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REPORT NO 3/90

E.L. 45/86 Tasmania

Annual Report on Exploration Completed on
King Island to 17/4/90

Prepared for National Mineral Sands Pty. Ltd.

G. Lee
March, 1990

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DISTRIBUTION

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S Y N O P S I S

1. AIM

To investigate the potential for mineral sand occurrences in the north-eastern areas of King Island near Counsel Hill.

2. REASON

During the past four years the demand for mineral sand products has outstripped the supply available from current production areas. As a consequence significant price rises have occurred in the mineral sand commodities - rutile, leucoxene, ilmenite (all TiO_2 raw materials), zircon and monazite.

King Island has a previous history of mineral sand production from the Naracoopa area on the east coast. This area is currently being examined by the title holder to fully determine the available resources. As well the area adjacent to Cowper Point is being investigated by the Company. Exploration within E.L. 45/86 is directed towards locating resources which would supplement those at Naracoopa and Cowper Point in order to extend the life of a mining operation.

3. SUMMARY & CONCLUSIONS

- 3.1 E.L. 45/86 covers 50 km² on the east coastal areas of King Island near Counsel Hill.
- 3.2 As a result of work undertaken during the early years of the licence a large part of the licence on the west and north coasts of King Island was relinquished.
- 3.3 Drillhole samples were subjected to laboratory heavy mineral separation.

- 3.4 Aerial photography at 1:16000 scale was obtained during April 1989. A revised air photo interpretation was prepared and is included as Figure 3.
- 3.5 Drillhole samples were subjected to laboratory heavy mineral separation.
- 3.6 Heavy mineral contents are tabulated along with drillhole logs in Appendix 1.
- 3.7 Three east-west traverse lines were completed to the east of Counsel Hill, during 1988/89. Part of the drilling was by reverse circulation and part by hand auger and cased sludging.
- 3.8 All three traverse lines in the Counsel Hill area extend to the eastern boundary of the licence.
- 3.9 Mineralogical determinations were made on composited sections of each drill traverse line.
- 3.10 The heavy mineral concentrations on MC Line-1 extend east almost to Saltwater Creek.
- 3.11 MC Line-2 and MC Line-3 contain uneconomic grades.
- 3.12 Recent investigations have shown that the Counsel Hill strandline system is a series of discontinuous sand bodies between granite outcrops and headlands.
- 3.13 Examination of the air photographs indicate a number of prospective targets for small high grade concentrations.
- 3.14 An order of magnitude resource estimate for the MC Line-1 area is 3 million tonnes of sand containing 90 thousand tonnes of heavy mineral.

4. RECOMMENDATION

A fire in November, 1988 has devastated the Counsel Hill area. It is recommended that drilling on four (4) additional traverse lines be carried out as soon as possible to take advantage of the reduced vegetation in the area.

Detail of the programme estimated to cost \$34,000 is set out in Section 11 of this report.

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R E P O R T

5. INTRODUCTION

National Mineral Sands Pty. Ltd. holds Exploration Licence 45/86, King Island, which was granted on 17th April, 1987 for a period of 12 months and has subsequently been renewed until 17/4/90.

In addition to E.L. 45/86 the Company holds title to E.L. 41/88 which adjoins to the south in the Cowper Point area and E.L. 28/85 in the vicinity of Naracoopa, as well as E.L. 44/86 located in the south of the island.

Exploration within E.L. 45/86 has been directed at locating additional resources of rutile, zircon, ilmenite, leucoxene and monazite bearing sands which could supplement the known resources within E.L. 28/85 and E.L. 41/88.

Exploration activities to the east of Counsel Hill have been confined to the strandline systems which are an extension of those at Cowper Point and in the Sea Elephant River area. These strandline systems are an extension of the mineralised Back Beach deposit (in E.L. 41/88) at Cowper Point. It is hoped that the mechanisms which formed the Naracoopa (E.L. 28/85) and Cowper Point (E.L. 41/88) deposits have continued to operate to the north.

Previous work in the Counsel Hill area had indicated the presence of a mineral sand body of unknown size contained in strandline deposits formed by beach processes along the former coastline.

6. TENEMENT INFORMATION

Exploration Licence 45/86 is held by National Mineral Sands Pty. Ltd. (formerly Butlers No. 27 Pty. Ltd.) and originally covered an area of 241 square kilometres on the northern end of King Island.

The area comprised 32 km² of Crown Land, 4 km² of private property. An area of 4 km² was excluded from the original application as it covered the Lavinia Nature Reserve.

Following exploration work carried out during the 12 months to 17/4/88 the licence was reduced to 185 km². An area of 56 km² was relinquished by the company as it was deemed unprospective following the initial work. The relinquished area occurs on the west coast of the island extending south from Quarantine Bay to just north of Little Porky Beach, see Figure 1.

Subsequent investigations have led to a further reduction of the E.L. by relinquishment of the northern areas of the licence. The application for renewal on 17/4/89 sought an area of 50 km² in the vicinity of Counsel Hill. Granting of this renewal application was delayed until February, 1990 in order to allow for a resolution of matters relating to a proposal to extend the Lavinia Nature Reserve into the licence area.

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7. AERIAL PHOTOGRAPHY

A single run of black and white aerial photographs were obtained over the prospective part of the exploration licence to the east of Counsel Hill. Details of the photography are:

Date flown: 15.4.89
Altitude: 2,400 m. ASL
Approximate Scale of Prints: 1:16,000
Job: T281
Photography By: Associated Surveys (Vic) Pty. Ltd.
P.O. Box 324
Hawthorn Vic 3122

The photographs clearly show the area affected by the November 1988 fire. As a consequence detail of geology is visible. Granite basement outcrops and strandline morphology are apparent in the area devoid of vegetation.

A photo interpretation of the prospective strandline area was made and is presented as Figure 3 of this report. The scale of these photographs at 1:16,000 allows a more detailed interpretation, compared to that achievable from previously available 1:42,000 scale photography. Figure 3 shows the most prospective sand bodies as relatively small targets between granite outcrops and near surface soil covered granitic basement.

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8. DRILLING

Two drilling techniques: hand boring and reverse circulation drilling have been used in the investigations which are the subject of this report. Details of drilling are recorded in the annual report for the year ended 17/4/89.

9. LABORATORY TESTING

9.1 Heavy Mineral Determination Procedure

All samples that were assayed for heavy minerals and recorded in this report were treated by the Tasmanian Mines Department, Metallurgical Laboratories, Launceston, using the procedure outlined below:

1. Dry sample as received.
2. Weigh and record dry weight.
3. Screen on a 2 mm coarse sieve to break up lumps.
4. Riffle split approximately 100 gm working sample.
5. Re-pack balance of sample.
6. Weigh working sample.
7. Screen on 1000 micron sieve and weigh plus 1000 micron fraction.
8. Caustic wash using a 2 percent NaOH solution, agitate and allow sand to settle.
 - 8.1 Decant NaOH solution, wash and decant with clean water in repeated steps until all NaOH is removed.
 - 8.2 Dry washed sample.
 - 8.3 Weigh washed and dried sample and calculate percentage lost as slimes during washing.
9. Using TBE, separate heavy minerals.
10. Dry and weigh heavy minerals.
11. Calculate heavy minerals as a percentage of the sample weighed in step 6 above.
12. Package heavies for despatch.

13. Record results for:
- . Dry weight of sample as received.
 - . Weight % of +1mm material
 - . Weight % slimes
 - . Weight % heavy minerals

9.2 Results of Heavy Mineral Determination

Heavy Mineral contents for individual samples are recorded against drill hole descriptive logs in Appendix 1. Also recorded where applicable on the drill hole logs are % slimes, % +1mm and dry weight of sample.

Copies of the laboratory results certificates are included as Appendix 2 of this report.

Test results included in this report were outstanding at the time of the previous annual report and relate to drilling described in that report.

9.3 Mineralogical Investigation

Mineralogical studies were carried out on bulk composites of heavy mineral. Composites were prepared by combining intervals both vertically and horizontally for a number of adjoining drill holes from areas containing significant heavy mineral, usually plus 1.5%, on a given traverse line.

For most composites the 1.2 amp Frantz non-magnetic fraction was microscopically examined with selected samples being subject to examination of all magnetic fractions. The method adopted for mineralogical study was:

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1. Magnetically separate the heavy concentrate into:

- . hand magnetics
- . 0.5 amp Frantz magnetics
- . 1.0 amp Frantz magnetics
- . 1.2 amp Frantz magnetics
- . 1.2 amp Frantz non-magnetics

using a Frantz magnetic separator with forward slope of 25° and side tilt of 18°.

2. Weigh each magnetic fraction.

3. Optically identify mineral grains and point count a minimum 500 points for the relevant magnetic fraction.

Mineralogical examinations were carried out by Applied Petrographic Services, Sydney.

Results are included as Appendix 2.

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10. DISCUSSION

10.1 Counsel Hill Investigation

The exploration activity concentrated on the Counsel Hill area (see Figure 2), situated east of Reekara and to the west of Saltwater Creek.

As previously mentioned in Section 5, this area was drilled in order to cover the strandline systems which extend northwards from the known mineralisation in the Back Beach deposit at Cowper Point (E.L. 41/88). It was hoped that the mechanisms which formed the southern heavy mineral concentrations continued further north into this area.

Three traverse lines designated MC Line 1, MC Line 2 and MC Line 3 were drilled during April, 1988 using reverse circulation methods. The lines going from north to south were spaced 2 kilometres and 1.3 kilometres apart (see Figure 2) and for the most part were drilled at 40 metres spacing. The heavy mineral grades recovered were variable, however on the northernmost line (MC Line-1) grades greater than 1.5% were found in holes MC Line-1, 36E to 64E, as shown on cross-section, figure 4.

These grades indicated further drilling was required, which was undertaken in February, 1989. All three initial traverse lines were extended eastward to the boundary of the exploration licence, using hand drilling methods.

The 1989 hand drilling indicated that the strandline systems are not continuous north to south through the area, as originally thought, but are separated by granite outcrops which would have formed headlands at the time of coastal deposition in the area.

Drill traverse MC Line-1 was extended to the eastern boundary of the licence and intersected mineralization in most holes. All results are plotted on cross section Figure 4.

Drill traverse MC Line-2 continued to cross granitic outcrops, which indicates a break and/or a thinning of the beach depositional sequence in this area. Results for this line have not been plotted on cross section.

Drill traverse MC Line-3 was also extended to the eastern boundary of the licence. Results are plotted on cross section Figure 5.

Heavy mineral assay results have shown that mineral concentrations greater than 1.5% only occur on traverse MC Line-1. On this line the +1.5% grades extend nearly to the eastern limit of the Authorisation, i.e. Saltwater Creek. Grades are plotted on cross section as Figure 4, which shows two separate mineralised strandline bodies. The western most mineralised strand contains a heavy mineral suite relatively rich in uneconomic silicate minerals particularly garnet and tourmaline and depleted in rutile (3%) and zircon (5%). In contrast the eastern mineralised strand is rich in rutile (7%) and particularly rich in zircon (21%).

Overall the recent drilling shows indications of a mineral sand resource occurring to the east of Counsel Hill.

It is now known from recent drilling that the Counsel Hill strandline system is not continuous. It is separated by a basement granite high on traverse MC Line 2. Examination of the aerial photography obtained in April, 1988 indicates four (4) separate granite outcrop areas which divide the strandline system into five (5) separate bodies. The mineralisation on traverse MC Line-1 occurs in the most northerly and the

largest of these 5 separate bodies. Another point worthy of mention is that each area of out cropping basement is also a point where a modern easterly flowing stream crosses the strandlines.

As previously mentioned, each basement high indicates a break and/or a thinning of the beach depositional sequences in the area. At the same time these areas of basement high may have acted as traps for the concentration of heavy minerals at the time of deposition of the beach deposits. They would be worthy of individual investigation as a locus for small high grade mineral concentrations; if a heavy mineral sand mining operation is undertaken on King Island.

The Counsel Hill area has shown encouraging results. Further work must give due recognition to the environment because of the adjoining Lavinia Nature Reserve. It is therefore recommended that the programme outlined in Section 11 be carried out as soon as possible to take advantage of the minimal vegetation in the area, due to the 1988 bushfire. Work could be carried out with minimal environmental damage, prior to regrowth attaining height and density sufficient to make walking access difficult.

10.2 Resource Estimate

From the data currently available it is possible to make a first estimate as to the magnitude of the resource contained in the area east of Counsel Hill in the vicinity of MC Line-1.

Extent measured from aerial photography is:

500m. north of MC Line -1.

400m. south of MC Line -1.

TABLE 1

Estimate of Magnitude of Mineral Sand
East of Counsel Hill. MC Line - 1

Holes	Sand (t)	% HM	HM (t)	R (t)	Z (t)	Leu (t)
56 - 40E	660,000	3.5	23,000	700	1,200	500
52 - 76E	1,900,000	2.6	51,000	3,500	11,000	3,000
80 - 96E (Shallow Sand)	590,000	3.2	19,000	*	*	*
	<hr/> 3,200,000 <hr/>	<hr/> 2.9 <hr/>	<hr/> 93,000 <hr/>	<hr/> 4,200* <hr/>	<hr/> 12,000* <hr/>	<hr/> 3,500* <hr/>
Rounded to 1 sig- nificant figure	<hr/> 3,000,000 <hr/>	<hr/> 3 <hr/>	<hr/> 90,000 <hr/>	<hr/> 4,000 <hr/>	<hr/> 10,000 <hr/>	<hr/> 4,000 <hr/>

* No mineralogy available for this area
Totals exclude above mineralogy

Table 1. sets out details of the estimate.

It is emphasized that this estimate is purely a guide to the likely magnitude of the resource in the area of MC Line-1 i.e. 3 million tonnes of sand containing 90,000 tons of heavy mineral. Follow up drilling and testing will be necessary to firm up this estimate. The estimate does not allow for any other possible mineralisation which may be located further to the south of this strandline system as shown on Figure 2

11. PROPOSED DRILLING

Further work on E.L. 45/86 is aimed at determining more precisely the quantity and grade of mineralisation within the Counsel Hill area, and to ascertain whether it is a viable adjunct to the known mineralisation at Naracoopa and Cowper Point.

The work will comprise an additional two lines to the north and two lines to the south of the line designated "MC Line-1". This comprises 16 holes per line at 40m. spacing, averaging 7m. depth for a total of 64 holes = 448m.

The above programme is based on information currently available in the Counsel Hill area and is intended to block out mineralisation with step-out lines spaced 300m. from the existing lines with mineral intersections. The location of these additional lines in relation to the existing lines are shown on the accompanying plan, Figure 3.

The estimated cost for the drilling, supervision and testing of the above work is \$34,000, which is above the required annual expenditure for E.L. 45/86.

Provided drilling of step-out traverse lines encounters mineral grades with economic potential, it is recommended that:-

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. Follow up drilling includes closer spaced drill holes at 20m. intervals in the MC Line-1 sand body.

.Also that some investigation be directed towards locating heavy mineral concentrations between the basement outcrops along the strandline system.

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APPENDICES

APPENDIX 1.

Drill hole Logs containing heavy mineral percentages not previously reported.

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 1

HOLE NO: MC 68 E

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

019

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 2.0		SAND, medium grained, well sorted. Peaty. 0 - 0.1m. Heavily indurated at 1.9m. H.M. \approx 1%.		0.2	3.3
2.0 - 2.7		AS ABOVE. Couldn't turn casing at 2.7m. E.O.H. 2.7m.		TRACE	6.6

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CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 1

HOLE NO: MC72 E

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

020

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 2.0		Peat to 0.1m. SAND, medium grained, well sorted.		0.3	1.8
2.0 - 4.0		SAND, medium grained. Coarser with depth. Well sorted. Brown. H.M. \approx 1%		0.8	2.1
4.0 - 5.5		AS ABOVE. Pyritic clay at base. E.O.H. 5.5m.		1.2	0.6

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CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO. 1

HOLE NO: MC76 \leftarrow

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

021

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 μ m	% H.M.
0 - 2.0		SAND, medium to fine grained, well sorted, grey. H.M. 1-2%.		0.1	2.9
2.0 - 4.0		AS ABOVE, coarser with depth to very coarse. Some induration. H.M. 2-5% at bottom.		0.6	6.7
4.0 - 5.5		SAND, very coarse with gravel. H.M. 2-5%.			
5.5 - 6.0		SAND, fine silty. E.O.H. 6.0m.		3.4	0.8

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CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 1

HOLE NO: MC80 E

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

022

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 2.0		SAND, medium to fine grained, well sorted, pale grey. H.M. 1-2%.		0.4	2.6
2.0 - 4.0		SAND, medium at top then very coarse. Moderate sorting. Minor peat. H.M. 2%+.		4.0	1.2
4.0 - 5.8		AS ABOVE with silt matrix and gravel. E.O.H, 5.8m. Hit rock		3.7	0.5

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CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LIEN NO 1

HOLE NO: MC84 E

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

023

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 2.0		SAND, medium grained, well sorted, brown.		0.3	4.4
2.0 - 3.5		SAND, coarse to very coarse, coarser with depth. Gravel at base.		17.0	1.4
		Basement Rock			
		E.O.H. 3.5m.			

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CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 1

HOLE NO: MC88E

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

024

Interval (m)	Dry Wt. (kg)	Description	% SLine	% +1000 um	% H.M.
0 - 1.5		PEATY SOIL, 0 - 0.1. Sand, medium grained, well sorted. Pale grey. Clay at 1.5m. Wouldn't drill		0.2	1.8

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CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 1

HOLE NO: MC 92E

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

025

Interval (m)	Dry Wt. (kg)	Description	% SLine	% +1000 um	% H.M.
0 - 2.0		SAND, medium grained, pale grey then white. Well sorted. Fine H.M. 1-2%.		0.1	2.8
2.0 - 2.7		AS ABOVE, to 2.2m. then very coarse sand with silty matrix. E.O.H. 2.7m. Rock		1.4	3.2
<i>Weighted average = 2.9% H.M.</i>					

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CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 1

HOLE NO: MC96E

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

020

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 2.0		SAND, medium grained, well sorted, grey, silty.		0.5	2.4
2.0 - 2.5		AS ABOVE, dark brown clay at 2.5m. E.O.H. 2.5m.		0.1	1.4

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 1

HOLE NO: MC100E

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

027

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 2.0		SAND, medium grained, well sorted, grey then brown.		1.5	1.4
2.0 - 4.2		SAND, very coarse grained base, coarsest at bottom. Dark brown.		12.6	0.7
		Basement Rock at 4.2m. E.O.H. 4.2m.			

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CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 2

HOLE NO: MC100

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

029

Interval (m)	Dry Wt. (kg)	Description	% S.Fine	% + 1000 um	% H.M.
0 - 2.0		SAND, coarse, well sorted, grey to 1.8m. 1.8 - 2.0m. Granite, weathered, brown. E.O.H. Rock 2.0m.		3.7	0.3

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 2

HOLE NO: MC104

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

029

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 1.5		0 - 1.2 SAND, Coarse, well sorted, pale grey. 1.2 - 1.5 Granite, weathered, brown. E.O.H. 1.5m.		8.3	0.2

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CEMENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MF-COUNSEL

LINE NO: 2

HOLE NO: MC108

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% E.M.
0 - 1.3		GRANITE outcrop near hole. SAND, very coarse, mod. sorted. Pale grey. E.O.H. 1.3m.		23.0	0.1

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CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 2

HOLE NO: MC112

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

081

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 1.0		GRANITE, weathered, grey. Rock 1.0m. E.O.H. 1.0m.		37.2	0.1

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL (edge of Saltwater Creek swamp)

LINE NO: 2

HOLE NO: MC116

LOGGED BY: GRAHAM

DATE DRILLED: 3.2.89

METHOD: Hand

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Interval (m)	Dry Wt. (kg)	Description	% Silt	% + 1000 um	% H.M.
0 - 1.0		SAND, medium, peaty and indurated. At 1.0m. water table pushed rods to 1.3m. in peaty material. E.O.H. 1.0m.		5.7	0.2

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CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 3

HOLE NO: MC88

LOGGED BY: GRAHAM LEE

DATE DRILLED: 4.2.89

METHOD: Hand

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Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 2.0		SAND, coarse, moderate to poorly sorted, white. H.M. Tr.		2.4	0.3
2.0 - 4.0		AS ABOVE.		0.9	0.2
4.0 - 6.0		AS ABOVE, water table 4.6m.		0.6	0.1
		5.8 - 6.0 Very coarse with granules, brown. Granitic sand with H.M.			
		E.O.H. 6.0m. Clay			

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CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 3

HOLE NO: MC92

LOGGED BY: GRAHAM LEE

DATE DRILLED: 4.2.89

METHOD: Hand

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Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 2.0		SAND, coarse, moderately sorted, white. H.M. Tr.		1.6	0.2
2.0 - 4.0		AS ABOVE, water 3.lm. Drilled to 4.lm. Hard indurated. Stopped drilling. E.O.H. 4.lm.		1.6	0.1

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CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 3

SOLE NO: MC96

LOGGED BY: GRAHAM LEE

DATE DRILLED: 4.2.89

METHOD: Hand

033

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 2.0		SAND, coarse, moderately sorted, white.		2.1	0.1
2.0 - 4.0		AS ABOVE, very coarse, some granules. Brown, lightly indurated at 3.4m.		9.3	0.1
4.0 - 6.0		SAND, coarse with some very coarse. Moderate sorting. Pale brown, minor indurated layers. Rich H.M. 5%+. Hole boiling in. Large sample $\frac{1}{2}$ bagged.		4.8	0.2
6.0 - 7.8		AS ABOVE, grades to well sorted granule gravel. H.M. 5%+ E.O.H. 7.8m. in gravel Difficult sludging Hole - sand boiling in Lithology similar to Back Beach		35.5	0.2

33

511036

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 3

HOLE NO: MC100

LOGGED BY: GRAHAM LEE

DATE DRILLED: 4.2.89

METHOD: Hand

036

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 2.0		SAND, medium grained to coarse, well sorted. Peaty at top. Sludge from 1.0m.		0.8	0.1
2.0 - 4.0		SAND, very coarse and very well sorted, pale greyish brown.		7.2	< 0.1
4.0 - 6.0		AS ABOVE to 5.5m. Indurated layer at 5.5 to 5.6m. then mineral rich sand, H.M. 5%+. Also black angular organics?		7.5	< 0.1
6.0 - 8.0		Very coarse Sand and granule gravel. H.M. 2-5%. E.O.H. 8.0m. Granule gravel		52.1	0.1

34

514037

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 3

HOLE NO: MC104

LOGGED BY: GRAHAM LEE

DATE DRILLED: 4.2.89

METHOD: Hand

037

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 2.0		SAND, coarse grained, well sorted, peaty at top.		3.9	0.1
2.0 - 4.0		AS ABOVE but coarser.		10.4	<0.1
4.0 - 6.0		AS ABOVE but coarser granule, gravel. No visible H.M.		25.7	<0.1
6.0 - 7.6		AS ABOVE, no visible H.M.		32.1	<0.1
		E.O.H. 7.6 on granite			

35

511038

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 3

BOLE NO: MC108

LOGGED BY: GRAHAM LEE

DATE DRILLED: 4.2.89

METHOD: Hand

030

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 2.0		SAND, medium - coarse, moderate sorting, coarser with depth. Brown, indurated at 1.5m.		3.3	0.1
2.0 - 4.0		SAND, very coarse with granules. Couldn't advance casing at 4.0m. E.O.H. 4.0m.		22.0	< 0.1

36

511039

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MOUNT COUNSEL

LINE NO: 3 HOLE NO: MC 112

LOGGED BY: GRAHAM LEE

DATE DRILLED: 4.2.89

METHOD: HAND

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 2.0		SAND, medium to coarse grained, well sorted, pale brown.		0.3	0.1
2.0 - 4.0		SAND, coarse grained, coarser with depth, moderate sorting, pale brown.		1.6	0.1
4.0 - 4.9		AS ABOVE, with H.M. 1 - 2% near bottom clay at 4.9m. EOH 4.9m.		20.9	<0.1

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 3

HOLE NO: MC120

LOGGED BY: GRAHAM LEE

DATE DRILLED: 4.2.89

METHOD: Hand

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 2.0		SAND, medium - coarse, well sorted, greyish brown.		0.5	0.1
2.0 - 2.4		AS ABOVE		3.7	0.1
		2.4m. Clay, dark grey, plastic			
		E.O.H. 2.4m.			

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 3

HOLE NO: MCL16

LOGGED BY: GRAHAM LEE

DATE DRILLED: 4.2.89

METHOD: Hand

041

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 2.0		SAND, medium to coarse grained, well sorted, pale brown.		0.1	0.1
2.0 - 2.4		AS ABOVE. E.O.H. 2.4m. Peaty plastic clay		Trace	0.2

APPENDIX 2.

Heavy Mineral Separation Assay Results



TASMANIA

DEPARTMENT OF MINES

Launceston Office:
Chemical and Metallurgical
Laboratory,
287 Wellington Street,
LAUNCESTON 7249

Enquiries: Peter H. Stitt & Assoc. Pty Ltd,
Phone: 5th Floor
Your ref.: 32 York Street.
Our file: Sydney 2000

17th April 1989
Attent. Mr. G. Lee

Reg. Nos 892277-327

Dear Sir,

Please find below results of samples submitted to this laboratory, and stated to be from the King Island area.

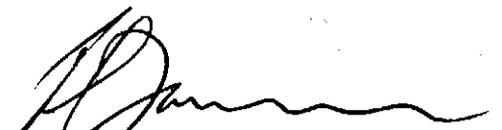
<u>Reg. No</u>	<u>Description</u>	<u>% + 1.00mm</u>	<u>% Heavy Mineral</u>
892277	Line 1 MC 68 0 - 2.0	0.2	3.3
278	2.0 - 2.7	Trace	6.6
279	MC 72 0 - 2.0	0.3	1.8
280	2.0 - 4.0	0.8	2.1
281	4.0 - 5.5	1.2	0.6
282	MC 76 0 - 2.0	0.1	2.9
283	2.0 - 4.0	0.6	6.7
284	4.0 - 6.0	3.4	0.8
285	MC 80 0 - 2.0	0.4	2.6
286	2.0 - 4.0	4.0	1.2
287	4.0 - 5.8	3.7	0.5
288	MC 84 0 - 2.0	0.3	4.4
289	2.0 - 3.5	17.0	1.4
290	MC 88 0 - 1.5	0.2	1.8
291	MC 92 0 - 2.0	0.1	2.8
292	MC 2.0 - 2.7	1.4	3.2
293	MC 96 0 - 2.0	0.5	2.4
294	2.0 - 2.5	0.1	1.4
295	MC 100 0 - 2.0	1.5	1.4
296	2.0 - 4.2	12.6	0.7

<u>Reg. No</u>	<u>Description</u>	<u>% + 1.00mm</u>	<u>% Heavy Mineral</u>
892297	Line 2 MC 100 0 - 2.0	3.7	0.3
298	MC 104 0 - 1.5	8.3	0.2
299	MC 108 0 - 1.3	23.0	0.1
300	MC 112 0 - 1.0	37.2	0.1
301	MC 116 0 - 1.0	5.7	0.1
302	Line 3 MC 88 0 - 2.0	2.4	0.3
303	2.0 - 4.0	0.9	0.2
304	4.0 - 6.0	0.6	0.1
305	MC 92 0 - 2.0	1.6	0.2
306	2.0 - 4.0	1.6	0.1
307	MC 96 0 - 2.0	2.1	0.1
308	2.0 - 4.0	9.3	0.1
309	4.0 - 6.0	4.8	0.2
310	6.0 - 7.8	35.5	0.2
311	MC 100 0 - 2.0	0.8	0.1
312	2.0 - 4.0	7.2	<0.1
313	4.0 - 6.0	7.5	<0.1
314	6.0 - 8.0	52.1	0.1
315	MC 104 0 - 2.0	3.9	0.1
316	2.0 - 4.0	10.4	<0.1
317	4.0 - 6.0	25.7	<0.1
318	6.0 - 7.0	32.1	<0.1
319	MC 108 0 - 2.0	3.3	0.1
320	2.0 - 4.0	22.0	<0.1
321	MC 112 0 - 2.0	0.3	0.1
322	2.0 - 4.0	1.6	0.1
323	4.0 - 4.9	20.9	<0.1
324	MC 116 0 - 2.0	0.1	0.1
325	2.0 - 2.4	Trace	0.2
326	MC 120 0 - 2.0	0.5	0.1
327	2.0 - 2.4	3.7	0.1

Metallurgist.....



(P.L. James)
Chief Chemist & Metallurgist



APPENDIX 3.

Mineralogical Results

APPLIED PETROGRAPHIC SERVICES

SPECIALIZING IN PETROGRAPHIC ANALYSIS OF GEOLOGICAL AND INDUSTRIAL SAMPLES

P.O. Box 257
Strawberry Hills
Sydney, N.S.W. 2012

2A RAILWAY AVENUE
STANMORE
SYDNEY, NSW 2048

Phone: (02) 516 4808

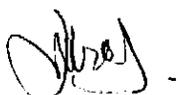
CLIENT: PETER H. STITT & ASSOC. PTY LTD

APS REPORT NO.: M 178

SAMPLE DETAILS: MT. COUNCEL LINE 1; 36E - 40E
ORDER NO. A36, REF. N.M.S. EL 45/86

DATE: 21.5.89

	TOTAL	HAND MAG	0.5A MAG	0.9A MAG	1.2A MAG	1.2A NON MAG
MONAZITE	<1	-	-	-	1	-
ZIRCON	5	-	-	<1	-	33
RUTILE	3	-	-	-	1	20
LEUCOXENE	2	-	-	-	-	11
LEUCOXENISED ILMENITE	8	-	-	15	20	-
ILMENITE	14	-	39	4	-	-
MAGNETITE	<1	100	-	-	-	-
IRON OXIDES	-	-	-	-	-	-
GARNET	19	-	61	1	2	-
TOURMALINE	37	-	-	68	57	1
ALUMINO-SILICATES	4	-	-	-	-	25
OTHER SILICATES	6	-	-	11	2	-
PYRITE	2	-	-	1	17	8
CORUNDUM	<1	-	-	-	-	<1
SHELL	-	-	-	-	-	-
QUARTZ	<1	-	-	-	-	2
CARBONATE	-	-	-	-	-	-
SPINEL	-	-	-	-	-	-
WEIGHT %	100	0.1	30.4	51.6	3.1	14.8
NO. OF POINTS			532	573	523	567


J. McNulty

APPLIED PETROGRAPHIC SERVICES

SPECIALIZING IN PETROGRAPHIC ANALYSIS OF GEOLOGICAL AND INDUSTRIAL SAMPLES

P.O. Box 257
Strawberry Hills
Sydney, N.S.W. 2012

2A RAILWAY AVENUE
STANMORE
SYDNEY, NSW 2048

Phone: (02) 516 4808

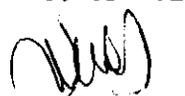
CLIENT: PETER H. STITT & ASSOC. PTY LTD

APS REPORT NO.: M 178

SAMPLE DETAILS: MT. COUNSEL LINE 1; 52E - 76E
ORDER NO. A36, REF. N.M.S. EL 45/86

DATE: 21.5.89

	TOTAL	HAND MAG	0.5A MAG	0.9A MAG	1.2A MAG	1.2A NON MAG
MONAZITE	<1	-	-	1	2	-
ZIRCON	21	-	<1	<1	2	56
RUTILE	7	-	-	<1	1	19
LEUCOXENE	6	-	-	-	-	16
LEUCOXENISED ILMENITE	9	-	-	32	57	-
ILMENITE	32	-	87	5	-	-
MAGNETITE	<1	100	-	-	-	-
IRON OXIDES	-	-	-	-	-	-
GARNET	5	-	13	-	1	-
TOURMALINE	14	-	-	54	19	<1
ALUMINO-SILICATES	1	-	-	-	-	4
OTHER SILICATES	2	-	-	6	2	-
PYRITE	2	-	-	1	16	3
CORUNDUM	<1	-	-	-	-	<1
SHELL	-	-	-	-	-	-
QUARTZ	1	-	-	-	-	2
CARBONATE	-	-	-	-	-	-
SPINEL	<1	-	-	1	-	-
WEIGHT %	100	0.4	35.8	25.1	2.2	36.5
NO. OF POINTS			550	516	516	516


J. McNulty

APPLIED PETROGRAPHIC SERVICES

SPECIALIZING IN PETROGRAPHIC ANALYSIS OF GEOLOGICAL AND INDUSTRIAL SAMPLES

P.O. Box 257
Strawberry Hills
Sydney, N.S.W. 2012

2A RAILWAY AVENUE
STANMORE
SYDNEY, NSW 2048

Phone: (02) 516 4808

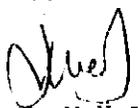
CLIENT: PETER H. STITT & ASSOC. PTY LTD

APS REPORT NO.: M 178

SAMPLE DETAILS: MT. COUNSEL LINE 2 ; 100E - 116E
ORDER NO. A36, REF N.M.S. EL 45/86

DATE: 21.5.89

	TOTAL	HAND MAG	0.5A MAG	0.9A MAG	1.2A MAG	1.2A NON MAG
MONAZITE	<1	-	-	1	1	-
ZIRCON	16	-	-	-	1	39
RUTILE	8	-	-	-	<1	19
LEUCOXENE	9	-	-	-	-	22
LEUCOXENISED ILMENITE	10	-	-	22	58	-
ILMENITE	19	-	95	4	-	-
MAGNETITE	1	100	-	-	-	-
IRON OXIDES	<1	-	<1	<1	-	-
GARNET	1	-	5	<1	<1	-
TOURMALINE	24	-	-	62	40	1
ALUMINO-SILICATES	3	-	-	-	-	6
OTHER SILICATES	4	-	-	10	<1	-
PYRITE	1	-	-	-	<1	2
CORUNDUM	<1	-	-	-	-	1
SHELL	-	-	-	-	-	-
QUARTZ	4	-	-	-	-	10
CARBONATE	-	-	-	-	-	-
SPINEL	<1	-	-	1	-	-
WEIGHT %	100	0.7	18.2	36.3	2.6	42.2
NO. OF POINTS			526	510	251	517


J. McNulty

APPLIED PETROGRAPHIC SERVICES

SPECIALIZING IN PETROGRAPHIC ANALYSIS OF GEOLOGICAL AND INDUSTRIAL SAMPLES

P.O. Box 257
Strawberry Hills
Sydney, N.S.W. 2012

2A RAILWAY AVENUE
STANMORE
SYDNEY, NSW 2048

Phone: (02) 516 4808

CLIENT: PETER H. STITT & ASSOC. PTY LTD

APS REPORT NO.: M 178

SAMPLE DETAILS: MT. COUNSEL LINE 3; 88E - 120E

DATE: 21.5.89

	TOTAL	HAND MAG	0.5A MAG	0.9A MAG	1.2A MAG	1.2A NON MAG
MONAZITE	<1	-	-	<1	<1	-
ZIRCON	10	-	-	-	<1	20
RUTILE	5	-	-	-	<1	11
LEUCOXENE	11	-	-	-	-	23
LEUCOXENISED ILMENITE	5	-	-	12	48	-
ILMENITE	14	-	89	4	-	-
MAGNETITE	1	100	-	-	-	-
IRON OXIDES	<1	-	3	-	-	-
GARNET	1	-	8	-	1	-
TOURMALINE	29	-	-	80	46	<1
ALUMINO-SILICATES	3	-	-	-	-	6
OTHER SILICATES	1	-	<1	3	2	-
PYRITE	3	-	-	-	3	6
CORUNDUM	<1	-	-	-	-	<1
SHELL	-	-	-	-	-	-
QUARTZ	17	2	-	-	-	34
CARBONATE	-	-	-	-	-	-
SPINEL	<1	-	-	1	-	-
WEIGHT %	100	0.7	14.4	34.6	2.4	47.9
NO. OF POINTS			518	545	514	522


J. McNulty

APPLIED PETROGRAPHIC SERVICES

SPECIALIZING IN PETROGRAPHIC ANALYSIS OF GEOLOGICAL AND INDUSTRIAL SAMPLES

P.O. Box 257
Strawberry Hills
Sydney, N.S.W. 2012

2A RAILWAY AVENUE
STANMORE
SYDNEY, N.S.W. 2048

Phone: (02) 516 4808

CLIENT: PETER H. STITT & ASSOC. PTY LTD

APS REPORT NO.: M 178

SAMPLE DETAILS: MT. COUNSEL HEAVY MINERALS

DATE: 26.5.89

ORDER NO. A36, REF. NMS EL 45/86

TIN TEST FOR CASSITERITE

MT. COUNSEL LINE 1

36E - 40E

<1% CASSITERITE

MT. COUNSEL LINE 1

52E - 76E

<1% CASSITERITE

MT. COUNSEL LINE 2

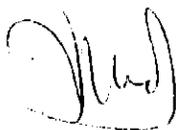
100E - 116E

NO CASSITERITE DETECTED

MT. COUNSEL LINE 3

88E - 120E

<1% CASSITERITE



J. McNulty

enquiries: J.G. Oakes
phone: 30 8362
your ref: Report No. 2/89
our title: EL45/86
JG05.90:AT

16 MAR 1990

Peter H. Stitt & Associates Pty Ltd
5th Floor
King York House
32 York Street
SYDNEY NSW 2000

Dear Sir,

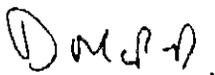
EXPLORATION LICENCE 45/86
KING ISLAND - TASMANIA

Reference is made to your annual report on exploration during the period to 17 April 1989.

In order to facilitate the entry of data on our data base please identify which drill holes were auger holes and which were reverse circulation.

We also require AMG co-ordinates for each hole.

Yours faithfully,



(Dr) D. McP. Duncan
DEPUTY CHIEF GEOLOGIST (ECONOMIC)

511053

Location	Drill Hole No for Ends of Traverse	Traverse No.	Approximate AMG for Holes on End of Traverse	Drilling Method
Disappointment Bay	DB1		41200E, 11400N	Hand Auger
	DB5		41200E, 11900N	Hand Auger
White Beach	WB1	1	46700E, 09700N	Hand Auger
	WB5	1	46600E, 09300N	Hand Auger
White Beach	WB1	2	45100E, 10100N	Hand Auger
	WB5	2	45000E, 09800N	Hand Auger
Manana	M1	1	43200E, 10030N	R.C. Rig
	M2	1	43400E, 10050N	R.C. Rig
Manana	M20E	2	43600E, 98350N	R.C. Rig
	M16W	2	43240E, 98330N	R.C. Rig
Counsel Hill	MC00	MC LINE 1	49500E, 96400N	R.C. Rig holes MC00 to MC64 Hand drilled holes MC68 to MC100
	MC100		50500E, 96400N	
Counsel Hill	MC00	MC LINE 2	49350E, 94400N	R.C. Rig holes MC00 to MC96 Hand drilled holes MC100 to MC116
	MC116		50510E, 94400N	
Counsel Hill	MC00	MC LINE 3	49300E, 93170N	R.C. Rig holes MC00 to MC84 Hand drilled holes MC 88 to MC 120
	MC120		50500E, 93100N	
Sea Elephant River	SEO		51370E, 89460N)	Hand auger and sludged except SE70, SE74, SE78 and SE82 which were RC Rig drilled
	SE82		50570E, 89390N)	

052

053

PETER H. STITT & ASSOCIATES PTY. LTD.
MINING AND GEOLOGICAL CONSULTANTS

5TH FLOOR,
KING YORK HOUSE,
32 YORK STREET,
SYDNEY N.S.W. 2000
PHONE: (02) 29 1403
FAX: (02) 262 2395

MINES	
File Ref. E.L. 45/86	
23 MAR 1990	
Doc. Ref. 782	
Action Officer	Initials
GO	
Resubmit to	Date

21st March, 1990

Dr D. McP. Duncan,
Deputy Chief Geologist (Economic),
Department of Resources & Energy,
P.O. Box 56,
ROSNY PARK TAS 7018

Dear Sir,

Subject: Exploration Licence 45/86, King Island

I have received your correspondence dated 16th March, 1990, wherein you requested information regarding AMG co-ordinates and method of drilling for drill holes mentioned in the 1989 Annual Report.

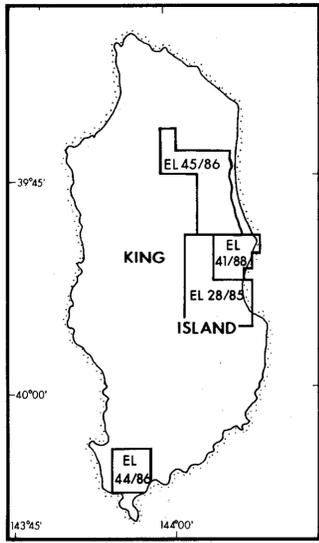
The accompanying table sets out the information you require. I have provided approximate AMG co-ordinates for drill holes on each end of each traverse line. Since no ground surveying was undertaken in these areas, all traverse lines were located using aerial photography (1:42,000 scale) with tape measurements between each drill hole on each traverse line.

I trust the information provided meets your requirements.

Yours faithfully,

G Lee
Graham Lee

*inserted
in
Ann Rpt
6/0 22/4/90*



CAPE WICKHAM

BASS

STRAIT

Lake Flannigan

Lake Martha Lavinia

RELINQUISHED AREA OF 45/86 (17/4/89)

Yambacoona

Quarantine Bay

EL 45/86

Reekara

Reekara

Road

Counsel Hill

SEA ELEPHANT RIVER WILDLIFE SANCTUARY

RELINQUISHED AREA OF 45/86 (17/4/88)

12 CLIFF

Little Porky Beach

750

757

90-3101

511055

NATIONAL MINERAL SANDS

KING ISLAND-TASMANIA

LOCATION MAP

EL 45/86

Author: A. DOVE DATE: MARCH '89 FIG.No.: 1

REVISED: MARCH '90

SCALE 1:50000



5 cm



OCEAN

SOUTHERN

5610

5600

5590

39°45'

40°00'

143°45'

144°00'

SOUTHERN OCEAN

BASS STRAIT

Cape Wickham

Disappointment Bay

DISAPPOINTMENT BAY TRAVERSE 1

DB5

DB1

WHITE BEACH TRAVERSES

WB1

WB2

WB3

WB4

WB5

WB6

WB7

WB8

WB9

WB10

WB11

WB12

WB13

WB14

WB15

WB16

WB17

WB18

WB19

WB20

WB21

WB22

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WB81

WB82

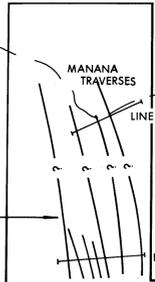
WB83

WB84

WB85

NOTE: - AEOLIAN DUNES ALONG MOST OF THE WEST COASTLINE OVERLIE PRECAMBRIAN GRANITE WHICH OUTCROPS ALONG THE PRESENT DAY SHORELINE.

AEOLIAN DUNES IN THIS AREA MAY OVERLY BEACH STRANDLINES



POSSIBLE OLD SHORELINES

COUNSEL HILL TRAVERSES

M-C LINE 1

M-C LINE 2

M-C LINE 3

M-C LINE 4

M-C LINE 5

M-C LINE 6

M-C LINE 7

M-C LINE 8

M-C LINE 9

M-C LINE 10

M-C LINE 11

M-C LINE 12

M-C LINE 13

M-C LINE 14

M-C LINE 15

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M-C LINE 17

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M-C LINE 89

M-C LINE 90

M-C LINE 91

M-C LINE 92

M-C LINE 93

M-C LINE 94

M-C LINE 95

M-C LINE 96

M-C LINE 97

M-C LINE 98

M-C LINE 99

M-C LINE 100



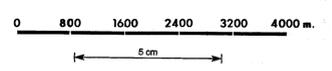
LEGEND

-  AEOLIAN DUNES
-  STRAND LINES
-  SWAMP
-  LAKE
-  ROAD OR TRACK
-  TRAVERSE LINE WITH END DRILLHOLE NUMBERS
-  PROPOSED TRAVERSE LINE

511056

90-3101

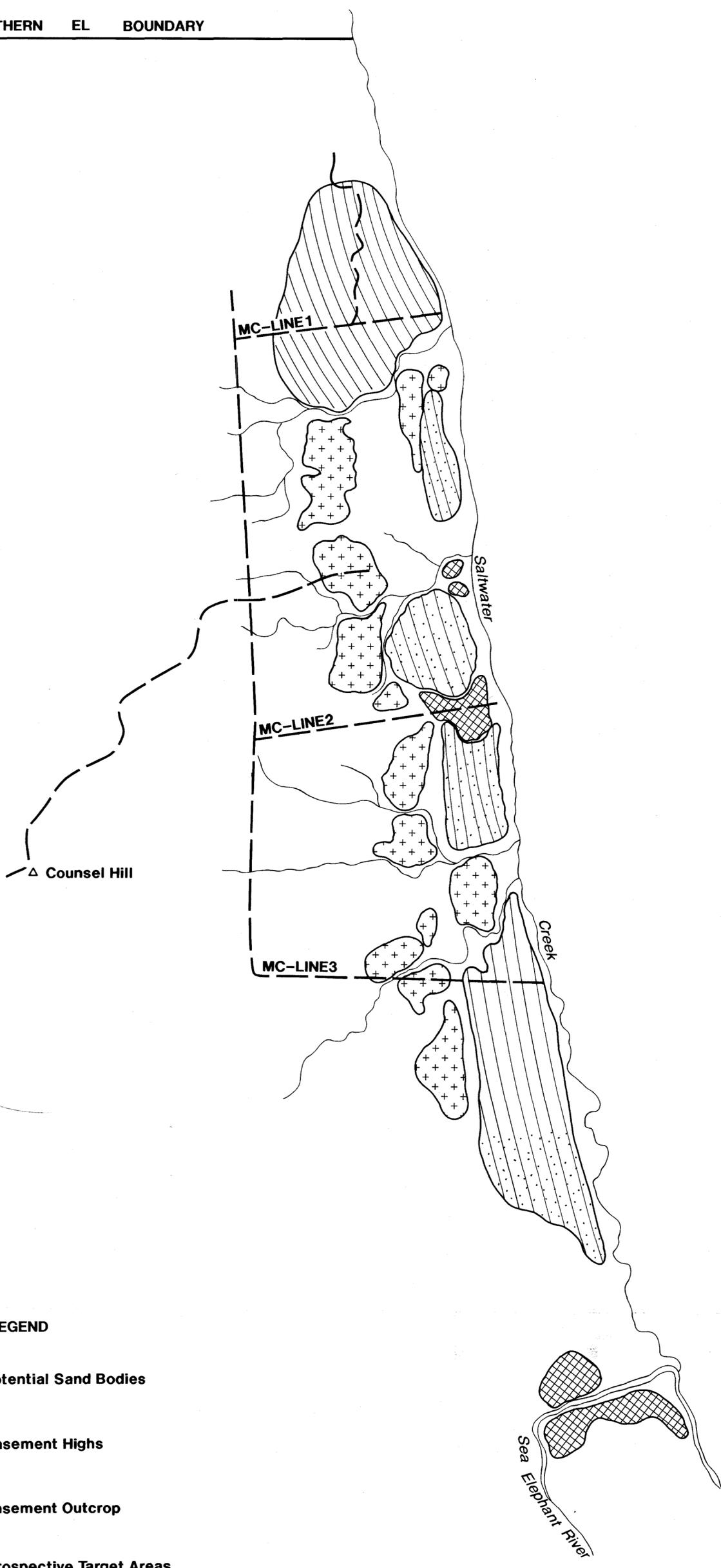
SCALE 1:42 000



NATIONAL MINERAL SANDS P/L
 EL 45/86 TASMANIA
 AIR PHOTO INTERPRETATION
 KING ISLAND (NORTH)
 WITH DRILL HOLE TRAVERSE LINES

Author: G. LEE Date: MARCH '89 Fig. No. 2
 Revised: MARCH '90

NORTHERN EL BOUNDARY



LEGEND

 Potential Sand Bodies

 Basement Highs

 Basement Outcrop

 Prospective Target Areas Not Previously Examined

 Existing Tracks

 Creeks

SCALE (Approx.)
1:16000

0 400 800 1200 1600m

5 cm

511057

90-3101

NATIONAL MINERAL SANDS P/L

EL 45/86

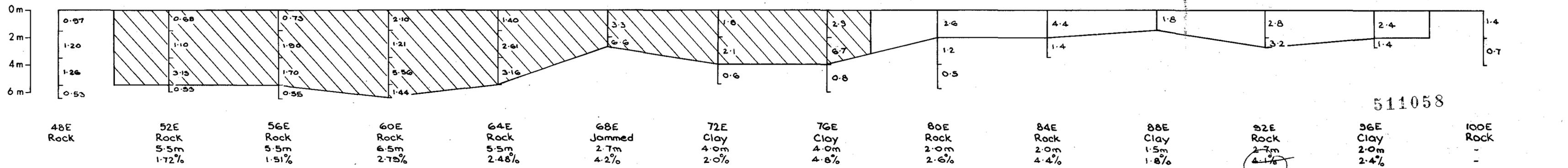
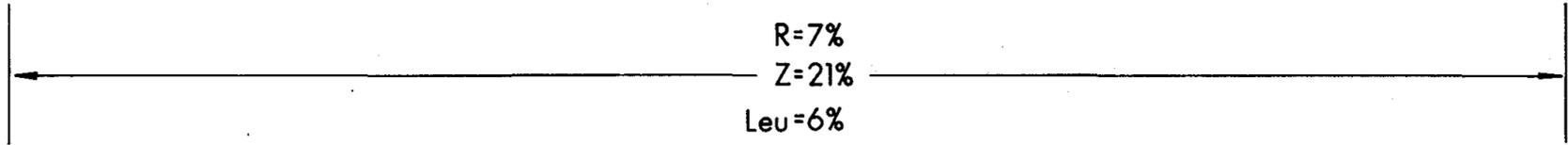
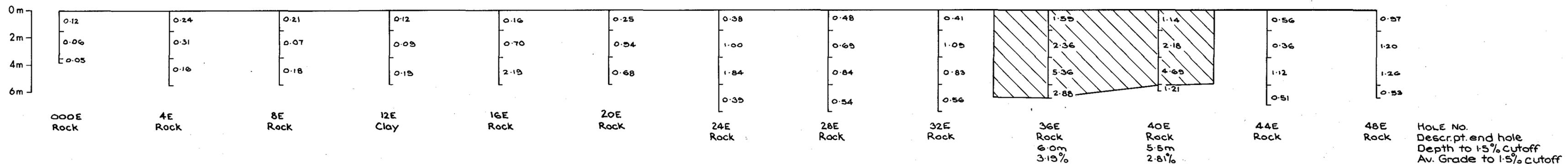
AIRPHOTO INTERPRETATION
OF COUNSEL HILL AREA
OF KING ISLAND

(Based on 1989 Photography)

Author: A.DOVE Date: MAR.'90 Fig.No.: 3

WEST

EAST



LEGEND:
+1.5% Heavy mineral content

SCALE
Horizontal 1:1000
Vertical 1:200

511058

NATIONAL MINERAL SANDS P/L

EL 45/86

LINE MC-1 CROSS SECTION

COUNSEL HILL

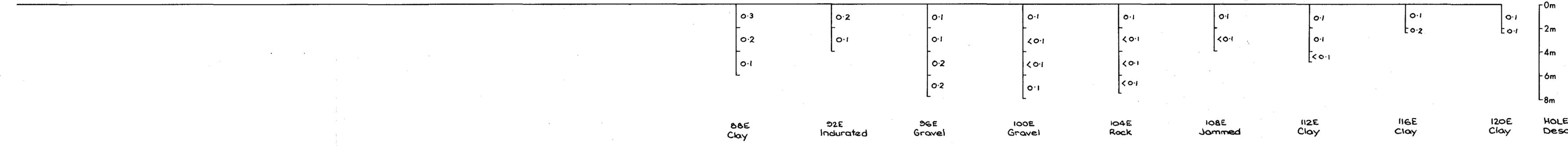
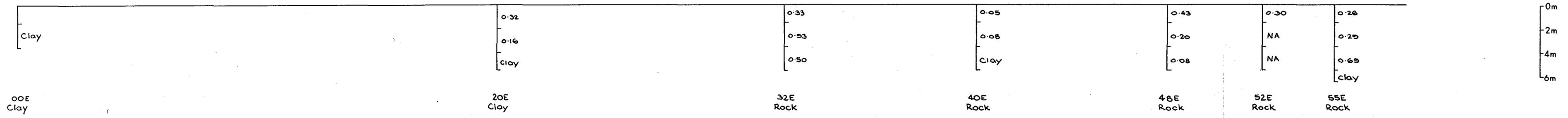
Author: A.DOVE | Date: MARCH'89 | Fig. No.: 4

5 cm

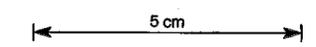
9416

WEST

EAST



SCALE
 Horizontal 1:1000
 Vertical 1:200



511059

**NATIONAL
MINERAL SANDS P/L**

EL 45/86

**LINE MC-3 CROSS SECTION
COUNSEL HILL**

Author: A.DOVE	Date: MARCH '89	Fig.No.: 5
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Revised: MARCH '90