136001

SMITHTON E.L. 18/78

FIRST AND FINAL REPORT

79-1386

C.H. Young,
Project Geologist, Tasmania.

August 1979.

001

136002

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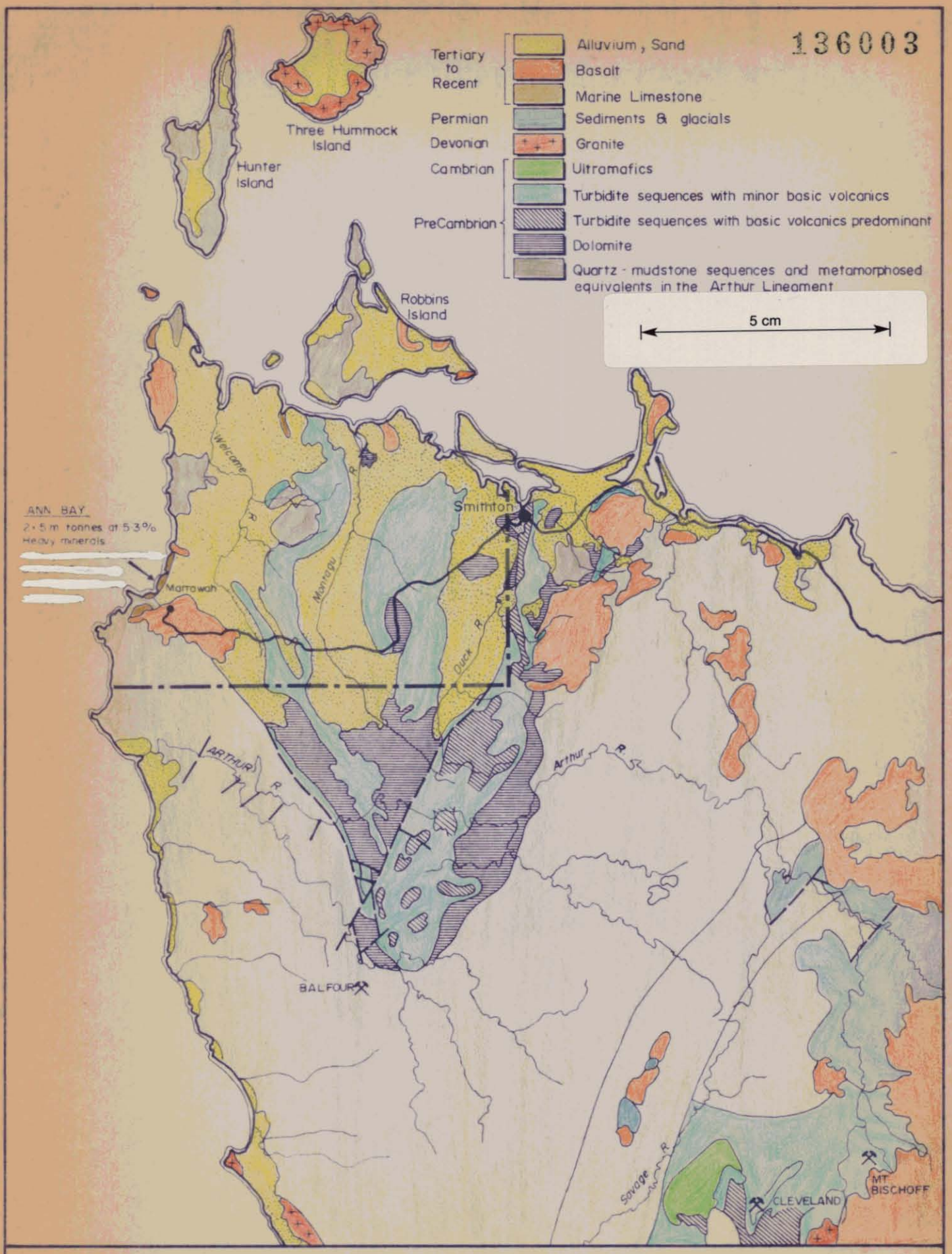
002

136003



Aberfoyle Exploration

FIG. 1

Geology: Tas. Mines Dept.	N. W. TASMANIA	Location code:
Drawn: R.J.E.	Smithton E.L.18/73	Scale: 1:500,000
Checked: R.V.S.	LOCATION PLAN	Date: October, 1978
Revised: Date:		Plate No. Smtn 2

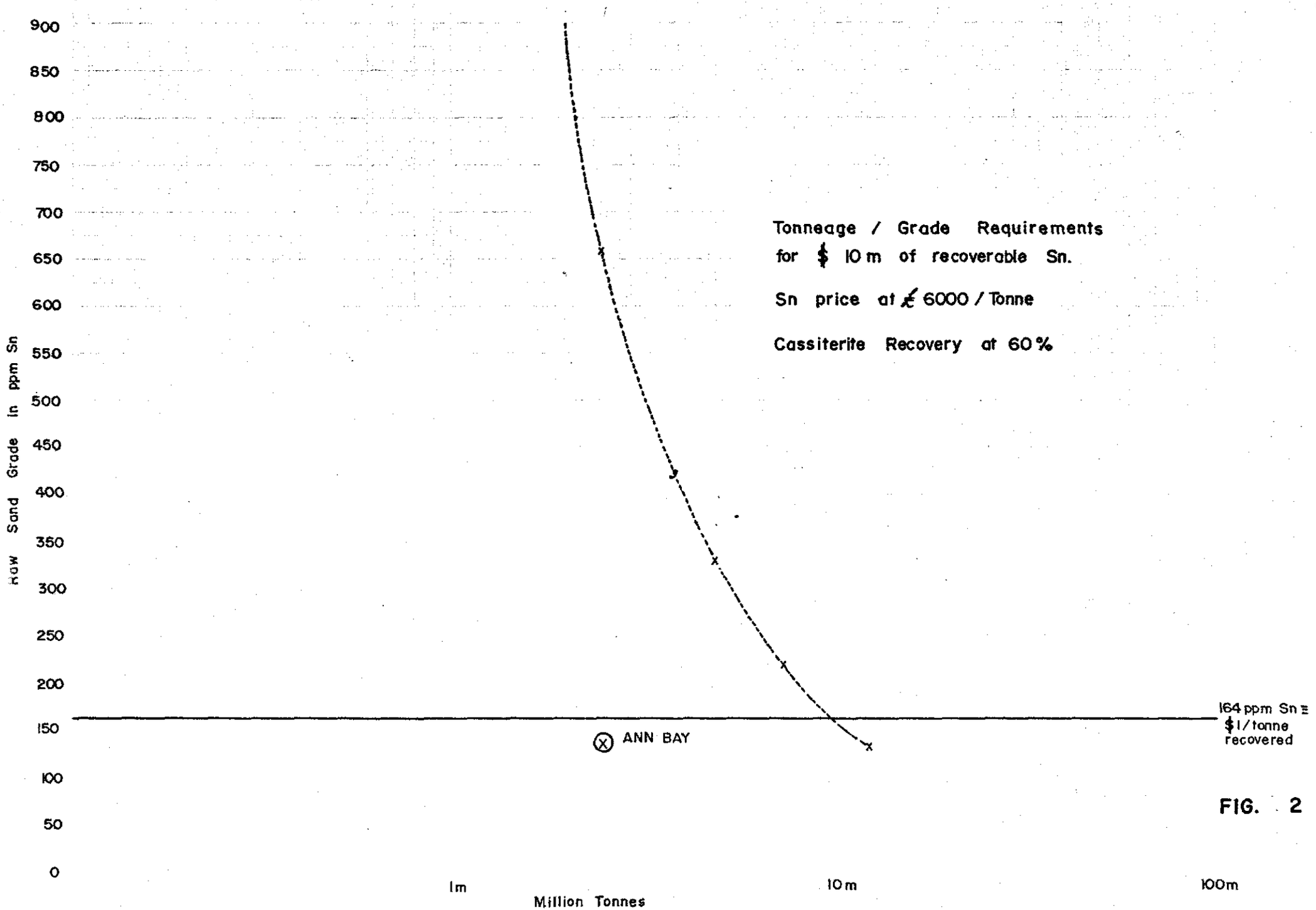

Tonneage / Grade Requirements
for $ 10 m of recoverable Sn.
Sn price at £ 6000 / Tonne
Cassiterite Recovery at 60 %
Raw Sand Grade in ppm Sn
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
ANN BAY
164 ppm Sn ≡ $1/tonne recovered
1m
10m
100m
Million Tonnes

FIG. 2

INTRODUCTION

Cognisant of the rising price of tin Aberfoyle became interested in the feasibility of a cassiterite beach sand operation centered on the heavy mineral deposit at Ann Bay.

Ann Bay, latitude of 40° 54'S, longitude 144° 41'E is situated on the north west coast of Tasmania near the town of Marrawah (Fig. 1). The topography consists of low lying coastal dunes ranging from 4 m to 20 m high, generally elongated in a NE-SW direction. The dunes are separated by low-flying flats where the water table is within 1 metre of the surface. The vegetation varies from coastal grasses and pastures to low scrub country. Trees are usually less than 5 metres in height.

Initial evaluation of the deposit had been conducted in 1968 by Pickands Mather International who identified the presence of cassiterite in the heavy mineral fraction. The evaluation by Pickands Mather gave the following results:

Heavy Mineral Sand Deposit

Sand 3.5 million tons
Average heavy mineral content 3.6%

Heavy Mineral Concentrates

Total 108,000 Tons
Rutile 2.5% in H.M. 2,700 tons
Zircon 5% in H.M. 5,400 tons
Cassiterite 0.098% in H.M. 103 tons (80 tons Sn)
An overall grade of 20 ppm Sn.

In 1970 the E.Z. Company examined the deposit. Their aim was to achieve a higher average grade. E.Z. used a cut off grade resulting in an average of 5.3 percent H.M., instead of 3.6 percent as used by Pickands Mather, E.Z. results are as follows:

Heavy Mineral Sand Deposit

Sand 2.5 million tons
Average heavy mineral content 5.3%

Heavy Mineral Concentrates

Total 100,000 tons
Rutile 2.8% in H.M. 2,800 tons
Zircon 6.3% in H.M. 6,300 tons
Cassiterite 0.43% in H.M. 430 tons (334 tons Sn)
An overall grade of 134 ppm Sn.

Aberfoyle assessed the parameters for a feasible cassiterite beach sand operation and concluded that an operation would be feasible if $10 million worth of recoverable Sn could be established at a recovered grade of above $1.00 per tonne. A plot of tonneage/grade requirements (Fig. 2) shows that for a feasible operation a deposit of 10 million tonnes with a minimum overall sand grade in the vicinity of 164 ppm Sn is required.

The recovery of rutile and zircon from a gravity concentrate is considerably more involved than the recovery of cassiterite and is about 5 times more expensive. Therefore Aberfoyle adopted a policy that the deposit has to stand or fall on the cassiterite content alone.

It was considered justified to evaluate the cassiterite grade of the deposit by hand auger/sludging and to expand the potential by traverse lines up to 500 metres inland and to test similar wave influenced sand deposits along the coast. Previous sampling by Pickands Mather/E.Z. did not involve sludging and hence no samples had been taken from below the water table.

Exploration Licence 18/78 was pegged in October 1978 and was granted in February 1979. An assessment of all previous work on the licence area was completed and is summarised on Plates Smtn. 6A and 6B.

The licence area includes areas formerly explored by Conzinc Riotinto, Pickands Mather (E.L. 16/67), E.Z. Co., Nickelton Mining Co. Pty. Ltd. (E.L. 4/71), The Australian & New Zealand Exploration Company (E.L. 11/73) and more recently C.R.A. Exploration (E.L. 1/77).

Pickands Mather and E.Z. evaluated the Ann Bay heavy mineral deposit. Nickelton Mining Co. Pty. Ltd. explored for copper in the Montagu area. ANZECO evaluated a hard rock silica deposit in the West Point area and C.R.A. conducted a regional stream sediment reconnaissance programme specifically for Sn mineralisation.

A dolomite horizon which extends from Smithton to 17 km south of the Arthur River has been quarried for agricultural use around Smithton.

The programme of hand auger/sludging was conducted on three east-west traverses (S1, S2 and S3), Plate Smtn. 5, each commencing from the low tide mark on the beach and extending eastward to the edge of a Tertiary basalt scarp.

Assessment of previous company work in the E.L. area indicated one other area considered to warrant further evaluation. Nickelton Mining had explored the Montagu River prospect in 1971. Disseminated pyrite mineralisation and a massive haematite-goethite gossan was reported to outcrop in the bed of the Montagu River about 2.5 km west of the town of Montagu. Nickelton completed an exploration programme involving S.P., I.P. and ground magnetics, followed by one diamond drill hole. Their target was base metal mineralisation, in particular copper and no assays were conducted for tin. The reported sequence of Cambrian spilites, siltstones and mudstones and Precambrian dolomites is similar to the stratigraphy at Cleveland and Renison. Field examination of the prospect to assess the potential for Sn mineralisation was completed.

SUMMARY

Based on the concept that 10 million tonnes of sand with an overall grade of 164 ppm Sn was feasible for a large scale sand mining operation, Aberfoyle pegged E.L. 18/78 and commenced evaluation of the Ann Bay Heavy Mineral deposit by hand auger/sludging techniques. The intention was to expand the potential of the known 2.5 million ton heavy mineral deposit which has a reported grade of 134 ppm Sn.

Three lines approximately 1500 metres apart, with drill hole spacing varied from 40 - 100 metres were completed (Plate Smtn. 5). Samples were taken at up to 3 metres intervals or at recognisable changes of the sand profile. The samples were reduced to approximately 18 Kg in the field. At the Cleveland Tin Metallurgical Research Laboratory the bulk sample was then dried and split for assay. This method of sample preparation was considered adequate as a first pass technique.

High Sn values would be checked by assay of the SG >2.85 fraction, which is the conventional method.

It became immediately obvious that Sn values were much lower than indicated by previous E.Z. work and more or less confirmed the results of Pickands Mather. The low order of cassiterite in the known heavy mineral deposit precluded any further work.

Field evaluation of the Nickelton Mining prospect in the Montagu River indicated the presence of syngenetic pyrite in Cambrian siltstones. Ferruginous mudstones were found to represent the so called massive haematite-goethite gossan. Rock chip sampling failed to detect any Sn mineralisation.

GEOLOGY

Precambrian sediments underly most of the licence area. These include comparatively unmetamorphosed laminated mudstone, with occasional pyrite-rich horizons, orthoquartzite sequences of super-mature pure quartz sands and dolomites. In the northern half of the licence area Cambrian rocks unconformably overly the Precambrian. The Cambrian rocks include siltstone, greywacke and spilitic lava. A number of Tertiary basalt outliers overlie these sediments. Quarternary sediments are developed in a large swampy area which was once a deltaic region draining from the highlands to the south.

At Ann Bay wave action concentration has formed a belt of recent sand dunes. The dunes contain heavy minerals concentrated immediately above the high water mark. The dark heavy minerals include chromite, ilmenite, rutile, zircon and cassiterite. The deposit has dimensions 2000 metres long, 80 to 300 metres wide with dunes in the order of 10 m height above sea level. The provenance of the heavy minerals is unknown.

In the Montagu River area (Nickelton Mining Co. Pty. Ltd., copper prospect) Cambrian rocks, situated on the east limb of a regional anticline, dip approximately 45° to the east. The Cambrian rocks include siltstone, greywacke, mudstone, spilite and volcanic breccia. Within the grid area the Cambrian rocks unconformably overly Precambrian dolomite.

A regional geological compilation plan (Plates Smtn. 6A - 6B) was prepared. This plan also summarises all known mineral prospects in the Smithton Licence area.

HAND AUGER/SLUDGING PROGRAMME

Initial evaluation of the heavy mineral deposit was conducted by running three traverses (S1, S2 and S3) normal to the shore line. The traverses were situated approximately 1500 metres apart (Plate Smtn. 5). The first sample was collected from the low tide mark on the beach, further samples were then taken at 100 metre intervals until reaching the edge of a Tertiary basalt scarp.

The holes were drilled using a 3 inch hand auger with aluminium extension rods. Once reaching the water table, 3 inch bore hole casing was placed down the hole and a 2.5 inch sludge pump was used. Samples were taken at every change in sand texture or composition, or every 3 metres.

In all, 42 holes were completed with an average depth of 4.83 m,(Plates Smtn. 7 - 9.) A total of 153 samples were collected, reduced by coning to approximately 18 Kg and then transported to the Cleveland Tin Metallurgical Research Laboratory. The samples were dried and riffle split to 1 Kg. This split was then pulverised and assayed by XRF for Sn. The above method of sample preparation is not normally used in the evaluation of heavy mineral deposits but was considered adequate for an initial scan of all the samples.

The Sn values obtained are plotted on plates (Smtn. 7 - 9.) Apart for one value of 500 ppm Sn, from an interval of only 5 cm, the results for Sn averaged 10 ppm which is the level of detection of the assay technique used. These results are much lower than that indicated by the previous work of E.Z. who indicated an overall grade of 134 ppm Sn. The previous work of Pickands Mather, however, gave an overall grade of 20 ppm Sn which is closer to the results obtained by Aberfoyle.

To check that the methods of sampling and assaying used were correct, 18 random samples were sent to Readings of Lismore Pty. Ltd. for heavy liquid separation. The heavy mineral fraction (sink) was then assayed for Sn by Cleveland Tin using chemical analytical techniques. This is the method normally used in the evaluation of heavy mineral deposits and is the method used by E.Z.

Table 1, lists the heavy mineral content of the 18 samples treated by Readings.

READINGS OF LISMORE PTY. LTD.

Mineral Processing Equipment & Technical Services

Associate Company of H. T. Reading Pty. Ltd.

Approved Research Organisation No. 412

PHONE: 21 2478 (3 LINES) & 21 6159
AFTER HOURS: 21 5708
TELEX: 66158

1 COOK STREET
P.O. BOX 161,
LISMORE, N.S.W., 2480.
AUSTRALIA.

TABLE 1 HEAVY MINERAL FRACTION SG > 2.85.

SAMPLE	HALF SPLIT WT.	H/M WT.	H/M %
ANN BAY:			
212411	142.2	0.994	0.70
212418	135.9	2.327	1.71
212421	146.8	1.028	0.70
212427	141.2	0.444	0.31
212428	139.7	1.143	0.82
212429	145.5	0.836	0.57
212441	146.7	1.146	0.78
212443(a)	147.2	0.720	0.49
212443(b)	146.0	0.753	0.52
212447	152.9	2.810	1.84
212449	146.4	0.916	0.63
212457	142.4	0.767	0.54
212461	139.7	0.638	0.46
212473	146.0	1.334	0.91
212480	140.7	2.367	1.68
212491	109.2	1.722	1.58
212497	143.0	1.094	0.77
212992	129.9	0.655	0.50

Note: Heavy mineral fractions, sample numbers: 212427, 212443, 212449 and 212461 were too small to be assayed.

The Sn values of the heavy mineral fraction were then compared to the tin values obtained by XRF analysis of the bulk sand sample. Table 2.

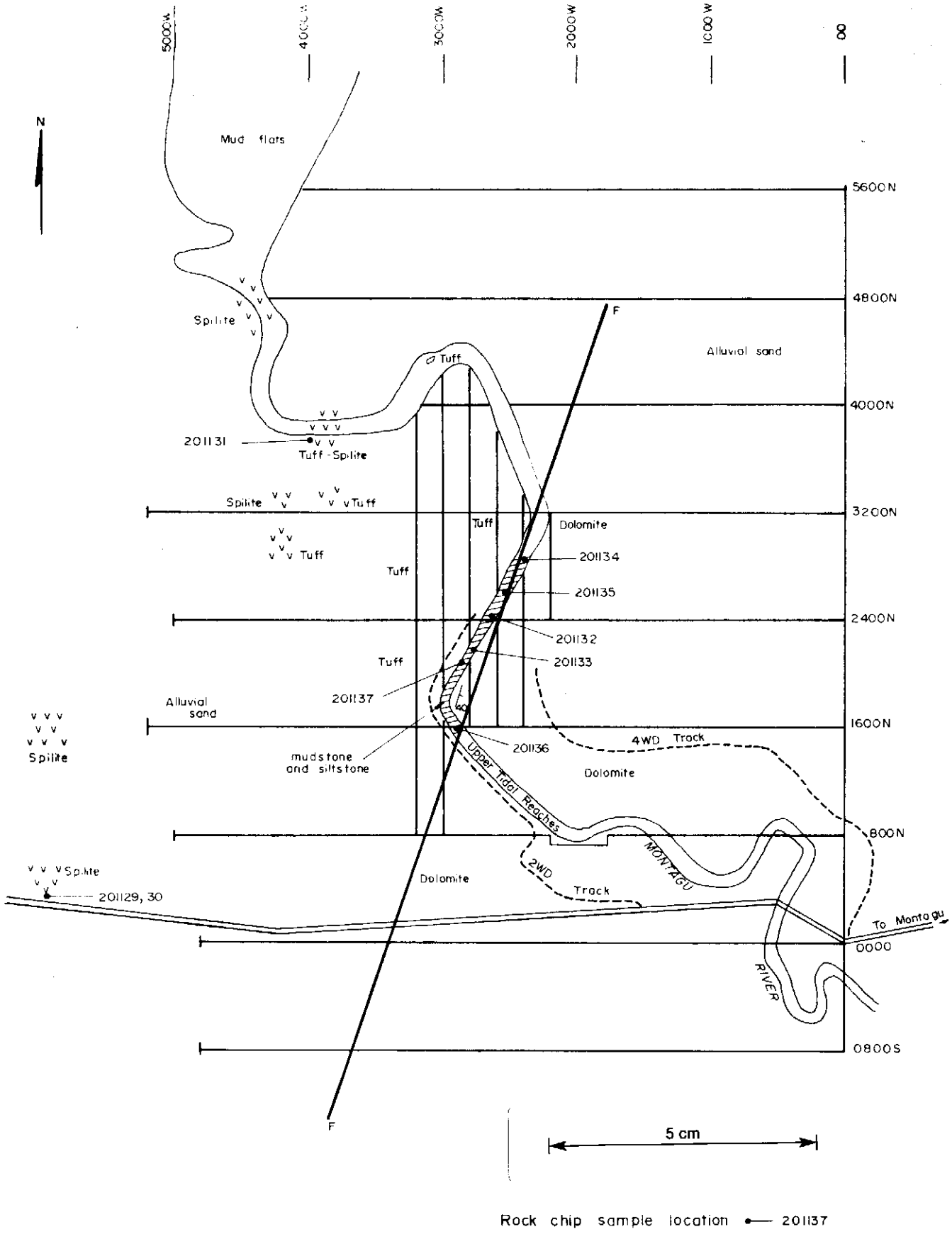
While individual values do not correspond, both methods of sampling and assay indicate that there is overall a very low Sn content in the Ann Bay heavy mineral deposit. It is concluded that the original evaluation by Pickands Mather (20 ppm Sn overall) was fairly accurate and that the much higher values (134 ppm overall) reported by E.Z. cannot be confirmed.

TABLE 2

COMPARISON OF Sn CONTENT IN H.M. CONCENTRATE TO Sn CONTENT OF BULK SAND SAMPLE

SAMPLE	H.M. %	Sn in H.M. (Chemical Assay) ppm.	Sn in TOTAL SAND (Calculated) ppm	Sn FROM BULK SAND (XRF ASSAY) ppm
212411	0.70	800	5.60	<10
212418	1.71	400	6.84	10
212421	0.7	400	2.80	<10
212428	0.82	800	6.56	<10
212429	0.57	800	4.56	10
212441	0.78	<400	3.12	10
212447	1.84	800	14.72	<10
212457	0.54	<600	3.24	<10
212473	0.91	1800	16.38	<10
212480	1.68	<200	3.36	10
212491	1.58	<200	3.16	<10
212492	0.50	1500	7.50	10
212497	0.77	600	4.62	<10

136012



Aberfoyle Exploration Pty Ltd

Drawn: C.H.Y.	NORTH WEST TASMANIA	Location code:	
Traced: R.J.E.	Summary Plan of Nickelton Mining's	Date: AUGUST, 1979	
Checked:	MONTAGU RIVER PROSPECT	Scale: 1:4000	
Revised by: Date:		Plate No Smtn. 10	

012

Abminco Exploration — GEOCHEMICAL SAMPLE LEDGER

Project: SMITHTON EL MONTAGU

Date: 11·2·79

Location (Eastings / Northings)	Sample Number	W	Sn	Cu	Pb	Zn	Geological Log
South Side of Creek Near Cent Landing 3800N 4000W	201131	<10	4	10	15	35	Bedded tuffaceous siltstone
On road side approx 400N 6000W.	201129	15	<4	5	10	20	Qz vein 2cm wide, with epidote – in spillite.
as above	201130	10	4	245	10	80	Cambrian spillite.
2800N, 2400W On E side of rd.	201134	<10	4	10	25	10	PC Dolomite
2600N, 2500W	201135	10	4	5	15	20	Cambrian Iron rich mudstone
2400N 2600W	201132	<10	6	65	50	50	Cambrian. Grey fissile mudstone.
1600N 2800W	201133	10	<4	195	15	155	Cambrian Mudstone, nr F, (commonly deeply weathered a ferruginous crust).
1550N 2800W	201136	<10	<4	25	15	10	Tuffaceous siltstone.
2200N 2800W	201137	<10	4	35	10	30	" "

OPERATOR C.N. YOUNG COMPUTER CHECK W. Sn by XRF; Cu Pb Zn by AAS. PLOTTER DATE

TRAY 3.

136013

MONTAGU RIVER PROSPECT

Brief evaluation of the Montagu River prospect showed disseminated syngenetic mineralisation to occur in a sequence of grey, green and reddish-brown pelitic and psammitic sediments of Cambrian age.

The massive haematite-goethite gossan reported by R.J.G. Lewis, in 1971, "Geophysical Investigations on E.L. 4/71, Montagu Tasmania on behalf of Nickelton Mining Co. Pty. Ltd.", is a red coloured ferruginous mudstone. The sediments dip to the east and are underlain by Cambrian age spilitic lavas. The Cambrian rocks unconformably overly, probably with a faulted contact Precambrian dolomite.

Rock chip samples were collected Table 3, their location is related to the Nickelton Mining grid co-ordinates(Plate Smtn. 10.) There is no evidence for Sn, W mineralisation in the area and all Sn/W values are at or below the level of detection.

A high copper background is indicated, associated with the spilitic lavas. The initial evaluation of this area by Nickelton Mining as a copper prospect may possibly be ascribed to the presence of the high copper background in the spilitic lavas.

CONCLUSION AND RECOMMENDATION

The cassiterite content in a beach sand deposit at Ann Bay was evaluated by hand auger/sludging.

Results to hand confirm the presence of cassiterite at about 10 - 20 ppm Sn raw sand grade. This level is far below that required for an economic sand mining operation.

Field evaluation of the Nickelton Mining copper prospect in the Montagu River indicated the presence of disseminated syngenetic pyrite in Cambrian sediments. A high copper background in Cambrian spilitic lavas appears to be the reason for the previous exploration of the area as a copper prospect.

Within the licence area no prospects of interest to Aberfoyle require further evaluation and it is recommended the licence be relinquished.

FINANCE

Total expenditure on the project is as follows:

Salaries and Wages (includes collection and preparation of sand samples for assay)	5,261
Contract Geochemical Analysis	849
Supplies	633
Accommodation	1,658
Vehicles	635
Communication	103
Tenure and Legal	4
Administration	1,615
	$10,758

REFERENCES

Schmidt, R.D.	(1968)	Marrawah Beach Heavy Mineral Sands. Pickands Mather International.
Wood, B.L.	(1970)	Report on the Pending Exploration Licence Northwest, Tasmania for Pluton Exploration N.L. (Hall Ralph & Associates Pty. Ltd.)
Macdonald, E.H.	(1971)	Preliminary Evaluation Programme Beach Sands at Strahan and Ann Bay, Tasmania.
Lewis, R.J.G.	(1971)	Geophysical Investigations on E.L. 4/71 Montagu, Tasmania on behalf of Nickelton Minerals Pty. Ltd.
Brandt, R.T.	(1974)	Summary Report on Exploration Licence 11/73 for the period May - December, 1973. Australian & New Zealand Exploration Company.

SIGNED: C.H. Young

C.H. Young,
Project Geologist, Tasmania.

ENDORSED: K.R. Yates

K.R. Yates
Manager - Outside Exploration.

144°40'

40° 50'

Maxies Point

Boggy Creek

SOUTHERN OCEAN

PICKANDS MATHER GRID

190 N
170N
150N
130N
110 N
90N
70N
50N
30N
10N

MT. CAMERON WEST

WELCOME RIVER

ANN BAY

LINE S3 10 holes
LINE S2 11 holes
LINE S1 19 holes

GREEN POINT

Pavement Point

WEST POINT

Doctors Creek

Arthur River

Landing Ground

Marrawah

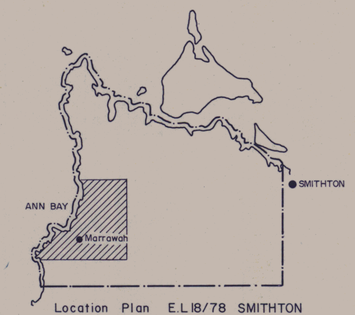
Road

REDPA HILL

Redpa

Sawards Creek

BASS HIGHWAY



Location Plan E.L18/78 SMITHTON

— LEGEND —

HM_ Heavy Mineral Distribution (%)

No breakdown of component percentages of heavy mineral fraction is available for individual sites. Overall, for the high grade heavy mineral area, heavy mineral fraction contains 0.43% cassiterite, 9.1% leucoxene, 6.3% zircon, 2.8% rutile, 3.2% chromite, 14.6% ilmenite

Location of sample showing depth and percentage (refer letters below) Area within circle not lettered has no recorded assay information.

after E.Z. 1970

NR		Not Recorded
2	A	0 - 2 % HM
2C	B	2 - 4 % HM
6	C	4 - 8 % HM
10	D	8 - 16 % HM
12	E	16 - 32 % HM
32	F	> 32 % HM

after Pickands - Mather

- > 5 % HM
- 2.5 - 5 % HM
- 1 - 2.5 % HM
- < 1 % HM

Traverses carried out by Aberfoyle between 5/1/79 - 25/1/79 see Sections for details.

Exploration Licence Boundary (500m offshore)

Major Road

Minor Road

River or creek

Trig Station

Building

Inferred Reserve > 2.5% HM

Inferred Reserve > 1.0% HM

1 0.5 0 1 Kilometres

5 cm

136016

Aberfoyle Exploration Pty Ltd

79-1386

Geology:	
Drawn: R.J.E.	
Traced: R.J.E.	
Checked: R.V.S.	
Revised by: Date:	

NORTH WEST TASMANIA 1370

SMITHTON E.L. 18/78

Marrawah Beach - Ann Bay

Geochemistry

Location code:	
Date: Nov. 1978	
Scale: 1 : 25, 000	
Plate No Smtn. 5	

144°40'
144°50'
40° 40'
40° 50'
41° 00'

WOOLNORTH POINT
CAPE GRIM
Valley Bay
Woolnorth Landing Ground
Hippo Point
Bluff Point
Studland Bay
Dodgers Point
Calm Bay
Maxies Point
STATE RESERVE
△ MT CAMERON WEST
T
KANGAROO ISLAND
ROBBINS ISLAND
Montagu Island
West Montagu
Woolnorth Road
RIVER
WELCOME
Harcus River
Boggy Creek
Sowerds Creek
MONTAGU
ROAD
Marrawah
Redpa
REDPA HILL
BASS HIGHWAY
Togari
SEYMOUR HILL
Pavement Point
GREEN POINT
ANN BAY
Netley Bay
WEST POINT
STATE RESERVE
Doctors Creek
Cuffey's Creek
ARTHUR
GRAVEL PIT
Landing Ground
Hatched area represents quartzite outcrops
Line 1
Line 2
Line 3
mud flats
Alluvial sand
spilite
Basalt
Tuff
Dol.

OCEAN
SOUTHERN

pC
Tb
T
Q
Q-T
Q-Tb
pCb
pC Dolm
€
€b ?
€?
pC?

MARRAWAH BEACH HEAVY MINERAL SANDS
E L 16/67 by PICKLANDS MATHER PTY LTD

- in 1967 interesting amounts of cassiterite in the sands
- results showed that a belt of Recent sand dunes immediately above the high water mark contained the richest materials
- area of interest is about 2000m long & from 75 - 300m wide with dunes in the order of 10-12m in height ASL

RESULTS - HEAVY MINERAL SANDS

Sand	3,000,000 cu yds
Av heavy mineral content	3 6 %
Total heavy mineral	108,000 tons

HEAVY MINERAL CONCENTRATES

Total	108,000 tons
Rutile - 2 5 % in H M	2,700 tons
Zircon - 5 0 % in H M	5,400 tons
Cassiterite - 0 098 % in H M	103 tons (80 tons Sn)

(Analysis by X-ray Spectrometric methods (XRF/Emmission Spec)

AUSTRALIA & NEW ZEALAND EXPLORATION COMPANY
on EL 11/73

Investigated the pre-€ quartzites in the Marrawah district for possible exploitation as sources of high grade silica for production of ferrosilicon

- extensive outcrops occur in vicinity of Marrawah light house & extend 3mls inland
- looking for an accessable open pit mine

GEOLOGY

- quartzites near Marrawah light house are unmetamorphosed pre €
- fresh, massive & m g., consisting of sub rounded qtz grains up to about 0 5mm cemented by Si
- Si content averages a little less than 99% SiO_2 – alumna is the cheif impurity
- the quartzites constitute a homogenous sedimentary unit with a max thickness no less than 600m
- has visible bedding but no interbeds

Structural basin formed by folding & is aligned E-NE measuring 3 mls in length, 1 5 mls wide

- dip varies from 15° – 55° towards the centre
- the N limb has fresh qtz o/c but S limb is concealed by sand dunes
- underlying formations to the N include qtzite horizons of similar character

SAMPLING & RESULTS

	Highest %	Lowest %	Av %	No of Samples
SiO_2	99 6	98 0	98 9	63
Al_2O_3	1 24	0 09	0 55	63
Fe_2O_3	0 23	0 03	0 11	35
TiO_2	0 06	0 02	0 03	63
CaO	0 03	0 01	0 01	3
P_2O_5	0 009	0 002	0 004	63
K_2O	0 24	0 02	0 13	35
LOI	0 38	0 08	0 18	17
Total			99 91	

The estimated tonnage of qtzite available at West Point based on the o/c & minable depth of 10-20m would be in the order of 100-150million tonnes

CONCLUSION

In spite of large tonnage & easy accessability, the chemical impurity is too high fo ferrosilicon production

Chemical purity limits are as follows -

%	SiO_2	Al_2O_3	Fe_2O_3	TiO_2	CaO	P
Simetal	99 5	0 10	0 05	0 003	0 01	0 005
50% FeSi	99 0	0 40	not critical	0 02	0 10	0 005

The physical specifications which include lump size & resistance to depreciation demand fresh unweathered rock capable of standing temperatures of up to 1000°C without serious disintergration

Index to Sheets

SHEET 1 | SHEET 2

For LEGEND see Sheet 2

5 cm

136017

Aberfoyle Exploration

Geology	A J Moyle
Drawn	R J E
Traced	R J E
Checked	
Revised by	Date

NORTH WEST TASMANIA 1371

SMITHTON E.L.18/78

GEOLOGICAL MAP

79-1386

Location code	
Date	July, 1979
Scale	1 50,000
Plate No	Smtn 6 A

145° 00'

145° 10'

40° 40'

40° 50'

ROBBINS ISLAND

SHIPWRECK POINT

PERKINS ISLAND

PERKINS BAY

Big Bay

Duck Bay

ANTHONY BEACH

Montagu

SMITHTON

Mella

Broadmeadows

Scotchtown

Irishtown

Nabageena

Eurebia

Edith Creek

Christmas Hill

Britton's Swamp

MT LILEAH

SMITHTON AIRFIELD

Abandoned

Barcoo Creek

Formans Creek

Tram Creek

OLD RAILWAY FORMATION

HIGHWAY

BASS

DUCK RIVER

Coventry Creek

Fixters Creek

Allen River

Abandoned

Alluvial sand

4000 N

5600 S

DDH 1

NRK 47

NRK 54

NRK 45

NRK 77

Tb

Q

Q-T

pC

pC dolm

pC dolm Holocene cover

Quarry

NICKELTON MINING CO. PTY. LTD ON E.L.4/71

Used I.P., Magnetic & S.P. Surveys on grid at Montagu and an Aeromag. survey over whole of E.L. 4/71

Grid surveys concentrated near pC dolomites & € volc. sequence → Mag. & S.P. surveys were conducted. Mag. anomalies reflect spilite horizons.

I.P. delineated a zone → completely blind & lies to W of known sulphides - strike length 2400 ft but may not be continuous.

Drilled 1 DDH at 1647 N, 2700 W inclined at 45° W - rod depth 700 ft

- showed interbedded siltstones & mudstones - some shearing was encountered between 580-610 ft. & 670-683 ft.
- no mineralisation of economic significance was intersected & the only traces of sulphides intersected was syngenetic pyrite in the joint planes
- this would have been sufficient to give rise to reported I.P. effects therefore they may have been caused by salt water from the tidal estuary areas seeping into joint planes.

GEOLOGY The gridded are was focussed on due to discovery of massive hematite goethite in the bed of Montagu River associated with pyrite in the € mudstone. The area is the E limb of large regional anticline and dips 45° to E at DDH 1

STRATIGRAPHIC SUCCESSION

Greywacke siltstone
magnet → Upper spilite
Mudstone → tuffaceous
Lower spilite
Volcanic breccia
Siltstone
Smithton dolomite

CHROMITE AREA NEAR MONTAGU SWAMP

- known deposits occur about 5 Km. S of this E.L. area, in E.L 5/68 & SPL 142
- discovered prior to 1955
- tested by Quest Mining & Exploration N.L. to determine mode of occurrence of deposit & any extensions

Chromite bearing deposits are gravels deposited on a low relief surface & subsequently eroded by the present streams so that only remnants situated on the top of flanks & ridges remain.

- the gravels consist almost entirely of rounded qtz & qtzite pebbles which range up to 2" in diameter
- may have been some erosion and redeposition and also some sorting

The main rivers flowed northward in Pleistocene times from the country east of Mt. Balfour and to the S of the present Arthur & Franklin rivers. There are tin deposits at Balfour & intrusions of ultrabasic rocks, the source of chromite in the general area (T.D.Hughes) Alluvial deposits are generally found near junction of Smithton Dolomite & overlaying € formations (P.B.Nye)

GRADE OF DEPOSITS

Sample R294 was collected from a chromite-rich layer in the wash and was partially concentrated. Results from raw sample R 294 :-

Cr_2O_3 = 10·28 % ∴ Cr = 7·04 %

Sn = 0·0258 % = 258 ppm

Cr / Fe ratio = 2·75

Sample R292 taken at same spot ie. 5 miles from highway
Raw sample Cr / Fe = 2·33 ie metallurgical grade

Cr_2O_3 % = 1·55

Samples vary as much in one position for tin & rutile as they do for different positions. Chromite itself is not conc. at bottom of wash & occurs throughout.

Material could be handled by ground sluicing

— LEGEND —

- Exploration Licence boundary (500 m Offshore)
- Major Road
- Minor Road
- Railway / Tram
- Drains
- River / Creek
- Trig station
- Building
- Cemetery
- State Reserve boundary

QUARTERNARY	Q	Alluvium, sand dunes, gravel & talus
UNDIFFERENTIATED QUARTERNARY-TERT.	Q / T	
TERTIARY	T	Undifferentiated marine & non marine sequences
	Tb	Basalt & related igneous rock types eg spilites
CAMBRIAN	€	€ unfossiliferrous usually greywacke turbidite sequence
	€	Mid → Upper € fossiliferrous usually greywacke turbidite sequence
	€	Basic-intermediate volcanic & associated rocks dominant
PRECAMBRIAN	pC dolm.	Smithton dolomite
	p.C.	Undifferentiated siltstones, slates & quartzites

- Geological boundary
- DDH Diamond drill hole
- Aeromagnetic anomalies
- 30 Dip & strike

Index to Sheets

SHEET 1 | SHEET 2

5 cm

Kilometre 1 0·5 0 1 2 3 4 Kilometres

136018

79-1386

Aberfoyle Exploration

~~72-869~~

Geology:	A.J. Moyle
Drawn:	R.J.E.
Traced:	R.J.E.
Checked:	
Revised by:	Date:

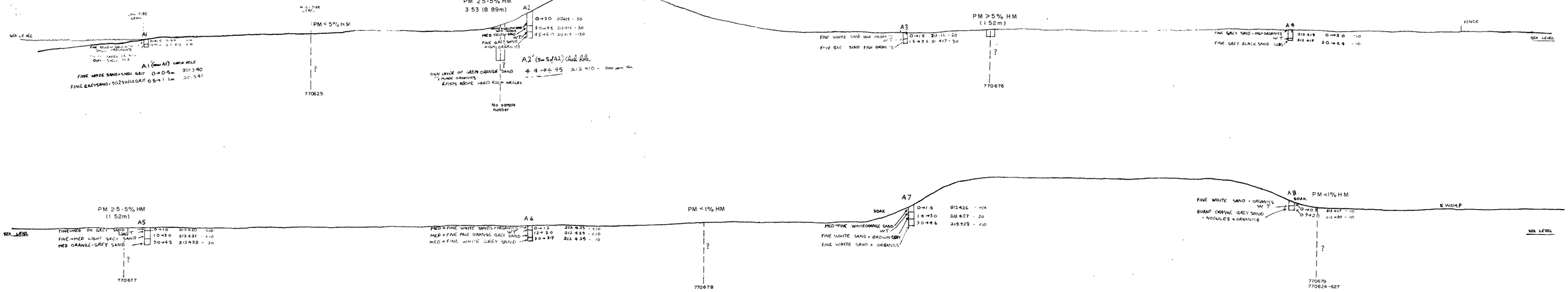
NORTH WEST TASMANIA 1372

SMITHTON E.L. 18/78

GEOLOGICAL MAP

Location code:	
Date:	July, 1979
Scale:	1:50,000
Plate No	Smtn. 6B

E



PM 2.5-5% HM
3.5 (8.89)

Hole position

Total depth unknown

Sample No 756894

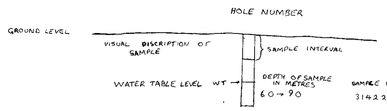
PM - PICKANDS MATHER
2.5-5% HM - HEAVY MINERAL PERCENTAGE
3.5 - CONCENTRATION OVER A RECORDED DEPTH
(8.89m) - RECORDED DEPTH
NR - Not Recorded

W ←——→ E

5cm

136019

LEGEND



NOTE: 1. GROUND LEVEL SKETCHES ARE VISUAL ESTIMATES ONLY

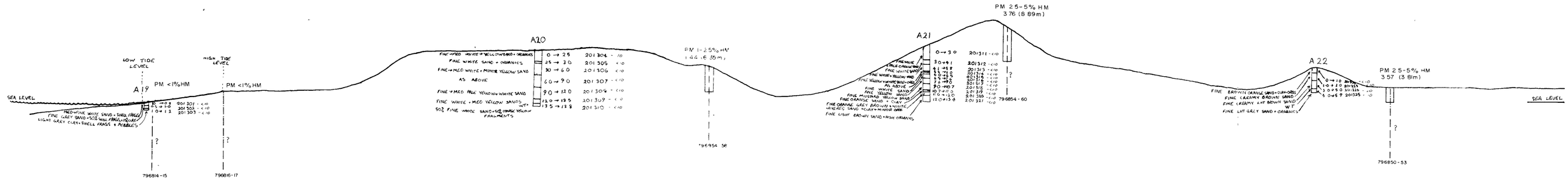
2. EXACT POSITION OF SAMPLE HOLES IS SHOWN ON AERIAL PHOTOGRAPH T507-53 NORTH WEST PROJECT 1803 RUN 19

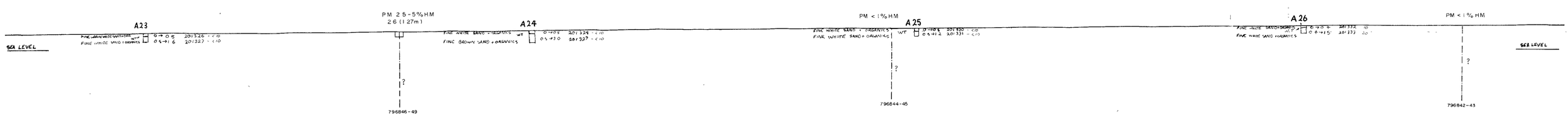
Aberfoyle Exploration Pty Ltd

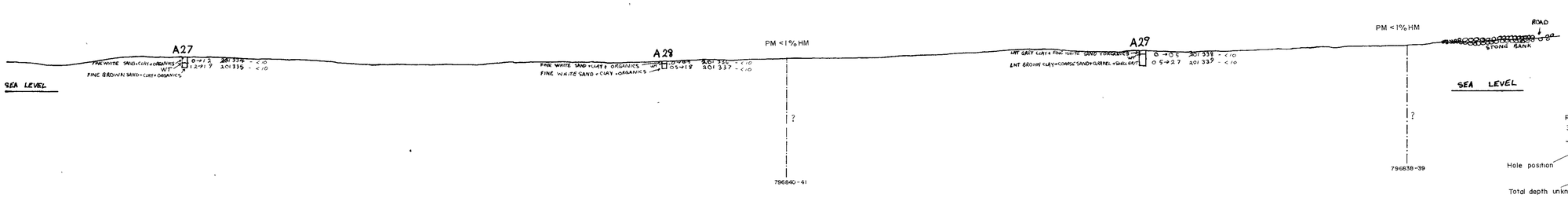
79-1386

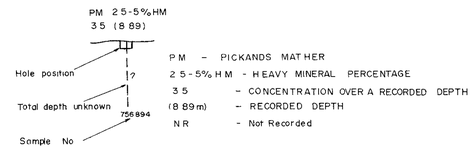
Geology AJM WEM	NORTH WEST TASMANIA 1373	Location code
Drawn AJM	SMITHTON E.L. 18/78	Date 5→12/1/79
Traced	ANN BAY - MARRAWAH BEACH	Scale 1:500
Checked	LINE S1	Plate No SMTN 7
Revised by Date	NO VERTICAL EXAGGERATION	

W









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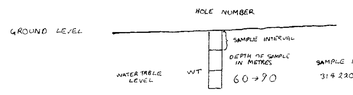


NOTE: 1. GROUND PROFILE SKETCHES ARE VISUAL ESTIMATES ONLY

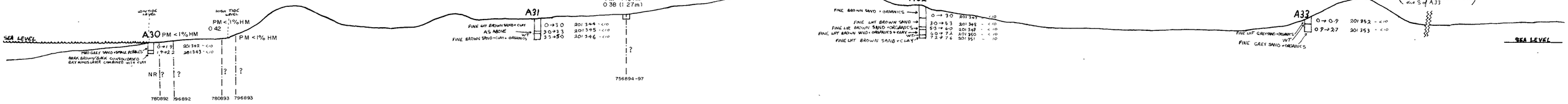
5 cm

136020

Aberfoyle Exploration Pty Ltd

Geology AJM, WEM, CHH	NORTH WEST TASMANIA 1374
Drawn AJM	SMITHTON E.L. 18/78
Traced	ANN BAY – MARRAWAH BEACH
Checked	LINE S2
Revised by Date	NO VERTICAL EXAGERATION 79-1386
Location code	
Date 12→19/1/79	
Scale 1:500	
Plate N° SMTN 8	

W



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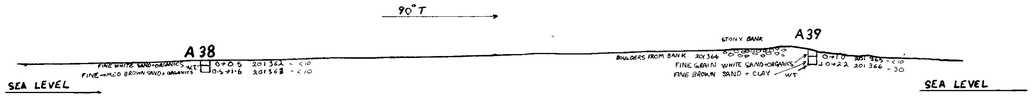

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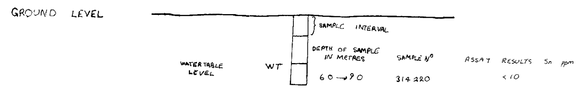
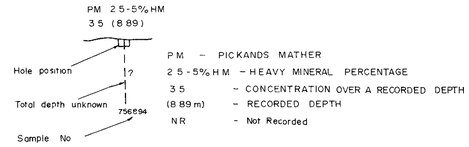
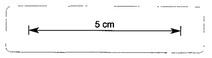


NOTE : GROUND PROFILE SKETCHES ARE VISUAL ESTIMATES ONLY.





136021

Aberfoyle Exploration Pty Ltd

79-1386

Geology CJH WEM	NORTH WEST TASMANIA 1375	Location code
Drawn AJM	SMITHTON E.L. 18 / 78	Date 19→23/1/79
Traced	ANN BAY – MARRAWAH BEACH	Scale 1 500
Checked	LINE S3	Plate No SMTN 9
Revised by Date	NO VERTICAL EXAGGERATION	