

**Former Gasworks
Dock Road, Limerick**

Site Characterisation Factual Report

November 2011

Report No. 1021927/R/02

Prepared by

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Mouchel has used reasonable skill, care and diligence in the design and interpretation of the ground investigation, however, the inherent variability of ground conditions allows only definition of the actual conditions at the location and depths of exploratory holes and samples/tests therefrom, while at intermediate locations conditions can only be inferred.

New information, changed practices or new legislation may necessitate revised interpretation of the report after the date of its submission.

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1 Introduction

1.1 Terms of Reference

Mouchel were appointed by Bord Gais Eireann, on 31st March 2009, to provide engineering consultancy services for the assessment and remediation of the former gasworks site, on Dock Road, Limerick, Ireland. Mouchel (formerly known as Parkman) have had an involvement with the site extending over a period of some nine years having previously undertaken ground investigations at the site.

This report supersedes the previous version B dated February 2010 and has been prepared following the drilling of an additional eleven sonic boreholes in two areas of the site; the former AGI and the former horse pound which were inaccessible during the 2009 characterisation site works.

1.2 Objectives and Scope

The Limerick Gasworks site has been identified for remediation in preparation for potential development. It was considered that undertaking the characterisation of the Limerick former gasworks site prior to remediation would be beneficial to the overall remediation design and tendering process. The advantages for undertaking the works at an early stage in the site remediation design/tender process are detailed below;

- A comprehensive data set would be obtained providing significantly increased certainty in relation to depth to rock head and the physical and chemical nature of the material on site.
- The characterisation information would be used to update the quantitative risk assessment (QRA) for the site, and allow more accurate calculations of material volumes that require treatment/disposal to be made.
- The more accurate QRA and assessment of quantities/contamination distribution would assist in the production of a fully robust remediation strategy and facilitate agreement with the EPA.
- The increased accuracy of the QRA and certainty of material composition and volume across the site would result in a comprehensive set of tender documents for issue to contractors to allow for accurate estimating. This should result in minimal opportunity for significant claims by the contractor during the remediation in relation to changes in material composition and quantities.

- Site characterisation is usually the first exercise to be undertaken by the remediation contractor, the costs for undertaking this would be included within the tender price submitted by the contractor. If the characterisation has already been undertaken the contractor would be able to start main remediation works immediately and not have to wait for the investigation and testing works to be undertaken.
- Machine excavated trial holes to assess rates of groundwater inflow to indicate any constraints during remediation works.

This report provides the factual data from the site characterisation undertaken in November 2009 and October 2011.

The results from the characterisation are interpreted and discussed in the 2010 Quantitative Risk Assessment, Options Appraisal and Remedial Strategy Report (1021927/R/03) and the subsequent addendum report, reference 1021927/R/018 dated December 2011.

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2 Ground Investigation

2.1 Design Rationale

The Site Characterisation was undertaken to supplement the information gained from the previous investigations undertaken at the site, and was designed to test for a wider range of determinands and provide a more comprehensive dataset of physical and chemical characteristics of the site.

The investigation was designed to provide the data needed to:

- Produce a more accurate conceptual ground model, specifically delineation of the former quarry area and underground structures
- Identify significant pollutant linkages
- Update the quantitative risk assessments to assess risks to identified receptors
- Update remediation target values for soils and groundwater.
- Provide an improved data set for remedial options appraisal.
- Allow for the formulation of a robust remediation strategy.

Sonic drilling was proposed for the majority of the site works as this technique is fast and provides good core recovery which is useful to define strata changes and facilitate reliable sample collection. The sonic drills are able to progress through obstructions such as concrete slabs, which would normally halt other methods. Sonic drilling is also generally a cleaner and safer technique than cable percussion drilling.

Window sampling was proposed for areas that could not be accessed by the sonic rigs (inside buildings and some areas along the site boundary)

The proposed characterisation is detailed overleaf;

Table 2.1: Proposed Site Characterisation Details

Investigation method	Estimated depth and purpose	Estimated number of holes
100mm diameter Sonic Drill Hole	10m deep (2m into rock) to assess quarry depth and material	57
100mm diameter Sonic Drill Hole	4m deep (1-2m into rock) general site coverage depth to rock	86
Excavator (with breaker) capable of excavating to 5m depth	5m deep trench holes to assess material composition, groundwater and delineate quarry sides	3
50mm diameter Window sample hole (Small Rig including coring through surface concrete)	2-3m deep investigation within structures and areas of difficult access	6
50mm diameter Window sample hole (Hand Held, including coring through concrete floor)	2-3m deep investigation inside former Bord Gais office	3
	Total	155

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2.2 Fieldwork

Due to access issues at the former AGI area and the horse pound, the majority of the Characterisation works were undertaken between the 4th and 27th November 2009. The AGI and horse pound areas were investigated between 25th and 27th October 2011. Both phases were conducted by ISGL, who sub-contracted Boart Longyear to undertake the sonic drilling. Mouchel were responsible for monitoring the works.

The second phase of investigation was carried out in general accordance with the following standards (it should be noted that the first phase of investigation was carried out in general accordance with the now superseded versions):

- BS5930:1999 (as amended 2010) Code of practice for site investigations;
- BS10175:2011 Code of Practice for the Investigation of Potentially Contaminated Sites;
- Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination, 2001 (Environment Agency).

The details of the characterisation are presented below. The site was divided into 10m x 10m cells, grid referenced alpha-numerically with a borehole proposed for each cell.

The exploratory hole location plan is presented as Drawing 1021927/R02/OD/001B.

Table 2.2: Summary of Site Activities

Activity	Dates Undertaken	Exploratory Hole Reference	Maximum Depth
Sonic drilled boreholes	4 th November – 24 th November 2009	132 locations referenced by alpha-numeric grid cell reference (A1, A2...)	12m bgl
	25 th October – 27 th October 2011	11 locations referenced by alpha-numeric grid cell reference	5.5m bgl
Window sample holes	25 th November – 27 th November 2009	13 locations (C12AWS, C12BWS, D12WS, E12WS, F9WS, F10WS, F12WS, L11WS, L12WS, L1WS, M1WS, N1WS, N2WS)	4.0m bgl
Trial pits	9 th November – 10 th November 2009	3 locations (TP1, TP2, TP3)	5.0m bgl
Soak away pits	9 th November 2009	1 location (“soakaway”)	2.1m bgl

During the first phase of characterisation in 2009, an active gas main was located along the north west section of the site (along row A). In all positions which were expected to be in the vicinity of the gas main a hand dug pit was progressed to at least 1.2m bgl before drilling. It is understood from Bord Gais that this main has now been disconnected and there is no live pipe-work associated with the new AGI infrastructure (located adjacent to the boundary wall in cell A9/A8) present on site.

2.2.1 Sonic drilled boreholes

143 sonic boreholes were drilled to determine the depth to rock head, and to take chemical samples for analysis, drill holes were terminated within the bedrock. Due to the possibility of limestone boulders within the made ground some holes were progressed for up to 2m into bedrock to provide confidence that the bedrock had been encountered. Total depths drilled varied between 2m bgl to 12m bgl.

24 locations were installed with groundwater monitoring wells, 10 had response zones positioned in the made ground, 14 installations had response zones positioned in the limestone bedrock. The table below shows the installation details at each location.

Table 2.3: Installation Details

Location	Response zone depth (m bgl)	Response zone strata
A1	3.0 – 4.0	rock
A3	3.0 - 4.5	rock
A4	2.5 - 4.5	rock
A9	1.0 – 2.5	made ground
A11	1.9 - 2.9	rock
B8	1.0 - 4.5	made ground
C2	1.0 – 2.5	made ground
C7	6.0 - 7.5	rock
C11	1.0 - 2.5	natural / possible made ground
D1	6.0 - 7.5	rock
D5	1.0 - 3.0	made ground
E8	1.0 - 6.0	made ground
F11	3.5 - 5.0	rock
G2	10.0 - 11.5	rock
G3	1.0 - 9.0	made ground
G4	10.0 - 12.0	rock
G5	1.0 - 9.0	made ground
G8	1.0 - 2.5	rock
H12	3.0 - 4.5	rock
J10	1.0 - 3.0	rock
K1	1.0 - 4.5	made ground
K5	1.0 - 6.0	made ground
L7	2.0 - 3.5	rock
M3	5.0 - 6.5	rock

2.2.2 Window sample holes

Window samples were located in 13 cells which could not be accessed by the sonic rig. The table below outlines the location of the window sample holes and an explanation of why it was not appropriate to use sonic drilling in these areas. Areas where the window sample was used were the Bord Gais offices, No. 5 Stores, Booster house along the south east boundary.

Table 2.4: Window Sample Hole Rationale

Location	Cell numbers	BH numbers	Rationale
Bord Gais Offices	C12 D12 E12 F12	C12AWS, C12BWS D12WS E12WS F12WS	Proposed locations were within the existing office building. Hand held window sampling and hand pits were used to gain information in this area
No. 5 Stores	L01 M01 N01 N02	L1WS M1WS N1WS N2WS	One sonic drilled BH was able to be progressed within the main building. However only a window sample rig could access the other proposed locations
Booster house	F9 F10	F9WS F10WS	The sonic was too large to access the proposed locations. A window sample rig was used to obtain information from within the booster house and just outside it.
South east boundary	L11 L12	L11WS L12WS	The sonic rig was too large to fit into this area. A window sample rig was used to collect samples and locate rock head in these areas.

2.2.3 Trial pits / soak away pits

Three trial pits were excavated within the former quarry area.

- TP1 – Cells H05/H06
- TP2 – Cells F03/F04
- TP3 – Cells G01/H01

Trial pits were positioned to help delineate the edge of the former quarry area and give an idea of digging conditions that may be encountered during the potential remediation works. No samples were obtained from the trial pits.

One additional soak away pit was excavated within the quarry area.

- Soakaway – Cells J04/J05

This was positioned to give an idea of the drainage rate in the quarry. One sample was obtained from the soak away pit.

Engineers logs (produced by IGSL) logging the strata encountered are presented in Appendix A. Photographs (taken by IGSL) of the recovered cores are presented as Appendix B.

2.3 Chemical Laboratory Testing

Soil samples were collected by IGSL, from sonic drill holes and window sample holes at nominal 1m intervals and strata changes. One sample was recovered from the soak away pit, no samples were obtained from the trial pits. In total 611 soil samples (first phase 582 and second phase 29) were recovered. 358 samples were submitted for chemical analysis (first phase 333 and second phase 25).

Groundwater samples have been obtained at quarterly intervals since the 2009 site works were completed and are reported separately. Only samples of the groundwater are recovered (no DNAPL is included within the samples) as this provides a worst case estimate of the concentration of the more mobile contaminants.

All Samples were stored in airtight containers suitable for the analysis to be undertaken. Containers were appropriately labelled, and transported in cool boxes with ice packs under completed chain of custody documentation to ALcontrol laboratories, who are appropriately accredited for the works required and are an approved supplier under the Mouchel Quality Management System.

2.3.1 Soils

A single testing suite (Limerick Suite) was developed to include a wide range of determinands which could be used for most samples to characterise conditions at the site.

Additional samples were also tested (based upon visual and olfactory evidence and historical data) for an asbestos screen, polychlorinated biphenyls (PCBs) and volatile organic compounds (VOCs).

Table 2.5: Summary of Soils Analysis

Suite Reference	Analysis Suite	No. samples scheduled
Limerick Suite	Arsenic, cadmium, chromium, copper, lead, mercury, selenium, zinc, cyanide, sulphate, sulphide, ammoniacal nitrogen, speciated phenols, Total Petroleum Hydrocarbons criteria working group split (TPH CWG) (including BTEX and MTBE), Polyaromatic Hydrocarbons (PAHs)	354
Asbestos	Asbestos screen	35
PCBs	US EPA 7 Speciated congeners	79
VOCs	VOCs	175

The testing suite was chosen based upon Mouchel's previous experience from working on former gasworks sites and using guidance provided in DOE industry profile for Gas works, coke works and other coal carbonisation plants.

As well as providing a good site coverage samples suspected of containing asbestos or containing high proportions of demolition rubble were submitted for asbestos screening. Locations positioned near former electrical substations were submitted from PCB analysis. Samples with distinctive odours were submitted for VOC analysis

Soil chemical results are presented in Appendix C and are interpreted in the Mouchel QRA Report (1021927/R/03) and the subsequent addendum report (1021927/R/18) dated December 2011.

For some samples from 2009, ALcontrol were reporting sulphate concentrations in excess of 100%. They conducted an investigation but could not establish the cause of this anomaly. Therefore the sulphate results for the 2009 investigation should be used with extreme caution. A letter detailing the issues regarding the sulphate analysis is included within Appendix C.

2.3.2 Groundwater

Groundwater monitoring has been undertaken on a nominal quarterly basis since the 2009 characterisation site works were completed. All 21 installations, installed during the 2009 site investigation have been dipped with an ATEX Dual phase dipmeter to establish the water depth and presence of Non Aqueous Phase Layers (NAPLs). More recent visits only dipped 19 installations as two have been lost (A4 and B8).

Samples are also retrieved from the monitoring wells and submitted to Alcontrol for chemical analysis. The table below summarises the suites of determinands scheduled. All samples are analysed for a limerick suite. VOC analysis is conducted on selected samples to give a spatial coverage of the site and down and up gradient of the suspected groundwater flow direction.

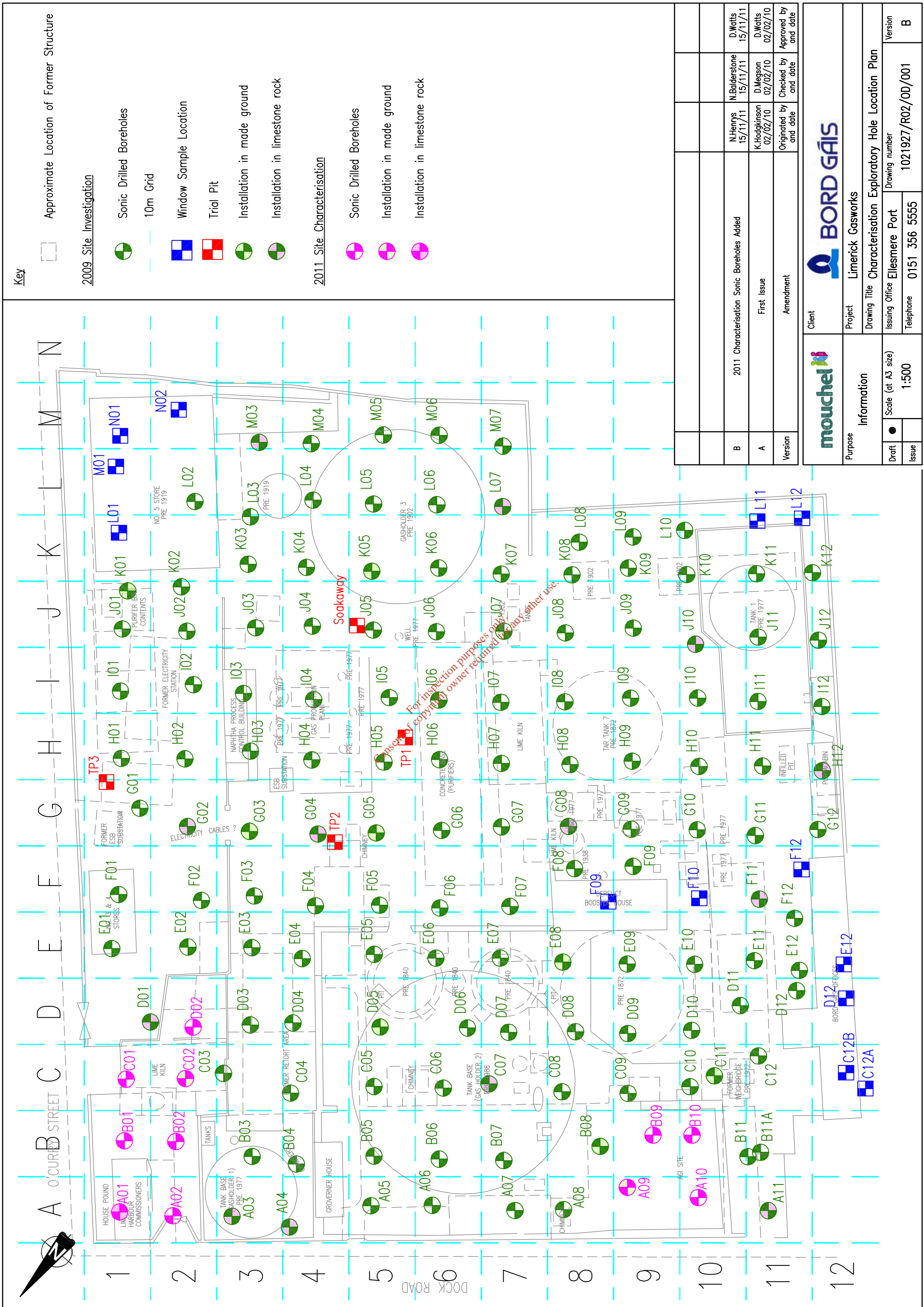
Table 2.6: Summary of Groundwater Analysis

Suite Reference	Analysis Suite
Limerick Suite	Arsenic, cadmium, chromium, copper, lead, mercury, selenium, zinc, cyanide, sulphate, sulphide, ammoniacal nitrogen, speciated phenols, Total Petroleum Hydrocarbons criteria working group split (TPH CWG) (including BTEX and MTBE), Polyaromatic Hydrocarbons (PAHs)
VOCs	VOCs

The three monitoring wells installed during 2011 are programmed to be monitored and sampled at the next quarterly visit in January 2012.

The results of the first two monitoring visits (10th-11th December 2009 and 14th – 15th January 2010) are interpreted in the 2010 Mouchel QRA Report 1021927/R/03. The subsequent monitoring visits are interpreted in the Mouchel Quarterly Groundwater Monitoring Reports submitted to Bord Gais. Annual Summary Reports are submitted to Bord Gais at the end of the year.

Chemical tests results for the groundwater monitoring are presented in the relevant quarterly monitoring reports.





TRIAL PIT RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		TRIAL PIT NO. TP2
LOGGED BY S. Letch		SHEET Sheet 1 of 1
CO-ORDINATES () 156,963.39 E 156,564.36 N		DATE STARTED 10/11/2009
GROUND LEVEL (m) 6.92		DATE COMPLETED 10/11/2009
CLIENT ENGINEER Bord Gais Mouchel	EXCAVATION METHOD 14T Track	

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	MADE GROUND: Concrete.		0.17	6.75	 (Rapid)					
	MADE GROUND: Brown sandy clay with some red brick and occasional concrete.		0.50	6.42						
	MADE GROUND: Light brown sand.		0.80	6.12						
1.0	MADE GROUND: Dark brown slightly sandy clay with some red brick.		1.80	5.12						
2.0	MADE GROUND: Angular cobbles and boulders.		1.90	5.02						
	End of Trial Pit at 1.90m									

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Groundwater Conditions
Strong odour of hydrocarbons. Strike at 1.8m rising 250mm in 2 minutes.

Stability
Major pit wall collapse at 1.90m

General Remarks
Location: Between H5 & H6.

IGSL TP LOG 14463.GPJ IGSL_GDT 15/12/09



TRIAL PIT RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		TRIAL PIT NO. TP3	
LOGGED BY S. Letch		SHEET Sheet 1 of 2	
CLIENT ENGINEER Bord Gais Mouchel		DATE STARTED 10/11/2009	
CO-ORDINATES(_) 156,995.88 E 156,579.10 N		DATE COMPLETED 10/11/2009	
GROUND LEVEL (m) 7.65		EXCAVATION METHOD 14T Track	

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
0.0	MADE GROUND: Dark brown clayey sand with much red brick, ceramics and concrete.	[Cross-hatched pattern]								
1.0	MADE GROUND: Brown sandy clay with much red brick and concrete.		1.00	6.65	↓ (Seepage)					
2.0	MADE GROUND: Grey slightly sandy gravelly clay with some sub-angular large cobbles and occasional red brick and steel.		1.80	5.85	↓ (Moderate)					
3.0										
4.0										

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Groundwater Conditions
Water table at 5.00m

Stability
Minor pit wall collapse on completion of pit

General Remarks
Location: Beside H1.

IGSL TP LOG 14463.GPJ IGSL_GDT 15/12/09



TRIAL PIT RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		TRIAL PIT NO. TP3	
LOGGED BY S. Letch		SHEET Sheet 2 of 2	
CLIENT ENGINEER Bord Gais Mouchel		CO-ORDINATES() 156,995.88 E 156,579.10 N	
		GROUND LEVEL (m) 7.65	
		DATE STARTED 10/11/2009	
		DATE COMPLETED 10/11/2009	
		EXCAVATION METHOD 14T Track	

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples			Vane Test (KPa)	Hand Penetrometer (KPa)
						Sample Ref	Type	Depth		
5.0			5.00	2.65						
6.0										
7.0										
8.0										
9.0										

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Groundwater Conditions

Stability
Minor pit wall collapse on completion of pit

General Remarks
Location: Beside H1.

IGSL TP LOG 14463.GPJ IGSL_GDT 15/12/09



WINDOW SAMPLE RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		PROBE NO. C12A WS
		SHEET Sheet 1 of 1
CO-ORDINATES 156,877.71 E 156,546.58 N	RIG TYPE Dando Terrier	DATE DRILLED 27/11/2009
GROUND LEVEL (mOD) 5.40	HOLE DIAMETER (mm)	DATE LOGGED 27/11/2009
CLIENT Bord Gais		SAMPLED BY IGSL
ENGINEER Mouchel		LOGGED BY G. Thornton

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Disturbed Sample Depth (m)	Sample Type
0.0	CONCRETE		0.15	5.25					
	MADE GROUND: Dense dark grey, clayey gravel (hardcore). NEC		0.35	5.05					
	MADE GROUND: red brick, concrete and white clay (probable ash). Possible asbestos.		0.50	4.90				0.35-0.50	ENV 001
	MADE GROUND: Slate floor. NEC.		0.55	4.85					
	Stiff brown slightly gravelly CLAY. NEC.					0.00-1.00	20		
1.0	Very stiff brown CLAY with limestone cobble. HC odour and sheen on cobble.		1.20	4.20		1.00-1.30	20	1.25-1.30	ENV 002. Only 1 voc, 1 glass jar.
	Final Depth 1.30m		1.30	4.10					
2.0									
3.0									
4.0									
5.0									

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General Remarks
Hand Pit to 1.20m.

Installations

LIMERICK WS LOG 14463.GPJ IGSL_GDT 23/12/09



WINDOW SAMPLE RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		PROBE NO. C12A WSHP	
		SHEET Sheet 1 of 1	
CO-ORDINATES 156,877.71 E 156,546.58 N		RIG TYPE Hand Dug	
GROUND LEVEL (mOD) 5.40		HOLE DIAMETER (mm)	
CLIENT Bord Gais		DATE DRILLED 25/11/2009	
ENGINEER Mouchel		DATE LOGGED 25/11/2009	
		SAMPLED BY IGSL	
		LOGGED BY G. Thornton	

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Disturbed Sample Depth (m)	Sample Type
0.0	Hand dug pit (see WS log)							0.35-0.50	ENV 001
1.0	Final Depth 1.20m		1.20	4.20					
2.0									
3.0									
4.0									
5.0									

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General Remarks
Hand Pit to 1.20m, 1.00m x 1.50m. ENV samples also on WS logs. Unable to proceed past 1.2m due to limestone, Probable bedrock.

Installations

LIMERICK WS LOG 14463.GPJ IGSL_GDT 23/12/09



WINDOW SAMPLE RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		PROBE NO. C12B WS
		SHEET Sheet 1 of 1
CO-ORDINATES 156,881.50 E 156,542.58 N	RIG TYPE Dando Terrier	DATE DRILLED 27/11/2009
GROUND LEVEL (mOD) 5.39	HOLE DIAMETER (mm)	DATE LOGGED 27/11/2009
CLIENT Bord Gais		SAMPLED BY IGSL
ENGINEER Mouchel		LOGGED BY G. Thornton

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Disturbed Sample Depth (m)	Sample Type
0.0	CONCRETE with rebar		0.15	5.24					
	MADE GROUND: Dense grey, clayey gravel (possible hardcore). NEC		0.30	5.09					
	MADE GROUND: red brick, concrete and white clay (probable ash). Possible asbestos. Stiff brown CLAY. NEC.		0.50	4.89				0.50-0.50	ENV 001
1.0	Soft dark grey gravelly CLAY. Strong HC odour. Final Depth 1.25m		1.20	4.19		0.00-1.00	100		
			1.25	4.14		1.00-1.25	100	1.20-1.25	ENV 002. Only 1 voc, 1 glass jar.

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General Remarks
Hand Pit to 1.20m.

Installations

LIMERICK WS LOG 14463.GPJ IGSL_GDT 23/12/09



WINDOW SAMPLE RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		PROBE NO. C12B WSHP	
		SHEET Sheet 1 of 1	
CO-ORDINATES 156,881.50 E 156,542.58 N	RIG TYPE Hand Dug		DATE DRILLED 24/11/2009
GROUND LEVEL (mOD) 5.39	HOLE DIAMETER (mm)		DATE LOGGED 24/11/2009
CLIENT Bord Gais			SAMPLED BY IGSL
ENGINEER Mouchel			LOGGED BY G. Thornton

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Disturbed Sample Depth (m)	Sample Type
0.0	Hand dug pit (see WS log)							0.30-0.50	ENV 001
1.0	Final Depth 1.20m		1.20	4.19					
2.0									
3.0									
4.0									
5.0									

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General Remarks
Hand Pit to 1.20m, 1.00m x 1.50m. ENV samples also on WS logs. Unable to proceed past 1.2m due to limestone, Probable bedrock.

Installations

LIMERICK WS LOG 14463.GPJ IGSL_GDT 23/12/09



WINDOW SAMPLE RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		PROBE NO. D12 WS
		SHEET Sheet 1 of 1
CO-ORDINATES 156,888.57 E 156,533.84 N	RIG TYPE Dando Terrier	DATE DRILLED 27/11/2009
GROUND LEVEL (mOD) 4.83	HOLE DIAMETER (mm)	DATE LOGGED 27/11/2009
CLIENT Bord Gais		SAMPLED BY IGSL
ENGINEER Mouchel		LOGGED BY G. Thornton

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Disturbed Sample Depth (m)	Sample Type
0.0	102								
	MADE GROUND: Dense grey, clayey gravel (hardcore). NEC.		0.15	4.68					
			0.20	4.63				0.20-0.25	ENV 001
	MADE GROUND: Dense grey sandy CLAY with red brick and possible ash. Possible contamination.		0.25	4.58				0.30-0.70	ENV 002
	Stiff brown CLAY with many limestone cobbles. HC odour.							0.30-0.80	ENV 003.
									Only 1 voc, 1 glass jar.
	Soft brown sandy gravelly CLAY. HC odour.		0.85	3.98		0.00-0.95	25		
			0.90	3.93		0.95-1.00	100	0.90-1.00	ENV 004.
	Soft light brown CLAY. NEC.		1.00	3.83					Only 1 voc, 1 glass jar.
	Final Depth 1.00m								

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General Remarks
Hand Pit to 0.85m.

Installations

LIMERICK WS LOG 14463.GPJ IGSL_GDT 23/12/09



WINDOW SAMPLE RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		PROBE NO. D12 WSHP
		SHEET Sheet 1 of 1
CO-ORDINATES 156,888.57 E 156,533.84 N	RIG TYPE Hand Dug	DATE DRILLED 26/11/2009
GROUND LEVEL (mOD) 4.83	HOLE DIAMETER (mm)	DATE LOGGED 26/11/2009
CLIENT Bord Gais		SAMPLED BY IGSL
ENGINEER Mouchel		LOGGED BY G. Thornton

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Disturbed Sample Depth (m)	Sample Type
0.0	Hand dug pit (see WS log)							0.20-0.25 0.30-0.70	ENV 001 ENV 002
1.0	Final Depth 0.85m		0.85	3.98	↓ (Slow)				
2.0									
3.0									
4.0									
5.0									

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General Remarks
Hole ended due to boulders, possible variably weathered limestone bedrock. Hand Pit to 0.85m, 1.00m x 1.50m. ENV samples also on WS logs.

Installations

LIMERICK WS LOG 14463.GPJ IGSL_GDT 23/12/09



WINDOW SAMPLE RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		PROBE NO. E12 WS
		SHEET Sheet 1 of 1
CO-ORDINATES 156,892.09 E 156,530.12 N	RIG TYPE Dando Terrier	DATE DRILLED 27/11/2009
GROUND LEVEL (mOD) 5.03	HOLE DIAMETER (mm)	DATE LOGGED 27/11/2009
CLIENT Bord Gais		SAMPLED BY IGSL
ENGINEER Mouchel		LOGGED BY G. Thornton

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Disturbed Sample Depth (m)	Sample Type
0.0	CONCRETE		0.15	4.88					ENV 001
	MADE GROUND: Dense grey, clayey gravel (hardcore). NEC.		0.20	4.83					
	Firm brown slightly gravelly CLAY. NEC.		0.50	4.53					
	Stiff black slightly gravelly CLAY with occasional cobbles. Strong HC odour.		0.95	4.08					
1.0	Final Depth 0.95m					0.40-0.95	100	0.50-0.70	
2.0									
3.0									
4.0									
5.0									

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General Remarks
Hand Pit to 0.95m.

Installations

LIMERICK WS LOG 14463.GPJ IGSL_GDT 23/12/09




WINDOW SAMPLE RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		PROBE NO. E12 WSHP
		SHEET Sheet 1 of 1
CO-ORDINATES 156,892.09 E 156,530.12 N	RIG TYPE Hand Dug	DATE DRILLED 26/11/2009
GROUND LEVEL (mOD) 5.03	HOLE DIAMETER (mm)	DATE LOGGED 26/11/2009
CLIENT Bord Gais		SAMPLED BY IGSL
ENGINEER Mouchel		LOGGED BY G. Thornton

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Disturbed Sample Depth (m)	Sample Type
0.0	Hand dug pit (see WS log)				 (Rapid)			0.50-0.70	ENV 001
1.0	Final Depth 0.95m		0.95	4.08					

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General Remarks
 Hole ended due to egress of water and odour in confined space. Hand Pit to 0.95m, 1.00m x 1.50m. ENV samples also on WS logs.

Installations

LIMERICK WS LOG 14463.GPJ IGSL_GDT 23/12/09



WINDOW SAMPLE RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		PROBE NO. F09 WS
		SHEET Sheet 1 of 1
CO-ORDINATES 156,925.67 E 156,545.24 N	RIG TYPE Dando Terrier	DATE DRILLED 26/11/2009
GROUND LEVEL (mOD) 8.17	HOLE DIAMETER (mm)	DATE LOGGED 26/11/2009
CLIENT Bord Gais		SAMPLED BY IGSL
ENGINEER Mouchel		LOGGED BY G. Thornton

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Disturbed Sample Depth (m)	Sample Type
0.0	MADE GROUND: Stiff sandy clay with frequent red brick. NEC.							0.00-1.00	ENV 001
1.0						0.00-1.00	100		
1.70	CONCRETE		1.70	6.47		1.00-1.80	100		
1.80	Stiff black/grey very clayey SAND with occasional cobbles. High HC impact and odour.		1.80	6.37				1.80-2.00	ENV 002. Only 1 voc, 1 glass jar, 1 tub.
2.00	Final Depth 2.00m		2.00	6.17					

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General Remarks

Installations

LIMERICK WS LOG 14463.GPJ IGSL_GDT 23/12/09



WINDOW SAMPLE RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		PROBE NO. F10 WS
		SHEET Sheet 1 of 1
CO-ORDINATES 156,915.33 E 156,536.14 N	RIG TYPE Dando Terrier	DATE DRILLED 26/11/2009
GROUND LEVEL (mOD) 7.27	HOLE DIAMETER (mm)	DATE LOGGED 26/11/2009
CLIENT Bord Gais		SAMPLED BY IGSL
ENGINEER Mouchel		LOGGED BY G. Thornton

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Disturbed Sample Depth (m)	Sample Type
0.0	CONCRETE		0.10	7.17				0.00-0.75	ENV 001
	MADE GROUND: Stiff black sandy gravelly clay with frequent red brick. NEC.								
	Slightly clayey COBBLES. HC.		0.75	6.52		0.00-1.00	100		
1.0	Very soft sandy CLAY and local cobble (2.00m). HC.		1.00	6.27				1.00-2.00	ENV 002. Only 1 voc, 1 glass jar, 1 tub.
2.0	Final Depth 1.00m		2.00	5.27		1.00-2.00	100		
3.0									
4.0									
5.0									

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General Remarks

Installations

LIMERICK WS LOG 14463.GPJ IGSL_GDT 23/12/09



WINDOW SAMPLE RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		PROBE NO. F12 WS
		SHEET Sheet 1 of 1
CO-ORDINATES 156,906.10 E 156,523.02 N	RIG TYPE Dando Terrier	DATE DRILLED 27/11/2009
GROUND LEVEL (mOD) 5.97	HOLE DIAMETER (mm)	DATE LOGGED 27/11/2009
CLIENT Bord Gais		SAMPLED BY IGSL
ENGINEER Mouchel		LOGGED BY G. Thornton

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Disturbed Sample Depth (m)	Sample Type
0.0	CONCRETE		0.10	5.87					ENV 001
	MADE GROUND: Very stiff to hard, dark grey, very gravelly clay (possible hardcore). NEC		0.20	5.77					
	Stiff brown slightly gravelly CLAY. NEC.		0.50	5.47					
	Stiff dark brown gravelly CLAY with occasional cobbles. Black tar 0.5-1.2m in spots. HC odour. Water with black oily tar. WS ended at 1.1m, Hand pit to 1.20m.								
1.0	Final Depth 1.10m		1.20	4.77		0.00-1.00 1.00-1.10	100 0	0.50-1.00	

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General Remarks
Hole ended at 1.10m due to refusal, no recovery 1.00-1.10m. Hand pit to 1.20m

Installations

LIMERICK WS LOG 14463.GPJ IGSL_GDT 23/12/09



WINDOW SAMPLE RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		PROBE NO. F12 WSHP
		SHEET Sheet 1 of 1
CO-ORDINATES 156,906.10 E 156,523.02 N	RIG TYPE Hand Dug	DATE DRILLED 23/11/2009
GROUND LEVEL (mOD) 5.97	HOLE DIAMETER (mm)	DATE LOGGED 23/11/2009
CLIENT Bord Gais		SAMPLED BY IGSL
ENGINEER Mouchel		LOGGED BY G. Thornton

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Disturbed Sample Depth (m)	Sample Type
0.0	Soft brown very gravelly CLAY. HC sheen.								
1.0								0.50-1.00	ENV 001
	Final Depth 1.20m		1.20	4.77					
2.0									
3.0									
4.0									
5.0									

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General Remarks
Hand Pit to 1.20m, 1.00m x 1.50m. ENV samples also on WS logs.

Installations

LIMERICK WS LOG 14463.GPJ IGSL_GDT 23/12/09



WINDOW SAMPLE RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		PROBE NO. L01 WS	
		SHEET Sheet 1 of 1	
CO-ORDINATES 157,018.22 E 156,548.72 N		RIG TYPE Dando Terrier	
GROUND LEVEL (mOD) 7.95		HOLE DIAMETER (mm)	
CLIENT Bord Gais		SAMPLED BY IGSL	
ENGINEER Mouchel		LOGGED BY G. Thornton	

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Disturbed Sample Depth (m)	Sample Type
0.0	CONCRETE								
	MADE GROUND: Loose clayey gravel with occasional red brick (in 5cm bands brown, dark grey, light grey, brown). Possible ash. Possible contamination		0.20	7.75				0.20-1.00	ENV 001
1.0						0.00-1.00	50	1.00-1.90	ENV 002
2.0	MADE GROUND: Firm white clay (possible ash/asbestos) with some black ash and cinders at 2.0-2.2m. Possible contamination		1.90	6.05		1.00-2.00	70	2.00-2.80	ENV 003
3.0	MADE GROUND: Medium dense brown sandy gravel (possible clinker). Possible contamination.		2.80	5.15		2.00-3.00	100	2.80-3.00	ENV 004.
	MADE GROUND: Dense grey/dark grey clayey gravel (possible ash in gravel). Possible contamination.		3.00	4.95		3.00-3.40	100	3.00-3.40	Only 1 voc, 1 glass jar. ENV 005.
	Final Depth 3.40m		3.40	4.55				Only 1 voc, 1 glass jar.	

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General Remarks

Installations

LIMERICK WS LOG 14463.GPJ IGSL_GDT 23/12/09



WINDOW SAMPLE RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		PROBE NO. L11 WS
		SHEET Sheet 1 of 1
CO-ORDINATES 156,944.52 E 156,486.41 N	RIG TYPE Dando Terrier	DATE DRILLED 26/11/2009
GROUND LEVEL (mOD) 6.99	HOLE DIAMETER (mm)	DATE LOGGED 26/11/2009
CLIENT Bord Gais		SAMPLED BY IGSL
ENGINEER Mouchel		LOGGED BY G. Thornton

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Disturbed Sample Depth (m)	Sample Type
0.0	TOPSOIL - soft black sandy gravelly clay. NEC.		0.10	6.89				0.10-0.40	ENV 001
	Stiff brown sandy gravelly CLAY. NEC.		0.40	6.59					
	Very stiff grey slightly sandy slightly gravelly CLAY. NEC.		0.60	6.39		0.00-0.60	100		
	Final Depth 0.60m								
1.0									
2.0									
3.0									
4.0									
5.0									

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General Remarks

Installations

LIMERICK WS LOG 14463.GPJ IGSL_GDT 23/12/09



WINDOW SAMPLE RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		PROBE NO. L12 WS
		SHEET Sheet 1 of 1
CO-ORDINATES 156,939.56 E 156,481.83 N	RIG TYPE Dando Terrier	DATE DRILLED 26/11/2009
GROUND LEVEL (mOD) 7.50	HOLE DIAMETER (mm)	DATE LOGGED 26/11/2009
CLIENT Bord Gais		SAMPLED BY IGSL
ENGINEER Mouchel		LOGGED BY G. Thornton

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Disturbed Sample Depth (m)	Sample Type
0.0	Stiff brown sandy gravelly CLAY. NEC.							0.00-0.30	ENV 001
	Very stiff grey very gravelly CLAY. NEC.		0.30	7.20					
	Final Depth 0.60m		0.60	6.90		0.00-0.60	100		
1.0									
2.0									
3.0									
4.0									
5.0									

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General Remarks

Installations

LIMERICK WS LOG 14463.GPJ IGSL_GDT 23/12/09



WINDOW SAMPLE RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		PROBE NO. M01 WS	
		SHEET Sheet 1 of 1	
CO-ORDINATES 157,024.90 E 156,541.25 N	RIG TYPE Dando Terrier	DATE DRILLED 26/11/2009	DATE LOGGED 26/11/2009
GROUND LEVEL (mOD) 8.07	HOLE DIAMETER (mm)	SAMPLED BY IGSL	LOGGED BY G. Thornton
CLIENT Bord Gais			
ENGINEER Mouchel			

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Disturbed Sample Depth (m)	Sample Type	
0.0	CONCRETE		0.10	7.97						
	MADE GROUND: Concrete and loose sand and gravel (0.10m recovered). NEC.									
	MADE GROUND: Firm white/grey clay (possible ash/asbestos). Possible contamination.			0.50	7.57				0.50-1.00	ENV 001
1.0							0.00-1.00	50		
									1.50-2.00	ENV 002
2.0						1.00-2.00	70			
								2.50-3.00	ENV 003	
3.0						2.00-3.00	100			
								3.50-3.90	ENV 004	
4.0	Black COBBLE (NEC).		3.90	4.17						
	Final Depth 4.00m		4.00	4.07		3.00-4.00	100			
5.0										

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General Remarks

Installations

LIMERICK WS LOG 14463.GPJ IGSL_GDT 23/12/09



WINDOW SAMPLE RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		PROBE NO. N01 WS
		SHEET Sheet 1 of 1
CO-ORDINATES 157,027.33 E 156,537.24 N	RIG TYPE Dando Terrier	DATE DRILLED 26/11/2009
GROUND LEVEL (mOD) 7.97	HOLE DIAMETER (mm)	DATE LOGGED 26/11/2009
CLIENT Bord Gais		SAMPLED BY IGSL
ENGINEER Mouchel		LOGGED BY G. Thornton

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Disturbed Sample Depth (m)	Sample Type
0.0	CONCRETE No recovery		0.10	7.87					
1.0	MADE GROUND: Grey/white/red very clayey sand with red brick (possible ash). Possible contamination.		0.70	7.27		0.00-1.00	40	0.70-1.00	ENV 001
2.0	MADE GROUND: Stiff red gravelly clay (possible cinders). Possible contamination.		1.80	6.17				1.80-2.00	ENV 002. Only 1 voc, 1 glass jar, 1 tub.
	MADE GROUND: Loose grey gravelly sand (0.1m recovery). NEC.		2.00	5.97					
3.0	MADE GROUND: Stiff white clay (possible ash). Possible contamination.		2.70	5.27		1.00-3.00	50	2.70-3.60	ENV 003. Only
			2.00-3.00			2.00-3.00	30		
4.0	Dense grey GRAVEL (possible upper limestone bedrock). NEC. Final Depth 3.70m		3.60	4.37		3.00-3.70	30		
		3.70	4.27						

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General Remarks

Installations

LIMERICK WS LOG 14463.GPJ IGSL_GDT 23/12/09



WINDOW SAMPLE RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		PROBE NO. N02 WS
		SHEET Sheet 1 of 1
CO-ORDINATES 157,022.95 E 156,528.61 N	RIG TYPE Dando Terrier	DATE DRILLED 26/11/2009
GROUND LEVEL (mOD) 7.95	HOLE DIAMETER (mm)	DATE LOGGED 26/11/2009
CLIENT Bord Gais		SAMPLED BY IGSL
ENGINEER Mouchel		LOGGED BY G. Thornton

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Depth of Sample Run (m)	Recovery (%)	Disturbed Sample Depth (m)	Sample Type	
0.0	CONCRETE		0.10	7.85						
	MADE GROUND: Firm sandy gravelly clay in three layers - dark grey and brown - NEC, white/slightly green, possible ash/cyanide/heavy metal. Sample 0.7-0.9m taken in white/green layer.									
1.0	Cavity			1.10	6.85		0.00-1.00	30	0.70-0.90	ENV 001. Only 1 voc, 1 glass jar, 1 tub. ENV 002. Only 1 voc, 1 glass jar.
	MADE GROUND: Stiff dark grey/light brown sandy gravelly clay. NEC.			1.40	6.55				1.00-2.00	
2.0	Loose very clayey gravelly SAND.			2.00	5.95		1.00-2.00	30	2.00-2.60	
	Final Depth 2.60m		2.60	5.35		2.00-2.60	80		ENV 003. Only 1 voc, 1 glass jar, 1 tub.	

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General Remarks

Installations

LIMERICK WS LOG 14463.GPJ IGSL_GDT 23/12/09



SONIC CORE RECORD

REPORT NUMBER

16033

CONTRACT Limerick Gasworks		DRILLHOLE NO A1	
CO-ORDINATES 156,953.31 E 156,628.24 N		SHEET Sheet 1 of 1	
GROUND LEVEL (mOD) 5.27		DATE DRILLED 26/10/2011	
		DATE LOGGED 26/10/2011	
CLIENT Bord Gais Networks		FLUSH MEDIUM	
ENGINEER Mouchel		CASING DIAMETER (mm)	
		SAMPLED BY Roberts	
		LOGGED BY G.Doyle	

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Sample Run (m)	Recovery (%)	Sample Type	Depth (m)	Standpipe Details
0.0	TOPSOIL (grass)		0.05	5.22					
	MADE GROUND (red brick)		0.15	5.12					
	Loose light brown very clayey very gravelly SAND with red brick				0.30-1.00		ENV	0.30-1.00	
1.0	Soft mottled grey brown gravelly CLAY with occasional cobbles. (Hydrocarbon odour)		1.00	4.27			ENV	1.00-2.00	
2.0	No Recovery		2.00	3.27					
	LIMESTONE rock (20-100mm cores, brown staining at 2.8m, hydrocarbon odour upon opening bag)		2.20	3.07					
3.0	Dense gravelly COBBLES. Possible weathered rock (limestone). (hydrocarbon odour, brown staining on rock @3-4m, visible sheen @3.8m)		3.00	2.27					
4.0	LIMESTONE rock 30-200mm cores (some brown staining)		4.00	1.27					
5.0	Final Depth 5.00m		5.00	0.27					

General Remarks

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
26-10-11	1.00	4.00	5.00	50mm SP
26-10-11	3.00	0.00	3.00	50mm SP

IGSL SONIC WITH SAMPLES 16033.GPJ IGSL.GDT 11/11/11

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SONIC CORE RECORD

REPORT NUMBER

16033

CONTRACT Limerick Gasworks		DRILLHOLE NO A2
CO-ORDINATES 156,946.69 E 156,623.59 N		SHEET Sheet 1 of 2
GROUND LEVEL (mOD) 5.17	RIG TYPE	DATE DRILLED 26/10/2011
	HOLE DIAMETER (mm)	DATE LOGGED 26/10/2011
CLIENT Bord Gais Networks	FLUSH MEDIUM	SAMPLED BY Roberts
ENGINEER Mouchel	CASING DIAMETER (mm)	LOGGED BY G.Doyle

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Sample Run (m)	Recovery (%)	Sample Type	Depth (m)	Standpipe Details
0.0	MADE GROUND (concrete)		0.10	5.07			ENV	0.00-1.00	
	Loose brown slightly clayey GRAVEL and cobbles with red brick.				0.00-1.00				
1.0	Soft brown very sandy slightly gravelly CLAY with seashells. (hydrocarbon odour at 1.9m-2.0m)		1.00	4.17			ENV	1.00-2.00	
					1.00-2.00				
2.0	Soft brown gravelly CLAY		2.00	3.17			ENV	2.00-2.50	
					2.00-2.50				
	Dense angular GRAVEL AND COBBLES (possible highly weathered rock)		2.50	2.67					
	LIMESTONE rock (fractured cobbles diameter of core barrel 30-40mm thick)		2.80	2.37					
3.0									
	Stiff grey gravelly CLAY (hydrocarbon odour)		3.80	1.37			ENV	3.80-4.00	
	LIMESTONE rock (30-100mm cores)		4.00	1.17					
4.0									
5.0									
					5.44-5.47				
			5.44	-0.27			ENV	5.44-5.47	

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General Remarks
 Drillers stopped to oil drilling head @2m. They used biodegradeable Enviro 46.

INSTALLATION DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type

IGSL SONIC WITH SAMPLES 16033.GPJ IGSL.GDT 11/11/11



SONIC CORE RECORD

REPORT NUMBER

16033

CONTRACT Limerick Gasworks			DRILLHOLE NO A2	
CO-ORDINATES 156,946.69 E 156,623.59 N			SHEET Sheet 2 of 2	
GROUND LEVEL (mOD) 5.17			DATE DRILLED 26/10/2011	
			DATE LOGGED 26/10/2011	
CLIENT Bord Gais Networks			FLUSH MEDIUM	
ENGINEER Mouchel			CASING DIAMETER (mm)	
			SAMPLED BY Roberts	
			LOGGED BY G.Doyle	

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Sample Run (m)	Recovery (%)	Sample Type	Depth (m)	Standpipe Details
	Stiff grey gravelly CLAY		5.47	-0.30					
	LIMESTONE rock (30mm core)		5.50	-0.33					
	Final Depth 5.50m								
6.0									
7.0									
8.0									
9.0									
10.0									

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General Remarks
 Drillers stopped to oil drilling head @2m. They used biodegradeable Enviro 46.

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

IGSL SONIC WITH SAMPLES 16033.GPJ IGSL.GDT 11/11/11



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET A03 Sheet 1 of 1	
CO-ORDINATES 156,939.89 E 156,617.83 N		RIG TYPE	
GROUND LEVEL (m AOD) 4.16		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 5.00	
ENGINEER Mouchel		CASING DEPTH (m) 5.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	CONCRETE		3.96	0.20						
	MADE GROUND: Sandy gravelly clay with stone blocks and red brick. NEC.				1	ENV	0.50-1.00			
					2	ENV	1.00-1.50			
	MADE GROUND: Medium dense, brown/red, silty gravelly sand with occasional cobbles & concrete. NEC.		2.96	1.20						
					3	ENV	1.80-2.40			
	MADE GROUND: Firm, red/brown/grey mottled, slightly sandy clay with occasional cobbles. NEC.		2.56	1.60						
					4	ENV	2.50-3.00			
	MADE GROUND: Loose, brown, clayey/silty, gravelly cobbles. NEC.		1.76	2.40						
			1.66	2.50						
	MADE GROUND: Loose, black, clayey silty sandy gravelly cobbles. HC		1.16	3.00						
	LIMESTONE. NEC.									
5	End of Borehole at 5.00 m		-0.84	5.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
24-11-09	5.00	3.50	5.00	50mm SP					

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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IGSL BH LOG 14463.GPJ IGSL_GDT 23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET A04 Sheet 1 of 1
CO-ORDINATES 156,931.97 E 156,613.80 N GROUND LEVEL (m AOD) 4.13	RIG TYPE BOREHOLE DIAMETER (mm) 140	DATE DRILLED 11/11/2009 DATE LOGGED 13/11/2009
CLIENT Bord Gais ENGINEER Mouchel	BOREHOLE DEPTH (m) 4.50 CASING DEPTH (m) 4.50	BORED BY Boart Longyear PROCESSED BY D. O'Shea

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Brown sandy gravelly clay with much red brick, concrete and steel. NEC. MADE GROUND: Soft grey/brown mottled sandy, slightly gravelly clay with occasional cobbles. Possible HC. MADE GROUND: Soft light brown sandy, slightly gravelly clay with occasional cobbles. NEC. LIMESTONE. NEC. Possible clay band 4.00-4.10m		2.93	0.00-0.50	1	ENV	0.00-0.50			
0.30-0.80				2	ENV	0.30-0.80				
1.10-1.50				3	ENV	1.10-1.50				
1.50-2.00				4	ENV	1.50-2.00				
2			2.63	2.00						
2.13			2.13	4.50						
4.50	End of Borehole at 4.50 m		-0.37	4.50						

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	
11-11-09	4.50	2.50	4.50	50mm SP						
REMARKS Hand dug pit 0.00-1.20m. Pit dry and stable.					Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample					

IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. A05
CO-ORDINATES 156,924.45 E 156,603.52 N		SHEET Sheet 1 of 1
GROUND LEVEL (m AOD) 6.47	RIG TYPE	DATE DRILLED 10/11/2009
CLIENT Bord Gais	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 10/11/2009
ENGINEER Mouchel	BOREHOLE DEPTH (m) 7.50	BORED BY Boart Longyear
	CASING DEPTH (m) 7.50	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Stiff grey sandy gravelly clay with plastic, red brick and wood. NEC				1	ENV	0.00-0.50			
1	Medium dense light brown clayey sandy GRAVEL. NEC.		5.47	1.00						
	Medium dense light brown very clayey sandy GRAVEL. NEC.		5.27	1.20						
2	Stiff brown sandy gravelly CLAY with occasional cobbles. HC odour.		4.67	1.80	1	ENV	1.50-2.00			
					2	ENV	2.50-3.00			
3	Soft black/dark brown gravelly CLAY with occasional cobbles. HC oil in clay.		3.47	3.00						
					3	ENV	3.50-3.90			
4	LIMESTONE. NEC.		2.57	3.90						
	SAND. HC odour.		2.17	4.30	4	ENV	4.30-4.50			
	LIMESTONE. NEC, very local HC sheen at 5.50m.		1.97	4.50						
5										
6										
7										
8	End of Borehole at 7.50 m		-1.03	7.50						
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Hand dug pit 0.00-1.20m	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET A06 Sheet 1 of 1	
CO-ORDINATES 156,917.31 E 156,597.62 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 5.02		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 6.00	
ENGINEER Mouchel		CASING DEPTH (m) 6.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Stiff brown sandy gravelly clay with red and yellow brick. NEC.		4.72	0.30	1	ENV	0.00-0.30			
	MADE GROUND: Soft brown clay with root hairs. NEC.		4.52	0.50	2	ENV	0.00-0.50			
1	Medium dense, light brown very clayey sandy GRAVEL. NEC.				3	ENV	1.50-2.00			
2	Soft grey/black sandy gravelly CLAY. Possible HC.		3.02	2.00	4	ENV	2.50-3.00			
3	Loose light brown, very clayey GRAVEL. NEC.		2.02	3.00	5	ENV	3.50-4.00			
	Stiff brown sandy, gravelly CLAY. NEC.		1.77	3.25						
	Soft black slightly gravelly CLAY. HC odour.		1.52	3.50						
4	LIMESTONE with band of very gravelly brown clay (5.80-6.00m) with phase HC. Slight HC sheen on rock.		1.02	4.00	6	ENV	5.80-6.00			
6	End of Borehole at 6.00 m		-0.98	6.00						

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS						
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments	
										No water strike	
INSTALLATION DETAILS					GROUNDWATER DETAILS						
INSTALLATION DETAILS					Date	Hole Depth	Casing Depth	Depth to Water	Comments		
Date	Tip Depth	RZ Top	RZ Base	Type							
REMARKS Hand dug pit 0.00-1.20m					Sample Legend						
					D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub)			U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample			

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET A07 Sheet 1 of 1
CO-ORDINATES 156,907.13 E 156,590.33 N	RIG TYPE Sonic	DATE DRILLED 11/11/2009
GROUND LEVEL (m AOD) 5.11	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 11/11/2009
CLIENT Bord Gais	BOREHOLE DEPTH (m) 6.00	BORED BY Boart Longyear
ENGINEER Mouchel	CASING DEPTH (m) 6.00	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Loose light brown, clayey sandy gravel. NEC.				1	ENV	0.00-0.50			
1	MADE GROUND: Stiff light brown sandy very gravelly clay. NEC.		3.91	1.20	2	ENV	0.50-1.00			
	MADE GROUND: Soft brown gravelly sand. Slight HC.		3.61	1.50	3	ENV	1.50-2.00			
2	MADE GROUND: Soft dark brown peaty sandy gravelly CLAY. Heavy HC.		3.11	2.00	4	ENV	2.50-3.00			
					5	ENV	3.50-4.00			
4	LIMESTONE with band of angular cobbles and grey clay 5.90-6.00m. Possible HC 5.90-6.00m - not enough material for sample.			4.00						
6	End of Borehole at 6.00 m		-0.89	6.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Hand dug pit 0.00-1.20m	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET A08 Sheet 1 of 1	
CO-ORDINATES 156,901.53 E 156,585.58 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 5.14		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 6.00	
ENGINEER Mouchel		CASING DEPTH (m) 6.00	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Brown slightly clayey sandy gravel. NEC		4.94	0.20	2	ENV	0.00-0.50			
	MADE GROUND: Light brown sandy gravel with occasional wood and steel. NEC				1	ENV	0.20-0.50			
1	Soft brown to dark brown, sandy gravelly CLAY. NEC.		3.94	1.20						
	Stiff dark brown gravelly CLAY. Possible HC. Not enough for sample			3.69	1.45	3	ENV	1.50-2.00		
2	Loose, light brown very clayey GRAVEL. NEC.			3.64	1.50					
	Medium dense brown SAND. NEC.			3.44	1.70					
	Firm grey, mottled black very gravelly CLAY. Possible HC in black mottling.		2.64	2.50	4	ENV	2.50-3.00			
3	Hard grey gravelly CLAY with occasional cobbles. NEC. Possible pulverised limestone boulder.			2.14	3.00					
	Firm dark grey gravelly CLAY. Strong HC.		1.84	3.30	5	ENV	3.50-4.00			
4	LIMESTONE. NEC.			1.74	4.00					
6	End of Borehole at 6.00 m		-0.86	6.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Hand dug pit 0.00-1.20m. Pit dry and stable.

Sample Legend
 D - Small Disturbed (tub)
 B - Bulk Disturbed
 LB - Large Bulk Disturbed
 Env - Environmental Sample (Jar + Vial + Tub)
 U - Undisturbed 100mm Diameter Sample
 P - Undisturbed Piston Sample

IGSL BH LOG 14463.GPJ IGSL_GDT 23/12/09



SONIC CORE RECORD

REPORT NUMBER

16033

CONTRACT Limerick Gasworks		DRILLHOLE NO A9
CO-ORDINATES 156,896.18 E 156,576.88 N		SHEET Sheet 1 of 1
GROUND LEVEL (mOD) 5.59	RIG TYPE	DATE DRILLED 25/10/2011
	HOLE DIAMETER (mm)	DATE LOGGED 25/10/2011
CLIENT Bord Gais Networks	FLUSH MEDIUM	SAMPLED BY Roberts
ENGINEER Mouchel	CASING DIAMETER (mm)	LOGGED BY G.Doyle

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Sample Run (m)	Recovery (%)	Sample Type	Depth (m)	Standpipe Details
0.0	MADE GROUND (medium dense dark brown very clayey fine to coarse gravel)				0.00-0.70		ENV	0.00-0.70	
	MADE GROUND (medium Ddense light brown very clayey fine gravel)		0.70	4.89	0.70-0.95		ENV	0.70-0.95	
1.0	MADE GROUND (concrete)		0.95	4.64					
2.0									
3.0	LIMESTONE rock (100mm cores with broken core @3.75-4m)		2.50	3.09					
4.0	Final Depth 4.00m		4.00	1.59					
5.0									

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General Remarks

INSTALLATION DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type
25-10-11	1.00	0.00	1.00	50mm SP
25-10-11	1.50	2.50	4.00	50mm SP

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SONIC CORE RECORD

REPORT NUMBER

16033

CONTRACT Limerick Gasworks				DRILLHOLE NO A10	
CO-ORDINATES 156,886.89 E 156,571.31 N				SHEET Sheet 1 of 1	
GROUND LEVEL (mOD) 5.54		RIG TYPE		DATE DRILLED 25/10/2011	
		HOLE DIAMETER (mm)		DATE LOGGED 25/10/2011	
CLIENT Bord Gais Networks		FLUSH MEDIUM		SAMPLED BY Roberts	
ENGINEER Mouchel		CASING DIAMETER (mm)		LOGGED BY G.Doyle	

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Sample Run (m)	Recovery (%)	Sample Type	Depth (m)	Standpipe Details
0.0	MADE GROUND (concrete)								
	Firm brown sandy CLAY		0.50	5.04	0.50-0.70		ENV	0.50-0.70	
	No Recovery		0.70	4.84					
1.0									
2.0	Stiff red brown CLAY		2.30	3.24	2.30-2.60		ENV	2.30-2.60	
	Weathered limestone rock, fractured into angular coarse GRAVEL and COBBLES by driller.		2.60	2.94					
3.0									
4.0	LIMESTONE rock		4.00	1.54					
5.0	Final Depth 5.00m		5.00	0.54					

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General Remarks

INSTALLATION DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type

IGSL SONIC WITH SAMPLES 16033.GPJ IGSL.GDT 11/11/11



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET A11 Sheet 1 of 1	
CO-ORDINATES 156,877.44 E 156,566.16 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 3.74		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 2.90	
ENGINEER Mouchel		CASING DEPTH (m) 2.90	
		BORED BY Boart Longyear	
		PROCESSED BY S. Letch	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Tarmacadam		3.54	0.20	1	ENV	0.20-0.50			
	MADE GROUND: brown slightly sandy gravelly clay with red brick, concrete, steel and boulders. NEC.									
1	Soft brown slightly gravelly CLAY. NEC.		2.54	1.20	2	ENV	1.50-1.70			
	Soft to firm grey/brown gravelly CLAY. HC.		2.24	1.50						
2	LIMESTONE. Possible slight HC, brown staining at 1.70m.		2.04	1.70						
3	End of Borehole at 2.90 m		0.74	3.00						

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					1.20	NR	NS	NR	NR	Seepage
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date					Hole Depth	Casing Depth	Depth to Water	Comments		
Date	Tip Depth	RZ Top	RZ Base	Type						
23-11-09	2.90	1.90	2.90	50mm SP						
REMARKS Hand dug pit 0.00-1.20m. Walls stable. No recovery 1.75-2.90m - minor sheen on water coming up.					Sample Legend					
					D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub)			U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample		

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SONIC CORE RECORD

REPORT NUMBER

16033

CONTRACT Limerick Gasworks				DRILLHOLE NO B2	
CO-ORDINATES 156,953.44 E 156,614.62 N		RIG TYPE		SHEET Sheet 1 of 1	
GROUND LEVEL (mOD) 5.33		HOLE DIAMETER (mm)		DATE DRILLED 27/10/2011	
CLIENT Bord Gais Networks		FLUSH MEDIUM		DATE LOGGED 27/10/2011	
ENGINEER Mouchel		CASING DIAMETER (mm)		SAMPLED BY Roberts	
				LOGGED BY G.Doyle	

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Sample Run (m)	Recovery (%)	Sample Type	Depth (m)	Standpipe Details
0.0	TOPSOIL (grass)		0.03	5.30					
	MADE GROUND (concrete)		0.08	5.25			ENV	0.20-0.80	
	MADE GROUND (Very soft brown very gravelly CLAY with red brick)				0.20-0.80				
1.0	MADE GROUND (Firm light brown slightly gravelly CLAY with occasional cobbles and small pieces of red brick. Cobbles 50mm.)(Slight Hydrocarbon odour)		0.80	4.53			ENV	0.80-1.30	
	Very soft grey slightly sandy SILT with seashells. (Hydrocarbon odour gets stronger as you go deeper, very strong @2m)		1.30	4.03			ENV	1.30-2.00	
2.0	No Recovery		2.00	3.33					
3.0	LIMESTONE rock		3.00	2.33					
4.0									
	Final Depth 4.30m		4.30	1.03					
5.0									

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General Remarks

INSTALLATION DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type

IGSL SONIC WITH SAMPLES 16033.GPJ IGSL.GDT 11/11/11



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. B03
		SHEET Sheet 1 of 1
CO-ORDINATES 156,943.08 E 156,609.08 N	RIG TYPE Sonic	DATE DRILLED 12/11/2009
GROUND LEVEL (m AOD) 4.62	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 13/11/2009
CLIENT Bord Gais	BOREHOLE DEPTH (m) 4.50	BORED BY Boart Longyear
ENGINEER Mouchel	CASING DEPTH (m) 4.50	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	TOPSOIL. NEC. Firm brown slightly sandy, gravelly CLAY with occasional cobbles. NEC.		4.52	0.10	1	ENV	0.10-0.40			
1	Dense light brown clayey COBBLES. NEC.		3.12	1.50						
2	Soft dark grey gravelly CLAY. HC impact - oil in clay. LIMESTONE. NEC.		2.72 2.62	1.90 2.00	2	ENV	1.90-2.00			
4	End of Borehole at 4.50 m		0.12	4.50						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET B04 Sheet 1 of 1	
CO-ORDINATES 156,937.18 E 156,605.75 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 6.41		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 6.00	
ENGINEER Mouchel		CASING DEPTH (m) 6.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Firm brown sandy gravelly clay. NEC.				1	ENV	0.00-0.50			
1	MADE GROUND: Dense black slightly clayey gravel. NEC.		5.66	0.75	2	ENV	1.00-1.50			
	MADE GROUND: Firm brown sandy slightly gravelly clay with red brick and white sandy zones (possible ash). Possible contamination.		5.36	1.05						
3	Stiff grey/black CLAY. HC impact in black with odour. LIMESTONE. NEC.		3.61	2.80	3	ENV	2.80-3.00			
			3.41	3.00						
4	Soft grey CLAY (band in rock). NEC. LIMESTONE. NEC.		2.01	4.40	4	ENV	4.40-4.45			
			1.91	4.50						
6	End of Borehole at 6.00 m		0.41	6.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET B05 Sheet 1 of 1	
CO-ORDINATES 156,928.84 E 156,597.40 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 4.48		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 6.00	
ENGINEER Mouchel		CASING DEPTH (m) 6.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft brown sandy gravelly clay. NEC.	[Cross-hatch pattern]	4.28	0.20	1	ENV	0.20-0.70			
1	MADE GROUND: Loose light brown very clayey sandy gravel. NEC.									
2	MADE GROUND: Soft grey very gravelly clay. NEC.			2.68	1.80	2	ENV	1.80-2.00		
	CONCRETE			2.48	2.00					
3	MADE GROUND: Stiff grey sandy gravelly clay. HC odour.	[Cross-hatch pattern]	1.98	2.50	3	ENV	2.50-3.00			
3	MADE GROUND: Stiff black gravelly clay with occasional cobbles. HC, free phase oil present in small amounts.			1.48	3.00	4	ENV	3.00-3.50		
4	MADE GROUND: Dense grey gravel. Possible pulverised rock. NEC.			0.98	3.50					
4	LIMESTONE. NEC.			0.48	4.00					
6	End of Borehole at 6.00 m		-1.53	6.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
REMARKS							Sample Legend		
							D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample		

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. B06
		SHEET Sheet 1 of 1
CO-ORDINATES 156,920.92 E 156,591.04 N	RIG TYPE Sonic	DATE DRILLED 18/11/2009
GROUND LEVEL (m AOD) 5.45	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 19/11/2009
CLIENT Bord Gais	BOREHOLE DEPTH (m) 6.00	BORED BY Boart Longyear
ENGINEER Mouchel	CASING DEPTH (m) 6.00	PROCESSED BY A. Mahony

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Concrete. NEC.		5.25	0.20	1	ENV	0.20-0.50			
1	MADE GROUND: Loose pale brown very silty sandy gravel. NEC.		4.65	0.80	2	ENV	1.00-1.50			
2	MADE GROUND: Loose, brown silty sandy gravel. NEC.				3	ENV	2.50-3.00			
3	MADE GROUND: Loose grey silty gravel. HC 2.80-3.00m, very light 3.00-3.50m.		2.65	2.80						
4	MADE GROUND: Firm, dark brown/black mottled, sandy gravelly clay. Strong HC		1.95	3.50	4	ENV	3.50-4.00			
4	LIMESTONE. NEC.		4.45	4.00						
6	End of Borehole at 6.00 m		-0.55	6.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date				Date	Hole Depth	Casing Depth	Depth to Water	Comments	
Date	Tip Depth	RZ Top	RZ Base	Type					

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. B07
		SHEET Sheet 1 of 1
CO-ORDINATES 156,913.21 E 156,585.54 N	RIG TYPE Sonic	DATE DRILLED 18/11/2009
GROUND LEVEL (m AOD) 5.49	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 19/11/2009
CLIENT Bord Gais	BOREHOLE DEPTH (m) 5.00	BORED BY Boart Longyear
ENGINEER Mouchel	CASING DEPTH (m) 5.00	PROCESSED BY A. Mahony

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Concrete. NEC.		5.29	0.20	1	ENV	0.50-1.00			
1	MADE GROUND: Loose light brown silty sandy gravel. NEC.		3.99	1.50						
2	MADE GROUND: Loose, grey/brown/pale brown, silty gravel. NEC.		2.49	3.00	2	ENV	3.00-3.50			
3	MADE GROUND: Firm, dark brown/grey, slightly sandy gravelly clay with red brick. HC (very strong 3.00-3.20m)		1.99	3.50						
4	Pulverised LIMESTONE. Slight HC odour.		0.49	5.00						
5	End of Borehole at 5.00 m									

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET B08 Sheet 1 of 1	
CO-ORDINATES 156,903.27 E 156,574.69 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 5.49		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 5.00	
ENGINEER Mouchel		CASING DEPTH (m) 5.00	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Loose yellow brown silty sandy gravel with root hairs. NEC 0.00-1.50m & slight HC 1.50-1.80m.		3.69	1.80	1	ENV	0.50-1.00			
1					2	ENV	1.50-1.80			
2	MADE GROUND: Loose yellow brown silty sandy gravel with root hairs. Heavy HC.		2.49	3.00	3	ENV	2.80-3.00			
3	MADE GROUND: Firm to soft mottled brown sandy gravelly clay with red brick. Heavy HC.				4	ENV	3.00-3.40			
4	MADE GROUND: Soft dark brown/black sandy very gravelly clay with brick. Very heavy HC.				5	ENV	3.50-4.00			
4	MADE GROUND: Firm to locally soft, grey/brown, slightly sandy gravelly clay with frequent cobbles. Strong HC, fading with depth after 4.50m.				6	ENV	4.00-4.50			
5	LIMESTONE. NEC.		0.99	4.50						
5	End of Borehole at 5.00 m		0.49	5.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
18-11-09	4.50	1.00	4.50	50mm SP					

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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SONIC CORE RECORD

REPORT NUMBER

16033

CONTRACT Limerick Gasworks				DRILLHOLE NO B9	
CO-ORDINATES 156,898.15 E 156,568.32 N		RIG TYPE		SHEET Sheet 1 of 1	
GROUND LEVEL (mOD) 5.46		HOLE DIAMETER (mm)		DATE DRILLED 25/10/2011	
CLIENT Bord Gais Networks		FLUSH MEDIUM		DATE LOGGED 25/10/2011	
ENGINEER Mouchel		CASING DIAMETER (mm)		SAMPLED BY Roberts	
				LOGGED BY G.Doyle	

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Sample Run (m)	Recovery (%)	Sample Type	Depth (m)	Standpipe Details
0.0	MADE GROUND (loose grey coarse gravel (804))								
	MADE GROUND (stiff dark brown sandy slightly gravelly CLAY with red and yellow brick)		0.20	5.26	0.30-0.50		ENV	0.30-0.50	
1.0					1.00-1.80		ENV	1.00-1.80	
	MADE GROUND (concrete)		1.85	3.61					
2.0	MADE GROUND consisting of stiff brown sandy slightly gravelly CLAY		2.00	3.46	2.00-2.20		ENV	2.00-2.20	
	MADE GROUND (concrete)		2.20	3.26					
	Very stiff light brown slightly sandy slightly gravelly CLAY with occasional cobbles. (strong hydrocarbon odour)		2.50	2.96	2.50-2.80		ENV	2.50-2.80	
3.0	LIMESTONE rock (fractures every 100-200mm)		2.90	2.56					
5.0	Final Depth 5.00m		5.00	0.46					

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General Remarks

INSTALLATION DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type

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SONIC CORE RECORD

REPORT NUMBER

16033

CONTRACT Limerick Gasworks		DRILLHOLE NO B10
CO-ORDINATES 156,893.58 E 156,564.60 N		SHEET Sheet 1 of 1
GROUND LEVEL (mOD) 5.56	RIG TYPE	DATE DRILLED 25/10/2011
	HOLE DIAMETER (mm)	DATE LOGGED 25/10/2011
CLIENT Bord Gais Networks	FLUSH MEDIUM	SAMPLED BY Roberts
ENGINEER Mouchel	CASING DIAMETER (mm)	LOGGED BY G.Doyle

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Sample Run (m)	Recovery (%)	Sample Type	Depth (m)	Standpipe Details
0.0	Very stiff dark brown grey gravelly sandy CLAY (damp sweet odour)				0.00-0.40		ENV	0.00-0.40	
	MADE GROUND (concrete)		0.40	5.16					
1.0	Dense light grey clayey fine SAND		0.99	4.57					
	MADE GROUND (concrete)		1.00	4.56					
3.0	Highly weathered fractured ROCK (strong hydrocarbon odour, visible sheen, open product)		3.00	2.56					
	ROCK (fractures 100mm apart)		3.50	2.06					
5.0	Final Depth 5.00m		5.00	0.56					

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General Remarks

INSTALLATION DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type

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REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. B11
		SHEET Sheet 1 of 1
CO-ORDINATES 156,883.91 E 156,560.06 N	RIG TYPE	DATE DRILLED 10/11/2009
GROUND LEVEL (m AOD) 4.75	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 10/11/2009
CLIENT Bord Gais	BOREHOLE DEPTH (m) 0.95	BORED BY Boart Longyear
ENGINEER Mouchel	CASING DEPTH (m) 2.20	PROCESSED BY S. Letch

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Tarmacadam	[Cross-hatch pattern]	4.60	0.15						
	MADE GROUND: Firm black sandy slightly gravelly clay with frequent redbrick, concrete and steel. NEC.									
1	MADE GROUND: Firm brown sandy slightly gravelly clay with occasional redbrick. NEC.		3.95	0.80						
	End of Borehole at 0.95 m		3.80	0.95						
2										
3										
4										
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
				GROUNDWATER DETAILS					
INSTALLATION DETAILS				Date	Hole Depth	Casing Depth	Depth to Water	Comments	
Date	Tip Depth	RZ Top	RZ Base	Type					
REMARKS Hand dug pit 0.00-0.95m. Pit dry and stable. Location moved due to gas pipe 0.95m blg.						Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample			

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. B11A	
		SHEET Sheet 1 of 1	
CO-ORDINATES 156,884.96 E 156,561.79 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 4.77		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 2.20	
ENGINEER Mouchel		CASING DEPTH (m) 1.20	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Tarmacadam	[Cross-hatch pattern]	4.67	0.10	1	ENV	0.40-0.55			
	MADE GROUND: Concrete	[Solid grey pattern]	4.62	0.15						
	MADE GROUND: Very stiff brown gravelly clay with occasional cobbles and wire. NEC.	[Diagonal lines pattern]	4.42	0.35						
	MADE GROUND: Very stiff light brown gravelly clay. NEC.	[Dotted pattern]	4.37	0.40						
1	MADE GROUND: Hard clayey black gravel (possible degraded tarmac or black ash cinders). Possible contamination.	[Horizontal lines pattern]	4.22	0.55						
	MADE GROUND: Stiff brown clay. NEC.	[Vertical lines pattern]	3.57	1.20						
	MADE GROUND: Observed by driller	[Brick pattern]	3.27	1.50						
2	MADE GROUND: Observed by driller	[Brick pattern]	2.57	2.20						
	LIMESTONE. Observed by driller.	[Brick pattern]								
	End of Borehole at 2.20 m									

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Hand dug pit 0.00-1.20m. Pit dry and stable.

Sample Legend
 D - Small Disturbed (tub)
 B - Bulk Disturbed
 LB - Large Bulk Disturbed
 Env - Environmental Sample (Jar + Vial + Tub)
 U - Undisturbed 100mm Diameter Sample
 P - Undisturbed Piston Sample

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SONIC CORE RECORD

REPORT NUMBER

16033

CONTRACT Limerick Gasworks				DRILLHOLE NO C1	
CO-ORDINATES 156,965.22 E 156,612.05 N				SHEET Sheet 1 of 1	
GROUND LEVEL (mOD) 5.37		RIG TYPE		DATE DRILLED 26/10/2011	
		HOLE DIAMETER (mm)		DATE LOGGED 26/10/2011	
CLIENT Bord Gais Networks		FLUSH MEDIUM		SAMPLED BY Roberts	
ENGINEER Mouchel		CASING DIAMETER (mm)		LOGGED BY G.Doyle	

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Sample Run (m)	Recovery (%)	Sample Type	Depth (m)	Standpipe Details
0.0	MADE GROUND (concrete)		0.03	5.34					
	Dense grey angular COBBLES		0.20	5.17			ENV	0.20-1.00	
	Medium dense very clayey GRAVEL				0.20-1.00				
1.0	No Recovery		1.00	4.37					
2.0									
	Loose brown very gravelly CLAY (hydrocarbon odour)		2.80	2.57	2.80-3.00		ENV	2.80-3.00	
3.0	Soft grey slightly gravelly CLAY (hydrocarbon odour, visible veins of tar oil throughout clay)		3.00	2.37			ENV	3.00-3.50	
					3.00-3.50				
	LIMESTONE rock		3.50	1.87					
4.0									
	Final Depth 4.70m		4.70	0.67					
5.0									

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General Remarks

INSTALLATION DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type

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SONIC CORE RECORD

REPORT NUMBER

16033

CONTRACT Limerick Gasworks		DRILLHOLE NO C2	
CO-ORDINATES 156,958.32 E 156,606.32 N		SHEET Sheet 1 of 1	
GROUND LEVEL (mOD) 5.33		DATE DRILLED 26/10/2011	
		DATE LOGGED 26/10/2011	
CLIENT Bord Gais Networks		FLUSH MEDIUM	
ENGINEER Mouchel		CASING DIAMETER (mm)	
		SAMPLED BY Roberts	
		LOGGED BY G.Doyle	

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Sample Run (m)	Recovery (%)	Sample Type	Depth (m)	Standpipe Details
0.0	MADE GROUND (concrete) No Recovery	XXXX	0.05	5.28					XXXX
1.5	MADE GROUND (soft light brown gravelly CLAY with occasional cobbles and red brick.)	XXXX	1.50	3.83	1.50-2.00		ENV	1.50-2.00	XXXX
2.0	No Recovery		2.00	3.33					XXXX
2.5	LIMESTONE rock	XXXX	2.50	2.83					XXXX
3.5	Final Depth 3.50m		3.50	1.83					XXXX

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General Remarks

INSTALLATION DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type
28-10-11	1.00	2.50	3.50	50mm SP
27-10-11	1.50	1.00	2.50	50mm SP

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET C03 Sheet 1 of 1	
CO-ORDINATES 156,954.37 E 156,602.09 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 4.20		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 4.00	
ENGINEER Mouchel		CASING DEPTH (m) 4.00	
		BORED BY Boart Longyear	
		PROCESSED BY D. O'Shea	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Concrete over grey/black mottled sandy clay. HC. (0.20m recovered).				1	ENV	0.00-0.50			
1										
2	LIMESTONE. NEC. Gravel layer 3.00-3.30m.		2.70	1.50						
3										
4	End of Borehole at 4.00 m		0.20	4.00						
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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CONTRACT Limerick Gasworks		BOREHOLE NO. C04
		SHEET Sheet 1 of 1
CO-ORDINATES 156,944.63 E 156,597.99 N	RIG TYPE Sonic	DATE DRILLED 12/11/2009
GROUND LEVEL (m AOD) 7.10	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 13/11/2009
CLIENT Bord Gais	BOREHOLE DEPTH (m) 4.00	BORED BY Boart Longyear
ENGINEER Mouchel	CASING DEPTH (m) 4.00	PROCESSED BY D. O'Shea

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Loose brown/grey clayey sandy gravel with occasional cobbles. NEC.		6.80	0.30	1	ENV	0.30-0.80			
	MADE GROUND: Soft dark brown sandy gravelly clay with occasional cobbles and red brick. Possible HC.		6.30	0.80	2	ENV	1.00-1.50			
1	Firm black sandy CLAY. Possible HC.		6.20	0.90						
	Loose brown clayey gravelly SAND. NEC.		5.60	1.50	3	ENV	1.70-2.00			
	Loose brown/grey clayey sandy angular GRAVEL. NEC.		5.40	1.70						
2	Soft grey/brown sandy gravelly CLAY with occasional cobbles. NEC.		5.10	2.00						
	LIMESTONE. NEC.									
4	End of Borehole at 4.00 m		3.10	4.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
REMARKS					Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample				

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET C05 Sheet 1 of 1
CO-ORDINATES 156,935.48 E 156,589.26 N	RIG TYPE Sonic	DATE DRILLED 09/11/2009
GROUND LEVEL (m AOD) 7.37	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 09/11/2009
CLIENT Bord Gais	BOREHOLE DEPTH (m) 4.50	BORED BY Boart Longyear
ENGINEER Mouchel	CASING DEPTH (m) 4.50	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete with rebar		7.22	0.15	1	ENV	0.15-0.65			
	MADE GROUND: Stiff light brown sandy gravelly clay with wood at 0.80m. NEC.		6.37	1.00	2	ENV	1.00-1.50			
1	MADE GROUND: Soft black gravelly clay, very impacted with oil.		5.87	1.50	3	ENV	2.00-2.50			
2	MADE GROUND: Loose sandy gravel. Slight HC sheen.		4.87	2.50						
3	LIMESTONE. NEC.		4.87	2.50						
4	End of Borehole at 4.50 m		2.87	4.50						

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	
REMARKS							Sample Legend			
							D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub)			
							U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample			

IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET C06 Sheet 1 of 1	
CO-ORDINATES 156,927.21 E 156,582.82 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 5.85		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 8.50	
ENGINEER Mouchel		CASING DEPTH (m) 8.50	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete		5.65	0.20						
	MADE GROUND: Loose light brown, very clayey gravel. NEC.		5.15	0.70	1	ENV	0.70-0.90			
	MADE GROUND: Stiff dark brown/light brown, sandy gravelly clay with red brick. NEC.		4.95	0.90	2	ENV	1.00-1.50			
	MADE GROUND: Loose very clayey gravel with occasional cobbles and red brick. NEC.		4.35	1.50	3	ENV	1.50-3.00			
	MADE GROUND: Soft black/red very gravelly clay. HC - free phase oil. (20cm recovered)		2.85	3.00	4	ENV	3.00-6.00			
	MADE GROUND: Loose black very clayey gravel with occasional cobbles. HC-free phase oil. 0.50m recovered.		-0.15	6.00	5	ENV	6.00-6.50			
	MADE GROUND: Very soft black clay. HC.		-0.65	6.50						
	LIMESTONE. Slight HC sheen, possible contamination from clay above.		-2.65	8.50						
	End of Borehole at 8.50 m									

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	
REMARKS							Sample Legend			
							D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub)			
							U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample			

IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET C07 Sheet 1 of 1	
CO-ORDINATES 156,922.26 E 156,577.97 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 5.55		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 8.50	
ENGINEER Mouchel		CASING DEPTH (m) 8.50	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete									
0	MADE GROUND: Loose light brown, very clayey gravel. NEC.		5.35	0.20	1	ENV	0.50-1.00			
1	MADE GROUND: Soft black, gravelly clay with red brick. HC 1.20-1.50m.		4.45	1.10						
1	MADE GROUND: Very soft black, very gravelly clay with occasional cobbles. Tar from 1.5m. HC 2.00-2.70m.		4.05	1.50	2	ENV	1.50-2.00			
2					3	ENV	2.00-2.50			
3	MADE GROUND: Loose grey clayey gravelly sand (possible pulverised boulder). NEC.		2.85	2.70						
3	MADE GROUND: Medium dense, black, very clayey gravel. HC impact - free phase oil.		2.55	3.00	4	ENV	3.00-3.50			
4					5	ENV	4.00-4.50			
4					6	ENV	4.50-6.00			
6	MADE GROUND: No recovery.		-0.45	6.00						
7	LIMESTONE. Slight HC sheen, possible contamination from drilling.		-0.95	6.50						
8										
9	End of Borehole at 8.50 m		-2.95	8.50						

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	
16-11-09	8.50	7.00	8.50	50mm SP						
REMARKS 2.0 hrs standing - Health and Safety due to very contaminated soils. 1hr extra over delay due to decontaminating rig because of very heavy contaminated					Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample					

IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET C08 Sheet 1 of 1	
CO-ORDINATES 156,912.94 E 156,571.93 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 5.68		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 5.00	
ENGINEER Mouchel		CASING DEPTH (m) 5.00	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete									
0.40	MADE GROUND: Loose pale to dark brown (with depth), silty sandy gravel and occasional cobbles. HC - increasing with depth. Peaty texture at base of run.		5.28	0.40	1	ENV	0.40-1.00			
1.00	MADE GROUND: Black silty sandy gravel with occasional cobbles. Heavy HC.		4.68	1.00	2	ENV	1.00-1.50			
1.50	MADE GROUND: Black silty cobbly gravel. Heavy HC.		4.18	1.50						
2.00					3	ENV	2.00-2.50			
2.50	MADE GROUND: Black/grey, very clayey gravel with frequent cobbles. Very heavy free phase oil.		3.18	2.50	4	ENV	2.50-3.00			
3.00	MADE GROUND: Black slightly silty gravel and cobbles. Free phase oil		2.68	3.00	5	ENV	3.00-3.30			
3.30	Limestone GRAVEL and COBBLES. HC. Possible variably weathered rock.		2.38	3.30						
4.50	LIMESTONE. NEC. Slight HC at top of rock.		1.18	4.50						
5.00	End of Borehole at 5.00 m		0.68	5.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET C09 Sheet 1 of 1	
CO-ORDINATES 156,905.07 E 156,565.82 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 5.96		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 5.50	
ENGINEER Mouchel		CASING DEPTH (m) 5.50	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Stiff brown gravelly clay. NEC.	[Cross-hatch pattern]	5.81	0.15	1	ENV	0.25-0.75			
	MADE GROUND: Loose black clayey gravel (possible cinders). Possible contamination.									
1	MADE GROUND: Loose black clayey gravel. NEC.		5.21	0.75						
	MADE GROUND: Small Boulder		4.76	1.20	2	ENV	1.50-2.00			
	MADE GROUND: Very soft very gravelly clay. HC with free phase oil.		4.46	1.50						
2	MADE GROUND: Firm brown slightly gravelly clay. HC.	3.96	2.00	3	ENV	2.00-2.50				
3	Very stiff brown CLAY with frequent cobbles. NEC.	[Horizontal lines with circles]	2.96	3.00	4	ENV	3.00-3.50			
4										
5	LIMESTONE. Some brown staining, possible HC.	[Brick pattern]	0.96	5.00	5	ENV	4.50-5.00			
	End of Borehole at 5.50 m		0.46	5.50						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
				GROUNDWATER DETAILS					
INSTALLATION DETAILS				Date	Hole Depth	Casing Depth	Depth to Water	Comments	
Date	Tip Depth	RZ Top	RZ Base	Type					
REMARKS End hole at 5.50m - water required to drill through rock, high risk of contamination spread					Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample				

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET C10 Sheet 1 of 1	
CO-ORDINATES 156,898.43 E 156,559.10 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 4.89		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 3.20	
ENGINEER Mouchel		CASING DEPTH (m) 3.20	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Loose dark brown very clayey gravel. NEC.									
1	Soft to firm light brown slightly gravelly CLAY. NEC.		4.14	0.75	1	ENV	0.75-1.00			
2	Stiff grey slightly gravelly CLAY with occasional cobbles. Local HC spots in clay.		3.39	1.50	2	ENV	1.50-2.00			
3	LIMESTONE. NEC.		1.94	2.95	3	ENV	2.50-2.95			
3	End of Borehole at 3.20 m		1.69	3.20						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
REMARKS End hole at 3.20m - water required to drill through rock, high risk of contamination spread					Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample				

IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET C11 Sheet 1 of 1	
CO-ORDINATES 156,896.62 E 156,555.51 N	RIG TYPE Sonic	DATE DRILLED 23/11/2009	DATE LOGGED 23/11/2009
GROUND LEVEL (m AOD) 4.36	BOREHOLE DIAMETER (mm) 140	BORED BY Boart Longyear	
CLIENT Bord Gais	BOREHOLE DEPTH (m) 3.00	PROCESSED BY G. Thornton	
ENGINEER Mouchel	CASING DEPTH (m) 3.00		

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	TARMAC		4.26	0.10						
	MADE GROUND: Stiff dark grey gravel. NEC.		4.16	0.20	1	ENV	0.25-0.70			
	MADE GROUND: Very stiff light brown gravelly clay. NEC.		4.11	0.25						
	MADE GROUND: Very stiff dark brown gravelly clay. Possible HC.		3.66	0.70						
1	MADE GROUND: Hard black gravel (possible tarmac). NEC		3.36	1.00						
	Stiff brown gravelly CLAY. NEC.		3.16	1.20						
2	Stiff black and light brown sandy CLAY with frequent cobbles. HC impact in black.		2.86	1.50	2	ENV	1.50-2.00			
	Soft grey sandy slightly gravelly CLAY. HC odour.		1.86	2.50	3	ENV	2.00-2.50			
	LIMESTONE. NEC.		1.36	3.00						
3	End of Borehole at 3.00 m		1.36	3.00						

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					0.25	NR	NS	NR	NR	Seepage
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	
23-11-09	2.50	1.00	2.50	50mm SP						
REMARKS Hand dug pit 0.00-1.20m. Water seeping in at 0.25m, water has visible sheen and hc odour. End hole at 3.00m - water required to drill through rock, high risk of contamination spread					Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample					

IGSL BH LOG 14463.GPJ IGSL_GDT 23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET C12 Sheet 1 of 1	
CO-ORDINATES 156,893.36 E 156,548.99 N	RIG TYPE Sonic	DATE DRILLED 18/11/2009	DATE LOGGED 18/11/2009
GROUND LEVEL (m AOD) 4.53	BOREHOLE DIAMETER (mm) 140	BORED BY Boart Longyear	
CLIENT Bord Gais	BOREHOLE DEPTH (m) 2.50	PROCESSED BY G. Thornton	
ENGINEER Mouchel	CASING DEPTH (m) 2.50		

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	TARMAC									
	CONCRETE		4.23	0.30						
	MADE GROUND: Red soft gravelly clay on one side of pit and stone blocks on other side.		3.98	0.55	1	ENV	0.55-1.00			
	MADE GROUND: Wet cobbles. HC sheen on water		3.33	1.20						
	Very stiff grey gravelly CLAY. HC odour.		3.03	1.50	2	ENV	1.50-2.00			
	Soft black very gravelly CLAY. HC - oil tar		2.53	2.00	3	ENV	2.00-2.30			
	LIMESTONE with local clay bands. Possible HC impact in clay.		2.23	2.30						
	End of Borehole at 2.50 m		2.03	2.50						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
				1.00	NR	NS	NR	NR	Rapid
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
REMARKS Hand dug pit 0.0-1.2m.				Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample					

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET D01 Sheet 1 of 1	
CO-ORDINATES 156,967.83 E 156,603.03 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.06		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 7.50	
ENGINEER Mouchel		CASING DEPTH (m) 7.50	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft, brown/dark brown, sandy gravelly silt/clay with occasional cobbles & root hairs. NEC.		6.56	0.50	1	ENV	0.00-0.50			
1	MADE GROUND: Soft, brown/grey mottled, sandy gravelly clay with occasional cobbles, red brick & root hairs. NEC.			1.00-1.50	2	ENV				
2				2.50-3.00	3	ENV				
3	MADE GROUND: Loose, brown clayey silty gravelly sand with occasional cobbles. NEC.			3.00	4	ENV				
4	MADE GROUND: Soft brown/black mottled, very sandy gravelly silt. HC			4.00	5	ENV				
5	MADE GROUND: Loose black very clayey sandy cobbly gravel. Strong HC.			4.50	6	ENV				
6	LIMESTONE. HC.		1.56	5.50						
7	End of Borehole at 7.50 m		-0.44	7.50						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
23-11-09	5.50	1.00	5.50	50mm SP					

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



SONIC CORE RECORD

REPORT NUMBER

16033

CONTRACT Limerick Gasworks				DRILLHOLE NO D2	
CO-ORDINATES 156,962.34 E 156,599.57 N		RIG TYPE		SHEET Sheet 1 of 1	
GROUND LEVEL (mOD) 5.44		HOLE DIAMETER (mm)		DATE DRILLED 26/10/2011	
CLIENT Bord Gais Networks		FLUSH MEDIUM		DATE LOGGED 26/10/2011	
ENGINEER Mouchel		CASING DIAMETER (mm)		SAMPLED BY Roberts	
				LOGGED BY G.Doyle	

Depth (m)	Geotechnical Description	Legend	Depth (m)	Elevation	Sample Run (m)	Recovery (%)	Sample Type	Depth (m)	Standpipe Details
0.0	MADE GROUND (concrete)	XXXXXX	0.05	5.39					
	MADE GROUND (soft dark brown slightly gravelly CLAY with red brick)(Slight hydrocarbon Odour)				0.50-1.00		ENV	0.50-1.00	
1.0	MADE GROUND (soft light brown gravelly CLAY with some red brick)(Slight hydrocarbon odour)		1.00	4.44			ENV	1.00-1.50	
	Loose black very clayey GRAVEL with occasional angular cobbles. (Visable sheen and strong hydrocarbon odour)	(Gravel symbol)	1.50	3.94	1.00-1.50				
2.0	LIMESTONE rock (300mm core lenghts with sheen. Most likely contamination from 1.5 to 2.4)	(Limestone symbol)	2.40	3.04	2.00-2.50			ENV	2.00-2.50
3.0	Final Depth 3.50m		3.50	1.94					
4.0									
5.0									

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General Remarks

INSTALLATION DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type

IGSL SONIC WITH SAMPLES 16033.GPJ IGSL.GDT 11/11/11



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET D03 Sheet 1 of 1	
CO-ORDINATES 156,955.84 E 156,593.85 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 6.32		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 6.00	
ENGINEER Mouchel		CASING DEPTH (m) 6.00	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete									
0.40	MADE GROUND: Soft to firm orange/brown/black mottled, very clayey sandy gravel with local red and yellow brick. Local slight HC.		5.92	0.40	1	ENV	0.50-1.00			
1.50				2	ENV	1.50-2.00				
2.00	MADE GROUND: Soft brown black very gravelly cobbly clay. Heavy HC.		4.32	2.00						
2.50	MADE GROUND: Brown/black, very clayey, angular cobbly gravel (limestone). HC impact increasing with depth.		3.82	2.50	3	ENV	2.50-3.00			
3.70				2.62	3.70	4	ENV	3.70-4.00		
4.00	MADE GROUND: Grey black heavily clay smeared, angular limestone gravel and cobbles. HC.		2.32	4.00						
4.00	MADE GROUND: limestone. Slight HC. Possible boulder.									
5.00	MADE GROUND: Angular gravel and few cobbles of varying lithologies and some fill material. NEC.		1.32	5.00						
5.40				0.92	5.40					
5.40	LIMESTONE. NEC.									
6.00	End of Borehole at 6.00 m		0.32	6.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
				GROUNDWATER DETAILS					
INSTALLATION DETAILS				Date	Hole Depth	Casing Depth	Depth to Water	Comments	
Date	Tip Depth	RZ Top	RZ Base	Type					
REMARKS					Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample				

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. D04
		SHEET Sheet 1 of 1
CO-ORDINATES 156,951.05 E 156,589.55 N	RIG TYPE Sonic	DATE DRILLED 12/11/2009
GROUND LEVEL (m AOD) 6.37	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 13/11/2009
CLIENT Bord Gais	BOREHOLE DEPTH (m) 4.00	BORED BY Boart Longyear
ENGINEER Mouchel	CASING DEPTH (m) 4.00	PROCESSED BY D. O'Shea

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Medium dense red/brown clayey, gravelly sand. NEC.									
1					1	ENV	1.00-1.50			
2	LIMESTONE. NEC. Gravel layer 3.00-3.50m.		4.87	1.50						
3										
4	End of Borehole at 4.00 m			4.00						
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date				Date	Hole Depth	Casing Depth	Depth to Water	Comments	
Date	Tip Depth	RZ Top	RZ Base	Type					

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. D05	
CO-ORDINATES 156,940.44 E 156,581.70 N		SHEET Sheet 1 of 1	
GROUND LEVEL (m AOD) 6.80		DATE DRILLED 09/11/2009	
CLIENT Bord Gais		DATE LOGGED 11/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY G. Thornton	
BOREHOLE DIAMETER (mm) 140			
BOREHOLE DEPTH (m) 5.00			
CASING DEPTH (m) 5.00			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete with rebar MADE GROUND: Loose slightly clayey gravel. HC odour and sheen.		6.65	0.15	1	ENV	0.15-3.00			
3	LIMESTONE. NEC.		3.80	3.00						
5	End of Borehole at 5.00 m		1.80	5.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
09-11-09	5.00	1.00	3.00	50mm SP					

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. D06
CO-ORDINATES 156,930.11 E 156,573.47 N		SHEET Sheet 1 of 1
GROUND LEVEL (m AOD) 5.75	RIG TYPE Sonic	DATE DRILLED 06/11/2009
CLIENT Bord Gais	BOREHOLE DIAMETER (mm) 112	DATE LOGGED 06/11/2009
ENGINEER Mouchel	BOREHOLE DEPTH (m) 4.50	BORED BY Boart Longyear
	CASING DEPTH (m) 4.50	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete		5.50	0.25						
0	MADE GROUND: No recovery. Loose material		5.50	0.25						
2.50	LIMESTONE. HC sheen to 4.00m.		3.25	2.50						
4.50	End of Borehole at 4.50 m		1.25	4.50						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS No recovery - no samples.

Sample Legend
 D - Small Disturbed (tub)
 B - Bulk Disturbed
 LB - Large Bulk Disturbed
 Env - Environmental Sample (Jar + Vial + Tub)
 U - Undisturbed 100mm Diameter Sample
 P - Undisturbed Piston Sample

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. D07	
CO-ORDINATES 156,924.88 E 156,570.05 N		SHEET Sheet 1 of 1	
GROUND LEVEL (m AOD) 6.30		DATE DRILLED 06/11/2009	
CLIENT Bord Gais		DATE LOGGED 06/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY G. Thornton	
BOREHOLE DIAMETER (mm) 112			
BOREHOLE DEPTH (m) 7.50			
CASING DEPTH (m) 7.50			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete									
1	MADE GROUND: Loose, light brown clayey gravelly sand. NEC.		5.50	0.80	1	ENV	1.00-1.50			
2	MADE GROUND: Firm black slightly sandy gravelly clay. HC odour.		4.60	1.70	2	ENV	1.70-2.00			
			4.30	2.00	3	ENV	2.00-2.30			
3	MADE GROUND: Loose grey slightly clayey gravelly sand. NEC. (possible pulverised by sonic drilling).		4.00	2.30	4	ENV	2.30-2.70			
			3.60	2.70						
3	MADE GROUND: Firm grey sandy gravelly clay. HC odour.									
3	MADE GROUND: Limestone boulder									
4	MADE GROUND: Stiff black sandy gravelly clay. HC odour (tarry).		2.50	3.80	5	ENV	3.50-4.00			
			2.30	4.00	6	ENV	4.00-4.50			
5	MADE GROUND: Soft, multi-layered dark brown, yellow, grey, sandy clay. HC odour (possible ash). LIMESTONE. NEC.		1.80	4.50						
8	Loose grey/black GRAVEL. HC. Soft grey CLAY. NEC.		-1.10	7.40	7	ENV	7.40-7.50			
			-1.11	7.41						
8	End of Borehole at 7.50 m		-1.20	7.50						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
REMARKS					Sample Legend				
					D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample				

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET D08 Sheet 1 of 1	
CO-ORDINATES 156,917.11 E 156,563.60 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 6.22		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 3.00	
ENGINEER Mouchel		CASING DEPTH (m) 3.00	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft brown to black (with depth) sandy gravelly clay. HC - slight to heavy with depth.				1	ENV	0.00-0.30			
1	MADE GROUND: Soft brown, slightly gravelly clay. HC - heavy at top and bottom of run.		5.12	1.10	2	ENV	0.60-1.10			
	MADE GROUND: Loose black silty cobbly gravel. Heavy HC.		4.72	1.50	3	ENV	1.10-1.40			
2	LIMESTONE. NEC.		4.22	2.00	4	ENV	1.50-2.00			
3	End of Borehole at 3.00 m		3.22	3.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Stopped drilling 1m into rock as driller bringing up contaminants.	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. D09
		SHEET Sheet 1 of 1
CO-ORDINATES 156,910.80 E 156,558.82 N	RIG TYPE Sonic	DATE DRILLED 17/11/2009
GROUND LEVEL (m AOD) 6.15	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 17/11/2009
CLIENT Bord Gais	BOREHOLE DEPTH (m) 6.50	BORED BY Boart Longyear
ENGINEER Mouchel	CASING DEPTH (m) 6.50	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Stiff dark brown very gravelly clay. NEC.				1	ENV	0.00-1.50			
1										
	MADE GROUND: Loose black clayey gravel (possible cinders). HC odour.		4.65	1.50	2	ENV	1.50-2.00			
2	MADE GROUND: Soft dark grey/black sandy clay. HC odour.		4.15	2.00	3	ENV	2.00-2.50			
3	MADE GROUND: Loose dark grey clayey gravelly sand. HC - concentrated sheen on water - possible free phase.		3.45	2.70	4	ENV	3.00-3.50			
4										
	MADE GROUND: Very soft grey/black sandy clay (black - tar). NEC.		1.65	4.50	5	ENV	4.50-5.00			
5	MADE GROUND: Soft grey clay. NEC.		1.15	5.00						
	MADE GROUND: Loose grey/red clayey gravel with red brick. NEC.		0.65	5.50	6	ENV	5.50-6.00			
6	LIMESTONE. NEC except slight spots of HC (6.00-6.10m)		0.15	6.00						
	End of Borehole at 6.50 m		-0.36	6.50						
7										
8										
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date				Date	Hole Depth	Casing Depth	Depth to Water	Comments	
Date	Tip Depth	RZ Top	RZ Base	Type					
REMARKS						Sample Legend			
						D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample			

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. D10
		SHEET Sheet 1 of 1
CO-ORDINATES 156,903.63 E 156,552.36 N	RIG TYPE Sonic	DATE DRILLED 17/11/2009
GROUND LEVEL (m AOD) 6.09	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 17/11/2009
CLIENT Bord Gais	BOREHOLE DEPTH (m) 2.50	BORED BY Boart Longyear
ENGINEER Mouchel	CASING DEPTH (m) 2.50	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Stiff black very gravelly CLAY. NEC.		5.99	0.10	1	ENV	0.10-0.50			
	Loose wet dark brown clayey GRAVEL. NEC.									
	Very stiff light brown CLAY with many cobbles. NEC.		5.59	0.50						
1	Stiff light brown, slightly sandy CLAY. NEC.		5.09	1.00	2	ENV	1.50-2.00			
	Soft black slightly gravelly CLAY. Possible HC impact.		4.59	1.50						
2	LIMESTONE with some black clay - possible HC impact.		4.09	2.00						
	End of Borehole at 2.50 m		3.59	2.50						
3										
4										
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS End hole at 2.50m - water required to drill through rock, high risk of contamination spread	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET D11 Sheet 1 of 1	
CO-ORDINATES 156,900.28 E 156,544.81 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 5.40		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 2.70	
ENGINEER Mouchel		CASING DEPTH (m) 2.70	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Hardcore	XXXXXX	5.30	0.10	1	ENV	0.40-0.70			
	Stiff light brown gravelly CLAY. NEC.	o-----o	5.20	0.20						
	Stiff dark grey/brown gravelly CLAY. NEC.	o-----o	5.00	0.40						
	Stiff grey gravelly CLAY. Possible HC.	o-----o	4.70	0.70						
1	Firm brown CLAY. NEC.	o-----o	4.20	1.20	2	ENV	1.00-1.50			
	Soft grey slightly gravelly CLAY. Slight HC impact.	o-----o								
2		o-----o								3
	LIMESTONE with local soft clack clay. NEC except for HC impact in clay bands.	o-----o	3.00	2.40						
3	End of Borehole at 2.70 m		2.70	2.70						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
REMARKS Hand dug pit 0.00-1.20m. Water seeping approx. 0.40-0.70m, water has visible sheen and hc odour. End hole at 2.60m - water required to drill through rock, high risk of contamination spread					Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample				

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. D12
CO-ORDINATES 156,895.10 E 156,537.68 N		SHEET Sheet 1 of 1
GROUND LEVEL (m AOD) 5.03	RIG TYPE Sonic	DATE DRILLED 18/11/2009
CLIENT Bord Gais	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 18/11/2009
ENGINEER Mouchel	BOREHOLE DEPTH (m) 4.00	BORED BY Boart Longyear
	CASING DEPTH (m) 4.00	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Soft dark grey gravelly CLAY with roots. NEC.				1	ENV	0.00-0.50			
	Stiff light brown gravelly CLAY. NEC.		4.53	0.50						
1	Firm brown slightly gravelly CLAY. NEC.		3.83	1.20	2	ENV	1.20-1.50			
	LIMESTONE. NEC.		3.53	1.50						
2										
3	Soft brown/grey CLAY band in limestone. NEC.		2.23	2.80	3	ENV	2.80-3.00			
	LIMESTONE. NEC.		2.03	3.00						
4	End of Borehole at 4.00 m		1.03	4.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS						
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments	
				0.40	NR	NS	NR	NR	Rapid	
INSTALLATION DETAILS				GROUNDWATER DETAILS						
Date				Hole Depth	Casing Depth	Depth to Water	Comments			
Date	Tip Depth	RZ Top	RZ Base	Type						

REMARKS Hand dug pit 0.0-1.2m.

Sample Legend
 D - Small Disturbed (tub)
 B - Bulk Disturbed
 LB - Large Bulk Disturbed
 Env - Environmental Sample (Jar + Vial + Tub)
 U - Undisturbed 100mm Diameter Sample
 P - Undisturbed Piston Sample

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET E01 Sheet 1 of 1	
CO-ORDINATES 156,979.37 E 156,598.12 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.42		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 8.00	
ENGINEER Mouchel		CASING DEPTH (m) 8.00	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Concrete. NEC.		7.32	0.10						
	MADE GROUND: Firm, red/white/yellow/black, sandy gravelly clay/silt with red brick. HC 0.40-0.60m, slight HC throughout.				1	ENV	0.40-0.60			
1					2	ENV	0.90-1.10			
2	MADE GROUND: Soft/firm, light brown/dark brown, sandy slightly gravelly clay. NEC.			5.82	1.60					
					3	ENV	2.30-2.80			
3	MADE GROUND: Soft, dark grey very sandy gravelly silt with occasional cobbles. Slight HC			4.42	3.00					
4				4	ENV	3.80-4.30				
5				5	ENV	5.20-5.50				
6	MADE GROUND: Loose, black, silty very gravelly cobbly sand. HC		1.72	5.70						
	LIMESTONE. NEC.		1.42	6.00						
7					6	ENV	5.70-6.00			
8	End of Borehole at 8.00 m		-0.58	8.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. E02	
CO-ORDINATES 156,970.59 E 156,590.68 N		SHEET Sheet 1 of 1	
GROUND LEVEL (m AOD) 7.38		DATE DRILLED 20/11/2009	
CLIENT Bord Gais		DATE LOGGED 20/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY A. Mahony	
BOREHOLE DIAMETER (mm) 140			
BOREHOLE DEPTH (m) 8.00			
CASING DEPTH (m) 8.00			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft, dark brown/black, sandy gravelly silt with occasional cobbles & red brick. NEC 0.00-2.70m, HC 2.70-3.00m.				1	ENV	0.00-0.50			
1					2	ENV	1.00-1.50			
2					3	ENV	2.00-2.50			
3	MADE GROUND: Soft brown sandy silt. NEC.		4.38	3.00	4	ENV	3.50-4.00			
4					5	ENV	5.00-5.50			
5	MADE GROUND: Loose, dark brown/black, silty very sandy gravel. HC increasing with depth.		2.58	4.80						
6	MADE GROUND: Loose, black, silty sandy gravelly cobbles. HC.		1.68	5.70						
6	LIMESTONE. NEC.		1.38	6.00						
7										
8	End of Borehole at 8.00 m		-0.62	8.00						
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
REMARKS							Sample Legend		
							D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub)		
							U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample		

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET E03 Sheet 1 of 1	
CO-ORDINATES 156,963.03 E 156,584.64 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 6.87		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 7.50	
ENGINEER Mouchel		CASING DEPTH (m) 7.50	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Firm dark brown sandy gravelly clay. NEC.		6.77	0.10	1	ENV	0.70-1.00			
	MADE GROUND: Light brown clayey sand with some concrete. NEC.		6.57	0.30						
	MADE GROUND: Firm brown slightly gravelly clay with wood. NEC.		6.37	0.50	2	ENV	1.00-1.50			
	MADE GROUND: Firm brown slightly gravelly clay. NEC.		6.17	0.70						
1	MADE GROUND: Stiff dark grey/brown sandy gravelly clay with some yellow brick. Slight HC 1.30-1.50m.		5.37	1.50	3	ENV	2.00-2.70			
	MADE GROUND: Soft black gravelly clay. HC.		4.17	2.70						
2	MADE GROUND: Loose red to white/grey to grey clayey sandy gravel (possibly layers of ash). Possible HC.		3.87	3.00	4	ENV	3.00-3.50			
	MADE GROUND: Soft grey slightly gravelly clay. HC.		3.72	3.75						
3	MADE GROUND: Medium dense yellow/grey/black very clayey GRAVEL with occasional cobbles. HC in black.		3.02	3.75	5	ENV	4.00-4.50			
4				6	ENV	5.30-5.80				
5	LIMESTONE (pulverised). HC odour.		1.07	5.80						
	LIMESTONE. NEC to 7.10m, HC sheen on rock 7.10-7.50m.		0.87	6.00						
6										
7	End of Borehole at 7.50 m		-0.63	7.50						
8										
9										

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	
REMARKS							Sample Legend			
							D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub)			
							U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample			

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CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET E04 Sheet 1 of 1	
CO-ORDINATES 156,956.11 E 156,581.12 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 6.28		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 3.80	
ENGINEER Mouchel		CASING DEPTH (m) 3.80	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	OIL with some fill material				1	ENV	0.00-0.50			
1.60 - 1.80	MADE GROUND: Grey, slightly brown, sandy gravelly clay with yellow brick and root hairs. HC. LIMESTONE. Slight HC at top of rock.		4.68 4.48	1.60 1.80	2	ENV	1.60-1.80			
3.80	End of Borehole at 3.80 m		2.48	3.80						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET E05 Sheet 1 of 1	
CO-ORDINATES 156,948.07 E 156,573.75 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 6.12		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 5.50	
ENGINEER Mouchel		CASING DEPTH (m) 5.50	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Brown sandy gravelly clay. NEC.		6.02	0.10	1	ENV	0.50-1.00			
	MADE GROUND: Medium dense clayey sandy gravel. NEC.		5.87	0.25						
	MADE GROUND: Firm brown sandy gravelly clay. NEC.		5.62	0.50						
1	MADE GROUND: Medium dense clayey sandy gravel. NEC.		5.02	1.10	2	ENV	1.10-1.50			
	MADE GROUND: Stiff brown sandy gravelly clay. HC odour.		4.32	1.80	3	ENV	2.00-2.50			
2	MADE GROUND: Dense black very clayey gravelly cobbles. HC in clay.									
3	LIMESTONE. NEC.		3.12	3.00						
4										
5										
6	End of Borehole at 5.50 m			0.62	5.50					

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET E06 Sheet 1 of 1
CO-ORDINATES 156,940.48 E 156,568.32 N	RIG TYPE Sonic	DATE DRILLED 10/11/2009
GROUND LEVEL (m AOD) 6.33	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 11/11/2009
CLIENT Bord Gais	BOREHOLE DEPTH (m) 7.50	BORED BY Boart Longyear
ENGINEER Mouchel	CASING DEPTH (m) 7.50	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Stiff brown gravelly clay. HC odour and visible at 1.00m. (0.50m recovered)				1	ENV	0.00-0.50			
1										
2	MADE GROUND: Soft black gravelly clay with occasional cobbles. Free phase oil.		4.83	1.50	2	ENV	1.50-2.00			
3					3	ENV	2.50-3.00			
4	MADE GROUND: Stiff mottled brown/grey gravelly clay. HC impact in grey mottling.		3.13	3.20	4	ENV	3.00-3.50			
4	MADE GROUND: Very stiff grey/cream clay with occasional cobbles. NEC.		2.83	3.50	5	ENV	4.00-4.50			
5	LIMESTONE. NEC.		1.83	4.50						
7	LIMESTONE with very thin band of clay. NEC.		-0.67	7.00						
8	End of Borehole at 7.50 m		-1.17	7.50						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET E07 Sheet 1 of 1	
CO-ORDINATES 156,932.94 E 156,562.16 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 5.92		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 9.00	
ENGINEER Mouchel		CASING DEPTH (m) 9.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Stiff brown slightly sandy, slightly gravelly clay. NEC.	<div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); opacity: 0.5; font-size: 10px;"> For inspection purposes only. Consent of copyright owner required for any other use. </div>	5.72	0.20						
1	MADE GROUND: Medium dense, slightly clayey gravel. NEC.				1	ENV	0.50-1.00			
2					2	ENV	1.50-2.00			
3					3	ENV	2.50-3.00			
4				4	ENV	3.50-4.00				
5	MADE GROUND: Stiff brown/grey sandy, gravelly clay with occasional cobbles. Strong HC odour.		1.12	4.80	5	ENV	4.80-5.00			
6				6	ENV	5.50-6.00				
6	LIMESTONE with soft grey clay band (8.90m-9.00m NEC). Local HC sheen on rock.	<div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); opacity: 0.5; font-size: 10px;"> For inspection purposes only. Consent of copyright owner required for any other use. </div>	-0.08	6.00						
7										
8										
9	End of Borehole at 9.00 m		-3.08	9.00	7	ENV	8.90-9.00			

HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET E08 Sheet 1 of 1	
CO-ORDINATES 156,925.23 E 156,556.66 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 5.84		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 7.00	
ENGINEER Mouchel		CASING DEPTH (m) 7.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Firm dark brown, very gravelly clay. NEC.		5.74	0.10	1	ENV	0.40-0.80			
	MADE GROUND: Loose light brown clayey gravel. NEC.		5.44	0.40						
1	MADE GROUND: Loose grey clayey gravelly sand (possible pulverised cobbles). NEC.		5.04	0.80						
	MADE GROUND: Stiff light brown, slightly gravelly clay. NEC.		4.34	1.50	2	ENV	1.50-2.00			
2	MADE GROUND: Very soft light brown clay. NEC within clay. Slight HC sheen on outside of clay.									
3	MADE GROUND: Very soft light brown clay. NEC 3.00-5.00m. HC odour 5.00-6.00m.		2.84	3.00	4	ENV	3.00-3.50			
4										
					6	ENV	5.50-6.00			
5										
6	LIMESTONE. HC - black tar 6.00-6.20m, hc sheen 6.00-6.50m. NEC 6.50-7.00m		-0.16	6.00						
7	End of Borehole at 7.00 m		-1.16	7.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
18-11-09	6.00	1.00	6.00	50mm SP					

REMARKS End hole at 7.00m - water required to drill through rock, high risk of contamination spread, HC coming up with water.	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET E09 Sheet 1 of 1	
CO-ORDINATES 156,917.51 E 156,550.74 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 5.42		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 6.00	
ENGINEER Mouchel		CASING DEPTH (m) 6.00	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft, alternating from dark brown/red/brown/pale brown, sandy, gravelly cobbly silt/clay with red brick. NEC.		4.42	1.00	1	ENV	0.80-0.90			
1	MADE GROUND: Soft, brown, locally mottled black, very sandy, gravelly silt/clay with red brick. NEC.				2	ENV	1.00-1.50			
2	MADE GROUND: Soft, black, silty clayey, very sandy gravel with red brick. Heavy HC with free phase oil.				3	ENV	2.90-3.10			
3				5.00	4	ENV	4.70-5.00			
4					5	ENV	5.00-5.20			
5					6	ENV	5.30-5.50			
5	Soft dark grey to black silty CLAY. Heavy HC with free phase oil.		0.42	5.00						
6	Firm blackened, grey CLAY (high plasticity). Heavy HC covering core (black) (not fully penetrating core).		0.12	5.30						
6	LIMESTONE (pulverised). Very clayey 5.50-5.70m. NEC.		-0.08	5.50						
6	End of Borehole at 6.00 m		-0.58	6.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	<p>Sample Legend</p> <p>D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub)</p> <p style="font-size: 0.8em;">U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample</p>
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CONTRACT Limerick Gasworks		BOREHOLE NO. E10	
		SHEET Sheet 1 of 1	
CO-ORDINATES 156,909.57 E 156,544.34 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 5.58		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 3.00	
ENGINEER Mouchel		CASING DEPTH (m) 3.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Tarmac		5.53	0.05						
	MADE GROUND consisting of very stiff, grey gravelly clay. NEC.		5.28	0.30	1	ENV	0.30-0.65			
	MADE GROUND consisting of brown gravelly clay with fragments of red and yellow brick and wood. NEC.		4.93	0.65						
	MADE GROUND consisting of brown gravelly clay with fragments of red and yellow brick and wood. NEC.		4.73	0.85						
1	Very stiff, black gravelly CLAY. NEC.		4.48	1.10	2	ENV	1.10-1.50			
	Very stiff, light brown CLAY. NEC.		4.08	1.50						
2	Stiff black gravelly CLAY with cobbles. Degraded hydrocarbon in black.									
	LIMESTONE. NEC.									
3	End of Borehole at 3.00 m		2.58	3.00						

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS						
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments	
										No water strike	
INSTALLATION DETAILS					GROUNDWATER DETAILS						
INSTALLATION DETAILS					Date	Hole Depth	Casing Depth	Depth to Water	Comments		
Date	Tip Depth	RZ Top	RZ Base	Type							
REMARKS 1.25 hrs standing - Health and Safety due to very contaminated soils.					Sample Legend						
					D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub)			U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample			

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CONTRACT Limerick Gasworks		BOREHOLE NO. E11
		SHEET Sheet 1 of 1
CO-ORDINATES 156,902.93 E 156,538.21 N	RIG TYPE Sonic	DATE DRILLED 23/11/2009
GROUND LEVEL (m AOD) 5.49	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 23/11/2009
CLIENT Bord Gais	BOREHOLE DEPTH (m) 3.00	BORED BY Boart Longyear
ENGINEER Mouchel	CASING DEPTH (m) 3.00	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Dense dark grey clayey gravel. NEC.	[Cross-hatch pattern]	5.24	0.25	1	ENV	0.35-0.50			
	MADE GROUND: Medium dense light brown clayey gravel with red brick. NEC.		5.14	0.35						
	MADE GROUND: Medium dense dark brown clayey gravel (possible cinders). Possible contamination.		4.99	0.50						
1	MADE GROUND: Stiff light brown gravelly clay with red brick. NEC.	[Horizontal lines]	4.29	1.20	2	ENV	1.50-2.00			
	Soft brown slightly gravelly CLAY. HC impact in gravel.									
2	Soft grey gravelly CLAY. HC (especially at 2.50m)	[Horizontal lines]	3.49	2.00	3	ENV	2.00-2.50			
	LIMESTONE with local very thin clay bands. HC - brown staining & impacted in clay.									
3	End of Borehole at 3.00 m		2.99	2.50						
			2.49	3.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
REMARKS End hole at 3.00m - water required to drill through rock, high risk of contamination spread					Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample				

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CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET E12 Sheet 1 of 1	
CO-ORDINATES 156,896.73 E 156,535.05 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 4.83		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 5.00	
ENGINEER Mouchel		CASING DEPTH (m) 5.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Soft dark brown slightly sandy CLAY. NEC.									
	Stiff red brown slightly gravelly CLAY with occasional cobbles. NEC		4.53	0.30	1	ENV	0.30-0.70			
	Very stiff light brown sandy slightly gravelly CLAY. NEC.		3.33	1.50	2	ENV	1.50-2.00			
					3	ENV	2.00-2.40			
	LIMESTONE. NEC.		2.43	2.40						
5	End of Borehole at 5.00 m		-0.17	5.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Hand dug pit 0.00-1.20m.

Sample Legend
 D - Small Disturbed (tub)
 B - Bulk Disturbed
 LB - Large Bulk Disturbed
 Env - Environmental Sample (Jar + Vial + Tub)
 U - Undisturbed 100mm Diameter Sample
 P - Undisturbed Piston Sample

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CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET F01 Sheet 1 of 1	
CO-ORDINATES 156,983.71 E 156,591.13 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.47		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 9.00	
ENGINEER Mouchel		CASING DEPTH (m) 9.00	
		BORED BY Boart Longyear	
		PROCESSED BY D. O'Shea	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Loose light brown, clayey slightly sand. NEC.		6.27		1	ENV	0.50-1.00			
1	MADE GROUND: Loose black/orange/brown, clayey gravelly sand. Slight HC impact.			1.20	2	ENV	1.20-1.50			
2	MADE GROUND: Firm (soft at 3.00-4.00m), brown/grey, sandy gravelly clay. Possible HC.			1.50	3	ENV	2.00-2.50			
4	MADE GROUND: Firm grey slightly sandy clay. Possible HC.			3.47	4	ENV	4.50-5.00			
6	MADE GROUND: Soft grey slightly sandy slightly gravelly clay. Possible HC.			1.47	5	ENV	6.00-6.50			
7	MADE GROUND: Soft grey sandy gravelly clay with occasional cobbles. NEC.			0.67	6	ENV	6.80-7.30			
8	Loose, grey clayey cobbly gravel - probable weathered rock. NEC. LIMESTONE. NEC.	0.17 -0.03	7.30 7.50							
9	End of Borehole at 9.00 m		-1.53	9.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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CONTRACT Limerick Gasworks		BOREHOLE NO. F02	
		SHEET Sheet 1 of 1	
CO-ORDINATES 156,973.46 E 156,583.93 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.51		BOREHOLE DIAMETER (mm) 112	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 8.00	
ENGINEER Mouchel		CASING DEPTH (m) 8.00	
		BORED BY Boart Longyear	
		PROCESSED BY D. O'Shea	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft/firm, brown/grey/black, sandy gravelly clay. Possible HC.				1	ENV	0.50-1.00			
1										
2	MADE GROUND: Loose black/orange/brown, clayey gravelly sand. Possible HC.		5.81	1.70	2	ENV	1.70-2.00			
	MADE GROUND: Soft/firm, brown/black, sandy gravelly clay. Possible HC.		5.51	2.00						
3	No recovery - observed by driller as made ground		4.51	3.00						
4										
5	MADE GROUND: Loose, black, clayey sandy gravelly cobbles. Strong HC.		3.01	4.50						
	MADE GROUND: Loose, black, clayey gravelly sand. Possible HC.		2.51	5.00	3	ENV	5.00-5.50			
6										
7	Loose clayey sandy gravelly cobbles - probable weathered rock. Strong HC - free phase oil.		1.01	6.50	4	ENV	7.00-7.50			
	LIMESTONE. NEC.		0.01	7.50						
8	End of Borehole at 8.00 m		-0.49	8.00						
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET F03 Sheet 1 of 2	
CO-ORDINATES 156,967.69 E 156,578.36 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.85		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 10.00	
ENGINEER Mouchel		CASING DEPTH (m) 10.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Standpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft black/brown gravelly clay. NEC.				1	ENV	0.50-1.00			
1	MADE GROUND: Loose light brown clayey gravelly sand. NEC.		6.85	1.00						
	MADE GROUND: Firm brown slightly sandy slightly gravelly clay. NEC.		6.35	1.50	2	ENV	1.50-2.00			
2	MADE GROUND: Boulder		5.35	2.50						
3	MADE GROUND: Loose black very clayey gravelly sand with red brick. HC odour.		4.95	2.90	3	ENV	2.90-3.00			
	MADE GROUND: Firm dark grey clay with occasional cobbles. NEC.		4.75	3.10	4	ENV	3.00-3.10			
4					5	ENV	3.50-4.00			
5	MADE GROUND: Very soft dark grey clay. HC increasing with depth.		3.35	4.50	6	ENV	4.50-5.00			
6					7	ENV	5.50-6.00			
7	MADE GROUND: Very soft black very gravelly clay with wood. Free phase oil.		1.35	6.50	8	ENV	6.50-7.00			
				9	ENV	7.00-7.50				
8	LIMESTONE. Local sheen of HC 9.80m within band of clayey gravel otherwise NEC.		0.35	7.50						
9										

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HARD STRATA BORING CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
				GROUNDWATER DETAILS					
INSTALLATION DETAILS				Date	Hole Depth	Casing Depth	Depth to Water	Comments	
Date	Tip Depth	RZ Top	RZ Base	Type					
REMARKS						Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample			

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. F03	
		SHEET Sheet 2 of 2	
CO-ORDINATES 156,967.69 E 156,578.36 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.85		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 10.00	
ENGINEER Mouchel		CASING DEPTH (m) 10.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10			-2.15	10.00						
11										
12										
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date				Date	Hole Depth	Casing Depth	Depth to Water	Comments	
Date	Tip Depth	RZ Top	RZ Base	Type					

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET F04 Sheet 1 of 1	
CO-ORDINATES 156,959.59 E 156,573.67 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 6.50		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 6.00	
ENGINEER Mouchel		CASING DEPTH (m) 6.00	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft brown, slightly grey very sandy gravelly silt. NEC.				1	ENV	0.20-0.70			
1	MADE GROUND: Soft dark grey/grey, slightly clayey, very sandy, slightly gravelly silt with occasional cobbles. Possible slight HC.		5.50	1.00	2	ENV	1.00-1.50			
	MADE GROUND: Soft black, very silty, very sandy gravel with occasional cobbles. Heavy HC.		5.00	1.50	3	ENV	1.50-2.00			
2	MADE GROUND: Soft dark brown mottled, slightly clayey, sandy gravelly cobbly silt. HC.		4.50	2.00	4	ENV	2.50-3.00			
3	Grey black silty sandy CLAY with some gravel and cobbles. Heavy HC.		3.50	3.00	5	ENV	3.00-3.50			
4	LIMESTONE (pulverised due to sonic drilling without water). NEC.		2.80	3.70						
6	End of Borehole at 6.00 m		0.50	6.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
REMARKS							Sample Legend		
							D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample		

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REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. F05
CO-ORDINATES 156,952.13 E 156,567.49 N		SHEET Sheet 1 of 1
GROUND LEVEL (m AOD) 6.47	RIG TYPE Sonic	DATE DRILLED 12/11/2009
CLIENT Bord Gais	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 13/11/2009
ENGINEER Mouchel	BOREHOLE DEPTH (m) 4.00	BORED BY Boart Longyear
	CASING DEPTH (m) 4.00	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Stiff brown gravelly clay. NEC.				1	ENV	0.50-0.80			
1	MADE GROUND: Stiff brown gravelly clay with occasional cobbles. NEC. LIMESTONE. NEC.		5.67 5.47	0.80 1.00						
4	End of Borehole at 4.00 m		2.47	4.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. F06
CO-ORDINATES 156,944.81 E 156,562.05 N		SHEET Sheet 1 of 1
GROUND LEVEL (m AOD) 6.56	RIG TYPE Sonic	DATE DRILLED 12/11/2009
CLIENT Bord Gais	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 12/11/2009
ENGINEER Mouchel	BOREHOLE DEPTH (m) 4.50	BORED BY Boart Longyear
	CASING DEPTH (m) 4.50	PROCESSED BY A. Mahony

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft dark brown, very silty/clayey sandy gravel with occasional cobbles. Possible slight HC. MADE GROUND: Black carbonaceous gravel and peaty silt with occasional cream marl. HC. MADE GROUND: Loose dark brown silty sandy gravel. Slight HC. MADE GROUND: Loose black very silty/clayey sandy, fine to medium gravel with occasional cobbles with some wood. High HC impact. LIMESTONE. NEC.	[Cross-hatch pattern]	6.36	0.20	1	ENV	0.00-0.20			
			6.16	0.40	2	ENV	0.20-0.40			
				5.76	0.80	3	ENV	0.40-0.80		
				5.06	1.50	4	ENV	0.80-1.50		
2										
4										
5	End of Borehole at 4.50 m		2.06	4.50						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. F07
CO-ORDINATES 156,936.74 E 156,555.18 N		SHEET Sheet 1 of 1
GROUND LEVEL (m AOD) 7.32	RIG TYPE Sonic	DATE DRILLED 12/11/2009
CLIENT Bord Gais	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 13/11/2009
ENGINEER Mouchel	BOREHOLE DEPTH (m) 4.50	BORED BY Boart Longyear
	CASING DEPTH (m) 4.50	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Stiff brown very gravelly clay. HC impact visible from 0.50m-1.10m.				1	ENV	0.50-1.00			
1	MADE GROUND: Stiff grey gravelly clay. HC odour.		6.22	1.10	2	ENV	1.10-1.50			
2	LIMESTONE. Local HC sheen and local thin clay band.		5.82	1.50						
4.50	End of Borehole at 4.50 m		2.82	4.50						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET F08 Sheet 1 of 1	
CO-ORDINATES 156,932.78 E 156,544.58 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.98		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 2.50	
ENGINEER Mouchel		CASING DEPTH (m) 2.50	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft, dark brown/brown mottled, clayey gravelly cobbly silt with rootlets. Possible HC.				1	ENV	0.00-0.50			
1	MADE GROUND: Soft, dark brown/black, clayey slightly sandy very gravelly silt with red brick. Possible HC.		6.98	1.00	2	ENV	1.00-1.50			
	LIMESTONE. Slight HC on occasional surfaces.		6.48	1.50						
2	End of Borehole at 2.50 m		5.48	2.50						
3										
4										
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET F09 Sheet 1 of 1	
CO-ORDINATES 156,926.13 E 156,538.73 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 8.17		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 3.50	
ENGINEER Mouchel		CASING DEPTH (m) 3.50	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Loose black gravelly silt/sand. HC				1	ENV	0.00-0.50			
	MADE GROUND: Soft, dark brown peaty sandy gravelly silt with red brick & root hairs. Possible HC.		7.67	0.50	2	ENV	0.50-1.00			
1	MADE GROUND: Soft, black peaty sandy very gravelly silt with glass, wood & root hairs. Strong HC		7.17	1.00	3	ENV	1.00-1.50			
	LIMESTONE. HC decreasing with depth.		6.67	1.50						
2										
3										
4	End of Borehole at 3.50 m		4.67	3.50						
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET F11 Sheet 1 of 1	
CO-ORDINATES 156,908.22 E 156,530.52 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 6.22		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 5.00	
ENGINEER Mouchel		CASING DEPTH (m) 5.00	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft/firm, dark brown/black, silty sandy gravelly (locally very gravelly 0.20-0.30m) clay with occasional concrete cobbles. NEC.				1	ENV	0.00-0.50			
1					2	ENV	1.00-1.50			
2	MADE GROUND: Soft/firm, dark grey/black mottled, sandy gravelly silt/clay. HC increasing with depth.		3.92	2.30	3	ENV	2.50-3.00			
3										
3	LIMESTONE. NEC.		3.22	3.00						
4										
5	End of Borehole at 5.00 m		1.22	5.00						
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	
20-11-09	5.00	3.50	5.00	50mm SP						

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET F12 Sheet 1 of 1	
CO-ORDINATES 156,902.25 E 156,529.41 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 5.60		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 3.70	
ENGINEER Mouchel		CASING DEPTH (m) 3.70	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Firm light brown sandy gravelly clay. NEC.	[Cross-hatch pattern]			1	ENV	0.00-0.50			
	MADE GROUND: Dense grey gravel. Possible HC.	[Dotted pattern]	4.90	0.70	2	ENV	0.50-1.00			
	MADE GROUND: Firm light brown sandy gravelly clay. NEC.	[Cross-hatch pattern]	4.80	0.80						
	MADE GROUND: Very soft, brown, sandy very gravelly silt/clay with occasional cobbles & root hairs. NEC	[Cross-hatch pattern]	4.40	1.20						
	MADE GROUND: Very soft, brown, sandy very gravelly silt/clay with occasional cobbles & root hairs. Slight HC increasing with depth.	[Cross-hatch pattern]	4.20	1.40						
	MADE GROUND: Very soft, brown, sandy very gravelly silt/clay with occasional cobbles & root hairs. Slight HC increasing with depth.	[Cross-hatch pattern]	3.80	1.80	3	ENV	1.80-2.10			
	MADE GROUND: Soft, black, sandy very gravelly clay/silt with occasional cobbles. Strong HC	[Cross-hatch pattern]	3.50	2.10	4	ENV	2.10-2.30			
	MADE GROUND: Soft/firm, brown/grey/black mottled, sandy gravelly silt/clay with occasional cobbles. HC increasing with depth.	[Cross-hatch pattern]	3.30	2.30						
	LIMESTONE. NEC.	[Brick pattern]	1.80	3.70						
4	End of Borehole at 3.70 m									

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Hand dug pit 0.00-1.20m. Water coming in fast from surface, water has visible sheen and hc odour.

Sample Legend
 D - Small Disturbed (tub)
 B - Bulk Disturbed
 LB - Large Bulk Disturbed
 Env - Environmental Sample (Jar + Vial + Tub)
 U - Undisturbed 100mm Diameter Sample
 P - Undisturbed Piston Sample

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. G01
		SHEET Sheet 1 of 2
CO-ORDINATES 156,989.48 E 156,579.00 N	RIG TYPE Sonic	DATE DRILLED 19/11/2009
GROUND LEVEL (m AOD) 7.92	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 20/11/2009
CLIENT Bord Gais	BOREHOLE DEPTH (m) 11.00	BORED BY Boart Longyear
ENGINEER Mouchel	CASING DEPTH (m) 11.00	PROCESSED BY D. O'Shea

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Standpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft, brown/red/black sandy gravelly clay with occasional cobbles. NEC.				1	ENV	0.00-0.50			
1	MADE GROUND: Stiff, dark brown, sandy clay. NEC.		7.12	0.80	2	ENV	1.00-1.50			
	MADE GROUND: Loose light brown, clayey slightly gravelly sand with occasional cobbles. NEC.		6.92	1.00						
3	MADE GROUND: Stiff, dark brown/grey/black, sandy clay. Possible HC.		5.42	2.50	3	ENV	2.50-3.00			
	MADE GROUND: Loose light brown, clayey slightly gravelly sand with occasional cobbles. NEC.		4.92	3.00						
4	MADE GROUND: Soft (firm 5.00-6.00m), brown/grey, sandy slightly gravelly clay. NEC.		3.92	4.00	4	ENV	4.50-5.00			
8	MADE GROUND: Soft, grey/brown/black, sandy slightly gravelly clay. Possible HC.		-0.08	8.00	6	ENV	8.50-9.00			
9	LIMESTONE. NEC.		-1.08	9.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. G01
		SHEET Sheet 2 of 2
CO-ORDINATES 156,989.48 E 156,579.00 N	RIG TYPE Sonic	DATE DRILLED 19/11/2009
GROUND LEVEL (m AOD) 7.92	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 20/11/2009
CLIENT Bord Gais	BOREHOLE DEPTH (m) 11.00	BORED BY Boart Longyear
ENGINEER Mouchel	CASING DEPTH (m) 11.00	PROCESSED BY D. O'Shea

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10	LIMESTONE. NEC. (continued)									
11	End of Borehole at 11.00 m		-3.08	11.00						
12										
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET G02 Sheet 1 of 2	
CO-ORDINATES 156,982.14 E 156,576.61 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.99		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 11.50	
ENGINEER Mouchel		CASING DEPTH (m) 11.50	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft, dark brown, sandy gravelly silt/clay with many cobbles & red brick. Slight HC, at top and bottom of strata.				1	ENV	0.00-0.50			
1					2	ENV	1.00-1.50			
2	MADE GROUND: Soft/firm, brown (becoming black with depth), sandy gravelly clay with occasional cobbles. NEC.		6.49	1.50	3	ENV	2.00-2.50			
3	No recovery.		4.99	3.00						
4										
5	MADE GROUND: Soft/firm, dark brown/black mottled, sandy slightly gravelly silt/clay with occasional cobbles, red brick & wood.		3.49	4.50	4	ENV	5.00-5.50			
6	MADE GROUND: Soft/firm, green/yellow mottled, sandy slightly gravelly silt/clay with occasional cobbles, red brick & wood. No recovery.		2.19 1.99	5.80 6.00	5	ENV	5.80-6.00			
7										
8	MADE GROUND: Medium dense, brown, clayey, silty gravelly sand with occasional cobbles. Slight HC		0.49	7.50	6	ENV	8.00-8.50			
9	LIMESTONE. NEC.		-1.01	9.00						

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	
19-11-09	11.50	10.00	11.50	50mm SP						

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET G02 Sheet 2 of 2	
CO-ORDINATES 156,982.14 E 156,576.61 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.99		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 11.50	
ENGINEER Mouchel		CASING DEPTH (m) 11.50	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10	LIMESTONE. NEC. (continued)	[Brick Pattern]								[Stacpipe Pattern]
11										
11.50	End of Borehole at 11.50 m		-3.51	11.50						
12										
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	
19-11-09	11.50	10.00	11.50	50mm SP						

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET G03 Sheet 1 of 2	
CO-ORDINATES 156,974.42 E 156,571.25 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.92		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 11.00	
ENGINEER Mouchel		CASING DEPTH (m) 11.00	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft, dark brown, slightly sandy gravelly clay with occasional cobbles, wood, concrete, red brick & root hairs. NEC.		6.42	1.50	1	ENV	0.00-0.50			
1					2	ENV	1.00-1.50			
	MADE GROUND: Soft, brown, very sandy gravelly clay with occasional cobbles. Possible HC.				3	ENV	1.50-2.00			
2	MADE GROUND: Loose, grey, very sandy gravelly cobbly silt. NEC.				4	ENV	2.10-2.50			
	MADE GROUND: Soft/firm, grey/black/brown mottled, slightly sandy gravelly clay with occasional cobbles. HC				5	ENV	2.50-3.00			
3	No recovery.		4.92	3.00						
6	MADE GROUND: Loose, grey, clayey silty gravelly cobbles. HC		1.92	6.00						
8	MADE GROUND: Soft/firm, grey/brown mottled, slightly sandy gravelly clay with many cobbles. HC		0.42	7.50						
9	LIMESTONE. NEC.		-1.08	9.00	6	ENV	8.50-9.00			

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date					Date	Hole Depth	Casing Depth	Depth to Water	Comments	
Date	Tip Depth	RZ Top	RZ Base	Type						
24-09-09	1.00	1.00	9.00	50mm SP						
REMARKS 2.0 hrs standing - Health and Safety due to very contaminated soils.					Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample					

IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. G03	
CO-ORDINATES 156,974.42 E 156,571.25 N		SHEET Sheet 2 of 2	
GROUND LEVEL (m AOD) 7.92		DATE DRILLED 24/11/2009	
CLIENT Bord Gais		DATE LOGGED 24/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY A. Mahony	
BOREHOLE DIAMETER (mm) 140			
BOREHOLE DEPTH (m) 11.00			
CASING DEPTH (m) 11.00			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10	LIMESTONE. NEC. (continued)									
11	End of Borehole at 11.00 m		-3.08	11.00						
12										
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	
24-09-09	1.00	1.00	9.00	50mm SP						

REMARKS 2.0 hrs standing - Health and Safety due to very contaminated soils.

Sample Legend
 D - Small Disturbed (tub)
 B - Bulk Disturbed
 LB - Large Bulk Disturbed
 Env - Environmental Sample (Jar + Vial + Tub)
 U - Undisturbed 100mm Diameter Sample
 P - Undisturbed Piston Sample

IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET G04 Sheet 1 of 2	
CO-ORDINATES 156,966.14 E 156,565.03 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.45		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 12.00	
ENGINEER Mouchel		CASING DEPTH (m) 12.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Stiff very sandy gravelly black clay. NEC.		7.15	0.30	1	ENV	0.30-0.50			
	MADE GROUND: Loose red/black gravelly clay. Possible cinders. Possible contamination.		6.95	0.50						
	MADE GROUND: Soft dark grey clay. NEC.		6.70	0.75						
1	MADE GROUND: Loose grey/white clayey gravel (possible ash). Possible contamination.		6.45	1.00	2	ENV	1.00-1.50			
	MADE GROUND: Soft black very sandy very gravelly clay (ash). Possible contamination.		5.95	1.50						
2	MADE GROUND: Soft dark grey gravelly clay. NEC.				3	ENV	2.50-3.00			
3	MADE GROUND: Soft brown/grey clay. NEC.		4.45	3.00	4	ENV	3.50-4.00			
4					5	ENV	4.50-5.00			
5	MADE GROUND: Soft grey clay. HC odour.		2.45	5.00	6	ENV	5.50-6.00			
6	MADE GROUND: No recovery.	1.45	6.00							
7										
8	MADE GROUND: Soft slightly gravelly clay. Slight HC sheen. 0.30m recovery.	-0.05	7.50	7	ENV	7.50-9.00				
9	MADE GROUND: Loose slightly clayey gravel with occasional cobbles. HC-free phase oil.	-1.55	9.00	8	ENV	9.50-10.00				

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
12-11-09	12.00	10.00	12.00	50mm SP					

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET G04 Sheet 2 of 2	
CO-ORDINATES 156,966.14 E 156,565.03 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.45		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 12.00	
ENGINEER Mouchel		CASING DEPTH (m) 12.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10	LIMESTONE. HC, Recovery predominantly oil.		-2.55	10.00						
11										
12	End of Borehole at 12.00 m		-4.55	12.00						
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date					Date	Hole Depth	Casing Depth	Depth to Water	Comments	
12-11-09	12.00	10.00	12.00	50mm SP						

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET G05 Sheet 1 of 2	
CO-ORDINATES 156,959.42 E 156,559.33 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.24		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 11.00	
ENGINEER Mouchel		CASING DEPTH (m) 11.00	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft to firm brown mottled black sandy, gravelly silt/clay with red brick and occasional cobbles. Possible slight HC.				1	ENV	0.00-0.50			
1	MADE GROUND: Soft reddish black sandy, gravelly silt/clay. Slight HC - free phase oil.		6.24	1.00	2	ENV	1.00-1.50			
2	MADE GROUND: Soft reddish black sandy, gravelly silt/clay. Only 0.10m recovered - free phase oil.		5.74	1.50						
3	MADE GROUND: Soft to slightly firm, grey, very sandy, very gravelly silt with occasional cobbles. Slight HC.		4.24	3.00						
4	MADE GROUND: Grey silty sand. Water washed away much of recovery (only 1.00m recovered). Free phase oil in water.		2.74	4.50	3	ENV	4.00-4.50			
5	MADE GROUND: cobble with some silty sand. HC.		1.34	5.90						
6	MADE GROUND: No recovery.		1.24	6.00	4	ENV	5.50-6.00			
7										
8	MADE GROUND: Soft to firm grey, clayey, very sandy silt. Heavy HC with free phase oil.		-0.26	7.50	5	ENV	8.00-8.50			
9	LIMESTONE. Heavy HC with free phase oil.		-1.56	8.80						

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					1.50	NR	NS	NR	NR	Rapid
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date					Date	Hole Depth	Casing Depth	Depth to Water	Comments	
17-11-09	9.00	1.00	9.00	50mm SP						
REMARKS							Sample Legend			
							D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample			

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. G05	
CO-ORDINATES 156,959.42 E 156,559.33 N		SHEET Sheet 2 of 2	
GROUND LEVEL (m AOD) 7.24		DATE DRILLED 17/11/2009	
CLIENT Bord Gais		DATE LOGGED 17/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY A. Mahony	
BOREHOLE DIAMETER (mm) 140			
BOREHOLE DEPTH (m) 11.00			
CASING DEPTH (m) 11.00			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10	LIMESTONE. Heavy HC with free phase oil. <i>(continued)</i>	[Brick Pattern]								[Cross-hatch Pattern]
11	End of Borehole at 11.00 m		-3.76	11.00						
12										
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date					Date	Hole Depth	Casing Depth	Depth to Water	Comments	
17-11-09	9.00	1.00	9.00	50mm SP						

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET G06 Sheet 1 of 2	
CO-ORDINATES 156,952.02 E 156,552.79 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.20		BOREHOLE DIAMETER (mm) 112	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 11.00	
ENGINEER Mouchel		CASING DEPTH (m) 11.00	
		BORED BY Boart Longyear	
		PROCESSED BY D. O'Shea	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Loose sandy cobbly gravel - possible powdered concrete NEC.									
1	MADE GROUND: Loose, brown/red, clayey gravelly sand. Possible HC.		6.20	1.00	1	ENV	1.50-2.00			
2	MADE GROUND: Loose black/brown, clayey gravelly sand with occasional cobbles. Strong HC - free phase oil.		5.20	2.00	2	ENV	2.50-3.00			
3										
4	MADE GROUND: Firm (soft 6.00-7.00m), brown, very sandy clay with occasional cobbles. Possible HC.		3.70	3.50	3	ENV	4.50-5.00			
5										
6										
7										
8	MADE GROUND: Firm/soft, green/grey, clayey sandy gravel. Strong HC.	-0.60	7.80	5	ENV	8.00-8.50				
9	MADE GROUND: Firm, brown sandy clay. Possible HC.	-1.50	8.70	6	ENV	8.70-8.90				
	MADE GROUND: Soft, black, sandy gravelly clay. Strong HC.	-1.70	8.90							
	LIMESTONE. NEC.	-1.80	9.00							

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. G06
CO-ORDINATES 156,952.02 E 156,552.79 N		SHEET Sheet 2 of 2
GROUND LEVEL (m AOD) 7.20	RIG TYPE Sonic	DATE DRILLED 20/11/2009
CLIENT Bord Gais	BOREHOLE DIAMETER (mm) 112	DATE LOGGED 20/11/2009
ENGINEER Mouchel	BOREHOLE DEPTH (m) 11.00	BORED BY Boart Longyear
	CASING DEPTH (m) 11.00	PROCESSED BY D. O'Shea

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10	LIMESTONE. NEC. (continued)									
11	End of Borehole at 11.00 m		-3.80	11.00						
12										
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET G07 Sheet 1 of 1	
CO-ORDINATES 156,945.33 E 156,546.67 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.24		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 9.00	
ENGINEER Mouchel		CASING DEPTH (m) 9.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: 0.1m recovered of medium dense clayey gravel with occasional cobbles. NEC.				1	ENV	0.00-1.50			
1	MADE GROUND: Stiff brown very gravelly clay with red brick. NEC.		5.74	1.50	2	ENV	1.50-2.00			
2	MADE GROUND: Loose dark grey/brown clayey sand with free phase oil.		4.74	2.50	3	ENV	2.50-3.00			
3	MADE GROUND: No recovery.		4.24	3.00						
4	MADE GROUND: Loose dark grey/brown clayey sand with free phase oil.		2.74	4.50	4	ENV	4.50-5.00			
5					5	ENV	5.50-6.00			
6	Dense black gravelly COBBLES. HC-oil. Possible variably weathered limestone. LIMESTONE. NEC.		1.54	5.70						
			1.24	6.00						
9	End of Borehole at 9.00 m		-1.76	9.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. G08	
CO-ORDINATES 156,937.52 E 156,540.22 N		SHEET Sheet 1 of 1	
GROUND LEVEL (m AOD) 7.28		DATE DRILLED 18/11/2009	
CLIENT Bord Gais		DATE LOGGED 18/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY A. Mahony	
BOREHOLE DIAMETER (mm) 140			
BOREHOLE DEPTH (m) 2.50			
CASING DEPTH (m) 2.50			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft brown sandy gravelly clay. Slight HC odour.		6.88	0.40	1	ENV	0.00-0.40			
	LIMESTONE. NEC.									
2.50	End of Borehole at 2.50 m		4.78	2.50						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
18-11-09	2.50	1.00	2.50	50mm SP					

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. G09
CO-ORDINATES 156,929.91 E 156,534.60 N		SHEET Sheet 1 of 1
GROUND LEVEL (m AOD) 7.20	RIG TYPE Sonic	DATE DRILLED 18/11/2009
CLIENT Bord Gais	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 18/11/2009
ENGINEER Mouchel	BOREHOLE DEPTH (m) 2.50	BORED BY Boart Longyear
	CASING DEPTH (m) 2.50	PROCESSED BY A. Mahony

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft dark brown/black sandy gravelly clay with red brick. Very slight HC odour. LIMESTONE. NEC.		6.90	0.30	1	ENV	0.00-0.30			
1										
2										
2.50	End of Borehole at 2.50 m		4.70	2.50						
3										
4										
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET G10 Sheet 1 of 1	
CO-ORDINATES 156,922.11 E 156,528.34 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 6.88		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 2.50	
ENGINEER Mouchel		CASING DEPTH (m) 2.50	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Loose brown (dark brown - top and bottom of run) slightly silty, slightly gravelly fine to medium sand. NEC.		6.38	0.50	1	ENV	0.00-0.50			
1	LIMESTONE. NEC.									
2										
2.50	End of Borehole at 2.50 m		4.38	2.50						
3										
4										
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. G11
		SHEET Sheet 1 of 1
CO-ORDINATES 156,914.76 E 156,523.46 N	RIG TYPE Sonic	DATE DRILLED 17/11/2009
GROUND LEVEL (m AOD) 6.63	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 17/11/2009
CLIENT Bord Gais	BOREHOLE DEPTH (m) 2.00	BORED BY Boart Longyear
ENGINEER Mouchel	CASING DEPTH (m) 2.00	PROCESSED BY A. Mahony

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft black/dark brown clayey sandy, very gravelly SILT. HC.				1	ENV	0.00-0.50			
1	MADE GROUND: Soft grey/brown very gravelly SILT/CLAY. HC increasing with depth.		6.03	0.60	2	ENV	1.00-1.60			
2	LIMESTONE, locally very silty. HC in silty zone 1.80-1.90m.		5.03	1.60	3	ENV	1.80-1.90			
2	End of Borehole at 2.00 m		4.63	2.00						
3										
4										
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET G12 Sheet 1 of 1	
CO-ORDINATES 156,908.01 E 156,516.78 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 6.85		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 6.00	
ENGINEER Mouchel		CASING DEPTH (m) 6.00	
		BORED BY Boart Longyear	
		PROCESSED BY D. O'Shea	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Concrete. NEC.		6.75	0.10						
	MADE GROUND: Loose, grey/black, clayey gravelly sand with occasional cobbles. Possible HC.				1	ENV	0.50-1.00			
1	MADE GROUND: Soft, red/brown/orange, sandy gravelly clay. NEC.			5.85	1.00	2	ENV	1.00-1.50		
	MADE GROUND: Soft/firm, brown/black, sandy gravelly clay. Strong HC - free phase oil.			5.35	1.50	3	ENV	1.50-2.00		
2	MADE GROUND: Loose sandy cobbly gravel - possible powdered boulder. NEC.			4.65	2.20					
	MADE GROUND: Soft, brown, sandy gravelly clay with occasional cobbles. NEC.			4.45	2.40	4	ENV	2.50-3.00		
3	MADE GROUND: Soft, black/brown, sandy gravelly clay. Strong HC - free phase oil.			3.85	3.00	5	ENV	3.00-3.30		
	MADE GROUND: Firm, orange/brown, clayey gravelly sand with occasional cobbles. Possible HC.			3.55	3.30	6	ENV	3.30-3.80		
4	Loose grey clayey sandy gravelly COBBLES - probable weathered rock. NEC.			3.05	3.80					
	LIMESTONE. NEC.				2.85	4.00				
6	End of Borehole at 6.00 m		0.85	6.00						

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date					Date	Hole Depth	Casing Depth	Depth to Water	Comments	
Date	Tip Depth	RZ Top	RZ Base	Type						
REMARKS							Sample Legend			
							D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample			

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET H01 Sheet 1 of 2	
CO-ORDINATES 156,996.40 E 156,574.93 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.77		BOREHOLE DIAMETER (mm) 112	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 10.50	
ENGINEER Mouchel		CASING DEPTH (m) 10.50	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete		7.67	0.10						
	MADE GROUND: Stiff brown slightly sandy gravelly clay with yellow brick. NEC.		7.27	0.50						
	MADE GROUND: Limestone cobble. NEC		6.97	0.80	1	ENV	0.80-1.00			
1	MADE GROUND: Stiff black slightly sandy, slightly gravelly clay. HC odour.		6.67	1.10	2	ENV	1.50-2.00			
	MADE GROUND: Firm grey slightly gravelly clay. NEC.				3	ENV	2.50-3.00			
					4	ENV	3.50-4.00			
				5	ENV	4.50-5.00				
6	MADE GROUND: Clayey sand with cobbles. NEC. (0.50m recovery)		1.77	6.00	6	ENV	6.00-6.50			
7										
8	LIMESTONE. NEC.		0.27	7.50						
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET H02 Sheet 1 of 2	
CO-ORDINATES 156,988.90 E 156,568.91 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.79		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 12.00	
ENGINEER Mouchel		CASING DEPTH (m) 12.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete		7.69	0.10	1	ENV	0.10-0.50			
	MADE GROUND: Stiff grey/brown sandy gravelly clay with red brick. NEC.		7.29	0.50	2	ENV	0.50-1.00			
	MADE GROUND: Loose black clayey gravel (possible cinders). Possible contamination.		6.79	1.00						
	MADE GROUND: Soft grey/white slightly gravelly clay (probable ash). Possible contamination.				3	ENV	1.50-2.00			
	MADE GROUND: Soft black clay impacted with HC odour.		5.79	2.00	4	ENV	2.00-2.10			
	MADE GROUND: Soft light brown slightly gravelly clay impacted with HC odour.		5.69	2.10						
					5	ENV	3.00-3.50			
					6	ENV	4.00-4.50			
					7	ENV	5.00-5.50			
					8	ENV	6.00-6.50			
				9	ENV	7.00-7.50				
				10	ENV	8.00-8.50				
9	LIMESTONE. NEC.		-1.21	9.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. H02
CO-ORDINATES 156,988.90 E 156,568.91 N		SHEET Sheet 2 of 2
GROUND LEVEL (m AOD) 7.79	RIG TYPE Sonic	DATE DRILLED 09/11/2009
CLIENT Bord Gais	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 09/11/2009
ENGINEER Mouchel	BOREHOLE DEPTH (m) 12.00	BORED BY Boart Longyear
	CASING DEPTH (m) 12.00	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10	LIMESTONE. NEC. (continued)									
11										
12	End of Borehole at 12.00 m		-4.21	12.00						
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET H03 Sheet 1 of 2	
CO-ORDINATES 156,981.95 E 156,561.75 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.64		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 12.00	
ENGINEER Mouchel		CASING DEPTH (m) 12.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete									
0.25	MADE GROUND: 0.10m recovered of loose fill		7.39	0.25	1	ENV	0.25-3.00			
3.00	MADE GROUND: Stiff brown slightly gravelly clay with occasional cobbles. NEC except slight odour of HC at 6.75m.		4.64	3.00	2	ENV	3.00-3.50			
4.00					3	ENV	4.00-4.50			
5.00					4	ENV	5.00-5.50			
6.50					5	ENV	6.50-7.00			
7.50					6	ENV	7.50-8.00			
8.50	Stiff brown/black slightly gravelly CLAY with occasional cobbles. Possible TOC.		-0.86	8.50	7	ENV	8.50-9.00			
9.00	LIMESTONE. NEC.		-1.36	9.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS 0.25-3.00m concrete in barrel pushed out loose material. 0.1m recovery.	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. H03
CO-ORDINATES 156,981.95 E 156,561.75 N		SHEET Sheet 2 of 2
GROUND LEVEL (m AOD) 7.64	RIG TYPE Sonic	DATE DRILLED 09/11/2009
CLIENT Bord Gais	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 09/11/2009
ENGINEER Mouchel	BOREHOLE DEPTH (m) 12.00	BORED BY Boart Longyear
	CASING DEPTH (m) 12.00	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10	LIMESTONE. NEC. (continued)									
11										
12	End of Borehole at 12.00 m		-4.36	12.00						
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date					Date	Hole Depth	Casing Depth	Depth to Water	Comments	
Date	Tip Depth	RZ Top	RZ Base	Type						
REMARKS 0.25-3.00m concrete in barrel pushed out loose material. 0.1m recovery.					Sample Legend					
					D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub)			U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample		

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET H04 Sheet 1 of 2	
CO-ORDINATES 156,973.94 E 156,556.92 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.40		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 12.00	
ENGINEER Mouchel		CASING DEPTH (m) 12.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete. Returns of pulverised (probable) concrete (powdered rock with cobbles)				1	ENV	0.00-0.50			
1					2	ENV	1.50-2.00			
2					3	ENV	2.50-3.00			
3	MADE GROUND: 0.10m recovered. Soft black gravelly clay with occasional cobbles and red brick. HC odour.		4.40	3.00	4	ENV	3.00-6.00			
4										
5										
6	MADE GROUND: Soft grey slightly gravelly clay. NEC.		1.40	6.00	5	ENV	6.00-6.50			
7					6	ENV	7.00-7.50			
8	MADE GROUND: Soft black, slightly gravelly clay with occasional cobbles. HC odour.		-0.60	8.00	7	ENV	8.50-9.00			
9	LIMESTONE. NEC.		-1.60	9.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS 0.75 hrs standing - Health and Safety due to very contaminated soils.	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. H04
CO-ORDINATES 156,973.94 E 156,556.92 N		SHEET Sheet 2 of 2
GROUND LEVEL (m AOD) 7.40	RIG TYPE Sonic	DATE DRILLED 09/11/2009
CLIENT Bord Gais	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 09/11/2009
ENGINEER Mouchel	BOREHOLE DEPTH (m) 12.00	BORED BY Boart Longyear
	CASING DEPTH (m) 12.00	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10	LIMESTONE. NEC. (continued)									
11										
12	End of Borehole at 12.00 m		-4.60	12.00						
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS						
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments	
										No water strike	
INSTALLATION DETAILS					GROUNDWATER DETAILS						
Date					Date	Hole Depth	Casing Depth	Depth to Water	Comments		
Date	Tip Depth	RZ Top	RZ Base	Type							
REMARKS 0.75 hrs standing - Health and Safety due to very contaminated soils.					Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub)			U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample			

IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET H05 Sheet 1 of 2	
CO-ORDINATES 156,965.27 E 156,550.29 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 6.87		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 12.00	
ENGINEER Mouchel		CASING DEPTH (m) 12.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete		6.72	0.15	1	ENV	0.15-0.40			
	MADE GROUND: Soft grey sandy gravelly clay. HC odour.		6.47	0.40						
	MADE GROUND: Loose cream fine clayey sand (possible ash). NEC.		6.07	0.80						
1	MADE GROUND: Loose red very clayey gravel. NEC.		5.87	1.00						
	MADE GROUND: Soft, grey gravelly clay with layers of cream, brown and black. HC at black zones from 2.00-3.00m.				2	ENV	1.50-2.00			
					3	ENV	2.50-3.00			
3	MADE GROUND: Soft grey slightly sandy clay with occasional cobbles and red brick. HC odour.		3.87	3.00						
					4	ENV	3.50-4.00			
					5	ENV	4.50-5.00			
					6	ENV	5.50-6.00			
6	MADE GROUND: Loose grey/black clayey sand. NEC.		0.87	6.00						
	LIMESTONE. HC sheen.		0.57	6.30	7					
9	LIMESTONE. NEC.		-2.13	9.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Possibly no recovery 0.15-1.50m.	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. H05
CO-ORDINATES 156,965.27 E 156,550.29 N		SHEET Sheet 2 of 2
GROUND LEVEL (m AOD) 6.87	RIG TYPE Sonic	DATE DRILLED 06/11/2009
CLIENT Bord Gais	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 06/11/2009
ENGINEER Mouchel	BOREHOLE DEPTH (m) 12.00	BORED BY Boart Longyear
	CASING DEPTH (m) 12.00	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10	LIMESTONE. NEC. (continued)									
11										
12	End of Borehole at 12.00 m		-5.13	12.00						
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Possibly no recovery 0.15-1.50m.

Sample Legend
 D - Small Disturbed (tub)
 B - Bulk Disturbed
 LB - Large Bulk Disturbed
 Env - Environmental Sample (Jar + Vial + Tub)
 U - Undisturbed 100mm Diameter Sample
 P - Undisturbed Piston Sample

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET H06 Sheet 1 of 2	
CO-ORDINATES 156,959.01 E 156,544.70 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 6.95		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 12.00	
ENGINEER Mouchel		CASING DEPTH (m) 12.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Standpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete with rebar		6.80	0.15	1	ENV	0.50-1.00			
1	MADE GROUND: Medium dense, light brown, clayey, slightly sandy gravel. NEC.		5.65	1.30	2	ENV	1.30-1.50			
2	MADE GROUND: Firm reddish brown sandy gravelly clay with red brick. NEC.		5.45	1.50	3	ENV	2.00-2.50			
3	MADE GROUND: Medium dense, clayey gravel with occasional cobbles. Heavy HC.		3.95	3.00	4	ENV	3.50-4.00			
4	MADE GROUND: Soft black, slightly sandy slightly gravelly clay. Heavy HC.		2.45	4.50	5	ENV	4.50-5.00			
5	MADE GROUND: Soft grey brown, slightly sandy slightly gravelly clay with 3mm-10mm lenses of HC impacted gravel. HC throughout.		0.95	6.00	6	ENV	5.50-6.00			
6	MADE GROUND: Medium dense, grey clayey gravelly sand with many cobbles. AEC.				7	ENV	6.50-7.00			
7					8	ENV	7.50-8.00			
8	MADE GROUND: Stiff grey/brown slightly sandy gravelly clay. NEC.		-1.55	8.50	9	ENV	8.50-9.00			
9	LIMESTONE with stiff grey, slightly gravelly clay band at 10.60-10.90m. NEC. (2.00m recovered - sonic drilling pulverising rock.)		-2.05	9.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET H06 Sheet 2 of 2	
CO-ORDINATES 156,959.01 E 156,544.70 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 6.95		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 12.00	
ENGINEER Mouchel		CASING DEPTH (m) 12.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10	LIMESTONE with stiff grey, slightly gravelly clay band at 10.60-10.90m. NEC. (2.00m recovered - sonic drilling pulverising rock.) (continued)	[Brick Pattern]			10	ENV	10.60-10.90			
12	End of Borehole at 12.00 m		-5.05	12.00						
11										
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

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CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET H07 Sheet 1 of 1	
CO-ORDINATES 156,951.40 E 156,539.25 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 6.99		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 7.50	
ENGINEER Mouchel		CASING DEPTH (m) 7.50	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Stiff brown sandy, slightly gravelly clay. NEC.				1	ENV	0.00-0.50			
1	MADE GROUND: Hard to very hard, cream/white, sandy gravelly clay (probable concrete pulverised by sonic drilling). NEC.		6.24	0.75						
2	MADE GROUND: Firm dark brown slightly sandy slightly gravelly clay. HC especially in gravel bands at 2.70-2.80m and 3.80m.		5.49	1.50	2	ENV	1.50-2.00			
3					ENV	2.50-3.00				
4					ENV	3.50-4.00				
5	MADE GROUND: Stiff dark grey, slightly sandy, slightly gravelly clay. HC.		2.49	4.50	5	ENV	4.50-5.00			
6					ENV	5.00-5.50				
6	LIMESTONE with soft grey clay band 7.20-7.40m. NEC.		1.49	5.50						
7	End of Borehole at 7.50 m		-0.51	7.50	7	ENV	7.20-7.40			
8										
9										

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS						
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments	
										No water strike	
INSTALLATION DETAILS					GROUNDWATER DETAILS						
INSTALLATION DETAILS					Date	Hole Depth	Casing Depth	Depth to Water	Comments		
Date	Tip Depth	RZ Top	RZ Base	Type	06-11-09	7.50			Soil damp at 1.50m		
REMARKS 1.0 hrs standing - Health and Safety due to very contaminated soils.					Sample Legend						
					D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub)			U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample			

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. H08
CO-ORDINATES 156,943.23 E 156,532.83 N		SHEET Sheet 1 of 1
GROUND LEVEL (m AOD) 7.07	RIG TYPE Sonic	DATE DRILLED 05/11/2009
CLIENT Bord Gais	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 05/11/2009
ENGINEER Mouchel	BOREHOLE DEPTH (m) 2.30	BORED BY Boart Longyear
	CASING DEPTH (m) 2.30	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Loose dark brown very clayey gravelly SAND				1	ENV	0.00-0.30			
0.30	LIMESTONE. NEC. (1.00m recovered - sonic drilling pulverising rock.)		6.77	0.30						
2.30	End of Borehole at 2.30 m		4.77	2.30						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET H09 Sheet 1 of 1	
CO-ORDINATES 156,936.29 E 156,526.49 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.15		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 9.00	
ENGINEER Mouchel		CASING DEPTH (m) 9.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Very stiff grey sandy gravelly clay. NEC.		6.75	0.40	1	ENV	0.00-0.40			
1	MADE GROUND: Soft grey/brown slightly sandy, slightly gravelly clay with occasional cobbles. NEC.			1.50	2	ENV	1.00-1.50			
2	MADE GROUND: Medium dense grey, slightly clayey gravel with many cobbles (10cm). Many spots of tar. HC odour. (0.65m recovery).			3.00	3	ENV	2.00-3.00			
3	MADE GROUND: Loose grey clayey, gravelly sand with occasional cobbles. Made up of approx. 20% globules of tar. HC odour.			3.65	4	ENV	3.00-3.50			
4	MADE GROUND: Soft to firm, sandy slightly gravelly clay. HC odour.			3.15	5	ENV	4.00-4.20			
5	MADE GROUND: Very stiff slightly sandy, slightly gravelly clay with red brick and grass			2.95	6	ENV	5.50-6.00			
6	Very stiff grey gravelly CLAY with many cobbles. NEC.		1.95	5.20						
7	Very stiff mottled grey brown slightly sandy, slightly gravelly CLAY with occasional cobbles. HC odour, no visible evidence.		1.15	6.00						
8	LIMESTONE. HC odour and sheen.									
9	End of Borehole at 9.00 m		-1.86	9.00						

HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
				0.10	NR	NS	NR	NR	NR

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Pic1 & pic2	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET H10 Sheet 1 of 1	
CO-ORDINATES 156,927.95 E 156,520.73 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 6.96		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 3.00	
ENGINEER Mouchel		CASING DEPTH (m) 3.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Stiff grey/brown slightly sandy gravelly CLAY. NEC.				1	ENV	0.00-0.50			
	Very stiff to hard gravelly CLAY. NEC.		6.26	0.70						
1	LIMESTONE. HC odour and sheen 1.00-2.00m. NEC 2.00-3.00m.		5.96	1.00	2	ENV	1.50-2.00			
3	End of Borehole at 3.00 m		3.96	3.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS Pic1 0.00-2.00m & pic2 2.00-3.00m	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET H11 Sheet 1 of 1	
CO-ORDINATES 156,920.54 E 156,514.62 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 6.77		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 2.00	
ENGINEER Mouchel		CASING DEPTH (m) 2.00	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Soft black, very sandy, very gravelly SILT with occasional cobbles. Heavy HC.				1	ENV	0.50-1.00			
1	Soft to locally firm, grey/black mottled, very gravelly SILT/CLAY with occasional cobbles. Predominantly gravel with very heavy HC at 1.30m.		5.77	1.00	3	ENV	1.30-1.35			
	LIMESTONE. Heavy HC.		5.27	1.50	2	ENV	1.35-1.50			
2	End of Borehole at 2.00 m		4.77	2.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET H12 Sheet 1 of 1	
CO-ORDINATES 156,913.09 E 156,509.48 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 6.76		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 4.50	
ENGINEER Mouchel		CASING DEPTH (m) 4.50	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Soft grey/brown sandy gravelly SILT/CLAY. HC.		6.56	0.20	1	ENV	0.20-0.40			
	Black silty GRAVEL. Heavy HC.		6.36	0.40						
1	Soft grey/brown sandy gravelly SILT/CLAY. Slight HC.		6.06	0.70	2	ENV	0.70-1.50			
	Soft to firm grey mottled brown silty sandy gravelly CLAY. HC.									
2	Limestone BOULDER (pulverised with silt)		5.26	1.50	3	ENV	1.50-2.00			
	Limestone BOULDER		4.76	2.00						
3	Soft (crumbly) to locally stiff, grey/brown gravelly SILT. Very bad odour, not HC.		4.26	2.50	4	ENV	2.70-3.00			
	Limestone GRAVEL. NEC.		3.76	3.00						
4	LIMESTONE. NEC.		3.26	3.50						
	End of Borehole at 4.50 m		2.26	4.50						

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	
17-09-09	4.50	3.00	4.50	50mm SP						

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

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CONTRACT Limerick Gasworks		BOREHOLE NO. 101	
		SHEET Sheet 1 of 2	
CO-ORDINATES 157,002.93 E 156,567.12 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.81		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 10.00	
ENGINEER Mouchel		CASING DEPTH (m) 10.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete	<div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); color: red; font-size: 10px; opacity: 0.5;"> For inspection purposes only. Consent of copyright owner required for any other use. </div>	7.66	0.15	1	ENV	0.00-0.50			
	MADE GROUND: Firm brown slightly sandy gravelly clay. NEC.				2	ENV	1.00-1.50			
2.50	MADE GROUND: Soft grey slightly gravelly clay. NEC.			5.31	2.50	3	ENV	2.50-3.00		
					4	ENV	3.50-4.00			
					5	ENV	4.50-5.00			
					6	ENV	5.50-6.00			
					7	ENV	6.00-6.50			
6.00	MADE GROUND: Loose grey slightly gravelly sand with occasional cobbles. NEC.		1.81	6.00						
7.00	LIMESTONE. NEC.		0.81	7.00						

HARD STRATA BORING/CASELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
REMARKS							Sample Legend		
							D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub)		
							U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample		

IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. 101	
CO-ORDINATES 157,002.93 E 156,567.12 N		SHEET Sheet 2 of 2	
GROUND LEVEL (m AOD) 7.81		DATE DRILLED 12/11/2009	
CLIENT Bord Gais		DATE LOGGED 13/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY G. Thornton	
BOREHOLE DIAMETER (mm) 140			
BOREHOLE DEPTH (m) 10.00			
CASING DEPTH (m) 10.00			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10			-2.19	10.00						
11										
12										
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. 102	
CO-ORDINATES 156,994.98 E 156,559.40 N		SHEET Sheet 1 of 2	
GROUND LEVEL (m AOD) 7.78		DATE DRILLED 13/11/2009	
CLIENT Bord Gais		DATE LOGGED 14/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY G. Thornton	
BOREHOLE DIAMETER (mm) 140			
BOREHOLE DEPTH (m) 12.00			
CASING DEPTH (m) 12.00			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete		7.63	0.15						
	MADE GROUND: Firm brown sandy gravelly clay. NEC.		7.43	0.35	1	ENV	0.35-0.55			
	MADE GROUND: Loose light brown sand. NEC.		7.23	0.55	2	ENV	0.55-0.70			
	MADE GROUND: Loose black clayey sand and gravel - possible cinders. Possible contamination.		7.08	0.70	3	ENV	1.00-1.25			
	MADE GROUND: Stiff white/light brown sandy clay - possible ash. Possible contamination.		6.88	0.90	4	ENV	1.25-1.50			
	MADE GROUND: Firm black slightly gravelly clay. Possible HC.		6.53	1.25						
	MADE GROUND: Medium dense white clayey sand - possible ash. Possible HC.		6.28	1.50	5	ENV	2.00-2.50			
	MADE GROUND: Firm brown mottled black/grey slightly gravelly clay. Possible HC impact in grey/black.				6	ENV	3.00-3.50			
					7	ENV	4.00-4.50			
					8	ENV	5.50-6.00			
6	MADE GROUND: No recovery.		1.78	6.00						
					9	ENV	7.50-8.00			
	MADE GROUND: Very soft grey sandy clay. NEC.		0.28	7.50						
					10	ENV	8.50-9.00			
9	LIMESTONE. NEC.		-1.22	9.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. 102	
CO-ORDINATES 156,994.98 E 156,559.40 N		SHEET Sheet 2 of 2	
GROUND LEVEL (m AOD) 7.78		DATE DRILLED 13/11/2009	
CLIENT Bord Gais		DATE LOGGED 14/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY G. Thornton	
BOREHOLE DIAMETER (mm) 140			
BOREHOLE DEPTH (m) 12.00			
CASING DEPTH (m) 12.00			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10	LIMESTONE. NEC. (continued)									
11										
12	End of Borehole at 12.00 m		-4.22	12.00						
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. 103	
		SHEET Sheet 1 of 2	
CO-ORDINATES 156,988.29 E 156,555.67 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.73		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 12.00	
ENGINEER Mouchel		CASING DEPTH (m) 12.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete									
	No recovery.		7.23	0.50						
	MADE GROUND: Firm brown slightly gravelly clay with local loose light brown clayey sand (0.10m). NEC. 0.50m recovered		6.23	1.50	1	ENV	1.50-3.00			
	MADE GROUND: Very soft brown slightly gravelly clay. NEC.		4.73	3.00	2	ENV	3.00-3.50			
					3	ENV	4.00-4.50			
					4	ENV	5.50-6.00			
	MADE GROUND: No recovery.		1.73	6.00						
	MADE GROUND: Very soft brown slightly gravelly clay. NEC.		0.23	7.50	5	ENV	7.50-8.00			
					6	ENV	8.00-8.50			
	MADE GROUND: Very soft brown very gravelly clay. NEC. LIMESTONE. NEC.		-0.87 -0.92	8.60 8.65						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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IGSL BH LOG 14463.GPJ IGSL_GDT 23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. 103	
CO-ORDINATES 156,988.29 E 156,555.67 N		SHEET Sheet 2 of 2	
GROUND LEVEL (m AOD) 7.73		DATE DRILLED 13/11/2009	
CLIENT Bord Gais		DATE LOGGED 14/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY G. Thornton	
BOREHOLE DIAMETER (mm) 140			
BOREHOLE DEPTH (m) 12.00			
CASING DEPTH (m) 12.00			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10	LIMESTONE. NEC. (continued)									
11										
12	End of Borehole at 12.00 m		-4.27	12.00						
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. 104	
CO-ORDINATES 156,979.48 E 156,549.68 N		SHEET Sheet 1 of 2	
GROUND LEVEL (m AOD) 7.58		DATE DRILLED 14/11/2009	
CLIENT Bord Gais		DATE LOGGED 15/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY G. Thornton	
BOREHOLE DIAMETER (mm) 140			
BOREHOLE DEPTH (m) 11.00			
CASING DEPTH (m) 11.00			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete. No recovery									
1	Concrete. NEC.		6.08	1.50						
2	MADE GROUND: Very soft dark brown/black clay. Possible HC in black, no odour.		4.78	2.80	1	ENV	2.80-3.00			
3					2	ENV	3.00-3.50			
4	MADE GROUND: Very soft black gravelly clay. HC odour.		3.58	4.00	3	ENV	4.00-4.50			
5	MADE GROUND: Very soft black very gravelly clay. HC impact.		3.08	4.50						
6	MADE GROUND: Very soft dark brown/black slightly gravelly clay with wood at 5.00m. Possible HC impact.		2.88	4.70						
7	MADE GROUND: Very soft black very gravelly clay. HC impact.		1.58	6.00	4	ENV	5.50-6.00			
8	MADE GROUND: Very soft black/dark brown gravelly clay. HC impact.		1.18	6.40	5	ENV	6.00-6.50			
9	MADE GROUND: Very soft dark brown very gravelly clay. HC impact.		0.58	7.00						
10	MADE GROUND: Very soft black slightly gravelly clay with occasional cobbles. HC impact.		0.08	7.50	6	ENV	7.50-8.00			
11	LIMESTONE. NEC.		-0.42	8.00						

HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. 104	
CO-ORDINATES 156,979.48 E 156,549.68 N		SHEET Sheet 2 of 2	
GROUND LEVEL (m AOD) 7.58		DATE DRILLED 14/11/2009	
CLIENT Bord Gais		DATE LOGGED 15/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY G. Thornton	
BOREHOLE DIAMETER (mm) 140			
BOREHOLE DEPTH (m) 11.00			
CASING DEPTH (m) 11.00			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10	LIMESTONE. NEC. (continued)									
11	End of Borehole at 11.00 m		-3.42	11.00						
12										
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. 105	
CO-ORDINATES 156,970.81 E 156,542.23 N		SHEET Sheet 1 of 2	
GROUND LEVEL (m AOD) 6.98		DATE DRILLED 13/11/2009	
CLIENT Bord Gais		DATE LOGGED 15/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY G. Thornton	
BOREHOLE DIAMETER (mm) 112			
BOREHOLE DEPTH (m) 10.50			
CASING DEPTH (m) 10.50			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete.		6.88	0.10						
0-3	MADE GROUND: No recovery. Possible cavity from 1.00-3.00m									
3	MADE GROUND: Medium dense, brown/black mottled, very clayey gravel. HC impact in black.		3.98	3.00						
3.5	MADE GROUND: Soft dark brown/black gravelly clay. HC odour.		3.48	3.50	1	ENV	3.50-4.00			
4					2	ENV	4.00-4.50			
4.5	MADE GROUND: Very soft, dark brown sandy clay. NEC. Mostly washed away by fast waterstrike at 4.50m - little recovery.		2.48	4.50	3	ENV	5.00-5.50			
5.6	MADE GROUND: Loose dark brown very clayey sand. NEC.		1.38	5.60						
5.8	MADE GROUND: cobble. NEC.		1.18	5.80	4	ENV	5.90-6.00			
5.9	MADE GROUND: Soft dark brown very clayey gravel. Possible HC.		1.08	5.90						
6.0	MADE GROUND: Very soft grey very gravelly clay. NEC.		0.98	6.00						
6.6	MADE GROUND: Loose dark grey slightly clayey sand. NEC.		0.38	6.60	5	ENV	6.70-7.00			
6.7	MADE GROUND: Very soft grey very gravelly clay. NEC.		0.28	6.70	6	ENV	7.00-7.20			
7.2	MADE GROUND: Very soft grey clay. HC.		-0.22	7.20						
7.5	Dense grey very clayey COBBLES. HC impact. Possible variably weathered limestone.		-0.52	7.50						
8	LIMESTONE. NEC.									

HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
				4.50	NR	NS	2.00	NR	Rapid

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. 105	
CO-ORDINATES 156,970.81 E 156,542.23 N		SHEET Sheet 2 of 2	
GROUND LEVEL (m AOD) 6.98		DATE DRILLED 13/11/2009	
CLIENT Bord Gais		DATE LOGGED 15/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY G. Thornton	
BOREHOLE DIAMETER (mm) 112			
BOREHOLE DEPTH (m) 10.50			
CASING DEPTH (m) 10.50			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10	LIMESTONE. NEC. (continued)	[Brick Pattern]								
	End of Borehole at 10.50 m		-3.52	10.50						
11										
12										
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	<p>Sample Legend</p> <p>D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub)</p> <p style="text-align: right; font-size: small;">U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample</p>
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. 106	
CO-ORDINATES 156,964.77 E 156,537.80 N		SHEET Sheet 1 of 1	
GROUND LEVEL (m AOD) 7.06		DATE DRILLED 13/11/2009	
CLIENT Bord Gais		DATE LOGGED 15/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY G. Thornton	
BOREHOLE DIAMETER (mm) 112			
BOREHOLE DEPTH (m) 9.00			
CASING DEPTH (m) 9.00			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete with rebar		6.91	0.15						
	MADE GROUND: Firm brown gravelly clay. Free phase oil from 1.50m-1.90m.				1	ENV	0.50-1.00			
1					2	ENV	1.50-1.90			
2	MADE GROUND: Very soft gravelly very sandy clay. Free phase oil.		5.16	1.90						
	MADE GROUND: Loose dark grey clayey sand. HC - free phase oil.		4.56	2.50	3	ENV	2.50-3.00			
3	MADE GROUND: Firm brown mottled black clay. HC in black.		4.06	3.00						
	MADE GROUND: Loose black very clayey gravel. HC-free phase oil.		3.76	3.30	4	ENV	3.30-3.50			
	MADE GROUND: Soft brown/black mottled gravelly clay with cobbles at 4.30m. HC impact - free phase oil.		3.56	3.50	5	ENV	4.00-4.50			
4	MADE GROUND: Loose clayey grey sand. HC.		2.56	4.50						
	MADE GROUND: Soft black clay. Heavy HC and free phase oil.		2.36	4.70	6	ENV	5.00-5.50			
5										
6	MADE GROUND: Firm brown/dark grey gravelly clay. HC in dark grey mottling.		1.36	5.70						
	LIMESTONE. NEC except for local staining at start of run.		1.06	6.00						
7										
8										
9	End of Borehole at 9.00 m		-1.94	9.00						

HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. 107	
CO-ORDINATES 156,957.30 E 156,532.14 N		SHEET Sheet 1 of 1	
GROUND LEVEL (m AOD) 7.04		DATE DRILLED 11/11/2009	
CLIENT Bord Gais		DATE LOGGED 12/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY D. O'Shea	
BOREHOLE DIAMETER (mm) 112			
BOREHOLE DEPTH (m) 8.00			
CASING DEPTH (m) 8.00			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft to firm light brown sandy gravelly clay. NEC.		6.64	0.40	1	ENV	0.40-1.00			
	MADE GROUND: Soft black/dark brown sandy gravelly clay. Possible HC.		6.04	1.00	2	ENV	1.00-1.50			
1	MADE GROUND: Loose light brown, clayey sandy gravel with occasional cobbles. Possible HC.		5.54	1.50						
	MADE GROUND: Soft brown, sandy gravelly clay. NEC.		5.04	2.00	3	ENV	2.00-3.00			
2	MADE GROUND: Soft black/grey sandy gravelly clay. High HC with free phase oil.		4.04	3.00	4	ENV	3.00-4.00			
3	MADE GROUND: Soft black sandy clay. High HC with free phase oil.	3.04	4.00	5	ENV	4.00-5.00				
4	MADE GROUND: Soft brown/black mottled sandy gravelly clay. High HC impact									
5	LIMESTONE. Local spots of HC 5.20-5.30m.		2.04	5.00						
6										
7										
8	End of Borehole at 8.00 m		-0.96	8.00						
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09



GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. 108	
CO-ORDINATES 156,949.84 E 156,525.97 N		SHEET Sheet 1 of 1	
GROUND LEVEL (m AOD) 7.11		DATE DRILLED 11/11/2009	
CLIENT Bord Gais		DATE LOGGED 11/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY D. O'Shea	
BOREHOLE DIAMETER (mm) 112			
BOREHOLE DEPTH (m) 7.50			
CASING DEPTH (m) 7.50			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details	
					Ref. Number	Sample Type	Depth (m)	Recovery			
0	MADE GROUND: Soft dark brown/black sandy gravelly clay. NEC.		6.81	0.30	1	ENV	0.50-1.00				
1	MADE GROUND: Soft dark brown sandy slightly gravelly clay. Possible HC.									2	ENV
2	MADE GROUND: No recovery.				5.61	1.50					
3	MADE GROUND: Soft dark brown sandy slightly gravelly clay. High HC with free phase oil.				4.11	3.00	3	ENV	3.00-3.50		
4	MADE GROUND: Soft black sandy slightly gravelly clay. High HC with free phase oil.				3.61	3.50	4	ENV	3.50-3.90		
4	MADE GROUND: Stiff brown/black clay. Possible HC.				3.21	3.90	5	ENV	3.90-4.30		
4	MADE GROUND: Loose sandy gravel and brick. Possible HC.				2.81	4.30	6	ENV	4.30-4.40		
5	Soft black sandy CLAY. High HC.		2.71	4.40	7	ENV	4.40-4.50				
5	LIMESTONE. NEC.		2.61	4.50							
8	End of Borehole at 7.50 m			-0.39	7.50						

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	
REMARKS					Sample Legend					
					D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub)					
					U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample					

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. 109	
CO-ORDINATES 156,942.49 E 156,519.27 N		SHEET Sheet 1 of 1	
GROUND LEVEL (m AOD) 7.15		DATE DRILLED 11/11/2009	
CLIENT Bord Gais		DATE LOGGED 13/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY A. Mahony	
BOREHOLE DIAMETER (mm) 140			
BOREHOLE DEPTH (m) 7.00			
CASING DEPTH (m) 7.00			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft to firm dark brown/black mottled, sandy gravelly silt/clay. Possible slight HC.		6.45	0.70	1	ENV	0.00-0.50			
1	MADE GROUND: Soft to firm dark brown/brown/black mottled, gravelly clay. Possible slight HC.				2	ENV	1.00-1.50			
2	MADE GROUND: Soft dark brown mottled red/black, sandy gravelly clay with occasional cobbles. HC.				3	ENV	2.00-2.50			
3	MADE GROUND: Soft dark brown mottled red/black, sandy gravelly clay (high plasticity) with occasional cobbles. Heavy HC, very sticky and visible oil.				4	ENV	3.00-3.50			
4	MADE GROUND: Soft to locally firm orange/brown mottled, sandy gravelly clay. HC.				5	ENV	4.00-4.50			
4	LIMESTONE (with grey silty/clayey limestone gravel 6.900-7.00m). NEC.		3.45	3.70						
4			3.15	4.00						
7	End of Borehole at 7.00 m		0.15	7.00	6	ENV	6.90-7.00			

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
					11-11-09	1.50			Soil very wet 1.50m-2.00m

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. I10	
CO-ORDINATES 156,934.64 E 156,512.86 N		SHEET Sheet 1 of 1	
GROUND LEVEL (m AOD) 7.04		DATE DRILLED 13/11/2009	
CLIENT Bord Gais		DATE LOGGED 14/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY G. Thornton	
BOREHOLE DIAMETER (mm) 140			
BOREHOLE DEPTH (m) 3.00			
CASING DEPTH (m) 3.00			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	LIMESTONE. NEC.	[Brick Pattern]								
3	End of Borehole at 3.00 m		4.04	3.00						

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS						
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments	
										No water strike	
INSTALLATION DETAILS					GROUNDWATER DETAILS						
Date					Date	Hole Depth	Casing Depth	Depth to Water	Comments		
Date	Tip Depth	RZ Top	RZ Base	Type							

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. I11	
		SHEET Sheet 1 of 1	
CO-ORDINATES 156,927.25 E 156,507.49 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.21		BOREHOLE DIAMETER (mm) 112	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 4.50	
ENGINEER Mouchel		CASING DEPTH (m) 4.50	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft slightly sandy, slightly gravelly CLAY with straw/manure and metal. TOC.				1	ENV	0.00-0.50			
0.5	Very stiff mottled grey/ reddish brown slightly sandy, slightly gravelly CLAY with occasional cobbles. HC odour.		6.71	0.50	2	ENV	1.00-1.20			
1.2	LIMESTONE. NEC.		6.01	1.20						
4.5	End of Borehole at 4.50 m		2.71	4.50						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
06-11-09					06-11-09	4.50			0.00-0.50m Damp soil, 0.50-1.20m Dry.
REMARKS 0.00-0.50m Damp soil, 0.50-1.20m Dry.							Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample		

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. 112	
CO-ORDINATES 156,919.26 E 156,501.99 N		SHEET Sheet 1 of 1	
GROUND LEVEL (m AOD) 7.19		DATE DRILLED 16/11/2009	
CLIENT Bord Gais		DATE LOGGED 16/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY A. Mahony	
BOREHOLE DIAMETER (mm) 140			
BOREHOLE DEPTH (m) 6.00			
CASING DEPTH (m) 6.00			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Dark brown black mottled silty sandy cobbly gravel. NEC.				1	ENV	0.00-0.50			
0.5	Soft brown mottled grey sandy gravelly SILT/CLAY with occasional cobbles. NEC.		6.69	0.50	2	ENV	0.70-1.00			
1.3	Firm to stiff brown mottled grey sandy gravelly SILT/CLAY with occasional cobbles. NEC.		5.89	1.30	3	ENV	1.50-2.00			
1.6	Soft to firm sandy gravelly cobbly /SILTCLAY. NEC.		5.59	1.60						
3.0	Sub-angular to sub-rounded limestone GRAVEL and COBBLES. (possibly variably weathered limestone bedrock). NEC.		4.19	3.00	4	ENV	2.80-3.00			
3.7	Soft grey/brown mottled gravelly cobbly CLAY (Possible clay band within rock). NEC.		3.79	4.00	5	ENV	4.00-4.30			
4.3	LIMESTONE (pulverised) with brown/grey silt/clay layer at 5.80m. NEC.		2.89	4.30						
5.8					6	ENV	5.80-5.85			
6.0	End of Borehole at 6.00 m		1.19	6.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks				BOREHOLE NO. SHEET J01 Sheet 1 of 1	
CO-ORDINATES 157,008.64 E 156,559.67 N		RIG TYPE Sonic		DATE DRILLED 09/11/2009	
GROUND LEVEL (m AOD) 7.93		BOREHOLE DIAMETER (mm) 112		DATE LOGGED 11/11/2009	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 9.00		BORED BY Boart Longyear	
ENGINEER Mouchel		CASING DEPTH (m) 9.00		PROCESSED BY S. Letch	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: dark brown clayey sandy gravel with clay pipe. NEC.		7.43	0.50	1	ENV	0.50-1.00			
	MADE GROUND: Grey slightly gravelly clay (possible ash). Possible contamination.		6.93	1.00	2	ENV	1.00-1.50			
1	MADE GROUND: Grey slightly sandy gravelly clay (possible ash). Possible contamination.		6.43	1.50	3	ENV	2.00-2.50			
	MADE GROUND: Grey slightly sandy gravelly clay with occasional cobbles. NEC.				4	ENV	3.00-3.50			
					5	ENV	4.00-4.50			
					6	ENV	5.80-6.00			
6	MADE GROUND: Grey gravelly clay with some cobbles and red brick. NEC.		2.13	5.80						
	MADE GROUND: Grey angular cobbles and red brick. NEC.		1.93	6.00						
7	LIMESTONE. NEC.		0.93	7.00						
9	End of Borehole at 9.00 m		-1.07	9.00						

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date					Date	Hole Depth	Casing Depth	Depth to Water	Comments	
Date	Tip Depth	RZ Top	RZ Base	Type						
REMARKS					Sample Legend					
					D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample					

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REPORT NUMBER

14463

CONTRACT Limerick Gasworks				BOREHOLE NO. SHEET J02 Sheet 1 of 1	
CO-ORDINATES 157,000.86 E 156,553.79 N		RIG TYPE Sonic		DATE DRILLED 09/11/2009	
GROUND LEVEL (m AOD) 7.95		BOREHOLE DIAMETER (mm) 140		DATE LOGGED 09/11/2009	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 9.00		BORED BY Boart Longyear	
ENGINEER Mouchel		CASING DEPTH (m) 9.00		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Concrete		7.75	0.20	1	ENV	0.20-0.70			
1	MADE GROUND: Loose black/grey/white (layered) clayey gravel (possible ash & cinders). Possible contamination.				2	ENV	1.50-2.00			
2	MADE GROUND: Stiff dark grey/black slightly gravelly clay. NEC.		5.95	2.00	3	ENV	2.00-2.50			
3	MADE GROUND: Brown to grey (with depth) slightly gravelly clay. NEC.		5.45	2.50	4	ENV	3.00-3.50			
4					5	ENV	4.00-4.50			
5					6	ENV	5.50-6.00			
6	MADE GROUND: limestone cobbles and red brick. NEC.		1.95	6.00						
7	LIMESTONE. NEC.		1.45	6.50						
8										
9	End of Borehole at 9.00 m		-1.06	9.00						

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
					GROUNDWATER DETAILS					
INSTALLATION DETAILS					Date	Hole Depth	Casing Depth	Depth to Water	Comments	
Date	Tip Depth	RZ Top	RZ Base	Type						
REMARKS							Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample			

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET J03 Sheet 1 of 1	
CO-ORDINATES 156,993.13 E 156,546.82 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.63		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 9.00	
ENGINEER Mouchel		CASING DEPTH (m) 9.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Standpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Stiff brown gravelly clay. NEC									
	MADE GROUND: Soft brown very gravelly clay. HC odour		7.13	0.50	1	ENV	0.50-1.00			
	MADE GROUND: Soft black very gravelly clay. Strong HC odour.		6.63	1.00	2	ENV	1.00-1.20			
	MADE GROUND: Stiff slightly gravelly clay. HC odour.		6.43	1.20						
	MADE GROUND: Soft black very gravelly clay. HC odour.		6.13	1.50	3	ENV	2.00-2.50			
					4	ENV	3.00-3.50			
	MADE GROUND: Firm brown (grey at 6.00m) clay. NEC.		4.13	3.50	5	ENV	4.00-4.50			
					6	ENV	5.50-6.00			
	MADE GROUND: Stiff grey very gravelly clay with many cobbles. NEC.		1.63	6.00	7	ENV	6.50-7.00			
	MADE GROUND: Stiff brown clay. NEC.	0.63	7.00	8	ENV	7.10-7.50				
	MADE GROUND: Hard brown very gravelly clay with occasional cobbles. NEC.	0.53	7.10							
	LIMESTONE. NEC.	0.13	7.50							
	Very stiff grey slightly gravelly CLAY. NEC.	-1.17	8.80	9	ENV	8.80-9.00				
	End of Borehole at 9.00 m		-1.37	9.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
REMARKS						Sample Legend			
						D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample			

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REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET J04 Sheet 1 of 1	
CO-ORDINATES 156,986.64 E 156,541.20 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.86		BOREHOLE DIAMETER (mm) 112	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 8.00	
ENGINEER Mouchel		CASING DEPTH (m) 8.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft dark grey, very gravelly clay. NEC.		7.36	0.50	1	ENV	0.55-1.00			
	MADE GROUND: Loose black sandy gravel (possible cinders) Possible contamination.		7.31	0.55						
1	MADE GROUND: Soft sandy clay in layers of white/grey/light brown/red (possible ash). NEC.				2	ENV	1.50-2.00			
2	MADE GROUND: Very soft dark grey to black (with depth) slightly gravelly clay. NEC.			5.86	2.00	3	ENV	2.50-3.00		
3	MADE GROUND: Very soft black gravelly clay. HC odour.			4.86	3.00	4	ENV	3.50-4.00		
4						5	ENV	4.30-4.80		
5	MADE GROUND: Loose black clayey gravel. HC odour.		3.06	4.80						
	MADE GROUND: Very soft dark grey clay. HC odour.		2.86	5.00						
	MADE GROUND: Soft black gravelly clay with occasional cobbles. HC odour.		2.36	5.50	6	ENV	5.50-6.00			
6	LIMESTONE. NEC.		1.86	6.00						
7										
8	End of Borehole at 8.00 m		-0.14	8.00						
9										

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
					GROUNDWATER DETAILS					
INSTALLATION DETAILS					Date	Hole Depth	Casing Depth	Depth to Water	Comments	
Date	Tip Depth	RZ Top	RZ Base	Type						
REMARKS					Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample					

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14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET J05 Sheet 1 of 1	
CO-ORDINATES 156,979.13 E 156,535.84 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 8.18		BOREHOLE DIAMETER (mm) 112	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 8.00	
ENGINEER Mouchel		CASING DEPTH (m) 8.00	
		BORED BY Boart Longyear	
		PROCESSED BY D. O'Shea	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Loose brown/dark brown, clayey sandy gravel with occasional cobbles. Possible HC.				1	ENV	0.00-0.50			
	MADE GROUND: Loose brown clayey sandy gravel. NEC.		7.68	0.50						
1	MADE GROUND: Dark brown/green/black clayey sand. Possible HC.		7.18	1.00	2	ENV	1.00-1.20			
	MADE GROUND: Light brown clayey sand. NEC.		6.98	1.20						
	MADE GROUND: Soft grey sandy gravelly clay. Possible HC.		6.68	1.50	3	ENV	1.50-2.50			
2	MADE GROUND: Soft, light yellow/brown sandy gravelly clay. NEC.		5.68	2.50						
3	MADE GROUND: No recovery.		5.18	3.00						
4	MADE GROUND: Soft grey sandy gravelly clay. NEC.		3.68	4.50	4	ENV	4.50-5.00			
5	MADE GROUND: Soft grey/brown, clayey, gravelly sand. NEC.		3.18	5.00						
	MADE GROUND: Soft black sandy gravelly clay. High HC content.		2.88	5.30	5	ENV	5.30-6.00			
6	LIMESTONE. NEC except local HC spots between 7.50-8.00m.		2.18	6.00						
8	End of Borehole at 8.00 m		0.18	8.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. J06	
		SHEET Sheet 1 of 1	
CO-ORDINATES 156,971.57 E 156,530.02 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.98		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 9.00	
ENGINEER Mouchel		CASING DEPTH (m) 9.00	
		BORED BY Boart Longyear	
		PROCESSED BY D. O'Shea	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Firm brown sandy topsoil. NEC.		7.78	0.20	1	ENV	0.20-0.70			
	MADE GROUND: Soft dark brown sandy gravelly clay. Possible HC.									
1	MADE GROUND: Stiff dark brown/black sandy slightly gravelly clay. Possible HC.		6.88	1.10	2	ENV	1.10-1.30			
	MADE GROUND: Loose brown clayey gravelly cobbles. NEC.		6.68	1.30						
2	MADE GROUND: Loose grey cobbles. NEC.		6.48	1.50						
5	MADE GROUND: Loose black clayey sandy gravelly cobbles. High HC impact.		3.48	4.50	3	ENV	5.00-5.50			
6	LIMESTONE. NEC.		1.98	6.00						
9	End of Borehole at 9.00 m		-1.02	9.00						

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	
REMARKS					Sample Legend					
					D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub)					
					U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample					

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET J07 Sheet 1 of 1	
CO-ORDINATES 156,963.72 E 156,523.53 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 8.04		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 7.50	
ENGINEER Mouchel		CASING DEPTH (m) 7.50	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Grass and topsoil. NEC. MADE GROUND: Firm brown, slightly sandy gravelly clay with occasional cobbles. NEC. MADE GROUND: No recovery (loose material).		7.94	0.10	1	ENV	0.10-0.30			
			7.74	0.30						
2	MADE GROUND: Loose dark brown to black very clayey gravel (possibly with cinders). Possible HC. MADE GROUND: Stiff brown sandy clay. NEC.		6.54	1.50	2	ENV	1.50-1.70			
			6.34	1.70						
3	MADE GROUND: Soft grey slightly gravelly clay with occasional cobbles. Strong HC.		5.74	2.30	3	ENV	2.50-3.00			
			5.04	3.00						
4	MADE GROUND: Soft black very gravelly clay with occasional cobbles. Strong HC.		3.94	4.10	4	ENV	3.50-4.00			
			3.54	4.50						
5	MADE GROUND: Stiff grey gravelly clay with occasional cobbles (possible pulverised rock). HC odour. LIMESTONE. NEC.		3.94	4.10	5	ENV	4.10-4.50			
			3.54	4.50						
8	End of Borehole at 7.50 m		0.54	7.50						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. J08
CO-ORDINATES 156,956.35 E 156,517.85 N		SHEET Sheet 1 of 1
GROUND LEVEL (m AOD) 7.47	RIG TYPE Sonic	DATE DRILLED 11/11/2009
CLIENT Bord Gais	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 12/11/2009
ENGINEER Mouchel	BOREHOLE DEPTH (m) 3.00	BORED BY Boart Longyear
	CASING DEPTH (m) 3.00	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Dark brown clayey sandy gravelly silt. NEC.		7.07	0.40	1	ENV	0.00-0.40			
	Pale grey sandy gravelly SILT. NEC.		6.97	0.50	2	ENV	0.10-0.50			
1										
2										
3	End of Borehole at 3.00 m		4.47	3.00						
4										
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. J09
		SHEET Sheet 1 of 1
CO-ORDINATES 156,948.85 E 156,510.81 N	RIG TYPE Sonic	DATE DRILLED 16/11/2009
GROUND LEVEL (m AOD) 7.23	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 16/11/2009
CLIENT Bord Gais	BOREHOLE DEPTH (m) 2.50	BORED BY Boart Longyear
ENGINEER Mouchel	CASING DEPTH (m) 2.50	PROCESSED BY A. Mahony

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	LIMESTONE. NEC.									
1										
2										
2.50	End of Borehole at 2.50 m		4.73	2.50						
3										
4										
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. J10	
CO-ORDINATES 156,940.02 E 156,506.75 N		SHEET Sheet 1 of 1	
GROUND LEVEL (m AOD) 6.95		DATE DRILLED 05/11/2009	
CLIENT Bord Gais		DATE LOGGED 05/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY G. Thornton	
BOREHOLE DIAMETER (mm) 140			
BOREHOLE DEPTH (m) 3.00			
CASING DEPTH (m) 3.00			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Firm grey/brown very gravelly CLAY. NEC.				1	ENV	0.00-0.30			
0.30	LIMESTONE. NEC.		6.65	0.30						
3.00	End of Borehole at 3.00 m		3.95	3.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
05-11-09	3.00	1.00	3.00	50mm SP					

REMARKS pic1 0.30-3.00m of rock?. Sample 001ENV taken by hand excavation due to core barrel getting no recovery between 0.00m-0.30m.	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET J11 Sheet 1 of 1	
CO-ORDINATES 156,933.36 E 156,499.93 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.43		BOREHOLE DIAMETER (mm) 112	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 2.50	
ENGINEER Mouchel		CASING DEPTH (m) 2.50	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	Stiff dark grey, slightly sandy gravelly CLAY. NEC.									
	Very stiff brown slightly sandy, slightly gravelly CLAY. NEC.		7.03	0.40						
	Loose black, slightly clayey, slightly gravelly SAND. HC odour.		6.58	0.85	1	ENV	0.85-0.95			
	Very stiff brown slightly sandy, gravelly CLAY. NEC.		6.48	0.95						
	Very stiff to hard sandy gravelly CLAY with occasional cobbles. NEC.		6.43	1.00						
	LIMESTONE. NEC.		6.23	1.20						
2	End of Borehole at 2.50 m		4.93	2.50						
3										
4										
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
REMARKS					Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample				

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14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET J12 Sheet 1 of 1	
CO-ORDINATES 156,926.01 E 156,494.56 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.43		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 3.50	
ENGINEER Mouchel		CASING DEPTH (m) 3.50	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Black gravelly fill. MADE GROUND: Soft light brown sandy gravelly silt/clay. NEC.		7.38	0.05	1	ENV	0.50-1.00			
1										
2	Very sandy GRAVEL with occasional cobbles. Gravel starts fine becoming coarse with depth. NEC.		5.93	1.50						
2	LIMESTONE. NEC.		5.43	2.00						
3										
4	End of Borehole at 3.50 m		3.93	3.50						
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET K01 Sheet 1 of 1	
CO-ORDINATES 157,011.65 E 156,554.69 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.96		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 6.50	
ENGINEER Mouchel		CASING DEPTH (m) 6.50	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft white/brown mottled sandy gravelly silt with red brick. NEC.				1	ENV	0.30-0.80			
1	MADE GROUND: Firm, grey/brown/black mottled, slightly sandy gravelly clay with occasional cobbles. NEC.		7.16	0.80	2	ENV	1.00-1.50			
2	MADE GROUND: Soft/firm, dark brown/grey mottled (black 4.00-4.50m), slightly sandy gravelly clay with occasional cobbles. NEC.		6.46	1.50	3	ENV	2.50-3.00			
3					4	ENV	3.50-4.00			
4	LIMESTONE. NEC.		3.46	4.50						
5										
6										
7	End of Borehole at 6.50 m		1.46	6.50						
8										
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
19-11-09	4.50	1.00	4.50	50mm SP					

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET K02 Sheet 1 of 1	
CO-ORDINATES 157,005.74 E 156,549.10 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 8.05		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 6.50	
ENGINEER Mouchel		CASING DEPTH (m) 6.50	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Firm, brown/white, sandy gravelly silt with red brick. NEC.		6.85	1	ENV	0.00-0.50				
1	MADE GROUND: Firm, orange/cream, sandy gravelly silt. NEC.			2	ENV	1.00-1.50				
2				3	ENV	2.00-2.50				
3	MADE GROUND: Firm, dark brown, sandy gravelly silt/clay with red brick. NEC.			4	ENV	3.00-3.50				
4	MADE GROUND: Soft, grey/black mottled clay. NEC.			5	ENV	4.00-4.50				
5	LIMESTONE. NEC.		3.55	4		2.80				
6				5		3.10				
7	End of Borehole at 6.50 m		1.55	6		4.50				
8				7		6.50				
9				8						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET K03 Sheet 1 of 1	
CO-ORDINATES 157,000.08 E 156,540.07 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.99		BOREHOLE DIAMETER (mm) 112	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 7.00	
ENGINEER Mouchel		CASING DEPTH (m) 7.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Loose dark grey/black very clayey gravel.		6.99	1.00	1	ENV	0.50-1.00			
1	MADE GROUND: Very soft gravelly clay in layers of white/dark grey/black (possible ash, cinders, clinker, asbestos).				2	ENV	1.00-1.50			
2					3	ENV	2.50-3.00			
3	MADE GROUND: Stiff grey to black (with depth) gravelly clay. NEC.				4	ENV	3.50-4.00			
4	MADE GROUND: Stiff black clay with frequent cobbles. Possible HC in black, no odour.				5	ENV	4.50-5.00			
5	LIMESTONE. NEC.		2.99	5.00						
7	End of Borehole at 7.00 m		0.99	7.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET K04 Sheet 1 of 2	
CO-ORDINATES 156,992.94 E 156,534.88 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.88		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 10.00	
ENGINEER Mouchel		CASING DEPTH (m) 10.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Loose brown clayey gravel (possible ash & cinders). Possible contamination.	<div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); opacity: 0.5; font-size: 0.8em;"> For inspection purposes only. Consent of copyright owner required for any other use. </div>			1	ENV	0.00-0.50			
1					2	ENV	1.00-1.50			
2	MADE GROUND: Very loose material. No recovery		6.38	1.50						
3										
4										
5	MADE GROUND: Medium dense, slightly gravelly sand. Strong HC odour. 1.00m recovered.		3.38	4.50	3	ENV	5.50-6.00			
6	MADE GROUND: Firm black very gravelly clay. HC odour and thick tar like substance.		1.88	6.00	4	ENV	6.25-6.75			
7	MADE GROUND: Stiff grey very sandy gravelly clay. Very strong HC. Tar like substance is on outside of core from 6.00-7.00m and may contaminate sample.		0.88	7.00	5	ENV	7.50-8.00			
8	MADE GROUND: Limestone cobbles and red brick and plastic. HC sheen on rock.		-0.13	8.00						
9	LIMESTONE. HC.	-1.13	9.00							

HARD STRATA BORING/CASELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
				GROUNDWATER DETAILS					
INSTALLATION DETAILS				Date	Hole Depth	Casing Depth	Depth to Water	Comments	
Date	Tip Depth	RZ Top	RZ Base	Type					
REMARKS						Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample			

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14463

CONTRACT Limerick Gasworks		BOREHOLE NO. K04
		SHEET Sheet 2 of 2
CO-ORDINATES 156,992.94 E 156,534.88 N	RIG TYPE Sonic	DATE DRILLED 10/11/2009
GROUND LEVEL (m AOD) 7.88	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 10/11/2009
CLIENT Bord Gais	BOREHOLE DEPTH (m) 10.00	BORED BY Boart Longyear
ENGINEER Mouchel	CASING DEPTH (m) 10.00	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10			-2.13	10.00						
11										
12										
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET K05 Sheet 1 of 1	
CO-ORDINATES 156,984.92 E 156,529.10 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 8.64		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 9.00	
ENGINEER Mouchel		CASING DEPTH (m) 9.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Stiff grey gravelly clay. NEC.	<i>For inspection purposes only. Consent of copyright owner required for any other use.</i>	8.44	0.20	1	ENV	0.25-0.75		[Stacpipe Diagram]	
	MADE GROUND: Stiff black gravelly clay with occasional cobbles and vegetation. Slight HC impact.		7.64	1.00	2	ENV	1.25-1.50			
1	MADE GROUND: Soft brown/black gravelly clay. HC, strong between 1.25-1.50m.		7.14	1.50						
	MADE GROUND: No recovery.									
3	MADE GROUND: Soft black gravelly clay. Heavy HC.		5.64	3.00	3	ENV	3.00-3.50			
					4	ENV	4.00-4.50			
6	LIMESTONE. Slight HC sheen.	2.64	6.00	5	ENV	5.50-6.00				
7	LIMESTONE. NEC.	1.64	7.00							
8										
	Very stiff black & grey CLAY. NEC.	-0.06	8.70	6	ENV	8.70-9.00				
9	End of Borehole at 9.00 m		-0.36	9.00						

HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments
10-11-09	6.00	1.00	6.00	50mm SP					

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. K06	
		SHEET Sheet 1 of 1	
CO-ORDINATES 156,977.38 E 156,522.33 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 8.32		BOREHOLE DIAMETER (mm) 112	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 7.50	
ENGINEER Mouchel		CASING DEPTH (m) 7.50	
		BORED BY Boart Longyear	
		PROCESSED BY D. O'Shea	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Firm brown sandy gravelly clay. Possible HC.		8.02	0.30	1	ENV	0.00-0.30			
1	MADE GROUND: Stiff dark brown sandy gravelly clay with occasional cobbles. Possible HC.				2	ENV	1.00-1.50			
2	MADE GROUND: Soft brown/black mottled, sandy gravelly clay. Heavy HC impact.			6.82	1.50					
3						3	ENV	3.00-3.50		
4	MADE GROUND: Firm black (becoming brown from 4.00m), sandy gravelly clay with wood fragments. Possible HC.		4.82	3.70	4	ENV	3.70-4.00			
5	MADE GROUND: Angular gravel - concrete and limestone. NEC.		4.02	4.30						
6	MADE GROUND: Gravel - tarmacadam. NEC.		2.32	6.00						
7	LIMESTONE. NEC.		1.82	6.50						
8	End of Borehole at 7.50 m		0.82	7.50						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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REPORT NUMBER

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CONTRACT Limerick Gasworks		BOREHOLE NO. K07	
		SHEET Sheet 1 of 1	
CO-ORDINATES 156,969.48 E 156,517.09 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 8.21		BOREHOLE DIAMETER (mm) 112	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 9.00	
ENGINEER Mouchel		CASING DEPTH (m) 9.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft to firm dark brown mottled, slightly clayey, gravelly SAND. NEC.		7.71	0.50	1	ENV	0.00-0.50			
1	MADE GROUND: Soft to firm orange/brown mottled, clayey sandy gravelly silt. NEC.			2	ENV	1.00-1.50				
3	MADE GROUND: Dark brown black mottled sandy cobbly gravel. Heavy HC.		5.21	3.00	3	ENV	2.90-3.00			
4				4	ENV	3.00-6.00				
6	LIMESTONE with clay band 8.70-8.90m. Heavy HC.		2.21	6.00						
9	End of Borehole at 9.00 m				-0.79	9.00	5	ENV	8.70-8.90	

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS						
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments	
										No water strike	
INSTALLATION DETAILS					GROUNDWATER DETAILS						
Date					Date	Hole Depth	Casing Depth	Depth to Water	Comments		
Date	Tip Depth	RZ Top	RZ Base	Type							
REMARKS					Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample						

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CONTRACT Limerick Gasworks		BOREHOLE NO. K08
CO-ORDINATES 156,961.12 E 156,510.40 N		SHEET Sheet 1 of 1
GROUND LEVEL (m AOD) 7.90	RIG TYPE Sonic	DATE DRILLED 16/11/2009
CLIENT Bord Gais	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 16/11/2009
ENGINEER Mouchel	BOREHOLE DEPTH (m) 2.00	BORED BY Boart Longyear
	CASING DEPTH (m) 2.00	PROCESSED BY A. Mahony

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	LIMESTONE. Slight odour of HC.									
2	End of Borehole at 2.00 m		5.90	2.00						
1										
3										
4										
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. K09
CO-ORDINATES 156,955.17 E 156,504.24 N		SHEET Sheet 1 of 1
GROUND LEVEL (m AOD) 7.60	RIG TYPE Sonic	DATE DRILLED 16/11/2009
CLIENT Bord Gais	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 16/11/2009
ENGINEER Mouchel	BOREHOLE DEPTH (m) 2.00	BORED BY Boart Longyear
	CASING DEPTH (m) 2.00	PROCESSED BY A. Mahony

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	LIMESTONE. NEC.									
2	End of Borehole at 2.00 m		5.60	2.00						
1										
3										
4										
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET K10 Sheet 1 of 1	
CO-ORDINATES 156,947.71 E 156,499.44 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.53		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 2.00	
ENGINEER Mouchel		CASING DEPTH (m) 2.00	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	LIMESTONE. NEC.									
2	End of Borehole at 2.00 m		5.53	2.00						
1										
3										
4										
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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CONTRACT Limerick Gasworks		BOREHOLE NO. K11	
		SHEET Sheet 1 of 1	
CO-ORDINATES 156,939.61 E 156,492.66 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.41		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 3.80	
ENGINEER Mouchel		CASING DEPTH (m) 3.80	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND consisting of very dense, grey angular limestone gravel. NEC		7.21	0.20	1	ENV	0.20-0.70			
	Stiff brown slightly sandy, slightly gravelly CLAY. NEC.		6.71	0.70	2	ENV	1.00-1.50			
	Very stiff, grey, slightly sandy, slightly gravelly CLAY. NEC.		5.91	1.50						
	LIMESTONE. NEC.									
4	End of Borehole at 3.80 m		3.81	3.80						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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CONTRACT Limerick Gasworks		BOREHOLE NO. K12	
		SHEET Sheet 1 of 1	
CO-ORDINATES 156,933.15 E 156,487.21 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.53		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 3.00	
ENGINEER Mouchel		CASING DEPTH (m) 3.00	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft light brown, very sandy gravelly cobbly silt. NEC.				1	ENV	0.00-0.50			
1	MADE GROUND: Slightly silty and sandy, gravel and cobbles. NEC.		6.73	0.80	2	ENV	1.20-1.30			
	6.53		1.00							
	6.03		1.50							
2	Coarse GRAVEL with local gravelly sand 1.20-1.30m. NEC.									
3	LIMESTONE. NEC.									
3	End of Borehole at 3.00 m		4.53	3.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
				GROUNDWATER DETAILS					
INSTALLATION DETAILS				Date	Hole Depth	Casing Depth	Depth to Water	Comments	
Date	Tip Depth	RZ Top	RZ Base	Type					
REMARKS					Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample				

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CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET L02 Sheet 1 of 1	
CO-ORDINATES 157,012.29 E 156,537.81 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.97		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 6.00	
ENGINEER Mouchel		CASING DEPTH (m) 6.00	
		BORED BY Boart Longyear	
		PROCESSED BY D. O'Shea	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft, brown, sandy gravelly clay. NEC.		7.77	0.20	1	ENV	0.00-0.20			
1	MADE GROUND: Loose brown/grey, gravelly sand. NEC.				2	ENV	1.00-1.50			
2	MADE GROUND: Loose brown/grey, clayey sandy gravel with brick (becoming very clayey 3.00-3.50m). NEC.			6.47	1.50					
4	MADE GROUND: Loose, black, clayey gravelly cobbly sand. Strong HC.		4.47	3.50	3	ENV	4.50-5.00			
5	MADE GROUND: Loose brown/grey/purple, sandy gravel with brick. NEC.		2.97	5.00						
6	LIMESTONE. NEC.		2.47	5.50						
6	End of Borehole at 6.00 m		1.97	6.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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REPORT NUMBER

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CONTRACT Limerick Gasworks		BOREHOLE NO. L03
CO-ORDINATES 157,004.35 E 156,534.30 N		SHEET Sheet 1 of 1
GROUND LEVEL (m AOD) 8.01	RIG TYPE Sonic	DATE DRILLED 19/11/2009
CLIENT Bord Gais	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 19/11/2009
ENGINEER Mouchel	BOREHOLE DEPTH (m) 7.50	BORED BY Boart Longyear
	CASING DEPTH (m) 7.50	PROCESSED BY D. O'Shea

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Loose black/brown/grey clayey gravelly sand. Possible HC.		7.51	0.50	1	ENV	0.00-0.50			
1	MADE GROUND: Soft, grey/brown, sandy gravelly clay with occasional cobbles. Possible HC.				2	ENV	1.00-1.50			
2	MADE GROUND: Soft, grey/brown, very sandy clay. NEC.				3	ENV	2.50-3.00			
3	MADE GROUND: Loose grey/brown clayey very sandy gravel with occasional cobbles. NEC.				4	ENV	4.00-4.50			
4	MADE GROUND: Firm, grey/brown/black, sandy gravelly clay. Strong HC - free phase oil.				5	ENV	4.50-5.00			
5	LIMESTONE. NEC.		2.51	5.50						
6										
7	End of Borehole at 7.50 m		0.51	7.50						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET L04 Sheet 1 of 2	
CO-ORDINATES 156,998.58 E 156,526.38 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 8.26		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 10.00	
ENGINEER Mouchel		CASING DEPTH (m) 10.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Standpipe Details			
					Ref. Number	Sample Type	Depth (m)	Recovery					
0	MADE GROUND: Soft light brown to grey (with depth from 3.00m) gravelly clay. HC, high from 3.00m.	[Cross-hatch pattern]			1	ENV	0.50-1.00						
2					ENV	1.00-1.50							
3					ENV	1.50-3.00							
4					ENV	3.00-3.50							
4	MADE GROUND: Soft dark brown gravelly clay. HC odour.	[Cross-hatch pattern]	4.76	3.50									
5	MADE GROUND: Medium dense, grey, clayey sand. HC impact.		3.76	4.50	5	ENV	4.50-4.90						
5	MADE GROUND: Loose black clayey gravel with few cobbles and red brick. Pure Tar product present.		3.36	4.90	6	ENV	5.50-6.00						
7					7	ENV	6.50-7.00						
8	MADE GROUND: Stiff mottled brown/black sandy gravelly clay. HC in black mottling.	[Cross-hatch pattern]	0.96	7.30									
8	MADE GROUND: Loose black slightly clayey sand. Pure Tar product present.		0.76	7.50							8	ENV	7.50-7.90
8	MADE GROUND: Loose black cobbles and red brick. Pure Tar product present.		0.36	7.90							9	ENV	8.00-8.30
9	MADE GROUND: Stiff dark grey/black sandy gravelly CLAY. HC with odour.		-0.04	8.30									
9	LIMESTONE. 8.50-9.00m gross pure tar in rock, 9.00-10.00m HC sheen (possible cross contamination from layer above).	[Brick pattern]	-0.24	8.50									

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HARD STRATA BORING CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
				GROUNDWATER DETAILS					
INSTALLATION DETAILS				Date	Hole Depth	Casing Depth	Depth to Water	Comments	
Date	Tip Depth	RZ Top	RZ Base	Type					
REMARKS Clean drilling technique used but no concrete base encountered.					Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample				

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CONTRACT Limerick Gasworks		BOREHOLE NO. L04	
		SHEET Sheet 2 of 2	
CO-ORDINATES 156,998.58 E 156,526.38 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 8.26		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 10.00	
ENGINEER Mouchel		CASING DEPTH (m) 10.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10			-1.74	10.00						
11										
12										
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
				GROUNDWATER DETAILS					
INSTALLATION DETAILS				Date	Hole Depth	Casing Depth	Depth to Water	Comments	
Date	Tip Depth	RZ Top	RZ Base	Type					
REMARKS Clean drilling technique used but no concrete base encountered.						Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample			

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14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET L05 Sheet 1 of 1	
CO-ORDINATES 156,991.13 E 156,521.05 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 8.41		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 8.00	
ENGINEER Mouchel		CASING DEPTH (m) 8.00	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft brown, sandy gravelly silt/clay. Slight HC		7.91	0.50	1	ENV	0.50-1.00			
1	MADE GROUND: Medium dense, pale brown/brown sand. HC getting stronger with depth.		6.91	1.50	2	ENV	2.00-2.50			
2	MADE GROUND: Loose, black, very silty, sandy gravel. Strong HC - free phase oil.		5.61	2.80	3	ENV	3.00-3.50			
3	MADE GROUND: Soft, black/brown/grey mottled, sandy gravelly silt/clay with occasional cobbles. Strong HC - free phase oil.				4	ENV	4.00-4.50			
4					5	ENV	5.00-5.50			
6	Pulverised LIMESTONE. Slight HC, decreasing with depth.		2.41	6.00	6	ENV	6.50-7.00			
7	LIMESTONE. NEC.		1.41	7.00						
8	End of Borehole at 8.00 m		0.41	8.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks				BOREHOLE NO. SHEET L06 Sheet 1 of 1	
CO-ORDINATES 156,983.64 E 156,515.10 N		RIG TYPE Sonic		DATE DRILLED 19/11/2009	
GROUND LEVEL (m AOD) 8.41		BOREHOLE DIAMETER (mm) 140		DATE LOGGED 19/11/2009	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 9.00		BORED BY Boart Longyear	
ENGINEER Mouchel		CASING DEPTH (m) 9.00		PROCESSED BY D. O'Shea	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Standpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft, brown, sandy gravelly clay. NEC.		7.91	0.50	1	ENV	0.50-0.80			
1	MADE GROUND: Firm, black/brown, sandy gravelly clay with occasional cobbles. Possible HC.		6.91	1.50	2	ENV	1.50-1.80			
2	MADE GROUND: Loose, brown/black, clayey sandy gravel with occasional cobbles. Strong HC - free phase oil.		6.61	1.80						
3	MADE GROUND: Firm, brown/black sandy gravelly clay with occasional cobbles. Possible HC.		5.91	2.50	3	ENV	2.50-3.00			
4	MADE GROUND: Soft, brown/black, sandy gravelly clay with occasional cobbles. Strong HC - free phase oil.		4.91	3.50						
5	MADE GROUND: Firm, mid brown sandy slightly gravelly clay. NEC.		3.91	4.50	4	ENV	4.50-5.00			
6	MADE GROUND: Soft, brown/black, sandy gravelly clay with occasional cobbles. Strong HC - free phase oil.		3.41	5.00						
7	MADE GROUND: Soft/firm, brown/black, sandy gravelly clay. Possible HC.		2.41	6.00	5	ENV	6.00-6.50			
8	MADE GROUND: Soft, grey/brown, sandy gravelly clay with occasional cobbles. Possible HC.		1.61	6.80	6	ENV	7.00-7.50			
9	LIMESTONE. NEC.		0.91	7.50						
9	End of Borehole at 9.00 m		-0.59	9.00						

HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET L07 Sheet 1 of 1	
CO-ORDINATES 156,975.76 E 156,509.04 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 8.65		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 4.50	
ENGINEER Mouchel		CASING DEPTH (m) 4.50	
		BORED BY Boart Longyear	
		PROCESSED BY D. O'Shea	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stancpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft, brown, sandy gravelly clay with occasional cobbles. NEC.				1	ENV	0.00-0.50			
	MADE GROUND: Stiff, dark brown/black, slightly sandy clay. Possible HC.		8.15	0.50	2	ENV	0.50-0.80			
	MADE GROUND: Soft brown sandy gravelly clay. NEC.		7.85	0.80						
	MADE GROUND: Firm, grey/brown, sandy gravelly clay with cobbles. NEC.		7.65	1.00	3	ENV	1.00-1.40			
	Returns of limestone COBBLES, possible rock. NEC.		7.25	1.40						
	LIMESTONE. Spots of HC from 1.50-4.50m		7.15	1.50						
4.50	End of Borehole at 4.50 m		4.15	4.50						

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	
19-11-09	3.50	2.00	3.50	50mm SP						
REMARKS					Sample Legend					
					D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample					

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. L08
		SHEET Sheet 1 of 1
CO-ORDINATES 156,963.39 E 156,505.90 N	RIG TYPE Sonic	DATE DRILLED 23/11/2009
GROUND LEVEL (m AOD) 8.15	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 23/11/2009
CLIENT Bord Gais	BOREHOLE DEPTH (m) 2.00	BORED BY Boart Longyear
ENGINEER Mouchel	CASING DEPTH (m) 2.00	PROCESSED BY A. Mahony

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	LIMESTONE. NEC.									
2	End of Borehole at 2.00 m		6.15	2.00						
1										
3										
4										
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET L09 Sheet 1 of 1	
CO-ORDINATES 156,957.59 E 156,500.15 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.98		BOREHOLE DIAMETER (mm) 112	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 2.00	
ENGINEER Mouchel		CASING DEPTH (m) 2.00	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	LIMESTONE. NEC.									
2	End of Borehole at 2.00 m		5.98	2.00						
1										
3										
4										
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET L10 Sheet 1 of 1	
CO-ORDINATES 156,952.16 E 156,494.45 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 7.73		BOREHOLE DIAMETER (mm) 112	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 2.00	
ENGINEER Mouchel		CASING DEPTH (m) 2.00	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	LIMESTONE. NEC.									
2	End of Borehole at 2.00 m		5.73	2.00						
1										
3										
4										
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date					Date	Hole Depth	Casing Depth	Depth to Water	Comments	
Date	Tip Depth	RZ Top	RZ Base	Type						

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET M03 Sheet 1 of 1	
CO-ORDINATES 157,010.40 E 156,524.75 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 8.23		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 6.50	
ENGINEER Mouchel		CASING DEPTH (m) 6.50	
		BORED BY Boart Longyear	
		PROCESSED BY D. O'Shea	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Returns of grey/brown, clayey cobbly gravel. NEC.		7.73	0.50	1	ENV	0.50-0.60			
	MADE GROUND: Soft, black, sandy gravelly clay. Possible HC.		7.63	0.60	2	ENV	0.60-1.00			
1	MADE GROUND: Stiff, brown, sandy gravelly clay. NEC.		7.23	1.00						
	MADE GROUND: Loose, light brown, clayey gravelly sand. NEC.				3	ENV	1.50-2.00			
2										
3										
4										
	MADE GROUND: Loose brown clayey sandy GRAVEL with occasional cobbles. NEC.		4.03	4.20						
	LIMESTONE. NEC.		3.73	4.50						
5										
6	No recovery - observed by driller as rock		2.23	6.00						
	End of Borehole at 6.50 m		1.73	6.50						
7										
8										
9										

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	
19-11-09	5.00	5.00	6.50	50mm SP						

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET M04 Sheet 1 of 1	
CO-ORDINATES 157,004.19 E 156,519.92 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 8.09		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 6.50	
ENGINEER Mouchel		CASING DEPTH (m) 6.50	
		BORED BY Boart Longyear	
		PROCESSED BY A. Mahony	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft brown/black peaty sandy gravelly clay with rootlets. NEC.		7.89	0.20	1	ENV	0.00-0.20			
				0.60	2	ENV	0.20-0.60			
1	MADE GROUND: Loose, grey/brown, clayey silty very gravelly sand. NEC.		7.49	0.60	3	ENV	0.60-1.30			
				1.30						
2	MADE GROUND: Soft/firm, brown, silty sandy gravelly clay with red brick. NEC.		6.79	1.30						
				1.50						
3	MADE GROUND: Cobbles. NEC.		6.59	1.50						
				2.30-2.80	4	ENV	2.30-2.80			
4	MADE GROUND: Soft, grey/brown mottled, sandy very gravelly clay with occasional cobbles. NEC.		5.09	3.00	5	ENV	3.00-3.50			
				4.00						
5	MADE GROUND: Loose, grey/black gravelly cobbly sand. Possible HC.		4.09	4.00						
				4.50						
6	MADE GROUND: Grey, very silty sandy gravelly cobbles. NEC.		3.59	4.50						
				5.00						
7	LIMESTONE. NEC.		1.59	6.50						
				6.50						
8	End of Borehole at 6.50 m		1.59	6.50						

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	
REMARKS							Sample Legend			
							D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub)			
							U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample			

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET M05 Sheet 1 of 2	
CO-ORDINATES 156,996.57 E 156,512.02 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 8.35		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 11.00	
ENGINEER Mouchel		CASING DEPTH (m) 11.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Firm brown sandy slightly gravelly clay with occasional cobbles. NEC.		7.65	0.70	1	ENV	0.70-1.00			
1	MADE GROUND: Firm brown sandy slightly gravelly clay. HC.									2
2	MADE GROUND: Firm brown clay. NEC.		6.35	2.00	3	ENV	2.00-2.50			
3										4
4	MADE GROUND: Soft dark brown clay with vegetative matter (possible original topsoil level). NEC.			4.35	4.00	5	ENV	4.50-5.00		
5	MADE GROUND: Soft brown slightly gravelly clay. Slight HC impact.									
6	MADE GROUND: Very soft dark grey to black (at 8.00m) slightly gravelly clay. HC increases with depth.			2.35	6.00	7	ENV	6.50-7.00		
7			8							
8	MADE GROUND: Very soft black slightly clayey gravel (possible cinders). HC.			0.35	8.00	9	ENV	8.50-9.00		
9	LIMESTONE. NEC.									

HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. M05
		SHEET Sheet 2 of 2
CO-ORDINATES 156,996.57 E 156,512.02 N	RIG TYPE Sonic	DATE DRILLED 20/11/2009
GROUND LEVEL (m AOD) 8.35	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 20/11/2009
CLIENT Bord Gais	BOREHOLE DEPTH (m) 11.00	BORED BY Boart Longyear
ENGINEER Mouchel	CASING DEPTH (m) 11.00	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10	LIMESTONE. NEC. (continued)									
11	End of Borehole at 11.00 m		-2.65	11.00						
12										
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. SHEET M06 Sheet 1 of 2	
CO-ORDINATES 156,990.01 E 156,506.74 N		RIG TYPE Sonic	
GROUND LEVEL (m AOD) 8.35		BOREHOLE DIAMETER (mm) 140	
CLIENT Bord Gais		BOREHOLE DEPTH (m) 12.00	
ENGINEER Mouchel		CASING DEPTH (m) 12.00	
		BORED BY Boart Longyear	
		PROCESSED BY G. Thornton	

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Soft brown slightly sandy, slightly gravelly clay wit roothairs. NEC.		8.15	0.20	1	ENV	0.20-0.50			
	MADE GROUND: Firm dark brown gravelly clay. NEC.		7.85	0.50						
1	CONCRETE. HC odour from water used to drill through.									
3	MADE GROUND: Stiff light grey very sandy gravelly clay with occasional cobbles. NEC.		5.35	3.00	2	ENV	3.50-4.00			
4					3	ENV	4.50-5.00			
5					4	ENV	5.00-5.50			
6	CONCRETE. NEC.		2.85	5.50						
9	LIMESTONE with local soft grey clay. NEC except for HC impact at 8.90m.		-0.15	8.50	5	ENV	8.90-8.90			
	LIMESTONE. NEC.		-0.65	9.00						

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike

INSTALLATION DETAILS					GROUNDWATER DETAILS				
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS 0.0-2.5m 20/11/09. 2.5-12m 23/11/09	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. M06
CO-ORDINATES 156,990.01 E 156,506.74 N		SHEET Sheet 2 of 2
GROUND LEVEL (m AOD) 8.35	RIG TYPE Sonic	DATE DRILLED 20/11/2009
CLIENT Bord Gais	BOREHOLE DIAMETER (mm) 140	DATE LOGGED 23/11/2009
ENGINEER Mouchel	BOREHOLE DEPTH (m) 12.00	BORED BY Boart Longyear
	CASING DEPTH (m) 12.00	PROCESSED BY G. Thornton

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
10	LIMESTONE. NEC. (continued)									
11										
12	End of Borehole at 12.00 m		-3.65	12.00						
13										
14										
15										
16										
17										
18										
19										

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HARD STRATA BORING/CHISELLING					WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments		Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
										No water strike
INSTALLATION DETAILS					GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments	
REMARKS 0.0-2.5m 20/11/09. 2.5-12m 23/11/09					Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample					

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GEOTECHNICAL BORING RECORD

REPORT NUMBER

14463

CONTRACT Limerick Gasworks		BOREHOLE NO. M07	
CO-ORDINATES 156,981.49 E 156,501.92 N		SHEET Sheet 1 of 1	
GROUND LEVEL (m AOD) 8.26		DATE DRILLED 20/11/2009	
CLIENT Bord Gais		DATE LOGGED 20/11/2009	
ENGINEER Mouchel		BORED BY Boart Longyear	
RIG TYPE Sonic		PROCESSED BY G. Thornton	
BOREHOLE DIAMETER (mm) 140			
BOREHOLE DEPTH (m) 2.50			
CASING DEPTH (m) 2.50			

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples				Field Test Results	Stacpipe Details
					Ref. Number	Sample Type	Depth (m)	Recovery		
0	MADE GROUND: Firm brown/grey gravelly clay with some plastic. NEC. LIMESTONE. NEC.		7.86	0.40	1	ENV	0.00-0.40			
1										
2										
2.50	End of Borehole at 2.50 m		5.76	2.50						
3										
4										
5										
6										
7										
8										
9										

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HARD STRATA BORING/CHISELLING				WATER STRIKE DETAILS					
From (m)	To (m)	Time (h)	Comments	Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
									No water strike
INSTALLATION DETAILS				GROUNDWATER DETAILS					
Date	Tip Depth	RZ Top	RZ Base	Type	Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS	Sample Legend D - Small Disturbed (tub) B - Bulk Disturbed LB - Large Bulk Disturbed Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample
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IGSL BH LOG 14463.GPJ IGSL_GDT_23/12/09

Soakaway Design f -value from field tests IGSL

Contract: Limerick Gas Works	Contract No. 14463
Test No. 1	
Client Bord Gais	Coordinates: E156981.454 N156536.878
Engineer Mouchel	Elevation: 7.972
Date: 09/11/09	

Summary of ground conditions

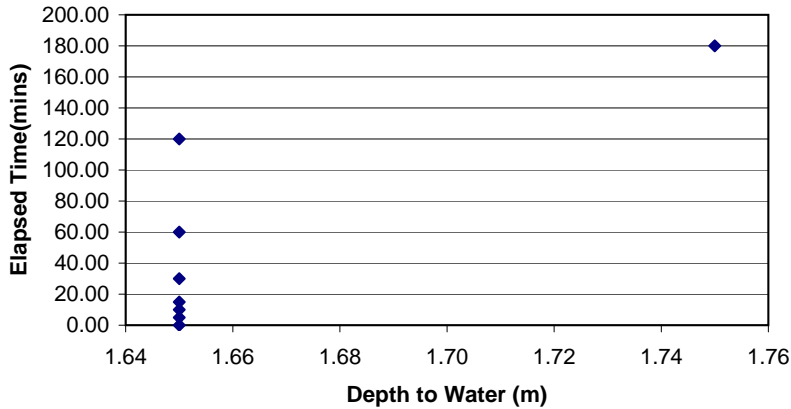
from	to	Description	Ground water
0.00	1.70	MADE GROUND: Brown slightly sandy gravelly clay with many red brick, steel and concrete fragments	No groundwater encountered
1.70	2.10	MADE GROUND: Firm blue slightly sandy clay with suspected blue billy.	

Notes: Pit walls stable.
 Pit extended due to obstruction and brick wall.
 Test left overnight - pit dry after 1140mins

Field Data **Field Test**

Depth to Water (m)	Elapsed Time (min)		
1.65	0.00	Depth of Pit (D)	2.10 m
1.65	5.00	Width of Pit (B)	1.00 m
1.65	10.00	Length of Pit (L)	3.00 m
1.65	15.00	Initial depth to Water =	1.65 m
1.65	30.00	Final depth to water =	2.10 m
1.65	60.00	Elapsed time (mins)=	1140.00
1.65	120.00	Top of permeable soil	0.00 m
1.75	180.00	Base of permeable soil	2.10 m
		Base area=	3 m ²
		*Av. side area of permeable stratum over test period=	1.8 m ²
		Total Exposed area =	4.8 m ²
		Infiltration rate (f) =	Volume of water used/unit exposed area / unit time
		f = 0.00025 m/min	or 4.112E-06 m/sec

Depth of water vs Elapsed Time (mins)



Limerick Gasworks - Photography



TP1_a.JPG



TP1_b.JPG

Limerick Gasworks - Photography



TP1_c.JPG



TP1_d.JPG

Limerick Gasworks - Photography



TP1_e.JPG



TP2 i.JPG

Limerick Gasworks - Photography



TP2ii.JPG



TP2iii.JPG

Limerick Gasworks - Photography



TP2iv.JPG



TP3_i.JPG

Limerick Gasworks - Photography



TP3_ii.JPG



TP3_iii.JPG

Limerick Gasworks - Photography



TP3_iv.JPG

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Limerick Gasworks - Photography



C12AWS.JPG



C12AWS_handpit_a.JPG

Limerick Gasworks - Photography



C12AWS_handpit_b.JPG



C12BWS.JPG

Limerick Gasworks - Photography



C12BWS_handpit_a.JPG



C12BWS_handpit_b.JPG

Limerick Gasworks - Photography



D12WS.JPG



D12WS_handpit_a.JPG

Limerick Gasworks - Photography



D12WS_handpit_b.JPG



E12WS.JPG

Limerick Gasworks - Photography



E12WS_handpit_a.JPG



E12WS_handpit_b.JPG

Limerick Gasworks - Photography



F10WS.JPG



F12WS.JPG

Limerick Gasworks - Photography



F12WS_handpit_a.JPG



F12WS_handpit_b.JPG

Limerick Gasworks - Photography



F9WS.JPG



L11WS.JPG

Limerick Gasworks - Photography



L12WS.JPG



L1WS.JPG

Limerick Gasworks - Photography



M1WS.JPG



N1WS.JPG

Limerick Gasworks - Photography



N2WS.JPG

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Limerick Gasworks – Core Photography

A03 Inspection Pit



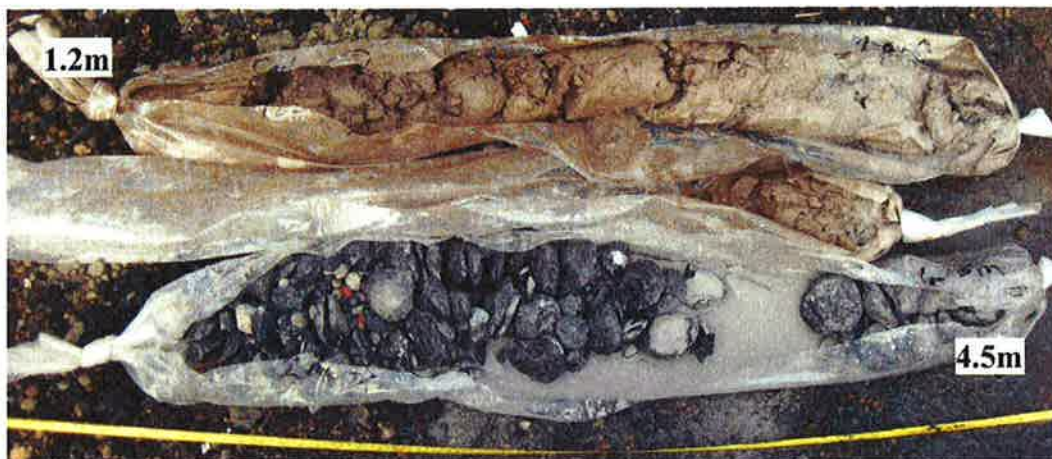
A03



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Limerick Gasworks – Core Photography

A04



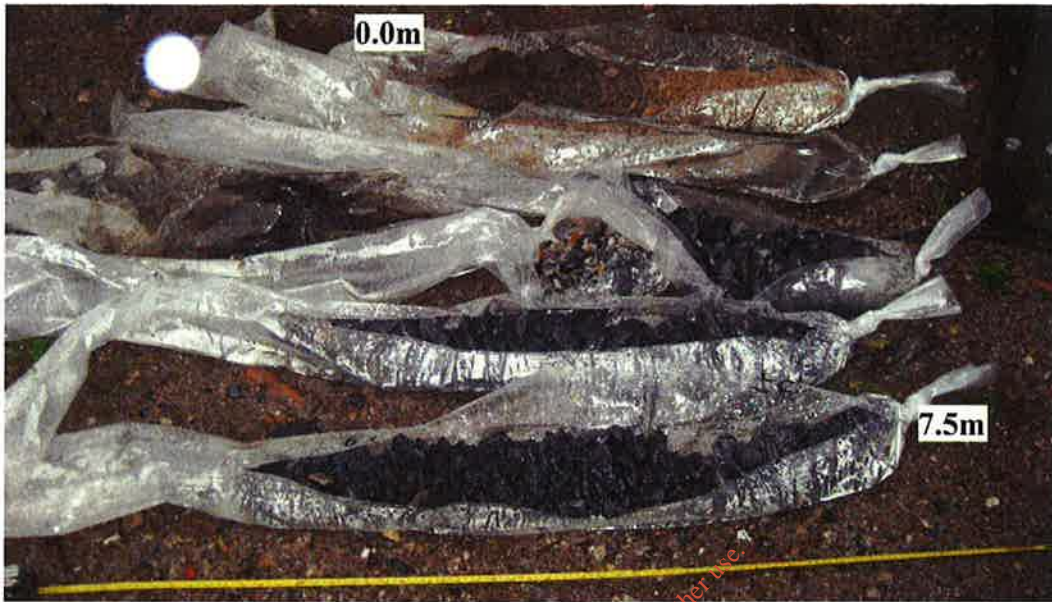
A05 Inspection Pit



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Limerick Gasworks – Core Photography

A05



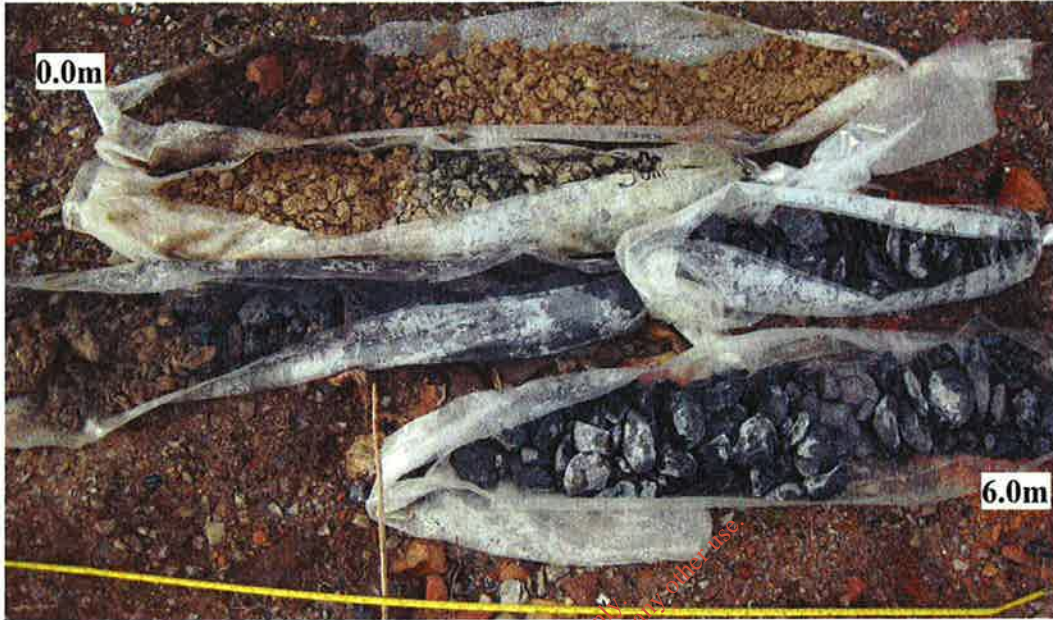
A06 Inspection Pit



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Limerick Gasworks – Core Photography

A06



A07 Inspection Pit



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Limerick Gasworks – Core Photography

A07



A08



IGSL Ltd

Limerick Gasworks – Core Photography

A11



B03



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Limerick Gasworks – Core Photography

B04



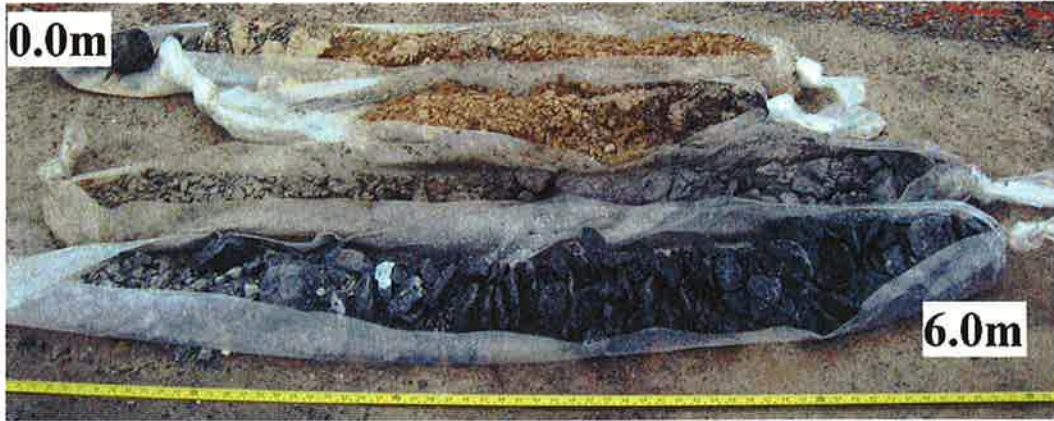
B05



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B06



B07



Limerick Gasworks – Core Photography

B08



B11 Inspection Pit



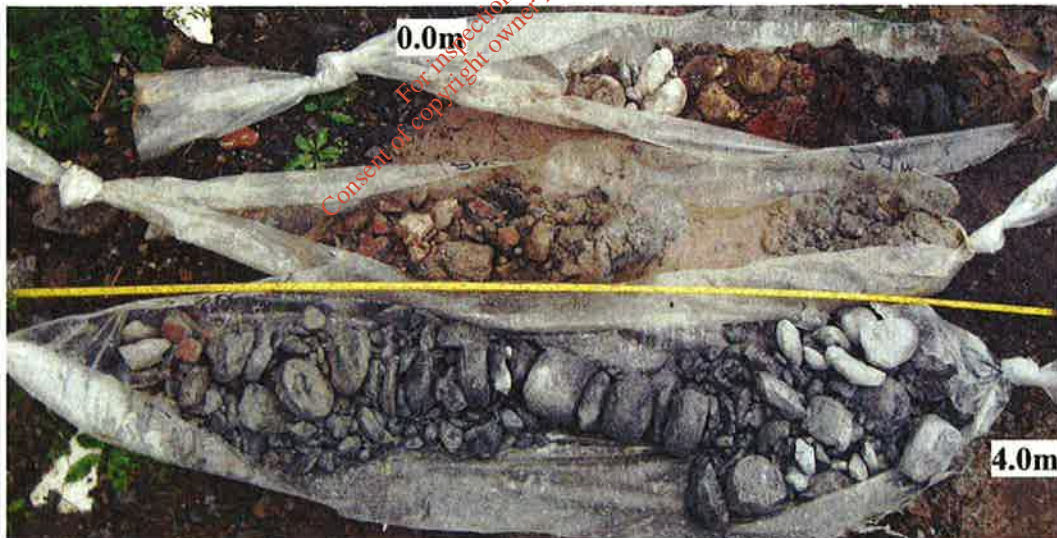
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Limerick Gasworks – Core Photography

C03



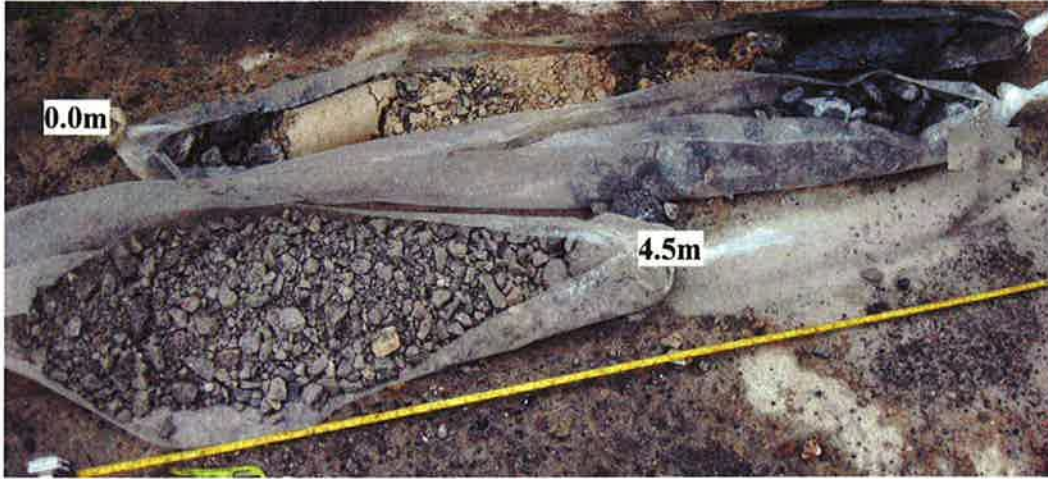
C04



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Limerick Gasworks – Core Photography

C05



C06 Photo 1 of 2



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Limerick Gasworks – Core Photography

C06 Photo 2 of 2



C07 Photo 1 of 2



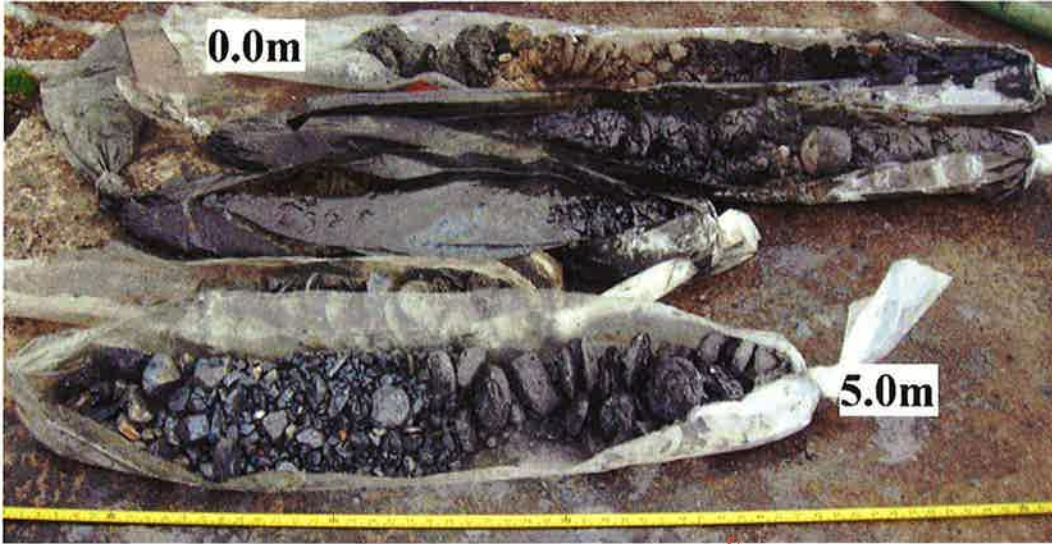
C07 Photo 2 of 2



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C08



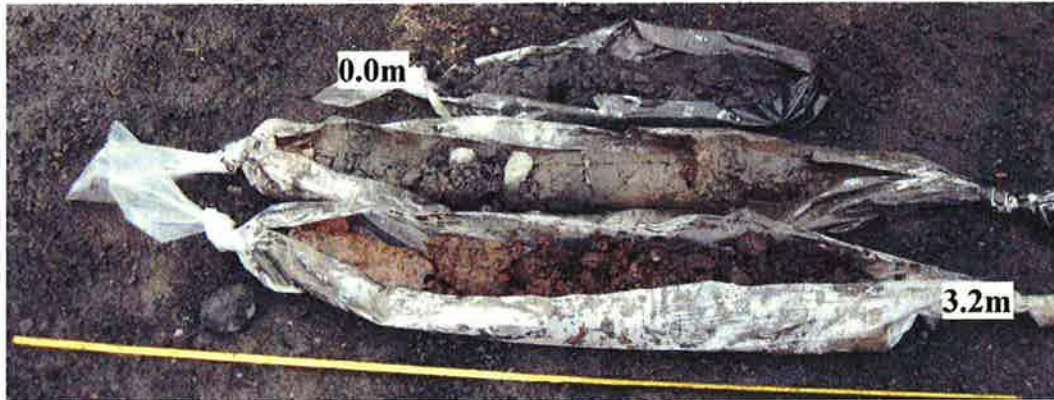
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Limerick Gasworks – Core Photography

C10



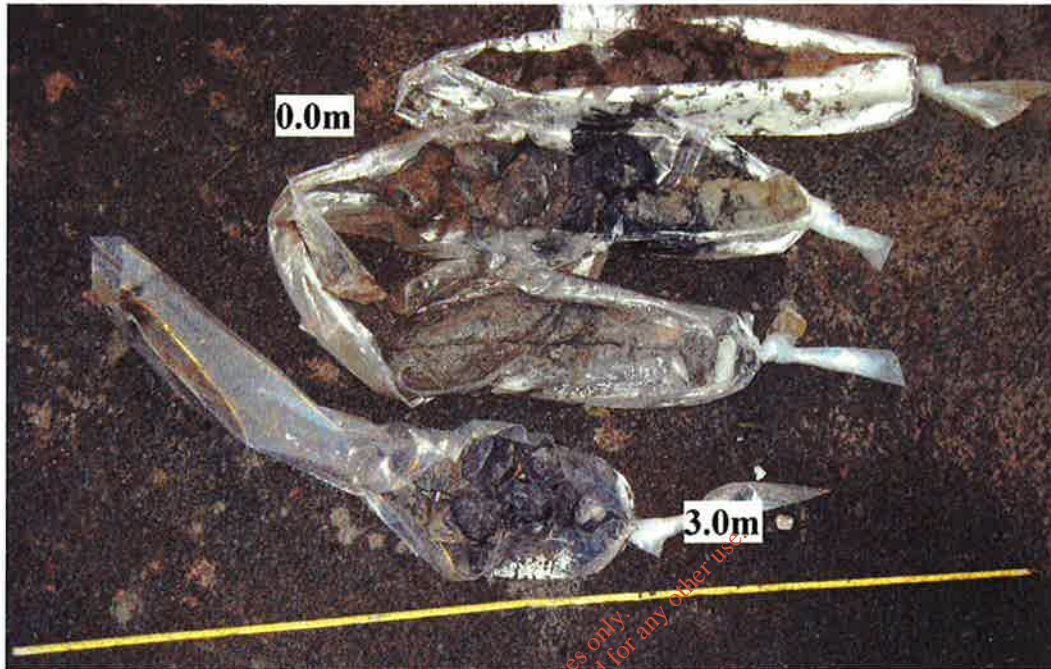
C11 Inspection Pit



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Limerick Gasworks – Core Photography

C11



C12 Inspection Pit



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Limerick Gasworks – Core Photography

C12



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Limerick Gasworks – Core Photography

D03



D04



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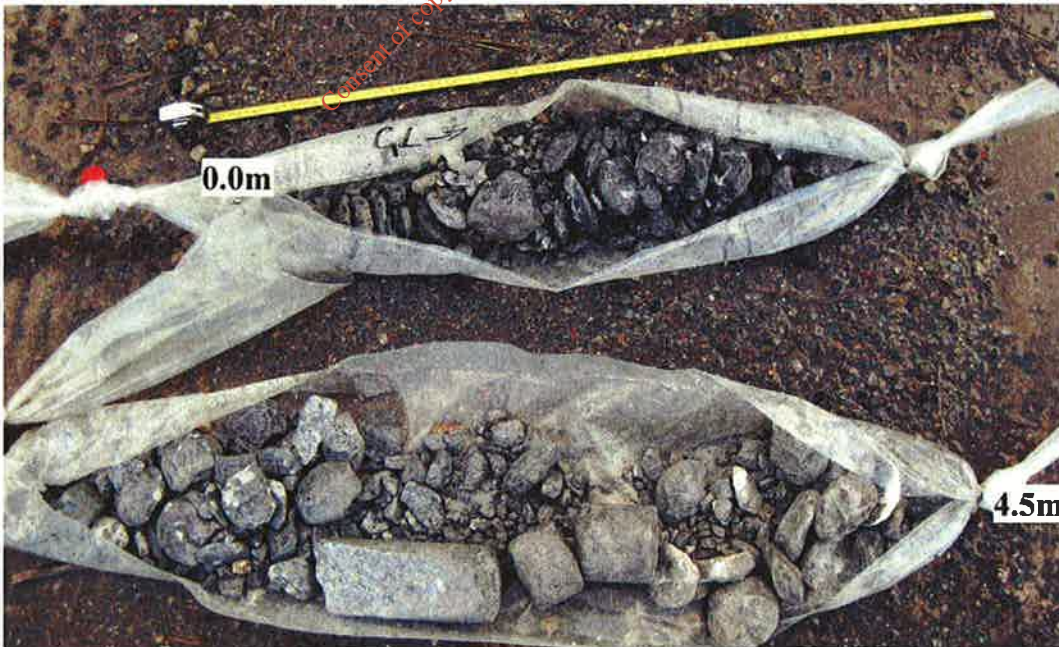
Limerick Gasworks – Core Photography

D05



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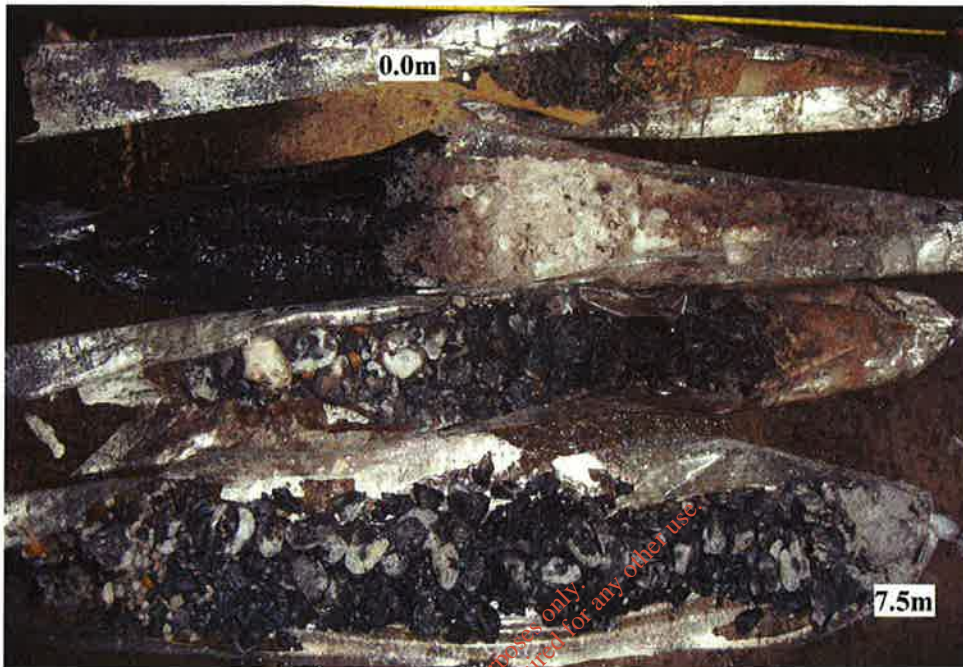
D06



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D07



D08



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Limerick Gasworks – Core Photography

D09



D10



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Limerick Gasworks – Core Photography

D11 Inspection Pit



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D11



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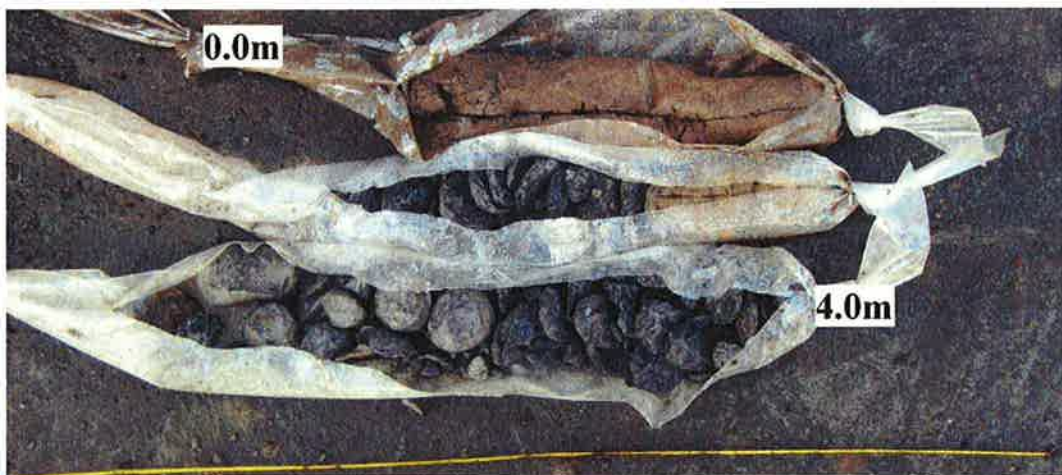
Limerick Gasworks – Core Photography

D12 Inspection Pit



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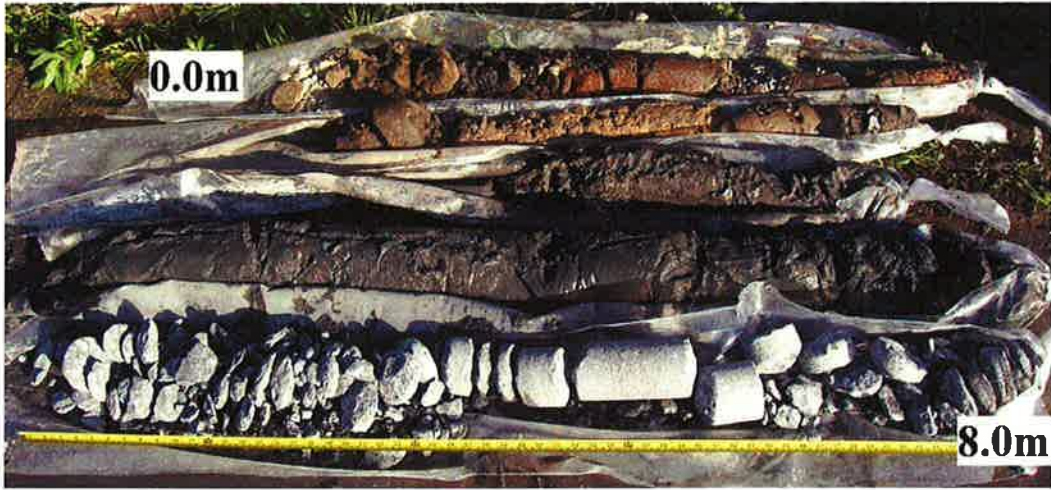
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Limerick Gasworks – Core Photography

E01



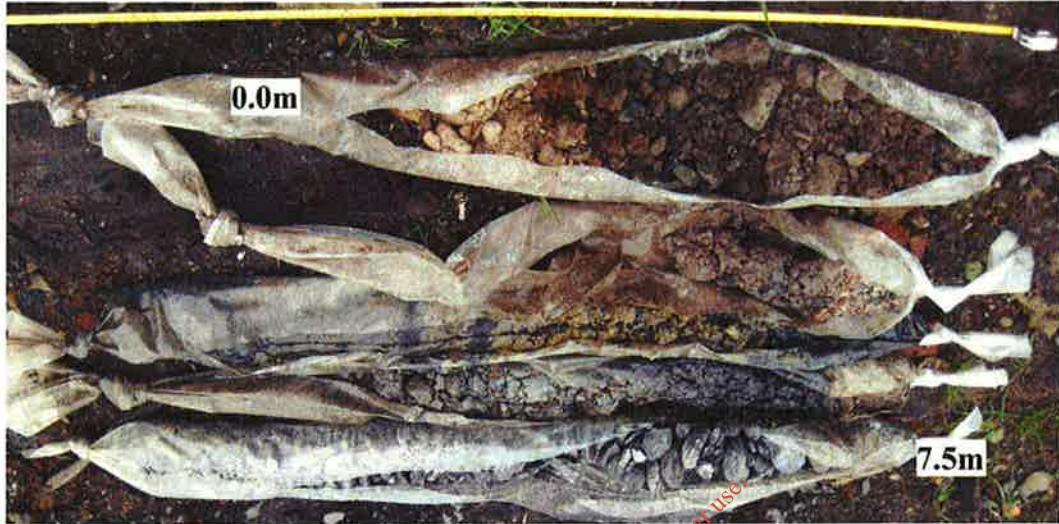
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E03



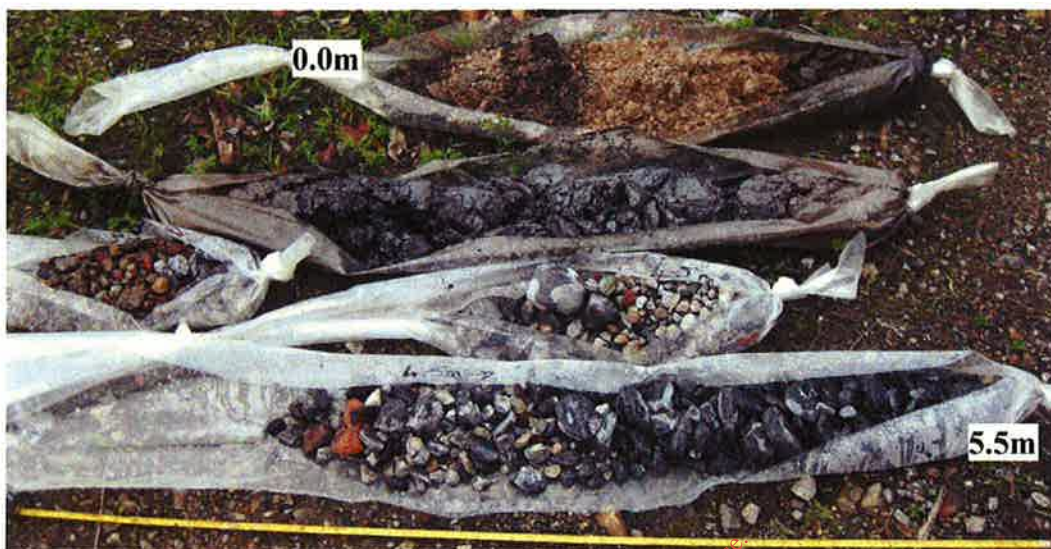
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E05



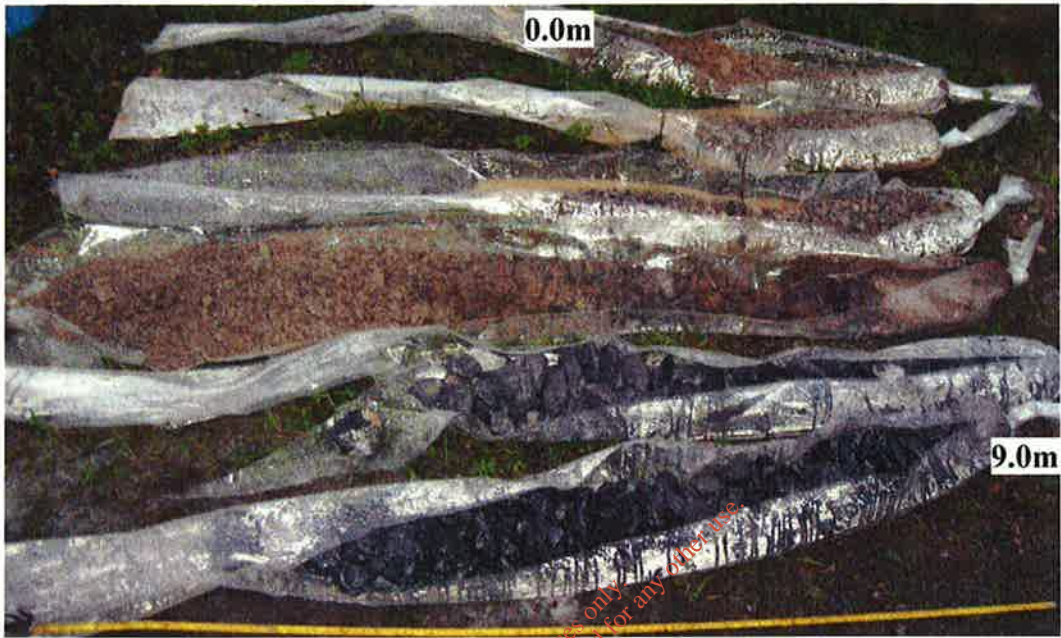
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E07



E08



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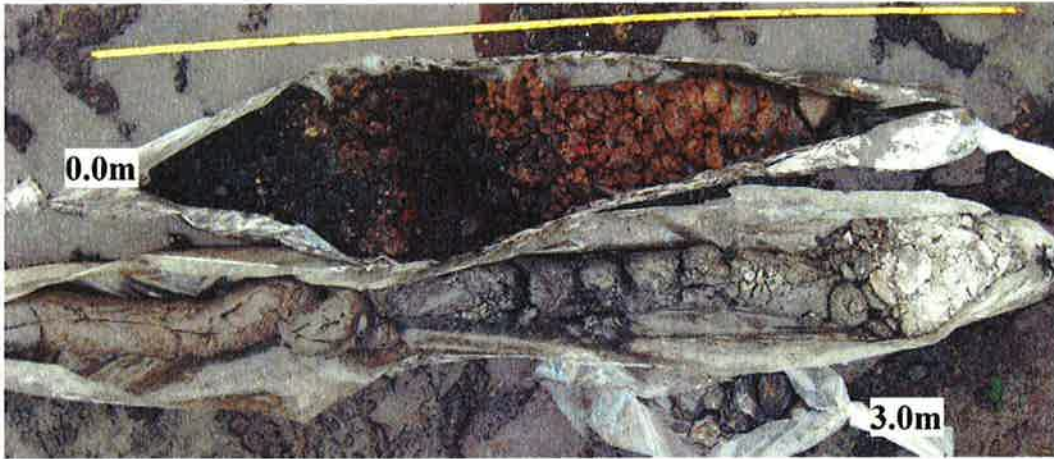
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E11



E12 Inspection Pit



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Limerick Gasworks – Core Photography

E12



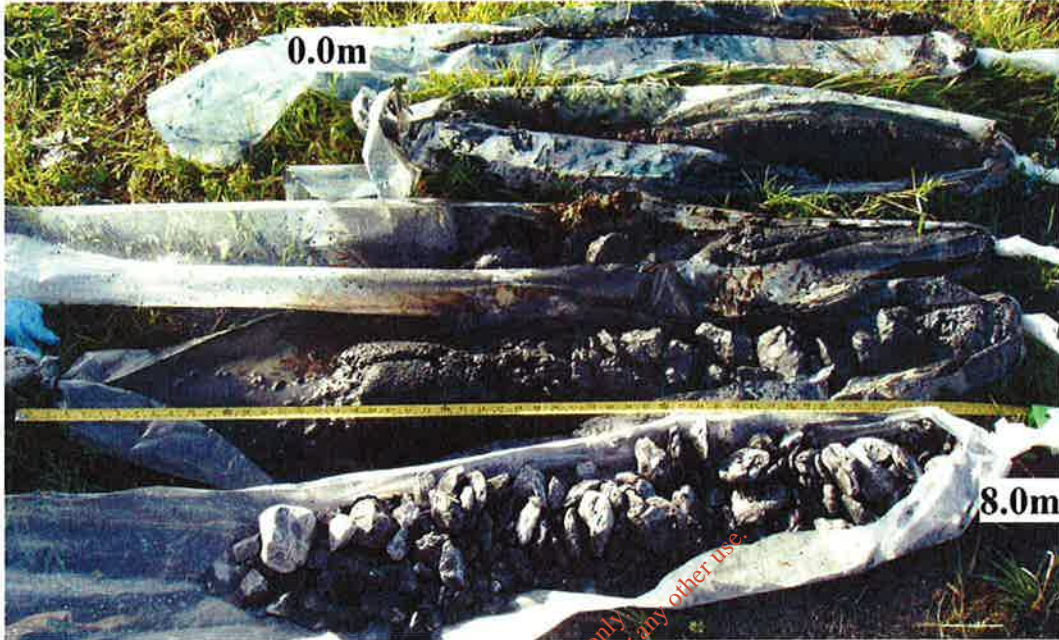
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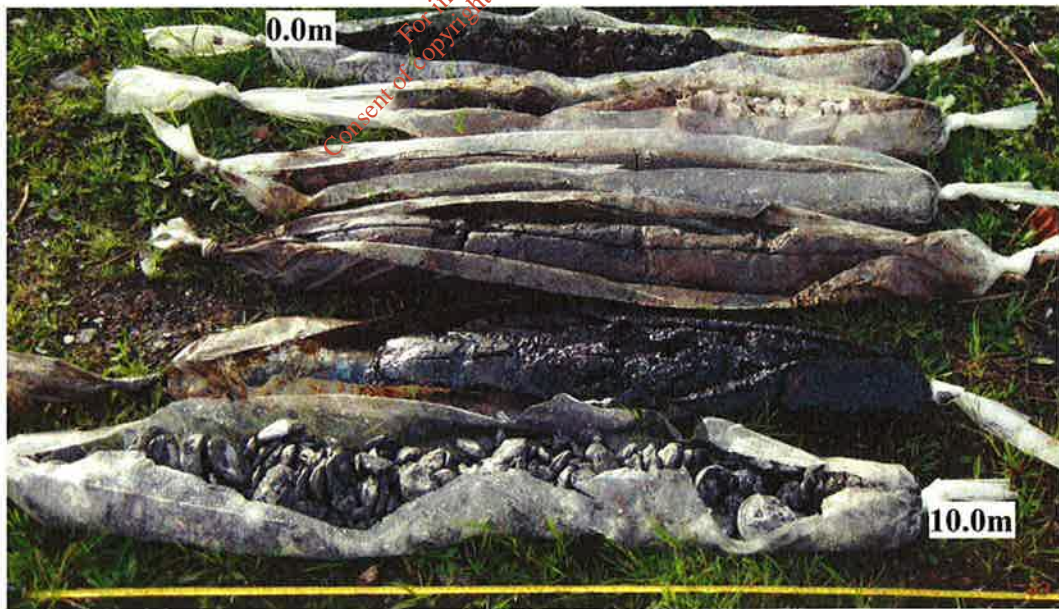
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F02



F03



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Limerick Gasworks – Core Photography

F04



F05



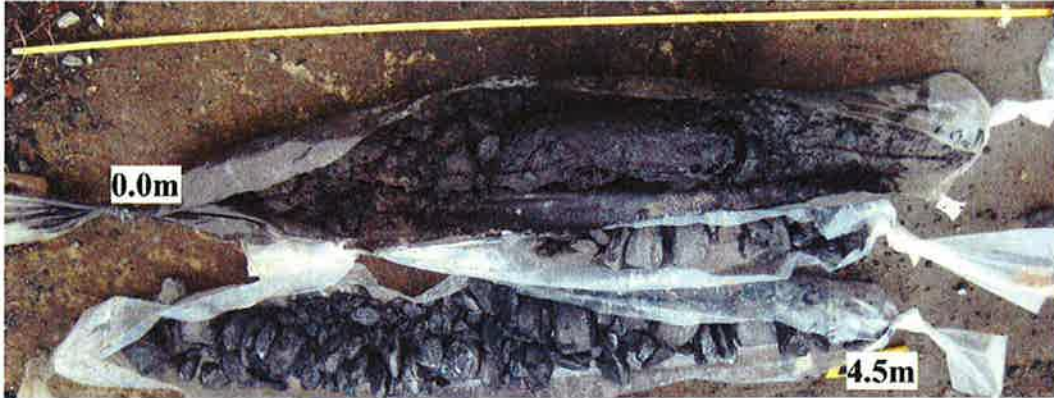
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F07



F08



F09



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Limerick Gasworks – Core Photography

F11



F12 Inspection Pit



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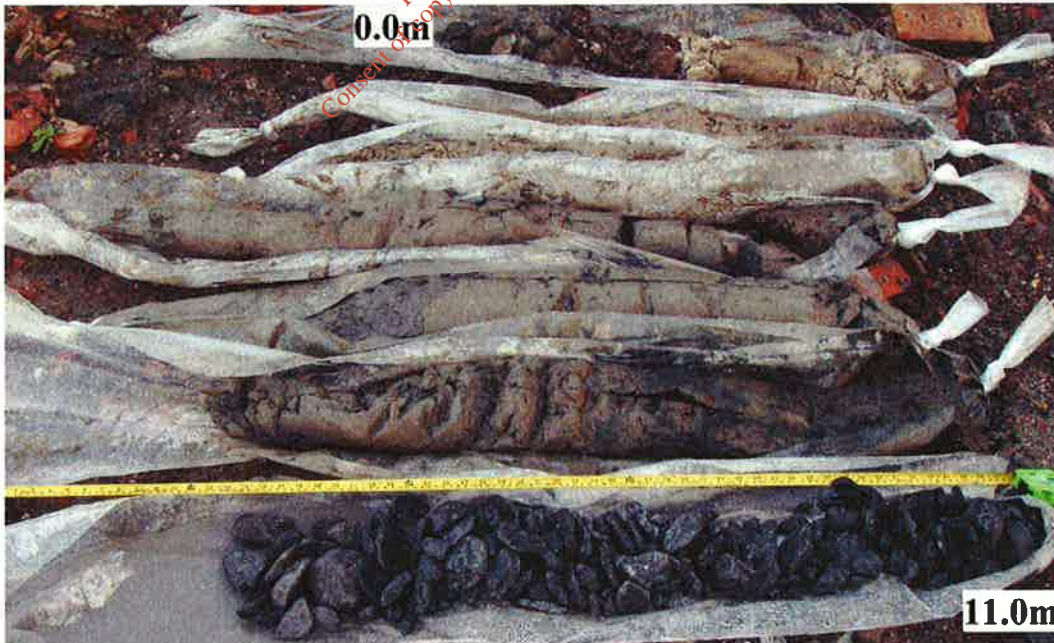
Limerick Gasworks – Core Photography

F12



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G01



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G02



G03



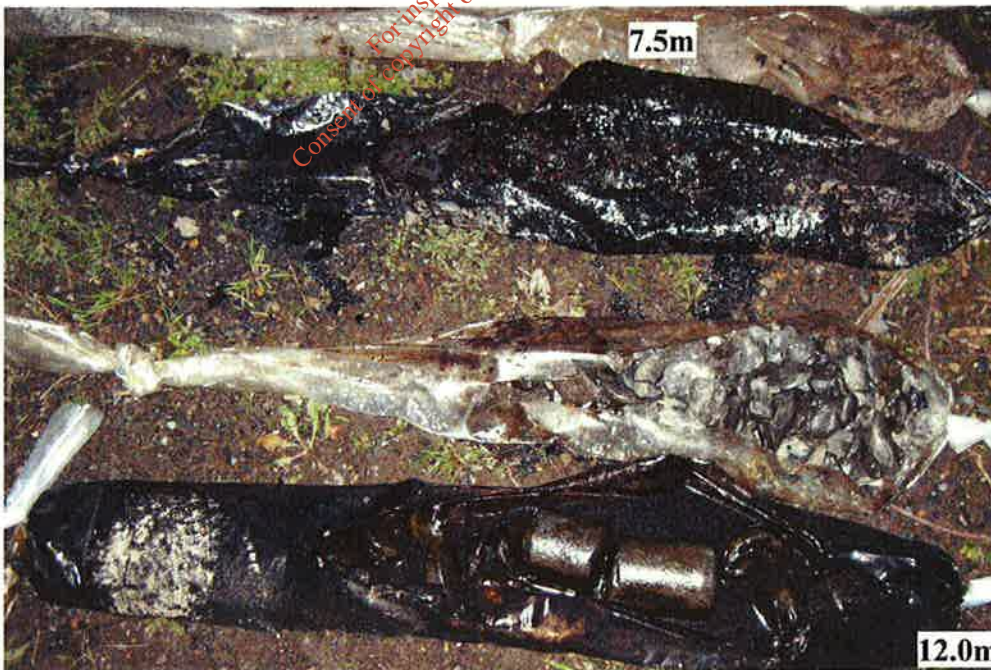
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G04 Photo 1 of 2



G04 Photo 2 of 2



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G05



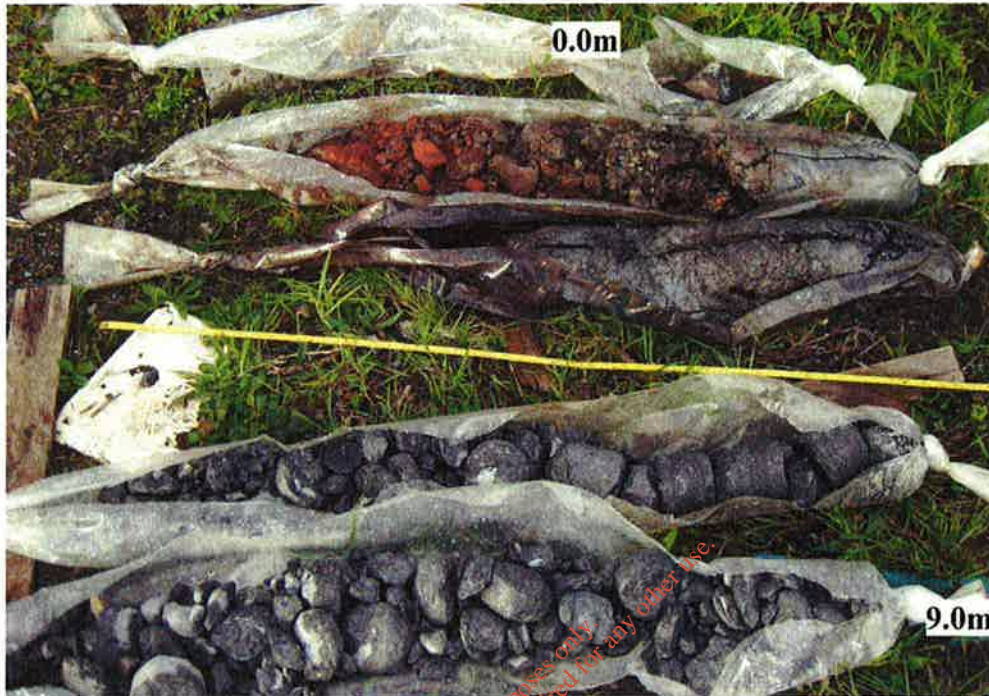
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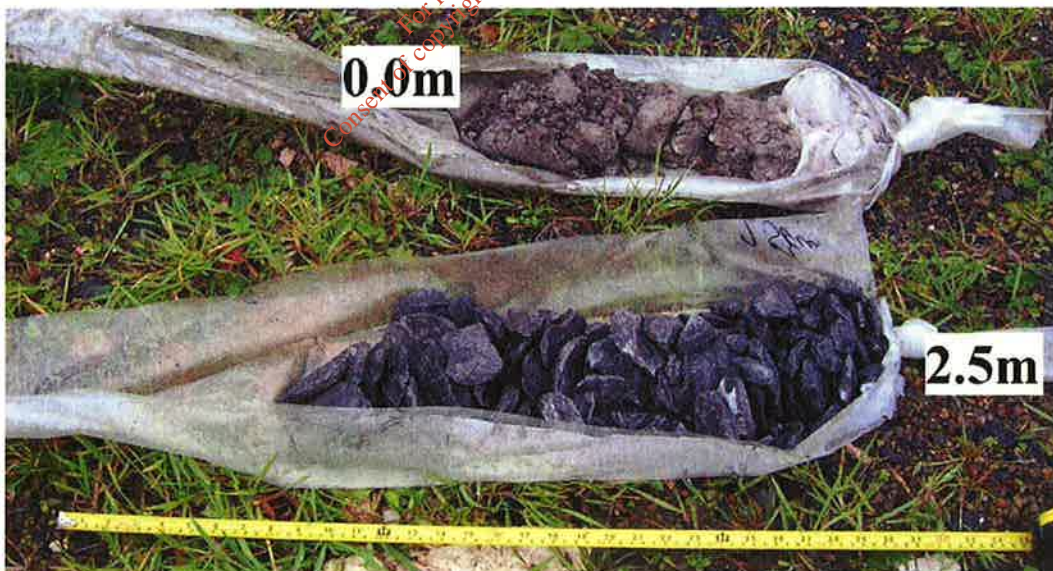
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Limerick Gasworks – Core Photography

G07



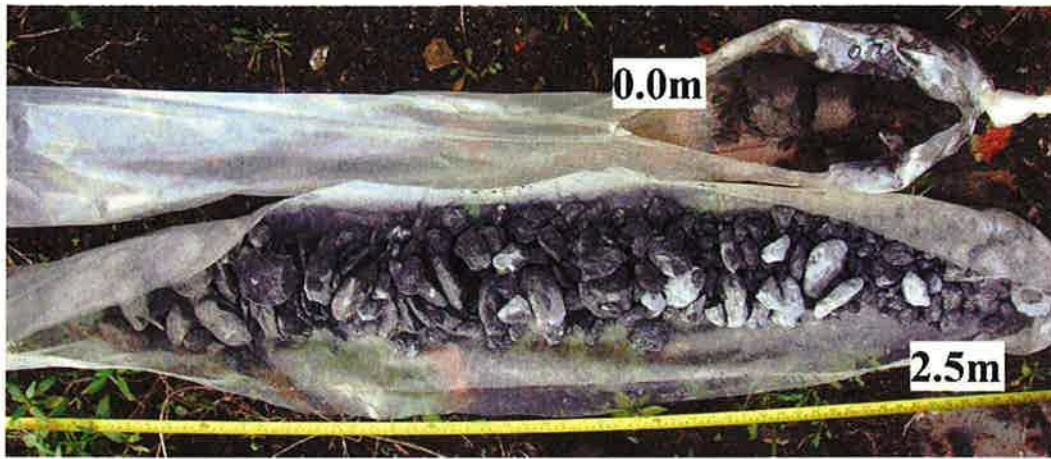
G08



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G09



G10



G11



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Limerick Gasworks – Core Photography

G12



H01



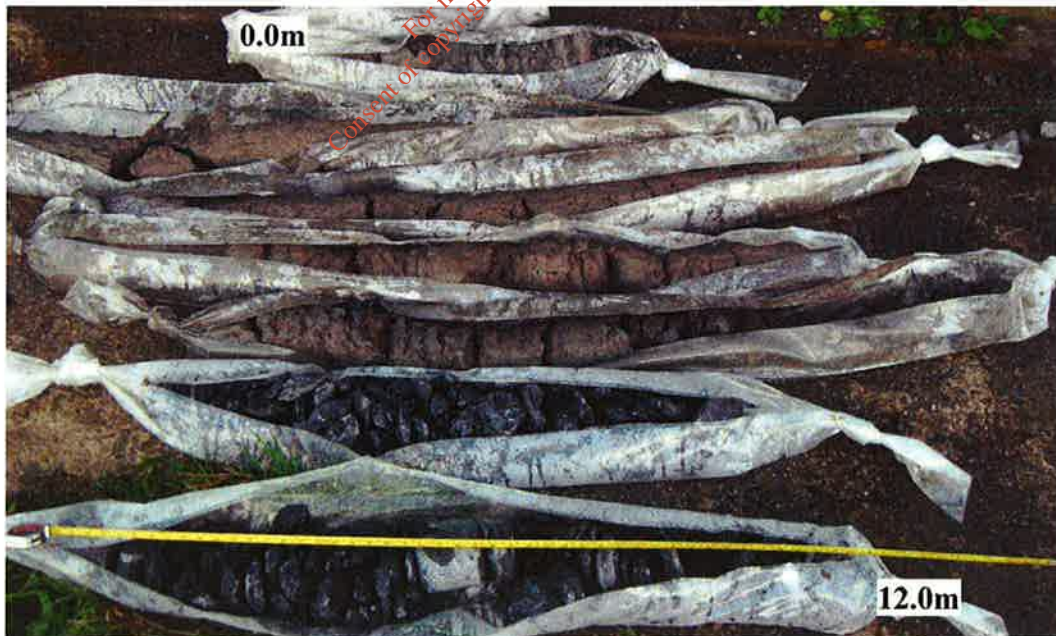
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Limerick Gasworks – Core Photography

H02



H03



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Limerick Gasworks – Core Photography

H04



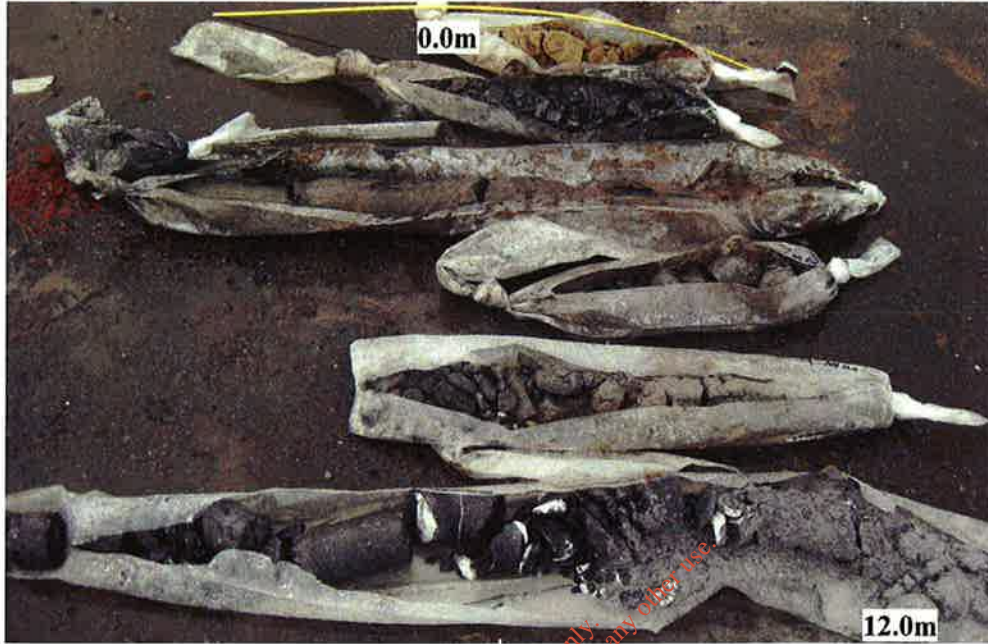
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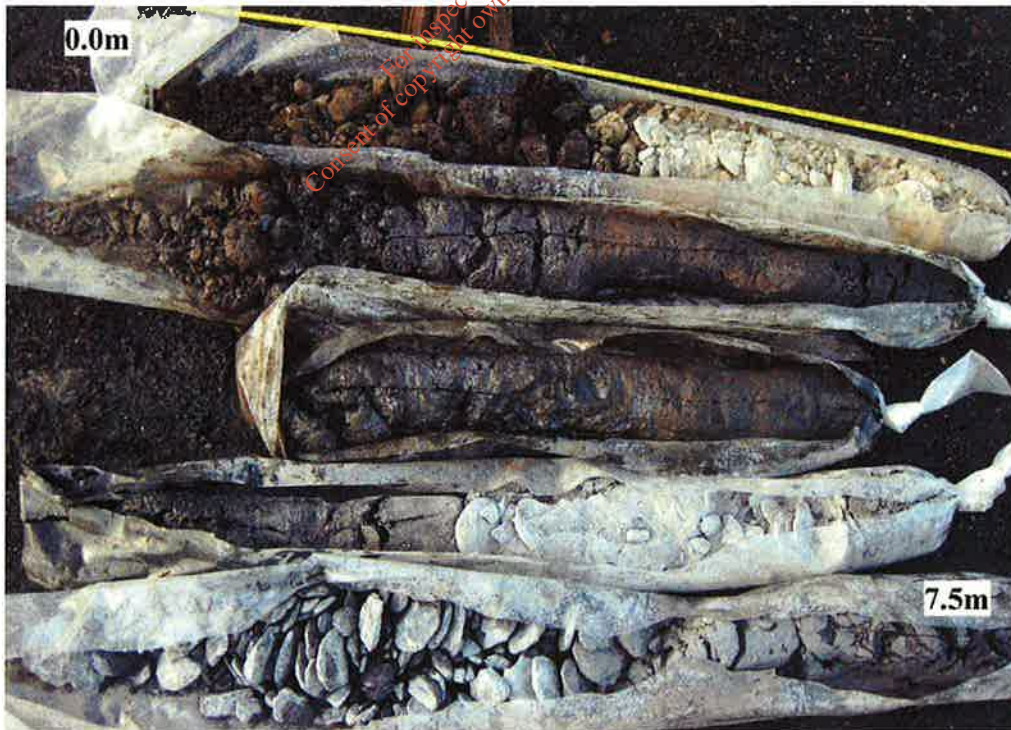
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H06



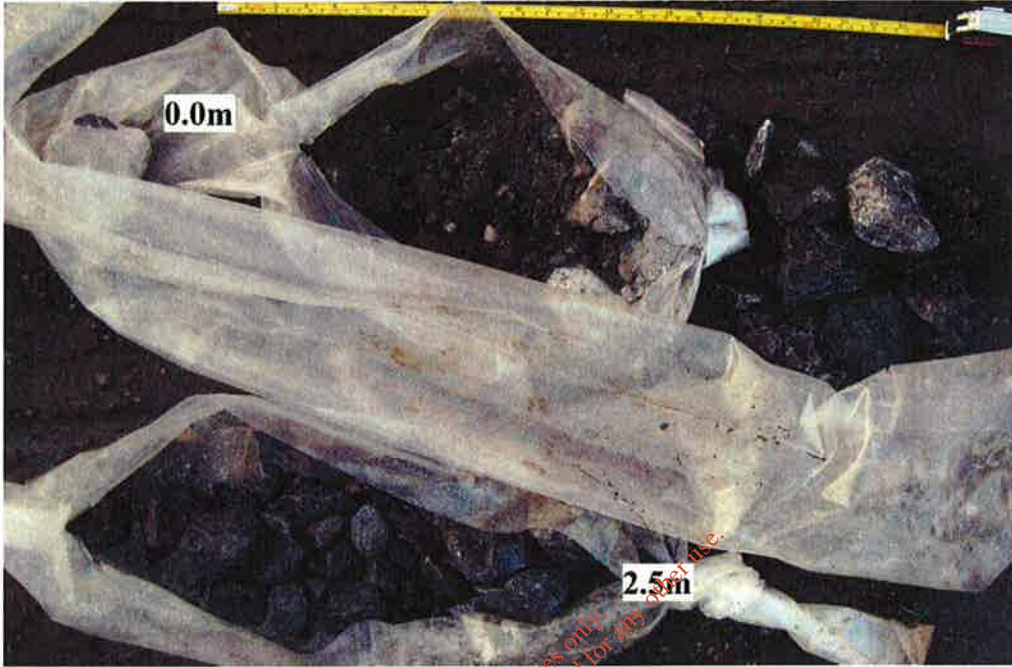
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H08



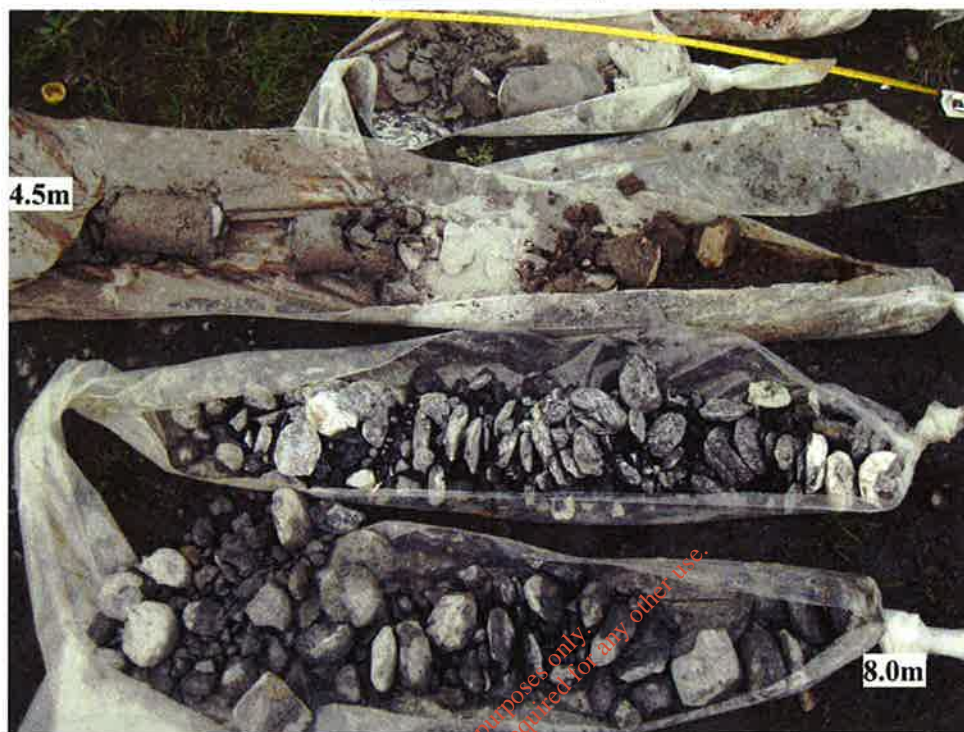
H09 Picture 1 of 2



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H09 Picture 2 of 2



H10



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H11

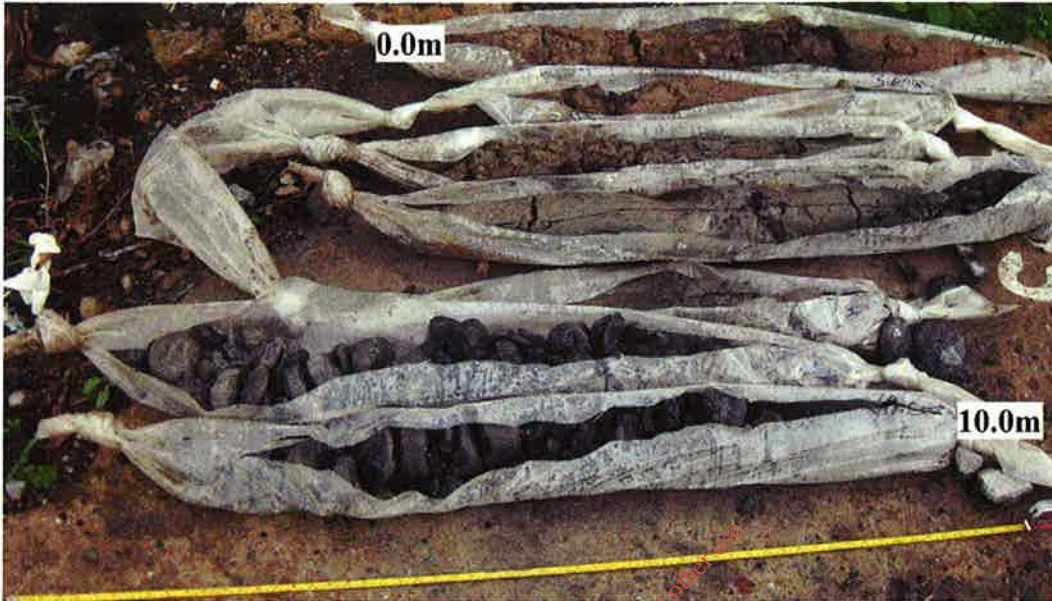


H12



Limerick Gasworks – Core Photography

I01



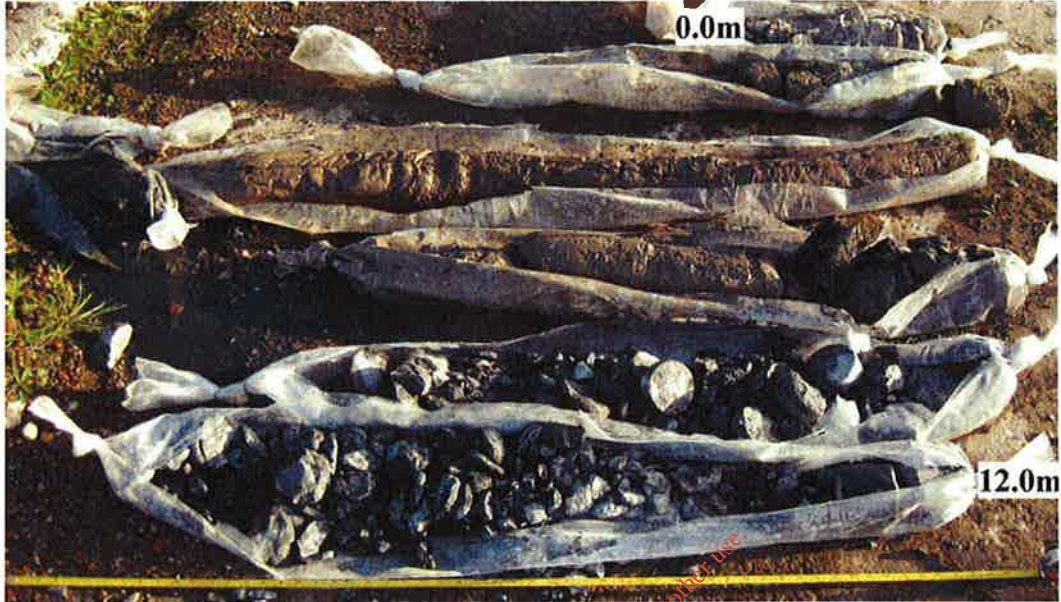
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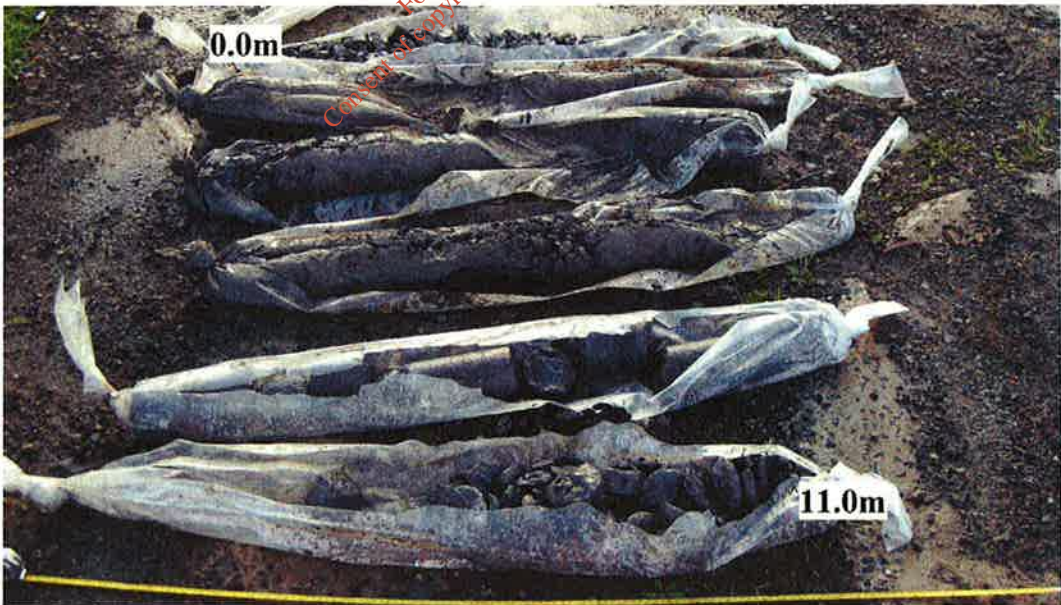
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I03



I04



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105



106



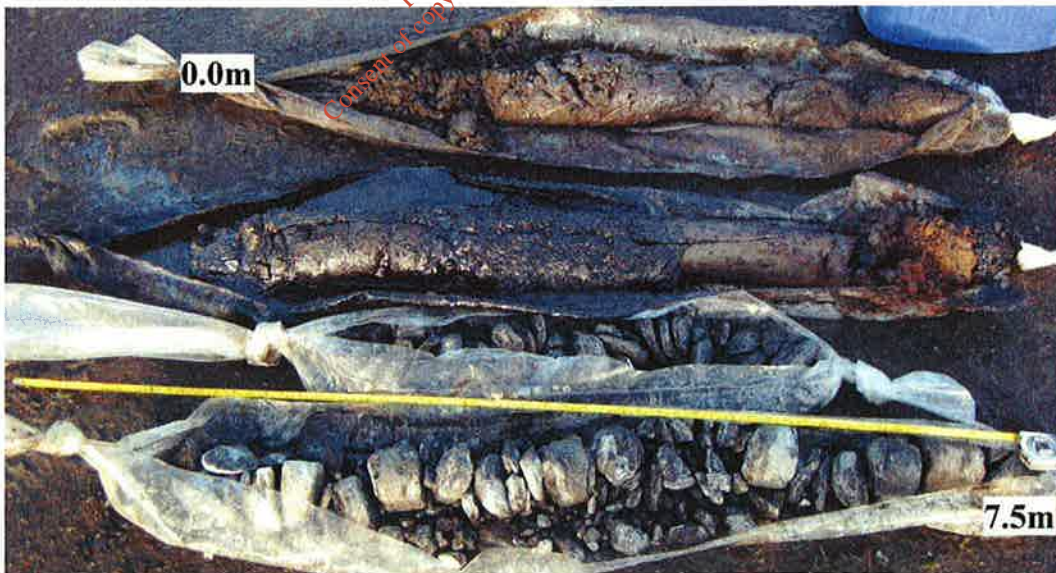
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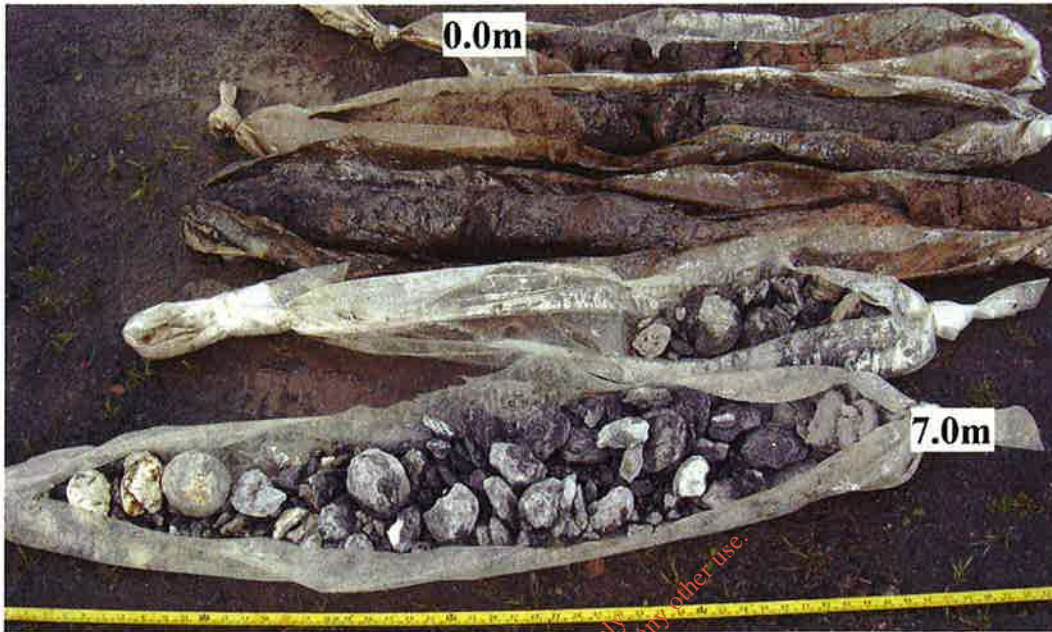
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109



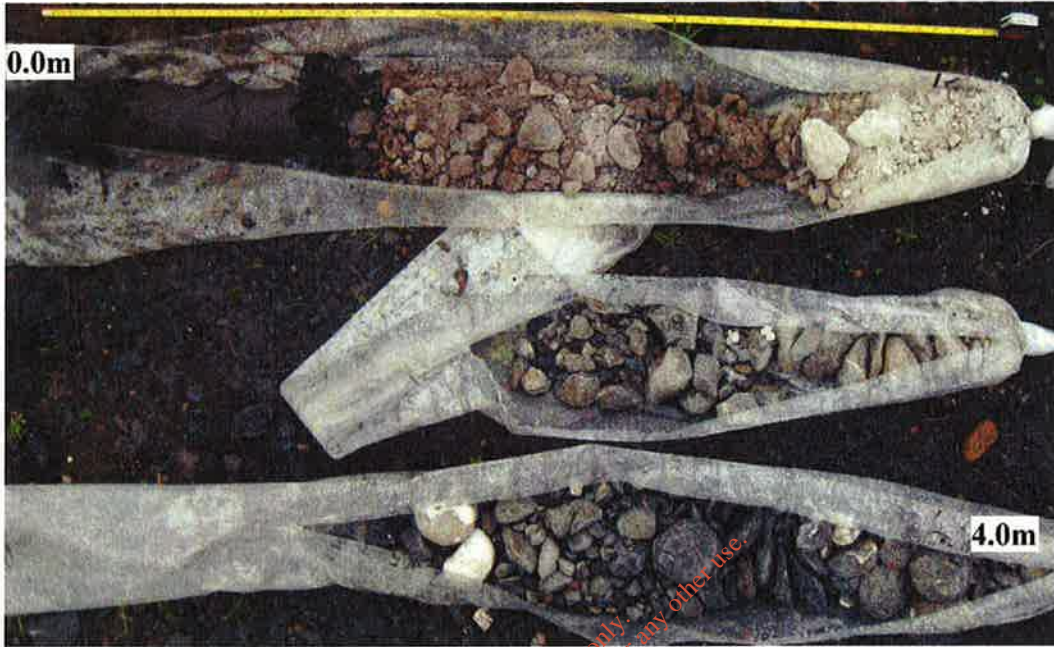
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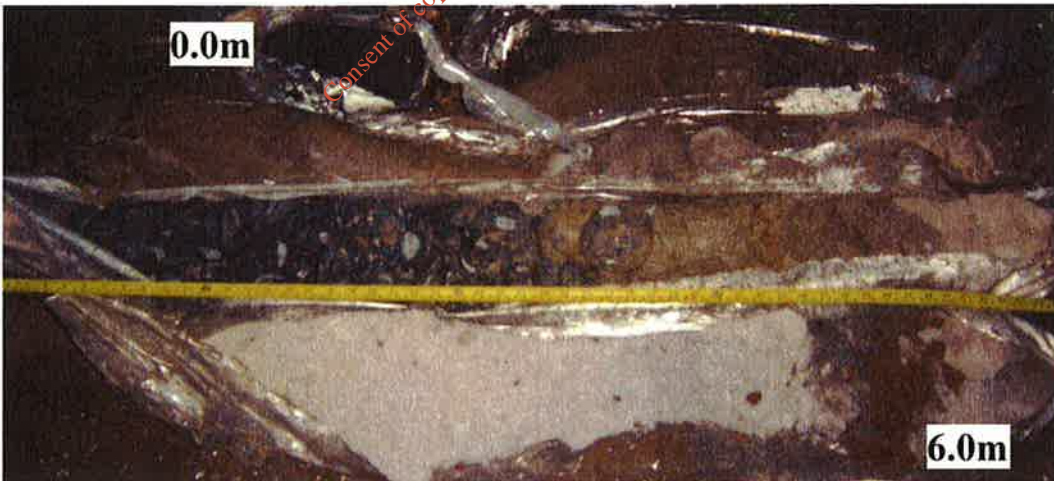
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I11



I12



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Limerick Gasworks – Core Photography

J01



J02



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Limerick Gasworks – Core Photography

J03



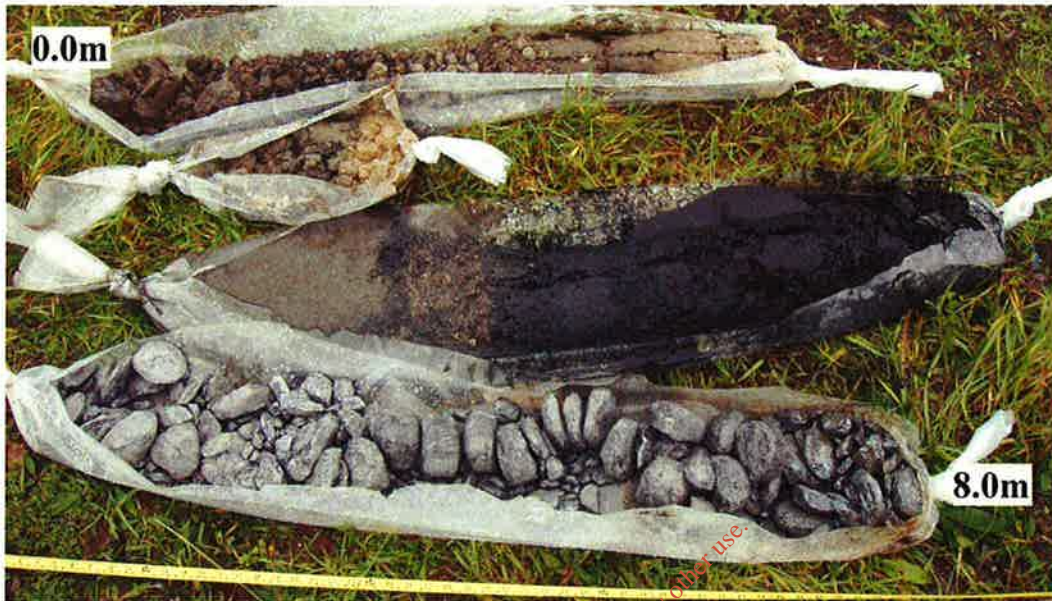
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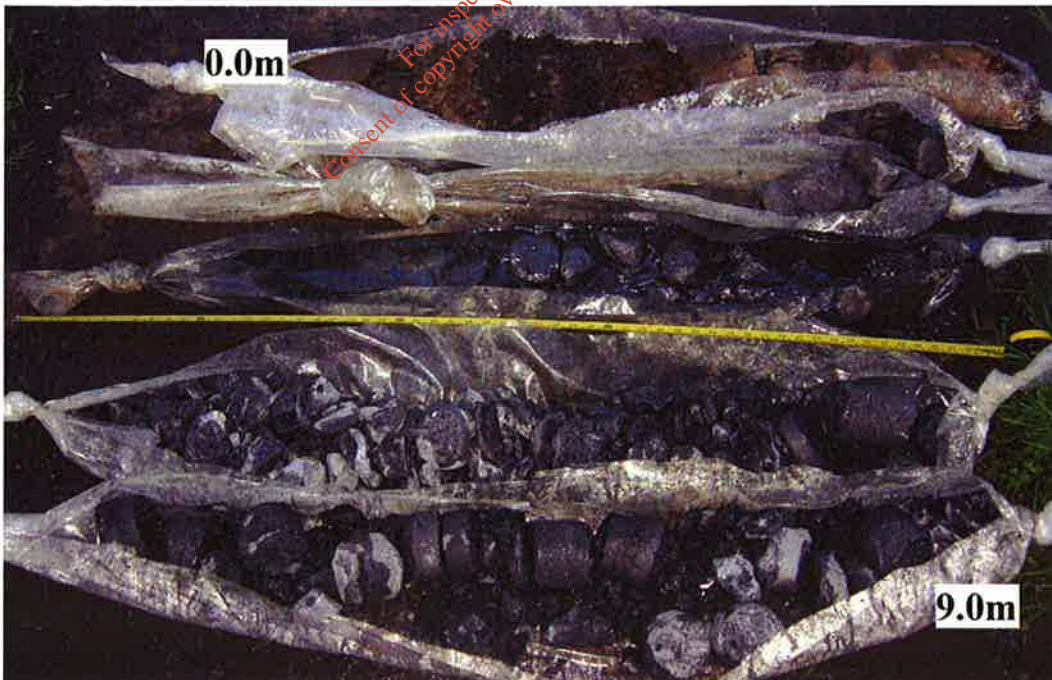
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Limerick Gasworks – Core Photography

J05



J06



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Limerick Gasworks – Core Photography

J07



J08



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Limerick Gasworks – Core Photography

J09



J10



J11



IGSL Ltd

Limerick Gasworks – Core Photography

J12



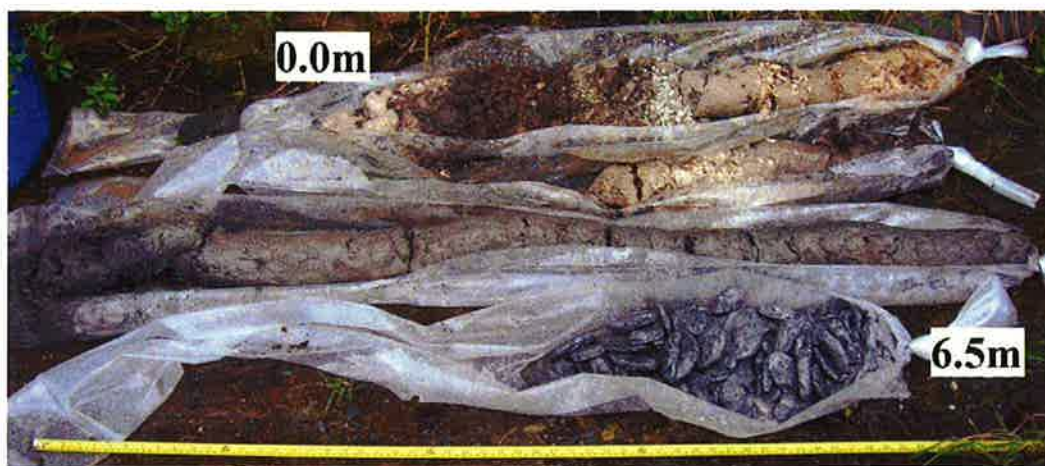
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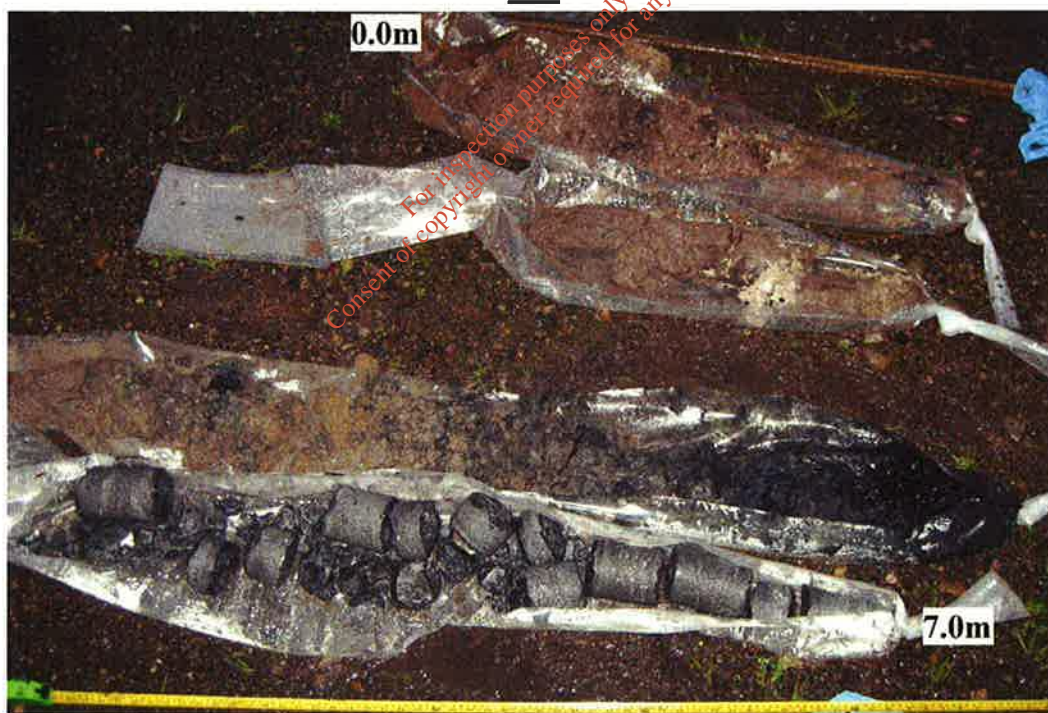
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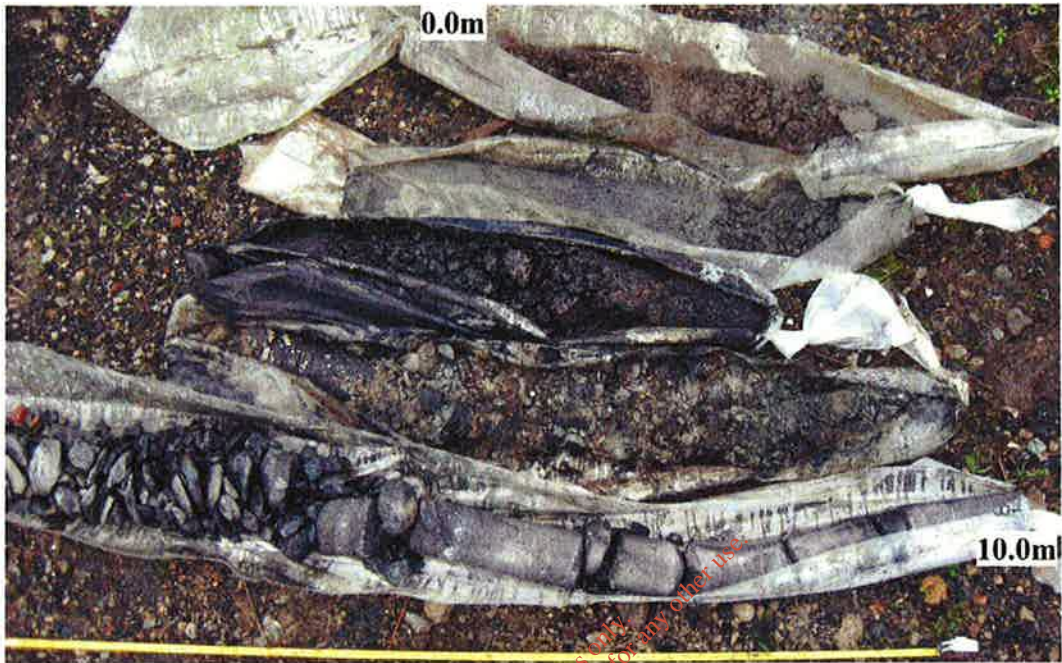
K03



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Limerick Gasworks – Core Photography

K04



K05



IGSL Ltd

Limerick Gasworks – Core Photography

K06



K07



IGSL Ltd

Limerick Gasworks – Core Photography

K08



K09



K10



IGSL Ltd

Limerick Gasworks – Core Photography

K11



K12



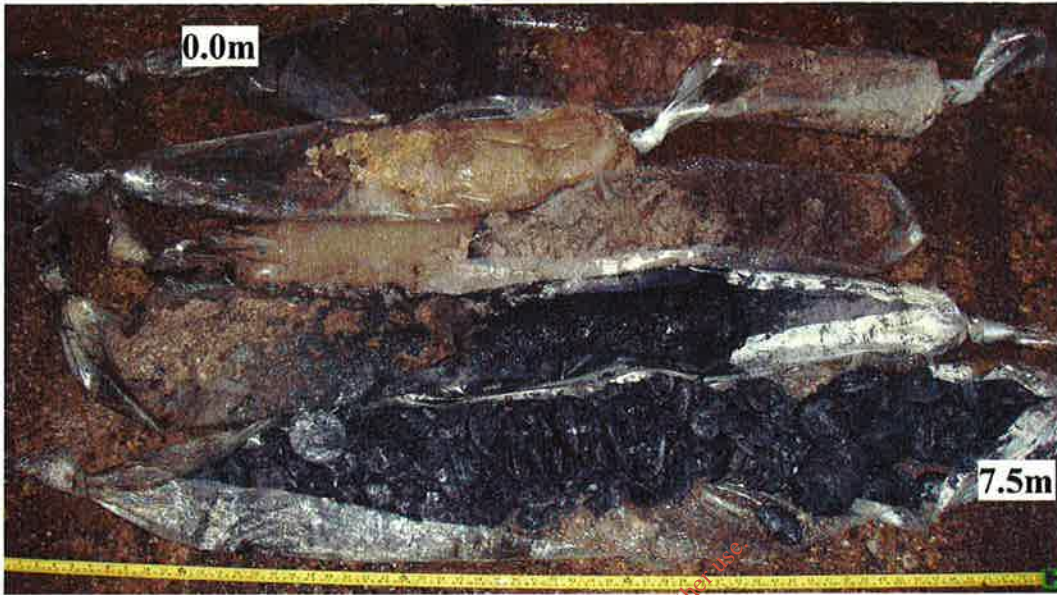
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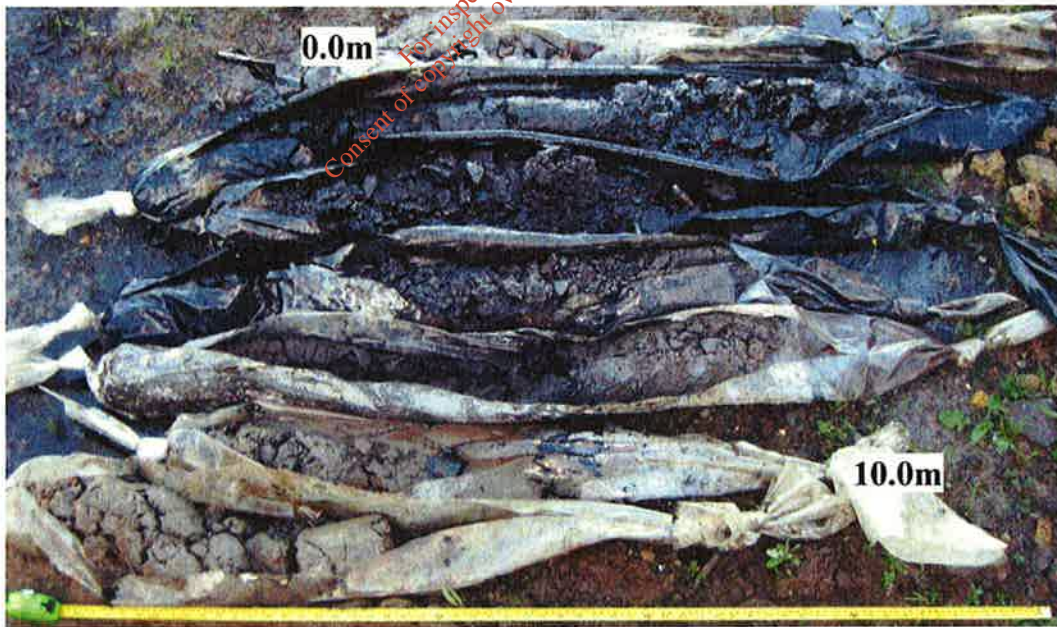
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Limerick Gasworks – Core Photography

L03



L04



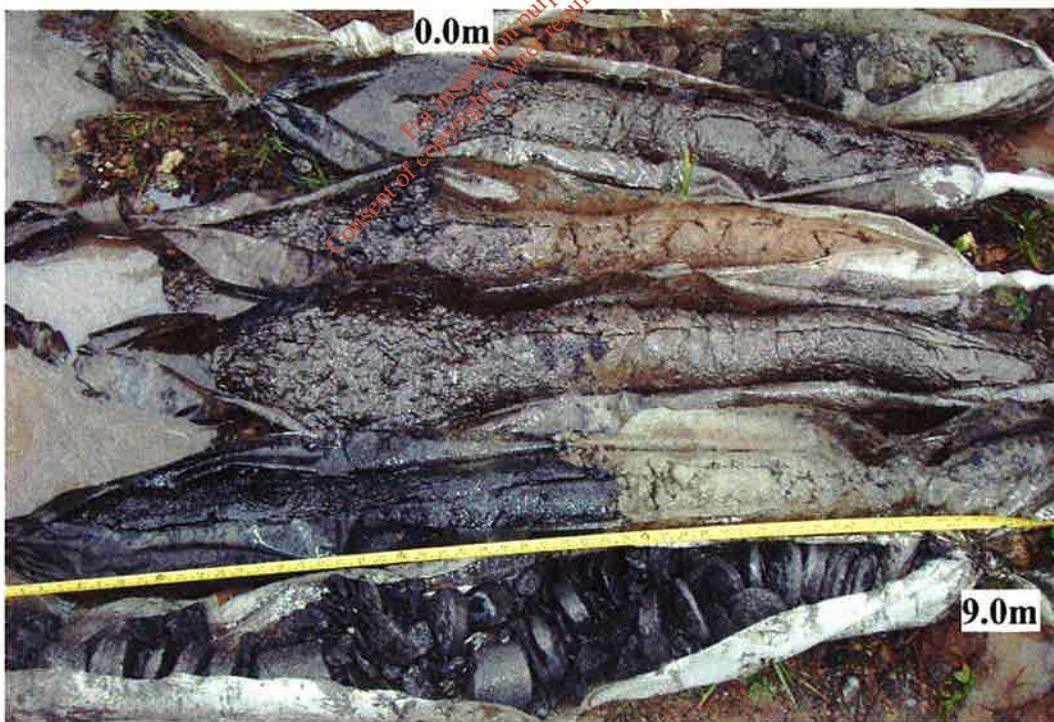
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Limerick Gasworks – Core Photography

L05



L06



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Limerick Gasworks – Core Photography

L07



L08



L09



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Limerick Gasworks – Core Photography

L10



M03



M04



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Limerick Gasworks – Core Photography

M05



M06 Picture 1 of 2



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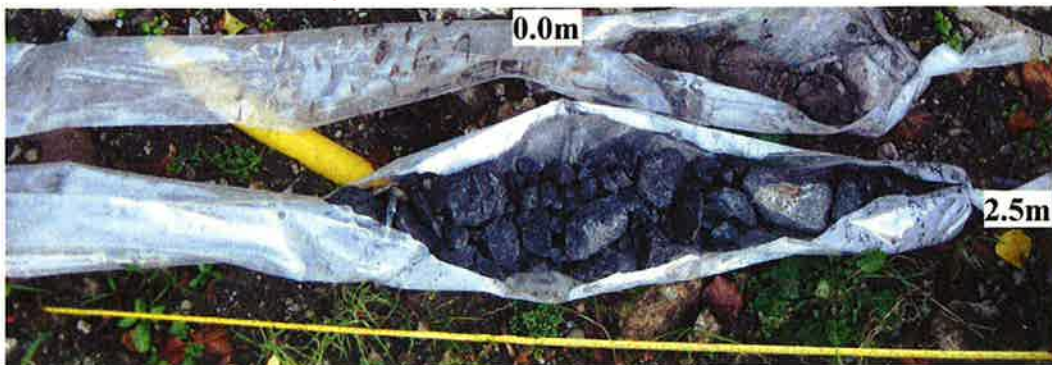
Limerick Gasworks – Core Photography

M06 Picture 2 of 2



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M07



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Limerick Gasworks - Sonic Core Photography

A1 0-2



A1 2-3



IGSL Project No. 16033

Limerick Gasworks - Sonic Core Photography

A1 3-4



A1 4-5



IGSL Project No. 16033

Limerick Gasworks - Sonic Core Photography

A10 0-2



A10 2-3



IGSL Project No. 16033

Limerick Gasworks - Sonic Core Photography

A10 3-4



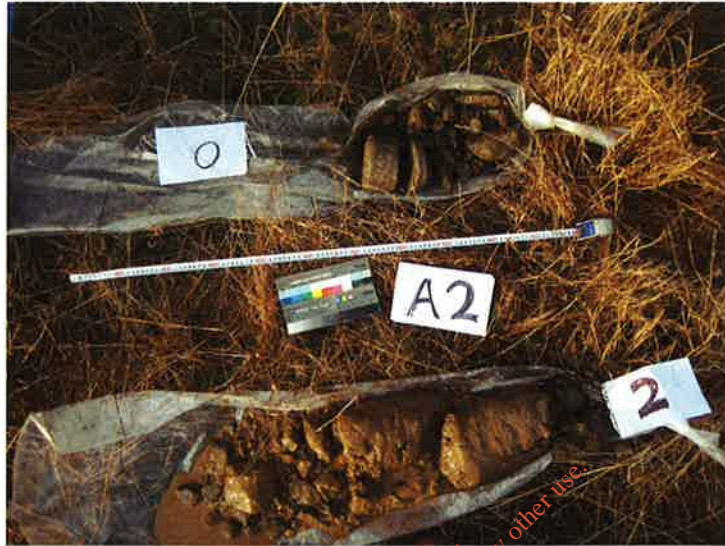
A10 4-5



IGSL Project No. 16033

Limerick Gasworks - Sonic Core Photography

A2 0-2



A2 2-4



IGSL Project No. 16033

Limerick Gasworks - Sonic Core Photography

A2 4-5.5



IGSL Project No. 16033

Limerick Gasworks - Sonic Core Photography

A9 1-2



A9 2-3



IGSL Project No. 16033

Limerick Gasworks - Sonic Core Photography

A9 3-4



B1 0-1



Limerick Gasworks - Sonic Core Photography

B1 1-2.5



B1 2.5-4



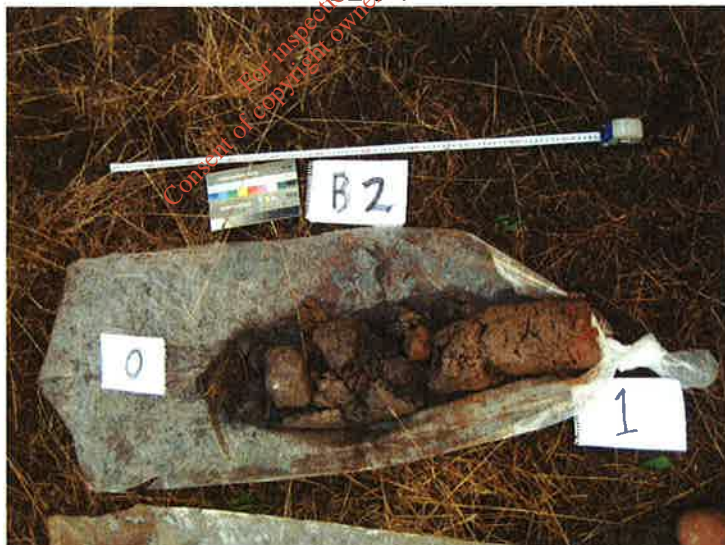
IGSL Project No. 16033

Limerick Gasworks - Sonic Core Photography

B10 0-2 and 2-5



B2 0-1



IGSL Project No. 16033

Limerick Gasworks - Sonic Core Photography

B2 1-2



B2 3-4.3



IGSL Project No. 16033

Limerick Gasworks - Sonic Core Photography

B9 0-2



B9 0-5



IGSL Project No. 16033

Limerick Gasworks - Sonic Core Photography

B9 2-3



IGSL Project No. 16033

Limerick Gasworks - Sonic Core Photography

C1 1-3.5



C1 3.5-4.7



IGSL Project No. 16033

Limerick Gasworks - Sonic Core Photography

C2 0-2



C2 2-3.5



IGSL Project No. 16033

Limerick Gasworks - Sonic Core Photography

D2 0-1.5



D2 1.5-2.5



IGSL Project No. 16033

Limerick Gasworks - Sonic Core Photography

D2 2.5-3.5



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