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ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

West Coast Mines

SPECIAL PROSPECTING LICENCE 806

Report on Exploration Activities for the twelve
months 10th March, 1982 to 10th March, 1983.

Geology Dept.

Report No. 163MD

I.R. McDonald,

APRIL, 1983.

83-2008

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LIST OF PLANS

A4-517-0031	1:50,000	Work Completed 1982-1983
A2-517-0033	1:10,000	Sample Locations 1982-1983

1. INTRODUCTION

This report covers activities carried out by EZ on behalf of a Joint Venture between Trikon International, who are the holders of S.P.L. 806 and EZ who are the managers of the project. Previous activity on the Licence has been reported in EZ Report No. 138 by J. Nyvlt (1981). A description of the Licence is contained in Report No. 138.

2. EXPLORATION UNDERTAKEN (Refer to Plan A4-517-0031)

2.1. Exploration Philosophy

The results of the initial rock-chip and stream sediment sampling (Report No. 138) were not immediately encouraging and did not offer any direct avenues for follow-up. In the light of these results it was decided that a reconnaissance overview of the S.P.L. should be undertaken to try and highlight areas of greater potential for ground follow-up. This was influenced by two factors.

- i) EZ were the holders of the adjacent E.L. 51/80 and the two areas could be covered in one exercise.
- ii) The Tasmanian Mines Department decided to conduct an airborne magnetic survey over West Coast Tasmania which would cover the area of S.P.L. 806.

It was decided to wait for the publication of the Mines Department aeromagnetic data and use this as the primary geophysical tool to screen the S.P.L. for magnetic-skarn or pyrrhotite replacement body potential. At the same time a photogeological study of the area was undertaken with particular emphasis on the detection of zones of structural disruption which might represent mineralisation pathways for potential Carlin-style gold mineralisation.

2.2. Geology

Hunting Geology and Geophysics were commissioned to undertake a photogeological study of S.P.L. 806. (This study also covered adjacent E.L. 51/80)

All available data on the project area were reviewed. In particular old lease maps were studied to assist in location of old workings. Areas for further follow-up were selected.

Mapping traverses were carried out in Gorings Creek, Sulphide Creek, and the Sailor Jack Creek area. A prospector traversed the Harveys and Halls/Sulphide Creek areas specifically trying to locate signs of previous workings. Eight rock samples were submitted for geochemical analyses.

2.3. Geochemistry

Stream sediment samples were collected from the Sailor Jack, Gorings and Sulphide Creek systems. In total 17 samples were collected and the -80 mesh fraction submitted for analysis.

A prospector collected 12 panned gravel samples from the Harveys and Halls/Sulphide Creek systems. The panned concentrates were submitted for analyses.

2.4. Geophysics

Leaman Geophysics were commissioned to produce an interpretation of the Tasmanian Mines Department aeromagnetic survey over the area of S.P.L. 806.

An attempt was made to run a reconnaissance ground magnetic traverse over an aeromagnetic anomaly, situated in the South-East corner of S.P.L. 806, to try and locate it on the ground. Extremely thick re-growth scrub prevented the traverse being carried out. The work was deferred until track cutters could be hired to cut an access into the area.

3. RESULTS RECEIVED

3.1. Geology

The photogeological report by Hunting Geology and Geophysics is presented in Appendix 1. This study also covered the adjacent EZ held

E.L. 51/80. Some of the comments in Appendix 1 therefore apply to E.L. 51/80.

The study concluded that the zone of basin-margin faulting running down the eastern margin of S.P.L. 806 could be a potential area of host rocks for fine grained gold mineralisation.

The creek mapping traverses encountered strongly cleaved micaceous mudstones and massive white quartzites. These rocks would correspond to the Ordovician Or and possibly Os units identified in the photogeological study. Cleavage-bedding relationships measured in the Gorings Creek area indicate a sequence of west facing rocks with a moderate to steep west dip and a strike slightly west of north.

Compare with other systems

Old lease maps show that the Harveys Creek area was once held under a group of leases. The prospector sampling travers of this system failed to find any signs of old workings or mineralisation.

Traversing of the Halls/Sulphide Creek systems also failed to find any signs of mineralisation. The most interesting sample (see No. 43858 Appendix 2) was an iron and manganese oxide stained wad collected from a area of iron-stained waters near the headwaters of Sulphide Creek. The prospector who collected the sample commented that the immediate soil area had an unpleasant smell (?oxidising sulphides) and that the creek waters resembled stagnant mine waters in colour. The sample however assayed only 5pp Cu; 5ppm Pb; 10ppm Zn; 2.25% Fe; 55ppm Mn; 100ppm As. Au, Ag, Sb, Bi and Sn were all below the limit of detection. The value of 100ppm As is possibly significant. The sample is not anomalous in any other element.

The traverse in the Gorings Creek area failed to find any signs of old workings although this area is reported to be the site of the "Rinadeena Antimony" workings.

3.2. Geochemistry (Refer to Appendix 2 - Geochemical Sample Data Sheets
and to Plan A2-517-0033)

3.2.1. Stream Sediments

In EZ Report No. 138 there were reported some anomalous W values. This was the only element to appear anomalous in the suite of samples analysed. Since the writing of Report 138, EZ have submitted stream sediment samples from two different E.L.'s to the same laboratory for analysis. In each of these cases W was the only element to appear weakly anomalous. In all three cases corresponding Sn analyses were all below the detection limit. In one of the other areas stream sediment sampling could be compared with soil samples which had been analysed at a different laboratory. The soil samples were not anomalous in W and in all cases the Sn content was higher than the W content. It appears that the laboratory (A.C.S.) which analysed the stream sediment samples had a quality control problem on low-level W analyses. This problem will probably not be resolved as A.C.S. laboratory is closing due to the recent death of its proprietor. It does appear, however, that the reported anomalous W in S.P.L. 806 stream sediment samples is a laboratory error and that there are no W anomalies in S.P.L. 806.

The results of the more recent stream sediment sampling are contained in Appendix 2. Only one sample appears anomalous. Sample No. 43828 is anomalous in Cu, with 80 ppm Cu; and Zn, with 125 ppm Zn. This comes from Sailor Jack Creek just outside the southern boundary of S.P.L. 806. This creek runs adjacent to the abandoned Strahan-Queenstown Railway and the sample was collected downstream from an old fettlers camp. Contamination could be a possibility in this sample. Sample No. 43832 contains 135 ppm Zn. The sample also contains the highest Fe content, a high organic material content, and was collected from a tributary of Gorings Creek which was overgrown with blackberries. Complexing of Zn by organic material is believed to be the cause of this high assay.

Every sample returned values below the limit of detection for Ag (0.5 ppm), Sn (1 ppm) and Sb (1 ppm). The Ag and Sb results suggest a general lack of sulphides in the areas sampled and the total absence of Sb adds further doubts about the existence of the "Rinadeena Antimony" workings within the area of S.P.L. 806.

3.2.2. Panned Gravel Samples

The panned gravels were distinguished by a distinct lack of heavy mineral phases. Most of the samples were brown ferruginous stained quartzose sand. The geochemical responses were consistent with the sample mineralogy, being mostly all low. Sb, Bi and Sn values were all below detection limit. Only one sample (43855) was above detection limit for Au. This sample returned 0.13 ppm Au and came from a small creek draining into the junction of Harveys and Sulphide Creeks. Two samples (43838 and 43840) contain above detection limit in Ag. Both samples contain 0.5 ppm Ag and come from adjacent small gullies draining into the eastern side of Harveys Creek. One sample is anomalous in As (43857) with 110 ppm As. This comes from the eastern branch of Sulphide Creek. The sample is also the highest in Fe and Mn, so scavenging by Fe and Mn oxides may be a contributing factor in the elevated As result. The next three highest As samples are also the next three highest Fe samples and comprise three of the next four highest Mn samples. This strong correlation of As with Fe and Mn supports the view that elevated As may be solely due to fixing by Fe and Mn oxides.

3.2.3. Rock Samples

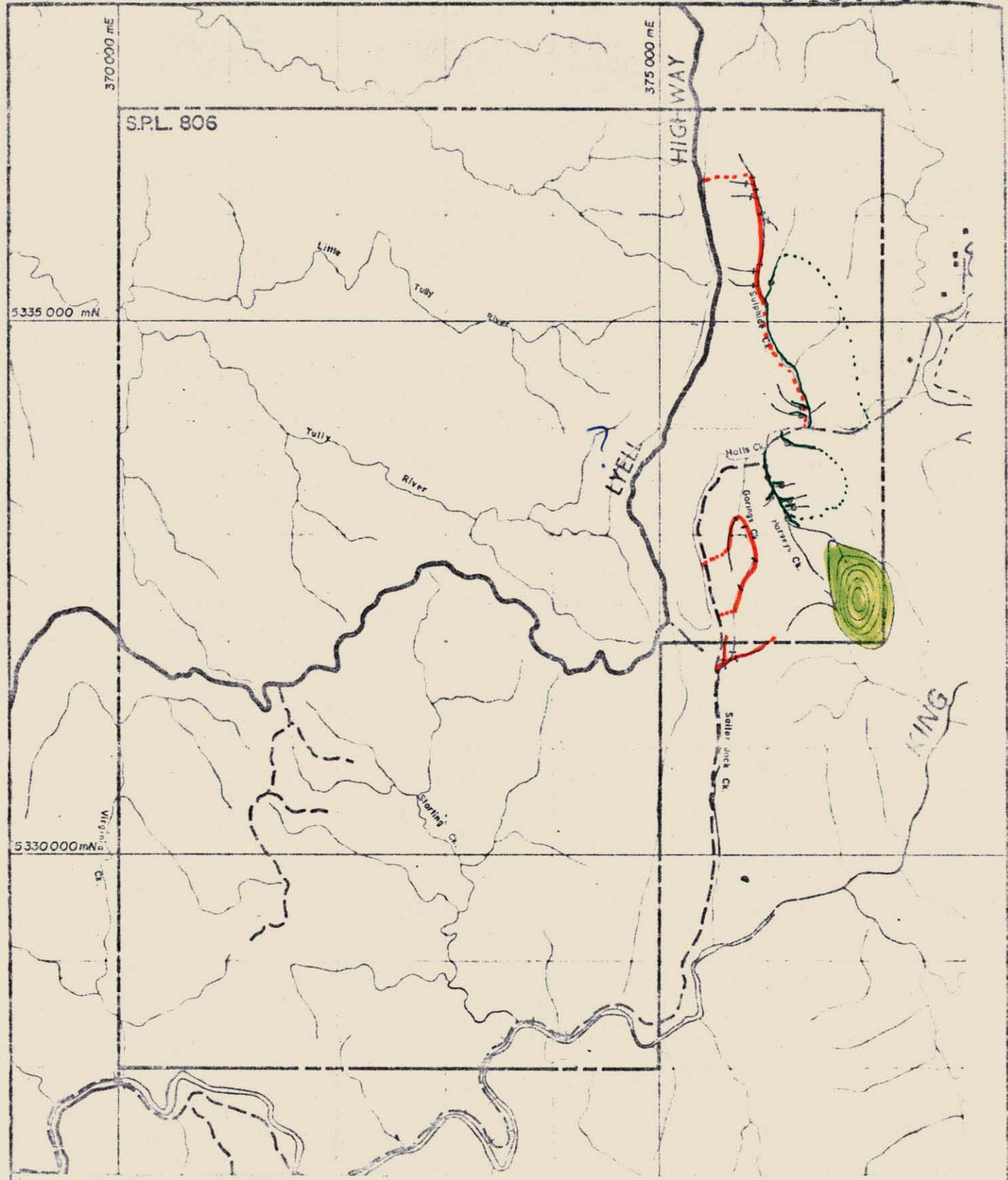
Of the eight 'rock' samples analysed, five were genuine fresh rocks, one was an oxidised "gossanous" sample, and two were clay wad samples. The only sample of any significance is the black clay wad (43839) from Harveys Creek. This is anomalous in Pb with 510 ppm Pb and contains the highest Ag value recorded of 1.5 ppm. This sample was collected from between the two 0.5 ppm Ag panned gravel samples. The ferruginous limestone sample (43833) contains 0.5 ppm Ag and was collected approximately 150m north of 43839 on a western tributary of Harveys Creek.

Four out of the only five samples from the entire programme to return any Ag values come, therefore, from an area of less than 250m diameter.

Au, Sb, Bi and Sn were all below detection limit in the rock samples.

3.3. Geophysics

The report by Leaman Geophysics on the Aeromagnetic Survey over S.P.L. 806 is presented in Appendix 3. The report recommended follow-up of an anomaly in the South-East corner of the Licence.



-  Creek Mapping Traverse
-  Prospecting Traverse
-  Stream Sediment Sample
-  Panned Gravel Sample
-  Aeromagnetic Anomaly

5 cm

ELECTROLYTIC ZINC CO OF A'ASIA		
Project: S.P.L. 806 J.V. Tasmania		
<p>WORK COMPLETED</p> <p>1982 - 1983</p>		
Scale: 1:50 000	Survey: I.M.S.D.	Revised:
Reference:	Date: 29.4.1983	
Drawn: T.G.K.	Checked:	A4-517-0031

APPENDIX 1.

A GEOPHOTO STUDY OF
THE MISERY FLAT AREA
TASMANIA

Undertaken on behalf of

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

February 1982

Hunting Geology and Geophysics (Australia) Pty. Limited
P.O. Box 365
FYSHWICK A.C.T. 2609

GA.94/81

ABSTRACT

Geophotos (1:45,000) of the Misery Flat area (EL 51/80 and SPL 806) near Queenstown were studied and annotated to obtain a detailed litho and structural map. The geology comprises a thick sequence of Ordovician to Devonian sediments overlaying Cambrian basement.

Plagioclasm

Photogeology was found to be a useful mapping tool. The area has good potential for disseminated gold mineralisation as well as Renison Bell type mineralisation.

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ABSTRACT

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1. INTRODUCTION

The study area (340 km²) is located between Queenstown and Strahan on the west coast of Tasmania and incorporates EL 51/80 and SPL 806 in which the Electrolytic Zinc Company of Australasia Limited have an interest. The area was selected on the assumption that the black shales and siltstones of Devonian age have a potential to host gold mineralisation of the "Carlin-type" found in Nevada in the U.S.A.

Thirteen black and white aerial photographs (1:45,000) were studied and annotated. The geophoto map constitutes the main objective of the study, this report being of a supplementary nature.

The base map of the study area on transparent film was prepared by photographically enlarging the relevant portions of the Cape Sorrel and Franklin 1:100,000 topographic maps and tracing off the drainage and coastline details. Annotation of the 1:45,000 aerial photographs was done in ink directly onto this base map.

Some re-drafting of the photogeological detail on the map was necessary and a hand-coloured print of this photogeological work-sheet map, along with the original transparency, are presented to the Electrolytic Zinc Company Limited.

The aims of the study were to:

- (a) detail lithological and stratigraphic annotation of the 1:45,000 aerial photographs;
- (b) outline as much structural detail as possible;
- (c) outline, if possible, any areas of hydrothermal alteration, particularly within the Devonian black shales that may be associated with disseminated fine-grained gold mineralisation.

2. GEOLOGY

Regionally, the geology of the study area consists of a thick sequence of Ordovician, Silurian and Lower Devonian sediments overlaying a Cambrian basement. The lithologies of the different units are indicated on the photogeological map.

The photogeological study was mainly aimed at the Devonian black shales which occupy the central part of the area. It is thought that these have a potential for hosting disseminated, fine-grained gold mineralisation. Photogeological evidence indicates two prospective areas:

1. the shear zone near the Queenstown airport; and
2. the zone of strong axial plane cleavage development between Lost Creek and the Tully River.

Both are zones of permeability extending to a significant depth and along which mineralising hydrothermal fluids may have risen.

There are a number of small gold prospects within the Silurian and Ordovician rocks in the eastern part of the study area that are apparently related to the zone of strong structural deformation along the eastern side of the study area. The calcareous sediments at the base of the Silurian sediments must also have some potential for hosting disseminated, fine-grained gold mineralisation.

The Cambrian rocks in the south-western part of the study area appear predominately tuffaceous and exhibit good stratification on the geophotos. Just south of the King River outside the study area, photogeological evidence suggests the presence of a granite intrusion in a very inaccessible area. If there is a granite there and it is of Devonian age, then these Cambrian rocks have some potential for containing tin mineralisation of the Renison Bell type.

3. CONCLUSIONS

- (a) The study area lends itself to geophoto interpretation, though stratigraphic and structural interpretation in the Devonian black shale sequence was not easy due to the homogeneity of the sequence.
- (b) There are two zones within the Devonian black shales that may have been permeable to a significant depth and along which mineralising hydrothermal fluids may have precipitated fine-grained gold mineralisation.
- (c) The eastern margin of the Devonian-Ordovician sequence is strongly folded and faulted against the Cambrian Basement. The calcareous sediments within this zone must also be potential hosts for fine-grained gold mineralisation.
- (d) The Cambrian rocks in the south-west of the study area may have some potential for Renison Bell type mineralisation.

APPENDIX 2.

Geochemical Sample Data Sheets - Stream Sediment Samples

- Rock & Panned Gravel Samples

Electrolytic Zinc Co. of A'asia Ltd.
Rosebery, Tas.

ROCK SAMPLE LEDGER

PROJECT: S.P.L. 806.

LOCALITY: Eastern zone

COLLECTED BY: J. H. G. ; T. B.

DATE:

Sample Number	A.M.G.Co-ordinates		Sample Type	Geological Description	Metal Content (p.p.m. unless specified)										
	N	E			Cu	Pb	Zn	Ag	Au	Fe	Mn	As	Sb	Bi	Sn
43833	5,333,500	376,020	Rock	Ferruginous capping on dark blue-grey limestone with carbonate veins	10	10	35	0.5	X	1.55%	365	103	X	X	X
43839	5,333,370	376,130	Wad	Black manganese oxide stained clays possibly after limestone.	40	510	135	1.5	X	1.10%	65	9	X	X	X
43858	5,335,600	376,150	Soil/Wad	Chocolate brown ferruginous clay wad from bank of creek running very stained water.	5	5	10	X	X	2.25%	55	100	X	X	X
43859	5,335,880	375,980	Rock	Pale greenish grey moderately cleaved mudstone, slightly micaceous.	15	75	160	1.0	X	2.65%	780	11	X	X	X
43860	5,335,420	375,940	Rock	Grey moderate to strongly cleaved Mudstone. Clavose lacunae holding trace	40	5	140	X	X	3.30%	100	4	X	X	X
35198	5,332,380	375,750	Rock	Grey moderate to strongly cleaved Mudstone with a phyllitic appearance.	55	25	180	X	X	3.30%	365	11	X	X	X
35199	5,332,520	375,790	Rock	White massive m.s. slightly micaceous quartz arenite.	X	5	5	X	X	1400	15	X	X	X	X
35200	5,333,260	376,260	Rock	Flint. White quartzite with green ? chlorite staining.	5	X	20	X	X	3250	25	X	X	X	X
43834	5,333,500	376,020	Panned gravel	Dark brown, manganese iron stained sand.	10	X	35	X	X	1.30%	120	26	X	X	X
43835	5,333,680	375,990	"	Brown sand.	15	10	35	X	X	8050	80	1	X	X	X
43836	5,333,610	376,000	"	Brown sand.	10	5	35	X	X	7050	55	X	X	X	X
43837	5,333,530	376,100	"	Pale buff sand from a small creek.	30	5	25	X	X	2950	30	X	X	X	X
43838	5,333,410	376,130	"	Pale buff coarse quartzite sand and gravel.	10	5	10	0.5	X	4350	25	X	X	X	X
43840	5,333,360	376,170	"	Pale brown quartzite sand from small creek	5	5	5	0.5	X	3800	25	X	X	X	X
43841	5,333,200	376,180	"	Brown sand.	10	10	35	X	X	8600	60	5	X	X	X
43842	5,333,780	377,580	"	Pale brown to grey sand & quartzite fragments	5	X	15	X	X	4100	25	X	X	X	X
43843	5,333,810	376,220	creek gravel	White quartzite chips in dark brown humic rich clay sand. looks like glacial scree from a dry creek	10	5	10	X	X	2300	15	X	X	X	X
43855	5,334,070	376,420	Panned gravel	Brown sand.	10	10	35	X	0.13	1.20%	70	25	X	X	X
43856	5,334,190	376,390	"	Brown sand.	15	30	50	X	X	1.30%	180	51	X	X	X
43857	5,335,270	376,150	"	Brown sand.	10	10	50	X	X	3.75%	400	110	X	X	X
ANALYTICAL DETECTION LIMIT					5	5	5	0.5	0.1	50	5	1	1	10	1

Smith Print No. 241822

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APPENDIX 3.

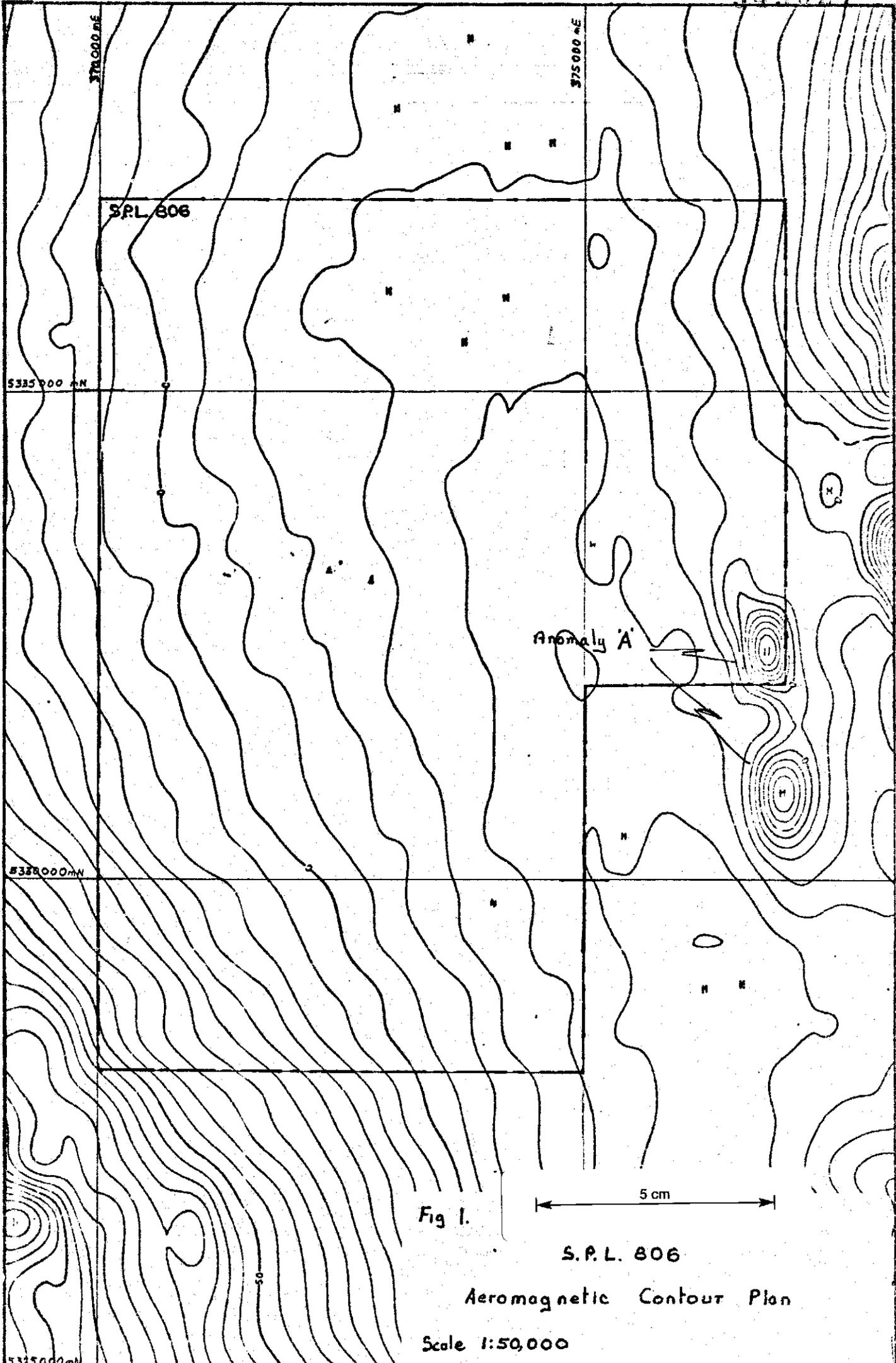
A Preliminary Interpretation of Mines Department Aeromagnetic
Survey over the area of S.P.L. 806.

by Leaman Geophysics.

SPECIAL PROSPECTORS LICENCE 806

Only one definite anomaly occurs within S.P.L. 806. This is the north end of the twin anomaly 'A' on Fig. 1. There is no obvious source for this feature. It appears to be a contact anomaly within Ordovician rocks but it may have a deeper source. Ground checking and modelling of this anomaly is required.

The remainder of the area is not anomalous. The magnetic gradient is negative and shallows towards the east.



S.P.L. 806

Anomaly A

Fig 1.

S.P.L. 806

Aeromagnetic Contour Plan

Scale 1:50,000

5 cm

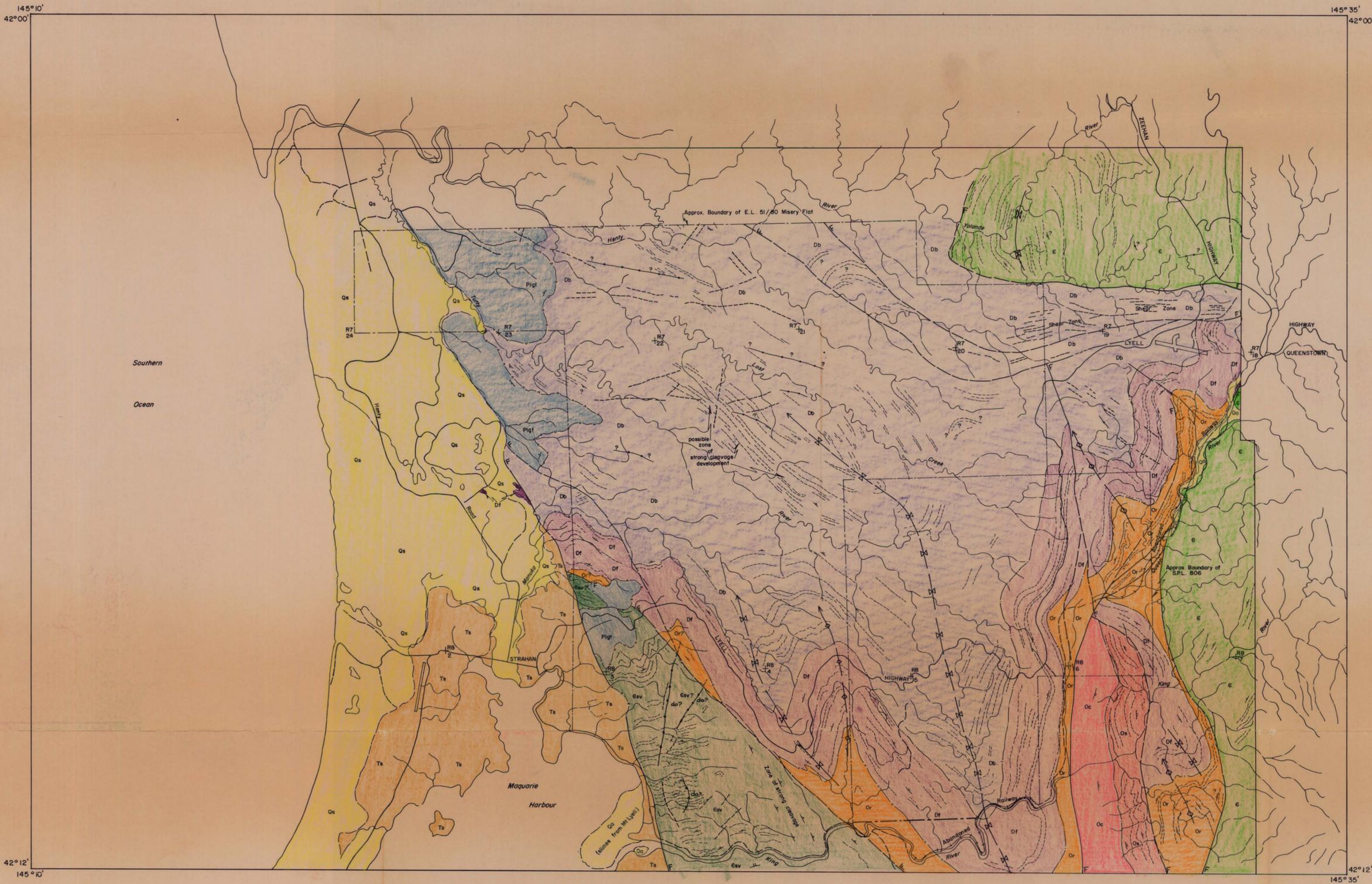
5385000 mN

5380000 mN

5375000 mN

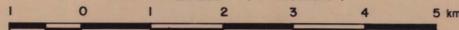
37000 mE

37500 mE



PHOTOGEOLOGICAL WORKSHEET MAP OF THE MISERY FLAT AREA, TASMANIA

Scale 1:50 000 (Photoscale)



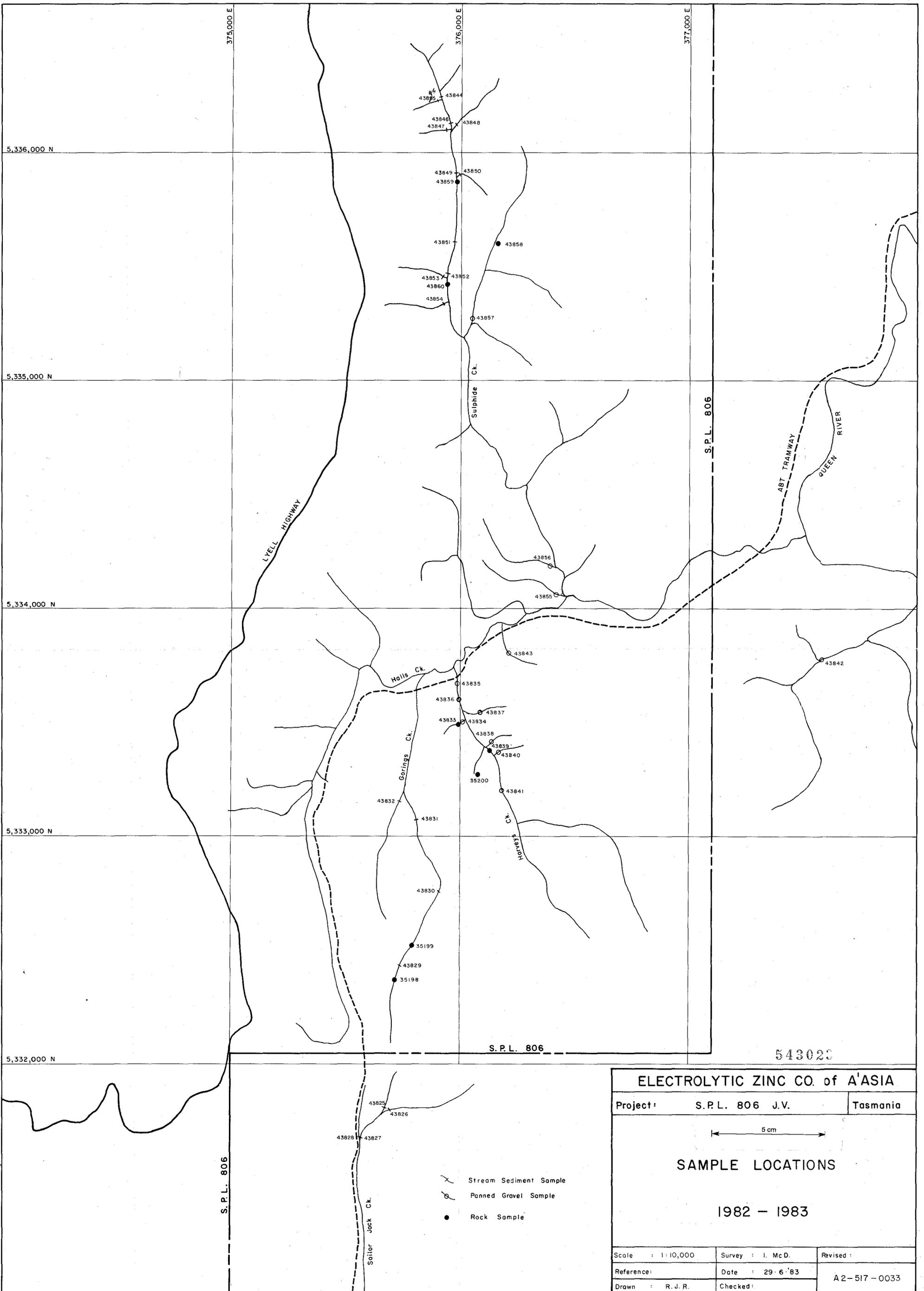
LEGEND

QUATERNARY	Qa	Alluvium
	Qs	Beach sands and sandy alluvium
TERTIARY	Ts	Sandstones, conglomerates, siltstones and lignite
DEVONIAN	Db	Mostly black shales and siltstones with minor fine grained sandstones
SILURIAN	Df	Mostly white, fine grained quartz sandstones.
	Or	Mostly mudstone and siltstone with minor sandstone and impure limestone
ORDOVICIAN	Os	Quartz sandstone with minor siltstone
	Oc	Mostly siliceous conglomerate
CAMBRIAN	Esv	Acid - intermediate tuffaceous rocks with siltstones, sandstones and slates
	G	Undifferentiated
PROTEROZOIC	Plgt	

	Unconformity
	Trace of bedding
	Geological contact
	Inferred geological contact
	Dip of strata, shallow, moderate, steep & near vertical or vertical
	Strike & direction of dip of foliation
	Vein or dyke
	Dolerite dyke
	Fractures
	Fault
	Inferred fault
	Plunging anticline
	Plunging syncline
	Photocentre

LOCATION DIAGRAM





ELECTROLYTIC ZINC CO. of A'ASIA

Project: S.P.L. 806 J.V.	Tasmania	
SAMPLE LOCATIONS		
1982 - 1983		
Scale : 1:10,000	Survey : I. McD.	Revised :
Reference:	Date : 29.6.'83	A2-517-0033
Drawn : R. J. R.	Checked:	