Former Gasworks, Dock Road, Limerick

Quarterly Groundwater Monitoring Report – Annual Summary 2011

November 2011

For Bord Gais

Rowan House
Lloyd Drive
Ellesmere Port
South Wirral
CH65 9HQ

T 0151 3565555
F 0151 3568960

Document Control Sheet

Project Title	Limerick Gasworks
Report Title	Quarterly Groundwater Monitoring Report – Annual Summary 2011
Report Reference	1034973/R/04
Version	A
Issue Date	November 2011

Record of Issue

Version	Status	Author	Checked	Authorised
A	First Issue	Neil Balderstone	Dave Watts	Sarah Dack

Distribution

Organisation	Contact	Format	Copies
Bord Gais	Declan Burke	Electronic Paper	1 1

LIMITATIONS

This report is presented to Bord Gais in respect of Limerick Gasworks and may not be used or relied on by any other person or by the client in relation to any other matters not covered specifically by the scope of this Report.

Notwithstanding anything to the contrary contained in the report, Mouchel Limited is obliged to exercise reasonable skill, care and diligence in the performance of the services required by Bord Gais and Mouchel Limited shall not be liable except to the extent that it has failed to exercise reasonable skill, care and diligence, and this report shall be read and construed accordingly.

This report has been prepared by Mouchel Limited. No individual is personally liable in connection with the preparation of this report. By receiving this report and acting on it, the client or any other person accepts that no individual is personally liable whether in contract, tort, for breach of statutory duty or otherwise.

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

Contents

Drawings

Appendices

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 Mouchel 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 forms part of the larger scheme of works currently being undertaken on the site, Mouchel have been appointed to conduct groundwater quality monitoring programme to establish a baseline data-set for the site prior to the proposed remediation works.

This report presents a comparison of the groundwater quality data from the three monitoring visits undertaken throughout the past year; Visit 6 – 26th to 27th January 2011; Visit 7 – 26th to 27th April 2011; Visit 8 – 24th to 26th October 2011.

1.2 Monitoring Visits

To date, eight groundwater monitoring visits have been undertaken as part of the additional groundwater monitoring programme. This annual report summarises the three visits undertaken in 2011.

For further information on the site characterisation fieldwork, sampling and chemical testing, please refer to the Mouchel Site Characterisation Factual Report, 1021927/R/02 version C dated November 2011.

2 Hydrogeological Site Model

2.1 Groundwater source and flow direction

The site specific hydrogeology is discussed in depth in the 2010 Quantitative Risk Assessment, Options Appraisal and Remediation Report, reference 1021927/R/03 and the subsequent Addendum Report 1021927/R/18. The findings of the QRA report have been reviewed following completion of two years worth of groundwater monitoring.

The results indicate that the flow direction is generally consistent all year round but the groundwater levels are influenced by seasonal rainfall variations. The results to date suggest that there may be two sources of groundwater entering the site.

- Source 1 – Originating from the southern corner of the site from within the rock outcrop (picked up by monitoring well J10).
- Source 2 – Originating from the south east section where water is draining into the site (picked up by monitoring well K5).

These two sources seem to be partially split by the bedrock which is located at the surface around cells I10, J09, K08, K09, K10, L08, L09 and L10.

The water appears to accumulate in the quarry area and flow towards the south west (A11 / corner of Dock Road and St. Alphonsus Street) and to the west (A3 – A4 / Dock Road). Flow is therefore in an approximately westerly direction as would be expected close to the river (the angle of flow will be to the river (west north west) but with a vector in the direction of river flow, i.e. westerly.

2.2 Groundwater levels

The results of the 2011 groundwater monitoring visits are presented overleaf (the DNAPL depths are displayed in brackets). Groundwater contour plots for all three visits undertaken during 2011 are presented as Appendix A.

BH No.	Response zone strata	* Response zone depth m MHD (m Malin Head Datum)	Water level m MHD (DNAPL level m MHD)				
			2010 Annual average	Jan 2011 Visit 6	Apr 2011 Visit 7	October 2011 Visit 8	2011 Annual Average
A3	Limestone bedrock	1.16 – -0.34	2.70	2.76	2.66	2.92	2.78
A4	Limestone bedrock	1.63 – -0.37	2.65	2.64	2.61	lost	2.63
A11	Limestone bedrock	1.84 – 0.84	2.64	2.69	2.70	3.22	2.87
B8	Made ground	4.49 – 0.99	3.65 (2.66)	could not access	could not access	could not access	N/A
C7	Limestone bedrock	-0.45 – -1.95	3.75 (-1.22)	3.75	3.65 (-0.65)	3.92 (-0.60)	3.77
C11	Natural clay	3.36 – 1.86	3.07	3.16	3.11	3.16	3.14
D1	Limestone bedrock	1.06 – -0.44	4.06 (2.16)	4.06 (2.60)	3.93 (2.76)	4.23 (2.11)	4.07
D5	Made ground	5.8 – 3.80	5.17	5.21	5.08	5.37	5.22
E8	Made ground	4.84 – -0.16	4.87	5.01	4.77	5.08	4.95
F11	Limestone bedrock	2.72 – 1.22	5.35	5.06	4.96	5.13	5.05
G2	Limestone bedrock	-2.01 – -3.51	4.85	5.02	4.72	5.19	4.98
G3	Made ground	6.92 – -1.08	4.87	5.06	4.73	5.20	5.00
G4	Limestone bedrock	-2.55 – -4.55	4.86 (-1.92)	5.06	4.72 (-1.64)	5.22 (-2.25)	5.00
G5	Made ground	6.24 – -1.76	4.88	5.06	4.77	5.24	5.02
G8	Limestone bedrock	6.28 – 4.78	6.79	6.87	6.58	6.95	6.80
H12	Limestone bedrock	3.76 – 2.26	5.69	5.66	5.64	5.60	5.63
J10	Limestone bedrock	5.95 – 3.95	6.64	6.85	6.19	6.95	6.66
K1	Made ground	6.96 – 3.46	5.86	5.95	5.83	6.27	6.02
K5	Made ground	7.64 – 2.64	7.74	7.69 (3.64)	7.72 (3.64)	8.31	7.91
L7	Limestone bedrock	6.65 – 5.15	<5.85**	<5.85**	<5.85**	5.97**	5.89
M3	Limestone bedrock	3.23 – 1.73	5.07	5.40	5.01	5.51	5.31
A1	Limestone bedrock	2.27 – 1.27	N/A	N/A	N/A	No DNAPL***	N/A
A9	Made ground	4.64 – 3.09	N/A	N/A	N/A		N/A
C2	Made ground	4.33 - 2.83	N/A	N/A	N/A		N/A

*Depth estimated from installation details from 2010 QRA report (1021927/R/03).

**Installation was dry during monitoring visit; the depth stated is at the base of the monitoring well.

***Groundwater levels measured on completion of drilling without sufficient time to stabilise. They have therefore not been summarised here.

2.3 Hydraulic gradient estimates

The results equate to the following estimates of hydraulic gradient across the site:

2010 annual average for visits 1-5

G8 – E8 (approximately 1.84 / 13.5m) = 0.136

G3 – A3 (approximately 2.17m / 59.9m) = 0.036

F11 – A11 (approximately 2.71m / 47.15m) = 0.057

Average across the three = 0.076

2011 annual average for visits 6-8

G8 – E8 (approximately 1.85m / 13.5m) = 0.137

G3 – A3 (approximately 2.22m / 59.9m) = 0.036

F11 – A11 (approximately 2.18m / 47.15m) = 0.046

Average across the three = 0.073

The average hydraulic gradient is generally consistent with the 2010 average. However, the F11 to A11 gradient has reduced between 2010 and 2011, possibly due to the drier than average year to date in 2011 as indicated by MET Eireann (**http://www.met.ie/climate/monthly-summary.asp**).

3 Chemical distribution

3.1 Visual, olfactory and DNAPL thickness results

Whilst undertaking the groundwater monitoring programme, samples collected were inspected for any visual and olfactory evidence of contamination. This ranged from various odours, hydrocarbon sheens and the presence of DNAPL. These results have been collated for the three visits undertaken during 2011 and have been summarised in the table below:

Visit	DNAPL detected	Hydrocarbon sheen / odour	Anaerobic / hydrogen sulphide odour	No evidence of significant contamination
6	D1, G4, K5	A3, A4, A11, C7, C11, D1, D5, E8, G2, G3, G5, G4, H12, K5, M3	D5	F11, G8, J10, K1, L7
7	C7, D1, G4, K5	A3, A4, C7, C11, D1, E8, F11, G2, G3, G4, G5, G8, H12, J10, K1, K5, M3		A11, D5, L7,
8	C7, D1, G4, K5	A3, D1, G2, G5, J10, K5, M3	-	A1, A9, A11, C2,C11, D5, E8, F11, G3, G8, H12, K1, L7

An anaerobic odour was previously noted from locations positioned within the former quarry area (D1 and G2), but was not recorded for the two most recent visits.

A hydrocarbon sheen / odour was recorded intermittently along the site boundary, down flow of the predicted groundwater direction (A3, A4 and A11).

A sheen / odour was regularly noted around the former gasholders and the quarry area (C7, D1, G4, G5 and K5). During visits 6, 7 and 8, a yellow/green colour accompanied by a strong organic / ammonaical odour was recorded in E8.

DNAPL was recorded in D1, G4 and K5 on all visits, and in C7 during visits 7 and 8. DNAPL was generally encountered around the former gasholders and within the deeper parts of the quarry where response zones were placed in the Limestone bedrock.

3.2 Chemical results

The groundwater testing methodology and legislation is discussed in full in the Mouchel Quantitative Risk Assessment, Options Appraisal and Remedial Strategy report reference 1021927/R/03, dated March 2010.

Chemical test results for the three quarterly monitoring visits for 2011 are discussed on a visit by visit basis in the quarterly monitoring reports.

Chemical test results from all three visits are presented as Appendix C. EQS and DWS screening tables for each visit are presented as Appendix D.

Across all three visits during 2011, the chemical test results generally correspond with the visual and olfactory evidence. The locations that appeared to be the most contaminated generally recorded the highest concentrations of contaminants. Concentrations of contaminants varied between visits but generally the following contaminants recorded exceedences:-

Environmental Quality Standards (EQS)

Concentrations commonly exceed the screening values in the majority of samples for selenium, ammoniacal nitrogen, sulphate, phenols, cyanide, BTEX, total TPH C_5-C_{35} and most of the speciated PAH's.

Exceedences were also recorded for arsenic, nickel, styrene, zinc, acidic pH, 1,2-dichloroethane and trichloroethene, but only at a few locations.

Drinking Water Standards (DWS)

Concentrations commonly exceed the screening values in the majority of samples for ammonium, sulphate, phenols, cyanide, benzene, total TPH C_5 to C_{35}, fluoranthene and total PAH. GRO and benzo(a)pyrene also recorded exceedences in the majority of samples, but not for each monitoring visit.

Exceedences were also recorded for arsenic, nickel, selenium, ethylbenzene, toluene, xylene, pH, 1,2-dichloroethane, trichloroethene and styrene at a few locations.

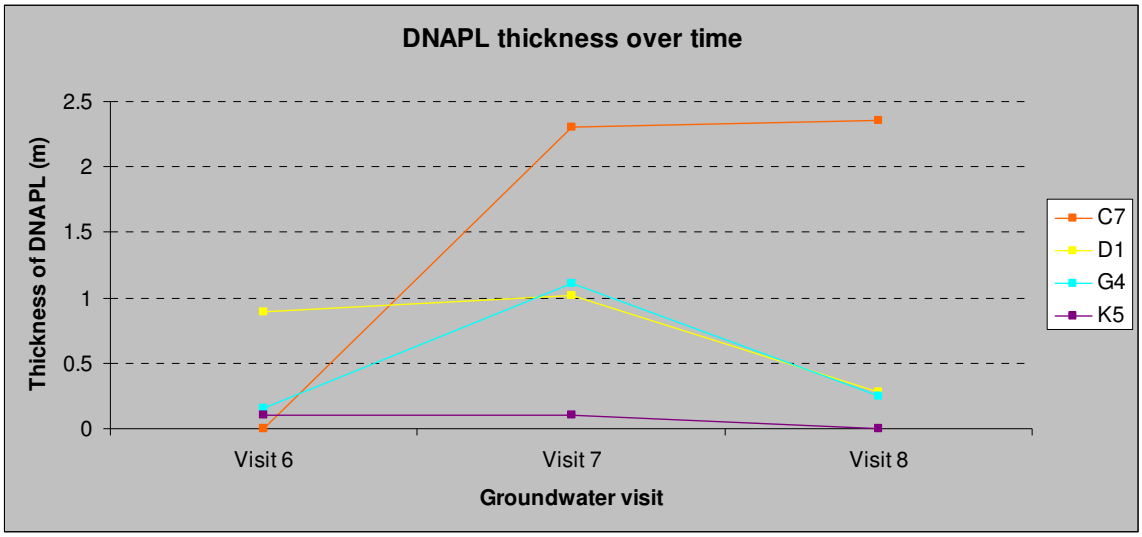
3.3 Temporal Variation

The DNAPL thickness and chemical analytical data from the three visits was compared to assess any potential temporal changes and identify any seasonal patterns. Temporal variation plots are presented in Appendix B.

The graphs indicate that although there is some variation in contaminant concentrations, there is no consistent increase or decline in contaminant concentrations over time. However, there are a few exceptions as detailed below:-

Naphthalene – at location C7, significant increase during visit 8 compared to visits 6 and 7; at location D1, significant decrease in visit 8 compared to visits 6 and 7; at location E8, significant decrease in visit 7; at location G2, significant decrease in visits 7 and 8 compared to visit 6. It is possible that the variation at 7 is due to the disappearance of the obstruction, allowing sampling to occur from a greater depth. The other observed variations could be due to the effect of the decreased rainfall during the 2011 monitoring period. However, all the differences are less than one order of magnitude and therefore are not considered to reflect a change in contaminant mobility or migration.

DNAPL was detected at four locations during the 2011 monitoring period. The graph below indicates the variation in the thickness of DNAPL across the three visits. It should be noted that the DNAPL thickness in well C7 during visit 6 is unlikely to be correct due to a blockage.



4 Conclusions

4.1 Hydrology

The results indicate that the groundwater levels and flow direction are generally consistent all year round. The results to date suggest that there may be two sources of groundwater entering the site along the southern boundary.

Groundwater flow appears to be in a westerly direction, as would be expected close to the river. The angle of flow will be to the river (west north west) but with a vector in the direction of river flow, (i.e. westerly).

The average results of the three visits to date this year equate to an estimated hydraulic gradient across the site of 0.073.

4.2 Chemical distribution

4.2.1 Visual, olfactory and DNAPL thickness results

Visual and olfactory evidence of contamination has varied slightly throughout the 2011 monitoring period, with a general decrease in the number of locations where a sheen and / or odour were recorded from visit 6 to visit 8.

The DNAPL thickness in C7 appears to be stable throughout the year at 2m to 2.5m thickness. The DNAPL thickness in G4 has varied considerably between visits ranging from approximately 1m to less than 0.5m. The thickness in K5 remained low in visits 6 and 7, but no DNAPL was recorded in visit 8. Location D1 followed a similar variation trend with the observed thickness reducing in visit 8.

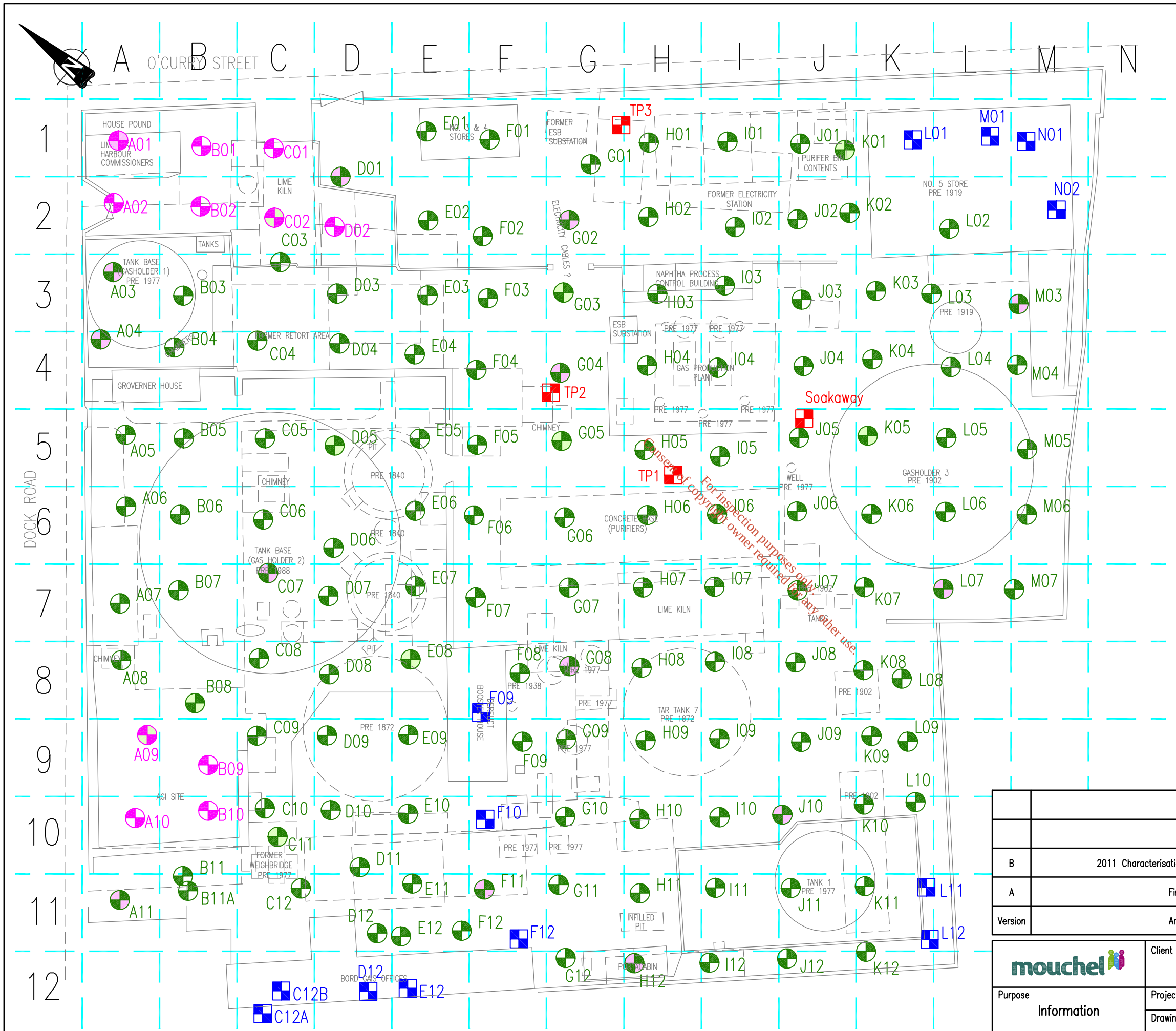
4.2.2 Chemical results

Several contaminants were recorded in concentrations above the EQS and DWS. A Tier 3 Groundwater QRA was undertaken in the QRA report which concluded that although a theoretical risk exists in respect to the River Shannon, this is unlikely to be realised due to the timescales required for contaminants to flow to the receptor and the presence of the wet dock and graving docks (with significant walls) impeding flow. It is also noted that cohesive alluvial deposits may be present in the vicinity of the river further impeding any groundwater flow directly into the river.

It is concluded that the limestone aquifer is not productive due to the brackish nature of the groundwater and the thin water bearing stratum (in the near surface weathered zone). There are also no abstractions within the vicinity of the site.

4.2.3 Seasonal Pattern

The chemical results to date have fluctuated slightly with naphthalene recording the largest variations between visits, but none of the determinands plotted recorded variation in excess of one order of magnitude between visits.



Key

Approximate Location of Former Structure

2009 Site Investigation

- Sonic Drilled Boreholes
- 10m Grid
- Window Sample Location
- Trial Pit
- Installation in made ground
- Installation in limestone rock

2011 Site Characterisation

- Sonic Drilled Boreholes
- Installation in made ground
- Installation in limestone rock

Version	Amendment	Originated by and date	Checked by and date	Approved by and date
B	2011 Characterisation Sonic Boreholes Added	N.Henrys 15/11/11	N.Balderstone 15/11/11	D.Watts 15/11/11
A	First Issue	K.Hodgkinson 02/02/10	D.Megson 02/02/10	D.Watts 02/02/10

mouchel

Client: BORD GÁIS

Purpose: Information

Project: Limerick Gasworks

Drawing Title: Characterisation Exploratory Hole Location Plan

Draft ● Issue

Scale (at A3 size): 1:500

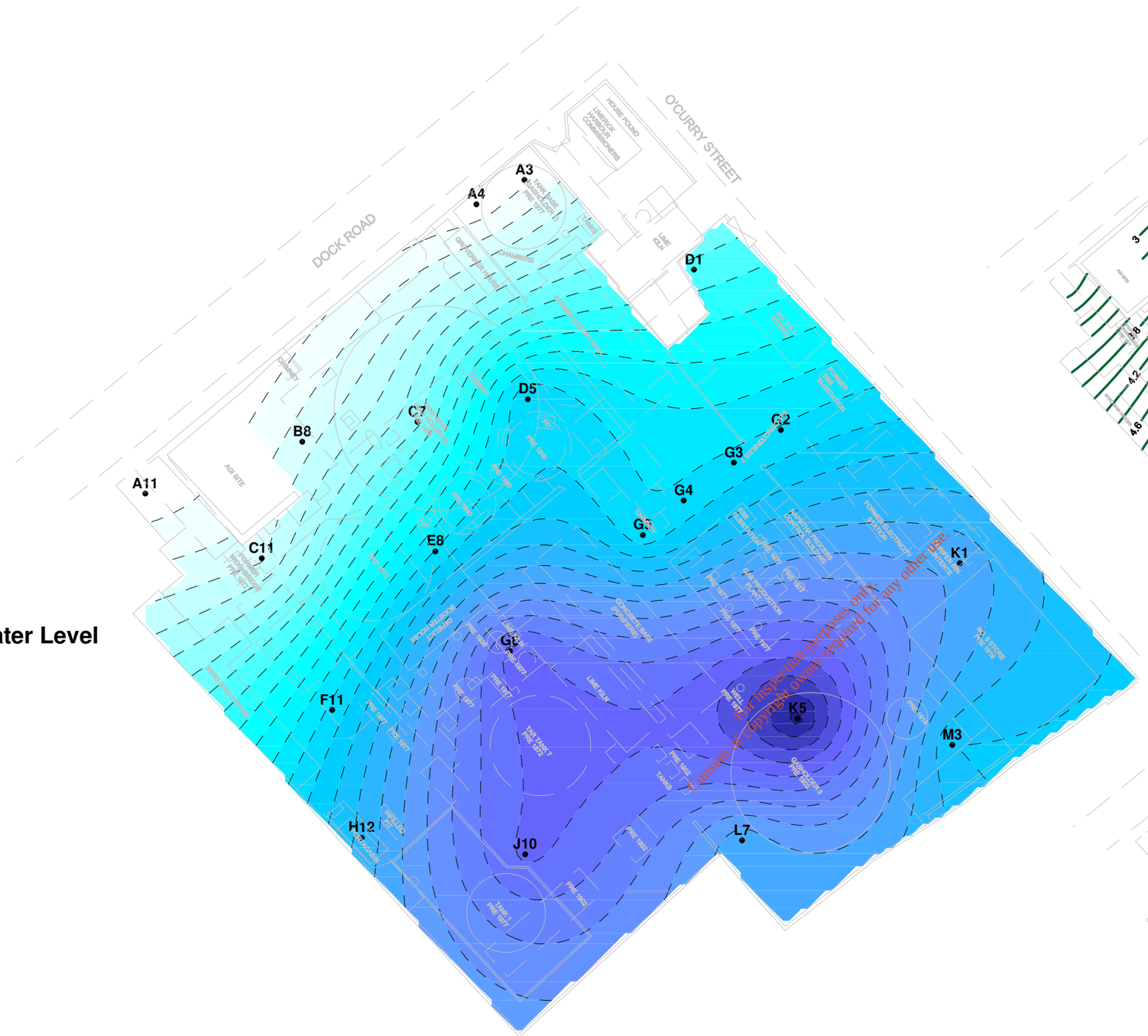
Issuing Office: Ellesmere Port

Telephone: 0151 356 5555

Drawing number: 1021927/R02/OD/001

Version: B

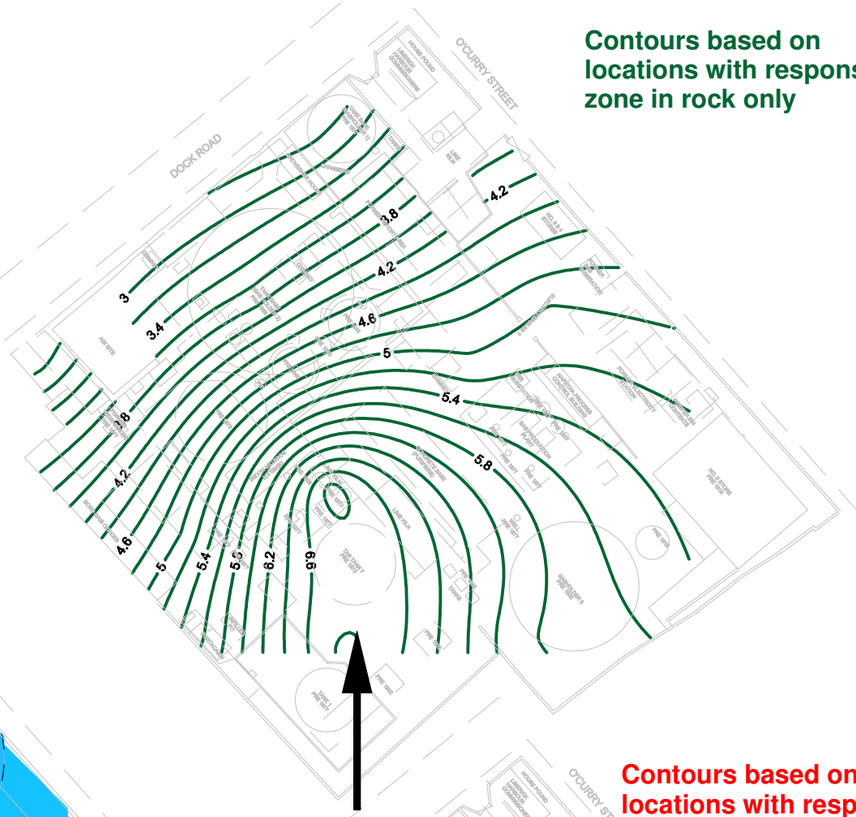
N



Groundwater Level (m MHD)

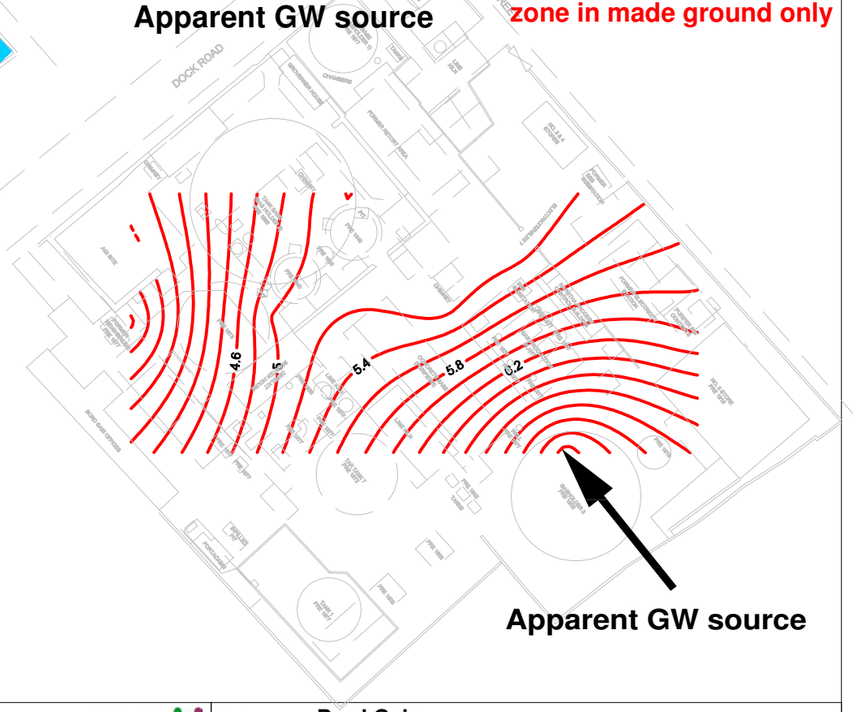
8
7.6
7.2
6.8
6.4
6
5.6
5.2
4.8
4.4
4
3.6
3.2
2.8
2.4
2

Contours based on locations with response zone in rock only



Apparent GW source

Contours based on locations with response zone in made ground only



Apparent GW source

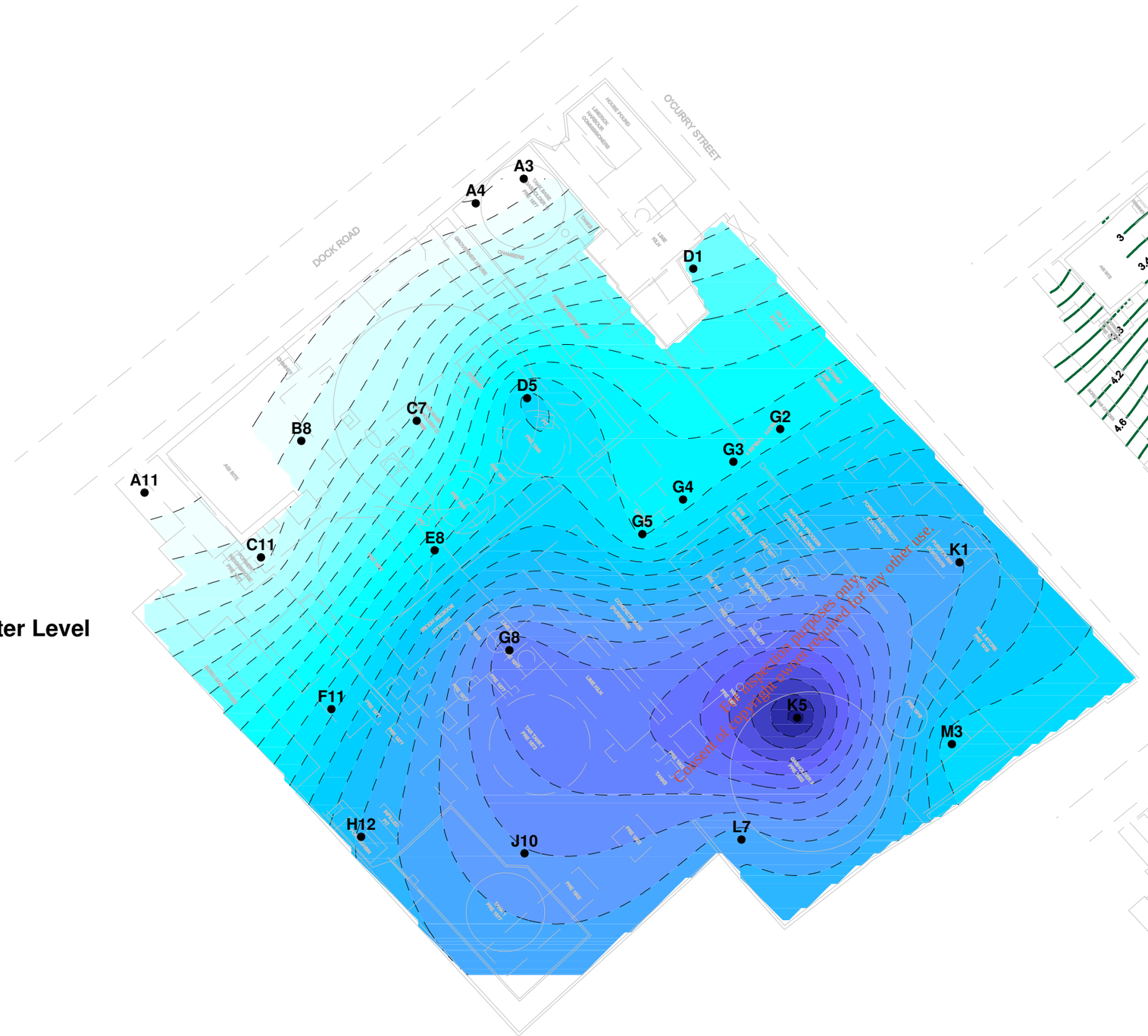
These plots have been produced using data obtained from the groundwater monitoring visit undertaken on 26-27/01/2011. Contours were plotted using the Kriging method based upon a 1m x 1m grid.

Version	Ammendment	Originated	Checked	Approved
A	First Issue	DM	DM	DW

mouchel

Client	Bord Gais
Project	Limerick Gasworks
Drawing Title	Figure 1) Groundwater levels 26-27/01/2011
Purpose	Information
Scale	Not to scale
Issuing Office	Ellesmere Port
Telephone	0151 356 5555
Drawing Number	1034973/R01/OD/001
Version	A

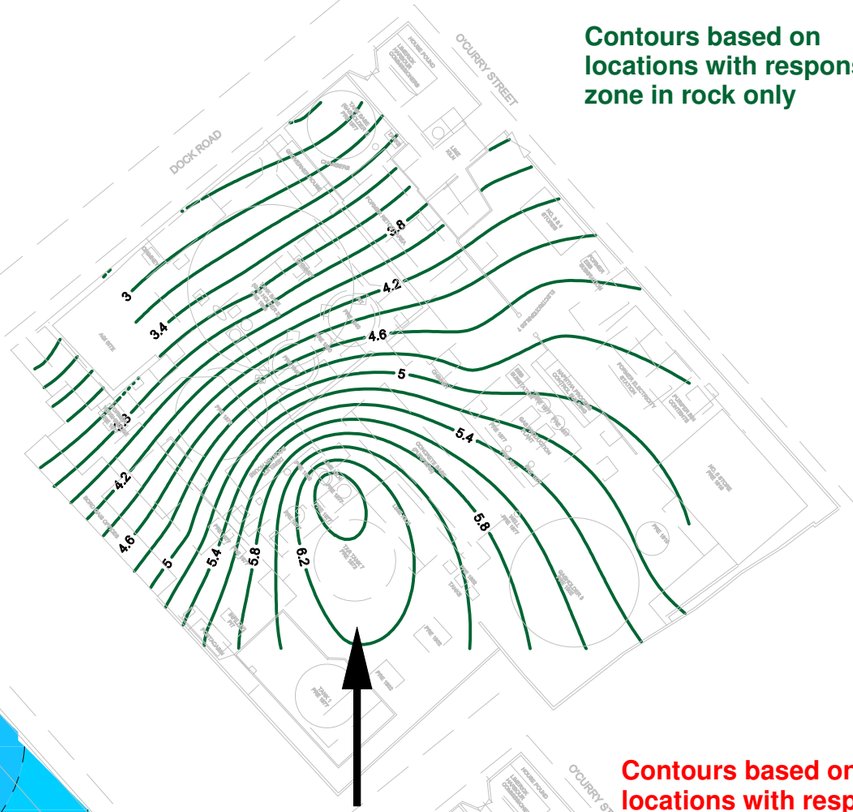
N



Groundwater Level (m MHD)

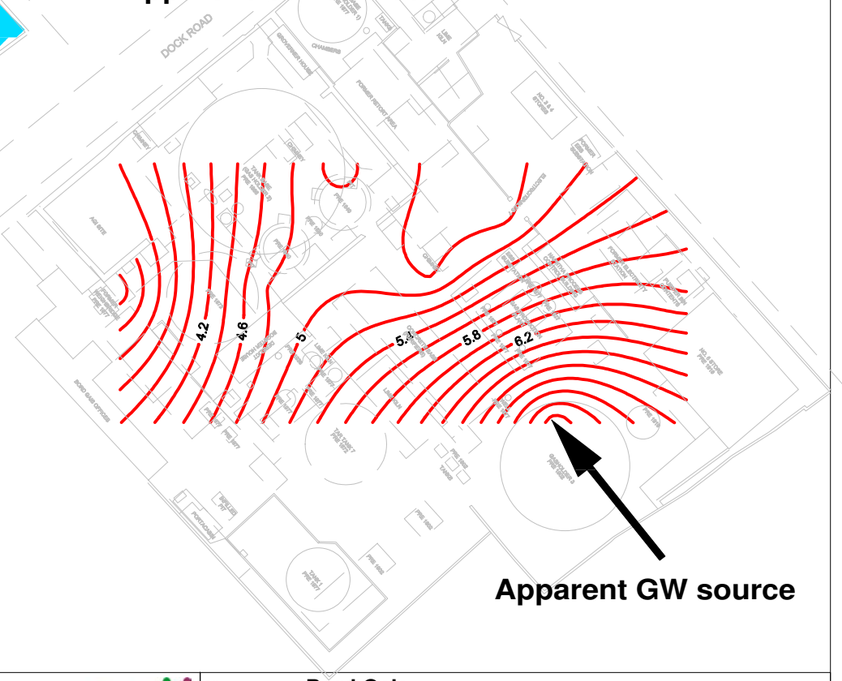
8
7.6
7.2
6.8
6.4
6
5.6
5.2
4.8
4.4
4
3.6
3.2
2.8
2.4
2

Contours based on locations with response zone in rock only



Apparent GW source

Contours based on locations with response zone in made ground only



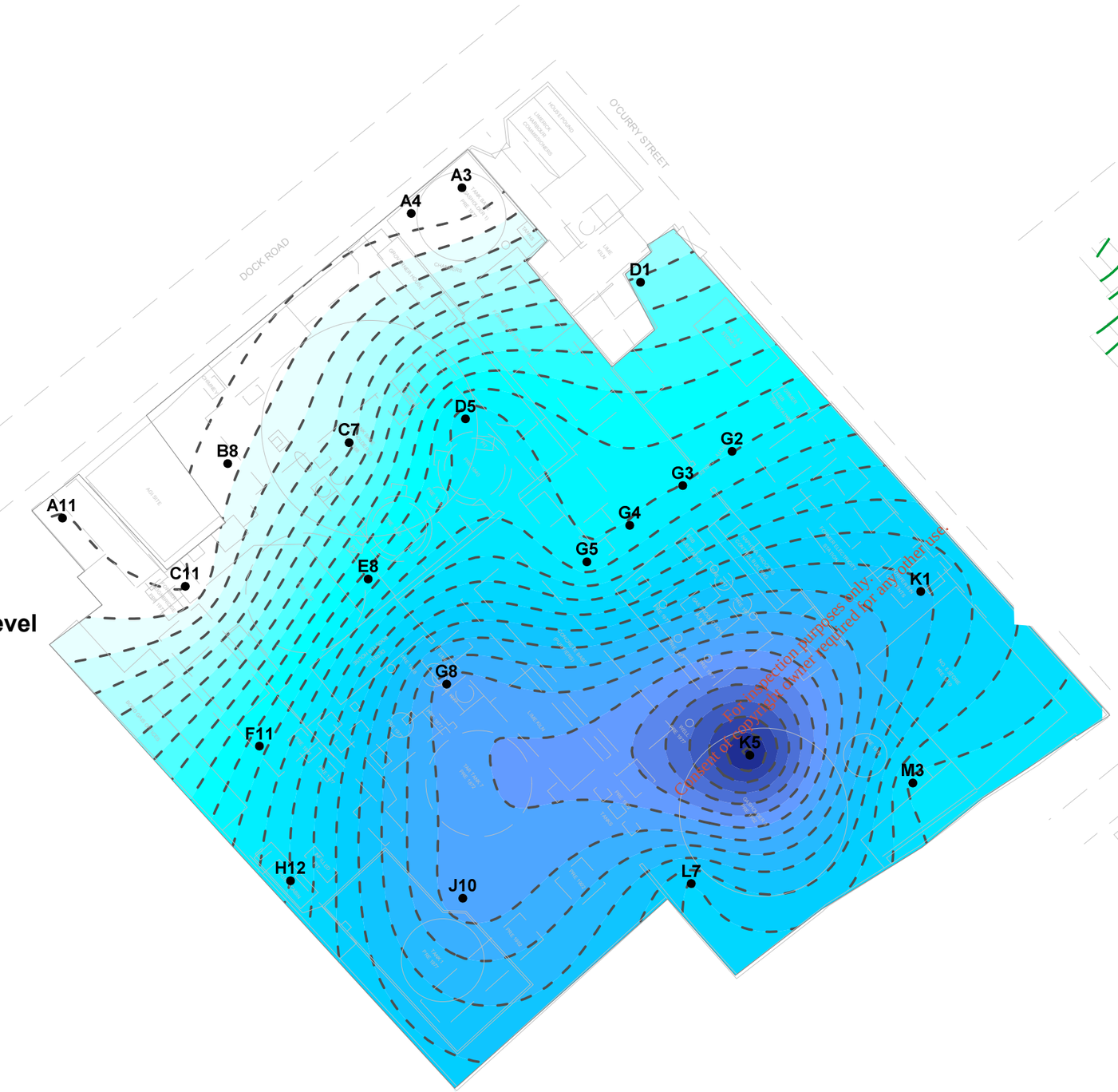
Apparent GW source

These plots have been produced using data obtained from the groundwater monitoring visit undertaken on 26-27/04/2011. Contours were plotted using the Kriging method based upon a 1m x 1m grid.

Version	Ammendment	Originated	Checked	Approved
A	First Issue	DM	DM	DW

mouchel	Client	Bord Gais	
Purpose: Information	Project	Limerick Gasworks	
	Drawing Title	Figure 1) Groundwater levels 26-27/04/2011	
Scale: Not to scale	Issuing Office	Ellesmere Port	Drawing Number: 1034973/R02/OD/001 — Version: A
	Telephone	0151 356 5555	

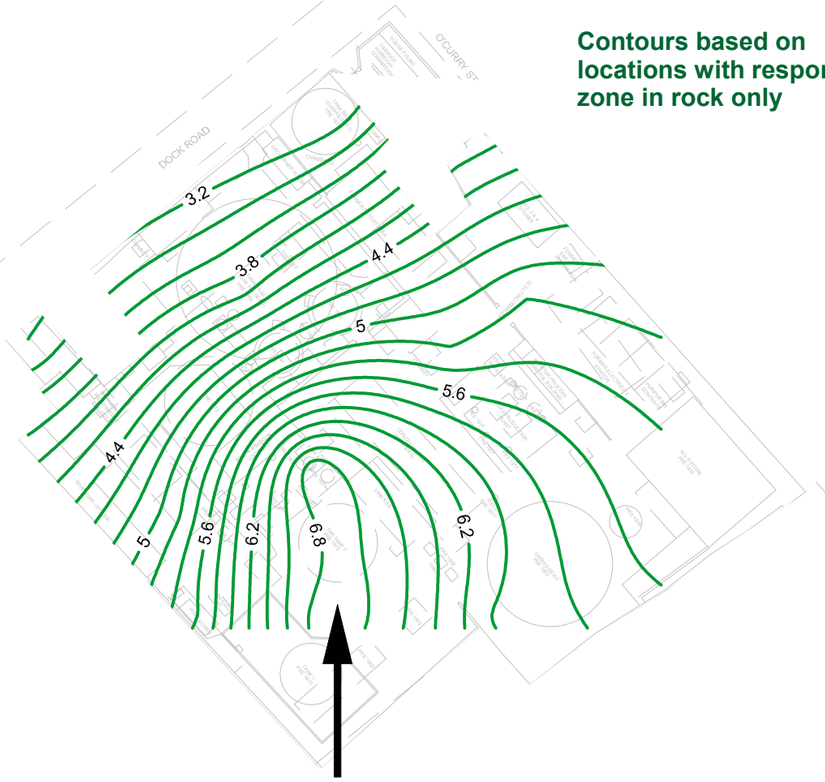
N



Groundwater Level (m MHD)

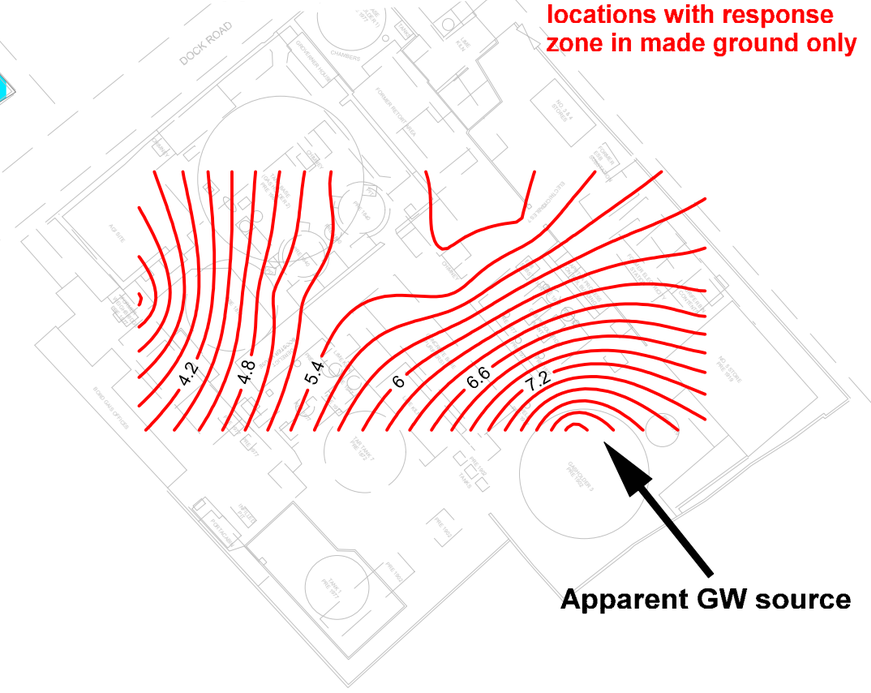
8.4
8
7.6
7.2
6.8
6.4
6
5.6
5.2
4.8
4.4
4
3.6
3.2
2.8
2.4
2

Contours based on locations with response zone in rock only



Apparent GW source

Contours based on locations with response zone in made ground only



Apparent GW source

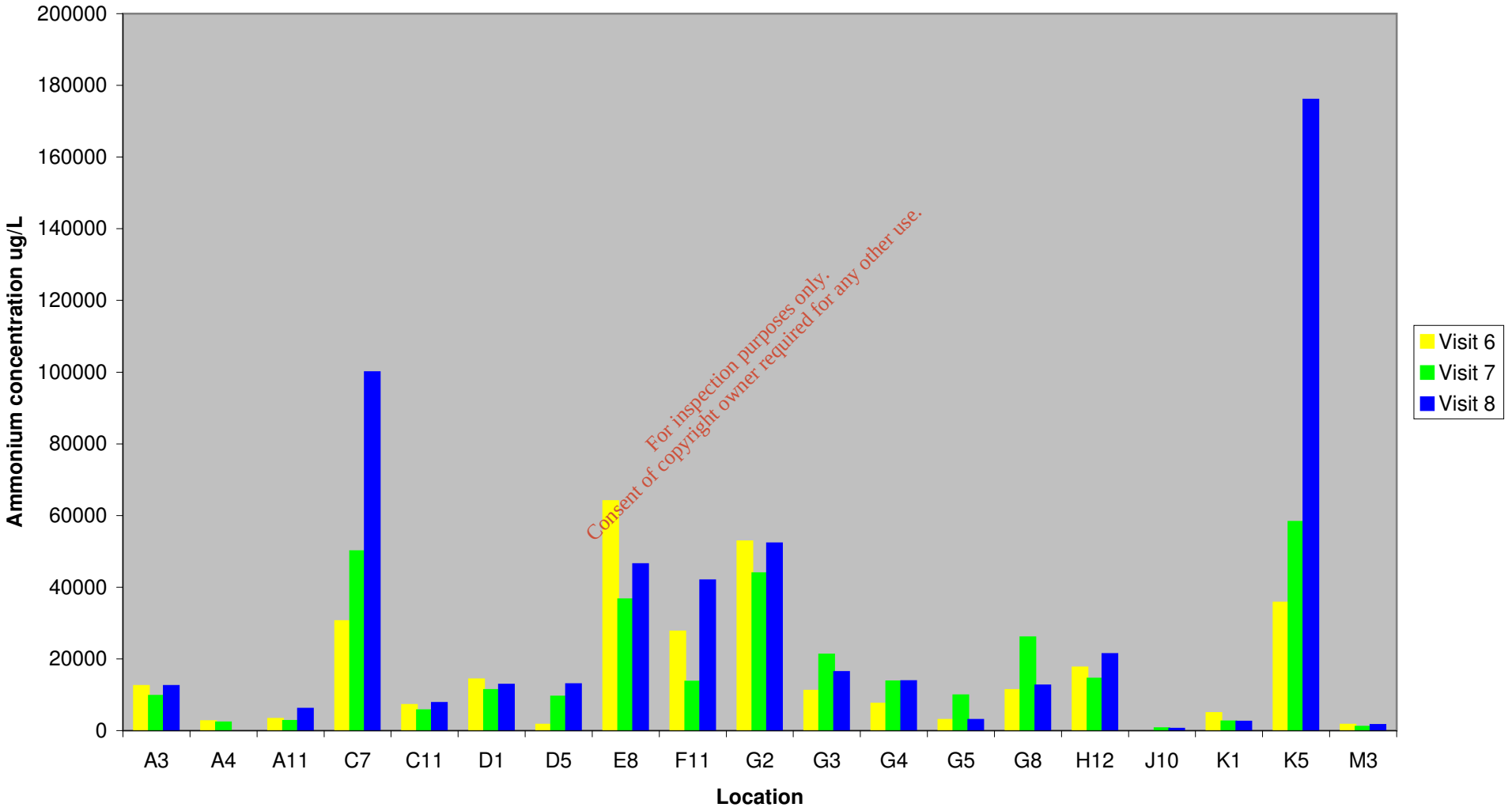
Version	Ammendment	Originated	Checked	Approved
A	First Issue	IW	NB	DW

These plots have been produced using data obtained from the groundwater monitoring visit undertaken on 24-26/10/2011. Contours were plotted using the Kriging method based upon a 1m x 1m grid.

mouchel

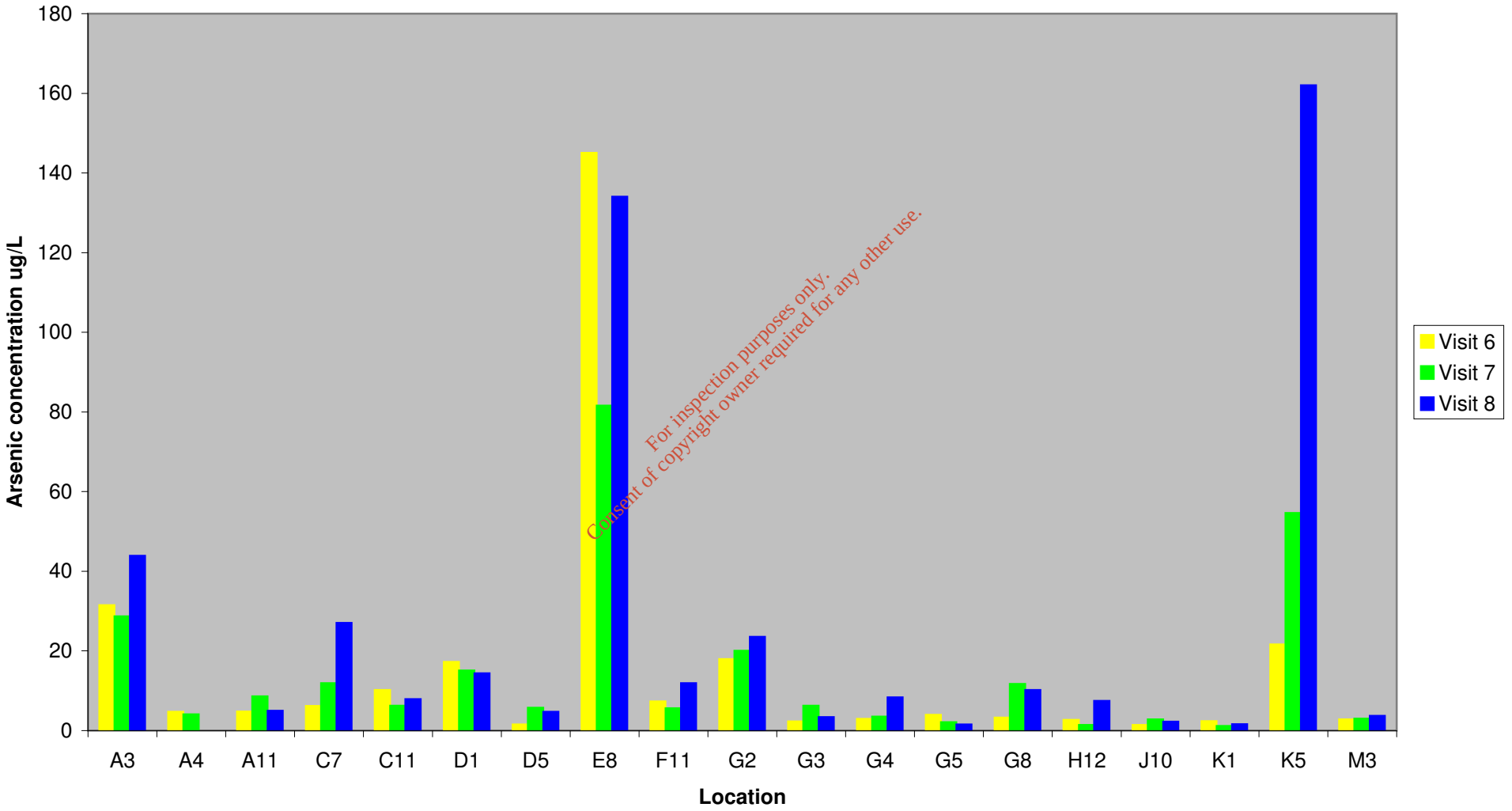
Purpose	Information
Scale	Not to scale
Client	Bord Gais
Project	Limerick Gasworks
Drawing Title	Figure 1) Groundwater Levels 24-26/10/11
Issuing Office	Ellesmere Port
Telephone	0151 356 5555
Drawing Number	1034973/R03/OD/01
Version	A

Ammonium

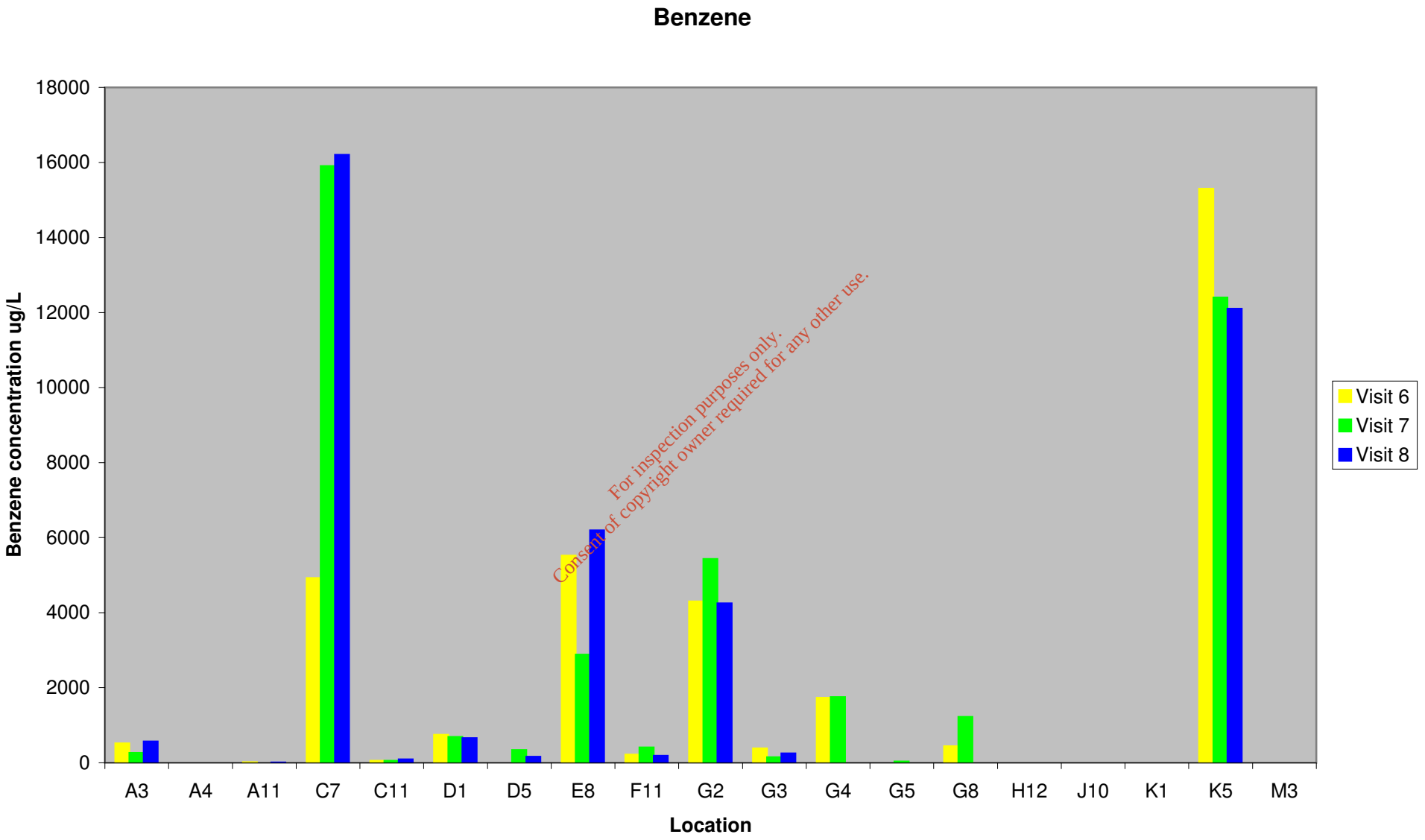


Limerick Gasworks
2011 Annual Groundwater Monitoring Summary
Appendix B - Temporal Variations

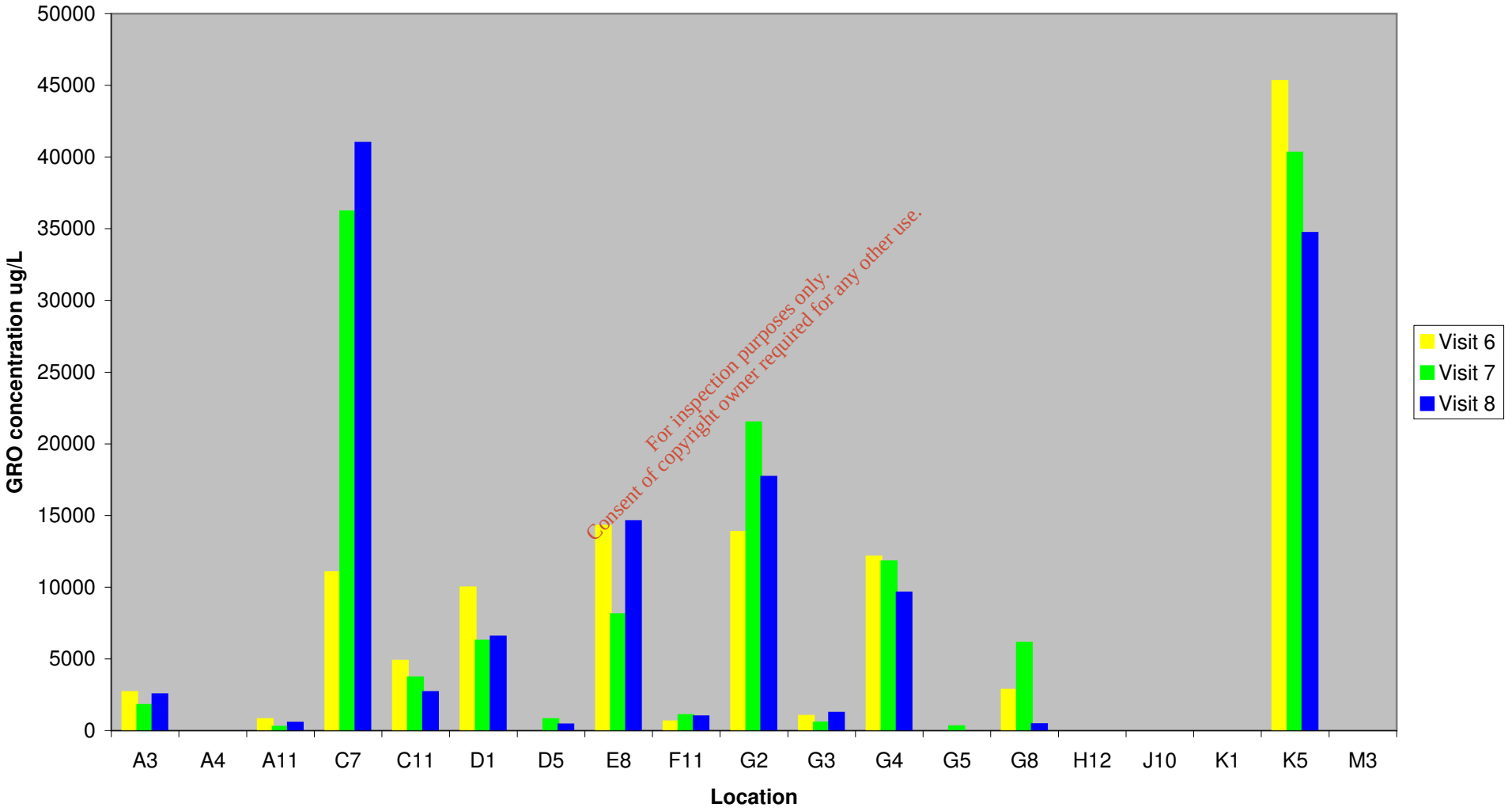
Arsenic

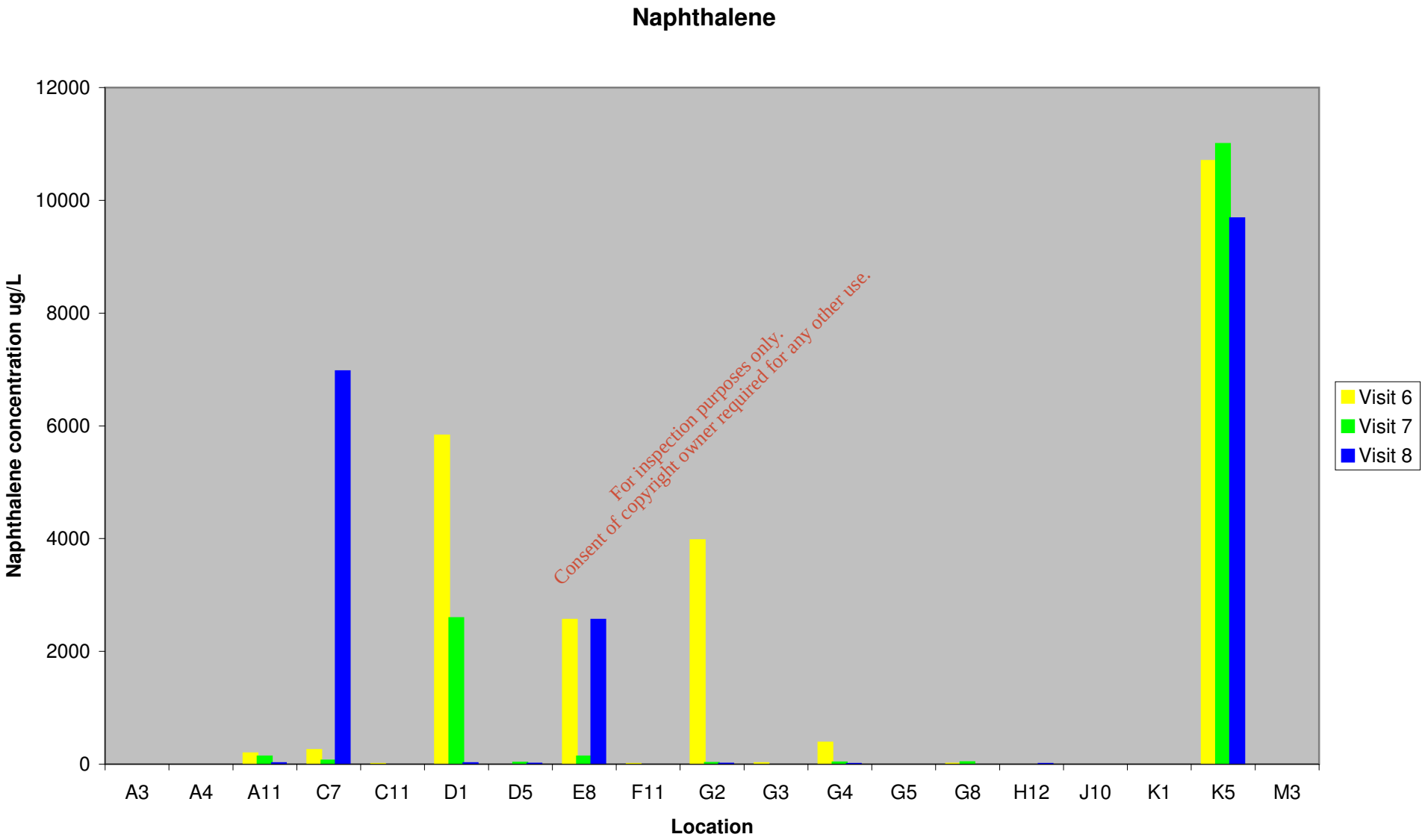


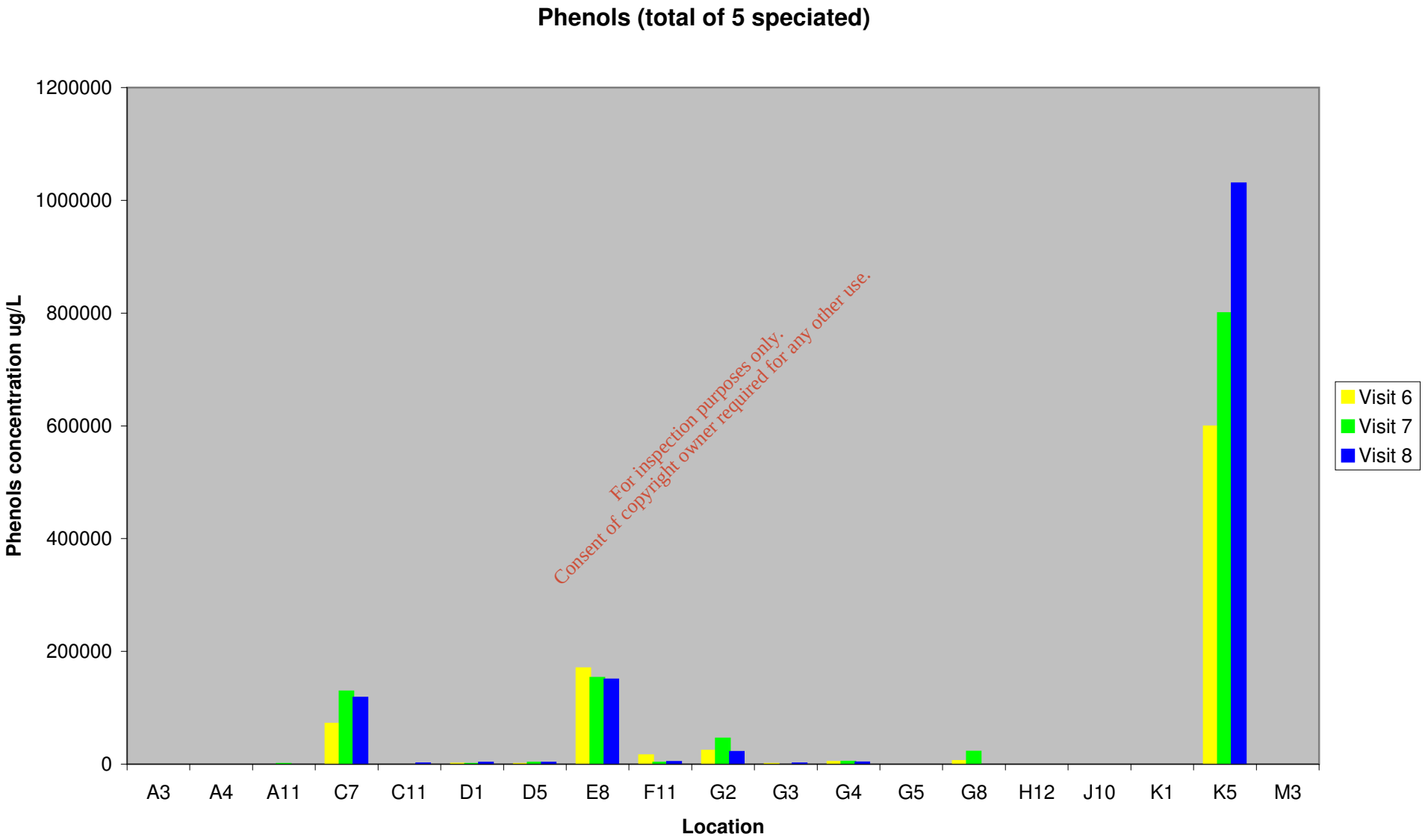
Limerick Gasworks
2011 Annual Groundwater Monitoring Summary
Appendix B - Temporal Variations



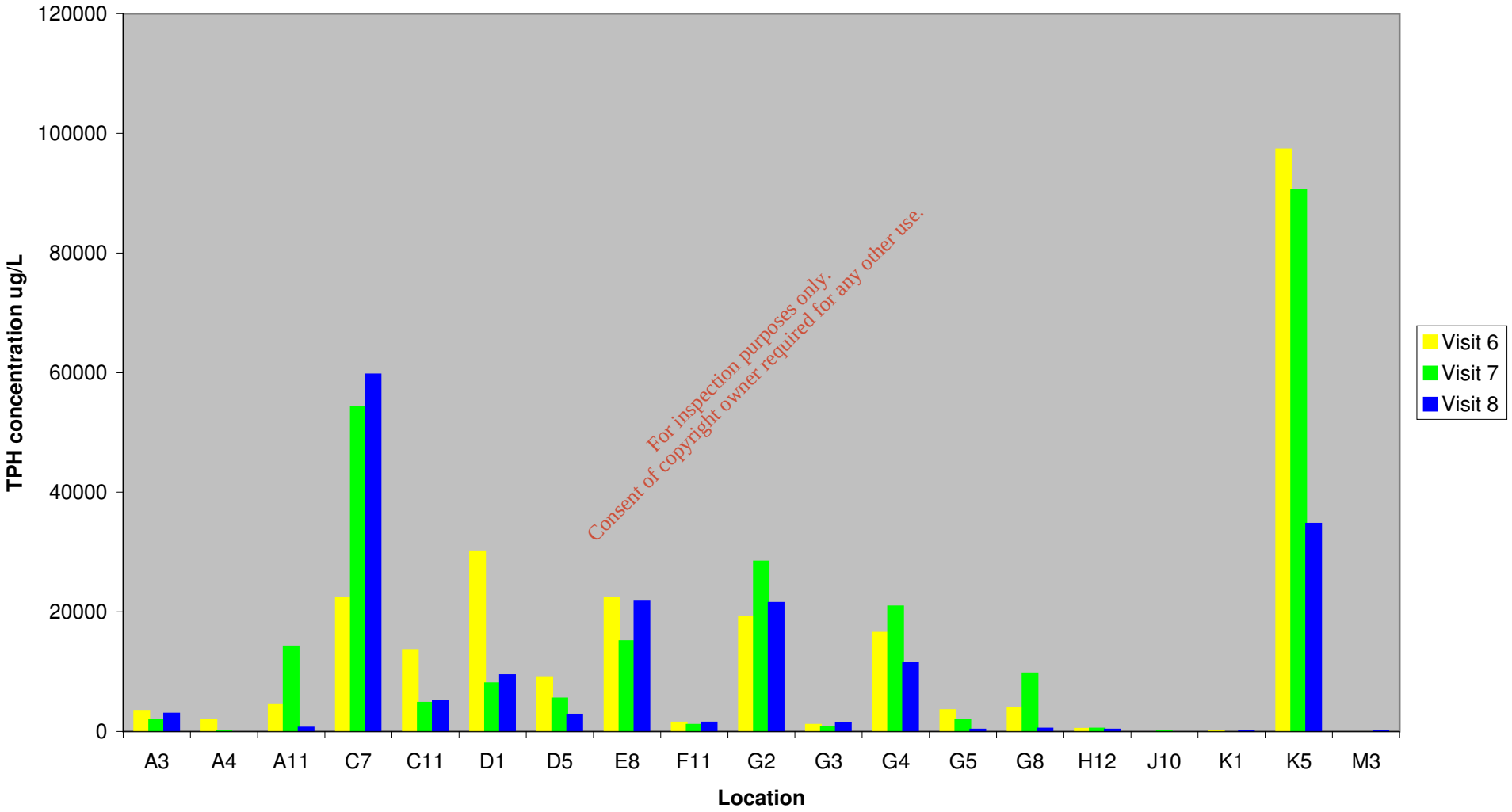
Petroleum Hydrocarbons - Gasoline Range Organics (GRO)







Petroleum Hydrocarbons - 'Total' Petroleum Hydrocarbons (TPH)



ALcontrol Laboratories

Unit 18A
Rosemount Business Park
Ballycoolin
Dublin 11
Tel : (0035) 3188 29893

Mouchel
Marina House
2nd Floor
Clarence Street
Dun Laoghaire
Co Dublin

Attention: David Megson

CERTIFICATE OF ANALYSIS

Date:	09 February 2011
Customer:	D_MOUCHEL_DLG
Sample Delivery Group (SDG):	110127-70
Your Reference:	Limerick Gasworks
Location:	Limerick Gasworks
Report No:	114955

We received 19 samples on Thursday January 27, 2011 and 14 of these samples were scheduled for analysis which was completed on Wednesday February 09, 2011. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	110127-70	**Location:**	Limerick Gasworks	**Order Number:**	4500063958
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	114955
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
2759867	A11	EW006	2.00 - 3.00	26/01/2011
2759855	A3	EW006	2.00 - 4.00	26/01/2011
2759856	A4	EW006	2.00 - 4.00	26/01/2011
2759864	C11	EW006	2.00 - 3.00	26/01/2011
2759857	C7	EW006	2.00 - 3.00	26/01/2011
2759872	D1	EW006	3.00 - 4.00	26/01/2011
2759854	D5	EW006	1.50 - 2.50	26/01/2011
2759863	E8	EW006	2.00 - 4.00	26/01/2011
2759866	F11	EW006	3.00 - 4.00	26/01/2011
2759871	G2	EW006	4.00 - 6.00	26/01/2011
2759870	G3	EW006	4.00 - 5.00	26/01/2011
2759869	G4	EW006	4.00 - 5.00	26/01/2011
2759873	G5	EW006	3.00 - 5.00	26/01/2011
2759865	G8	EW006	1.00 - 2.00	26/01/2011
2759861	H12	EW006	2.00 - 3.00	26/01/2011
2759859	J10	EW006	1.00 - 2.00	26/01/2011
2759860	K1	EW006	2.00 - 4.00	26/01/2011
2759858	K5	EW006	1.00 - 3.00	26/01/2011
2759862	M3	EW006	3.00 - 5.00	26/01/2011

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	110127-70	**Location:**	Limerick Gasworks	**Order Number:**	4500063958
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	114955
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

LIQUID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)	2759860	2759855	2759862	2759856	2759854	2759858	2759857	2759863	2759865	2759867 2759859	2759864	2759866	2759861
Customer Sample Reference	K1	A3	M3	A4	D5	K5	C7	E8	G8	A11 J10	C11	F11	H12
AGS Reference	EW006	EW006	EW006	EW006	EW006	EW006	EW006	EW006	EW006	EW006 EW006	EW006	EW006	EW006
Depth (m)	2.00 - 4.00	2.00 - 4.00	3.00 - 5.00	2.00 - 4.00	1.50 - 2.50	1.00 - 3.00	2.00 - 3.00	2.00 - 4.00	1.00 - 2.00	2.00 - 3.00 1.00 - 2.00	2.00 - 3.00	3.00 - 4.00	2.00 - 3.00
Container	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial

Ammonium	All	NDPs: 0 Tests: 19		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X	
Anions by Kone (w)	All	NDPs: 0 Tests: 19		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 19	X		X		X		X		X		X		X		X		X		X		X		X	X		X		X											
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 19		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X	
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 19	X		X		X		X		X		X		X		X		X		X		X		X	X		X		X											
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 19	X		X		X		X		X		X		X		X		X		X		X		X	X		X		X											
GRO by GC-FID (W)	All	NDPs: 0 Tests: 19		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 19		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X	
Mercury Dissolved	All	NDPs: 0 Tests: 19	X		X		X		X		X		X		X		X		X		X		X		X	X		X		X											
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 19	X		X		X		X		X		X		X		X		X		X		X		X	X		X		X											
pH Value	All	NDPs: 0 Tests: 19		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 19	X		X		X		X		X		X		X		X		X		X		X		X	X		X		X											
Sulphide	All	NDPs: 0 Tests: 19		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X		X	
TPH CWG (W)	All	NDPs: 0 Tests: 19	X		X		X		X		X		X		X		X		X		X		X		X	X		X		X											
VOC MS (W)	All	NDPs: 0 Tests: 10				X		X		X			X		X																										

CERTIFICATE OF ANALYSIS

SDG:	110127-70	**Location:**	Limerick Gasworks	**Order Number:**	4500063958
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	114955
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

LIQUID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)	2759872	2759871	2759870	2759869	2759873	2759867
Customer Sample Reference	D1	G2	G3	G4	G5	A11
AGS Reference	EW006	EW006	EW006	EW006	EW006	EW006
Depth (m)	3.00 - 4.00	4.00 - 6.00	4.00 - 5.00	4.00 - 5.00	3.00 - 5.00	2.00 - 3.00
Container	1l green glass bottle / 1lplastic / Vial	1l green glass bottle / 1lplastic / Vial	1l green glass bottle / 1lplastic / Vial	1l green glass bottle / 1lplastic / Vial	1l green glass bottle / 1lplastic / Vial	1lplastic / Vial

Ammonium	All	NDPs: 0 Tests: 19		X		X		X		X			X	X				
Anions by Kone (w)	All	NDPs: 0 Tests: 19		X		X		X		X			X	X				
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 19	X		X		X		X			X						
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 19		X		X		X		X			X	X				
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 19	X		X		X		X			X						
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 19	X		X		X		X			X						
GRO by GC-FID (W)	All	NDPs: 0 Tests: 19			X		X		X		X			X			X	X
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 19		X		X		X		X			X	X				
Mercury Dissolved	All	NDPs: 0 Tests: 19	X		X		X		X			X						
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 19	X		X		X		X			X						
pH Value	All	NDPs: 0 Tests: 19		X		X		X		X			X	X				
Phenols by HPLC (W)	All	NDPs: 0 Tests: 19	X		X		X		X			X						
Sulphide	All	NDPs: 0 Tests: 19		X		X		X		X			X	X				
TPH CWG (W)	All	NDPs: 0 Tests: 19	X		X		X		X			X						
VOC MS (W)	All	NDPs: 0 Tests: 10			X		X				X			X			X	X

CERTIFICATE OF ANALYSIS

SDG:	110127-70	**Location:**	Limerick Gasworks	**Order Number:**	4500063958
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	114955
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	A3	A4	C7	D1	D5	H12
			Depth (m)	2.00 - 4.00	2.00 - 4.00	2.00 - 3.00	3.00 - 4.00	1.50 - 2.50	2.00 - 3.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	26/01/2011	26/01/2011	26/01/2011	26/01/2011	26/01/2011	26/01/2011
			Date Received	27/01/2011	27/01/2011	27/01/2011	27/01/2011	27/01/2011	27/01/2011
			SDG Ref	110127-70	110127-70	110127-70	110127-70	110127-70	110127-70
			Lab Sample No.(s)	2759855	2759856	2759857	2759872	2759854	2759861
			AGS Reference	EW006	EW006	EW006	EW006	EW006	EW006
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		9.63 #	2.04 #	23.7 #		1.24 #	13.7 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099		12.4 #	2.62 #	30.5 #		1.59 #	17.6 #
Sulphide	<0.01 mg/l	TM101		<0.01 #	<0.01 #	<0.01 #	98.9 #	<0.01 #	<0.01 #
Arsenic (diss.filt)	<0.12 µg/l	TM152		31.5 #	4.72 #	6.19 #		1.52 #	2.65 #
Cadmium (diss.filt)	<0.1 µg/l	TM152		<0.1 #	<0.1 #	<0.1 #		<0.1 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152		21.5 #	14.3 #	8.37 #		6.43 #	4.95 #
Copper (diss.filt)	<0.85 µg/l	TM152		1.5 #	1.48 #	<0.85 #		2.47 #	<0.85 #
Lead (diss.filt)	<0.02 µg/l	TM152		<0.02 #	0.06 #	0.099 #		0.29 #	<0.02 #
Nickel (diss.filt)	<0.15 µg/l	TM152		4.64 #	3.98 #	1.74 #		2.07 #	4.96 #
Selenium (diss.filt)	<0.39 µg/l	TM152		1.79 #	1.11 #	10.7 #		1.3 #	<0.39 #
Zinc (diss.filt)	<0.41 µg/l	TM152		0.989 #	1.39 #	0.907 #		12.2 #	<0.41 #
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #		<0.01 #	<0.01 #
Sulphate	<3 mg/l	TM184		367 #	276 #	18 #		18.7 #	210 #
Cyanide, Total	<0.05 mg/l	TM227		0.28 #	0.205 #	0.081 #		0.051 #	<0.05 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03	<0.03	<0.03		<0.03	<0.03
pH	<1 pH Units	TM256		7.84 #	7.77 #	8.1 #		7.79 #	8.18 #
Resorcinol	<0.01 mg/l	TM259		<0.01	<0.01	<0.05		<0.01	<0.01
Catechol	<0.01 mg/l	TM259		<0.01	<0.01	<0.05		<0.01	<0.01
Phenol	<0.002 mg/l	TM259		<0.002 #	<0.002 #	7.32 #		0.03 #	<0.002 #
Cresols	<0.006 mg/l	TM259		<0.006 #	<0.006 #	24.1 #		0.17 #	<0.006 #
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #	29.9 #		0.18 #	<0.008 #
1-Naphthol	<0.01 mg/l	TM259		<0.01	<0.01	<0.05		<0.01	<0.01
2,3,5-Trimethylphenol	<0.003 mg/l	TM259		<0.003 #	<0.003 #	<0.015 #		<0.003 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259		<0.006 #	<0.006 #	10.4 #		<0.006 #	<0.006 #
Phenols, Total 5 speciated	<0.025 mg/l	TM259		<0.025	<0.025	71.7		0.38	<0.025

CERTIFICATE OF ANALYSIS

SDG:	110127-70	**Location:**	Limerick Gasworks	**Order Number:**	4500063958
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	114955
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	J10	K1	K5	M3		
			Depth (m)	1.00 - 2.00	2.00 - 4.00	1.00 - 3.00	3.00 - 5.00		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	26/01/2011	26/01/2011	26/01/2011	26/01/2011		
			Date Received	27/01/2011	27/01/2011	27/01/2011	27/01/2011		
			SDG Ref	110127-70	110127-70	110127-70	110127-70		
			Lab Sample No.(s)	2759859	2759860	2759858	2759862		
			AGS Reference	EW006	EW006	EW006	EW006		
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		<0.2 #	3.78 #	27.8 #	1.28 #		
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099		<0.3 #	4.86 #	35.7 #	1.65 #		
Sulphide	<0.01 mg/l	TM101		<0.01 #	<0.01 #	<0.01 #	<0.01 #		
Arsenic (diss.filt)	<0.12 µg/l	TM152		1.39 #	2.36 #	21.6 #	2.8 #		
Cadmium (diss.filt)	<0.1 µg/l	TM152		<0.1 #	<0.1 #	<0.1 #	<0.1 #		
Chromium (diss.filt)	<0.22 µg/l	TM152		4.69 #	3.86 #	8.06 #	2.05 #		
Copper (diss.filt)	<0.85 µg/l	TM152		0.984 #	3.16 #	1.58 #	4.93 #		
Lead (diss.filt)	<0.02 µg/l	TM152		0.12 #	0.264 #	0.48 #	0.038 #		
Nickel (diss.filt)	<0.15 µg/l	TM152		3.95 #	12.7 #	11.9 #	7.33 #		
Selenium (diss.filt)	<0.39 µg/l	TM152		1.72 #	0.911 #	15.7 #	0.544 #		
Zinc (diss.filt)	<0.41 µg/l	TM152		<0.41 #	<0.41 #	<0.41 #	<0.41 #		
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	<0.01 #		
Sulphate	<3 mg/l	TM184		70.2 #	765 #	318 #	603 #		
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	0.6 #	1.57 #	1.23 #		
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03	<0.03	<0.06	<0.03		
pH	<1 pH Units	TM256		8.31 #	8 #	7.87 #	8.11 #		
Resorcinol	<0.01 mg/l	TM259		<0.01	<0.01	<0.5	<0.01		
Catechol	<0.01 mg/l	TM259		<0.01	<0.01	<0.5	<0.01		
Phenol	<0.002 mg/l	TM259		<0.002 #	<0.002 #	109 #	<0.002 #		
Cresols	<0.006 mg/l	TM259		<0.006 #	<0.006 #	263 #	<0.006 #		
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #	189 #	<0.008 #		
1-Naphthol	<0.01 mg/l	TM259		<0.01	<0.01	<0.5	<0.01		
2,3,5-Trimethylphenol	<0.003 mg/l	TM259		<0.003 #	<0.003 #	<0.15 #	<0.003 #		
2-Isopropylphenol	<0.006 mg/l	TM259		<0.006 #	<0.006 #	37.9 #	<0.006 #		
Phenols, Total 5 speciated	<0.025 mg/l	TM259		<0.025	<0.025	599	<0.025		

CERTIFICATE OF ANALYSIS

SDG:	110127-70	**Location:**	Limerick Gasworks	**Order Number:**	4500063958
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	114955
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	A3	A4	C7	D1	D5	H12
			Depth (m)	2.00 - 4.00	2.00 - 4.00	2.00 - 3.00	3.00 - 4.00	1.50 - 2.50	2.00 - 3.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	26/01/2011	26/01/2011	26/01/2011	26/01/2011	26/01/2011	26/01/2011
			Date Received	27/01/2011	27/01/2011	27/01/2011	27/01/2011	27/01/2011	27/01/2011
			SDG Ref	110127-70	110127-70	110127-70	110127-70	110127-70	110127-70
			Lab Sample No.(s)	2759855	2759856	2759857	2759872	2759854	2759861
			AGS Reference	EW006	EW006	EW006	EW006	EW006	EW006
Naphthalene (aq)	<0.1 µg/l	TM178		0.427 #	0.416 #	251 #	5830 #	0.603 #	1.79 #
Acenaphthene (aq)	<0.015 µg/l	TM178		2.14 #	0.193 #	26.5 #	357 #	0.138 #	0.791 #
Acenaphthylene (aq)	<0.011 µg/l	TM178		1.94 #	2.09 #	178 #	942 #	1.23 #	2.25 #
Fluoranthene (aq)	<0.017 µg/l	TM178		5.58 #	7.94 #	144 #	883 #	5.27 #	10.7 #
Anthracene (aq)	<0.015 µg/l	TM178		1.09 #	0.601 #	56.1 #	434 #	0.409 #	1.5 #
Phenanthrene (aq)	<0.022 µg/l	TM178		1.69 #	1.08 #	154 #	1020 #	1.15 #	4.62 #
Fluorene (aq)	<0.014 µg/l	TM178		0.966 #	0.325 #	88.7 #	564 #	0.203 #	1.48 #
Chrysene (aq)	<0.013 µg/l	TM178		2.43 #	4.44 #	47.7 #	127 #	3.07 #	4.58 #
Pyrene (aq)	<0.015 µg/l	TM178		11.3 #	10.4 #	106 #	575 #	4.29 #	7.08 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		3.33 #	4.87 #	52.3 #	155 #	2.94 #	4.88 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		2.15 #	8.81 #	50.2 #	58 #	3.35 #	7.87 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		2.53 #	9.19 #	38.6 #	62.1 #	2.96 #	6.82 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		4.98 #	11.6 #	42.4 #	67.1 #	3.07 #	9.42 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		0.419 #	2.03 #	6.69 #	6.09 #	0.679 #	1.62 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		2.08 #	6.09 #	26.9 #	24.6 #	2.19 #	5.53 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		1.68 #	6.09 #	23.9 #	24.2 #	2.09 #	5.1 #
Polyaromatic hydrocarbons, Total	<0.1 µg/l	TM178		44.7 #	76.1 #	1290 #	11100 #	33.7 #	76 #

CERTIFICATE OF ANALYSIS

SDG:	110127-70	**Location:**	Limerick Gasworks	**Order Number:**	4500063958
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	114955
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	J10	K1	K5	M3		
			Depth (m)	1.00 - 2.00	2.00 - 4.00	1.00 - 3.00	3.00 - 5.00		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	26/01/2011	26/01/2011	26/01/2011	26/01/2011		
			Date Received	27/01/2011	27/01/2011	27/01/2011	27/01/2011		
			SDG Ref	110127-70	110127-70	110127-70	110127-70		
			Lab Sample No.(s)	2759859	2759860	2759858	2759862		
			AGS Reference	EW006	EW006	EW006	EW006		
Naphthalene (aq)	<0.1 µg/l	TM178		0.101 #	0.175 #	10700 #	<0.1 #		
Acenaphthene (aq)	<0.015 µg/l	TM178		0.0183 #	0.164 #	268 #	<0.015 #		
Acenaphthylene (aq)	<0.011 µg/l	TM178		0.323 #	0.252 #	1320 #	0.0386 #		
Fluoranthene (aq)	<0.017 µg/l	TM178		0.403 #	2.88 #	1250 #	1.46 #		
Anthracene (aq)	<0.015 µg/l	TM178		0.0659 #	0.297 #	662 #	0.0468 #		
Phenanthrene (aq)	<0.022 µg/l	TM178		0.133 #	0.747 #	1860 #	0.0951 #		
Fluorene (aq)	<0.014 µg/l	TM178		0.049 #	0.131 #	829 #	0.029 #		
Chrysene (aq)	<0.013 µg/l	TM178		0.356 #	1.99 #	339 #	0.487 #		
Pyrene (aq)	<0.015 µg/l	TM178		0.332 #	2.83 #	817 #	0.948 #		
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		0.365 #	2.15 #	408 #	0.473 #		
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		0.928 #	3.13 #	224 #	0.723 #		
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		0.771 #	3.11 #	244 #	0.565 #		
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		1.35 #	3.74 #	266 #	0.627 #		
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		0.28 #	0.833 #	38.7 #	0.115 #		
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		1.12 #	3.23 #	134 #	0.557 #		
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		0.945 #	2.85 #	129 #	0.453 #		
Polyaromatic hydrocarbons, Total	<0.1 µg/l	TM178		7.54 #	28.5 #	19500 #	6.07 #		

CERTIFICATE OF ANALYSIS

SDG:	110127-70	**Location:**	Limerick Gasworks	**Order Number:**	4500063958
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	114955
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	A3	A4	C7	D1	D5	H12
			Depth (m)	2.00 - 4.00	2.00 - 4.00	2.00 - 3.00	3.00 - 4.00	1.50 - 2.50	2.00 - 3.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	26/01/2011	26/01/2011	26/01/2011	26/01/2011	26/01/2011	26/01/2011
			Date Received	27/01/2011	27/01/2011	27/01/2011	27/01/2011	27/01/2011	27/01/2011
			SDG Ref	110127-70	110127-70	110127-70	110127-70	110127-70	110127-70
			Lab Sample No.(s)	2759855	2759856	2759857	2759872	2759854	2759861
			AGS Reference	EW006	EW006	EW006	EW006	EW006	EW006
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<6 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		516 #	<7 #	4920 #	746 #	<7 #	<7 #
Toluene	<4 µg/l	TM245		15 #	<4 #	1870 #	538 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245		198 #	<5 #	75 #	248 #	<5 #	<5 #
m,p-Xylene	<8 µg/l	TM245		53 #	<8 #	515 #	856 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245		55 #	<3 #	244 #	422 #	<3 #	<3 #
m,p,o-Xylene	<10 µg/l	TM245		108	<10	759	1280	<10	<10
Total Aliphatics & Aromatics >C12-C35	<10 µg/l	TM174		760	1930	11300		9090	433
BTEX, Total	<10 µg/l	TM245		837	<10	7620	2810	<10	<10
Aliphatics >C5-C6	<10 µg/l	TM245		11	<10	23	15	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		78	<10	236	154	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		197	<10	588	804	<10	<10
Aliphatics >C10-C12	<10 µg/l	TM245		849	<10	1300	3390	<10	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	415	40		<50	13
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	612	109		387	18
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	352	398		3750	140
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	1380	547		4160	171
Aromatics >EC5-EC7	<10 µg/l	TM245		516	<10	4920	746	<10	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		15	<10	1870	538	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		438	<10	1230	2060	<10	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		566	<10	869	2260	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		372	37	6400		<50	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		246	156	1540		359	35
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		142	356	2820		4550	227
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		760	549	10800		4930	262
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		3430	1930	22300	30100	9090	444
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174		1140	1380	2700	6910	4160	178
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174		2300	551	19600	23200	4930	266
Total Aliphatics >C5-C12	<10 µg/l	TM245		1140	<10	2150	4370	<10	<10
Total Aromatics >EC5-EC12	<10 µg/l	TM245		1540	<10	8880	5610	<10	<10

CERTIFICATE OF ANALYSIS

SDG:	110127-70	**Location:**	Limerick Gasworks	**Order Number:**	4500063958
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	114955
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	J10	K1	K5	M3		
			Depth (m)	1.00 - 2.00	2.00 - 4.00	1.00 - 3.00	3.00 - 5.00		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	26/01/2011	26/01/2011	26/01/2011	26/01/2011		
			Date Received	27/01/2011	27/01/2011	27/01/2011	27/01/2011		
			SDG Ref	110127-70	110127-70	110127-70	110127-70		
			Lab Sample No.(s)	2759859	2759860	2759858	2759862		
			AGS Reference	EW006	EW006	EW006	EW006		
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<30 #	<3 #		
Benzene	<7 µg/l	TM245		<7 #	<7 #	15300 #	<7 #		
Toluene	<4 µg/l	TM245		<4 #	<4 #	5350 #	<4 #		
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	275 #	<5 #		
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	1770 #	<8 #		
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	735 #	<3 #		
m,p,o-Xylene	<10 µg/l	TM245		<10	<10	2510	<10		
Total Aliphatics & Aromatics >C12-C35	<10 µg/l	TM174		<10	46	52100	<10		
BTEX, Total	<10 µg/l	TM245		<10	<10	23400	<10		
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	188	<10		
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	1480	<10		
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	2410	<10		
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	9680	<10		
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	768	<10		
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	585	<10		
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	612	<10		
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	1970	<10		
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	15300	<10		
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	5350	<10		
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	4390	<10		
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	6450	<10		
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		<10	<10	40800	<10		
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		<10	<10	4610	<10		
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	46	4710	<10		
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		<10	46	50100	<10		
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	46	97300	<10		
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174		<10	<10	15700	<10		
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174		<10	46	81600	<10		
Total Aliphatics >C5-C12	<10 µg/l	TM245		<10	<10	13800	<10		
Total Aromatics >EC5-EC12	<10 µg/l	TM245		<10	<10	31500	<10		

CERTIFICATE OF ANALYSIS

SDG:	110127-70	**Location:**	Limerick Gasworks	**Order Number:**	4500063958
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	114955
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	A3	A4	A11	C7	D1	G2
			Depth (m)	2.00 - 4.00	2.00 - 4.00	2.00 - 3.00	2.00 - 3.00	3.00 - 4.00	4.00 - 6.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	26/01/2011	26/01/2011	26/01/2011	26/01/2011	26/01/2011	26/01/2011
			Date Received	27/01/2011	27/01/2011	27/01/2011	27/01/2011	27/01/2011	27/01/2011
			SDG Ref	110127-70	110127-70	110127-70	110127-70	110127-70	110127-70
			Lab Sample No.(s)	2759855	2759856	2759867	2759857	2759872	2759871
			AGS Reference	EW006	EW006	EW006	EW006	EW006	EW006
Dibromofluoromethane**	%	TM208		104	105	105	104	99.6	103
Toluene-d8**	%	TM208		98.6	99.3	98.4	99.1	99.4	98.8
4-Bromofluorobenzene**	%	TM208		99.6	99	98.9	99.4	98.7	102
Dichlorodifluoromethane	<7 µg/l	TM208		<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Chloromethane	<9 µg/l	TM208		<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
Vinyl chloride	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #	<1.2 #	<1.2 #	<1.2 #
Bromomethane	<2 µg/l	TM208		<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
Chloroethane	<2.5 µg/l	TM208		<2.5 #	<2.5 #	<2.5 #	<2.5 #	<2.5 #	<2.5 #
Trichlorofluoromethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #	<1.3 #	<1.3 #	<1.3 #
1,1-Dichloroethene	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #	<1.2 #	<1.2 #	<1.2 #
Carbon disulphide	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #	<1.3 #	<1.3 #	4.78 #
Dichloromethane	<3.7 µg/l	TM208		<3.7 #	<3.7 #	<3.7 #	<3.7 #	<3.7 #	<3.7 #
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208		<1.6 #	<1.6 #	<1.6 #	<1.6 #	<1.6 #	<1.6 #
trans-1,2-Dichloroethene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #
1,1-Dichloroethane	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #	<1.2 #	<1.2 #	<1.2 #
cis-1,2-Dichloroethene	<2.3 µg/l	TM208		<2.3 #	<2.3 #	<2.3 #	<2.3 #	<2.3 #	<2.3 #
2,2-Dichloropropane	<3.8 µg/l	TM208		<3.8 #	<3.8 #	<3.8 #	<3.8 #	<3.8 #	<3.8 #
Bromochloromethane	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #
Chloroform	<1.8 µg/l	TM208		<1.8 #	<1.8 #	<1.8 #	<1.8 #	<1.8 #	<1.8 #
1,1,1-Trichloroethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #	<1.3 #	<1.3 #	<1.3 #
1,1-Dichloropropene	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #	<1.3 #	<1.3 #	<1.3 #
Carbontetrachloride	<1.4 µg/l	TM208		<1.4 #	<1.4 #	<1.4 #	<1.4 #	<1.4 #	<1.4 #
1,2-Dichloroethane	<3.3 µg/l	TM208		<3.3	<3.3	<3.3	<3.3	19.1	<3.3
Benzene	<1.3 µg/l	TM208		511 #	<1.3 #	13.8 #	5350 #	880 #	5480 #
Trichloroethene	<2.5 µg/l	TM208		<2.5 #	<2.5 #	<2.5 #	<2.5 #	<2.5 #	<2.5 #
1,2-Dichloropropane	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Dibromomethane	<2.7 µg/l	TM208		<2.7 #	<2.7 #	<2.7 #	<2.7 #	<2.7 #	<2.7 #
Bromodichloromethane	<0.9 µg/l	TM208		<0.9 #	<0.9 #	<0.9 #	<0.9 #	<0.9 #	<0.9 #
cis-1,3-Dichloropropene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #
Toluene	<1.4 µg/l	TM208		16.4 #	<1.4 #	33.4 #	1650 #	326 #	3420 #
trans-1,3-Dichloropropene	<3.5 µg/l	TM208		<3.5 #	<3.5 #	<3.5 #	<3.5 #	<3.5 #	<3.5 #
1,1,2-Trichloroethane	<2.2 µg/l	TM208		<2.2 #	<2.2 #	<2.2 #	113 #	<2.2 #	211 #
1,3-Dichloropropane	<2.2 µg/l	TM208		<2.2 #	<2.2 #	<2.2 #	<2.2 #	<2.2 #	<2.2 #
Tetrachloroethene	<1.5 µg/l	TM208		<1.5 #	<1.5 #	<1.5 #	<1.5 #	<1.5 #	<1.5 #
Dibromochloromethane	<1.7 µg/l	TM208		<1.7 #	<1.7 #	<1.7 #	<1.7 #	<1.7 #	<1.7 #

CERTIFICATE OF ANALYSIS

SDG:	110127-70	**Location:**	Limerick Gasworks	**Order Number:**	4500063958
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	114955
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	A3	A4	A11	C7	D1	G2
			Depth (m)	2.00 - 4.00	2.00 - 4.00	2.00 - 3.00	2.00 - 3.00	3.00 - 4.00	4.00 - 6.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	26/01/2011	26/01/2011	26/01/2011	26/01/2011	26/01/2011	26/01/2011
			Date Received	27/01/2011	27/01/2011	27/01/2011	27/01/2011	27/01/2011	27/01/2011
			SDG Ref	110127-70	110127-70	110127-70	110127-70	110127-70	110127-70
			Lab Sample No.(s)	2759855	2759856	2759867	2759857	2759872	2759871
			AGS Reference	EW006	EW006	EW006	EW006	EW006	EW006
1,2-Dibromoethane	<2.3 µg/l	TM208		<2.3 #	<2.3 #	<2.3 #	<2.3 #	<2.3 #	<2.3 #
Chlorobenzene	<3.5 µg/l	TM208		<3.5 #	<3.5 #	<3.5 #	<3.5 #	<3.5 #	<3.5 #
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #	<1.3 #	<1.3 #	<1.3 #
Ethylbenzene	<2.5 µg/l	TM208		206 #	<2.5 #	14.7 #	68.7 #	239 #	332 #
m,p-Xylene	<2.5 µg/l	TM208		58.4 #	<2.5 #	45 #	475 #	898 #	1010 #
o-Xylene	<1.7 µg/l	TM208		60.7 #	<1.7 #	32.5 #	238 #	462 #	754 #
Styrene	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #	89.9 #	<1.2 #	<1.2 #
Bromoform	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Isopropylbenzene	<1.4 µg/l	TM208		16.3 #	<1.4 #	2.11 #	2.24 #	23.7 #	28 #
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208		<5.2	<5.2	<5.2	<5.2	<5.2	<5.2
1,2,3-Trichloropropane	<7.8 µg/l	TM208		<7.8 #	<7.8 #	<7.8 #	<7.8 #	<7.8 #	<7.8 #
Bromobenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
Propylbenzene	<2.6 µg/l	TM208		7.48 #	<2.6 #	<2.6 #	<2.6 #	25.1 #	29.3 #
2-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208		6.85 #	<1.8 #	6.11 #	33.2 #	134 #	119 #
4-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #
tert-Butylbenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208		25.3 #	<1.7 #	19.1 #	73.8 #	369 #	294 #
sec-Butylbenzene	<1.7 µg/l	TM208		<1.7 #	<1.7 #	<1.7 #	<1.7 #	<1.7 #	<1.7 #
4-iso-Propyltoluene	<2.6 µg/l	TM208		<2.6 #	<2.6 #	<2.6 #	15.3 #	15 #	9.78 #
1,3-Dichlorobenzene	<2.2 µg/l	TM208		<2.2 #	<2.2 #	<2.2 #	<2.2 #	<2.2 #	<2.2 #
1,4-Dichlorobenzene	<2.7 µg/l	TM208		<2.7 #	<2.7 #	<2.7 #	<2.7 #	<2.7 #	<2.7 #
n-Butylbenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #	<2 #	7.64 #	<2 #
1,2-Dichlorobenzene	<3.7 µg/l	TM208		<3.7	<3.7	<3.7	<3.7	<3.7	<3.7
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208		<9.8	<9.8	<9.8	<9.8	<9.8	<9.8
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208		<2.3 #	<2.3 #	<2.3 #	<2.3 #	<2.3 #	<2.3 #
Hexachlorobutadiene	<2.5 µg/l	TM208		<2.5 #	<2.5 #	<2.5 #	<2.5 #	<2.5 #	<2.5 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Naphthalene	<3.5 µg/l	TM208		338 #	<3.5 #	225 #	<3.5 #	2600 #	<3.5 #
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208		<3.1 #	<3.1 #	<3.1 #	<3.1 #	<3.1 #	<3.1 #
1,3,5-Trichlorobenzene	<10 µg/l	TM208		<10	<10	<10	<10	<10	<10

CERTIFICATE OF ANALYSIS

SDG:	110127-70	**Location:**	Limerick Gasworks	**Order Number:**	4500063958
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	114955
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Customer Sample R	G4	G5	K5	M3
Depth (m)	4.00 - 5.00	3.00 - 5.00	1.00 - 3.00	3.00 - 5.00
Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled	26/01/2011	26/01/2011	26/01/2011	26/01/2011
Date Received	27/01/2011	27/01/2011	27/01/2011	27/01/2011
SDG Ref	110127-70	110127-70	110127-70	110127-70
Lab Sample No.(s)	2759869	2759873	2759858	2759862
AGS Reference	EW006	EW006	EW006	EW006

Component	LOD/Units	Method				
Dibromofluoromethane**	%	TM208	100	105	105	105
Toluene-d8**	%	TM208	98.8	100	95.2	99.7
4-Bromofluorobenzene**	%	TM208	101	97.8	80.9	98
Dichlorodifluoromethane	<7 µg/l	TM208	<7 #	<7 #	<7 #	<7 #
Chloromethane	<9 µg/l	TM208	<9 #	<9 #	<9 #	<9 #
Vinyl chloride	<1.2 µg/l	TM208	<1.2 #	<1.2 #	<1.2 #	<1.2 #
Bromomethane	<2 µg/l	TM208	<2 #	<2 #	<2 #	<2 #
Chloroethane	<2.5 µg/l	TM208	<2.5 #	<2.5 #	<2.5 #	<2.5 #
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3 #	<1.3 #	1.34 #	<1.3 #
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2 #	<1.2 #	<1.2 #	<1.2 #
Carbon disulphide	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #	<1.3 #
Dichloromethane	<3.7 µg/l	TM208	<3.7 #	<3.7 #	<3.7 #	<3.7 #
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208	<1.6 #	<1.6 #	<1.6 #	<1.6 #
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #	<1.9 #
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2 #	<1.2 #	<1.2 #	<1.2 #
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3 #	<2.3 #	<2.3 #	<2.3 #
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8 #	<3.8 #	<3.8 #	<3.8 #
Bromochloromethane	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #	<1.9 #
Chloroform	<1.8 µg/l	TM208	<1.8 #	<1.8 #	<1.8 #	<1.8 #
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3 #	<1.3 #	6.76 #	<1.3 #
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #	<1.3 #
Carbontetrachloride	<1.4 µg/l	TM208	<1.4 #	<1.4 #	<1.4 #	<1.4 #
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3	<3.3	<3.3	<3.3
Benzene	<1.3 µg/l	TM208	1840 #	<1.3 #	17200 #	<1.3 #
Trichloroethene	<2.5 µg/l	TM208	<2.5 #	<2.5 #	11 #	<2.5 #
1,2-Dichloropropane	<3 µg/l	TM208	<3 #	<3 #	<3 #	<3 #
Dibromomethane	<2.7 µg/l	TM208	<2.7 #	<2.7 #	<2.7 #	<2.7 #
Bromodichloromethane	<0.9 µg/l	TM208	<0.9 #	<0.9 #	<0.9 #	<0.9 #
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9 #	<1.9 #	<1.9 #	<1.9 #
Toluene	<1.4 µg/l	TM208	1460 #	<1.4 #	5300 #	<1.4 #
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5 #	<3.5 #	<3.5 #	<3.5 #
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2 #	<2.2 #	<2.2 #	<2.2 #
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2 #	<2.2 #	<2.2 #	<2.2 #
Tetrachloroethene	<1.5 µg/l	TM208	<1.5 #	<1.5 #	2.57 #	<1.5 #
Dibromochloromethane	<1.7 µg/l	TM208	<1.7 #	<1.7 #	<1.7 #	<1.7 #

CERTIFICATE OF ANALYSIS

SDG:	110127-70	**Location:**	Limerick Gasworks	**Order Number:**	4500063958
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	114955
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	G4	G5	K5	M3		
			Depth (m)	4.00 - 5.00	3.00 - 5.00	1.00 - 3.00	3.00 - 5.00		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	26/01/2011	26/01/2011	26/01/2011	26/01/2011		
			Date Received	27/01/2011	27/01/2011	27/01/2011	27/01/2011		
			SDG Ref	110127-70	110127-70	110127-70	110127-70		
			Lab Sample No.(s)	2759869	2759873	2759858	2759862		
			AGS Reference	EW006	EW006	EW006	EW006		
1,2-Dibromoethane	<2.3 µg/l	TM208		<2.3 #	<2.3 #	<2.3 #	<2.3 #		
Chlorobenzene	<3.5 µg/l	TM208		<3.5 #	<3.5 #	<3.5 #	<3.5 #		
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #	<1.3 #		
Ethylbenzene	<2.5 µg/l	TM208		23 #	<2.5 #	239 #	<2.5 #		
m,p-Xylene	<2.5 µg/l	TM208		1030 #	<2.5 #	1470 #	<2.5 #		
o-Xylene	<1.7 µg/l	TM208		547 #	<1.7 #	665 #	<1.7 #		
Styrene	<1.2 µg/l	TM208		<1.2 #	<1.2 #	355 #	<1.2 #		
Bromoform	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #		
Isopropylbenzene	<1.4 µg/l	TM208		2.44 #	<1.4 #	10.9 #	<1.4 #		
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208		<5.2	<5.2	<5.2	<5.2		
1,2,3-Trichloropropane	<7.8 µg/l	TM208		<7.8 #	<7.8 #	<7.8 #	<7.8 #		
Bromobenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #	<2 #		
Propylbenzene	<2.6 µg/l	TM208		<2.6 #	<2.6 #	15 #	<2.6 #		
2-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #		
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208		127 #	<1.8 #	79.9 #	<1.8 #		
4-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #		
tert-Butylbenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #	<2 #		
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208		241 #	<1.7 #	192 #	<1.7 #		
sec-Butylbenzene	<1.7 µg/l	TM208		<1.7 #	<1.7 #	<1.7 #	<1.7 #		
4-iso-Propyltoluene	<2.6 µg/l	TM208		13 #	<2.6 #	28.4 #	<2.6 #		
1,3-Dichlorobenzene	<2.2 µg/l	TM208		<2.2 #	<2.2 #	<2.2 #	<2.2 #		
1,4-Dichlorobenzene	<2.7 µg/l	TM208		<2.7 #	<2.7 #	<2.7 #	<2.7 #		
n-Butylbenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #	<2 #		
1,2-Dichlorobenzene	<3.7 µg/l	TM208		<3.7	<3.7	<3.7	<3.7		
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208		<9.8	<9.8	<9.8	<9.8		
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208		<2.3 #	<2.3 #	<2.3 #	<2.3 #		
Hexachlorobutadiene	<2.5 µg/l	TM208		<2.5 #	<2.5 #	<2.5 #	<2.5 #		
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Naphthalene	<3.5 µg/l	TM208		12.3 #	<3.5 #	6130 #	<3.5 #		
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208		<3.1 #	<3.1 #	<3.1 #	<3.1 #		
1,3,5-Trichlorobenzene	<10 µg/l	TM208		<10	<10	<10	<10		

CERTIFICATE OF ANALYSIS

SDG:	110127-70	**Location:**	Limerick Gasworks	**Order Number:**	4500063958
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	114955
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10-7

NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate		
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	110127-70	**Location:**	Limerick Gasworks	**Order Number:**	4500063958
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	114955
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	2759855	2759856	2759867	2759857	2759872	2759854	2759871	2759869	2759873	2759861
Customer Sample Ref.	A3	A4	A11	C7	D1	D5	G2	G4	G5	H12
AGS Ref.	EW006	EW006	EW006	EW006	EW006	EW006	EW006	EW006	EW006	EW006
Depth	2.00 - 4.00	2.00 - 4.00	2.00 - 3.00	2.00 - 3.00	3.00 - 4.00	1.50 - 2.50	4.00 - 6.00	4.00 - 5.00	3.00 - 5.00	2.00 - 3.00
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammoniacal Nitrogen	01-Feb-2011	01-Feb-2011		01-Feb-2011		01-Feb-2011				01-Feb-2011
Anions by Kone (w)	28-Jan-2011	28-Jan-2011		28-Jan-2011		28-Jan-2011				31-Jan-2011
Cyanide Comp/Free/Total/Thiocyanate	01-Feb-2011	01-Feb-2011		01-Feb-2011		01-Feb-2011				01-Feb-2011
Dissolved Metals by ICP-MS	31-Jan-2011	31-Jan-2011		31-Jan-2011		31-Jan-2011				28-Jan-2011
EPH CWG (Aliphatic) Aqueous GC (W)	02-Feb-2011	02-Feb-2011		02-Feb-2011		02-Feb-2011				02-Feb-2011
EPH CWG (Aromatic) Aqueous GC (W)	02-Feb-2011	02-Feb-2011		02-Feb-2011		02-Feb-2011				02-Feb-2011
GRO by GC-FID (W)	04-Feb-2011	07-Feb-2011		07-Feb-2011	04-Feb-2011	07-Feb-2011				03-Feb-2011
Hexavalent Chromium (w)	01-Feb-2011	01-Feb-2011		01-Feb-2011		01-Feb-2011				31-Jan-2011
Mercury Dissolved	31-Jan-2011	31-Jan-2011		31-Jan-2011		31-Jan-2011				31-Jan-2011
PAH Spec MS - Aqueous (W)	03-Feb-2011	03-Feb-2011		06-Feb-2011	04-Feb-2011	03-Feb-2011				02-Feb-2011
pH Value	28-Jan-2011	28-Jan-2011		28-Jan-2011		28-Jan-2011				31-Jan-2011
Phenols by HPLC (W)	31-Jan-2011	31-Jan-2011		31-Jan-2011		31-Jan-2011				31-Jan-2011
Sulphide	28-Jan-2011	28-Jan-2011		28-Jan-2011	31-Jan-2011	28-Jan-2011				28-Jan-2011
TPH CWG (W)	04-Feb-2011	07-Feb-2011		07-Feb-2011	04-Feb-2011	07-Feb-2011				03-Feb-2011
VOC MS (W)	07-Feb-2011	07-Feb-2011	07-Feb-2011	09-Feb-2011	09-Feb-2011		09-Feb-2011	09-Feb-2011	07-Feb-2011	

Lab Sample No(s)	2759859	2759860	2759858	2759862
Customer Sample Ref.	J10	K1	K5	M3
AGS Ref.	EW006	EW006	EW006	EW006
Depth	1.00 - 2.00	2.00 - 4.00	1.00 - 3.00	3.00 - 5.00
Type	LIQUID	LIQUID	LIQUID	LIQUID
Ammoniacal Nitrogen	01-Feb-2011	01-Feb-2011	01-Feb-2011	01-Feb-2011
Anions by Kone (w)	31-Jan-2011	31-Jan-2011	31-Jan-2011	31-Jan-2011
Cyanide Comp/Free/Total/Thiocyanate	01-Feb-2011	01-Feb-2011	01-Feb-2011	01-Feb-2011
Dissolved Metals by ICP-MS	28-Jan-2011	28-Jan-2011	28-Jan-2011	28-Jan-2011
EPH CWG (Aliphatic) Aqueous GC (W)	02-Feb-2011	02-Feb-2011	02-Feb-2011	02-Feb-2011
EPH CWG (Aromatic) Aqueous GC (W)	02-Feb-2011	02-Feb-2011	02-Feb-2011	02-Feb-2011
GRO by GC-FID (W)	03-Feb-2011	03-Feb-2011	07-Feb-2011	03-Feb-2011
Hexavalent Chromium (w)	31-Jan-2011	31-Jan-2011	31-Jan-2011	01-Feb-2011
Mercury Dissolved	31-Jan-2011	31-Jan-2011	31-Jan-2011	31-Jan-2011
PAH Spec MS - Aqueous (W)	03-Feb-2011	02-Feb-2011	06-Feb-2011	02-Feb-2011
pH Value	31-Jan-2011	31-Jan-2011	31-Jan-2011	31-Jan-2011
Phenols by HPLC (W)	31-Jan-2011	31-Jan-2011	31-Jan-2011	31-Jan-2011
Sulphide	28-Jan-2011	28-Jan-2011	28-Jan-2011	28-Jan-2011
TPH CWG (W)	03-Feb-2011	03-Feb-2011	07-Feb-2011	03-Feb-2011
VOC MS (W)			09-Feb-2011	05-Feb-2011

CERTIFICATE OF ANALYSIS

SDG:	110127-70	**Location:**	Limerick Gasworks	**Order Number:**	4500063958
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	114955
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

12. Results relate only to the items tested

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not
accredited.

19. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

20. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

23. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials -whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute themajor part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

24. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C4 -C10 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DCM	SOXTHERM	IATROSCAN
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GC-MS
HERBICIDES	D&C	HEXANE/ACETONE	SOXTHERM	GC-MS
PESTICIDES	D&C	HEXANE/ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE/ACETONE	END OVER END	GC-FID
PCB TOT / PCB CON	D&C	HEXANE/ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE/ACETONE	MICROWAVE TM218.	GC-MS
C8-C40 (C8-C40) EZ FLASH	WET	HEXANE/ACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RARD GC	WET	HEXANE/ACETONE	SHAKER	GC-EZ
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM/ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH-MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC-MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC-MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC-MS
PHENOLS-MS	DCM	SOLID PHASE EXTRACTION	GC-MS
TPH by INFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC-MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -
Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in MDHS 100.

The identification of asbestos containing materials falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

ALcontrol Laboratories

Unit 18A
Rosemount Business Park
Ballycoolin
Dublin 11
Tel : (0035) 3188 29893

Mouchel
Marina House
2nd Floor
Clarence Street
Dun Laoghaire
Co Dublin

Attention: David Megson

CERTIFICATE OF ANALYSIS

Date:	10 May 2011
Customer:	D_MOUCHEL_DLG
Sample Delivery Group (SDG):	110428-57
Your Reference:	Limerick Gasworks
Location:	Limerick Gasworks
Report No:	128147

We received 19 samples on Thursday April 28, 2011 and 19 of these samples were scheduled for analysis which was completed on Tuesday May 10, 2011. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

Sonia McWhan

Operations Manager

UKAS TESTING
1291

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
3376168	A3	EW007	2.00 - 3.00	27/04/2011
3376169	A4	EW007	2.00 - 3.00	27/04/2011
3376178	C11	EW007	1.50 - 2.00	27/04/2011
3376166	D5	EW007	1.80 - 2.40	27/04/2011
3376177	E8	EW007	1.50 - 2.50	27/04/2011
3376181	F11	EW007	4.00 - 5.00	27/04/2011
3376184	G3	EW007	4.00 - 5.00	27/04/2011
3376179	G8	EW007	1.40 - 2.40	27/04/2011
3376175	H12	EW007	3.00 - 4.00	27/04/2011
3376172	J10	EW007	1.00 - 2.00	27/04/2011
3376173	K1	EW007	3.00 - 4.00	27/04/2011
3376176	M3	EW007	3.00 - 5.00	27/04/2011

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

LIQUID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)	3376173	3376168	3376176	3376169	3376166	3376171	3376170	3376177	3376179	3376172	3376182	3376178	3376181	3376175
Customer Sample Reference	K1	A3	M3	A4	D5	K5	C7	E8	G8	J10	A11	C11	F11	H12
AGS Reference	EW007	EW007	EW007	EW007	EW007	EW007	EW007	EW007	EW007	EW007	EW007	EW007	EW007	EW007
Depth (m)	3.00 - 4.00	2.00 - 3.00	3.00 - 5.00	2.00 - 3.00	1.80 - 2.40	1.00 - 2.00	4.00 - 6.00	1.50 - 2.50	1.40 - 2.40	1.00 - 2.00	1.80 - 2.30	1.50 - 2.00	4.00 - 5.00	3.00 - 4.00
Container	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial

Ammoniacal Nitrogen	All	NDPs: 0 Tests: 19		X			X			X			X			X			X			X			X			X			X			X			X			X		
Anions by Kone (w)	All	NDPs: 0 Tests: 19		X			X			X			X			X			X			X			X			X			X			X			X			X		
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 19	X			X			X			X			X			X			X			X			X			X			X			X			X	X			X			X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 19		X			X			X			X			X			X			X			X			X			X			X			X			X		
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 19	X			X			X			X			X			X			X			X			X			X			X			X	X			X			X		
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 19	X			X			X			X			X			X			X			X			X			X			X			X	X			X			X		
GRO by GC-FID (W)	All	NDPs: 0 Tests: 19		X			X			X			X			X			X			X			X			X			X			X			X			X			X		
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 19		X			X			X			X			X			X			X			X			X			X			X			X			X		
Mercury Dissolved	All	NDPs: 0 Tests: 19	X			X			X			X			X			X			X			X			X			X			X			X	X			X			X		
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 19	X			X			X			X			X			X			X			X			X			X			X			X	X			X			X		
pH Value	All	NDPs: 0 Tests: 19		X			X			X			X			X			X			X			X			X			X			X			X			X		
Phenols by HPLC (W)	All	NDPs: 0 Tests: 19	X			X			X			X			X			X			X			X			X			X			X			X	X			X			X		
Sulphide	All	NDPs: 0 Tests: 19		X			X			X			X			X			X			X			X			X			X			X			X			X		
TPH CWG (W)	All	NDPs: 0 Tests: 19	X			X			X			X			X			X			X			X			X			X			X			X	X			X			X		
VOC MS (W)	All	NDPs: 0 Tests: 10			X			X			X			X																													

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

LIQUID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			3376188	3376186	3376184	3376183	3376190	3376182
Customer Sample Reference			D1	G2	G3	G4	G5	A11
AGS Reference			EW007	EW007	EW007	EW007	EW007	EW007
Depth (m)			3.00 - 4.00	3.50 - 4.50	4.00 - 5.00	2.80 - 3.00	5.00 - 6.00	1.80 - 2.30
Container			1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial	1l green glass bottle	1lplastic	Vial
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 19		X		X		X		X		X		X		X	
Anions by Kone (w)	All	NDPs: 0 Tests: 19		X		X		X		X		X		X		X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 19	X			X			X			X			X					
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 19		X		X		X		X		X		X		X	
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 19	X			X			X			X			X					
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 19	X			X			X			X			X					
GRO by GC-FID (W)	All	NDPs: 0 Tests: 19			X			X			X			X			X			X
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 19		X		X		X		X		X		X		X	
Mercury Dissolved	All	NDPs: 0 Tests: 19	X			X			X			X			X					
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 19	X			X			X			X			X					
pH Value	All	NDPs: 0 Tests: 19		X		X		X		X		X		X		X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 19	X			X			X			X			X					
Sulphide	All	NDPs: 0 Tests: 19		X		X		X		X		X		X		X	
TPH CWG (W)	All	NDPs: 0 Tests: 19	X			X			X			X			X					
VOC MS (W)	All	NDPs: 0 Tests: 10			X			X					X			X				X

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	A3	A4	A11	C7	C11	D1
			Depth (m)	2.00 - 3.00	2.00 - 3.00	1.80 - 2.30	4.00 - 6.00	1.50 - 2.00	3.00 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011
			Date Received	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011
			SDG Ref	110428-57	110428-57	110428-57	110428-57	110428-57	110428-57
			Lab Sample No.(s)	3376168	3376169	3376182	3376170	3376178	3376188
			AGS Reference	EW007	EW007	EW007	EW007	EW007	EW007
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		9.67 #	2.27 #	2.71 #	50 #	5.62 #	11.3 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099		12.4 #	2.92 #	3.48 #	64.3 #	7.23 #	14.5 #
Sulphide	<0.01 mg/l	TM101		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	97 #
Arsenic (diss.filt)	<0.12 µg/l	TM152		28.7 #	4.06 #	8.59 #	11.9 #	6.21 #	15.1 #
Cadmium (diss.filt)	<0.1 µg/l	TM152		<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152		24.6 #	16.2 #	8.28 #	12.3 #	17.7 #	22.4 #
Copper (diss.filt)	<0.85 µg/l	TM152		<0.85 #	<0.85 #	<0.85 #	<0.85 #	<0.85 #	<0.85 #
Lead (diss.filt)	<0.02 µg/l	TM152		<0.02 #	0.039 #	0.121 #	0.219 #	<0.02 #	<0.02 #
Nickel (diss.filt)	<0.15 µg/l	TM152		4.84 #	3.56 #	2.47 #	1.51 #	3.65 #	3.79 #
Selenium (diss.filt)	<0.39 µg/l	TM152		0.811 #	0.666 #	0.461 #	14 #	1.54 #	1.38 #
Zinc (diss.filt)	<0.41 µg/l	TM152		2.79 #	1.41 #	0.459 #	1.52 #	<0.41 #	1.11 #
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	0.0228 #	<0.01 #	<0.01 #
Sulphate	<2 mg/l	TM184		408 #	264 #	69.5 #	29 #	73.4 #	468 #
Cyanide, Total	<0.05 mg/l	TM227		0.296 #	0.161 #	<0.05 #	<0.05 #	0.099 #	1.03 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
pH	<1 pH Units	TM256		8.29 #	8.04 #	8.19 #	8.43 #	8.11 #	5.23 #
Resorcinol	<0.01 mg/l	TM259		<0.01	<0.01	<0.01	<0.1	<0.01	<0.01
Catechol	<0.01 mg/l	TM259		<0.01	<0.01	<0.01	<0.1	<0.01	<0.01
Phenol	<0.002 mg/l	TM259		<0.002 #	<0.002 #	<0.002 #	16.4 #	<0.002 #	<0.002 #
Cresols	<0.006 mg/l	TM259		<0.006 #	<0.006 #	0.23 #	46.2 #	0.01 #	<0.006 #
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #	<0.008 #	52.5 #	0.05 #	0.24 #
1-Naphthol	<0.01 mg/l	TM259		<0.01	<0.01	<0.01	<0.1	<0.01	<0.01
2,3,5-Trimethylphenol	<0.003 mg/l	TM259		<0.003 #	<0.003 #	<0.003 #	<0.03 #	<0.003 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259		<0.006 #	<0.006 #	<0.006 #	13.6 #	<0.006 #	<0.006 #
Phenols, Total Detected 5 speciated	<0.013 mg/l	TM259		<0.013	<0.013	0.23	129	0.06	0.24

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	D5	E8	F11	G2	G3	G4
			Depth (m)	1.80 - 2.40	1.50 - 2.50	4.00 - 5.00	3.50 - 4.50	4.00 - 5.00	2.80 - 3.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011
			Date Received	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011
			SDG Ref	110428-57	110428-57	110428-57	110428-57	110428-57	110428-57
			Lab Sample No.(s)	3376166	3376177	3376181	3376186	3376184	3376183
			AGS Reference	EW007	EW007	EW007	EW007	EW007	EW007
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		9.47 #	36.6 #	13.6 #	43.9 #	21.2 #	13.7 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099		12.2 #	47.1 #	17.5 #	56.4 #	27.3 #	17.6 #
Sulphide	<0.01 mg/l	TM101		0.41 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Arsenic (diss.filt)	<0.12 µg/l	TM152		5.7 #	81.6 #	5.57 #	20 #	6.25 #	3.51 #
Cadmium (diss.filt)	<0.1 µg/l	TM152		<0.1 #	0.122 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152		11.8 #	2.6 #	9.29 #	30.7 #	24.5 #	13.3 #
Copper (diss.filt)	<0.85 µg/l	TM152		<0.85 #	1.87 #	<0.85 #	1.34 #	1.26 #	<0.85 #
Lead (diss.filt)	<0.02 µg/l	TM152		0.691 #	0.12 #	0.048 #	<0.02 #	0.032 #	0.052 #
Nickel (diss.filt)	<0.15 µg/l	TM152		5.1 #	34.4 #	2.98 #	6.82 #	8.05 #	10.9 #
Selenium (diss.filt)	<0.39 µg/l	TM152		5.37 #	18.4 #	1.3 #	8.45 #	4.03 #	8.89 #
Zinc (diss.filt)	<0.41 µg/l	TM152		7.29 #	4.85 #	0.728 #	0.985 #	3.25 #	5.84 #
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	0.0121 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Sulphate	<2 mg/l	TM184		47.4 #	373 #	97.3 #	702 #	500 #	403 #
Cyanide, Total	<0.05 mg/l	TM227		0.209 #	4.72 #	<0.05 #	0.99 #	0.408 #	0.085 #
Chromium, Hexavalent	<0.03 mg/l	TM241		0.056	<0.03	<0.03	<0.03	<0.03	<0.03
pH	<1 pH Units	TM256		7.85 #	7.94 #	8.27 #	8.05 #	7.98 #	8.08 #
Resorcinol	<0.01 mg/l	TM259		<0.01	<0.1	<0.01	<0.05	<0.01	<0.01
Catechol	<0.01 mg/l	TM259		<0.01	<0.1	<0.01	<0.05	<0.01	<0.01
Phenol	<0.002 mg/l	TM259		0.15 #	43.1 #	0.01 #	4.04 #	0.01 #	0.06 #
Cresols	<0.006 mg/l	TM259		1.06 #	64.8 #	0.17 #	9.86 #	0.01 #	0.52 #
Xylenols	<0.008 mg/l	TM259		1.05 #	38.9 #	1.33 #	19.9 #	0.06 #	2.37 #
1-Naphthol	<0.01 mg/l	TM259		<0.01	0.1	<0.01	<0.05	<0.01	0.04
2,3,5-Trimethylphenol	<0.003 mg/l	TM259		<0.003 #	<0.03 #	<0.003 #	<0.015 #	<0.003 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259		0.38 #	6.23 #	0.96 #	11.5 #	0.05 #	1.5 #
Phenols, Total Detected 5 speciated	<0.013 mg/l	TM259		2.64	153	2.47	45.3	0.13	4.45

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	G5	G8	H12	J10	K1	K5
			Depth (m)	5.00 - 6.00	1.40 - 2.40	3.00 - 4.00	1.00 - 2.00	3.00 - 4.00	1.00 - 2.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011
			Date Received	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011
			SDG Ref	110428-57	110428-57	110428-57	110428-57	110428-57	110428-57
			Lab Sample No.(s)	3376190	3376179	3376175	3376172	3376173	3376171
			AGS Reference	EW007	EW007	EW007	EW007	EW007	EW007
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		9.84 #	26 #	14.5 #	0.668 #	2.57 #	58.2 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099		12.7 #	33.4 #	18.6 #	0.859 #	3.3 #	74.8 #
Sulphide	<0.01 mg/l	TM101		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Arsenic (diss.filt)	<0.12 µg/l	TM152		2.1 #	11.7 #	1.41 #	2.82 #	1.14 #	54.6 #
Cadmium (diss.filt)	<0.1 µg/l	TM152		<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152		30 #	11 #	15.2 #	17.2 #	10.6 #	14.1 #
Copper (diss.filt)	<0.85 µg/l	TM152		1.4 #	<0.85 #	<0.85 #	0.852 #	3.53 #	2.99 #
Lead (diss.filt)	<0.02 µg/l	TM152		0.114 #	<0.02 #	<0.02 #	<0.02 #	0.237 #	0.323 #
Nickel (diss.filt)	<0.15 µg/l	TM152		8.04 #	5.23 #	3.34 #	4.18 #	6.95 #	15.2 #
Selenium (diss.filt)	<0.39 µg/l	TM152		2.12 #	8.26 #	1.17 #	3.84 #	0.961 #	18.3 #
Zinc (diss.filt)	<0.41 µg/l	TM152		3.02 #	<0.41 #	0.756 #	2.38 #	2.81 #	3.69 #
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	0.0354 #
Sulphate	<2 mg/l	TM184		605 #	160 #	191 #	73.2 #	580 #	495 #
Cyanide, Total	<0.05 mg/l	TM227		0.458 #	0.119 #	<0.05 #	<0.05 #	0.848 #	3.32 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
pH	<1 pH Units	TM256		7.93 #	8.33 #	7.64 #	8.31 #	7.94 #	8.25 #
Resorcinol	<0.01 mg/l	TM259		<0.01	<0.02	<0.01	<0.01	<0.01	<0.5
Catechol	<0.01 mg/l	TM259		<0.01	<0.02	<0.01	<0.01	<0.01	<0.5
Phenol	<0.002 mg/l	TM259		<0.002 #	3.71 #	<0.002 #	<0.002 #	<0.002 #	177 #
Cresols	<0.006 mg/l	TM259		<0.006 #	7.05 #	<0.006 #	<0.006 #	<0.006 #	373 #
Xylenols	<0.008 mg/l	TM259		<0.008 #	8.6 #	<0.008 #	<0.008 #	<0.008 #	213 #
1-Naphthol	<0.01 mg/l	TM259		<0.01	<0.02	<0.01	<0.01	<0.01	<0.5
2,3,5-Trimethylphenol	<0.003 mg/l	TM259		<0.003 #	<0.006 #	<0.003 #	<0.003 #	<0.003 #	<0.15 #
2-Isopropylphenol	<0.006 mg/l	TM259		<0.006 #	2.83 #	<0.006 #	<0.006 #	<0.006 #	37.2 #
Phenols, Total Detected 5 speciated	<0.013 mg/l	TM259		<0.013	22.2	<0.013	<0.013	<0.013	800

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Customer Sample R	M3
Depth (m)	3.00 - 5.00
Sample Type	Water(GW/SW)
Date Sampled	27/04/2011
Date Received	28/04/2011
SDG Ref	110428-57
Lab Sample No.(s)	3376176
AGS Reference	EW007

Component	LOD/Units	Method	
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	1.09 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099	1.4 #
Sulphide	<0.01 mg/l	TM101	<0.01 #
Arsenic (diss.filt)	<0.12 µg/l	TM152	2.96 #
Cadmium (diss.filt)	<0.1 µg/l	TM152	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152	4.24 #
Copper (diss.filt)	<0.85 µg/l	TM152	8.66 #
Lead (diss.filt)	<0.02 µg/l	TM152	0.083 #
Nickel (diss.filt)	<0.15 µg/l	TM152	4.1 #
Selenium (diss.filt)	<0.39 µg/l	TM152	1.25 #
Zinc (diss.filt)	<0.41 µg/l	TM152	1.27 #
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #
Sulphate	<2 mg/l	TM184	550 #
Cyanide, Total	<0.05 mg/l	TM227	1.29 #
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03
pH	<1 pH Units	TM256	7.96 #
Resorcinol	<0.01 mg/l	TM259	<0.01
Catechol	<0.01 mg/l	TM259	<0.01
Phenol	<0.002 mg/l	TM259	0.01 #
Cresols	<0.006 mg/l	TM259	0.03 #
Xylenols	<0.008 mg/l	TM259	<0.008 #
1-Naphthol	<0.01 mg/l	TM259	<0.01
2,3,5-Trimethylphenol	<0.003 mg/l	TM259	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259	<0.006 #
Phenols, Total Detected 5 speciated	<0.013 mg/l	TM259	0.04

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	A3	A4	A11	C7	C11	D1
			Depth (m)	2.00 - 3.00	2.00 - 3.00	1.80 - 2.30	4.00 - 6.00	1.50 - 2.00	3.00 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011
			Date Received	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011
			SDG Ref	110428-57	110428-57	110428-57	110428-57	110428-57	110428-57
			Lab Sample No.(s)	3376168	3376169	3376182	3376170	3376178	3376188
			AGS Reference	EW007	EW007	EW007	EW007	EW007	EW007
Naphthalene (aq)	<0.1 µg/l	TM178		0.142 #	0.101 #	135 #	64.7 #	1.11 #	2590 #
Acenaphthene (aq)	<0.015 µg/l	TM178		0.422 #	0.0233 #	23.7 #	30.9 #	2.74 #	136 #
Acenaphthylene (aq)	<0.011 µg/l	TM178		0.307 #	0.208 #	79.2 #	193 #	1.38 #	227 #
Fluoranthene (aq)	<0.017 µg/l	TM178		0.466 #	0.756 #	294 #	128 #	8.42 #	146 #
Anthracene (aq)	<0.015 µg/l	TM178		0.111 #	0.142 #	46.8 #	68.6 #	0.929 #	75.6 #
Phenanthrene (aq)	<0.022 µg/l	TM178		0.248 #	0.153 #	125 #	173 #	2.81 #	336 #
Fluorene (aq)	<0.014 µg/l	TM178		0.114 #	0.0554 #	51 #	126 #	0.907 #	164 #
Chrysene (aq)	<0.013 µg/l	TM178		0.193 #	0.347 #	267 #	29.8 #	2.36 #	18.9 #
Pyrene (aq)	<0.015 µg/l	TM178		2.5 #	0.829 #	241 #	90.6 #	5.18 #	88.9 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		0.228 #	0.319 #	290 #	34.7 #	2.8 #	19.4 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		0.17 #	0.695 #	386 #	28.9 #	4.12 #	11 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		0.272 #	0.597 #	434 #	26.5 #	4.41 #	8.5 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		0.363 #	0.694 #	419 #	29.1 #	4.42 #	8.72 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		0.0269 #	0.0788 #	47.9 #	5.62 #	0.622 #	1.52 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		0.0965 #	0.232 #	125 #	14.6 #	1.58 #	2.42 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		0.0902 #	0.26 #	118 #	14.6 #	1.97 #	2.41 #
PAH, Total Detected USEPA 16 (aq)	<0.17 µg/l	TM178		5.76	5.49	3080	1060	45.8	3840

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	D5	E8	F11	G2	G3	G4
			Depth (m)	1.80 - 2.40	1.50 - 2.50	4.00 - 5.00	3.50 - 4.50	4.00 - 5.00	2.80 - 3.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011
			Date Received	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011
			SDG Ref	110428-57	110428-57	110428-57	110428-57	110428-57	110428-57
			Lab Sample No.(s)	3376166	3376177	3376181	3376186	3376184	3376183
			AGS Reference	EW007	EW007	EW007	EW007	EW007	EW007
Naphthalene (aq)	<0.1 µg/l	TM178		23.8 #	135 #	0.42 #	19.1 #	1.21 #	31.1 #
Acenaphthene (aq)	<0.015 µg/l	TM178		2.43 #	7.76 #	0.0355 #	25.8 #	1.19 #	38.1 #
Acenaphthylene (aq)	<0.011 µg/l	TM178		18.6 #	50.1 #	0.215 #	28.7 #	1.54 #	48.8 #
Fluoranthene (aq)	<0.017 µg/l	TM178		85.8 #	5.82 #	0.649 #	6.25 #	4.14 #	182 #
Anthracene (aq)	<0.015 µg/l	TM178		7.63 #	6.79 #	0.061 #	4.56 #	0.424 #	88.9 #
Phenanthrene (aq)	<0.022 µg/l	TM178		24.9 #	21.4 #	0.16 #	30 #	1.19 #	196 #
Fluorene (aq)	<0.014 µg/l	TM178		5.49 #	20 #	0.0492 #	20.8 #	0.313 #	121 #
Chrysene (aq)	<0.013 µg/l	TM178		59 #	0.921 #	0.412 #	0.566 #	2.99 #	46.4 #
Pyrene (aq)	<0.015 µg/l	TM178		70.6 #	3.5 #	0.551 #	3.7 #	3.65 #	120 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		48.9 #	1.27 #	0.406 #	0.713 #	3 #	55.6 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		81.6 #	0.919 #	0.845 #	0.393 #	4.6 #	41.2 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		75.4 #	0.969 #	0.751 #	0.41 #	4.78 #	45.5 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		63.2 #	0.958 #	0.768 #	0.404 #	4.84 #	48.1 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		11.6 #	0.127 #	0.0946 #	0.0471 #	0.907 #	7.32 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		27.9 #	0.291 #	0.328 #	0.111 #	2.54 #	17.2 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		29.6 #	0.345 #	0.336 #	0.12 #	2.72 #	19.5 #
PAH, Total Detected USEPA 16 (aq)	<0.17 µg/l	TM178		636	256	6.08	142	40	1110

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	G5	G8	H12	J10	K1	K5
			Depth (m)	5.00 - 6.00	1.40 - 2.40	3.00 - 4.00	1.00 - 2.00	3.00 - 4.00	1.00 - 2.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011
			Date Received	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011
			SDG Ref	110428-57	110428-57	110428-57	110428-57	110428-57	110428-57
			Lab Sample No.(s)	3376190	3376179	3376175	3376172	3376173	3376171
			AGS Reference	EW007	EW007	EW007	EW007	EW007	EW007
Naphthalene (aq)	<0.1 µg/l	TM178		0.721 #	35.6 #	1.35 #	0.172 #	0.145 #	11000 #
Acenaphthene (aq)	<0.015 µg/l	TM178		0.354 #	9.06 #	0.638 #	0.0736 #	0.0233 #	345 #
Acenaphthylene (aq)	<0.011 µg/l	TM178		3.21 #	66.1 #	1.96 #	1 #	0.0596 #	1700 #
Fluoranthene (aq)	<0.017 µg/l	TM178		16.3 #	19.1 #	8.37 #	1.94 #	0.64 #	1660 #
Anthracene (aq)	<0.015 µg/l	TM178		1.98 #	11.1 #	1.4 #	0.213 #	0.0513 #	911 #
Phenanthrene (aq)	<0.022 µg/l	TM178		3.21 #	41.1 #	4.06 #	0.817 #	0.157 #	2640 #
Fluorene (aq)	<0.014 µg/l	TM178		1 #	34.1 #	1.27 #	0.21 #	0.0289 #	1130 #
Chrysene (aq)	<0.013 µg/l	TM178		8.05 #	5.09 #	4.93 #	1.63 #	0.436 #	451 #
Pyrene (aq)	<0.015 µg/l	TM178		11.2 #	12.6 #	5.92 #	1.34 #	0.636 #	1120 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		8.07 #	7.15 #	4.77 #	2.12 #	0.481 #	369 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		10.2 #	4.95 #	11.5 #	5.14 #	0.741 #	139 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		10.4 #	6.05 #	8.95 #	4.11 #	0.85 #	178 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		13.3 #	6.02 #	12.4 #	5.93 #	0.806 #	226 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		2.62 #	0.701 #	1.83 #	1 #	0.132 #	27.7 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		7.49 #	1.35 #	4.75 #	1.81 #	0.473 #	84.7 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		7.63 #	1.77 #	5.4 #	2.19 #	0.451 #	92.3 #
PAH, Total Detected USEPA 16 (aq)	<0.17 µg/l	TM178		106	262	79.4	29.7	6.11	22100

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R: M3
			Depth (m): 3.00 - 5.00
			Sample Type: Water(GW/SW)
			Date Sampled: 27/04/2011
			Date Received: 28/04/2011
			SDG Ref: 110428-57
			Lab Sample No.(s): 3376176
			AGS Reference: EW007
Naphthalene (aq)	<0.1 µg/l	TM178	0.114 #
Acenaphthene (aq)	<0.015 µg/l	TM178	<0.015 #
Acenaphthylene (aq)	<0.011 µg/l	TM178	0.0467 #
Fluoranthene (aq)	<0.017 µg/l	TM178	1.26 #
Anthracene (aq)	<0.015 µg/l	TM178	0.0474 #
Phenanthrene (aq)	<0.022 µg/l	TM178	0.0957 #
Fluorene (aq)	<0.014 µg/l	TM178	0.0199 #
Chrysene (aq)	<0.013 µg/l	TM178	0.823 #
Pyrene (aq)	<0.015 µg/l	TM178	1.01 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178	0.851 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178	1.8 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178	1.47 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178	1.41 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178	0.205 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178	0.832 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178	0.779 #
PAH, Total Detected USEPA 16 (aq)	<0.17 µg/l	TM178	10.8

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	A3	A4	A11	C7	C11	D1
			Depth (m)	2.00 - 3.00	2.00 - 3.00	1.80 - 2.30	4.00 - 6.00	1.50 - 2.00	3.00 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011
			Date Received	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011
			SDG Ref	110428-57	110428-57	110428-57	110428-57	110428-57	110428-57
			Lab Sample No.(s)	3376168	3376169	3376182	3376170	3376178	3376188
			AGS Reference	EW007	EW007	EW007	EW007	EW007	EW007
GRO Surrogate % recovery**	%	TM245		113	119	121	119	121	93
GRO >C5-C12	<50 µg/l	TM245		1780 #	<50 #	264 #	36200 #	3710 #	6270 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<15 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		258 #	<7 #	<7 #	15900 #	49 #	685 #
Toluene	<4 µg/l	TM245		6 #	<4 #	18 #	5580 #	25 #	231 #
Ethylbenzene	<5 µg/l	TM245		8 #	<5 #	5 #	195 #	119 #	204 #
m,p-Xylene	<8 µg/l	TM245		48 #	<8 #	15 #	1400 #	135 #	549 #
o-Xylene	<3 µg/l	TM245		49 #	<3 #	13 #	597 #	133 #	302 #
m,p,o-Xylene	<10 µg/l	TM245		97	<10	28	2000	268	851
BTEX, Total	<10 µg/l	TM245		369	<10	51	23700	461	1970
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	244	<10	11
Aliphatics >C6-C8	<10 µg/l	TM245		65	<10	<10	537	30	116
Aliphatics >C8-C10	<10 µg/l	TM245		145	<10	32	1500	398	503
Aliphatics >C10-C12	<10 µg/l	TM245		659	<10	88	5580	1530	2000
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	11	211	31	125	29
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	21	912	32	39	74
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	3950	34	<10	31
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	32	5070	97	164	134
Aromatics >EC5-EC7	<10 µg/l	TM245		258	<10	<10	15900	49	685
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	<10	18	5580	25	231
Aromatics >EC8-EC10	<10 µg/l	TM245		202	<10	55	3190	651	1390
Aromatics >EC10-EC12	<10 µg/l	TM245		439	<10	59	3720	1020	1330
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		97	<10	296	15300	406	665
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		109	13	801	1770	287	537
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		13	13	7740	751	219	436
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		219	26	8840	17800	912	1640
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		2000	63	14200	54200	4790	8040

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	D5	E8	F11	G2	G3	G4
			Depth (m)	1.80 - 2.40	1.50 - 2.50	4.00 - 5.00	3.50 - 4.50	4.00 - 5.00	2.80 - 3.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011
			Date Received	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011
			SDG Ref	110428-57	110428-57	110428-57	110428-57	110428-57	110428-57
			Lab Sample No.(s)	3376166	3376177	3376181	3376186	3376184	3376183
			AGS Reference	EW007	EW007	EW007	EW007	EW007	EW007
GRO Surrogate % recovery**	%	TM245		120	88	118	113	119	120
GRO >C5-C12	<50 µg/l	TM245		802 #	8100 #	1080 #	21500 #	567 #	11800 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<6 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		337 #	2880 #	410 #	5430 #	144 #	1750 #
Toluene	<4 µg/l	TM245		79 #	784 #	153 #	3940 #	<4 #	1520 #
Ethylbenzene	<5 µg/l	TM245		16 #	35 #	13 #	451 #	11 #	209 #
m,p-Xylene	<8 µg/l	TM245		30 #	250 #	72 #	1930 #	17 #	1430 #
o-Xylene	<3 µg/l	TM245		31 #	120 #	37 #	1020 #	51 #	583 #
m,p,o-Xylene	<10 µg/l	TM245		61	370	109	2950	68	2010
BTEX, Total	<10 µg/l	TM245		493	4070	685	12800	223	5490
Aliphatics >C5-C6	<10 µg/l	TM245		<10	30	<10	60	<10	14
Aliphatics >C6-C8	<10 µg/l	TM245		14	211	13	285	18	124
Aliphatics >C8-C10	<10 µg/l	TM245		43	466	52	1250	50	863
Aliphatics >C10-C12	<10 µg/l	TM245		131	1810	178	3790	143	2820
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10	232
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		122	<10	<10	<10	<10	132
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		1180	<10	<10	<10	<10	137
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		1300	<10	<10	<10	<10	501
Aromatics >EC5-EC7	<10 µg/l	TM245		337	2880	410	5430	144	1750
Aromatics >EC7-EC8	<10 µg/l	TM245		79	784	153	3940	<10	1520
Aromatics >EC8-EC10	<10 µg/l	TM245		106	716	157	4230	112	2800
Aromatics >EC10-EC12	<10 µg/l	TM245		87	1210	118	2530	95	1880
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		331	6270	11	6130	25	3450
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		269	497	<10	618	<10	2290
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		2800	199	<10	100	74	2860
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		3400	6960	11	6850	99	8600
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		5500	15100	1090	28400	665	20900

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	G5	G8	H12	J10	K1	K5
			Depth (m)	5.00 - 6.00	1.40 - 2.40	3.00 - 4.00	1.00 - 2.00	3.00 - 4.00	1.00 - 2.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011
			Date Received	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011
			SDG Ref	110428-57	110428-57	110428-57	110428-57	110428-57	110428-57
			Lab Sample No.(s)	3376190	3376179	3376175	3376172	3376173	3376171
			AGS Reference	EW007	EW007	EW007	EW007	EW007	EW007
GRO Surrogate % recovery**	%	TM245		110	120	117	123	110	83
GRO >C5-C12	<50 µg/l	TM245		295 #	6120 #	<50 #	<50 #	<50 #	40300 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<15 #
Benzene	<7 µg/l	TM245		34 #	1220 #	<7 #	<7 #	<7 #	12400 #
Toluene	<4 µg/l	TM245		<4 #	744 #	<4 #	<4 #	<4 #	4200 #
Ethylbenzene	<5 µg/l	TM245		<5 #	65 #	<5 #	<5 #	<5 #	206 #
m,p-Xylene	<8 µg/l	TM245		8 #	459 #	<8 #	<8 #	<8 #	1340 #
o-Xylene	<3 µg/l	TM245		9 #	192 #	<3 #	<3 #	<3 #	566 #
m,p,o-Xylene	<10 µg/l	TM245		17	651	<10	<10	<10	1910
BTEX, Total	<10 µg/l	TM245		51	2680	<10	<10	<10	18700
Aliphatics >C5-C6	<10 µg/l	TM245		<10	10	<10	<10	<10	266
Aliphatics >C6-C8	<10 µg/l	TM245		18	84	<10	<10	<10	1320
Aliphatics >C8-C10	<10 µg/l	TM245		40	356	<10	<10	<10	2180
Aliphatics >C10-C12	<10 µg/l	TM245		92	1650	<10	<10	<10	9810
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		100	<10	<10	<10	<10	79
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		83	<10	<10	<10	<10	63
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		98	<10	60	<10	<10	72
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		281	<10	60	<10	<10	214
Aromatics >EC5-EC7	<10 µg/l	TM245		34	1220	<10	<10	<10	12400
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	744	<10	<10	<10	4200
Aromatics >EC8-EC10	<10 µg/l	TM245		46	954	<10	<10	<10	3570
Aromatics >EC10-EC12	<10 µg/l	TM245		62	1100	<10	<10	<10	6540
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		101	2840	16	<10	<10	45900
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		202	526	50	<10	<10	3210
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		1110	209	322	83	<10	1020
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		1420	3570	388	83	<10	50100
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		1990	9700	455	87	<10	90600

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Customer Sample R	M3
Depth (m)	3.00 - 5.00
Sample Type	Water(GW/SW)
Date Sampled	27/04/2011
Date Received	28/04/2011
SDG Ref	110428-57
Lab Sample No.(s)	3376176
AGS Reference	EW007

Component	LOD/Units	Method	
GRO Surrogate % recovery**	%	TM245	110
GRO >C5-C12	<50 µg/l	TM245	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3 #
Benzene	<7 µg/l	TM245	<7 #
Toluene	<4 µg/l	TM245	<4 #
Ethylbenzene	<5 µg/l	TM245	<5 #
m,p-Xylene	<8 µg/l	TM245	<8 #
o-Xylene	<3 µg/l	TM245	<3 #
m,p,o-Xylene	<10 µg/l	TM245	<10
BTEX, Total	<10 µg/l	TM245	<10
Aliphatics >C5-C6	<10 µg/l	TM245	<10
Aliphatics >C6-C8	<10 µg/l	TM245	<10
Aliphatics >C8-C10	<10 µg/l	TM245	<10
Aliphatics >C10-C12	<10 µg/l	TM245	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	<10
Aromatics >EC5-EC7	<10 µg/l	TM245	<10
Aromatics >EC7-EC8	<10 µg/l	TM245	<10
Aromatics >EC8-EC10	<10 µg/l	TM245	<10
Aromatics >EC10-EC12	<10 µg/l	TM245	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	17
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	17
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	18

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	A3	A4	A11	C7	D1	G2
			Depth (m)	2.00 - 3.00	2.00 - 3.00	1.80 - 2.30	4.00 - 6.00	3.00 - 4.00	3.50 - 4.50
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011
			Date Received	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011
			SDG Ref	110428-57	110428-57	110428-57	110428-57	110428-57	110428-57
			Lab Sample No.(s)	3376168	3376169	3376182	3376170	3376188	3376186
			AGS Reference	EW007	EW007	EW007	EW007	EW007	EW007
Dibromofluoromethane**	%	TM208		105	104	106	103	104	104
Toluene-d8**	%	TM208		97.3	97	98.8	101	96.6	97.1
4-Bromofluorobenzene**	%	TM208		98.7	99.2	99.4	91.9	96.6	97.3
Dichlorodifluoromethane	<7 µg/l	TM208		<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Chloromethane	<9 µg/l	TM208		<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
Vinyl chloride	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #	<1.2 #	<1.2 #	<1.2 #
Bromomethane	<2 µg/l	TM208		<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
Chloroethane	<2.5 µg/l	TM208		<2.5 #	<2.5 #	<2.5 #	<2.5 #	<2.5 #	<2.5 #
Trichlorofluoromethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #	<1.3 #	<1.3 #	<1.3 #
1,1-Dichloroethene	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #	<1.2 #	<1.2 #	<1.2 #
Carbon disulphide	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #	<1.3 #	<1.3 #	3.25 #
Dichloromethane	<3.7 µg/l	TM208		<3.7 #	<3.7 #	<3.7 #	<3.7 #	<3.7 #	<3.7 #
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208		<1.6 #	<1.6 #	<1.6 #	<1.6 #	<1.6 #	<1.6 #
trans-1,2-Dichloroethene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #
1,1-Dichloroethane	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #	<1.2 #	<1.2 #	<1.2 #
cis-1,2-Dichloroethene	<2.3 µg/l	TM208		<2.3 #	<2.3 #	<2.3 #	<2.3 #	<2.3 #	<2.3 #
2,2-Dichloropropane	<3.8 µg/l	TM208		<3.8 #	<3.8 #	<3.8 #	<3.8 #	<3.8 #	<3.8 #
Bromochloromethane	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #
Chloroform	<1.8 µg/l	TM208		<1.8 #	<1.8 #	<1.8 #	<1.8 #	<1.8 #	<1.8 #
1,1,1-Trichloroethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #	<1.3 #	<1.3 #	<1.3 #
1,1-Dichloropropene	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #	<1.3 #	<1.3 #	<1.3 #
Carbontetrachloride	<1.4 µg/l	TM208		<1.4 #	<1.4 #	<1.4 #	<1.4 #	<1.4 #	<1.4 #
1,2-Dichloroethane	<3.3 µg/l	TM208		<3.3	<3.3	<3.3	<3.3	<3.3	<3.3
Benzene	<1.3 µg/l	TM208		202 #	<1.3 #	4.35 #	16400 #	919 #	5540 #
Trichloroethene	<2.5 µg/l	TM208		<2.5 #	<2.5 #	<2.5 #	<2.5 #	<2.5 #	<2.5 #
1,2-Dichloropropane	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Dibromomethane	<2.7 µg/l	TM208		<2.7 #	<2.7 #	<2.7 #	<2.7 #	<2.7 #	<2.7 #
Bromodichloromethane	<0.9 µg/l	TM208		<0.9 #	<0.9 #	<0.9 #	<0.9 #	<0.9 #	<0.9 #
cis-1,3-Dichloropropene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #
Toluene	<1.4 µg/l	TM208		3.88 #	<1.4 #	15.9 #	5110 #	217 #	3900 #
trans-1,3-Dichloropropene	<3.5 µg/l	TM208		<3.5 #	<3.5 #	<3.5 #	<3.5 #	<3.5 #	<3.5 #
1,1,2-Trichloroethane	<2.2 µg/l	TM208		<2.2 #	<2.2 #	<2.2 #	<2.2 #	<2.2 #	<2.2 #
1,3-Dichloropropane	<2.2 µg/l	TM208		<2.2 #	<2.2 #	<2.2 #	<2.2 #	<2.2 #	<2.2 #
Tetrachloroethene	<1.5 µg/l	TM208		<1.5 #	<1.5 #	<1.5 #	<1.5 #	<1.5 #	<1.5 #
Dibromochloromethane	<1.7 µg/l	TM208		<1.7 #	<1.7 #	<1.7 #	<1.7 #	<1.7 #	<1.7 #

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	A3	A4	A11	C7	D1	G2
			Depth (m)	2.00 - 3.00	2.00 - 3.00	1.80 - 2.30	4.00 - 6.00	3.00 - 4.00	3.50 - 4.50
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011	27/04/2011
			Date Received	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011	28/04/2011
			SDG Ref	110428-57	110428-57	110428-57	110428-57	110428-57	110428-57
			Lab Sample No.(s)	3376168	3376169	3376182	3376170	3376188	3376186
			AGS Reference	EW007	EW007	EW007	EW007	EW007	EW007
1,2-Dibromoethane	<2.3 µg/l	TM208		<2.3 #	<2.3 #	<2.3 #	<2.3 #	<2.3 #	<2.3 #
Chlorobenzene	<3.5 µg/l	TM208		<3.5 #	<3.5 #	<3.5 #	<3.5 #	<3.5 #	<3.5 #
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #	<1.3 #	<1.3 #	<1.3 #
Ethylbenzene	<2.5 µg/l	TM208		<2.5 #	<2.5 #	3.42 #	151 #	249 #	391 #
m,p-Xylene	<2.5 µg/l	TM208		40.1 #	<2.5 #	11.6 #	1060 #	681 #	1760 #
o-Xylene	<1.7 µg/l	TM208		43 #	<1.7 #	10.1 #	482 #	384 #	965 #
Styrene	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #	242 #	<1.2 #	<1.2 #
Bromoform	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #	<3 #	<3 #
Isopropylbenzene	<1.4 µg/l	TM208		2.83 #	<1.4 #	<1.4 #	6.42 #	23.8 #	26.8 #
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208		<5.2	<5.2	<5.2	<5.2	<5.2	<5.2
1,2,3-Trichloropropane	<7.8 µg/l	TM208		<7.8 #	<7.8 #	<7.8 #	<7.8 #	<7.8 #	<7.8 #
Bromobenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
Propylbenzene	<2.6 µg/l	TM208		<2.6 #	<2.6 #	<2.6 #	8.48 #	29.1 #	28.3 #
2-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208		5.01 #	<1.8 #	<1.8 #	55.2 #	76.3 #	100 #
4-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #
tert-Butylbenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208		17.6 #	<1.7 #	4.72 #	139 #	268 #	376 #
sec-Butylbenzene	<1.7 µg/l	TM208		<1.7 #	<1.7 #	<1.7 #	<1.7 #	<1.7 #	<1.7 #
4-iso-Propyltoluene	<2.6 µg/l	TM208		<2.6 #	<2.6 #	<2.6 #	<2.6 #	<2.6 #	<2.6 #
1,3-Dichlorobenzene	<2.2 µg/l	TM208		<2.2 #	<2.2 #	<2.2 #	<2.2 #	<2.2 #	<2.2 #
1,4-Dichlorobenzene	<2.7 µg/l	TM208		<2.7 #	<2.7 #	<2.7 #	<2.7 #	<2.7 #	<2.7 #
n-Butylbenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #	<2 #	<2 #	<2 #
1,2-Dichlorobenzene	<3.7 µg/l	TM208		<3.7	<3.7	<3.7	<3.7	<3.7	<3.7
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208		<9.8	<9.8	<9.8	<9.8	<9.8	<9.8
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208		<2.3 #	<2.3 #	<2.3 #	<2.3 #	<2.3 #	<2.3 #
Hexachlorobutadiene	<2.5 µg/l	TM208		<2.5 #	<2.5 #	<2.5 #	<2.5 #	<2.5 #	<2.5 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Naphthalene	<3.5 µg/l	TM208		103 #	<3.5 #	74.3 #	5370 #	3450 #	3360 #
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208		<3.1 #	<3.1 #	<3.1 #	<3.1 #	<3.1 #	<3.1 #
1,3,5-Trichlorobenzene	<10 µg/l	TM208		<10	<10	<10	<10	<10	<10

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	G4	G5	K5	M3		
			Depth (m)	2.80 - 3.00	5.00 - 6.00	1.00 - 2.00	3.00 - 5.00		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	27/04/2011	27/04/2011	27/04/2011	27/04/2011		
			Date Received	28/04/2011	28/04/2011	28/04/2011	28/04/2011		
			SDG Ref	110428-57	110428-57	110428-57	110428-57		
			Lab Sample No.(s)	3376183	3376190	3376171	3376176		
			AGS Reference	EW007	EW007	EW007	EW007		
Dibromofluoromethane**	%	TM208		105	102	103	114		
Toluene-d8**	%	TM208		97.5	96.6	94.3	100		
4-Bromofluorobenzene**	%	TM208		97.5	98.6	72.6	102		
Dichlorodifluoromethane	<7 µg/l	TM208		<7 #	<7 #	<7 #	<7 #		
Chloromethane	<9 µg/l	TM208		<9 #	<9 #	<9 #	<9 #		
Vinyl chloride	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #	<1.2 #		
Bromomethane	<2 µg/l	TM208		<2 #	<2 #	<2 #	<2 #		
Chloroethane	<2.5 µg/l	TM208		<2.5 #	<2.5 #	<2.5 #	<2.5 #		
Trichlorofluoromethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #	<1.3 #		
1,1-Dichloroethene	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #	<1.2 #		
Carbon disulphide	<1.3 µg/l	TM208		<1.3 #	<1.3 #	1.38 #	<1.3 #		
Dichloromethane	<3.7 µg/l	TM208		<3.7 #	<3.7 #	<3.7 #	<3.7 #		
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208		<1.6 #	<1.6 #	<1.6 #	<1.6 #		
trans-1,2-Dichloroethene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #		
1,1-Dichloroethane	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #	<1.2 #		
cis-1,2-Dichloroethene	<2.3 µg/l	TM208		<2.3 #	<2.3 #	<2.3 #	<2.3 #		
2,2-Dichloropropane	<3.8 µg/l	TM208		<3.8 #	<3.8 #	<3.8 #	<3.8 #		
Bromochloromethane	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #		
Chloroform	<1.8 µg/l	TM208		<1.8 #	<1.8 #	<1.8 #	<1.8 #		
1,1,1-Trichloroethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	5.82 #	<1.3 #		
1,1-Dichloropropene	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #	<1.3 #		
Carbontetrachloride	<1.4 µg/l	TM208		<1.4 #	<1.4 #	<1.4 #	<1.4 #		
1,2-Dichloroethane	<3.3 µg/l	TM208		<3.3	<3.3	<3.3	<3.3		
Benzene	<1.3 µg/l	TM208		1770 #	24.9 #	17700 #	<1.3 #		
Trichloroethene	<2.5 µg/l	TM208		<2.5 #	<2.5 #	<2.5 #	<2.5 #		
1,2-Dichloropropane	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #		
Dibromomethane	<2.7 µg/l	TM208		<2.7 #	<2.7 #	<2.7 #	<2.7 #		
Bromodichloromethane	<0.9 µg/l	TM208		<0.9 #	<0.9 #	<0.9 #	<0.9 #		
cis-1,3-Dichloropropene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #		
Toluene	<1.4 µg/l	TM208		1480 #	<1.4 #	5260 #	<1.4 #		
trans-1,3-Dichloropropene	<3.5 µg/l	TM208		<3.5 #	<3.5 #	<3.5 #	<3.5 #		
1,1,2-Trichloroethane	<2.2 µg/l	TM208		<2.2 #	<2.2 #	<2.2 #	<2.2 #		
1,3-Dichloropropane	<2.2 µg/l	TM208		<2.2 #	<2.2 #	<2.2 #	<2.2 #		
Tetrachloroethene	<1.5 µg/l	TM208		<1.5 #	<1.5 #	<1.5 #	<1.5 #		
Dibromochloromethane	<1.7 µg/l	TM208		<1.7 #	<1.7 #	<1.7 #	<1.7 #		

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Non-conforming work.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.

Component	LOD/Units	Method	Customer Sample R	G4	G5	K5	M3		
			Depth (m)	2.80 - 3.00	5.00 - 6.00	1.00 - 2.00	3.00 - 5.00		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	27/04/2011	27/04/2011	27/04/2011	27/04/2011		
			Date Received	28/04/2011	28/04/2011	28/04/2011	28/04/2011		
			SDG Ref	110428-57	110428-57	110428-57	110428-57		
			Lab Sample No.(s)	3376183	3376190	3376171	3376176		
			AGS Reference	EW007	EW007	EW007	EW007		
1,2-Dibromoethane	<2.3 µg/l	TM208		<2.3 #	<2.3 #	<2.3 #	<2.3 #		
Chlorobenzene	<3.5 µg/l	TM208		<3.5 #	<3.5 #	<3.5 #	<3.5 #		
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #	<1.3 #		
Ethylbenzene	<2.5 µg/l	TM208		182 #	<2.5 #	230 #	4.22 #		
m,p-Xylene	<2.5 µg/l	TM208		1310 #	5.06 #	1460 #	<2.5 #		
o-Xylene	<1.7 µg/l	TM208		535 #	7.08 #	653 #	<1.7 #		
Styrene	<1.2 µg/l	TM208		<1.2 #	<1.2 #	318 #	3.43 #		
Bromoform	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #		
Isopropylbenzene	<1.4 µg/l	TM208		14.3 #	<1.4 #	9.62 #	<1.4 #		
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208		<5.2	<5.2	<5.2	<5.2		
1,2,3-Trichloropropane	<7.8 µg/l	TM208		<7.8 #	<7.8 #	<7.8 #	<7.8 #		
Bromobenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #	<2 #		
Propylbenzene	<2.6 µg/l	TM208		13.6 #	<2.6 #	12.8 #	<2.6 #		
2-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #		
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208		113 #	<1.8 #	60.5 #	<1.8 #		
4-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #		
tert-Butylbenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #	<2 #		
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208		294 #	4.94 #	152 #	<1.7 #		
sec-Butylbenzene	<1.7 µg/l	TM208		<1.7 #	<1.7 #	<1.7 #	<1.7 #		
4-iso-Propyltoluene	<2.6 µg/l	TM208		<2.6 #	<2.6 #	<2.6 #	<2.6 #		
1,3-Dichlorobenzene	<2.2 µg/l	TM208		<2.2 #	<2.2 #	<2.2 #	<2.2 #		
1,4-Dichlorobenzene	<2.7 µg/l	TM208		<2.7 #	<2.7 #	<2.7 #	<2.7 #		
n-Butylbenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #	<2 #		
1,2-Dichlorobenzene	<3.7 µg/l	TM208		<3.7	<3.7	<3.7	<3.7		
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208		<9.8	<9.8	<9.8	<9.8		
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208		<2.3 #	<2.3 #	<2.3 #	<2.3 #		
Hexachlorobutadiene	<2.5 µg/l	TM208		<2.5 #	<2.5 #	<2.5 #	<2.5 #		
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #		
Naphthalene	<3.5 µg/l	TM208		3020 #	<3.5 #	6080 #	<3.5 #		
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208		<3.1 #	<3.1 #	<3.1 #	<3.1 #		
1,3,5-Trichlorobenzene	<10 µg/l	TM208		<10	<10	<10	<10		

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10-7

NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate		
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	3376168	3376169	3376182	3376170	3376178	3376188	3376166	3376177	3376181	3376186
Customer Sample Ref.	A3	A4	A11	C7	C11	D1	D5	E8	F11	G2
AGS Ref.	EW007	EW007	EW007	EW007	EW007	EW007	EW007	EW007	EW007	EW007
Depth	2.00 - 3.00	2.00 - 3.00	1.80 - 2.30	4.00 - 6.00	1.50 - 2.00	3.00 - 4.00	1.80 - 2.40	1.50 - 2.50	4.00 - 5.00	3.50 - 4.50
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammoniacal Nitrogen	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011
Anions by Kone (w)	09-May-2011	06-May-2011	06-May-2011	09-May-2011	09-May-2011	09-May-2011	09-May-2011	09-May-2011	06-May-2011	06-May-2011
Cyanide Comp/Free/Total/Thiocyanate	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	04-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011
Dissolved Metals by ICP-MS	04-May-2011	05-May-2011	05-May-2011	04-May-2011	05-May-2011	04-May-2011	04-May-2011	05-May-2011	05-May-2011	05-May-2011
EPH CWG (Aliphatic) Aqueous GC (W)	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	05-May-2011	06-May-2011	05-May-2011	09-May-2011	06-May-2011
EPH CWG (Aromatic) Aqueous GC (W)	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	05-May-2011	06-May-2011	05-May-2011	09-May-2011	06-May-2011
GRO by GC-FID (W)	07-May-2011	07-May-2011	07-May-2011	09-May-2011	07-May-2011	07-May-2011	07-May-2011	07-May-2011	07-May-2011	09-May-2011
Hexavalent Chromium (w)	10-May-2011	05-May-2011	05-May-2011	10-May-2011	06-May-2011	10-May-2011	10-May-2011	06-May-2011	05-May-2011	05-May-2011
Mercury Dissolved	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011
PAH Spec MS - Aqueous (W)	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011
pH Value	09-May-2011	09-May-2011	09-May-2011	09-May-2011	09-May-2011	09-May-2011	09-May-2011	09-May-2011	09-May-2011	09-May-2011
Phenols by HPLC (W)	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011
Sulphide	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011
TPH CWG (W)	07-May-2011	07-May-2011	07-May-2011	09-May-2011	07-May-2011	07-May-2011	07-May-2011	07-May-2011	09-May-2011	09-May-2011
VOC MS (W)	09-May-2011	09-May-2011	10-May-2011	09-May-2011		10-May-2011				10-May-2011

Lab Sample No(s)	3376184	3376183	3376190	3376179	3376175	3376172	3376173	3376171	3376176
Customer Sample Ref.	G3	G4	G5	G8	H12	J10	K1	K5	M3
AGS Ref.	EW007	EW007	EW007	EW007	EW007	EW007	EW007	EW007	EW007
Depth	4.00 - 5.00	2.80 - 3.00	5.00 - 6.00	1.40 - 2.40	3.00 - 4.00	1.00 - 2.00	3.00 - 4.00	1.00 - 2.00	3.00 - 5.00
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammoniacal Nitrogen	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	05-May-2011	06-May-2011	06-May-2011	06-May-2011
Anions by Kone (w)	09-May-2011	09-May-2011	09-May-2011	06-May-2011	09-May-2011	06-May-2011	09-May-2011	06-May-2011	06-May-2011
Cyanide Comp/Free/Total/Thiocyanate	03-May-2011	03-May-2011	04-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011
Dissolved Metals by ICP-MS	04-May-2011	04-May-2011	04-May-2011	05-May-2011	05-May-2011	05-May-2011	04-May-2011	05-May-2011	05-May-2011
EPH CWG (Aliphatic) Aqueous GC (W)	05-May-2011	09-May-2011	05-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011
EPH CWG (Aromatic) Aqueous GC (W)	05-May-2011	09-May-2011	05-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011
GRO by GC-FID (W)	07-May-2011	07-May-2011	07-May-2011	07-May-2011	07-May-2011	07-May-2011	09-May-2011	09-May-2011	08-May-2011
Hexavalent Chromium (w)	10-May-2011	10-May-2011	10-May-2011	05-May-2011	06-May-2011	05-May-2011	10-May-2011	05-May-2011	05-May-2011
Mercury Dissolved	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011	03-May-2011
PAH Spec MS - Aqueous (W)	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	06-May-2011	10-May-2011	06-May-2011
pH Value	09-May-2011	09-May-2011	09-May-2011	09-May-2011	09-May-2011	09-May-2011	09-May-2011	09-May-2011	09-May-2011
Phenols by HPLC (W)	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	04-May-2011	04-May-2011	05-May-2011	05-May-2011
Sulphide	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011	05-May-2011
TPH CWG (W)	07-May-2011	09-May-2011	07-May-2011	07-May-2011	07-May-2011	07-May-2011	09-May-2011	09-May-2011	08-May-2011
VOC MS (W)		10-May-2011	10-May-2011					09-May-2011	06-May-2011

CERTIFICATE OF ANALYSIS

SDG:	110428-57	**Location:**	Limerick Gasworks	**Order Number:**	4500073063
Job:	D_MOUCHEL_DLG-1	**Customer:**	Mouchel	**Report Number:**	128147
Client Reference:	Limerick Gasworks	**Attention:**	Dave Watts	**Superseded Report:**	

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

12. Results relate only to the items tested

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not
accredited.

19. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

20. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

23. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials -whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute themajor part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

24. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C4 -C10 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DCM	SOXTHERM	IATROSCAN
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GC-MS
HERBICIDES	D&C	HEXANE/ACETONE	SOXTHERM	GC-MS
PESTICIDES	D&C	HEXANE/ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE/ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE/ACETONE	END OVER END	GC-FID
PCB TOT / PCB CON	D&C	HEXANE/ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE/ACETONE	MICROWAVE TM218.	GC-MS
C8-C40 (C8-C40) EZ FLASH	WET	HEXANE/ACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE/ACETONE	SHAKER	GC-EZ
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM/ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH-MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC-MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC-MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC-MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC-MS
PHENOLS-MS	DCM	SOLID PHASE EXTRACTION	GC-MS
TPH by INFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC-MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -
Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

ALcontrol Laboratories

Unit 18A
Rosemount Business Park
Ballycoolin
Dublin 11
Tel : (0035) 3188 29893

Mouchel
Ground Engineering
Rowan House
Lloyd Drive
Cheshire
CH65 9HQ

Attention: Neil Balderstone

CERTIFICATE OF ANALYSIS

Date:	04 November 2011
Customer:	D_MOUCHEL_ELE
Sample Delivery Group (SDG):	111028-8
Your Reference:	
Location:	Limerick Gasworks
Report No:	158057

We received 4 samples on Wednesday October 26, 2011 and 4 of these samples were scheduled for analysis which was completed on Friday November 04, 2011. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
4592745	A11		4.50 - 5.50	25/10/2011
4592747	D1		3.50 - 4.50	25/10/2011
4592744	F11		4.00 - 4.90	25/10/2011
4592746	G2		3.00 - 4.00	25/10/2011

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

LIQUID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			4592747		4592746		4592745		4592744	
Customer Sample Reference			D1		G2		A11		F11	
AGS Reference										
Depth (m)			3.50 - 4.50		3.00 - 4.00		4.50 - 5.50		4.00 - 4.90	
Container			1l glass bottle (D)	60g VOC (ALE215)	PLAS BOT (D)	1l glass bottle (D)	60g VOC (ALE215)	PLAS BOT (D)	1l glass bottle (D)	60g VOC (ALE215)	PLAS BOT (D)	1l glass bottle (D)	60g VOC (ALE215)	PLAS BOT (D)
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 4			X		X		X		X
Anions by Kone (w)	All	NDPs: 0 Tests: 4			X		X		X		X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4	X		X		X		X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 4			X		X		X		X
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 4	X		X		X		X		
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 4	X		X		X		X		
GRO by GC-FID (W)	All	NDPs: 0 Tests: 4		X		X		X		X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 4			X		X		X		X
Mercury Dissolved	All	NDPs: 0 Tests: 4	X		X		X		X		
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 4	X		X		X		X		
pH Value	All	NDPs: 0 Tests: 4			X		X		X		X
Phenols by HPLC (W)	All	NDPs: 0 Tests: 4	X		X		X		X		
Sulphide	All	NDPs: 0 Tests: 4			X		X		X		X
TPH CWG (W)	All	NDPs: 0 Tests: 4	X		X		X		X		
VOC MS (W)	All	NDPs: 0 Tests: 3		X		X		X			

CERTIFICATE OF ANALYSIS

SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	A11	D1	F11	G2		
			Depth (m)	4.50 - 5.50	3.50 - 4.50	4.00 - 4.90	3.00 - 4.00		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	25/10/2011	25/10/2011	25/10/2011	25/10/2011		
			Date Received	26/10/2011	26/10/2011	26/10/2011	26/10/2011		
			SDG Ref	111028-8	111028-8	111028-8	111028-8		
			Lab Sample No.(s)	4592745	4592747	4592744	4592746		
			AGS Reference						
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		4.71 #	9.97 #	32.6 #	40.6 #		
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099		6.06 #	12.8 #	41.9 #	52.2 #		
Sulphide	<0.01 mg/l	TM101		0.285 #	18.1 #	0.168 #	0.035 #		
Arsenic (diss.filt)	<0.12 µg/l	TM152		4.95 #	14.4 #	11.9 #	23.5 #		
Cadmium (diss.filt)	<0.1 µg/l	TM152		<0.1 #	<0.1 #	<0.1 #	<0.1 #		
Chromium (diss.filt)	<0.22 µg/l	TM152		5.9 #	14.7 #	11.1 #	18.3 #		
Copper (diss.filt)	<0.85 µg/l	TM152		<0.85 #	1.5 #	<0.85 #	2.58 #		
Lead (diss.filt)	<0.02 µg/l	TM152		0.518 #	0.092 #	0.136 #	<0.02 #		
Nickel (diss.filt)	<0.15 µg/l	TM152		6.25 #	5.65 #	5.26 #	8.73 #		
Selenium (diss.filt)	<0.39 µg/l	TM152		0.853 #	2.64 #	3.08 #	10.6 #		
Zinc (diss.filt)	<0.41 µg/l	TM152		1.26 #	<0.41 #	<0.41 #	0.572 #		
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	<0.01 #		
Sulphate	<2 mg/l	TM184		68.3 #	397 #	52.6 #	643 #		
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	0.841 #	<0.05 #	1.09 #		
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03 #	<0.03 #	<0.03 #	<0.03 #		
pH	<1 pH Units	TM256		7.06 #	7.31 #	7.13 #	7.56 #		
Resorcinol	<0.01 mg/l	TM259		<0.01	<0.01	<0.01	<0.01		
Catechol	<0.01 mg/l	TM259		<0.01	<0.01	<0.01	<0.01		
Phenol	<0.002 mg/l	TM259		<0.002 #	0.01 #	0.03 #	1.65 #		
Cresols	<0.006 mg/l	TM259		<0.006 #	0.06 #	0.38 #	4.56 #		
Xylenols	<0.008 mg/l	TM259		<0.008 #	0.77 #	1.82 #	10.6 #		
1-Naphthol	<0.01 mg/l	TM259		<0.01	0.07	<0.01	<0.01		
2,3,5-Trimethylphenol	<0.003 mg/l	TM259		<0.003 #	<0.003 #	<0.003 #	<0.003 #		
2-Isopropylphenol	<0.006 mg/l	TM259		<0.006 #	1.56 #	1.61 #	4.86 #		
Phenols, Total Detected 5 speciated	<0.025 mg/l	TM259		<0.025	2.4	3.84	21.7		

CERTIFICATE OF ANALYSIS

SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	A11	D1	F11	G2		
			Depth (m)	4.50 - 5.50	3.50 - 4.50	4.00 - 4.90	3.00 - 4.00		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	25/10/2011	25/10/2011	25/10/2011	25/10/2011		
			Date Received	26/10/2011	26/10/2011	26/10/2011	26/10/2011		
			SDG Ref	111028-8	111028-8	111028-8	111028-8		
			Lab Sample No.(s)	4592745	4592747	4592744	4592746		
			AGS Reference						
Naphthalene (aq)	<0.1 µg/l	TM178		17.6 #	18.7 #	0.559 #	6.56 #		
Acenaphthene (aq)	<0.015 µg/l	TM178		11.4 #	54.9 #	0.0599 #	20.9 #		
Acenaphthylene (aq)	<0.011 µg/l	TM178		19.7 #	54.3 #	0.233 #	18.3 #		
Fluoranthene (aq)	<0.017 µg/l	TM178		84.4 #	110 #	0.669 #	3.78 #		
Anthracene (aq)	<0.015 µg/l	TM178		12.6 #	33.1 #	0.115 #	2.23 #		
Phenanthrene (aq)	<0.022 µg/l	TM178		37.3 #	90.9 #	0.209 #	16 #		
Fluorene (aq)	<0.014 µg/l	TM178		15.7 #	71.7 #	0.0696 #	11.9 #		
Chrysene (aq)	<0.013 µg/l	TM178		53.7 #	15.6 #	0.422 #	0.423 #		
Pyrene (aq)	<0.015 µg/l	TM178		69.5 #	67.4 #	0.583 #	2.23 #		
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		53.3 #	19.6 #	0.45 #	0.549 #		
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		81.1 #	12.9 #	0.964 #	0.218 #		
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		76.6 #	9.45 #	0.592 #	0.253 #		
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		95.1 #	13.4 #	0.819 #	0.274 #		
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		18.4 #	1.95 #	0.205 #	0.037 #		
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		59.1 #	6.98 #	0.636 #	0.0943 #		
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		53.6 #	6.81 #	0.773 #	0.097 #		
PAH, Total Detected USEPA 16 (aq)	<0.247 µg/l	TM178		759	587	7.36	83.8		

CERTIFICATE OF ANALYSIS

SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	A11	D1	F11	G2		
			Depth (m)	4.50 - 5.50	3.50 - 4.50	4.00 - 4.90	3.00 - 4.00		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	25/10/2011	25/10/2011	25/10/2011	25/10/2011		
			Date Received	26/10/2011	26/10/2011	26/10/2011	26/10/2011		
			SDG Ref	111028-8	111028-8	111028-8	111028-8		
			Lab Sample No.(s)	4592745	4592747	4592744	4592746		
			AGS Reference						
GRO Surrogate % recovery**	%	TM245		95 §	91 §	94 §	90 §		
GRO >C5-C12	<50 µg/l	TM245		540 § #	6560 § #	994 § #	17700 § #		
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 § #	<3 § #	<3 § #	<3 § #		
Benzene	<7 µg/l	TM245		9 § #	654 § #	186 § #	4250 § #		
Toluene	<4 µg/l	TM245		51 § #	439 § #	165 § #	3200 § #		
Ethylbenzene	<5 µg/l	TM245		7 § #	185 § #	18 § #	387 § #		
m,p-Xylene	<8 µg/l	TM245		44 § #	547 § #	91 § #	1560 § #		
o-Xylene	<3 µg/l	TM245		24 § #	293 § #	54 § #	870 § #		
Sum of detected Xylenes	<11 µg/l	TM245		68 §	840 §	145 §	2430 §		
Sum of detected BTEX	<28 µg/l	TM245		135 §	2120 §	514 §	10300 §		
Aliphatics >C5-C6	<10 µg/l	TM245		<10 §	12 §	<10 §	29 §		
Aliphatics >C6-C8	<10 µg/l	TM245		<10 §	103 §	31 §	236 §		
Aliphatics >C8-C10	<10 µg/l	TM245		54 §	479 §	74 §	990 §		
Aliphatics >C10-C12	<10 µg/l	TM245		184 §	2120 §	192 §	3340 §		
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	70	<10	<10		
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	96	<10	<10		
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	61	<10	<10		
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	227	<10	<10		
Aromatics >EC5-EC7	<10 µg/l	TM245		<10 §	654 §	186 §	4250 §		
Aromatics >EC7-EC8	<10 µg/l	TM245		51 §	439 §	165 §	3200 §		
Aromatics >EC8-EC10	<10 µg/l	TM245		111 §	1340 §	213 §	3480 §		
Aromatics >EC10-EC12	<10 µg/l	TM245		122 §	1410 §	128 §	2230 §		
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		32	1630	475	3440		
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		21	719	21	262		
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		55	282	12	32		
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		108	2630	508	3730		
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		648	9420	1500	21500		

CERTIFICATE OF ANALYSIS

SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	A11	D1	G2
			Depth (m)	4.50 - 5.50	3.50 - 4.50	3.00 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	25/10/2011	25/10/2011	25/10/2011
			Date Received	26/10/2011	26/10/2011	26/10/2011
			SDG Ref	111028-8	111028-8	111028-8
			Lab Sample No.(s)	4592745	4592747	4592746
			AGS Reference			
Dibromofluoromethane**	%	TM208		103 §	103 §	105 §
Toluene-d8**	%	TM208		99.5 §	99.9 §	100 §
4-Bromofluorobenzene**	%	TM208		98.2 §	95.2 §	95 §
Dichlorodifluoromethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Chloromethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Vinyl chloride	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Bromomethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Chloroethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Trichlorofluoromethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
1,1-Dichloroethene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Carbon disulphide	<1 µg/l	TM208		<1 § #	1.34 § #	3.2 § #
Dichloromethane	<3 µg/l	TM208		<3 § #	<3 § #	<3 § #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
1,1-Dichloroethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
2,2-Dichloropropane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Bromochloromethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Chloroform	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
1,1-Dichloropropene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Carbontetrachloride	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
1,2-Dichloroethane	<1 µg/l	TM208		<1 §	<1 §	<1 §
Benzene	<1 µg/l	TM208		8.82 § #	710 #	3500 #
Trichloroethene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
1,2-Dichloropropane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Dibromomethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Bromodichloromethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Toluene	<1 µg/l	TM208		53.1 § #	478 § #	2690 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
1,1,2-Trichloroethane	<1 µg/l	TM208		1.92 § #	<1 § #	<1 § #
1,3-Dichloropropane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Tetrachloroethene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Dibromochloromethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #

CERTIFICATE OF ANALYSIS

SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	A11	D1	G2			
			Depth (m)	4.50 - 5.50	3.50 - 4.50	3.00 - 4.00			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	25/10/2011	25/10/2011	25/10/2011			
			Date Received	26/10/2011	26/10/2011	26/10/2011			
			SDG Ref	111028-8	111028-8	111028-8			
			Lab Sample No.(s)	4592745	4592747	4592746			
			AGS Reference						
1,2-Dibromoethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
Chlorobenzene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
Ethylbenzene	<1 µg/l	TM208		6.01 § #	192 § #	417 § #			
m,p-Xylene	<1 µg/l	TM208		41.5 § #	582 § #	1290 #			
o-Xylene	<1 µg/l	TM208		21.8 § #	322 § #	735 #			
Styrene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
Bromoform	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
Isopropylbenzene	<1 µg/l	TM208		<1 § #	18.8 § #	27.4 § #			
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 §	<1 §	<1 §			
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
Bromobenzene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
Propylbenzene	<1 µg/l	TM208		<1 § #	23.9 § #	31.3 § #			
2-Chlorotoluene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
1,3,5-Trimethylbenzene	<1 µg/l	TM208		5.77 § #	65.8 § #	94.3 § #			
4-Chlorotoluene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
tert-Butylbenzene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
1,2,4-Trimethylbenzene	<1 µg/l	TM208		16.7 § #	213 § #	375 § #			
sec-Butylbenzene	<1 µg/l	TM208		<1 § #	1.82 § #	<1 § #			
4-iso-Propyltoluene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
n-Butylbenzene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 §	<1 §	<1 §			
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1 §	<1 §	<1 §			
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
Hexachlorobutadiene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
Naphthalene	<1 µg/l	TM208		121 § #	3680 #	3440 #			
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1 §	<1 §	<1 §			

CERTIFICATE OF ANALYSIS

SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Notification of Deviating Samples

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
4598959	F11	4.00 - 4.90	LIQUID	GRO by GC-FID (W)	Aliphatics >C10-C12	Volatile container not received
4598959	F11	4.00 - 4.90	LIQUID	GRO by GC-FID (W)	Aliphatics >C5-C6	Volatile container not received
4598959	F11	4.00 - 4.90	LIQUID	GRO by GC-FID (W)	Aliphatics >C6-C8	Volatile container not received
4598959	F11	4.00 - 4.90	LIQUID	GRO by GC-FID (W)	Aliphatics >C8-C10	Volatile container not received
4598959	F11	4.00 - 4.90	LIQUID	GRO by GC-FID (W)	Aromatics >EC10-EC12	Volatile container not received
4598959	F11	4.00 - 4.90	LIQUID	GRO by GC-FID (W)	Aromatics >EC5-EC7	Volatile container not received
4598959	F11	4.00 - 4.90	LIQUID	GRO by GC-FID (W)	Aromatics >EC7-EC8	Volatile container not received
4598959	F11	4.00 - 4.90	LIQUID	GRO by GC-FID (W)	Aromatics >EC8-EC10	Volatile container not received
4598959	F11	4.00 - 4.90	LIQUID	GRO by GC-FID (W)	Benzene	Volatile container not received
4598959	F11	4.00 - 4.90	LIQUID	GRO by GC-FID (W)	Ethylbenzene	Volatile container not received
4598959	F11	4.00 - 4.90	LIQUID	GRO by GC-FID (W)	GRO >C5-C12	Volatile container not received
4598959	F11	4.00 - 4.90	LIQUID	GRO by GC-FID (W)	GRO Surrogate % recovery**	Volatile container not received
4598959	F11	4.00 - 4.90	LIQUID	GRO by GC-FID (W)	m,p-Xylene	Volatile container not received
4598959	F11	4.00 - 4.90	LIQUID	GRO by GC-FID (W)	Methyl tertiary butyl ether (MTBE)	Volatile container not received
4598959	F11	4.00 - 4.90	LIQUID	GRO by GC-FID (W)	o-Xylene	Volatile container not received
4598959	F11	4.00 - 4.90	LIQUID	GRO by GC-FID (W)	Sum of detected BTEX	Volatile container not received
4598959	F11	4.00 - 4.90	LIQUID	GRO by GC-FID (W)	Sum of detected Xylenes	Volatile container not received
4598959	F11	4.00 - 4.90	LIQUID	GRO by GC-FID (W)	Toluene	Volatile container not received
4598972	A11	4.50 - 5.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C10-C12	Volatile container not received
4598972	A11	4.50 - 5.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C5-C6	Volatile container not received
4598972	A11	4.50 - 5.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C6-C8	Volatile container not received
4598972	A11	4.50 - 5.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C8-C10	Volatile container not received
4598972	A11	4.50 - 5.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC10-EC12	Volatile container not received
4598972	A11	4.50 - 5.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC5-EC7	Volatile container not received
4598972	A11	4.50 - 5.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC7-EC8	Volatile container not received
4598972	A11	4.50 - 5.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC8-EC10	Volatile container not received
4598972	A11	4.50 - 5.50	LIQUID	GRO by GC-FID (W)	Benzene	Volatile container not received
4598972	A11	4.50 - 5.50	LIQUID	GRO by GC-FID (W)	Ethylbenzene	Volatile container not received
4598972	A11	4.50 - 5.50	LIQUID	GRO by GC-FID (W)	GRO >C5-C12	Volatile container not received
4598972	A11	4.50 - 5.50	LIQUID	GRO by GC-FID (W)	GRO Surrogate % recovery**	Volatile container not received
4598972	A11	4.50 - 5.50	LIQUID	GRO by GC-FID (W)	m,p-Xylene	Volatile container not received
4598972	A11	4.50 - 5.50	LIQUID	GRO by GC-FID (W)	Methyl tertiary butyl ether (MTBE)	Volatile container not received
4598972	A11	4.50 - 5.50	LIQUID	GRO by GC-FID (W)	o-Xylene	Volatile container not received
4598972	A11	4.50 - 5.50	LIQUID	GRO by GC-FID (W)	Sum of detected BTEX	Volatile container not received
4598972	A11	4.50 - 5.50	LIQUID	GRO by GC-FID (W)	Sum of detected Xylenes	Volatile container not received
4598972	A11	4.50 - 5.50	LIQUID	GRO by GC-FID (W)	Toluene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,1,1,2-Tetrachloroethane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,1,1-Trichloroethane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,1,2,2-Tetrachloroethane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,1,2-Trichloroethane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,1-Dichloroethane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,1-Dichloroethene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,1-Dichloropropene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,2,3-Trichlorobenzene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,2,3-Trichloropropane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,2,4-Trichlorobenzene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,2,4-Trimethylbenzene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,2-Dibromo-3-chloropropane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,2-Dibromoethane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,2-Dichlorobenzene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,2-Dichloroethane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,2-Dichloropropane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,3,5-Trichlorobenzene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,3,5-Trimethylbenzene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,3-Dichlorobenzene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,3-Dichloropropane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	1,4-Dichlorobenzene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	2,2-Dichloropropane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	2-Chlorotoluene	Volatile container not received

CERTIFICATE OF ANALYSIS

SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	4-Bromofluorobenzene**	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	4-Chlorotoluene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	4-iso-Propyltoluene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Benzene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Bromobenzene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Bromochloromethane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Bromodichloromethane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Bromoform	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Bromomethane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Carbon disulphide	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Carbontetrachloride	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Chlorobenzene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Chloroethane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Chloroform	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Chloromethane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	cis-1,2-Dichloroethene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	cis-1,3-Dichloropropene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Dibromochloromethane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Dibromofluoromethane**	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Dibromomethane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Dichlorodifluoromethane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Dichloromethane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Ethylbenzene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Hexachlorobutadiene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Isopropylbenzene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	m,p-Xylene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Methyl tertiary butyl ether (MTBE)	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Naphthalene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	n-Butylbenzene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	o-Xylene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Propylbenzene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	sec-Butylbenzene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Styrene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	tert-Amyl methyl ether (TAME)	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	tert-Butylbenzene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Tetrachloroethene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Toluene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Toluene-d8**	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	trans-1,2-Dichloroethene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	trans-1,3-Dichloropropene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Trichloroethene	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Trichlorofluoromethane	Volatile container not received
4598978	A11	4.50 - 5.50	LIQUID	VOC MS (W)	Vinyl chloride	Volatile container not received
4598985	G2	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C10-C12	Volatile container not received
4598985	G2	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C5-C6	Volatile container not received
4598985	G2	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C6-C8	Volatile container not received
4598985	G2	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C8-C10	Volatile container not received
4598985	G2	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC10-EC12	Volatile container not received
4598985	G2	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC5-EC7	Volatile container not received
4598985	G2	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC7-EC8	Volatile container not received
4598985	G2	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC8-EC10	Volatile container not received
4598985	G2	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Benzene	Volatile container not received
4598985	G2	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Ethylbenzene	Volatile container not received
4598985	G2	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	GRO >C5-C12	Volatile container not received
4598985	G2	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	GRO Surrogate % recovery**	Volatile container not received
4598985	G2	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	m,p-Xylene	Volatile container not received
4598985	G2	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Methyl tertiary butyl ether (MTBE)	Volatile container not received
4598985	G2	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	o-Xylene	Volatile container not received
4598985	G2	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Sum of detected BTEX	Volatile container not received
4598985	G2	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Sum of detected Xylenes	Volatile container not received

CERTIFICATE OF ANALYSIS

SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
4598985	G2	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Toluene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,1,1,2-Tetrachloroethane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,1,1-Trichloroethane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,1,2,2-Tetrachloroethane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,1,2-Trichloroethane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,1-Dichloroethane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,1-Dichloroethene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,1-Dichloropropene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,2,3-Trichlorobenzene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,2,3-Trichloropropane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,2,4-Trichlorobenzene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,2,4-Trimethylbenzene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,2-Dibromo-3-chloropropane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,2-Dibromoethane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,2-Dichlorobenzene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,2-Dichloroethane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,2-Dichloropropane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,3,5-Trichlorobenzene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,3,5-Trimethylbenzene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,3-Dichlorobenzene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,3-Dichloropropane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	1,4-Dichlorobenzene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	2,2-Dichloropropane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	2-Chlorotoluene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	4-Bromofluorobenzene**	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	4-Chlorotoluene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	4-iso-Propyltoluene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Benzene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Bromobenzene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Bromochloromethane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Bromodichloromethane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Bromoform	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Bromomethane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Carbon disulphide	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Carbontetrachloride	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Chlorobenzene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Chloroethane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Chloroform	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Chloromethane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	cis-1,2-Dichloroethene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	cis-1,3-Dichloropropene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Dibromochloromethane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Dibromofluoromethane**	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Dibromomethane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Dichlorodifluoromethane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Dichloromethane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Ethylbenzene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Hexachlorobutadiene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Isopropylbenzene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	m,p-Xylene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Methyl tertiary butyl ether (MTBE)	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Naphthalene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	n-Butylbenzene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	o-Xylene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Propylbenzene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	sec-Butylbenzene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Styrene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	tert-Amyl methyl ether (TAME)	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	tert-Butylbenzene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Tetrachloroethene	Volatile container not received

CERTIFICATE OF ANALYSIS

SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Toluene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Toluene-d8**	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	trans-1,2-Dichloroethene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	trans-1,3-Dichloropropene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Trichloroethene	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Trichlorofluoromethane	Volatile container not received
4598992	G2	3.00 - 4.00	LIQUID	VOC MS (W)	Vinyl chloride	Volatile container not received
4599008	D1	3.50 - 4.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C10-C12	Volatile container not received
4599008	D1	3.50 - 4.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C5-C6	Volatile container not received
4599008	D1	3.50 - 4.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C6-C8	Volatile container not received
4599008	D1	3.50 - 4.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C8-C10	Volatile container not received
4599008	D1	3.50 - 4.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC10-EC12	Volatile container not received
4599008	D1	3.50 - 4.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC5-EC7	Volatile container not received
4599008	D1	3.50 - 4.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC7-EC8	Volatile container not received
4599008	D1	3.50 - 4.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC8-EC10	Volatile container not received
4599008	D1	3.50 - 4.50	LIQUID	GRO by GC-FID (W)	Benzene	Volatile container not received
4599008	D1	3.50 - 4.50	LIQUID	GRO by GC-FID (W)	Ethylbenzene	Volatile container not received
4599008	D1	3.50 - 4.50	LIQUID	GRO by GC-FID (W)	GRO >C5-C12	Volatile container not received
4599008	D1	3.50 - 4.50	LIQUID	GRO by GC-FID (W)	GRO Surrogate % recovery**	Volatile container not received
4599008	D1	3.50 - 4.50	LIQUID	GRO by GC-FID (W)	m,p-Xylene	Volatile container not received
4599008	D1	3.50 - 4.50	LIQUID	GRO by GC-FID (W)	Methyl tertiary butyl ether (MTBE)	Volatile container not received
4599008	D1	3.50 - 4.50	LIQUID	GRO by GC-FID (W)	o-Xylene	Volatile container not received
4599008	D1	3.50 - 4.50	LIQUID	GRO by GC-FID (W)	Sum of detected BTEX	Volatile container not received
4599008	D1	3.50 - 4.50	LIQUID	GRO by GC-FID (W)	Sum of detected Xylenes	Volatile container not received
4599008	D1	3.50 - 4.50	LIQUID	GRO by GC-FID (W)	Toluene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,1,1,2-Tetrachloroethane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,1,1-Trichloroethane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,1,2,2-Tetrachloroethane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,1,2-Trichloroethane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,1-Dichloroethane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,1-Dichloroethene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,1-Dichloropropene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,2,3-Trichlorobenzene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,2,3-Trichloropropane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,2,4-Trichlorobenzene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,2,4-Trimethylbenzene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,2-Dibromo-3-chloropropane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,2-Dibromoethane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,2-Dichlorobenzene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,2-Dichloroethane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,2-Dichloropropane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,3,5-Trichlorobenzene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,3,5-Trimethylbenzene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,3-Dichlorobenzene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,3-Dichloropropane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	1,4-Dichlorobenzene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	2,2-Dichloropropane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	2-Chlorotoluene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	4-Bromofluorobenzene**	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	4-Chlorotoluene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	4-iso-Propyltoluene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Benzene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Bromobenzene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Bromochloromethane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Bromodichloromethane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Bromoform	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Bromomethane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Carbon disulphide	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Carbontetrachloride	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Chlorobenzene	Volatile container not received

CERTIFICATE OF ANALYSIS

SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Chloroethane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Chloroform	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Chloromethane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	cis-1,2-Dichloroethene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	cis-1,3-Dichloropropene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Dibromochloromethane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Dibromofluoromethane**	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Dibromomethane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Dichlorodifluoromethane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Dichloromethane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Ethylbenzene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Hexachlorobutadiene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Isopropylbenzene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	m,p-Xylene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Methyl tertiary butyl ether (MTBE)	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Naphthalene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	n-Butylbenzene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	o-Xylene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Propylbenzene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	sec-Butylbenzene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Styrene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	tert-Amyl methyl ether (TAME)	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	tert-Butylbenzene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Tetrachloroethene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Toluene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Toluene-d8**	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	trans-1,2-Dichloroethene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	trans-1,3-Dichloropropene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Trichloroethene	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Trichlorofluoromethane	Volatile container not received
4599013	D1	3.50 - 4.50	LIQUID	VOC MS (W)	Vinyl chloride	Volatile container not received

Note : Test results may be compromised

CERTIFICATE OF ANALYSIS

SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10-7

NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate		
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Test Completion Dates

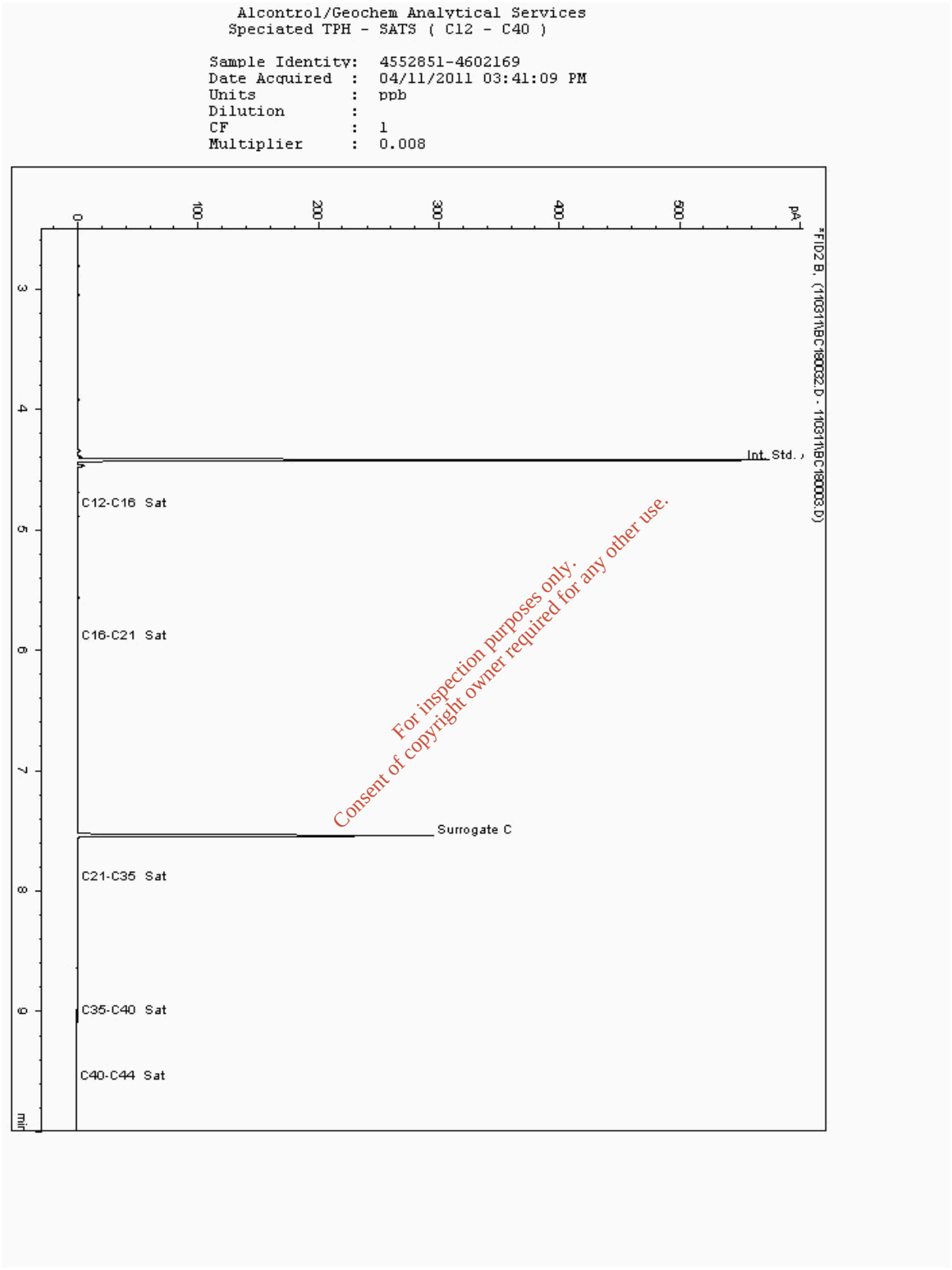
Lab Sample No(s)	4592745	4592747	4592744	4592746
Customer Sample Ref.	A11	D1	F11	G2
AGS Ref.				
Depth	4.50 - 5.50	3.50 - 4.50	4.00 - 4.90	3.00 - 4.00
Type	LIQUID	LIQUID	LIQUID	LIQUID
Ammoniacal Nitrogen	31-Oct-2011	31-Oct-2011	31-Oct-2011	31-Oct-2011
Anions by Kone (w)	02-Nov-2011	02-Nov-2011	02-Nov-2011	02-Nov-2011
Cyanide Comp/Free/Total/Thiocyanate	31-Oct-2011	31-Oct-2011	31-Oct-2011	31-Oct-2011
Dissolved Metals by ICP-MS	31-Oct-2011	31-Oct-2011	31-Oct-2011	31-Oct-2011
EPH CWG (Aliphatic) Aqueous GC (W)	04-Nov-2011	04-Nov-2011	04-Nov-2011	04-Nov-2011
EPH CWG (Aromatic) Aqueous GC (W)	04-Nov-2011	04-Nov-2011	04-Nov-2011	04-Nov-2011
GRO by GC-FID (W)	30-Oct-2011	30-Oct-2011	30-Oct-2011	30-Oct-2011
Hexavalent Chromium (w)	01-Nov-2011	01-Nov-2011	01-Nov-2011	01-Nov-2011
Mercury Dissolved	31-Oct-2011	31-Oct-2011	31-Oct-2011	31-Oct-2011
PAH Spec MS - Aqueous (W)	04-Nov-2011	04-Nov-2011	04-Nov-2011	04-Nov-2011
pH Value	31-Oct-2011	31-Oct-2011	31-Oct-2011	31-Oct-2011
Phenols by HPLC (W)	01-Nov-2011	01-Nov-2011	01-Nov-2011	01-Nov-2011
Sulphide	02-Nov-2011	01-Nov-2011	02-Nov-2011	01-Nov-2011
TPH CWG (W)	04-Nov-2011	04-Nov-2011	04-Nov-2011	04-Nov-2011
VOC MS (W)	29-Oct-2011	31-Oct-2011		31-Oct-2011

CERTIFICATE OF ANALYSIS

SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 4602169 **Sample ID :** G2 **Depth :** 3.00 - 4.00



CERTIFICATE OF ANALYSIS

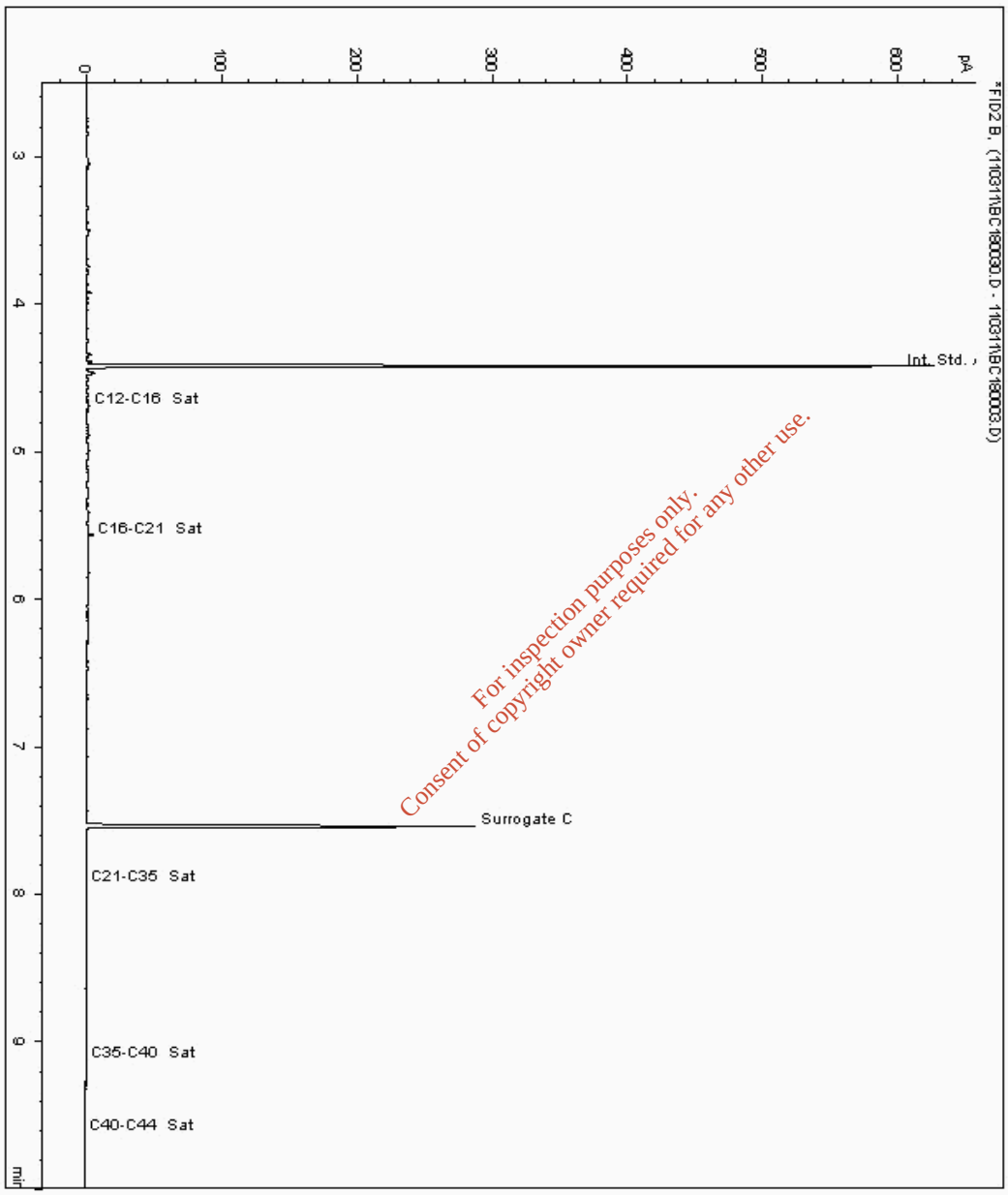
SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 4602232 **Sample ID :** D1 **Depth :** 3.50 - 4.50

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 4552882-4602232
Date Acquired : 04/11/2011 03:08:42 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

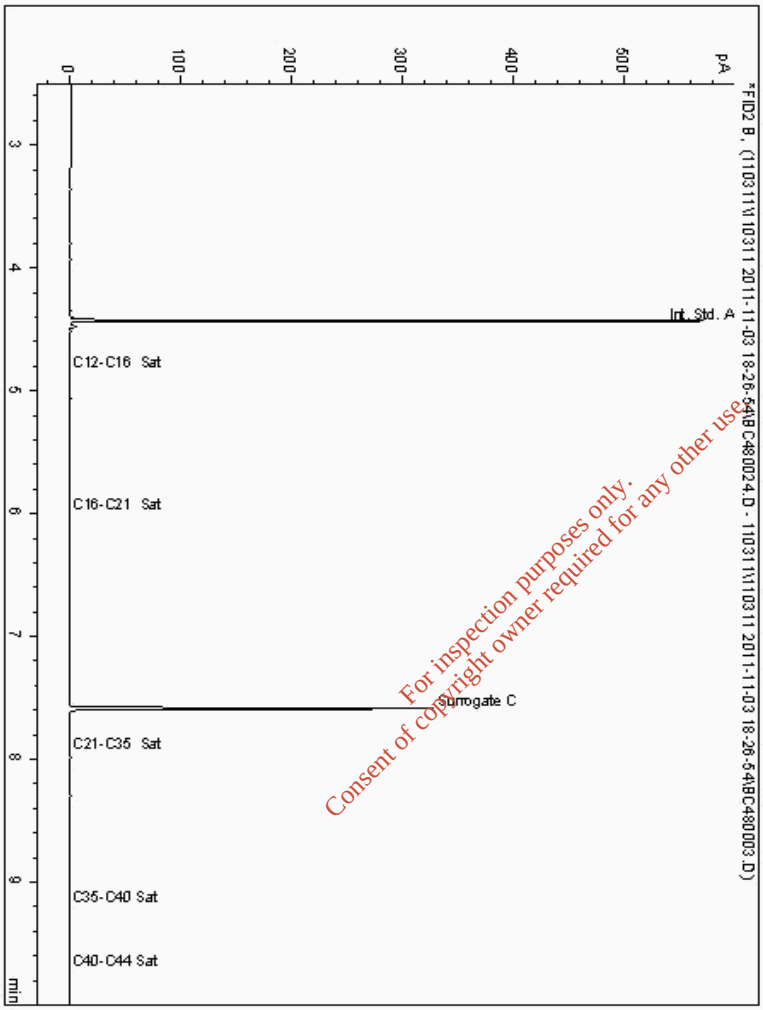
SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 4602298 **Sample ID :** F11 **Depth :** 4.00 - 4.90

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 4552793-4602298
Date Acquired : 04/11/11 01:14:56
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

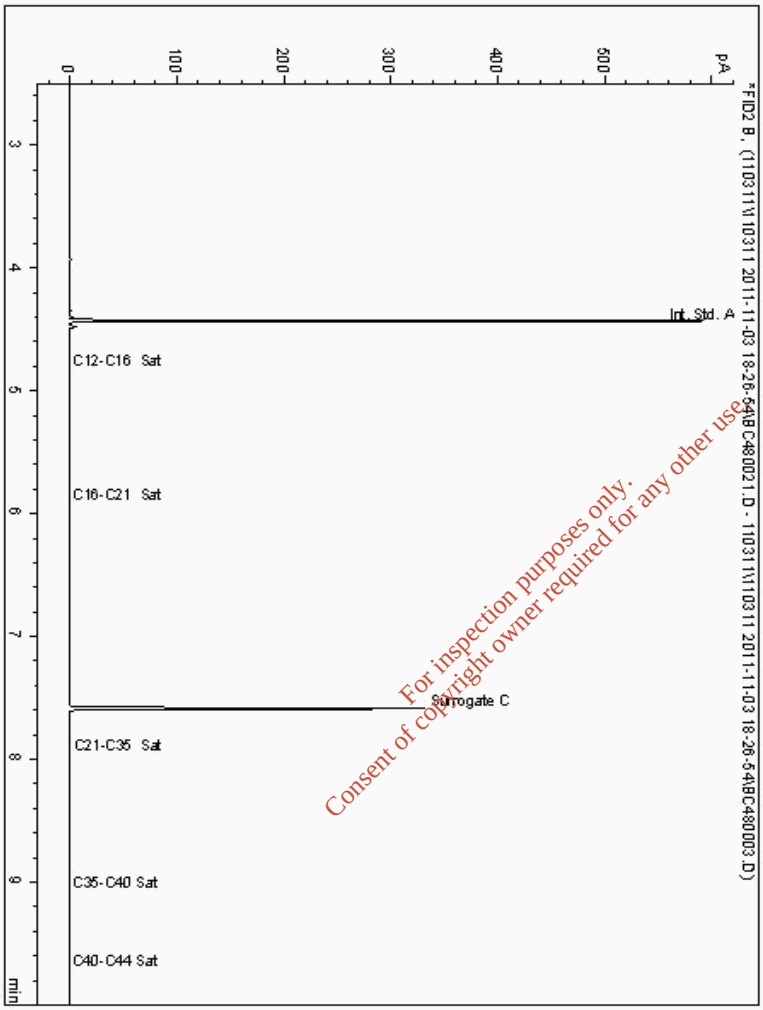
SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 4602365 **Sample ID :** A11 **Depth :** 4.50 - 5.50

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 4552829-4602365
Date Acquired : 04/11/11 00:26:47
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

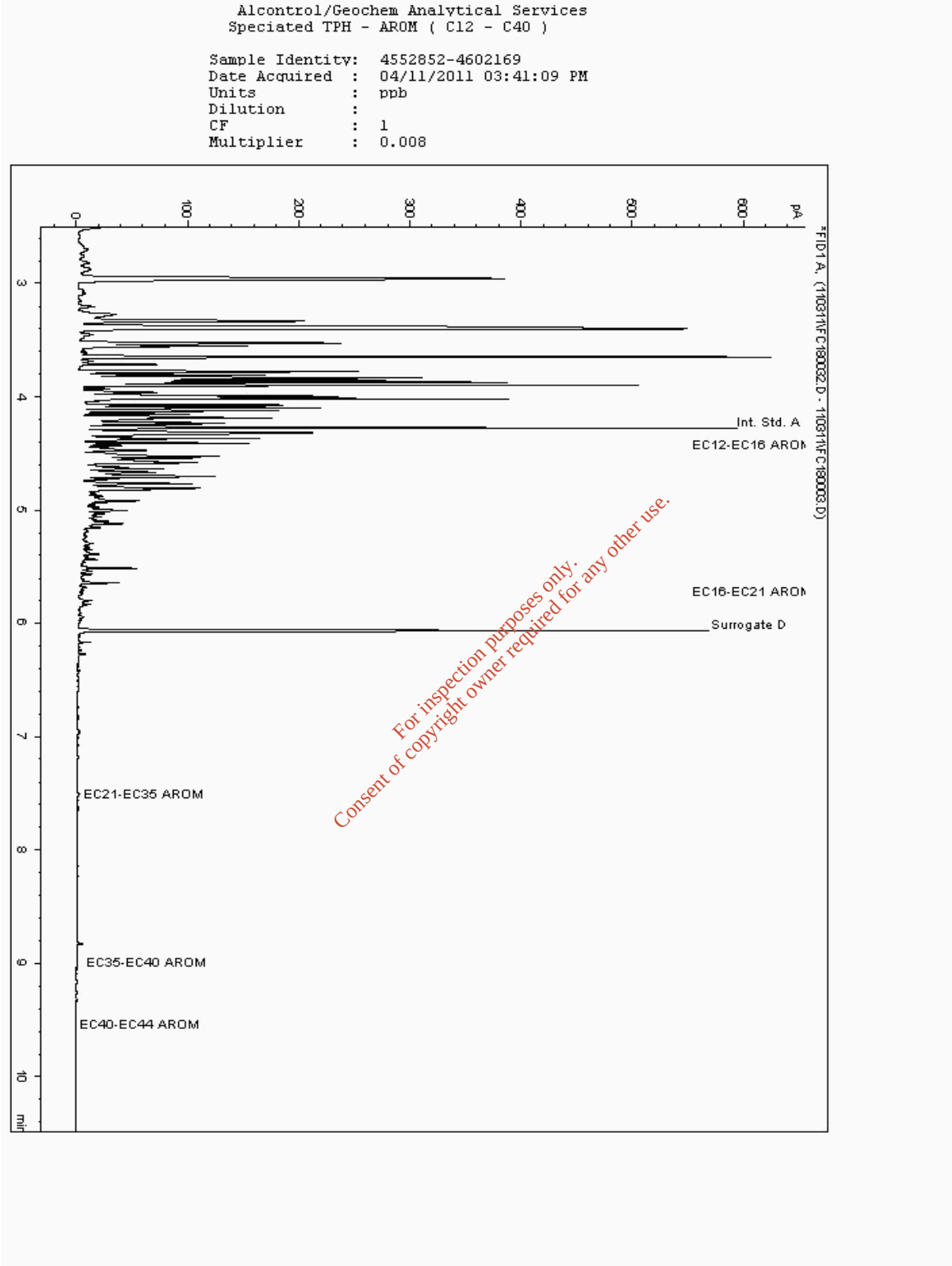


CERTIFICATE OF ANALYSIS

SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 4602169 **Sample ID :** G2 **Depth :** 3.00 - 4.00

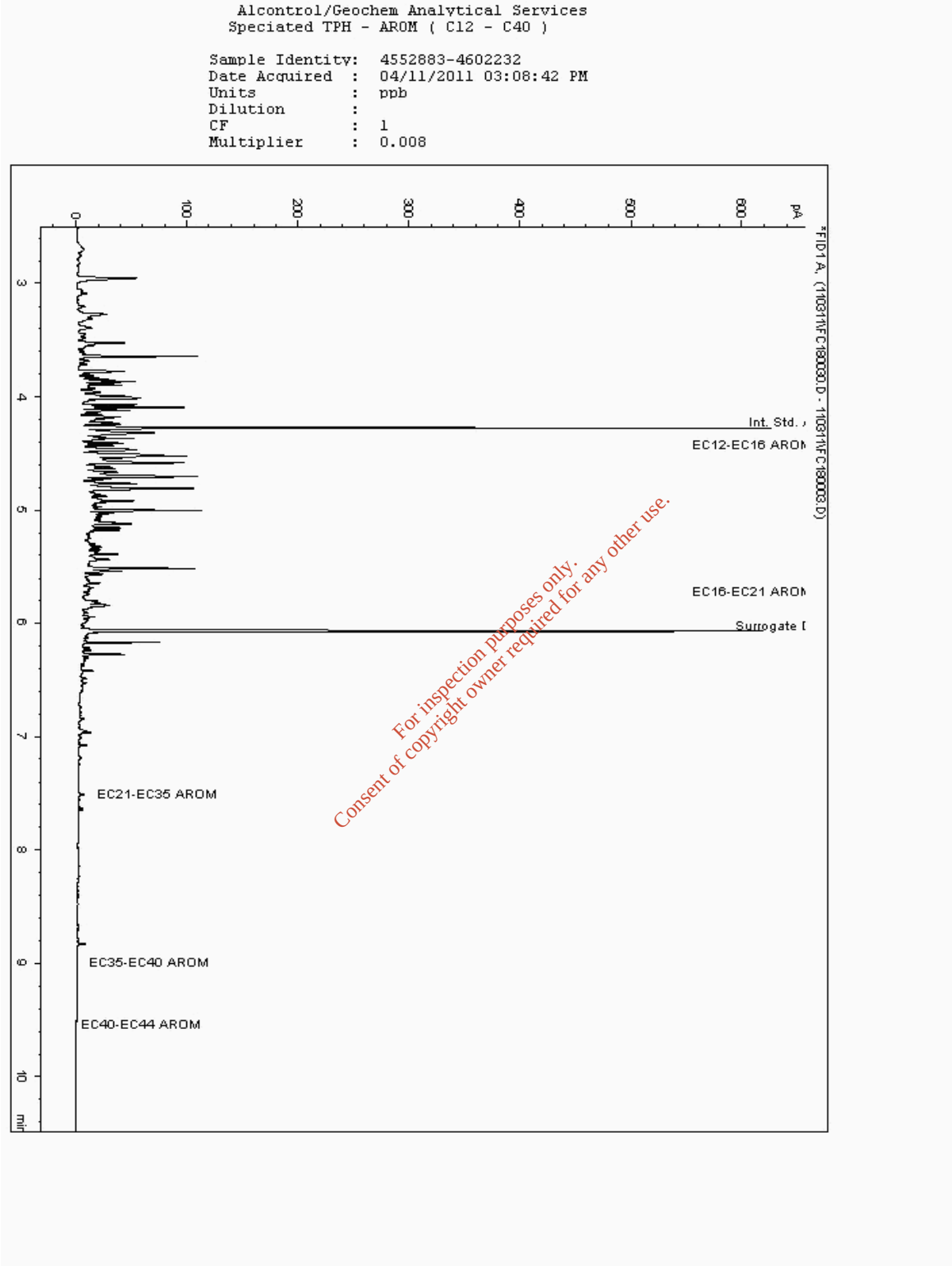


CERTIFICATE OF ANALYSIS

SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 4602232 **Sample ID :** D1 **Depth :** 3.50 - 4.50



CERTIFICATE OF ANALYSIS

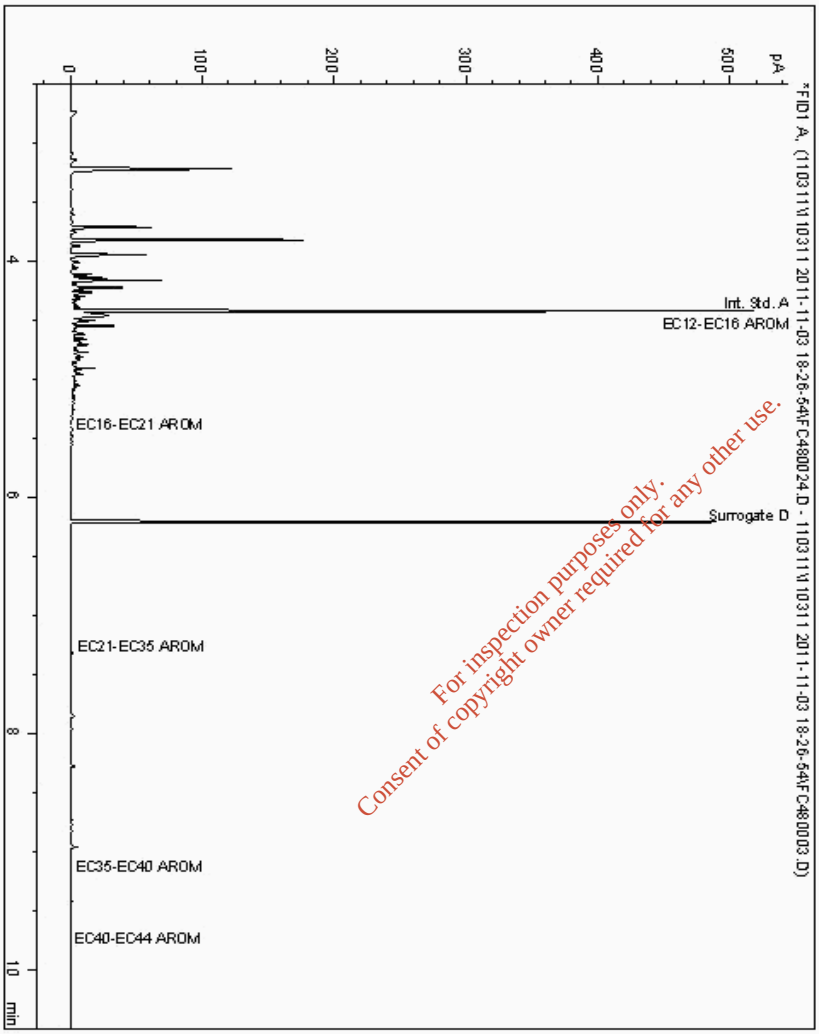
SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 4602298 **Sample ID :** F11 **Depth :** 4.00 - 4.90

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 4552794-4602298
Date Acquired : 04/11/11 01:14:56
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

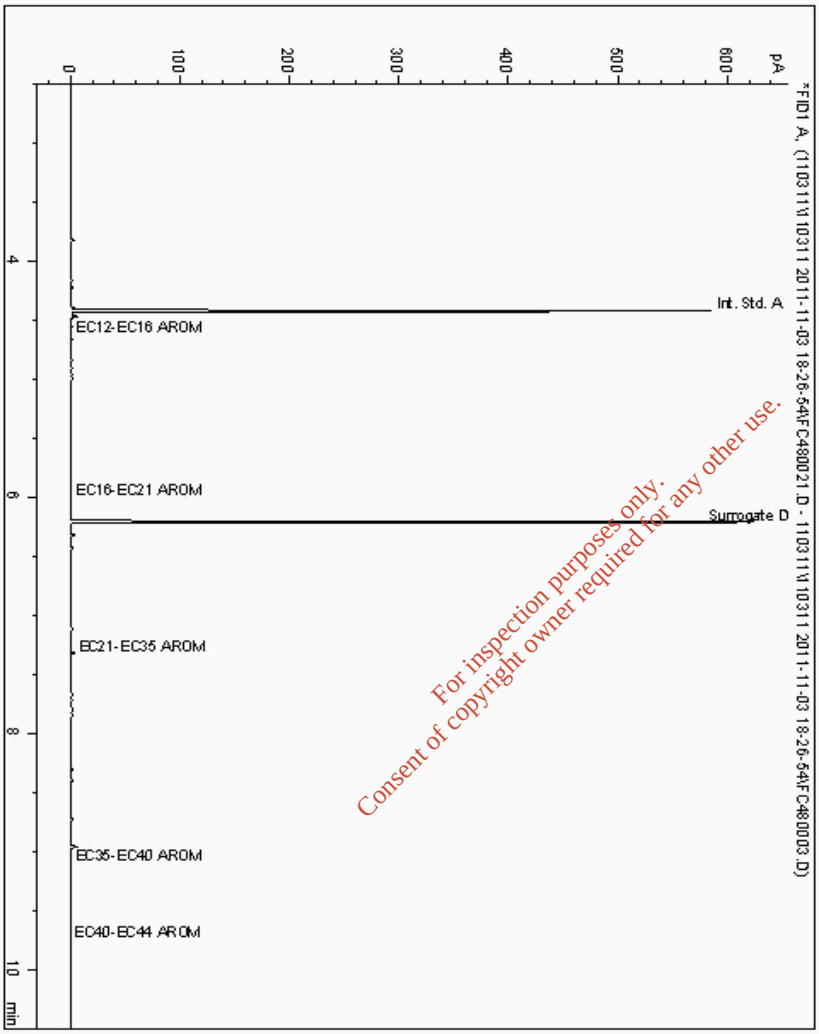
SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 4602365 **Sample ID :** A11 **Depth :** 4.50 - 5.50

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 4552830-4602365
Date Acquired : 04/11/11 00:26:47
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

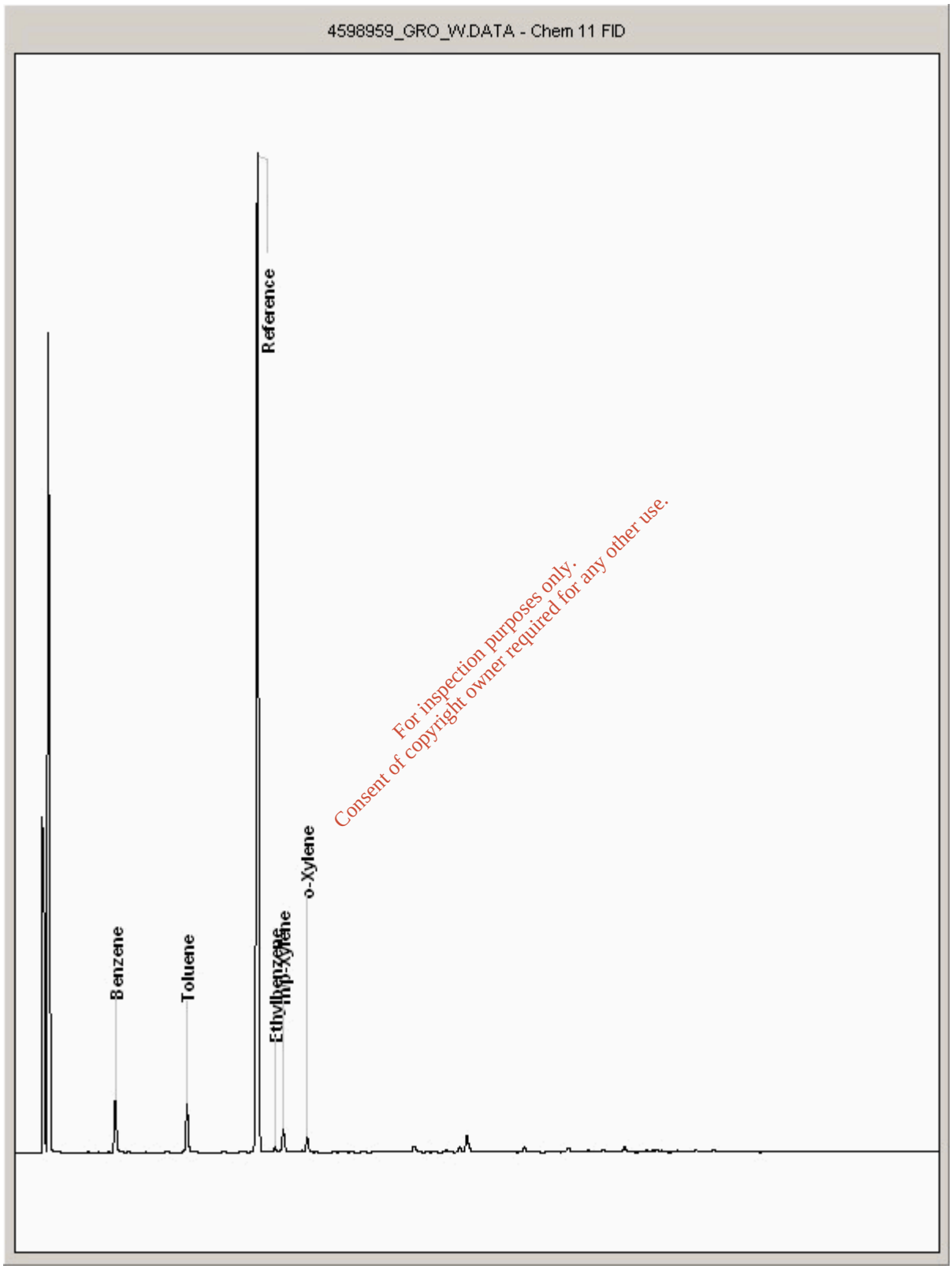
SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4598959
Sample ID : F11

Depth : 4.00 - 4.90



CERTIFICATE OF ANALYSIS

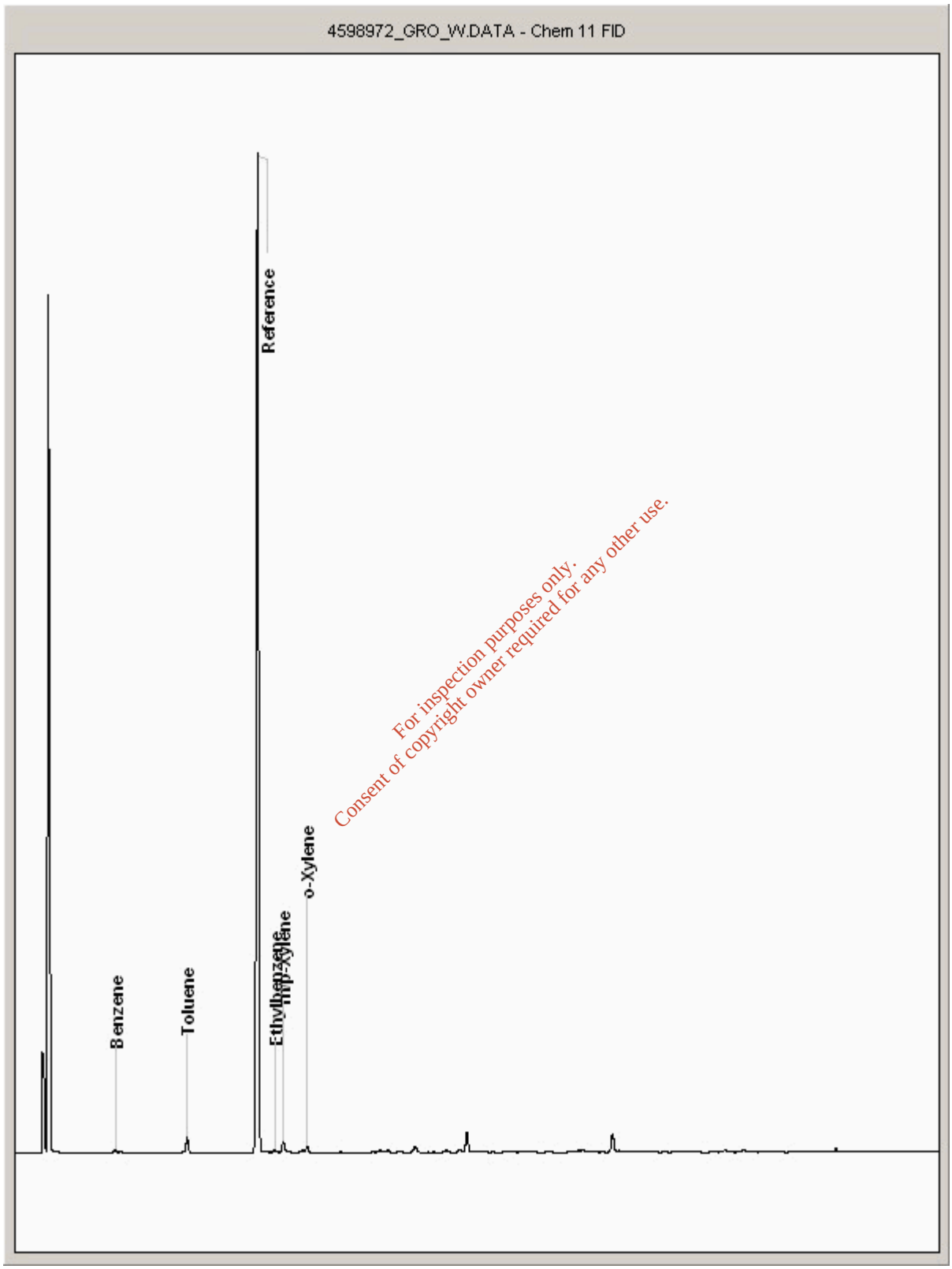
SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4598972
Sample ID : A11

Depth : 4.50 - 5.50



CERTIFICATE OF ANALYSIS

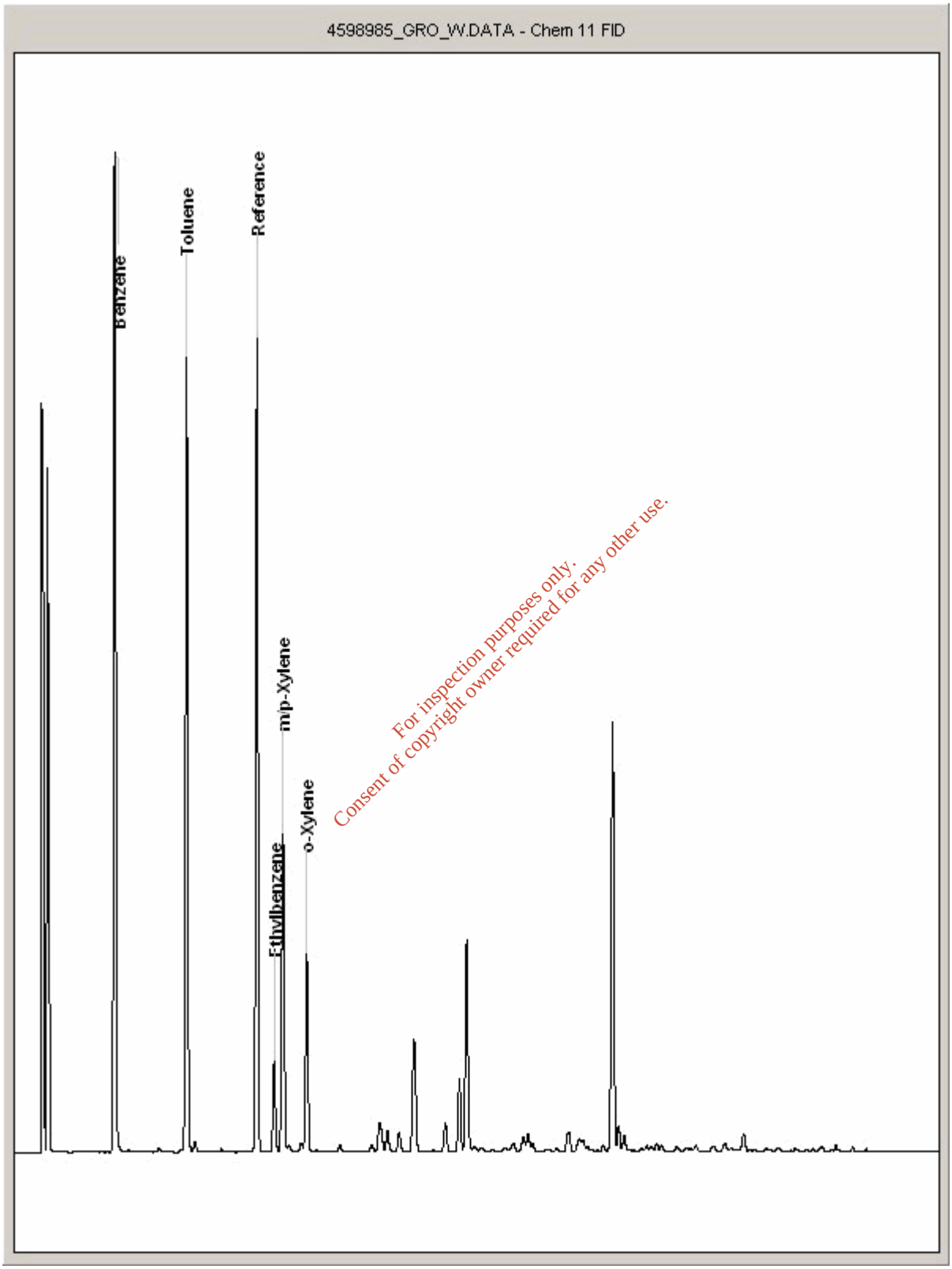
SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4598985
Sample ID : G2

Depth : 3.00 - 4.00



CERTIFICATE OF ANALYSIS

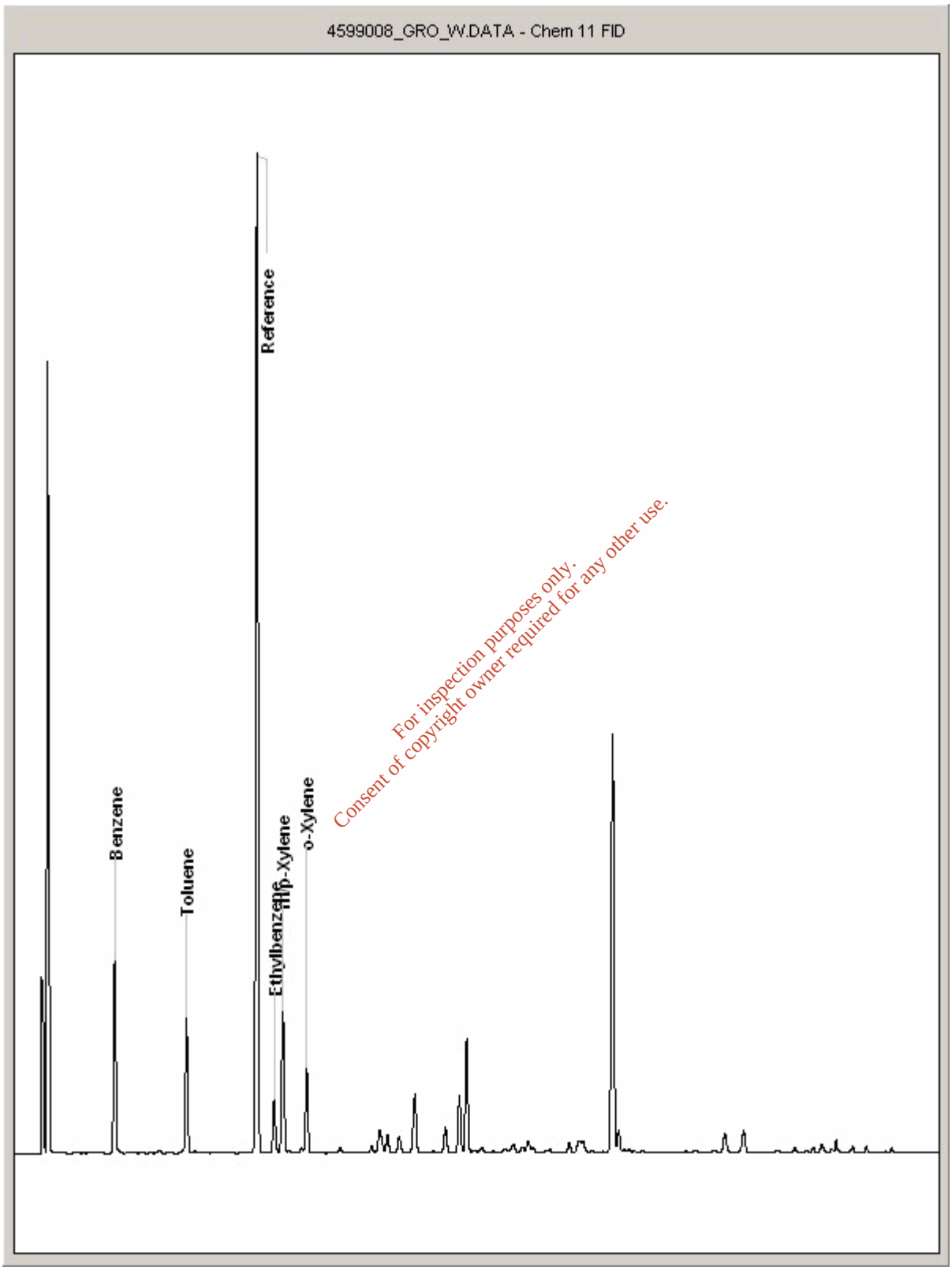
SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4599008
Sample ID : D1

Depth : 3.50 - 4.50



SDG:	111028-8	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158057
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be screened in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. Is an asbestos fibre type is found it will be reported as detected (for each fibre type found). If asbestos is present either as asbestos containing material or loose fibres no further analysis will be undertaken. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials -whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute themajor part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C4 -C10 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GC-MS
HERBICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
PESTICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB TOT / PCB CON	D&C	HEXANE:ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE:ACETONE	MICROWAVE TM218.	GC-MS
C8-C40 (C8-C40) EZ FLASH	WET	HEXANE:ACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE:ACETONE	SHAKER	GC-EZ
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM:ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC MS

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials or those identified as potentially asbestos containing during sample description which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -
Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

ALcontrol Laboratories

Unit 18A
Rosemount Business Park
Ballycoolin
Dublin 11
Tel : (0035) 3188 29893

Mouchel
Ground Engineering
Rowan House
Lloyd Drive
Cheshire
CH65 9HQ

Attention: Neil Balderstone

CERTIFICATE OF ANALYSIS

Date:	04 November 2011
Customer:	D_MOUCHEL_ELE
Sample Delivery Group (SDG):	111028-13
Your Reference:	
Location:	Limerick Gasworks
Report No:	158059

We received 4 samples on Wednesday October 26, 2011 and 4 of these samples were scheduled for analysis which was completed on Friday November 04, 2011. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
4593562	C11		1.00 - 2.00	25/10/2011
4593558	G3		2.50 - 3.50	25/10/2011
4593559	G5		2.00 - 3.00	25/10/2011
4593561	G8		1.50 - 2.00	25/10/2011

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

LIQUID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			4593558			4593559			4593561			4593562		
Customer Sample Reference			G3			G5			G8			C11		
AGS Reference														
Depth (m)			2.50 - 3.50			2.00 - 3.00			1.50 - 2.00			1.00 - 2.00		
Container			1l glass bottle (D)	60g VOC (ALE215)	PLAS BOT (D)	1l glass bottle (D)	60g VOC (ALE215)	PLAS BOT (D)	1l glass bottle (D)	60g VOC (ALE215)	PLAS BOT (D)	1l glass bottle (D)	60g VOC (ALE215)	PLAS BOT (D)
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 4			X			X			X			X
Anions by Kone (w)	All	NDPs: 0 Tests: 4			X			X			X			X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 4	X			X			X			X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 4			X			X			X			X
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 4	X			X			X			X		
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 4	X			X			X			X		
GRO by GC-FID (W)	All	NDPs: 0 Tests: 4		X			X			X			X	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 4			X			X			X			X
Mercury Dissolved	All	NDPs: 0 Tests: 4	X			X			X			X		
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 4	X			X			X			X		
pH Value	All	NDPs: 0 Tests: 4			X			X			X			X
Phenols by HPLC (W)	All	NDPs: 0 Tests: 4	X			X			X			X		
Sulphide	All	NDPs: 0 Tests: 4			X			X			X			X
TPH CWG (W)	All	NDPs: 0 Tests: 4	X			X			X			X		
VOC MS (W)	All	NDPs: 0 Tests: 1					X							

CERTIFICATE OF ANALYSIS

SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	C11	G3	G5	G8		
			Depth (m)	1.00 - 2.00	2.50 - 3.50	2.00 - 3.00	1.50 - 2.00		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	25/10/2011	25/10/2011	25/10/2011	25/10/2011		
			Date Received	26/10/2011	26/10/2011	26/10/2011	26/10/2011		
			SDG Ref	111028-13	111028-13	111028-13	111028-13		
			Lab Sample No.(s)	4593562	4593558	4593559	4593561		
			AGS Reference						
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		5.99 #	12.7 #	2.29 #	9.81 #		
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099		7.7 #	16.3 #	2.94 #	12.6 #		
Sulphide	<0.01 mg/l	TM101		<0.01 #	<0.01 #	0.01 #	<0.01 #		
Arsenic (diss.filt)	<0.12 µg/l	TM152		7.91 #	3.37 #	1.54 #	10.2 #		
Cadmium (diss.filt)	<0.1 µg/l	TM152		<0.1 #	<0.1 #	<0.1 #	<0.1 #		
Chromium (diss.filt)	<0.22 µg/l	TM152		10.8 #	11.5 #	15.4 #	8.89 #		
Copper (diss.filt)	<0.85 µg/l	TM152		<0.85 #	4.36 #	8.28 #	0.946 #		
Lead (diss.filt)	<0.02 µg/l	TM152		0.044 #	0.094 #	0.272 #	0.079 #		
Nickel (diss.filt)	<0.15 µg/l	TM152		5.11 #	12.8 #	15.6 #	6.85 #		
Selenium (diss.filt)	<0.39 µg/l	TM152		1.13 #	5.01 #	6.01 #	0.996 #		
Zinc (diss.filt)	<0.41 µg/l	TM152		0.791 #	1.87 #	5.82 #	0.444 #		
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	<0.01 #		
Sulphate	<2 mg/l	TM184		215 #	1080 #	1060 #	148 #		
Cyanide, Total	<0.05 mg/l	TM227		0.078 #	3.74 #	1.66 #	0.127 #		
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03 #	<0.03 #	<0.03 #	<0.03 #		
pH	<1 pH Units	TM256		7.65 #	7.66 #	7.55 #	7.56 #		
Resorcinol	<0.01 mg/l	TM259		<0.01	<0.01	<0.01	<0.01		
Catechol	<0.01 mg/l	TM259		<0.01	<0.01	<0.01	<0.01		
Phenol	<0.002 mg/l	TM259		0.01 #	0.03 #	<0.002 #	<0.002 #		
Cresols	<0.006 mg/l	TM259		0.16 #	0.17 #	<0.006 #	<0.006 #		
Xylenols	<0.008 mg/l	TM259		0.57 #	0.82 #	<0.008 #	0.09 #		
1-Naphthol	<0.01 mg/l	TM259		0.01	<0.01	<0.01	<0.01		
2,3,5-Trimethylphenol	<0.003 mg/l	TM259		<0.003 #	<0.003 #	<0.003 #	<0.003 #		
2-Isopropylphenol	<0.006 mg/l	TM259		0.58 #	0.46 #	<0.006 #	<0.006 #		
Phenols, Total Detected 5 speciated	<0.025 mg/l	TM259		1.32	1.48	<0.025	0.09		

CERTIFICATE OF ANALYSIS

SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	C11	G3	G5	G8		
			Depth (m)	1.00 - 2.00	2.50 - 3.50	2.00 - 3.00	1.50 - 2.00		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	25/10/2011	25/10/2011	25/10/2011	25/10/2011		
			Date Received	26/10/2011	26/10/2011	26/10/2011	26/10/2011		
			SDG Ref	111028-13	111028-13	111028-13	111028-13		
			Lab Sample No.(s)	4593562	4593558	4593559	4593561		
			AGS Reference						
Naphthalene (aq)	<0.1 µg/l	TM178		1.69 #	0.688 #	<5 #	0.314 #		
Acenaphthene (aq)	<0.015 µg/l	TM178		1.14 #	0.564 #	1.31 #	0.0331 #		
Acenaphthylene (aq)	<0.011 µg/l	TM178		2.34 #	0.694 #	25 #	0.276 #		
Fluoranthene (aq)	<0.017 µg/l	TM178		13.1 #	4.08 #	59.8 #	0.735 #		
Anthracene (aq)	<0.015 µg/l	TM178		1.37 #	0.381 #	4.86 #	0.187 #		
Phenanthrene (aq)	<0.022 µg/l	TM178		3.85 #	1.11 #	8.98 #	0.594 #		
Fluorene (aq)	<0.014 µg/l	TM178		0.982 #	0.177 #	3.03 #	0.154 #		
Chrysene (aq)	<0.013 µg/l	TM178		3.71 #	2.77 #	41.9 #	0.357 #		
Pyrene (aq)	<0.015 µg/l	TM178		10.2 #	3.68 #	42.5 #	0.505 #		
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		4.06 #	2.61 #	38.1 #	0.406 #		
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		7.24 #	4.35 #	52.5 #	0.501 #		
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		6.22 #	4.16 #	64 #	0.51 #		
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		7.86 #	4.51 #	71.6 #	0.626 #		
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		1.48 #	0.964 #	14.2 #	0.0962 #		
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		4.98 #	3.58 #	47 #	0.283 #		
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		4.72 #	3.25 #	45.7 #	0.276 #		
PAH, Total Detected USEPA 16 (aq)	<0.247 µg/l	TM178		74.9	37.6	523	5.85		

CERTIFICATE OF ANALYSIS

SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	C11	G3	G5	G8		
			Depth (m)	1.00 - 2.00	2.50 - 3.50	2.00 - 3.00	1.50 - 2.00		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	25/10/2011	25/10/2011	25/10/2011	25/10/2011		
			Date Received	26/10/2011	26/10/2011	26/10/2011	26/10/2011		
			SDG Ref	111028-13	111028-13	111028-13	111028-13		
			Lab Sample No.(s)	4593562	4593558	4593559	4593561		
			AGS Reference						
GRO Surrogate % recovery**	%	TM245		99 §	97 §	96 §	100 §		
GRO >C5-C12	<50 µg/l	TM245		2690 § #	1230 § #	<50 § #	436 § #		
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 § #	<3 § #	<3 § #	<3 § #		
Benzene	<7 µg/l	TM245		91 § #	248 § #	<7 § #	<7 § #		
Toluene	<4 µg/l	TM245		56 § #	128 § #	<4 § #	10 § #		
Ethylbenzene	<5 µg/l	TM245		57 § #	32 § #	<5 § #	11 § #		
m,p-Xylene	<8 µg/l	TM245		163 § #	100 § #	<8 § #	80 § #		
o-Xylene	<3 µg/l	TM245		118 § #	88 § #	<3 § #	37 § #		
Sum of detected Xylenes	<11 µg/l	TM245		281 §	188 §	<11 §	117 §		
Sum of detected BTEX	<28 µg/l	TM245		485 §	596 §	<28 §	138 §		
Aliphatics >C5-C6	<10 µg/l	TM245		<10 §	<10 §	<10 §	<10 §		
Aliphatics >C6-C8	<10 µg/l	TM245		20 §	27 §	<10 §	10 §		
Aliphatics >C8-C10	<10 µg/l	TM245		290 §	101 §	<10 §	60 §		
Aliphatics >C10-C12	<10 µg/l	TM245		1020 §	263 §	<10 §	109 §		
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		476	<10	<10	<10		
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		273	<10	14	<10		
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		148	<10	<10	<10		
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		897	<10	14	<10		
Aromatics >EC5-EC7	<10 µg/l	TM245		91 §	248 §	<10 §	<10 §		
Aromatics >EC7-EC8	<10 µg/l	TM245		56 §	128 §	<10 §	10 §		
Aromatics >EC8-EC10	<10 µg/l	TM245		531 §	287 §	<10 §	169 §		
Aromatics >EC10-EC12	<10 µg/l	TM245		678 §	175 §	<10 §	73 §		
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		700	74	<10	<10		
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		449	28	42	<10		
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		405	83	226	16		
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		1550	185	268	16		
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		5140	1420	287	452		

CERTIFICATE OF ANALYSIS

SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

	Customer Sample R	
	Depth (m)	2.00 - 3.00
	Sample Type	Water(GW/SW)
	Date Sampled	25/10/2011
	Date Received	26/10/2011
	SDG Ref	111028-13
	Lab Sample No.(s)	4593559
	AGS Reference	G5

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM208	111 §
Toluene-d8**	%	TM208	99.7 §
4-Bromofluorobenzene**	%	TM208	95.1 §
Dichlorodifluoromethane	<1 µg/l	TM208	<1 § #
Chloromethane	<1 µg/l	TM208	<1 #
Vinyl chloride	<1 µg/l	TM208	<1 § #
Bromomethane	<1 µg/l	TM208	<1 § #
Chloroethane	<1 µg/l	TM208	<1 § #
Trichlorofluoromethane	<1 µg/l	TM208	<1 § #
1,1-Dichloroethene	<1 µg/l	TM208	<1 § #
Carbon disulphide	<1 µg/l	TM208	<1 § #
Dichloromethane	<3 µg/l	TM208	<3 § #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208	<1 § #
trans-1,2-Dichloroethene	<1 µg/l	TM208	<1 § #
1,1-Dichloroethane	<1 µg/l	TM208	<1 § #
cis-1,2-Dichloroethene	<1 µg/l	TM208	<1 § #
2,2-Dichloropropane	<1 µg/l	TM208	<1 § #
Bromochloromethane	<1 µg/l	TM208	<1 § #
Chloroform	<1 µg/l	TM208	<1 § #
1,1,1-Trichloroethane	<1 µg/l	TM208	<1 § #
1,1-Dichloropropene	<1 µg/l	TM208	<1 § #
Carbontetrachloride	<1 µg/l	TM208	<1 § #
1,2-Dichloroethane	<1 µg/l	TM208	<1 §
Benzene	<1 µg/l	TM208	<1 § #
Trichloroethene	<1 µg/l	TM208	<1 § #
1,2-Dichloropropane	<1 µg/l	TM208	<1 § #
Dibromomethane	<1 µg/l	TM208	<1 § #
Bromodichloromethane	<1 µg/l	TM208	<1 § #
cis-1,3-Dichloropropene	<1 µg/l	TM208	<1 § #
Toluene	<1 µg/l	TM208	<1 § #
trans-1,3-Dichloropropene	<1 µg/l	TM208	<1 § #
1,1,2-Trichloroethane	<1 µg/l	TM208	<1 § #
1,3-Dichloropropane	<1 µg/l	TM208	<1 § #
Tetrachloroethene	<1 µg/l	TM208	<1 § #
Dibromochloromethane	<1 µg/l	TM208	<1 § #

CERTIFICATE OF ANALYSIS

SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	
			Depth (m)	2.00 - 3.00
			Sample Type	Water(GW/SW)
			Date Sampled	25/10/2011
			Date Received	26/10/2011
			SDG Ref	111028-13
			Lab Sample No.(s)	4593559
			AGS Reference	G5
1,2-Dibromoethane	<1 µg/l	TM208	<1	§ #
Chlorobenzene	<1 µg/l	TM208	<1	§ #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208	<1	§ #
Ethylbenzene	<1 µg/l	TM208	<1	§ #
m,p-Xylene	<1 µg/l	TM208	<1	§ #
o-Xylene	<1 µg/l	TM208	<1	§ #
Styrene	<1 µg/l	TM208	<1	§ #
Bromoform	<1 µg/l	TM208	<1	§ #
Isopropylbenzene	<1 µg/l	TM208	<1	§ #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208	<1	§
1,2,3-Trichloropropane	<1 µg/l	TM208	<1	§ #
Bromobenzene	<1 µg/l	TM208	<1	§ #
Propylbenzene	<1 µg/l	TM208	<1	§ #
2-Chlorotoluene	<1 µg/l	TM208	<1	§ #
1,3,5-Trimethylbenzene	<1 µg/l	TM208	<1	§ #
4-Chlorotoluene	<1 µg/l	TM208	<1	§ #
tert-Butylbenzene	<1 µg/l	TM208	<1	§ #
1,2,4-Trimethylbenzene	<1 µg/l	TM208	<1	§ #
sec-Butylbenzene	<1 µg/l	TM208	<1	§ #
4-iso-Propyltoluene	<1 µg/l	TM208	<1	§ #
1,3-Dichlorobenzene	<1 µg/l	TM208	<1	§ #
1,4-Dichlorobenzene	<1 µg/l	TM208	<1	§ #
n-Butylbenzene	<1 µg/l	TM208	<1	§ #
1,2-Dichlorobenzene	<1 µg/l	TM208	<1	§
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208	<1	§
1,2,4-Trichlorobenzene	<1 µg/l	TM208	<1	§ #
Hexachlorobutadiene	<1 µg/l	TM208	<1	§ #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1	§ #
Naphthalene	<1 µg/l	TM208	<1	§ #
1,2,3-Trichlorobenzene	<1 µg/l	TM208	<1	§ #
1,3,5-Trichlorobenzene	<1 µg/l	TM208	<1	§

CERTIFICATE OF ANALYSIS

SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Notification of Deviating Samples

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
4605768	G3	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C10-C12	Volatile container not received
4605768	G3	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C5-C6	Volatile container not received
4605768	G3	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C6-C8	Volatile container not received
4605768	G3	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C8-C10	Volatile container not received
4605768	G3	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC10-EC12	Volatile container not received
4605768	G3	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC5-EC7	Volatile container not received
4605768	G3	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC7-EC8	Volatile container not received
4605768	G3	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC8-EC10	Volatile container not received
4605768	G3	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Benzene	Volatile container not received
4605768	G3	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Ethylbenzene	Volatile container not received
4605768	G3	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	GRO >C5-C12	Volatile container not received
4605768	G3	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	GRO Surrogate % recovery**	Volatile container not received
4605768	G3	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	m,p-Xylene	Volatile container not received
4605768	G3	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Methyl tertiary butyl ether (MTBE)	Volatile container not received
4605768	G3	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	o-Xylene	Volatile container not received
4605768	G3	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Sum of detected BTEX	Volatile container not received
4605768	G3	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Sum of detected Xylenes	Volatile container not received
4605768	G3	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Toluene	Volatile container not received
4605780	G5	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C10-C12	Volatile container not received
4605780	G5	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C5-C6	Volatile container not received
4605780	G5	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C6-C8	Volatile container not received
4605780	G5	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C8-C10	Volatile container not received
4605780	G5	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC10-EC12	Volatile container not received
4605780	G5	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC5-EC7	Volatile container not received
4605780	G5	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC7-EC8	Volatile container not received
4605780	G5	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC8-EC10	Volatile container not received
4605780	G5	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Benzene	Volatile container not received
4605780	G5	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Ethylbenzene	Volatile container not received
4605780	G5	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	GRO >C5-C12	Volatile container not received
4605780	G5	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	GRO Surrogate % recovery**	Volatile container not received
4605780	G5	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	m,p-Xylene	Volatile container not received
4605780	G5	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Methyl tertiary butyl ether (MTBE)	Volatile container not received
4605780	G5	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	o-Xylene	Volatile container not received
4605780	G5	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Sum of detected BTEX	Volatile container not received
4605780	G5	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Sum of detected Xylenes	Volatile container not received
4605780	G5	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Toluene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,1,1,2-Tetrachloroethane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,1,1-Trichloroethane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,1,2,2-Tetrachloroethane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,1,2-Trichloroethane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,1-Dichloroethane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,1-Dichloroethene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,1-Dichloropropene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,2,3-Trichlorobenzene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,2,3-Trichloropropane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,2,4-Trichlorobenzene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,2,4-Trimethylbenzene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,2-Dibromo-3-chloropropane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,2-Dibromoethane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,2-Dichlorobenzene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,2-Dichloroethane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,2-Dichloropropane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,3,5-Trichlorobenzene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,3,5-Trimethylbenzene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,3-Dichlorobenzene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,3-Dichloropropane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	1,4-Dichlorobenzene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	2,2-Dichloropropane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	2-Chlorotoluene	Volatile container not received

CERTIFICATE OF ANALYSIS

SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	4-Bromofluorobenzene**	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	4-Chlorotoluene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	4-iso-Propyltoluene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Benzene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Bromobenzene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Bromochloromethane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Bromodichloromethane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Bromoform	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Bromomethane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Carbon disulphide	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Carbontetrachloride	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Chlorobenzene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Chloroethane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Chloroform	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Chloromethane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	cis-1,2-Dichloroethene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	cis-1,3-Dichloropropene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Dibromochloromethane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Dibromofluoromethane**	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Dibromomethane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Dichlorodifluoromethane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Dichloromethane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Ethylbenzene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Hexachlorobutadiene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Isopropylbenzene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	m,p-Xylene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Methyl tertiary butyl ether (MTBE)	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Naphthalene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	n-Butylbenzene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	o-Xylene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Propylbenzene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	sec-Butylbenzene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Styrene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	tert-Amyl methyl ether (TAME)	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	tert-Butylbenzene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Tetrachloroethene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Toluene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Toluene-d8**	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	trans-1,2-Dichloroethene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	trans-1,3-Dichloropropene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Trichloroethene	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Trichlorofluoromethane	Volatile container not received
4605785	G5	2.00 - 3.00	LIQUID	VOC MS (W)	Vinyl chloride	Volatile container not received
4605788	G8	1.50 - 2.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C10-C12	Volatile container not received
4605788	G8	1.50 - 2.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C5-C6	Volatile container not received
4605788	G8	1.50 - 2.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C6-C8	Volatile container not received
4605788	G8	1.50 - 2.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C8-C10	Volatile container not received
4605788	G8	1.50 - 2.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC10-EC12	Volatile container not received
4605788	G8	1.50 - 2.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC5-EC7	Volatile container not received
4605788	G8	1.50 - 2.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC7-EC8	Volatile container not received
4605788	G8	1.50 - 2.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC8-EC10	Volatile container not received
4605788	G8	1.50 - 2.00	LIQUID	GRO by GC-FID (W)	Benzene	Volatile container not received
4605788	G8	1.50 - 2.00	LIQUID	GRO by GC-FID (W)	Ethylbenzene	Volatile container not received
4605788	G8	1.50 - 2.00	LIQUID	GRO by GC-FID (W)	GRO >C5-C12	Volatile container not received
4605788	G8	1.50 - 2.00	LIQUID	GRO by GC-FID (W)	GRO Surrogate % recovery**	Volatile container not received
4605788	G8	1.50 - 2.00	LIQUID	GRO by GC-FID (W)	m,p-Xylene	Volatile container not received
4605788	G8	1.50 - 2.00	LIQUID	GRO by GC-FID (W)	Methyl tertiary butyl ether (MTBE)	Volatile container not received
4605788	G8	1.50 - 2.00	LIQUID	GRO by GC-FID (W)	o-Xylene	Volatile container not received
4605788	G8	1.50 - 2.00	LIQUID	GRO by GC-FID (W)	Sum of detected BTEX	Volatile container not received
4605788	G8	1.50 - 2.00	LIQUID	GRO by GC-FID (W)	Sum of detected Xylenes	Volatile container not received

CERTIFICATE OF ANALYSIS

SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
4605788	G8	1.50 - 2.00	LIQUID	GRO by GC-FID (W)	Toluene	Volatile container not received
4605801	C11	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C10-C12	Volatile container not received
4605801	C11	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C5-C6	Volatile container not received
4605801	C11	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C6-C8	Volatile container not received
4605801	C11	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C8-C10	Volatile container not received
4605801	C11	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC10-EC12	Volatile container not received
4605801	C11	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC5-EC7	Volatile container not received
4605801	C11	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC7-EC8	Volatile container not received
4605801	C11	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC8-EC10	Volatile container not received
4605801	C11	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Benzene	Volatile container not received
4605801	C11	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Ethylbenzene	Volatile container not received
4605801	C11	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	GRO >C5-C12	Volatile container not received
4605801	C11	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	GRO Surrogate % recovery**	Volatile container not received
4605801	C11	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	m,p-Xylene	Volatile container not received
4605801	C11	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Methyl tertiary butyl ether (MTBE)	Volatile container not received
4605801	C11	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	o-Xylene	Volatile container not received
4605801	C11	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Sum of detected BTEX	Volatile container not received
4605801	C11	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Sum of detected Xylenes	Volatile container not received
4605801	C11	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Toluene	Volatile container not received

Note : Test results may be compromised

CERTIFICATE OF ANALYSIS

SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10-7

NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate		
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Test Completion Dates

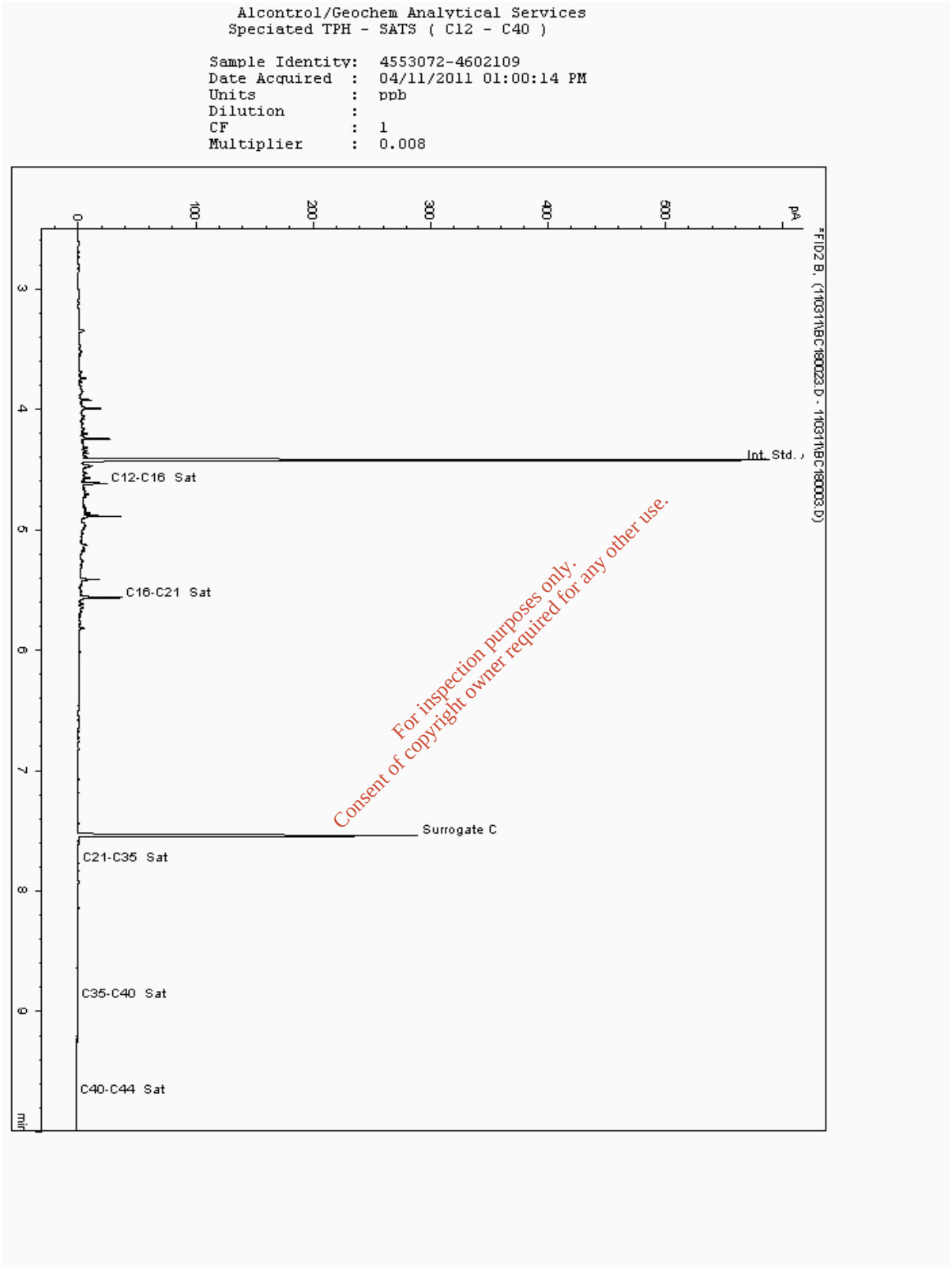
Lab Sample No(s)	4593562	4593558	4593559	4593561
Customer Sample Ref.	C11	G3	G5	G8
AGS Ref.				
Depth	1.00 - 2.00	2.50 - 3.50	2.00 - 3.00	1.50 - 2.00
Type	LIQUID	LIQUID	LIQUID	LIQUID
Ammoniacal Nitrogen	02-Nov-2011	02-Nov-2011	02-Nov-2011	02-Nov-2011
Anions by Kone (w)	02-Nov-2011	02-Nov-2011	02-Nov-2011	02-Nov-2011
Cyanide Comp/Free/Total/Thiocyanate	31-Oct-2011	31-Oct-2011	31-Oct-2011	31-Oct-2011
Dissolved Metals by ICP-MS	02-Nov-2011	02-Nov-2011	02-Nov-2011	02-Nov-2011
EPH CWG (Aliphatic) Aqueous GC (W)	04-Nov-2011	04-Nov-2011	04-Nov-2011	04-Nov-2011
EPH CWG (Aromatic) Aqueous GC (W)	04-Nov-2011	04-Nov-2011	04-Nov-2011	04-Nov-2011
GRO by GC-FID (W)	31-Oct-2011	31-Oct-2011	31-Oct-2011	31-Oct-2011
Hexavalent Chromium (w)	01-Nov-2011	01-Nov-2011	01-Nov-2011	01-Nov-2011
Mercury Dissolved	31-Oct-2011	31-Oct-2011	31-Oct-2011	31-Oct-2011
PAH Spec MS - Aqueous (W)	04-Nov-2011	04-Nov-2011	03-Nov-2011	04-Nov-2011
pH Value	31-Oct-2011	31-Oct-2011	31-Oct-2011	31-Oct-2011
Phenols by HPLC (W)	01-Nov-2011	01-Nov-2011	01-Nov-2011	01-Nov-2011
Sulphide	01-Nov-2011	01-Nov-2011	01-Nov-2011	01-Nov-2011
TPH CWG (W)	04-Nov-2011	04-Nov-2011	04-Nov-2011	04-Nov-2011
VOC MS (W)			02-Nov-2011	

CERTIFICATE OF ANALYSIS

SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 4602109 **Sample ID :** C11 **Depth :** 1.00 - 2.00

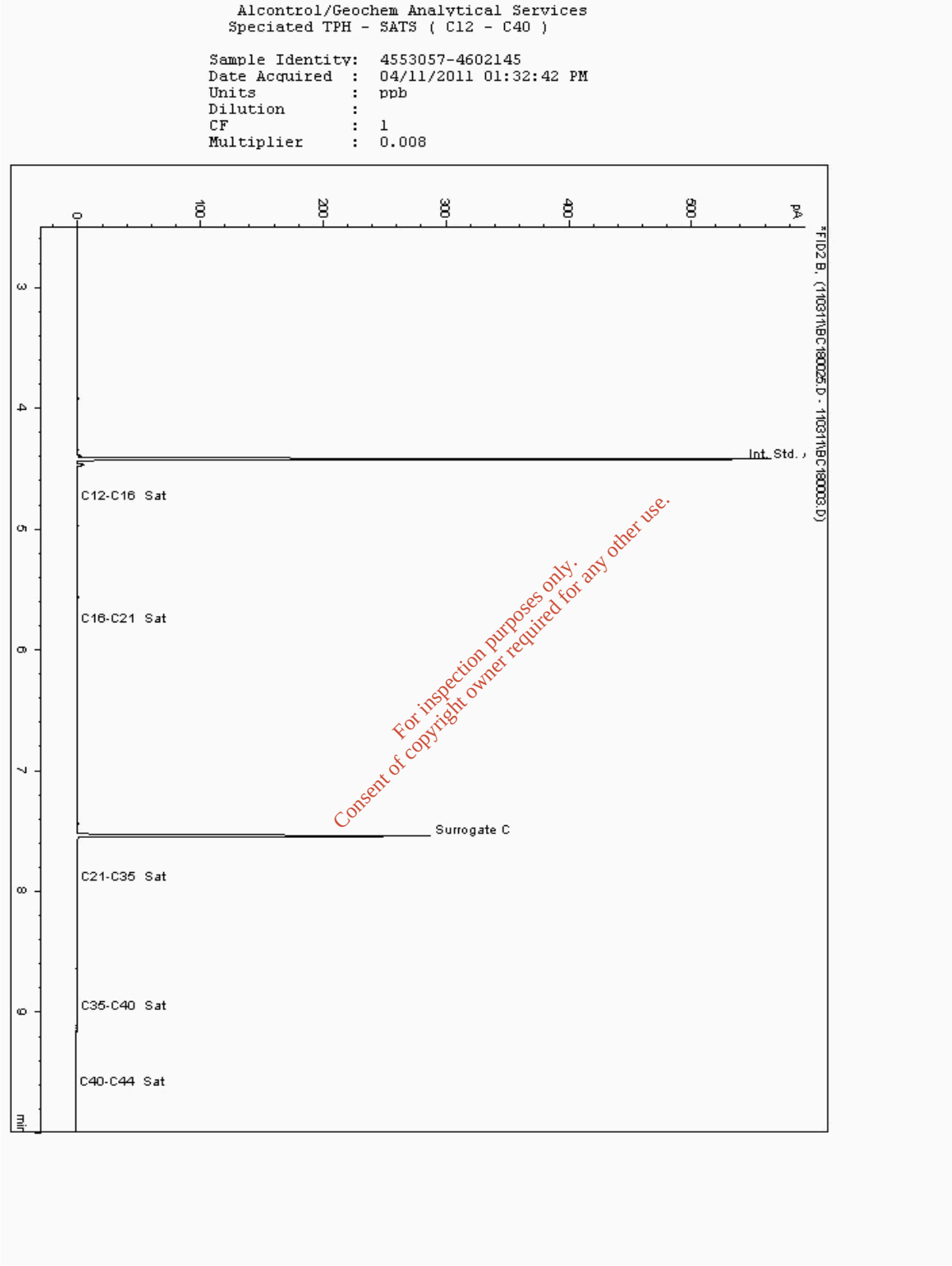


CERTIFICATE OF ANALYSIS

SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 4602145 **Sample ID :** G8 **Depth :** 1.50 - 2.00



CERTIFICATE OF ANALYSIS

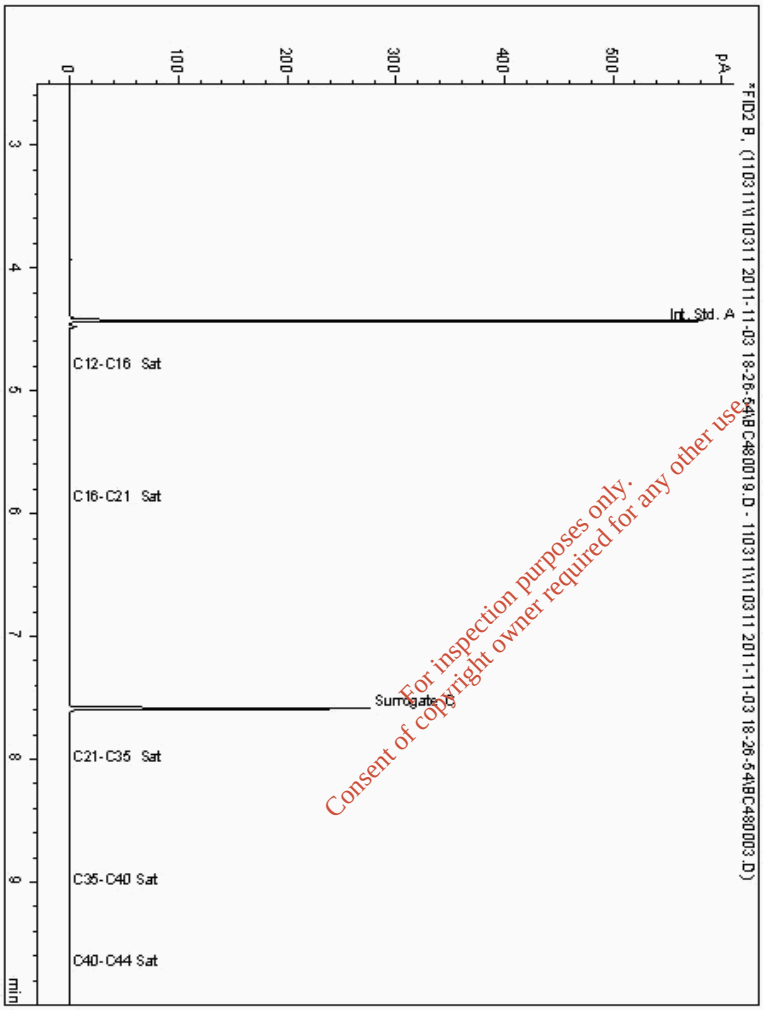
SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 4602215 **Sample ID :** G3 **Depth :** 2.50 - 3.50

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 4553023-4602215
Date Acquired : 03/11/11 23:57:52
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

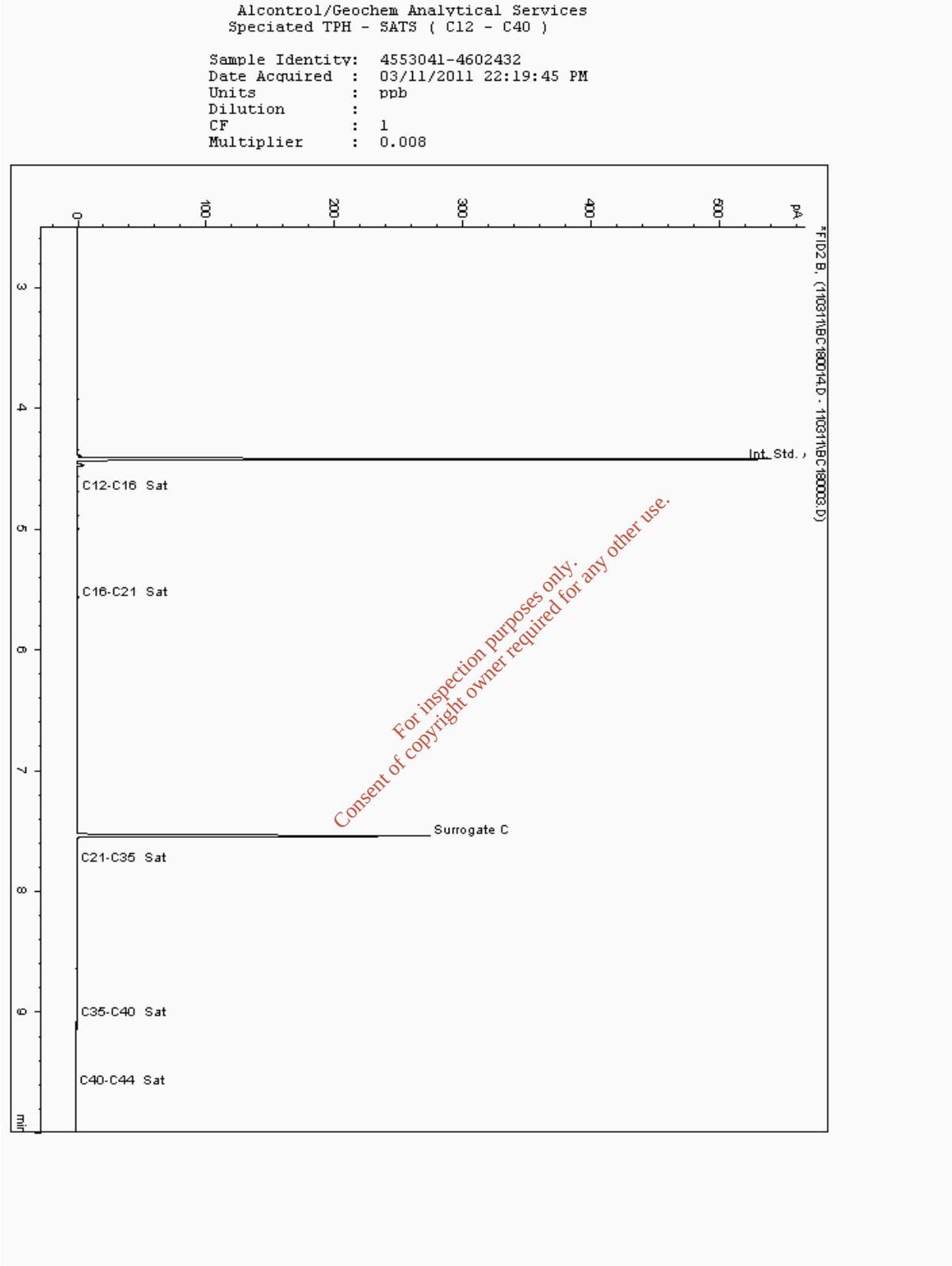


CERTIFICATE OF ANALYSIS

SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 4602432 **Sample ID :** G5 **Depth :** 2.00 - 3.00

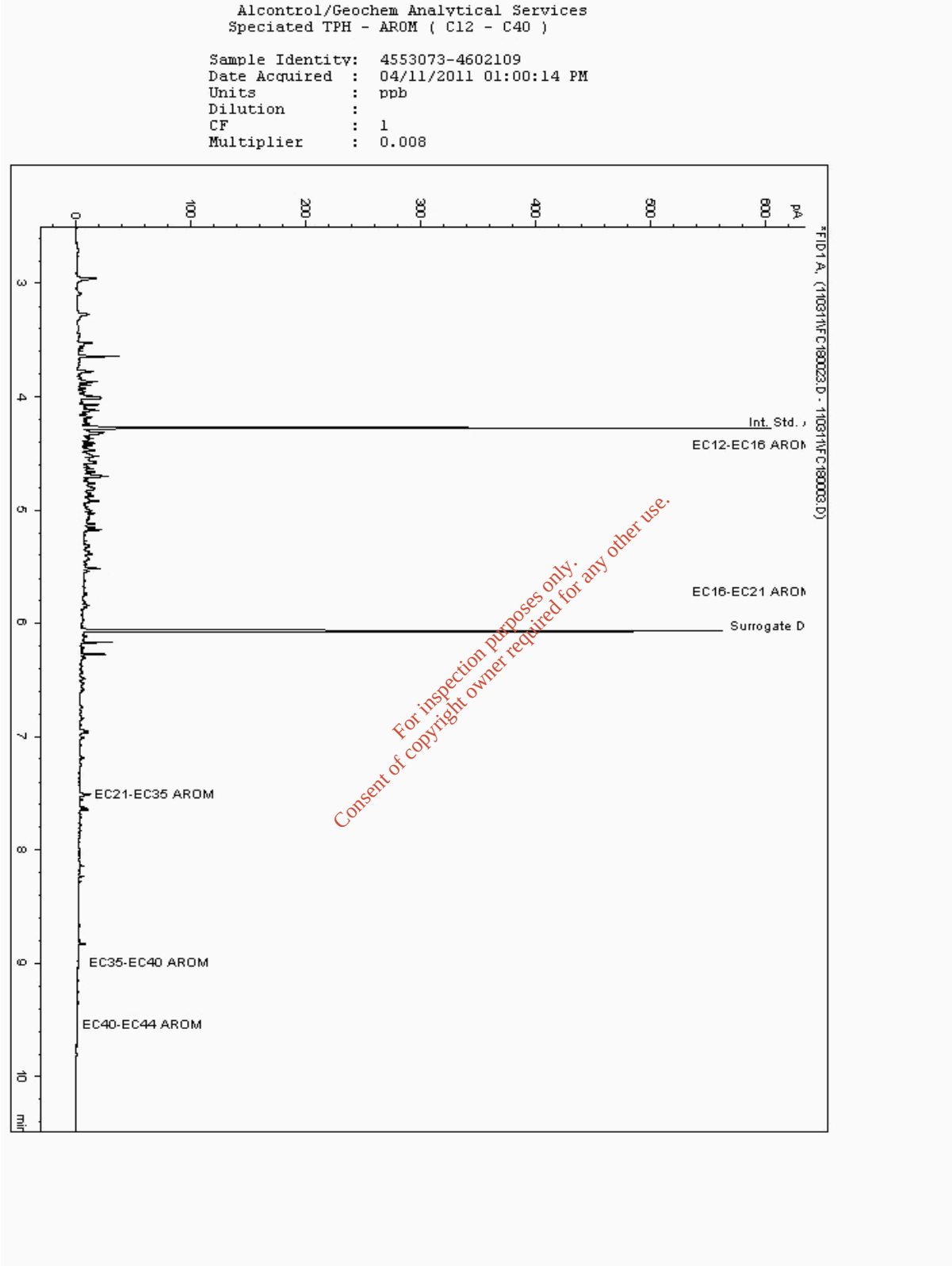


CERTIFICATE OF ANALYSIS

SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 4602109 **Sample ID :** C11 **Depth :** 1.00 - 2.00

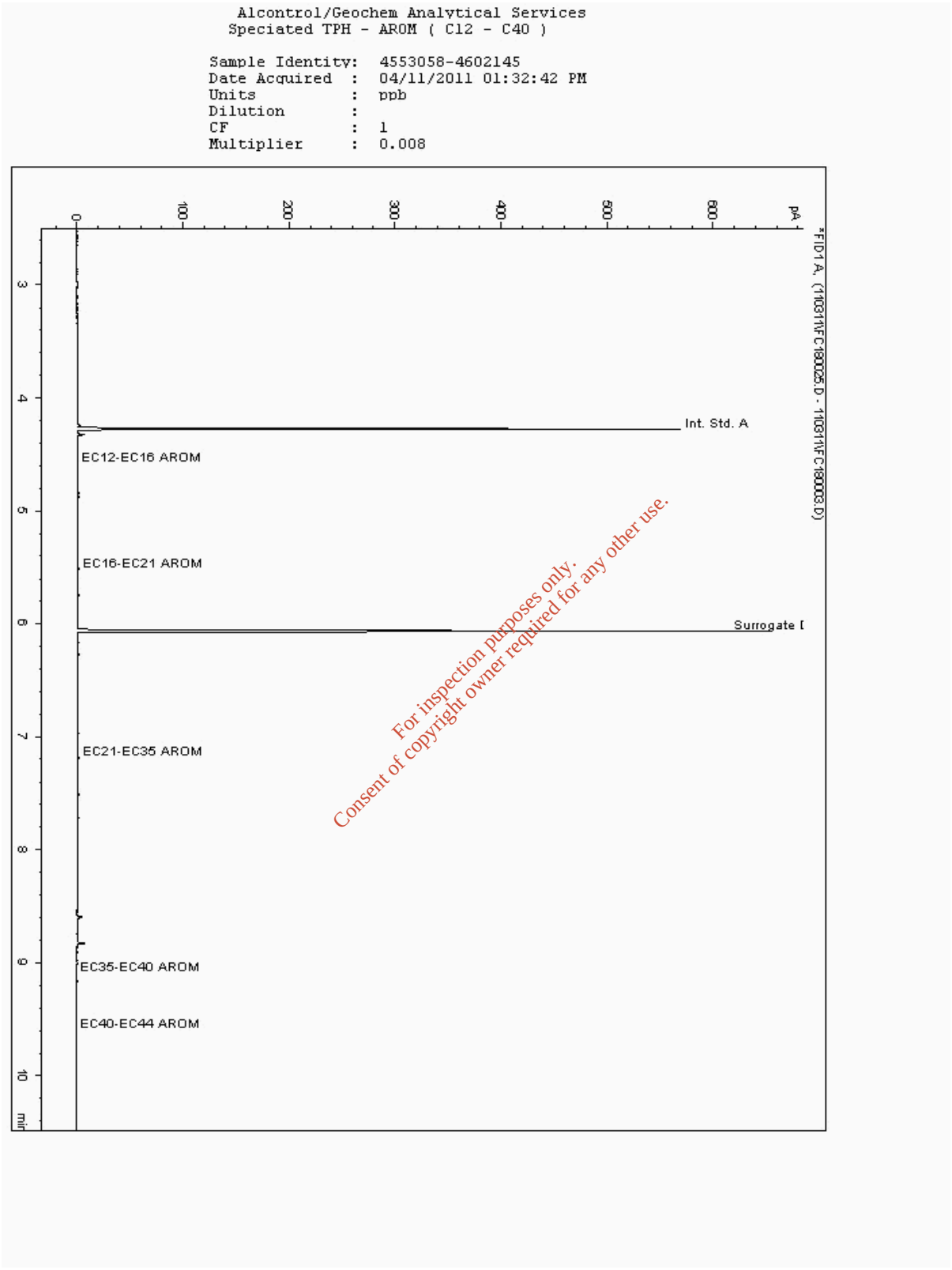


CERTIFICATE OF ANALYSIS

SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 4602145 **Sample ID :** G8 **Depth :** 1.50 - 2.00



CERTIFICATE OF ANALYSIS

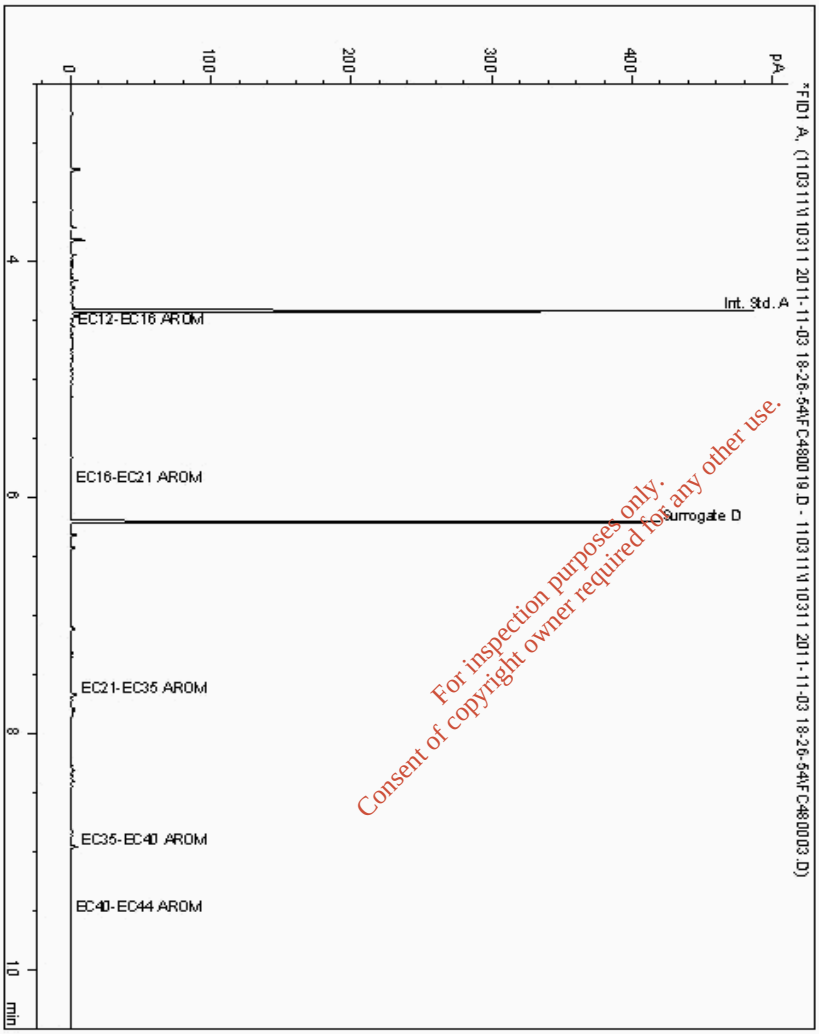
SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 4602215 **Sample ID :** G3 **Depth :** 2.50 - 3.50

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 4553024-4602215
Date Acquired : 03/11/11 23:57:52
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

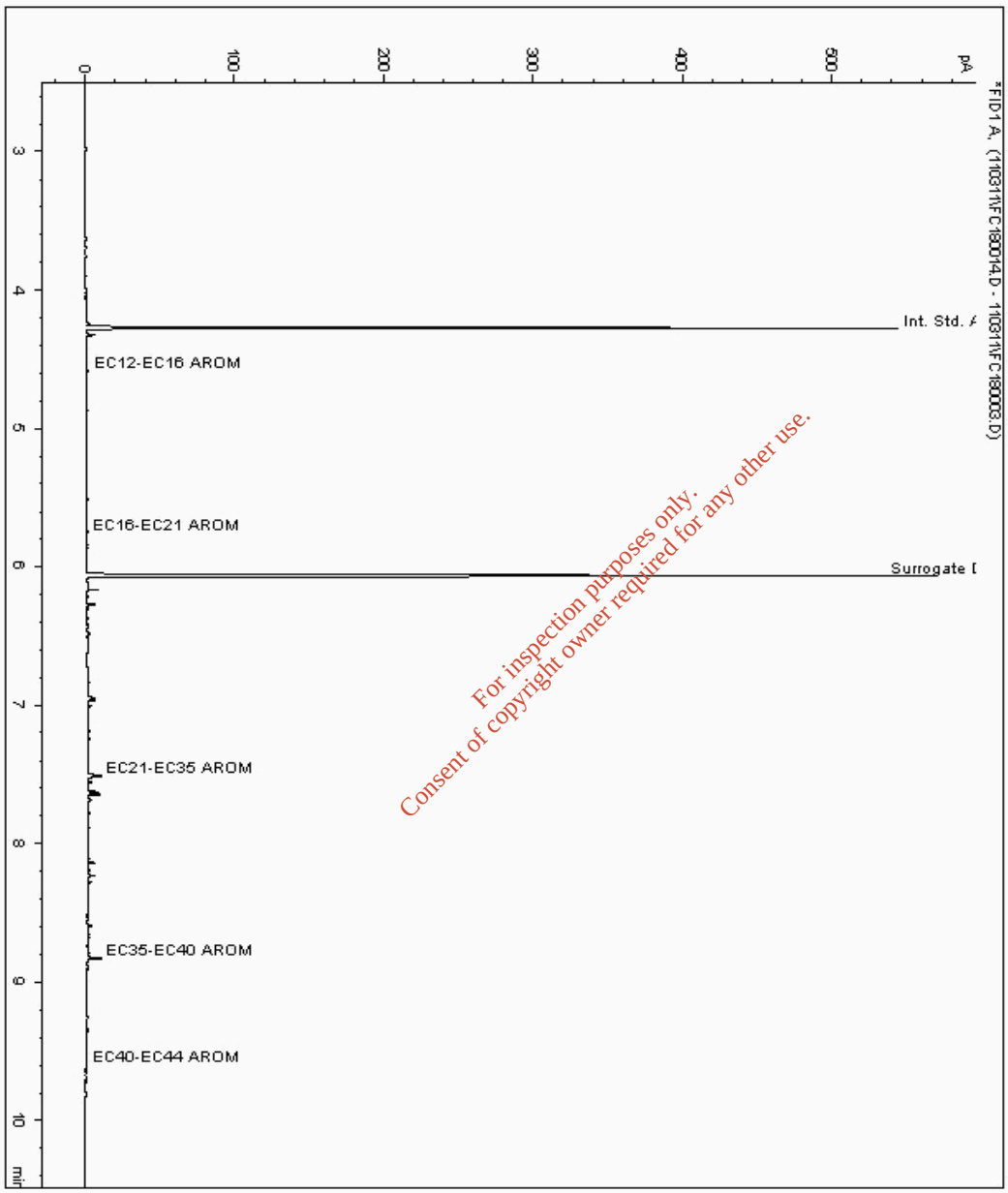
SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 4602432 **Sample ID :** G5 **Depth :** 2.00 - 3.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 4553042-4602432
Date Acquired : 03/11/2011 22:19:45 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

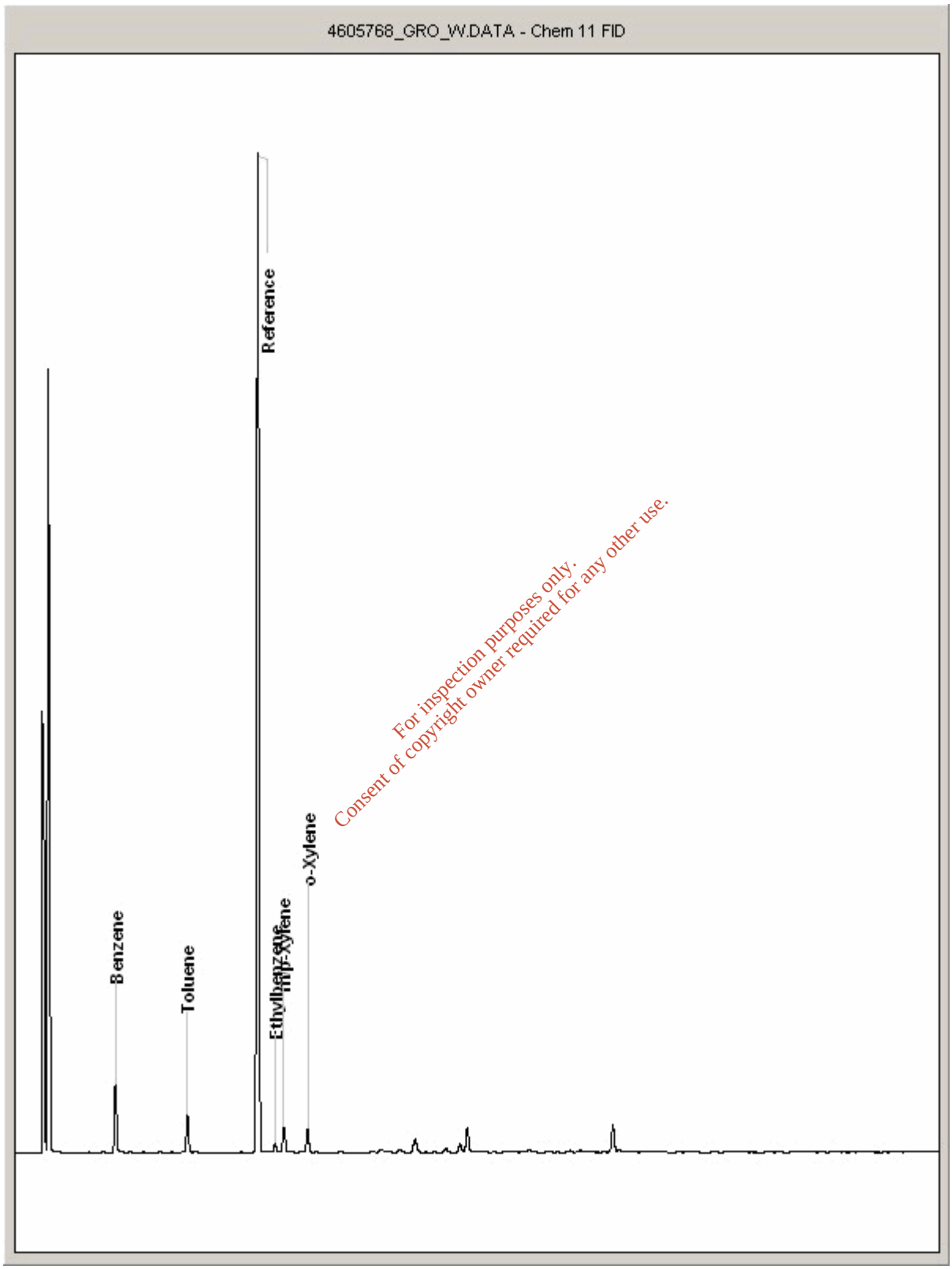
SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4605768
Sample ID : G3

Depth : 2.50 - 3.50



CERTIFICATE OF ANALYSIS

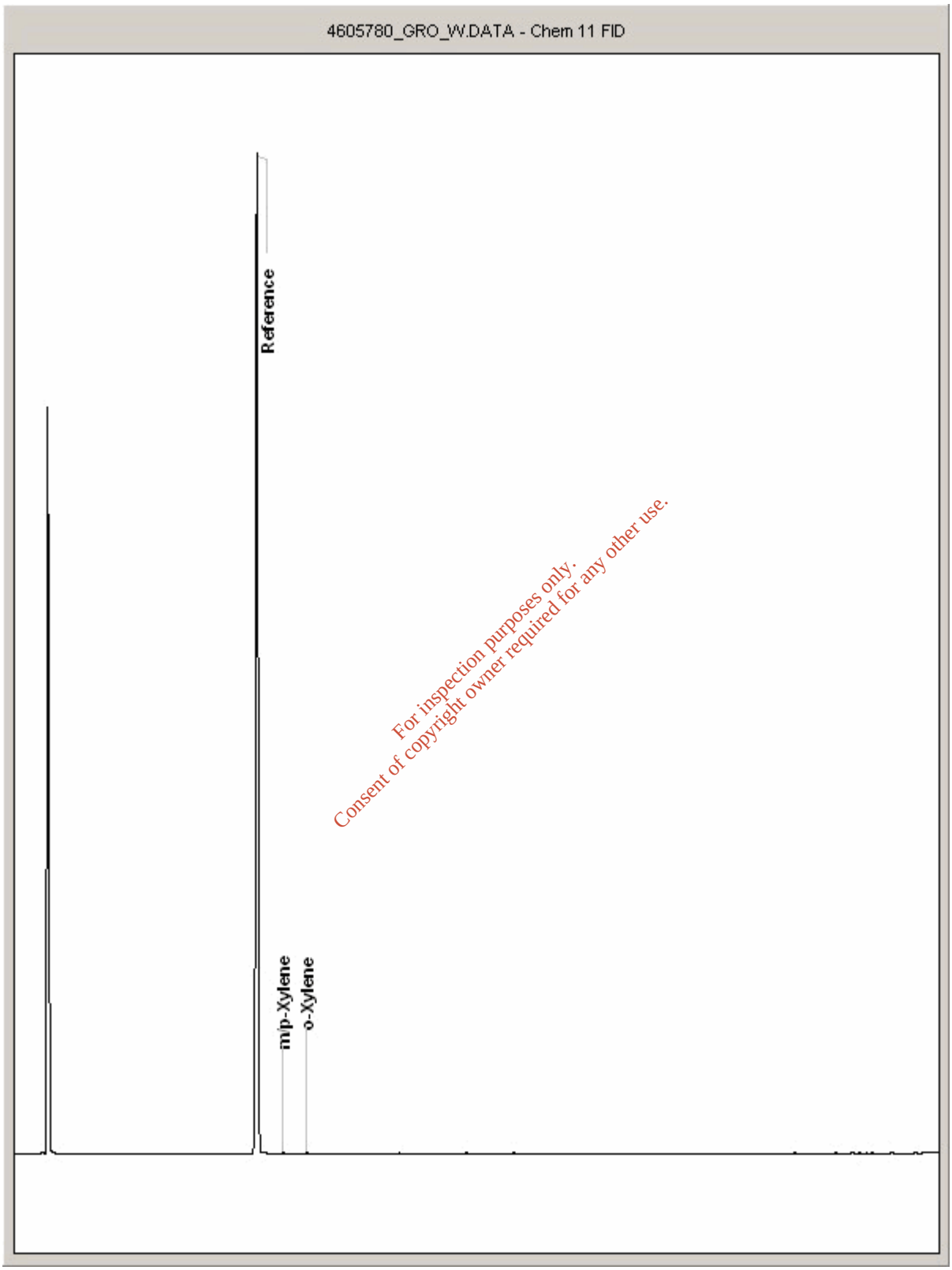
SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4605780
Sample ID : G5

Depth : 2.00 - 3.00



CERTIFICATE OF ANALYSIS

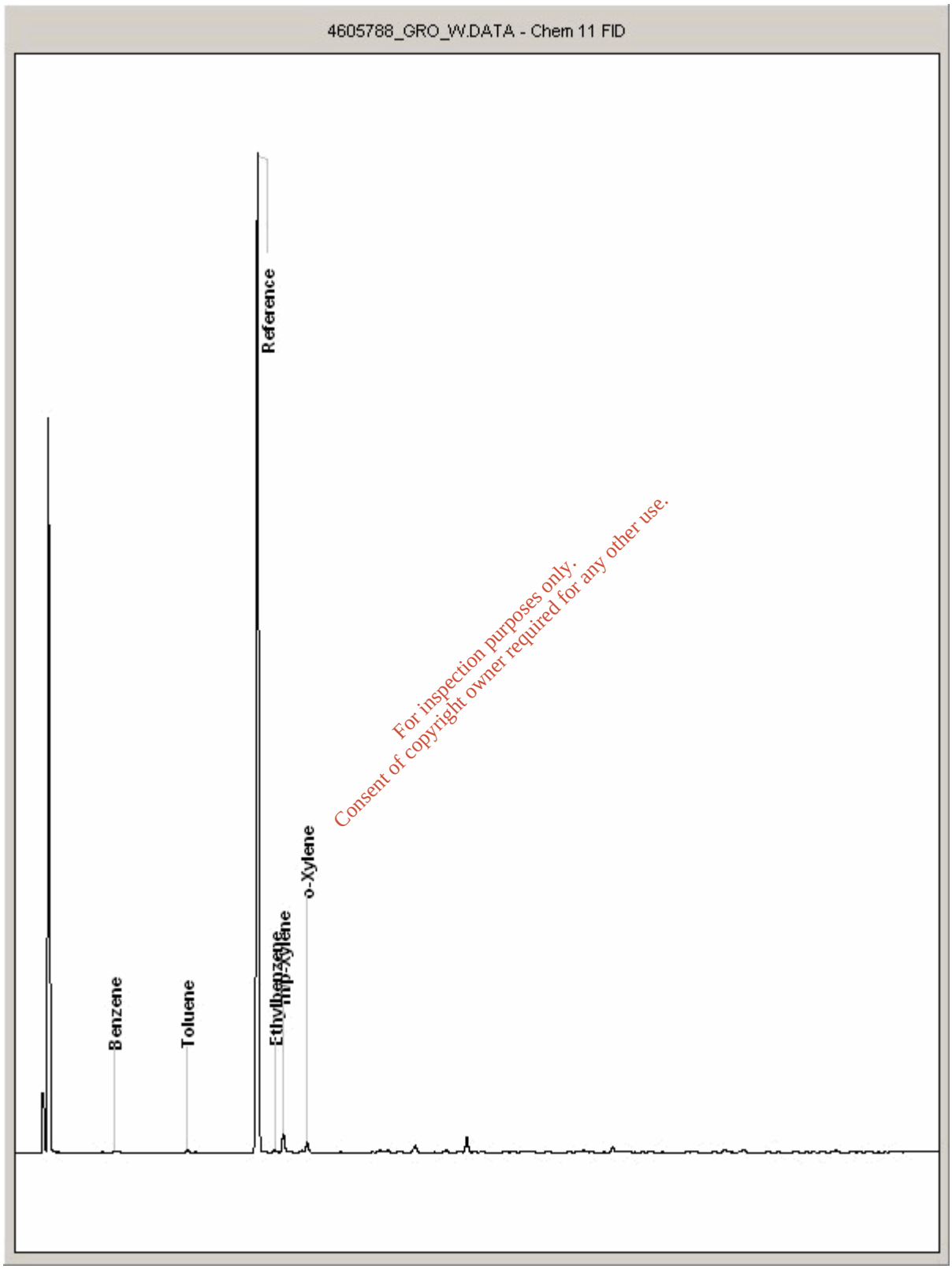
SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4605788
Sample ID : G8

Depth : 1.50 - 2.00



CERTIFICATE OF ANALYSIS

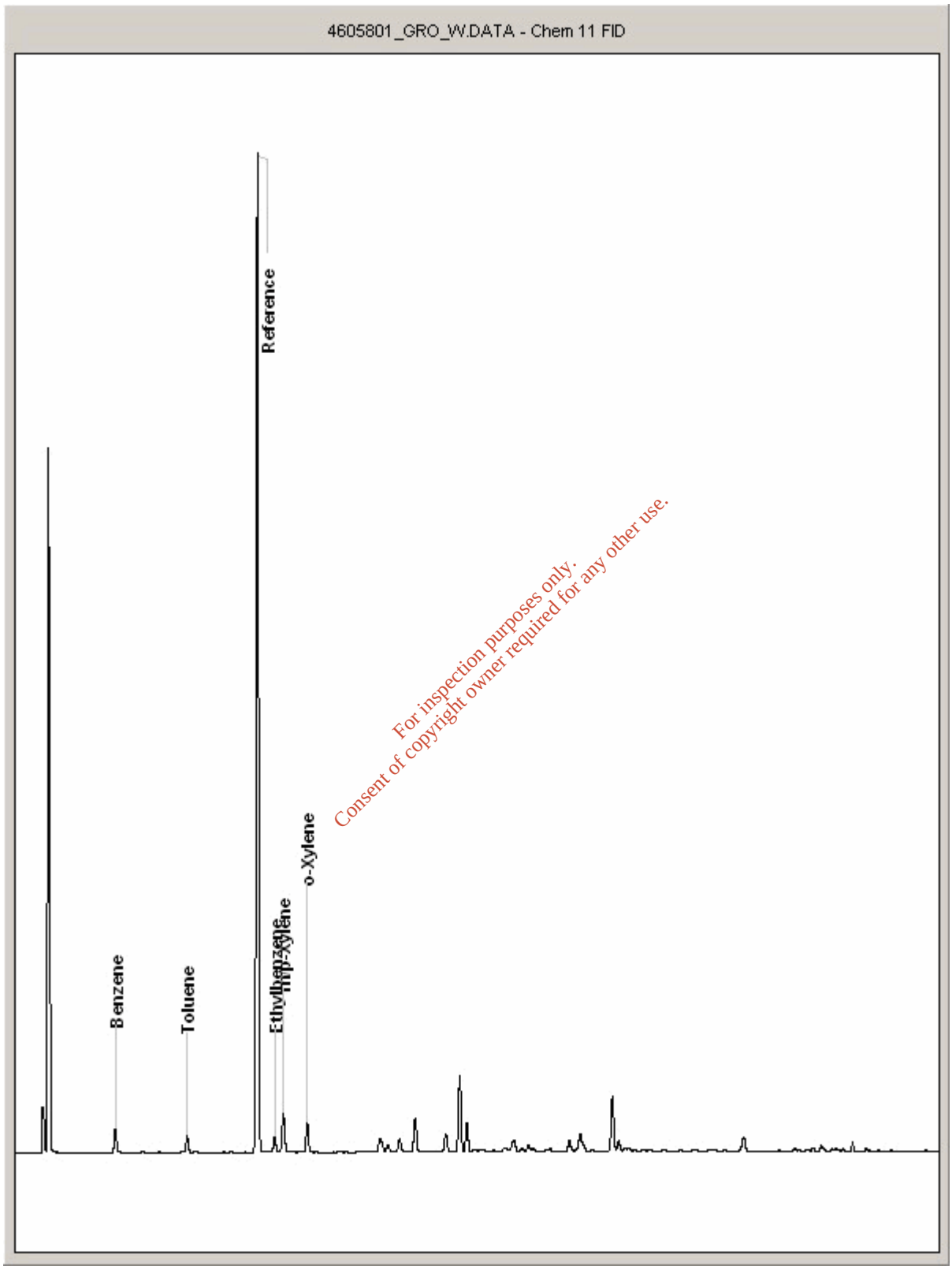
SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4605801
Sample ID : C11

Depth : 1.00 - 2.00



SDG:	111028-13	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158059
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be screened in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. Is an asbestos fibre type is found it will be reported as detected (for each fibre type found). If asbestos is present either as asbestos containing material or loose fibres no further analysis will be undertaken. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials -whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute themajor part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C4 -C10 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GC-MS
HERBICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
PESTICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB TOT/PCB CON	D&C	HEXANE:ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE:ACETONE	MICROWAVE TM218.	GC-MS
C8-C40 (C8-C40) EZ FLASH	WET	HEXANE:ACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE:ACETONE	SHAKER	GC-EZ
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM:ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC MS

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials or those identified as potentially asbestos containing during sample description which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -
Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

ALcontrol Laboratories

Unit 18A
Rosemount Business Park
Ballycoolin
Dublin 11
Tel : (0035) 3188 29893

Mouchel
Ground Engineering
Rowan House
Lloyd Drive
Cheshire
CH65 9HQ

Attention: Neil Balderstone

CERTIFICATE OF ANALYSIS

Date:	04 November 2011
Customer:	D_MOUCHEL_ELE
Sample Delivery Group (SDG):	111027-54
Your Reference:	
Location:	Limerick Gasworks
Report No:	158094

We received 5 samples on Tuesday October 25, 2011 and 5 of these samples were scheduled for analysis which was completed on Friday November 04, 2011. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
4587709	H12		2.50 - 3.50	25/10/2011
4587707	J10		1.00 - 2.00	25/10/2011
4587704	K1		2.00 - 3.00	25/10/2011
4587706	K5		1.00 - 2.00	25/10/2011
4587705	M3		3.00 - 4.00	25/10/2011

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

LIQUID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			4587704	4587705	4587706	4587707	4587709
Customer Sample Reference			K1	M3	K5	J10	H12
AGS Reference							
Depth (m)			2.00 - 3.00	3.00 - 4.00	1.00 - 2.00	1.00 - 2.00	2.50 - 3.50
Container			1l glass bottle (D) / PLAS BOT (D) / Vial (ALE297)	1l glass bottle (D) / 1lplastic (ALE221) / Vial (ALE297)	1l glass bottle (D) / PLAS BOT (D) / Vial (ALE297)	1l glass bottle (D) / PLAS BOT (D) / Vial (ALE297)	1l glass bottle (D) / 1lplastic (ALE221) / Vial (ALE297)
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 5	X	X	X	X	X
Anions by Kone (w)	All	NDPs: 0 Tests: 5	X	X	X	X	X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5	X	X	X	X	X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 5	X	X	X	X	X
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5	X	X	X	X	X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5	X	X	X	X	X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 5	X	X	X	X	X
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 5	X	X	X	X	X
Mercury Dissolved	All	NDPs: 0 Tests: 5	X	X	X	X	X
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 5	X	X	X	X	X
pH Value	All	NDPs: 0 Tests: 5	X	X	X	X	X
Phenols by HPLC (W)	All	NDPs: 0 Tests: 5	X	X	X	X	X
Sulphide	All	NDPs: 0 Tests: 5	X	X	X	X	X
TPH CWG (W)	All	NDPs: 0 Tests: 5	X	X	X	X	X
VOC MS (W)	All	NDPs: 0 Tests: 2		X	X		

CERTIFICATE OF ANALYSIS

SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	H12	J10	K1	K5	M3
			Depth (m)	2.50 - 3.50	1.00 - 2.00	2.00 - 3.00	1.00 - 2.00	3.00 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	25/10/2011	25/10/2011	25/10/2011	25/10/2011	25/10/2011
			Date Received	25/10/2011	25/10/2011	25/10/2011	25/10/2011	25/10/2011
			SDG Ref	111027-54	111027-54	111027-54	111027-54	111027-54
			Lab Sample No.(s)	4587709	4587707	4587704	4587706	4587705
			AGS Reference					
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		16.6 #	0.394 #	1.94 #	137 #	1.19 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099		21.3 #	0.507 #	2.49 #	176 #	1.53 #
Sulphide	<0.01 mg/l	TM101		<0.01 #	<0.01 #	<0.01 #	<0.05 #	<0.01 #
Arsenic (diss.filt)	<0.12 µg/l	TM152		7.41 #	2.24 #	1.56 #	162 #	3.68 #
Cadmium (diss.filt)	<0.1 µg/l	TM152		<0.1 #	<0.1 #	<0.1 #	0.177 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152		12.8 #	10.3 #	5.75 #	14.1 #	2.46 #
Copper (diss.filt)	<0.85 µg/l	TM152		1.07 #	4.51 #	4.44 #	1.97 #	4.31 #
Lead (diss.filt)	<0.02 µg/l	TM152		0.599 #	0.071 #	0.483 #	0.404 #	0.425 #
Nickel (diss.filt)	<0.15 µg/l	TM152		5.88 #	6.1 #	9.93 #	28 #	5.02 #
Selenium (diss.filt)	<0.39 µg/l	TM152		3.94 #	2.64 #	2.05 #	26.2 #	2.76 #
Zinc (diss.filt)	<0.41 µg/l	TM152		0.861 #	0.723 #	2.06 #	46.2 #	2.18 #
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	0.119 #	<0.01 #
Sulphate	<2 mg/l	TM184		182 #	60.3 #	722 #	422 #	551 #
Cyanide, Total	<0.05 mg/l	TM227		<0.05 #	<0.05 #	1.05 #	8.47 #	0.845 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03 #	<0.03 #	<0.03 #	<0.3 #	<0.03 #
pH	<1 pH Units	TM256		7.39 #	7.6 #	7.15 #	9.57 #	7.54 #
Resorcinol	<0.01 mg/l	TM259		<0.01	<0.01	<0.01	<1	<0.01
Catechol	<0.01 mg/l	TM259		<0.01	<0.01	<0.01	<1	<0.01
Phenol	<0.002 mg/l	TM259		<0.002 #	<0.002 #	<0.002 #	307 #	<0.002 #
Cresols	<0.006 mg/l	TM259		<0.006 #	<0.006 #	<0.006 #	470 #	<0.006 #
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #	<0.008 #	253 #	<0.008 #
1-Naphthol	<0.01 mg/l	TM259		<0.01	<0.01	<0.01	<1	<0.01
2,3,5-Trimethylphenol	<0.003 mg/l	TM259		<0.003 #	<0.003 #	<0.003 #	<0.3 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259		<0.006 #	<0.006 #	<0.006 #	<0.6 #	<0.006 #
Phenols, Total Detected 5 speciated	<0.025 mg/l	TM259		<0.025	<0.025	<0.025	1030	<0.025

CERTIFICATE OF ANALYSIS

SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	H12	J10	K1	K5	M3
			Depth (m)	2.50 - 3.50	1.00 - 2.00	2.00 - 3.00	1.00 - 2.00	3.00 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	25/10/2011	25/10/2011	25/10/2011	25/10/2011	25/10/2011
			Date Received	25/10/2011	25/10/2011	25/10/2011	25/10/2011	25/10/2011
			SDG Ref	111027-54	111027-54	111027-54	111027-54	111027-54
			Lab Sample No.(s)	4587709	4587707	4587704	4587706	4587705
			AGS Reference					
Naphthalene (aq)	<0.1 µg/l	TM178		2.5 #	0.104 #	0.161 #	9680 #	0.139 #
Acenaphthene (aq)	<0.015 µg/l	TM178		1.25 #	<0.015 #	0.0445 #	118 #	<0.015 #
Acenaphthylene (aq)	<0.011 µg/l	TM178		3.77 #	0.14 #	0.137 #	544 #	0.0673 #
Fluoranthene (aq)	<0.017 µg/l	TM178		26.8 #	0.128 #	2.09 #	240 #	1.53 #
Anthracene (aq)	<0.015 µg/l	TM178		3.01 #	0.0439 #	0.177 #	183 #	0.0867 #
Phenanthrene (aq)	<0.022 µg/l	TM178		7.64 #	0.0749 #	0.567 #	593 #	0.164 #
Fluorene (aq)	<0.014 µg/l	TM178		2.51 #	0.0258 #	0.0775 #	286 #	0.029 #
Chrysene (aq)	<0.013 µg/l	TM178		12.2 #	0.14 #	1.81 #	93.2 #	1.16 #
Pyrene (aq)	<0.015 µg/l	TM178		17.3 #	0.102 #	2.11 #	170 #	1.4 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		11.4 #	0.0994 #	1.62 #	89.2 #	0.939 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		29 #	0.233 #	3.03 #	122 #	1.76 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		26.7 #	0.314 #	3.64 #	84.9 #	2.16 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		31 #	0.408 #	3.82 #	97.8 #	2.17 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		4.16 #	0.0497 #	0.75 #	35.6 #	0.356 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		17.2 #	0.302 #	3.56 #	83.9 #	1.96 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		15.2 #	0.204 #	2.97 #	88.3 #	1.53 #
PAH, Total Detected USEPA 16 (aq)	<0.247 µg/l	TM178		212	2.37	26.6	12500	15.5

CERTIFICATE OF ANALYSIS

SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	H12	J10	K1	K5	M3
			Depth (m)	2.50 - 3.50	1.00 - 2.00	2.00 - 3.00	1.00 - 2.00	3.00 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	25/10/2011	25/10/2011	25/10/2011	25/10/2011	25/10/2011
			Date Received	25/10/2011	25/10/2011	25/10/2011	25/10/2011	25/10/2011
			SDG Ref	111027-54	111027-54	111027-54	111027-54	111027-54
			Lab Sample No.(s)	4587709	4587707	4587704	4587706	4587705
			AGS Reference					
GRO Surrogate % recovery**	%	TM245		93 §	93 §	91 §	92	92
GRO >C5-C12	<50 µg/l	TM245		<50 § #	<50 § #	<50 § #	34700 #	<50 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 § #	<3 § #	<3 § #	<15 #	<3 #
Benzene	<7 µg/l	TM245		<7 § #	<7 § #	<7 § #	12100 #	<7 #
Toluene	<4 µg/l	TM245		<4 § #	<4 § #	<4 § #	4180 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 § #	<5 § #	<5 § #	207 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 § #	<8 § #	<8 § #	1310 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 § #	<3 § #	<3 § #	534 #	<3 #
Sum of detected Xylenes	<11 µg/l	TM245		<11 §	<11 §	<11 §	1840	<11
Sum of detected BTEX	<28 µg/l	TM245		<28 §	<28 §	<28 §	18300	<28
Aliphatics >C5-C6	<10 µg/l	TM245		<10 §	<10 §	<10 §	263	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10 §	<10 §	<10 §	1150	<10
Aliphatics >C8-C10	<10 µg/l	TM245		<10 §	<10 §	<10 §	1670	<10
Aliphatics >C10-C12	<10 µg/l	TM245		<10 §	<10 §	<10 §	7290	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		32	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		32	<10	<10	<10	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		<10 §	<10 §	<10 §	12100	<10
Aromatics >EC7-EC8	<10 µg/l	TM245		<10 §	<10 §	<10 §	4180	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		<10 §	<10 §	<10 §	3160	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		<10 §	<10 §	<10 §	4860	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		185	<10	<10	<10	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		87	<10	14	<10	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		<10	<10	50	<10	28
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		272	<10	64	<10	28
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		309	<10	64	34700	31

CERTIFICATE OF ANALYSIS

SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	K5	M3
			Depth (m)	1.00 - 2.00	3.00 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)
			Date Sampled	25/10/2011	25/10/2011
			Date Received	25/10/2011	25/10/2011
			SDG Ref	111027-54	111027-54
			Lab Sample No.(s)	4587706	4587705
			AGS Reference		
Dibromofluoromethane**	%	TM208		72.1	107
Toluene-d8**	%	TM208		89.5	99.4
4-Bromofluorobenzene**	%	TM208		64.4	98.3
Dichlorodifluoromethane	<1 µg/l	TM208		<1 #	<1 #
Chloromethane	<1 µg/l	TM208		<1 #	<1 #
Vinyl chloride	<1 µg/l	TM208		<1 #	<1 #
Bromomethane	<1 µg/l	TM208		<1 #	<1 #
Chloroethane	<1 µg/l	TM208		<1 #	<1 #
Trichlorofluoromethane	<1 µg/l	TM208		<1 #	<1 #
1,1-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #
Carbon disulphide	<1 µg/l	TM208		<1 #	<1 #
Dichloromethane	<3 µg/l	TM208		<3 #	<3 #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 #	<1 #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #
1,1-Dichloroethane	<1 µg/l	TM208		<1 #	<1 #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 #	<1 #
2,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #
Bromochloromethane	<1 µg/l	TM208		<1 #	<1 #
Chloroform	<1 µg/l	TM208		<1 #	<1 #
1,1,1-Trichloroethane	<1 µg/l	TM208		4.3 #	<1 #
1,1-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #
Carbontetrachloride	<1 µg/l	TM208		<1 #	<1 #
1,2-Dichloroethane	<1 µg/l	TM208		<1	<1
Benzene	<1 µg/l	TM208		13300 #	<1 #
Trichloroethene	<1 µg/l	TM208		8.4 #	<1 #
1,2-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #
Dibromomethane	<1 µg/l	TM208		<1 #	<1 #
Bromodichloromethane	<1 µg/l	TM208		<1 #	<1 #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #
Toluene	<1 µg/l	TM208		5020 #	<1 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 #	<1 #
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 #	<1 #
1,3-Dichloropropane	<1 µg/l	TM208		<1 #	<1 #
Tetrachloroethene	<1 µg/l	TM208		<1 #	<1 #
Dibromochloromethane	<1 µg/l	TM208		<1 #	<1 #

CERTIFICATE OF ANALYSIS

SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	K5	M3
			Depth (m)	1.00 - 2.00	3.00 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)
			Date Sampled	25/10/2011	25/10/2011
			Date Received	25/10/2011	25/10/2011
			SDG Ref	111027-54	111027-54
			Lab Sample No.(s)	4587706	4587705
			AGS Reference		
1,2-Dibromoethane	<1 µg/l	TM208		<1 #	<1 #
Chlorobenzene	<1 µg/l	TM208		<1 #	<1 #
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 #	<1 #
Ethylbenzene	<1 µg/l	TM208		227 #	<1 #
m,p-Xylene	<1 µg/l	TM208		1460 #	<1 #
o-Xylene	<1 µg/l	TM208		644 #	<1 #
Styrene	<1 µg/l	TM208		263 #	<1 #
Bromoform	<1 µg/l	TM208		<1 #	<1 #
Isopropylbenzene	<1 µg/l	TM208		9.55 #	<1 #
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1	<1
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 #	<1 #
Bromobenzene	<1 µg/l	TM208		<1 #	<1 #
Propylbenzene	<1 µg/l	TM208		12 #	<1 #
2-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #
1,3,5-Trimethylbenzene	<1 µg/l	TM208		53.5 #	<1 #
4-Chlorotoluene	<1 µg/l	TM208		<1 #	<1 #
tert-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #
1,2,4-Trimethylbenzene	<1 µg/l	TM208		135 #	<1 #
sec-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #
4-iso-Propyltoluene	<1 µg/l	TM208		<1 #	<1 #
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 #	<1 #
n-Butylbenzene	<1 µg/l	TM208		<1 #	<1 #
1,2-Dichlorobenzene	<1 µg/l	TM208		<1	<1
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1	<1
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #
Hexachlorobutadiene	<1 µg/l	TM208		<1 #	<1 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #
Naphthalene	<1 µg/l	TM208		5770 #	<1 #
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 #	<1 #
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1	<1

CERTIFICATE OF ANALYSIS

SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Notification of Deviating Samples

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
4627418	J10	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C10-C12	Container with Headspace provided for volatiles analysis
4627418	J10	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C5-C6	Container with Headspace provided for volatiles analysis
4627418	J10	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C6-C8	Container with Headspace provided for volatiles analysis
4627418	J10	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C8-C10	Container with Headspace provided for volatiles analysis
4627418	J10	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC10-EC12	Container with Headspace provided for volatiles analysis
4627418	J10	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC5-EC7	Container with Headspace provided for volatiles analysis
4627418	J10	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC7-EC8	Container with Headspace provided for volatiles analysis
4627418	J10	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC8-EC10	Container with Headspace provided for volatiles analysis
4627418	J10	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Benzene	Container with Headspace provided for volatiles analysis
4627418	J10	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Ethylbenzene	Container with Headspace provided for volatiles analysis
4627418	J10	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	GRO >C5-C12	Container with Headspace provided for volatiles analysis
4627418	J10	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	GRO Surrogate % recovery**	Container with Headspace provided for volatiles analysis
4627418	J10	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	m,p-Xylene	Container with Headspace provided for volatiles analysis
4627418	J10	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Methyl tertiary butyl ether (MTBE)	Container with Headspace provided for volatiles analysis
4627418	J10	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	o-Xylene	Container with Headspace provided for volatiles analysis
4627418	J10	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Sum of detected BTEX	Container with Headspace provided for volatiles analysis
4627418	J10	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Sum of detected Xylenes	Container with Headspace provided for volatiles analysis
4627418	J10	1.00 - 2.00	LIQUID	GRO by GC-FID (W)	Toluene	Container with Headspace provided for volatiles analysis
4627470	K1	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C10-C12	Container with Headspace provided for volatiles analysis
4627470	K1	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C5-C6	Container with Headspace provided for volatiles analysis
4627470	K1	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C6-C8	Container with Headspace provided for volatiles analysis
4627470	K1	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C8-C10	Container with Headspace provided for volatiles analysis
4627470	K1	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC10-EC12	Container with Headspace provided for volatiles analysis
4627470	K1	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC5-EC7	Container with Headspace provided for volatiles analysis
4627470	K1	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC7-EC8	Container with Headspace provided for volatiles analysis
4627470	K1	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC8-EC10	Container with Headspace provided for volatiles analysis
4627470	K1	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Benzene	Container with Headspace provided for volatiles analysis
4627470	K1	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Ethylbenzene	Container with Headspace provided for volatiles analysis
4627470	K1	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	GRO >C5-C12	Container with Headspace provided for volatiles analysis
4627470	K1	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	GRO Surrogate % recovery**	Container with Headspace provided for volatiles analysis
4627470	K1	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	m,p-Xylene	Container with Headspace provided for volatiles analysis
4627470	K1	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Methyl tertiary butyl ether (MTBE)	Container with Headspace provided for volatiles analysis
4627470	K1	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	o-Xylene	Container with Headspace provided for volatiles analysis
4627470	K1	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Sum of detected BTEX	Container with Headspace provided for volatiles analysis
4627470	K1	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Sum of detected Xylenes	Container with Headspace provided for volatiles analysis
4627470	K1	2.00 - 3.00	LIQUID	GRO by GC-FID (W)	Toluene	Container with Headspace provided for volatiles analysis

CERTIFICATE OF ANALYSIS

SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
4627490	H12	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C10-C12	Container with Headspace provided for volatiles analysis
4627490	H12	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C5-C6	Container with Headspace provided for volatiles analysis
4627490	H12	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C6-C8	Container with Headspace provided for volatiles analysis
4627490	H12	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C8-C10	Container with Headspace provided for volatiles analysis
4627490	H12	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC10-EC12	Container with Headspace provided for volatiles analysis
4627490	H12	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC5-EC7	Container with Headspace provided for volatiles analysis
4627490	H12	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC7-EC8	Container with Headspace provided for volatiles analysis
4627490	H12	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC8-EC10	Container with Headspace provided for volatiles analysis
4627490	H12	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Benzene	Container with Headspace provided for volatiles analysis
4627490	H12	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Ethylbenzene	Container with Headspace provided for volatiles analysis
4627490	H12	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	GRO >C5-C12	Container with Headspace provided for volatiles analysis
4627490	H12	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	GRO Surrogate % recovery**	Container with Headspace provided for volatiles analysis
4627490	H12	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	m,p-Xylene	Container with Headspace provided for volatiles analysis
4627490	H12	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Methyl tertiary butyl ether (MTBE)	Container with Headspace provided for volatiles analysis
4627490	H12	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	o-Xylene	Container with Headspace provided for volatiles analysis
4627490	H12	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Sum of detected BTEX	Container with Headspace provided for volatiles analysis
4627490	H12	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Sum of detected Xylenes	Container with Headspace provided for volatiles analysis
4627490	H12	2.50 - 3.50	LIQUID	GRO by GC-FID (W)	Toluene	Container with Headspace provided for volatiles analysis

Note : Test results may be compromised

CERTIFICATE OF ANALYSIS

SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10-7

NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate		
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Test Completion Dates

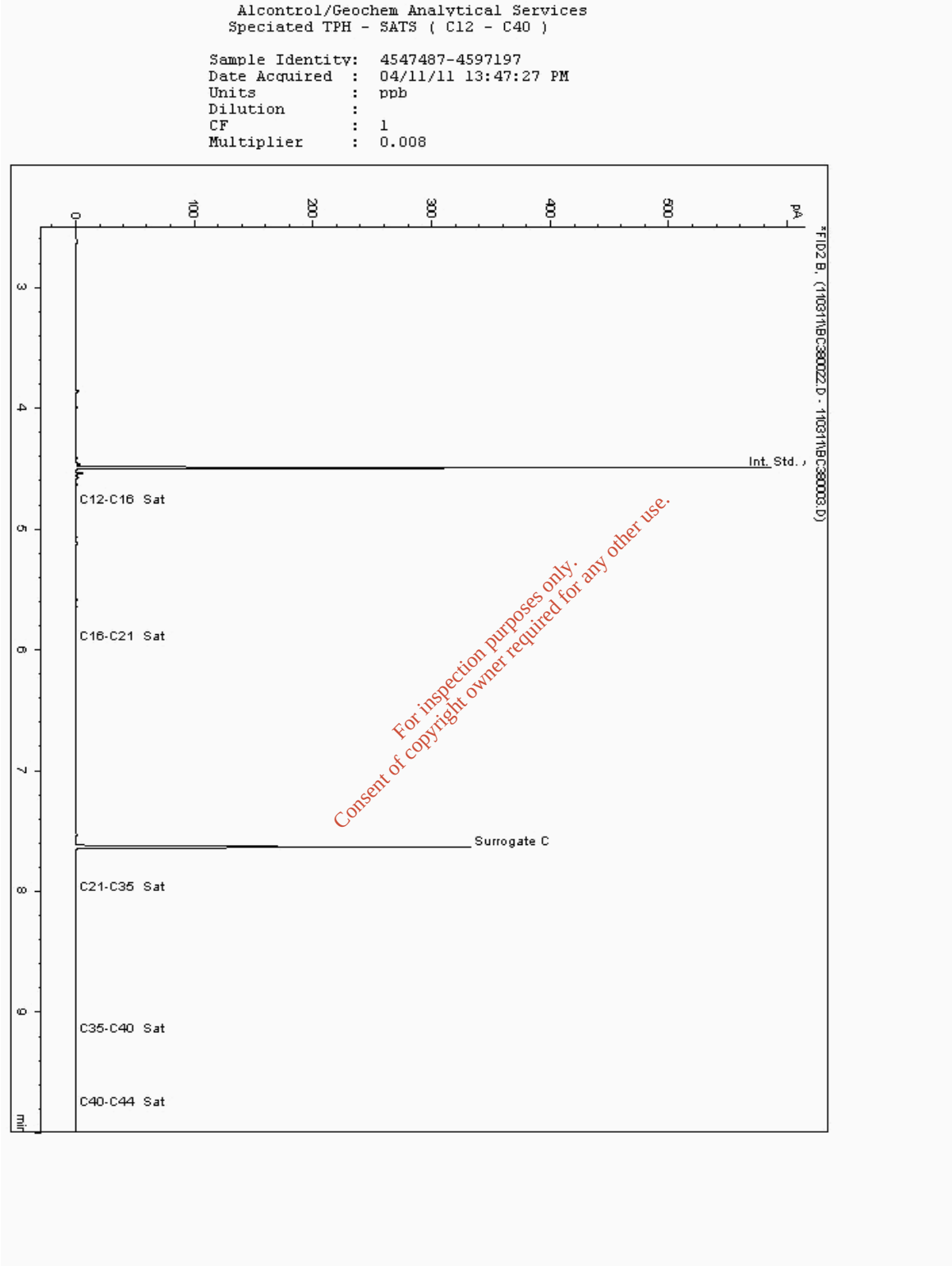
Lab Sample No(s)	4587709	4587707	4587704	4587706	4587705
Customer Sample Ref.	H12	J10	K1	K5	M3
AGS Ref.					
Depth	2.50 - 3.50	1.00 - 2.00	2.00 - 3.00	1.00 - 2.00	3.00 - 4.00
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammoniacal Nitrogen	01-Nov-2011	31-Oct-2011	31-Oct-2011	01-Nov-2011	01-Nov-2011
Anions by Kone (w)	02-Nov-2011	02-Nov-2011	02-Nov-2011	02-Nov-2011	02-Nov-2011
Cyanide Comp/Free/Total/Thiocyanate	28-Oct-2011	28-Oct-2011	28-Oct-2011	28-Oct-2011	28-Oct-2011
Dissolved Metals by ICP-MS	02-Nov-2011	01-Nov-2011	01-Nov-2011	01-Nov-2011	02-Nov-2011
EPH CWG (Aliphatic) Aqueous GC (W)	04-Nov-2011	04-Nov-2011	04-Nov-2011	04-Nov-2011	04-Nov-2011
EPH CWG (Aromatic) Aqueous GC (W)	04-Nov-2011	04-Nov-2011	04-Nov-2011	04-Nov-2011	04-Nov-2011
GRO by GC-FID (W)	03-Nov-2011	03-Nov-2011	03-Nov-2011	31-Oct-2011	30-Oct-2011
Hexavalent Chromium (w)	01-Nov-2011	01-Nov-2011	01-Nov-2011	01-Nov-2011	01-Nov-2011
Mercury Dissolved	31-Oct-2011	01-Nov-2011	31-Oct-2011	01-Nov-2011	31-Oct-2011
PAH Spec MS - Aqueous (W)	02-Nov-2011	03-Nov-2011	02-Nov-2011	02-Nov-2011	03-Nov-2011
pH Value	28-Oct-2011	01-Nov-2011	28-Oct-2011	31-Oct-2011	28-Oct-2011
Phenols by HPLC (W)	01-Nov-2011	01-Nov-2011	01-Nov-2011	02-Nov-2011	01-Nov-2011
Sulphide	01-Nov-2011	01-Nov-2011	01-Nov-2011	01-Nov-2011	01-Nov-2011
TPH CWG (W)	04-Nov-2011	04-Nov-2011	04-Nov-2011	04-Nov-2011	04-Nov-2011
VOC MS (W)				02-Nov-2011	01-Nov-2011

CERTIFICATE OF ANALYSIS

SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 4597197 **Sample ID :** K5 **Depth :** 1.00 - 2.00



CERTIFICATE OF ANALYSIS

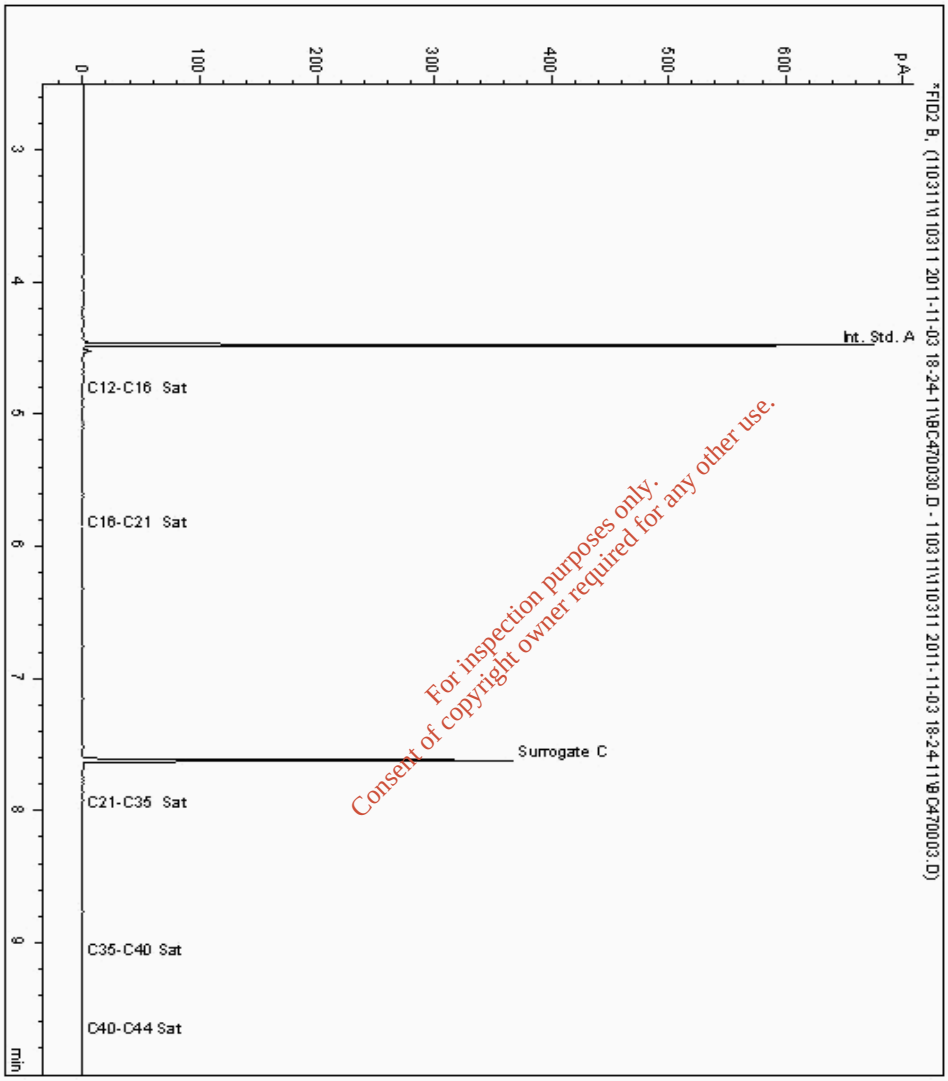
SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 4597259 **Sample ID :** J10 **Depth :** 1.00 - 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 4547503-4597259
Date Acquired : 04/11/11 03:09:45
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

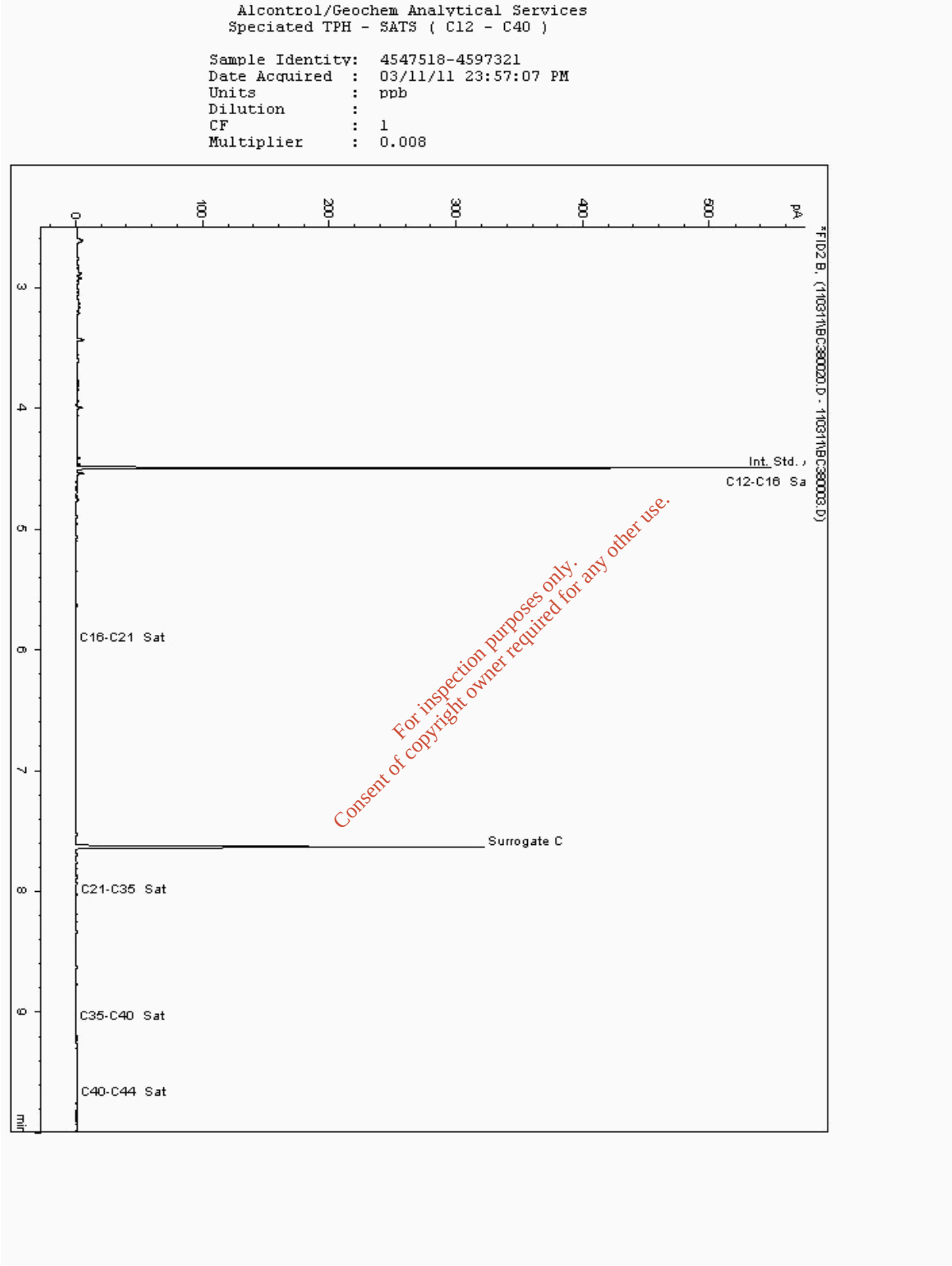


CERTIFICATE OF ANALYSIS

SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 4597321 **Sample ID :** H12 **Depth :** 2.50 - 3.50



CERTIFICATE OF ANALYSIS

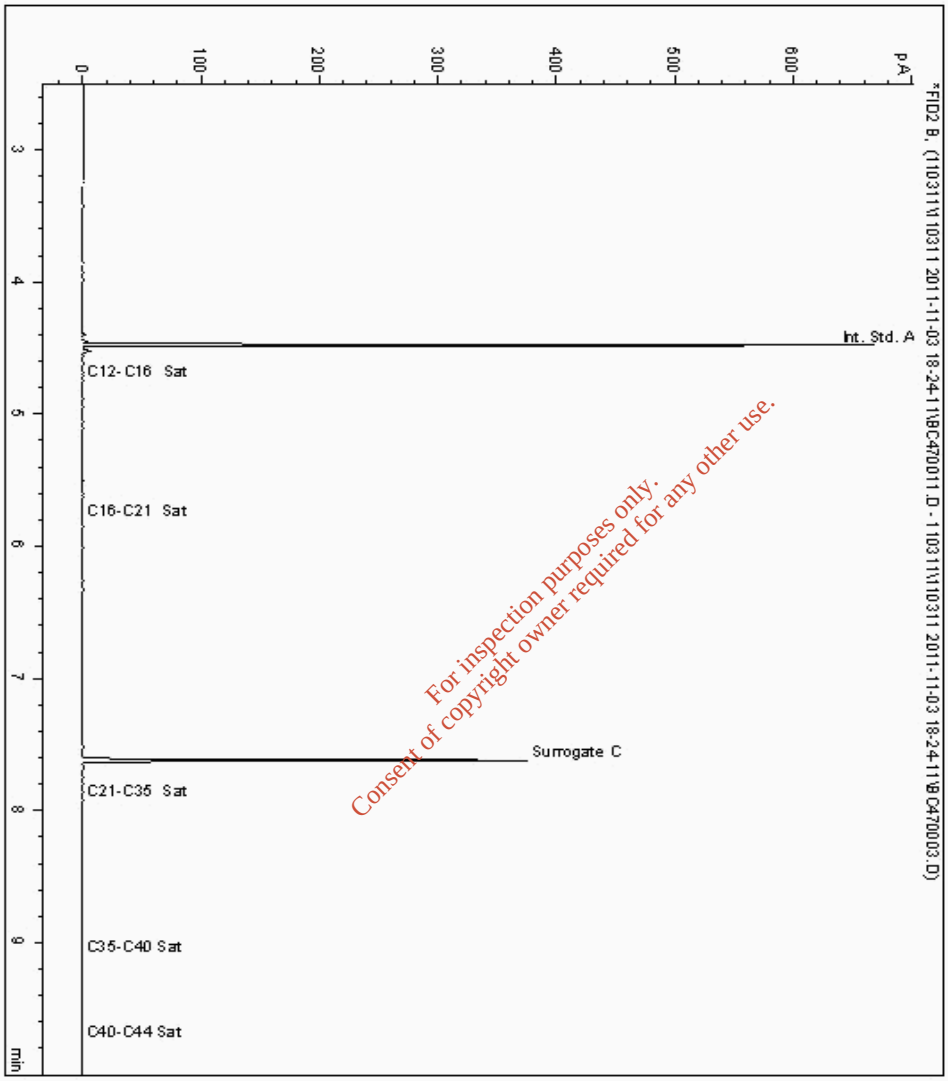
SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 4597361 **Sample ID :** K1 **Depth :** 2.00 - 3.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 4547455-4597361
Date Acquired : 03/11/11 21:32:40
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

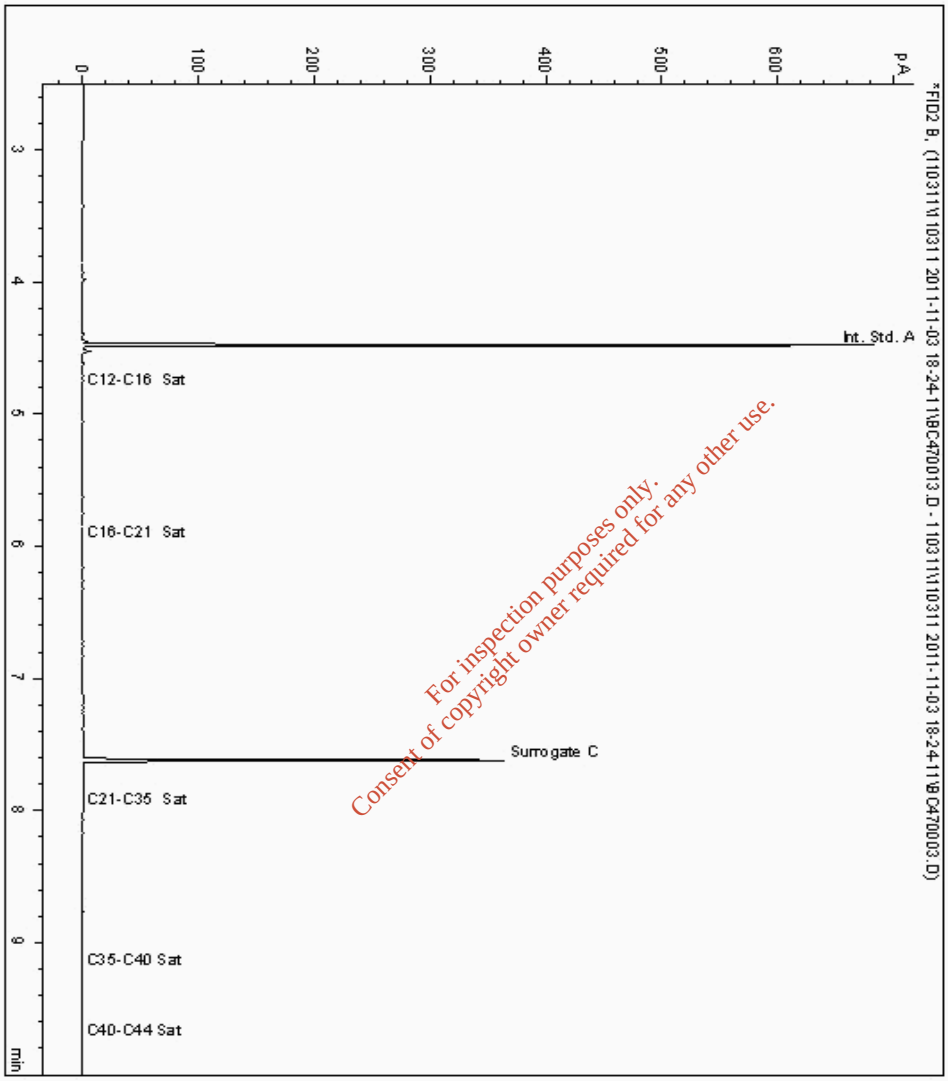
SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 4597378 **Sample ID :** M3 **Depth :** 3.00 - 4.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 4547471-4597378
Date Acquired : 03/11/11 22:01:48
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

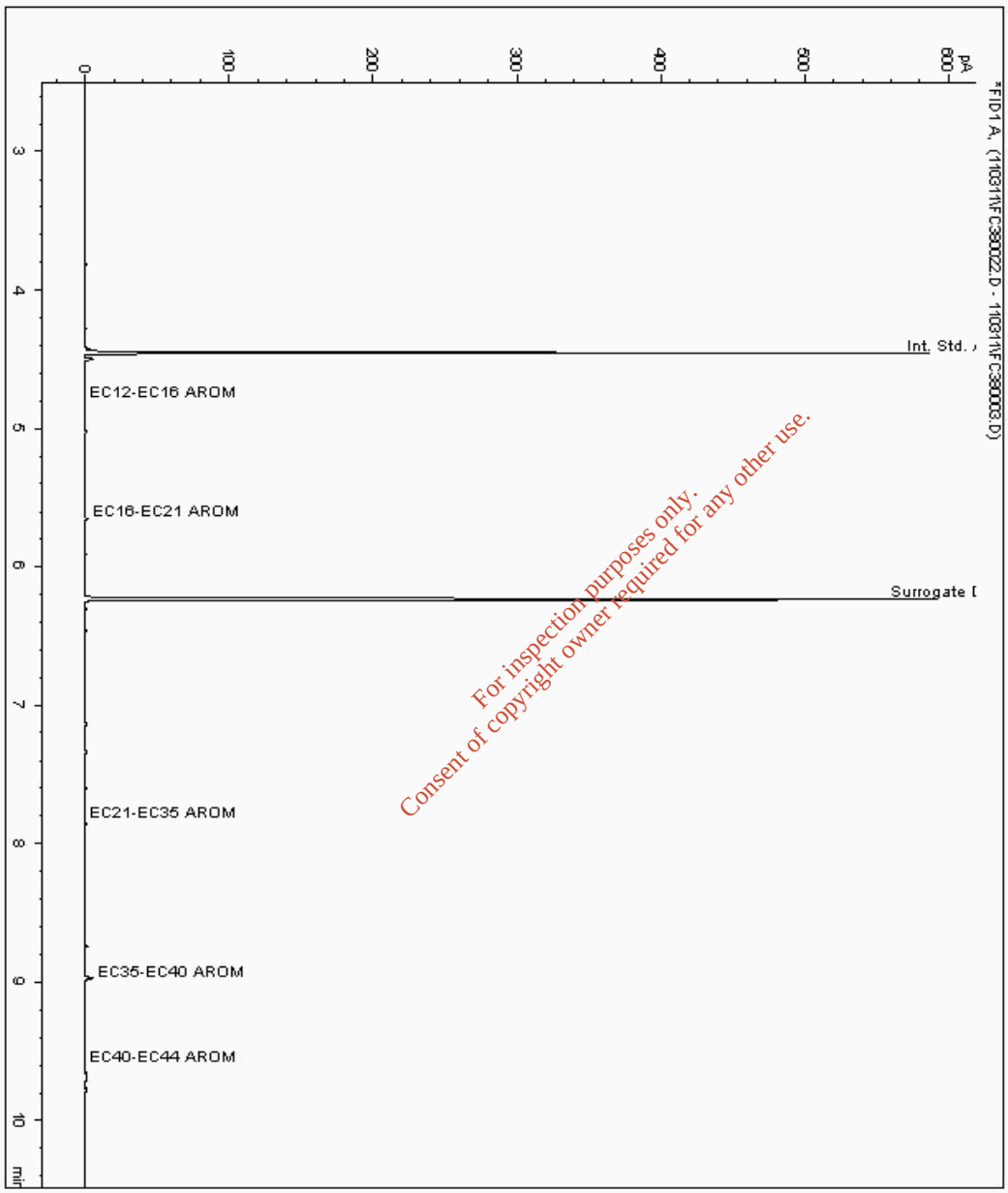
SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 4597197 **Sample ID :** K5 **Depth :** 1.00 - 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 4547488-4597197
Date Acquired : 04/11/11 13:47:26 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

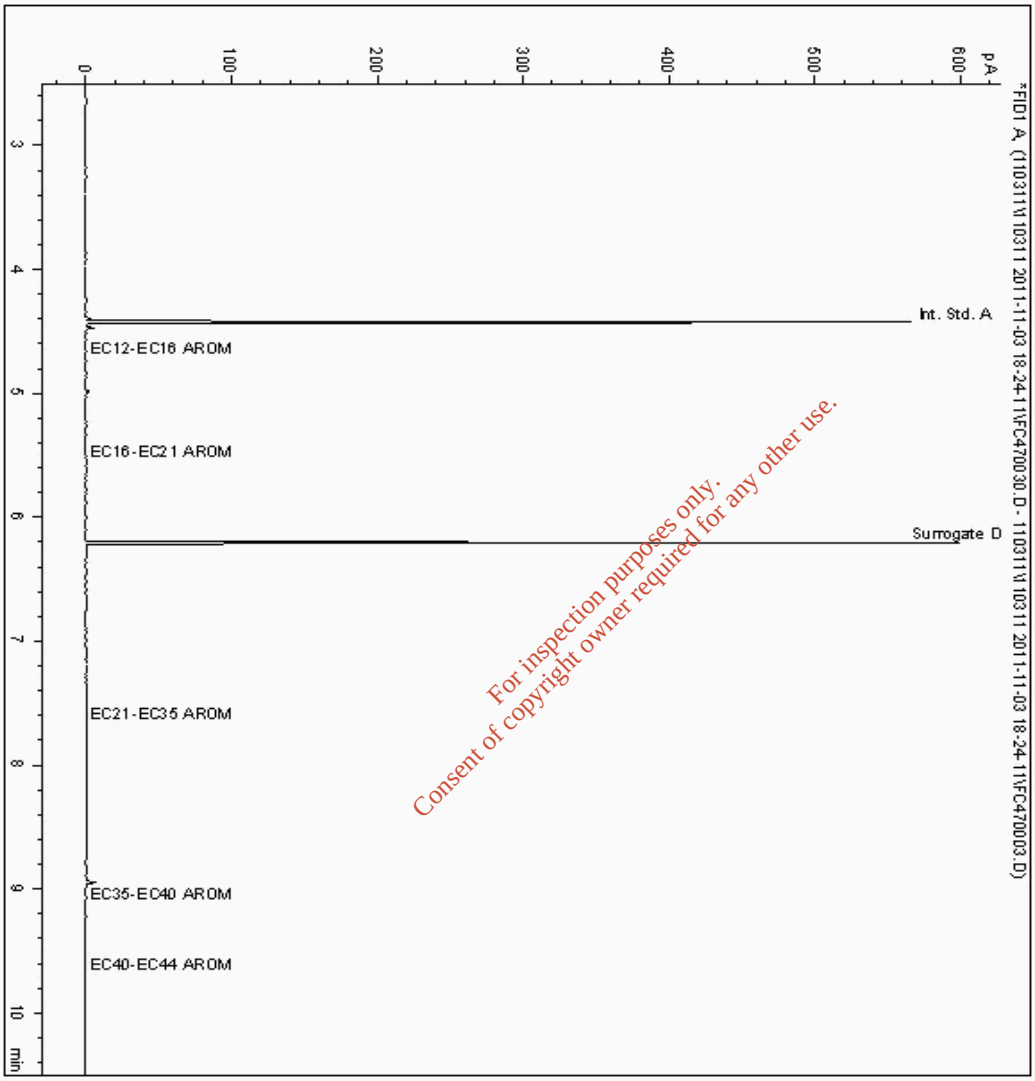
SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 4597259 **Sample ID :** J10 **Depth :** 1.00 - 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 4547504-4597259
Date Acquired : 04/11/11 03:09:45
Units :
Dilution :
CF : 1
Multiplier : 0.008

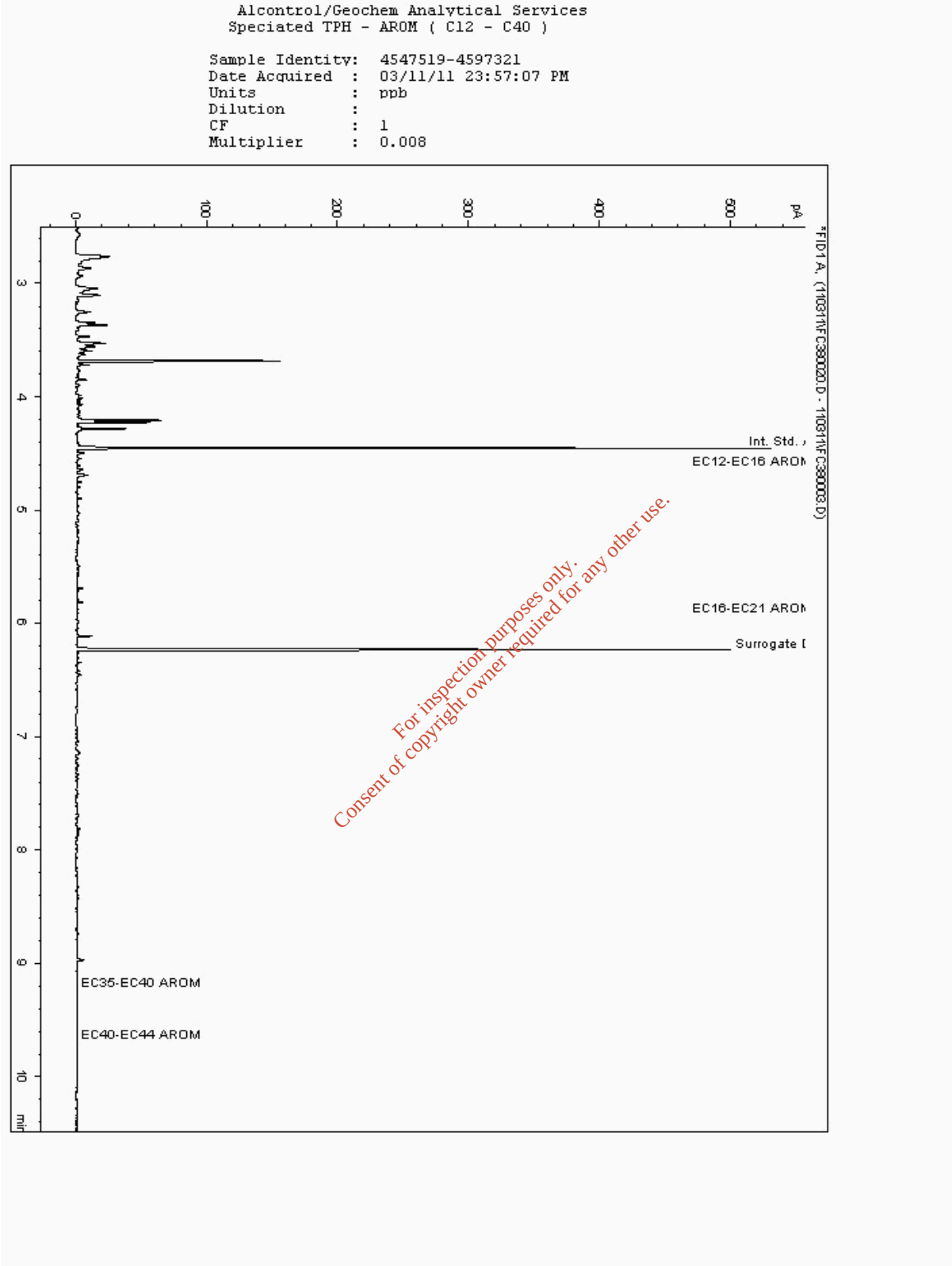


CERTIFICATE OF ANALYSIS

SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 4597321 **Sample ID :** H12 **Depth :** 2.50 - 3.50



CERTIFICATE OF ANALYSIS

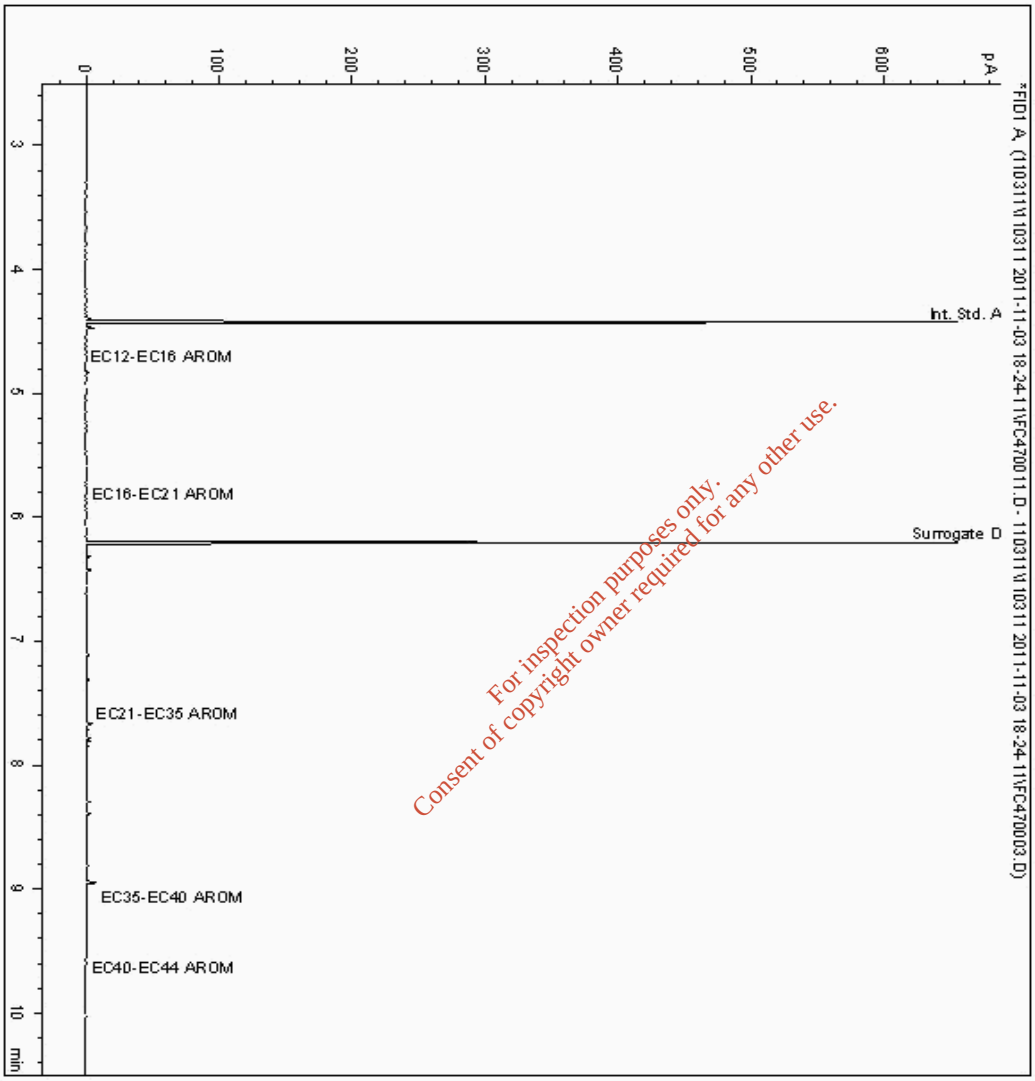
SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 4597361 **Sample ID :** K1 **Depth :** 2.00 - 3.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 4547456-4597361
Date Acquired : 03/11/11 21:32:40
Units :
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

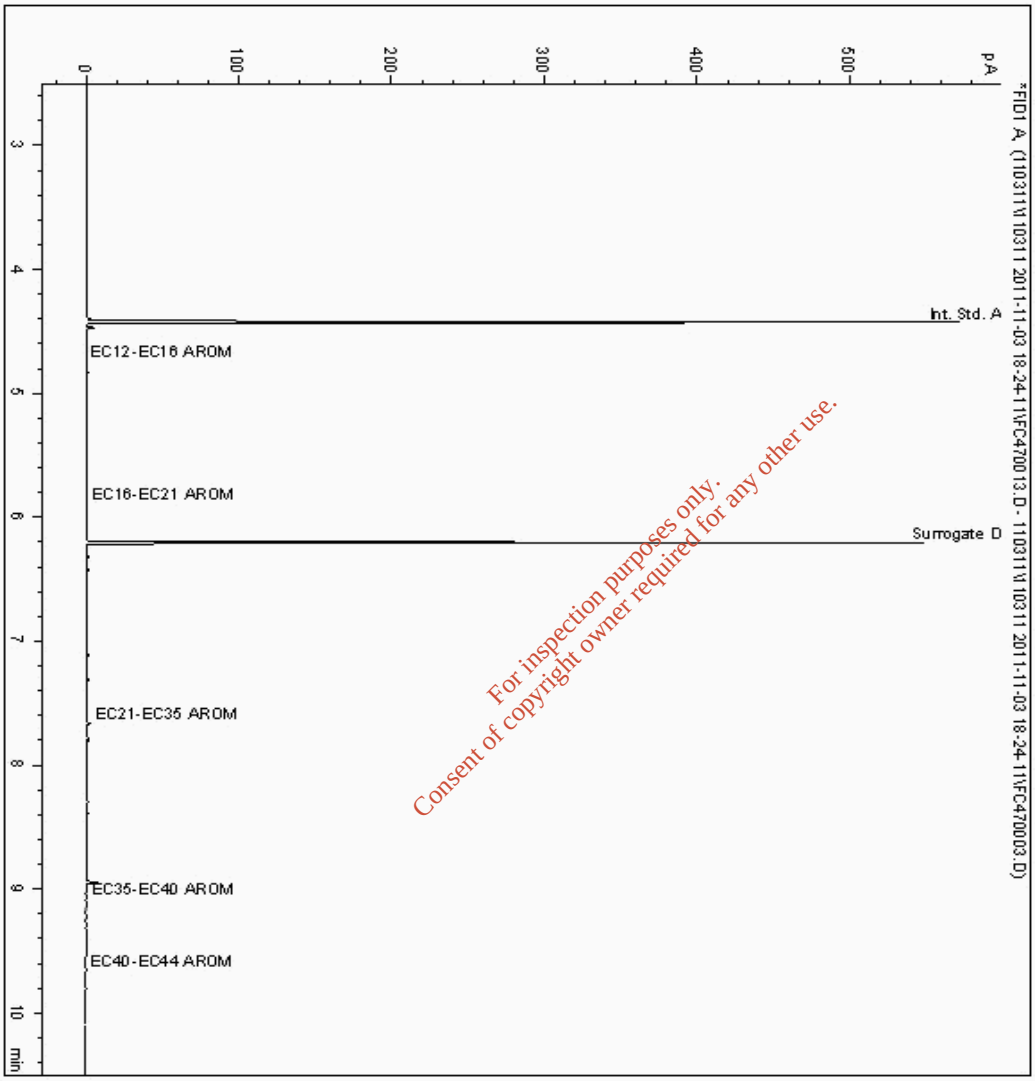
SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 4597378 **Sample ID :** M3 **Depth :** 3.00 - 4.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 4547472-4597378
Date Acquired : 03/11/11 22:01:48
Units :
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

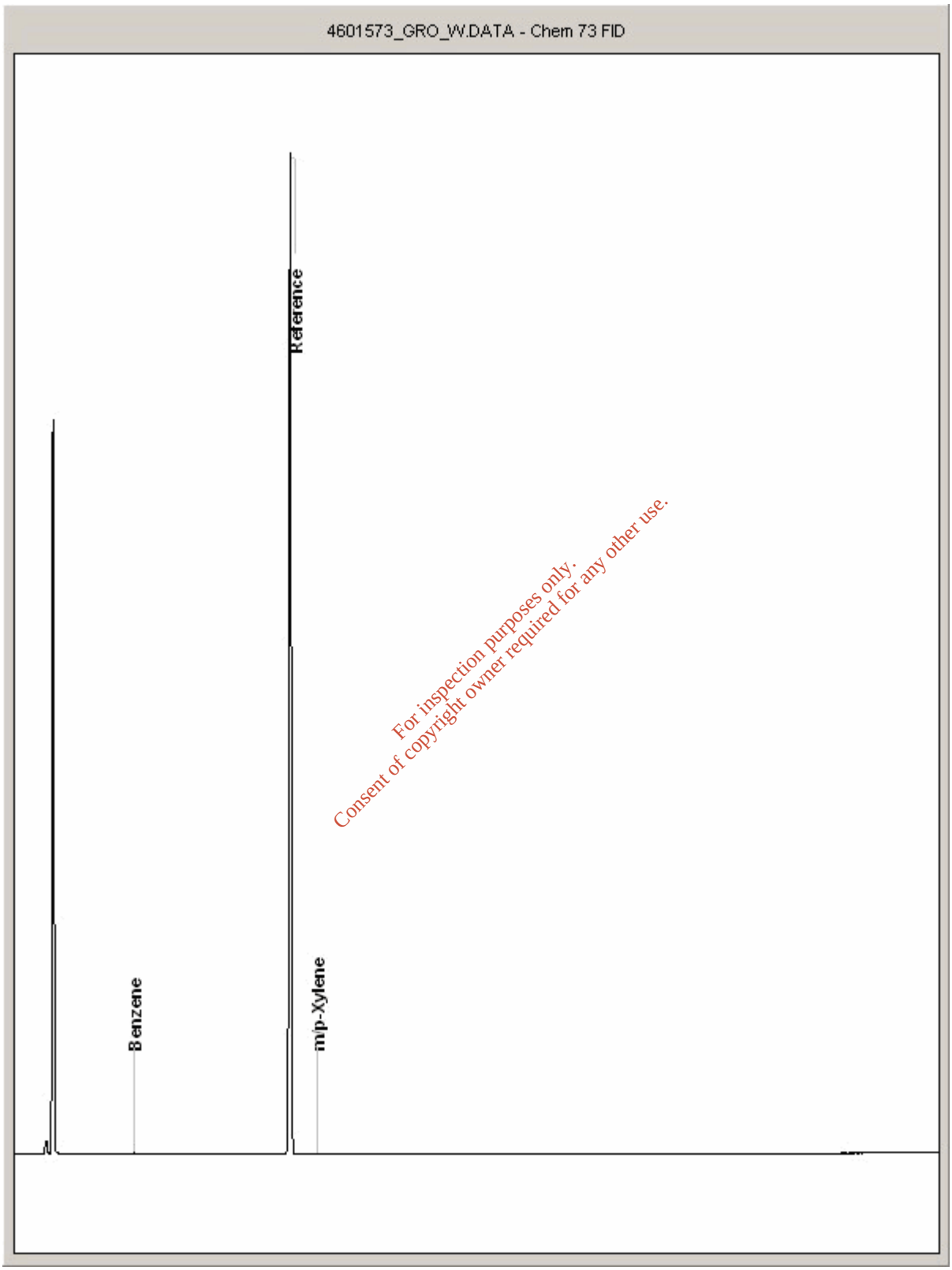
SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4601573
Sample ID : M3

Depth : 3.00 - 4.00



CERTIFICATE OF ANALYSIS

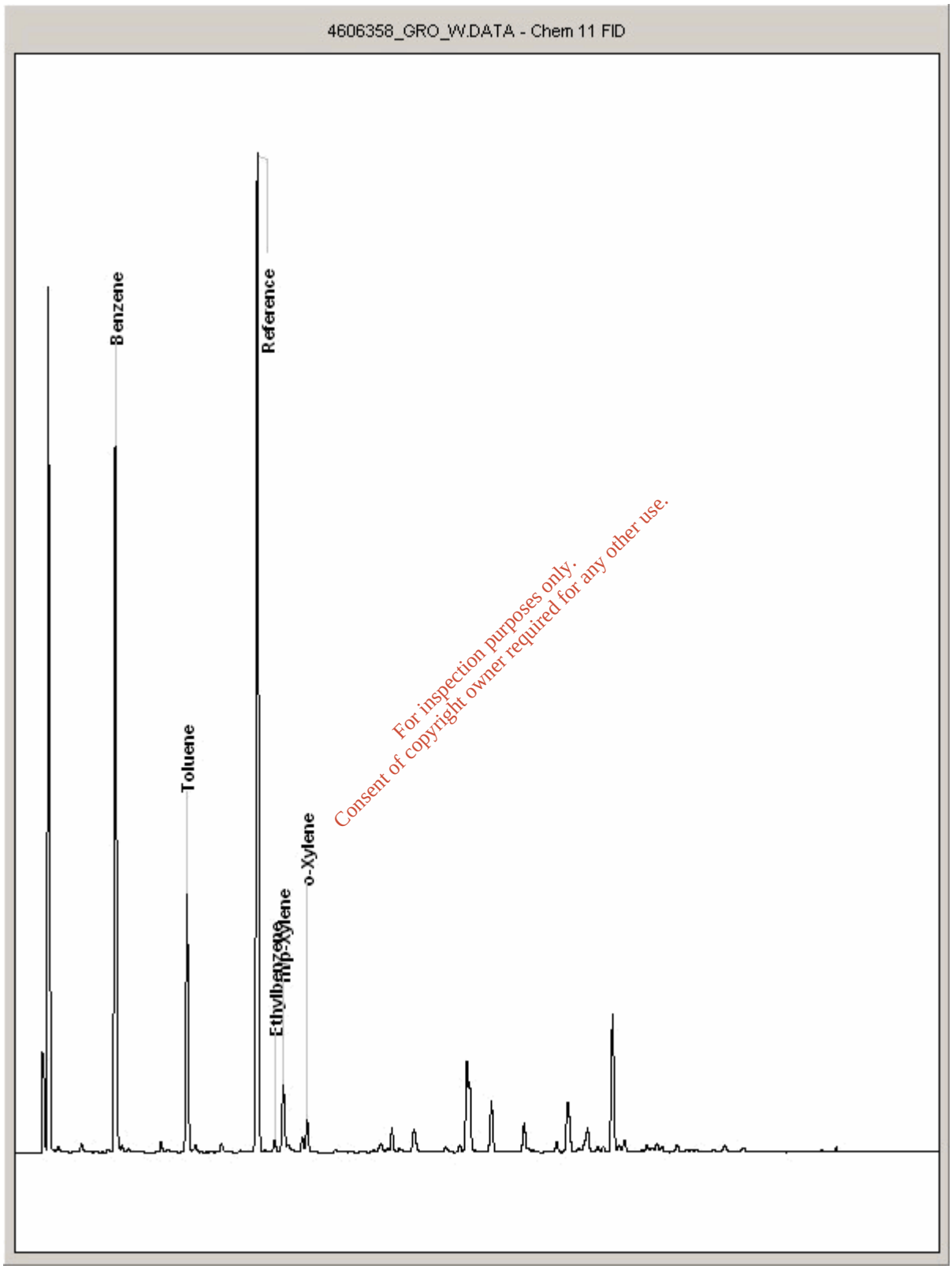
SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4606358
Sample ID : K5

Depth : 1.00 - 2.00



CERTIFICATE OF ANALYSIS

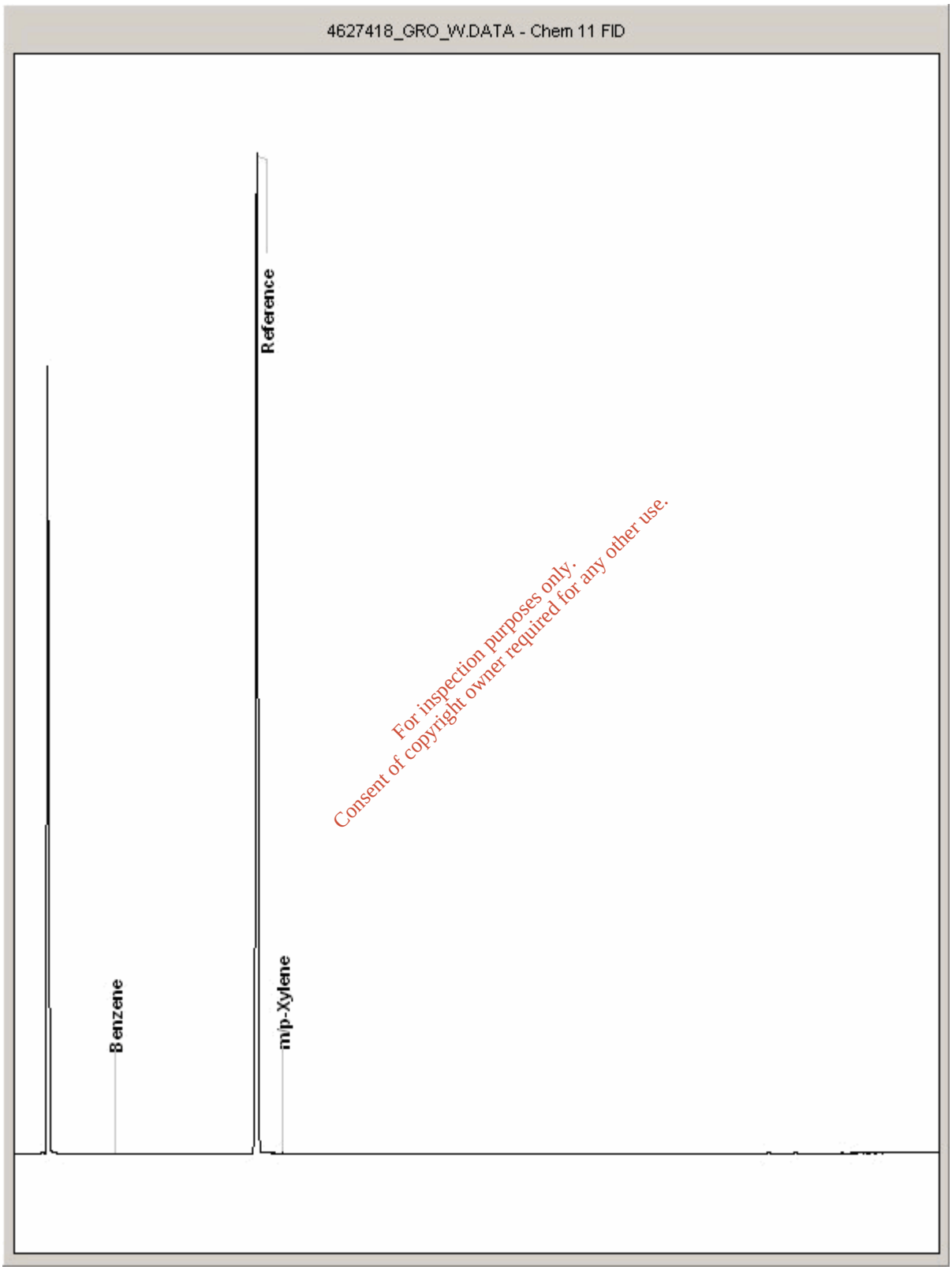
SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4627418
Sample ID : J10

Depth : 1.00 - 2.00



CERTIFICATE OF ANALYSIS

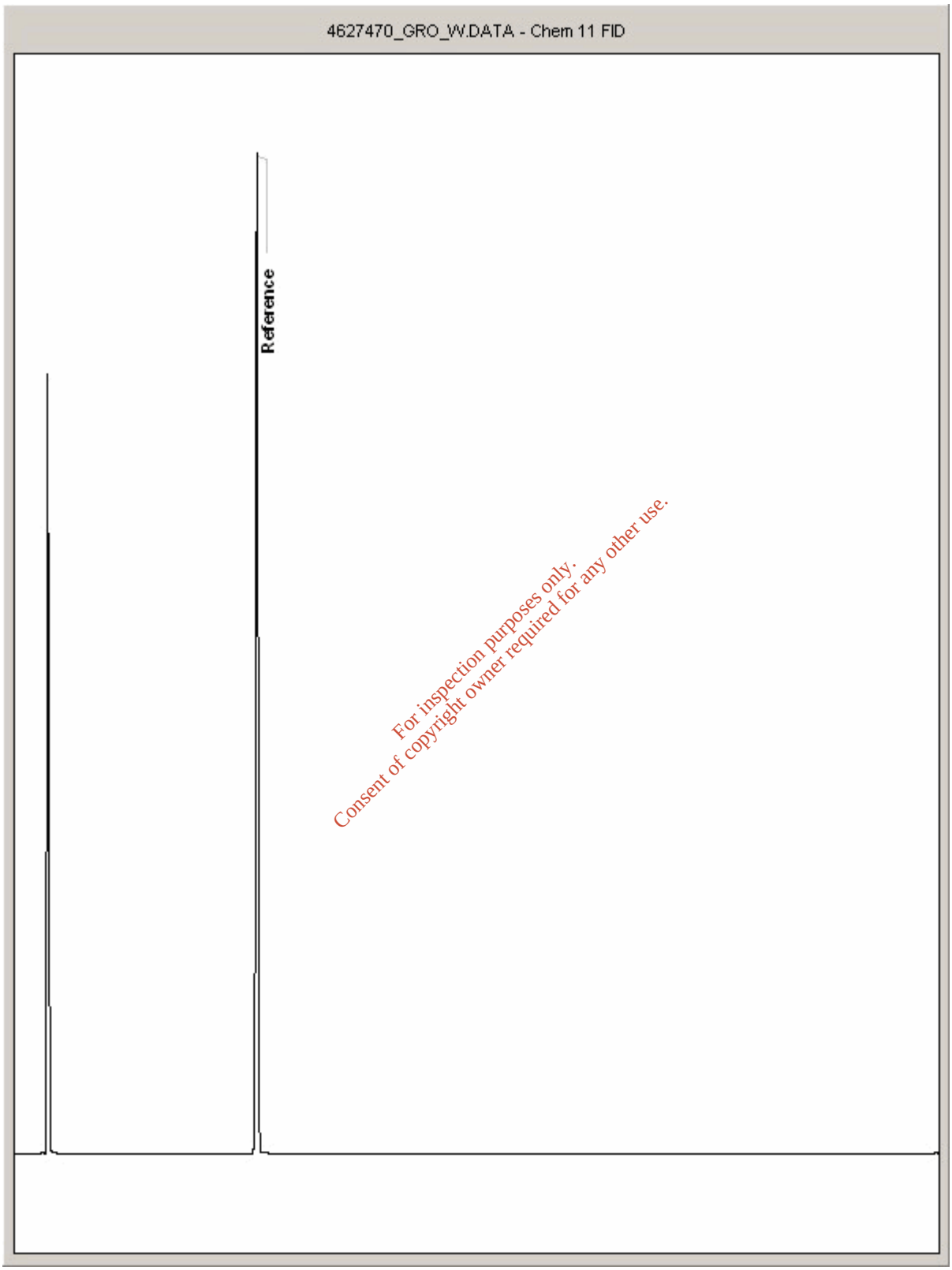
SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4627470
Sample ID : K1

Depth : 2.00 - 3.00



CERTIFICATE OF ANALYSIS

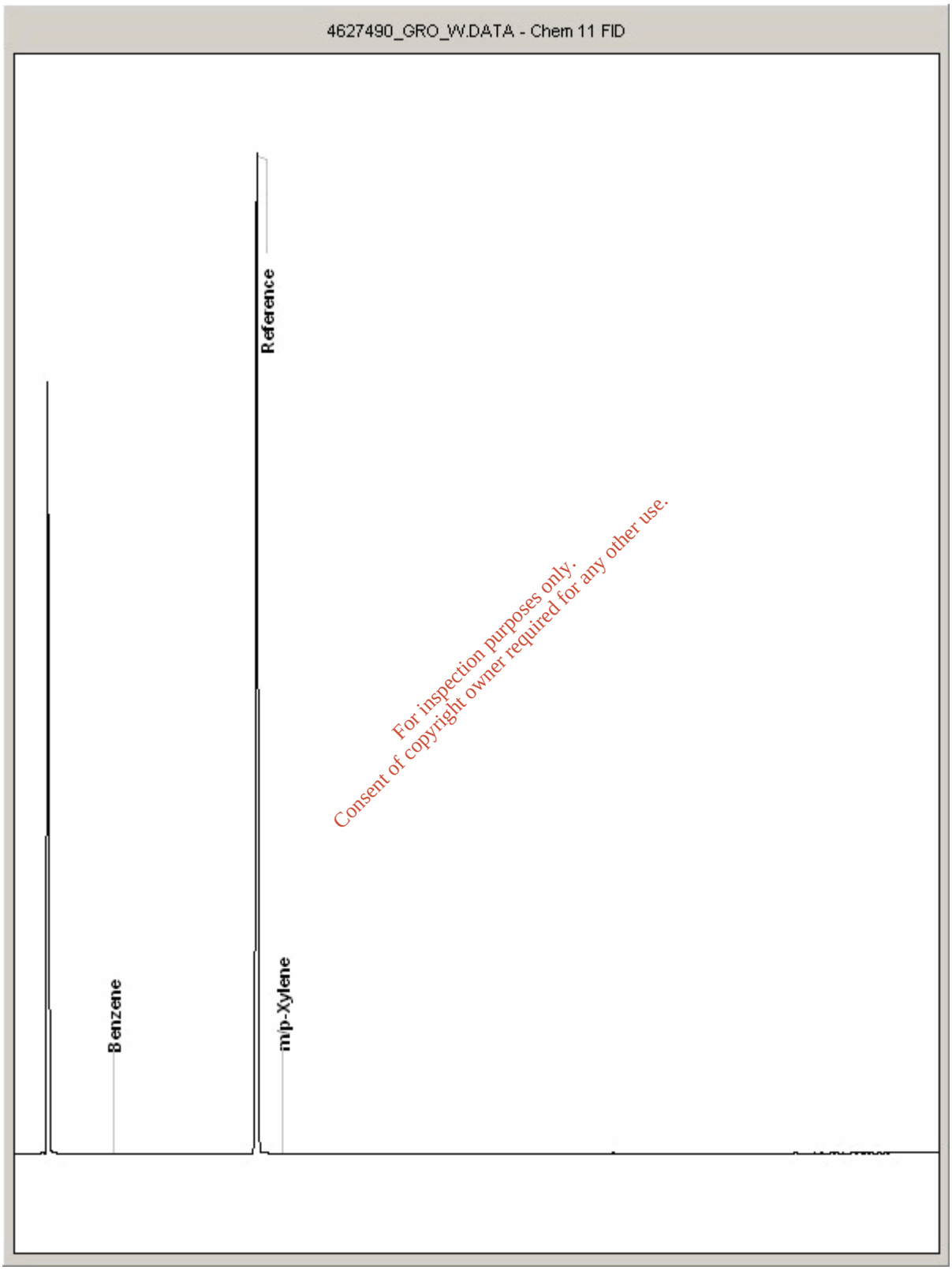
SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4627490
Sample ID : H12

Depth : 2.50 - 3.50



SDG:	111027-54	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158094
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be screened in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. Is an asbestos fibre type is found it will be reported as detected (for each fibre type found). If asbestos is present either as asbestos containing material or loose fibres no further analysis will be undertaken. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials -whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute themajor part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C4 -C10 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GC-MS
HERBICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
PESTICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB TOT / PCB CON	D&C	HEXANE:ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE:ACETONE	MICROWAVE TM218.	GC-MS
C8-C40 (C8-C40) EZ FLASH	WET	HEXANE:ACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE:ACETONE	SHAKER	GC-EZ
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM:ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC MS

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials or those identified as potentially asbestos containing during sample description which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -
Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

ALcontrol Laboratories

Unit 18A
Rosemount Business Park
Ballycoolin
Dublin 11
Tel : (0035) 3188 29893

Mouchel
Ground Engineering
Rowan House
Lloyd Drive
Cheshire
CH65 9HQ

Attention: Neil Balderstone

CERTIFICATE OF ANALYSIS

Date:	04 November 2011
Customer:	D_MOUCHEL_ELE
Sample Delivery Group (SDG):	111028-6
Your Reference:	
Location:	Limerick Gasworks
Report No:	158055

We received 5 samples on Wednesday October 26, 2011 and 5 of these samples were scheduled for analysis which was completed on Friday November 04, 2011. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
4592388	A3		1.50 - 2.50	26/10/2011
4592385	C7		4.00 - 5.00	26/10/2011
4592387	D5		1.50 - 2.50	26/10/2011
4592390	E8		1.00 - 2.00	26/10/2011
4592389	G4		3.00 - 4.00	26/10/2011

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

LIQUID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			4592388	4592389	4592387	4592385	4592390
Customer Sample Reference			A3	G4	D5	C7	E8
AGS Reference							
Depth (m)			1.50 - 2.50	3.00 - 4.00	1.50 - 2.50	4.00 - 5.00	1.00 - 2.00
Container			1l glass bottle (D) / 60g VOC (ALE215) / PLAS BOT (D)	1l glass bottle (D) / 60g VOC (ALE215) / PLAS BOT (D)	1l glass bottle (D) / 60g VOC (ALE215) / PLAS BOT (D)	1l glass bottle (D) / 60g VOC (ALE215) / PLAS BOT (D)	1l glass bottle (D) / 60g VOC (ALE215) / PLAS BOT (D)
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 5		X	X	X	X
Anions by Kone (w)	All	NDPs: 0 Tests: 5		X	X	X	X
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 5	X	X	X	X	
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 5		X	X	X	X
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5	X	X	X	X	X
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 5	X	X	X	X	X
GRO by GC-FID (W)	All	NDPs: 0 Tests: 5	X	X	X	X	X
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 5		X	X	X	X
Mercury Dissolved	All	NDPs: 0 Tests: 5	X	X	X	X	X
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 5	X	X	X	X	X
pH Value	All	NDPs: 0 Tests: 5		X	X	X	X
Phenols by HPLC (W)	All	NDPs: 0 Tests: 5	X	X	X	X	X
Sulphide	All	NDPs: 0 Tests: 5		X	X	X	X
TPH CWG (W)	All	NDPs: 0 Tests: 5	X	X	X	X	X
VOC MS (W)	All	NDPs: 0 Tests: 3	X	X		X	

CERTIFICATE OF ANALYSIS

SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	A3	C7	D5	E8	G4
			Depth (m)	1.50 - 2.50	4.00 - 5.00	1.50 - 2.50	1.00 - 2.00	3.00 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	26/10/2011	26/10/2011	26/10/2011	26/10/2011	26/10/2011
			Date Received	26/10/2011	26/10/2011	26/10/2011	26/10/2011	26/10/2011
			SDG Ref	111028-6	111028-6	111028-6	111028-6	111028-6
			Lab Sample No.(s)	4592388	4592385	4592387	4592390	4592389
			AGS Reference					
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		9.66 #	77.8 #	10 #	36.1 #	10.7 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099		12.4 #	100 #	12.9 #	46.4 #	13.8 #
Sulphide	<0.01 mg/l	TM101		<0.01 #	0.015 #	<0.01 #	<0.01 #	<0.01 #
Arsenic (diss.filt)	<0.12 µg/l	TM152		43.9 #	27 #	4.71 #	134 #	8.35 #
Cadmium (diss.filt)	<0.1 µg/l	TM152		<0.1 #	0.212 #	<0.1 #	0.247 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152		17.6 #	11.3 #	8.95 #	3.45 #	10.4 #
Copper (diss.filt)	<0.85 µg/l	TM152		1.3 #	2.57 #	<0.85 #	2.02 #	1.42 #
Lead (diss.filt)	<0.02 µg/l	TM152		0.094 #	0.398 #	0.188 #	0.295 #	0.304 #
Nickel (diss.filt)	<0.15 µg/l	TM152		5.73 #	4.9 #	3.9 #	26.9 #	5.47 #
Selenium (diss.filt)	<0.39 µg/l	TM152		4.36 #	24.1 #	2.92 #	18.5 #	10.8 #
Zinc (diss.filt)	<0.41 µg/l	TM152		0.757 #	2.63 #	1.63 #	35.5 #	4.46 #
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	0.0399 #	<0.01 #	0.0179 #	<0.01 #
Sulphate	<2 mg/l	TM184		325 #	<40 #	48.3 #	358 #	235 #
Cyanide, Total	<0.05 mg/l	TM227		0.335 #	0.541 #	0.057 #	6.45 #	0.117 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03 #	<0.03 #	<0.03 #	<0.03 #	<0.03 #
pH	<1 pH Units	TM256		7.63 #	8.55 #	7.97 #	8 #	7.54 #
Resorcinol	<0.01 mg/l	TM259		<0.01	<0.05	<0.01	<0.1	<0.01
Catechol	<0.01 mg/l	TM259		<0.01	<0.05	<0.01	<0.1	<0.01
Phenol	<0.002 mg/l	TM259		<0.002 #	15.8 #	0.06 #	35.7 #	0.03 #
Cresols	<0.006 mg/l	TM259		0.01 #	36.5 #	0.62 #	63 #	0.31 #
Xylenols	<0.008 mg/l	TM259		<0.008 #	44.6 #	1.33 #	37.3 #	1.31 #
1-Naphthol	<0.01 mg/l	TM259		<0.01	<0.05	<0.01	<0.1	0.04
2,3,5-Trimethylphenol	<0.003 mg/l	TM259		<0.003 #	<0.015 #	<0.003 #	<0.03 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259		<0.006 #	21 #	0.45 #	14.3 #	1.13 #
Phenols, Total Detected 5 speciated	<0.025 mg/l	TM259		<0.025	118	2.46	150	2.78

CERTIFICATE OF ANALYSIS

SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

PAH Spec MS - Aqueous (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	A3	C7	D5	E8	G4
			Depth (m)	1.50 - 2.50	4.00 - 5.00	1.50 - 2.50	1.00 - 2.00	3.00 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	26/10/2011	26/10/2011	26/10/2011	26/10/2011	26/10/2011
			Date Received	26/10/2011	26/10/2011	26/10/2011	26/10/2011	26/10/2011
			SDG Ref	111028-6	111028-6	111028-6	111028-6	111028-6
			Lab Sample No.(s)	4592388	4592385	4592387	4592390	4592389
			AGS Reference					
Naphthalene (aq)	<0.1 µg/l	TM178		0.157 #	6970 #	7.82 #	2560 #	2.53 #
Acenaphthene (aq)	<0.015 µg/l	TM178		1.15 #	31.6 #	3.24 #	14.8 #	30.5 #
Acenaphthylene (aq)	<0.011 µg/l	TM178		1.14 #	245 #	13 #	96.4 #	56.7 #
Fluoranthene (aq)	<0.017 µg/l	TM178		3.04 #	59.5 #	63.6 #	7.39 #	12.7 #
Anthracene (aq)	<0.015 µg/l	TM178		0.674 #	32.9 #	5.19 #	7.65 #	7.5 #
Phenanthrene (aq)	<0.022 µg/l	TM178		0.902 #	142 #	14.7 #	30.3 #	7.78 #
Fluorene (aq)	<0.014 µg/l	TM178		0.535 #	90.9 #	4.45 #	33.4 #	38.3 #
Chrysene (aq)	<0.013 µg/l	TM178		1.46 #	17.6 #	38 #	1.11 #	1.02 #
Pyrene (aq)	<0.015 µg/l	TM178		9.76 #	42 #	50.2 #	4.66 #	7.51 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		1.54 #	12.1 #	29.6 #	1.16 #	1.09 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		1.05 #	<11.5 #	43.3 #	<1.15 #	0.189 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		2.04 #	<13.5 #	41.5 #	<1.35 #	0.342 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		3.19 #	9.86 #	44.3 #	<0.45 #	0.247 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		0.229 #	<8 #	6.05 #	<0.8 #	<0.08 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		1.17 #	<8 #	25.5 #	<0.8 #	<0.08 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		0.976 #	<7 #	22.4 #	<0.7 #	<0.07 #
PAH, Total Detected USEPA 16 (aq)	<0.247 µg/l	TM178		29	7680	413	2760	167

CERTIFICATE OF ANALYSIS

SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

TPH CWG (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	A3	C7	D5	E8	G4
			Depth (m)	1.50 - 2.50	4.00 - 5.00	1.50 - 2.50	1.00 - 2.00	3.00 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	26/10/2011	26/10/2011	26/10/2011	26/10/2011	26/10/2011
			Date Received	26/10/2011	26/10/2011	26/10/2011	26/10/2011	26/10/2011
			SDG Ref	111028-6	111028-6	111028-6	111028-6	111028-6
			Lab Sample No.(s)	4592388	4592385	4592387	4592390	4592389
			AGS Reference					
GRO Surrogate % recovery**	%	TM245		88 §	99	93 §	102	93 §
GRO >C5-C12	<50 µg/l	TM245		2530 § #	41000 #	429 § #	14600 #	9630 § #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 § #	<15 #	<3 § #	<6 #	<3 § #
Benzene	<7 µg/l	TM245		564 § #	16200 #	159 § #	6190 #	<7 § #
Toluene	<4 µg/l	TM245		27 § #	7570 #	63 § #	1770 #	1510 § #
Ethylbenzene	<5 µg/l	TM245		230 § #	294 #	13 § #	76 #	181 § #
m,p-Xylene	<8 µg/l	TM245		54 § #	2090 #	14 § #	624 #	1120 § #
o-Xylene	<3 µg/l	TM245		59 § #	817 #	18 § #	252 #	450 § #
Sum of detected Xylenes	<11 µg/l	TM245		113 §	2910	32 §	876	1570 §
Sum of detected BTEX	<28 µg/l	TM245		934 §	27000	267 §	8910	3260 §
Aliphatics >C5-C6	<10 µg/l	TM245		<10 §	104	<10 §	50	11 §
Aliphatics >C6-C8	<10 µg/l	TM245		56 §	522	<10 §	332	2030 §
Aliphatics >C8-C10	<10 µg/l	TM245		168 §	1720	16 §	668	598 §
Aliphatics >C10-C12	<10 µg/l	TM245		749 §	6320	77 §	2490	2000 §
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	26	23	12	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	25	95	28	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	44	427	21	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	95	545	61	<10
Aromatics >EC5-EC7	<10 µg/l	TM245		564 §	16200	159 §	6190	<10 §
Aromatics >EC7-EC8	<10 µg/l	TM245		27 §	7570	63 §	1770	1510 §
Aromatics >EC8-EC10	<10 µg/l	TM245		455 §	4350	56 §	1400	2150 §
Aromatics >EC10-EC12	<10 µg/l	TM245		500 §	4210	51 §	1660	1330 §
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		274	16600	409	6400	1270
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		132	1560	289	557	425
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		42	519	1120	156	101
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		448	18700	1820	7120	1800
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		2970	59700	2790	21700	11400

CERTIFICATE OF ANALYSIS

SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	A3	C7	G4
			Depth (m)	1.50 - 2.50	4.00 - 5.00	3.00 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	26/10/2011	26/10/2011	26/10/2011
			Date Received	26/10/2011	26/10/2011	26/10/2011
			SDG Ref	111028-6	111028-6	111028-6
			Lab Sample No.(s)	4592388	4592385	4592389
			AGS Reference			
Dibromofluoromethane**	%	TM208		107 §	104 §	104 §
Toluene-d8**	%	TM208		98.8 §	95.1 §	98.8 §
4-Bromofluorobenzene**	%	TM208		95.3 §	78.6 §	92.7 §
Dichlorodifluoromethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Chloromethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Vinyl chloride	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Bromomethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Chloroethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Trichlorofluoromethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
1,1-Dichloroethene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Carbon disulphide	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Dichloromethane	<3 µg/l	TM208		<3 § #	<3 § #	<3 § #
Methyl tertiary butyl ether (MTBE)	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
trans-1,2-Dichloroethene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
1,1-Dichloroethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
cis-1,2-Dichloroethene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
2,2-Dichloropropane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Bromochloromethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Chloroform	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
1,1,1-Trichloroethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
1,1-Dichloropropene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Carbontetrachloride	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
1,2-Dichloroethane	<1 µg/l	TM208		<1 §	<1 §	<1 §
Benzene	<1 µg/l	TM208		627 #	21100 #	2090 #
Trichloroethene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
1,2-Dichloropropane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Dibromomethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Bromodichloromethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
cis-1,3-Dichloropropene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Toluene	<1 µg/l	TM208		26.9 § #	9370 #	1640 #
trans-1,3-Dichloropropene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
1,1,2-Trichloroethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
1,3-Dichloropropane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Tetrachloroethene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #
Dibromochloromethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #

CERTIFICATE OF ANALYSIS

SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

VOC MS (W)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
§	Deviating sample.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed

Component	LOD/Units	Method	Customer Sample R	A3	C7	G4			
			Depth (m)	1.50 - 2.50	4.00 - 5.00	3.00 - 4.00			
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)			
			Date Sampled	26/10/2011	26/10/2011	26/10/2011			
			Date Received	26/10/2011	26/10/2011	26/10/2011			
			SDG Ref	111028-6	111028-6	111028-6			
			Lab Sample No.(s)	4592388	4592385	4592389			
			AGS Reference						
1,2-Dibromoethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
Chlorobenzene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
1,1,1,2-Tetrachloroethane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
Ethylbenzene	<1 µg/l	TM208		234 § #	327 § #	172 § #			
m,p-Xylene	<1 µg/l	TM208		52.3 § #	2400 #	1230 #			
o-Xylene	<1 µg/l	TM208		60.9 § #	979 #	482 § #			
Styrene	<1 µg/l	TM208		<1 § #	464 § #	<1 § #			
Bromoform	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
Isopropylbenzene	<1 µg/l	TM208		18.2 § #	13.5 § #	12 § #			
1,1,2,2-Tetrachloroethane	<1 µg/l	TM208		<1 §	<1 §	<1 §			
1,2,3-Trichloropropane	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
Bromobenzene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
Propylbenzene	<1 µg/l	TM208		15.9 § #	17.1 § #	11.2 § #			
2-Chlorotoluene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
1,3,5-Trimethylbenzene	<1 µg/l	TM208		5.87 § #	98.4 § #	89.6 § #			
4-Chlorotoluene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
tert-Butylbenzene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
1,2,4-Trimethylbenzene	<1 µg/l	TM208		22.9 § #	237 § #	227 § #			
sec-Butylbenzene	<1 µg/l	TM208		1.63 § #	<1 § #	<1 § #			
4-iso-Propyltoluene	<1 µg/l	TM208		<1 § #	7.46 § #	<1 § #			
1,3-Dichlorobenzene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
1,4-Dichlorobenzene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
n-Butylbenzene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
1,2-Dichlorobenzene	<1 µg/l	TM208		<1 §	<1 §	<1 §			
1,2-Dibromo-3-chloropropane	<1 µg/l	TM208		<1 §	<1 §	<1 §			
1,2,4-Trichlorobenzene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
Hexachlorobutadiene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
Naphthalene	<1 µg/l	TM208		237 § #	9940 #	3110 #			
1,2,3-Trichlorobenzene	<1 µg/l	TM208		<1 § #	<1 § #	<1 § #			
1,3,5-Trichlorobenzene	<1 µg/l	TM208		<1 §	<1 §	<1 §			

CERTIFICATE OF ANALYSIS

SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Notification of Deviating Samples

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
4604538	A3	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C10-C12	Volatile container not received
4604538	A3	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C5-C6	Volatile container not received
4604538	A3	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C6-C8	Volatile container not received
4604538	A3	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C8-C10	Volatile container not received
4604538	A3	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC10-EC12	Volatile container not received
4604538	A3	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC5-EC7	Volatile container not received
4604538	A3	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC7-EC8	Volatile container not received
4604538	A3	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC8-EC10	Volatile container not received
4604538	A3	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Benzene	Volatile container not received
4604538	A3	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Ethylbenzene	Volatile container not received
4604538	A3	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	GRO >C5-C12	Volatile container not received
4604538	A3	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	GRO Surrogate % recovery**	Volatile container not received
4604538	A3	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	m,p-Xylene	Volatile container not received
4604538	A3	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Methyl tertiary butyl ether (MTBE)	Volatile container not received
4604538	A3	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	o-Xylene	Volatile container not received
4604538	A3	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Sum of detected BTEX	Volatile container not received
4604538	A3	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Sum of detected Xylenes	Volatile container not received
4604538	A3	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Toluene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,1,1,2-Tetrachloroethane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,1,1-Trichloroethane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,1,2,2-Tetrachloroethane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,1,2-Trichloroethane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,1-Dichloroethane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,1-Dichloroethene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,1-Dichloropropene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,2,3-Trichlorobenzene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,2,3-Trichloropropane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,2,4-Trichlorobenzene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,2,4-Trimethylbenzene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,2-Dibromo-3-chloropropane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,2-Dibromoethane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,2-Dichlorobenzene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,2-Dichloroethane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,2-Dichloropropane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,3,5-Trichlorobenzene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,3,5-Trimethylbenzene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,3-Dichlorobenzene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,3-Dichloropropane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	1,4-Dichlorobenzene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	2,2-Dichloropropane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	2-Chlorotoluene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	4-Bromofluorobenzene**	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	4-Chlorotoluene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	4-iso-Propyltoluene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Benzene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Bromobenzene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Bromochloromethane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Bromodichloromethane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Bromoform	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Bromomethane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Carbon disulphide	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Carbontetrachloride	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Chlorobenzene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Chloroethane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Chloroform	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Chloromethane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	cis-1,2-Dichloroethene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	cis-1,3-Dichloropropene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Dibromochloromethane	Volatile container not received

CERTIFICATE OF ANALYSIS

SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Dibromofluoromethane**	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Dibromomethane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Dichlorodifluoromethane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Dichloromethane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Ethylbenzene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Hexachlorobutadiene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Isopropylbenzene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	m,p-Xylene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Methyl tertiary butyl ether (MTBE)	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Naphthalene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	n-Butylbenzene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	o-Xylene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Propylbenzene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	sec-Butylbenzene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Styrene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	tert-Amyl methyl ether (TAME)	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	tert-Butylbenzene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Tetrachloroethene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Toluene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Toluene-d8**	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	trans-1,2-Dichloroethene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	trans-1,3-Dichloropropene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Trichloroethene	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Trichlorofluoromethane	Volatile container not received
4604544	A3	1.50 - 2.50	LIQUID	VOC MS (W)	Vinyl chloride	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,1,1,2-Tetrachloroethane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,1,1-Trichloroethane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,1,2,2-Tetrachloroethane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,1,2-Trichloroethane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,1-Dichloroethane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,1-Dichloroethene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,1-Dichloropropene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,2,3-Trichlorobenzene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,2,3-Trichloropropane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,2,4-Trichlorobenzene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,2,4-Trimethylbenzene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,2-Dibromo-3-chloropropane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,2-Dibromoethane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,2-Dichlorobenzene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,2-Dichloroethane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,2-Dichloropropane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,3,5-Trichlorobenzene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,3,5-Trimethylbenzene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,3-Dichlorobenzene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,3-Dichloropropane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	1,4-Dichlorobenzene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	2,2-Dichloropropane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	2-Chlorotoluene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	4-Bromofluorobenzene**	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	4-Chlorotoluene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	4-iso-Propyltoluene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Benzene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Bromobenzene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Bromochloromethane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Bromodichloromethane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Bromoform	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Bromomethane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Carbon disulphide	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Carbontetrachloride	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Chlorobenzene	Volatile container not received

CERTIFICATE OF ANALYSIS

SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Chloroethane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Chloroform	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Chloromethane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	cis-1,2-Dichloroethene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	cis-1,3-Dichloropropene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Dibromochloromethane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Dibromofluoromethane**	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Dibromomethane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Dichlorodifluoromethane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Dichloromethane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Ethylbenzene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Hexachlorobutadiene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Isopropylbenzene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	m,p-Xylene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Methyl tertiary butyl ether (MTBE)	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Naphthalene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	n-Butylbenzene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	o-Xylene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Propylbenzene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	sec-Butylbenzene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Styrene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	tert-Amyl methyl ether (TAME)	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	tert-Butylbenzene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Tetrachloroethene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Toluene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Toluene-d8**	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	trans-1,2-Dichloroethene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	trans-1,3-Dichloropropene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Trichloroethene	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Trichlorofluoromethane	Volatile container not received
4604550	C7	4.00 - 5.00	LIQUID	VOC MS (W)	Vinyl chloride	Volatile container not received
4604557	D5	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C10-C12	Volatile container not received
4604557	D5	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C5-C6	Volatile container not received
4604557	D5	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C6-C8	Volatile container not received
4604557	D5	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Aliphatics >C8-C10	Volatile container not received
4604557	D5	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC10-EC12	Volatile container not received
4604557	D5	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC5-EC7	Volatile container not received
4604557	D5	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC7-EC8	Volatile container not received
4604557	D5	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Aromatics >EC8-EC10	Volatile container not received
4604557	D5	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Benzene	Volatile container not received
4604557	D5	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Ethylbenzene	Volatile container not received
4604557	D5	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	GRO >C5-C12	Volatile container not received
4604557	D5	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	GRO Surrogate % recovery**	Volatile container not received
4604557	D5	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	m,p-Xylene	Volatile container not received
4604557	D5	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Methyl tertiary butyl ether (MTBE)	Volatile container not received
4604557	D5	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	o-Xylene	Volatile container not received
4604557	D5	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Sum of detected BTEX	Volatile container not received
4604557	D5	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Sum of detected Xylenes	Volatile container not received
4604557	D5	1.50 - 2.50	LIQUID	GRO by GC-FID (W)	Toluene	Volatile container not received
4604561	G4	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C10-C12	Volatile container not received
4604561	G4	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C5-C6	Volatile container not received
4604561	G4	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C6-C8	Volatile container not received
4604561	G4	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Aliphatics >C8-C10	Volatile container not received
4604561	G4	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC10-EC12	Volatile container not received
4604561	G4	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC5-EC7	Volatile container not received
4604561	G4	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC7-EC8	Volatile container not received
4604561	G4	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Aromatics >EC8-EC10	Volatile container not received
4604561	G4	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Benzene	Volatile container not received
4604561	G4	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Ethylbenzene	Volatile container not received
4604561	G4	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	GRO >C5-C12	Volatile container not received

CERTIFICATE OF ANALYSIS

SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
4604561	G4	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	GRO Surrogate % recovery**	Volatile container not received
4604561	G4	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	m,p-Xylene	Volatile container not received
4604561	G4	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Methyl tertiary butyl ether (MTBE)	Volatile container not received
4604561	G4	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	o-Xylene	Volatile container not received
4604561	G4	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Sum of detected BTEX	Volatile container not received
4604561	G4	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Sum of detected Xylenes	Volatile container not received
4604561	G4	3.00 - 4.00	LIQUID	GRO by GC-FID (W)	Toluene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,1,1,2-Tetrachloroethane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,1,1-Trichloroethane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,1,2,2-Tetrachloroethane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,1,2-Trichloroethane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,1-Dichloroethane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,1-Dichloroethene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,1-Dichloropropene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,2,3-Trichlorobenzene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,2,3-Trichloropropane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,2,4-Trichlorobenzene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,2,4-Trimethylbenzene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,2-Dibromo-3-chloropropane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,2-Dibromoethane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,2-Dichlorobenzene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,2-Dichloroethane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,2-Dichloropropane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,3,5-Trichlorobenzene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,3,5-Trimethylbenzene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,3-Dichlorobenzene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,3-Dichloropropane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	1,4-Dichlorobenzene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	2,2-Dichloropropane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	2-Chlorotoluene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	4-Bromofluorobenzene**	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	4-Chlorotoluene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	4-iso-Propyltoluene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Benzene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Bromobenzene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Bromochloromethane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Bromodichloromethane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Bromoform	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Bromomethane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Carbon disulphide	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Carbontetrachloride	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Chlorobenzene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Chloroethane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Chloroform	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Chloromethane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	cis-1,2-Dichloroethene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	cis-1,3-Dichloropropene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Dibromochloromethane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Dibromofluoromethane**	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Dibromomethane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Dichlorodifluoromethane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Dichloromethane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Ethylbenzene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Hexachlorobutadiene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Isopropylbenzene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	m,p-Xylene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Methyl tertiary butyl ether (MTBE)	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Naphthalene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	n-Butylbenzene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	o-Xylene	Volatile container not received

CERTIFICATE OF ANALYSIS

SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Sample Number	Customer Sample Ref.	Depth (m)	Matrix	Test Name	Component Name	Comment
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Propylbenzene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	sec-Butylbenzene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Styrene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	tert-Amyl methyl ether (TAME)	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	tert-Butylbenzene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Tetrachloroethene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Toluene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Toluene-d8**	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	trans-1,2-Dichloroethene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	trans-1,3-Dichloropropene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Trichloroethene	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Trichlorofluoromethane	Volatile container not received
4604565	G4	3.00 - 4.00	LIQUID	VOC MS (W)	Vinyl chloride	Volatile container not received

Note : Test results may be compromised

CERTIFICATE OF ANALYSIS

SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Table of Results - Appendix

REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10-7

NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM101	Method 4500B & C, AWWA/APHA, 20th Ed., 1999	Determination of Sulphide in soil and water samples using the Kone Analyser		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID		
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters		
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry		
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers		
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters		
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate		
TM241	Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.	The Determination of Hexavalent Chromium in Waters and Leachates using the Kone Analyser		
TM245	By GC-FID	Determination of GRO by Headspace in waters		
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	4592388	4592385	4592387	4592390	4592389
Customer Sample Ref.	A3	C7	D5	E8	G4
AGS Ref.					
Depth	1.50 - 2.50	4.00 - 5.00	1.50 - 2.50	1.00 - 2.00	3.00 - 4.00
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammoniacal Nitrogen	31-Oct-2011	31-Oct-2011	31-Oct-2011	31-Oct-2011	31-Oct-2011
Anions by Kone (w)	02-Nov-2011	03-Nov-2011	02-Nov-2011	02-Nov-2011	02-Nov-2011
Cyanide Comp/Free/Total/Thiocyanate	31-Oct-2011	01-Nov-2011	31-Oct-2011	31-Oct-2011	31-Oct-2011
Dissolved Metals by ICP-MS	01-Nov-2011	02-Nov-2011	01-Nov-2011	01-Nov-2011	01-Nov-2011
EPH CWG (Aliphatic) Aqueous GC (W)	04-Nov-2011	04-Nov-2011	04-Nov-2011	04-Nov-2011	04-Nov-2011
EPH CWG (Aromatic) Aqueous GC (W)	04-Nov-2011	04-Nov-2011	04-Nov-2011	04-Nov-2011	04-Nov-2011
GRO by GC-FID (W)	30-Oct-2011	31-Oct-2011	03-Nov-2011	31-Oct-2011	03-Nov-2011
Hexavalent Chromium (w)	01-Nov-2011	01-Nov-2011	01-Nov-2011	01-Nov-2011	01-Nov-2011
Mercury Dissolved	31-Oct-2011	31-Oct-2011	31-Oct-2011	31-Oct-2011	31-Oct-2011
PAH Spec MS - Aqueous (W)	03-Nov-2011	04-Nov-2011	03-Nov-2011	04-Nov-2011	04-Nov-2011
pH Value	31-Oct-2011	31-Oct-2011	31-Oct-2011	31-Oct-2011	31-Oct-2011
Phenols by HPLC (W)	01-Nov-2011	01-Nov-2011	01-Nov-2011	03-Nov-2011	01-Nov-2011
Sulphide	01-Nov-2011	01-Nov-2011	01-Nov-2011	01-Nov-2011	01-Nov-2011
TPH CWG (W)	04-Nov-2011	04-Nov-2011	04-Nov-2011	04-Nov-2011	04-Nov-2011
VOC MS (W)	02-Nov-2011	02-Nov-2011			02-Nov-2011

CERTIFICATE OF ANALYSIS

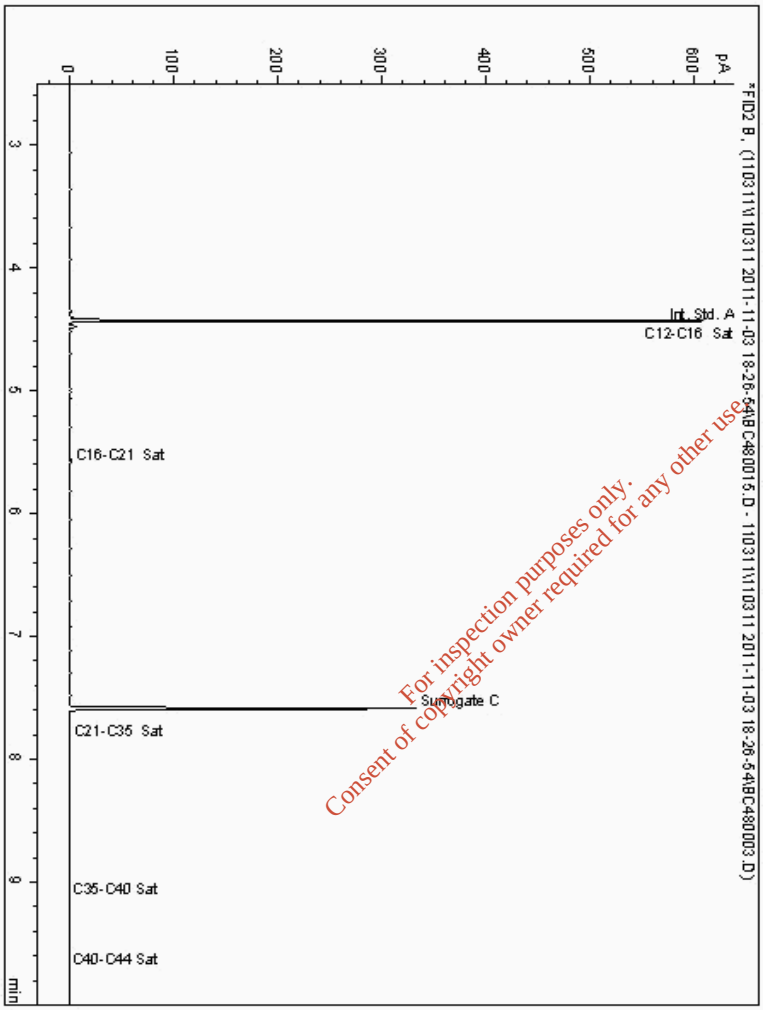
SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 4600379 **Sample ID :** C7 **Depth :** 4.00 - 5.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 4552697-4600379
Date Acquired : 03/11/11 22:50:25
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

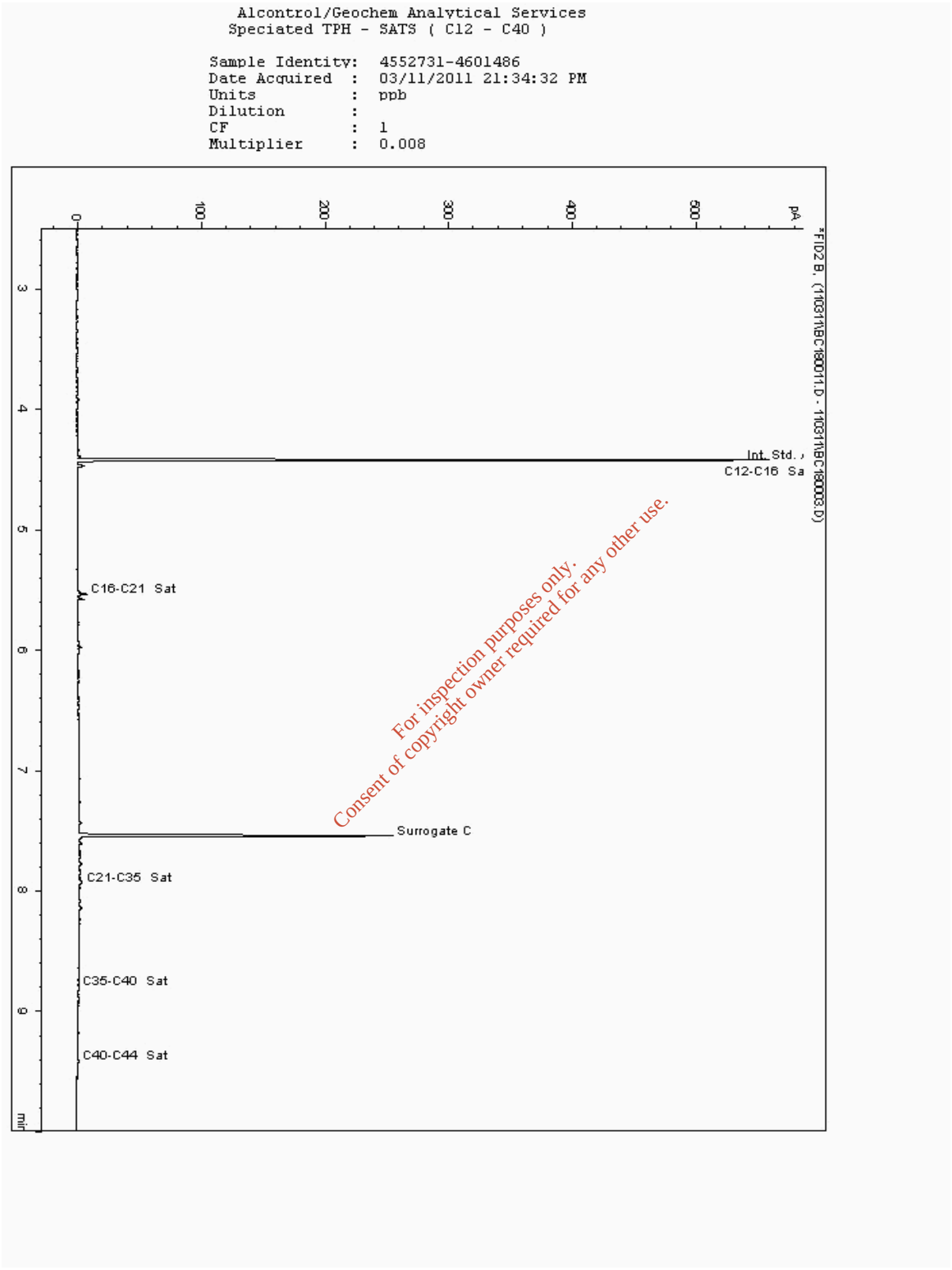


CERTIFICATE OF ANALYSIS

SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 4601486 **Sample ID :** D5 **Depth :** 1.50 - 2.50



CERTIFICATE OF ANALYSIS

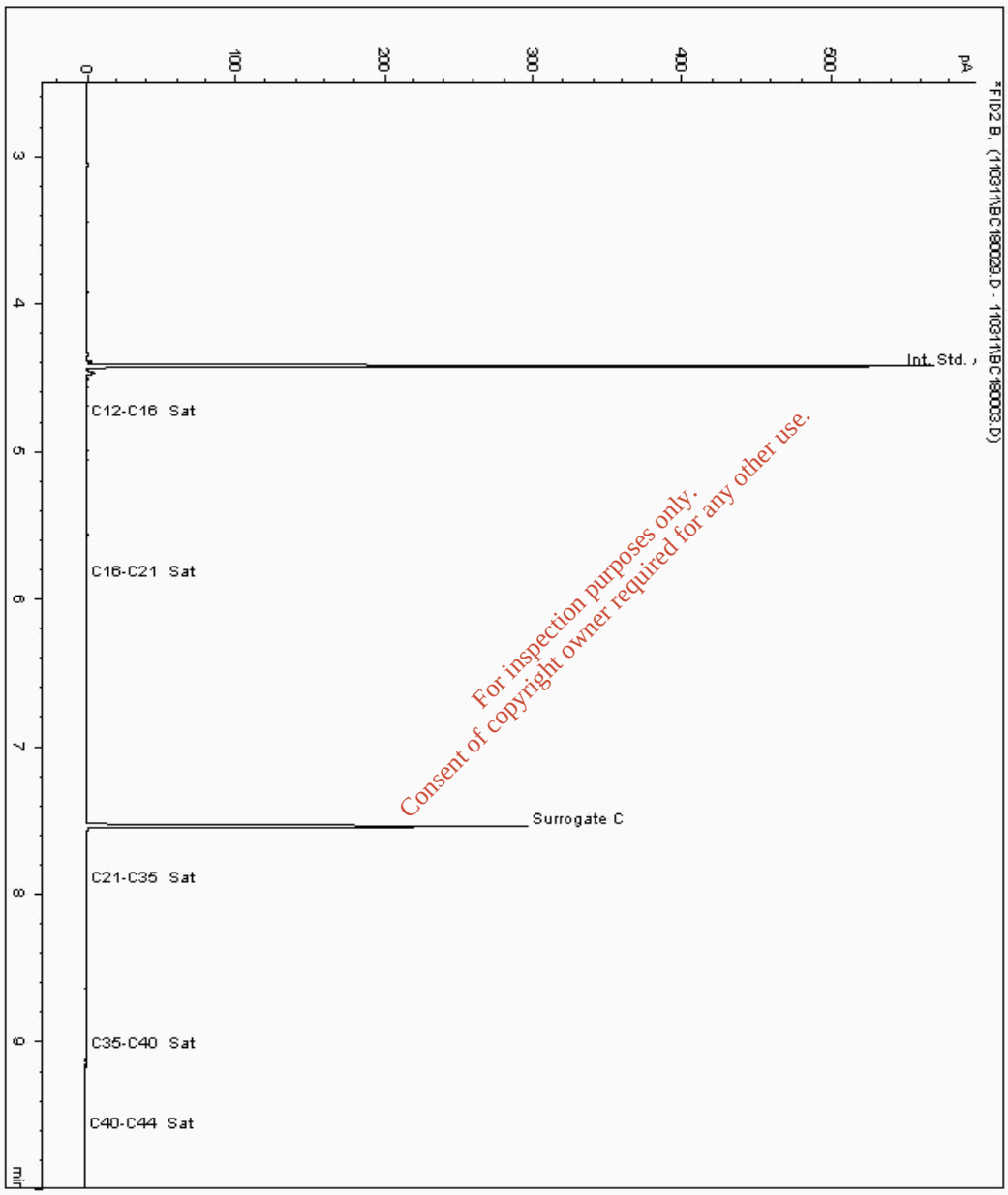
SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 4601543 **Sample ID :** G4 **Depth :** 3.00 - 4.00

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 4552762-4601543
Date Acquired : 04/11/2011 02:49:31 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

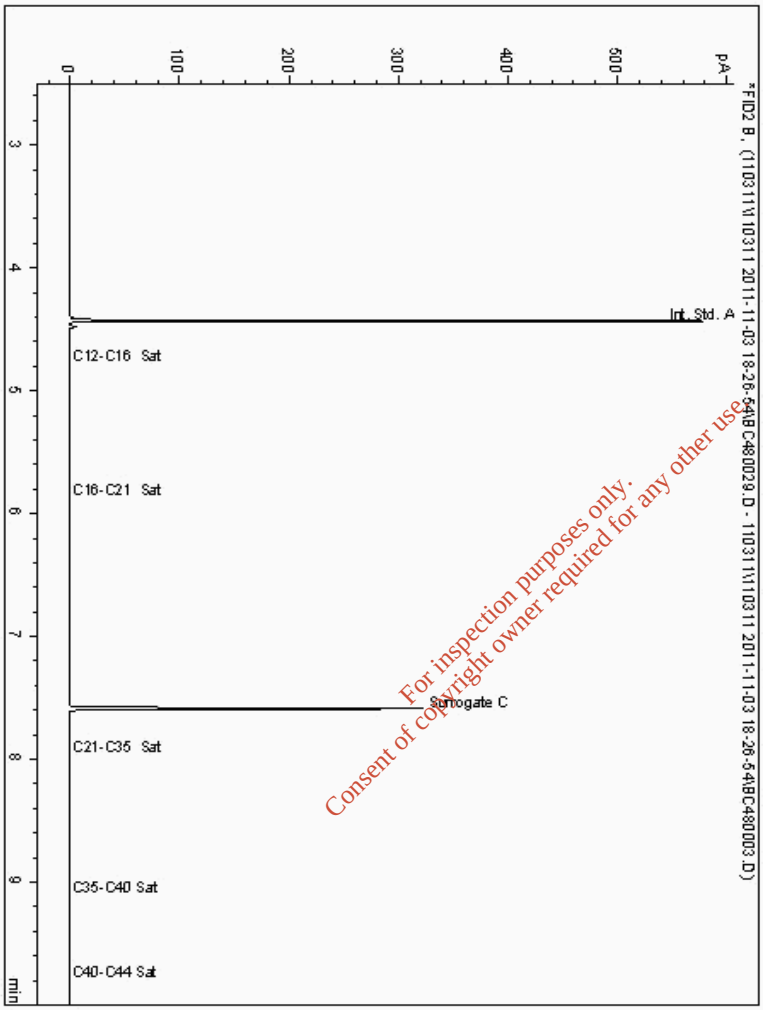
SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 4601600 **Sample ID :** A3 **Depth :** 1.50 - 2.50

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 4552746-4601600
Date Acquired : 04/11/11 02:41:49
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008

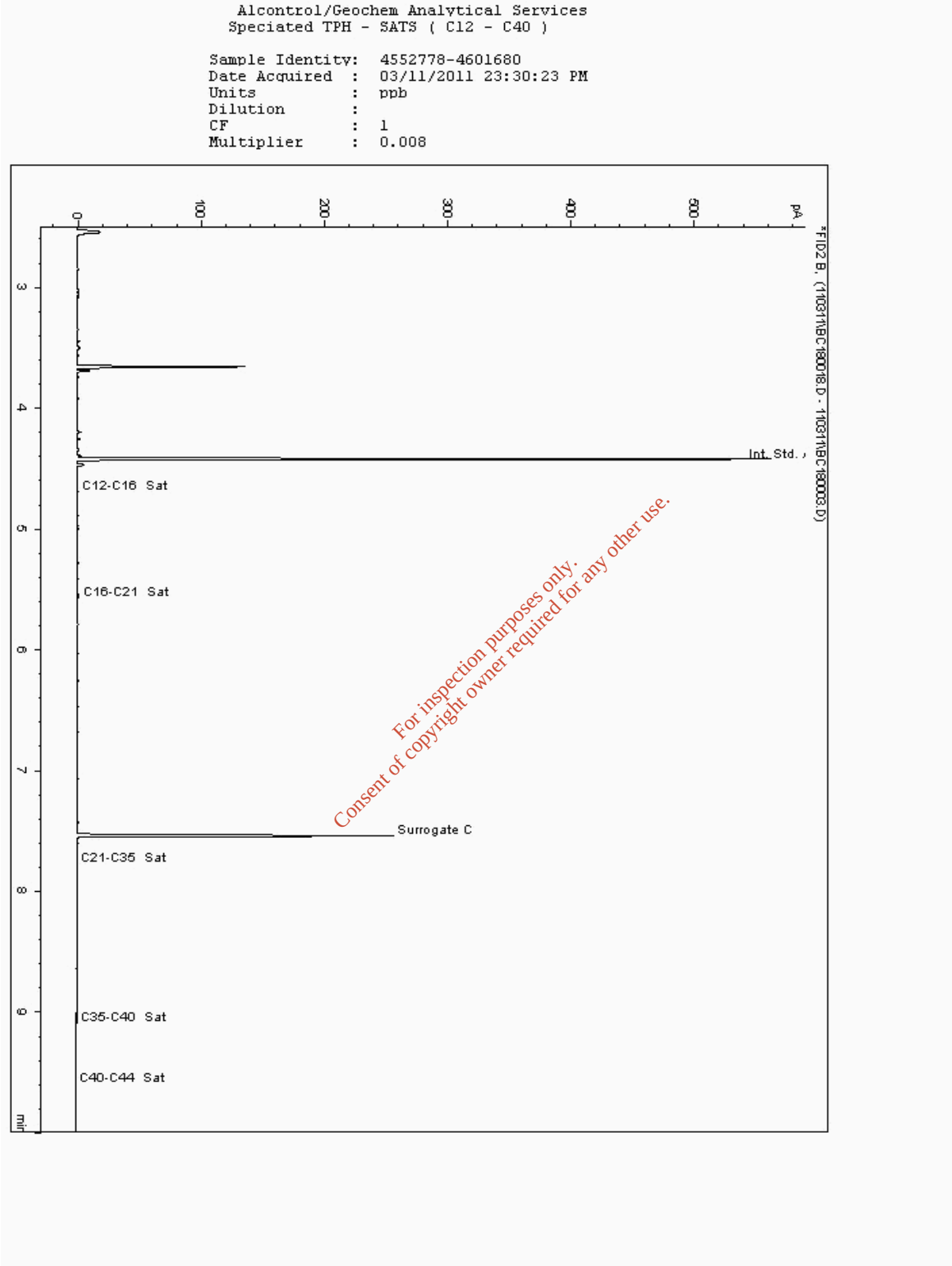


CERTIFICATE OF ANALYSIS

SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) Aqueous GC (W) **Sample No :** 4601680 **Sample ID :** E8 **Depth :** 1.00 - 2.00



CERTIFICATE OF ANALYSIS

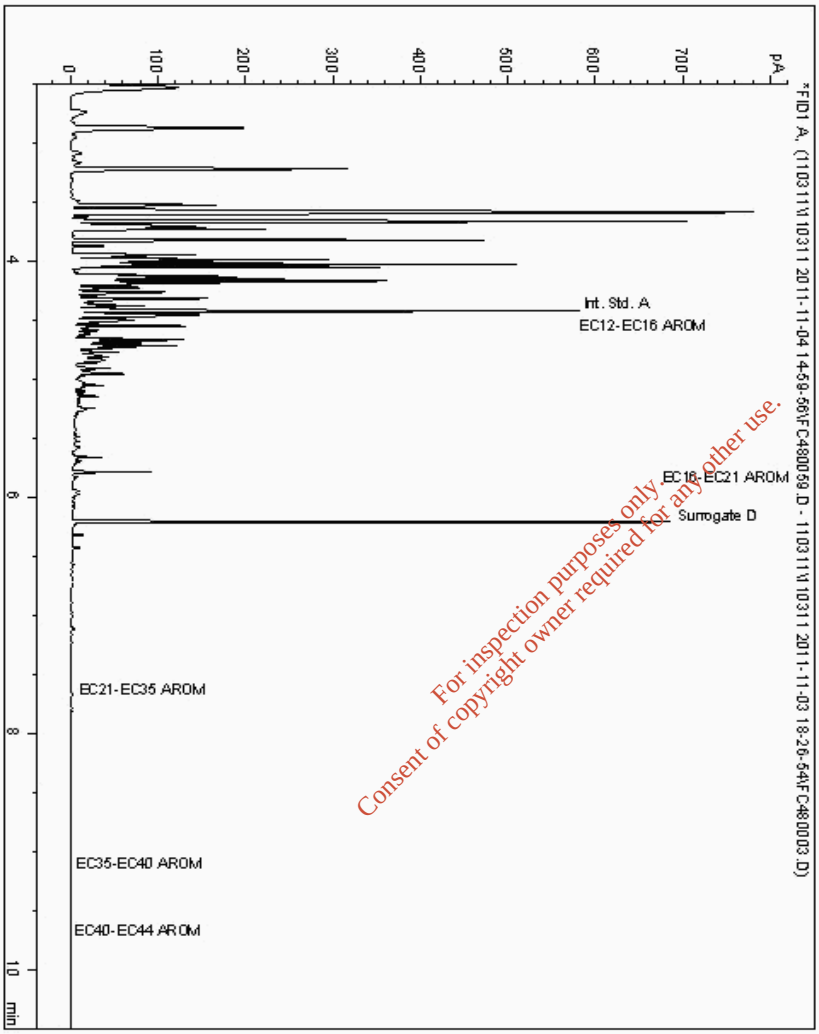
SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 4600379 **Sample ID :** C7 **Depth :** 4.00 - 5.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 4552698-4600379
Date Acquired : 04/11/11 15:03:16
Units : ppb
Dilution :
CF : 1
Multiplier : 0.042

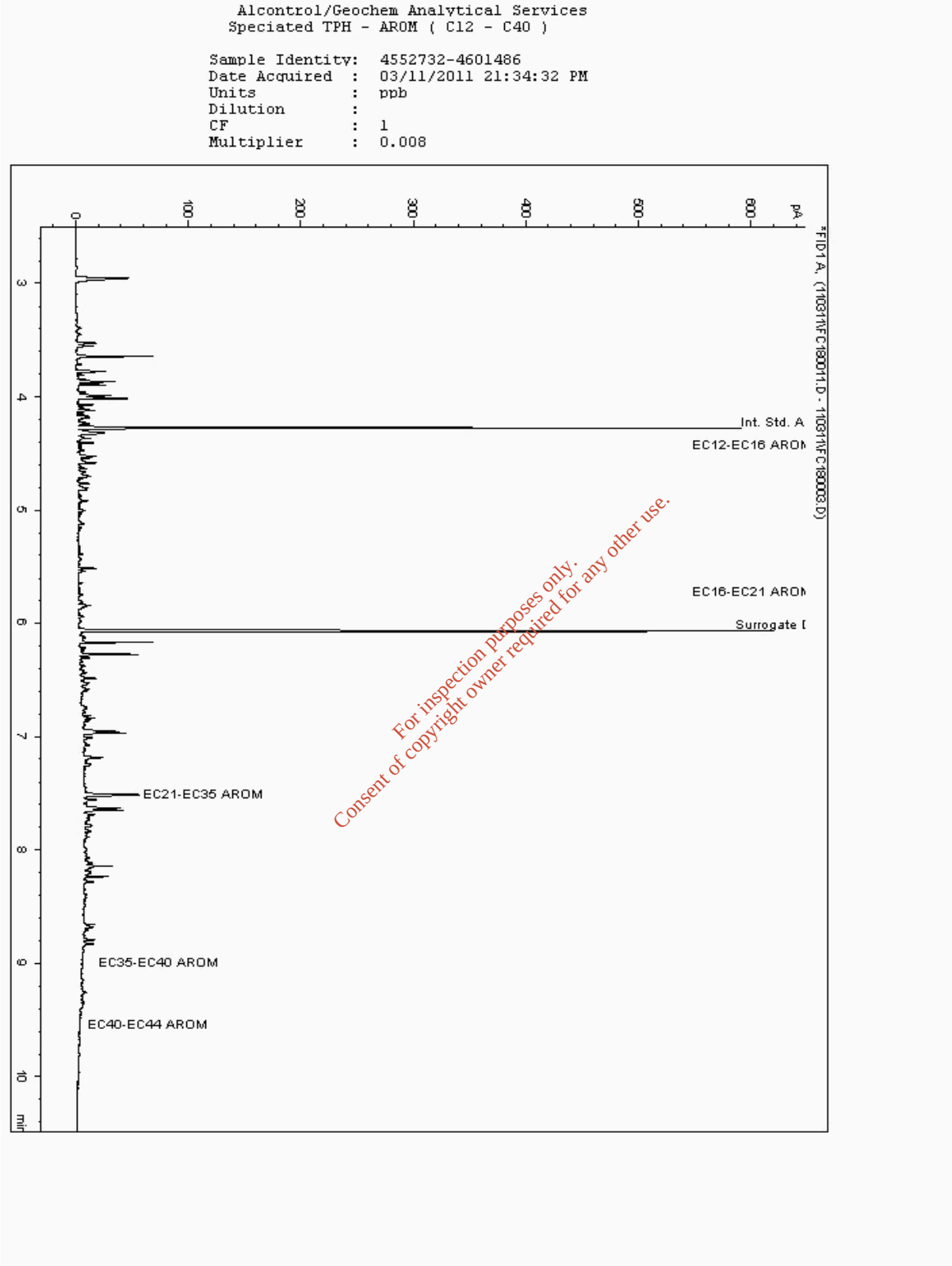


CERTIFICATE OF ANALYSIS

SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 4601486 **Sample ID :** D5 **Depth :** 1.50 - 2.50

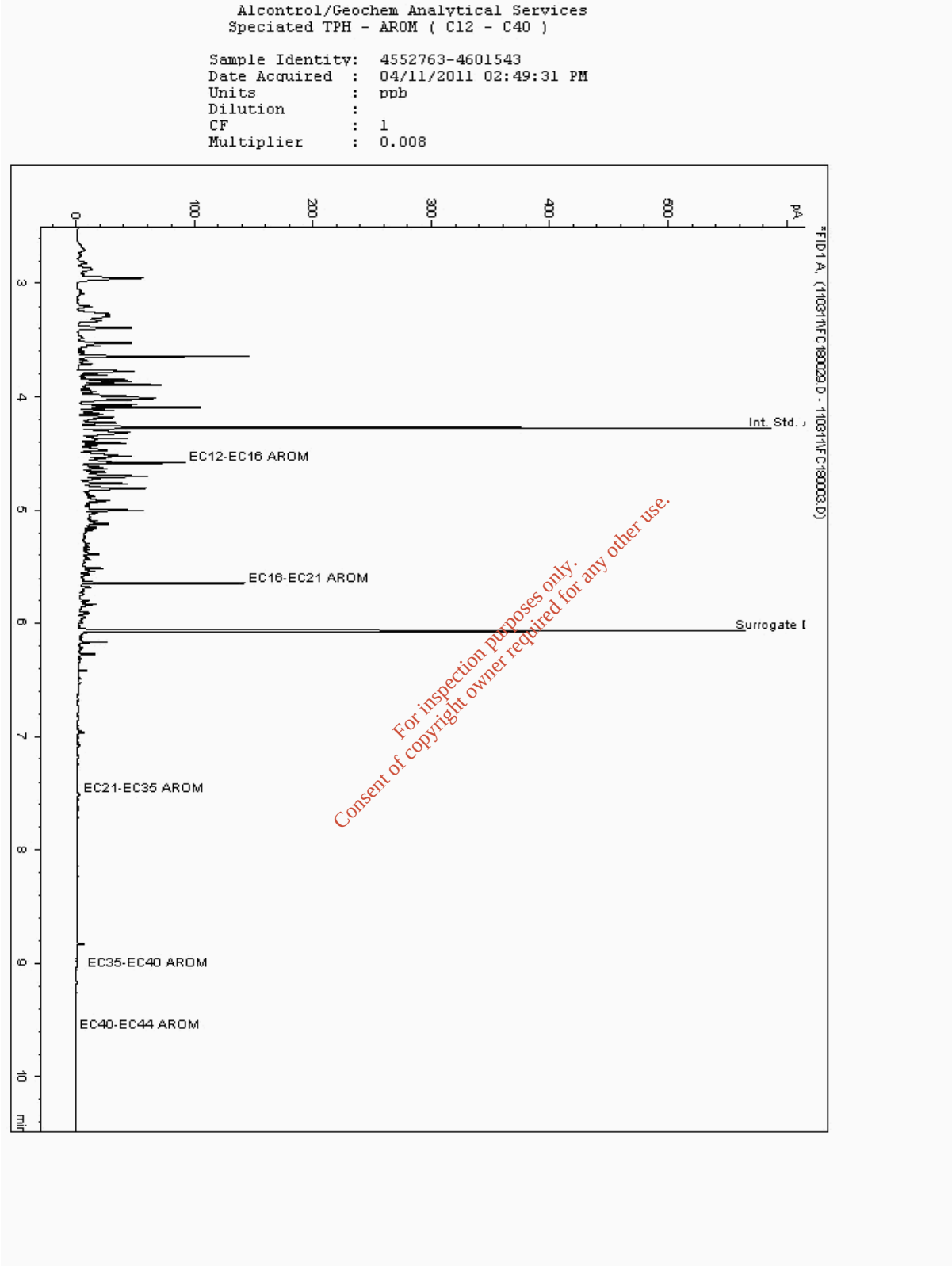


CERTIFICATE OF ANALYSIS

SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 4601543 **Sample ID :** G4 **Depth :** 3.00 - 4.00



CERTIFICATE OF ANALYSIS

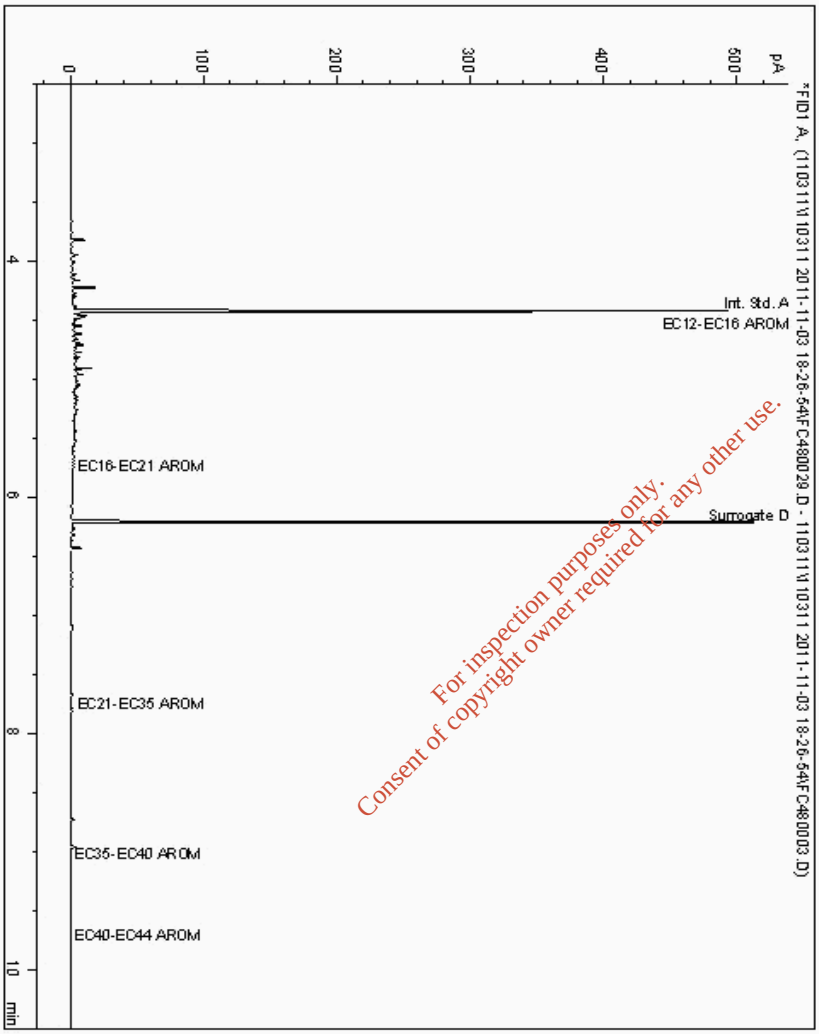
SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 4601600 **Sample ID :** A3 **Depth :** 1.50 - 2.50

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 4552747-4601600
Date Acquired : 04/11/11 02:41:49
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



CERTIFICATE OF ANALYSIS

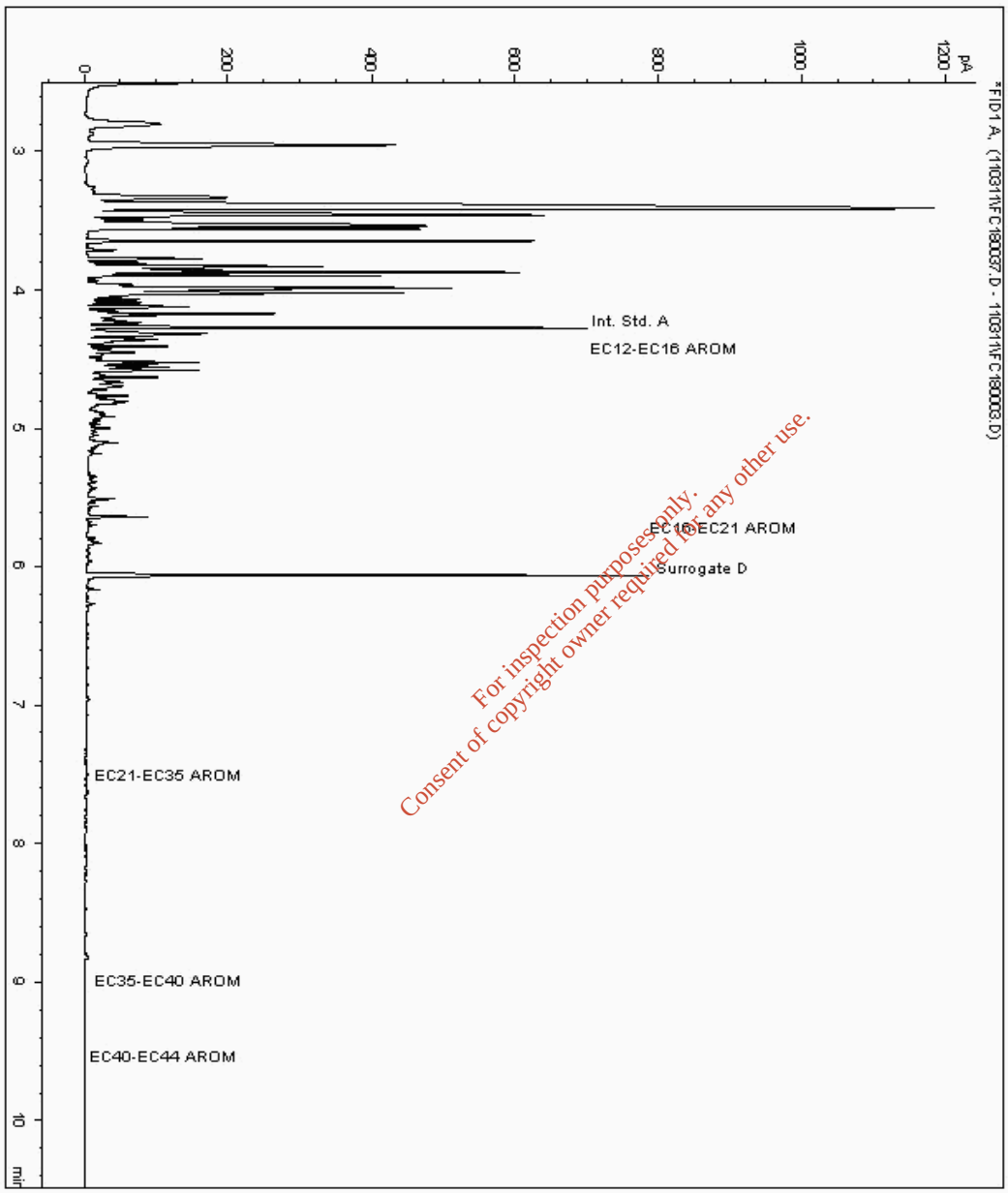
SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) Aqueous GC (W) **Sample No :** 4601680 **Sample ID :** E8 **Depth :** 1.00 - 2.00

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 4552779-4601680
Date Acquired : 04/11/2011 14:43:40 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



CERTIFICATE OF ANALYSIS

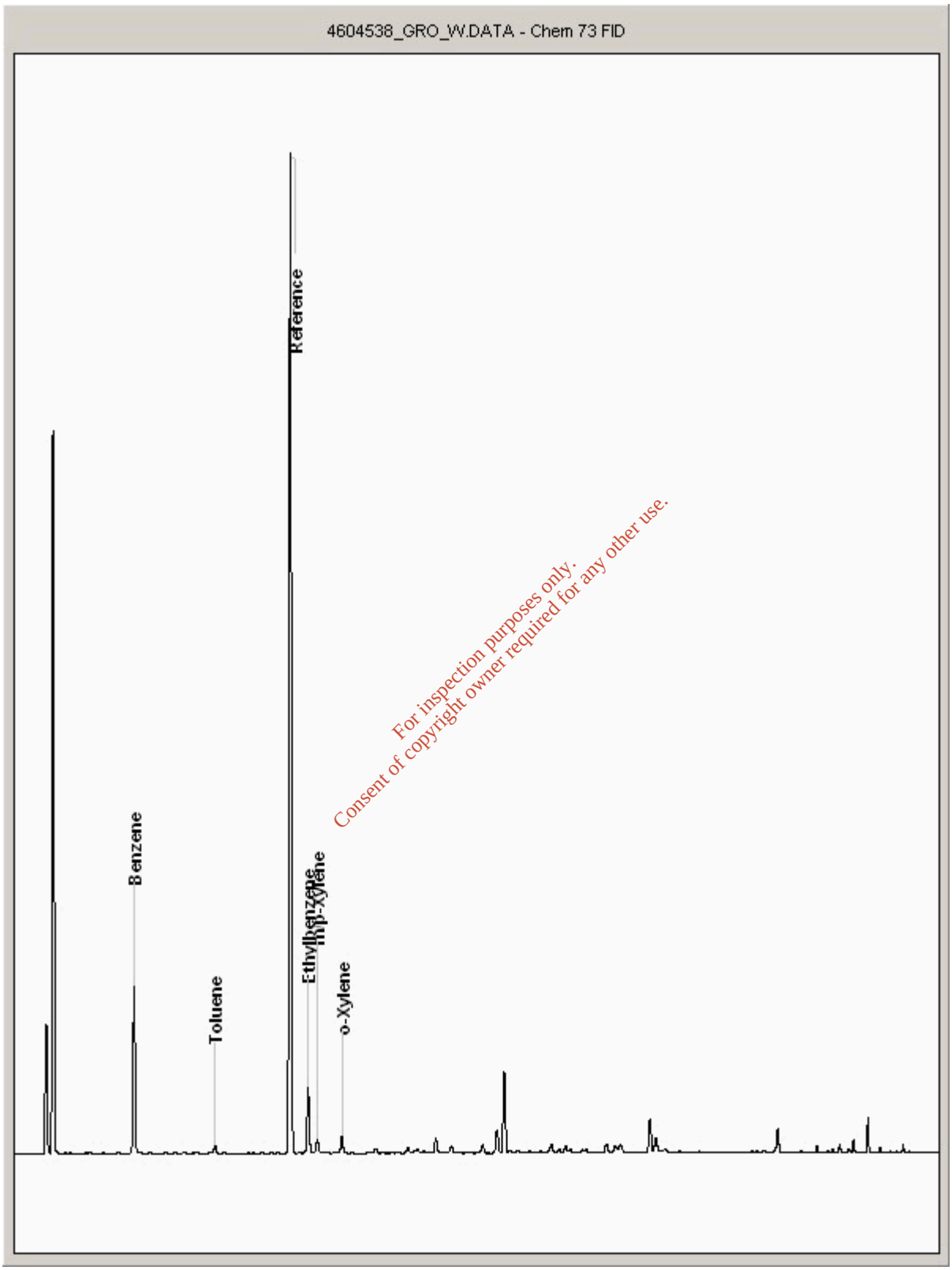
SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4604538
Sample ID : A3

Depth : 1.50 - 2.50



CERTIFICATE OF ANALYSIS

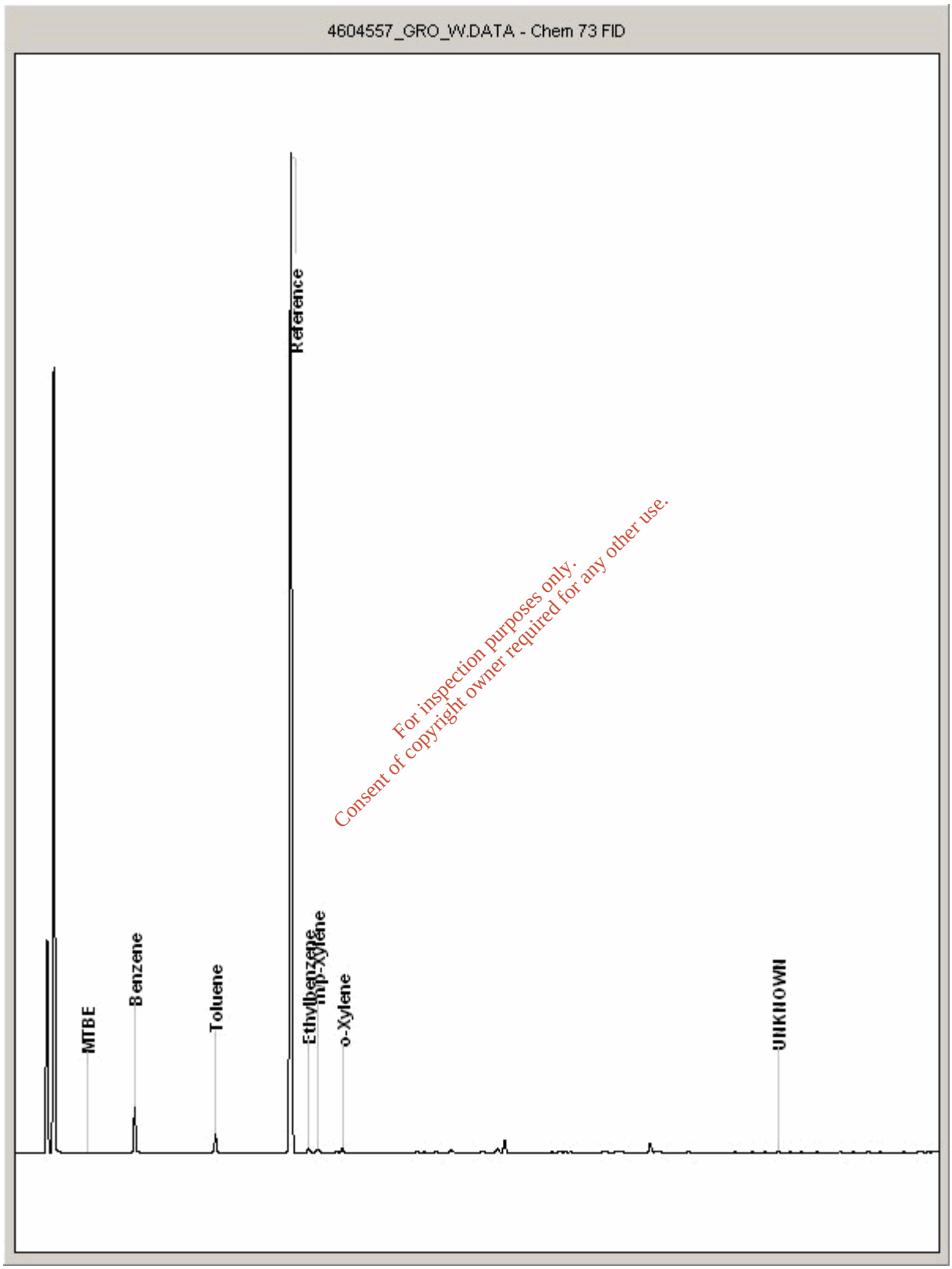
SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4604557
Sample ID : D5

Depth : 1.50 - 2.50



CERTIFICATE OF ANALYSIS

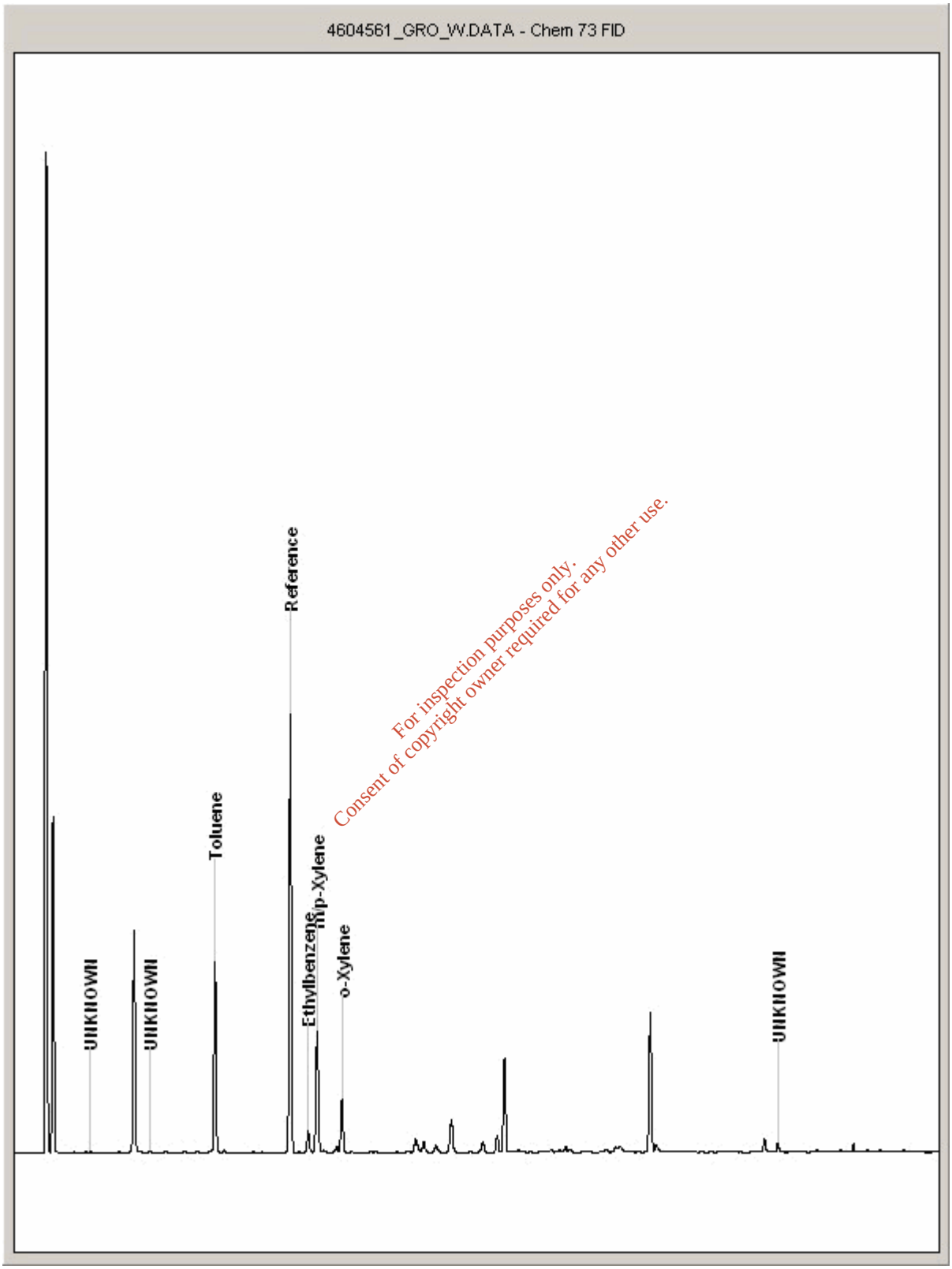
SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4604561
Sample ID : G4

Depth : 3.00 - 4.00



CERTIFICATE OF ANALYSIS

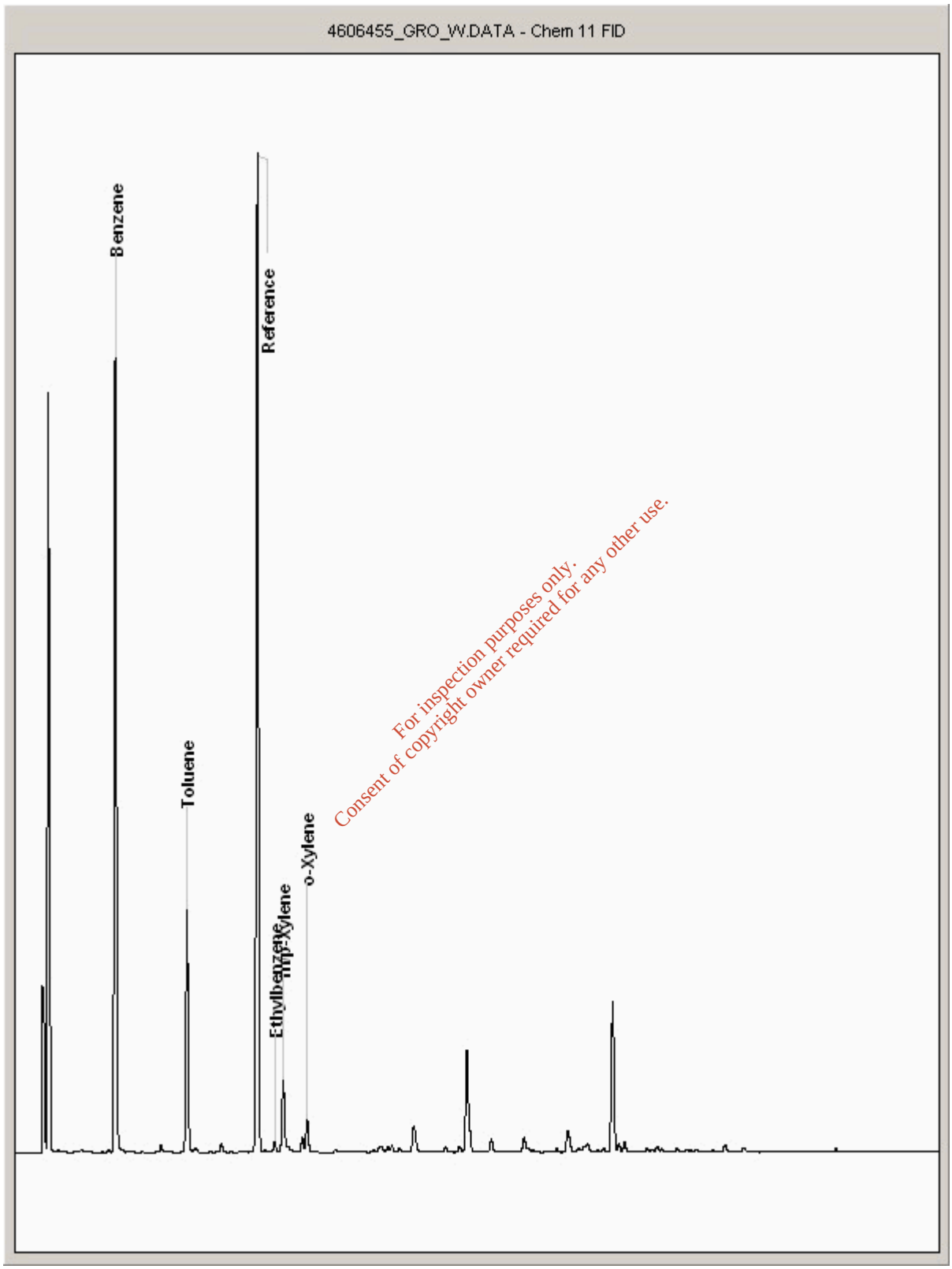
SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4606455
Sample ID : E8

Depth : 1.00 - 2.00



CERTIFICATE OF ANALYSIS

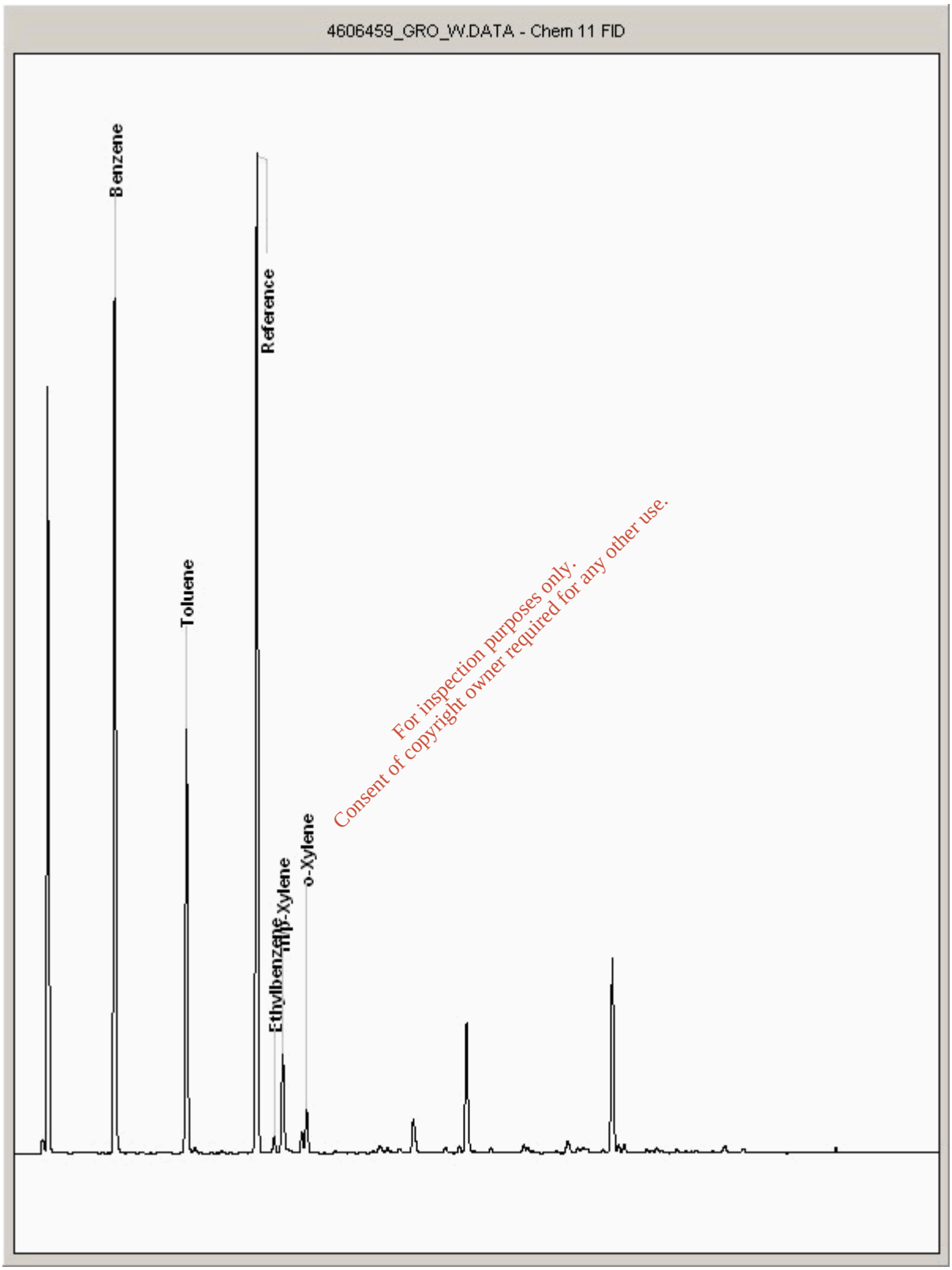
SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (W)

Sample No : 4606459
Sample ID : C7

Depth : 4.00 - 5.00



SDG:	111028-6	**Location:**	Limerick Gasworks	**Order Number:**	4700000740
Job:	D_MOUCHEL_ELE-1	**Customer:**	Mouchel	**Report Number:**	158055
Client Reference:		**Attention:**	Neil Balderstone	**Superseded Report:**	

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be screened in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. Is an asbestos fibre type is found it will be reported as detected (for each fibre type found). If asbestos is present either as asbestos containing material or loose fibres no further analysis will be undertaken. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials -whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute themajor part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C4 -C10 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GC-MS
HERBICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
PESTICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB TOT / PCB CON	D&C	HEXANE:ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE:ACETONE	MICROWAVE TM218.	GC-MS
C8-C40 (C8-C40) EZ FLASH	WET	HEXANE:ACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE:ACETONE	SHAKER	GC-EZ
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM:ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC MS

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials or those identified as potentially asbestos containing during sample description which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -
Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring Visit 6 (26th - 27th Jan 2011)

Screening Values - Drinking Water Standards

Aquifer type: Locally important aquifer
Typical productivity: Moderately Productive (40-100 m3/d)

Concentration exceeds screening value
Concentration exceeds screening value because limit of detection is greater than screening value

			Ground type																		
			Borehole	A3	A4	A11	C7	C11	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3
			Depth (mbgl)	1.50-4.50	1.50-2.30	1.00-2.50	2.00-6.50	1.50-2.50	3.00-4.50	2.00-3.00	1.50-6.00	1.00-4.00	4.00-10.00	3.50-8.50	3.00-9.50	2.50-8.50	1.00-2.00	1.50-4.00	1.00-2.00	2.50-4.40	1.00-5.00	3.50-6.00
Determinand	**Units**	**Screening Value (µg/l)**	**Source of screening value**																			
Inorganics																						
Arsenic (dissolved)	µg/l	10	SI 278/2007	31.5	4.72	4.78	6.19	10.2	17.2	1.52	145	7.32	17.9	2.29	2.95	3.93	3.27	2.65	1.39	2.36	21.6	2.8
Cadmium (dissolved)	µg/l	5	SI 278/2007	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.392	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (dissolved)	µg/l	50	SI 278/2007	21.5	14.3	8.36	8.37	6.28	20.5	6.43	2.36	11.5	23.4	13.6	8.43	25.3	7.88	4.95	4.69	3.86	8.06	2.05
Copper (dissolved)	µg/l	2000	SI 278/2007	1.5	1.48	1.04	<0.85	<0.85	13.8	2.47	<0.85	<0.85	3.2	6.04	2.19	17.8	0.922	<0.85	0.984	3.16	1.58	4.93
Lead (dissolved)	µg/l	25	SI 278/2007	<0.02	0.06	0.328	0.099	0.043	<0.02	0.29	0.131	0.057	<0.02	0.058	0.051	0.251	0.033	<0.02	0.12	0.264	0.48	0.038
Nickel (dissolved)	µg/l	20	SI 278/2007	4.64	3.98	4.69	1.74	6	4.54	2.07	46.4	4.46	6.07	9.49	4.88	12	4.84	4.96	3.95	12.7	11.9	7.33
Selenium (dissolved)	µg/l	10	SI 278/2007	1.79	1.11	1.83	10.7	1.08	36.8	1.3	25.2	4.84	9.73	3.18	12.4	13.2	1.79	<0.39	1.72	0.911	15.7	0.544
Zinc (dissolved)	µg/l	5000	WHO Drinking water Quality Guideline Value	0.989	1.39	5.05	0.907	<0.41	10	12.2	42.9	0.996	1.23	3.26	3.47	15.6	0.59	<0.41	<0.41	<0.41	<0.41	<0.41
Mercury (dissolved)	µg/l	1	SI 278/2007	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.021	<0.01	0.0259	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ammonium	µg/l	300	SI 278/2007	12400	2620	3280	30500	7120	14300	1590	64000	27600	52800	11100	7480	2970	11300	17600	<300	4860	35700	1650
Sulphate (soluble)	µg/l	250000	SI 278/2007	367000	276000	138000	18000	158000	481000	18700	467000	71500	674000	806000	425000	796000	113000	210000	70200	765000	318000	603000
Phenols	µg/l	0.5	SI 81/1988	<25	<25	<25	71700	90	990	380	170000	15600	23800	580	3900	<25	5710	<25	<25	<25	599000	<25
Total Cyanide	µg/l	50	SI 278/2007	280	205	<50	81	107	818	51	7900	59	1340	2060	666	959	118	<50	<50	600	1570	1230
pH Value	µg/l	6.5	SI 278/2007	7.84	7.77	7.85	8.1	8.24	7.95	7.79	8.34	7.56	8.11	7.98	8.27	7.11	7.9	8.18	8.31	8	7.87	8.11
pH Value	µg/l	9.5	SI 278/2007	7.84	7.77	7.85	8.1	8.24	7.95	7.79	8.34	7.56	8.11	7.98	8.27	7.11	7.9	8.18	8.31	8	7.87	8.11
BTEX																						
Benzene	µg/l	1	SI 278/2007	516	<7	14	4920	54	746	<7	5520	216	4300	382	1730	<7	439	<7	<7	<7	15300	<7
Toluene	µg/l	700	WHO Drinking Water Quality Guideline Value	15	<4	31	1870	44	538	<4	1550	144	3100	8	1890	<4	347	<4	<4	<4	5350	<4
Ethyl benzene	µg/l	300	WHO Drinking Water Quality Guideline Value	198	<5	16	75	111	248	<5	72	6	378	10	194	<5	38	<5	<5	<5	275	<5
Xylene	µg/l	500	WHO Drinking Water Quality Guideline Value	108	<10	75	759	411	1280	<10	783	41	2120	126	1890	<10	366	<10	<10	<10	2510	<10
Petroleum Hydrocarbons																						
GRO (C4-C12)	µg/l	10	SI 81/1988	2680	<20	786	11030	4870	9980	<20	14290	630	13840	1027	12140	<20	2840	<20	<20	<20	45300	<20
MTBE	µg/l			<1.6	<1.6	<1.6	<1.6	-	<1.6	-	-	-	<1.6	-	<1.6	<1.6	-	-	-	-	<1.6	<1.6
Aliphatics C5-C6	µg/l			11	<10	<10	23	<10	15	<10	71	<10	25	<10	18	<10	<10	<10	<10	<10	188	<10
Aliphatics C6-C8	µg/l			78	<10	17	236	45	154	<10	398	13	352	22	138	<10	40	<10	<10	<10	1480	<10
Aliphatics C8-C10	µg/l			197	<10	77	588	541	804	<10	744	27	996	81	815	<10	201	<10	<10	<10	2410	<10
Aliphatics C10-C12	µg/l			849	<10	301	1300	1980	3390	<10	2780	98	1170	203	2950	<10	761	<10	<10	<10	9680	<10
Aliphatics C12-C16	µg/l			<10	415	73	40	1480	965	<50	19	<10	<10	<10	18	267	10	13	<10	<10	768	<10
Aliphatics C16-C21	µg/l			<10	612	304	109	765	991	387	30	<10	<10	<10	22	217	52	18	<10	<10	585	<10
Aliphatics C21-C35	µg/l			<10	352	1110	398	382	593	3750	17	<10	<10	<10	23	258	16	140	<10	<10	612	<10
Aromatics C6-C7	µg/l			516	<10	14	4920	54	746	<10	5520	216	4300	382	1730	<10	439	<10	<10	<10	15300	<10
Aromatics C7-C8	µg/l			15	<10	31	1870	44	538	<10	1550	144	3100	<10	1890	<10	347	<10	<10	<10	5350	<10
Aromatics C8-C10	µg/l			438	<10	142	1230	883	2060	<10	1350	65	3160	191	2620	<10	539	<10	<10	<10	4390	<10
Aromatics C10-C12	µg/l			566	<10	201	869	1320	2260	<10	1850	66	779	135	1970	<10	507	<10	<10	<10	6450	<10
Aromatics C12-C16	µg/l			372	37	173	6400	2590	4860	<50	7000	847	4620	44	2720	92	580	<10	<10	<10	40800	<10
Aromatics C16-C21	µg/l			246	156	230	1540	1580	4960	359	612	14	491	<10	935	359	201	35	<10	<10	4610	<10
Aromatics C21-C35	µg/l			142	356	1740	2820	1890	7800	4550	454	<10	106	15	661	2370	300	227	<10	46	4710	<10
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	SI 81/1988	3430	1930	4410	22300	13600	30100	9090	22400	1490	19100	1090	16500	3560	4000	444	<10	46	97300	<10
PAHs																						
Acenaphthene	µg/l			2.14	0.193	40.3	26.5	82.7	357	0.138	17	0.45	48.5	2.85	23	1.15	2.28	0.791	0.0183	0.164	268	<0.015
Acenaphthylene	µg/l			1.94	2.09	173	178	22.1	942	1.23	122	0.581	76.3	4.31	107	2.05	5.69	2.25	0.323	0.252	1320	0.0386
Anthracene	µg/l			1.09	0.601	78.6	56.1	4.09	434	0.409	16.9	0.125	5.49	1.54	11.8	0.828	6.67	1.5	0.0659	0.297	662	0.0468
Benzo(a)anthracene	µg/l			3.33	4.87	290	52.3	0.599	155	2.94	18.1	0.228	0.575	6.12	1.41	2	16.7	4.88	0.365	2.15	408	0.473
Benzo(a)pyrene	µg/l	0.01	SI 278/2007	4.98	11.6	441	42.4	0.263	67.1	3.07	12.9	0.222	0.265	8.75	0.661	3.2	18.6	9.42	1.35	3.74	266	0.627
Benzo(b)fluoranthene	µg/l			2.15	8.81	413	50.2	0.236	58	3.35	13.2	0.198	<0.46	7.45	0.608	2.76	16.2	7.87	0.928	3.13	224	0.723
Benzo(ghi)perylene	µg/l			2.08	6.09	307	26.9	0.143	24.6	2.19	9.45	0.152	<0.32	7.1	0.286	2.15	7.45	5.53	1.12	3.23	134	0.557
Benzo(k)fluoranthene	µg/l			2.53	9.19	372	38.6	0.269	62.1	2.96	15	0.186	<0.54	7.82	0.8	2.94	15.9	6.82	0.771	3.11	244	0.565
Chrysene	µg/l			2.43	4.44	285	47.7	0.817	127	3.07	15.6	0.21	<0.26	6.74	0.606	2.35	12	4.58	0.356	1.99	339	0.487
Dibenzo(ah)anthracene	µg/l			0.419	2.03	73.4	6.69	<0.08	6.09	0.679	1.99	0.0377	<0.32	1.88	<0.16	0.45	3.41	1.62	0.28	0.833	38.7	0.115
Fluoranthene	µg/l	4	WHO Drinking Water Quality Guideline Value	5.58	7.94	509	144	6.53	883	5.27	38.9	0.569	4.88	10.7	9.28	5.25	29.9	10.7	0.403	2.88	1250	1.46
Fluorene	µg/l			0.966	0.325	80.3	88.7	30.5	564	0.203	42.5	0.314	37.5	1.18	41.3	0.761	5.32	1.48	0.049	0.131	829	0.029
Indeno(123cd)pyrene	µg/l			1.68	6.09	272	23.9	0.146	24.2	2.09	7.43	0.135	<0.28	6.38	0.233	1.87	8.39	5.1	0.945	2.85	129	0.453
Naphthalene	µg/l			0.427	0.416	192	251	3.36	5830	0.603	2560	2.43	3970	18.4	381	<1	6.88	1.79	0.101	0.175	10700	<0.1
Phenanthrene	µg/l			1.69	1.08	202	154	26.9	1020	1.15	64	0.25	33.9	3.98	33.2	1.94	12.5	4.62	0.133	0.747	1860	0.0951
Pyrene	µg/l			11.3	10.4	427	106	3.39	575	4.29	26.2	0.398	287	9.06	5.29	3.21	19.7	7.08	0.332	2.83	817	0.948
Total PAH # (Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)perylene & Indeno(123cd)pyrene)	µg/l	0.1	SI 278/2007	8.44	30.18	1364	139.6	0.794	168.9	10.59	45.08	0.671	<1.60	28.75	1.927	9.72	47.94	25.32	3.764	12.32	731	2.298
Volatile Organic Compounds																						
1.1.1.2-Tetrachloroethane	µg/l			<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	<1.3	<1.3
1.1.1-Trichloroethane	µg/l	2000	WHO Drinking Water Quality Guideline Value	<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	6.76	<1.3
1,1,2,2-Tetrachloroethane	µg/l			<5.2	<5.2	<5.2	<5.2	-	<5.2	-	-	-	<5.2	-	<5.2	<5.2	-	-	-	-	<5.2	<5.2
1.1.2-Trichloroethane	µg/l	5	US EPA - National Primary Drinking Water Regulations, Maximum Contaminant Level	<2.2	<2.2	<2.2	113	-	<2.2	-	-	-	211	-	<2.2	<2.2	-	-	-	-	<2.2	<2.2
1.1-Dichloroethane	µg/l	-	-	<1.2	<1.2	<1.2	<1.2	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	<1.2	<1.2
1.1-Dichloroethene	µg/l	140	**Informal** WHO Drinking Water Quality Guideline Value	<1.2	<1.2	<1.2	<1.2	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	<1.2	<1.2
1.1-Dichloropropene	µg/l			<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	<1.3	<1.3
1.2.3-Trichlorobenzene	µg/l			<3.1	<3.1	<3.1	<3.1	-	<3.1	-	-	-	<3.1	-	<3.1	<3.1	-	-	-	-	<3.1	<3.1
1.2.3-Trichloropropane	µg/l			<7.8	<7.8	<7.8	<7.8	-	<7.8	-	-	-	<7.8	-	<7.8	<7.8	-	-	-	-	<7.8	<7.8
1.2.4-Trichlorobenzene	µg/l			<2.3	<2.3	<2.3	<2.3	-	<2.3	-	-	-	<2.3	-	<2.3	<2.3	-	-	-	-	<2.3	<2.3
1.2.4-Trimethylbenzene	µg/l			25.3	<1.7	19.1	73.8	-	369	-	-	-	294	-	241	<1.7	-	-	-	-	192	<1.7
1.2-Dibromo-3-chloropropane (DBCP)	µg/l	1	WHO Drinking Water Quality Guideline Value	<9.8	<9.8	<9.8	<9.8	-	<9.8	-	-	-	<9.8	-	<9.8	<9.8	-	-	-	-	<9.8	<9.8
1.2-Dibromoethane	µg/l	0.4	**Provisional** WHO Drinking Water Quality Guideline Value	<2.3	<2.3	<2.3	<2.3	-	<2.3	-	-	-	<2.3	-	<2.3	<2.3	-	-	-	-	<2.3	<2.3
1,2-Dichlorobenzene	µg/l			<3.7	<3.7	<3.7	<3.7	-	<3.7	-	-	-	<3.7	-	<3.7	<3.7	-	-	-	-	<3.7	<3.7
1.2-Dichloroethane	µg/l	3	SI 278/2007	<3.3	<3.3	<3.3	<3.3	-	19.1	-	-	-	<3.3	-	<3.3	<3.3	-	-	-	-	<3.3	<3.3
1.2-Dichloropropane	µg/l	40	**Provisional** WHO Drinking Water Quality Guideline Value	<3	<3	<3	<3	-	<3	-	-	-	<3	-	<3	<3	-	-	-	-	<3	<3
1,3,5-Trichlorobenzene	µg/l			<10	<10	<10	<10	-	<10	-	-	-	<10	-	<10	<10	-	-	-	-	<10	<10
1.3.5-Trimethylbenzene	µg/l			6.85	<1.8	6.11	33.2	-	134	-	-	-	119	-	127	<1.8	-	-	-	-	79.9	<1.8
1,3-Dichlorobenzene	µg/l			<2.2	<2.2	<2.2	<2.2	-	<2.2	-	-	-	<2.2	-	<2.2	<2.2	-	-	-	-	<2.2	<2.2
1.3-Dichloropropane	µg/l			<2.2	<2.2	<2.2	<2.2	-	<2.2	-	-	-	<2.2	-	<2.2	<2.2	-	-	-	-	<2.2	<2.2
1,4-Dichlorobenzene	µg/l			<2.7	<2.7	<2.7	<2.7	-	<2.7	-	-	-	<2.7	-	<2.7	<2.7	-	-	-	-	<2.7	<2.7
2.2-Dichloropropane	µg/l			<3.8	<3.8	<3.8	<3.8	-	<3.8	-	-	-	<3.8	-	<3.8	<3.8	-	-	-	-	<3.8	<3.8
2-Chlorotoluene	µg/l			<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
4-Chlorotoluene	µg/l			<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
4-Isopropyltoluene	µg/l			<2.6	<2.6	<2.6	15.3	-	15	-	-	-	9.78	-	13	<2.6	-	-	-	-	28.4	<2.6
Bromobenzene	µg/l			<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Bromochloromethane	µg/l			<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
Bromodichloromethane	µg/l	100	UK DWS for total Trihalomethanes (chloroform, bromoform, dibromochloromethane and bromodichloromethane)	<0.9	<0.9	<0.9	<0.9	-	<0.9	-	-	-	<0.9	-	<0.9	<0.9	-	-	-	-	<0.9	<0.9
Bromoform	µg/l	100	UK DWS for total Trihalomethanes (chloroform, bromoform, dibromochloromethane and bromodichloromethane)	<3	<3	<3	<3	-	<3	-	-	-	<3	-	<3	<3	-	-	-	-	<3	<3
Bromomethane	µg/l			<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Carbon Disulphide	µg/l			<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	4.78	-	<1.3	<1.3	-	-	-	-	<1.3	<1.3
Carbontetrachloride	µg/l	4	WHO Drinking Water Quality Guideline Value	<1.4	<1.4	<1.4	<1.4	-	<1.4	-	-	-	<1.4	-	<1.4	<1.4	-	-	-	-	<1.4	<1.4
Chlorobenzene	µg/l	100	WHO Drinking Water Quality Guideline Value	<3.5	<3.5	<3.5	<3.5	-	<3.5	-	-	-	<3.5	-	<3.5	<3.5	-	-	-	-	<3.5	<3.5
Chloroethane	µg/l			<2.5	<2.5	<2.5	<2.5	-	<2.5	-	-	-	<2.5	-	<2.5	<2.5	-	-	-	-	<2.5	<2.5
Chloroform	µg/l	100	SI 278/2007 for total Trihalomethanes (chloroform, bromoform, dibromochloromethane and bromodichloromethane)	<1.8	<1.8	<1.8	<1.8	-	<1.8	-	-	-	<1.8	-	<1.8	<1.8	-	-	-	-	<1.8	<1.8
Chloromethane	µg/l			<9	<9	<9	<9	-	<9	-	-	-	<9	-	<9	<9	-	-	-	-	<9	<9
cis-1-2-Dichloroethene	µg/l	50	WHO Drinking Water Quality Guideline Value	<2.3	<2.3	<2.3	<2.3	-	<2.3	-	-	-	<2.3	-	<2.3	<2.3	-	-	-	-	<2.3	<2.3
cis-1-3-Dichloropropene	µg/l	20	WHO Drinking Water Quality Guideline Value	<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
Dibromochloromethane	µg/l	100	SI 278/2007 for total Trihalomethanes (chloroform, bromoform, dibromochloromethane and bromodichloromethane)	<1.7	<1.7	<1.7	<1.7	-	<1.7	-	-	-	<1.7	-	<1.7	<1.7	-	-	-	-	<1.7	<1.7
Dibromomethane	µg/l			<2.7	<2.7	<2.7	<2.7	-	<2.7	-	-	-	<2.7	-	<2.7	<2.7	-	-	-	-	<2.7	<2.7
Dichlorodifluoromethane	µg/l			<7	<7	<7	<7	-	<7	-	-	-	<7	-	<7	<7	-	-	-	-	<7	<7
Dichloromethane	µg/l	20	WHO Drinking Water Quality Guideline Value	<3.7	<3.7	<3.7	<3.7	-	<3.7	-	-	-	<3.7	-	<3.7	<3.7	-	-	-	-	<3.7	<3.7
Hexachlorobutadiene	µg/l			<2.5	<2.5	<2.5	<2.5	-	<2.5	-	-	-	<2.5	-	<2.5	<2.5	-	-	-	-	<2.5	<2.5
Isopropylbenzene	µg/l			16.3	<1.4	2.11	2.24	-	23.7	-	-	-	28	-	2.44	<1.4	-	-	-	-	10.9	<1.4
n-Butylbenzene	µg/l			<2	<2	<2	<2	-	7.64	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Propylbenzene	µg/l			7.48	<2.6	<2.6	<2.6	-	25.1	-	-	-	29.3	-	<2.6	<2.6	-	-	-	-	15	<2.6
sec-Butylbenzene	µg/l			<1.7	<1.7	<1.7	<1.7	-	<1.7	-	-	-	<1.7	-	<1.7	<1.7	-	-	-	-	<1.7	<1.7
Styrene	µg/l	20	WHO Drinking Water Quality Guideline Value	<1.2	<1.2	<1.2	89.9	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	355	<1.2
tert-Amyl methyl ether (TAME)	µg/l			<1	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
tert-Butylbenzene	µg/l			<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Tetrachloroethene	µg/l	10	SI 278/2007	<1.5	<1.5	<1.5	<1.5	-	<1.5	-	-	-	<1.5	-	<1.5	<1.5	-	-	-	-	2.57	<1.5
trans-1-2-Dichloroethene	µg/l	50	WHO Drinking Water Quality Guideline Value	<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
trans-1-3-Dichloropropene	µg/l	20	WHO Drinking Water Quality Guideline Value	<3.5	<3.5	<3.5	<3.5	-	<3.5	-	-	-	<3.5	-	<3.5	<3.5	-	-	-	-	<3.5	<3.5
Trichloroethene	µg/l	10	SI 278/2007	<2.5	<2.5	<2.5	<2.5	-	<2.5	-	-	-	<2.5	-	<2.5	<2.5	-	-	-	-	11	<2.5
Trichlorofluoromethane	µg/l			<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	1.34	<1.3
Vinyl Chloride	µg/l	0.5	SI 278/2007	<1.2	<1.2	<1.2	<1.2	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	<1.2	<1.2

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring visit 6 (26th - 27th Jan 2011)

Screening Values - Environmental Quality Standards

Receptor water type: Freshwater suitable for coarse fish
Relevant EQS Hardness Band: >100-150 mg/l

* Hardness related Freshwater EQS - based on cyprinid/coarse fish

Concentration exceeds screening value
Concentraion exceeds screening value becaue limit of detection is greater than screening value

Determinand	Units	Screening Value (µg/l) Freshwater	Screening Value (µg/l) Coastal/Estuary /Marine	Source of screening value	Ground type																	
					Borehole	A3	A4	A11	C7	C11	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3
					Depth (mbgl)	1.50-4.50	1.50-2.30	1.00-2.50	2.00-6.50	1.50-2.50	3.00-4.50	2.00-3.00	1.50-6.00	1.00-4.00	4.00-10.00	3.50-8.50	3.00-9.50	2.50-8.50	1.00-2.00	1.50-4.00	1.00-2.00	2.50-4.40	1.00-5.00	3.50-6.00
Inorganics																							
Arsenic (dissolved)	µg/l	25	20	SI 272/2009 Annual Ave		31.5	4.72	4.78	6.19	10.2	17.2	1.52	145	7.32	17.9	2.29	2.95	3.93	3.27	2.65	1.39	2.36	21.6	2.8
Cadmium (dissolved)	µg/l	1.5	1.5	SI272/2009 MAC		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.392	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (dissolved)	µg/l	32	32	SI272/2009 MAC		21.5	14.3	8.36	8.37	6.28	20.5	6.43	2.36	11.5	23.4	13.6	8.43	25.3	7.88	4.95	4.69	3.86	8.06	2.05
Copper (dissolved)	µg/l	30*		SI 272/2009 Annual Ave		1.5	1.48	1.04	<0.85	<0.85	13.8	2.47	<0.85	<0.85	3.2	6.04	2.19	17.8	0.922	<0.85	0.984	3.16	1.58	4.93
Lead (dissolved)	µg/l	7.2	7.2	SI 272/2009 Annual Ave		<0.02	0.06	0.328	0.099	0.043	<0.02	0.29	0.131	0.057	<0.02	0.058	0.051	0.251	0.033	<0.02	0.12	0.264	0.48	0.038
Nickel (dissolved)	µg/l	20	20	SI 272/2009 Annual Ave		4.64	3.98	4.69	1.74	6	4.54	2.07	46.4	4.46	6.07	9.49	4.88	12	4.84	4.96	3.95	12.7	11.9	7.33
Selenium (dissolved)	µg/l	1	-	Guidelines for Aquatic Life (2007)		1.79	1.11	1.83	10.7	1.08	36.8	1.3	25.2	4.84	9.73	3.18	12.4	13.2	1.79	<0.39	1.72	0.911	15.7	0.544
Zinc (dissolved)	µg/l	100*	40	SI 272/2009 Annual Ave		0.989	1.39	5.05	0.907	<0.41	10	12.2	42.9	0.996	1.23	3.26	3.47	15.6	0.59	<0.41	<0.41	<0.41	<0.41	<0.41
Mercury (dissolved)	µg/l	0.07	0.07	SI272/2009 MAC		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.021	<0.01	0.0259	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Ammoniacal Nitrogen	µg/l	1000	-	Freshwater Fish Directive		12400	2620	3280	30500	7120	14300	1590	64000	27600	52800	11100	7480	2970	11300	17600	<300	4860	35700	1650
Sulphate (soluble)	µg/l	200000	-	EQS & IGV		367000	276000	138000	18000	158000	481000	18700	467000	71500	674000	806000	425000	796000	113000	210000	70200	765000	318000	603000
Phenols	µg/l	46	46	SI272/2009 MAC		<25	<25	<25	71700	90	990	380	170000	15600	23800	580	3900	<25	5710	<25	<25	<25	599000	<25
Free Cyanide - (total CN in lab results)	µg/l	10	10	SI 272/2009 Annual Ave		280	205	<50	81	107	818	51	7900	59	1340	2060	666	959	118	<50	<50	600	1570	1230
pH Value	µg/l	6.5	6.5	Interim Guideline Values		7.84	7.77	7.85	8.1	8.24	7.95	7.79	8.34	7.56	8.11	7.98	8.27	7.11	7.9	8.18	8.31	8	7.87	8.11
pH Value	µg/l	9.5	9.5	Interim Guideline Values		7.84	7.77	7.85	8.1	8.24	7.95	7.79	8.34	7.56	8.11	7.98	8.27	7.11	7.9	8.18	8.31	8	7.87	8.11
BTEX																							
Benzene	µg/l	50	50	SI272/2009 MAC		516	<7	14	4920	54	746	<7	5520	216	4300	382	1730	<7	439	<7	<7	<7	15300	<7
Toluene	µg/l	10	10	SI 272/2009 Annual Ave		15	<4	31	1870	44	538	<4	1550	144	3100	8	1890	<4	347	<4	<4	<4	5350	<4
Ethyl benzene	µg/l	10	10	EQS & IGV		198	<5	16	75	111	248	<5	72	6	378	10	194	<5	38	<5	<5	<5	275	<5
Xylene	µg/l	10	10	SI 272/2009 Annual Ave		108	<10	75	759	411	1280	<10	783	41	2120	126	1890	<10	366	<10	<10	<10	2510	<10
Petroleum Hydrocarbons																							
GRO (C4-C12)	µg/l					2680	<20	786	11030	4870	9980	<20	14290	630	13840	1027	12140	<20	2840	<20	<20	<20	45300	<20
MTBE	µg/l	30	30	IGV		<1.6	<1.6	<1.6	<1.6	-	<1.6	-	-	-	<1.6	-	<1.6	<1.6	-	-	-	-	<1.6	<1.6
Aliphatics C5-C6	µg/l					11	<10	<10	23	<10	15	<10	71	<10	25	<10	18	<10	<10	<10	<10	<10	188	<10
Aliphatics C6-C8	µg/l					78	<10	17	236	45	154	<10	398	13	352	22	138	<10	40	<10	<10	<10	1480	<10
Aliphatics C8-C10	µg/l					197	<10	77	588	541	804	<10	744	27	996	81	815	<10	201	<10	<10	<10	2410	<10
Aliphatics C10-C12	µg/l					849	<10	301	1300	1980	3390	<10	2780	98	1170	203	2950	<10	761	<10	<10	<10	9680	<10
Aliphatics C12-C16	µg/l					<10	415	73	40	1480	965	<50	19	<10	<10	<10	18	267	10	13	<10	<10	768	<10
Aliphatics C16-C21	µg/l					<10	612	304	109	765	991	387	30	<10	<10	<10	22	217	52	18	<10	<10	585	<10
Aliphatics C21-C35	µg/l					<10	352	1110	398	382	593	3750	17	<10	<10	<10	23	258	16	140	<10	<10	612	<10
Aromatics C6-C7	µg/l					516	<10	14	4920	54	746	<10	5520	216	4300	382	1730	<10	439	<10	<10	<10	15300	<10
Aromatics C7-C8	µg/l					15	<10	31	1870	44	538	<10	1550	144	3100	<10	1890	<10	347	<10	<10	<10	5350	<10
Aromatics 8-10	µg/l					438	<10	142	1230	883	2060	<10	1350	65	3160	191	2620	<10	539	<10	<10	<10	4390	<10
Aromatics 10-12	µg/l					566	<10	201	869	1320	2260	<10	1850	66	779	135	1970	<10	507	<10	<10	<10	6450	<10
Aromatics 12-16	µg/l					372	37	173	6400	2590	4860	<50	7000	847	4620	44	2720	92	580	<10	<10	<10	40800	<10
Aromatics 16-21	µg/l					246	156	230	1540	1580	4960	359	612	14	491	<10	935	359	201	35	<10	<10	4610	<10
Aromatics 21-35	µg/l					142	356	1740	2820	1890	7800	4550	454	<10	106	15	661	2370	300	227	<10	46	4710	<10
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	10	EQS & IGV		3430	1930	4410	22300	13600	30100	9090	22400	1490	19100	1090	16500	3560	4000	444	<10	46	97300	<10
PAHs																							
Acenaphthene	µg/l	5.8	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		2.14	0.193	40.3	26.5	82.7	357	0.138	17	0.45	48.5	2.85	23	1.15	2.28	0.791	0.0183	0.164	268	<0.015
Acenaphthylene	µg/l	-	-	-		1.94	2.09	173	178	22.1	942	1.23	122	0.581	76.3	4.31	107	2.05	5.69	2.25	0.323	0.252	1320	0.0386
Anthracene	µg/l	0.4	0.4	SI272/2009 MAC		1.09	0.601	78.6	56.1	4.09	434	0.409	16.9	0.125	5.49	1.54	11.8	0.828	6.67	1.5	0.0659	0.297	662	0.0468
Benzo(a)anthracene	µg/l	0.018	-	Guidelines for Aquatic Life (2007)		3.33	4.87	290	52.3	0.599	155	2.94	18.1	0.228	0.575	6.12	1.41	2	16.7	4.88	0.365	2.15	408	0.473
Benzo(a)pyrene	µg/l	0.1	0.1	SI272/2009 MAC		4.98	11.6	441	42.4	0.263	67.1	3.07	12.9	0.222	0.265	8.75	0.661	3.2	18.6	9.42	1.35	3.74	266	0.627
Benzo(b)fluoranthene	µg/l	0.5	-	Interim Guideline Value		2.15	8.81	413	50.2	0.236	58	3.35	13.2	0.198	<0.46	7.45	0.608	2.76	16.2	7.87	0.928	3.13	224	0.723
Benzo(ghi)perylene	µg/l	0.05	-	Interim Guideline Value		2.08	6.09	307	26.9	0.143	24.6	2.19	9.45	0.152	<0.32	7.1	0.286	2.15	7.45	5.53	1.12	3.23	134	0.557
Benzo(k)fluoranthene	µg/l	0.05	-	Interim Guideline Value		2.53	9.19	372	38.6	0.269	62.1	2.96	15	0.186	<0.54	7.82	0.8	2.94	15.9	6.82	0.771	3.11	244	0.565
Chrysene	µg/l	-	-	-		2.43	4.44	285	47.7	0.817	127	3.07	15.6	0.21	<0.26	6.74	0.606	2.35	12	4.58	0.356	1.99	339	0.487
Dibenzo(ah)anthracene	µg/l	-	-	-		0.419	2.03	73.4	6.69	<0.08	6.09	0.679	1.99	0.0377	<0.32	1.88	<0.16	0.45	3.41	1.62	0.28	0.833	38.7	0.115
Fluoranthene	µg/l	1	1	SI272/2009 MAC		5.58	7.94	509	144	6.53	883	5.27	38.9	0.569	4.88	10.7	9.28	5.25	29.9	10.7	0.403	2.88	1250	1.46
Fluorene	µg/l	3	-	Guidelines for Aquatic Life (2007)		0.966	0.325	80.3	88.7	30.5	564	0.203	42.5	0.314	37.5	1.18	41.3	0.761	5.32	1.48	0.049	0.131	829	0.029
Indeno(123cd)pyrene	µg/l	0.05	-	Interim Guideline Value		1.68	6.09	272	23.9	0.146	24.2	2.09	7.43	0.135	<0.28	6.38	0.233	1.87	8.39	5.1	0.945	2.85	129	0.453
Naphthalene	µg/l	2.4	1.2	SI 272/2009 Annual Ave		0.427	0.416	192	251	3.36	5830	0.603	2560	2.43	3970	18.4	381	<1	6.88	1.79	0.101	0.175	10700	<0.1
Phenanthrene	µg/l	0.4	-	Guidelines for Aquatic Life (2007)		1.69	1.08	202	154	26.9	1020	1.15	64	0.25	33.9	3.98	33.2	1.94	12.5	4.62	0.133	0.747	1860	0.0951
Pyrene	µg/l	0.025	-	Guidelines for Aquatic Life (2007)		11.3	10.4	427	106	3.39	575	4.29	26.2	0.398	2.87	9.06	5.29	3.21	19.7	7.08	0.332	2.83	817	0.948
Sum benzo(ghi)perylene and indeno(123-cd)pyrene	µg/l	0.002	0.002	SI 272/2009 Annual Ave		3.76	12.18	579	50.8	0.289	48.8	4.28	16.88	0.287	<0.6	13.48	0.519	4.02	15.84	10.63	2.065	6.08	263	1.01
Sum benzo (b + K) fluoranthene	µg/l	0.03	0.03	SI 272/2009 Annual Ave		4.68	18	785	88.9	0.505	120.1	6.31	28.2	0.384	<1	15.27	1.408	5.7	32.1	14.69	1.699	6.24	468	1.288
Volatile Organic Compounds																							
1.1.1.2-Tetrachloroethane	µg/l					<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	<1.3	<1.3
1.1.1-Trichloroethane	µg/l	100	100	EQS 76/464/EEC		<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	6.76	<1.3
1,1,2,2-Tetrachloroethane	µg/l					<5.2	<5.2	<5.2	<5.2	-	<5.2	-	-	-	<5.2	-	<5.2	<5.2	-	-	-	-	<5.2	<5.2
1.1.2-Trichloroethane	µg/l	400	300	EQS 76/464/EEC		<2.2	<2.2	<2.2	113	-	<2.2	-	-	-	211	-	<2.2	<2.2	-	-	-	-	<2.2	<2.2
1.1-Dichloroethane	µg/l					<1.2	<1.2	<1.2	<1.2	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	<1.2	<1.2
1.1-Dichloroethene	µg/l					<1.2	<1.2	<1.2	<1.2	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	<1.2	<1.2
1.1-Dichloropropene	µg/l					<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	<1.3	<1.3
1.2.3-Trichlorobenzene	µg/l	0.4	0.4	SI 272/2009 Annual Ave		<3.1	<3.1	<3.1	<3.1	-	<3.1	-	-	-	<3.1	-	<3.1	<3.1	-	-	-	-	<3.1	<3.1
1.2.3-Trichloropropane	µg/l					<7.8	<7.8	<7.8	<7.8	-	<7.8	-	-	-	<7.8	-	<7.8	<7.8	-	-	-	-	<7.8	<7.8
1,2,4-Trichlorobenzene	µg/l					<2.3	<2.3	<2.3	<2.3	-	<2.3	-	-	-	<2.3	-	<2.3	<2.3	-	-	-	-	<2.3	<2.3
1.2.4-Trimethylbenzene	µg/l					25.3	<1.7	19.1	73.8	-	369	-	-	-	294	-	241	<1.7	-	-	-	-	192	<1.7
1,2-Dibromo-3-chloropropane (DBCP)	µg/l					<9.8	<9.8	<9.8	<9.8	-	<9.8	-	-	-	<9.8	-	<9.8	<9.8	-	-	-	-	<9.8	<9.8
1.2-Dibromoethane	µg/l					<2.3	<2.3	<2.3	<2.3	-	<2.3	-	-	-	<2.3	-	<2.3	<2.3	-	-	-	-	<2.3	<2.3
1,2-Dichlorobenzene	µg/l					<3.7	<3.7	<3.7	<3.7	-	<3.7	-	-	-	<3.7	-	<3.7	<3.7	-	-	-	-	<3.7	<3.7
1.2-Dichloroethane	µg/l	10	10	SI 272/2009 Annual Ave		<3.3	<3.3	<3.3	<3.3	-	19.1	-	-	-	<3.3	-	<3.3	<3.3	-	-	-	-	<3.3	<3.3
1.2-Dichloropropane	µg/l					<3	<3	<3	<3	-	<3	-	-	-	<3	-	<3	<3	-	-	-	-	<3	<3
1,3,5-Trichlorobenzene	µg/l					<10	<10	<10	<10	-	<10	-	-	-	<10	-	<10	<10	-	-	-	-	<10	<10
1.3.5-Trimethylbenzene	µg/l					6.85	<1.8	6.11	33.2	-	134	-	-	-	119	-	127	<1.8	-	-	-	-	79.9	<1.8
1,3-Dichlorobenzene	µg/l					<2.2	<2.2	<2.2	<2.2	-	<2.2	-	-	-	<2.2	-	<2.2	<2.2	-	-	-	-	<2.2	<2.2
1.3-Dichloropropane	µg/l					<2.2	<2.2	<2.2	<2.2	-	<2.2	-	-	-	<2.2	-	<2.2	<2.2	-	-	-	-	<2.2	<2.2
1,4-Dichlorobenzene	µg/l					<2.7	<2.7	<2.7	<2.7	-	<2.7	-	-	-	<2.7	-	<2.7	<2.7	-	-	-	-	<2.7	<2.7
2.2-Dichloropropane	µg/l					<3.8	<3.8	<3.8	<3.8	-	<3.8	-	-	-	<3.8	-	<3.8	<3.8	-	-	-	-	<3.8	<3.8
2-Chlorotoluene	µg/l					<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
4-Chlorotoluene	µg/l					<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
4-Isopropyltoluene	µg/l					<2.6	<2.6	<2.6	15.3	-	15	-	-	-	9.78	-	13	<2.6	-	-	-	-	28.4	<2.6
Bromobenzene	µg/l					<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Bromochloromethane	µg/l					<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
Bromodichloromethane	µg/l					<0.9	<0.9	<0.9	<0.9	-	<0.9	-	-	-	<0.9	-	<0.9	<0.9	-	-	-	-	<0.9	<0.9
Bromoform	µg/l					<3	<3	<3	<3	-	<3	-	-	-	<3	-	<3	<3	-	-	-	-	<3	<3
Bromomethane	µg/l					<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Carbon Disulphide	µg/l					<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	4.78	-	<1.3	<1.3	-	-	-	-	<1.3	<1.3
Carbon tetrachloride	µg/l	12	12	SI 272/2009 Annual Ave		<1.4	<1.4	<1.4	<1.4	-	<1.4	-	-	-	<1.4	-	<1.4	<1.4	-	-	-	-	<1.4	<1.4
Chlorobenzene	µg/l	1	1	EQS for the Aquatic Environment - EPA, quoted in IGV		<3.5	<3.5	<3.5	<3.5	-	<3.5	-	-	-	<3.5	-	<3.5	<3.5	-	-	-	-	<3.5	<3.5
Chloroethane	µg/l					<2.5	<2.5	<2.5	<2.5	-	<2.5	-	-	-	<2.5	-	<2.5	<2.5	-	-	-	-	<2.5	<2.5
Chloroform	µg/l	12	12	EQS 76/464/EEC		<1.8	<1.8	<1.8	<1.8	-	<1.8	-	-	-	<1.8	-	<1.8	<1.8	-	-	-	-	<1.8	<1.8
Chloromethane	µg/l					<9	<9	<9	<9	-	<9	-	-	-	<9	-	<9	<9	-	-	-	-	<9	<9
cis-1-2-Dichloroethene	µg/l					<2.3	<2.3	<2.3	<2.3	-	<2.3	-	-	-	<2.3	-	<2.3	<2.3	-	-	-	-	<2.3	<2.3
cis-1-3-Dichloropropene	µg/l					<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
Dibromochloromethane	µg/l					<1.7	<1.7	<1.7	<1.7	-	<1.7	-	-	-	<1.7	-	<1.7	<1.7	-	-	-	-	<1.7	<1.7
Dibromomethane	µg/l					<2.7	<2.7	<2.7	<2.7	-	<2.7	-	-	-	<2.7	-	<2.7	<2.7	-	-	-	-	<2.7	<2.7
Dichlorodifluoromethane	µg/l					<7	<7	<7	<7	-	<7	-	-	-	<7	-	<7	<7	-	-	-	-	<7	<7
Dichloromethane	µg/l	20	20	SI 272/2009 Annual Ave		<3.7	<3.7	<3.7	<3.7	-	<3.7	-	-	-	<3.7	-	<3.7	<3.7	-	-	-	-	<3.7	<3.7
Hexachlorobutadiene	µg/l					<2.5	<2.5	<2.5	<2.5	-	<2.5	-	-	-	<2.5	-	<2.5	<2.5	-	-	-	-	<2.5	<2.5
Isopropylbenzene	µg/l					16.3	<1.4	2.11	2.24	-	23.7	-	-	-	28	-	2.44	<1.4	-	-	-	-	10.9	<1.4
n-Butylbenzene	µg/l					<2	<2	<2	<2	-	7.64	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Propylbenzene	µg/l					7.48	<2.6	<2.6	<2.6	-	25.1	-	-	-	29.3	-	<2.6	<2.6	-	-	-	-	15	<2.6
sec-Butylbenzene	µg/l					<1.7	<1.7	<1.7	<1.7	-	<1.7	-	-	-	<1.7	-	<1.7	<1.7	-	-	-	-	<1.7	<1.7
Styrene	µg/l	72	-	Guidelines for Aquatic Life (2007)		<1.2	<1.2	<1.2	89.9	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	355	<1.2
tert-Amyl methyl ether (TAME)	µg/l					<1	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
tert-Butylbenzene	µg/l					<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Tetrachloroethene	µg/l	10	10	SI 272/2009 Annual Ave		<1.5	<1.5	<1.5	<1.5	-	<1.5	-	-	-	<1.5	-	<1.5	<1.5	-	-	-	-	2.57	<1.5
trans-1-2-Dichloroethene	µg/l					<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
trans-1-3-Dichloropropene	µg/l					<3.5	<3.5	<3.5	<3.5	-	<3.5	-	-	-	<3.5	-	<3.5	<3.5	-	-	-	-	<3.5	<3.5
Trichloroethene	µg/l	10	10	SI 272/2009 Annual Ave		<2.5	<2.5	<2.5	<2.5	-	<2.5	-	-	-	<2.5	-	<2.5	<2.5	-	-	-	-	11	<2.5
Trichlorofluoromethane	µg/l					<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	1.34	<1.3
Vinyl Chloride	µg/l					<1.2	<1.2	<1.2	<1.2	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	<1.2	<1.2

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring Visit 7 (26th - 27th April 2011)

Screening Values - Drinking Water Standards

Aquifer type: Locally important aquifer
Typical productivity: Moderately Productive (40-100 m3/d)

Concentration exceeds screening value
Concentration exceeds screening value because limit of detection is greater than screening value

			Ground type																		
			Borehole	A3	A4	A11	C7	C11	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3
			Depth (mbgl)	1.50-4.50	1.50-2.30	1.00-2.50	2.00-6.50	1.50-2.50	3.00-4.50	2.00-3.00	1.50-6.00	1.00-4.00	4.00-10.00	3.50-8.50	3.00-9.50	2.50-8.50	1.00-2.00	1.50-4.00	1.00-2.00	2.50-4.40	1.00-5.00	3.50-6.00
Determinand	**Units**	**Screening Value (µg/l)**	**Source of screening value**																			
Inorganics																						
Arsenic (dissolved)	µg/l	10	SI 278/2007	28.7	4.06	8.59	11.9	6.21	15.1	5.7	81.6	5.57	20	6.25	3.51	2.1	11.7	1.41	2.82	1.14	54.6	2.96
Cadmium (dissolved)	µg/l	5	SI 278/2007	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.122	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (dissolved)	µg/l	50	SI 278/2007	24.6	16.2	8.28	12.3	17.7	22.4	11.8	2.6	9.29	30.7	24.5	13.3	30	11	15.2	17.2	10.6	14.1	4.24
Copper (dissolved)	µg/l	2000	SI 278/2007	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	1.87	<0.85	1.34	1.26	<0.85	1.4	<0.85	<0.85	0.852	3.53	2.99	8.66
Lead (dissolved)	µg/l	25	SI 278/2007	<0.02	0.039	0.121	0.219	<0.02	<0.02	0.691	0.12	0.048	<0.02	0.032	0.052	0.114	<0.02	<0.02	<0.02	0.237	0.323	0.083
Nickel (dissolved)	µg/l	20	SI 278/2007	4.84	3.56	2.47	1.51	3.65	3.79	5.1	34.4	2.98	6.82	8.05	10.9	8.04	5.23	3.34	4.18	6.95	15.2	4.1
Selenium (dissolved)	µg/l	10	SI 278/2007	0.811	0.666	0.461	14	1.54	1.38	5.37	18.4	1.3	8.45	4.03	8.89	2.12	8.26	1.17	3.84	0.961	18.3	1.25
Zinc (dissolved)	µg/l	5000	WHO Drinking water Quality Guideline Value	2.79	1.41	0.459	1.52	<0.41	1.11	7.29	4.85	0.728	0.985	3.25	5.84	3.02	<0.41	0.756	2.38	2.81	3.69	1.27
Mercury (dissolved)	µg/l	1	SI 278/2007	<0.01	<0.01	<0.01	0.0228	<0.01	<0.01	<0.01	0.0121	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0354	<0.01
Ammonium	µg/l	300	SI 278/2007	9670	2270	2710	50000	5620	11300	9470	36600	13600	43900	21200	13700	9840	26000	14500	668	2570	58200	1090
Sulphate (soluble)	µg/l	250000	SI 278/2007	408000	264000	69500	29000	73400	468000	47400	373000	97300	702000	500000	403000	605000	160000	191000	73200	580000	495000	550000
Phenols	µg/l	0.5	SI 81/1988	<13	<13	230	129000	60	240	2640	153000	2470	45300	130	4450	<13	22200	<13	<13	<13	800000	40
Total Cyanide	µg/l	50	SI 278/2007	296	161	<50	<50	99	1030	209	4720	<50	990	408	85	458	119	<50	<50	848	3320	1290
pH Value	µg/l	6.5	SI 278/2007	8.29	8.04	8.19	8.43	8.11	5.23	7.85	7.94	8.27	8.05	7.98	8.08	7.93	8.33	7.64	8.31	7.94	8.25	7.96
pH Value	µg/l	9.5	SI 278/2007	8.29	8.04	8.19	8.43	8.11	5.23	7.85	7.94	8.27	8.05	7.98	8.08	7.93	8.33	7.64	8.31	7.94	8.25	7.96
BTEX																						
Benzene	µg/l	1	SI 278/2007	258	<7	<7	15900	49	685	337	2880	410	5430	144	1750	34	1220	<7	<7	<7	12400	<7
Toluene	µg/l	700	WHO Drinking Water Quality Guideline Value	6	<4	18	5580	25	231	79	784	153	3940	<4	1520	<4	744	<4	<4	<4	4200	<4
Ethyl benzene	µg/l	300	WHO Drinking Water Quality Guideline Value	8	<5	5	195	119	204	16	35	13	451	11	209	<5	65	<5	<5	<5	206	<5
Xylene	µg/l	500	WHO Drinking Water Quality Guideline Value	97	<10	28	2000	268	851	61	370	109	2950	68	2010	17	651	<10	<10	<10	1910	<10
Petroleum Hydrocarbons																						
GRO (C4-C12)	µg/l	10	SI 81/1988	1780	<50	264	36200	3710	6270	802	8100	1080	21500	567	11800	295	6120	<50	<50	<50	40300	<50
MTBE	µg/l			<3	<3	<3	<15	<3	<3	<3	<3	<3	<6	<3	<3	<3	<3	<3	<3	<3	<15	<3
Aliphatics C5-C6	µg/l			<10	<10	<10	244	<10	11	<10	30	<10	60	<10	14	<10	10	<10	<10	<10	266	<10
Aliphatics C6-C8	µg/l			65	<10	<10	537	30	116	14	211	13	285	18	124	18	84	<10	<10	<10	1320	<10
Aliphatics C8-C10	µg/l			145	<10	32	1500	398	503	43	466	52	1250	50	863	40	356	<10	<10	<10	2180	<10
Aliphatics C10-C12	µg/l			659	<10	88	5580	1530	2000	131	1810	178	3790	143	2820	92	1650	<10	<10	<10	9810	<10
Aliphatics C12-C16	µg/l			<10	11	211	31	125	29	<10	<10	<10	<10	<10	232	100	<10	<10	<10	<10	79	<10
Aliphatics C16-C21	µg/l			<10	21	912	32	39	74	122	<10	<10	<10	<10	132	83	<10	<10	<10	<10	63	<10
Aliphatics C21-C35	µg/l			<10	<10	3950	34	<10	31	1180	<10	<10	<10	<10	137	98	<10	60	<10	<10	72	<10
Aromatics C6-C7	µg/l			258	<10	<10	15900	49	685	337	2880	410	5430	144	1750	34	1220	<10	<10	<10	12400	<10
Aromatics C7-C8	µg/l			<10	<10	18	5580	25	231	79	784	153	3940	<10	1520	<10	744	<10	<10	<10	4200	<10
Aromatics C8-C10	µg/l			202	<10	55	3190	651	1390	106	716	157	4230	112	2800	46	954	<10	<10	<10	3570	<10
Aromatics C10-C12	µg/l			439	<10	59	3720	1020	1330	87	1210	118	2530	95	1880	62	1100	<10	<10	<10	6540	<10
Aromatics C12-C16	µg/l			97	<10	296	15300	406	665	331	6270	11	6130	25	3450	101	2840	16	<10	<10	45900	<10
Aromatics C16-C21	µg/l			109	13	801	1770	287	537	269	497	<10	618	<10	2290	202	526	50	<10	<10	3210	<10
Aromatics C21-C35	µg/l			13	13	7740	751	219	436	2800	199	<10	100	74	2860	1110	209	322	83	<10	1020	17
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	SI 81/1988	2000	63	14200	54200	4790	8040	5500	15100	1090	28400	665	20900	1990	9700	455	87	<10	90600	18
PAHs																						
Acenaphthene	µg/l			0.422	0.0233	23.7	30.9	2.74	136	2.43	7.76	0.0355	25.8	1.19	38.1	0.354	9.06	0.638	0.0736	0.0233	345	<0.015
Acenaphthylene	µg/l			0.307	0.208	79.2	193	1.38	227	18.6	50.1	0.215	28.7	1.54	48.8	3.21	66.1	1.96	1	0.0596	1700	0.0467
Anthracene	µg/l			0.111	0.142	46.8	68.6	0.929	75.6	7.63	6.79	0.061	4.56	0.424	88.9	1.98	11.1	1.4	0.213	0.0513	911	0.0474
Benzo(a)anthracene	µg/l			0.228	0.319	290	34.7	2.8	19.4	48.9	1.27	0.406	0.713	3	55.6	8.07	7.15	4.77	2.12	0.481	369	0.851
Benzo(a)pyrene	µg/l	0.01	SI 278/2007	0.363	0.694	419	29.1	4.42	8.72	63.2	0.958	0.768	0.404	4.84	48.1	13.3	6.02	12.4	5.93	0.806	226	1.41
Benzo(b)fluoranthene	µg/l			0.17	0.695	386	28.9	4.12	11	81.6	0.919	0.845	0.393	4.6	41.2	10.2	4.95	11.5	5.14	0.741	139	1.8
Benzo(ghi)perylene	µg/l			0.0965	0.237	125	14.6	1.58	2.42	27.9	0.291	0.328	0.111	2.54	17.2	7.49	1.35	4.75	1.81	0.473	84.7	0.832
Benzo(k)fluoranthene	µg/l			0.272	0.597	434	26.5	4.41	8.5	75.4	0.969	0.751	0.41	4.78	45.5	10.4	6.05	8.95	4.11	0.85	178	1.47
Chrysene	µg/l			0.193	0.347	267	29.8	2.36	18.9	59	0.921	0.412	0.566	2.99	46.4	8.05	5.09	4.93	1.63	0.436	451	0.823
Dibenzo(ah)anthracene	µg/l			0.0269	0.0788	47.9	5.62	0.622	1.52	11.6	0.127	0.0946	0.0471	0.907	7.32	2.62	0.701	1.83	1	0.132	27.7	0.205
Fluoranthene	µg/l	4	WHO Drinking Water Quality Guideline Value	0.466	0.756	294	128	8.42	146	85.8	5.82	0.649	6.25	4.14	182	16.3	19.1	8.37	1.94	0.64	1660	1.26
Fluorene	µg/l			0.114	0.0554	51	126	0.907	164	5.49	20	0.0492	20.8	0.313	121	1	34.1	1.27	0.21	0.0289	1130	0.0199
Indeno(123cd)pyrene	µg/l			0.0902	0.26	118	14.6	1.97	2.41	29.6	0.345	0.336	0.12	2.72	19.5	7.63	1.77	5.4	2.19	0.451	92.3	0.779
Naphthalene	µg/l			0.142	0.101	135	64.7	1.11	2590	23.8	135	0.42	19.1	1.21	31.1	0.721	35.6	1.35	0.172	0.145	11000	0.114
Phenanthrene	µg/l			0.248	0.153	125	173	2.81	336	24.9	21.4	0.16	30	1.19	196	3.21	41.1	4.06	0.817	0.157	2640	0.0957
Pyrene	µg/l			2.5	0.829	241	90.6	5.18	88.9	70.6	3.5	0.551	57	3.65	120	11.2	12.6	5.92	1.34	0.636	1120	1.01
Total PAH # (Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)perylene & Indeno(123cd)pyrene)	µg/l	0.1	SI 278/2007	0.6287	1.789	1063	84.6	12.08	24.33	214.5	2.524	2.25	1.034	14.64	123.4	35.72	14.12	30.6	13.25	2.515	494	4.881
Volatile Organic Compounds																						
1.1.1.2-Tetrachloroethane	µg/l			<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	<1.3	<1.3
1.1.1-Trichloroethane	µg/l	2000	WHO Drinking Water Quality Guideline Value	<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	5.82	<1.3
1,1,2,2-Tetrachloroethane	µg/l			<5.2	<5.2	<5.2	<5.2	-	<5.2	-	-	-	<5.2	-	<5.2	<5.2	-	-	-	-	<5.2	<5.2
1.1.2-Trichloroethane	µg/l	5	US EPA - National Primary Drinking Water Regulations, Maximum Contaminant Level	<2.2	<2.2	<2.2	<2.2	-	<2.2	-	-	-	<2.2	-	<2.2	<2.2	-	-	-	-	<2.2	<2.2
1.1-Dichloroethane	µg/l	-	-	<1.2	<1.2	<1.2	<1.2	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	<1.2	<1.2
1.1-Dichloroethene	µg/l	140	**Informal** WHO Drinking Water Quality Guideline Value	<1.2	<1.2	<1.2	<1.2	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	<1.2	<1.2
1.1-Dichloropropene	µg/l			<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	<1.3	<1.3
1.2.3-Trichlorobenzene	µg/l			<3.1	<3.1	<3.1	<3.1	-	<3.1	-	-	-	<3.1	-	<3.1	<3.1	-	-	-	-	<3.1	<3.1
1.2.3-Trichloropropane	µg/l			<7.8	<7.8	<7.8	<7.8	-	<7.8	-	-	-	<7.8	-	<7.8	<7.8	-	-	-	-	<7.8	<7.8
1.2.4-Trichlorobenzene	µg/l			<2.3	<2.3	<2.3	<2.3	-	<2.3	-	-	-	<2.3	-	<2.3	<2.3	-	-	-	-	<2.3	<2.3
1.2.4-Trimethylbenzene	µg/l			17.6	<1.7	4.72	139	-	268	-	-	-	376	-	294	4.94	-	-	-	-	152	<1.7
1.2-Dibromo-3-chloropropane (DBCP)	µg/l	1	WHO Drinking Water Quality Guideline Value	<9.8	<9.8	<9.8	<9.8	-	<9.8	-	-	-	<9.8	-	<9.8	<9.8	-	-	-	-	<9.8	<9.8
1.2-Dibromoethane	µg/l	0.4	**Provisional** WHO Drinking Water Quality Guideline Value	<2.3	<2.3	<2.3	<2.3	-	<2.3	-	-	-	<2.3	-	<2.3	<2.3	-	-	-	-	<2.3	<2.3
1,2-Dichlorobenzene	µg/l			<3.7	<3.7	<3.7	<3.7	-	<3.7	-	-	-	<3.7	-	<3.7	<3.7	-	-	-	-	<3.7	<3.7
1.2-Dichloroethane	µg/l	3	SI 278/2007	<3.3	<3.3	<3.3	<3.3	-	<3.3	-	-	-	<3.3	-	<3.3	<3.3	-	-	-	-	<3.3	<3.3
1.2-Dichloropropane	µg/l	40	**Provisional** WHO Drinking Water Quality Guideline Value	<3	<3	<3	<3	-	<3	-	-	-	<3	-	<3	<3	-	-	-	-	<3	<3
1,3,5-Trichlorobenzene	µg/l			<10	<10	<10	<10	-	<10	-	-	-	<10	-	<10	<10	-	-	-	-	<10	<10
1,3,5-Trimethylbenzene	µg/l			5.01	<1.8	<1.8	55.2	-	76.3	-	-	-	100	-	113	<1.8	-	-	-	-	60.5	<1.8
1,3-Dichlorobenzene	µg/l			<2.2	<2.2	<2.2	<2.2	-	<2.2	-	-	-	<2.2	-	<2.2	<2.2	-	-	-	-	<2.2	<2.2
1.3-Dichloropropane	µg/l			<2.2	<2.2	<2.2	<2.2	-	<2.2	-	-	-	<2.2	-	<2.2	<2.2	-	-	-	-	<2.2	<2.2
1,4-Dichlorobenzene	µg/l			<2.7	<2.7	<2.7	<2.7	-	<2.7	-	-	-	<2.7	-	<2.7	<2.7	-	-	-	-	<2.7	<2.7
2.2-Dichloropropane	µg/l			<3.8	<3.8	<3.8	<3.8	-	<3.8	-	-	-	<3.8	-	<3.8	<3.8	-	-	-	-	<3.8	<3.8
2-Chlorotoluene	µg/l			<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
4-Chlorotoluene	µg/l			<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
4-Isopropyltoluene	µg/l			<2.6	<2.6	<2.6	<2.6	-	<2.6	-	-	-	<2.6	-	<2.6	<2.6	-	-	-	-	<2.6	<2.6
Bromobenzene	µg/l			<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Bromochloromethane	µg/l			<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
Bromodichloromethane	µg/l	100	UK DWS for total Trihalomethanes (chloroform, bromoform, dibromochloromethane and bromodichloromethane)	<0.9	<0.9	<0.9	<0.9	-	<0.9	-	-	-	<0.9	-	<0.9	<0.9	-	-	-	-	<0.9	<0.9
Bromoform	µg/l	100	UK DWS for total Trihalomethanes (chloroform, bromoform, dibromochloromethane and bromodichloromethane)	<3	<3	<3	<3	-	<3	-	-	-	<3	-	<3	<3	-	-	-	-	<3	<3
Bromomethane	µg/l			<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Carbon Disulphide	µg/l			<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	3.25	-	<1.3	<1.3	-	-	-	-	1.38	<1.3
Carbontetrachloride	µg/l	4	WHO Drinking Water Quality Guideline Value	<1.4	<1.4	<1.4	<1.4	-	<1.4	-	-	-	<1.4	-	<1.4	<1.4	-	-	-	-	<1.4	<1.4
Chlorobenzene	µg/l	100	WHO Drinking Water Quality Guideline Value	<3.5	<3.5	<3.5	<3.5	-	<3.5	-	-	-	<3.5	-	<3.5	<3.5	-	-	-	-	<3.5	<3.5
Chloroethane	µg/l			<2.5	<2.5	<2.5	<2.5	-	<2.5	-	-	-	<2.5	-	<2.5	<2.5	-	-	-	-	<2.5	<2.5
Chloroform	µg/l	100	SI 278/2007 for total Trihalomethanes (chloroform, bromoform, dibromochloromethane and bromodichloromethane)	<1.8	<1.8	<1.8	<1.8	-	<1.8	-	-	-	<1.8	-	<1.8	<1.8	-	-	-	-	<1.8	<1.8
Chloromethane	µg/l			<9	<9	<9	<9	-	<9	-	-	-	<9	-	<9	<9	-	-	-	-	<9	<9
cis-1-2-Dichloroethene	µg/l	50	WHO Drinking Water Quality Guideline Value	<2.3	<2.3	<2.3	<2.3	-	<2.3	-	-	-	<2.3	-	<2.3	<2.3	-	-	-	-	<2.3	<2.3
cis-1-3-Dichloropropene	µg/l	20	WHO Drinking Water Quality Guideline Value	<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
Dibromochloromethane	µg/l	100	SI 278/2007 for total Trihalomethanes (chloroform, bromoform, dibromochloromethane and bromodichloromethane)	<1.7	<1.7	<1.7	<1.7	-	<1.7	-	-	-	<1.7	-	<1.7	<1.7	-	-	-	-	<1.7	<1.7
Dibromomethane	µg/l			<2.7	<2.7	<2.7	<2.7	-	<2.7	-	-	-	<2.7	-	<2.7	<2.7	-	-	-	-	<2.7	<2.7
Dichlorodifluoromethane	µg/l			<7	<7	<7	<7	-	<7	-	-	-	<7	-	<7	<7	-	-	-	-	<7	<7
Dichloromethane	µg/l	20	WHO Drinking Water Quality Guideline Value	<3.7	<3.7	<3.7	<3.7	-	<3.7	-	-	-	<3.7	-	<3.7	<3.7	-	-	-	-	<3.7	<3.7
Hexachlorobutadiene	µg/l			<2.5	<2.5	<2.5	<2.5	-	<2.5	-	-	-	<2.5	-	<2.5	<2.5	-	-	-	-	<2.5	<2.5
Isopropylbenzene	µg/l			2.83	<1.4	<1.4	6.42	-	23.8	-	-	-	26.8	-	14.3	<1.4	-	-	-	-	9.62	<1.4
n-Butylbenzene	µg/l			<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Propylbenzene	µg/l			<2.6	<2.6	<2.6	8.48	-	29.1	-	-	-	28.3	-	13.6	<2.6	-	-	-	-	12.8	<2.6
sec-Butylbenzene	µg/l			<1.7	<1.7	<1.7	<1.7	-	<1.7	-	-	-	<1.7	-	<1.7	<1.7	-	-	-	-	<1.7	<1.7
Styrene	µg/l	20	WHO Drinking Water Quality Guideline Value	<1.2	<1.2	<1.2	242	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	318	3.43
tert-Amyl methyl ether (TAME)	µg/l			<1	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
tert-Butylbenzene	µg/l			<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Tetrachloroethene	µg/l	10	SI 278/2007	<1.5	<1.5	<1.5	<1.5	-	<1.5	-	-	-	<1.5	-	<1.5	<1.5	-	-	-	-	<1.5	<1.5
trans-1-2-Dichloroethene	µg/l	50	WHO Drinking Water Quality Guideline Value	<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
trans-1-3-Dichloropropene	µg/l	20	WHO Drinking Water Quality Guideline Value	<3.5	<3.5	<3.5	<3.5	-	<3.5	-	-	-	<3.5	-	<3.5	<3.5	-	-	-	-	<3.5	<3.5
Trichloroethene	µg/l	10	SI 278/2007	<2.5	<2.5	<2.5	<2.5	-	<2.5	-	-	-	<2.5	-	<2.5	<2.5	-	-	-	-	<2.5	<2.5
Trichlorofluoromethane	µg/l			<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	<1.3	<1.3
Vinyl Chloride	µg/l	0.5	SI 278/2007	<1.2	<1.2	<1.2	<1.2	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	<1.2	<1.2

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring visit 7 (26th - 27th April 2011)

Screening Values - Environmental Quality Standards

Receptor water type: Freshwater suitable for coarse fish
Relevant EQS Hardness Band: >100-150 mg/l

* Hardness related Freshwater EQS - based on cyprinid/coarse fish

Concentration exceeds screening value
Concentraion exceeds screening value becaue limit of detection is greater than screening value

				Ground type																	
				Borehole	A3	A4	A11	C7	C11	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3
				Depth (mbgl)	2.00-3.00	2.00-3.00	1.80-2.30	4.00-6.00	1.50-2.00	3.00-4.00	1.80-2.40	1.50-2.50	4.00-5.00	3.50-4.50	4.00-5.00	2.80-3.00	5.00-6.00	1.40-2.40	3.00-4.00	1.00-2.00	3.00-4.00	1.00-2.00	3.00-5.00
Determinand	**Units**	**Screening Value (µg/l)** Freshwater	Coastal/Estuary /Marine	**Source of screening value**																			
Inorganics																							
Arsenic (dissolved)	µg/l	25	20	SI 272/2009 Annual Ave	28.7	4.06	8.59	11.9	6.21	15.1	5.7	81.6	5.57	20	6.25	3.51	2.1	11.7	1.41	2.82	1.14	54.6	2.96
Cadmium (dissolved)	µg/l	1.5	1.5	SI272/2009 MAC	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.122	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (dissolved)	µg/l	32	32	SI272/2009 MAC	24.6	16.2	8.28	12.3	17.7	22.4	11.8	2.6	9.29	30.7	24.5	13.3	30	11	15.2	17.2	10.6	14.1	4.24
Copper (dissolved)	µg/l	30*		SI 272/2009 Annual Ave	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	<0.85	1.87	<0.85	1.34	1.26	<0.85	1.4	<0.85	<0.85	0.852	3.53	2.99	8.66
Lead (dissolved)	µg/l	7.2	7.2	SI 272/2009 Annual Ave	<0.02	0.039	0.121	0.219	<0.02	<0.02	0.691	0.12	0.048	<0.02	0.032	0.052	0.114	<0.02	<0.02	<0.02	0.237	0.323	0.083
Nickel (dissolved)	µg/l	20	20	SI 272/2009 Annual Ave	4.84	3.56	2.47	1.51	3.65	3.79	5.1	34.4	2.98	6.82	8.05	10.9	8.04	5.23	3.34	4.18	6.95	15.2	4.1
Selenium (dissolved)	µg/l	1	-	Guidelines for Aquatic Life (2007)	0.811	0.666	0.461	14	1.54	1.38	5.37	18.4	1.3	8.45	4.03	8.89	2.12	8.26	1.17	3.84	0.961	18.3	1.25
Zinc (dissolved)	µg/l	100*	40	SI 272/2009 Annual Ave	2.79	1.41	0.459	1.52	<0.41	1.11	7.29	4.85	0.728	0.985	3.25	5.84	3.02	<0.41	0.756	2.38	2.81	3.69	1.27
Mercury (dissolved)	µg/l	0.07	0.07	SI272/2009 MAC	<0.01	<0.01	<0.01	0.0228	<0.01	<0.01	<0.01	0.0121	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0354	<0.01
Ammoniacal Nitrogen	µg/l	1000	-	Freshwater Fish Directive	9670	2270	2710	50000	5620	11300	9470	36600	13600	43900	21200	13700	9840	26000	14500	668	2570	58200	1090
Sulphate (soluble)	µg/l	200000	-	EQS & IGV	408000	264000	69500	29000	73400	468000	47400	373000	97300	702000	500000	403000	605000	160000	191000	73200	580000	495000	550000
Phenols	µg/l	46	46	SI272/2009 MAC	<13	<13	230	129000	60	240	2640	153000	2470	45300	130	4450	<13	22200	<13	<13	<13	800000	40
Free Cyanide - (total CN in lab results)	µg/l	10	10	SI 272/2009 Annual Ave	296	161	<50	<50	99	1030	209	4720	<50	990	408	85	458	119	<50	<50	848	3320	1290
pH Value	µg/l	6.5	6.5	Interim Guideline Values	8.29	8.04	8.19	8.43	8.11	5.23	7.85	7.94	8.27	8.05	7.98	8.08	7.93	8.33	7.64	8.31	7.94	8.25	7.96
pH Value	µg/l	9.5	9.5	Interim Guideline Values	8.29	8.04	8.19	8.43	8.11	5.23	7.85	7.94	8.27	8.05	7.98	8.08	7.93	8.33	7.64	8.31	7.94	8.25	7.96
BTEX																							
Benzene	µg/l	50	50	SI272/2009 MAC	258	<7	<7	15900	49	685	337	2880	410	5430	144	1750	34	1220	<7	<7	<7	12400	<7
Toluene	µg/l	10	10	SI 272/2009 Annual Ave	6	<4	18	5580	25	231	79	784	153	3940	<4	1520	<4	744	<4	<4	<4	4200	<4
Ethyl benzene	µg/l	10	10	EQS & IGV	8	<5	5	195	119	204	16	35	13	451	11	209	<5	65	<5	<5	<5	206	<5
Xylene	µg/l	10	10	SI 272/2009 Annual Ave	97	<10	28	2000	268	851	61	370	109	2950	68	2010	17	651	<10	<10	<10	1910	<10
Petroleum Hydrocarbons																							
GRO (C4-C12)	µg/l				1780	<50	264	36200	3710	6270	802	8100	1080	21500	567	11800	295	6120	<50	<50	<50	40300	<50
MTBE	µg/l	30	30	IGV	<3	<3	<3	<15	<3	<3	<3	<3	<3	<6	<3	<3	<3	<3	<3	<3	<3	<15	<3
Aliphatics C5-C6	µg/l				<10	<10	<10	244	<10	11	<10	30	<10	60	<10	14	<10	10	<10	<10	<10	266	<10
Aliphatics C6-C8	µg/l				65	<10	<10	537	30	116	14	211	13	285	18	124	18	84	<10	<10	<10	1320	<10
Aliphatics C8-C10	µg/l				145	<10	32	1500	398	503	43	466	52	1250	50	863	40	356	<10	<10	<10	2180	<10
Aliphatics C10-C12	µg/l				659	<10	88	5580	1530	2000	131	1810	178	3790	143	2820	92	1650	<10	<10	<10	9810	<10
Aliphatics C12-C16	µg/l				<10	11	211	31	125	29	<10	<10	<10	<10	<10	232	100	<10	<10	<10	<10	79	<10
Aliphatics C16-C21	µg/l				<10	21	912	32	39	74	122	<10	<10	<10	<10	132	83	<10	<10	<10	<10	63	<10
Aliphatics C21-C35	µg/l				<10	<10	3950	34	<10	31	1180	<10	<10	<10	<10	137	98	<10	60	<10	<10	72	<10
Aromatics C6-C7	µg/l				258	<10	<10	15900	49	685	337	2880	410	5430	144	1750	34	1220	<10	<10	<10	12400	<10
Aromatics C7-C8	µg/l				<10	<10	18	5580	25	231	79	784	153	3940	<10	1520	<10	744	<10	<10	<10	4200	<10
Aromatics 8-10	µg/l				202	<10	55	3190	651	1390	106	716	157	4230	112	2800	46	954	<10	<10	<10	3570	<10
Aromatics 10-12	µg/l				439	<10	59	3720	1020	1330	87	1210	118	2530	95	1880	62	1100	<10	<10	<10	6540	<10
Aromatics 12-16	µg/l				97	<10	296	15300	406	665	331	6270	11	6130	25	3450	101	2840	16	<10	<10	45900	<10
Aromatics 16-21	µg/l				109	13	801	1770	287	537	269	497	<10	618	<10	2290	202	526	50	<10	<10	3210	<10
Aromatics 21-35	µg/l				13	13	7740	751	219	436	2800	199	<10	100	74	2860	1110	209	322	83	<10	1020	17
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	10	EQS & IGV	2000	63	14200	54200	4790	8040	5500	15100	1090	28400	665	20900	1990	9700	455	87	<10	90600	18
PAHs																							
Acenaphthene	µg/l	5.8	-	Canadian Water Quality Guidelines for Aquatic Life (2007)	0.422	0.0233	23.7	30.9	2.74	136	2.43	7.76	0.0355	25.8	1.19	38.1	0.354	9.06	0.638	0.0736	0.0233	345	<0.015
Acenaphthylene	µg/l	-	-	-	0.307	0.208	79.2	193	1.38	227	18.6	50.1	0.215	28.7	1.54	48.8	3.21	66.1	1.96	1	0.0596	1700	0.0467
Anthracene	µg/l	0.4	0.4	SI272/2009 MAC	0.111	0.142	46.8	68.6	0.929	75.6	7.63	6.79	0.061	4.56	0.424	88.9	1.98	11.1	1.4	0.213	0.0513	911	0.0474
Benzo(a)anthracene	µg/l	0.018	-	Guidelines for Aquatic Life (2007)	0.228	0.319	290	34.7	2.8	19.4	48.9	1.27	0.406	0.713	3	55.6	8.07	7.15	4.77	2.12	0.481	369	0.851
Benzo(a)pyrene	µg/l	0.1	0.1	SI272/2009 MAC	0.363	0.694	419	29.1	4.42	8.72	63.2	0.958	0.768	0.404	4.84	48.1	13.3	6.02	12.4	5.93	0.806	226	1.41
Benzo(b)fluoranthene	µg/l	0.5	-	Interim Guideline Value	0.17	0.695	386	28.9	4.12	11	81.6	0.919	0.845	0.393	4.6	41.2	10.2	4.95	11.5	5.14	0.741	139	1.8
Benzo(ghi)perylene	µg/l	0.05	-	Interim Guideline Value	0.0965	0.237	125	14.6	1.58	2.42	27.9	0.291	0.328	0.111	2.54	17.2	7.49	1.35	4.75	1.81	0.473	84.7	0.832
Benzo(k)fluoranthene	µg/l	0.05	-	Interim Guideline Value	0.272	0.597	434	26.5	4.41	8.5	75.4	0.969	0.751	0.41	4.78	45.5	10.4	6.05	8.95	4.11	0.85	178	1.47
Chrysene	µg/l	-	-	-	0.193	0.347	267	29.8	2.36	18.9	59	0.921	0.412	0.566	2.99	46.4	8.05	5.09	4.93	1.63	0.436	451	0.823
Dibenzo(ah)anthracene	µg/l	-	-	-	0.0269	0.0788	47.9	5.62	0.622	1.52	11.6	0.127	0.0946	0.0471	0.907	7.32	2.62	0.701	1.83	1	0.132	27.7	0.205
Fluoranthene	µg/l	1	1	SI272/2009 MAC	0.466	0.756	294	128	8.42	146	85.8	5.82	0.649	6.25	4.14	182	16.3	19.1	8.37	1.94	0.64	1660	1.26
Fluorene	µg/l	3	-	Guidelines for Aquatic Life (2007)	0.114	0.0554	51	126	0.907	164	5.49	20	0.0492	20.8	0.313	121	1	34.1	1.27	0.21	0.0289	1130	0.0199
Indeno(123cd)pyrene	µg/l	0.05	-	Interim Guideline Value	0.0902	0.26	118	14.6	1.97	2.41	29.6	0.345	0.336	0.12	2.72	19.5	7.63	1.77	5.4	2.19	0.451	92.3	0.779
Naphthalene	µg/l	2.4	1.2	SI 272/2009 Annual Ave	0.142	0.101	135	64.7	1.11	2590	23.8	135	0.42	19.1	1.21	31.1	0.721	35.6	1.35	0.172	0.145	11000	0.114
Phenanthrene	µg/l	0.4	-	Guidelines for Aquatic Life (2007)	0.248	0.153	125	173	2.81	336	24.9	21.4	0.16	30	1.19	196	3.21	41.1	4.06	0.817	0.157	2640	0.0957
Pyrene	µg/l	0.025	-	Guidelines for Aquatic Life (2007)	2.5	0.829	241	90.6	5.18	88.9	70.6	3.5	0.551	3.7	3.65	120	11.2	12.6	5.92	1.34	0.636	1120	1.01
Sum benzo(ghi)perylene and indeno(123-cd)pyrene	µg/l	0.002	0.002	SI 272/2009 Annual Ave	0.1867	0.497	243	29.2	3.55	4.83	57.5	0.636	0.664	0.231	5.26	36.7	15.12	3.12	10.15	4	0.924	177	1.611
Sum benzo (b + K) fluoranthene	µg/l	0.03	0.03	SI 272/2009 Annual Ave	0.442	1.292	820	55.7	6.53	19.5	157	1.888	1.596	0.803	9.38	86.7	20.6	11	20.45	9.25	1.591	317	3.27
Volatile Organic Compounds																							
1.1.1.2-Tetrachloroethane	µg/l				<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	<1.3	<1.3
1.1.1-Trichloroethane	µg/l	100	100	EQS 76/464/EEC	<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	5.82	<1.3
1,1,2,2-Tetrachloroethane	µg/l				<5.2	<5.2	<5.2	<5.2	-	<5.2	-	-	-	<5.2	-	<5.2	<5.2	-	-	-	-	<5.2	<5.2
1.1.2-Trichloroethane	µg/l	400	300	EQS 76/464/EEC	<2.2	<2.2	<2.2	<2.2	-	<2.2	-	-	-	<2.2	-	<2.2	<2.2	-	-	-	-	<2.2	<2.2
1.1-Dichloroethane	µg/l				<1.2	<1.2	<1.2	<1.2	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	<1.2	<1.2
1.1-Dichloroethene	µg/l				<1.2	<1.2	<1.2	<1.2	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	<1.2	<1.2
1.1-Dichloropropene	µg/l				<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	<1.3	<1.3
1.2.3-Trichlorobenzene	µg/l	0.4	0.4	SI 272/2009 Annual Ave	<3.1	<3.1	<3.1	<3.1	-	<3.1	-	-	-	<3.1	-	<3.1	<3.1	-	-	-	-	<3.1	<3.1
1.2.3-Trichloropropane	µg/l				<7.8	<7.8	<7.8	<7.8	-	<7.8	-	-	-	<7.8	-	<7.8	<7.8	-	-	-	-	<7.8	<7.8
1,2,4-Trichlorobenzene	µg/l				<2.3	<2.3	<2.3	<2.3	-	<2.3	-	-	-	<2.3	-	<2.3	<2.3	-	-	-	-	<2.3	<2.3
1.2.4-Trimethylbenzene	µg/l				17.6	<1.7	4.72	139	-	268	-	-	-	376	-	294	4.94	-	-	-	-	152	<1.7
1.2-Dibromo-3-chloropropane (DBCP)	µg/l				<9.8	<9.8	<9.8	<9.8	-	<9.8	-	-	-	<9.8	-	<9.8	<9.8	-	-	-	-	<9.8	<9.8
1.2-Dibromoethane	µg/l				<2.3	<2.3	<2.3	<2.3	-	<2.3	-	-	-	<2.3	-	<2.3	<2.3	-	-	-	-	<2.3	<2.3
1,2-Dichlorobenzene	µg/l				<3.7	<3.7	<3.7	<3.7	-	<3.7	-	-	-	<3.7	-	<3.7	<3.7	-	-	-	-	<3.7	<3.7
1.2-Dichloroethane	µg/l	10	10	SI 272/2009 Annual Ave	<3.3	<3.3	<3.3	<3.3	-	<3.3	-	-	-	<3.3	-	<3.3	<3.3	-	-	-	-	<3.3	<3.3
1.2-Dichloropropane	µg/l				<3	<3	<3	<3	-	<3	-	-	-	<3	-	<3	<3	-	-	-	-	<3	<3
1,3,5-Trichlorobenzene	µg/l				<10	<10	<10	<10	-	<10	-	-	-	<10	-	<10	<10	-	-	-	-	<10	<10
1.3.5-Trimethylbenzene	µg/l				5.01	<1.8	<1.8	55.2	-	76.3	-	-	-	100	-	113	<1.8	-	-	-	-	60.5	<1.8
1,3-Dichlorobenzene	µg/l				<2.2	<2.2	<2.2	<2.2	-	<2.2	-	-	-	<2.2	-	<2.2	<2.2	-	-	-	-	<2.2	<2.2
1.3-Dichloropropane	µg/l				<2.2	<2.2	<2.2	<2.2	-	<2.2	-	-	-	<2.2	-	<2.2	<2.2	-	-	-	-	<2.2	<2.2
1,4-Dichlorobenzene	µg/l				<2.7	<2.7	<2.7	<2.7	-	<2.7	-	-	-	<2.7	-	<2.7	<2.7	-	-	-	-	<2.7	<2.7
2.2-Dichloropropane	µg/l				<3.8	<3.8	<3.8	<3.8	-	<3.8	-	-	-	<3.8	-	<3.8	<3.8	-	-	-	-	<3.8	<3.8
2-Chlorotoluene	µg/l				<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
4-Chlorotoluene	µg/l				<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
4-Isopropyltoluene	µg/l				<2.6	<2.6	<2.6	<2.6	-	<2.6	-	-	-	<2.6	-	<2.6	<2.6	-	-	-	-	<2.6	<2.6
Bromobenzene	µg/l				<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Bromochloromethane	µg/l				<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
Bromodichloromethane	µg/l				<0.9	<0.9	<0.9	<0.9	-	<0.9	-	-	-	<0.9	-	<0.9	<0.9	-	-	-	-	<0.9	<0.9
Bromoform	µg/l				<3	<3	<3	<3	-	<3	-	-	-	<3	-	<3	<3	-	-	-	-	<3	<3
Bromomethane	µg/l				<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Carbon Disulphide	µg/l				<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	3.25	-	<1.3	<1.3	-	-	-	-	1.38	<1.3
Carbon tetrachloride	µg/l	12	12	SI 272/2009 Annual Ave	<1.4	<1.4	<1.4	<1.4	-	<1.4	-	-	-	<1.4	-	<1.4	<1.4	-	-	-	-	<1.4	<1.4
Chlorobenzene	µg/l	1	1	EQS for the Aquatic Environment - EPA, quoted in IGV	<3.5	<3.5	<3.5	<3.5	-	<3.5	-	-	-	<3.5	-	<3.5	<3.5	-	-	-	-	<3.5	<3.5
Chloroethane	µg/l				<2.5	<2.5	<2.5	<2.5	-	<2.5	-	-	-	<2.5	-	<2.5	<2.5	-	-	-	-	<2.5	<2.5
Chloroform	µg/l	12	12	EQS 76/464/EEC	<1.8	<1.8	<1.8	<1.8	-	<1.8	-	-	-	<1.8	-	<1.8	<1.8	-	-	-	-	<1.8	<1.8
Chloromethane	µg/l				<9	<9	<9	<9	-	<9	-	-	-	<9	-	<9	<9	-	-	-	-	<9	<9
cis-1-2-Dichloroethene	µg/l				<2.3	<2.3	<2.3	<2.3	-	<2.3	-	-	-	<2.3	-	<2.3	<2.3	-	-	-	-	<2.3	<2.3
cis-1-3-Dichloropropene	µg/l				<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
Dibromochloromethane	µg/l				<1.7	<1.7	<1.7	<1.7	-	<1.7	-	-	-	<1.7	-	<1.7	<1.7	-	-	-	-	<1.7	<1.7
Dibromomethane	µg/l				<2.7	<2.7	<2.7	<2.7	-	<2.7	-	-	-	<2.7	-	<2.7	<2.7	-	-	-	-	<2.7	<2.7
Dichlorodifluoromethane	µg/l				<7	<7	<7	<7	-	<7	-	-	-	<7	-	<7	<7	-	-	-	-	<7	<7
Dichloromethane	µg/l	20	20	SI 272/2009 Annual Ave	<3.7	<3.7	<3.7	<3.7	-	<3.7	-	-	-	<3.7	-	<3.7	<3.7	-	-	-	-	<3.7	<3.7
Hexachlorobutadiene	µg/l				<2.5	<2.5	<2.5	<2.5	-	<2.5	-	-	-	<2.5	-	<2.5	<2.5	-	-	-	-	<2.5	<2.5
Isopropylbenzene	µg/l				2.83	<1.4	<1.4	6.42	-	23.8	-	-	-	26.8	-	14.3	<1.4	-	-	-	-	9.62	<1.4
n-Butylbenzene	µg/l				<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Propylbenzene	µg/l				<2.6	<2.6	<2.6	8.48	-	29.1	-	-	-	28.3	-	13.6	<2.6	-	-	-	-	12.8	<2.6
sec-Butylbenzene	µg/l				<1.7	<1.7	<1.7	<1.7	-	<1.7	-	-	-	<1.7	-	<1.7	<1.7	-	-	-	-	<1.7	<1.7
Styrene	µg/l	72	-	Guidelines for Aquatic Life (2007)	<1.2	<1.2	<1.2	242	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	318	3.43
tert-Amyl methyl ether (TAME)	µg/l				<1	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
tert-Butylbenzene	µg/l				<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Tetrachloroethene	µg/l	10	10	SI 272/2009 Annual Ave	<1.5	<1.5	<1.5	<1.5	-	<1.5	-	-	-	<1.5	-	<1.5	<1.5	-	-	-	-	<1.5	<1.5
trans-1-2-Dichloroethene	µg/l				<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	<1.9	<1.9
trans-1-3-Dichloropropene	µg/l				<3.5	<3.5	<3.5	<3.5	-	<3.5	-	-	-	<3.5	-	<3.5	<3.5	-	-	-	-	<3.5	<3.5
Trichloroethene	µg/l	10	10	SI 272/2009 Annual Ave	<2.5	<2.5	<2.5	<2.5	-	<2.5	-	-	-	<2.5	-	<2.5	<2.5	-	-	-	-	<2.5	<2.5
Trichlorofluoromethane	µg/l				<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	<1.3	<1.3
Vinyl Chloride	µg/l				<1.2	<1.2	<1.2	<1.2	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	<1.2	<1.2

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring Visit 8 (25 - 26th October 2011)

Screening Values - Drinking Water Standards

Aquifer type: Locally important aquifer
Typical productivity: Moderately Productive (40-100 m3/d)

Concentration exceeds screening value
Concentration exceeds screening value because limit of detection is greater than screening value

			Ground type																		
			Borehole	A3	A11	C7	C11	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3
			Depth (mbgl)	1.50-2.50	4.50-5.50	4.00-5.00	1.00-2.00	3.50-4.50	1.50-2.50	1.00-2.00	4.00-4.90	3.00-4.00	2.50-3.50	3.00-4.00	2.00-3.00	1.50-2.00	2.50-3.50	1.00-2.00	2.00-3.00	1.00-2.00	3.00-4.00
Determinand	**Units**	**Screening Value (µg/l)**	**Source of screening value**																		
Inorganics																					
Arsenic (dissolved)	µg/l	10	SI 278/2007	43.9	4.95	27	7.91	14.4	4.71	134	11.9	23.5	3.37	8.35	1.54	10.2	7.41	2.24	1.56	162	3.68
Cadmium (dissolved)	µg/l	5	SI 278/2007	<0.1	<0.1	0.212	<0.1	<0.1	<0.1	0.247	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.177	<0.1
Chromium (dissolved)	µg/l	50	SI 278/2007	17.6	5.9	11.3	10.8	14.7	8.95	3.45	11.1	18.3	11.5	10.4	15.4	8.89	12.8	10.3	5.75	14.1	2.46
Copper (dissolved)	µg/l	2000	SI 278/2007	1.3	<0.85	2.57	<0.85	1.5	<0.85	2.02	<0.85	2.58	4.36	1.42	8.28	0.946	1.07	4.51	4.44	1.97	4.31
Lead (dissolved)	µg/l	25	SI 278/2007	0.094	0.518	0.398	0.044	0.092	0.188	0.295	0.136	<0.02	0.094	0.304	0.272	0.079	0.599	0.071	0.483	0.404	0.425
Nickel (dissolved)	µg/l	20	SI 278/2007	5.73	6.25	4.9	5.11	5.65	3.9	26.9	5.26	8.73	12.8	5.47	15.6	6.85	5.88	6.1	9.93	28	5.02
Selenium (dissolved)	µg/l	10	SI 278/2007	4.36	0.853	24.1	1.13	2.64	2.92	18.5	3.08	10.6	5.01	10.8	6.01	0.996	3.94	2.64	2.05	26.2	2.76
Zinc (dissolved)	µg/l	5000	WHO Drinking water Quality Guideline Value	0.757	1.26	2.63	0.791	<0.41	1.63	35.5	<0.41	0.572	1.87	4.46	5.82	0.444	0.861	0.723	2.06	46.2	2.18
Mercury (dissolved)	µg/l	1	SI 278/2007	<0.01	<0.01	0.0399	<0.01	<0.01	<0.01	0.0179	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.119	<0.01
Ammonium	µg/l	300	SI 278/2007	12400	6060	100000	7700	12800	12900	46400	41900	52200	16300	13800	2940	12600	21300	507	2490	176000	1530
Sulphate (soluble)	µg/l	250000	SI 278/2007	325000	68300	<40000	215000	397000	48300	358000	52600	643000	1080000	235000	1060000	148000	182000	60300	722000	422000	551000
Phenols	µg/l	0.5	SI 81/1988	<25	<25	118000	1320	2400	2460	150000	3840	21700	1480	2780	<25	90	<25	<25	<25	1030000	<25
Total Cyanide	µg/l	50	SI 278/2007	335	<50	541	78	841	57	6450	<50	1090	3740	117	1660	127	<50	<50	1050	8470	845
pH Value	µg/l	6.5	SI 278/2007	7.63	7.06	8.55	7.65	7.31	7.97	8	7.13	7.56	7.66	7.54	7.55	7.56	7.39	7.6	7.15	9.57	7.54
pH Value	µg/l	9.5	SI 278/2007	7.63	7.06	8.55	7.65	7.31	7.97	8	7.13	7.56	7.66	7.54	7.55	7.56	7.39	7.6	7.15	9.57	7.54
BTEX																					
Benzene	µg/l	1	SI 278/2007	564	9	16200	91	654	159	6190	186	4250	248	<7	<7	<7	<7	<7	<7	12100	<7
Toluene	µg/l	700	WHO Drinking Water Quality Guideline Value	27	51	7570	56	439	63	1770	165	3200	128	1510	<4	10	<4	<4	<4	4180	<4
Ethyl benzene	µg/l	300	WHO Drinking Water Quality Guideline Value	230	7	294	57	185	13	76	18	387	32	181	<5	11	<5	<5	<5	207	<5
Xylene	µg/l	500	WHO Drinking Water Quality Guideline Value	113	68	2910	281	840	32	876	145	2430	188	1570	<11	117	<11	<11	<11	1840	<11
Petroleum Hydrocarbons																					
GRO (C4-C12)	µg/l	10	SI 81/1988	2530	540	41000	2690	6560	429	14600	994	17700	1230	9630	<50	436	<50	<50	<50	34700	<50
MTBE	µg/l			<3	<3	<15	<3	<3	<3	<6	<3	<3	<3	<3	<3	<3	<3	<3	<3	<15	<3
Aliphatics C5-C6	µg/l			<10	<10	104	<10	12	<10	50	<10	29	<10	11	<10	<10	<10	<10	<10	263	<10
Aliphatics C6-C8	µg/l			56	<10	522	20	103	<10	332	31	236	27	2030	<10	10	<10	<10	<10	1150	<10
Aliphatics C8-C10	µg/l			168	54	1720	290	479	16	668	74	990	101	598	<10	60	<10	<10	<10	1670	<10
Aliphatics C10-C12	µg/l			749	184	6320	1020	2120	77	2490	192	3340	263	2000	<10	109	<10	<10	<10	7290	<10
Aliphatics C12-C16	µg/l			<10	<10	26	476	70	23	12	<10	<10	<10	<10	<10	<10	32	<10	<10	<10	<10
Aliphatics C16-C21	µg/l			<10	<10	25	273	96	95	28	<10	<10	<10	<10	<10	14	<10	<10	<10	<10	<10
Aliphatics C21-C35	µg/l			<10	<10	44	148	61	427	21	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics C6-C7	µg/l			564	<10	16200	91	654	159	6190	186	4250	248	<10	<10	<10	<10	<10	<10	12100	<10
Aromatics C7-C8	µg/l			27	51	7570	56	439	63	1770	165	3200	128	1510	<10	10	<10	<10	<10	4180	<10
Aromatics C8-C10	µg/l			455	111	4350	531	1340	56	1400	213	3480	287	2150	<10	169	<10	<10	<10	3160	<10
Aromatics C10-C12	µg/l			500	122	4210	678	1410	51	1660	128	2230	175	1330	<10	73	<10	<10	<10	4860	<10
Aromatics C12-C16	µg/l			274	32	16600	700	1630	409	6400	475	3440	74	1270	<10	<10	185	<10	<10	<10	<10
Aromatics C16-C21	µg/l			132	21	1560	449	719	289	557	21	262	28	425	42	<10	87	<10	14	<10	<10
Aromatics C21-C35	µg/l			42	55	519	405	282	1120	156	12	32	83	101	226	16	<10	<10	50	<10	28
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	SI 81/1988	2970	648	59700	5140	9420	2790	21700	1500	21500	1420	11400	287	452	309	<10	64	34700	31
PAHs																					
Acenaphthene	µg/l			1.15	11.4	31.6	1.14	54.9	3.24	14.8	0.0599	20.9	0.564	30.5	1.31	0.0331	1.25	<0.015	0.0445	118	<0.015
Acenaphthylene	µg/l			1.14	19.7	245	2.34	54.3	13	96.4	0.233	18.3	0.694	56.7	25	0.276	3.77	0.14	0.137	544	0.0673
Anthracene	µg/l			0.674	12.6	32.9	1.37	33.1	5.19	7.65	0.115	2.23	0.381	7.5	4.86	0.187	3.01	0.0439	0.177	183	0.0867
Benzo(a)anthracene	µg/l			1.54	53.3	12.1	4.06	19.6	29.6	1.16	0.45	0.549	2.61	1.09	38.1	0.406	11.4	0.0994	1.62	89.2	0.939
Benzo(a)pyrene	µg/l	0.01	SI 278/2007	3.19	95.1	9.86	7.86	13.4	44.3	<0.45	0.819	0.274	4.51	0.247	71.6	0.626	31	0.408	3.82	97.8	2.17
Benzo(b)fluoranthene	µg/l			1.05	81.1	<11.5	7.24	12.9	43.3	<1.15	0.964	0.218	4.35	0.189	52.5	0.501	29	0.233	3.03	122	1.76
Benzo(ghi)perylene	µg/l			1.17	59.1	<8	4.98	6.98	25.5	<0.8	0.636	0.0943	3.58	<0.08	47	0.283	17.2	0.307	3.56	83.9	1.96
Benzo(k)fluoranthene	µg/l			2.04	76.6	<13.5	6.22	9.45	41.5	<1.35	0.592	0.253	4.16	0.342	64	0.51	26.7	0.314	3.64	84.9	2.16
Chrysene	µg/l			1.46	53.7	17.6	3.71	15.6	38	1.11	0.422	0.423	2.77	1.02	41.9	0.357	12.2	0.14	1.81	93.2	1.16
Dibenzo(ah)anthracene	µg/l			0.229	18.4	<8	1.48	1.95	6.05	<0.8	0.205	0.037	0.964	<0.08	14.2	0.0962	4.16	0.0497	0.75	35.6	0.356
Fluoranthene	µg/l	4	WHO Drinking Water Quality Guideline Value	3.04	84.4	59.5	13.1	110	63.6	7.39	0.669	3.78	4.08	12.7	59.8	0.735	26.8	0.128	2.09	240	1.53
Fluorene	µg/l			0.535	15.7	90.9	0.982	71.7	4.45	33.4	0.0696	11.9	0.177	38.3	3.03	0.154	2.51	0.0258	0.0775	286	0.029
Indeno(123cd)pyrene	µg/l			0.976	53.6	<7	4.72	6.81	22.4	<0.7	0.773	0.097	3.25	<0.07	45.7	0.276	15.2	0.204	2.97	88.3	1.53
Naphthalene	µg/l			0.157	17.6	6970	1.69	18.7	7.82	2560	0.559	6.56	0.688	2.53	<5	0.314	2.5	0.104	0.161	9680	0.139
Phenanthrene	µg/l			0.902	37.3	142	3.85	90.9	14.7	30.3	0.209	16	1.11	7.78	8.98	0.594	7.64	0.0749	0.567	593	0.164
Pyrene	µg/l			9.76	69.5	42	10.2	67.4	50.2	4.66	0.583	2.23	3.68	7.51	42.5	0.505	17.3	0.102	2.11	170	1.4
Total PAH # (Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)perylene & Indeno(123cd)pyrene)	µg/l	0.1	SI 278/2007	5.236	270.4	<40	23.16	36.14	132.7	<4	2.965	0.6623	15.34	<0.681	209.2	1.57	88.1	1.058	13.2	379.1	7.41
Volatile Organic Compounds																					
1.1.1.2-Tetrachloroethane	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.1.1-Trichloroethane	µg/l	2000	WHO Drinking Water Quality Guideline Value	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	4.3	<1
1,1,2,2-Tetrachloroethane	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.1.2-Trichloroethane	µg/l	5	US EPA - National Primary Drinking Water Regulations, Maximum Contaminant Level	<1	1.92	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.1-Dichloroethane	µg/l	-	-	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.1-Dichloroethene	µg/l	140	**Informal** WHO Drinking Water Quality Guideline Value	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.1-Dichloropropene	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.2.3-Trichlorobenzene	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.2.3-Trichloropropane	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.2.4-Trichlorobenzene	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.2.4-Trimethylbenzene	µg/l			22.9	16.7	237	-	213	-	-	-	375	-	227	<1	-	-	-	-	135	<1
1.2-Dibromo-3-chloropropane (DBCP)	µg/l	1	WHO Drinking Water Quality Guideline Value	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.2-Dibromoethane	µg/l	0.4	**Provisional** WHO Drinking Water Quality Guideline Value	<1	<1	<1		<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1,2-Dichlorobenzene	µg/l			<1	<1	<1		<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.2-Dichloroethane	µg/l	3	SI 278/2007	<1	<1	<1		<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.2-Dichloropropane	µg/l	40	**Provisional** WHO Drinking Water Quality Guideline Value	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1,3,5-Trichlorobenzene	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.3.5-Trimethylbenzene	µg/l			5.87	5.77	98.2	-	65.8	-	-	-	94.3	-	89.6	<1	-	-	-	-	53.5	<1
1,3-Dichlorobenzene	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.3-Dichloropropane	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1,4-Dichlorobenzene	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
2.2-Dichloropropane	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
2-Chlorotoluene	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
4-Chlorotoluene	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
4-Isopropyltoluene	µg/l			<1	<1	7.46	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Bromobenzene	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Bromochloromethane	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Bromodichloromethane	µg/l	100	UK DWS for total Trihalomethanes (chloroform, bromoform, dibromochloromethane and bromodichloromethane)	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Bromoform	µg/l	100	UK DWS for total Trihalomethanes (chloroform, bromoform, dibromochloromethane and bromodichloromethane)	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Bromomethane	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Carbon Disulphide	µg/l			<1	<1	<1	-	1.34	-	-	-	3.2	-	<1	<1	-	-	-	-	<1	<1
Carbontetrachloride	µg/l	4	WHO Drinking Water Quality Guideline Value	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Chlorobenzene	µg/l	100	WHO Drinking Water Quality Guideline Value	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Chloroethane	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Chloroform	µg/l	100	SI 278/2007 for total Trihalomethanes (chloroform, bromoform, dibromochloromethane and bromodichloromethane)	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Chloromethane	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
cis-1-2-Dichloroethene	µg/l	50	WHO Drinking Water Quality Guideline Value	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
cis-1-3-Dichloropropene	µg/l	20	WHO Drinking Water Quality Guideline Value	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Dibromochloromethane	µg/l	100	SI 278/2007 for total Trihalomethanes (chloroform, bromoform, dibromochloromethane and bromodichloromethane)	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Dibromomethane	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Dichlorodifluoromethane	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Dichloromethane	µg/l	20	WHO Drinking Water Quality Guideline Value	<3	<3	<3	-	<3	-	-	-	<3	-	<3	<3	-	-	-	-	<3	<3
Hexachlorobutadiene	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Isopropylbenzene	µg/l			18.2	<1	13.5	-	18.8	-	-	-	27.4	-	12	<1	-	-	-	-	9.55	<1
n-Butylbenzene	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Propylbenzene	µg/l			15.9	<1	17.1	-	23.9	-	-	-	31.3	-	11.2	<1	-	-	-	-	12	<1
sec-Butylbenzene	µg/l			1.63	<1	<1	-	1.82	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Styrene	µg/l	20	WHO Drinking Water Quality Guideline Value	<1	<1	464	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	263	<1
tert-Amyl methyl ether (TAME)	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
tert-Butylbenzene	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Tetrachloroethene	µg/l	10	SI 278/2007	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
trans-1-2-Dichloroethene	µg/l	50	WHO Drinking Water Quality Guideline Value	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
trans-1-3-Dichloropropene	µg/l	20	WHO Drinking Water Quality Guideline Value	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Trichloroethene	µg/l	10	SI 278/2007	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	8.4	<1
Trichlorofluoromethane	µg/l			<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Vinyl Chloride	µg/l	0.5	SI 278/2007	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1

ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring visit 8 (25-26th October 2011)

Screening Values - Environmental Quality Standards

Receptor water type: Freshwater suitable for coarse fish
Relevant EQS Hardness Band: >100-150 mg/l

* Hardness related Freshwater EQS - based on cyprinid/coarse fish

Concentration exceeds screening value
Concentraion exceeds screening value becaue limit of detection is greater than screening value

				Ground type																	
				Borehole	A3	A11	C7	C11	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3
				Depth (mbgl)	1.50-2.50	4.50-5.50	4.00-5.00	1.00-2.00	3.50-4.50	1.50-2.50	1.00-2.00	4.00-4.90	3.00-4.00	2.50-3.50	3.00-4.00	2.00-3.00	1.50-2.00	2.50-3.50	1.00-2.00	2.00-3.00	1.00-2.00	3.00-4.00
Determinand	**Units**	**Screening Value (µg/l)** Freshwater	Coastal/Estuary /Marine	**Source of screening value**																		
Inorganics																						
Arsenic (dissolved)	µg/l	25	20	SI 272/2009 Annual Ave	43.9	4.95	27	7.91	14.4	4.71	134	11.9	23.5	3.37	8.35	1.54	10.2	7.41	2.24	1.56	162	3.68
Cadmium (dissolved)	µg/l	1.5	1.5	SI272/2009 MAC	<0.1	<0.1	0.212	<0.1	<0.1	<0.1	0.247	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.177	<0.1
Chromium (dissolved)	µg/l	32	32	SI272/2009 MAC	17.6	5.9	11.3	10.8	14.7	8.95	3.45	11.1	18.3	11.5	10.4	15.4	8.89	12.8	10.3	5.75	14.1	2.46
Copper (dissolved)	µg/l	30*		SI 272/2009 Annual Ave	1.3	<0.85	2.57	<0.85	1.5	<0.85	2.02	<0.85	2.58	4.36	1.42	8.28	0.946	1.07	4.51	4.44	1.97	4.31
Lead (dissolved)	µg/l	7.2	7.2	SI 272/2009 Annual Ave	0.094	0.518	0.398	0.044	0.092	0.188	0.295	0.136	<0.02	0.094	0.304	0.272	0.079	0.599	0.071	0.483	0.404	0.425
Nickel (dissolved)	µg/l	20	20	SI 272/2009 Annual Ave	5.73	6.25	4.9	5.11	5.65	3.9	26.9	5.26	8.73	12.8	5.47	15.6	6.85	5.88	6.1	9.93	28	5.02
Selenium (dissolved)	µg/l	1	-	Guidelines for Aquatic Life (2007)	4.36	0.853	24.1	1.13	2.64	2.92	18.5	3.08	10.6	5.01	10.8	6.01	0.996	3.94	2.64	2.05	26.2	2.76
Zinc (dissolved)	µg/l	100*	40	SI 272/2009 Annual Ave	0.757	1.26	2.63	0.791	<0.41	1.63	35.5	<0.41	0.572	1.87	4.46	5.82	0.444	0.861	0.723	2.06	46.2	2.18
Mercury (dissolved)	µg/l	0.07	0.07	SI272/2009 MAC	<0.01	<0.01	0.0399	<0.01	<0.01	<0.01	0.0179	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.119	<0.01
Ammoniacal Nitrogen	µg/l	1000	-	Freshwater Fish Directive	12400	6060	100000	7700	12800	12900	46400	41900	52200	16300	13800	2940	12600	21300	507	2490	176000	1530
Sulphate (soluble)	µg/l	200000	-	EQS & IGV	325000	68300	<40000	215000	397000	48300	358000	52600	643000	1080000	235000	1060000	148000	182000	60300	722000	422000	551000
Phenols	µg/l	46	46	SI272/2009 MAC	<25	<25	118000	1320	2400	2460	150000	3840	21700	1480	2780	<25	90	<25	<25	<25	1030000	<25
Free Cyanide - (total CN in lab results)	µg/l	10	10	SI 272/2009 Annual Ave	335	<50	541	78	841	57	6450	<50	1090	3740	117	1660	127	<50	<50	1050	8470	845
pH Value	µg/l	6.5	6.5	Interim Guideline Values	7.63	7.06	8.55	7.65	7.31	7.97	8	7.13	7.56	7.66	7.54	7.55	7.56	7.39	7.6	7.15	9.57	7.54
pH Value	µg/l	9.5	9.5	Interim Guideline Values	7.63	7.06	8.55	7.65	7.31	7.97	8	7.13	7.56	7.66	7.54	7.55	7.56	7.39	7.6	7.15	9.57	7.54
BTEX																						
Benzene	µg/l	50	50	SI272/2009 MAC	564	9	16200	91	654	159	6190	186	4250	248	<7	<7	<7	<7	<7	<7	12100	<7
Toluene	µg/l	10	10	SI 272/2009 Annual Ave	27	51	7570	56	439	63	1770	165	3200	128	1510	<4	10	<4	<4	<4	4180	<4
Ethyl benzene	µg/l	10	10	EQS & IGV	230	7	294	57	185	13	76	18	387	32	181	<5	11	<5	<5	<5	207	<5
Xylene	µg/l	10	10	SI 272/2009 Annual Ave	113	68	2910	281	840	32	876	145	2430	188	1570	<11	117	<11	<11	<11	1840	<11
Petroleum Hydrocarbons																						
GRO (C4-C12)	µg/l				2530	540	41000	2690	6560	429	14600	994	17700	1230	9630	<50	436	<50	<50	<50	34700	<50
MTBE	µg/l	30	30	IGV	<3	<3	<15	<3	<3	<3	<6	<3	<3	<3	<3	<3	<3	<3	<3	<3	<15	<3
Aliphatics C5-C6	µg/l				<10	<10	104	<10	12	<10	50	<10	29	<10	11	<10	<10	<10	<10	<10	263	<10
Aliphatics C6-C8	µg/l				56	<10	522	20	103	<10	332	31	236	27	2030	<10	10	<10	<10	<10	1150	<10
Aliphatics C8-C10	µg/l				168	54	1720	290	479	16	668	74	990	101	598	<10	60	<10	<10	<10	1670	<10
Aliphatics C10-C12	µg/l				749	184	6320	1020	2120	77	2490	192	3340	263	2000	<10	109	<10	<10	<10	7290	<10
Aliphatics C12-C16	µg/l				<10	<10	26	476	70	23	12	<10	<10	<10	<10	<10	<10	32	<10	<10	<10	<10
Aliphatics C16-C21	µg/l				<10	<10	25	273	96	95	28	<10	<10	<10	<10	14	<10	<10	<10	<10	<10	<10
Aliphatics C21-C35	µg/l				<10	<10	44	148	61	427	21	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Aromatics C6-C7	µg/l				564	<10	16200	91	654	159	6190	186	4250	248	<10	<10	<10	<10	<10	<10	12100	<10
Aromatics C7-C8	µg/l				27	51	7570	56	439	63	1770	165	3200	128	1510	<10	10	<10	<10	<10	4180	<10
Aromatics 8-10	µg/l				455	111	4350	531	1340	56	1400	213	3480	287	2150	<10	169	<10	<10	<10	3160	<10
Aromatics 10-12	µg/l				500	122	4210	678	1410	51	1660	128	2230	175	1330	<10	73	<10	<10	<10	4860	<10
Aromatics 12-16	µg/l				274	32	16600	700	1630	409	6400	475	3440	74	1270	<10	<10	185	<10	<10	<10	<10
Aromatics 16-21	µg/l				132	21	1560	449	719	289	557	21	262	28	425	42	<10	87	<10	14	<10	<10
Aromatics 21-35	µg/l				42	55	519	405	282	1120	156	12	32	83	101	226	16	<10	<10	50	<10	28
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	10	EQS & IGV	2970	648	59700	5140	9420	2790	21700	1500	21500	1420	11400	287	452	309	<10	64	34700	31
PAHs																						
Acenaphthene	µg/l	5.8	-	Canadian Water Quality Guidelines for Aquatic Life (2007)	1.15	11.4	31.6	1.14	54.9	3.24	14.8	0.0599	20.9	0.564	30.5	1.31	0.0331	1.25	<0.015	0.0445	118	<0.015
Acenaphthylene	µg/l	-	-	-	1.14	19.7	245	2.34	54.3	13	96.4	0.233	18.3	0.694	56.7	25	0.276	3.77	0.14	0.137	544	0.0673
Anthracene	µg/l	0.4	0.4	SI272/2009 MAC	0.674	12.6	32.9	1.37	33.1	5.19	7.65	0.115	2.23	0.381	7.5	4.86	0.187	3.01	0.0439	0.177	183	0.0867
Benzo(a)anthracene	µg/l	0.018	-	Guidelines for Aquatic Life (2007)	1.54	53.3	12.1	4.06	19.6	29.6	1.16	0.45	0.549	2.61	1.09	38.1	0.406	11.4	0.0994	1.62	89.2	0.939
Benzo(a)pyrene	µg/l	0.1	0.1	SI272/2009 MAC	3.19	95.1	9.86	7.86	13.4	44.3	<0.45	0.819	0.274	4.51	0.247	71.6	0.626	31	0.408	3.82	97.8	2.17
Benzo(b)fluoranthene	µg/l	0.5	-	Interim Guideline Value	1.05	81.1	<11.5	7.24	12.9	43.3	<1.15	0.964	0.218	4.35	0.189	52.5	0.501	29	0.233	3.03	122	1.76
Benzo(ghi)perylene	µg/l	0.05	-	Interim Guideline Value	1.17	59.1	<8	4.98	6.95	25.5	<0.8	0.636	0.0943	3.58	<0.08	47	0.283	17.2	0.307	3.56	83.9	1.96
Benzo(k)fluoranthene	µg/l	0.05	-	Interim Guideline Value	2.04	76.6	<13.5	6.22	9.45	41.5	<1.35	0.592	0.253	4.16	0.342	64	0.51	26.7	0.314	3.64	84.9	2.16
Chrysene	µg/l	-	-	-	1.46	53.7	17.6	3.71	15.6	38	1.11	0.422	0.423	2.77	1.02	41.9	0.357	12.2	0.14	1.81	93.2	1.16
Dibenzo(ah)anthracene	µg/l	-	-	-	0.229	18.4	<8	1.48	1.95	6.05	<0.8	0.205	0.037	0.964	<0.08	14.2	0.0962	4.16	0.0497	0.75	35.6	0.356
Fluoranthene	µg/l	1	1	SI272/2009 MAC	3.04	84.4	59.5	13.7	110	63.6	7.39	0.669	3.78	4.08	12.7	59.8	0.735	26.8	0.128	2.09	240	1.53
Fluorene	µg/l	3	-	Guidelines for Aquatic Life (2007)	0.535	15.7	90.9	0.982	71.7	4.45	33.4	0.0696	11.9	0.177	38.3	3.03	0.154	2.51	0.0258	0.0775	286	0.029
Indeno(123cd)pyrene	µg/l	0.05	-	Interim Guideline Value	0.976	53.6	<7	4.72	6.81	22.4	<0.7	0.773	0.097	3.25	<0.07	45.7	0.276	15.2	0.204	2.97	88.3	1.53
Naphthalene	µg/l	2.4	1.2	SI 272/2009 Annual Ave	0.157	17.6	6970	1.69	18.7	7.82	2560	0.559	6.56	0.688	2.53	<5	0.314	2.5	0.104	0.161	9680	0.139
Phenanthrene	µg/l	0.4	-	Guidelines for Aquatic Life (2007)	0.902	37.3	142	3.85	90.9	14.7	30.3	0.209	16	1.11	7.78	8.98	0.594	7.64	0.0749	0.567	593	0.164
Pyrene	µg/l	0.025	-	Guidelines for Aquatic Life (2007)	9.76	69.5	42	10.2	67.4	50.2	4.66	0.583	2.23	3.68	7.51	42.5	0.505	17.3	0.102	2.11	170	1.4
Sum benzo(ghi)perylene and indeno(123-cd)pyrene	µg/l	0.002	0.002	SI 272/2009 Annual Ave	2.146	112.7	<15	9.7	13.79	47.9	<15	1.409	0.1913	6.83	<0.15	92.7	0.559	32.4	0.511	6.53	172.2	3.49
Sum benzo (b + K) fluoranthene	µg/l	0.03	0.03	SI 272/2009 Annual Ave	3.09	157.7	<25	13.46	22.35	84.8	<2.5	1.556	0.471	8.51	0.531	116.5	1.011	55.7	0.547	6.67	206.9	3.92
Volatile Organic Compounds																						
1.1.1.2-Tetrachloroethane	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.1.1-Trichloroethane	µg/l	100	100	EQS 76/464/EEC	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	4.3	<1
1,1,2,2-Tetrachloroethane	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.1.2-Trichloroethane	µg/l	400	300	EQS 76/464/EEC	<1	1.92	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.1-Dichloroethane	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.1-Dichloroethene	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.1-Dichloropropene	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.2.3-Trichlorobenzene	µg/l	0.4	0.4	SI 272/2009 Annual Ave	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.2.3-Trichloropropane	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1,2,4-Trichlorobenzene	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.2.4-Trimethylbenzene	µg/l				22.9	16.7	237	-	213	-	-	-	375	-	227	<1	-	-	-	-	135	<1
1.2-Dibromo-3-chloropropane (DBCP)	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.2-Dibromoethane	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1,2-Dichlorobenzene	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.2-Dichloroethane	µg/l	10	10	SI 272/2009 Annual Ave	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.2-Dichloropropane	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1,3,5-Trichlorobenzene	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.3.5-Trimethylbenzene	µg/l				5.87	5.77	98.2	-	65.8	-	-	-	94.3	-	89.6	<1	-	-	-	-	53.5	<1
1,3-Dichlorobenzene	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1.3-Dichloropropane	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
1,4-Dichlorobenzene	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
2.2-Dichloropropane	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
2-Chlorotoluene	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
4-Chlorotoluene	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
4-Isopropyltoluene	µg/l				<1	<1	7.46	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Bromobenzene	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Bromochloromethane	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Bromodichloromethane	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Bromoform	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Bromomethane	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Carbon Disulphide	µg/l				<1	<1	<1	-	1.34	-	-	-	3.2	-	<1	<1	-	-	-	-	<1	<1
Carbon tetrachloride	µg/l	12	12	SI 272/2009 Annual Ave	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Chlorobenzene	µg/l	1	1	EQS for the Aquatic Environment - EPA, quoted in IGV	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Chloroethane	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Chloroform	µg/l	12	12	EQS 76/464/EEC	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Chloromethane	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
cis-1-2-Dichloroethene	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
cis-1-3-Dichloropropene	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Dibromochloromethane	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Dibromomethane	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Dichlorodifluoromethane	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Dichloromethane	µg/l	20	20	SI 272/2009 Annual Ave	<3	<3	<3	-	<3	-	-	-	<3	-	<3	<3	-	-	-	-	<3	<3
Hexachlorobutadiene	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Isopropylbenzene	µg/l				18.2	<1	13.5	-	18.8	-	-	-	27.4	-	12	<1	-	-	-	-	9.55	<1
n-Butylbenzene	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Propylbenzene	µg/l				15.9	<1	17.1	-	23.9	-	-	-	31.3	-	11.2	<1	-	-	-	-	12	<1
sec-Butylbenzene	µg/l				1.63	<1	<1	-	1.82	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Styrene	µg/l	72	-	Guidelines for Aquatic Life (2007)	<1	<1	464	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	263	<1
tert-Amyl methyl ether (TAME)	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
tert-Butylbenzene	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Tetrachloroethene	µg/l	10	10	SI 272/2009 Annual Ave	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
trans-1-2-Dichloroethene	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
trans-1-3-Dichloropropene	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Trichloroethene	µg/l	10	10	SI 272/2009 Annual Ave	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	8.4	<1
Trichlorofluoromethane	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
Vinyl Chloride	µg/l				<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1