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- 4 JAN 1982

WARMAN SERVICES LIMITED

Report No. KI/81/5

SIX MONTHLY REPORT

TO THE MINES DEPARTMENT

by

S. Grieve Brown

82-1678

OPEN FILE

KING ISLAND

DECEMBER 1981

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CONTENTS

INTRODUCTION

Exploration Licence 39/80 is held by Warman Services Limited over an area of 105 square kilometers in north central King Island. A total of 59 different land holdings are covered either completely or partially by the licence.

The licence covers the old tin tungsten operations in the Reekara area as well the old Stony's Creek alluvial tin workings. The topography is generally flat with more undulating ground occurring in the southern part where the licence is transected by the Sea Elephant River.

Work carried out on the licence has, to date, mainly been concerned with re-assessment of previously acquired data and completion of a photo-linear study of the whole of King Island.

SUMMARY

1. GEOLOGY

The Reekara area lies within a series of regionally metamorphosed sediments of late Precambrian age. About 7 km to the West lies the Precambrian West Coast Granite, while to the East the Devonian/Carboniferous Mt. Council Granite occurs about 5 km away.

Mineralisation appears to be confined to quartz tourmaline veins striking 140° magnetic and dipping steeply to the West. Insufficient exposure is available to assess the number of veins present in the area, but quartz float, often reworked, is present in a number of streams.

The Reekara area is considered to be the source area for the alluvial tin which was mined by Hawkes Alluvial about 2 km to the South.

2. PREVIOUS WORK

Initial work was carried out in the area by Mr. J. H. Curtain, and the area has been the subject of Mines Department reports dated December 1926, May 1951, and June 1955.

A number of pits were sunk on some veins, and both tin and tungsten mineralisation encountered. The lodes consist of quartz tourmaline veins containing cassiterite and/or scheelite. There seems (from the literature) to be a definite correlation of scheelite with high tourmaline content. The mineralisation is irregularly distributed throughout the veins.

Test pits established the presence of these veins over a strike length of 1.6 km (not necessarily as continuous individuals) on a bearing of approximately 140° magnetic. The veins were shown to dip West at about 80° and to vary considerably in width. Widths recorded varied from 8 cm up to 70 cm, and samples taken in 1955 highlighted the irregularity of the mineralisation.

Location	Vein width	% WO_3	% Sn
East end of Drive Shaft A	70 cm	0.88	Trace
West end of Drive Shaft A	38 cm	6.70	0.64

The plan of this vein is shown in Figure 1.

Diamond drilling was carried out prior to 1955 with two drill holes being completed (Figure 2). These holes had very low core recovery, and did not recover any tourmaline material. This could quite possibly be due to the very friable nature of the tourmaline rich lode at the shallow depth to which the holes were drilled. Given the nature of the ground being drilled (weathered mica schists), the size of the core being obtained (probably X or at best E) and the fact that it was drilled using conventional equipment, the low core recovery is hardly surprising. It is of significance that the report (1955) states that "small tungsten values were obtained almost throughout the bores".

During the period 1969 to 1972, exploration work was carried out by Geopeko as part of an evaluation of the mineral potential of King Island. The main aim of the exploration was to define the Devonian Mt. Counsel Granite and to test for Mine Series rocks within its contact area.

Some hand auger drilling was carried out in the vicinity of the old workings, but this was basically aimed at a finding of a large disseminated deposit. The results of this programme showed that a near surface disseminated deposit did not exist.

3. MT. CARBINE - QUEENSLAND

The Mt. Carbine (F.N.Q.) deposit consists of a swarm of near vertical quartz veins striking 135° magnetic, which cover a core area of approximately 610 m by 375 m with extensions North and South. The veins, which contain irregular amounts of wolframite and scheelite, are sub-parallel to, and East of, a major regional fault and occur in metamorphosed siltstones, sandstones, and graywackes. The area has been intruded by the Carboniferous Mareeba Granite which is thought to be the source of the mineralisation. This granite outcrops about 1 km from the deposit.

The actual distribution of wolframite and scheelite within the quartz veins is erratic, as is the distribution of the veins within the metamorphics (Figures 3 and 4).

The average "ore" grade mined is 0.07% WO_3 and the average grade of the quartz veins is 1.7% WO_3. The veins vary in width from about 2 cm up to about 60 cm wide.

Examination of the veins shows that the variation of the mineralisation is such that over a distance of a metre the vein can change from pure quartz to almost pure wolframite/scheelite. This makes sampling and grade control difficult.

The ore mined is upgraded using photometric ore sorters, and up to 76% of the material mined is rejected prior to the milling stage.

Diamond drilling carried out by North Broken Hill in 1969 gave an average grade from 818 m of drilling of 0.09% WO_3, which was considered non-economic at that time. Current mining is being carried out using a cut-off grade of 0.07% WO_3, with the ore being upgraded to about 1% WO_3 using photometric ore sorting prior to milling.

4. POTENTIAL OF THE REEKARA AREA

To summarise, the factors which were considered to be important in suggesting that the area has potential for a Mt. Carbine type deposit are:

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Tin and tungsten mineralisation is known to occur in quartz tourmaline veins within the metamorphic rocks. These veins are extensive, at least in the north - south direction.

A possible source for the mineralisation could be the Devonian/Carboniferous Mt. Counsel Granite which outcrops about 5 km to the East. Devonian/Carboniferous granites are associated with many of the tin and tungsten deposits in Eastern Australia.

It is possible that the Grassy River Fault may extend much further North than currently traced. A projection of the Grassy River Fault line would lie close to the Fraser River Gold Mine, the Reekara tin/tungsten prospect, and Victoria Cove where veins of quartz containing scheelite occur. Such a fault is a major factor in the formation of the Mt. Carbine deposit.

Although the area was explored for "host rocks" of the Grassy type, no real search for vein type deposits was carried out, and such deposits are not precluded by the results of earlier work.

The diamond drilling carried out pre 1955, although not reliable due to recovery problems, did record tungsten values almost throughout.

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WORK CARRIED OUT TO DATE

This work, has to date, consisted of re-examination of the regional geological data, the New Mt. Costigan Gravity data and the 1973 Airborne magnetic survey data. In addition a preliminary photolinear study was carried out over the area of the Licence.

The results of this work, although not positively encouraging, have not precluded the presence of a Mt. Carbine type tin tungsten deposit in the area.

The re-examination of the regional geological data showed that there was insufficient outcrop to allow any detailed geological plan to be drawn up for the area. During a visit to the area an outcrop of weathered granite was discovered south of the old Stony's Creek tin mine. This is tentatively identified as being of the Devonian/Carboniferous type. If this were so it could possibly be an indication of the presence of such material underlying part of the area of interest.

The data used by New Mt. Costigan Mines to produce their regional gravity map was based on data points which were too widely spaced to detect any small sub-surface masses of granite which could underline the vicinity of the old mine shafts. The presence of such a sub-surface Devonian/Carboniferous granite in the Mt. Carbine area is thought to be a major factor in the formation of that deposit.

The 1973 airborne magnetic survey did detect some areas of amomalous magnetic character in the metamorphic sequence which were, on the basis of the mapped surface geology, interpreted as due to parts of the sequence with distinctly different magnetic character. No evidence has as yet been found to contradict this interpretation.

The preliminary photolinear study has shown that it is tentatively possible to extend the trend of the Grassy River Fault north to the area south of Lagoon prior to losing it under sand cover. The existance of such an extension is not considered proved as yet, due to the intermittent nature of the trends on the photos caused by large areas of uncleared land where photolinear are easily masked by tree growth. For this reason colour Landsat photos have been ordered to allow an overall view of the island to be studied.

FUTURE WORK PROGRAMME

During the next twelve months the following work programme is planned:

1. A regional gravity survey consisting of 3 lines of stations at 100 metre stations, across the area of interest, from the west coast granitic complex to the Mt. Council granite to test for the possible presence of a sub-surface Devonian/ Carboniferous Granite.

2. A Very Low Frequency survey over the area around the old shafts to try to locate the major shears inferred from the air photos. Should this work succeed in locating these structures then consideration will be given to extending the survey north and south to trace their lineal extent.

3. Study of the Landsat imagery for the island for any indications of major structural features on the island, especially a northwards extension of the Grassy River Fault.

4. Possibly diamond drill two holes in the area of the old shafts to test the density of quartz veining and the grade of any contained mineralisation.

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EXPENDITURE ON EL 39/80

Six months to 30th November 1981.

Geology and Photolinear Study	$1 696.00
Field Expenses	$ 428.00
Administration including Licence Fees	$ 812.00
Total expenditure for six months	$9 485.00

REFERENCES

Brown S. G.	1974	Final Report on the Mineral Potential of Exploration Licence 5/69. Unpublished Company Report.
Cottam P.	1971	Final Report EL 4/68. Unpublished Company Report.
Cottam P.	1972	Progress Report EL 5/69. Unpublished Company Report.
Gresham J. J.	1972	Regional Geology of King Island. Unpublished Company Report.
Hughes T. D.	1955	J. Curtain's Scheelite Prospect. Unpublished Mines Department Report.
Mining Magazine	Jan. 1976	Photometric Ore Sorting at Mt. Carbine Wolfamite Mine, Queensland.

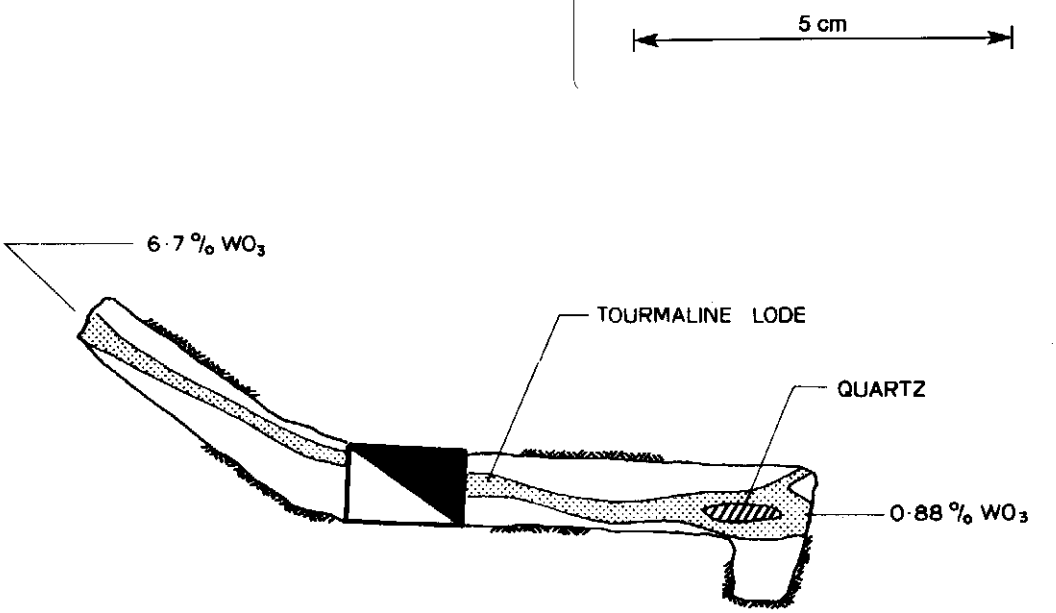


fig. I 'A' SHAFT, 7m BELOW SURFACE

Scale 1 : 120

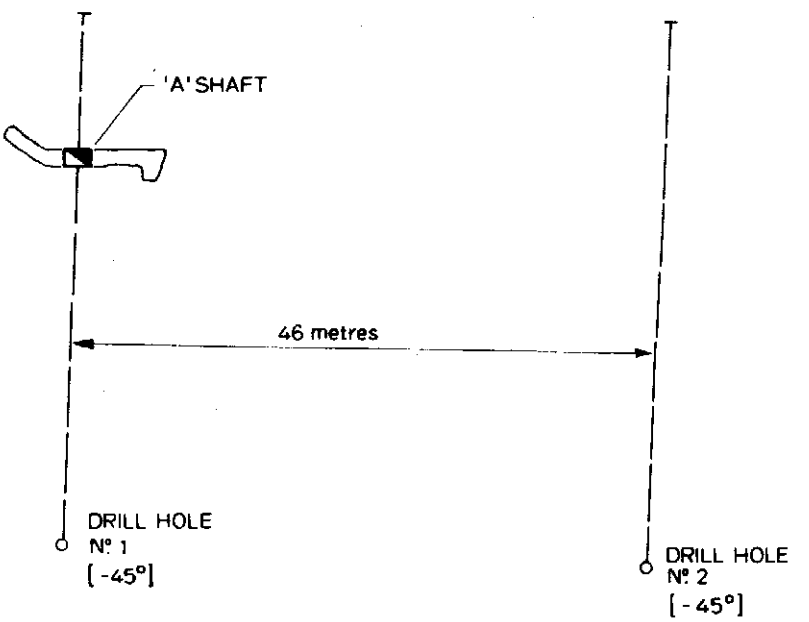


fig. II

REF. PLAN	GEOLOGY			1 : SCALE	KING ISLAND SCHEELITE GRASSY KING ISLAND
NOTE INFORMATION OBTAINED FROM MINES DEPT. REPORT DATED 30th JUNE 1955	SURVEY			TO ACCOMPANY PROJECT PROPOSAL	
	PLANNING				
	ROCK. MEC.				
	GRADE CON.				
	DRAFTING			DRAWING NUMBER	
	T.S.S.				

011

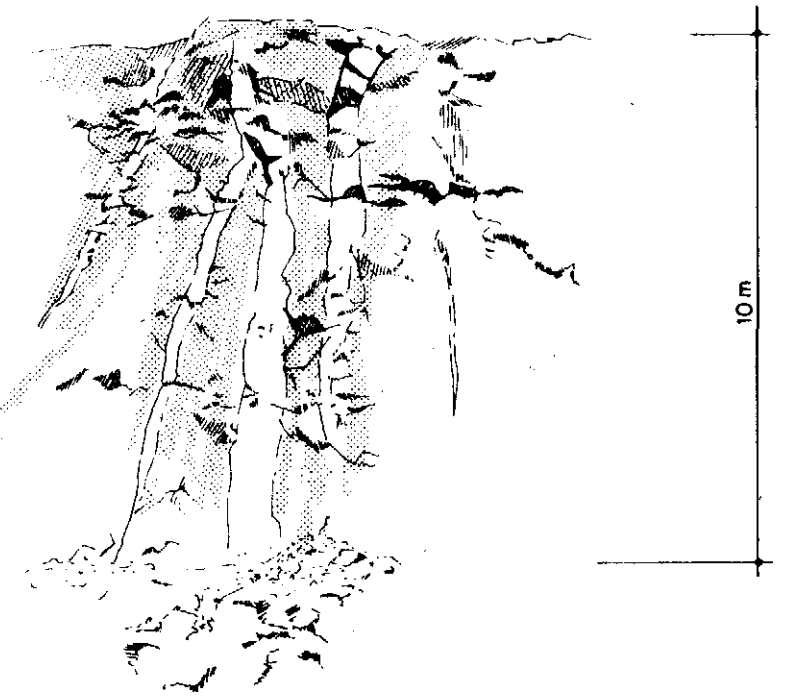


fig. III

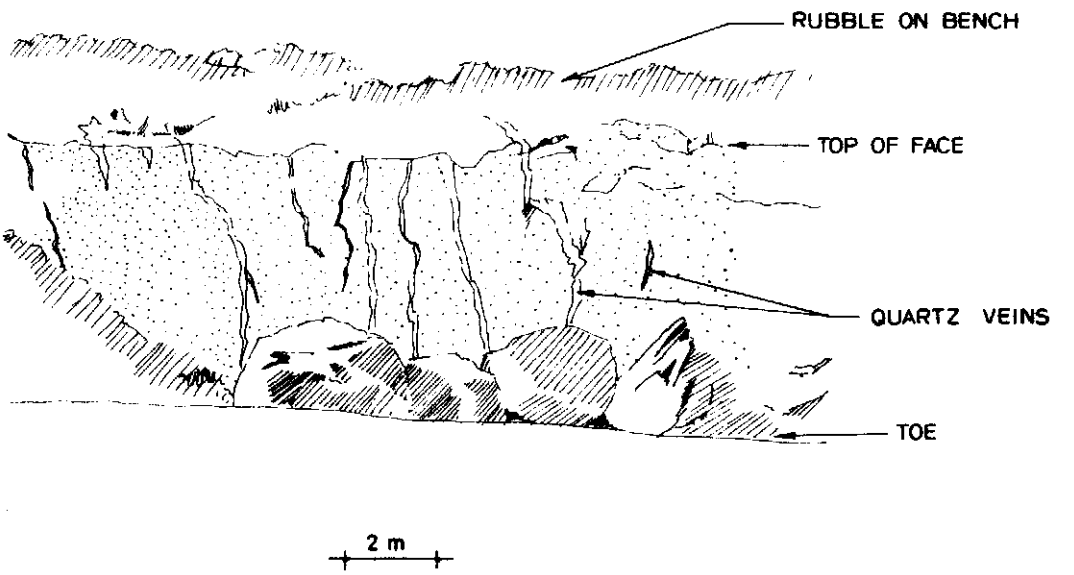


fig. IV

5 cm

REF. PLAN	GEOLOGY	1 : SCALE	KING ISLAND SCHEELITE GRASSY KING ISLAND
	SURVEY		TO ACCOMPANY PROJECT PROPOSAL
	PLANNING		
	ROCK.MEC.		
	GRADE CON.		
	DRAFTING		DRAWING NUMBER
	T.S.S.		

012

5 cm

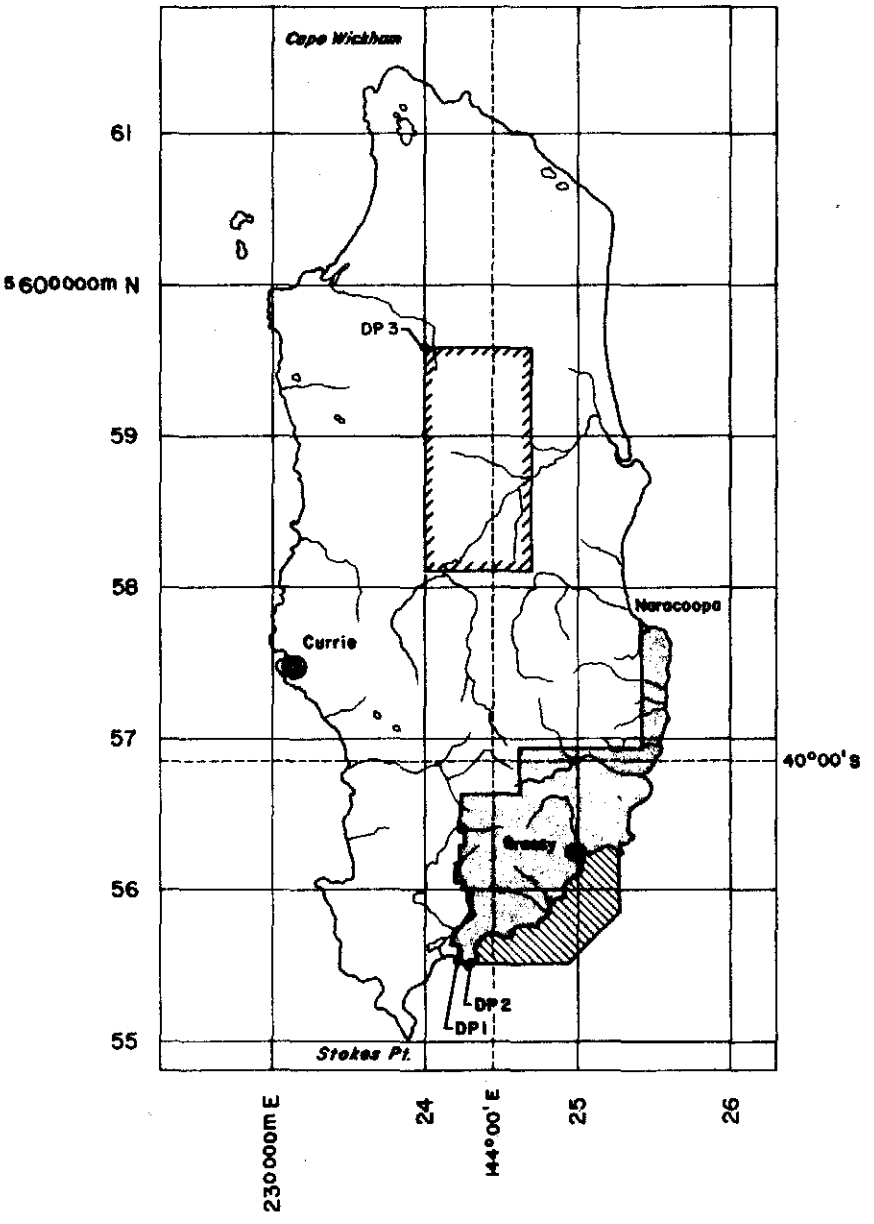
896013

E. L. 15/66

E. L. 21/78

E.L. 39/80 (Under Application)

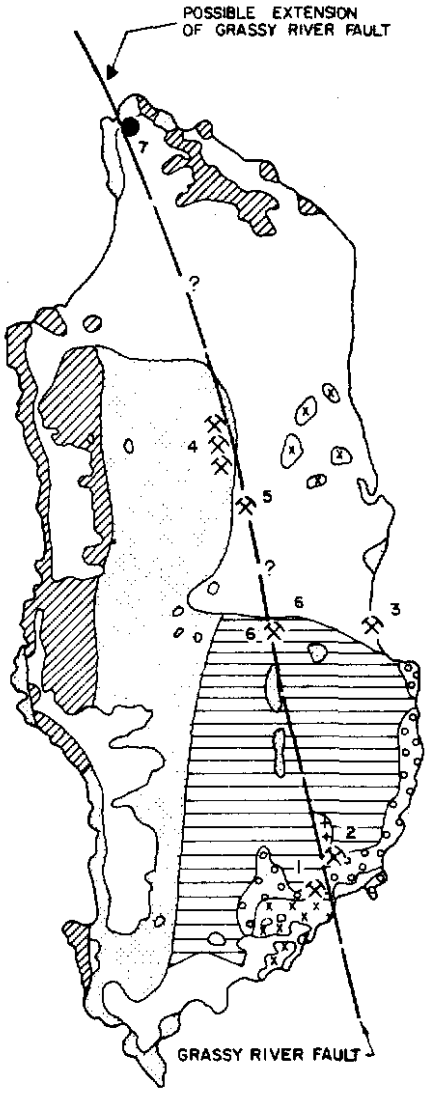
KING ISLAND
1:500 000



DATA POINTS (DP) CO-ORDINATES

DP1 - E.L. 15/66:	5 555 260m	N
	241 330m	E
DP2 - E.L. 21/78:	5 555 000m	N
	242 000m	E
DP3 - E.L. 39/80:	5 596 000m	N
	240 000m	E

Australian Map Grid Zone 55 (AMG)



Holocene – Late Carboniferous

CAMBRIAN — Basaltic – sedimentary sequence

PRECAMBRIAN — Unmetamorphosed sandstone – mudstone

Metamorphosed quartzite – pelite sequences

Igneous rocks

EARLY CARBONIFEROUS –LATE DEVONIAN — Adamellite

Granodiorite

PRECAMBRIAN — Dominantly granite

Mines or prospects

Occurence

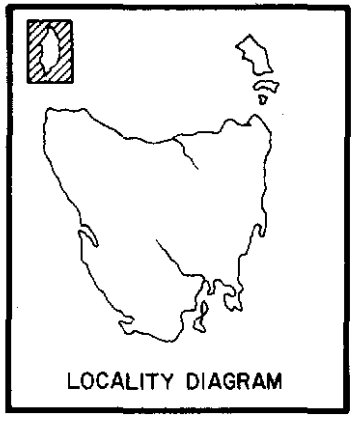
1. DOLPHIN / Nº 1 OREBODY – W, Mo
2. BOLD HEAD – W, Mo
3. NARACOOPA – Beach Sands
4. REEKARA – W, Sn
5. HAWKES ALLUVIAL – Sn, W
6. FRASER RIVER – Au
7. VICTORIA COVE – W

north

0 5 10 15 20 25 Kilometres

1 : 500 000

5 cm



KING ISLAND GEOLOGICAL MAP

240 000 E

247 000 E

5596000 N

DATUM

BOUNDARY E.L. 39/80

+ Shaft C

+ Shaft B

DDH 1 ⊙+ Shaft A
DDH 2 ⊙

ZONE OF CONTACT HORNFELS

BOUNDARY E.L. 39/80

GRADATIONAL BOUNDARY

GRADATIONAL BOUNDARY

5581000 N

240 000 E

247 000 E

LEGEND:

GEOLOGY

- Basalt (Tertiary)
- Granite and Adamellite (Devonian)
- Sandstones, Siltstones and Shales
- Regional Metamorphosed Quartzites and Quartz muscovite staurolite schists
- Regional Metamorphosed Quartzites and Quartz biotite andalusite schists
- West Coast Granitic Complex
- Basic dykes in Lower Proterozoic
- Areas high in quartz float

+ Old W/Sn exploration shafts

⊙ Old Diamond drill holes

5 cm

DATE: 22-12-81

DRAWN: C.W.

GEOLOGY: S.G.B.

CHECKED:

GEOPEKO 896015

0 10 20 30 40
SCALE 1: 40 000

DWG. No. KG 39/80 - 001

E.L. 39/80
REGIONAL GEOLOGY MAP

SHOWING PRELIMINARY PHOTOLINEAR STUDY RESULTS

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