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REPORT NO 2/89

E.L. 45/86 Tasmania

Annual Report on Exploration Completed on
King Island to 17/4/89

Prepared for National Mineral Sands Pty. Ltd.

MICROFILMED

A. Dove
March, 1989

AMG REFERENCE POINTS ADDED

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C O N T E N T S

S Y N O P S I S

	Page
1. AIM	1
2. REASON	1
3. SUMMARY & CONCLUSIONS	1
4. RECOMMENDATION	3

R E P O R T

5. INTRODUCTION	4
6. TENEMENT INFORMATION	5
7. DRILLING METHODS	6
7.1 Hand drilling	6
7.2 Reverse Circulation Drilling	6
8. LABORATORY TESTING	7
8.1 Heavy Mineral Determination Procedure	7
8.2 Results of Heavy Mineral Determination	8
8.3 Mineralogical Investigation	8
9. INVESTIGATIONS	10
9.1 Traverse Line Summaries	10
10. DISCUSSION	14
11. PROPOSED DRILLING	15
12. APPENDICES	16
Appendix 1 - Drillhole Logs	16
Appendix 2 - Heavy Mineral Separation Assay Results	128
Appendix 3 - Mineralogical Results	136

LIST OF FIGURES

- | | |
|----------|--|
| Figure 1 | Location Map |
| Figure 2 | Airphoto Interpretation King Island (North)
with Drill Hole Traverse Lines. |
| Figure 3 | Sea Elephant Traverse - Cross Section. |
| Figure 4 | Line MC-1 Cross Section Counsel Hill |
| Figure 5 | Line MC-2 Cross Section Counsel Hill |
| Figure 6 | Proposed Drilling Grid for Mount Counsel Area
1989-1990 |

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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-western and eastern areas of King Island.

2. REASON

During the past three 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. Exploration within E.L. 45/86 is directed towards locating resources which would supplement those at Naracoopa.

3. SUMMARY & CONCLUSIONS

- 3.1 E.L. 45/86 covers 185 km² on the north and east coastal areas of King Island.
- 3.2 As a result of work undertaken during the first year of the licence an area of 56 km² on the west coast of King Island was relinquished.
- 3.3 During the 12 months ending 17/4/89 field investigations concentrated on surveying and drilling 38 hand auger and sludged holes and 46 reverse circulation holes.
- 3.4 Drillhole samples were subjected to laboratory heavy mineral separation.

- 3.5 Heavy mineral contents are tabulated along with drillhole logs in Appendix 1.
- 3.6 The Sea Elephant traverse was originally drilled in 1987, however laboratory testing was completed during the past year. No significant mineralised zones were encountered.
- 3.7 In the Manana area some further drilling by reverse circulation was undertaken. No significant mineralisation was encountered. The drill hole depths and lithologies were similar to those achieved by hand drilling nearby.
- 3.8 At White Beach and Disappointment Bay some hand drilling was undertaken in order to verify older references to the occurrence of heavy mineral concentrations in these areas. No significant concentrations were encountered.
- 3.9 Three east-west traverse lines were completed to the east of Counsel Hill. Part of the drilling was by reverse circulation and part by hand auger and cased sludging.
- 3.10 All three traverse lines in the Counsel Hill area extend to the eastern boundary of the licence.
- 3.11 Two traverse lines, MC Line-1 and MC Line-3 have intersected visible concentrations of heavy minerals. Test results are still pending for some samples.
- 3.12 From visual indications MC Line-1 has a mineralised width of 440m., east-west, with depths averaging 5 or 6 metres.

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3.13 From visual indications MC Line-3 has mineralised width of 40 to 80m. with depths averaging 7m.

3.14 The Counsel Hill strandline system is divided into at least two discrete sand bodies, separated by a basement high.

4. RECOMMENDATION

A recent fire has devastated the Counsel Hill area. It is recommended that drilling on eight (8) 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.

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 was subsequently renewed on 17/4/88 for a further period of 12 months.

In addition to E.L. 45/86 the company holds title to the adjoining E.L. 93/87 (to the west), E.L. 28/85 and E.L. 41/88 (to the south and east) and 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 Mt. Counsel have been confined to the strandline systems of the east coast, north of Cowper Point and the Sea Elephant River. These strandline systems are an extension of the 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.

A number of scout hand drill holes were also located on the north coast of the island at White Beach and Disappointment Bay.

Further drilling at Manana was completed in order to improve knowledge of this ancient beach deposit.

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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.

7. DRILLING METHODS

Two drilling techniques: hand boring and reverse circulation drilling, were used in the investigations which are the subject of this report. A brief descriptive log for each drill hole is presented in Appendix 1.

7.1 Hand Drilling

Hand boring was carried out by Moina Mining Industries (G. Lavell). Holes were hand augered to water table using 50mm diameter hand auger. When water table was reached 50mm casing was inserted into the hole and was advanced by sludging using a whistle top sludger on aluminium extension rods.

All drilling was terminated at rock basement, gravel, clay or due to boiling in. Samples were bagged at 2 metre intervals with a total of 171.7metres from 38holes drilled.

7.2 Reverse Circulation Drilling

Reverse circulation drilling was carried out using a reverse circulation drilling rig mounted on a Toyota Landcruiser. The hole size was BQ (56 mm diameter), and the drill rod lengths were 6 metres. The advantage of this type of drilling compared to hand augering, is greater depth penetration and clay and gravel layers can also be penetrated.

All drilling was terminated at rock basement or thick clay. The first sample taken from the hole represented the top 1.5 metres, with successive samples representing 2 metre increments. A total of 2,658 metres from 46 holes was drilled.

8. LABORATORY TESTING

8.1 Heavy Mineral Determination Procedure

All samples that were assayed for heavy minerals on a routine basis during the programme were treated by R.H.F. Laboratories, Smithton, or 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. (It was realised later that after disaggregation any remaining +2mm particles were discarded without weighing).
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 slimed 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.

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8.2 Results of Heavy Mineral Determination

Heavy Mineral contents for individual samples are recorded against drill hole descriptive logs in Appendix 1. Also recorded 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.

8.3 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 for areas containing significant heavy mineral, usually plus 1.5%.

For most composites the 1.2 amp non-magnetic fraction was examined with selected samples being subject to examination of all magnetic fractions.

The method adopted for mineralogical study was:

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.

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

Results are included as Appendix 3.

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9. INVESTIGATIONS9.1 Traverse Line SummariesSea Elephant Traverse

This line was originally drilled in July of 1987, however only a select number of samples were assayed for heavy minerals. Since then the remaining samples have been assayed and during February 1989 some reverse circulation infill drilling was carried out. (See Figure 3).

The purpose of the infill drilling was to hopefully find a northerly extension of the Back Beach deposit at Cowper Point (E.L. 41/88). By using the reverse circulation rig it was hoped that greater depths would be achieved than with the original hand drilling. It was found, however, that the depths obtained with the hand drilling were equivalent with the depths obtained with rig.

Manana Traverse

A second traverse line situated approximately 3 kilometres to the south of the original line was drilled in April, 1988, using reverse circulation methods.

The traverse extended 400 metres to the edge of the nature reserve, and incorporated 10 holes. All holes terminated at basement with only traces of heavy mineral detected.

As well as the traverse, 2 holes were redrilled on traverse line 1, using the reverse circulation rig. The holes were a check to see if the depths obtained using hand drilling methods corresponded to the actual maximum depth of sand. As was the case with the Sea Elephant drilling, the depths obtained with the two methods were comparable.

White Beach and Disappointment Bay Traverses

These two adjoining areas are located on the northern coast of the island (see figure 2) and were drilled during April 1988, using hand drilling techniques. Exploration reports available from the Tasmanian Department of Mines include references to heavy mineral concentrations occurring in these areas.

Two traverse lines were drilled at White Beach, one near the eastern end of the beach and the other in about the middle of the beach. A total of 10 holes for 53.3 metres was drilled with samples showing a visual trace of heavy mineral.

At Disappointment Bay only one traverse line was drilled in the middle of the beach. Five holes for a total of 30.0 metres was drilled with samples again only showing a visual trace of heavy mineral.

Counsel Hill Traverses

The bulk of the exploration activities were concentrated around the Counsel Hill area (see figure 2), situated east of Reekara and to the west of Saltwater Creek.

As previously mentioned in chapter 5, this area was drilled to cover the strandline systems which extend northwards from the known mineralization at Cowper Point (E.L. 41/88). It was hoped that the mechanisms that formed the southern mineralized areas continued further north into this area.

Three traverse lines designated MC Line 1 (fig.4), MC Line 2 and MC Line 3 (fig 5) 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 metre spacing.

The heavy mineral grades recovered were variable, however on the northern-

most line (MC Line-1) grades greater than 1.5% were found in the eastern-most holes, as shown on cross-section, figure 4.

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

The recent hand drilling indicated that the strandline systems are not continuous north to south through the area, as originally thought.

Drill traverse MC Line-1 was extended to the eastern boundary of the licence and intersected mineralization in most holes. While test results are still pending for some samples, it appears that mineralization occurs over a width of 440 metres in this area, with depths averaging between 5 and 6 metres.

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.

Drill traverse MC Line-3 was also extended to the eastern boundary of the licence and visual mineral was sighted. The mineralization seems to be similar to that of the Back Beach deposit at Cowper Point (E.L. 41/88) and has a width of 40 to 80m. with average sand depths of 7m. Results from testing of drill hole samples are still pending.

A total of 53 holes have been drilled incorporating 257.2 metres.

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10. DISCUSSION

Overall the current drilling shows indications of a mineral sand resource occurring to the east of Counsel Hill. All other areas with maybe the exception of the Sea Elephant traverse show poor results and must be considered as areas of lower future prospectivity.

It is now known that the Counsel Hill strandline system is divided into at least two discrete sand bodies, separated by a basement granite high, and not the one continuous system, as originally thought. As previously mentioned, this could indicate 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.

Although the Counsel Hill area has shown encouraging results, all further work must give due recognition to the environment because of the adjoining Lavinia Nature Reserve. It is therefore recommended that the future programme (see Chapter 11) be carried out as soon as possible to take advantage of the recent devastation of the area by the recent bushfire. The bushfire has significantly reduced vegetation in the area and much of that remaining has died as a result. Work could be carried out with minimal environmental damage, prior to significant regrowth occurring.

11. PROPOSED DRILLING

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

The work will comprise the following:

- . 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.
- . An additional two lines to the north and two lines to the south of the line designated "MC Line 3". In addition, infill drilling on MC 3 line to give a 20m. hole spacing. This work will comprise eight holes per line at 20m. spacing plus three additional holes for a total of 35 holes, to an average depth of 8m. = 280m. Total drilling estimate - 728m.

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 6.

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

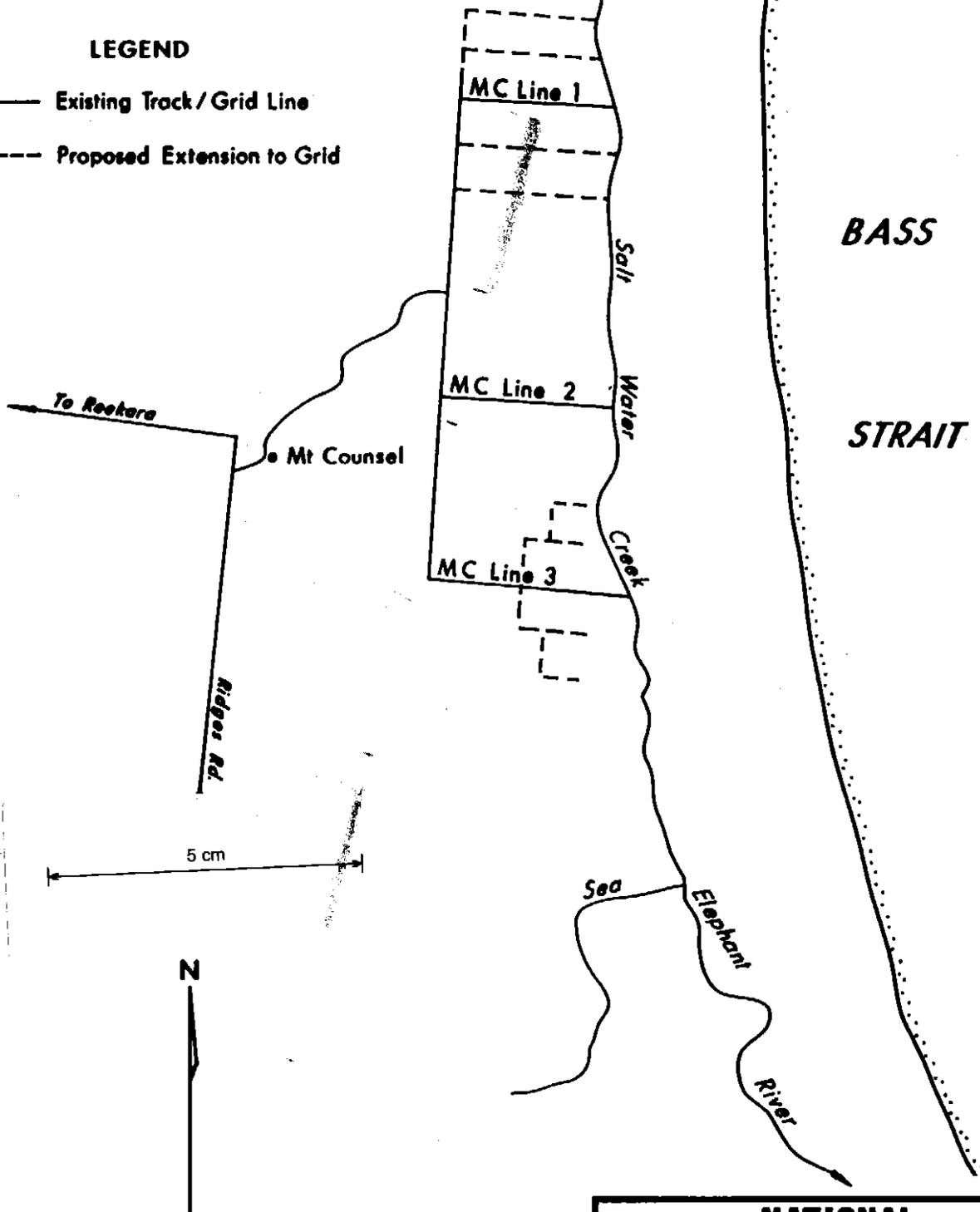
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EL 45/86 Boundary

LEGEND

- Existing Track / Grid Line
- - - Proposed Extension to Grid



SCALE 1:42,000

0 420 840 1260 1680 2100m

(Air Photo Overlay)

NATIONAL MINERAL SANDS P/L

EL 45/86
PROPOSED DRILLING GRID FOR MOUNT COUNSEL AREA 1989-1990

12. APPENDICES

APPENDIX 1

Drillhole Logs

SEA ELEPHANT

Traverse Line

CLIENT: NATIONAL MINERAL SANDS
 AREA: KING ISLAND - SEA ELEPHANT
 LOGGED BY: ANDREW DOVE

TITLE NO: EL 45/86
 LINE NO: 1 HOLE NO: SE 0
 DATE DRILLED: 6/7/87

Interval (m)	Wet Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1		SAND, medium to fine grained, dark grey then white		1.00	0.50
1 - 2		SAND, medium to fine grained, white		0.10	0.40
2 - 3	3.75	AS ABOVE to 2.5 then START SLUDGING Then dark greyish brown, indurated sand.		0.10	0.50
3 - 4	3.25	SAND, medium to coarse grained, some very coarse grey indurated.		0.10	0.70
4 - 5	3.5	AS ABOVE		1.90	0.50
5 - 6	3.25	SAND, amber and brownish grey, medium grained. Shell rich.		13.20	0.30
6 - 7	4.0	SAND, coarse to very coarse. Shell rich with very coarse shell fragments. Some pebbles.		15.40	0.60
		END OF HOLE on pebble base			
			Average		0.50

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CLIENT: NATIONAL MINERAL SANDS
 AREA: KING ISLAND - SEA ELEPHANT
 LOGGED BY: ANDREW DOVE

TITLE NO: EL 45/86
 LINE NO: 1 HOLE NO: SE4
 DATE DRILLED: 6/7/87

022

Interval (m)	Wet Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1		SAND, medium to fine grained. Dark grey to black, indurated. START SLUDGING		1.30	0.30
1 - 2	4.0	AS ABOVE		0.10	0.30
2 - 3	4.0	AS ABOVE		Trace	0.30
3 - 4	4.0	AS ABOVE		1.70	0.80
4 - 5	5.0	SAND, coarse grained, dark grey.		17.40	0.30
5 - 5.7	5.25	SAND, coarse to very coarse grained with pebbles. Some sludge coming into casing. Then into black mud. Some leaves in coarse sand. END OF HOLE. mud		23.70	0.30
			Average		0.39

19

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CLIENT: NATIONAL MINERAL SANDS
 AREA: KING ISLAND - SEA ELEPHANT
 LOGGED BY: ANDREW DOVE

TITLE NO: EL 45/86
 LINE NO: 1 HOLE NO: SE 8
 DATE DRILLED: 6/7/87

023

Interval (m)	Wet Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1		SAND, medium to fine, dark grey to black, indurated. STARTED SLUDGING		0.10	0.30
1 - 2	2.75	AS ABOVE		0.10	0.40
2 - 3	4.5	AS ABOVE		2.80	1.10
		END OF HOLE 3m. Mud			
			Average		0.6

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CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: KING ISLAND - SEA ELEPHANT

LINE NO: 1 HOLE NO: SE 12

LOGGED BY: ANDREW DOVE

DATE DRILLED: 6/7/87

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Interval (m)	Wet Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1		SAND, fine to medium dark grey then white. STARTED SLUDGING		Trace	0.40
1 - 2	4.5	SAND, fine to medium grained, light grey, slightly organic.		0.10	0.50
2 - 3	3.5	SAND, fine to medium grained, dark grey, slightly indurated.		0.10	0.40
3 - 4	3.5	AS ABOVE		6.80	0.50
		END OF HOLE 4.0m. Mud			
			Average		0.45

21

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CLIENT: NATIONAL MINERAL SANDS
 AREA: KING ISLAND - SEA ELEPHANT
 LOGGED BY: ANDREW DOVE

TITLE NO: EL 45/86
 LINE NO: 1 HOLE NO: SE 16
 DATE DRILLED: 6/7/87

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Interval (m)	Wet Wt. (kg)	Description	% Slime	% um	% H.M.
0 - 1		SAND, fine to medium grained, dark grey. Slight indurated. STARTED SLUDGING		0.4	0.2
1 - 2	3.0	AS ABOVE		0.2	0.3
2 - 3	4.0	AS ABOVE		4.0	0.3
3 - 4	4.25	AS ABOVE, becoming darker and medium grained.		16.8	0.3
4 - 5	5.75	AS ABOVE, becoming granular at base.		<u>%+1000 um</u> 10.6	0.1
5 - 6	4.0	AS ABOVE		19.8	0.3
6 - 7	4.0	SAND, light grey, fine grained, occasional granules, mica and calcrete present at basement		8.7	2.3
		END OF HOLE 7.0m.			
		Average			0.54

22

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CLIENT: NATIONAL MINERAL SANDS
 AREA: KING ISLAND - SEA ELEPHANT
 LOGGED BY: ANDREW DOVE

TITLE NO: EL 45/86
 LINE NO: 1 HOLE NO: SE 20
 DATE DRILLED: 6/7/87

Interval (m)	Wet Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 1		SAND, fine to medium grained, dark grey, indurated. STARTED SLUDGING		0.40	0.20
1 - 2	2.5	SAND, fine grained, light grey, contains minor H.M.		Trace	0.30
2 - 3	5.0	SAND, fine grained, light grey, contains indurated layer.		0.10	0.30
3 - 4	6.25	SAND, medium to coarse grained, light grey, slightly organic.		0.30	1.00
4 - 4.5	1.25	AS ABOVE, hit basement, prob. calcrete.		7.70	0.90
		END OF HOLE 4.5m. Basement			
			Average		0.50

CLIENT: NATIONAL MINERAL SANDS
 AREA: KING ISLAND - SEA ELEPHANT
 LOGGED BY: ANDREW DOVE

TITLE NO: EL 45/86
 LINE NO: 1 HOLE NO: SE 24
 DATE DRILLED: 6/7/87

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Interval (m)	Wet Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1		SAND, fine-medium grained, dark grey to brown, indurated. STARTED SLUDGING		0.70	0.10
1 - 2	4.25	SAND, fine-medium grained, white, slightly organic.		0.20	0.30
2 - 3	4.5	AS ABOVE becoming coarser (medium grained)		1.60	0.30
3 - 4	4.75	AS ABOVE, coarser. Coarse grained to granular.		5.00	0.20
4 - 5	4.0	AS ABOVE, H.M. visible		28.60	0.10
5 - 6	3.0	AS ABOVE, mica present.		9.00	0.20
6 - 6.3	1.5	SAND, fine grained, light grey, some granules. Hit basement.		9.70	1.00
		END OF HOLE 6.3m. Basement. Large Pebbles.			
			Average		0.24

24

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CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: KING ISLAND - SEA ELEPHANT

LINE NO: 1

HOLE NO: SE28

LOGGED BY: ANDREW DOVE

DATE DRILLED: 6/7/87

027

Interval (m)	Wet Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1	5.0	SAND, medium to fine grained, dark grey then white. STARTED SLUDGING		1.30	0.20
1 - 2		AS ABOVE, hit hard indurated layer. END OF HOLE 1.9m. Hard indurated layer.		Trace	0.30
				Average	0.25

25

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CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: KING ISLAND - SEA ELEPHANT

LINE NO: 1

HOLE NO: SE 32

LOGGED BY: ANDREW DOVE

DATE DRILLED: 6/7/87

028

Interval (m)	Wet Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1		SAND, fine to medium grained, dark grey. STARTED SLUDGING		0.40	0.10
1 - 2	4.0	SAND, medium grained, light grey.		0.10	0.10
2 - 3	5.0	AS ABOVE, white.		Trace	0.10
3 - 4	7.0	AS ABOVE becoming very coarse		2.20	0.10
4 - 5	3.75	AS ABOVE		5.40	0.10
5 - 6	5.0	AS ABOVE, granules and occasional pebbles.		16.70	0.10
6 - 7	4.5	AS ABOVE, contained hard indurated layer		17.90	<0.10
7 - 8	4.0	AS ABOVE. Hit hard layer		11.90	0.10
		END OF HOLE 8.0m. Indurated layer.			
			Average		<0.10

26

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029

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: KING ISLAND - SEA ELEPHANT

LINE NO: 1 HOLE NO: SE 36

LOGGED BY: ANDREW DOVE

DATE DRILLED: 6/7/87

Interval (m)	Wet Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1		SAND, fine-medium grained, dark grey then light grey		0.40	<0.10
		STARTED SLUDGING			
1 - 2	3.5	SAND, fine-medium grained, light grey		Trace	0.10
2 - 3	5.0	AS ABOVE		0.10	0.10
3 - 4	5.25	AS ABOVE		0.10	0.10
4 - 5	5.0	AS ABOVE, becoming coarser		0.30	0.10
5 - 6	7.0	AS ABOVE, very coarse to granular		6.80	<0.10
		END OF HOLE 6.0m. Mud			
			Average		<0.10

27

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CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: KING ISLAND - SEA ELEPHANT

LINE NO: 1 HOLE NO: SE 40

LOGGED BY: ANDREW DOVE

DATE DRILLED: 6/7/87

030

Interval (m)	Wet Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1		SAND, fine-medium, dark grey, indurated. STARTED SLUDGING		0.40	<0.10
1 - 2	4.0	SAND, fine-medium grained, light grey. Went thru bit indurated layer		0.10	0.10
2 - 3	5.0	SAND, fine-medium grained, light grey.		0.50	0.10
3 - 4	7.0	AS ABOVE, SAND becoming whiter		1.60	0.10
4 - 5	7.0	AS ABOVE, becoming coarser, occasional granules, hit hard layer END OF DRILLING 5.0m. hard layer		4.10	<0.10
			Average		<0.10

28

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CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

031

AREA: KING ISLAND - SEA ELEPHANT

LINE NO: 1 HOLE NO: SE 44

LOGGED BY: ANDREW DOVE

DATE DRILLED: 6/7/87

Interval (m)	Wet Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1		SAND, fine-medium, dark grey STARTED SLUDGING		0.80	<0.10
1 - 2	3.0	SAND, fine-medium grained, light grey to white.		0.10	0.10
2 - 3	3.75	AS ABOVE, getting coarse		Trace	0.10
3 - 4	5.0	AS ABOVE, getting coarse, light grey		1.20	0.10
4 - 5	6.5	AS ABOVE, went thru an indurated layer		3.10	0.10
5 - 6	2.5	SAND, dark brown, fine-medium grained, indurated.		5.70	0.10
6 - 7	2.75	AS ABOVE		5.30	0.10
		END OF HOLE 7.0m., got too tight			
			Average		<0.10

29

664033

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: KING ISLAND - SEA ELEPHANT

LINE NO: 1

HOLE NO: SE 48

LOGGED BY: ANDREW DOVE

DATE DRILLED: 6/7/87

032

Interval (m)	Wet Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1		SAND, medium to fine, dark grey, indurated. STARTED SLUDGING		0.50	<0.10
1 - 2	3.0	SAND, fine-medium grained, light grey.		Trace	0.10
2 - 3	3.5	SAND, fine-medium grained, white		Trace	0.10
3 - 4	6.0	AS ABOVE		Trace	0.10
4 - 5	3.5	AS ABOVE, hit hard indurated layer.		0.10	0.10
		END OF HOLE 5m. Indurated layer			
			Average		<0.10

30

664034

CLIENT: NATIONAL MINERAL SANDS
 AREA: KING ISLAND - SEA ELEPHANT
 LOGGED BY: ANDREW DOVE

TITLE NO: EL 45/86
 LINE NO: 1 HOLE NO: SE 52
 DATE DRILLED: 6/7/87

033

Interval (m)	Wet Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1		SAND, medium to fine grained, dark grey STARTED SLUDGING		4.30	<0.10
1 - 2	3.5	SAND, medium to coarse, dark grey then white.		0.30	0.10
2 - 3	5.5	SAND, medium to coarse, white.		Trace	0.20
3 - 4	5.0	AS ABOVE		Trace	0.90
4 - 5	3.5	AS ABOVE, then dark grey indurated, becoming coarser.		5.00	0.20
5 - 6	4.0	SAND, dark grey, indurated, coarse to very coarse. END OF HOLE. Hard indurated layer 6.0m.		9.80	0.10
			Average		0.27

31

664033

CLIENT: NATIONAL MINERAL SANDS
 AREA: KING ISLAND - SEA ELEPHANT
 LOGGED BY: ANDREW DOVE

TITLE NO: EL 45/86
 LINE NO: 1 HOLE NO: SE 56
 DATE DRILLED: 6/7/87

034

Interval (m)	Wet Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1		SAND, medium to coarse, dark grey then white. STARTED SLUDGING		0.60	<0.10
1 - 2	4.5	SAND, medium to coarse, white.		0.30	0.10
2 - 3	4/5	AS ABOVE then dark grey, indurated.		Trace	0.10
3 - 4	3.5	SAND, dark grey, indurated, becoming coarser. END OF HOLE 4.0m. due to hard drilling		0.20	0.20
			Average		0.13

CLIENT: NATIONAL MINERAL SANDS
 AREA: KING ISLAND - SEA ELEPHANT
 LOGGED BY: ANDREW DOVE

TITLE NO: EL 45/86
 LINE NO: 1 HOLE NO: SE 60
 DATE DRILLED: 6/7/87

035

Interval (m)	Wet Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1		SAND, coarse to medium, slight dark grey then white. STARTED SLUDGING		0.90	<0.10
1 - 2	5.0	SAND, coarse to medium, white.		0.20	0.20
2 - 3	4.5	AS ABOVE		0.30	0.10
3 - 4	4.5	SAND, medium to coarse grained, light grey.		2.90	0.10
4 - 5	4.0	AS ABOVE		9.20	0.10
5 - 6	4.0	AS ABOVE, becoming very coarse to granular END OF HOLE 6.0m. becoming too tight		22.00	<0.10
			Average		0.12

33

664037

CLIENT: NATIONAL MINERAL SANDS
 AREA: KING ISLAND - SEA ELEPHANT
 LOGGED BY: ANDREW DOVE

TITLE NO: EL 45/86
 LINE NO: 1 HOLE NO: SE 64
 DATE DRILLED: 6/7/87

036

Interval (m)	Wet Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1		SAND, medium to coarse, slightly dark grey then white.		2.40	<0.10
		STARTED SLUDGING			
1 - 2	4.0	SAND, white, medium to coarse grained, hit dark grey indurated layer		2.80	<0.10
		END OF HOLE 2m. Indurated layer			
			Average		<0.10

34

664038

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: KING ISLAND - SEA ELEPHANT

LINE NO: 1 HOLE NO: SE 68

LOGGED BY: ANDREW DOVE

DATE DRILLED: 6/7/87

037

Interval (m)	Wet Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1		SAND, white with slight dark grey, medium to coarse grained STARTED SLUDGING		2.00	<0.10
1 - 2	4.75	SAND, white then dark grey, medium to coarse grained.		1.40	<0.10
2 - 3	4.5	SAND, dark grey, medium to coarse grained, indurated.		19.10	<0.10
3 - 3.5	2.75	AS ABOVE, coarse to granular END OF HOLE 3.5m. got too tight		23.50	<0.10
			Average		<0.10

35

664039

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/88

AREA: SEA ELEPHANT

LINE NO 1

HOLE NO: SE 70

LOGGED BY: GRAHAM LEE

DATE DRILLED: 9.2.89

METHOD: Rig

038

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 1.5		SAND, coarse grained. Well sorted and rounded. Grey.			
1.5 - 3.5		AS ABOVE, dark brown with indurate.			
3.5 - 5.0		AS ABOVE. 5.0m. Silt/clay, pale grey, mica rich with fine sand. E.O.H. 5.0m.			

664040

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

039

AREA: KING ISLAND - SEA ELEPHANT

LINE NO: 1

HOLE NO: SE 72

LOGGED BY: ANDREW DOVE

DATE DRILLED: 6/7/87

Interval (m)	Wet Wt. (kg)	Description	% Slime	% +600 um	% H.M.
0 - 1		SAND, medium to coarse grained, dark grey slightly then white.			0.1
1 - 2	6.0	SAND, light grey, medium to coarse Started sludging 1.5m. hitting hard indurated layer END OF HOLE 2.0m. hard indurated layer			0.1
		Average			0.1

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/88

AREA: SEA ELEPHANT

LINE NO 1

HOLE NO: SE 74

LOGGED BY: GRAHAM LEE

DATE DRILLED: 9.2.89

METHOD: Rig

040

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 1.5		SAND, coarse grained, well sorted and rounded, grey. Hard indurated layers.			
1.5 - 3.5		AS ABOVE, dark brown			
3.5 - 4.75		AS ABOVE at 4.6m. Sand, fine - medium, very clayey. E.O.H. 4.75m.			

38

664042

041

CLIENT: NATIONAL MINERAL SANDS
AREA: KING ISLAND - SEA ELEPHANT
LOGGED BY: ANDREW DOVE

TITLE NO: EL 45/86
LINE NO: 1 HOLE NO: SE 76
DATE DRILLED: 6/7/87

Interval (m)	Wet Wt. (kg)	Description	% Slime	% +600 um	% H.M.
0 - 1		SAND, medium to coarse, slightly dark grey then white			0.1
1 - 2	5.5	Started sludging 1.3m. SAND, medium to coarse, white, becoming granular			<0.1
2 - 2.3	1.5	AS ABOVE, granular, hit hard indurated layer.			0.1
		END OF HOLE 2.3m. Hard indurated layer			
		Average			<0.1

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/88

AREA: SEA ELEPHANT

LINE NO 1

HOLE NO: SE 78

LOGGED BY: GRAHAM LEE

DATE DRILLED: 9.2.89

METHOD: Rig

042

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 1.5		SAND, coarse grained, moderately sorted, well rounded. Pale grey			
1.5 - 3.5		SAND, coarse with very coarse bands, moderate sorted, well rounded. Hard indurated layers.			
3.5 - 4.25 DO NOT TEST		AS ABOVE, to 3.75m. then into weathered granite WITH white clay matrix E.O.H. 4.25m.			

40

664044

CLIENT: NATIONAL MINERAL SANDS
 AREA: KING ISLAND - SEA ELEPHANT
 LOGGED BY: ANDREW DOVE

TITLE NO: EL 45/86
 LINE NO: 1 HOLE NO: SE 80
 DATE DRILLED: 6/7/87

043

Interval (m)	Wet Wt. (kg)	Description	% Slime	% +600 um	% H.M.
0 - 1	4.0	SAND, medium to coarse grained, slightly dark grey then white. Started sludging 0.7m.			0.3
1 - 2	3.0	SAND, fine-coarse grained white then light grey.			0.4
2 - 3	4.0	SAND, fine-coarse grained, light grey.			0.2
3 - 4	3.0	AS ABOVE, hit hard indurated layer.			0.4
		END OF HOLE 4.0m. Hard indurated layer.			
		Average			0.33

41

664045

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/88

AREA: SEA ELEPHANT

LINE NO 1

HOLE NO: SE 82

LOGGED BY: GRAHAM LEE

DATE DRILLED: 9.2.89

METHOD: Rig

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 1.5		SAND, coarse grained, moderately sorted. Grey. Abundant plant matter - fibrous roots and stems			
1.5 - 3.5		SAND, coarse grained with brown clay matrix. Increasing clay with depth. 3.5m. clay, brown, mica rich. E.O.H. 3.5m.			

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044

47

664046

045

664047

MANANA

Traverse Lines

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MANANA REDRILL

LINE NO: 1

HOLE NO: M 1

LOGGED BY: ANDREW DOVE

DATE DRILLED: 27.4.88

27.4.88

Interval (m)	Wet Wt. (kg)	Description	% Slime	% + 1000um	% H.M.
0 - 1.5	4.09	SAND fine to medium grained, white grades to brown at base, H.M. trace WATER TABLE		1.04	0.56
1.5 - 3.5	3.03	SAND fine to medium grained red-brown, slightly indurated. H.M. trace		3.11	0.31
3.5 - 4.0		AS ABOVE hit dark brown clay. H.M. trace			
4.0 - 5.5		CLAY green blue EOH 5.5m.			

44

664048

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MANANA REDRILL

LINE NO: 1

HOLE NO: M 2

LOGGED BY: ANDREW DOVE

DATE DRILLED: 27.4.88

047

Interval (m)	Wet Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 -1.5		200M. IN FROM CORNER SAND fine to medium grained light grey then dark brown			
		WATER TABLE			
1.5 - 2.0		SAND medium to coarse grained dark brown, hit dark brown clay			
2.0 - 4.5		CLAY dark brown, went into green blue clay			
4.5 -5.5		SAND very coarse and gravel, light green. H.M. present			
5.5 - 7.0		AS ABOVE hit coral fragment then into blue green clay and fragment			
7.0 - 8.0		AS ABOVE then in clay and limestone			
		BASEMENT SCHIST			
8.0 - 10.5		Weathered basement and clay Basement at 10.5m. Schist Drilled to 11.5m. - rock fragments			

664049

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MANANA

LINE NO: 2

HOLE NO: M 20E

LOGGED BY: ANDREW DOVE

DATE DRILLED:

27.4.88

048

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1.5		IN SWAMP BEHIND BIG DUNE WATER TABLE PEAT with some fine grained dark brown sand (very small sample)			
1.5 - 3.5		SAND medium to coarse grained dark brown, very peaty (small sample)			
3.5 - 5.0		SAND medium to coarse grained, dark brown, hit grey blue clay, some gravel EOH 5m.			

46

664050

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MANANA

LINE NO: 2

HOLE NO: M 16E

LOGGED BY: ANDREW DOVE

DATE DRILLED: 27.4.88

69

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1.5	3.00	SAND fine to medium grained, light grey	5.24	2.74	0.67
1.5 - 3.5	5.80	AS ABOVE grades into brown WATER TABLE	6.11	0.81	0.70
3.5 - 5.5	8.20	SAND medium grained dark brown, indurated, contains occasional pebble coarser towards base	6.08	2.28	0.94
5.5 - 7.5		SAND medium to coarse grained, grey, contains gravel (weathered basement)			
7.5 - 10.5		WEATHERED basement rich in silver grey clay, hit blue green clay at 7.5m. contains rock fragments EOH 10.5m.			

41

664051

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MANANA

LINE NO: 2 HOLE NO: M12E

LOGGED BY: ANDREW DOVE

DATE DRILLED: 27.4.88

000

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1.5	2.10	SAND, fine to medium grained, dark brown	18.25	0.75	0.41
1.5 - 3.5	5.91	AS ABOVE indurated	4.90	0.32	0.54
3.5 - 5.5	4.55	AS ABOVE hit dark brown clay then back to sand medium grained light brown to brown then hit green blue clay EOH 5.5 m.	5.14	5.92	2.01
			Average		1.04

664052

48

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MANANA

LINE NO: 2

HOLE NO: M 8E

LOGGED BY: ANDREW DOVE

DATE DRILLED: 27.4.88

051

Interval (m)	DRY Wt. (kg)	Description	% Slime	% 1000 um	% H.M.
0 - 1.5	3.37	SAND medium to coarse frained, light grey then dark brown WATER TABLE	2.27	5.27	0.32
1.5 - 3.5	5.27	SAND coarse grained, dark brown, indurated, contains gravel, muddy	4.35	8.79	0.50
3.5 - 4.5	2.36	AS ABOVE hit green blue clay	6.71	11.74	0.89
4.5 - 5.5		CLAY EOH 5.5m.			
			Average		0.53

664053

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MANANA

LINE NO: 2

HOLE NO: M 4E

LOGGED BY: ANDREW DOVE

DATE DRILLED: 27.4.88

002

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 100um	% H.M.
0 - 1.5		SAND fine to medium grained, light grey to dark brown WATER TABLE			
1.5 - 3.5		SAND fine to medium grained, dark brown, indurated muddy and clayey			
3.5 - 4.0		AS ABOVE hit gravel then green blue clay			
4.0 - 5.5		CLAY			
		EOH 5.5m.			

50

664054

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MANANA

LINE NO: 2

HOLE NO: M 0

LOGGED BY: ANDREW DOVE

DATE DRILLED: 27.4.88

103

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1.5	2.13	SAND fine grained, dark brown then light grey	-	0.52	0.37
1.5 - 3.5		SAND fine to medium grained, dark brown, indurated			
3.5 - 5.5		WATER TABLE AS ABOVE very fine silty mud contains gravel, hit light green grey clay			
5.5 - 9.5		CLAY green blue and weathered basement. EOH 9.0m.			

21

664055

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MANANA

LINE NO: 2

HOLE NO:M 4W

LOGGED BY: ANDREW DOVE

DATE DRILLED: 27.4.88

Interval (m)	Dry Wt. (kg)	Description	% Slime	% 1000 um	% H.M.
0 - 1.5		SAND fine to medium grained, light grey then dark brown WATER TABLE			
1.5 - 3.5	6.20	SAND fine to medium grained, black brown, very muddy, indurated		0.51	0.54
3.5 - 5.5		AS ABOVE hit dark brown clay, then fragment, then green blue clay EOH 5.5m.			

664056

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MANANA

LINE NO: 2

HOLE NO: M 8W

LOGGED BY: ANDREW DOVE

DATE DRILLED:

27.4.88

2
01
01

Interval (m)	Wt. (kg)	Description	% Slime	% + 1000um	% H.M.
0 - 1.5	2.88	SAND fine to medium grained, light grey then dark brown WATER TABLE	8.38	0.81	0.56
1.5 - 3.5	6.70	SAND fine to medium grained, dark brown contains gravel, hit dark brown clay	5.14	1.89	0.68
3.5 - 5.5		CLAY dark brown then into grey green clay with fragment weathered basement EOH 5.5m.			
			Average		0.63

664057

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MANANA

LINE NO: 2

HOLE NO: M 12W

LOGGED BY: ANDREW DOVE

DATE DRILLED: 27.4.88

0.50

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 100um	% H.M.
0 - 1.5	2.65	SAND fine to medium grained, light grey to dark brown WATER TABLE	12.02	1.31	0.50
1.5 - 3.5	3.20	SAND fine to medium grained, dark brown	8.58	3.38	0.55
3.5 - 5.5 (no sample)		CLAY dark brown then hit fragment with grey green clay EOH 5.5m.			
			Average		0.53

54

664058

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MANANA

LINE NO: 2

HOLE NO: M. 16W

LOGGED BY: ANDREW DOVE

DATE DRILLED: 27.4.88

057

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1.5		SAND fine to medium grained, light grey to brown WATER TABLE			
1.5 - 2.0	1.70	SAND fine to medium grained brown, hit brown clay, then hit limestone	9.80	16.26	0.81
2.0 - 5.5	3.41	CLAY with limestone fragments with blue green clay	5.99	6.93	2.47

664059

WHITE BEACH
Traverse Lines

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: WHITE BEACH

LINE NO: 1

HOLE NO: WB1

LOGGED BY: GRAHAM LEE

DATE DRILLED: 10.4.88

059

Interval (m)	Dry Wt. (kg)	Description	% Slime	% 600 um	% H.M.
0 - 0.8		MID TIDE MARK ON BEACH SAND, medium grain grey and white with abundant dark silicate. Rock at 0.8m. EOH		2.29	0.28
		Average			0.78

664061

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: WHITE BEACH

LINE NO: 1 HOLE NO: WB2

LOGGED BY: GRAHAM LEE

DATE DRILLED:

060

Interval (m)	Dry Wt. (kg)	Description	% Slime	% 600 um	% H.M.
0 - 2.0		Crest of first beach ridge, 40m. south of WB1 SAND, pale amber, medium grained with traces of HM.		0.16	0.58
2.0 - 4.0		As above, with seams of HM between 3.5 to 4.0m.		0.05	1.13
4.0 - 5.0		As above. Water at 4.3m. 4.3 - 5.0m. coarse sand with pebbles and coarse shale fragments. Rock at 5.0m. EOH 5.8m.		3.28	2.23
		Average			1.13

664062

58

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: WHITE BEACH

LINE NO: 1 HOLE NO: WB3

LOGGED BY: GRAHAM LEE

DATE DRILLED: 10.4.88

061

Interval (m)	Dry. Wt. (kg)	Description	% Slime	% 600 um	% H.M.
0 - 2.0		North slope of front coastal ridge, 80m. south of WB1 SAND, medium grained, grey and pale amber		0.35	0.50
2.0 - 4.0		As above. Trace of HM		0.07	0.47
4.0 - 6.0		As above. Trace of HM		0.02	0.38
6.0 - 8.0		As above. Trace of HM		0.03	0.28
8.0 - 10.0		As above. EOH		0.02	0.34
		Average			0.39

664063

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: WHITE BEACH

LINE NO: 1

HOLE NO: WB4

LOGGED BY: GRAHAM LEE

DATE DRILLED: 10.4.88

062

Interval (m)	Dry Wt. (kg)	Description	% Slime	% 600 um	% H.M.
0 - 2.0		Top of front coastal ridge, 120m. south of WB1 SAND, fine to medium grained, grey and brownish yellow		0.57	0.54
2.0 - 4.0		SAND, medium grained, pale amber. Trace HM		0.19	0.28
4.0 - 6.0		As above		0.10	0.47
6.0 - 8.0		As above		0.10	0.61
8.0 - 10.0		As above		0.06	0.77
		EOH			
		Average			0.53

664064

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: WHITE BEACH

LINE NO: 1

HOLE NO: WB6

LOGGED BY: GRAHAM LEE

DATE DRILLED: 10.4.88

030

Interval (m)	Dry Wt. (kg)	Description	% Slime	%+ 600 um	% H.M.
0 - 2.0		180m. South of WB1. Valley behind frontal dune SAND, fine grained grey, white then pale brown		0.99	0.55
2.0 - 4.0		As above to 2.7m. 2.7 -3.0m. Grey sand (old soil). 3.0 -4.0m. White sand grading to pale brown.		0.23	0.39
4.0 - 6.0		SAND, medium to fine grained, pale amber. Traces of HM		0.14	0.45
6.0 - 8.0		SAND, medium grained grey to 6.3m. then pale amber medium grained with minor shell. Traces of HM and minor thin bands		0.25	0.77
		EOH			
		Average			0.54

664065

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: WHITE BEACH

LINE NO: 2

HOLE NO: WB1

LOGGED BY: GRAHAM LEE

DATE DRILLED: 11.4.88

0
11

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +600 um	% H.M.
0 - 1.0		On Beach SAND, medium grained amber with minor shell.		2.16	0.05
		Average			0.05

664066

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: WHITE BEACH

LINE NO: 2

HOLE NO: WB2

LOGGED BY: GRAHAM LEE

DATE DRILLED: 11.4.88

067

Interval (m)	Dry. Wt. (kg)	Description	% Slime	%+600 um	% H.M.
0 - 1.0		SAND, medium to fine grained, pale amber. Traces HM. Water at 1.0m.		0.03	0.13
1.0 - 2.0		As above		1.86	0.19
2.0 - 3.0		As above		1.50	0.01
3.0 - 4.0		SAND, medium to coarse grained with coarse shell. End in coarse shell. EOH		10.45	0.05
			Average		0.1

01

664067

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: WHITE BEACH

LINE NO: 2

HOLE NO: WB4

LOGGED BY: GRAHAM LEE

DATE DRILLED: 11.4.88

067

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +600 um	% H.M.
0 - 2.0		SAND, fine to medium grained, pale amber. Traces of HM. Water at 2.0m.		0.05	0.35
2.0 - 4.0		SAND, medium grained, pale amber, shell rich.		1.41	1.00
4.0 - 6.0		As above with coarse shell. Rock at 6.0m. Coarse shell stopped hole.		13.38	0.10
Average					0.48

664069

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: WHITE BEACH

LINE NO: 2

HOLE NO: WB5

LOGGED BY: GRAHAM LEE

DATE DRILLED: 11.4.88

058

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +600 um	% H.M.
0 - 2.0		SAND, fine to medium grained, pale grey		0.47	0.42
2.0 - 2.50		SAND, fine to medium grained, amber. Rock at 2.50m.		0.06	0.27
		Average			0.39

bb

664070

069

DISAPPOINTMENT BAY

Traverse Line

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: DISAPPOINTMENT BAY

LINE NO: 1

HOLE NO: DB2

LOGGED BY: GRAHAM LEE

DATE DRILLED: 11.4.88

071

Interval (m)	DryWt. (kg)	Description	% Slime	% +600 um	% H.M.
0 - 2.0		Beside Track to Bay. SAND, fine to medium grained, pale grey to 0.6m. then amber sand with traces of HM.		0.03	0.34
2.0 - 4.0		SAND, medium to fine grained. Traces of HM.		0.01	0.33
4.0 - 6.0		SAND as above to 5.8m. then grey (old soil) 5.8 to 6.4m. then white fine grained sand. Traces of HM at 6.0m. Dark brown sand.		0.01	0.38
6.0 - 8.0		SAND, medium grained, brown with orange Fe cemented layer 7.9 - 8.0m.		0.01	0.51
8.0 - 10.0		SAND, grey very moist fine grained to 8.3m., then white fine grained slightly moist, grades down to amber.		0.10	0.37
		EOH			
		Average			0.39

664073

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL/4586

AREA: DISAPPOINTMENT BAY

LINE NO: 1

HOLE NO: DB4

LOGGED BY: GRAHAM LEE

DATE DRILLED: 11.4.88

073

Interval (m)	Dry Wt. (kg)	Description	% Slime	%+600 um	% H.M.
0 - 2.0		80M. EAST OF ROAD, SLOPE OF FRONTAL DUNE SAND, medium grained, amber		0.04	0.48
2.0 - 4.0		SAND, medium grained, amber with traces of HM		0.08	0.31
4.0 - 6.0		AS above		1.97	0.32
6.0 - 8.0		AS above, grading coarser and shell rich at bottom. Hole caving at 8.0m.		5.34	0.65
		Average			0.44

664073

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: DISAPPOINTMENT BAY

LINE NO: HOLE NO: DB5

LOGGED BY: GRAHAM LEE

DATE DRILLED: 11.4.88

074

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +600 um	% H.M.
0 - 1.5		Back of Beach SAND, medium grained with some shell and traces of HM to 1.0m., then coarse shell to 1.5m. Water at 1.5m. EOH		7.90	0.38
		Average			0.38

664076

075

MOUNT COUNSEL
Traverse Lines

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 1 HOLE NO: MCO

LOGGED BY: ANDREW DOVE

DATE DRILLED: 25.4.88

070

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1.5	4.60	SAND, medium grained, brownish grey Water Table	5.82	0.77	0.12
1.5 - 3.5	6.42	SAND, medium grained, brownish grey grading to brown, indurated	4.68	0.22	0.06
3.5 - 3.8	1.20	As above, hit basement EOH 3.8m.	8.81	2.60	0.05
			Average		0.08

74

664078

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 1 HOLE NO: MC4

LOGGED BY: ANDREW DOVE

DATE DRILLED: 25.4.88

077

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1.5	3.55	SAND, medium to coarse grained, white to light grey	5.44	1.04	0.24
1.5 - 3.5	8.16	SAND, medium to coarse grained, brownish grey. Water Table	5.45	0.65	0.31
3.5 - 5.5	7.97	SAND, coarse grained dark brown, indurated. Hit basement.	4.43	1.51	0.16
		E.O.H. 5.5m.			
			Average		0.24

75

664079

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 1

HOLE NO: MC8

LOGGED BY: ANDREW DOVE

DATE DRILLED:

078

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 1.5	5.19	SAND medium to coarse grained, white to light grey	1.51	0.19	0.21
1.5 - 3.5	5.45	SAND, medium to coarse grained, brownish grey Water Table	3.69	0.53	0.07
3.5 - 5.5	8.20	SAND, coarse grained, dark brown, indurated. Hit basement	3.18	4.94	0.18
E.O.H. 5.5m			Average		0.13

76

664080

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 1

HOLE NO: MC12

LOGGED BY: ANDREW DOVE

DATE DRILLED:

25.4.88

079

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000um	% H.M.
0 - 1.5	5.63	SAND, medium to coarse grained, light grey to greyish brown Water Table	2.27	1.60	0.12
1.5 - 3.5	6.50	SAND coarse grained, greyish brown	2.90	1.42	0.09
3.5 - 5.5	9.14	AS above, dark brown indurated. Hit dark brown clay. EOH 5.5m.	6.97	7.20	0.19
			Average		0.13

77

664081

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 1 HOLE NO: MC16

LOGGED BY: ANDREW DOVE

DATE DRILLED: 25.4.88

030

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1.5	3.50	SAND, coarse grained, greyish brown Water Table	1.08	1.80	0.16
1.5 - 3.5	7.92	AS above, slightly darker	1.51	0.61	0.70
3.5 - 5.5	9.10	AS above, dark brown, indurated. Hit rock - basement EOH 5.5m.	2.76	2.22	2.19
			Average		1.09

78

664082

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 1

HOLE NO: MC20

LOGGED BY: ANDREW DOVE

DATE DRILLED:

25.4.88

081

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1.5	2.83	SAND, coarse grained, greyish brown Water Table	6.43	0.59	0.25
1.5 - 3.5	8.48	AS above, darker, indurated	3.74	1.00	0.94
3.5 - 5.5	8.45	AS above, hit rock basement EOH 5.5m.	1.58	2.87	0.68
			Average		0.66

79

664083

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 1 HOLE NO: MC-24

LOGGED BY: ANDREW DOVE

DATE DRILLED: 25.4.88

002

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1.5	4.38	SAND, medium to coarse grained, light grey to brownish grey Water Table	1.36	0.20	0.38
1.5 - 3.5	7.76	SAND, coarse grained, brownish grey grading to greyish brown	1.03	0.14	1.00
3.5 - 5.5	11.15	AS above, greyish brown, indurated	1.53	1.84	1.84
5.5 - 7.5	8.48	AS above, hit rock basement EOH 7.5m.	3.10	6.06	0.39
			Average		0.94

80

664084

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 1

HOLE NO: MC28

LOGGED BY: ANDREW DOVE

DATE DRILLED: 25.4.88

083

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000um	% H.M.
0 - 1.5	2.23	SAND, coarse grained, greyish brown Water Table	3.42	1.00	0.48
1.5 - 3.5	1.47	AS above, grey	2.63	0.70	0.69
3.5 - 5.5	8.01	AS above, contains gravel	1.33	2.50	0.84
5.5 - 7.5	7.18	AS above, dark brown indurated, hit rock basement EOH 7.5m.	3.32	4.92	0.54
			Average		0.65

81

664085

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 1 HOLE NO: MC 32

LOGGED BY: ANDREW DOVE

DATE DRILLED: 25.4.88

084

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1.5	4.89	SAND, coarse grained, light grey. Water Table	1.06	0.19	0.41
1.5 - 3.5	7.10	AS above, brownish grey	0.90	0.55	1.09
3.5 - 5.5	9.65	AS above, gravel present	1.07	2.88	0.83
5.5 - 7.5	8.70	AS above, hit rock basement, slightly indurated. EOH 7.5m.	2.03	2.94	0.56
			Average		0.74

82

664086

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 1

HOLE NO: MC 36

LOGGED BY: ANDREW DOVE

DATE DRILLED: 25.4.88

085

Interval (m)	Dry. Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1.5	2.21	SAND, medium grained, dark brown, very organic	6.86	0.20	1.59
1.5 - 3.5	6.68	AS ABOVE	2.22	0.10	2.36
3.5 - 5.5	9.86	AS ABOVE becoming coarse	1.63	0.66	5.36
5.5 - 6.5	4.93	AS ABOVE, hit rock basement EOH 6.5m.	4.21	3.74	2.88
			Average		3.19

83

664087

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 1

HOLE NO: MC 40

LOGGED BY: ANDREW DOVE

DATE DRILLED: 25.4.88

086

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +600 um	% H.M.
0 - 1.5	3.15	SAND, medium grained, brownish grey WATER TABLE	7.45	0.93	1.14
1.5-3.5	7.66	SAND, medium grained, brown.	5.22	0.21	2.18
3.5-5.5	10.52	AS ABOVE becoming dark brown and coarser with depth. Slightly indurated	2.40	0.18	4.69
5.5-6.0	2.73	AS ABOVE, very coarse, contains rock. Hit basement EOH 6.0m.	2.23	2.39	1.21
			Average		2.68

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664088

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 1

HOLE NO: MC 44

LOGGED BY: ANDREW DOVE

DATE DRILLED: 25/4/88

087

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000 um	% H.M.
0 - 1.5	3.75	SAND, fine grained, greyish brown Water Table	10.68	0.51	0.56
1.5 - 3.5		SAND, medium grained, brown		0.41	0.36
3.5 - 5.5	9.04	AS ABOVE darker, indurated and becoming coarser with depth. HM trace.	3.31	0.14	1.12
5.5 - 7.0	5.21	AS ABOVE, hit rock and gravel, dark grey mudstone or greywacke EOH 7.0m.	6.54	5.94	0.51
			Average		0.65

85

664089

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 1

HOLE NO: MC48

LOGGED BY: ANDREW DOVE

DATE DRILLED: 25.4.88

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Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1.5	5.10	SAND, fine grained, greyish brown. HM Water Table	2.39	0.74	0.97
1.5 - 3.5	5.89	AS ABOVE, grades to brown	2.79	0.12	1.20
3.5 - 5.5	7.88	SAND, medium grained, dark brown, indurated. HM	3.20	0.25	1.26
5.5 - 6.5	2.87	SAND, medium to coarse grained, dark brown, indurated. Hit basement EOH 6.5m.	4.26	3.88	0.53
			Average		1.06

89

664090

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 1 HOLE NO: MC 52

LOGGED BY: ANDREW DOVE

DATE DRILLED: 25.4.88

689

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1.5	1.95	SAND, medium grained, dark grey to brown. HM present. Water Table	4.62	0.17	0.68
1.5 - 3.5	7.25	AS ABOVE, brown, HM	2.73	0.32	1.10
3.5 - 5.5	8.66	AS ABOVE, dark brown, indurated, HM	3.20	0.24	3.13
5.5 - 6.0	1.61	AS ABOVE, hit basement EOH 6.0m.	4.61	8.04	0.53
			Average		1.62

87

664091

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 1

HOLE NO: MC 56

LOGGED BY: ANDREW DOVE

DATE DRILLED: 25.4.88

090

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1.5	2.46	SAND, medium grained, brown. HM present	9.20	0.36	0.73
1.5 - 3.5	6.21	AS ABOVE, HM present	5.75	0.07	1.90
3.5 - 5.5	8.36	AS ABOVE, indurated HM present	3.12	0.43	1.70
5.5 - 6.0	1.40	AS ABOVE, indurated HM present. Hit basement EOH 6.0m.	5.50	3.88	0.55
			Average		1.43

88

664092

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 1

HOLE NO: MC 60

LOGGED BY: ANDREW DOVE

DATE DRILLED: 25.4.88

091

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1.5	4.78	SAND, fine grained, light grey to brown. HM present. Water table	5.17	0.24	2.10
1.5 - 3.5	7.00	SAND, fine to medium grained, brown. HM present		0.03	1.21
3.5 - 5.5	8.48	AS ABOVE. HM present.	2.49	0.09	5.56
5.5 - 6.5	3.45	AS ABOVE, hit gravel then basement. HM present EOH 6.5m.	1.87	2.16	1.44
			Average		3.02

89

664093

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT GOUNSEL

LINE NO: 1

HOLE NO: MC 64

LOGGED BY: ANDREW DOVE

DATE DRILLED:

25.4.88

092

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +100um	% H.M.
0 - 1.5	1.60	SAND, fine to medium grained, light grey HM present Water Table	14.01	1.78	1.40
1.5 - 3.5	7.93	AS ABOVE, dark brown. HM present	11.36	0.12	2.61
3.5 - 5.5	7.39	AS ABOVE, hit basement. HM present EOH 5.5m.	6.61	1.84	3.16
				Average	2.49

90

664094

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 1

HOLE NO: MC 68

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

093

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. 1 - 1m. \approx 1%.			
2.0 - 2.7		AS ABOVE. Couldn't turn casing at 2.7m. E.O.H. 2.7m.			

91

664095

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 1

HOLE NO: MC72

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

094

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

97

664096

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO. 1

HOLE NO: MC76

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

095

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 2.0		SAND, medium to fine grained, well sorted, grey. H.M. 1-2%.			
2.0 - 4.0		AS ABOVE, coarser with depth to very coarse. Some induration. H.M. 2-5% at bottom.			
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.			

664097

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 1

HOLE NO: MC80

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

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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%.			
2.0 - 4.0		SAND, medium at top then very coarse. Moderate sorting. Minor peat. H.M. 2%+.			
4.0 - 5.8		AS ABOVE with silt matrix and gravel. E.O.H, 5.8m. Hit rock			

44

664098

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LIEN NO 1

HOLE NO: MC84

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

097

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

93

664099

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 1

HOLE NO: MC88

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

090

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 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			

664100

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 1

HOLE NO: MC 92

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

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Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 2.0		SAND, medium grained, pale grey then white. Well sorted. Fine H.M. 1-2%.			
2.0 - 2.7		AS ABOVE, to 2.2m. then very coarse sand with silty matrix. E.O.H. 2.7m. Rock			

664101

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 1

HOLE NO: MC96

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

100

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

98

664102

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 1

HOLE NO: MC100

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

101

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

gy

664103

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 2

HOLE NO: MC 0

LOGGED BY: ANDREW DOVE

DATE DRILLED: 26.4.88

102

Interval (m)	Dry: Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1.5 (No sample)		TOP SOIL red brown then grey clay			
.1.5 - 5.5		CLAY grey EOH 5.5m.			

100

664104

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 2 HOLE NO: MC 8

LOGGED BY: ANDREW DOVE

DATE DRILLED: 26.4.88

103

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1.5		GRAVEL for 20cm. then hit weathered bedrock, very clayey			
1.5 - 3.5		Weathered bedrock, clayey			
		EOH 3.5m.			

401

664105

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 2

HOLE NO: MC 16

LOGGED BY: ANDREW DOVE

DATE DRILLED: 26.4.88

104

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1.5		SAND and gravel very coarse for 30cm. then clay			
1.5 -3.5		CLAY and weathered basement			
		EOH 3.5m.			

107

664106

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 2

HOLE NO: MC 24

LOGGED BY: ANDREW DOVE

DATE DRILLED: 26.4.88

103

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +100um	% H.M.
0 - 3.5		SAND and gravel very coarse for top 20cm., then clay and gravel, hit weathered basement EOH 3.5m.			664107

103

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 2 HOLE NO: MC 36

LOGGED BY: ANDREW DOVE

DATE DRILLED: 26.4.88

106

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 3.5		SAND and gravel very coarse for 20cm. then clay. Weathered bedrock and clay EOH 3.5m.			

104

664108

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 2

HOLE NO: MC 40

LOGGED BY: ANDREW DOVE

DATE DRILLED: 26.4.88

107

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1.5		CLAY light brown - yellow brown			
1.5 - 3.5		CLAY			
		E.O.H. 3.5m.			

105

664109

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 2

HOLE NO: MC 64

LOGGED BY: ANDREW DOVE

DATE DRILLED:

108

Interval (m)	Dry Wt. (kg)	Description	% Slime	%+1000 um	% H.M.
0 - 1.5		SAND fine to medium grained, light gray top 0.4m. then into mica with clay			
1.5 -5.0		CLAY. then hit weathered granite EOH 5.0m.			

106

664110

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

109

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 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.			

107

664111

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

119

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.			

108

664112

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT COUNSEL

LINE NO: 2

HOLE NO: MC108

LOGGED BY: GRAHAM LEE

DATE DRILLED: 3.2.89

METHOD: Hand

111

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

109

664113

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

112

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.			

110

664114

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

113

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 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.			

664115

111

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 3

HOLE NO: MC 0

LOGGED BY: ANDREW DOVE

DATE DRILLED: 26.4.88

114

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1.5		SAND, clayey grey			
1.5 - 3.5		CLAY grey. No sample EOH 3.5			

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL.

LINE NO: 3

HOLE NO: MC 20

LOGGED BY: ANDREW DOVE
±

DATE DRILLED: 26.4.88

113

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 -1.5	4.07	SAND coarse grained, dark gray, hit clay at 0.5m. then hit hard indurated layer, indurated sand medium grained WATER TABLE		1.60	0.32
1.5 -3.5	4.75	SAND indurated and hard indurated layers. Clay at base light brown		3.13	0.16
3.5 -5.5 (no sample)		CLAY EOH 5.5m.			
			Average		0.23

113

664117

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 3

HOLE NO: MC32

LOGGED BY: ANDREW DOVE

DATE DRILLED: 26.4.88

116

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +100µm	% H.M.
0 - 1.5	4.09	SAND medium to coarse grained, light grey to red brown, indurated	5.82	4.09	0.33
		WATER TABLE			
1.5 - 3.5	7.00	SAND very coarse grained, very muddy and clayey, dark brown, indurated		13.22	0.93
3.5 - 5.5	4.70	AS ABOVE, hit clay weathered basement EOH 5.5m.		13.88	0.50
				Average	0.61

114

664118

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 3

HOLE NO: MC 40

LOGGED BY: ANDREW DOVE

DATE DRILLED: 26.4.88

117

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1.5	1.60	SAND, medium to coarse grained brown into indurated layers after 0.5m., becoming very coarse grained		16.53	0.05
		WATER TABLE			
1.5 - 3.5	3.80	SAND very coarse to fine grained, very muddy and clayey, indurated		14.69	0.08
3.5 - 5.5		Hit clay then weathered basement			
		EOH 5.5m.			
			Average		0.07

115

664119

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 3

HOLE NO: MC 48

LOGGED BY: ANDREW DOVE

DATE DRILLED: 26.4.88

118

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1.5	7.22	SAND, medium to coarse grained, dark brown. Went through clay layer, then into indurated layer, then into dark brown mud -very clayey WATER TABLE		4.10	0.43
1.5 - 3.5	5.58	Indurated layer dark brown, becomes very muddy and clayey.		5.97	0.20
3.5 - 5.5	3.75	AS ABOVE - contains gravel hit clay. EOH 5.5m.		26.67	0.08
			Average		0.22

116

664120

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 3

HOLE NO: MC 52

LOGGED BY: ANDREW DOVE

DATE DRILLED: 26.4.88

119

Interval (m)	Dry Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1.5	3.64	SAND, coarse grained grey then hit dark brown clay WATER TABLE		6.20	0.30
1.5 - 3.5		Hard indurated layer top 1 metre then dark brown mud			
3.5 - 5.5		MUD, dark brown very clayey, hit weathered basement EOH 5.5m.			

117

664121

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: EL 45/86

AREA: MOUNT COUNSEL

LINE NO: 3 HOLE NO: MC 55

LOGGED BY: ANDREW DOVE

DATE DRILLED: 26.4.88

120

Interval (m)	DRY Wt. (kg)	Description	% Slime	% +1000um	% H.M.
0 - 1.5	3.78	SAND medium grained grey Water Table		4.27	0.26
1.5 - 3.5	1.37	SAND, coarse grained some gravel hit clay layers (very small sample as clay went to silt and decomposed)		13.50	0.29
3.5 - 5.5	5.60	Dark grey mud conkers, gravel		12.52	0.69
5.5 - 6.5		CLAY grey containing weathered basement Drilled down basement looked to be a calcareous limestone, when drilled just breaks up EOH 8.0m.			
			Average		0.43

118

664122

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

121

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

664123

111

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

122

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 2.0		SAND, coarse, moderately sorted, white. H.M. Tr.			
2.0 - 4.0		AS ABOVE, water 3.1m. Drilled to 4.1m. Hard indurated. Stopped drilling. E.O.H. 4.1m.			

664124

121

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 3

HOLE NO: MC96

LOGGED BY: GRAHAM LEE

DATE DRILLED: 4.2.89

METHOD: Hand

123

Interval (m)	Dry Wt. (kg)	Description	% Slime	% + 1000 um	% H.M.
0 - 2.0		SAND, coarse, moderately sorted, white.			
2.0 - 4.0		AS ABOVE, very coarse, some granules. Brown, lightly indurated at 3.4m.			
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.			
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			

121

664125

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

124

Interval (m)	Dry Wt. (kg)	Description	% Sline	% + 1000 um	% H.M.
0 - 2.0		SAND, medium grained to coarse, well sorted. Peaty at top. Sludge from 1.0m.			
2.0 - 4.0		SAND, very coarse and very well sorted, pale greyish brown.			
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?			
6.0 - 8.0		Very coarse Sand and granule gravel. H.M. 2-5%. E.O.H. 8.0m. Granule gravel			

664126

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

125

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

123

664127

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 3

HOLE NO: MC108

LOGGED BY: GRAHAM LEE

DATE DRILLED: 4.2.89

METHOD: Hand

126

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.			
2.0 - 4.0		SAND, very coarse with granules. Couldn't advance casing at 4.0m. E.O.H. 4.0m.			

124

664128

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

127

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

664129

CLIENT: NATIONAL MINERAL SANDS

TITLE NO: E.L. 45/86

AREA: MT. COUNSEL

LINE NO: 3

HOLE NO: MC116

LOGGED BY: GRAHAM LEE

DATE DRILLED: 4.2.89

METHOD: Hand

128

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

126

664130

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

664131

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

664131

130

APPENDIX 2

Heavy Mineral Separation Assay Results

664133



RHF
Laboratory Services

33 Nelson St,
P.O. Box 5,
Smithton 7330
Ph. 52 1982

A Division of Circular Head Dolomite & Trading Co. Pty. Ltd.
(Incorporated in Tasmania)

3rd October, 1988

Peter Stitt & Associate Pty. Ltd.,
5th Floor King York House,
32 York Street,
SYDNEY. N.S.W. 2000
ATTENTION: MR. G. LEE

Dear Sir,

Please find enclosed complete results of the Heavy Mineral Levels in the MC and M lines.

Yours faithfully,

For RHF LABORATORY

A handwritten signature in cursive script, appearing to read 'G.P. Dowson', is written over a horizontal line.

G.P. Dowson,
MANAGER.

Hole No.	Depth (m)	Total wt. (Kg)	wt% Slime	wt% +1000u	wt% -1000u	wt% Heavy Mineral
<u>LINE 1</u>						
MC0	0-1.5	4.60	5.82	0.77	99.23	0.12
	1.5-3.5	6.42	4.68	0.22	99.78	0.06
	3.5-3.8	1.20	8.81	2.60	97.40	0.05
MC4	0-1.5	3.55	5.44	1.04	98.96	0.24
	1.5-3.5	8.16	5.45	0.65	99.35	0.31
	3.5-5.5	7.97	4.43	1.51	98.49	0.16
MC6	1.5-3.5	7.06	1.65	0.00	100.00	1.91
MC8	0-1.5	5.19	1.51	0.19	99.81	0.21
	1.5-3.5	5.45	3.69	0.53	99.47	0.07
	3.5-5.5	8.20	3.18	4.94	95.06	0.18
MC12	0-1.5	5.63	2.27	1.60	98.40	0.12
	1.5-3.5	6.50	2.90	1.42	98.58	0.09
	3.5-5.5	9.14	6.97	7.20	92.80	0.19
MC16	0-1.5	3.50	1.08	1.80	98.20	0.16
	1.5-3.5	7.92	1.51	0.61	99.39	0.70
	3.5-5.5	9.10	2.76	2.22	97.78	2.19
MC20	0-1.5	2.83	6.43	0.59	99.41	0.25
	1.5-3.5	8.48	3.74	1.00	99.00	0.94
	3.5-5.5	8.45	1.58	2.87	97.13	0.68
MC24	0-1.5	4.38	1.36	0.20	99.80	0.38
	1.5-3.5	7.76	1.03	0.14	99.86	1.00
	3.5-5.5	11.15	1.53	1.84	98.16	1.84
	5.5-7.5	8.48	3.10	6.06	93.94	0.39
MC28	0-1.5	2.23	3.42	1.00	99.00	0.48
	1.5-3.5	1.47	2.63	0.70	99.30	0.69
	3.5-5.5	8.01	1.33	2.50	97.50	0.84
	5.5-7.5	7.18	3.32	4.92	95.08	0.54
MC32	0-1.5	4.89	1.06	0.19	99.81	0.41
	1.5-3.5	7.10	0.90	0.55	99.45	1.09
	3.5-5.5	9.65	1.07	2.88	97.12	0.83
	5.5-7.5	8.70	2.03	2.94	97.06	0.56
MC36	0-1.5	2.21	6.86	0.20	99.80	1.59
	1.5-3.5	6.68	2.22	0.10	99.90	2.36
	3.5-5.5	9.86	1.63	0.66	99.34	5.36
	5.5-6.5	4.93	4.21	3.74	96.26	2.88
MC40	0-1.5	3.15	7.45	0.93	99.07	1.14
	1.5-3.5	7.66	5.22	0.21	99.79	2.18
	3.5-5.5	10.52	2.40	0.18	99.82	4.69
	5.5-6.0	2.73	2.23	2.39	97.61	1.21
MC44	0-1.5	3.75	10.68	0.51	99.49	0.56
	1.5-3.5	-	-	0.41	99.59	0.36
	3.5-5.5	9.04	3.31	0.14	99.86	1.12
	5.5-7.0	5.21	6.54	5.94	94.06	0.51
MC48	0-1.5	5.10	2.39	0.74	99.26	0.97
	1.5-3.5	5.89	2.79	0.12	99.88	1.20
	3.5-5.5	7.88	3.20	0.25	99.75	1.26
	5.5-6.5	2.87	4.26	3.88	96.12	0.53
MC52	0-1.5	1.95	4.62	0.17	99.83	0.68
	1.5-3.5	7.25	2.73	0.32	99.68	1.10
	3.5-5.5	8.66	3.20	0.24	99.76	3.13
	5.5-6.0	1.61	4.61	8.04	91.96	0.53
MC56	0-1.5	2.46	9.20	0.36	99.64	0.73
	1.5-3.5	6.21	5.75	0.07	99.93	1.90
	3.5-5.5	8.36	3.12	0.43	99.57	1.70
	5.5-6.5	1.40	5.50	3.88	96.12	0.55
MC60	0-1.5	4.78	5.17	0.24	99.76	2.10
	1.5-3.5	7.00	-	0.03	99.97	1.21
	3.5-5.5	8.48	2.49	0.09	99.91	5.56
	5.5-6.5	3.45	1.87	2.16	97.84	1.44

-2-

Hole No.	Depth (m)	Total wt. (Kg)	wt% Slime	wt% +1000u	wt% -1000u	wt% Heavy Mineral
<u>LINE 1 (Cont.)</u>						
MC64	0-1.5	1.60	14.01	1.78	98.22	1.40
	1.5-3.5	7.93	11.36	0.12	99.88	2.61
	3.5-5.5	7.39	6.61	1.84	98.16	3.16
RDM1	0-1.5	4.09	-	1.04	98.96	0.56
	1.5-3.5	3.03	-	3.11	96.89	0.31
<u>LINE 2</u>						
M8E	0-1.5	3.37	2.27	5.27	94.73	0.32
	1.5-3.5	5.27	4.35	8.79	91.21	0.50
	3.5-4.5	2.36	6.71	11.74	88.26	0.89
M12E	0-1.5	2.10	18.25	0.75	99.25	0.41
	1.5-3.5	5.91	4.90	0.32	99.68	0.54
	3.5-5.5	4.55	5.14	5.92	94.08	2.01
M16E	0-1.5	3.00	5.24	2.74	97.26	0.67
	1.5-3.5	5.80	6.11	0.81	99.19	0.70
	3.5-5.5	8.20	6.08	2.28	97.72	0.94
M4W	1.5-3.5	6.20	-	0.51	99.49	0.54
M8W	0-1.5	2.88	8.38	0.81	99.19	0.56
	1.5-3.5	6.70	5.14	1.89	98.11	0.68
M12W	0-1.5	2.65	12.02	1.31	98.69	0.50
	1.5-3.5	3.20	8.58	3.38	96.62	0.55
M16W	1.5-2.0	1.70	9.80	16.26	83.74	0.81
	5.5-6.0	3.41	5.99	6.93	93.07	2.47
M0	0-1.5	2.13	-	0.52	99.48	0.37
<u>LINE 3</u>						
MC20	0-1.5	4.07	-	1.60	98.40	0.32
	1.5-3.5	4.75	-	3.13	96.87	0.16
MC32	0-1.5	4.09	5.82	4.09	95.91	0.33
	1.5-3.5	7.00	-	13.22	86.78	0.93
	3.5-5.5	4.70	-	13.88	86.12	0.50
MC40	0-1.5	1.60	-	16.53	83.47	0.05
	1.5-3.5	3.80	-	14.69	85.31	0.08
MC48	0-1.5	7.22	-	4.10	95.90	0.43
	1.5-3.5	5.58	-	5.97	94.03	0.20
	3.5-5.5	3.75	-	26.67	73.33	0.08
MC52	0-1.5	3.64	-	6.20	93.80	0.30
MC55	0-1.5	3.78	-	4.27	95.73	0.26
	1.5-3.5	1.37	-	13.50	86.50	0.29
	3.5-5.5	5.60	-	12.52	87.48	0.69

RAW DATA FOR HEAVY MINERAL SEPARATION

HOLE NO.	DEPTH (M)	Wt. % +600 μ	Wt. % -600 μ	Wt. % HEAVY MINERAL
WHITE BEACH				
Line 1 WB1	0-0.8	2.29	97.71	0.28
WB2	0-2.0	0.16	99.84	0.58
	2.0-4.0	0.05	99.95	1.13
	4.0-5.0	3.28	96.72	2.23
WB3	0-2.0	0.35	99.65	0.50
	2.0-4.0	0.07	99.93	0.47
	4.0-6.0	0.02	99.98	0.38
	6.0-8.0	0.03	99.97	0.28
	8.0-10.0	0.02	99.98	0.34
WB4	0-2.0	0.57	99.43	0.54
	2.0-4.0	0.19	99.81	0.28
	4.0-6.0	0.10	99.90	0.47
	6.0-8.0	0.10	99.90	0.61
	8.0-10.0	0.06	99.94	0.77
WB6	0-2.0	0.99	99.01	0.55
	2.0-4.0	0.23	99.77	0.39
	4.0-6.0	0.14	99.86	0.45
	6.0-8.0	0.25	99.75	0.77
Line 2 WB1	0-1.0	2.16	97.84	0.05
WB2	0-1.0	0.03	99.97	0.13
	1.0-2.0	1.86	98.14	0.19
	2.0-3.0	1.50	98.50	0.01
	3.0-4.0	10.45	89.55	0.05
WB3	0-2.0	0.05	99.95	0.57
	2.0-4.0	2.65	97.35	0.18
	4.0-6.0	10.11	89.89	0.02
WB4	0-2.0	0.05	99.95	0.35
	2.0-4.0	1.41	98.59	1.00
	4.0-6.0	13.38	86.62	0.10
WB5	0-2.0	0.47	99.53	0.42
	2.0-2.5	0.06	99.94	0.27
DISAPPOINTMENT BAY				
DB1	0-2.0	0.20	99.80	0.31
	2.0-4.0	0.02	99.98	0.24
	4.0-6.0	0.27	99.73	0.38
	6.0-8.0	0.56	99.44	0.30
	8.0-10.0	0.63	99.37	0.57
DB2	0-2.0	0.03	99.97	0.34
	2.0-4.0	0.01	99.99	0.33
	4.0-6.0	0.01	99.99	0.38
	6.0-8.0	0.01	99.99	0.51
	8.0-10.0	0.10	99.90	0.37
DB3	0-2.0	0.08	99.92	0.30
	2.0-4.0	0.01	99.99	0.37
	4.0-6.0	0.01	99.99	0.29
	6.0-8.0	0.03	99.97	0.37
	8.0-10.0	0.01	99.99	0.33
DB4	0-2.0	0.04	99.96	0.48
	2.0-4.0	0.08	99.92	0.31
	4.0-6.0	1.97	98.03	0.32
	6.0-8.0	5.34	94.66	0.65
DB5	0-1.5	7.90	92.10	0.38

DEPARTMENT OF MINES



TASMANIA

Launceston Office:

Chemical and Metallurgical
Laboratory,
287 Wellington Street,
LAUNCESTON 7249

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

8.2.89

Attent Mr. G. LeeReg. Nos 890520-606

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>
890520	SE 0 0 - 1	1.0	0.5
521	1 - 2	0.1	0.4
522	2 - 3	0.1	0.5
523	3 - 4	0.1	0.7
524	4 - 5	1.9	0.5
525	5 - 6	13.2	0.3
526	6 - 7	15.4	0.6
527	SE 4* 0 - 1	1.3	0.3
528	1 - 2	0.1	0.3
529	2 - 3	Trace	0.3
530	3 - 4	1.7	0.8
531	4 - 5	17.4	0.3
532	5 - 5.7	23.7	0.3
533	SE 8 0 - 1	0.1	0.3
534	1 - 2	0.1	0.4
535	2 - 3	2.8	1.1
536	SE 12 0 - 1	Trace	0.4
537	1 - 2	0.1	0.5
538	2 - 3	0.1	0.4
539	3 - 4	6.8	0.5
540	SE 20 0 - 1	0.4	0.2
541	1 - 2	Trace	0.3
542	2 - 3	0.1	0.3
543	3 - 4	0.3	1.0
544	4 - 4.5	7.7	0.9

* Bags labelled SE 1

136

2

<u>Reg. No</u>	<u>Description</u>	<u>% + 1.00mm</u>	<u>% Heavy Minerals</u>
890545	SE 24 0 - 1	0.7	0.1
546	1 - 2	0.2	0.3
547	2 - 3	1.6	0.3
548	3 - 4	5.0	0.2
549	4 - 5	28.6	0.1
550	5 - 6	9.0	0.2
551	6 - 6.3	9.7	1.0
552	SE 28 0 - 1	1.3	0.2
553	1 - 2	Trace	0.3
554	SE 32 0 - 1	0.4	0.1
555	1 - 2	0.1	0.1
556	2 - 3	Trace	0.1
557	3 - 4	2.2	0.1
558	4 - 5	5.4	0.1
559	5 - 6	16.7	0.1
560	6 - 7	17.9	<0.1
561	7 - 8	11.9	0.1
562	SE 36 0 - 1	0.4	<0.1
563	1 - 2	Trace	0.1
564	2 - 3	0.1	0.1
565	3 - 4	0.1	0.1
566	4 - 5	0.3	0.1
567	5 - 6	6.8	<0.1
568	SE 40 0 - 1	0.4	<0.1
569	1 - 2	0.1	0.1
570	2 - 3	0.5	0.1
571	3 - 4	1.6	0.1
572	4 - 5	4.1	<0.1
573	SE 44 0 - 1	0.8	<0.1
574	1 - 2	0.1	0.1
575	2 - 3	Trace	0.1
576	3 - 4	1.2	0.1
577	4 - 5	3.1	0.1
578	5 - 6	5.7	0.1
579	6 - 7	5.3	0.1
580	SE 48 0 - 1	0.5	<0.1
581	1 - 2	Trace	0.1
582	2 - 3	Trace	0.1

<u>Reg. No</u>		<u>Description</u>	<u>% + 1.00mm</u>	<u>% Heavy Minerals</u>
890583	SE 48	3 - 4	Trace	0.1
584		4 - 5	0.1	0.1
585	SE 52	0 - 1	4.3	<0.1
586		1 - 2	0.3	0.1
587		2 - 3	Trace	0.2
588		3 - 4	Trace	0.9
589		4 - 5	5.0	0.2
590		5 - 6	9.8	0.1
591	SE 56	0 - 1	0.6	<0.1
592		1 - 2	0.3	0.1
593		2 - 3	Trace	0.1
594		3 - 4	0.2	0.2
595	SE 60	0 - 1	0.9	<0.1
596		1 - 2	0.2	0.2
597		2 - 3	0.3	0.1
598		3 - 4	2.9	0.1
599		4 - 5	9.2	0.1
600		5 - 6	22.0	<0.1
601	SE 64	0 - 1	2.4	<0.1
602		1 - 2	2.8	<0.1
603	SE 68	0 - 1	2.0	<0.1
604		1 - 2	1.4	<0.1
605		2 - 3	19.1	<0.1
606		3 - 3.5	23.5	<0.1

We await your instructions where to send the heavy liquid sinks for mineralogical examination.

Yours faithfully,

(P.L. James)

Chief Chemist & Metallurgist

Metallurgist.....*J. Rhodes*

Fee \$1218.00

APPENDIX 3

Mineralogical Results

189

APPLIED PETROGRAPHIC SERVICES

SPECIALIZING IN PETROGRAPHIC ANALYSIS OF GEOLOGICAL AND INDUSTRIAL SAMPLES

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

20 Holdsworth Street
Newtown
Sydney, N.S.W. 2042

Phone: (02) 516 4808
(02) 909 8741

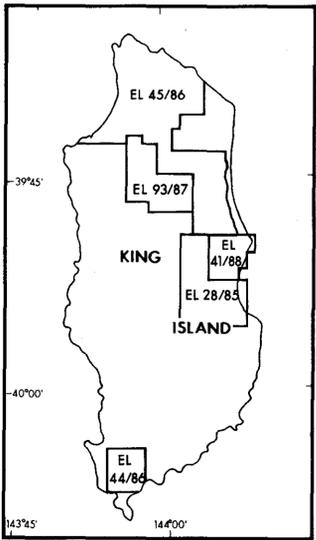
	Sample 2	Sample 3	Sample 4
	M 56 0 - 4	M 56 4 - 4.56	SE 16
	875147-50	875151	875276-80
MAGNETITE	4	23	11
ILMENITE	25	12	21
GARNET	3	5	4
TOURMALINE	39	41	13
RUTILE	5	1	7
ZIRCON	8	<1	13
STAUROLITE	1	1	<1
ALUMINO-SILICATES	1	<1	2
LEUCOXENE	10	<1	8
EPIDOTE/ZOISITE	-	<1	<1
QUARTZ	4	1	3
ORGANICS	-	16	18
AMPHIBOLE	-	-	<1

8267

AMG 5614300 N
237800 E
CAPE WICKHAM

BASS

STRAIT



EL 45/86

AMG 5604800 N
252000 E

Yambacoona

Quarantine Bay

Reekara

Reekara

Road

Counsel Hill

SEA ELEPHANT RIVER WILDLIFE SANCTUARY

RELINQUISHED AREA OF 45/86

OCEAN

SOUTHERN

8267

89-2932

664142

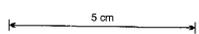
NATIONAL MINERAL SANDS

KING ISLAND-TASMANIA

LOCATION MAP

EL 45/86

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



SCALE 1:50000



AMG REFERENCE POINTS ADDED

N

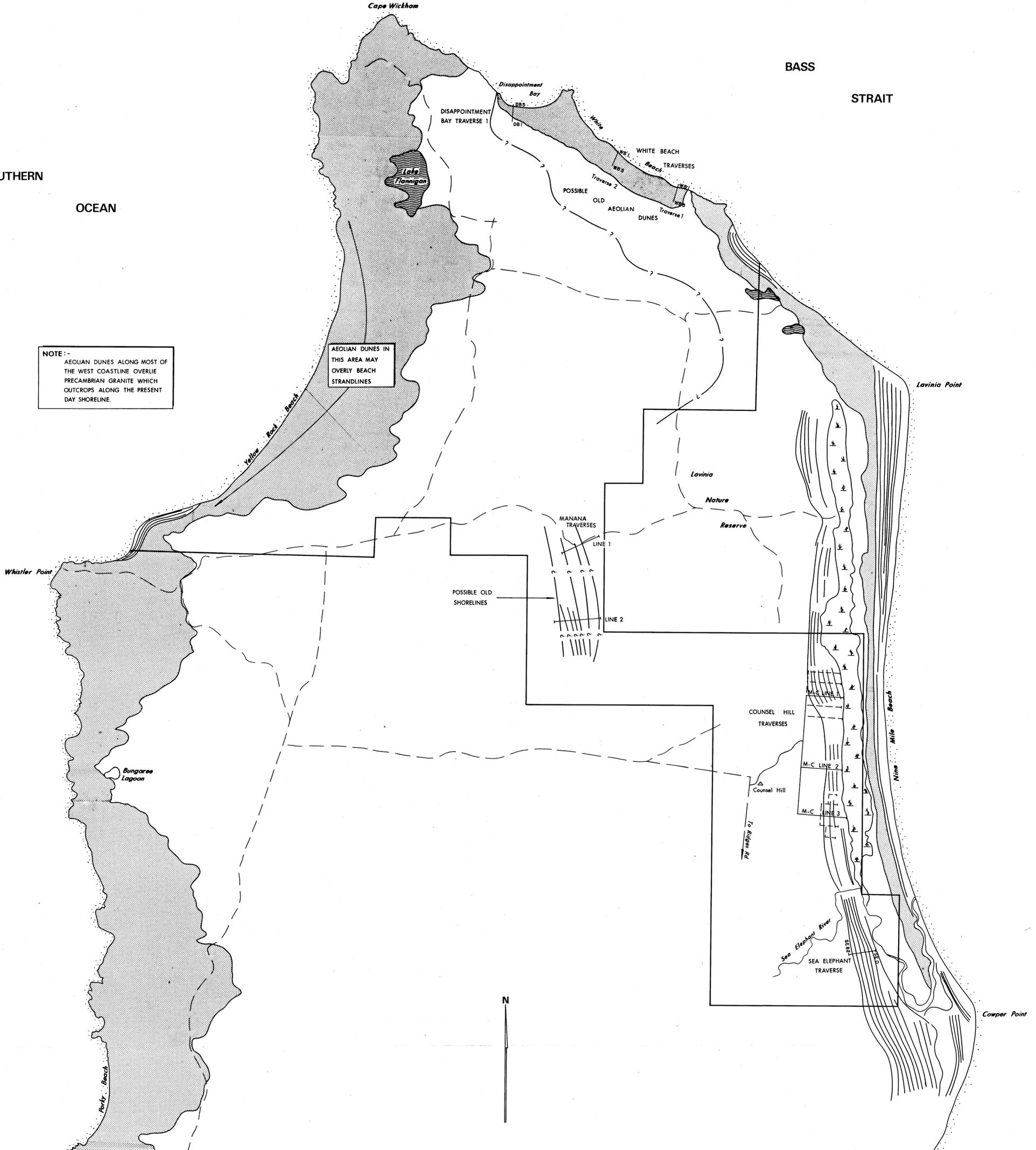
SOUTHERN OCEAN

BASS STRAIT

Cape Wickham

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



LEGEND

-  AEOLIAN DUNES
-  STRAND LINES
-  SWAMP
-  LAKE
-  ROAD OR TRACK
-  TRAVERSE LINE
-  PROPOSED TRAVERSE LINE

5 cm

89-2932

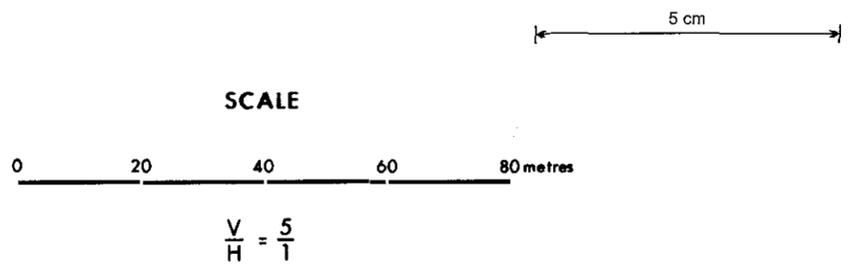
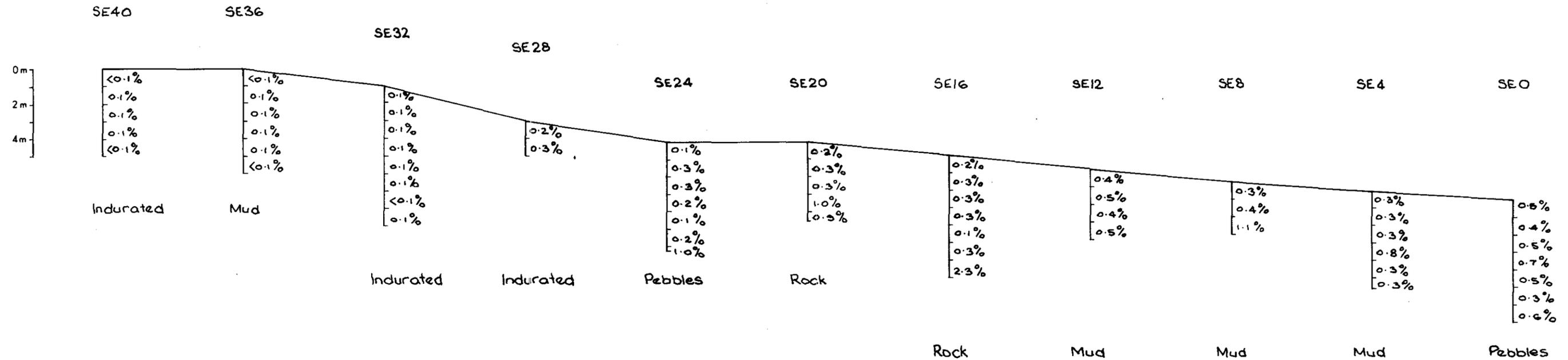
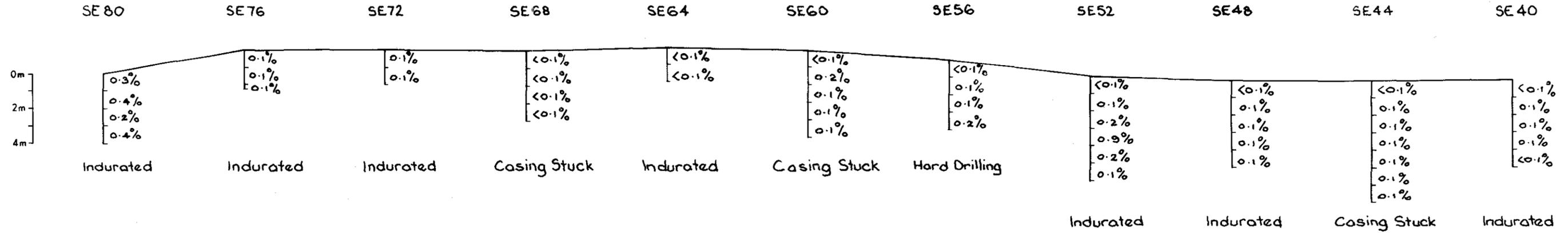
8268

SCALE 1:42000

0 800 1600 2400 3200 4000 m.

664143

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



664144

NATIONAL MINERAL SANDS

EL 45/86

SEA ELEPHANT

TRAVERSE

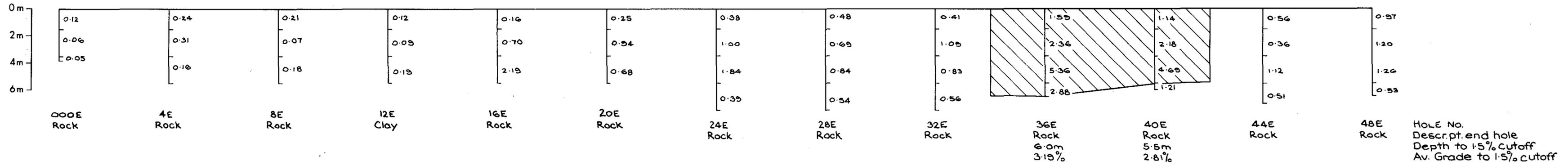
CROSS SECTION

Author: G. LEE | Date: JAN '89 | Fig.No: 3

WEST

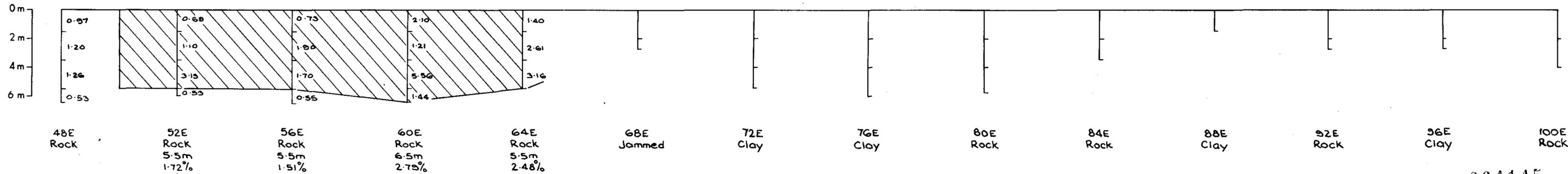
8271

EAST



HOLE NO.
 Descr.pt. end hole
 Depth to 1.5% cutoff
 Av. Grade to 1.5% cutoff

5 cm



LEGEND:
 +1.5% Heavy mineral content

SCALE
 Horizontal 1:1000
 Vertical 1:200

664145

8271

NATIONAL MINERAL SANDS P/L

EL 45/86

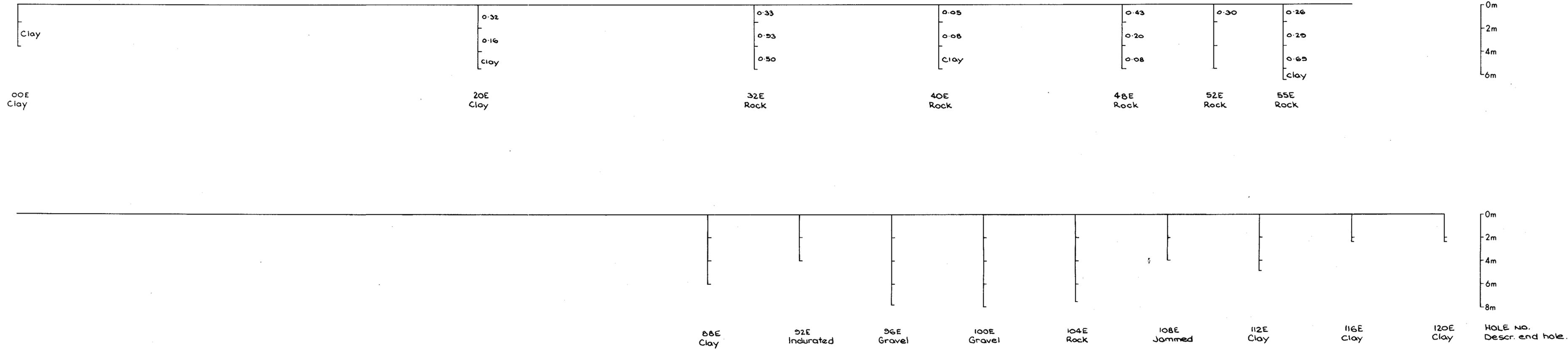
LINE MC-1 CROSS SECTION

COUNSEL HILL

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

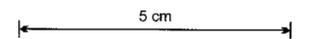
WEST

EAST



SCALE

Horizontal 1:1000
Vertical 1:200



664146

**NATIONAL
MINERAL SANDS P/L**

EL 45/86

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

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