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FINAL REPORT

ON

SCAMANDER H.M. BEACH SAND PROSPECT,  
SCAMANDER, TASMANIA.  
S.P.L. NO. 39.

BY

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MICROFILMED

9TH FEBRUARY, 1968.

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ILLUSTRATIONS

<u>FIGURE</u> <u>No.</u>	<u>DESCRIPTION</u>	<u>SCALE</u>
1	Locality Plan	1" = 8 miles.
2	Plan of S.P.L. No. 33 showing sampling localities.	1" = 2,000 feet.

INTRODUCTION

Interest was developed in the potential of the beach sands at Scamander, Tasmania, after an initial sample showed that there was a possibility of economic sands being present. The grade indicated was 1.31% zircon, 0.57% monazite, 0.57% garnet and 2.36% ilmenite (with a low chrome content), the main interest here being the associated monazite content.

A 14 mile stretch of beach and coastal dunes was secured, as an S.P.L., and a reconnaissance exploration programme was carried out during November, 1967. The details of this programme have been described in two previous reports by the writer, entitled "Proposed Exploration Programme and Cost Estimates" dated 13th October, 1967, and "Preliminary Report on Scamander H.M. Beach Sand Prospect, Tasmania" dated 30th November, 1967.

Altogether 161 beach sand samples were collected during the field work and submitted to AMDEL for H.M. determinations. The preliminary results of the determinations were received on the 30th January, 1968. Although the final report on the analyses has not yet arrived from Adelaide, the few outstanding results will make no difference to the conclusions reached.

EXPLORATION PROGRAMME

The exploration programme was aimed at sampling the 14 mile beach strip covered by the S.P.L. on lines at one mile spacings (Fig.2). It became obvious during the field work that the H.M. beach sand potential was greatest in a three mile beach section centred around the Scamander River outlet, and that the large dunes towards St.Helens Point had a very low H.M. fraction. Consequently, a greater density of sampling was carried out in the Scamander section (Fig.2).

A total of 19 sampling lines was run over the 14 mile coastal stretch and 67 hand drilled holes along these lines, totalled 793 feet. In addition, 3 samples of sand were collected on the beach at Seymour, situated 20 miles south of Scamander, because of the dark nature of this sand. Altogether 161 samples were collected and submitted to AMDEL for H.M. determination for all samples, and a grain count for ilmenite, zircon, monazite, rutile, garnet, cassiterite and others for all those samples, which contained in excess of 1% H.M. fraction.

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The sampling programme only tested the sands to the water table except on Line 2 where material was obtained up to 10 feet below this level.

The original cost estimate for the programme was \$3,000 with provision for a further \$1,000 if fully implemented. This figure was based on direct costs only so that the overall cost could be around \$5,000.

### PHYSIOGRAPHY

The landform around Scamander is dominated by about one mile of undulating coastal plain, and then rises abruptly to about 1500 feet with the formation of the Scamander Tier. The coast consists of recent beach sands backed by variable fixed dunes. In the southern part of the area the dunes extend from 200 to 400 feet back from the beach and are about 20 feet above the water table, whereas in the northern area they are up to 1000 feet from the beach and 50 feet high. Behind the dunes swampy areas and lagoons have developed. The Scamander River traverses the coastal plain by a rather tortuous course and has its outlet to the sea at Scamander. It is quite possible that the outlet has been situated elsewhere over the passage of years.

The coastal plain is underlain by Mathinna Group sediments (sandstones, shales, slates etc.) while the Tier country is made up of Mathinna sediments and occurrences of massive red and grey granites of Devonian age.

The coastal sand dunes are all of typically wind blown origin and consist of clean fine to medium grained sands with occasional organic and coarse shell seams. Black sands are showing on the beach south of the Scamander River outlet and are clearly derived from a narrow 18" (approximately) seam located near the water table.

### RESULTS

An examination of the mineral constituents of the H.M. fractions reveals that the possible economic content consists of zircon, rutile, garnet and opaques which contains 90% + ilmenite. The non-economic content consists of pigeonite, tourmaline, spinel, clinopyroxene, orthopyroxene, green amphibole, topaz and a few grains of epidote. A very notable

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omission in the analysis is the absence of monazite, which was quoted as being present in the original sample. It has now been recognised by A.M.D.E.L. that the monazite was wrongly identified, and that the mineral was in fact, pigeonite, an uneconomic pyroxene.

An analysis of the results shows that 47 or 30% contain 1% H.M. or better. When the values are averaged on their respective lines, then of the 19 lines sampled 7 or 36% averaged above 1% H.M. and these lines all occur south of Diana's Basin (Fig.2 and Appendix).

Closer spaced sampling in the three mile section centred around the Scamander River outlet located three small areas where the H.M. fraction was appreciably higher (Fig.2). The potential of these areas is:-

<u>Area</u>	<u>Tonnage</u> <u>(to Water Table)</u>	<u>% H.M.</u>	<u>Grade</u>
I	150,000	1.78	0.22% zircon, 0.72% ilmenite
II	100,000	1.60	0.20% " , 0.80% "
III	125,000	1.64	0.22% " , 0.84% "

Hence the best grade of the economically interesting minerals present is likely to be about 1.70% H.M. containing 0.20% zircon and 0.80% ilmenite.

Three samples collected at Seymour about 20 miles south of Scamander had rather similar mineral constituents to the Scamander samples.

ECONOMIC CONSIDERATIONS

On current operations, it would appear that an economic grade is 0.5% combined rutile and zircon. The present f.o.b. prices are as follows:-

Rutile	\$85 per ton
Ilmenite	\$ 8 per ton
Zircon	\$40 per ton
Monazite	\$135 per ton

Applying the above proportions to the indicated best areas outlined at Scamander, implies that the economic grade would

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need to be 3-4% H.M. containing 2.80% ilmenite and 0.22% zircon. This means that while the zircon content is suitable the ilmenite content would need to be  $3\frac{1}{2}$  times the indicated grade.

In addition to the below economic grade aspect, the total tonnage of the three areas outlined is only about 375,000 tons. Even the addition of sands below the water table and the possibility of other small areas would not increase this tonnage to say more than 1,000,000 tons.

However, if the sands had contained even as much as 0.10% monazite (0.57% suggested in the original sample) then with the existing grades of 0.80% ilmenite and 0.20% zircon the Scamander Prospect would have warranted a more detailed examination.

The aspect of potential below the water table does not look encouraging. Observations during field work suggested bedrock at about 20 feet below the sands. This would need to grade at 4.3% ilmenite or better and the chances of this appear to be slight.

#### CONCLUSIONS

A reconnaissance exploration programme was carried out to ascertain the potential of the Scamander Beach Sand Prospect. The initial enthusiasm for the Prospect was based on the results of one sample, which showed the presence of monazite.

Subsequent analytical work by A.M.D.E.L. on the samples collected during the field work showed that a mistake had been made in the original analytical work and that the previously identified monazite was, in fact, pigeonite an uneconomic pyroxene.

The results of the field work showed that the likely grade of best areas would only be around 0.80% ilmenite and 0.22% zircon. The ilmenite grade is about  $3\frac{1}{2}$  times too low for economic consideration. The sands were only tested to the water table, but the prospects below this do not appear great.

#### RECOMMENDATIONS

1. That no further work be carried out for beach sand

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prospecting in S.P.L. 33, and the S.P.L. be relinquished.

2. Any future exploration programme of this nature is based on the results of at least 3 samples submitted to two independent analytical organisations.

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12th February, 1968.

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APPENDIX 1.

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ANALYSES OF SCAMANDER BEACH SAND SAMPLES.

WORK UNDERTAKEN BY AMDEL.

Hole No.	Sample No.	Depth	% H.M.	Zir.	Rut.	Gar.	Opq.	Average H.M.
3/1	AA2551	0-5'	0.90					0.90%
3/2	2	0-5'	0.85					) 1.51%
	3	5'-10'	0.90					
	4	10'-15'	3.40	0.12	0.01	0.33	2.07	
	5	15'-17'	0.90					
3/3	6	0-5'	0.75					) 1.12%
	7	5'-10'	1.30	0.30	0.01	0.24	0.52	
	8	10'-15'	1.30	0.15	0.01	0.16	0.46	
4/1	9	0-2'6"	0.90					0.90%
4/2	60	0-5'	1.65	0.06	0.008	0.25	0.31	) 1.20%
	1	5'-10'	1.35	0.30	0.01	0.26	0.49	
	2	10'-13'	0.60					
4/3	3	0-5'	0.90					) 0.60%
	4	5'-10'	0.60					
	5	10'-15'	0.30					
5/1	6	0-4'	0.85					0.85%
5/2	7	0-5'	1.05	0.16	0.01	0.21	0.28	) 1.30%
	8	5'-10'	1.05	0.11	0.01	0.18	0.35	
	9	10'-15'	2.00	0.52	.01	0.26	0.83	
	70	15'-16'	0.55					
5/3	1	0-5'	2.40	0.11	0.01	0.49	0.71	) 2.20
	2	5'-10'	1.65	0.08	0.01	0.21	0.42	
	3	10'-11'	1.95	0.37	0.02	0.26	0.55	
2/1	4	0-3'	0.10					0.11%
2/2	5	0-5'	0.35					) 0.23%
	6	5'-10'	0.15					
	7	10'-15'	0.20					
2/3	8	0-5'	0.70					) 0.55%
	9	5'-10'	0.40					
2/4	80	0-5'	0.25					0.25%
2/5	81	0-5'	0.50					) 0.47%
	2	5'-10'	0.45					
3B/1	3	0-5'	1.50	0.13	-	0.14	0.41	1.50%
3B/2	4	0-5'	0.80					) 1.01%
	5	5'-10'	0.75					
	6	10'-15'	0.85					
	7	15'-19'	1.60	0.16	-	0.17	0.80	
3B/3	8	15'-20'	0.95					) 0.93%
	9	20'-23'	0.90					
1/1	90	0-5'	1.20	0.08	-	0.14	0.40	1.20%
1/2	1	0-5'	0.45					) 0.63%
	2	5'-10'	0.90					
	3	10'-15'	0.55					

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Hole No.	Sample No.	Depth	% H.M.	Zir.	Rut.	Gar.	Opq.	Average H.M.
1/3	AA2594	0-5'	1.15	0.12	-	0.22	0.27	) 0.92%
	5	5'-10'	1.15	0.10	-	0.25	0.23	
	6	10'-15'	0.80					
	7	15'-20'	0.55					
	8	20'-23'	0.95					
1/4	9	0-5'	1.65	0.29	-	0.25	0.30	) 1.10%
	2600	5'-9'	0.55					
3A/1	1	0-5'	0.90					0.90%
3A/2	2	0-5'	1.15	0.22	-	0.17	0.37	) 2.80%
	3	5'-10'	4.90	0.37	-	0.56	2.85	
	4	10'-12'	1.60	0.16	-	0.18	0.68	
6/1	5	0-5'	1.45	0.09	-	0.18	0.41	1.45%
6/2	6	0-5'	0.25					) 1.33%
	7	5'-10'	2.65	0.15	-	0.44	0.53	
	8	10'-15'	1.25	0.13	0.01	0.16	0.33	
	9	15'-17'	0.95					
6/3	10	0-5'	1.60	0.08	-	0.26	0.34	1.60%
6/4	11	0-5'	1.55	0.24	0.01	0.25	0.51	) 1.19%
	12	5'-10'	0.75					
	13	10'-15'	1.00	0.12	0.01	0.15	0.22	
	14	15'-20'	1.40	0.36	0.02	0.22	0.50	
7/1	15	0-5'	0.55					0.55%
7/2	16	0-5'	0.55					) 0.57%
	17	5'-10'	0.60					
	18	10'-15'	0.50					
	19	15'-19'	0.65					
7/3	20	0-5'	1.00					) 0.68%
	21	5'-10'	0.85					
	22	10'-15'	0.70					
	23	15'-20'	0.50					
	24	20'-23'	0.35					
8/1	25	0-8'	-					0.0%
8/2	26	0-5'	0.35					) 0.25%
	27	5'-10'	0.40					
	28	10'-15'	-					
	29	15'-18'	0.25					
8/3	30	0-5'	0.55					) 0.50%
	31	5'-10'	0.45					
8/4	32	0-5'	0.65					) 0.40%
	33	5'-10'	0.65					
	34	10'-14'	0.30					
8/5	35	0-8'	0.45					0.45%
9/1	36	0-4'	-					0.0%
9/2	37	0-5'	0.25					) 0.20%
	38	5'-8'	0.15					
9/3	39	0-5'	0.40					) 0.20%
	40	5'-7'	-					
9/4	41	0-5'	0.30					) 0.40%
	42	5'-10'	0.40					
	43	10'-12'	0.50					

Hole No.	Sample No.	Depth	% H.M.	Zir.	Rut.	Gar.	Opq.	Average H.M.
9/5	AA2644	0-5'	0.20					) 0.29%
	45	5'-10'	0.25					
	46	10'-15'	0.20					
	47	15'-20'	0.50					
9/6	48	0-10'	0.25					) 0.12%
	49	10'-20'	-					
	50	20'-24'	0-10					
11/1	51	0-5'	0.15				0.15%	
11/2	52	0-5'	0.50					) 0.38%
	53	5'-10'	0.30					
	54	10'-12'	0.35					
11/3	55	0-4'	0.45				0.45%	
11/4	56	0-5'	0.25					) 0.24%
	57	5'-10'	0.20					
	58	10'-15'	-					
	59	15'-20'	0.50					
11/5	60	0-5'	0.20					) 0.21%
	61	5'-10'	0.15					
	62	10'-15'	0.10					
	63	15'-20'	0.15					
	64	20'-29'	0.45					
11/6	65	0-5'	0.10					) 0.10%
	66	5'-10'	0.10					
	67	10'-15'	-					
	68	15'-20'	0.15					
3B1/1	2669	0-6'	0.50				0.50%	
3B1/2	70	0-10'	1.00	0.10	-	0.14	0.40	) 0.40%
	71	10'-15'	1.25	0.17	-	0.19	0.39	
3B1/3	72	0-10'	0.95					) 0.40%
	73	10'-14'	1.60	0.19	-	0.15	0.82	
3B2/1	74	0-5'	1.15	0.23	-	0.14	0.48	1.15%
3B2/2	75	0-10'	0.85					) 0.80%
	76	10'-14'	0.75					
3B2/3	77	0-10'	1.05	0.10	-	0.15	0.34	) 1.8%
	78	10'-16'	3.10	0.23	0.04	0.29	1.80	
3B2/4	79	0-5'	1.40	0.18	-	0.16	0.44	) 2.9%
	80	5'-8'	6.65	0.70	-	0.75	3.86	
	81	8'-10'	0.95					
3B2/5	82	0-11'	0.65				0.65%	
3B2/6	83	0-8'	0.60				0.60%	
3A1/1	84	0-8'	0.60				0.60%	
3A1/2	85	0-9'	1.10	0.07	-	0.16	0.32	1.1%
3A1/3	86	0-5'	0.30				0.3%	
3A2/1	87	0-8'	0.85				0.85%	
3A2/2	88	0-10'	-					) 0.60%
	89	10'-14'	1.20	0.23	-	0.13	0.58	
3A2/3	90	0-9'	0.60				0.60%	

Hole No.	Sample No.	Depth	% H.M.	Zir.	Rut.	Gar.	Opg.	Average H.M.
2A1/2	AA2691	0-10'	1.50	0.19	-	0.22	0.53	) 1.50%
	92	10'-15'	1.55	0.20	-	0.20	0.50	
	93	15'-17'	1.65	0.18	-	0.10	0.67	
2A1/1	94	0-5'	2.15	0.17	-	0.20	1.11	) 2.30%
	95	5'-8'	2.55	0.16	-	0.20	1.32	
2A1/3	96	0-8'	1.55	0.16	-	0.22	0.53	) 1.82%
	97	8'-15'	2.10	0.40	-	0.18	0.82	
2A2/1	98	0-10'	0.85					) 0.60%
	99	10'-14'	-					
2A2/2	2700	0-8'	1.00	0.10	-	0.13	0.37	) 0.80%
	1	8-10'	-					
X <sub>1</sub>	2	0-10'	0.55					) 0.70%
	3	10'-12'	1.60	0.15	-	0.18	0.74	
X <sub>2</sub>	4	0-14'	0.95					) 0.90%
	5	14'-17'	0.70					
S <sub>1</sub>	6	1'0"	6.95	0.72	-	0.43	4.30	6.95%
S <sub>2</sub>	7	2'0"	2.00	0.12	-	0.20	1.02	2.00%
S <sub>3</sub>	8	4'0"	2.75	0.20	-	0.45	0.90	2.75%
SM <sub>1</sub>	9	3'0"	5.30	0.14	-	0.50	0.38	5.30%
SM <sub>2</sub>	10		2.2	0.05	-	0.15	0.10	2.35%
SM <sub>3</sub>	11		5.00	1.2	0.03	0.48	1.10	5.0%

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## APPENDIX II.

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## GRADE ESTIMATION - SCAMANDER H.M. BEACH SAND.

Line	Hole No.	Depth	% H.M.	Product	Grade				Average H.M.
					Zircon	Rutile	Garnet	Opaques	
3	3/1	5'	0.90	4.50					
	3/2	17'	1.51	25.67					
	3/3	15'	1.12	16.80					
		37'		46.97					1.30%
4	4/1	2½'	0.90	2.25					
	4/2	13'	1.20	15.60					
	4/3	15'	0.60	9.00					
		30½'		26.85					0.80%
5	5/1	4'	0.85	3.40					
	5/2	16'	1.30	20.80	0.26	0.01	0.21	0.49	
	5/3	11'	2.20	24.20	0.12	0.01	0.43	0.65	
		31'		48.40					1.56%
2	2/1	3'	0.11	0.33					
	2/2	15'	0.23	3.45					
	2/3	10'	0.55	5.50					
	2/4	5'	0.25	1.25					
	2/5	10'	0.47	4.70					
		43'		15.23					0.35%
3B	3B/1	5'	1.50	7.50	0.13	-	0.14	0.41	
	3B/2	19'	1.01	19.19					
	3B/3	23'	0.93	31.39					
		47'		58.08					1.23%
1	1/1	5'	1.20	6.00	0.08	-	0.14	0.40	
	1/2	15'	0.63	9.45					
	1/3	23'	0.92	21.16					
	1/4	9'	1.10	9.90					
		52'		46.51					0.90%
3A	3A/1	5'	0.90	4.50	0.13	-	0.14	0.41	
	3A/2	12'	2.80	33.60	0.27	-	0.33	1.45	
		17'		38.10	0.22	-		1.14	2.24%
6	6/1	5'	1.45	7.25	0.09	-	0.18	0.41	
	6/2	17'	1.33	22.61					
	6/3	5'	1.60	8.00	0.08	-	0.26	0.34	
	6/4	20'	1.19	23.80	0.24	-	0.21	0.41	
		47'		61.66					1.31%
7	7/1	5'	0.55	2.75					
	7/2	19'	0.57	10.83					
	7/3	23'	0.68	15.64					
		47'		29.22					0.62%
8	8/1	5'	0.0	0					
	8/2	18'	0.25	4.50					
	8/3	10'	0.50	5.00					
	8/4	14'	0.40	5.60					
	8/5	8'	0.45	3.60					
		55'		18.70					0.34%
9	9/1	4'	0	0					
	9/2	8'	0.20	1.60					
	9/3	7'	0.20	1.40					
	9/4	12'	0.40	4.80					
	9/5	20'	0.29	5.80					
	9/6	24'	0.12	2.88					
		75'		16.48					0.22%

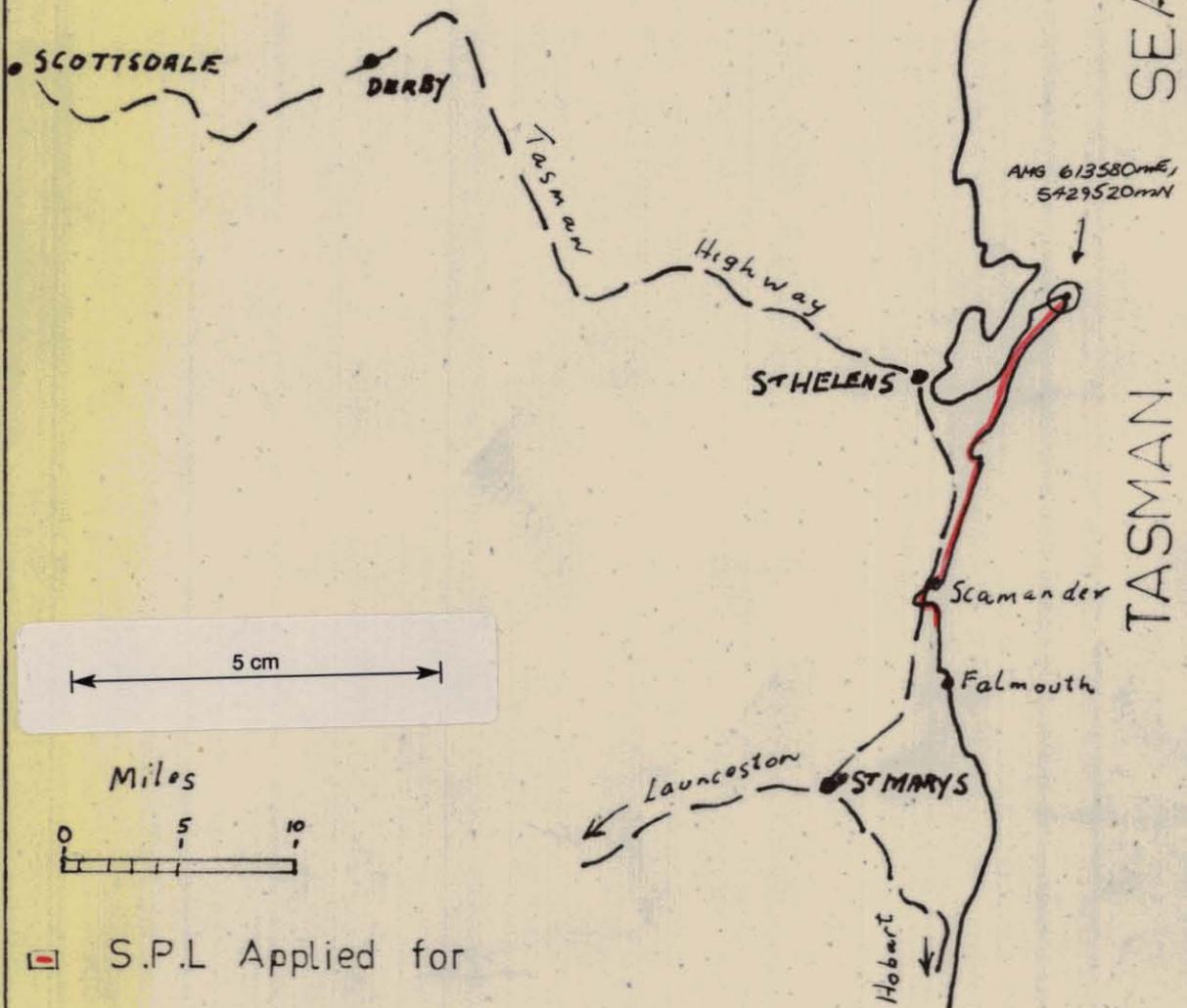
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Line	Hole No.	Depth	% H.M.	Product	Grade				Average H.M.
					Zircon	Rutile	Garnet	Opaques	
11	11/1	5'	0.15	0.75					
	11/2	12'	0.38	4.56					
	11/3	4'	0.45	1.80					
	11/4	20'	0.24	4.80					
	11/5	29'	0.21	4.49					
	11/6	20'	0.10	2.00					
		90'		18.40					0.20%
3B <sub>1</sub>	3B1/1	6'	0.50	3.00					
	3B1/2	15'	0.40	6.00	0.14	-	0.16	0.40	
	3B1/3	14'	1.1	15.10					
		35'		24.10					0.70%
3B <sub>2</sub>	3B2/1	5'	1.15	5.75	0.23	-	0.14	0.48	
	3B2/2	14'	0.80	11.20					
	3B2/3	16'	1.80	28.80	0.15	-	0.20	0.90	
	3B2/4	10'	2.90	29.0	0.33	-		1.45	
	3B2/5	11'	0.65	7.15					
	3B2/6	8'	0.60	4.80					
		64'		86.70					1.35%
3A <sub>1</sub>	3A1/1	8'	0.60	4.80					
	3A1/2	9'	1.10	9.90	0.07	-	0.16	0.32	
	3A1/3	5'	0.30	1.50					
		22'		16.20					0.74%
3A <sub>2</sub>	3A2/1	7'	0.85	5.95					
	3A2/2	10'	0.60	6.00					
	3A2/3	9'	0.60	5.40					
		26'		17.35					0.66%
2A <sub>1</sub>	2A1/1	8'	2.30	18.40	0.17	-	0.20	1.19	
	2A1/2	17'	1.50	25.50	0.19	-	0.20	0.55	
	2A1/3	15'	1.82	27.30	0.28	-	0.20	0.68	
		40'		71.20	0.22	-	0.20	0.72	1.78%
2A <sub>2</sub>	2A2/1	14'	0.60	8.40					
	2A2/2	10'	0.80	8.00					
		24'		16.40					0.70%
X	X <sub>1</sub>	12'	0.70	8.40					
	X <sub>2</sub>	17'	0.90	15.30					
		29'		23.70					0.80%

013

# BASS STRAIT

AMG 556450mE,  
5480720mN



NEW CONSOLIDATED GOLD FIELDS (AUST) PTY LTD

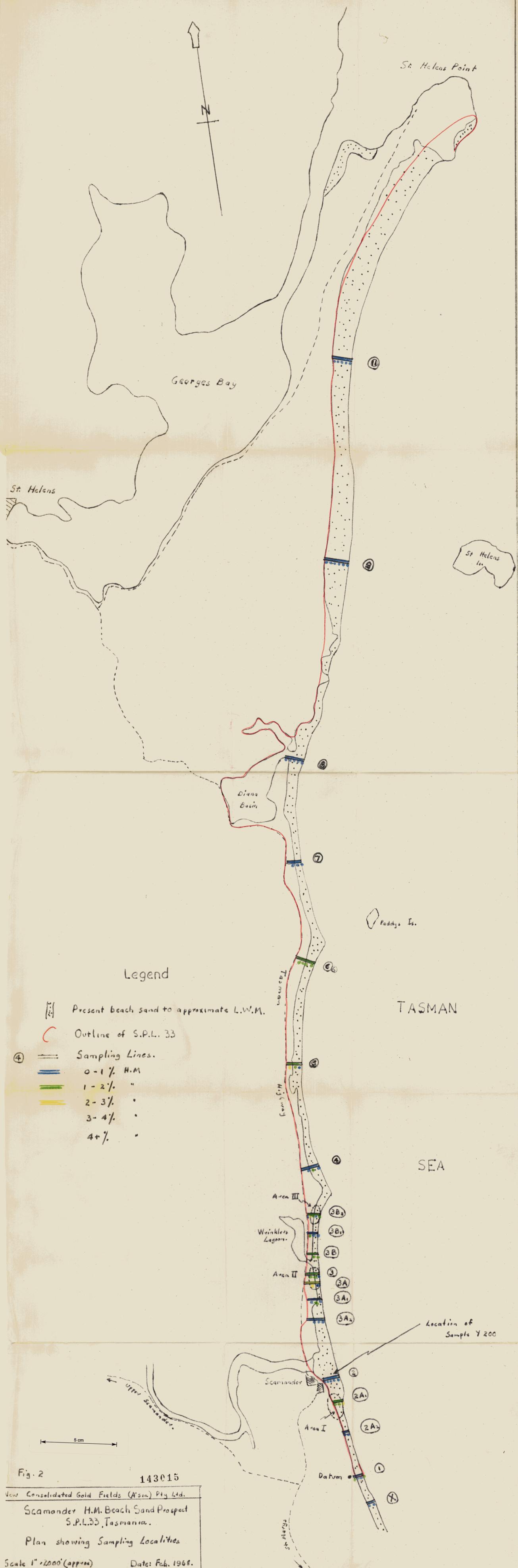
Scamander Beach Sands Prospect TAS

Fig. 1. Locality Plan.

Date 22 8 67

AMG REFERENCE POINTS ADDED

L.S.D.



Legend

- Present beach sand to approximate L.W.M.
- Outline of S.P.L. 33
- Sampling Lines.
- 0-1% H.M.
- 1-2% "
- 2-3% "
- 3-4% "
- 4+%

TASMAN

SEA

Location of Sample Y 200

5cm

Fig. 2

143015

New Consolidated Gold Fields (Asia) Pty Ltd.  
 Scamander H.M. Beach Sand Prospect  
 S.P.L. 33, Tasmania.  
 Plan showing Sampling Localities  
 Scale 1" = 2000' (approx) Date: Feb. 1968.  
 A.S.P.