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ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

West Coast Mines

MICROFILMED

OPEN FILE

EXPLORATION LICENCE 51/80 - MISERY FLAT

Progress Report on Activities

8th November, 1981 to 8th November, 1982

Geology Dept.
Report No. 155

I.R. McDonald,
October, 1982

82-1850.

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1. INTRODUCTION

This report covers work on E.L. 51/80 by Electrolytic Zinc Company of A'Asia Ltd. between 8th November, 1981 and 8th November, 1982. Details of previous work on the E.L. are contained in E.Z. Report No. 139 - "Report for Six Months Ended 8th November, 1981". A description of the Licence is contained in Report No. 139.

2. EXPLORATION UNDERTAKEN

The results of the initial sampling (Report No. 139) in the E.L. 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 E.L. should be undertaken to try and highlight areas of greater potential for ground follow-up. This was partly influenced by the decision of the Tasmanian Mines Department to conduct an airborne magnetic survey over West Coast Tasmania which would cover the area of E.L. 51/80. It was decided to wait for the publication of this data and use it as the primary geophysical exploration tool to screen the E.L. for magnetite-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.

Hunting Geology and Geophysics were commissioned to undertake the photogeological study and Leaman Geophysics were commissioned to interpret the aeromagnetic survey.

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 S.P.L. 806 as E.Z. is a Joint Venture partner on that Licence with the holder, Trikon

International. Some of the comments in Appendix 1 therefore apply to S.P.L. 806.

The study indicated two areas of potential for follow-up. The first is a zone in the north east corner of the E.L. running westwards from the area of the Queenstown Airport. The second is centrally situated in the Tully River area.

3.2. Geophysics

Leaman Geophysics produced an interpretation of the aeromagnetic survey over E.L. 51/80 and the relevant sections of his report are presented in Appendix 2. The study concludes that there are anomalies unexplained by present knowledge of the geology which should be followed up.

4. PROPOSED PROGRAMME

The programme proposes follow-up of the two different regional anomaly types.

- i) Follow-up of the two areas of structural disruption indicated by the photogeological study. This will involve stream sediment sampling, geological mapping of creeks and access, and rock chip sampling. Track and/or creek cutting will be required for access. Establishment of grids over anomalous areas will follow.
- ii) Follow-up of aeromagnetic anomalies indicated by Leaman Geophysics. This will involve ground location and definition by ground magnetics, line cutting and pegging, geological mapping, detailed stream sediment sampling and rock chip sampling.

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APPENDIX 1.

A Photo-Interpretation of E.L. 51/80.

by Hunting Geology and Geophysics (Aust.) Pty. Ltd.

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.

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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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.

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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.

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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.

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APPENDIX 2.

Interpretation of Mines Department Aeromagnetic Survey
over E.L. 51/80.

by Leaman Geophysics.

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E.L. 51/80 - MISERY FLAT

Comparison with the geological mapping available indicates no obvious simple explanation for any of the major anomalies, namely No's 'A', 'B' and 'C', in the E.L. (See Fig. 1).

Anomaly 'A' is the most intense and, possibly shallowest, anomaly on a small anomaly arc and all are associated with basal Permian rocks. Discrete sources are implied, 'A' is possibly at more than 500m depth. Since the underlying rocks are Siluro-Devonian and non magnetic, a fault, flanking the Permian exposures and exposed at 3575/347, may be intruded by dolerite or basalt. The only reasonable alternative is a structure comparable with the faulted northern side of the basin with a source similar to anomaly 'D' (also unknown but either Upper Cambrian tuffs or on-fault alteration). 'D' is a sharper feature since there is no Cainozoic cover (and less Permian-Silurian cover). The fault alteration hypothesis is supported by anomalies 'E' and 'D1' which are comparable to the extensions of 'A'.

Anomaly 'C' and its associated apparent herringbone may be real, reflecting an E-W extension of faulting across the area with minor alteration.

The bulk of the Misery Flat basin is not anomalous. The gradient is negative and shallowing to the east which might suggest a thinning of the post Cambrian pile westward with the main depositional axis near the eastern limit of the licence area.

The curious circular feature centred on the Professor Plateau extends into the Licence area. Its source is unknown and appears to be independent of rock type and age. It may be due to either the cumulative effect of large sedimentary piles to north, southeast and west or a small pluton at perhaps 2km depth. The latter solution is preferred since some boundary correlations would be expected given the major displacements observed in the region. There are none. The anomaly is, however, positive - all other Devonian granites yield negative anomalies. Perhaps a Cambrian granite or ring complex is present. Gravity coverage of this area would be enlightening.

Anomalies 'B' and 'F' and the gradient change between them is not explained by available mapping. 'B' is accessible and worthy of immediate checking.

Anomaly 'G' may be due to a lithology change (hornblende porphyry) near Lettes Bay.

5,350,000 N

5,340,000 N

5,330,000 N

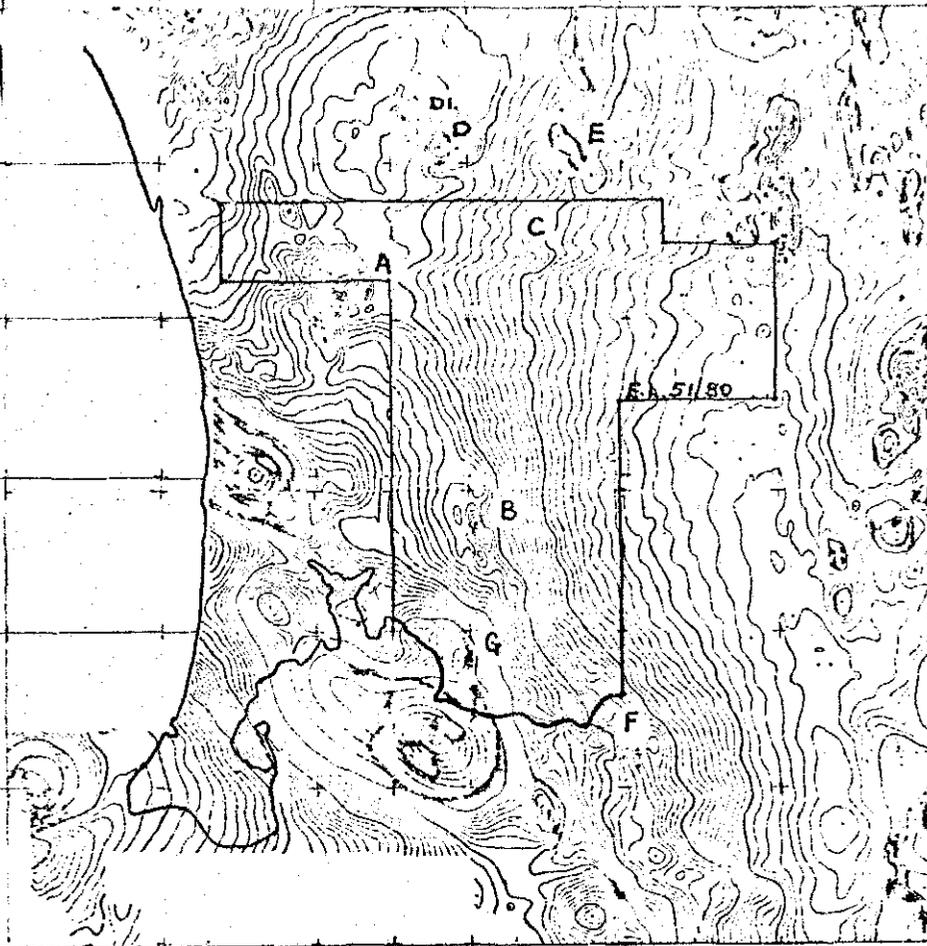
5,320,000 N

350,000 E

360,000 E

370,000 E

380,000 E



A = Anomaly identification as used in text

5 cm

TOTAL MAGNETIC FIELD

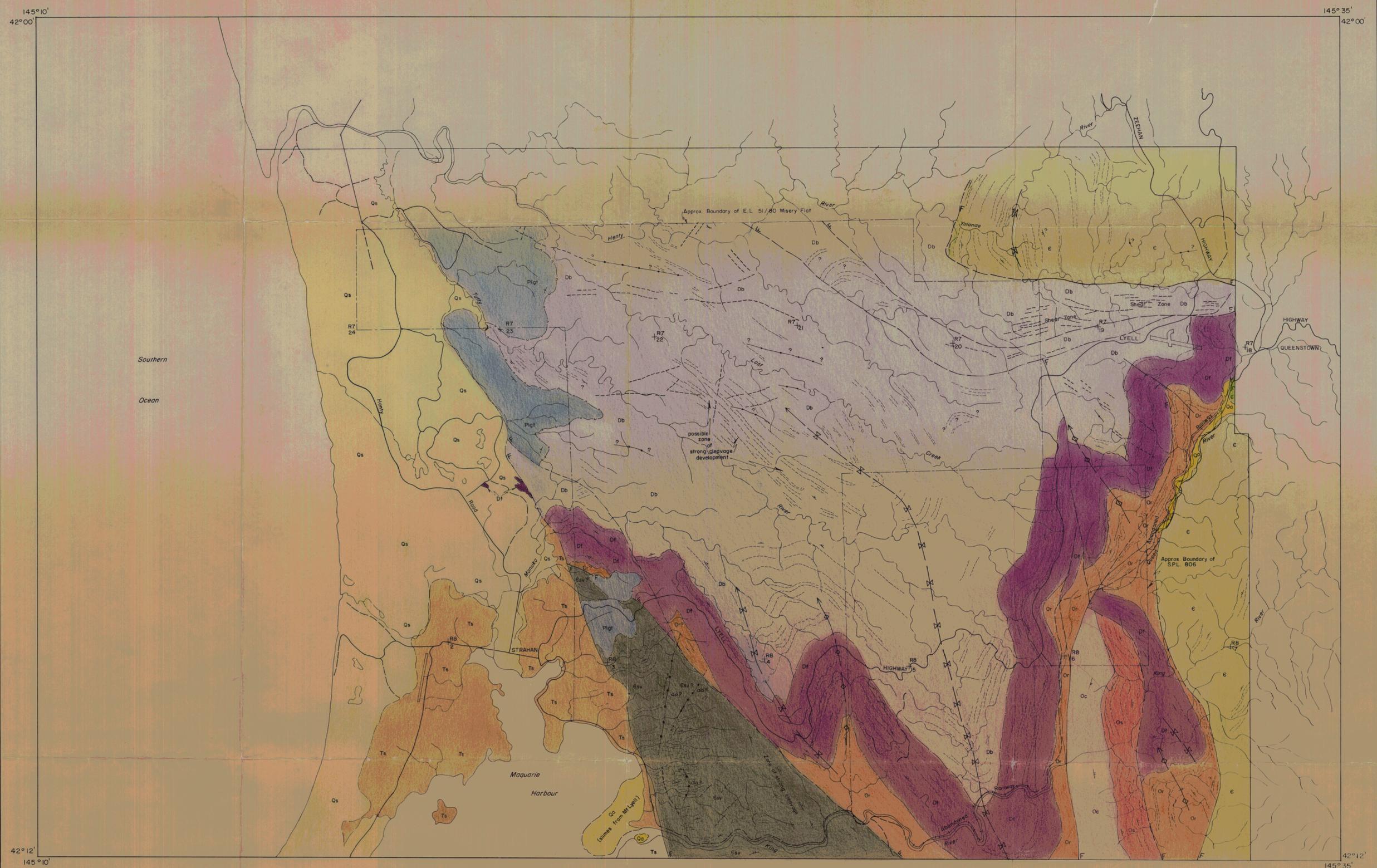
IN

E.L. 51/80

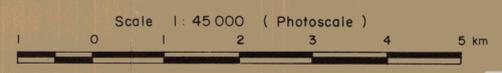
Scale 1:250,000

From Tas Mines Dept Survey
Flown Geox 1982

FIGURE 1 Appendix 2.



PHOTOGEOLOGICAL WORKSHEET MAP OF THE MISERY FLAT AREA, TASMANIA



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	Eav	Acid - intermediate tuffaceous rocks with siltstones, sandstones and slates
	E	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

