



Fingal County Council

Comhairle Contae Fhine Gall



Fingal Landfill Project



VOLUME 5

Environmental Impact Statement

Supporting Documents

Ground Investigations Volume I (Part A)



WASTE MANAGEMENT PLAN
Working for the Dublin Region

April 2006

RPS

GROUND INVESTIGATION

Fingal Landfill Project Volume 1 – Part A

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Report No: 05-271

Client: Fingal County Council

Engineer: RPS-MCOS

February 2006

SITE INVESTIGATION

Fingal Landfill Project

CONTENTS

Page No.

Volume 1 Part A

Note on: Methods of describing soils and rocks

1	AUTHORITY	1
2	SCOPE	1
3	DESCRIPTION OF SITE	1
4	FIELDWORK	1
4.1	Boreholes by cable percussion methods	2
4.2	Boreholes by rotary drilling methods	2
4.3	Trial pits	2
4.4	Insitu Testing	3
4.4.1	Standard Penetration Tests	3
4.4.2	Permeability Tests	3
4.5	Groundwater Monitoring Installations	3
4.6	Photographic Plates	3
4.7	Exploratory Hole Position and Elevation	3
5	LABORATORY WORK	3
6	BRIEF GEOLOGY OF THE SITE	5
7	REFERENCES	5

Appendix A	Site location plans
Appendix B	Exploratory borehole logs
Appendix C	Exploratory trial pit logs

Fingal Landfill Project

CONTENTS

Volume 1 Part B

Appendix D Insitu test results

- i) Variable head permeability test
- ii) Packer permeability test

Appendix E Laboratory test results

- i) Ph and water soluble sulphate analysis and organic content
- ii) Atterberg limit analysis & moisture content
- iii) Particle size distributions
- iv) Undrained triaxial compression tests
- v) Triaxial permeability testing
- vi) Consolidated undrained triaxial testing
- vii) Chemical testing
- viii) Moisture condition value
- ix) Compaction testing

Appendix F Excerpts from geological maps

Volume 2 Photographs

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	Name	Date
Logged By	Andy Millar	16/11/05
Checked By	Thomas Robinson	16/11/05
Approved By	Gabriel Gallagher	16/11/05

Methods of describing soils and rocks

Soil and rock descriptions are based on the guidance in Section 6 of BS 5930: 1999, *The Code of Practice for Site Investigation*, with the following exceptions:

1. Where the strength of clay is based on field assessment without the availability of laboratory or in-situ test results the following terms are used, where applicable:
 - soft to firm: clay with undrained shear strength close to the BS5930 boundary (40kPa) between soft and firm soil.
 - firm to stiff : clay with undrained shear strength close to the BS5930 boundary (75kPa) between firm and stiff soil.
2. The relative density of coarse-grained soils, described in trial pit logs, is based on field observations including stability of pit sides and the ease/difficulty of excavation. The description is for indicative purposes only: as required by BS 5930, the relative density should only be determined by use of insitu tests, including standard penetration tests.
3. All rock cores obtained were logged by an Engineering Geologist in accordance with the Geological Society Engineering Group Working Party Report: 1970 & BS 5930: 1999. With respect to Solid Core Recovery (SCR), it should be noted that this index has been expressed in relation to solid core of full diameter, but not necessarily of full circumference.
4. Fracture Index (FI) as recorded on the rotary borehole logs, is expressed in terms of fracture frequency per metre length of core. The term non-intact is used for highly fractured or fragmented core where the rock material was recovered as fine to coarse gravel size angular fragments.
5. Descriptions within symmetrix boreholes are based on the drillers logs and are not to BS5930.

SITE INVESTIGATION

Fingal Landfill Project

1 AUTHORITY

On the instructions of, RPS-MCOS, Consulting Engineers acting on behalf of the Client Fingal County Council, a ground investigation was undertaken at the above site to establish the subsoil conditions with regard to a proposed new landfill (Appendix A).

2 SCOPE

The extent of the investigation was as directed and designed by the Engineer and included the sinking of cable percussion and rotary boreholes, excavation of trial pits, the installation of monitoring standpipes, the taking of samples, the carrying out of laboratory and insitu soil mechanics tests and the preparation of a report on the findings.

This report constitutes Volume 1, Part A & Part B of the overall ground investigation and should be read in conjunction with Volume 2, Photographs.

3 DESCRIPTION OF SITE

The proposed Landfill site is located in North County Dublin, in the townland of Nevitt (Appendix A). However, the site investigation covered a larger area to establish information on the surrounding underlying ground conditions. This included the townlands of Rowans Little, Rowans Big, Courtough, Hedges town, Jordanstown, Ballystrane and Tooman.

The landfill site is bounded to the East by the M1 Motorway and dissected by a minor road aligned in an East West orientation.

The majority of the site is within private agricultural land that slopes gently to the East. The pasture land is divided into fields with small hedgerows and occasional streams along some boundaries. The larger fields are used for arable farming and contain crops during the time of the investigation.

Exploratory hole locations are presented within Appendix A and positioned as indicated.

4 FIELDWORK

The fieldwork undertaken for the investigation was between 4th May 2005 and 1st September 2005 under the supervision of an Engineer from Glover Site Investigations Ltd.

The number, location and depths of exploratory holes were as directed by the Engineer.

4.1 Boreholes by cable percussion methods

Thirty boreholes were sunk by means of a Pilcon Wayfarer Drilling Rig using shell and auger techniques. The boreholes were drilled in 300mm & 200mm diameter using temporary casing and boring tools and extended to depths of 21.20m below existing ground level.

Disturbed (small jar and bulk bag) and undisturbed (U100 open tube) samples were taken of the strata encountered.

Standard penetration tests were carried out at regular intervals, where appropriate – the borehole logs report whether the split spoon sample or solid cone was used.

Any water strikes encountered during boring were recorded along with any changes in their levels as the borehole proceeded.

Borehole logs can be found in Appendix B.

4.2 Boreholes by rotary drilling methods

Twenty-nine rotary boreholes were drilled through the overburden using symitrix techniques at either 168mm or 114mm diameters. Fourteen off these boreholes had temporary casing installed to allow rotary coring to start at the base of the drift deposits.

Coring was undertaken using a truck mounted Hands England & Knebel coring rig using a metric H core barrel and air mist flush giving a nominal hole diameter of 100mm and a nominal core diameter of 76mm. Boreholes extended to 59.90m depth below existing ground level.

The borehole logs are provided in Appendix B

Twenty-six rotary boreholes were drilled from surface using Geobore S with polymer mud flush giving a nominal hole diameter of 146mm and a nominal core diameter of 102mm in order to recover samples of the overburden.

4.3 Trial pits

Fifteen trial pits were excavated using a 4 tonne tracked excavator fitted with a 1200mm wide toothed bucket. The pits extended to depths of 3.50m.

Disturbed (small bag jar and bulk bag) samples were taken of the strata encountered.

Any water strikes encountered during excavation were recorded along with any changes in their levels as the excavation proceeded. Details are given on the individual log sheets.

The trial pit logs are provided in Appendix C

4.4 Insitu Testing

4.4.1 Standard Penetration Tests

Standard Penetration Tests, using either a split barrel sampler (SPT) or solid 60' cone (CPT) to enable measurement of the penetration resistance (N) to be determined under dynamic loading. When the number of blows for the seating drive exceeds 25 blows the distance driven is recorded and the test drive started. If the test drive exceeds 50 blows (increased to 100 blows in soft rock) then the distance driven is recorded and the test terminated.

4.4.2 Permeability Tests

Variable head permeability tests were completed within selected boreholes as boring progressed.

Single and double packer permeability tests were completed within bedrock at borehole locations HR3, HR8, SHR2, SHR4 and SHR5.

Results of permeability testing are given in appendix D parts i & ii.

4.5 Groundwater Monitoring Installations

Installations in selected boreholes included slotted 38mm & 50mm standpipes. Details of individual installations are presented on the instrumentation data sheet that accompanies the relevant borehole logs (Appendix B).

Standpipe depths range from 4.70m – 55.00m depth below existing ground level.

4.6 Photographic Plates

Photographic plates of trial pits, rock and geobore core are presented in volume 2.

4.7 Exploratory Hole Position and Elevation

All exploratory hole excavations were surveyed by means of a Trimble Global Positioning System (GPS). An ordnance survey GPS base station was used to give us Irish grid co-ordinates and elevation, from this information we are able to survey the site with an accuracy of +/- 20mm.

Exploratory hole co-ordinates and elevations are presented on each exploratory hole log.

5 LABORATORY WORK

Upon their receipt in the laboratory, all disturbed samples were carefully examined and accurately described and their descriptions incorporated into the preliminary borehole logs.

The logs were revised, where necessary, based on the results of the laboratory tests.

Laboratory testing, conducted as scheduled by the Engineer, comprised the following:

- Classification tests: moisture content, particle size distribution and Atterberg Limits,
- Soil/groundwater chemistry tests: pH and sulphate content.
- Shear strength (total stress) tests: (multistage) unconsolidated undrained triaxial tests on 100mm specimens
- Shear strength (effective stress) tests: Consolidated undrained triaxial compression tests on 100mm specimens
- Compaction related tests: dry density/moisture content relationship, moisture condition value (MCV) testing.
- Permeability: Triaxial permeability testing
- Chemical testing: Fractional organic carbon, ammoniacal nitrogen.

The test results are tabulated in Appendix E (parts i-ix) unless noted otherwise; tests were conducted in accordance with BS 1377:1990, *Methods of test for soils for civil engineering purposes. Parts 1 to 9.*

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6 BRIEF GEOLOGY OF THE SITE

The geological map of the landfill area sheet 13 Meath shows the bedrock to be Carboniferous in age. From the south of the site the oldest rocks are from the Lucan Formation (LU) and consist of dark limestone and shale (Calp). Conformability above these rocks lies the Naul Formation (NA), which comprises of calcarenite and calcisiltite. The Loughshinny Formation (LO), which are mainly dark micrite/calcarenite and shale overlie the Naul Formation.

Further north the Balrickard Formation (BC), which consist of coarse sandstone and shale overlie these rocks unconformably. The youngest rocks within the landfill site are from the Walshestown Formation and comprise of shale, sandstone and limestone.

The geological map indicates that the site is bounded to the east by a major fault.

7 REFERENCES

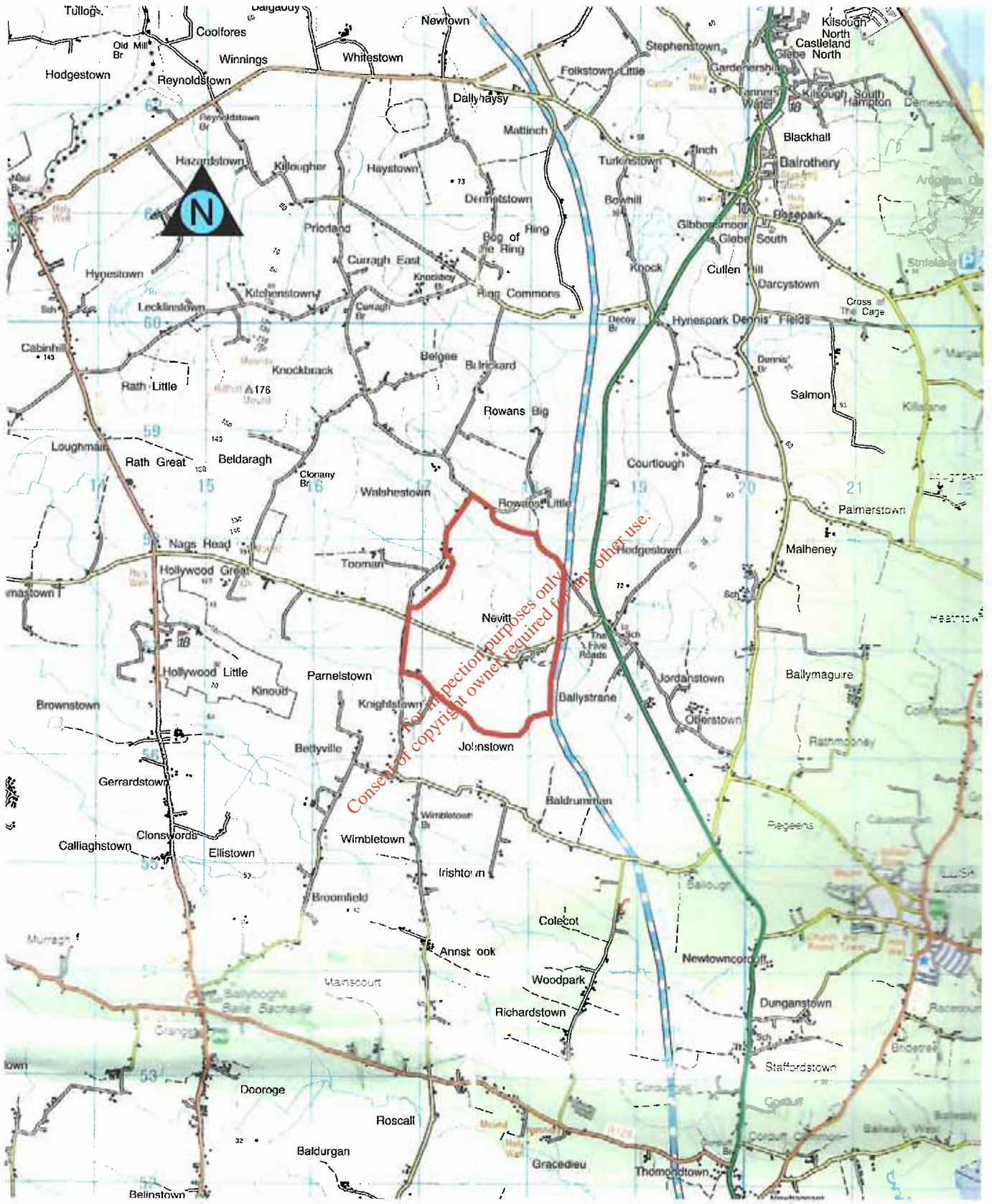
British Standards Institute (1999) *BS 5930:1999, Code of practice for site investigations.*

British Standards Institute (1990) *BS 1377:1990, Methods of test for soils for civil engineering purposes. Parts 1 to 9.*

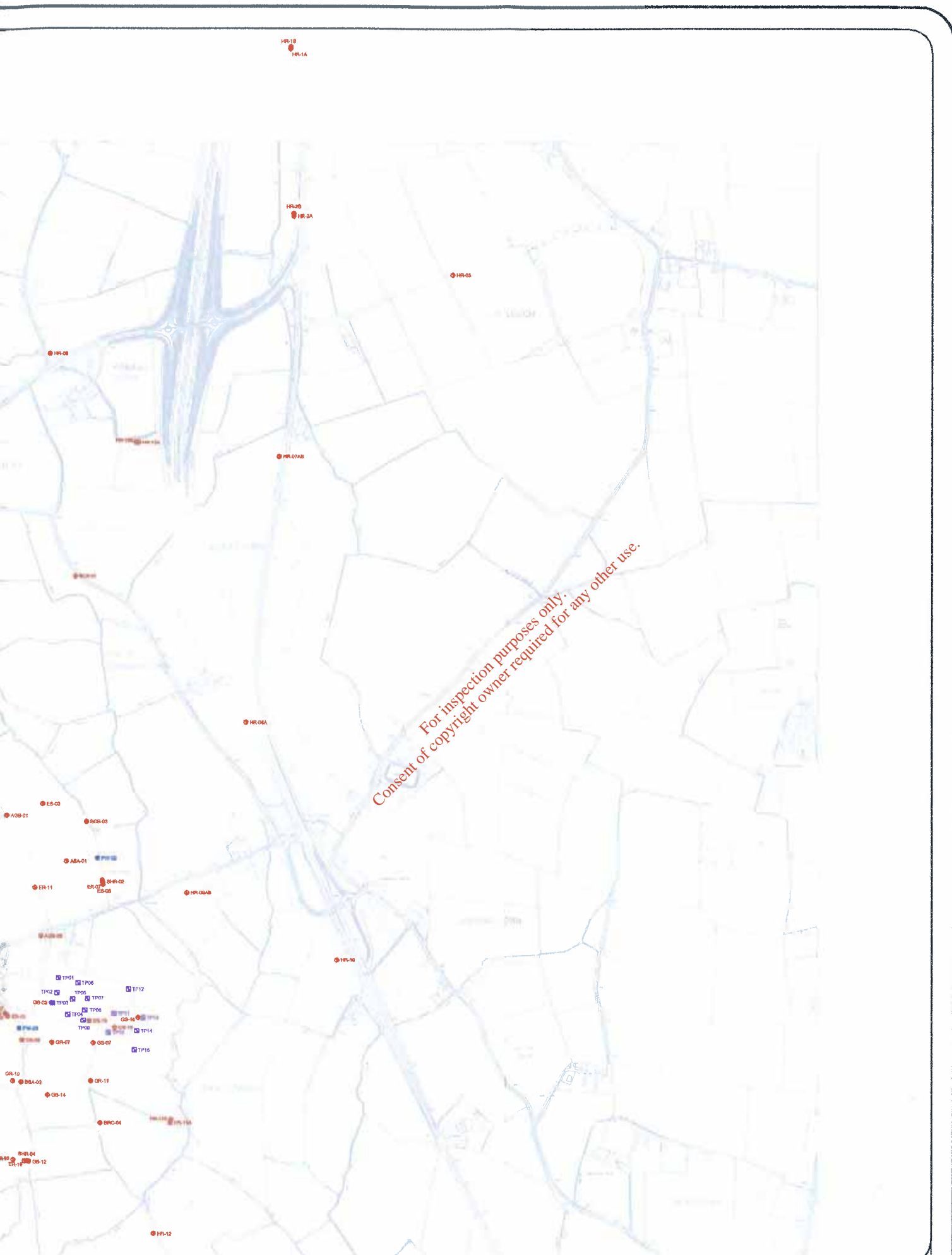
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Appendix A
Site location plans

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PROJECT: Fingal Landfill Project					TITLE: Mapping Overview				
CLIENT: Fingal County Council					 KEY: - Area of Site				
ENGINEER: RPS incos						REV:	DATE:	DETAILS:	DRW:
SCALE: N.T.S	SERIES: 01 of 01	DATE: 14/06/05	DRWN: S.S.	CHK: T.R.	DWG NO: 05-271-Map-Oviev-001				REV:



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Location Plan	Fingal County Council	GLOVEE SPECIALIST EPA LUM. TEC.	● Borehole ■ Trial Pit ● Pumping Well	NTS	01 of 01		
Project	RPS			A.W.	17/08/05	05271-SILoc-001A3	
				T.R.			

Appendix B

Exploratory borehole logs

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Site
FINGAL LANDFILL PROJECT

Borehole Number
AGB1

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE S	Casing Diameter 146mm cased to 21.20m	Ground Level (mOD) 42.01	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317935.3 E 257291.8 N	Dates 22/06/2005	Engineer RPS-MCOS	Sheet 1/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30						41.71	(0.30) 0.30	TOPSOIL		
	62	0	0				(1.70)	Firm brown sandy gravelly CLAY containing occasional smooth subrounded cobbles. Gravel is fine to medium subrounded		
3.00						40.01	2.00	Stiff to very stiff dark grey grey to bluish sandy gravelly CLAY containing occasional smooth subrounded cobbles and boulders. Gravel is fine to medium subrounded.		
	100	0	0							
4.65										
	100	0	0							
6.35										
	100	0	0				(8.00)			
7.90										
	100	0	0							
9.40										
						32.01	10.00			

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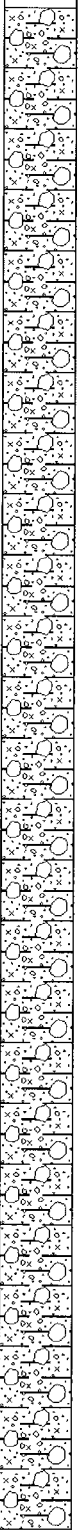
Remarks	Scale (approx)	1:50	Logged By	AM
	Figure No.	05-271.AGB1		

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
AGB1

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE S	Casing Diameter 146mm cased to 21.20m	Ground Level (mOD) 42.01	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317935.3 E 257291.8 N	Dates 22/06/2005	Engineer RPS-MCOS	Sheet 2/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.90	100	0	0	0				Stiff to very stiff dark grey grey to bluish sandy gravelly CLAY containing occasional smooth subrounded cobbles and boulders. Gravel is fine to medium subrounded.		
12.20	76	0	0							
13.75	100	0	0							
15.25	100	0	0			(10.00)				
16.85	100	0	0							
18.40	100	0	0							
19.95						22.01	20.00			

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Remarks	Scale (approx)	1:50	Logged By	AM
	Figure No.	05-271.AGB1		

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Site
FINGAL LANDFILL PROJECT

Borehole Number
AGB1

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE S	Casing Diameter 146mm cased to 21.20m	Ground Level (mOD) 42.01	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317935.3 E 257291.8 N	Dates 22/06/2005	Engineer RPS-MCOS	Sheet 3/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
20.65	100	0	0			21.36	20.65 (0.65)	Stiff to very stiff dark grey grey to bluish sandy gravelly CLAY containing occasional smooth subrounded cobbles and boulders. Gravel is fine to medium subrounded.		
21.20	45	0	0		22/06/2005	20.81	21.20 (0.55)	Medium dense grey sandy fine to coarse subrounded GRAVEL containing occasional smooth subrounded cobbles		
								Complete at 21.20m		

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Remarks Borehole backfilled with bentonite. Geobore S unable to penetrate gravel. Borehole terminated at 21.20m.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.AGB1	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
AGB2

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE S	Casing Diameter 146mm cased to 36.20m	Ground Level (mOD) 49.50	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317685.6 E 257171.4 N	Dates 28/06/2005- 29/06/2005	Engineer RPS-MCOS	Sheet 1/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30						49.20	(0.30) 0.30	TOPSOIL		
							(1.70)	Firm light brown sandy gravelly CLAY containing occasional smooth subrounded cobbles. Gravel is fine to medium subrounded		
	59	0	0	0		47.50	2.00	Stiff to very stiff dark grey to black gravelly sandy CLAY containing occasional smooth subrounded cobbles and boulders. Gravel is subrounded fine to medium		
3.25										
	100	0	0	0						
4.43										
	100	0	0	0						
6.20							(8.00)			
	100	0	0	0						
7.70										
	100	0	0	0						
9.25										
						39.50	10.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.AGB2	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
AGB2

Machine : COMMACHIO	Casing Diameter 146mm cased to 36.20m	Ground Level (mOD) 49.50	Client FINGAL COUNTY COUNCIL	Job Number 05-271
Flush : POLYMER MUD	Location 317685.6 E 257171.4 N	Dates 28/06/2005- 29/06/2005	Engineer RPS-MCOS	Sheet 2/4
Core Dia: 102				
Method : GEOBORE S				

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.86	100	0	0	0				Stiff to very stiff dark grey to black gravelly sandy CLAY containing occasional smooth subrounded cobbles and boulders. Gravel is subrounded fine to medium		
12.30	100	0	0	0						
13.75	100	0	0	0						
15.20	100	0	0	0		(10.00)				
16.60	100	0	0	0						
18.10	100	0	0	0						
19.60						29.50	20.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.AGB2	

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Site
FINGAL LANDFILL PROJECT

Borehole Number
AGB2

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE S	Casing Diameter 146mm cased to 36.20m	Ground Level (mOD) 49.50	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317685.6 E 257171.4 N	Dates 28/06/2005- 29/06/2005	Engineer RPS-MCOS	Sheet 3/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
21.15	100	0	0	0				Stiff to very stiff dark grey to black gravelly sandy CLAY containing occasional smooth subrounded cobbles and boulders. Gravel is subrounded fine to medium		
22.70	97	0	0	0						
24.30	100	0	0	0						
25.95	90	0	0	0			 BOULDER: Strong medium blue grey fine grained micritic limestone		
27.45	100	82	78	6		22.25 21.85	27.25 (0.40) 27.65	Dense clayey sandy fine to coarse sub-angular to sub-rounded GRAVEL with occasional sub-angular to sub-rounded cobbles. 27.45m - 27.65m: Increasing angular cobble content		
28.60	97	94	78	8			(2.35)	Strong thinly bedded medium blue grey fine grained micritic LIMESTONE with slightly shaley partings. Discontinuities are closely to medium spaced (6-60cm) (Full description with discontinuities as Sheet 4)		
						19.50	30.00			

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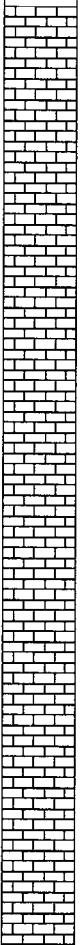
Remarks Standpipe installed to 36.20	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.AGB2	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
AGB2

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE S	Casing Diameter 146mm cased to 36.20m	Ground Level (mOD) 49.50	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317685.6 E 257171.4 N	Dates 28/06/2005- 29/06/2005	Engineer RPS-MCOS	Sheet 4/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
30.20								<p>Strong thinly bedded medium blue grey fine grained micritic LIMESTONE with slightly shaley partings.</p> <p>Discontinuities are closely to medium spaced (6-60cm). Discontinuity Set 1 dipping 20-30 degrees, smooth planar, tight, clean (bedding parallel), extremely closely spaced at partings.</p> <p>continuous calcite veins close to medium spaced (6-60cm)</p> <p>Discontinuity Set 2 dipping 50-60 degrees, planar, 1-12mm thick.</p> <p>Discontinuity Set 3 widely spaced, dipping sub-vertical, smooth undulating, moderately open, (<1mm calcite mineralisation).</p> <p>Discontinuity Set 4 dipping 70 degrees, rough planar, moderately open to open, clean (34.05m)</p>		
31.25 31.35	100	93	83	4						
				Non-Intact						
31.70				6						
				Non-Intact						
32.50	100	97	91	1						
33.20						(6.20)				
	100	100	87	7						
34.70				Non-Intact						
35.00				5						
35.40	100	67	57	Non-Intact						
35.60				3						
36.20						13.30	36.20	Complete at 36.20m		

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Remarks Borehole terminated at scheduled depth.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.AGB2	

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Site
FINGAL LANDFILL PROJECT

Borehole Number
AGB2

Installation Type Water monitoring	Dimensions Internal Diameter of Tube [A] = 50 mm Diameter of Filter Zone = 146 mm	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317685.6 E 257171.4 N	Ground Level (mOD) 49.50	Engineer RPS-MCOS

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling														
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)					
5 min	10 min	15 min	20 min																	
			49.00	0.50	Concrete															
						Groundwater Observations During Drilling														
						Date	Start of Shift					End of Shift								
							Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)				
						Instrument Groundwater Observations														
						Inst. [A] Type :														
						Date	Instrument [A]			Remarks										
							Time	Depth (m)	Level (mOD)											
			21.00	28.50	Gravel Filter															
			20.50	29.00																
						Slotted Standpipe														
			13.30	36.20																

Remarks
 Geotextile sock fitted around filter
 Upright cover fitted
 End cap at base of standpipe

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
AGB4

Machine : KNEBEL Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE S	Casing Diameter 146mm cased to 4.50m	Ground Level (mOD) 47.84	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317491.6 E 256919.3 N	Dates 22/06/2005	Engineer RPS-MCOS	Sheet 1/1

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30								TOPSOIL		
	70	0	0	0		47.14	(0.70) 0.70	Medium dense brown sandy fine to coarse GRAVEL containing occasional smooth subrounded cobbles		
1.50	66	0	0	0						
3.00	30	0	0	0			(3.80)			
4.50						43.34	4.50	Complete at 4.50m		

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Remarks Backfilled with bentonite Geobore S unable to penetrate gravel. Borehole terminated at 4.50m.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.AGB4	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
AGB6

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE S	Casing Diameter 146mm cased to 15.00m	Ground Level (mOD) 38.79	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 318022.3 E 256988.5 N	Dates 23/06/2005	Engineer RPS-MCOS	Sheet 1/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30						38.49	(0.30) 0.30	TOPSOIL		
	26	0	0				(1.55)	Firm brown sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
1.50						36.94	1.85	Stiff to very stiff dark grey to black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to coarse		
3.20	100	0	0							
4.70	100	0	0							
6.25	100	0	0				(8.15)			
7.80	100	0	0	0						
9.30						28.79	10.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.AGB6	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
AGB6

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE S	Casing Diameter 146mm cased to 15.00m	Ground Level (mOD) 38.79	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 318022.3 E 256988.5 N	Dates 23/06/2005	Engineer RPS-MCOS	Sheet 2/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.70	100	0	0					Stiff to very stiff dark grey to black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to coarse		
12.20	100	0	0			(3.70)				
13.70	40	0	0			25.09				
14.20	31	0	0				(1.30)	Medium dense brown to greyish brown sandy fine to coarse sub-rounded GRAVEL containing occasional smooth sub-rounded cobbles		
15.00						23.79	15.00	Complete at 15.00m		

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Remarks Borehole backfilled with bentonite. Geobore S unable to penetrate gravel. Borehole terminated at 15.00m.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.AGB6	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
AGB7

Machine : KNEBEL Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE S	Casing Diameter 146mm cased to 12.00m	Ground Level (mOD) 52.62	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317149.8 E 256750.8 N	Dates 21/06/2005	Engineer RPS-MCOS	Sheet 1/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30						52.32	(0.30) 0.30	TOPSOIL		
	92	0	0					Soft to firm light brown sandy slightly gravelly CLAY containing occasional smooth sub-rounded cobbles. Gravel is sub-rounded fine to medium		
1.50						50.22	(2.10) 2.40			
	100	0	0					Stiff to very stiff dark brown sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
3.00										
	100	0	0							
4.50										
	100	0	0				(4.90)			
6.00				0						
	100	0	0							
7.50						45.32	7.30	Moderately strong dark grey thinly laminated fine grained LIMESTONE. Highly fractured.		
	100	43	0					Very closely to closely spaced dipping 30 degrees, smooth planar, tight, brown clay infill		
9.00							(2.70)			
	93	0	0			42.62	10.00			

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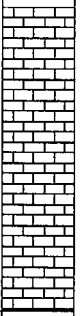
Remarks	Scale (approx)	1:50	Logged By	AM
	Figure No.	05-271.AGB7		

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
AGB7

Machine : KNEBEL Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE S	Casing Diameter 146mm cased to 12.00m	Ground Level (mOD) 52.62	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317149.8 E 256750.8 N	Dates 21/06/2005	Engineer RPS-MCOS	Sheet 2/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50								Moderately strong dark grey thinly laminated fine grained LIMESTONE. Highly fractured. Very closely to closely spaced dipping 30 degrees, smooth planar, light, brown clay infill		
	83	0	0				(2.00)			
12.00					21/06/2005	40.62	12.00	Complete at 12.00m		

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Remarks Borehole backfill with bentonite. Borehole terminated at scheduled depth.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.AGB7	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
AGB8

Boring Method SYMMETRIX DRILLING TO 24.50m	Casing Diameter 114mm cased to 24.50m	Ground Level (mOD) 52.45	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317299.1 E 256725.5 N	Dates 23/06/2005	Engineer RPS-MCOS	Sheet 1/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					52.25	0.20	TOPSOIL DRILLER'S DESCRIPTION: Light brown to dark brown boulder CLAY containing occasional cobbles and boulders		
						(9.80)			
					42.45	10.00			

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Remarks Descriptions of overburden based on drillers logs.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.AGB8	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
AGB8

Boring Method SYMMETRIX DRILLING TO 24.50m	Casing Diameter 114mm cased to 24.50m	Ground Level (mOD) 52.45	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317299.1 E 256725.5 N	Dates 23/06/2005	Engineer RPS-MCOS	Sheet 2/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					32.45	20.00	DRILLER'S DESCRIPTION: Light brown to dark brown boulder CLAY containing occasional cobbles and boulders		

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Remarks	Scale (approx)	1:50	Logged By	TR
	Figure No.	05-271.AGB8		

Glover Site Investigations Ltd						Site FINGAL LANDFILL PROJECT		Borehole Number AGB8	
Boring Method SYMMETRIX DRILLING TO 24.50m		Casing Diameter 114mm cased to 24.50m		Ground Level (mOD) 52.45		Client FINGAL COUNTY COUNCIL		Job Number 05-271	
		Location 317299.1 E 256725.5 N		Dates 23/06/2005		Engineer RPS-MCOS		Sheet 3/3	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							DRILLER'S DESCRIPTION: Light brown to dark brown boulder CLAY containing occasional cobbles and boulders		
						(1.50)			
						30.95	DRILLER'S DESCRIPTION: Dark grey Siltstone/limestone with traces of clay		
						21.50			
						(3.00)			
				23/06/2005		27.95			
						24.50	Complete at 24.50m		
Remarks Borehole backfilled with bentonite. Borehole terminated at scheduled depth.								Scale (approx) 1:50	Logged By TR
								Figure No. 05-271.AGB8	

Glover Site Investigations Ltd						Site FINGAL LANDFILL PROJECT		Borehole Number ASA1	
Boring Method Cable Percussion		Casing Diameter 300mm cased to 11.00m 250mm cased to 20.00m		Ground Level (mOD) 38.45		Client FINGAL COUNTY COUNCIL		Job Number 05-271	
		Location 318087 E 257171.2 N		Dates 21/06/2005- 27/06/2005		Engineer RPS-MCOS		Sheet 1/2	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							Soft to firm brown fine to medium sandy CLAY		
					37.55	0.90	Firm dark brown fine to medium sandy fine to medium gravelly CLAY with subangular and subrounded boulders		
					35.85	2.60	Stiff to very stiff dark grey/black fine to medium sandy fine to coarse gravelly CLAY with occasional subangular and subrounded cobbles and boulders		
						(7.40)			
					28.45	10.00			
Remarks Standpipe installed. Permeability Test carried out at 9.50m, 13.00m, 13.90m, 18.10m and 19.60m. Chiselling from 0.80m to 1.10m for 0.5 hours. Chiselling from 3.00m to 3.40m for 0.5 hours. Chiselling from 4.80m to 5.00m for 0.5 hours. Chiselling from 6.30m to 6.50m for 0.5 hours.								Scale (approx)	Logged By
								1:50	TR
								Figure No. 05-271.ASA1	

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Glover Site Investigations Ltd							Site	Borehole Number	
Boring Method		Casing Diameter		Ground Level (mOD)		Client	FINGAL LANDFILL PROJECT	ASA1	
Cable Percussion		300mm cased to 11.00m 250mm cased to 20.00m		38.45		FINGAL COUNTY COUNCIL	Job Number	05-271	
		Location		Dates		Engineer	Sheet		
		318087 E 257171.2 N		21/06/2005- 27/06/2005		RPS-MCOS	2/2		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
11.00-11.45	SPT N=36			4,7,7,9,8,12	27.45	(1.00)	Stiff to very stiff dark grey/black fine to medium sandy fine to coarse gravelly CLAY with occasional subangular and subrounded cobbles and boulders		
11.00	J1					11.00	Medium dense brown grey slightly fine to coarse gravelly fine to coarse GRAVEL		
11.30	B1					(0.90)			
12.00	B2			8,15/50	26.55	11.90	Dense grey brown fine to coarse gravelly fine to coarse SAND with numerous cobbles		
12.20-12.32	CPT 23*/120 50/0				26.45	12.00	Dense slightly fine to coarse sandy slightly fine to coarse gravelly cobbly BOULDERS		
12.80	B3					(2.50)			
13.50-13.75	CPT 25*/130 50/120			10,15/22,28					
13.80	B4								
14.80	J2				23.95	14.50	Dense grey fine to coarse sandy fine to coarse GRAVEL with numerous cobbles		
14.90	B5					(1.30)			
15.00	J3								
15.80	B6				22.65	15.80	Stiff to very stiff dark grey/black fine to medium sand fine to coarse gravelly CLAY with few cobbles and small boulders		
16.60	J4					(2.80)			
16.70	B7								
17.80	J5								
17.90	B8								
18.60	J6				19.85	18.60	Dense grey fine to coarse sandy fine to coarse GRAVEL with numerous cobbles		
18.70	B9					(1.40)			
20.00	J7								
20.00	B10				18.45	20.00			

Remarks
 Borehole terminated on Engineer's instruction.
 Chiselling from 12.40m to 13.10m for 1.5 hours. Chiselling from 13.10m to 13.50m for 1 hour. Chiselling from 13.80m to 14.20m for 1.5 hours.
 Chiselling from 14.40m to 14.60m for 0.75 hours. Chiselling from 15.50m to 15.80m for 0.5 hours. Chiselling from 16.40m to 16.60m for 0.5 hours.
 Chiselling from 16.80m to 17.00m for 0.5 hours. Chiselling from 17.00m to 17.20m for 0.5 hours. Chiselling from 18.20m to 18.40m for 1.5 hours.

Scale (approx)	Logged By
1:50	TR
Figure No. 05-271.ASA1	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ASA1

Installation Type
Water Monitoring

Dimensions
Internal Diameter of Tube [A] = 150 mm
Diameter of Filter Zone = 250 mm

Client
FINGAL COUNTY COUNCIL

Job Number
05-271

Location
318087 E 257171.2 N

Ground Level (mOD)
38.45

Engineer
RPS-MCOS

Sheet
1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling														
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)					
			37.85	0.60	Concrete															
						Groundwater Observations During Drilling														
						Start of Shift					End of Shift									
					Cement/Bentonite Grout	Date	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)				
						Instrument Groundwater Observations														
						Inst. [A] Type :														
			26.95	11.50	Gravel Filter	Date	Instrument [A]			Remarks										
			26.45	12.00			Time	Depth (m)	Level (mOD)											
					Slotted Standpipe															
			22.95	15.50	Bentonite Seal															
			18.45	20.00																

Remarks
 Geotextile sock fitted around filter
 Upright cover fitted
 End cap fitted to base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ASA2

Boring Method Cable Percussion	Casing Diameter 300mm cased to 11.00m 250mm cased to 19.80m	Ground Level (mOD) 34.96	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317930.4 E 256789.6 N	Dates 31/05/2005- 10/06/2005	Engineer RPS-MCOS	Sheet 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				Seepage(1) at 0.90m.	34.76	0.20	Sandy TOPSOIL		
					(1.90)		Firm dark brown slightly fine to medium sandy slightly fine gravelly CLAY		▽1
					32.86	2.10	Stiff to very stiff dark grey and black fine to medium sandy fine to coarse gravelly CLAY with occasional sub-angular to sub-rounded cobbles and boulders		
						(7.00)			
					25.86	9.10	Soft to firm grey saturated fine to medium sandy CLAY		
						(0.90)			
					24.96	10.00			

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Remarks Chiselling from 2.10m to 2.30m for 0.5 hours. Chiselling from 4.20m to 4.40m for 0.5 hours. Chiselling from 6.00m to 6.20m for 0.5 hours.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.ASA2	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ASA2

Boring Method Cable Percussion	Casing Diameter 300mm cased to 11.00m 250mm cased to 19.80m	Ground Level (mOD) 34.96	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317930.4 E 256789.6 N	Dates 31/05/2005- 10/06/2005	Engineer RPS-MCOS	Sheet 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							Soft to firm grey saturated fine to medium sandy CLAY		
						(1.30)			
					23.66	11.30	Stiff to very stiff dark grey fine to medium sandy CLAY with thin bands of fine sand		
						(0.90)			
12.20 12.40	J1 B1				22.76	12.20	Dense grey fine to medium sandy fine to coarse GRAVEL with occasional cobbles and boulders		
12.70-13.05	CPT 62/200			11,12/16,22,24		(0.90)			
13.20	B2				21.86	13.10	Dense brown fine SAND with pockets of stiff brown clay		
13.60 13.70-14.15 13.90	J2 CPT N=36 B3			9,8/7,8,10,11		(1.90)			
14.50 14.60	J3 B4								
14.90	J4								
15.10-15.55 15.10 15.40 15.50	CPT N=57 J5 J6 B5			8,10/10,12,16,19	19.96	15.00 (0.40)	Dense slightly sandy medium to coarse GRAVEL with some cobbles		
15.80 15.90	J7 B6				19.56	15.40 (0.40)	Dense grey brown fine to medium sandy medium to coarse GRAVEL with occasional small pockets of dense silty sand		
15.80 15.90	J7 B6				19.16	15.80	Dense fine to medium sandy medium to coarse GRAVEL with numerous cobbles		
16.40 16.50 16.60-17.05 16.70	J8 B7 CPT N=49 B8			7,10/10,9,12,18		(2.60)			
17.70 17.80 18.00-18.45	J9 B9 CPT N=72			13,11/14,18,19,21					
18.40	J10				16.56	18.40	Very stiff grey brown fine to medium sandy fine to coarse gravelly CLAY with occasional cobbles		
						(1.40)			
19.60-19.80	CPT 22/50			10,18/22					
					15.16	19.80			

Remarks Permeability Test carried out at 12.70m, 15.60m and 16.60m. Borehole terminated on Engineer's instruction. Chiselling from 12.90m to 13.10m for 1.5 hours. Chiselling from 13.10m to 13.40m for 1 hour. Chiselling from 13.50m to 13.70m for 0.5 hours. Chiselling from 14.60m to 15.00m for 1 hour. Chiselling from 15.80m to 16.00m for 0.75 hours. Chiselling from 16.40m to 16.60m for 0.75 hours. Chiselling from 19.80m to 19.80m for 0.5 hours.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.ASA2	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ASA2

Installation Type WATER MONITORING	Dimensions Internal Diameter of Tube [A] = 150 mm Diameter of Filter Zone = 250 mm	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317930.4 E 256789.6 N	Ground Level (mOD) 34.96	Engineer RPS-MCOS

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling														
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)					
			34.46	0.50	Concrete															
			33.96	1.00	Cement/Bentonite Grout			0.90		Seepage										
						Groundwater Observations During Drilling														
						Start of Shift					End of Shift									
						Date	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)				
						Instrument Groundwater Observations														
						Inst. [A] Type :														
						Date	Instrument [A]			Remarks										
							Time	Depth (m)	Level (mOD)											
			23.96	11.00	Cement/Bentonite Grout															
			20.96	14.00	Gravel Filter															
			20.46	14.50																
					Slotted Standpipe															
			16.96	18.00	Gravel Filter															
			16.66	18.30																
					Bentonite Seal															
			15.16	19.80																

Remarks
 Geotextile sock fitted around filter.
 Upright cover fitted.
 End cap fitted to base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

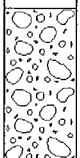

Borehole Number
ASA3

Boring Method Cable Percussion	Casing Diameter 300mm cased to 10.00m 200mm cased to 21.20m	Ground Level (mOD) 47.81	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317490.4 E 256917 N	Dates 28/06/2005	Engineer RPS-MCOS	Sheet 1/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.10	B1				47.01	0.80 (0.40)	Firm friable brown sandy CLAY		
					46.61	1.20 (0.60)	Firm grey brown slightly fine sandy CLAY		
					46.01	1.80 (0.60)	Soft (saturated) brown fine sandy CLAY		
3.00 3.10	J1 B2				43.70	(2.30)	Firm dark brown fine to medium sandy fine to medium gravelly CLAY with occasional cobbles		
4.10	B3				43.71	4.70 (0.60)	Medium dense grey brown fine to medium gravelly fine to medium SAND		
5.00	B4				43.79	4.70 (1.30)	Soft brown slightly fine to medium gravelly fine to medium sandy CLAY with occasional cobbles		
6.00 6.00	B5 J2				41.81	6.00 (1.50)	Firm brown slightly fine gravelly fine to coarse sandy CLAY		
7.00	B6				40.31	7.50 (0.90)	Firm dark grey slightly fine gravelly fine to coarse sandy CLAY		
8.90 9.00 9.10-9.30	J3 B7 U1				39.41	8.40 (1.60)	Stiff to very stiff dark grey and black fine to medium sandy fine to coarse gravelly CLAY with occasional cobbles and small boulders		
					37.81	10.00			

Remarks Permeability Test carried out at 9.90m, 15.00m and 17.50m. Chiselling from 8.20m to 8.40m for 0.75 hours. Chiselling from 9.90m to 10.00m for 0.5 hours.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.ASA3	

Glover Site Investigations Ltd							Site	Borehole Number	
Boring Method		Casing Diameter		Ground Level (mOD)		Client	FINGAL LANDFILL PROJECT	ASA3	
Cable Percussion		300mm cased to 10.00m 200mm cased to 21.20m		47.81		FINGAL COUNTY COUNCIL	Job Number	05-271	
		Location		Dates		Engineer	Sheet		
		317490.4 E 256917 N		28/06/2005		RPS-MCOS	2/3		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
11.00-11.45	CPT N=60			8,12/12,16,14,18			Stiff to very stiff dark grey and black fine to medium sandy fine to coarse gravelly CLAY with occasional cobbles and small boulders		
12.00	B9								
12.50-12.75	CPT 50/100			10,19/50					
14.00 14.00 14.10-14.60	J4 B10 U2					(7.30)			
15.30 15.30	B11 J5								
16.10-16.50	U3								
17.00 17.30 17.40-17.65 17.50 17.50	J6 B12 CPT 19/100 B13 J7			10,11/19	30.51 30.31	17.30 (0.20) 17.50 (0.40)	Hard black fine to medium sandy slightly fine gravelly CLAY		
17.90	B14				29.91	17.90	Dense grey slightly fine to coarse sandy medium to coarse GRAVEL with numerous cobbles		
19.20	B15				28.81	19.00	Hard black fine to medium sandy fine to coarse gravelly CLAY with numerous cobbles		
20.00-20.30	CPT 70/150			8,8/12,38,20	27.81	20.00	BOULDERS with stiff black sandy gravelly clay		
Remarks Chiselling from 12.80m to 13.20m for 0.75 hours. Chiselling from 13.80m to 14.00m for 0.5 hours. Chiselling from 15.90m to 16.10m for 0.5 hours. Chiselling from 17.60m to 17.90m for 0.75 hours. Chiselling from 19.00m to 19.40m for 1.5 hours. Chiselling from 19.80m to 20.00m for 0.5 hours.							Scale (approx)	Logged By	
							1:50	TR	
							Figure No.	05-271.ASA3	

Glover Site Investigations Ltd							Site FINGAL LANDFILL PROJECT		Borehole Number ASA3	
Boring Method Cable Percussion		Casing Diameter 300mm cased to 10.00m 200mm cased to 21.20m		Ground Level (mOD) 47.81		Client FINGAL COUNTY COUNCIL		Job Number 05-271		
		Location 317490.4 E 256917 N		Dates 28/06/2005		Engineer RPS-MCOS		Sheet 3/3		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
							BOULDERS with stiff black sandy gravelly clay			
					26.81 26.61	(1.00) 21.00 21.20	Firm to stiff brown slightly fine gravelly fine to coarse sandy CLAY			
				28/06/2005			Complete at 21.20m			
Remarks Standpipe installed. Borehole terminated on Engineer's instruction. Chiselling from 20.40m to 20.80m for 0.5 hours. Chiselling from 20.80m to 21.00m for 1.25 hours.								Scale (approx)	Logged By	
								1:50	TR	
								Figure No. 05-271.ASA3		

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Site FINGAL LANDFILL PROJECT	Borehole Number ASA3
Client FINGAL COUNTY COUNCIL	Job Number 05-271
Engineer RPS-MCOS	Sheet 1/1

Installation Type WATER MONITORING	Dimensions Internal Diameter of Tube [A] = 150 mm Diameter of Filter Zone = 200 mm
Location 317490.4 E 256917 N	Ground Level (mOD) 47.81

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling														
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)					
			47.51	0.30	Concrete															
					Cement/Bentonite Grout															
			45.61	2.20	Gravel Filter															
			45.11	2.70																
					Slotted Standpipe															
			43.11	4.70	Bentonite Seal	Groundwater Observations During Drilling														
						Start of Shift					End of Shift									
						Date	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)				
						28/06/05							21.20							
						Instrument Groundwater Observations														
						Inst. [A] Type :														
						Date	Instrument [A]			Remarks										
						Time	Depth (m)	Level (mOD)												
			26.61	21.20																

Remarks
 Geotextile sock fitted around filter.
 Upright cover fitted.
 End cap fitted to base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER01

Machine : COMMACHIO Flush : POLYMER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 33.50m	Ground Level (mOD) 51.06	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317558.4 E 257667.6 N	Dates 03/06/2005- 14/06/2005	Engineer RPS-MCOS	Sheet 1/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						50.76	(0.30) 0.30	TOPSOIL		
	51	0	0	0				Firm brown gravelly sandy CLAY containing occasional smooth sub-rounded cobbles. Gravel is sub-rounded fine to medium		
3.00						48.06	3.00	Very stiff dark grey to black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to coarse		
4.55	100	0	0							
5.55	100	0	0		03/06/2005 07/06/2005					
6.60	100	0	0				(7.00)			
7.75	100	0	0		07/06/2005 13/06/2005					
9.30						41.06	10.00			

Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER01	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER01

Machine : COMMACHIO Flush : POLYMER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 33.50m	Ground Level (mOD) 51.06	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317558.4 E 257667.6 N	Dates 03/06/2005- 14/06/2005	Engineer RPS-MCOS	Sheet 2/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.90	100	0	0					Very stiff dark grey to black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to coarse		
12.40	100	0	0							
14.00	100	0	0	0						
15.50	100	0	0			(10.00)				
17.10	100	0	0							
19.50						31.06	20.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER01	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER01

Machine : COMMACHIO Flush : POLYMER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 33.50m	Ground Level (mOD) 51.06	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317558.4 E 257667.6 N	Dates 03/06/2005- 14/06/2005	Engineer RPS-MCOS	Sheet 3/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
21.10	100	0	0			30.06	(1.00)	Very stiff dark grey to black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to coarse		
							21.00	Moderately weak to weak thinly laminated dark grey fine grained MUDSTONE, non-intact recovery, parts weathered to very stiff dark grey silt insitu.		
22.60	100	0	0	Non-Intact				Highly fractured; extremely closely to closely spaced dipping 30 degrees, 60 degrees and 70 degrees, smooth planar, tight to moderately open, dark grey, cohesive, silty fill		
24.20	100	0	0	Non-Intact						
25.30								25.65m - 25.80m: Medium dense to dense light grey micaceous SAND		
25.80	100	0	0	Non-Intact			(9.00)			
27.30	100	0	0	Non-Intact						
28.80	100	0	0	Non-Intact	13/06/2005 14/06/2005					
						21.06	30.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER01	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER01

Machine : COMMACHIO Flush : POLYMER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 33.50m	Ground Level (mOD) 51.06	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317558.4 E 257667.6 N	Dates 03/06/2005- 14/06/2005	Engineer RPS-MCOS	Sheet 4/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
30.40								Moderately weak to weak thinly laminated dark grey fine grained MUDSTONE, non-intact recovery, parts weathered to very stiff dark grey silt insitu. Highly fractured; extremely closely to closely spaced dipping 30 degrees, 60 degrees and 70 degrees, smooth planar, tight to moderately open, dark grey, cohesive, silty fill		
	100	0	0	Non-Intact			(3.50)			
32.00										
	100	0	0	Non-Intact						
33.50					14/06/2005	17.56	33.50	Complete at 33.50m		

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Remarks Borehole terminated at scheduled depth.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER01	

Glover Site Investigations Ltd

Site FINGAL LANDFILL PROJECT	Borehole Number ER01
Client FINGAL COUNTY COUNCIL	Job Number 05-271
Engineer RPS-MCOS	Sheet 1/1

Installation Type WATER MONITORING	Dimensions Internal Diameter of Tube [A] = 50 mm Diameter of Filter Zone = 146 mm
Location 317558.4 E 257667.6 N	Ground Level (mOD) 51.06

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling															
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)						
			50.56	0.50	Concrete																
						Groundwater Observations During Drilling															
						Date	Start of Shift					End of Shift									
							Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)					
						03/06/05						1700	5.55								
						07/06/05	0800	5.55				1700	7.75								
						13/06/05	0800	7.75				1700	28.80								
						14/06/05	0800	28.80				1700	33.50								
						Instrument Groundwater Observations															
						Inst. [A] Type :															
						Date	Instrument [A]			Remarks											
							Time	Depth (m)	Level (mOD)												
			28.56	22.50	Gravel Filter																
			27.56	23.50	Gravel Filter																
					Slotted Standpipe																
			18.56	32.50	Gravel Filter																
			17.56	33.50	Gravel Filter																

Remarks
 Geotextile sock fitted around filter
 Upright cover fitted.
 End cap fitted to base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER02

Machine : COMMACHIO Flush : POLYER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 25.75m	Ground Level (mOD) 46.37	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317728.5 E 257527.9 N	Dates 30/05/2005- 31/05/2005	Engineer RPS-MCOS	Sheet 1/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						46.07	(0.30) 0.30	TOPSOIL		
	52	0	0				(2.40)	Firm light brown sandy gravelly CLAY containing occasional smooth sub-rounded cobbles. Gravel is sub-rounded fine to medium		
2.70						43.67	2.70	Very stiff black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
4.20					30/05/2005 31/05/2005					
	100	0	0				(7.30)			
5.70										
7.40										
	100	0	0							
9.05										
	100	0	0			36.37	10.00			

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Remarks	Scale (approx)	1:50	Logged By	AM
	Figure No.	05-271.ER02		

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER02

Machine : COMMACHIO Flush : POLYER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 25.75m	Ground Level (mOD) 46.37	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317728.5 E 257527.9 N	Dates 30/05/2005- 31/05/2005	Engineer RPS-MCOS	Sheet 2/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.60	100	0	0					Very stiff black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
12.24	100	0	0							
13.70	100	0	0	0						
15.20	100	0	0			(10.00)				
16.70	100	0	0							
18.20	100	0	0							
19.70						26.37	20.00			

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Remarks	Scale (approx)	1:50	Logged By	AM
	Figure No.			
	05-271.ER02			

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER02

Machine : COMMACHIO Flush : POLYMER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 25.75m	Ground Level (mOD) 46.37	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317728.5 E 257527.9 N	Dates 30/05/2005- 31/05/2005	Engineer RPS-MCOS	Sheet 3/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
21.25	100	0	0					Very stiff black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
22.70	100	0	0			(5.00)				
24.25	100	0	0							
25.00	66	0	0			21.37				
25.75					31/05/2005	20.62	25.75	Medium dense brown sandy fine to coarse sub-rounded GRAVEL containing occasional smooth sub-rounded cobbles and boulders		
								Complete at 25.75m		

Remarks Geobore S unable to penetrate gravel. Borehole terminated at 25.75m.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER02	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER03

Machine : COMMACHIO Flush : POLYMER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 36.40m	Ground Level (mOD) 56.75	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317471.3 E 257461.8 N	Dates 15/06/05- 16/06/05	Engineer RPS-MCOS	Sheet 1/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						56.45	(0.30) 0.30	TOPSOIL		
	50	0	0	0			(2.50)	Firm light brown sandy gravelly CLAY containing occasional smooth sub-rounded cobbles. Gravel is sub-rounded fine to medium		
2.80						53.95	2.80	Very stiff dark grey to black gravelly sandy CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to coarse		
4.30	100	0	0							
6.00	100	0	0				(7.20)			
7.50	100	0	0							
9.10	100	0	0			46.75	10.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER03	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER03

Machine : COMMACHIO Flush : POLYMER GEL Core Dia : 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 36.40m	Ground Level (mOD) 56.75	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317471.3 E 257461.8 N	Dates 15/06/05- 16/06/05	Engineer RPS-MCOS	Sheet 2/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.40	100	0	0					Very stiff dark grey to black gravelly sandy CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to coarse		
11.95	100	0	0							
13.45	100	0	0	0						
14.90	100	0	0			(10.00)				
16.33	100	0	0							
18.00	100	0	0							
19.60						36.75	20.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER03	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER03

Machine : COMMACHIO Flush : POLYMER GEL Core Dia : 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 36.40m	Ground Level (mOD) 56.75	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317471.3 E 257461.8 N	Dates 15/06/05- 16/06/05	Engineer RPS-MCOS	Sheet 3/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
21.15	100	0	0				(1.45)	Very stiff dark grey to black gravelly sandy CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to coarse		
21.45	100	0	0			35.30 21.45				
22.80	29	0	0					Medium dense greyish brown sandy fine to coarse sub-rounded GRAVEL containing occasional cobbles and boulders		
23.90	45	0	0							
24.65	60	0	0				(4.75)			
25.40	66	0	0							
26.20	87	0	0							
27.00	100	0	0		15/06/05	30.55	26.20	Moderately strong dark grey fine to medium grained micrite LIMESTONE. Moderately weathered. Highly fractured, thinly bedded fractures, closely spaced, smooth planar, tigh, clean		
28.00	100	0	0		16/06/05		(3.80)			
28.60	100	0	0							
28.90	100	0	0							
29.80	100	0	0	Non-Intact		26.75	30.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
Figure No. 05-271.ER03		

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER03

Machine : COMMACHIO Flush : POLYMER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 36.40m	Ground Level (mOD) 56.75	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317471.3 E 257461.8 N	Dates 15/06/05- 16/06/05	Engineer RPS-MCOS	Sheet 4/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
30.60	100	0	0					Moderately strong dark grey fine to medium grained micrite LIMESTONE. Moderately weathered. Highly fractured, thinly bedded fractures, closely spaced, smooth planar tight, clean		
	100	0	0							
31.50	100	0	0							
32.00										
32.20	100	0	40	10						
32.60										
33.00	100	0	0							
34.00	100	0	0	Non-Intact						
35.00	71	0	0							
36.40					16/06/05	20.35	36.40	Complete at 36.40m		

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Remarks Standpipe installed to 35.40m. Borehole terminated at scheduled depth.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER03	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER03

Installation Type WATER MONITORING	Dimensions Internal Diameter of Tube [A] = 50 mm Diameter of Filter Zone = 146 mm	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317471.3 E 257461.8 N	Ground Level (mOD) 56.75	Engineer RPS-MCOS
			Sheet 1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling																	
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)								
												Groundwater Observations During Drilling											
												Start of Shift					End of Shift						
												Date	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Date	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)
[Concrete Symbol]			56.25	0.50	Concrete																		
[Cement/Bentonite Grout Symbol]					Cement/Bentonite Grout	15/06/05	0800	27.00									1700	27.00					
												Instrument Groundwater Observations											
												Inst. [A] Type :											
												Instrument [A]			Remarks								
												Date	Time	Depth (m)							Level (mOD)		
[Gravel Filter Symbol]			30.75	26.00	Gravel Filter																		
[Gravel Filter Symbol]			29.25	27.50	Gravel Filter																		
[Slotted Standpipe Symbol]					Slotted Standpipe																		
[Gravel Filter Symbol]			21.35	35.40	Gravel Filter																		
[Gravel Filter Symbol]			20.35	36.40	Gravel Filter																		

Remarks
 Geotextile sock fitted around filter.
 Upright cover fitted.
 End cap fitted to base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
ER04

Machine : COMMACHIO Flush : POLYMER GEL Core Dia : 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 26.75m	Ground Level (mOD) 44.90	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317847.7 E 257418.3 N	Dates 01/06/05- 02/06/05	Engineer RPS-MCOS	Sheet 1/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						44.60	(0.30) 0.30	TOPSOIL		
	56						(2.30)	Firm light brown sandy gravelly CLAY containing occasional smooth sub-rounded cobbles. Gravel is sub-rounded fine to coarse		
2.60						42.30	2.60	Very stiff dark grey to black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to coarse		
	100	0								
4.20										
	100	0								
5.80			0				(7.40)			
	100	0								
7.50										
	100	0								
9.10										
	100	0				34.90	10.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER04	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
ER04

Machine : COMMACHIO Flush : POLYMER GEL Core Dia : 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 26.75m	Ground Level (mOD) 44.90	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317847.7 E 257418.3 N	Dates 01/06/05- 02/06/05	Engineer RPS-MCOS	Sheet 2/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.70	100	0						Very stiff dark grey to black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to coarse		
12.20	100	0	0		01/06/05 02/06/05					
13.70	100	0	0							
15.25	100	0	0			(10.00)				
16.80	100	0	0							
18.30	100	0	0							
19.80				0		24.90	20.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
Figure No. 05-271.ER04		

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER04

Machine : COMMACHIO Flush : POLYMER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 26.75m	Ground Level (mOD) 44.90	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317847.7 E 257418.3 N	Dates 01/06/05- 02/06/05	Engineer RPS-MCOS	Sheet 3/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
21.35	100	0	0					Very stiff dark grey to black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to coarse		
22.90	100	0	0			(5.75)				
24.35	100	0	0							
25.75	100	0	0							
25.75	30	0	0			19.15	25.75	Medium dense brown sandy fine to coarse sub-rounded GRAVEL containing occasional smooth cobbles and boulders		
26.75					02/06/05	18.15	26.75	Complete at 26.75m		

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Remarks Geobore S unable to penetrate gravel. Borehole terminated at 26.75m.	Scale (approx)	Logged By
	1:50	AM
Figure No. 05-271.ER04		

Glover Site Investigations Ltd						Site FINGAL LANDFILL PROJECT		Borehole Number ER05	
Boring Method Cable Percussion		Casing Diameter 300mm cased to 7.50m 250mm cased to 21.20m		Ground Level (mOD) 51.39		Client FINGAL COUNTY COUNCIL		Job Number 05-271	
		Location 317551.1 E 257120.3 N		Dates 14/06/2005- 16/06/2005		Engineer RPS-MCOS		Sheet 1/3	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	J1				51.19	0.20	TOPSOIL		
1.00-1.45 1.00	SPT N=9 B1			1,1/2,2,2,3		(1.60)	Firm brown sandy slightly gravelly CLAY. Gravel is sub-rounded fine to medium		
1.50	J2								
2.00 2.00-2.45	B2 U1				49.59	1.80	Very stiff black to dark grey sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
2.50	J3								
3.00-3.45 3.20	SPT N=20 B3			3,6/4,4,7,5					
3.50	J4								
3.80	B4								
4.20-4.65 4.50	SPT N=34 J5			5,9/9,10,8,7					
5.30 5.30-5.75 5.50	B5 U2 J6								
6.20-6.65 6.20 6.30	SPT N=32 J7 B6			7,7/7,9,8,8					
7.00-7.45 7.00	SPT N=51 J8			6,10/10,13,14,14					
7.50	J9								
8.00-8.45 8.00	CPT N=34 J10			5,12/8,10,6,10					
8.50	B7								
9.00-9.45 9.40	CPT N=45 J11			8,7/7,10,13,15	41.39	10.00			
Remarks Permeability test carried out at 10.00m and 20.00m. Chiselling from 3.60m to 4.00m for 0.5 hours. Chiselling from 6.00m to 6.20m for 0.5 hours. Chiselling from 8.60m to 8.80m for 1 hour. Water added from 8.70m.								Scale (approx) 1:50	Logged By TR
								Figure No. 05-271.ER05	

Glover Site Investigations Ltd							Site	Borehole Number	
Boring Method		Casing Diameter		Ground Level (mOD)		Client	FINGAL LANDFILL PROJECT	ER05	
Cable Percussion		300mm cased to 7.50m 250mm cased to 21.20m		51.39		FINGAL COUNTY COUNCIL	Job Number	05-271	
		Location		Dates		Engineer	Sheet		
		317551.1 E 257120.3 N		14/06/2005- 16/06/2005		RPS-MCOS	2/3		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.00	J12						Very stiff black to dark grey sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
10.20-10.55	CPT 48/200			7,10/12,19,17					
10.50	B8								
11.40-11.85	CPT N=45			5,4/10,12,9,14					
11.40	J13								
11.60	B9					(4.00)			
12.20	B10								
12.20	J14								
12.50-12.78	CPT 50/130			4,6/19,31					
13.30	B11								
13.30-13.75	U3								
14.00	J15			15/06/2005:DRY	37.39	14.00	Very stiff black to dark grey sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
14.50	J16			16/06/2005					
15.00-15.45	SPT N=38			5,7/7,9,10,12					
15.00	B12								
15.80	J17								
16.00	B13								
16.10-16.55	SPT N=63			8,16/14,13,18,18					
16.40	J18								
16.90	B14								
17.00-17.45	CPT N=45			6,12/10,14,14,7		(6.00)			
17.50	B15								
18.20	J19								
18.40-18.85	CPT N=47			5,8/7,10,13,17					
18.80	B16								
19.60	B17								
20.00-20.22	CPT 50/70			10,18/21,29	31.39	20.00			
Remarks Standpipe installed to 20.00m. Chiselling from 12.80m to 13.00m for 1 hour. Chiselling from 16.60m to 16.70m for 1 hour. Chiselling from 17.80m to 18.20m for 0.5 hours. Chiselling from 19.60m to 20.20m for 1.5 hours.							Scale (approx)	Logged By	
							1:50	TR	
							Figure No.		
							05-271.ER05		

Glover Site Investigations Ltd							Site FINGAL LANDFILL PROJECT		Borehole Number ER05	
Boring Method Cable Percussion		Casing Diameter 300mm cased to 7.50m 250mm cased to 21.20m		Ground Level (mOD) 51.39		Client FINGAL COUNTY COUNCIL		Job Number 05-271		
		Location 317551.1 E 257120.3 N		Dates 14/06/2005- 16/06/2005		Engineer RPS-MCOS		Sheet 3/3		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
							Very stiff black to dark grey sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium			
				16/06/2005	30.19	(1.20) 21.20	Complete at 21.20m			
Remarks Borehole terminated at scheduled depth.								Scale (approx) 1:50	Logged By TR	
								Figure No. 05-271.ER05		

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Site
FINGAL LANDFILL PROJECT
Borehole Number
ER05

Client
FINGAL COUNTY COUNCIL
Job Number
05-271

Installation Type
WATER MONITORING

Dimensions
Internal Diameter of Tube [A] = 50 mm
Diameter of Filter Zone = 250 mm

Location
317551.1 E 257120.3 N

Ground Level (mOD)
51.39

Engineer
RPS-MCOS

Sheet
1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling														
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)					
						Groundwater Observations During Drilling														
						Date	Start of Shift					End of Shift								
						Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)					
			50.89	0.50	Concrete															
					Cement/Bentonite Grout															
			48.89	2.50	Gravel Filter															
			48.39	3.00																
					Slotted Standpipe															
			31.39	20.00	Gravel Filter															
			31.19	20.20																

Remarks
Geotextile sock fitted around filter.
Upright cover fitted.
End cap fitted to base of standpipe.

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Site
FINGAL LANDFILL PROJECT

Borehole Number
ER06

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 23.60m	Ground Level (mOD) 44.65	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317851.2 E 257136.3 N	Dates 25/05/2005- 26/05/2005	Engineer RPS-MCOS	Sheet 1/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
3.00	53	0	0			44.45	0.20	TOPSOIL		
							(1.30)	Firm to stiff dark brown slightly gravelly sandy CLAY. Gravel is sub-rounded fine to medium		
						43.15	1.50	Stiff to very stiff dark brown to black slightly sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
4.35	100	0	0							
6.15	100	0	0				(8.50)			
7.70	100	0	0							
9.25	100	0	0							
						34.65	10.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER06	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER06

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 23.60m	Ground Level (mOD) 44.65	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317851.2 E 257136.3 N	Dates 25/05/2005- 26/05/2005	Engineer RPS-MCOS	Sheet 2/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50	100	0	0		10/05/2005:DRY 26/05/2005:DRY			Stiff to very stiff dark brown to black slightly sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
12.15	100	0	0	0						
13.85	100	0	0							
15.40	100	0	0			(10.00)				
17.00	100	0	0							
18.50	100	0	0							
20.05						24.65	20.00			

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Remarks Standpipe installed to 20.00m.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER06	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER06

Machine : COMMACHIO	Casing Diameter 146mm cased to 23.60m	Ground Level (mOD) 44.65	Client FINGAL COUNTY COUNCIL	Job Number 05-271
Flush : POLYMER MUD	Location 317851.2 E 257136.3 N	Dates 25/05/2005- 26/05/2005	Engineer RPS-MCOS	Sheet 3/3
Core Dia: 102				
Method : GEOBORE-S				

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
21.50	100	0	0			23.65	(1.00)	Stiff to very stiff dark brown to black slightly sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
	50	0	0			21.05	(2.60)	Dense dark brown silty sandy fine to coarse sub-rounded GRAVEL containing occasional smooth sub-rounded cobbles and boulders		
23.60					26/05/2005	21.05	23.60	Complete at 23.60m		

Remarks Geobore S unable to penetrate gravel. Borehole terminated at 23.60m.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER06	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER06

Installation Type
WATER MONITORING

Dimensions
Internal Diameter of Tube [A] = 50 mm
Diameter of Filter Zone = 146 mm

Location
317851.2 E 257136.3 N

Client
FINGAL COUNTY COUNCIL

Job Number
05-271

Engineer
RPS-MCOS

Sheet
1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling										
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)	
											5 min	10 min	15 min	20 min		
			44.15	0.50	Concrete											
					Cement/Bentonite Grout											
			42.15	2.50	Gravel Filter											
			41.65	3.00												
						Groundwater Observations During Drilling										
						Date	Start of Shift					End of Shift				
							Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)
						10/05/05										
						26/05/05	0800	10.50		DRY		1700	10.50		23.60	DRY
						Instrument Groundwater Observations										
						Inst. [A] Type :										
						Date	Instrument [A]			Remarks						
							Time	Depth (m)	Level (mOD)							
			25.65	19.00	Gravel Filter											
			24.65	20.00												
					Bentonite Seal											
			21.05	23.60												




Remarks
 Geotextile sock fitted around filter.
 Upright cover fitted.
 End cap fitted to base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER07

Machine : HANS ENGLAND Flush : AIR-MIST Core Dia: 75 Method : SYMMETRIX DRILLING & CORING	Casing Diameter 114mm cased to 21.50m	Ground Level (mOD) 34.95	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 318178.9 E 257128.7 N	Dates 21/06/2005- 22/06/2005	Engineer RPS-MCOS	Sheet 1/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						34.75	0.20	TOPSOIL DRILLER'S DESCRIPTION: Light brown slightly silty CLAY		
							(1.80)			
						32.95	2.00	DRILLER'S DESCRIPTION: Dark grey CLAY		
							(7.30)			
					Moderate Flow(1) at 9.30m.	25.65	9.30	DRILLER'S DESCRIPTION: Sandy GRAVEL		∇1
						24.95	10.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
Figure No. 05-271.ER07		

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER07

Machine : HANS ENGLAND Flush : AIR-MIST Core Dia: 75 Method : SYMMETRIX DRILLING & CORING	Casing Diameter 114mm cased to 21.50m	Ground Level (mOD) 34.95	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 318178.9 E 257128.7 N	Dates 21/06/2005- 22/06/2005	Engineer RPS-MCOS	Sheet 2/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
			0					DRILLER'S DESCRIPTION: Sandy GRAVEL		
						22.65	12.30	DRILLER'S DESCRIPTION: Gravel with traces of clay		
						19.65	15.30	DRILLER'S DESCRIPTION: Sand and gravel with occasional cobble or boulder		
						14.95	20.00			

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Remarks	Scale (approx)	1:50	Logged By	AM
	Figure No.	05-271.ER07		

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER07

Machine : HANS ENGLAND Flush : AIR-MIST Core Dia: 75 Method : SYMMETRIX DRILLING & CORING	Casing Diameter 114mm cased to 21.50m	Ground Level (mOD) 34.95	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 318178.9 E 257128.7 N	Dates 21/06/2005- 22/06/2005	Engineer RPS-MCOS	Sheet 3/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							(0.50)	DRILLER'S DESCRIPTION: Sand and gravel with occasional cobble or boulder		
					Moderate Flow(2) at 20.50m.	14.45	20.50	DRILLER'S DESCRIPTION: Dark grey siltstone		W2
							(1.00)			
21.50	100	0	0		21/06/2005	13.45	21.50	Moderately weak to moderately strong thinly laminated dark grey shaley MUDSTONE, non-intact.		
22.10					22/06/2005			Fracturing very to extremely closely spaced dipping 10 degrees, (bedding parallel), smooth planar, tight, clean, moderately weak sections shattered		
	52	5	0							
23.75										
	64	16	0							
25.00										
	73	13	0				(8.50)			
26.50					Non-Intact					
	53	0	0							
28.00										
	52	13	0							
29.50										
						4.95	30.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER07	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER07

Machine : HANS ENGLAND Flush : AIR-MIST Core Dia: 75 Method : SYMMETRIX DRILLING & CORING	Casing Diameter 114mm cased to 21.50m	Ground Level (mOD) 34.95	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 318178.9 E 257128.7 N	Dates 21/06/2005- 22/06/2005	Engineer RPS-MCOS	Sheet 4/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
31.00	40	11	0		22/06/2005	3.95	(1.00)	Moderately weak to moderately strong thinly laminated dark grey shaley MUDSTONE, non-intact. Fracturing very to extremely closely spaced dipping 10 degrees, (bedding parallel), smooth planar, tight, clean, moderately weak sections shattered		
							31.00	Complete at 31.00m		

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Remarks Standpipe installed to 31.00m. Descriptions of overburden based on drillers logs. Borehole terminated at scheduled depth.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER07	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER07

Client
FINGAL COUNTY COUNCIL

Job Number
05-271

Engineer
RPS-MCOS

Sheet
1/1

Installation Type
WATER MONITORING

Dimensions
Internal Diameter of Tube [A] = 50 mm

Location
318178.9 E 257128.7 N

Ground Level (mOD)
34.95

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling										
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)	
			34.45	0.50	Concrete			9.30 20.50		Moderate Flow Moderate Flow						
						Groundwater Observations During Drilling										
						Date	Start of Shift					End of Shift				
							Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)
					Cement/Bentonite Grout	21/06/05		21.50					21.50			
						22/06/05							31.00			
						Instrument Groundwater Observations										
						Inst. [A] Type :										
						Date	Instrument [A]			Remarks						
						Time	Depth (m)	Level (mOD)								
			13.95 13.45	21.00 21.50	Gravel Filter											
					Slotted Standpipe											
			3.95	31.00												

Remarks
Geotextile sock fitted around filter.
Upright cover fitted.
End cap fitted to base of standpipe.

Glover Site Investigations Ltd

Site: FINGAL LANDFILL PROJECT
Borehole Number: ER08

Machine : KNEBEL Flush : POLYMER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 25.20m	Ground Level (mOD) 51.93	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317454.1 E 257013.9 N	Dates 14/06/2005-16/06/2005	Engineer RPS-MCOS	Sheet 1/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30	100	0	0	0		51.73	0.20	TOPSOIL		
	100	0	0				(2.30)	Firm light brown sandy gravelly CLAY containing occasional smooth sub-rounded cobbles. Gravel is sub-rounded fine to medium		
1.50	100	0	0							
3.00	100	0	0			49.43	2.50	Very stiff dark grey to black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to coarse		
4.50	100	0	0							
6.00	100	0	0				(7.50)			
7.50	100	0	0							
9.00	100	0	0	0		41.93	10.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER08	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER08

Machine : KNEBEL
Flush : POLYMER GEL
Core Dia: 102
Method : GEOBORE-S

Casing Diameter
146mm cased to 25.20m

Ground Level (mOD)
51.93

Client
FINGAL COUNTY COUNCIL

Job Number
05-271

Location
317454.1 E 257013.9 N

Dates
14/06/2005-
16/06/2005

Engineer
RPS-MCOS

Sheet
2/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50	100	0	0					Very stiff dark grey to black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to coarse		
12.00	100	0	0			(5.00)				
13.50	100	0	0							
15.00	100	0	0			36.93	15.00	Strong dark grey thinly bedded fine grained muddy LIMESTONE, interbedded with moderately weak dark grey to black thinly laminated fine grained shale. Close to very closely spaced, fractures dipping 30 degrees, smooth planar, tight, brown with clay infill		
16.50	100	0	0			(5.00)				
18.00				Non-Intact						
18.50	100	50	32	15						
19.10				Non-Intact						
19.35				7						
19.50										
19.65				Non-Intact		31.93	20.00			

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Remarks

Scale (approx)
1:50

Logged By
AM

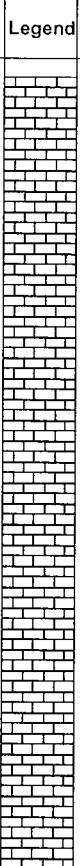
Figure No.
05-271.ER08

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER08

Machine : KNEBEL Flush : POLYMER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 25.20m	Ground Level (mOD) 51.93	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317454.1 E 257013.9 N	Dates 14/06/2005-16/06/2005	Engineer RPS-MCOS	Sheet 3/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
20.20	100	66	66	6				Strong dark grey thinly bedded fine grained muddy LIMESTONE, interbedded with moderately weak dark grey to black thinly laminated fine grained shale. Close to very closely spaced, fractures dipping 30 degrees, smooth planar, tight, brown with clay infill		
21.00				10						
21.45 21.65	100	87	52	Non-Intact						
				5						
22.15				20						
22.35 22.50				12						
22.80				Non-Intact		(5.20)				
	100	73	53	7						
23.90 24.00 24.10				Non-Intact						
				4						
24.35	100	66	66	Non-Intact						
24.75				4						
25.20						26.73	25.20	Complete at 25.20m		

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Remarks Standpipe installed to 24.50m. Borehole terminated at scheduled depth.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER08	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER08

Installation Type WATER MONITORING	Dimensions Internal Diameter of Tube [A] = 50 mm Diameter of Filter Zone = 146 mm	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317454.1 E 257013.9 N	Ground Level (mOD) 51.93	Engineer RPS-MCOS

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling														
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)					
			51.43	0.50	Concrete															
						Groundwater Observations During Drilling														
						Date	Start of Shift					End of Shift								
						Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)					
						Instrument Groundwater Observations														
						Inst. [A] Type :														
						Date	Instrument [A]			Remarks										
						Time	Depth (m)	Level (mOD)												
			35.93	16.00	Gravel Filter															
			35.43	16.50	Gravel Filter															
					Slotted Standpipe															
			27.43	24.50	Gravel Filter															
			26.73	25.20	Gravel Filter															

Remarks
 Geotextile sock fitted around filter.
 Upright cover fitted.
 End cap fitted to base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER09

Machine : HANS ENGLAND Flush : AIR-MIST Core Dia: 75 Method : SYMMETRIX & CORING	Casing Diameter 114mm cased to 33.00m	Ground Level (mOD) 52.69	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317294.4 E 256726.6 N	Dates 25/08/2005-26/08/2005	Engineer RPS-MCOS	Sheet 1/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						52.59	0.10	TOPSOIL DRILLER'S DESCRIPTION: Brown and grey boulder clay		
							(9.90)			
						42.69	10.00			

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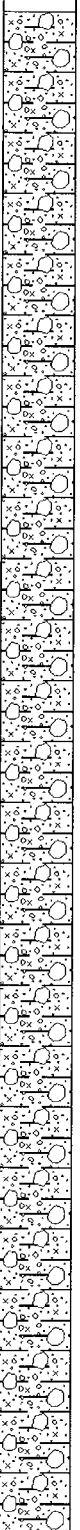
Remarks Descriptions of overburden based on drillers logs. Borehole had to be reamed out using 165mm DTH - 2 hours.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER09	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER09

Machine : HANS ENGLAND Flush : AIR-MIST Core Dia: 75 Method : SYMMETRIX & CORING	Casing Diameter 114mm cased to 33.00m	Ground Level (mOD) 52.69	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317294.4 E 256726.6 N	Dates 25/08/2005-26/08/2005	Engineer RPS-MCOS	Sheet 2/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
								DRILLER'S DESCRIPTION: Brown and grey boulder clay		
						32.69	20.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER09	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER09

Machine : HANS ENGLAND Flush : AIR-MIST Core Dia: 75 Method : SYMMETRIX & CORING	Casing Diameter 114mm cased to 33.00m	Ground Level (mOD) 52.69	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317294.4 E 256726.6 N	Dates 25/08/2005- 26/08/2005	Engineer RPS-MCOS	Sheet 3/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
22.00						31.69	(1.00)	DRILLER'S DESCRIPTION: Brown and grey boulder clay		
						21.00	(1.00)	DRILLER'S DESCRIPTION: Grey black boulder clay with traces of siltstone		
23.90	94	0	0			30.69	(1.40)	Dark grey sandy slightly gravelly CLAY. Gravel is sub-angular to sub-rounded fine		
						23.40	(2.00)	Stiff sandy gravelly CLAY with probable boulders recovered as angular coarse gravel. Gravel in clay is sub-angular to sub-rounded fine to medium. Boulders are moderately strong dark grey MUDSTONE		
24.90	50	0	0			29.29	(2.00)			
25.40	100	0	0		Slight Flow(1) at 25.00m.	27.29	(2.60)	Moderately strong dark brownish grey MUDSTONE, non-intact recovered as medium to coarse angular gravel, orange brown (iron) staining.		
25.70	42	0	0	Non-Intact				Parts thinly laminated with planar iron stained pale laminae. 27.50m: Parting of stiff brown sandy gravelly CLAY. Gravel is sub-angular to sub-rounded fine to medium. 28.40m - 29.00m: Moderately strong, very dark grey MUDSTONE, interbedded with dark brown grey mudstone		
27.25	80	0	0	Non-Intact	25/08/2005 26/08/2005:20.20m		(4.60)			
28.00	65	0	0	Non-Intact						
29.00										
						22.69	30.00			

Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER09	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER09

Machine : HANS ENGLAND Flush : AIR-MIST Core Dia: 75 Method : SYMMETRIX & CORING	Casing Diameter 114mm cased to 33.00m	Ground Level (mOD) 52.69	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317294.4 E 256726.6 N	Dates 25/08/2005-26/08/2005	Engineer RPS-MCOS	Sheet 4/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
								Moderately strong dark brownish grey MUDSTONE, non-intact recovered as medium to coarse angular gravel, orange brown (iron) staining. Parts thinly laminated with planar iron stained pale laminae		
					26/08/2005	19.69	33.00	Complete at 33.00m		

Remarks Standpipe installed to 33.00m. Symmetrix drilling from 0.00m - 22.00m. Rotary Cored to 29.00m. After rotary coring Symmetrix drilling was used to extend the borehole to 33.00m. Therefore between 22.00m - 29.00m the borehole was reamed out. Borehole terminated at scheduled depth.	Scale (approx)	Logged By
	1:50	AM
Figure No. 05-271.ER09		

Glover Site Investigations Ltd

Site FINGAL LANDFILL PROJECT	Borehole Number ER09
Client FINGAL COUNTY COUNCIL	Job Number 05-271
Engineer RPS-MCOS	Sheet 1/1

Installation Type WATER MONITORING	Dimensions Internal Diameter of Tube [A] = 50 mm Diameter of Filter Zone = 150 mm
	Location 317294.4 E 256726.6 N
	Ground Level (mOD) 52.69

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling										
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)	
			52.19	0.50	Concrete			25.00		Slight Flow						
Groundwater Observations During Drilling																
						Date	Start of Shift				End of Shift					
							Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)
						25/08/05							27.25			
					Cement/Bentonite Grout	26/08/05		27.25		20.20	32.49		33.00			
Instrument Groundwater Observations																
Inst. [A] Type :																
						Date	Instrument [A]			Remarks						
							Time	Depth (m)	Level (mOD)							
			27.79	24.90	Gravel Filter											
			25.59	27.10	Slotted Standpipe											
			19.69	33.00												

Remarks
 Geotextile sock fitted around filter.
 Upright cover fitted.
 End cap fitted to base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER10

Machine : PUNTEL Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE S	Casing Diameter 146mm cased to 20.10m	Ground Level (mOD) 45.99	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317340.8 E 256541.7 N	Dates 20/06/2005	Engineer RPS-MCOS	Sheet 1/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30			0	0		45.79	0.20	TOPSOIL		
	79	0	0				(1.80)	Firm brown sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
1.50			0			43.99	2.00	Stiff to very stiff grey sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
3.00	100	0	0							
4.50	96	0	0							
6.00	100	0	0				(8.00)			
7.50	100	0	0	0						
9.00	86	0	0			35.99	10.00			

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Remarks	Scale (approx)	1:50	Logged By	AM
	Figure No.	05-271.ER10		

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER10

Machine : PUNTEL Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE S	Casing Diameter 146mm cased to 20.10m	Ground Level (mOD) 45.99	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317340.8 E 256541.7 N	Dates 20/06/2005	Engineer RPS-MCOS	Sheet 2/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50	100	0	0					Stiff to very stiff grey sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
12.00	100	0	0			(4.90)				
13.50	100	0	0							
15.00	100	0	0			14.90	14.90	Medium dense grey sandy fine to medium sub-rounded GRAVEL containing occasional smooth sub-rounded cobbles		
16.50	100	0	0			(1.75)				
18.00	100	0	0	Non-Intact		29.34	16.65	Moderately weak to weak very dark grey fine grained MUDSTONE; non-intact recovery. Parts weathered to very stiff very dark grey silt insitu.		
18.55	100	0	0	Non-Intact			18.00m - 18.55m: Firm dark grey then brown sandy SILT. 19.50m - 19.75m: Very stiff brown sandy silt			
19.50	100	0	0	0		25.99	20.00			

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Remarks Standpipe installed to 19.50m.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER10	

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Site
FINGAL LANDFILL PROJECT

Borehole Number
ER10

Machine : PUNTEL Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE S	Casing Diameter 146mm cased to 20.10m	Ground Level (mOD) 45.99	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317340.8 E 256541.7 N	Dates 20/06/2005	Engineer RPS-MCOS	Sheet 3/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
20.10					20/06/2005	25.89	20.10	Moderately weak to weak very dark grey fine grained MUDSTONE (Description same as Sheet 1) Complete at 20.10m		

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Remarks Borehole terminated at scheduled depth.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER10	

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Site
FINGAL LANDFILL PROJECT

Borehole Number
ER11

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 13.80m	Ground Level (mOD) 39.56	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 318006.7 E 257110.5 N	Dates 26/05/2005	Engineer RPS-MCOS	Sheet 1/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
2.75	62	0	0	0		39.36	0.20	TOPSOIL		
							(1.30)	Soft to firm light brown slightly sandy slightly gravelly CLAY. Gravel is sub-rounded fine to medium		
						38.06	1.50	Stiff to very stiff dark brown slightly sandy gravelly CLAY containing smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
							(8.50)			
4.50	100	0	0							
6.10	100	0	0							
7.10	100	0	0	0						
9.30										
						29.56	10.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER11	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER11

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 13.80m	Ground Level (mOD) 39.56	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 318006.7 E 257110.5 N	Dates 26/05/2005	Engineer RPS-MCOS	Sheet 2/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.80	100	0	0					Stiff to very stiff dark brown slightly sandy gravelly CLAY containing smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
12.65	100	0	0			(3.50)				
13.80	90	0	0		26/05/2005	26.06 25.76	13.50 (0.30) 13.80			
								Complete at 13.80m		

Remarks Borehole backfilled with bentonite. Geobore S unable to penetrate gravel. Borehole terminated at 13.80m.	Scale (approx)	Logged By
	1:50	AM
Figure No. 05-271.ER11		

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER12

Machine : KNEBEL Flush : AIR-MIST Core Dia: 75 Method : SYMMETRIX & CORING	Casing Diameter 168mm cased to 20.70m	Ground Level (mOD) 34.72	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317938.1 E 256782 N	Dates 23/05/2005- 25/06/2005	Engineer RPS-MCOS	Sheet 1/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						34.52	0.20	TOPSOIL		
					Seepage(1) at 0.90m.		(1.20)	DRILLER'S DESCRIPTION: Brown Fill		∇1
						33.32	1.40	DRILLER'S DESCRIPTION: Grey stiff stoney boulder clay		
							(6.50)			
						26.82	7.90	DRILLER'S DESCRIPTION: Brown sandy gravelly boulder clay		
						26.42	8.30	DRILLER'S DESCRIPTION: Brown stiff stoney boulder clay		
							(1.60)			
						24.82	9.90			

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Remarks Descriptions of overburden based on drillers logs.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER12	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER12

Machine : KNEBEL Flush : AIR-MIST Core Dia: 75	Casing Diameter 168mm cased to 20.70m	Ground Level (mOD) 34.72	Client FINGAL COUNTY COUNCIL	Job Number 05-271
Method : SYMMETRIX & CORING	Location 317938.1 E 256782 N	Dates 23/05/2005- 25/06/2005	Engineer RPS-MCOS	Sheet 2/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50			0	0	Moderate Flow(2) at 10.20m. 23/05/2005:12.00m 24/05/2005 B1			DRILLER'S DESCRIPTION: Dark grey to black sandy boulder clay DRILLER'S DESCRIPTION: Dark grey to black sandy boulder clay		∇2
12.00					B2		(3.90)			
13.50					B3					
15.00					Strong Flow(3) at 13.90m. B4	20.82	13.90	DRILLER'S DESCRIPTION: Brown sandy GRAVEL		∇3
16.50					B5		(4.10)			
18.00					B6	16.72	18.00	DRILLER'S DESCRIPTION: Brown silty gravelly sand		
19.50					B7					




















Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER12	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER12

Machine : KNEBEL Flush : AIR-MIST Core Dia: 75 Method : SYMMETRIX & CORING	Casing Diameter 168mm cased to 20.70m	Ground Level (mOD) 34.72	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317938.1 E 256782 N	Dates 23/05/2005- 25/06/2005	Engineer RPS-MCOS	Sheet 3/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
20.70					24/05/2005:23.60m 25/05/2005	14.22	(2.50) 20.50	Moderately strong to strong dark grey fine grained LIMESTONE interbedded with weak thinly laminated dark grey shaly mudstone. Closely to medium spaced dipping 30-40 degrees, smooth planar, tight, clean patchy quartz mineralisation		
21.00	100	73	73	4	Non-Intact					
22.20 22.40				4						
22.65	100	71	54	2	Non-Intact					
23.00				6						
23.60	100	90	90	20						
23.95 24.00				6						
24.50	100	85	66	10	Non-Intact		(9.50)			
25.50 25.65				5						
26.00				5						
26.50	100	66	37	10	Non-Intact					
26.70 26.80				10						
27.40				10	Non-Intact					
27.60	100	78	62	10						
28.20				10	Non-Intact					
28.50				1						
28.80	100	100	100	20						
29.50				20						
29.75						4.72	30.00			

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
Remarks Standpipe installed to 30.00m	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER12	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER12

Machine : KNEBEL Flush : AIR-MIST Core Dia: 75 Method : SYMMETRIX & CORING	Casing Diameter 168mm cased to 20.70m	Ground Level (mOD) 34.72	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317938.1 E 256782 N	Dates 23/05/2005- 25/06/2005	Engineer RPS-MCOS	Sheet 4/4

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
30.50	100	95	85	3	25/05/2005	4.22	(0.50) 30.50	Moderately strong to strong dark grey fine grained LIMESTONE interbedded with weak thinly laminated dark grey shaly mudstone. Closely to medium spaced dipping 30-40 degrees, smooth planar, tight, clean patchy quartz mineralisation Complete at 30.50m		

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Remarks Borehole terminated at scheduled depth. Symmetrix drilling to 20.70m. Rotary Coring to 30.50m.	Scale (approx)	Logged By
	1:50	AM
Figure No. 05-271.ER12		

Glover Site Investigations Ltd

Site FINGAL LANDFILL PROJECT	Borehole Number ER12
Client FINGAL COUNTY COUNCIL	Job Number 05-271
Engineer RPS-MCOS	Sheet 1/1

Installation Type WATER MONITORING	Dimensions Internal Diameter of Tube [A] = 50 mm
Location 317938.1 E 256782 N	Ground Level (mOD) 34.72

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling									
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)
			34.22	0.50	Cement/Bentonite Grout			0.90 10.20 13.90		Seepage Moderate Flow Strong Flow					
Groundwater Observations During Drilling															
					Concrete	Date	Start of Shift				End of Shift				Water Level (mOD)
							Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	
						23/05/05		10.20				10.20		12.00	22.72
						24/05/05 25/05/05		20.50				20.50 30.50		23.60	11.12
Instrument Groundwater Observations															
Inst. [A] Type :															
					Instrument [A]	Date	Remarks								
							Time	Depth (m)	Level (mOD)						
			13.72 13.22	21.00 21.50	Gravel Filter										
					Slotted Standpipe										
			4.72 4.22	30.00 30.50	Gravel Filter										

Remarks
 Geotextile sock fitted around filter.
 Upright cover fitted.
 End cap fitted to base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER13

Machine : KNEBEL Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE S	Casing Diameter 146mm cased to 25.50m	Ground Level (mOD) 57.49	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317778.2 E 258116.3 N	Dates 23/06/2005	Engineer RPS-MCOS	Sheet 1/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30	100	0	0	0		57.29	0.20	TOPSOIL		
								Firm brown sandy gravelly CLAY containing occasional smooth sub-rounded cobbles. Gravel is sub-rounded fine to medium		
1.50	100	0	0				(2.10)			
3.00	100	0	0			55.19	2.30	Stiff to very stiff dark grey sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
4.50	100	0	0							
6.00	96	0	0				(7.70)			
7.50	100	0	0							
9.00	100	0	0							
						47.49	10.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
Figure No. 05-271.ER13		

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER13

Machine : KNEBEL Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE S	Casing Diameter 146mm cased to 25.50m	Ground Level (mOD) 57.49	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317778.2 E 258116.3 N	Dates 23/06/2005	Engineer RPS-MCOS	Sheet 2/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50	100	0	0					Stiff to very stiff dark grey sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
12.00	100	0	0	0						
13.50	100	0	0							
15.00	100	0	0			(10.00)				
16.50	100	0	0							
18.00	93	0	0							
19.50						 occasional thin layers of sandy fine to medium sub-rounded gravel			
						37.49	20.00			

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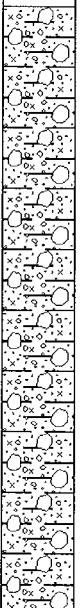
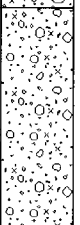
Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER13	

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Site
FINGAL LANDFILL PROJECT

Borehole Number
ER13

Machine : KNEBEL Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE S	Casing Diameter 146mm cased to 25.50m	Ground Level (mOD) 57.49	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317778.2 E 258116.3 N	Dates 23/06/2005	Engineer RPS-MCOS	Sheet 3/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
21.00	96	0	0					Stiff to very stiff dark grey sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
	100	0	0				(4.00)			
22.50	96	0	0					Medium dense grey sandy fine to coarse sub-rounded GRAVEL containing occasional smooth sub-rounded cobbles		
24.00	73	0	0			33.49	(1.50)			
25.50					23/06/2005	31.99	25.50	Complete at 25.50m		

Remarks Standpipe installed to 23.00m. Geobore S unable to penetrate gravel. Borehole terminated at 25.50m.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.ER13	

Glover Site Investigations Ltd

Site FINGAL LANDFILL PROJECT	Borehole Number ER13
Client FINGAL COUNTY COUNCIL	Job Number 05-271
Engineer RPS-MCOS	Sheet 1/1

Installation Type WATER MONITORING	Dimensions Internal Diameter of Tube [A] = 150 mm
	Location 317778.2 E 258116.3 N

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling											
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)		
			56.99	0.50	Concrete												
			54.49	3.00	Gravel Filter												
			53.99	3.50													
Groundwater Observations During Drilling																	
						Start of Shift					End of Shift						
						Date	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	
Instrument Groundwater Observations																	
						Inst. [A] Type :											
						Date	Instrument [A]			Remarks							
						Time	Depth (m)	Level (mOD)									
			34.49	23.00	Gravel Filter												
			33.99	23.50													
					Bentonite Seal												
			31.99	25.50													

Remarks
 Geotextile sock fitted around filter.
 Upright cover fitted.
 End cap fitted to base of standpipe.

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Site
FINGAL LANDFILL PROJECT

Borehole Number
ER14

Boring Method SYMMETRIX DRILLING TO 24.60m	Casing Diameter 114mm cased to 24.60m	Ground Level (mOD) 57.27	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317467.9 E 257484.6 N	Dates 23/08/2005-24/08/2005	Engineer RPS-MCOS	Sheet 1/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					57.17	0.10	TOPSOIL DRILLER'S DESCRIPTION: Brown boulder clay		
						(2.90)			
					54.27	3.00	DRILLER'S DESCRIPTION: Grey boulder clay with occasional boulders		
						(7.00)			
					47.27	10.00			

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Remarks Descriptions of overburden based on drillers logs. Borehole had to be reamed out using 150mm DTHH - 2 hours.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.ER14	

Glover Site Investigations Ltd							Site FINGAL LANDFILL PROJECT		Borehole Number ER14	
Boring Method SYMMETRIX DRILLING TO 24.60m		Casing Diameter 114mm cased to 24.60m		Ground Level (mOD) 57.27		Client FINGAL COUNTY COUNCIL		Job Number 05-271		
		Location 317467.9 E 257484.6 N		Dates 23/08/2005-24/08/2005		Engineer RPS-MCOS		Sheet 2/3		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
							DRILLER'S DESCRIPTION: Grey boulder clay with occasional boulders			
					37.27	20.00				
Remarks								Scale (approx) 1:50	Logged By TR	
								Figure No. 05-271.ER14		

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Site
FINGAL LANDFILL PROJECT

Borehole Number
ER14

Boring Method SYMMETRIX DRILLING TO 24.60m	Casing Diameter 114mm cased to 24.60m	Ground Level (mOD) 57.27	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317467.9 E 257484.6 N	Dates 23/08/2005-24/08/2005	Engineer RPS-MCOS	Sheet 3/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							DRILLER'S DESCRIPTION: Grey boulder clay with occasional boulders		
				Moderate Flow(1) at 22.00m.	35.47	(1.80) 21.80	DRILLER'S DESCRIPTION: Coarse sandy gravel		∇ ₁
				23/08/2005 24/08/2005	34.27	(1.20) 23.00	DRILLER'S DESCRIPTION: Coarse sandy GRAVEL		
				24/08/2005	32.67	(1.60) 24.60	Complete at 24.60m		

Remarks Symmetrix system unable to penetrate gravels. Borehole terminated at 24.60m. Standpipe installed to 24.60m.	Scale (approx)	Logged By
	1:50	TR
Figure No. 05-271.ER14		

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
ER14

Installation Type
WATER MONITORING

Dimensions
Internal Diameter of Tube [A] = 50 mm
Diameter of Filter Zone = 150 mm

Client
FINGAL COUNTY COUNCIL

Job Number
05-271

Location
317467.9 E 257484.6 N

Ground Level (mOD)
57.27

Engineer
RPS-MCOS

Sheet
1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling									
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)
			56.77	0.50	Concrete			22.00		Moderate Flow					
						Groundwater Observations During Drilling									
						Date	Start of Shift				End of Shift				
							Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)
						23/08/05		23.00				23.00			
						24/08/05						24.60			
					Cement/Bentonite Grout										
						Instrument Groundwater Observations									
						Inst. [A] Type :									
						Date	Instrument [A]			Remarks					
							Time	Depth (m)	Level (mOD)						
			35.47	21.80	Gravel Filter										
			35.17	22.10											
					Slotted Standpipe										
			32.67	24.60											

Remarks
Geotextile sock fitted around filter.
Upright cover fitted.
End cap fitted to base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER15

Boring Method SYMMETRIX DRILLING TO 14.00m	Casing Diameter 114mm cased to 14.00m	Ground Level (mOD) 30.73	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317980.8 E 256416.5 N	Dates 22/08/2005	Engineer RPS-MCOS	Sheet 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					30.63	0.10	TOPSOIL DRILLER'S DESCRIPTION: Brown gravelly sandy CLAY containing occasional smooth sub-rounded cobbles and boulders		
						(2.90)			
					27.73	3.00	DRILLER'S DESCRIPTION: Grey boulder clay		
						(4.00)			
					23.73	7.00	DRILLER'S DESCRIPTION: Grey slightly silty slightly sandy fine to coarse sub-rounded GRAVEL		
						(1.00)			
					22.73	8.00	DRILLER'S DESCRIPTION: Brown boulder clay		
						(1.00)			
					21.73	9.00	DRILLER'S DESCRIPTION: Sand containing some grey clay bands		
						(1.00)			
					20.73	10.00			

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Remarks Descriptions of overburden based on drillers logs.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.ER15	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ER15

Boring Method SYMMETRIX DRILLING TO 14.00m	Casing Diameter 114mm cased to 14.00m	Ground Level (mOD) 30.73	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317980.8 E 256416.5 N	Dates 22/08/2005	Engineer RPS-MCOS	Sheet 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				Moderate Flow(1) at 10.80m.	19.93	(0.80) 10.80	DRILLER'S DESCRIPTION: Sand containing some grey clay bands		
						(3.20)	DRILLER'S DESCRIPTION: Sandy Gravel		
				22/08/2005	16.73	4.00	Complete at 14.00m		

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Remarks Standpipe installed to 14.00m. Symmetrix system unable to penetrate gravel. Borehole terminated at 14.00m.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.ER15	

Glover Site Investigations Ltd

Site FINGAL LANDFILL PROJECT	Borehole Number ER15
Client FINGAL COUNTY COUNCIL	Job Number 05-271
Engineer RPS-MCOS	Sheet 1/1

Installation Type WATER MONITORING	Dimensions Internal Diameter of Tube [A] = 50 mm
Location 317980.8 E 256416.5 N	Ground Level (mOD) 30.73

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling											
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)		
			30.23	0.50	Concrete			10.80		Moderate Flow							
Groundwater Observations During Drilling																	
						Start of Shift					End of Shift						
						Date	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Date	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)
					Cement/Bentonite Grout												
Instrument Groundwater Observations																	
Inst. [A] Type :																	
						Date	Instrument [A]			Remarks							
						Time	Depth (m)	Level (mOD)									
			19.53	11.20	Gravel Filter												
			19.23	11.50													
					Slotted Standpipe												
			16.73	14.00													

Remarks
 Geotextile sock fitted around filter.
 Upright cover fitted.
 End cap fitted to base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
ES01

Boring Method Cable Percussion	Casing Diameter 200mm cased to 12.30m	Ground Level (mOD) 47.09	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317725.8 E 257646.7 N	Dates 12/05/2005- 16/05/2005	Engineer RPS-MCOS	Sheet 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00	B1				46.84	(0.25) 0.25	TOPSOIL Soft to firm dark brown slightly sandy CLAY containing occasional sub-angular to sub-rounded fine to medium gravel and smooth sub-rounded cobbles		
1.50-1.95	U1					(2.05)			
2.00	B2								
3.00-3.45 3.00	SPT N=20 B3			3,4/4,5,5,6	44.79	2.30	Stiff black gravelly sandy CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
4.00	B4								
4.50-4.95	SPT N=20			3,3/5,5,6,4					
5.00	B5								
6.00 6.00-6.45	B6 U2			12/05/2005: DRY 13/05/2005: DRY		(7.70)			
7.00	B7								
7.50-7.95 7.50	SPT N=22 J1			3,5/6,5,5,6					
8.00	B8								
9.00 9.00-9.45	B9 U3				37.09	10.00			

Remarks Standpipe installed to 11.50m. Permeability test carried out at 5.00m and 10.00m. Virtual refusal met at 12.30m on boulder.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.ES01	

Glover Site Investigations Ltd							Site	Borehole Number	
Boring Method		Casing Diameter		Ground Level (mOD)		Client	FINGAL LANDFILL PROJECT	ES01	
Cable Percussion		200mm cased to 12.30m		47.09		FINGAL COUNTY COUNCIL	Job Number	05-271	
		Location		Dates		Engineer	Sheet		
		317725.8 E 257646.7 N		12/05/2005-16/05/2005		RPS-MCOS	2/2		
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.00	B10			13/05/2005:DRY 16/05/2005:DRY			Stiff black gravelly sandy CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
11.00	B11				(2.30)				
11.50-11.60	SPT 25*0 50/100			25,0/50					
12.00	B12			16/05/2005	34.79	12.30			
							Complete at 12.30m		
<p style="color: red; transform: rotate(-45deg); opacity: 0.5;">Consent of copyright owner required for any other use.</p>									
Remarks Chiselling from 10.40m to 10.80m for 0.5 hours. Chiselling from 11.60m to 11.90m for 0.5 hours. Chiselling from 12.20m to 12.30m for 1 hour.							Scale (approx) 1:50	Logged By TR	
							Figure No. 05-271.ES01		

Glover Site Investigations Ltd

Site FINGAL LANDFILL PROJECT	Borehole Number ES01
Client FINGAL COUNTY COUNCIL	Job Number 05-271
Engineer RPS-MCOS	Sheet 1/1

Installation Type WATER MONITORING	Dimensions Internal Diameter of Tube [A] = 50 mm Diameter of Filter Zone = 200 mm
	Location 317725.8 E 257646.7 N

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling														
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)					
			46.59	0.50	Concrete															
					Cement/Bentonite Grout															
			44.59	2.50	Gravel Filter	Groundwater Observations During Drilling														
			44.09	3.00		Date	Start of Shift					End of Shift								
						Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)					
						12/05/05						5.50								
						13/05/05		5.50	DRY			10.20		DRY						
						16/05/05		10.20	DRY			12.30		DRY						
						Instrument Groundwater Observations														
						Inst. [A] Type :														
					Slotted Standpipe	Instrument [A]			Remarks											
						Date	Time	Depth (m)					Level (mOD)							
			35.59	11.50																
			34.79	12.30	Gravel Filter															

Remarks
 Geotextile sock fitted around filter.
 Upright cover fitted.
 End cap fitted at base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ES02

Boring Method Cable Percussion	Casing Diameter 200mm cased to 9.40m	Ground Level (mOD) 56.85	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317471.9 E 257469 N	Dates 16/05/2005- 17/05/2005	Engineer RPS-MCOS	Sheet 1/1

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					56.65	0.20	TOPSOIL		
1.00	B1						Firm to stiff dark brown gravelly sandy CLAY containing occasional smooth sub-rounded cobbles. Gravel is sub-angular fine to medium		
1.50-1.95 1.50	SPT N=15 J1			1,2/3,3,4,5		(2.20)			
2.00	B2								
3.00 3.00-3.45	B3 U1				54.45	2.40	Stiff to very stiff black sandy gravelly CLAY containing occasional smooth sub-rounded to sub-angular cobbles and boulders. Gravel is sub-angular fine to medium		
4.00	B4								
4.50-4.95 4.50	SPT N=17 J2			3,3/4,4,4,5					
5.00	B5			16/05/2005:DRY 17/05/2005:DRY					
6.00-6.45 6.00	SPT N=21 B6			3,4/5,5,5,6		(7.00)			
6.50	J3								
7.00	B7								
7.50-7.95	SPT N=20			3,4/4,5,6,5					
8.00	B8								
9.00 9.00-9.40	B9 U2 Refusal			17/05/2005:DRY	47.45	9.40			

Remarks Standpipe installed to 9.00m. Virtual refusal met at 0.40m on boulders. Chiselling from 3.70m to 4.10m for 1 hour. Chiselling from 8.20m to 8.70m for 0.5 hours. Chiselling from 8.90m to 9.10m for 0.5 hours. Chiselling from 9.30m to 9.40m for 1 hour.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.ES02	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
ES02

Installation Type
WATER MONITORING

Dimensions
Internal Diameter of Tube [A] = 50 mm
Diameter of Filter Zone = 200 mm

Client
FINGAL COUNTY COUNCIL

Job Number
05-271

Location
317471.9 E 257469 N

Ground Level (mOD)
56.85

Engineer
RPS-MCOS

Sheet
1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling											
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)		
			56.35	0.50	Concrete												
					Cement/Bentonite Grout												
						Groundwater Observations During Drilling											
			54.35	2.50	Gravel Filter	Date	Start of Shift				End of Shift				Water Level (mOD)		
			53.85	3.00			Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)		Water Depth (m)	
						16/05/05					1700	5.00		DRY			
						17/05/05	0800	800.00		DRY		9.40		DRY			
						Instrument Groundwater Observations											
						Inst. [A] Type :											
					Slotted Standpipe	Date	Instrument [A]			Remarks							
							Time	Depth (m)	Level (mOD)								
			47.85	9.00	Gravel Filter												
			47.45	9.40													

Remarks
Geotextile sock fitted around filter.
Upright cover fitted.
End cap fitted at base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ES03

Boring Method Cable Percussion	Casing Diameter 200mm cased to 13.80m	Ground Level (mOD) 40.40	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 318026.3 E 257322.4 N	Dates 07/05/2005- 09/05/2005	Engineer RPS-MCOS	Sheet 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					40.20	0.20	TOPSOIL		
1.00	B1					(1.70)	Firm dark brown to greyish brown sandy CLAY containing occasional fine to medium sub-rounded gravel		
1.50-1.95	SPT N=11			2,3/2,4,3,2					
2.00	B2				38.50	1.90	Stiff dark grey to black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is fine to medium sub-rounded		
3.00 3.00-3.45	B3 U1			07/05/2005:DRY 09/05/2005:DRY					
4.00	B4								
4.50-4.95 4.50	SPT N=16 J1			1,3/4,4,3,5					
5.00	B5								
6.00-6.45 6.00	SPT N=25 B6			2,4/6,7,6,6		(8.10)			
7.00	B7								
7.50-7.95	U2								
8.00	B8								
9.00-9.45 9.00	SPT N=47 B9			6,5/7,11,15,14					
					30.40	10.00			


Remarks Virtual refusal met at 13.80m on boulders. Permeability tests carried out at 5.00m and 10.00m. Standpipe installed to 13.00m. Chiselling from 1.90m to 2.30m for 1.5 hours. Chiselling from 8.40m to 8.70m for 1 hour.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.ES03	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ES03

Boring Method Cable Percussion	Casing Diameter 200mm cased to 13.80m	Ground Level (mOD) 40.40	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 318026.3 E 257322.4 N	Dates 07/05/2005- 09/05/2005	Engineer RPS-MCOS	Sheet 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.00	B10						Stiff dark grey to black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is fine to medium sub-rounded		
10.50	J2								
11.00	B11								
11.50-11.95	CPT N=49			8,9/10,10,14,15					
12.00	B12			09/05/2005:DRY 10/05/2005:DRY		(3.80)			
13.00 13.00-13.45	B13 U4 Refusal								
13.80	B14			10/05/2005:DRY	26.60	13.80			
							Complete at 13.80m		

Remarks Chiselling from 13.50m to 13.80m for 1 hour.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.ES03	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
ES03

Installation Type
WATER MONITORING

Dimensions
Internal Diameter of Tube [A] = 50 mm
Diameter of Filter Zone = 200 mm

Client
FINGAL COUNTY COUNCIL

Job Number
05-271

Location
318026.3 E 257322.4 N

Ground Level (mOD)
40.40

Engineer
RPS-MCOS

Sheet
1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling											
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)		
			40.10	0.30	Concrete												
					Cement/Bentonite Grout												
			37.40	3.00	Gravel Filter	Groundwater Observations During Drilling											
			36.40	4.00		Date	Start of Shift					End of Shift					
						Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)		
						07/05/05						3.00					
						09/05/05		3.00		DRY		12.30					
						10/05/05		12.30		DRY		13.80					
						Instrument Groundwater Observations											
						Inst. [A] Type :											
					Slotted Standpipe	Instrument [A]			Remarks								
						Date	Time	Depth (m)					Level (mOD)				
			27.40	13.00	Gravel Filter												
			26.60	13.80													

Remarks
Geotextile sock fitted around filter.
Upright cover fitted.
End cap fitted at base of standpipe.

Glover Site Investigations Ltd							Site	Borehole Number	
Boring Method Cable Percussion		Casing Diameter 200mm cased to 13.00m		Ground Level (mOD) 47.83		Client FINGAL COUNTY COUNCIL		ES04	
		Location 317768.9 E 257287 N		Dates 09/05/2005- 10/05/2005		Engineer RPS-MCOS		Job Number 05-271	
								Sheet 1/2	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	J1				47.73	0.10	TOPSOIL		
1.20 1.30-1.75	B1 U1				46.53	1.30	Firm brown sandy CLAY containing occasional smooth sub-rounded cobbles		
2.50 2.50	B2 J2				44.93	2.90	Firm to stiff brown sandy slightly gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
3.00-3.45 3.00 3.20	SPT N=11 B3 B4			1,1/2,2,3,4			Stiff to very stiff dark brown to black gravelly sandy CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
4.50-4.95	U2								
5.30 5.30	J3 B5								
6.00-6.45 6.00	SPT N=14 J4			2,4/2,2,5,5					
7.10-7.55	U3								
7.70 8.00	B6 B7								
9.00-9.45 9.00	SPT N=12 B8			2,2/3,2,3,4					
					37.83	10.00			

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Remarks Standpipe installed to 12.00m. Permeability test carried out at 5.00m and 10.00m. Virtual refusal met at 13.00m on possible boulders. Chiselling from 7.70m to 8.00m for 0.5 hours.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.ES04	

Glover Site Investigations Ltd							Site	Borehole Number	
Boring Method Cable Percussion		Casing Diameter 200mm cased to 13.00m		Ground Level (mOD) 47.83		Client FINGAL COUNTY COUNCIL		ES04	
		Location 317768.9 E 257287 N		Dates 09/05/2005- 10/05/2005		Engineer RPS-MCOS		Job Number 05-271 Sheet 2/2	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.00	B9						Stiff to very stiff dark brown to black gravelly sandy CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
10.50-10.95	U4								
11.00	B10					(3.00)			
12.00	J5			09/05/2005:DRY					
12.40-12.80	CPT 50/250			10/05/2005:DRY 7,12/18,22,10					
				10/05/2005	34.83	13.00	Complete at 13.00m		
Remarks Chiselling from 12.20m to 12.60m for 1.5 hours. Chiselling from 12.60m to 13.00m for 1 hour.								Scale (approx) 1:50	Logged By TR
								Figure No. 05-271.ES04	

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Site
FINGAL LANDFILL PROJECT
Borehole Number
ES04

Installation Type
WATER MONITORING

Dimensions
Internal Diameter of Tube [A] = 50 mm
Diameter of Filter Zone = 200 mm

Client
FINGAL COUNTY COUNCIL

Job Number
05-271

Location
317768.9 E 257287 N

Ground Level (mOD)
47.83

Engineer
RPS-MCOS

Sheet
1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling														
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)					
			47.33	0.50	Concrete															
					Cement/Bentonite Grout															
			44.83	3.00	Gravel Filter	Groundwater Observations During Drilling														
						Date	Start of Shift					End of Shift								
							Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)				
			43.83	4.00		09/05/05		12.30		DRY		12.30		DRY						
					10/05/05						13.00									
					Slotted Standpipe	Instrument Groundwater Observations														
						Inst. [A] Type :				Remarks										
					Date	Instrument [A]														
							Time	Depth (m)	Level (mOD)											
			35.83	12.00	Gravel Filter															
			34.83	13.00																

Remarks
 Geotextile sock fitted around filter.
 Upright cover fitted.
 End cap fitted at base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ES05

Boring Method Cable Percussion	Casing Diameter 200mm cased to 20.50m	Ground Level (mOD) 43.92	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317718.6 E 257031.5 N	Dates 04/05/2005- 06/05/2005	Engineer RPS-MCOS	Sheet 1/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							TOPSOIL		
					43.42	(0.50) 0.50	Firm brown sandy CLAY		
1.00 1.00 1.30-1.90	J1 B1 U1				43.02	(0.40) 0.90 (0.40)	Firm greyish brown sandy CLAY containing occasional fine to medium sub-angular gravel		
1.50 1.50	B2 J2			Seepage(1) at 1.90m.	42.62	1.30	Firm brown sandy gravelly CLAY containing occasional smooth sub-angular cobbles. Gravel is sub-angular fine to coarse		Σ1
2.60 2.60 2.90-3.35 3.00 3.00	B3 J3 SPT N=22 B4 J4			2,3/2,3,10,7	41.32	2.60	Stiff black sandy gravelly CLAY containing occasional smooth sub-angular cobbles and boulders. Gravel is sub-angular fine to coarse		
3.90-4.35	U3								
4.70	B5								
6.00-6.45 6.20 6.50 6.50	SPT N=21 B6 B7 J5			4,4/5,4,7,5		(7.40)			
7.80-8.30	U3								
8.30 8.30	J6 B9								
8.90 8.90	B10 J7								
9.20-9.65	SPT N=14			2,2/4,3,2,5					
				04/05/2005:DRY 05/05/2005:DRY	33.92	10.00			

Remarks Permeability tests carried out at 5.0m and 10.00m.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.ES05	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
ES05

Boring Method Cable Percussion	Casing Diameter 200mm cased to 20.50m	Ground Level (mOD) 43.92	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317718.6 E 257031.5 N	Dates 04/05/2005- 06/05/2005	Engineer RPS-MCOS	Sheet 2/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
11.00-11.45	U4						Stiff black sandy gravelly CLAY containing occasional smooth sub-angular cobbles and boulders. Gravel is sub-angular fine to coarse		
11.30 11.30	B11 J8								
12.00 12.00	J9 B12								
13.00-13.45	SPT N=24			3,4/8,5,4,7					
14.40 14.60	U5 No Recovery J10								
15.20-15.65	U6					(10.00)			
17.30 17.20-17.65 17.30	B13 CPT N=36 J11			05/05/2005 06/05/2005:7.90m 4,8/9,9,8,10					
18.00	B14								
19.00	B15								
					23.92	20.00			


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Remarks Standpipe installed to 20.00m. Chiselling from 10.50m to 10.70m for 0.5 hours. Chiselling from 14.40m to 14.60m for 0.25 hours. Chiselling from 14.90m to 15.20m for 0.5 hours. Chiselling from 16.30m to 16.50m for 0.25 hours. Chiselling from 19.40m to 19.70m for 0.5 hours.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.ES05	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
ES05

Boring Method Cable Percussion	Casing Diameter 200mm cased to 20.50m	Ground Level (mOD) 43.92	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317718.6 E 257031.5 N	Dates 04/05/2005- 06/05/2005	Engineer RPS-MCOS	Sheet 3/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
20.00	B16			06/05/2005	23.42	(0.50) 20.50	Stiff black sandy gravelly CLAY containing occasional smooth sub-angular cobbles and boulders. Gravel is sub-angular fine to coarse		
							Complete at 20.50m		

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Remarks Borehole terminated at scheduled depth. Chiselling from 20.40m to 20.50m for 1 hour.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.ES05	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
ES05

Installation Type WATER MONITORING	Dimensions Internal Diameter of Tube [A] = 50 mm Diameter of Filter Zone = 200 mm		Client FINGAL COUNTY COUNCIL		Job Number 05-271
	Location 317718.6 E 257031.5 N		Ground Level (mOD) 43.92	Engineer RPS-MCOS	Sheet 1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling														
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)					
			43.62	0.30	Concrete															
					Cement/Bentonite Grout			1.90		Seepage										
			40.92	3.00	Gravel Filter															
			39.92	4.00																
Groundwater Observations During Drilling																				
Start of Shift																				
End of Shift																				
						Date	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)				
						04/05/05		10.00		DRY			10.00							
						05/05/05		17.00			36.02		17.00							
						06/05/05							20.50							
Instrument Groundwater Observations																				
Inst. [A] Type :																				
					Slotted Standpipe															
						Date	Time	Depth (m)	Level (mOD)	Remarks										
			24.92	19.00	Gravel Filter															
			23.42	20.50																

Remarks
 Geotextile sock fitted around filter.
 Upright cover fitted.
 End cap fitted at base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
ES06

Boring Method Cable Percussion	Casing Diameter 200mm cased to 11.80m	Ground Level (mOD) 35.00	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 318181 E 257117.4 N	Dates 04/05/2005- 05/05/2005	Engineer RPS-MCOS	Sheet 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							TOPSOIL		
1.00	B1				34.70	(0.30) 0.30	Firm light brown to reddish brown sandy CLAY containing occasional sub-angular fine to coarse gravel		
1.50-1.95	U1					(1.50)			
2.00	B2				33.20	1.80 (0.30)	Stiff dark grey sandy gravelly CLAY containing occasional smooth sub-angular cobbles. Gravel is sub-rounded to sub-angular fine to medium		
3.00-3.45	SPT N=29			5,5/7,6,7,9	32.90	2.10	Stiff black gravelly sandy CLAY containing occasional smooth sub-angular cobbles. Gravel is sub-angular fine to coarse		
3.00	J1			Seepage(1) at 3.50m.					▽1
3.00	B3								
4.00	B4								
4.50-4.95	SPT N=36			6,7/7,6,9,14					
5.00	B5								
6.00-6.45	SPT N=38			6,6/8,9,11,10		(7.20)			
6.00	B6								▽2
7.00	B7								
7.50-8.00	SPT 44/350			8,7/9,9,11,15					
7.50	J2								
8.00	B8								
9.00-9.45	SPT N=41			6,8/7,8,12,14					
9.00	B9			04/05/2005: DRY 05/05/2005: DRY	25.70	9.30 (0.70)	Medium dense to dense dark grey sandy fine to medium GRAVEL containing occasional smooth sub-rounded cobbles and boulders and lenses of brown silty fine sand		
					25.00	10.00			

Remarks Permeability test carried out at 7.00m and 10.00m.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.ES06	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
ES06

Boring Method Cable Percussion	Casing Diameter 200mm cased to 11.80m	Ground Level (mOD) 35.00	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 318181 E 257117.4 N	Dates 04/05/2005- 05/05/2005	Engineer RPS-MCOS	Sheet 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.00	B10			Moderately Flow(2) at 10.20m, rose to 6.50m in 20 mins. 7,6/5,9,11,14			Medium dense to dense dark grey sandy fine to medium GRAVEL containing occasional smooth sub-rounded cobbles and boulders and lenses of brown silty fine sand		▽2
10.50-10.95	SPT N=39					(1.80)			
11.00	B11				05/05/2005	23.20	11.80	Complete at 11.80m	

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Remarks Standpipe installed to 11.50m. Virtual refusal met at 11.80m on boulder. Chiselling from 10.30m to 10.50m for 0.5 hours. Chiselling from 11.20m to 11.40m for 0.5 hours. Chiselling from 11.70m to 11.80m for 1 hour.	Scale (approx)	Logged By
	1:50	TR
Figure No. 05-271.ES06		

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
ES06

Installation Type
WATER MONITORING

Dimensions
Internal Diameter of Tube [A] = 50 mm
Diameter of Filter Zone = 200 mm

Client
FINGAL COUNTY COUNCIL

Job Number
05-271

Location
318181 E 257117.4 N

Ground Level (mOD)
35.00

Engineer
RPS-MCOS

Sheet
1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling										
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)	
			34.50	0.50	Concrete			3.50 10.20		Seepage Moderately Flow					6.50	
Groundwater Observations During Drilling																
						Start of Shift			End of Shift							
						Date	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)
						04/05/05		9.30		DRY			9.30		DRY	
						05/05/05							11.80			
					Cement/Bentonite Grout											
Instrument Groundwater Observations																
Inst. [A] Type :																
						Instrument [A]			Remarks							
					Date	Time	Depth (m)	Level (mOD)								
			26.00	9.00	Gravel Filter											
			25.50	9.50	Gravel Filter											
					Slotted Standpipe											
			23.50	11.50	Gravel Filter											
			23.20	11.80	Gravel Filter											

Remarks
 Geotextile sock fitted around filter.
 Upright cover fitted.
 End cap fitted at base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
ES07

Boring Method Cable Percussion	Casing Diameter 200mm cased to 14.70m	Ground Level (mOD) 39.99	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317860.4 E 256932 N	Dates 10/05/2005- 11/05/2005	Engineer RPS-MCOS	Sheet 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					39.79	0.20	TOPSOIL		
1.00 1.00-1.45	B1 U1					(1.90)	Firm to stiff dark brown sandy gravelly CLAY. Gravel is sub-rounded to sub-angular fine to medium		
2.00	B2				37.89	2.10	Stiff to very stiff black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-angular		
3.00-3.45 3.00	SPT N=21 B3			3,3/5,5,5,6					
4.00	B4								
4.50-4.82 5.00	SPT 32/170 B5			10/05/2005: DRY 11/05/2005: DRY 9,15/20,12					
6.00-6.45 6.00 6.00	SPT N=21 B6 J1			8,4/6,6,5,4		(7.90)			
7.00	B7								
7.50-7.95	U2								
8.00	B8								
9.00-9.45 9.00	SPT N=24 B9			6,4/5,6,6,7					
9.45	J2				29.99	10.00			

Remarks Permeability test carried out at 5.00m and 10.00m. Chiselling from 4.50m to 5.00m for 1 hour.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.ES07	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
ES07

Boring Method Cable Percussion	Casing Diameter 200mm cased to 14.70m	Ground Level (mOD) 39.99	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317860.4 E 256932 N	Dates 10/05/2005- 11/05/2005	Engineer RPS-MCOS	Sheet 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.00	B10						Stiff to very stiff black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-angular		
11.00 11.00-11.45	B11 U3								
12.00	J3			11/05/2005:DRY					
12.50-12.95	SPT N=36			12/05/2005:DRY 6,8/8,9,9,10		(4.70)			
13.00	B12								
14.00-14.45 14.00	CPT N=45 B13			7,8/9,10,12,14					
				12/05/2005	14.29	14.70	Complete at 14.70m		

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Remarks Standpipe installed to 14.20m. Virtual refusal met at 14.70m on boulder. Chiselling from 10.30m to 10.50m for 0.5 hours. Chiselling from 12.00m to 12.20m for 1 hour. Chiselling from 14.60m to 14.70m for 1 hour.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.ES07	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
ES07

Installation Type
WATER MONITORING

Dimensions
Internal Diameter of Tube [A] = 50 mm
Diameter of Filter Zone = 200 mm

Client
FINGAL COUNTY COUNCIL
Job Number
05-271

Location
317860.4 E 256932 N

Ground Level (mOD)
39.99

Engineer
RPS-MCOS
Sheet
1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling														
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)					
			39.69	0.30	Concrete															
					Cement/Bentonite Grout															
			36.99	3.00	Gravel Filter	Groundwater Observations During Drilling														
			36.49	3.50		Date	Start of Shift					End of Shift								
					Time		Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)					
					10/05/05						4.50									
					11/05/05		4.50		DRY		12.20		DRY							
					12/05/05		12.20		DRY		14.70		DRY							
					Instrument Groundwater Observations															
					Inst. [A] Type :															
					Date	Instrument [A]			Remarks											
						Time	Depth (m)	Level (mOD)												
			25.79	14.20																
			25.29	14.70																

Remarks
 Geotextile sock fitted around filter.
 Upright cover fitted.
 End cap fitted at base of standpipe.

Glover Site Investigations Ltd						Site FINGAL LANDFILL PROJECT		Borehole Number ES08	
Boring Method Cable Percussion		Casing Diameter 200mm cased to 10.10m		Ground Level (mOD) 49.28		Client FINGAL COUNTY COUNCIL		Job Number 05-271	
		Location 317390.2 E 256782.4 N		Dates 19/05/2005- 23/05/2005		Engineer RPS-MCOS		Sheet 1/2	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					49.08	0.20	TOPSOIL		
1.00-1.45 1.00 1.00	SPT N=10 J1 B1			2,3/2,2,3,3		(1.70)	Soft to firm brown laminated sandy CLAY containing occasional fine to medium sub-rounded gravel		
2.20 2.20 2.20-2.65	B2 J2 U1				47.38	1.90	Stiff to very stiff greyish brown to black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
3.10 3.10 3.20-3.56	B3 J3 SPT 50/210			2,3/8,17,25					
4.20 4.20 4.20-4.65	B4 J4 U2								
5.50-5.95 5.50 5.50	SPT N=28 J5 B5			3,4/6,7,7,8		(8.10)			
6.00	J6								
6.50-6.95	U3								
7.50 7.50 7.80-8.25 7.80 7.80	B6 J7 SPT N=25 B7 J8			4,4/6,7,7,5					
8.80 8.80	B8 J9								
9.40-9.85	U4								
					39.28	10.00			
Remarks Permeability test carried out at 5.00m and 10.10m. Standpipe installed to 9.50m. Chiselling from 3.40m to 3.70m for 1.5 hours. Chiselling from 10.00m to 10.10m for 1.5 hours.							Scale (approx) 1:50	Logged By TR	Figure No. 05-271.ES08

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
ES08

Boring Method Cable Percussion	Casing Diameter 200mm cased to 10.10m	Ground Level (mOD) 49.28	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317390.2 E 256782.4 N	Dates 19/05/2005- 23/05/2005	Engineer RPS-MCOS	Sheet 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.00	B9			23/05/2005	39.18	10.10	Stiff to very stiff greyish brown to black sandy gravelly CLAY (As Sheet 1) Complete at 10.10m		

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Remarks Virtual refusal met at 10.10m on boulder. Chiselling from 10.00m to 10.10m for 1.5 hours.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.ES08	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
ES08

Installation Type
WATER MONITORING

Dimensions
Internal Diameter of Tube [A] = 50 mm
Diameter of Filter Zone = 200 mm

Client
FINGAL COUNTY COUNCIL

Job Number
05-271

Location
317390.2 E 256782.4 N

Ground Level (mOD)
49.28

Engineer
RPS-MCOS

Sheet
1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling														
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)					
			48.78	0.50	Concrete															
					Cement/Bentonite Grout															
Groundwater Observations During Drilling																				
			46.28	3.00	Gravel Filter	Date	Start of Shift					End of Shift								
			45.78	3.50			Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)				
						19/05/05	0800	5.00		DRY		1700	5.00		DRY					
						20/05/05	0800	10.00	DRY		1700	10.00		DRY						
						23/05/05														
Instrument Groundwater Observations																				
Inst. [A] Type :																				
					Slotted Standpipe	Date	Instrument [A]			Remarks										
							Time	Depth (m)	Level (mOD)											
			39.78	9.50	Gravel Filter															
			39.18	10.10																

Remarks
Geotextile sock fitted around filter.
Upright cover fitted.
End cap fitted at base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR01

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 19.75m	Ground Level (mOD) 48.12	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317579 E 256801.5 N	Dates 20/05/2005- 23/05/2005	Engineer RPS-MCOS	Sheet 1/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						48.02	0.10	TOPSOIL		
							(1.40)	Firm to stiff light brown slightly gravelly sandy CLAY containing occasional smooth sub-rounded cobbles. Gravel is sub-rounded fine to medium		
	57	0	0	0		46.62	1.50	Stiff to very stiff dark brown to black slightly sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
3.00										
	100	0	0							
4.00										
	100	0	0							
5.00										
	100	0	0							
6.30										
	100	0	0							
7.70										
	100	0	0							
8.95										
	100	0	0			38.12	10.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.GR01	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR01

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 19.75m	Ground Level (mOD) 48.12	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317579 E 256801.5 N	Dates 20/05/2005- 23/05/2005	Engineer RPS-MCOS	Sheet 2/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.65	100	0	0	0				Stiff to very stiff dark brown to black slightly sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
12.35	100	0	0		20/05/2005: DRY 23/05/2005: DRY					
13.70	100	0	0							
14.90	100	0	0			(9.75)				
16.60	100	0	0							
18.25	100	0	0			 16.80m - 16.90m: Soft dark brown very gravelly sandy clay			
19.75					23/05/2005	28.37	19.75			

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Remarks Standpipe installed to 19.75m. Borehole terminated at scheduled depth.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.GR01	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
GR01

Installation Type
WATER MONITORING

Dimensions
Internal Diameter of Tube [A] = 50 mm
Diameter of Filter Zone = 146 mm

Client
FINGAL COUNTY COUNCIL

Job Number
05-271

Location
317579 E 256801.5 N

Ground Level (mOD)
48.12

Engineer
RPS-MCOS

Sheet
1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling										
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)	
			47.62	0.50	Concrete						5 min	10 min	15 min	20 min		
					Cement/Bentonite Grout											
			45.12	3.00	Gravel Filter											
			44.12	4.00												
Groundwater Observations During Drilling																
						Start of Shift					End of Shift					
						Date	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)
						20/05/05							12.35			
						23/05/05	0800	12.35		DRY			19.75			DRY
Instrument Groundwater Observations																
Inst. [A] Type :																
					Slotted Standpipe	Instrument [A]				Remarks						
						Date	Time	Depth (m)	Level (mOD)							
			29.12	19.00	Gravel Filter											
			28.37	19.75												

Remarks
Geotextile sock fitted around filter.
Upright cover fitted.
End cap fitted at base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR02

Machine : KNEBEL Flush : POLYMER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 24.00m	Ground Level (mOD) 42.17	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317725.3 E 256785.2 N	Dates 09/06/2005- 10/06/2005	Engineer RPS-MCOS	Sheet 1/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30			0	0		41.97	0.20	TOPSOIL		
	79	0	0					Firm brown slightly gravelly sandy CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
1.30							(1.80)			
	86	0	0			40.17	2.00	Very stiff to hard grey sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
3.00										
	100	0	0							
4.50										
	96	0	0							
6.00							(8.00)			
	100	0	0							
7.50										
	100	0	0							
9.00										
	100	0	0			32.17	10.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.GR02	

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Site
FINGAL LANDFILL PROJECT

Borehole Number
GR02

Machine : KNEBEL Flush : POLYMER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 24.00m	Ground Level (mOD) 42.17	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317725.3 E 256785.2 N	Dates 09/06/2005- 10/06/2005	Engineer RPS-MCOS	Sheet 2/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50	100	0	0					Very stiff to hard grey sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
12.00	100	0	0	0						
13.50	100	0	0							
15.00	100	0	0			(10.00)				
16.50	100	0	0							
18.00	100	0	0							
19.50						22.17	20.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.GR02	

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Site
FINGAL LANDFILL PROJECT

Borehole Number
GR02

Machine : KNEBEL
Flush : POLYMER GEL
Core Dia: 102
Method : GEOBORE-S

Casing Diameter
146mm cased to 24.00m

Ground Level (mOD)
42.17

Client
FINGAL COUNTY COUNCIL

Job Number
05-271

Location
317725.3 E 256785.2 N

Dates
09/06/2005-
10/06/2005

Engineer
RPS-MCOS

Sheet
3/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
21.00	100	0	0					Very stiff to hard grey sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
	100	0	0				(2.90)			
22.50								Medium dense brown sandy fine to coarse sub-rounded GRAVEL containing occasional smooth sub-rounded cobbles and boulders		
	56	0	0				19.27 22.90 (1.10)			
24.00							18.17 24.00	Complete at 24.00m		

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Remarks
Standpipe installed to 21.00m.
Geobore S unable to penetrate gravel.
Borehole terminated at 24.00m.

Scale (approx)
1:50

Logged By
AM

Figure No.
05-271.GR02

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
GR02

Installation Type
WATER MONITORING

Dimensions
Internal Diameter of Tube [A] = 50 mm
Diameter of Filter Zone = 146 mm

Client
FINGAL COUNTY COUNCIL

Job Number
05-271

Location
317725.3 E 256785.2 N

Ground Level (mOD)
42.17

Engineer
RPS-MCOS

Sheet
1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling											
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)		
			41.67	0.50	Concrete												
					Cement/Bentonite Grout												
			39.17	3.00	Gravel Filter												
			38.67	3.50													
												Groundwater Observations During Drilling					
						Start of Shift					End of Shift						
						Date	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	
												Instrument Groundwater Observations					
Inst. [A] Type :																	
						Date	Instrument [A]			Remarks							
							Time	Depth (m)	Level (mOD)								
			21.17	21.00	Gravel Filter												
			20.17	22.00	Bentonite Seal												
			18.17	24.00													

Remarks
Geotextile sock fitted around filter.
Upright cover fitted.
End cap fitted at base of standpipe.

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Site
FINGAL LANDFILL PROJECT

Borehole Number
GR05

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 25.95m	Ground Level (mOD) 41.32	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317643.3 E 256695 N	Dates 18/05/2005- 19/05/2005	Engineer RPS-MCOS	Sheet 1/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
3.00	57	0	0	0		41.22	0.10	TOPSOIL Soft to firm light brown slightly sandy slightly gravelly CLAY. Gravel is sub-rounded fine to medium			
							(1.40)				
						39.82	1.50	Stiff to very stiff dark brown to black slightly sandy slightly gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium			
4.55	100	0	0								
6.15	94	0	0								
7.75	100	0	0								
9.30	100	0	0								
						31.32	10.00				

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.GR05	

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Site
FINGAL LANDFILL PROJECT
Borehole Number
GR05

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 25.95m	Ground Level (mOD) 41.32	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317643.3 E 256695 N	Dates 18/05/2005- 19/05/2005	Engineer RPS-MCOS	Sheet 2/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.60	100	0	0				(2.30)	Stiff to very stiff dark brown to black slightly sandy slightly gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
12.30	94	0	0			29.02	12.30 (1.60)	Firm dark brown slightly sandy very gravelly CLAY. Gravel is sub-rounded fine to medium		
13.90	93	0	0	0		27.42	13.90	Stiff to very stiff dark brown to black slightly sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
15.30	97	0	0		18/05/2005: DRY 19/05/2005: DRY					
16.75	100	0	0				(6.10)			
18.35	100	0	0							
19.70						21.32	20.00			

Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.GR05	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR05

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 25.95m	Ground Level (mOD) 41.32	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317643.3 E 256695 N	Dates 18/05/2005- 19/05/2005	Engineer RPS-MCOS	Sheet 3/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
21.30	94	0	0					Stiff to very stiff dark brown to black slightly sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
	94	0	0							
22.90	100	0	0			(5.95)				
24.40	97	0	0							
25.95					19/05/2005	15.37	25.95	Complete at 25.95m		

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Remarks Standpipe installed to 25.50m. Borehole terminated at scheduled depth.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.GR05	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
GR05

Installation Type
WATER MONITORING

Dimensions
Internal Diameter of Tube [A] = 50 mm
Diameter of Filter Zone = 146 mm

Client
FINGAL COUNTY COUNCIL

Job Number
05-271

Location
317643.3 E 256695 N

Ground Level (mOD)
41.32

Engineer
RPS-MCOS

Sheet
1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling											
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)		
			40.82	0.50	Concrete												
			38.32 37.82	3.00 3.50	Cement/Bentonite Grout Gravel Filter												
						Groundwater Observations During Drilling											
						Date	Start of Shift				End of Shift						
							Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	
						18/05/05						15.00			DRY		
						19/05/05	0800	15.00		DRY		25.95					
						Instrument Groundwater Observations											
						Inst. [A] Type :											
					Slotted Standpipe	Date	Instrument [A]			Remarks							
							Time	Depth (m)	Level (mOD)								
			15.82 15.42	25.50 25.90	Gravel Filter												

Remarks
Geotextile sock fitted around filter.
Upright cover fitted.
End cap fitted at base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR06

Machine : KNEBEL Flush : POLYMER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 15.00m	Ground Level (mOD) 36.51	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317852.6 E 256717.7 N	Dates 08/06/2005	Engineer RPS-MCOS	Sheet 1/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30			0	0		36.21	(0.30) 0.30	TOPSOIL		
	70	0	0				(0.70)	Firm brown sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
1.50	86	0	0			35.51	1.00	Stiff to very stiff grey to black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
3.00	100	0	0							
4.50	96	0	0							
6.00	100	0	0							
7.50	93	0	0	0						
9.00	100	0	0							
						26.51	10.00			

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Remarks	Scale (approx)	1:50	Logged By	AM
	Figure No.	05-271.GR06		

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Site
FINGAL LANDFILL PROJECT

Borehole Number
GR06

Machine : KNEBEL Flush : POLYMER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 15.00m	Ground Level (mOD) 36.51	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317852.6 E 256717.7 N	Dates 08/06/2005	Engineer RPS-MCOS	Sheet 2/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50	100	0	0					Stiff to very stiff grey to black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
12.00	100	0	0				(3.90)			
13.50	93	0	0			22.61	13.90 (1.10)	Medium dense brown sandy fine to coarse sub-rounded GRAVEL containing occasional smooth sub-rounded cobbles and boulders		
15.00						21.51	15.00	Complete at 15.00m		

Remarks Geobore S unable to penetrate gravels. Borehole terminated at 15.00m.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.GR06	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR07

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 20.00m	Ground Level (mOD) 34.04	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 318050.3 E 256718.4 N	Dates 17/06/2005- 20/06/2005	Engineer RPS-MCOS	Sheet 1/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30			0	0		33.74	(0.30) 0.30	TOPSOIL		
	33	0	0				(2.70)	Firm light brown sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
3.00	65	0	0			31.04	3.00	Stiff to very stiff grey to black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
4.60	65	0	0							
6.20	100	0	0		17/06/2005 20/06/2005		(7.00)			
7.70	100	0	0							
9.40						24.04	10.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.GR07	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
GR07

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 20.00m	Ground Level (mOD) 34.04	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 318050.3 E 256718.4 N	Dates 17/06/2005- 20/06/2005	Engineer RPS-MCOS	Sheet 2/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.90	100	0	0	0			(2.30)	Stiff to very stiff grey to black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
12.50	100	0	0			21.74	12.30	Medium dense silty fine to coarse SAND		
14.00	80	0	0							
15.50	80	0	0				(6.20)			
17.00	40	0	0							
18.50	50	0	0							
18.50	50	0	0			15.54	18.50	Medium dense grey sandy fine to coarse sub-rounded GRAVEL containing occasional smooth sub-rounded cobbles		
20.00							(1.50)			
20.00						14.04	20.00			

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Remarks Standpipe installed to 20.00m. Geobore S unable to penetrate gravel. Borehole terminated at 20.00m.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.GR07	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
GR07

Installation Type
WATER MONITORING

Dimensions
Internal Diameter of Tube [A] = 50 mm

Client
FINGAL COUNTY COUNCIL
Job Number
05-271

Location
318050.3 E 256718.4 N

Ground Level (mOD)
34.04

Engineer
RPS-MCOS
Sheet
1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description	Groundwater Strikes During Drilling														
						Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)					
			33.54	0.50	Concrete															
Groundwater Observations During Drilling																				
Start of Shift						End of Shift														
						Date	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)				
					Cement/Bentonite Grout	17/06/05							6.20							
						20/06/05							20.00							
Instrument Groundwater Observations																				
Inst. [A] Type :																				
						Date	Instrument [A]			Remarks										
						Time	Depth (m)	Level (mOD)												
			21.24	12.80	Gravel Filter															
			20.74	13.30																
					Slotted Standpipe															
			14.04	20.00																

Remarks
 Geotextile sock fitted around filter.
 Upright cover fitted.
 End cap fitted at base of standpipe.

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR09

Machine : KNEBEL Flush : POLYMER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 19.65m	Ground Level (mOD) 37.03	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317751.2 E 256617.9 N	Dates 07/06/2005- 08/06/2005	Engineer RPS-MCOS	Sheet 1/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30			0	0		36.73	(0.30) 0.30	TOPSOIL		
	100	0	0				(0.70)	Firm brown gravelly sandy CLAY containing occasional smooth sub-rounded cobbles. Gravel is sub-rounded fine to medium		
1.50	86	0	0			36.03	1.00	Very stiff grey to black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to coarse		
3.00	100	0	0							
4.50	96	0	0							
6.00	100	0	0				(9.00)			
7.50	100	0	0	0						
9.00	100	0	0			27.03	10.00			

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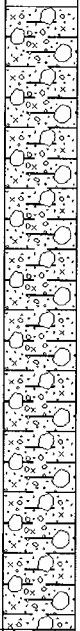
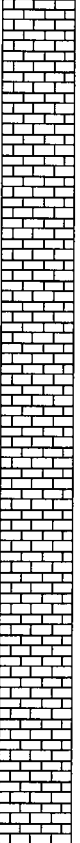
Remarks	Scale (approx)	1:50	Logged By	AM
	Figure No.	05-271.GR09		

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR09

Machine : KNEBEL Flush : POLYMER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 19.65m	Ground Level (mOD) 37.03	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317751.2 E 256617.9 N	Dates 07/06/2005- 08/06/2005	Engineer RPS-MCOS	Sheet 2/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50	100	0	0					Very stiff grey to black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to coarse		
12.00	100	0	0			(4.10)				
13.50	100	0	0							
14.10	100	0	0	Non-Intact		22.93	14.70	Highly weathered dark grey fine to medium grained LIMESTONE with much stiff clay throughout, tight to wide fractures, thinly interbedded with completely weathered mudstone		
15.00	100	0	0	Non-Intact						
16.50	100	0	0	Non-Intact		(5.55)				
18.00	100	0	0	Non-Intact						
19.65						17.38	19.65			

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Remarks Borehole terminated at scheduled depth.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.GR09	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR10

Machine : KNEBEL
Flush : POLYMER MUD
Core Dia: 102
Method : GEOBORE-S

Casing Diameter
146mm cased to 13.50m

Ground Level (mOD)
32.04

Client
FINGAL COUNTY COUNCIL

Job Number
05-271

Location
317951.1 E 256618.5 N

Dates
26/05/2005

Engineer
RPS-MCOS

Sheet
1/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.50	100	0	0	0		31.94	0.10	TOPSOIL Very stiff dark brown to black slightly sandy slightly gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders and thin fine to medium sub-rounded gravel layers. Gravel is sub-rounded fine to medium		
	80	0	0							
	100	0	0							
	100	0	0							
	100	0	0							
4.50	100	0	0			(9.90)				
6.00	100	0	0							
7.50	100	0	0	0						
9.00	100	0	0							
						22.04	10.00			

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Remarks

Scale (approx)
1:50

Logged By
AM

Figure No.
05-271.GR10

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR10

Machine : KNEBEL Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 13.50m	Ground Level (mOD) 32.04	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317951.1 E 256618.5 N	Dates 26/05/2005	Engineer RPS-MCOS	Sheet 2/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50								Very stiff dark brown to black slightly sandy slightly gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders and thin fine to medium sub-rounded gravel layers. Gravel is sub-rounded fine to medium		
	100	0	0				(2.00)			
12.00						20.04	12.00	Medium dense dark greyish brown silty sandy fine to coarse sub-rounded GRAVEL containing occasional smooth sub-rounded cobbles and boulders		
	100	0	0				(1.50)			
13.50					26/05/2005	18.54	13.50	Complete at 13.50m		

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Remarks Borehole backfilled with bentonite. Geobore S unable to penetrate gravel. Borehole terminated at 13.50m.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.GR10	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR11

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE S	Casing Diameter 146mm cased to 13.10m	Ground Level (mOD) 29.42	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 318150 E 256619.9 N	Dates 21/06/2005	Engineer RPS-MCOS	Sheet 1/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30						29.12	(0.30) 0.30	TOPSOIL		
	34	0						Firm light brown gravelly sandy CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
2.60							(3.70)			
	100	0								
4.35				0		25.42 25.12	(0.30) (0.30)	Stiff to very stiff black gravelly sandy CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-angular fine to medium		
	100	0	0				(2.25)	Medium dense dark grey sandy fine to coarse sub-rounded GRAVEL containing occasional smooth sub-rounded cobbles		
5.85							6.55			
	73	0				22.87		Stiff to very stiff black gravelly sandy CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-angular to sub-rounded fine to medium		
7.35							(2.15)			
	100	0								
8.70				Non-Intact		20.72	8.70	Moderately strong thinly laminated grey highly weathered micritic LIMESTONE with bands of weak black siltstone. Highly fractured recovered as angular gravel		
9.05							(1.30)			
	100	20	0	Non-Intact						
10.05						19.42	10.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.GR11	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR11

Machine : COMMACHIO Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE S	Casing Diameter 146mm cased to 13.10m	Ground Level (mOD) 29.42	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 318150 E 256619.9 N	Dates 21/06/2005	Engineer RPS-MCOS	Sheet 2/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.25				Non-Intact 10				Moderately strong thinly laminated grey highly weathered micritic LIMESTONE with bands of weak black siltstone. Highly fractured recovered as angular gravel		
10.65 10.80	100	61	50	Non-Intact 12						
11.05 11.15				Non-Intact 14						
11.45	70	21	21	Non-Intact		(3.10)				
12.45 12.65	100	46	31	Non-Intact						
13.10					21/06/2005	16.32	13.10	Complete at 13.10m		

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Remarks Borehole backfilled with bentonite. Borehole terminated at scheduled depth.	Scale (approx)	Logged By
	1:50	AM
Figure No. 05-271.GR11		

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR12

Machine : KNEBEL Flush : POLYMER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 21.20m	Ground Level (mOD) 39.30	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317659.8 E 256541.9 N	Dates 12/06/2005	Engineer RPS-MCOS	Sheet 1/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30			0	0		39.10	0.20	TOPSOIL		
	96	0	0				(2.10)	Firm brown sandy gravelly CLAY containing occasional smooth sub-rounded cobbles. Gravel is sub-rounded fine to medium		
1.50										
	87	0	0							
2.70						37.00	2.30	Very stiff dark greyish brown to black gravelly sandy CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
3.00										
	100	0	0							
	100	0	0							
4.50										
	87	0	0							
6.00							(7.70)			
	100	0	0							
7.50										
	83	0	0							
9.00										
	100	0	0			29.30	10.00			

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Remarks	Scale (approx)	1:50	Logged By	AM
	Figure No.	05-271.GR12		

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
GR12

Machine : KNEBEL Flush : POLYMER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 21.20m	Ground Level (mOD) 39.30	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317659.8 E 256541.9 N	Dates 12/06/2005	Engineer RPS-MCOS	Sheet 2/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50	100	0	0	0				Very stiff dark greyish brown to black gravelly sandy CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
12.00	100	0	0							
13.50	100	0	0							
15.00	100	0	0			(9.30)				
16.50	100	0	0							
18.10	100	0	0							
19.60						20.00	19.30	Medium dense brown silty fine to medium SAND		
						19.30	20.00			

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Remarks	Scale (approx)	1:50	Logged By	AM
	Figure No.	05-271.GR12		

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR12

Machine : KNEBEL Flush : POLYMER GEL Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 21.20m	Ground Level (mOD) 39.30	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317659.8 E 256541.9 N	Dates 12/06/2005	Engineer RPS-MCOS	Sheet 3/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
21.20	100	0	0		12/06/2005		(0.70)	Medium dense brown silty fine to medium SAND		
						18.60	20.70 (0.50)	Medium dense brown sandy fine to coarse sub-rounded GRAVEL containing occasional smooth sub-rounded cobbles and boulders		
						18.10	21.20	Complete at 21.20m		

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Remarks Geobore S unable to penetrate gravel. Borehole terminated at 21.20m.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.GR12	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT
Borehole Number
GR13

Machine : KNEBEL Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 19.65m	Ground Level (mOD) 35.11	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317850.7 E 256519.6 N	Dates 01/06/2005	Engineer RPS-MCOS	Sheet 1/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30			0	0		34.91	0.20	TOPSOIL		
	92	0	0				(2.00)	Soft to firm light brown very sandy gravelly CLAY containing occasional smooth sub-rounded cobbles. Gravel is sub-rounded fine to medium		
1.50			0			32.91	2.20	Stiff to very stiff dark brown gravelly slightly sandy CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
3.00	100	0	0				(1.80)			
4.50			0	0		31.11	4.00	Firm dark brown very gravelly slightly sandy CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
6.00	100	0	0		01/06/2005 02/06/2005		(3.00)			
7.50			0			28.11	7.00	Stiff to very stiff dark brown to black gravelly sandy CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
9.00	100	0	0				(3.00)			
9.90	100	26	26			25.11	10.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.GR13	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR13

Machine : KNEBEL
Flush : POLYMER MUD
Core Dia: 102
Method : GEOBORE-S

Casing Diameter
146mm cased to 19.65m

Ground Level (mOD)
35.11

Client
FINGAL COUNTY COUNCIL

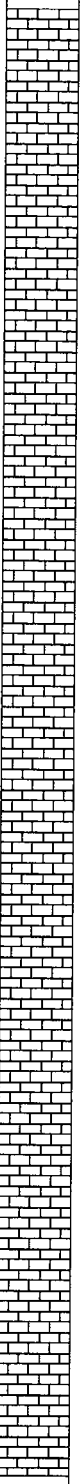
Job Number
05-271

Location
317850.7 E 256519.6 N

Dates
01/06/2005

Engineer
RPS-MCOS

Sheet
2/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50				18				<p>Strong dark grey thinly laminated fine grained micritic LIMESTONE. Closely to very closely spaced, joints dipping 20 degrees (bedding parallel), smooth planar tight, clean occasionally dark grey silty infill.</p> <p>Moderately weathered joints occur occasionally (highly fractured/non-intact, moderately weak, silty infill penetrates 2mm - 20mm into joint wall).</p> <p>Occasional calcite veins dipping 70-85 degrees 10-30mm thick</p>		
10.90	100	87	80	4						
11.50				Non-Intact						
11.60				10						
11.90				Non-Intact						
12.00										
12.10										
	100	100	90	6						
13.50										
	100	76	67	10						
14.65				Non-Intact						
15.00				8		(9.65)				
15.25				Non-Intact						
15.30										
	100	83	65	12						
16.30				Non-Intact						
16.50				10						
17.30	100	87	70	12						
17.80				Non-Intact						
18.00				11						
	100	93	63							
19.00				Non-Intact						
19.10				20						
19.25				3						
19.65					02/06/2005	15.46	19.65			

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Remarks
Borehole backfilled with bentonite.
Borehole terminated at scheduled depth.

Scale (approx)
1:50

Logged By
AM

Figure No.
05-271.GR13

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR15

Machine : KNEBEL Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 19.70m	Ground Level (mOD) 36.97	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317750.9 E 256418 N	Dates 31/05/2005- 01/06/2005	Engineer RPS-MCOS	Sheet 1/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30			0	0		36.77	0.20	TOPSOIL		
	83	0	0					Very stiff to stiff dark brown to black slightly sandy slightly gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
1.50	100	0	0							
3.00	100	0	0							
4.50	100	0	0				(9.80)			
6.00	100	0	0	0						
7.50	100	0	0							
9.00					31/05/2005:DRY 01/06/2005:DRY					
	87	0	0			26.97	10.00			

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Remarks	Scale (approx)	1:50	Logged By	AM
	Figure No.	05-271.GR15		

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR15

Machine : KNEBEL Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 19.70m	Ground Level (mOD) 36.97	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317750.9 E 256418 N	Dates 31/05/2005- 01/06/2005	Engineer RPS-MCOS	Sheet 2/2

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50								Very stiff to stiff dark brown to black slightly sandy slightly gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
	100	0	0				(3.30)			
12.00								Strong thinly laminated dark grey fine grained micritic LIMESTONE. Closely to medium spaced dipping 30 degrees (Bedding parallel) smooth planar tight clean		
	100	0	0							
13.50						23.67	13.30			
	100	100	80	10						
15.00										
	100	100	87	4						
16.50										
	100	100	93	3			(6.40)			
18.00										
	100	100	93							
19.00										
				10						
19.50										
	100	100	0							
19.70					01/06/2005	17.27	19.70			

Remarks Borehole terminated at scheduled depth.	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.GR15	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR16

Machine : KNEBEL Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 22.30m	Ground Level (mOD) 31.97	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317952 E 256418.3 N	Dates 27/05/2005-30/05/2005	Engineer RPS-MCOS	Sheet 1/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30			0	0		31.77	0.20	TOPSOIL		
	63	0	0					Soft to firm light brown slightly sandy slightly gravelly CLAY containing smooth sub-rounded cobbles. Gravel is sub-rounded fine to medium		
1.50			0				(2.80)			
	93	0	0							
3.00			0			28.97	3.00	Stiff to very stiff dark brown to black slightly sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
	100	0	0							
4.50			0							
	100	0	0							
6.00			0	0			(7.00)			
	100	0	0							
7.50			0							
	100	0	0							
9.00			0							
	100	0	0			21.97	10.00			

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Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.GR16	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR16

Machine : KNEBEL Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 22.30m	Ground Level (mOD) 31.97	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317952 E 256418.3 N	Dates 27/05/2005- 30/05/2005	Engineer RPS-MCOS	Sheet 2/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50	100	0	0				(2.50)	Stiff to very stiff dark brown to black slightly sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
12.00				Non-Intact						
12.50	67	50	33	30		19.47	12.50	Moderately strong thinly laminated dark grey to black, fine grained micritic LIMESTONE. Closely to very closely spaced dipping 20-30 degrees (bedding parallel) smooth planar tight, clean, occasionally dark grey silty infilling from 15.80m - 16.50m.		
13.10				3						
13.50				25						
13.70				Non-Intact						
14.00	100	73	67	12				Extremely closely spaced jointing dipping 50 degrees, tight, clean		
14.70				Non-intact						
14.80				17						
15.00				24						
15.80	100	94	33				(7.50)			
16.50					27/05/2005: DRY 30/05/2005: DRY					
18.00	100	71	63	8						
19.50										
						11.97	20.00			

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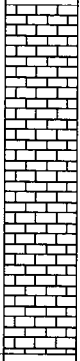
Remarks	Scale (approx)	Logged By
	1:50	AM
	Figure No. 05-271.GR16	

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GR16

Machine : KNEBEL Flush : POLYMER MUD Core Dia: 102 Method : GEOBORE-S	Casing Diameter 146mm cased to 22.30m	Ground Level (mOD) 31.97	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317952 E 256418.3 N	Dates 27/05/2005- 30/05/2005	Engineer RPS-MCOS	Sheet 3/3

Depth (m)	TCR	SCR	RQD	FI	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
21.00	100	100	80	6				Moderately strong thinly laminated dark grey to black, fine grained micritic LIMESTONE. Closely to very closely spaced dipping 20-30 degrees (bedding parallel) smooth planar tight, clean		
21.20				Non-Intact		(2.30)				
22.30	100	81	69	7	30/05/2005	9.67	22.30	Complete at 22.30m		

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Remarks Standpipe installed to 21.50m. Borehole terminated at scheduled depth.	Scale (approx)	Logged By
	1:50	AM
Figure No. 05-271.GR16		

Glover Site Investigations Ltd

Site
FINGAL LANDFILL PROJECT

Borehole Number
GS01

Boring Method Cable Percussion	Casing Diameter 200mm cased to 10.90m	Ground Level (mOD) 45.56	Client FINGAL COUNTY COUNCIL	Job Number 05-271
	Location 317651.8 E 256818.4 N	Dates 18/05/2005	Engineer RPS-MCOS	Sheet 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	J1				45.36	0.20	TOPSOIL		
1.00 1.00-1.45	B1 U1					(2.10)	Firm orange brown sandy slightly gravelly CLAY. Gravel is sub-rounded fine to medium		
1.50	J2								
2.00-2.45 2.00	SPT N=15 B2			4,4/4,3,4,4					
2.50	J3				43.26	2.30	Stiff to very stiff dark greyish brown to black gravelly sandy CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
3.00 3.00-3.45	B3 U2								
3.50	J4								
4.00-4.45 4.00	SPT N=18 B4			5,4/5,4,5,4					
4.50	J5								
5.00 5.00-5.45	B5 U3								
5.50	J6								
6.00-6.45 6.00	SPT N=19 B6			5,5/4,5,5,5		(7.70)			
7.00 7.00-7.45	J7 U4								
7.50	J8								
8.00-8.45 8.00	SPT N=30 B8			7,5/6,8,8,8					
8.50	J9								
9.00 9.00-9.45	B9 U5								
9.50	J10								
					35.56	10.00			

Remarks Permeability test carried out at 5.00m and 10.00m.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.GS01	

Glover Site Investigations Ltd							Site FINGAL LANDFILL PROJECT	Borehole Number GS01	
Boring Method Cable Percussion		Casing Diameter 200mm cased to 10.90m		Ground Level (mOD) 45.56		Client FINGAL COUNTY COUNCIL		Job Number 05-271	
		Location 317651.8 E 256818.4 N		Dates 18/05/2005		Engineer RPS-MCOS		Sheet 2/2	
Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.00 10.00-10.45	B10 U6						Stiff to very stiff dark greyish brown to black gravelly sandy CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded fine to medium		
10.50	J11			18/05/2005:DRY	34.66	(0.90) 10.90	Complete at 10.90m		
<p style="color: red; transform: rotate(-45deg); opacity: 0.5;">Consent of copyright owner required for any other use. For inspection purposes only.</p>									
Remarks Virtual refusal met at 10.70m on boulder. Chiselling from 10.70m to 10.90m for 1 hour.							Scale (approx) 1:50	Logged By TR	
							Figure No. 05-271.GS01		

Glover Site Investigations Ltd

Site FINGAL LANDFILL PROJECT	Borehole Number GS02
Client FINGAL COUNTY COUNCIL	Job Number 05-271
Engineer RPS-MCOS	Sheet 1/1

Boring Method Cable Percussion	Casing Diameter 200mm cased to 9.60m	Ground Level (mOD) 34.91
Location 317933 E 256788.5 N		Dates 10/05/2005- 12/05/2005

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					34.71	0.20	TOPSOIL		
						(0.80)	Firm brown slightly gravelly sandy CLAY containing occasional smooth sub-angular cobbles. Gravel is sub-rounded fine to medium		
1.00 1.00	J1 B1				33.91	1.00	Stiff to very stiff black sandy gravelly CLAY containing occasional smooth sub-rounded cobbles and boulders. Gravel is sub-rounded to sub-angular fine to medium		
2.00 2.30-2.75	B2 U1			10/05/2005:DRY 11/05/2005:DRY					
3.30 3.30	B3 J2			Seepage(1) at 3.20m.					▽1
4.00	B4								
5.00	B5					(8.60)			
6.00 6.00-6.45	B6 U2			Seepage(2) at 6.20m.					▽2
7.20 7.50-7.95 7.50	B7 SPT N=31 J3			5,8/7,7,8,9					
8.00 8.00-8.30	B8 U3 Refusal								
8.70-9.15	CPT N=33			5,7/7,8,8,10					
9.20 9.40	B9 J4			11/05/2005:DRY 12/05/2005:DRY 12/05/2005	25.31	9.60			

Remarks Permeability test carried out at 5.00m and 9.40m. Virtual refusal met at 9.60m on boulder. Standpipe installed to 9.00m. Chiselling from 2.00m to 2.30m for 0.5 hours. Chiselling from 8.30m to 8.70m for 0.5 hours. Chiselling from 9.20m to 9.60m for 1 hour.	Scale (approx)	Logged By
	1:50	TR
	Figure No. 05-271.GS02	