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**MICROFILMED**

GEOLOGICAL REPORT

on

MT. LINDSAY TIN DEPOSIT

ZEEHAN, TASMANIA

by

J. L. Morton

Accompanying Report:

- Geological Plan - Scale 1" = 20'
- Composite Geological Plan - Scale 1" = 100'
- Cross Section at 3086E - Scale 1" = 20'
- Cross Section at 3210E - Scale 1" = 20'

SUMMARY

The Mt. Lindsay Tin Deposit occurs in a zone of mineralisation extending for over 3,000 feet.

Structurally controlled lenses of gossan, occurring in the mineralised zone, of an indicated grade of 2.4% Sn could not be expected to provide large tonnages. No appreciable tonnages of gossan remain in the mine workings.

A body of sulphides exposed at three points along the zone was sampled at one point and averaged .58% Sn. Although this body would almost certainly be discontinuous, it could represent a large potential tonnage.

The most suitable way to assess the area as a whole would be by trenching based on geophysical data, magnetic to locate gossans and their shape and EM to outline sulphides. Trenches would be required at 300 foot intervals along strike, reduced to 100 foot intervals over geophysical anomalies.

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REASONS AND PURPOSE OF INVESTIGATION AND REPORT

The main factor is one of Land Tenure. Aberfoyle Tin N.L. and Partners control two Leases comprising about 10 acres of the area, the remainder being held under reservation by Rio-E.Z. exploration partnership. Work was required to maintain ownership of the leases and it was decided that the purpose of the work should be to (a) confirm the presence of a worthwhile prospect and (b) gain geological data necessary to conduct a comprehensive evaluation in the event Rio-E.Z. should relinquish their Exploration Licence.

LOCATION

15 miles NNE of Zeehan, Tasmania, on the southern slopes of Parsons Hood Mountain. Comprising Leases numbered 24/M43 and 25/M43. The leases are not shown on the accompanying plans because no datum pegs could be located.

TOPOGRAPHY

Most of the area is on ground sloping between 20° - 25°, covered with from 1 to 4 feet of soil held together by a tangle of roots from heavy growth of Myrtle and other vegetation.

OWNERS

Dr. D.M. Garretty. At present under option to Aberfoyle Tin N.L. and Partners. Rio-E.Z. hold prior rights to the ground surrounding the leases through their reserved area E.L.4/59.

EXAMINATION

An examination of the property was carried out by the writer, assisted by three men, between January 23rd. and February 23rd., 1962.

During the first stage of the programme men, provisions and equipment to a total weight of 2,392 lbs. were flown to the Mt. Lindsay Heliport in a total of 173 minutes flying time including ferry time. Camp was established in proximity to Tulloch Creek near the main shaft on ground previously levelled for machinery and buildings. This site is recommended for a camp establishment.

The second stage of the programme comprised cleaning out, scaling and retimbering the mine workings, running a control survey along the areas of interest and into the mine openings and mapping in reconnaissance. The survey was calculated and plotted along with mapping to provide guidance for further work.

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Entry was gained through the Battery Adit into the drives and stopes and main shaft between 3000E and 3100E (please refer 20 scale Geological Plan) Tulloch Adit, west of 2900E and through a caved in stope to a crosscut east of 3200E. Much effort was expended in an attempt to enter the east mine workings through the caved stope east of 3200E, which was found to be blocked by a fall of earth at the eastern end, and later through the rise at 3350E. The latter had to be fitted with a hoist and some muck removed from about 120 feet below surface. A hole was opened through at this point but the workings were found to be flooded. Further work was suspended on this section being beyond the scope of available equipment.

The remainder of the second stage was directed into cleaning out old trenches, detail mapping and mapping of available exposures on Rio-E.Z. ground. Men, samples and some equipment to a total weight of 1,280 lbs. were flown to Zeehan by helicopter at the end of the programme. Total flying time 93 minutes, including ferry time.

#### GEOLOGY

Mineralogical studies being carried out on some ore and rock specimens will not be completed in time for this report. Field names will be given here and the mineralogical report appended at a later date.

The wall rocks underlying the mine area are hard, light coloured, banded, quartz-feldspathic rocks striking about east-west and dipping at about 85° south. They are neither typically granulose or schistose in the "fresh" state, i.e. away from the mineralised zones. These have previously been described as Dundas sediments and Tuffs of pre-Silurian age. Some narrow bands of these rocks occur as remnants in the mineralised zone, particularly in the folded area near 3020E. These rocks are herein described as hornfels.

Slates similar in appearance to the hornfels occur in places. These are thought to be, in some cases, decomposed hornfels.

The tin bearing rocks can be divided into three distinct groups:

1. Gossans. Completely oxidised lenses of mineralised shear material. These comprise the only ore mined by previous operators. They are of substantially higher grade than the other tin bearing rocks, due to reduction of density through leaching of heavier minerals, and probably also to a higher original tin content by virtue of their structural environment within the highly disturbed zone.
2. Sulphides, Mainly pyrite replacing small fold crests, shears and possibly fractures, occurring along the footwall of the zone on the western end of the structure. Most of these sulphides have been partially oxidised.

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3. Fresh sulphides. Mostly pyrite but with some pyrrhotite and chalcopyrite and also containing hornblende and magnetite in places and occasional bands of hornfels. These rocks occur along the hangingwall of the structure and continue strongly to the west past Tulloch Adit.

The Gossans have been classified into four types:

- (1) Banded Limonitic Gossan. This is the main shear filling material. What appears to be banding are shear planes, not conformable to dips of sediments and observed to occur as lenses in the stope east of 3200E. Limonitic pseudomorphs from pyrite occur in this gossan at the eastern end of the open cut.
- (2) Earthy Limonitic Gossan. Similar composition to Banded Limonitic Gossan but of massive structure.
- (3) Siliceous Gossan. A light blue, friable gossan occurring as small lenses within the Banded Limonitic Gossan and always containing high tin values.
- (4) Haematitic Gossan. Hard gossan occurring mainly along the footwall of the gossan zone. In places as small blobs, lenses and latticework in Earthy Limonitic Gossan; sometimes carrying high tin values, but not treated by previous operators; no doubt due to its hardness.

#### DISTRIBUTION OF TIN VALUES

Samples cut across mineralised zones are shown on the 20 scale geological plan and are summarised on tables 1, 2 and 3. Two sections of hangingwall sulphides average .55% Sn over 30 feet at 3000E and .599% Sn over 45 feet at 3050E.

Partially decomposed pyrite at 3000E average .607% Sn over 45.5 feet.

Gossans at 3050E averaged 1.24% Sn over 23 feet. In the Battery Adit at 3085E averaged 4.37% Sn over 11 feet. At the east end of the open cut at 3150E assayed 1.29% Sn over 5 feet - footwall not exposed. In the caved stope and crosscut at 3210E averaged 2.90% Sn over 21 feet. It should be noted that the gossan carrying high tin values occurs only as remnants and no appreciable tonnage remains.

Overall sections of the ore zones are, from table 1 .586% Sn over 75.5 feet at 3000E and from table 2, 0.81% Sn over 68 feet at 3050E.

#### STRUCTURAL CONTROL

The ore zone is associated with a flexure in the metaseds. The main gossan zone situated within the open cut is a shear link between changes in strike from 110° to 90° at 3180E and from 90° to 120° at 3060E. Smaller

versions of the same type of shear occur in the stope east of 3200E, these are in the form of  $85^{\circ}$  easterly pitching lenses. Another marked change in strike occurs at 2900E and along this limb footwall rocks have been extremely contorted at 3060E, gradually giving way to small drag folds and shears to the west and approaching 2950E. Some of the drag folds and shears have been replaced by pyrite with varying tin values but all of small dimensions. All of the small drag folds have a pitch of about  $85^{\circ}$  easterly. It can be fairly safely assumed that this is the pitch of the shear link as well.

Faulting in the crosscut near 3200E strikes approximately east-west and dips  $32^{\circ}$  south. No magnitude is known apart from the fact that there is more than 2 feet of fault gouge along the fault plane where observed. This indicates a major fault. Please refer cross section at 3210E.

Two openings at 800 feet and 1,400 feet west of the main workings, named No.1 West Crosscut and Western Adit are shown on the 100 scale composite plan. Structure in these openings appears similar to the main workings with appreciable widths of gossans and associated hangingwall pyrite-pyrrhotite sulphides, the main difference being that most of the movement has been taken up by faulting rather than folding and shearing: hence no evidence of lensing.

The pyrite-pyrrhotite-magnetite-hornblende body in the hangingwall of the main workings shows up in the hangingwall of Western Adit and in the bed of News Creek about 2,500 feet west of the main workings. This is significant indication of the extent of the mineralised zone.

J.L. Morton  
20th. March, 1962

## TIN DEVELOPMENT PARTNERSHIP

## MT. LINDSAY TIN DEPOSIT

## Summary of Samples

Table 1.

Section 3000E

Sample No.	Width feet	Value % Sn	W x V	Accum. Width	Accum. W x V	Averages	
50-3	4.0	0.11	0.44	4.0	0.44	Fresh pyrite, Pyrr. Magnetite, H <sup>+</sup> blende Av. = .55% Sn over 30'	Main zone of Mineralisation Av. = .655% Sn over 50.6'
49-1	5.0	0.78	3.90	9.0	4.34		
48-1	5.0	0.60	3.00	14.0	7.34		
47-1	5.0	0.13	0.65	19.0	7.99		
46-1	4.5	1.40	6.30	23.5	14.29		
45-1	4.0	0.33	1.32	27.5	15.61		
44-1	2.5	0.44	1.10	30.0	16.71		
43-3	3.3	0.54	1.78	33.3	18.49		
42-1	4.2	1.16	4.87	37.5	23.36		
41-3	3.6	0.35	1.26	41.1	24.62		
40-7	1.5	0.27	0.41	42.6	25.03	Partially decomposed pyrite and sed. Av. = .607% Sn over 45.5'	Lesser Mineralised section Av. = 0.45% Sn over 24.9'
39-1	4.0	1.51	6.04	46.6	31.07		
38-1	4.0	0.50	2.00	50.6	33.07		
37-1	4.0	Tr.	0.00	54.6	33.07		
24-1	1.5	0.12	0.18	55.1	33.25		
25-3	3.7	0.12	0.44	59.8	33.69		
26-2	2.0	0.43	0.86	61.8	34.55		
27-1	1.0	1.60	1.60	62.8	36.15		
28-3	1.5	0.21	0.32	64.3	36.47		
29-1	1.0	Tr.	0.00	65.3	36.47		
30-3	4.2	1.44	6.05	69.5	42.52		
31-1	6.0	0.30	1.80	75.5	44.32		
32-3	5.5	Tr.	0.00	81.0	44.32		
33-1	1.5	Tr.	0.00	82.5	44.32		
34-3	4.0	Tr.	0.00	86.5	44.32		
35-1	5.0	0.32	1.60	91.5	45.92		
36-3	4.0	0.00	0.00	95.5	45.92		
	95.5		45.92				

Average sample size - 5 lbs.  
out from channel.

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## Summary of Samples

Table 2.

Section 3050E

Sample No.	Width feet	Value % Sn	W x V	Accum. Width	Accum. W x V	Averages	
1-2	5.0	Tr.	0.00	5.0	0.00		
2-2	5.0	Tr.	0.00	10.0	0.00		
3-2	5.0	Tr.	0.00	15.0	0.00		
4-1	5.0	0.77	3.85	20.0	3.85	Fresh pyrite, pyr. Hornblende AV. = 0.58% Sn over 45'	Overall Mineralised section AV. = 0.81% Sn over 68'
5-1	5.0	0.56	2.80	25.0	6.65		
6-1	5.0	0.74	3.70	30.0	10.35		
7-1	5.0	0.68	3.40	35.0	13.75		
8-1	5.0	0.12	0.60	40.0	14.35		
9-1	5.0	0.23	1.15	45.0	15.50		
10-1	5.0	0.74	3.70	50.0	19.20		
11-1	5.0	1.46	7.30	55.0	26.50		
12-1	5.0	Tr.	0.00	60.0	26.50		
13-4	3.5	0.68	2.38	65.0	28.88		
14-4	3.5	0.37	1.30	68.5	30.18		
15-7	2.5	3.60	9.00	72.0	39.18		
16-6	1.5	2.16	3.24	74.5	42.42		
17-4	5.0	1.79	8.75	76.0	51.17		
18-4	5.0	0.72	3.60	81.0	54.77		
19-4	2.0	0.12	0.24	83.0	55.01		
	83.0		55.01				

TIN DEVELOPMENT PARTNERSHIPMT. LINDSAY TIN DEPOSIT

## Summary of Samples

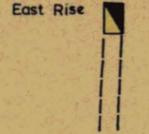
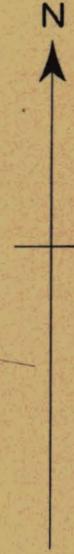
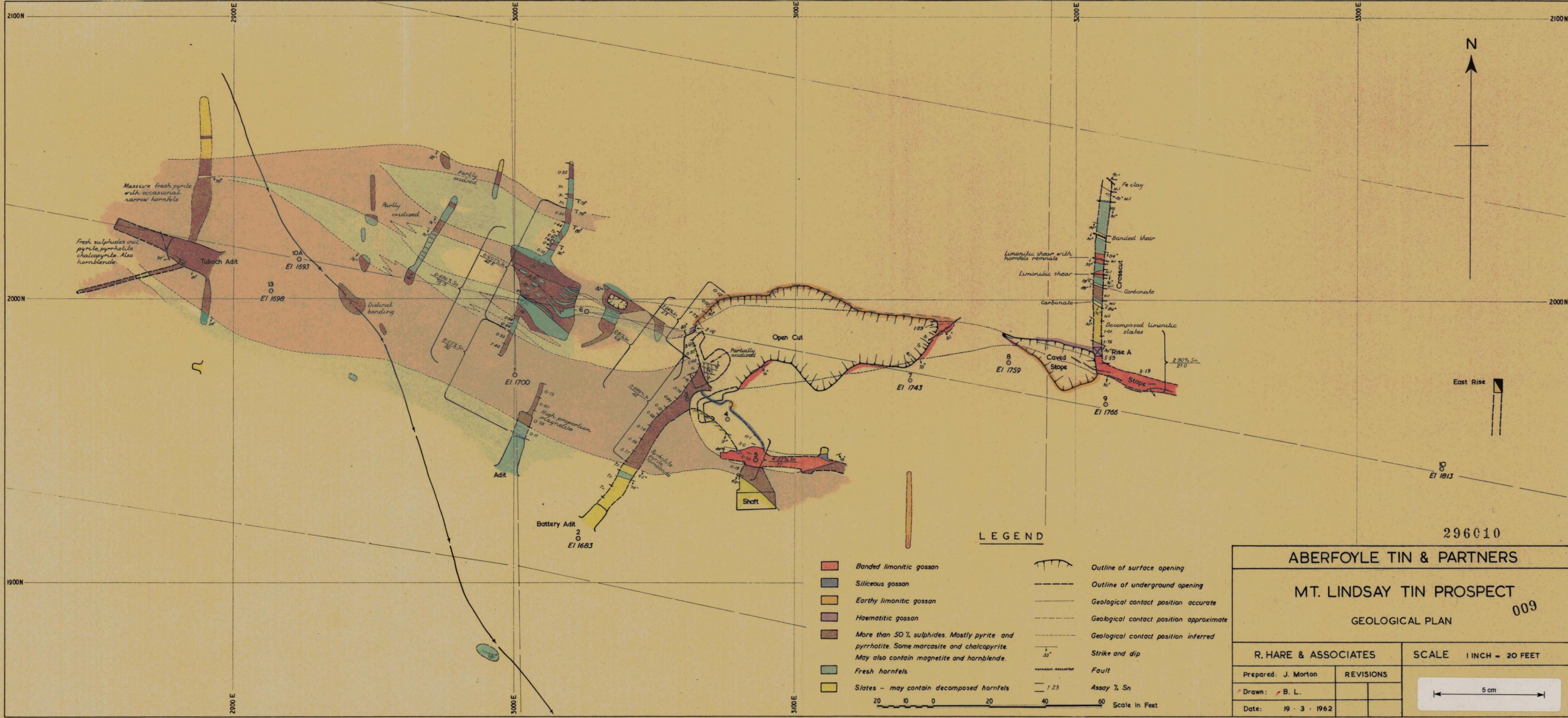
Table 3.

## Section 3080 - Gossans

Sample No.	Width feet	Value % Sn	W x V	Accum. Width	Accum. W x V	Averages
21-5	4.0	.72	2.88			
22-5	4.0	3.00	12.00			
23-7	3.0	1.11	33.30			
	11.0	4.37	48.18			4.37

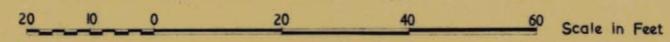
## Section 3210 - Gossans

Sample No.	Width feet	Value % Sn	W x V	Accum. Width	Accum. W x V	Averages
69-5	6.0	3.19	19.14			
55-2	5.0	5.59	27.95			
56-2	5.0	1.75	8.75			
57-2	5.0	1.01	5.05			
	21.0	2.90	60.89			2.90



**LEGEND**

- Banded limonitic gossan
- Siliceous gossan
- Earthy limonitic gossan
- Haematitic gossan
- More than 50% sulphides. Mostly pyrite and pyrrhotite. Some marcasite and chalcopyrite. May also contain magnetite and hornblende.
- Fresh hornfels
- Slates - may contain decomposed hornfels
- Outline of surface opening
- Outline of underground opening
- Geological contact position accurate
- Geological contact position approximate
- Geological contact position inferred
- Strike and dip
- Fault
- Assay % Sn



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**ABERFOYLE TIN & PARTNERS**

**MT. LINDSAY TIN PROSPECT**

GEOLOGICAL PLAN

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R. HARE & ASSOCIATES

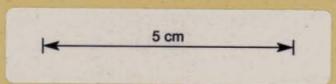
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Prepared: J. Morton

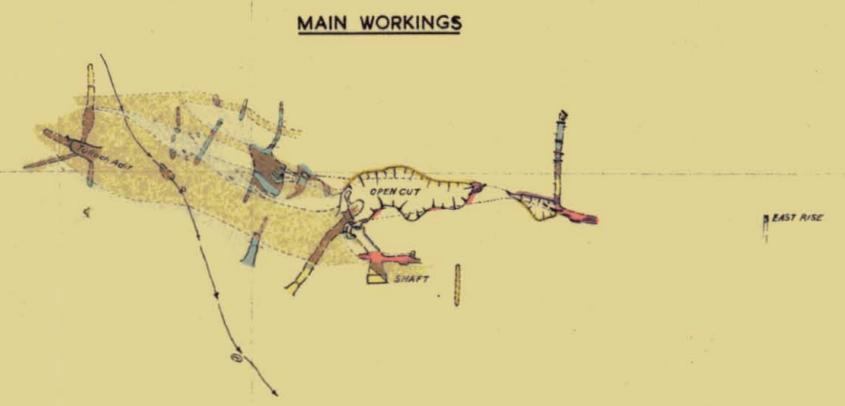
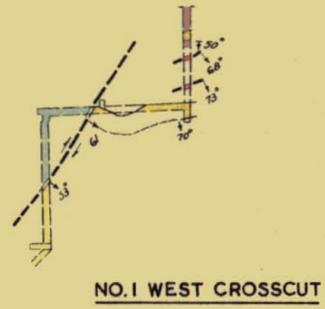
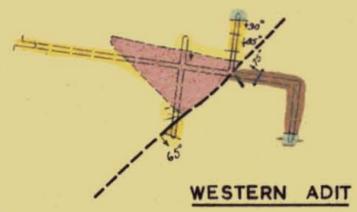
REVISIONS

Drawn: B. L.

Date: 19-3-1962



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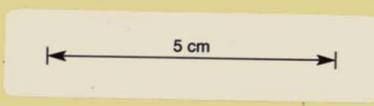
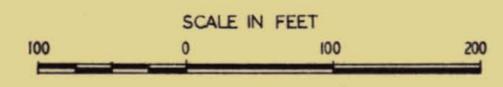


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**LEGEND**

- Banded limonitic gossan*
- Siliceous gossan*
- Earthy limonitic gossan*
- Haematitic gossan*
- More than 50% sulphides. Mostly pyrite and pyrrhotite. Some marcasite and chalcopyrite. May also contain magnetite and hornblende.*
- Fresh hornfels*
- Slates - may contain decomposed hornfels.*

- Outline of surface opening*
- Outline of underground opening*
- Geological contact position accurate*
- Geological contact position approximate*
- Geological contact position inferred*
- Strike and dip*
- Fault*



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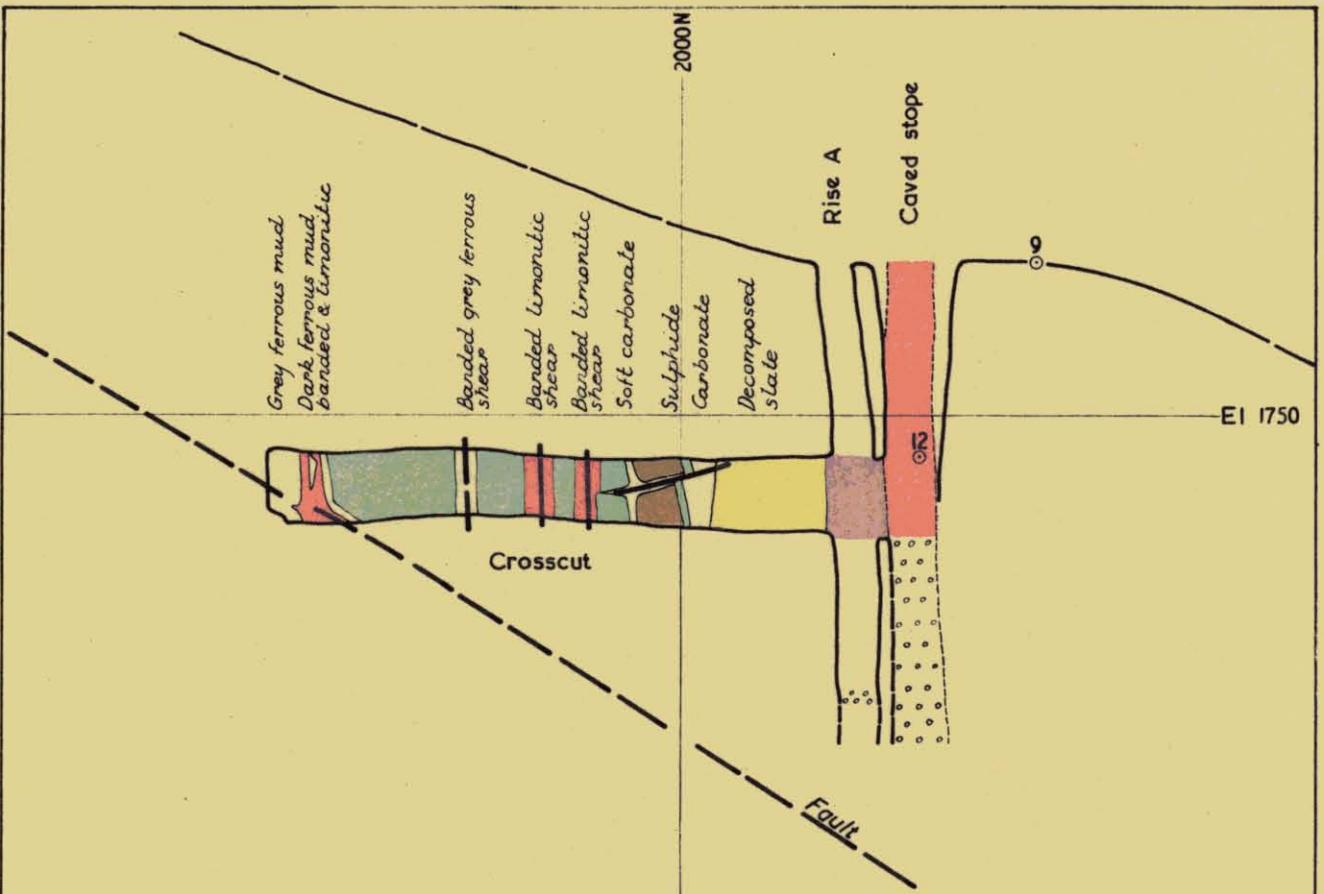
**ABERFOYLE TIN & PARTNERS**

**MT. LINDSAY TIN DEPOSIT**

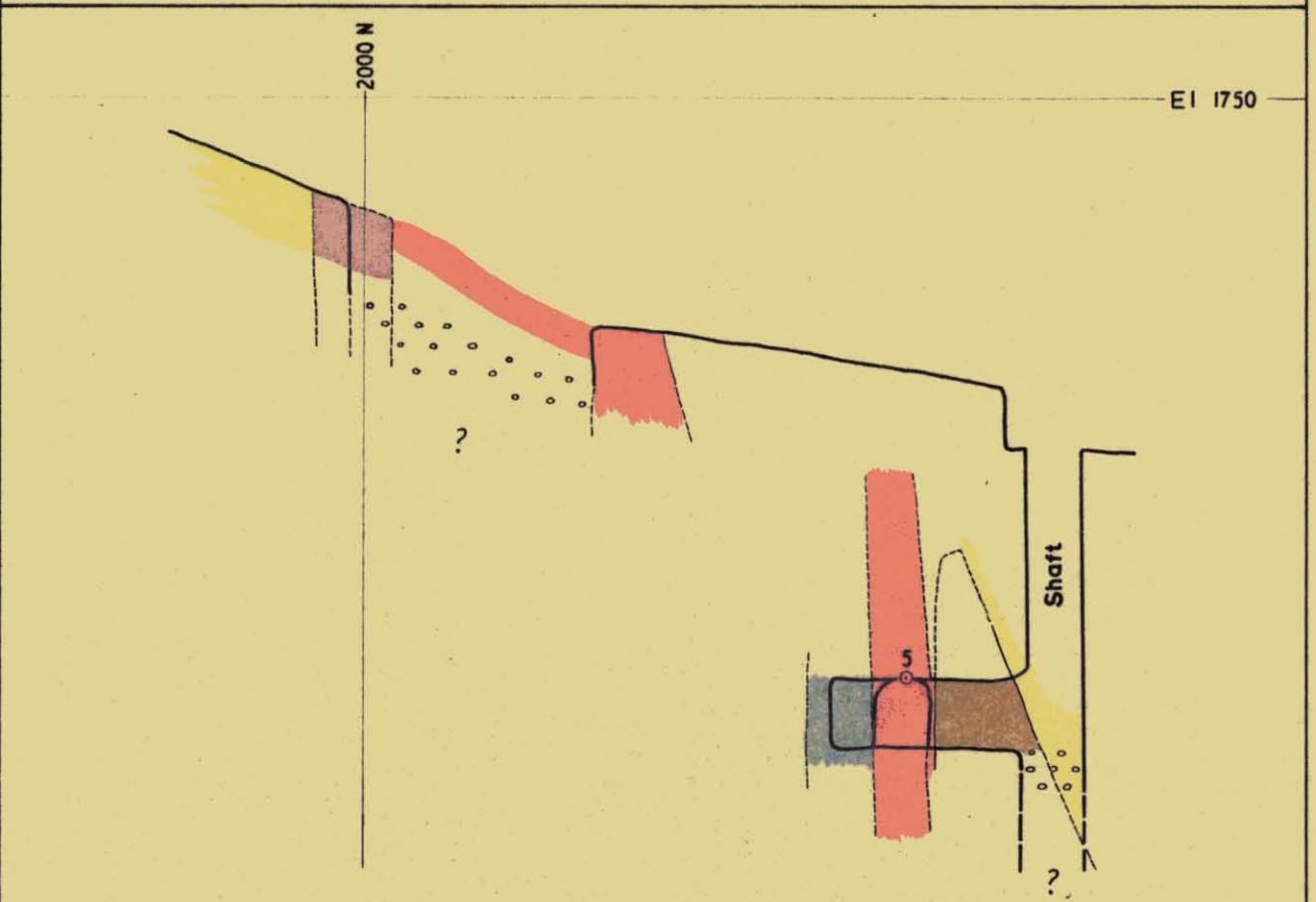
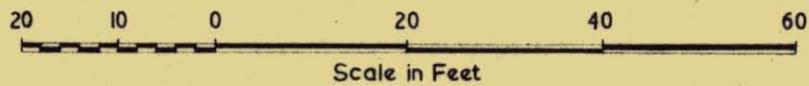
COMPOSITE GEOLOGICAL PLAN

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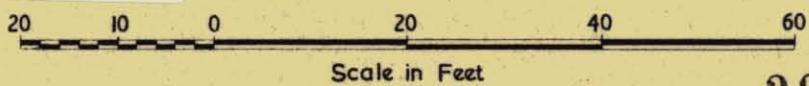
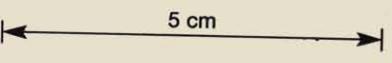
R. HARE & ASSOCIATES		SCALE: 1 INCH = 100 FEET	
Prepared: J. Morton	REVISIONS		
Drawn: B. L.			
Date: 19. 3. 1962			



MT. LINDSAY MINE  
CROSS SECTION 3210E  
LOOKING EAST



MT. LINDSAY MINE  
CROSS SECTION 3086  
LOOKING EAST



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