOUS EXPLORATION	6
4.1 Mining Activity	6
4.2 Exploration	6
4.3 Recent Exploration Result Summary	8
5. GEOLOGY	13
6. EXPLORATION CONCEPTS	15
6.1 Alluvial Cassiterite	15
6.2 Eluvial Cassiterite	15
6.3 Primary Cassiterite	16
6.4 Tungsten and Molybdenum	16
6.5 Copper, Silver, Lead and Zinc	17
6.6 Gold and Silver	17
7. CURRENT EXPLORATION	18
7.1 General	18
7.2 Stream Sediment Anomalies	19
7.3 Soil Anomalies	20
7.4 Radiometric Anomalies	22
7.5 Licence Reassessment	22
7.6 Air Photograph Analysis	23
7.7 Forester Creek Tributary Anomaly	24
8. RESULTS	25
8.1 Stream Sediment Anomaly Follow-Up	25
8.2 Soil Anomaly Follow-Up	27
8.3 Radiometric Anomalies	29
9. CONCLUSIONS	30
10. REFERENCES	31

003

APPENDIX

I SAMPLE DATA SHEETS : SOIL, STREAM SEDIMENT AND
ROCK CHIP SAMPLING - 1981

LIST OF ILLUSTRATIONS

FIGURES

FACING PAGE NO.

1	E.L. 11/78 - LOCATION MAP	4
2	E.L. 11/78 - LAND OWNERSHIP	5
3	FERNTREE HILL - SOIL GRID (MACNAMARA)	28
4	FERNTREE HILL - SOIL SAMPLES	29
5	FORESTER CREEK TRIBUTARY - SOIL SAMPLES	24

TABLES

1	RESULTS OF STREAM SEDIMENT GEOCHEMISTRY	25
2	RESULTS OF SOIL SIZING AND ASSAYS	27

PLANS

DRG NO.

SCALE

K554-1	GEOLOGY, E.L. 11/78, GEORGE RIVER PROSPECT TASMANIA	1:25,000
K554-5	STREAM SEDIMENT SAMPLE LOCATIONS, CSR 1978-81 GEOPHOTO 1969-70	1:25,000
K554-6	REVISED GEOLOGY, E.L. 11/78, GEORGE RIVER PROSPECT, TASMANIA	1:25,000
K554-7	AIR PHOTOGRAPH ANOMALIES, GEORGE RIVER PROSPECT, E.L. 11/78, TASMANIA	1:25,000

KEYWORDS

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E L 11/78

EXPLORATION
TIN
WOLFRAM
ALLUVIAL
GREISEN
SAMPLING
1981
ROCK
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REPORT

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1. INTRODUCTION

Exploration Licence No. 11/78 (E.L. 11/78) was granted to CSR Limited on 15th September, 1978. It covered an area of 303 square kilometres immediately west of St. Helens in the northeastern portion of Tasmania. The Licence area stretched from St. Helens (east) to Pyer⁹ana (west) and from Griffiths Marsh (north) to Upper Scamander (south).

This area was thought to include a spread of tin mineralisation from Tertiary alluvials through to disseminated and lode tin possibilities in both country rock and mineralising granite.

Since 1978, CSR Limited has been conducting an exploration programme to evaluate the Licence. Results of the 1978/79 exploration and the 1979/80 programme were documented by Hall (1979) and Williams (1980) respectively.

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2. SUMMARY

2.1 The exploration of E.L. 11/78 continued in 1981. This work showed that the area with the highest economic potential was the Ferntree Hill greisenous zone. Soil samples from this area should define the size and shape of the tin zone enabling a drilling programme to be planned.

2.2 Checking of anomalous stream sediment samples showed a significant repeatable anomalous zone in a tributary of Forester Creek. A soil sampling programme has been started which should define the size of the anomaly. This will enable the planning of a drilling programme.

2.3 No other stream sediment anomalies were repeatable.

2.4 Air photographs are useful in delineating structural, textural and tonal variations in areas of known mineralisation. Several areas away from known mineralisation have shown similar features which require ground examination.

2.5 Further drilling is required in the area of Thureau's Lead. There is some doubt about the reliability of past drilling.

2.6 Old radiometric anomalies were examined on the ground with no significant results. No further work is required.

2.7 Tin-bearing granites of the Blue Tier area have been found to have diagnostic mineralogy and trace element chemistry. Studies of these properties in granites from most areas within E.L. 11/78 are required to define potentially tin-bearing zones.

2.8 Anomalies in the Haley's Creek area (structural, geochemical, geophysical) require further investigation.

2.9 The size of E.L. 11/78 has been substantially reduced following reassessment of the potential for economic mineral deposit discovery.

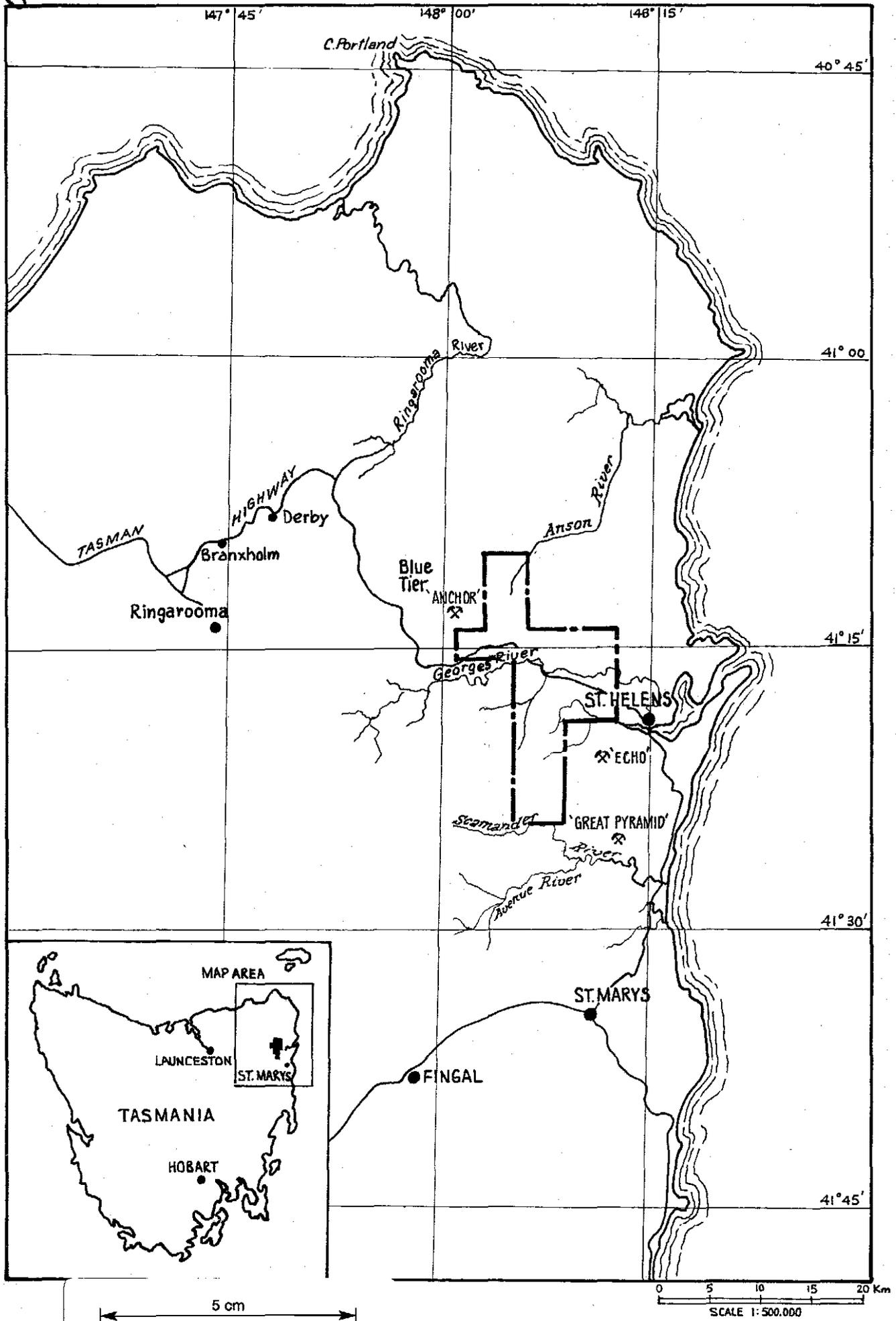


FIG. 1. LOCATION MAP-GEORGES RIVER E.L.11/78 TAS.

3. LOCATION AND ACCESS

The eastern boundary of E.L. 11/78 is 3 kilometres west of St. Helens on the Tasman Highway (Figure 1) towards Launceston (160 kilometres). This sealed highway through the central portion of the Licence bisects the Licence into two roughly equal-sized areas (north and south blocks). All other roads within the Licence are variable grade dirt/gravel roads. This network of minor public, forestry and farm roads provides good access for vehicles to all parts of the Licence. The coverage is such that almost all areas within the Licence can be reached with less than 3 kilometres of walking (DRG No. K554-1). Most roads are all-weather roads.

Approximately 90 percent of the area of E.L. 11/78 is either Crown land and/or State forests. Apart from a small area (about 5 square kilometres) of town reserve, the rest of the Licence is private property. Most of this private property is in a strip along the George River and the Tasman Highway. Generally the private land is on the river flats. However, the river flats around the old alluvial workings (Argonaut, Boggy Creek and Clio Hill areas) are Crown land (Figure 2).

E.L. 11/78 covers portions of three main drainage basins. the northern part of the Licence contains the headwaters of the northeasterly draining Ansons River system; the central area of the Licence contains the lower reaches of the easterly draining George River system; and the southern portion includes the headwaters of the southeasterly draining Scamander River system. These river systems have deeply incised into the granites and metamorphosed sediments of the area to form a hilly to locally very steep topography. Elevations of 300 metres are common with a range from 100 to 700 metres. The highest areas are in the northwestern corner of the Licence in the Blue Tier Granite area. Generally the hill slopes are gentle although locally cliffs are encountered along the major drainage channel.

Apart from the privately owned cleared grazing land, most of the tenement is covered by open eucalypt forests with

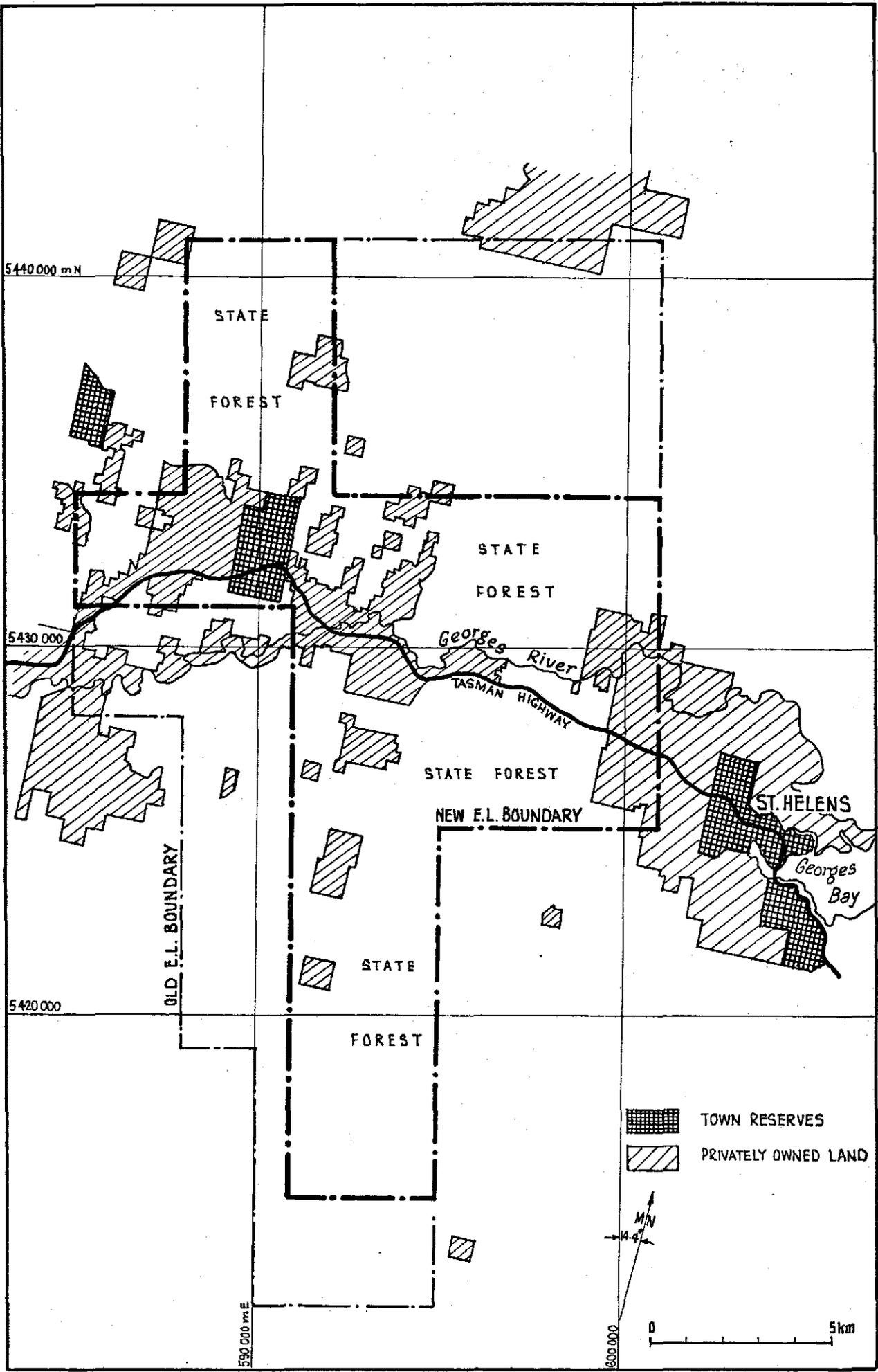


FIG. 2 LAND OWNERSHIP E.L. 11/78 GEORGES RIVER TASMANIA

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local dense undergrowth. Along the steeper southward facing slopes of the George River there are small patches of thick rainforest type vegetation. In the area to the north and northeast of Goulds Country, pine forests have been planted by the Tasmania Forestry Commission. Recently forestry interests have become interested in the St. Helens area as a source of mill and chip logs. It is expected that logging within E.L. 11/78 will commence in the near future.

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4. PREVIOUS EXPLORATION

4.1 Mining Activity

In 1852 gold was discovered in the Mangana-Mathinna area (south of E.L. 11/78). This quartz reef gold was worked until about 1920 during which time, 527,000 fine ounces of gold were produced from the gold-fields of northeastern Tasmania. The decline in gold mining activity was followed by the discovery and working of tin deposits (alluvial) along several of the northeastern Tasmanian rivers.

Alluvial tin working often led to the discoveries of hard-rock tin deposits, particularly in the Blue Tier Granite area (northwestern edge of E.L. 11/78). Tin mining continued until 1951 although mining after 1935 was only on a very small scale.

Coincident with the development of tin workings in northeastern Tasmania was the investigation of the Scamander Mineral district (southeast of E.L. 11/78). Minor copper, silver, tungsten and tin were produced from this area.

4.2 Exploration

Geological exploration activity was dominated by individual prospectors until early in the 20th century. An exception was the Mt. Lyell Mining and Railway Company which investigated the Blue Tier Tinfield. The Tasmanian Department of Mines was the only organisation which conducted limited investigational work of northeastern Tasmania between 1910 and 1956.

Large exploration companies and the Tasmanian Department of Mines have been active in the area since 1956. The most notable of these companies have been :

- 013
- .. Rio Tinto Zinc Corporation (1956-58).
Scamander Mineral Field, alluvial tin areas.
 - .. Electrolytic Zinc Co. (1959-63).
Scamander Mineral Field, Blue Tier Granite.
 - .. Broken Hill Proprietary Co. Ltd. (1960's-80's).
Scamander Mineral Field.
 - .. Austminex (1960's).
Scamander Mineral Field, Blue Tier Granite.
 - .. Utah Development Co. (1963-1966)
Alluvial tin areas.
 - .. Aberfoyle Development Co. (mid 1960's).
Scamander Mineral Field, Blue Tier Granite.
 - .. Texins Development Pty. Ltd. [Geophoto]
(1968-70). Scamander to Mt. Cameron.

A short summary of this work can be found in Mortimer (1974).

The above exploration consisted of a range of exploration techniques from "grass-roots" blanket geochemistry, through detailed geological mapping, gravity, electromagnetic, induced polarisation and air photograph analysis to exploratory diamond drilling programme.

At the present time the Broken Hill Proprietary Company Limited is active in the exploration of the area to the south and southeast of E.L. 11/78 (around the Great Pyramid Mine area), Union Corporation of Australia Pty. Ltd. is exploring the area to the west of E.L. 11/78 and Renison Ltd. (through Hellyer Mining and Exploration Pty. Ltd.) is active in the area to the northeast of E.L. 11/78 (around the Anchor Mine). Most of the area to the north and east of E.L. 11/78 is not covered by any form of mining or exploration title.

At present several small Mining Leases and Special Purpose Leases within the boundaries of E.L. 11/78 are held

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by other (non-CSR) concerns. Since E.L. 11/78 was granted one of these Mining Leases (55M/77) has been relinquished and one (41M/53) has been reduced in area. These two areas are thus not covered by any mining or exploration title.

4.3 Recent Exploration Result Summary

Most of the work in the St. Helens area prior to the 1968-74 work by Geophoto Resources Consultants was either not directly concerned with the area covered by E.L. 11/78 or was only of a reconnaissance nature.

Initial work by Geophoto was the extension of the Austminex systematic stream sediment sampling programme to test for new tin, tungsten, molybdenum, copper, zinc and arsenic mineralisation. Weak anomalies were located for follow-up work. The main anomaly within E.L. 11/78 was the Upper Scamander anomalous area.

Geophoto also conducted an airborne radiometric survey using a gamma ray spectrometer system which recorded aerial distributions of radioactive thallium 208, potassium 40 and bismuth 214. This survey differentiated between the mineralising "tin" granites and granites containing little tin. Several anomalies (O and U) were located within E.L. 11/78 and required follow-up work on the ground (which was not done by Geophoto).

An attempt was made at a digital geofracture analysis of the area. This work delineated several areas of possible interest. Field observations did not agree completely with the results of the analysis.

Within E.L. 11/78 follow-up work was conducted on two likely prospects; the Copper Show Creek and the Upper Scamander Copper Anomaly prospects. Gridding, geological mapping, detailed stream sediment, soil and rock sampling were conducted in the former prospect area.

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This study concluded that this fissure type of sulphide mineralisation would only yield low tonnages of low grade ore. The Upper Scamander Copper anomaly was studied by detailed stream sediment sampling, gridding, soil sampling, preliminary I.P. surveys, geological mapping, two diamond drill holes and finally a follow-up I.P. survey. This work proved inconclusive and this prospect was abandoned. Follow-up work was considered to be still required.

The entire area of E.L. 6/68 was allowed to lapse by Geophoto Resources Consultants on 23rd February, 1974.

After CSR Limited obtained E.L. 11/78 on 15th September 1978, the previous exploration results were examined. This led to CSR Limited undertaking an exploration programme of five phases :-

4.3.1 Orientation surveys around the Priory Mine granite hosted tin deposit and the Wolfram Creek-Mathinna Beds hosted tin, tungsten and molybdenum vein deposit were conducted. These surveys showed that optimum sized geochemical responses for soil samples could be obtained from the -20 to +80 mesh or the -20 to +60 mesh size fractions. In soils the tungsten and tin were complementary as were copper and zinc (in the coarse fractions). No significant base metals seemed to be associated with lode tin. Thus elemental tin was the best indicator of lode tin.

Heavy mineral data from the Wolfram Creek area suggested that tourmaline but not tin was found in granite contact zones, cassiterite and wolframite are minor minerals in streams draining molybdenum/tungsten deposits, and that cassiterite is the major element in streams draining lode tin deposits (Hall, 1979).

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4.3.2 An evaluation of alluvial tin deposits was made. This consisted of examining and sampling old workings. Then augering programmes were undertaken in swampy areas (not previously mined) within drainage systems containing old alluvial tin workings. This work showed the only possible economic deposits of alluvial tin was in the area known in Thureau's Lead between the Derwent Creek inflow and the Boggy Creek workings. Drilling of this area was recommended (Hall, 1979).

After locating a report on auger drilling in this area, Williams (1980) downgraded the likelihood of the occurrence of an economic alluvial tin deposit in the area.

4.3.3 Old reports showed that the Lottah Granite outcrops were associated with known tin deposits (Anchor Mine). Thus these outcrops (Platt's Lookout, Gould's Country, Sweet Hill and Johnson's Hill) were stream sediment and heavy mineral sampled, geologically mapped and rock chip sampled.

The steep terrain presented problems in the Platt's Lookout area. However, no obvious geochemical anomalies were found (tin, tungsten and molybdenum did show considerable variations). Traces of cassiterite and wolframite were found in the heavy mineral samples.

The Johnson's Hill area (including Gould's Country and Sweet Hill) has many old workings. These areas were also soil sampled at 200 metre intervals. The stream sediment samples showed few areas anomalous in tin, tungsten, bismuth and molybdenum. Some greisens were located. Heavy mineral samples showed cassiterite concentrations near old workings. Soil samples showed coincident tin, tungsten, copper, zinc anomalies near the licence boundary. Further work was recommended.

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4.3.4 Many streams from the Mt. Pierson Granite have been worked for alluvial tin. A study of these old workings with associated soil and rock chip sampling showed that within this granite complex concentrations of tin occurred around small pipe-like outcrops of siliceous material and/or in areas of quartz-tourmaline veining, areas of aplite-quartz veining and/or breccia zones (Hall, 1979).

Follow-up work consisted of stream sediment sampling of areas not previously sampled and not previously worked for alluvial tin. Of these, two streams were found to have anomalous tin values indicating a need for further work.

Other work consisted of a geological inspection of the area (a greisen zone located at Clio Hill, when gridded and rock-chip sampled, showed only traces of tin), an orientation programme of soil sampling, and a bulk soil sampling programme (to determine variations in tin in primary tin concentrations in soils on the various granite masses). This bulk soil sampling exercise showed the Mt. Pierson Granite to have significant areas of higher than normal tin contents which although extremely variable, explain the alluvial tin concentrations. This programme also located the Ferntree Hill tin-bearing greisen over which a soil sampling programme was conducted.

This sampling showed conventional soil sampling of the A2 or C horizons was more effective than bulk soil sampling.

4.3.5 Geophoto's work showed three areas of Mathinna Beds which required further work.

Field work by CSR in the first area (Haley's Creek) located a further shaft and trench with gold, tin and antimony mineralisation plus minor copper,

lead, zinc, silver and arsenic in veins in an area known as the Copper Show Creek Prospect. Also in this area (at the Upper Scamander Creek Prospect) stream sediment, heavy mineral and rock chip samples were taken. These confirmed the anomalous areas of Geophoto as well as showing further anomalous copper, lead and minor tin zones within tourmalinised patches. Gossans showed high lead, arsenic, tin and tungsten values as well as very high copper anomalies.

This area also contained two structural analysis anomalies which had surface geological expressions requiring further follow-up work.

The second area of Mathinna Beds was the Hogan's Track area. This area contained another two structural anomalies which were investigated by field examination, stream sediment and rock chip sampling. No geochemical anomalies were located.

The third area of the Mathinna Beds was the Goshen and Pyengana roof pendants. These were investigated by stream sediment sampling which showed two anomalous values.

Associated with the investigation of these roof pendants was the stream sediment sampling of other streams draining granite completing the stream geochemistry coverage of the licence area. This also showed several anomalous values.

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5. GEOLOGY

A detailed geological description of E.L. 11/78 can be found in Hall (1979) from which the following summary was derived (DRG No. K554-1).

Within E.L. 11/78 the oldest rocks are the Mathinna Beds. These consist mainly of poorly sorted argillaceous sandstones and coarse siltstones with minor fine siltstones and shales. This sequence of 0.1 to 1.0 metre thick units has been subjected to low grade regional metamorphism and regional folding (Tabberaberan Orogeny). Resulting major folds have axial strikes of 150 degrees. Minor small scale folding is also present.

Granites of the Blue Tier Batholith passively intruded this folded sequence resulting in the formation of contact metamorphic aureoles containing tin, copper, tungsten and silver mineralisation. This Upper Devonian batholith contains many different recognisable phases. Early injection of hornblende granodiorites resulted in the formation of the Gardens, St. Helens and Pyenana Plutons. The hornblende in these produce a distinctive green on weathering. The emplacement of these granodiorites was followed by the injection of the coarse grained biotite granite-adamellites of the Poimena and Mt. Pierson Plutons. The Poimena Pluton is porphyritic with up to 3 cm laths of feldspar and biotite in a medium-grained groundmass while the Mt. Pierson Pluton is more even grained. Late stage intrusions were the muscovite-biotite granite/adamellites of the Lottah and Constable Creek Sheets. These are differentiates of the Poimena and Mt. Pierson Plutons and are "tin" granites. They are fine to medium grained with two micas and a distinctive red coloration. Tin occurs in greisen sheets and in fine-grained aplite zones.

Dolerite dykes have intruded the Lottah Granite and the Mathinna Beds.

The only other rocks within E.L. 11/78 are the alluvial sediments accumulated in old stream and river channels. These

sands, clays and gravels are tin-bearing adjacent to the Mt. Pierson Granite.

No changes to this geology were noted in the 1981 field work. However, the Regional Geology Section of the Tasmanian Department of Mines (McClenaghan and Williams, 1981) have mapped the Blue Tier 1:50,000 scale sheet area which covers the portion of E.L. 11/78 north of grid line 5433000 m N. This mapping showed that while the distribution of the granites was substantially correct on CSR Limited plans (DRG No. K554-1), the petrography of the various granites is considerably different to the Department of Mines plan. As the granite types have a considerable bearing on the potential for tin deposits, these granite petrographies have been plotted onto CSR Limited's plans (DRG No. K554-6).

Further petrographic studies of the granites in the southern half of E.L. 11/78 will be undertaken in the near future.

6. EXPLORATION CONCEPTS

6.1 Alluvial Cassiterite

Alluvial tin was widespread within E.L. 11/78. Most of the past mining was concentrated along a palaeo-channel of the George River known as Thureau's Lead. At present most of the small scale mining is along Saxelby Creek (or its tributaries) with only one lease being on the Groom River.

Hall (1979) examined most of the areas with any potential for economic deposits of alluvial tin. No significant tin concentration was located, but it was concluded that Thureau's Lead held the only potential for an economic alluvial tin deposit. Williams (1980) further studied Thureau's Lead and found that alluvial tin was concentrated in the surficial quartz sand cover rather than in bedded and partially lithified clay/sands exposed by the sluicing operations. Also a brief report of the Department of Mines (Jennings, 1968) suggested that no deep concentrations of tin occurred in Thureau's Lead. However, discussions with Mr. D.J. Jennings indicated that the drilling reported in an appendix to the report (Jennings, 1968) was unsupervised and of little value.

Thus potential for an alluvial cassiterite deposit, although only small, remained in the possible extension of the Thureau's Lead tin workings.

6.2 Eluvial Cassiterite

Williams (1980) suggested that eluvial cassiterite has been worked within E.L. 11/78 but that these workings have been incorporated into alluvial tin workings. Due to the extensive nature of past workings it is unlikely that any further significant eluvial cassiterite deposits will be found within E.L. 11/78.

6.3 Primary Cassiterite

Primary cassiterite occurs within E.L. 11/78 mainly in greisenous zones associated with the biotite-muscovite granites of the Lottah and Constable's Creek sheets. These greisenous tin zones may contain quartz-cassiterite veins.

A second type of tin mineralisation known within the area is the stockwork deposits of quartz-cassiterite veins. The Great Pyramid Mine to the southeast of E.L. 11/78 represents a stockwork deposit formed in the mineralising granite.

The highest potential for the occurrence of primary cassiterite deposits is the area of the Constable's Creek muscovite-biotite granite sheets. At present the most promising zone is the Ferntree Hill greisen.

It was thought that Lottah Granite Sheets were of similar composition and potential (for primary cassiterite deposits) to the Constable's Creek sheet. However, recent work by the Department of Mines (McClenaghan and Williams, 1981) suggest that the Lottah Granite Sheet containing the Anchor Mine tin deposit is significantly different to the remainder of the so called Lottah Sheets outcropping within E.L. 11/78. Further work in this area is required.

6.4 Tungsten and Molybdenum

Quartz veins containing tungsten and molybdenum occur to the southeast of E.L. 11/78. These veins occur in northeasterly trending tension fractures. The fractures and the veins are thought to be related to the intrusion of the Blue Tier Batholith.

The occurrence of these veins suggests that stockworks of these tungsten and molybdenum bearing veins may

exist in either the Mathinna Beds or the intrusive granites. Within E.L. 11/78 the most likely area for such a stockwork occurrence is in the southeastern zone of the Licence. However, the potential for finding an economic stockwork vein deposit in this area is very low.

6.5 Copper, Silver, Lead and Zinc

Copper, silver, lead and zinc deposits, as well as minor arsenic, are known from the area to the south and southeast of E.L. 11/78. These gossanous sulphide deposits occurred in northeasterly trending fractures and faults.

Fractures with anomalous copper and other base metal anomalies occur in the southern part of E.L. 11/78 in the Haley's Creek area. These require further work. However, the closeness of the intrusive mass and the thin nature of the Mathinna Beds (sulphide host rocks) indicate that the possibility of locating an economic deposit in this area is very low. There is more potential for locating a tin/molybdenum/tungsten deposit.

6.6 Gold and Silver

Quartz veins containing gold and silver have been mined to the west of the southern portion of E.L. 11/78. These deposits were very variable and of low grade. The potential for finding an economic deposit in this area of E.L. 11/78 is extremely low. However, the anomalous areas defined by Geophoto (including drill results) should be examined.

7. CURRENT EXPLORATION

7.1 General

The initial exploration work for 1981 within E.L. 11/78 consisted of follow-up work on the anomalous areas located during the 1980 season (Williams, 1980). This follow-up work included resampling anomalous stream sediment sample locations and re-examining areas of anomalous rock chip and soil samples. Other work during the early part of the period was the follow-up of anomalous zones located by Geophoto Resources Consultants in their radiometric survey of the northeastern area of Tasmania.

Results of this preliminary follow-up work led to a re-assessment of exploration potential. This re-assessment showed that there were several large areas which had only extremely low potential.

Delineation of low potential areas was followed by check stream sediment and soil sampling in the areas suggested for relinquishment. These check samples were generally to analyse for elements (usually tin) which were not determined in the original samples or to fill in gaps in the geochemical data. The areas proposed for relinquishment were also covered by an air photograph analysis. This analysis was an attempt to ensure that these areas contained no greisenous features similar to the Ferntree Hill greisen which had not been identified by geochemistry.

As well as the work on the areas proposed for relinquishment and the follow-up work for single point anomalous areas, soil sampling grids over two large anomalous areas were extended. These were the Ferntree Hill greisenous zone and the Forester Creek tributary anomalous stream sediment zone. A preliminary scan of air photographs of the entire Licence for anomalous features was also undertaken.

7.2 Stream Sediment Anomalies

Stream sediment samples taken by Williams (1980) indicated several anomalies. Samples A80803 (from a tributary at Forester Creek) and A80845 (from a tributary of Mother Logan's Creek) from within the Mt. Pierson Granite showed anomalous tin values (190 and 300 ppm tin in the -20 mesh fraction). Samples A80603 (from a tributary of Bosses Creek) and A80602 (from a tributary of the Scamander River) were from streams draining outcrops of Mathinna Beds. These latter two samples showed anomalous tungsten (50 ppm) and tin (35 ppm) values, respectively.

Follow-up work was conducted on all four anomalous samples. This work consisted of revisiting each sample site and obtaining another sample of the stream sediments. A further stream sediment sample from each of the creeks was taken upstream of the original anomalous sample site (two upstream samples were taken from near samples numbered A80803 and A80682). The sample numbers and locations taken in this follow-up work were :-

<u>DATABASE</u> No	<u>Sample Number</u>	<u>Location</u>
6131	A87151	200 metres upstream of A80803 (5803)
6152	A87152	122 metres upstream of A80803
6153	A87153	Resample of A80803
	A87155	200 metres upstream of A80845
	A87156	Resample of A80845
	A87158	Resample of A80603
	A87159	Resample of A80603
	A87160	50 metres southwest of A80603
6161	A87161	80 metres upstream of A80682 (5682)
6163	A87163	Resample of A80682

Heavy mineral samples were also collected from each of the original anomalous sample sites. These heavy mineral samples represented the heavy mineral concentrate obtained from the panning of one medium-sized panning dish of stream sediments from each of the sites.

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All samples (stream sediment and heavy minerals) were analysed for copper, lead, zinc, silver, bismuth and molybdenum using A.A.S. techniques on the -80 mesh size fraction and for tin and tungsten using XRF methods on the -20 and +80 mesh size fractions.

7.3 Soil Anomalies

7.3.1 Tin Panning Losses

During 1980 problems were encountered in the Ferntree Hill area with tin concentration variations in soils (Williams, 1980). These problems related to the suspected loss of tin during the panning of 12 kilogram samples down to heavy mineral concentrates. The problem was noted when the tin value of the panned concentrate was found to be generally extremely low compared to the tin analysis of the -20 mesh size fraction of unpanned soil.

During 1981 an attempt was made to explain this discrepancy in the tin contents. This consisted of obtaining two samples of the A2 soil horizon from two of the 1980 sample sites which showed the tin contents discrepancy. The two sample points were from the locations of the 1980 sample numbers A80783 and A80808. The new sample numbers from these sites were A87165 and A87166 respectively.

After obtaining the two samples, each was dried and weighed. The samples were then screened using 20, 40, 80 and 200 mesh screens. Each of the five size fractions from each sample were then weighed and analysed for tin and tungsten. The tin values were then compared to the tin content of the total A2 soil horizon (-20 mesh size fraction) as obtained from the analyses of the 1980 samples.

7.3.2 Ferntree Hill Soil Grid Extensions

Williams (1980) reported that soil and rock chip samples from Ferntree Hill had anomalous tin values (up to 370 ppm tin). Thus in early 1981 Mr. P.M. Macnamara (CSR geologist) partially extended the soil sampling on the grid originally set out by Williams (1980). These extensions were along three east-west lines parallel to the original ridge top grid line (Williams, 1980). One line was to the north of the original grid line and two lines were to the south.

Most of this extended soil sampling was only of limited use as almost all sample points were down-slope from the original grid line sample points (along the ridge top). Also most of these 1981 samples were from the A2 soil horizon. Thus any anomalous values may have represented the presence of in situ tin at the sample site or it may represent the downslope movement of tin from the ridge top source.

With this point in mind, the writer developed a second soil sampling programme for the Ferntree Hill area. This extension of the original grid was confined to grid lines along ridge tops to the east, west, north and south of the original grid. Samples from the A2/C horizon were taken at 50 metre intervals along an extended grid line in each direction (two lines to the north). These samples were to determine the extent of the tin-bearing greisenous zone. All samples were taken using a hand auger.

Samples from the original grid extension were taken at 10 and/or 20 metre intervals, also using a hand auger.

The results of the analyses of the tin contents of the panned and unpanned soil samples (see Sections 7.3.1 and 8.2.1) showed that soil samples

taken from granite areas within E.L. 11/78 should be dried and the total -20 mesh size fraction analysed for the best results. Thus both extension programmes of soil sampling consisted of drying the soil samples and then screening to obtain -80 mesh and -20 to +80 mesh size fractions. The finer fractions (-80 mesh) were analysed for copper, lead, zinc, bismuth and molybdenum using AAS methods while the coarse fractions (-20 to +80 mesh) were analysed for tin and tungsten using XRF techniques.

At the time of writing analyses for the first extension of the original grid were available but results for the recent extension sampling were not.

7.4 Radiometric Anomalies

Anomalies "O" and "U" in the Geophoto work were defined by an airborne gamma ray spectrometer system survey of the area (Mortimer, 1974). These anomalies had never been investigated on the ground.

During the 1980/81 season these radiometric anomalies were ground-traversed using an Austral S.G.I. scintillometer. Once located in the field these areas were geologically mapped in an attempt to determine the cause of the original airborne anomaly.

7.5 Licence Re-assessment

Re-assessment included a study of all old reports on the area and discussions with personnel from the Tasmanian Department of Mines.

Several large areas of E.L. 11/78 were considered of low prospective potential. However, several small information gaps were highlighted.

Thus a fill-in stream sediment sampling programme was initiated. This covered seven drainage basins within

029

the Licence area which had either not been covered in previous geochemical surveys or had only been partially covered. Three stream sediment samples were taken from the Last River system (just within the Licence boundary), a single check sample from Fight Creek, two samples from the Littlechilds Creek), seven samples from the northern tributaries of the George River, six samples from Powers Rivulet, one sample from the upper reaches of the Scamander River and one sample from Treloggen Creek.

A series of soil and stream sediment samples were also taken from the western slopes of Treloggen Creek immediately to the west of Ferntree Hill. These soil samples (at 100 metre intervals) were to confirm that a pair of east-west aligned tributaries straddling the tin anomalous Ferntree Hill area (on air photographs) did not carry tin to the west of Treloggen Creek. On the air photographs it appeared as if the Ferntree Hill lineations extended into the area west of Treloggen Creek. These lineations were investigated in the field during the soil sampling programme.

These samples (stream sediment and soil with minor rock samples) were sufficient to fill all the gaps in the geochemical cover of those portions of E.L. 11/78 which it was proposed to relinquish.

7.6 Air Photograph Analysis

A preliminary scan of a set of black and white contact prints (1:40,000 scale) and enlargements (1:10,000 scale) showed that air photographs may be a useful tool in determining the location and extent of greisenous zones within the St. Helens granites (DRG No. K554-7 shows the anomalies located in the preliminary scan). However, a brief examination of Tasmanian Forestry Commission's colour air photographs (1:20,000 scale) showed these prints to be much more definitive. Thus a set of colour prints has been ordered. These will be examined in detail when they

become available. Field checking of areas of interest located on the black and white photographs will continue.

7.7 Forester Creek Tributary Anomaly

The original sample A80803 from a small tributary of Forester Creek (just above the Anson Bay road bridge) had anomalous tin values which were repeated in follow-up sampling (see Sections 7.2 and 8.1). To determine the source and extent of the anomalous area a soil sampling programme was initiated.

Sample point A80803 was located 70 metres along the tributary from its junction with Forester Creek. A follow-up sample showed that the anomalous tin did not occur in stream sediment samples 122 metres upstream of the original sample (A80803). Further follow-up work (in the initial stages of the soil sampling programme) showed that the anomalous tin did not occur in stream sediments 50 metres upstream from sample A80803.

The soil sampling was thus set out on a 25 metre square grid centred on the anomalous sample A80803 (Fig. 5). The grid lines were perpendicular to the creek and aligned grid north/south. Each grid line extended to the north and south of the creek (baseline) until it reached the crest of the ridge between the anomalous creek and the adjacent creeks. Forty-nine samples from six grid lines were collected. Follow-up stream sediment samples were also taken from the immediate area of the anomaly.

032
TABLE 1 : RESULTS OF STREAM SEDIMENT GEOCHEMISTRY (in ppm)

Sample Number	Sample Type	Cu	Pb	Zn	Ag	Bi	Mo	Sn	W
A87151	Sediment	10	60	25	2	30	10	10	10
A87152	Sediment	10	50	15	1	20	10	5	10
A87153	Sediment	5	40	20	1	20	5	250	<10
A87154	Heavy mineral	5	15	10	<1	5	10	0.12%	<10
A87155	Sediment	5	15	10	<1	5	2	5	<10
A87156	Sediment	5	25	15	<1	10	5	5	10
A87157	Heavy mineral	10	20	20	<1	2	2	-	-
A87158	Sediment	15	30	40	1	20	5	5	10
A87159	Sediment	15	30	40	1	20	5	5	<10
A87160	Sediment	10	20	20	1	10	55	5	<10
A87161	Sediment	20	65	35	2	25	5	5	<10
A87162	Sediment	20	40	30	1	20	5	5	<10
A87163	Sediment	10	45	30	1	20	5	5	<10
A87164	Heavy mineral	55	40	60	1	15	10	915	<10

See Appendix I for Sample Data Sheets

033

8. RESULTS

8.1 Stream Sediment Anomaly Follow-up

Each of the single point anomalous stream sediment sample locations were resampled with at least a further two samples being taken. Heavy mineral samples were also taken. Results of the analyses of these samples are shown in Table 1, while sample locations are shown on DRG No. K554-5A.

Sample A80803 from a tributary of Forester Creek was considered anomalous with a value of 190 ppm tin in the -20 to +80 mesh size fraction. Sample A87153 from the same location showed anomalous tin with an assay of 250 ppm tin in the -20 to +80 mesh fraction. However, samples A87152 and A87151 (120 and 300 metres upstream of A87153, respectively) showed no anomalous tin concentrations (<5 and 10 ppm tin).

The heavy mineral sample A87153 from the same sample site as A80803 showed an anomalous tin content. This 9.66 gram sample of concentrate from a single medium sized dish of stream sediments contained 0.12 percent tin.

No other anomalous elements were observed in any of these samples.

To further check this anomaly follow-up soil testing has been commenced (see Section 7.7).

Sample A80845 from a tributary of Mother Logan's Creek was considered weakly anomalous with a value of 30 ppm tin in the -20 to +80 mesh size fraction. Sample A87156 from the same location, however, showed only <5 ppm tin in the same size fraction. Similarly sample A87155 from approximately 200 metres upstream from A80845 showed only <5 ppm tin in the -20 to +80 mesh fraction.

The heavy mineral sample A87157 from the same sample site as A80845 only gave 0.8 grams from a dish of stream sediments. This quantity was insufficient for a tin content determination. A base metal analysis of this sample showed no anomalies.

Thus the slightly anomalous tin value of sample A80845 is not repeatable and thus requires no further investigation.

Sample A80603 from a tributary of Bosses Creek was considered anomalous with a value of 50 ppm tungsten in the -20 to +80 mesh size fraction. Samples A87158 and A87159 from the sheet wash area at the same location as sample A80603 showed only 10 and <10 ppm tungsten respectively, in the same size fraction. These values are not anomalous. Similarly sample A87160 from a more defined drainage channel 50 metres southwest of A80603 (same creek) showed only <10 ppm tungsten in the -20 to +80 mesh fraction.

None of these samples showed any other anomalous elements.

As the anomalous tungsten value of sample A80603 was not substantiated, no further investigation is warranted.

Sample A80862 from a tributary of the Scamander River was considered anomalous with a value of 35 ppm tin in the -20 to +80 mesh size fraction. Sample A87163 from the same location, however, showed only 15 ppm tin in the same size fraction. Samples A87162 and A87161 from 40 and 80 metres upstream of A80682, respectively assayed at only 5 ppm tin in the -20 to +80 mesh size fractions.

The heavy mineral sample A87164 from the same sample site as A80682 showed 915 ppm tin. Although this value is high it is not significant when considering that

035

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TABLE 2 : RESULTS OF SOIL SIZING AND ASSAYS

SAMPLE NUMBER	SIZE (MESH)	Sn (ppm)	W (ppm)	SAMPLE WEIGHT (gm)	WEIGHT Sn (gm)	% CONTAINED Sn	CALCULATED -20 MESH Sn (ppm)
A87165	+20	30	<10	661.60	0.020	16.36	455
	-20 +40	210	<10	82.38	0.0255	20.86	
	-40 +80	570	10	63.27	0.0360	29.46	
	-40 +200	635	<10	45.94	0.0292	23.89	
	-200	150	<10	76.92	0.0115	9.41	
	Total			930.17			
A80783	-20	370					370
A87165	+20	< 5	<10	499.06	≈ 0.0015	4.97	141
	-20 +40	130	10	62.19	0.0081	26.82	
	-40 +80	150	<10	46.16	0.0090	29.80	
	-80 +200	195	<10	38.03	0.0074	24.50	
	-200	85	10	66.81	0.0057	18.87	
	Total						
A80808	-20	100		712.25			100

See Appendix I for Sample Data Sheets

036

the 6.32 grams of heavy mineral was concentrated from at least 5 kilograms of stream sediment.

The anomalous tin value of sample A80682 was not repeated and thus requires no further investigation.

The results of the follow-up investigations of the 1979/80 anomalous stream sediment geochemistry showed that of the four original anomalies only one requires further investigation. This one sample point (A80803) showed anomalous tin values in the stream sediment and heavy mineral samples.

The fill-in stream sediment samples from the northeastern and southwestern areas showed no anomalous values (Appendix I). Associated soil sampling in the vicinity of Steels Marsh showed no extended anomalies (Appendix I).

8.2 Soil Anomaly Follow-Up

8.2.1 Tin Panning Losses

1979/80 sample points A80703 and A80808 were resampled by taking approximately 1 kilogram of soil from each site. These samples, A87165 and A87166 (respectively) were then dried, weighed and screened (using 20, 40, 80 and 200 mesh screens). Each of the five size fractions from each sample were weighed and then analysed for tin and tungsten.

The results of the analyses (Table 2) showed that the tungsten content of all size fractions in both samples was very low. Tin values were relatively high for all size fractions except the +20 mesh fraction (30 and <5 ppm tin, respectively). The finest size fraction (-200 mesh) of both samples contained the smallest quantity of tin of the size fractions less than 20 mesh. Thus even if the finest tin was wasted away during the panning of bulk soil samples there

037

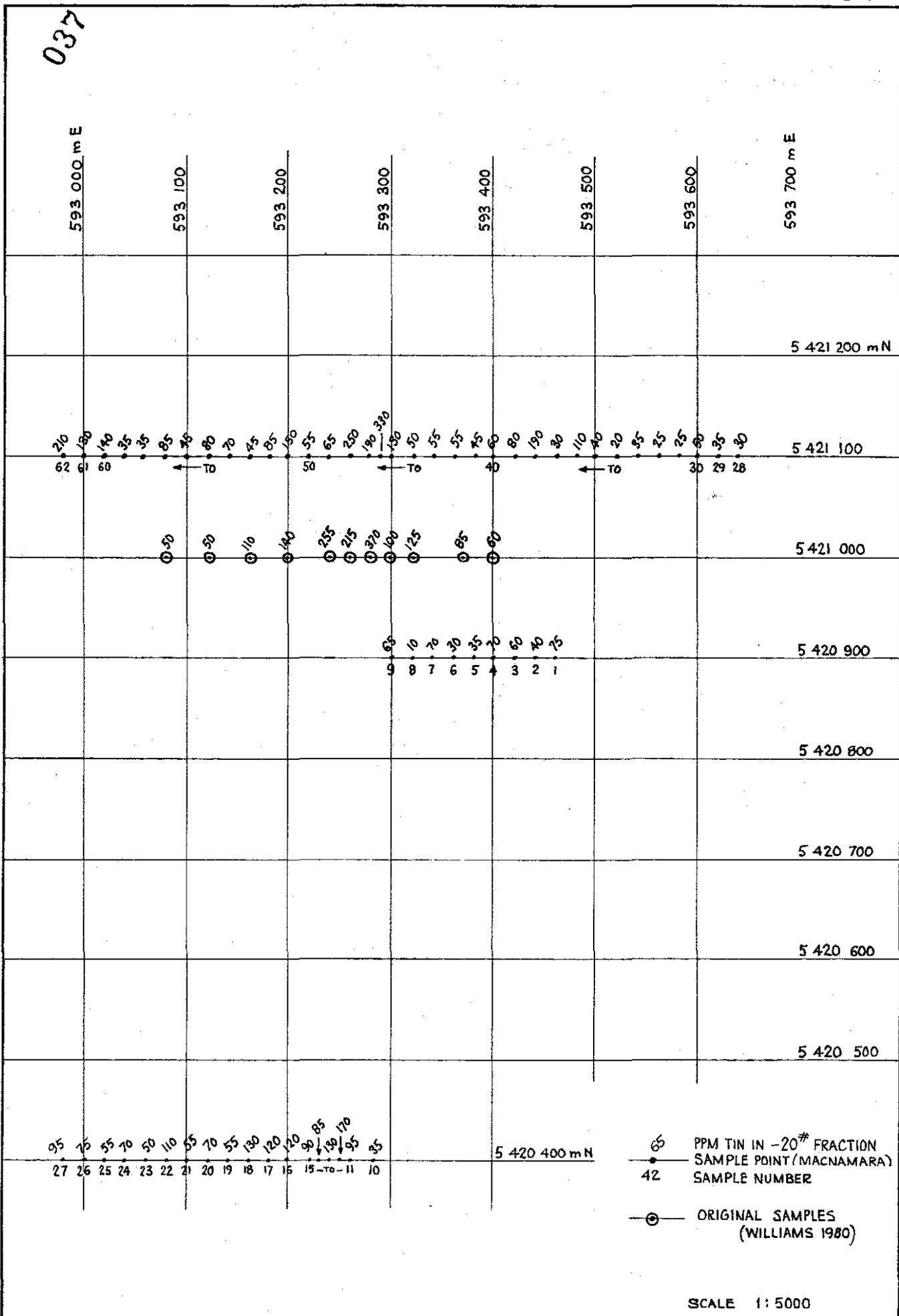
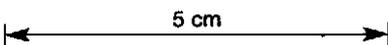


FIG. 3 FERNTREE HILL - MACNAMARA SOIL GRID
 E.L. 11/78 GEORGES RIVER, TASMANIA



should be very little change in the tin content of the concentrate. This size distribution of the tin certainly does not explain the reduced tin values for the 1979/80 panned concentrate samples when compared to the total -20 mesh soil tin content.

Another possible explanation for the loss of tin during panning of bulk soil samples is that the tin is incorporated within the biotite grains. During panning biotite is washed away. This would result in a lower than expected tin value in the panned concentrate. This theory could be checked by obtaining samples of biotite from the Ferntree Hill area and having them assayed by XRF or electron probe techniques for tin contents.

8.2.2 Ferntree Hill Soil Grid Extensions

Initial follow-up sampling of anomalous soil samples along the ridge top at Ferntree Hill was along three additional east-west grid lines, and resulted in 62 soil samples being taken by hand auger. The -20 mesh size fraction of each sample was analysed for tin. The grid and the tin values are shown in Figure 3.

The results of the analyses of these soil samples showed that anomalous tin zone was possibly truncated to the east in the area of grid co-ordinate 593700 m E on grid line 5421100 m N. No northerly, southerly or westerly limits for the anomalous tin zone were defined by this initial soil sampling.

Apart from indicating a possible easterly limit of the anomalous tin zone this soil sampling was of limited value. Most of the soil sample sites were downslope from the original line of anomalous soil samples. Thus any anomalous values may have been the result of downslope movement of tin from a ridge top outcrop.

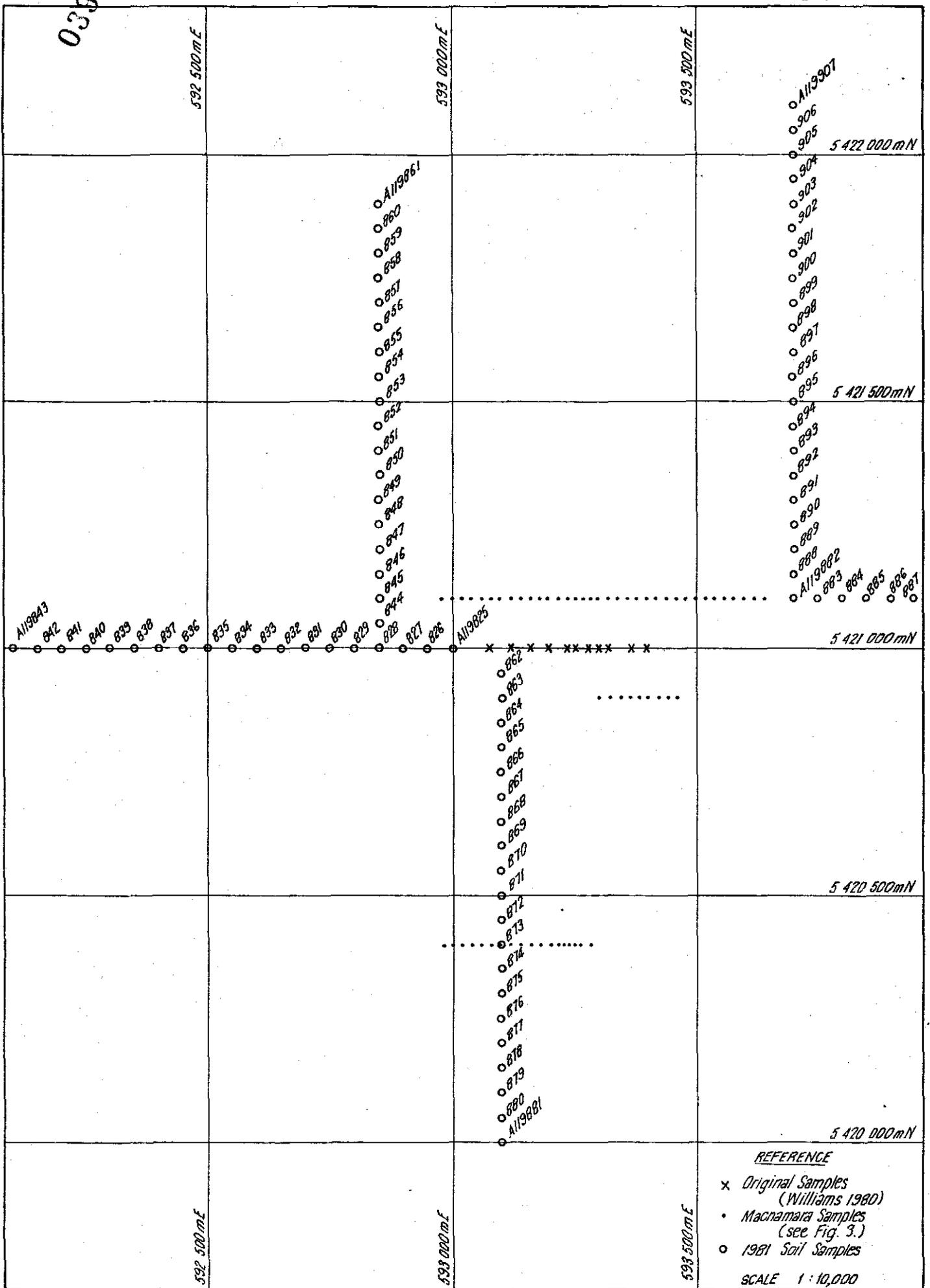


FIG. 4. FERNTREE HILL SOIL SAMPLES - E.L.11/78 GEORGES RIVER, TAS.

5 cm

A new soil sampling programme for the Fern-tree Hill area was thus initiated. This consisted of extending the sampling grid along ridge tops to the north, south, east and west of the original grid and sampling mainly the C soil horizon (Figure 4). This resulted in the grid being extended approximately one kilometre in each direction from the original grid. Thus an area of approximately 2.5 kilometres square was covered by soil sampling.

Results of the analyses of the -20 mesh size fraction samples are not yet available. It is hoped that the results will help in the locating of either a diamond drill hole collar or a series of percussion hole locations to test the Ferntree Hill greisen.

8.3 Radiometric Anomalies

The airborne radiometric survey of the northeast of Tasmania by Geophoto Resources Consultants (Mortimer, 1974) located two anomalies within E.L. 11/78. CSR Limited checked these anomalous areas using a S.G.I. Austral scintillometer.

Anomaly "0" was located over the contact of the Mathinna Beds and Mt. Pierson Granite. Very low readings (10-20 c.p.s.) were recorded over the Mathinna Beds with higher readings (30-40 c.p.s.) being recorded over the granite near the contact zone. These values are not considered significant. Thus no further work is warranted in the area of anomaly "0".

Anomaly "U" was located within an area of Mathinna Beds. The ground traversing with the scintillometer located no anomalies. Average readings in the area were 10-20 c.p.s. with maximums of 25 c.p.s.

Geochemical and geophysical data showed no anomalies in the vicinity of these radiometric anomalies. No further investigation is warranted.

041

9. CONCLUSIONS

Exploratory work during the 1981 season has delineated large areas of the exploration licence which have an extremely low potential for economic mineral deposits.

Follow-up work has shown that only one of the anomalous stream sediment samples (Williams, 1980) within E.L. 11/78 is repeatable and warranted further work. Soil sampling over this anomaly has been started. Further work may include drilling.

A check of Geophoto Resources Consultants' radiometric anomalies in the field showed both anomalies to be insignificant.

Air photographs have been found to be useful in delineating structural and tonal variations in the vicinity of known tin mineralisation. Several other anomalous variations (outside of known tin mineralisation) have been located. These require field follow-up investigation.

Old drilling of Thureau's Lead is not necessarily reliable in parts. Further drilling is warranted. Recent studies have shown known tin-bearing granites have a diagnostic mineralogy and trace element chemistry. Further work on granites in the licence is required.

The Ferntree Hill prospect constitutes a high priority target for further work. Soil sampling has shown anomalous tin over an area of at least 700 m². Further work is designed to determine the limits of the anomalous areas and to help locate possible drill holes.

042

10. REFERENCES

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043

APPENDIX ISAMPLE DATA SHEETSSOIL, STREAM SEDIMENT AND ROCK SAMPLING - 1981

M = Stream sediment

HM = heavy mineral

S = soil

NB. see 82-1683 for data base nos, etc.
for rest of data

CSR LIMITED - SAMPLE DATA SHEET



AREA GEORGE RIVER EL11/78
 STATE TAS LOCATION _____

PROSPECT NUMBER 603
 1:100,000 SHEET _____

DATE SAMPLED APR 1980
 SAMPLER REW.

LABORATORY REPORT NO. ALS BGLN N192
 ANALYTICAL METHOD AAS 1 & XRF 1A

NOTATIONS: SAMPLE TYPE - M - Creek mud S - Surf
 SA - Soil Auger, RC - Drill Core,
 RP - Percussion Chips
 R - Rock
 ANALYSES: Please state element

ADDITIONAL 044

SAMPLE NUMBER	SAMPLE TYPE	DEPTH (meters)	CHEMICAL ANALYSES (ppm)									SUMMARY DESCRIPTION	LOCATION		
			Cu	Pb	Zn	Ag	Bi	Mo	Sr	W	E/W		N/S		
A 97151	M	-80 -20+80	10	60	25	2	30	10				500m upstream of A80803	6151		
52	M	-80 -20+80	10	50	15	1	20	10				300m upstream of A80803	6152		
53	M	-80 -20+80	5	40	20	1	20	5				REPEAT OF SAMPLE LOCATION A80803	6153	598050	5432680
54	HM		5	15	10	<1	5	10	0.12%	<10		9.66gms Sample Heavy mineral conc (1 medium dish) at sample pt A80803		598050	5432680
55	M	-80 -20+80	5	15	10	<1	5	2	<5	<10		200m upstream from A80845			
56	M	-80 -20+80	5	25	15	<1	10	5		<5	10	Sample Site A80845		594070	5438120
57	HM		10	20	20	<1	<2	2 I.S.	I.S.			0.80gms Sample Heavy mineral conc at A80845 sample site.		594070	5438120
58	M	-80 -20+80	15	30	40	1	20	5		<5	10	RESAMPLE OF ANOMALY A80603 - virtually a soil sample as creek to just chest wash		594260	5434050
59	M	-80 -20+80	15	30	40	1	20	5		<5	<10			594260	5434050
60	M	-80 -20+80	10	20	20	1	10	5		<5	<10	Sampling of defined drainage 50m SW of A80603 (Alluvial swath enabled correct location of creek.)			
61	M	-80 -20+80	20	65	35	2	25	5			5	80m upstream from A80682	6161		
62	M	-80 -20+80	20	40	30	1	20	5			5	40m upstream from A80682	6162		
63	M	-80 -20+80	10	45	30	1	20	5			1.5	Repeat of A80682	6163	594800	5414300
64	HM		55	40	60	1	15	10	9.15	<10		6.32gms Sample Heavy mineral Core of site of A80682		594800	5414300

FOLLOW-UP SAMPLING FOR ANOMALY SAMPLE N° A80803

FOLLOW-UP SAMPLING FOR ANOMALY SAMPLE N° A80803

FOLLOW-UP OF ANOMALY SAMPLE N° A80682

872045

CSR LIMITED - SAMPLE DATA SHEET

CLM

AREA GEORGE RIVER E/W 1/28
 STATE TAS LOCATION FERN TREE HILL

PROSPECT NUMBER 603
 1:100,000 SHEET

DATE SAMPLED AUG 1980
 SAMPLER REW

LABORATORY REPORT NO. ALS Batch N° 1192
 ANALYTICAL METHOD XRF-1A

NOTATIONS: SAMPLE TYPE - M - Core Mud, S - Soil
 SA - Soil Auger, RC - Drill Core,
 RP - Percussion Chips
 R - Rock
 Please state element

ANAL

045

SAMPLE NUMBER	DEPTH (cm)	CORRECTION	CHEMICAL ANALYSES (ppm)							SUMMARY DESCRIPTION	LOCATION		
			SL	W	FRACTIONAL WEIGHT	WT REMOVED (g)	CALCD -20ppm S ₂	% CONTAINED S ₂	E/W		N/S		
A 87165	S									Total wt of Sample 930.17gm	A ₂ Soil	573280	592100
		+20	30	<10	661.66	0.020		16.38%					
		-20+40	310	<10	82.38	0.0255		20.86%					
		-40+80	570	10	63.27	0.0360		29.46%					
		+80+200	635	<10	45.94	0.0292		23.89%					
		-200	150	<10	76.92	0.015		9.41%					
							455						
A 90783	S		-20	370						A ₂ HORIZON	JAN 1980		
A 87166	S									Total wt of Sample 712.25gm	A ₂ Soil	573300	592100
		+20	<5	<10	899.06	0.015 (C)		~4.97%					
		-20+40	130	10	62.19	0.0081		26.82%					
		-40+80	150	<10	46.16	0.0090		29.80%					
		-80+200	195	<10	38.03	0.0074		24.50%					
		-200	85	10	66.81	0.0057		18.87%					
							141						
A 80908	S		-20	100						A ₂ HORIZON	JAN 1980		

872046

CSR LIMITED - SAMPLE DATA SHEET



AREA GEORGE RIVER
STATE TAS LOCATION ELI/178

PROSPECT NUMBER 603
1:100,000 SHEET GEORGES BAY

DATE SAMPLED JULY/AUG 1981
SAMPLER P.D.E.

LABORATORY REPORT NO. ALS
ANALYTICAL METHOD AAS & XRF

NOTATIONS: SAMPLE TYPE - M - Creek mud, S - Soil
SA - Soil Auger, RC - Drill Core,
RP - Percussion Chips
R - Rock
ANALYSES: Please state element

ADDITIONAL

047

SAMPLE NUMBER	SAMPLE TYPE	ANALYSE (ppm)	CHEMICAL ANALYSES (ppm)										DATA BASE NUMBER	SUMMARY DESCRIPTION	LOCATION	
			Sn	W	Cu	Pb	Zn	Bi	Mo	EM#	N#					
A 119759	SA	-8.0	5	1.0	<2	5	<2							Shells Marsh - 100 m from old stud (NW corner) at 207° magnetic (-1/2° dip)	591.030	542.1322
A 119760	SA	-8.0	5	<1.0										" " - 100 m from A119759 at 196° magnetic (0 dip)	591.000	542.1326
A 119761	SA	-8.0	2.0	<1.0										" " - 100 m " A119760 " 181° " (-1/2° dip)	590.980	542.1129
A 119762	M	-8.0	<5	<1.0										" " - 80 m " A119761 " 186° " (+1/2° dip)	590.960	542.1055
A 119763	SA	-8.0	<5	<1.0										" " " 20 m " A119762 " 186° " (+1/2° dip)	590.970	542.1025
A 119764	SA	-8.0	<5	<1.0										" " " 100 m " A119763 " 133° " (-3° ")	591.025	542.0943
A 119765	SA	-8.0	<5	<1.0										" " " 100 m " A119764 " 177° " (+1/2° ")	591.000	542.0860
A 119766	M	-8.0	<5	<1.0										" " " 50 m " A119765 " 168° " (-2° ")	591.000	542.0800
A 119767	SA	-8.0	<5	<1.0										" " " 50 m " A119766 " 168° " (-2° ")	591.015	542.0755
A 119768	M	-8.0	<5	<1.0										" " " 80 m " A119767 " 180° " (0 dip)	591.015	542.0775
A 119769	SA	-8.0	<5	<1.0										" " " 20 m " A119768 " 180° " (0 ")	591.000	542.0650
A 119770	SA	-8.0	<5	<1.0										" " " 100 m " A119769 " 169° " (+1/2° ")	591.010	542.0550
A 119771	M	-8.0	<5	<1.0										" " " 50 m " A119770 " 164° " (-1° ")	591.020	542.0515
A 119772	SA	-8.0	<5	<1.0										" " " 50 m " A119771 " 164° " (-1° ")	591.030	542.0470
A 119773	SA	-8.0	<5	<1.0										" " " 100 m " A119772 " 174° " (0 ")	591.025	542.0365
A 119774	M	-8.0	<5	<1.0										" " " 50 m " A119773 " 180° " (-1° ")	591.015	542.0325
A 119775	SA	-8.0	1.0	<1.0										" " " 50 m " A119774 " 180° " (-1° ")	591.005	542.0265
A 119776	R	-8.0	1.5	<1.0										Sample point A119773 - quartz veins	591.025	542.0365
A 119777	SA	-8.0	5	<1.0										" " " 100 m from A119775 at 171° magnetic (-1/2° dip)	591.020	542.0160
A 119778	SA	-8.0	5	<1.0										" " " 100 m " A119777 " 140° " (-1° ")	591.065	542.0085
A 119779	SA	-8.0	2	<1.0										" " " 100 m " A119778 " 149° " (-3° ")	591.100	542.0000
A 119780	SA	-8.0	2	<1.0										" " " 100 m " A119779 " 136° " (-2° ")	591.153	541.9900

872048

CSR LIMITED - SAMPLE DATA SHEET



048

AREA GEORGE RIVER
STATE TAS LOCATION ELI/78

PROSPECT NUMBER 603
1:100,000 SHEET GEORGES BAY

DATE SAMPLED July/Aug 1991
SAMPLER P.D.E

LABORATORY REPORT NO. ALS
ANALYTICAL METHOD AAS & XRF

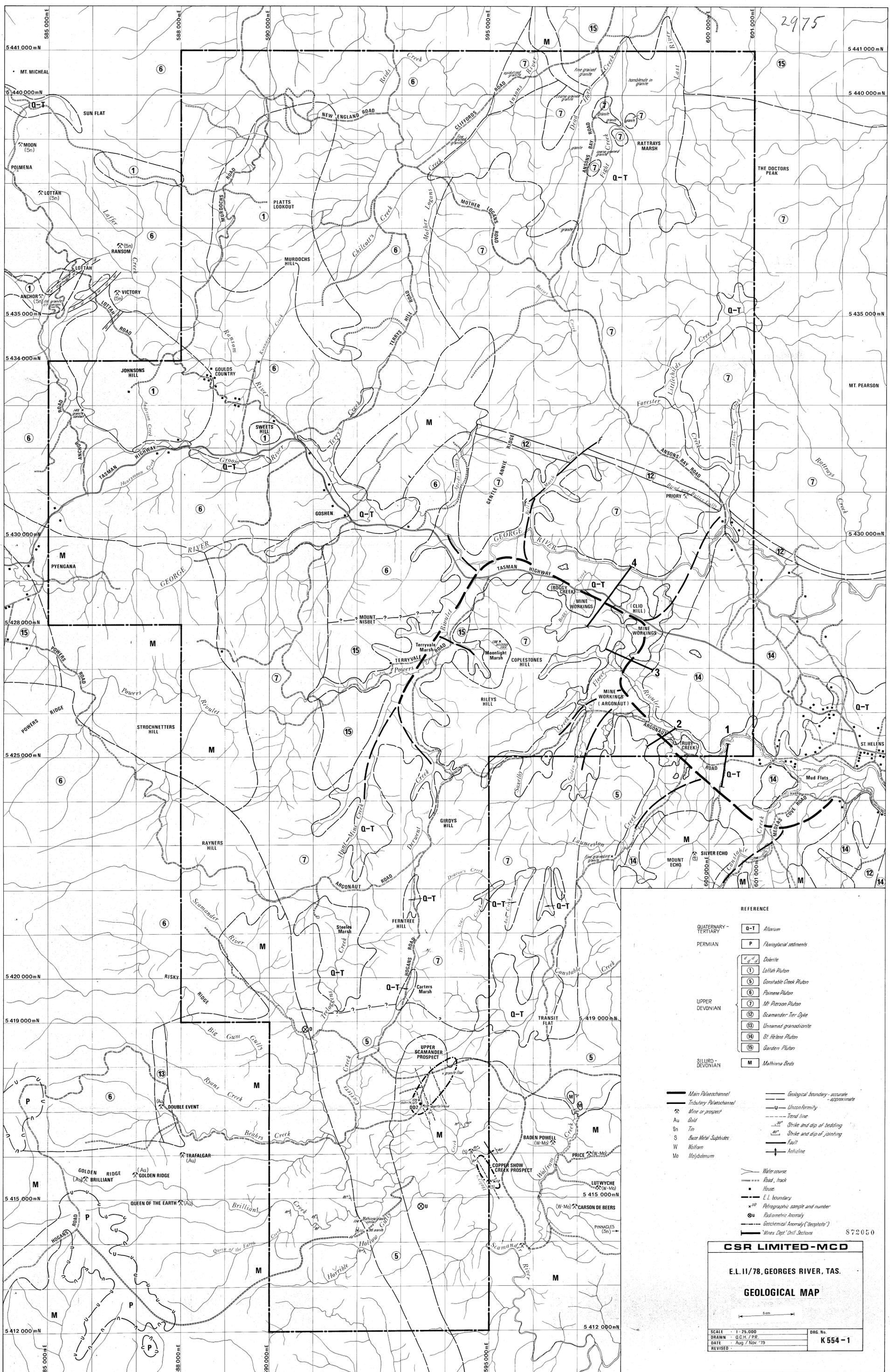
NOTATIONS: SAMPLE TYPE - M - Creek mud, S - Soil
SA - Soil Auger, RC - Drill Core,
RP - Percussion Chips
R - Rock
ANALYSES: Please state element

ADDITIONAL _____

SAMPLE NUMBER	SAMPLE TYPE	APERTURE (SIEVE, MICRONS)	CHEMICAL ANALYSES (ppm)																SUMMARY DESCRIPTION	LOCATION		
			Sn	W	Co	Pb	Zn	Bi	Mo	TRACE										E/W	N/S	
A 119781	M	-80	<5	<1.0	1.0	2.5	2.0	2.0	2	588										Steels Marsh - Adjacent to soil sample A119780	59.1.155	54.1.990.0
A 119782	SA	-20+80	<5	<1.0	2	1.5	2	2.0	2											Steels Marsh - 100 m from A119781 at 145° magnetic (-2° dip)	59.1.215	54.1.982.5
A 119783	SA	-80	<5	<1.0	5	2.5	1.0	1.5	2											" " - 100 m " A119782 " 122° " (-1° ")	59.1.290	54.1.975.5
A 119784	SA	-80	<5	<1.0	2	3.0	1.0	2.0	<2											" " - 100 m " A119783 " 167° " (-2° ")	59.1.300	54.1.965.5
A 119785	SA	-80	<5	<1.0	2	2.0	1.0	2.0	2											" " - 100 m " A119784 " 174° " (+ 1/2° ")	59.1.355	54.1.958.5
A 119823	M	-80	5.0	<1.0	1.0	2.5	2.0	2.0	2	5825										Treloggen Creek - resample of number 177	59.1.200	54.1.885.0
A 119824	M	-80	<5	<1.0	1.0	4.5	4.5	1.5	2											Seamander Rivin - resample of near number 627	59.0345	54.1.914.5

872049

2975



REFERENCE

QUATERNARY - TERTIARY	Q-T	Alluvium
PERMIAN	P	Fluviofacial sediments
	1	Dolerite
	2	Lottah Pluton
	3	Constable Creek Pluton
	4	Poimena Pluton
UPPER DEVONIAN	5	Mt. Pearson Pluton
	6	Scamander Tier Dyke
	7	Unnamed granodiorite
	8	St. Helens Pluton
	9	Garden Pluton
SILURO-DEVONIAN	M	Malthona Beds

—	Main Palaeochannel	—	Geological boundary - accurate
- - -	Tributary Palaeochannel	- - -	Geological boundary - approximate
⊗	Mine or prospect	- - -	Unconformity
⊙	Gold	- - -	Trend line
⊙	Tin	- - -	Strike and dip of bedding
S	Base Metal Sulphides	- - -	Strike and dip of jointing
W	Wolfram	—	Fault
Mo	Molybdenum	+	Anticline

—	Water course
—	Road, track
■	House
—	E.L. boundary
⊗	Petrographic sample and number
⊙	Radiometric anomaly
—	Geochronological anomaly ("teophta")
—	Mines Dept. Drill Sections

872050

CSR LIMITED-MCD

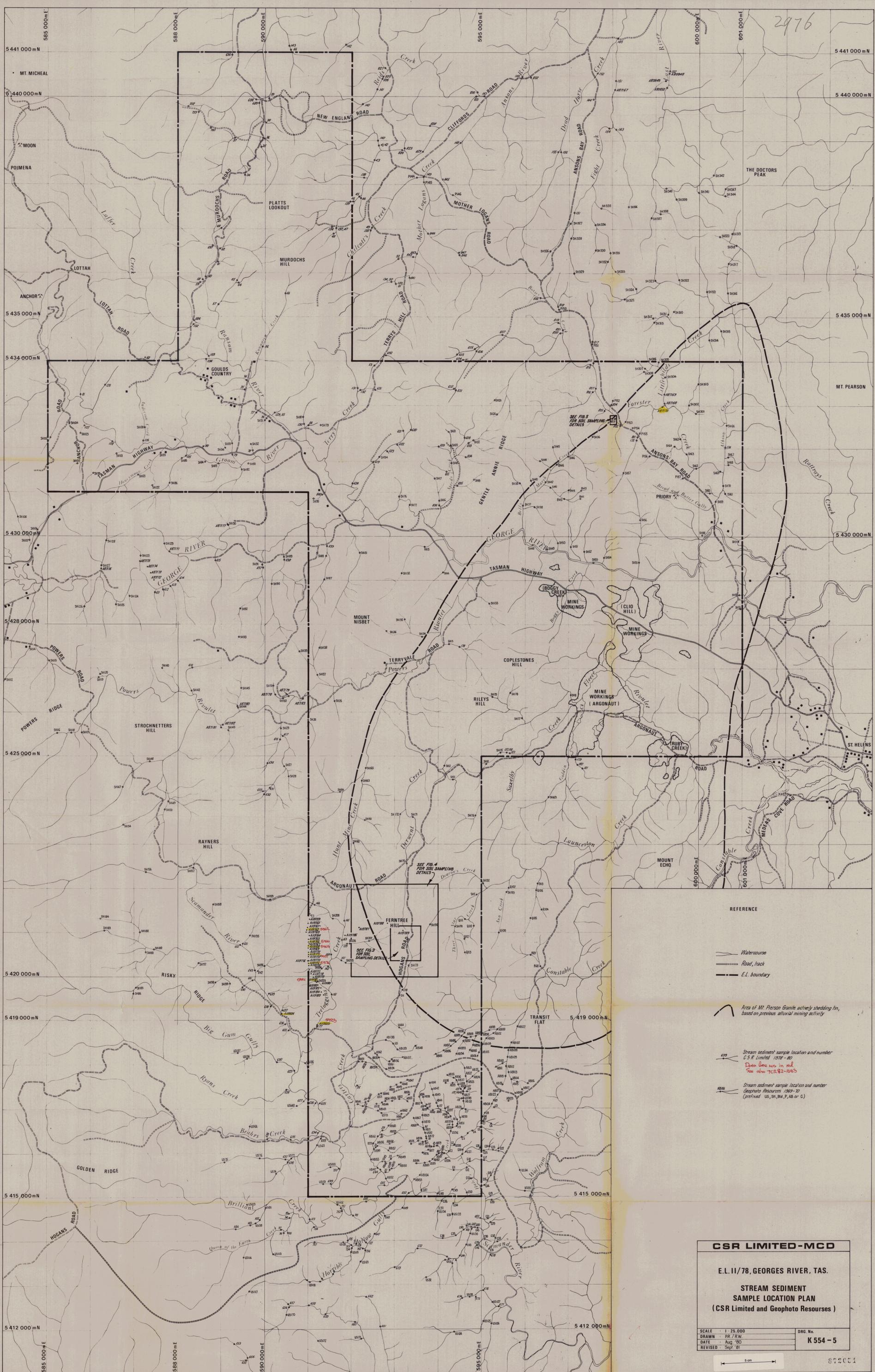
E.L. 11/78, GEORGES RIVER, TAS.

GEOLOGICAL MAP

5 cm

SCALE 1:25,000	DRG. No.
DRAWN G.C.H./P.R.	K 554-1
DATE Aug / Nov '79	
REVISED	

2976



REFERENCE

- Watercourse
- Road, track
- E.L. boundary
- Area of Mt. Pearson Granite actively shedding tin, based on previous alluvial mining activity
- Stream sediment sample location and number C.S.R. Limited, 1978 - 80
Data lines in red
See also T.C.R. 92-1043
- Stream sediment sample location and number Geophoto Resources 1969-70 (prefixed US, SH, BA, P, AB or C)

CSR LIMITED-MCD

E.L. 11/78, GEORGES RIVER, TAS.

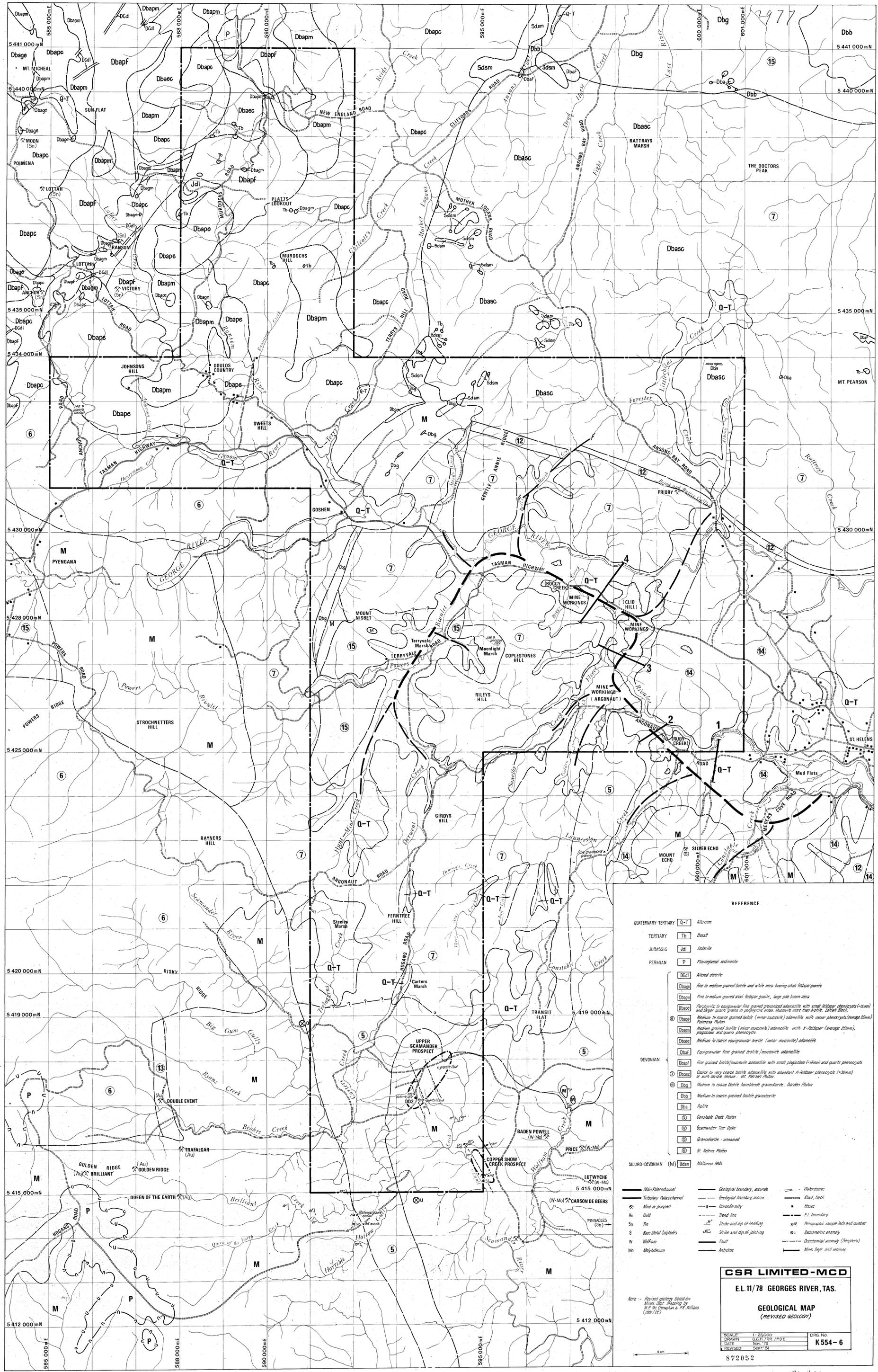
STREAM SEDIMENT SAMPLE LOCATION PLAN
(CSR Limited and Geophoto Resources)

SCALE	1:25,000	DRG No.	
DRAWN	PR./R.W.		K 554-5
DATE	Aug '80		
REVISED	Sept '81		

5 cm

872001

51-1630



REFERENCE

QUATERNARY-TERTIARY	Q-T	Alluvium
TERTIARY	Tb	Basal
JURASSIC	Jal	Delterite
PERMIAN	P	Fluvioestuarine sediments
	Dcdl	Altered dolerite
	Dbage	Fine to medium grained biotite and white mica bearing alkali feldspar granite
	Dbapm	Fine to medium grained alkali feldspar granite, large pale brown mica
	Dbapc	Porphyritic to equigranular fine grained granodioritic adamellite with small plagioclase (photocrysts < 15mm) and large quartz grains in periplastic areas. Muscovite more than biotite. Dark Rock
	⑥ Dbapc	Medium to coarse grained biotite (minor muscovite) adamellite with minor plagioclase (average 15mm) Palmyra Flats
	⑦ Dbapc	Medium grained biotite (minor muscovite) adamellite with K-feldspar (average 15mm), plagioclase and quartz phenocrysts
	⑧ Dbapc	Medium to coarse equigranular biotite (minor muscovite) adamellite
	⑨ Dbapc	Equigranular fine grained biotite/muscovite adamellite
DEVONIAN	⑩ Dbapc	Fine grained biotite/muscovite adamellite with small plagioclase (< 10mm) and quartz phenocrysts
	⑪ Dbapc	Coarse to very coarse biotite adamellite with abundant K-feldspar phenocrysts (> 30mm) with small biotite. Mt. Pipers Flats
	⑫ Dbapc	Medium to coarse biotite hornblende granodiorite Garden Flats
	⑬ Dbapc	Medium to coarse grained biotite granodiorite
	⑭ Dbapc	Aplitic
	⑮ Dbapc	Constable Creek Flats
	⑯ Dbapc	Scamander Tier Dyke
	⑰ Dbapc	Granodiorite - unnamed
	⑱ Dbapc	St. Helens Flats
SILURO-DEVONIAN	M	Mylonite Beds

—	Main paleochannel	—	Geological boundary, accurate	—	Watercourse
- - -	Tributary paleochannel	- - -	Geological boundary, approx.	—	Road, track
⊙	Mine or prospect	- - -	Unconformity	•	House
Au	Gold	—	Trend line	—	E.I. boundary
Sn	Tin	—	Strike and dip of bedding	⊗	Petrographic sample (etch and number)
S	Base Metal Sulphides	—	Strike and dip of jointing	⊕	Geochronological anomaly
W	Wolfram	—	Fault	—	Geochronological anomaly (Geophoto)
Mo	Molybdenum	—	Anticline	—	Mine Dept. drill sections

CSR LIMITED-MCD

E.L.11/78 GEORGES RIVER, TAS.

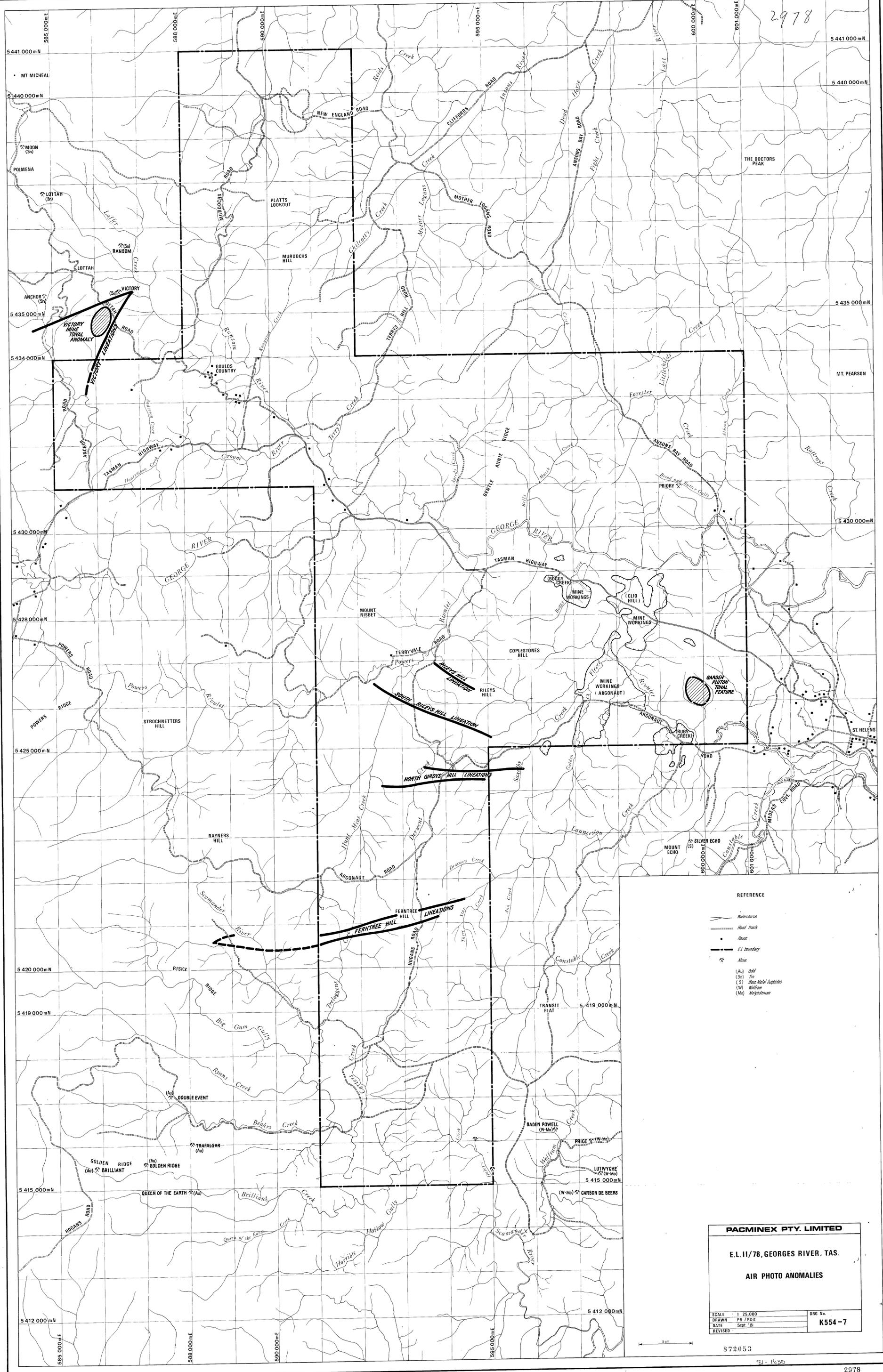
GEOLOGICAL MAP
(REVISED GEOLOGY)

Scale: 1:25,000
 Drawn: G.C.H./P.R./P.E.
 Date: Nov 78
 Revised: Sep 81

DRG No: K554-6

872052

Note - Revised geology based on Mines Dept. Mapping by M.P. McCann & P.R. Williams (1987)



REFERENCE

	Watercourse
	Road track
	House
	E.L. boundary
	Mine
	(Au) Gold
	(Sn) Tin
	(Ag) Silver
	(Zn) Zinc
	(Cu) Copper
	(Pb) Lead
	(Fe) Iron
	(Mn) Manganese
	(W-Mo) Wolfram
	(Mo) Molybdenum

PACMINEX PTY. LIMITED

E.L. 11/78, GEORGES RIVER, TAS.

AIR PHOTO ANOMALIES

SCALE	1:25,000	DWG No.	
DRAWN	PR/PDE		
DATE	Sept '81		
REVISED			

872053

5 cm