Former Gasworks, Dock Road, Limerick

Quarterly Groundwater Monitoring Report – Annual Summary 2009/10

November 2010

For Bord Gais

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

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1 Introduction

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 the results of the fifth groundwater monitoring visit and provides a comparison of the groundwater quality with previous monitoring visits undertaken throughout the past year (December 2009 – October 2010).

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2 Investigation Methodology

2.1 Design Rationale and Scope

Five groundwater monitoring visits have been undertaken so far as part of the additional groundwater monitoring programme.

Visit	Date	Rationale
GW Visit 1	10th–11th December 2009	End of SI works
GW Visit 2	14th–15th January 2010	Quarterly visit 1
GW Visit 3	21st–22nd April 2010	Quarterly visit 2
GW Visit 4	15th–16th July 2010	Quarterly visit 3
GW Visit 5	**20th – 21st October 2010**	**Quarterly visit 4**

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2.2 Summary of fieldwork

The main site characterisation works were undertaken between the 4th and 27th November 2009. The investigation was conducted by ISGL, who sub-contracted Boart Longyear to undertake the sonic drilling. Mouchel were responsible for monitoring the works.

The investigation was carried out in general accordance with the following standards:

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

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

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The exploratory hole location plan is displayed as Figure 1 (Drawing 1021927/R02/001), which also shows the alpha-numeric grid referenced cells.

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

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No access could be gained to the AGI site or the Shannon Foynes Port Company area, therefore no holes were positioned in these locations.

As part of the characterisation works 21 locations were installed with groundwater monitoring wells, 8 had response zones positioned in the made ground, 13 installations had response zones positioned in the limestone bedrock. The table below shows the installation details at each location.

Location	Response zone depth (m bgl)	Response zone strata
A3	3.0 - 4.5	Limestone Bedrock
A4	2.5 - 4.5	Limestone Bedrock
A11	1.9 - 2.9	Limestone Bedrock
B8	1.0 - 4.5	made ground
C7	6.0 - 7.5	Limestone Bedrock
C11	1.0 - 2.5	natural / possible made ground
D1	6.0 - 7.5	Limestone Bedrock
D5	1.0 - 3.0	made ground
E8	1.0 - 6.0	made ground

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Location	Response zone depth (m bgl)	Response zone strata
F11	3.5 - 5.0	Limestone Bedrock
G2	10.0 - 11.5	Limestone Bedrock
G3	1.0 - 9.0	made ground
G4	10.0 - 12.0	Limestone Bedrock
G5	1.0 - 9.0	made ground
G8	1.0 - 2.5	Limestone Bedrock
H12	3.0 - 4.5	Limestone Bedrock
J10	1.0 - 3.0	Limestone Bedrock
K1	1.0 - 4.5	made ground
K5	1.0 - 6.0	made ground
L7	2.0 - 3.5	Limestone Bedrock
M3	5.0 - 6.5	Limestone Bedrock

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2.3 Chemical Laboratory Testing

All 21 monitoring wells, installed during the 2009 site investigation, were dipped with an ATEX Dual phase dipmeter to establish the water depth and presence of Non Aqueous Phase Layers (NAPLs). Any visual and olfactory evidence of contamination was noted.

During all monitoring visits undertaken to date no water samples could be obtained from L7 as it did not contain a sufficient depth of water to collect a sample. During the 5th visit, B8 had been covered with a stockpile of waste spoil and so no sample could be obtained on that occasion.

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

All samples were analysed for a 'Limerick Suite' of determinands. VOC analysis was conducted on samples to give a spatial coverage of the site and down and up gradient of the suspected groundwater flow direction. A summary of the analysis undertaken is listed overleaf.

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Suite Reference	Analysis Suite	No. samples scheduled
Limerick Suite	Arsenic, cadmium, chromium, copper, lead, mercury, selenium, zinc, cyanide, sulphate, sulphide, ammonaical nitrogen, speciated phenols, Total Petroleum Hydrocarbons criteria working group split (TPH CWG) (including BTEX and MTBE), Polyaromatic Hydrocarbons (PAHs)	20 (first visit) 20 (second visit) 20 (third visit) 20 (fourth visit) 20 (fifth visit) **100 (total)**
VOCs	VOCs	11 (first visit) 10 (second visit) 11 (third visit) 11 (fourth visit) 10 (fifth visit) **53 (total)**

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3 Hydrological Site Model

3.1 Groundwater source and flow direction

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

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.

- 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).

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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.

The results indicated that location F10 was significantly influenced by heavy downpours during the monitoring. Heavy rainfall was encountered on the fourth visit (15th-16th July) which caused the water level in F10 to rise quickly to ground level.

3.2 Groundwater levels

The results of the groundwater and DNAPL levels are presented overleaf (the DNAPL depths are displayed in brackets). Groundwater contour plots for all five visits undertaken to date are presented as Appendix A.

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BH No.	Response zone strata	* Response zone depth (m Malin Head Datum) (MHD)	Water level m MHD (DNAPL level m MHD)					
			10th-11th Dec 2009	14th-15th Jan 2010	21st-22nd April 2010	15th-16th July 2010	20th-21st Oct 2010	Annual average
A3	Limestone bedrock	1.16 – -0.34	2.80	2.75	2.70	2.61	2.63	**2.70**
A4	Limestone bedrock	1.63 – -0.37	2.73	2.67	2.63	2.61	2.62	**2.65**
A11	Limestone bedrock	1.84 – 0.84	2.70	2.68	2.59	2.63	2.58	**2.64**
B8	Made ground	4.49 – 0.99	3.69 (2.24)	3.64 (2.79)	3.65 (2.85)	3.62 (2.77)	not accessible	**3.65 (2.66)**
C7	Limestone bedrock	-0.45 – -1.95	4.00 (-1.98)	3.75 (-1.17)	3.68 (-1.05)	3.75 (-1.05)	3.58 (-0.85)	**3.75 (-1.22)**
C11	Natural clay	3.36 – 1.86	3.11	3.07	3.04	3.07	3.04	**3.07**
D1	Limestone bedrock	1.06 – -0.44	4.26	4.06	4.01 (1.81)	4.03 (1.81)	3.96 (2.86)	**4.06 (2.16)**
D5	Made ground	5.8 – 3.80	5.30	5.20	5.10	5.21	5.02	**5.17**
E8	Made ground	4.84 – -0.16	5.04	4.84	4.78	4.88	4.79	**4.87**
F11	Limestone bedrock	2.72 – 1.22	5.10	5.22	5.12	6.22	5.09	**5.35**
G2	Limestone bedrock	-2.01 – -3.51	5.20	4.84	4.81	4.69	4.69	**4.85**
G3	Made ground	6.92 – -1.08	5.22	4.87	4.84	4.69	4.72	**4.87**
G4	Limestone bedrock	-2.55 – -4.55	5.15 (-1.55)	4.85 (-2.15)	4.88 (-2.33)	4.68 (-1.42)	4.72 (-2.17)	**4.86 (-1.92)**
G5	Made ground	6.24 – -1.76	5.24	4.90	4.84	4.71	4.71	**4.88**
G8	Limestone bedrock	6.28 – 4.78	6.94	6.95	6.66	6.85	6.56	**6.79**
H12	Limestone bedrock	3.76 – 2.26	5.71	5.72	5.68	5.72	5.62	**5.69**
J10	Limestone bedrock	5.95 – 3.95	6.87	6.85	6.25	6.85	6.38	**6.64**
K1	Made ground	6.96 – 3.46	6.04	5.90	5.70	5.90	5.77	**5.86**
K5	Made ground	7.64 – 2.64	7.87	7.67	7.64	7.84	7.69	**7.74**
L7	Limestone bedrock	6.65 – 5.15	<5.85**	<5.85**	5.88	<5.85**	<5.85**	**<5.85**
M3	Limestone bedrock	3.23 – 1.73	5.44	5.06	5.08	4.80	4.95	**5.07**

*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.

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3.3 Hydraulic gradient estimates

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

GW Visit 1

G8 – E8 (approximately 1.9m / 13.5m) = 0.141

G3 – A3 (approximately 2.42m / 59.9m) = 0.040

F11 – A11 (approximately 2.37m / 47.15m) = 0.050

Average across the three = 0.077

GW Visit 2

G8 – E8 (approximately 2.11m / 13.5m) = 0.156

G3 – A3 (approximately 2.12m / 59.9m) = 0.035

F11 – A11 (approximately 2.54m / 47.15m) = 0.054

Average across the three = 0.075

GW Visit 3

G8 – E8 (approximately 1.88m / 13.5m) = 0.139

G3 – A3 (approximately 2.14m / 59.9m) = 0.038

F11 – A11 (approximately 2.53m / 47.15m) = 0.054

Average across the three = 0.077

GW Visit 4

G8 – E8 (approximately 1.97m / 13.5m) = 0.146

G3 – A3 (approximately 2.08m / 59.9m) = 0.035

F11 – A11 (approximately 3.59m / 47.15m) = 0.076

Average across the three = 0.086

GW Visit 5

G8 – E8 (approximately 1.77m / 13.5m) = 0.131

G3 – A3 (approximately 2.09m / 59.9m) = 0.035

F11 – A11 (approximately 2.51m / 47.15m) = 0.053

Average across the three = 0.073

The groundwater level across the site appears to have fallen by around 30-40cm since the first groundwater monitoring visit. This is most likely attributable

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to seasonal variation and the high volume of rainfall experienced towards the end of 2009. Despite the slight change in water level the hydraulic gradient has remained fairly constant throughout the year. The hydraulic gradient was significantly greater in the measurement from F11 – A11 in the fourth visit. However, this was due to heavy rainfall during the monitoring of F11 which temporarily increased the water level.

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4 Chemical distribution

4.1 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 collected from the five visits undertaken to date and have been summarised in the table below

Visit	DNAPL detected	Hydrocarbon sheen / odour	Anaerobic / hydrogen sulphide odour	No evidence of significant contamination
Visit 1	B8, C7, G4,	A3, A4, A11, B8, C7, C11, D1, G4, G5, K5	G2	D5, E8, F11, G3, G8, H12, K1, J10, L7, M3
Visit 2	B8, C7, G4,	B8, C7, C11, D1, G4, G5, K5	D1, G2	A3, A4, A11, D5, E8, F11, G3, G8, H12, K1, J10, L7, M3,
Visit 3	B8, C7, D1, G4, K5	A3, A4, B8, C7, C11, D1, D5, E8, F11, G4, G5, H12, K5,	D1, G2, G3	A11, G8, J10, K1, L7, M3,
Visit 4	B8, C7, D1, G4, K5	B8, C7, D1, E8, G4, G5, H12, K5	D1, G2	A3, A4, A11, C11, D5, F11, G3, G8, J10, K1, L7, M3,
Visit 5	D1, C7, G4, K5	A3, A4, C7, C11, D1, E8, G2, G3, G4, G5, G8, J10, K5,	F11, G2, H12,	A11, D5, K1, L7, M3,

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An anaerobic odour was regularly noted from locations positioned within the former quarry area (D1 and G2).

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

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A sheen / odour was regularly noted around the former gasholders and the quarry area (B8, C7, D1, G4, G5 and K5). During visit 4 and visit 5 an orange/green colour accompanied with a strong organic / ammonaical odour was recorded in E8.

DNAPL was recorded in B8, C7 and G4 on all visits, and in D1 and K5 on the 3rd, 4th and 5th visits. DNAPL was encountered around the former gasholders and within the deeper parts of the quarry where response zones were placed in the Limestone bedrock.

Visually the least contaminated samples were generally obtained from the southern sections of the site where the bedrock is closest to the surface (L7, M3 and K1).

4.2 Chemical results

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The groundwater testing methodology and legislation is discussed in full in the 2010 QRA report (1021927/R/03). This report looks at the results obtained in the fifth groundwater monitoring visit and how they relate to the previous results. Due to the proximity of the River Shannon, and the limestone aquifer, Tier 1 groundwater screening has been carried out against Environmental Quality Standards (EQS) and Drinking Water Standards (DWS).

Generally the chemical information ties in with the visual and olfactory evidence. The locations that appeared to be the most contaminated recorded the highest concentrations of contaminants. Concentrations of contaminants varied between visits, there did not appear to be a clear difference between contaminant concentrations in the 3rd and 5th visits against concentrations in the other visits. This indicates that the differences in the visual and olfactory dataset are probably due to adverse weather conditions (rain and high winds) suppressing the odours from the various locations.

4.2.1 EQS – 5th visit results

The chemical results were screened against relevant EQS. Site wide concentrations of selenium, ammonaical nitrogen, phenols, cyanide, TPH and PAH were detected above the EQS screening value. Several samples failed the EQS screen for arsenic, sulphate, BTEX, styrene and trichloroethene.

4.2.2 DWS – 5th visit results

The chemical results were screened against relevant DWS. Site wide concentrations of ammonium, phenols, cyanide, GRO, TPH and PAH failed the

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DWS screen. Several samples failed the DWS screen for arsenic, selenium, sulphate, BTEX, styrene and trichloroethene.

Chemical results from all five visits are presented as Appendix C. EQS and DWS screening tables from all five visits are presented as Appendix D. The 2003 screening results have also been included for comparison.

4.3 Seasonal pattern

The DNAPL thickness and chemical analytical data from the five visits was compared to assess any potential temporal changes and identify any seasonal patterns.

DNAPL was detected in five locations during the monitoring period. The graph below displays how the thickness in DNAPL has varied across the five visits in each location.

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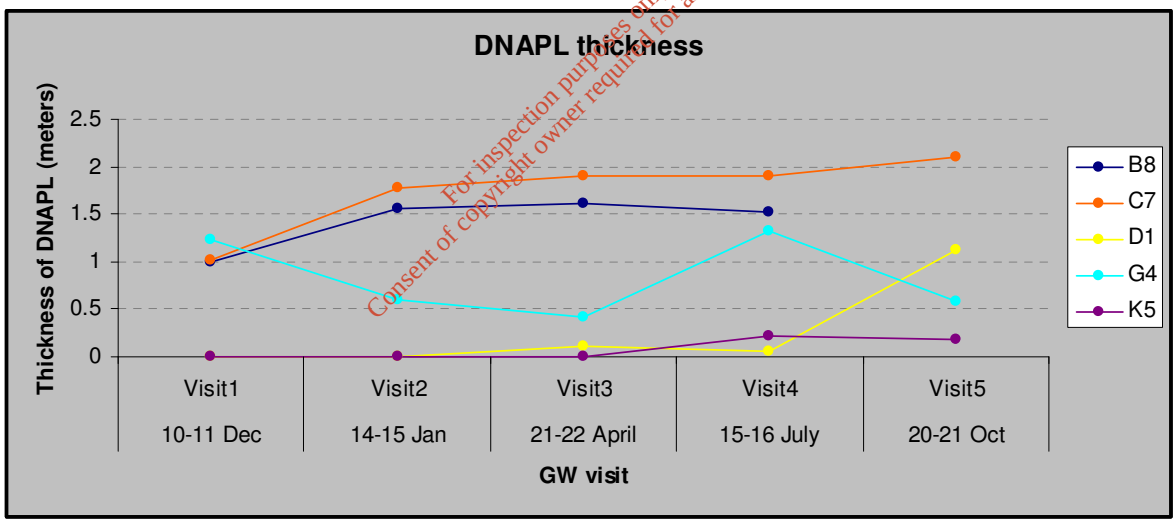

To further assess how contaminant concentrations changed over the monitoring period several graphs were produced and are presented as Appendix B. The graphs indicate that although there is some degree of variation there is no consistent increase or decline in contaminant concentrations over time. The only exception was K5 for TPH where concentrations in the 3rd, 4th and 5th visits were significantly higher than the 1st and 2nd visits.

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5 Conclusions

5.1 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 five visits to date equate to an estimated hydraulic gradient across the site of 0.0776.

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5.2 Chemical distribution

5.2.1 Visual, olfactory and DNAPL thickness results

Visual and olfactory evidence of contamination has varied slightly throughout the monitoring period. During visits 3 and 5 there appeared to be more evidence of contamination. During visits 1, 2 and 4 heavy rainfall was encountered around the time the monitoring was undertaken. This rainfall may have had an effect on the apparent contamination status by suppressing any odours.

The DNAPL thickness in B8 and C7 have steadily increased since the first monitoring period. Thicknesses in B8 and C7 now appear to have stabilised at around 1.5 and 2.0m respectively. The DNAPL thickness in G4 has varied considerably between visits ranging from around 0.5m to 1.5m. In K5 and D1, thicknesses have remained less than 0.3m, except in the 5th visit where the DNAPL thickness in D1 had increased to around 1m.

5.2.2 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

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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.

5.2.3 Seasonal Pattern

The chemical results to date have been generally consistent throughout the monitoring period. Fluctuations in the dataset were recorded however there was no apparent increase or decrease in the contamination status throughout the monitoring period.

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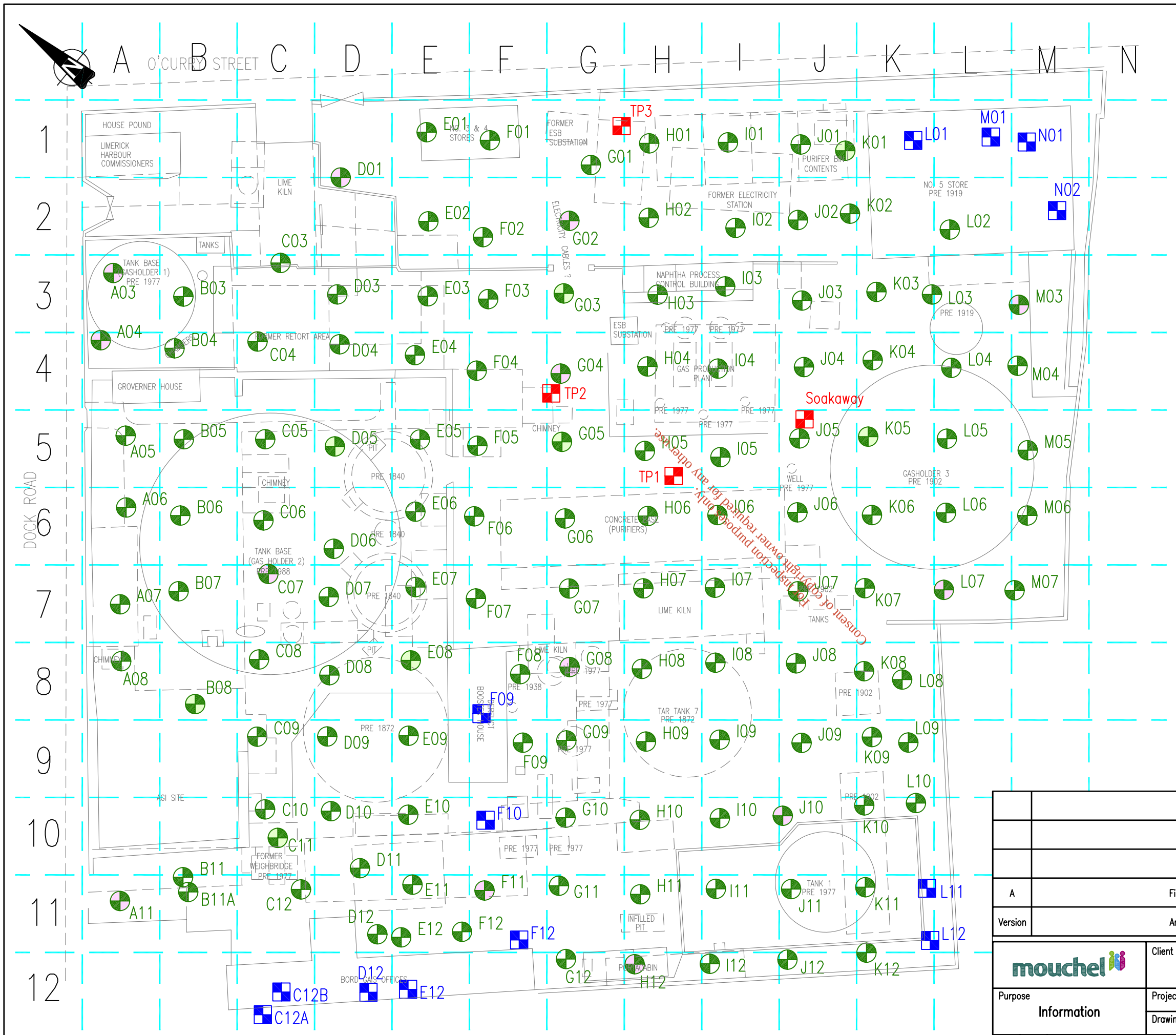

Key

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

A	First Issue	K.Hodgkinson 02/02/10	D.Megson 02/02/10	D.Watts 02/02/10
Version	Amendment	Originated by and date	Checked by and date	Approved by and date

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Client: BORD GÁIS

Purpose: Information

Project: Limerick Gasworks

Drawing Title: Figure 1 2009 SI – Exploratory Hole Location Plan

Draft ● Issue

Scale (at A3 size): 1:500

Issuing Office: Ellesmere Port

Telephone: 0151 356 5555

Drawing number: 1021927/R02/001

Version: A

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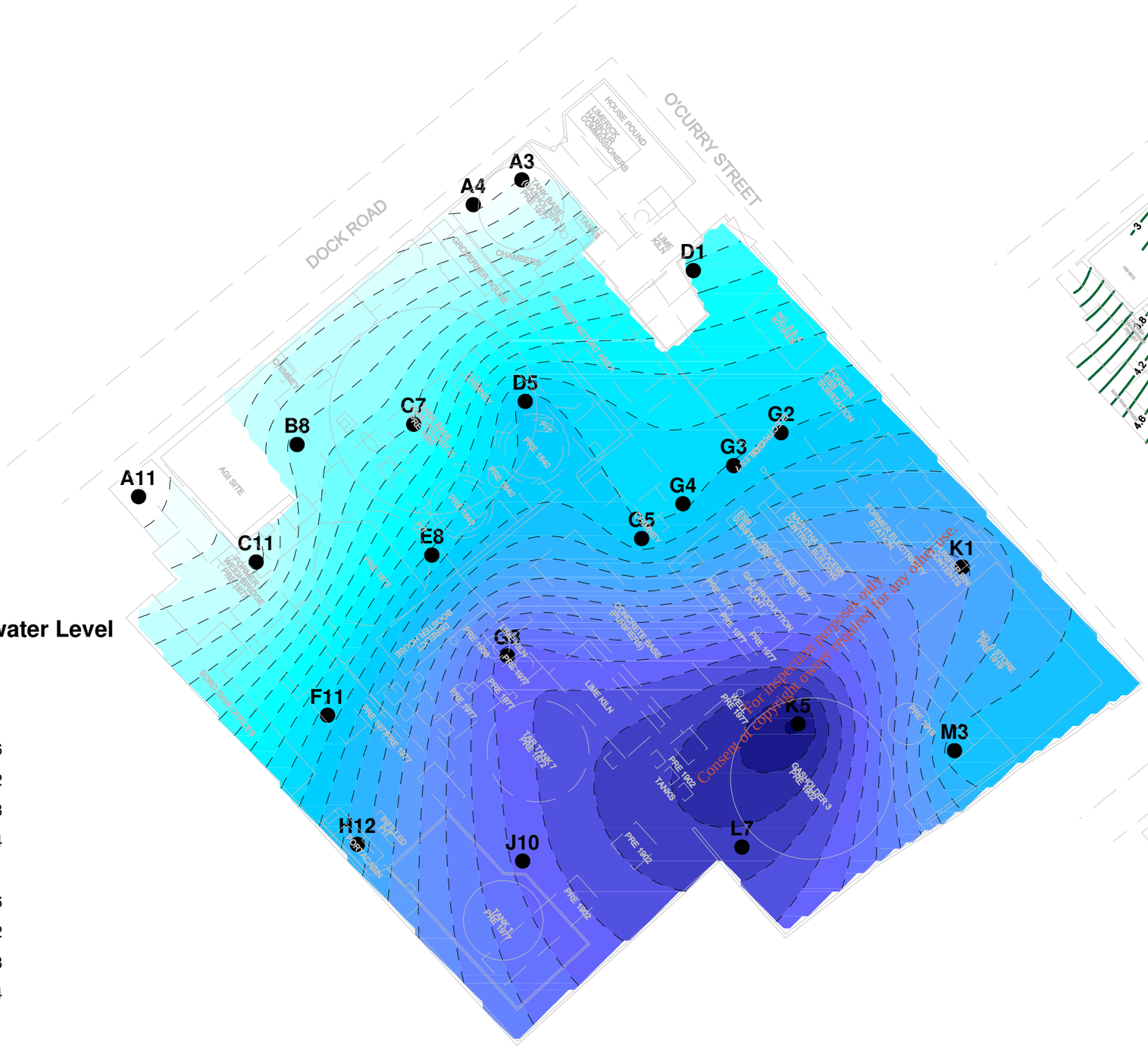

Groundwater Level (m MHD)

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
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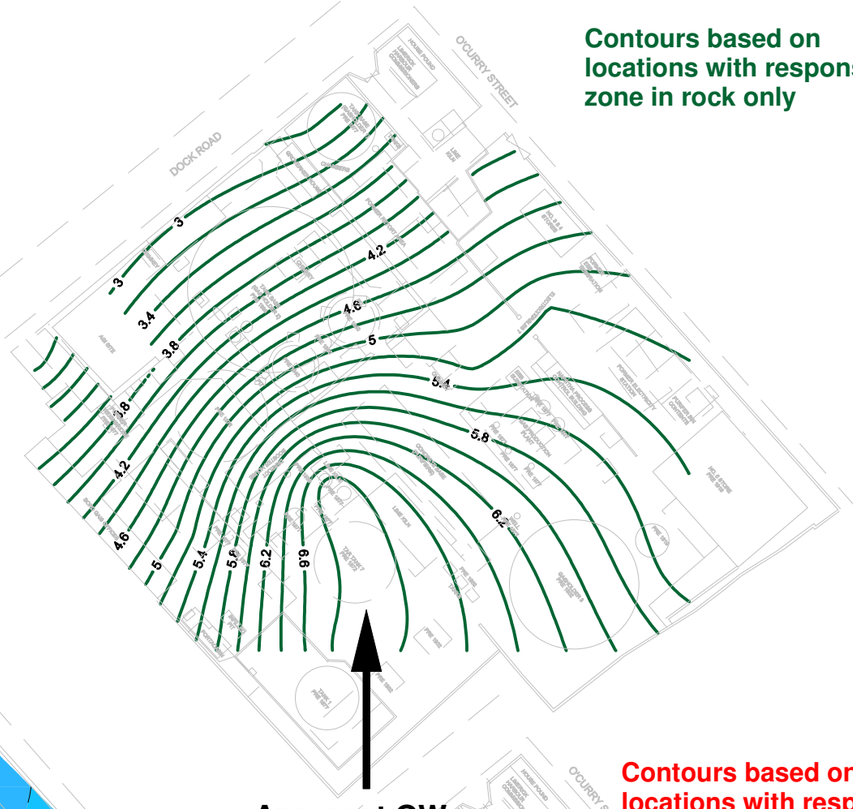
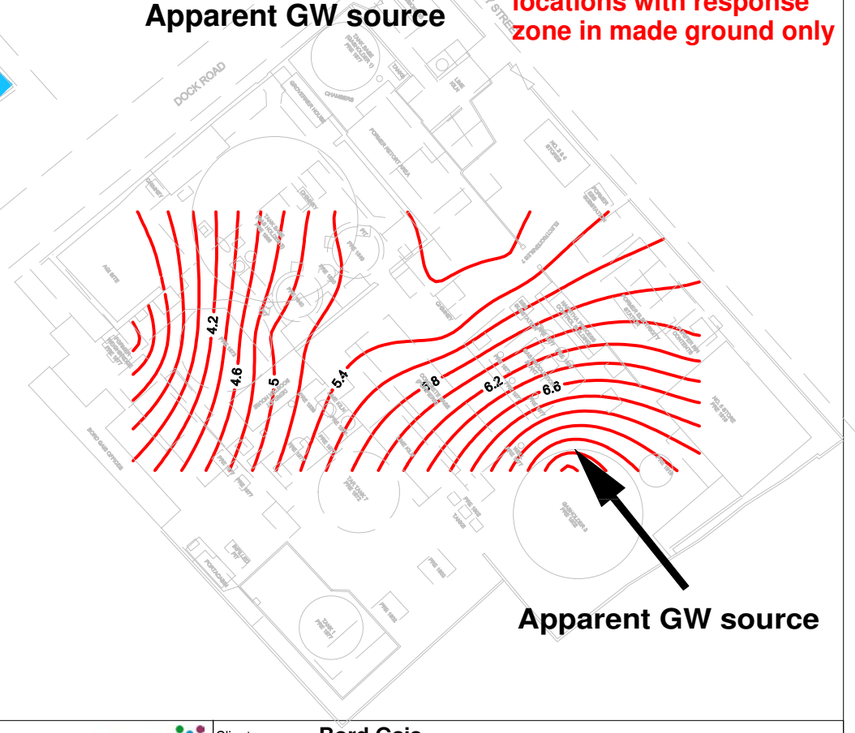
2



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 10-11/12/2009. Contours were plotted using the Kriging method based upon a 1m x 1m grid

Version	Ammendment	Originated	Checked	Approved
A	First Issue	DM	SD	DW

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Client	Bord Gais
Project	Limerick Gasworks
Drawing Title	Figure 6a) Groundwater levels 10-11/12/2009
Purpose	Information
Scale	Not to scale
Issuing Office	Ellesmere Port
Telephone	0151 356 5555
Drawing Number	102192/R03/006a
Version	A

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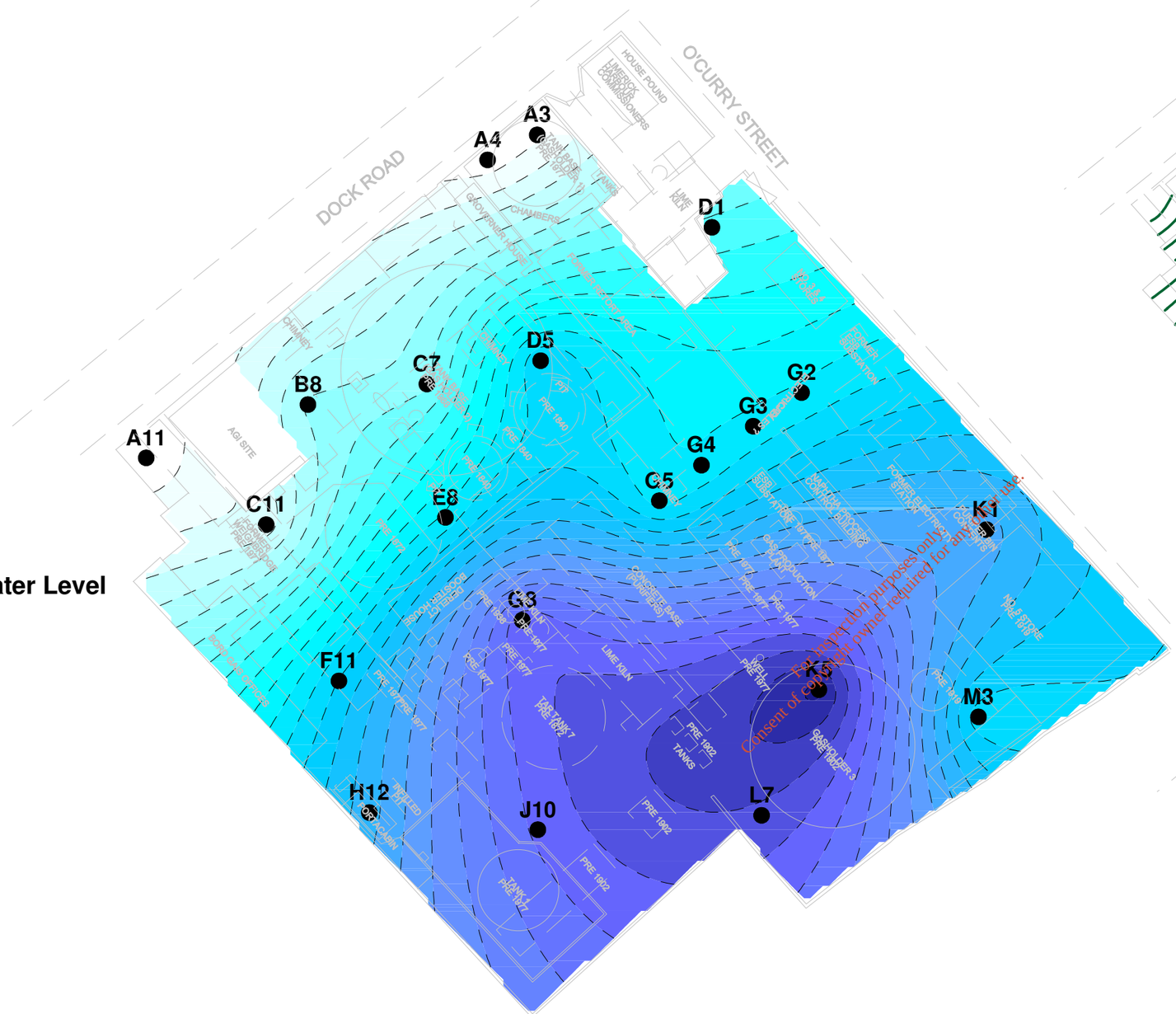
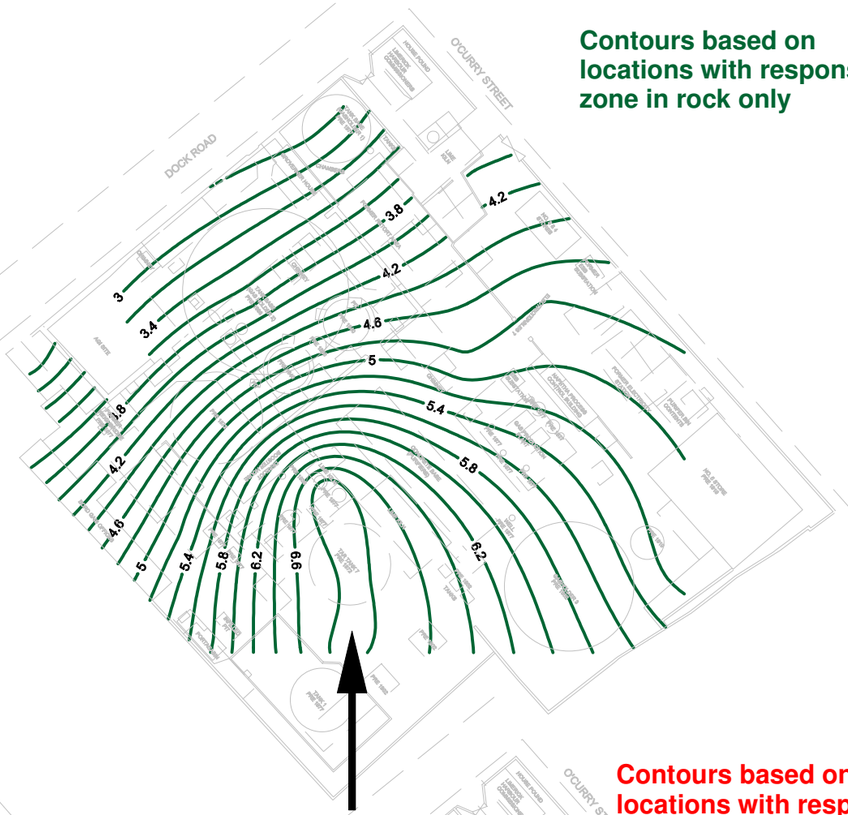


Groundwater Level (m MHD)

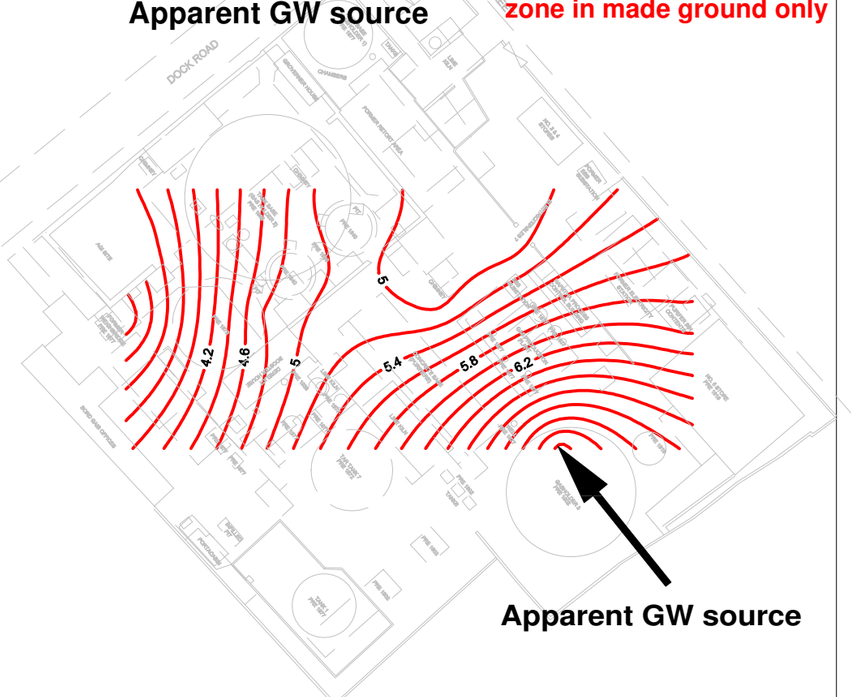
8
7.6
7.2
6.8
6.4
6
5.6
5.2
4.8
4.4
4
3.6
3.2
2.8
2.4
2

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 14-15/01/2009. Contours were plotted using the Kriging method based upon a 1m x 1m grid

Version	Ammendment	Originated	Checked	Approved
A	First Issue	DM	SD	DW

mouchel	Client	Bord Gais	
Purpose: Information	Project	Limerick Gasworks	
	Drawing Title	Figure 6b) Groundwater levels 14-15/01/2010	
Scale: Not to scale	Issuing Office	Ellesmere Port	Drawing Number: 1021927/R03/006b; Version: A
	Telephone	0151 356 5555	

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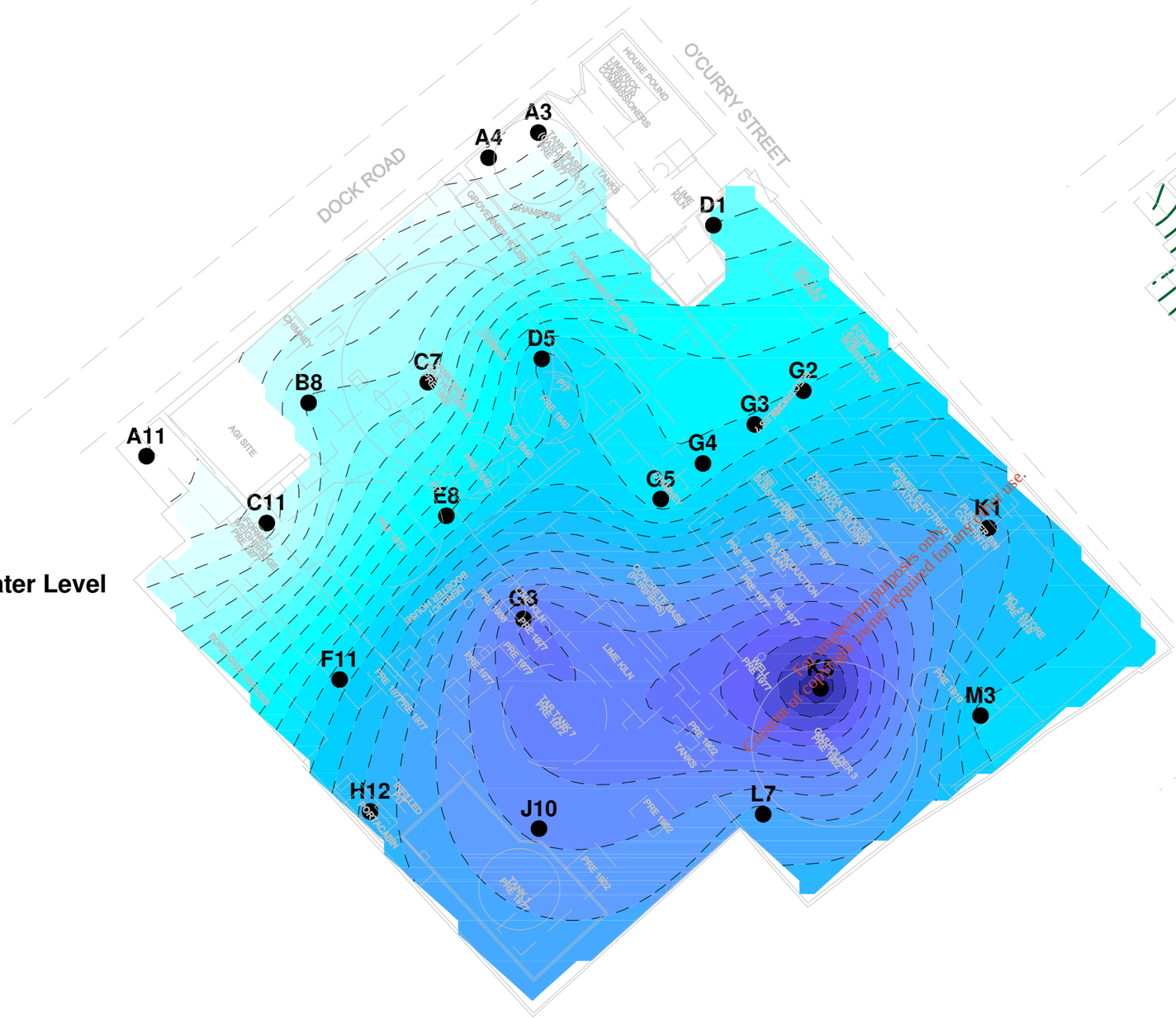
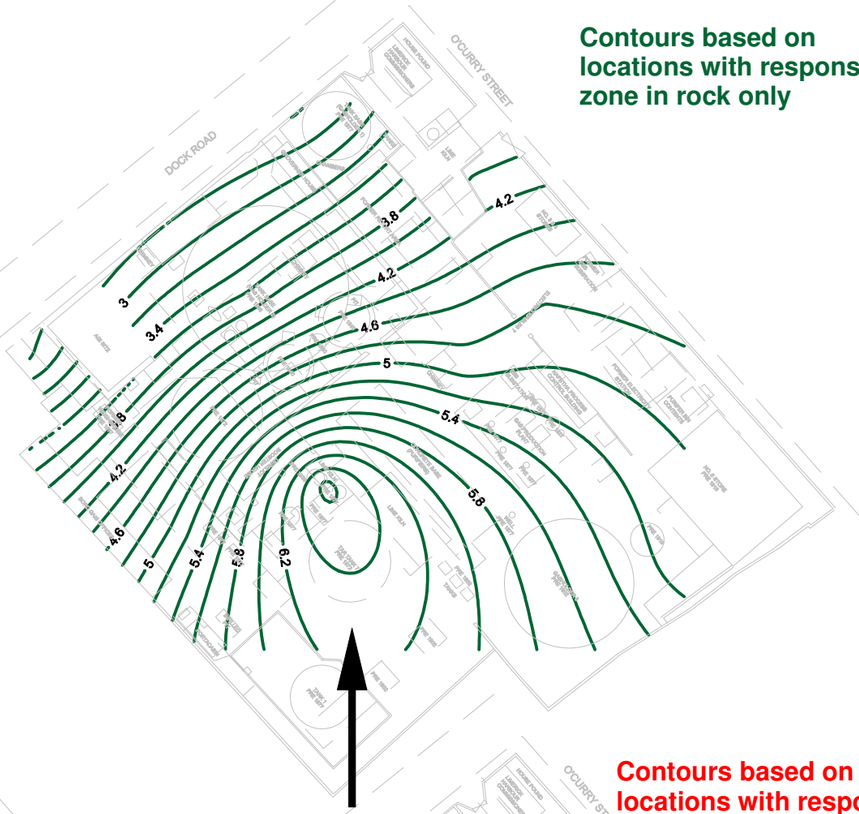
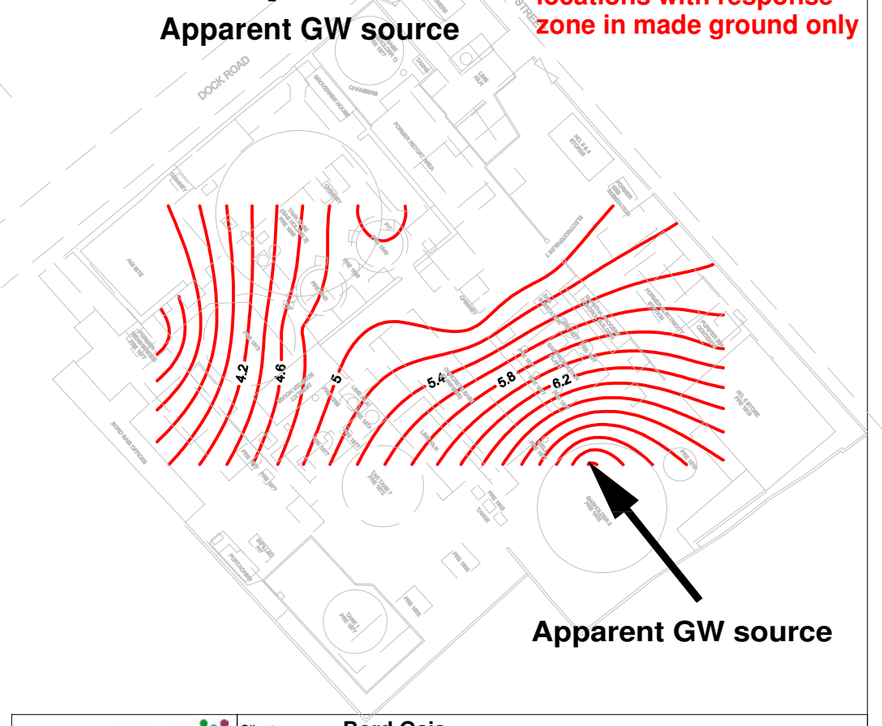
N



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





These plots have been produced using data obtained from the groundwater monitoring visit undertaken on 21-22/04/2010. 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

Purpose	Information
Scale	Not to scale
Client	Bord Gais
Project	Limerick Gasworks
Drawing Title	Figure 1) Groundwater levels 21-22/04/2010
Issuing Office	Ellesmere Port
Telephone	0151 356 5555
Drawing Number	1021927/R05/001
Version	A

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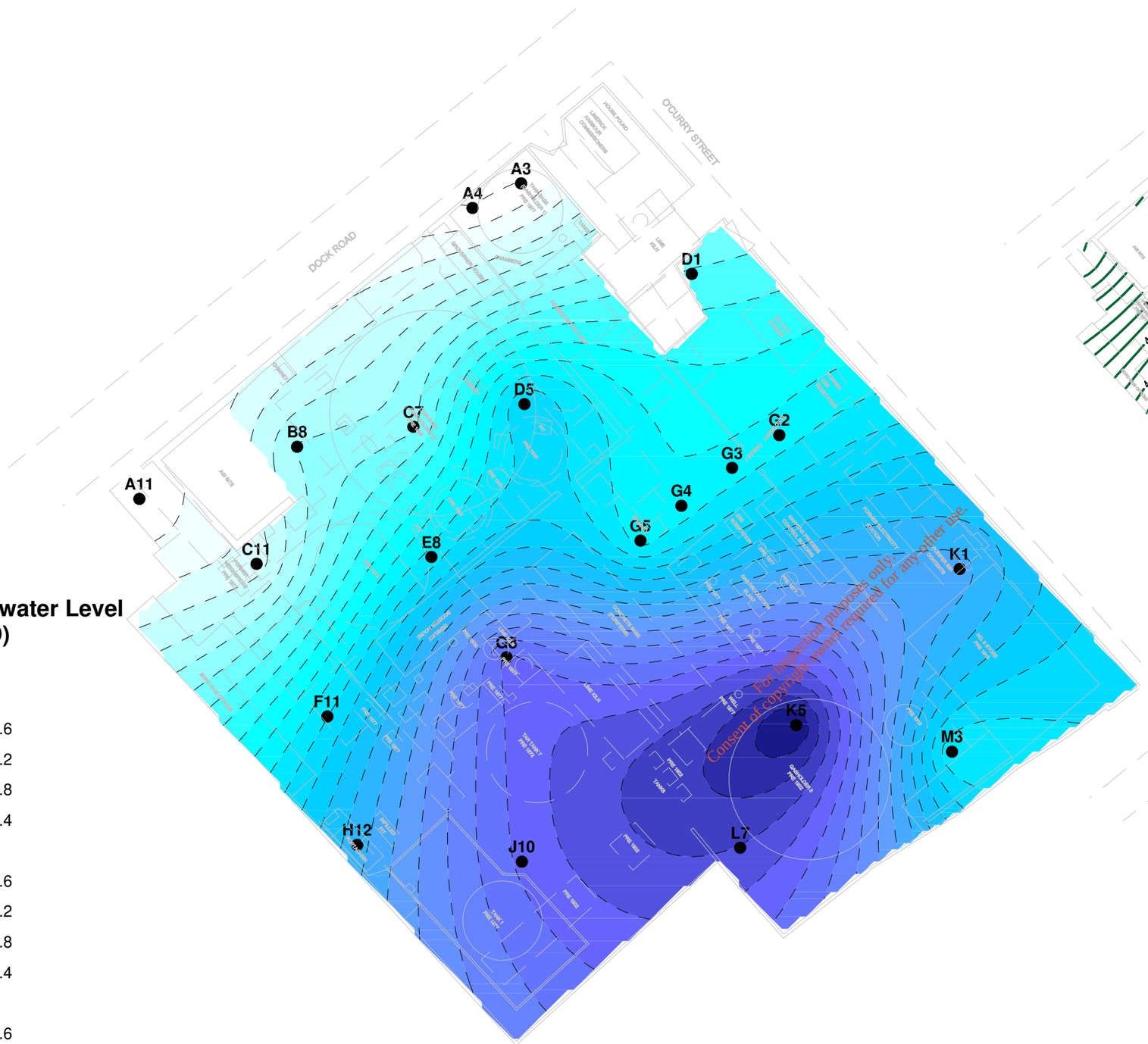
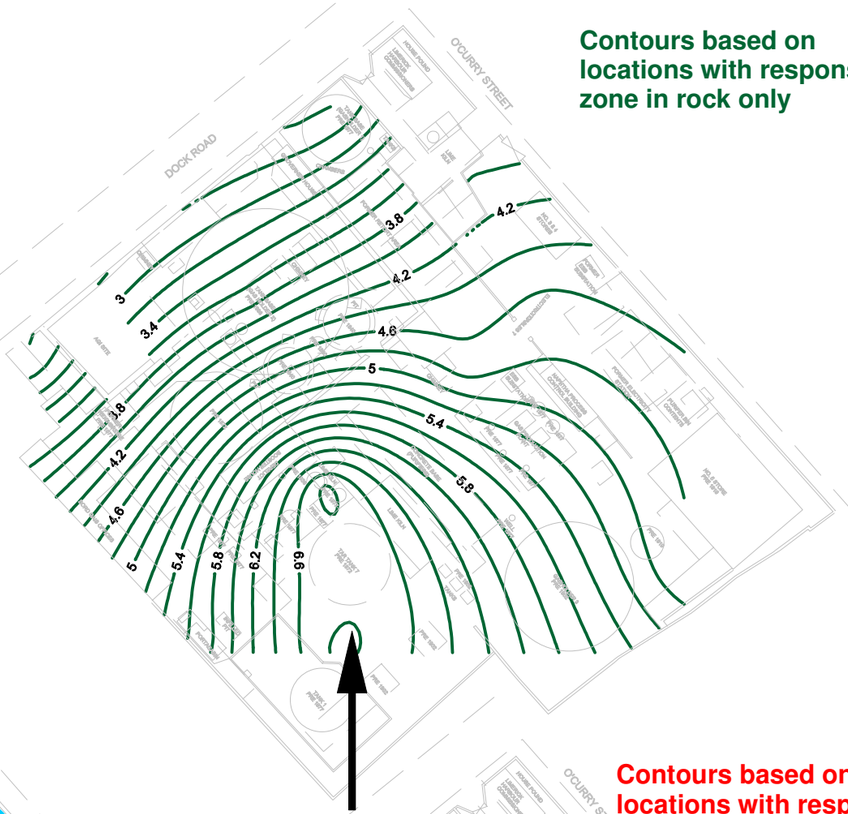
N



Groundwater Level (m MHD)

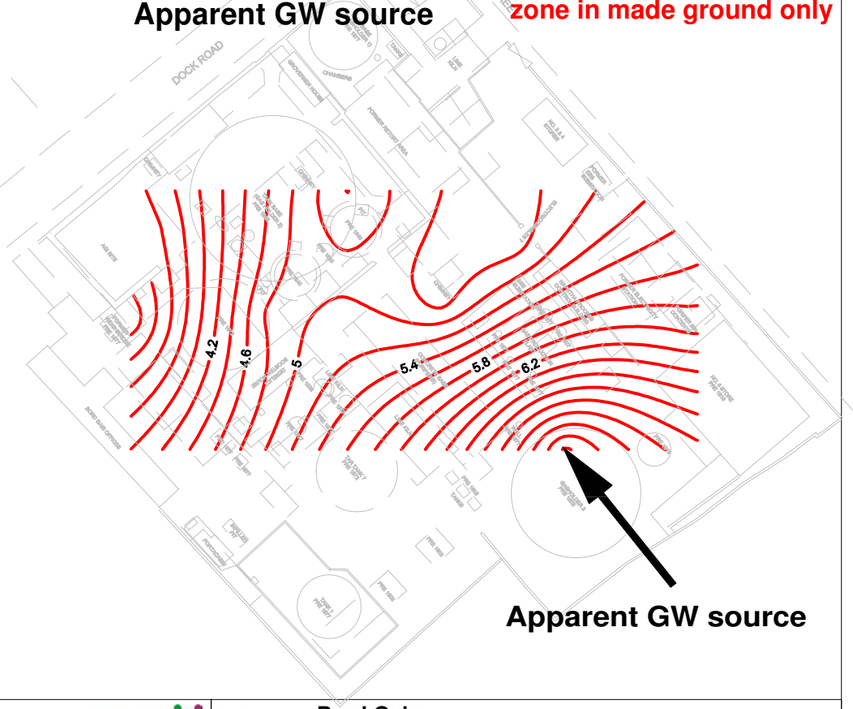
8
7.6
7.2
6.8
6.4
6
5.6
5.2
4.8
4.4
4
3.6
3.2
2.8
2.4
2

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 15-16/07/2010. Contours were plotted using the Kriging method based upon a 1m x 1m grid. Location F11 was removed from the model due to heavy rainfall temporarily affecting the water level monitored.

Version	Ammendment	Originated	Checked	Approved
A	First Issue	DM	DM	DW

mouchel

Client	Bord Gais
Project	Limerick Gasworks
Drawing Title	Figure 1) Groundwater levels 15-16/07/2010
Purpose	Information
Scale	Not to scale
Issuing Office	Ellesmere Port
Telephone	0151 356 5555
Drawing Number	1021927/R12/001
Version	A

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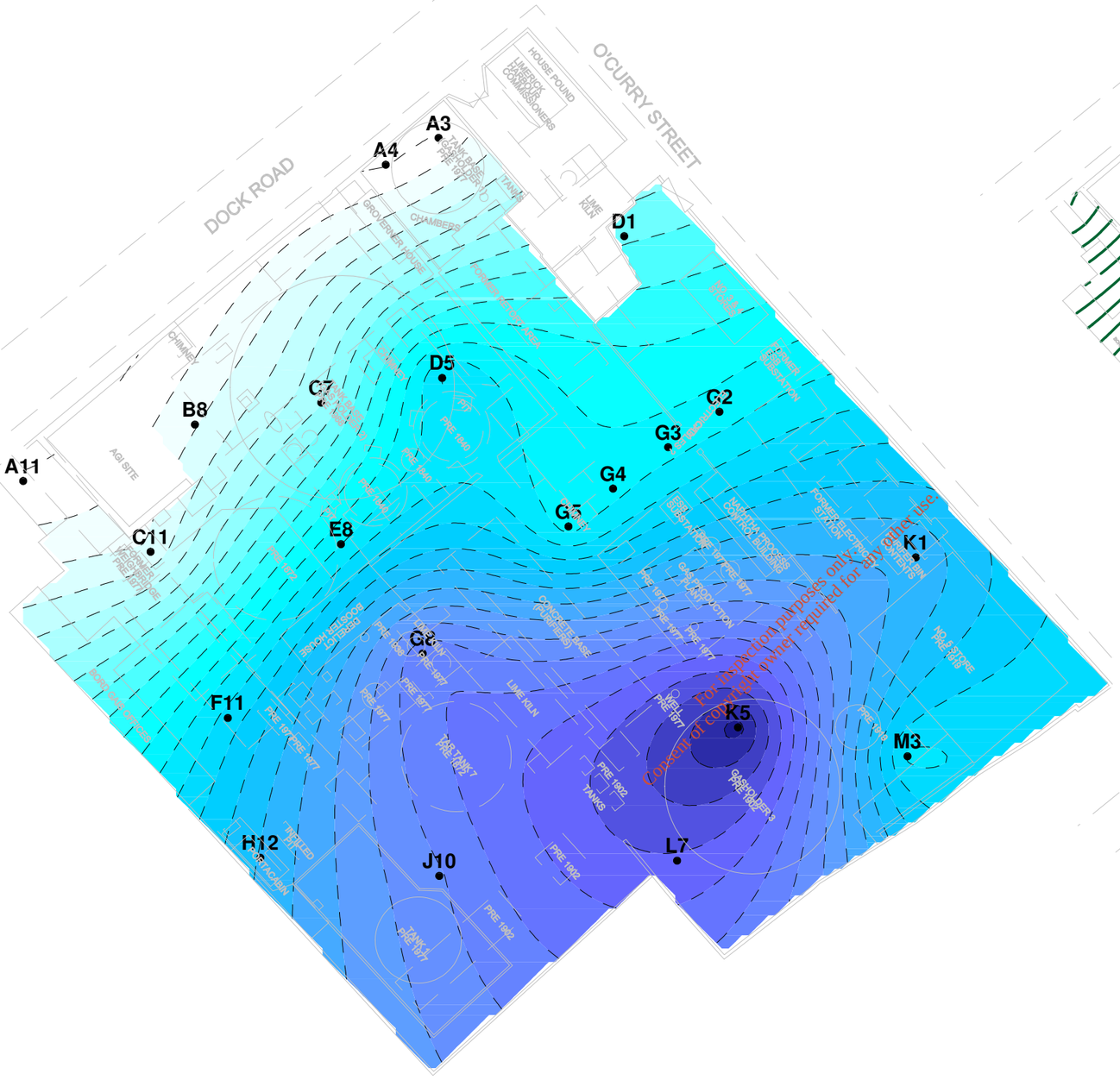
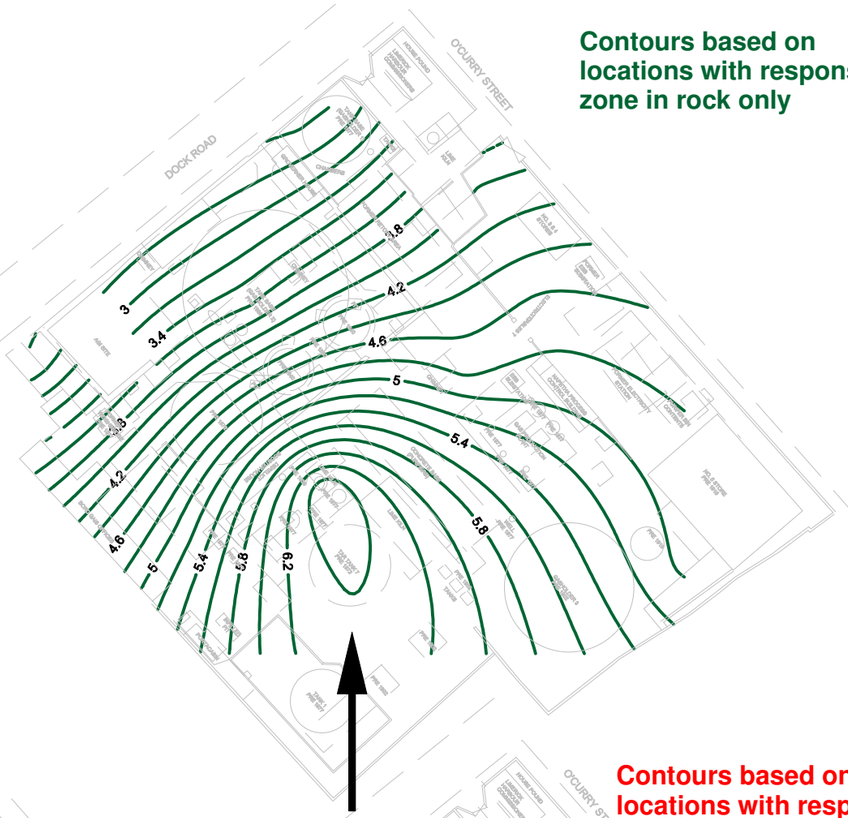
N



Groundwater Level (m MHD)

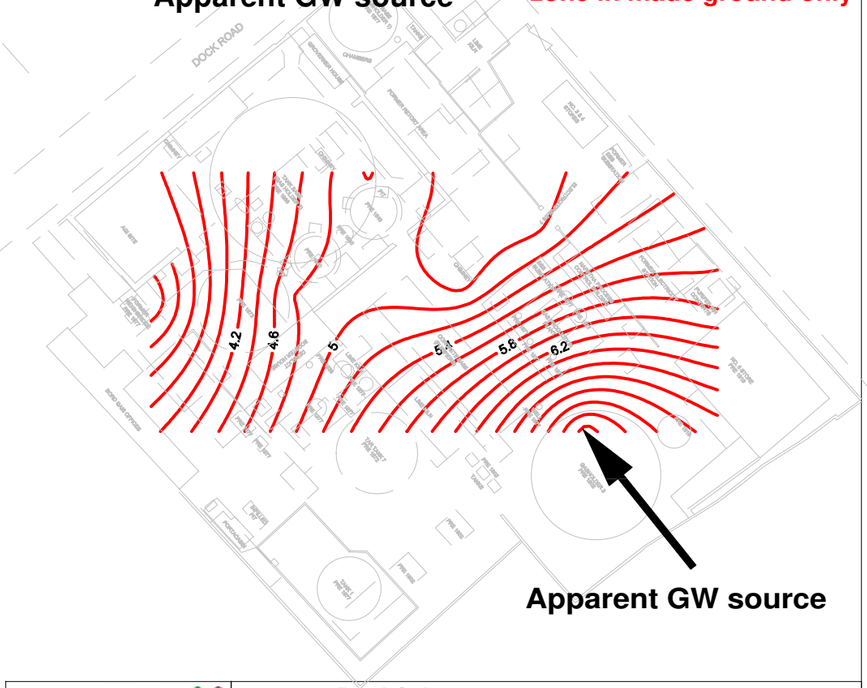
8
7.6
7.2
6.8
6.4
6
5.6
5.2
4.8
4.4
4
3.6
3.2
2.8
2.4
2

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 20-21/10/2010. 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 20-21/10/2010	
Scale: Not to scale	Issuing Office: Ellesmere Port	Drawing Number: 1021927/R14/OD/001	Version: A
	Telephone: 0151 356 5555		

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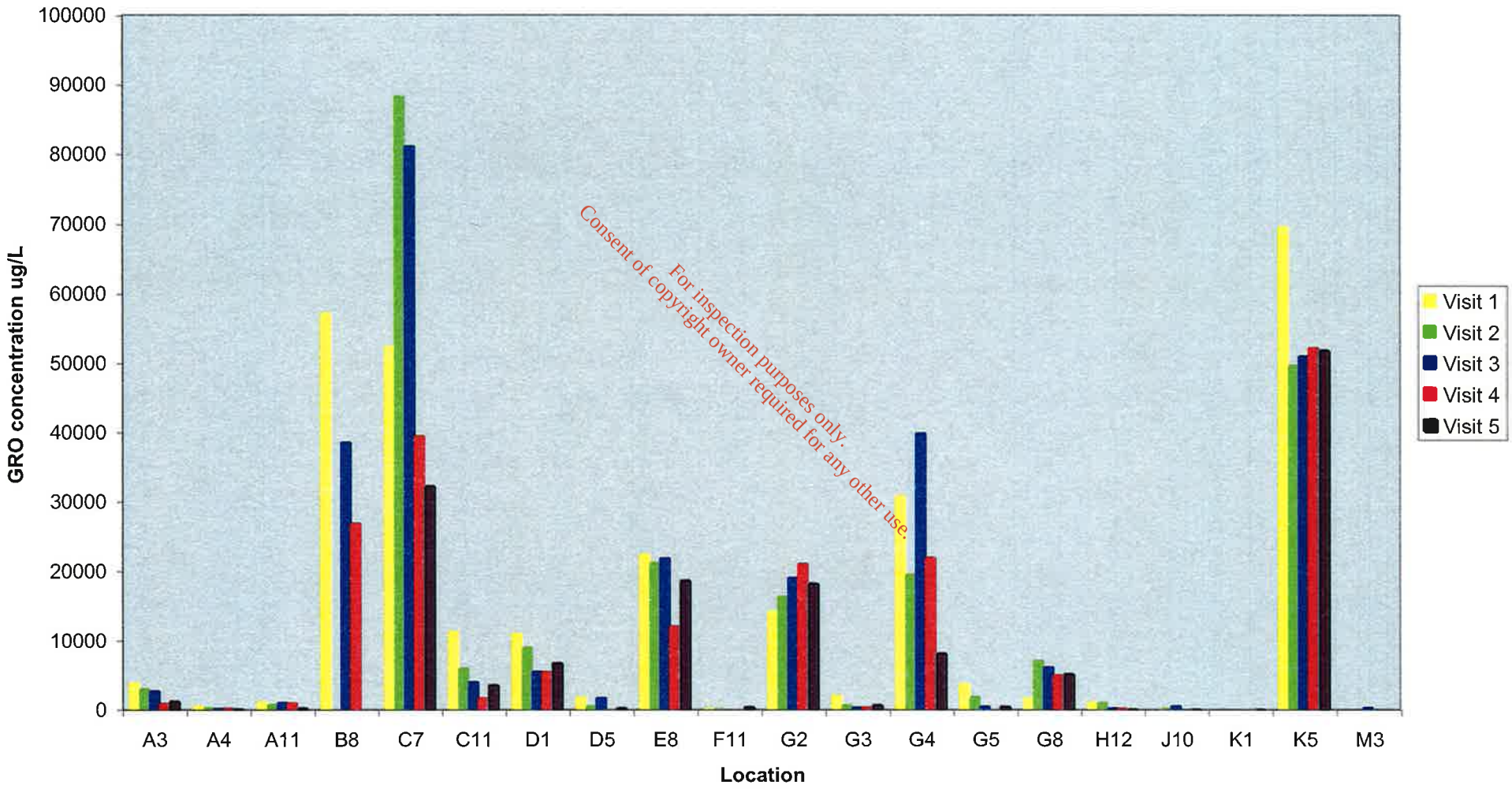
Petroleum Hydrocarbons - Gasoline Range Organics (GRO)



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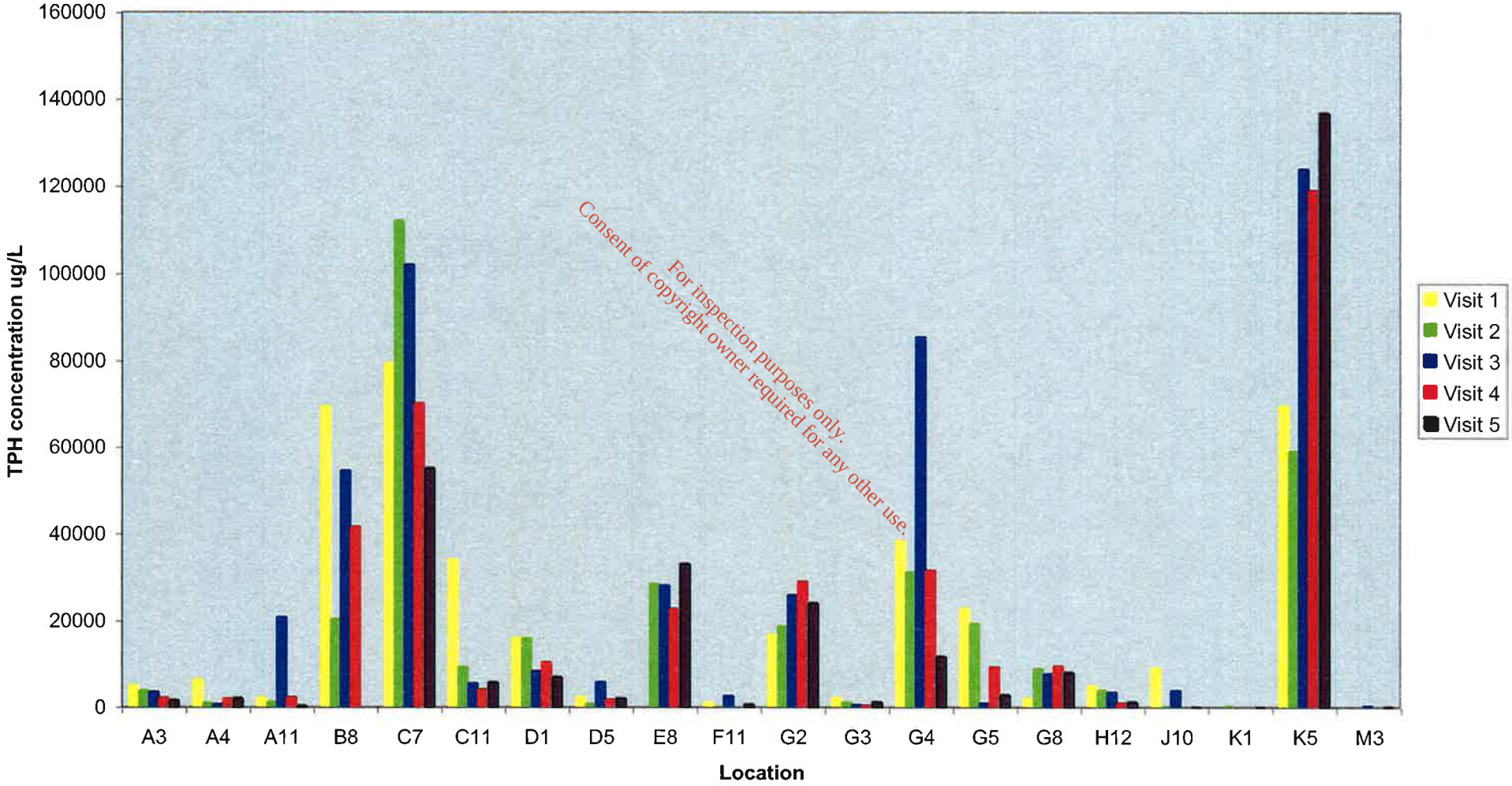
Petroleum Hydrocarbons - 'Total' Petroleum Hydrocarbons (TPH)



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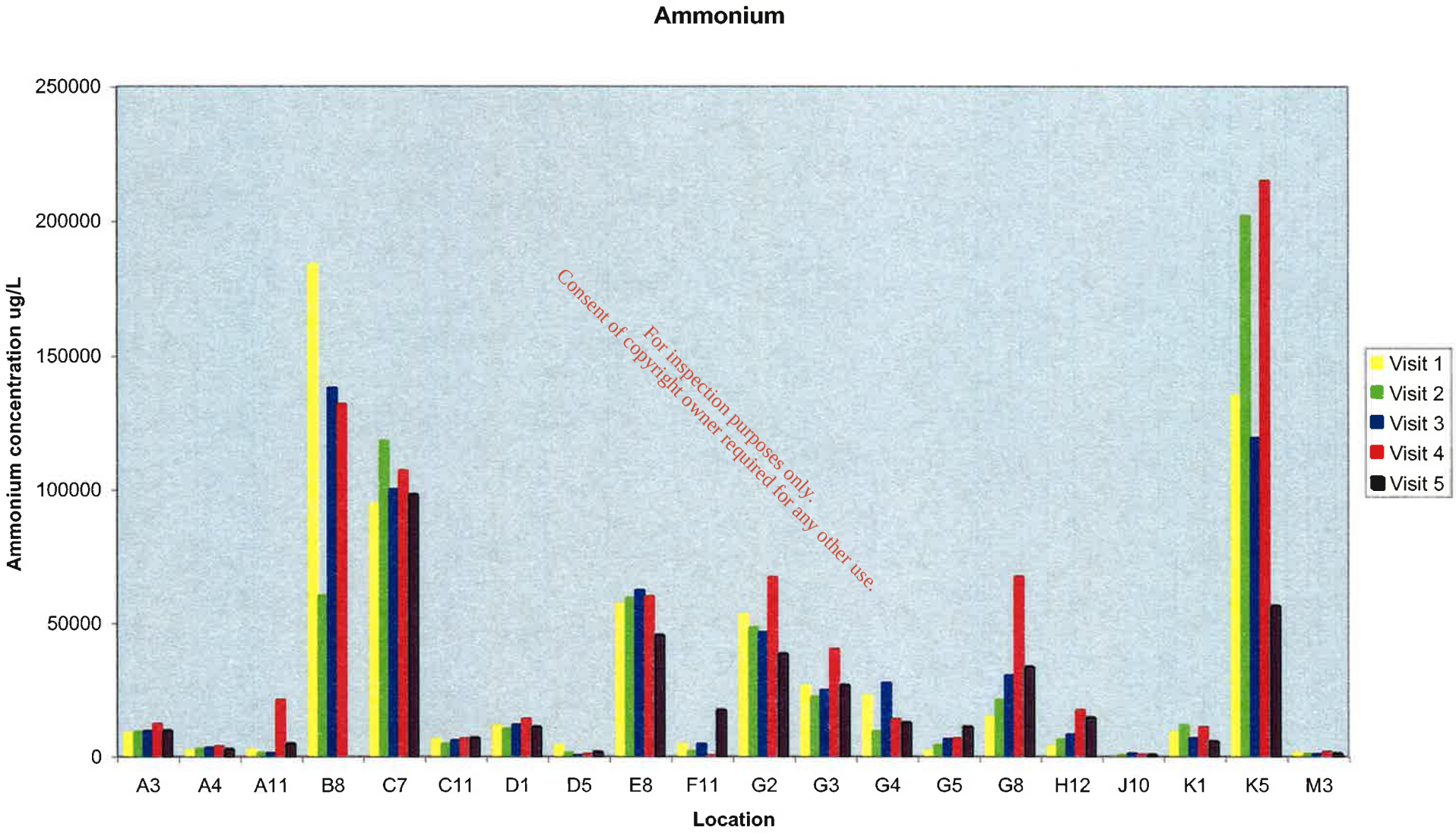

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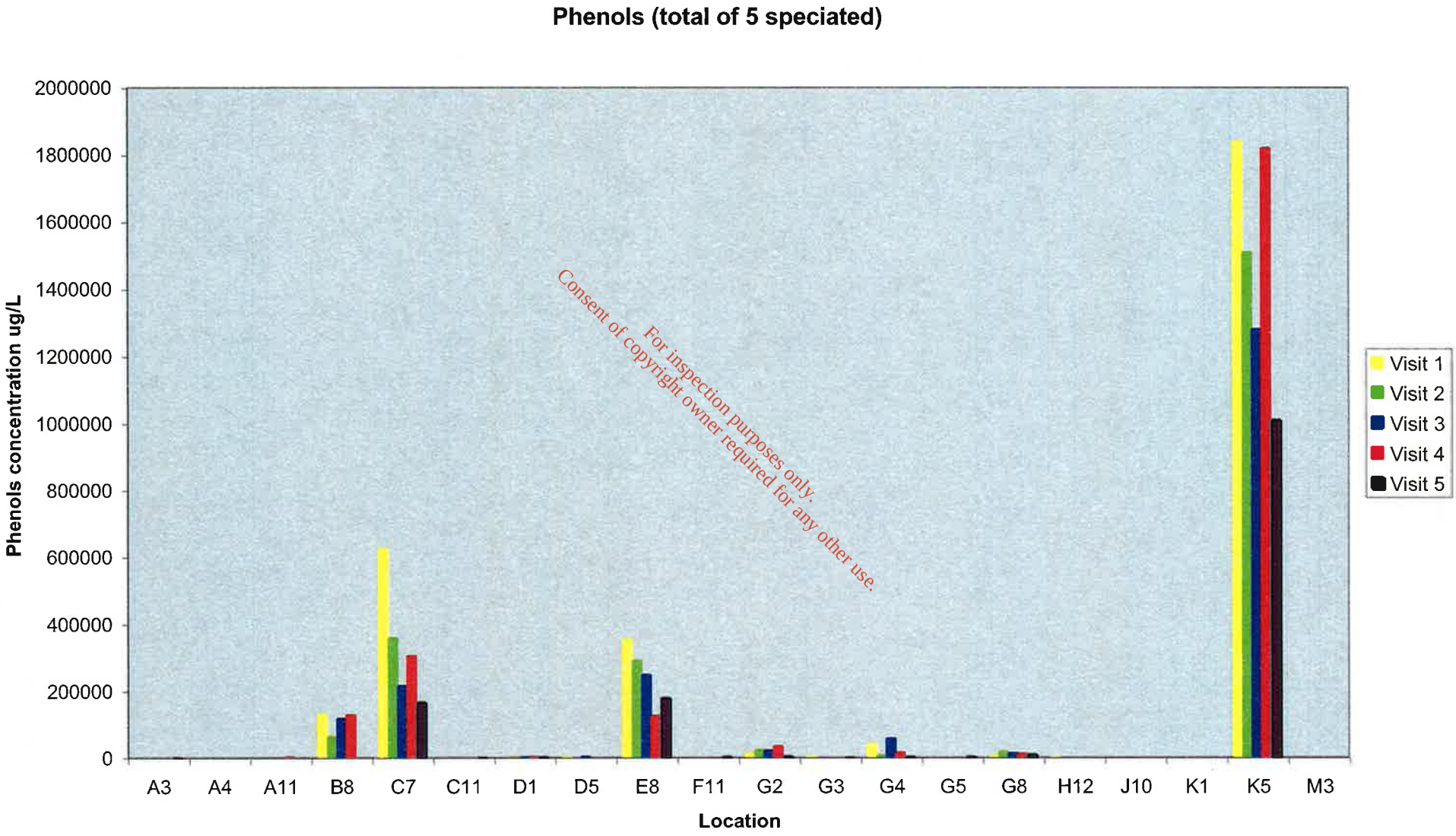

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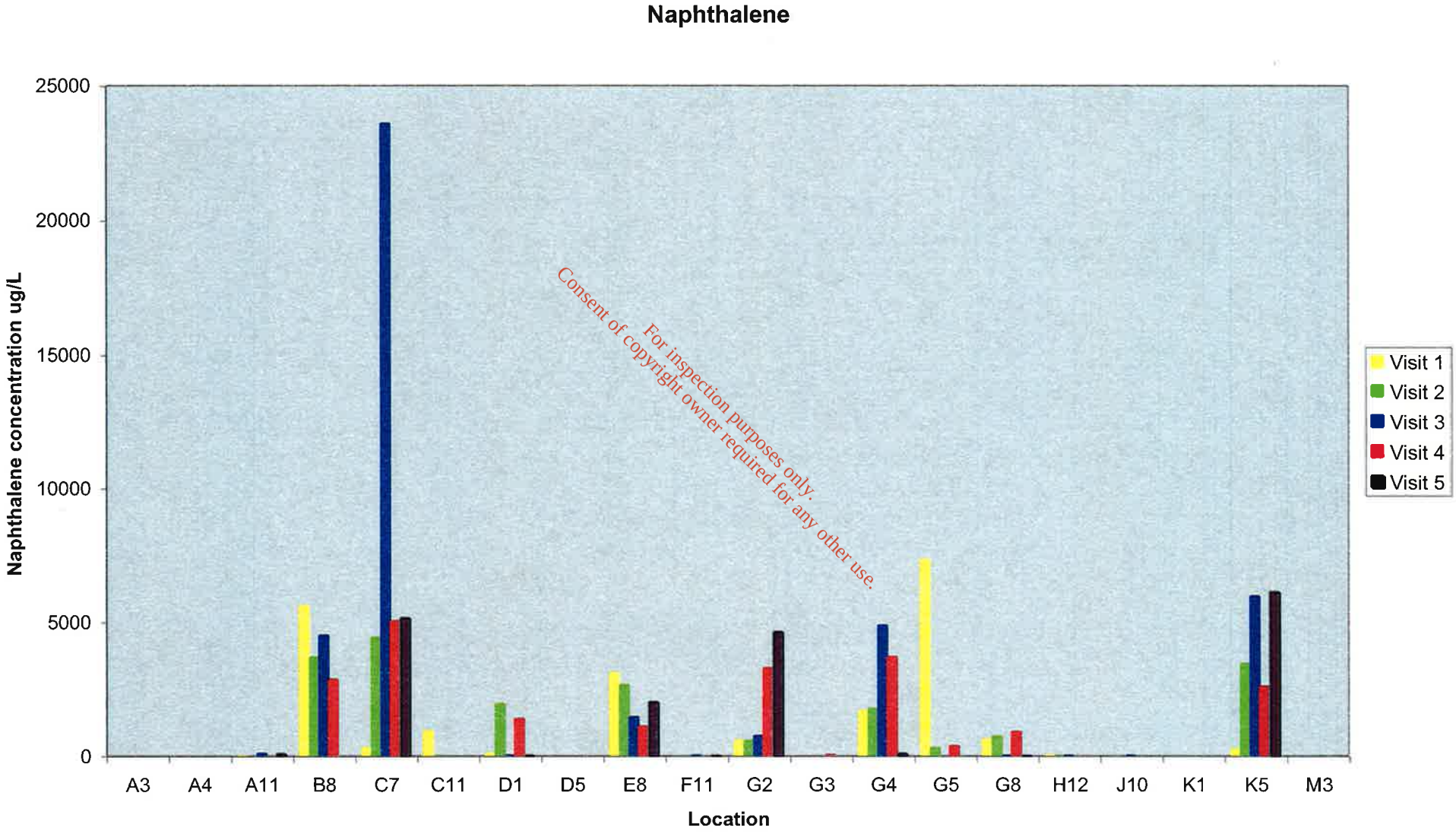

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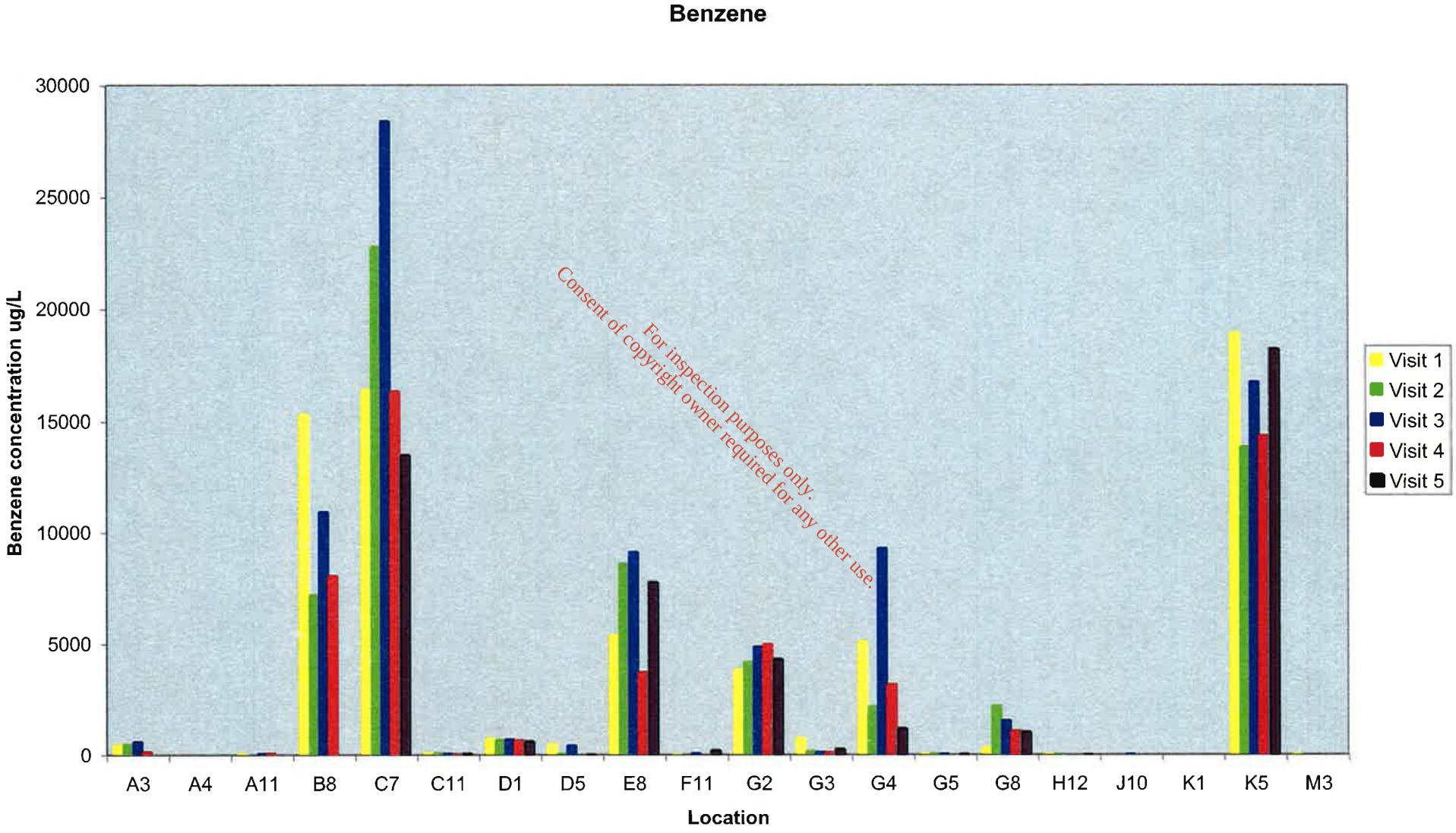

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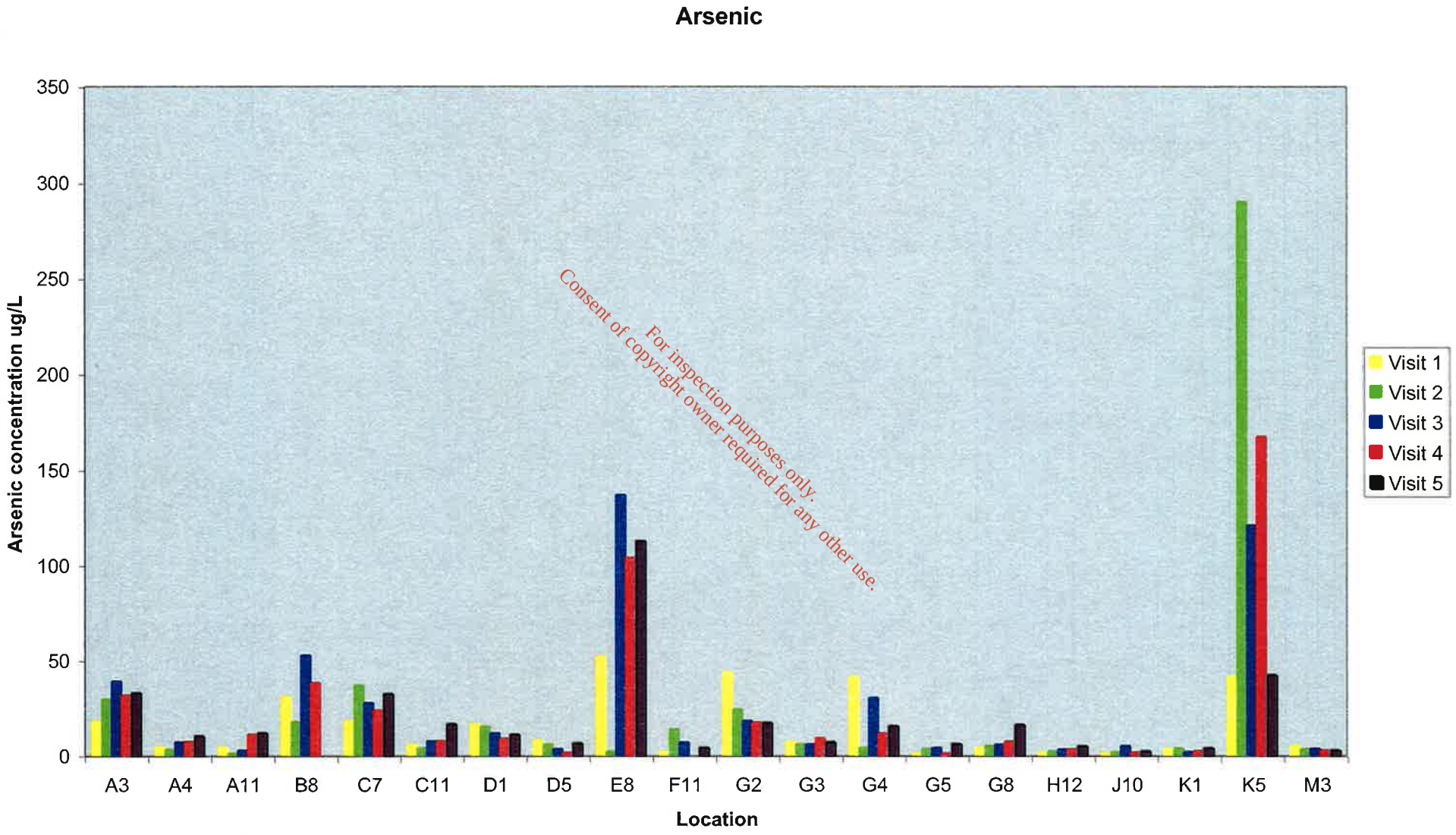

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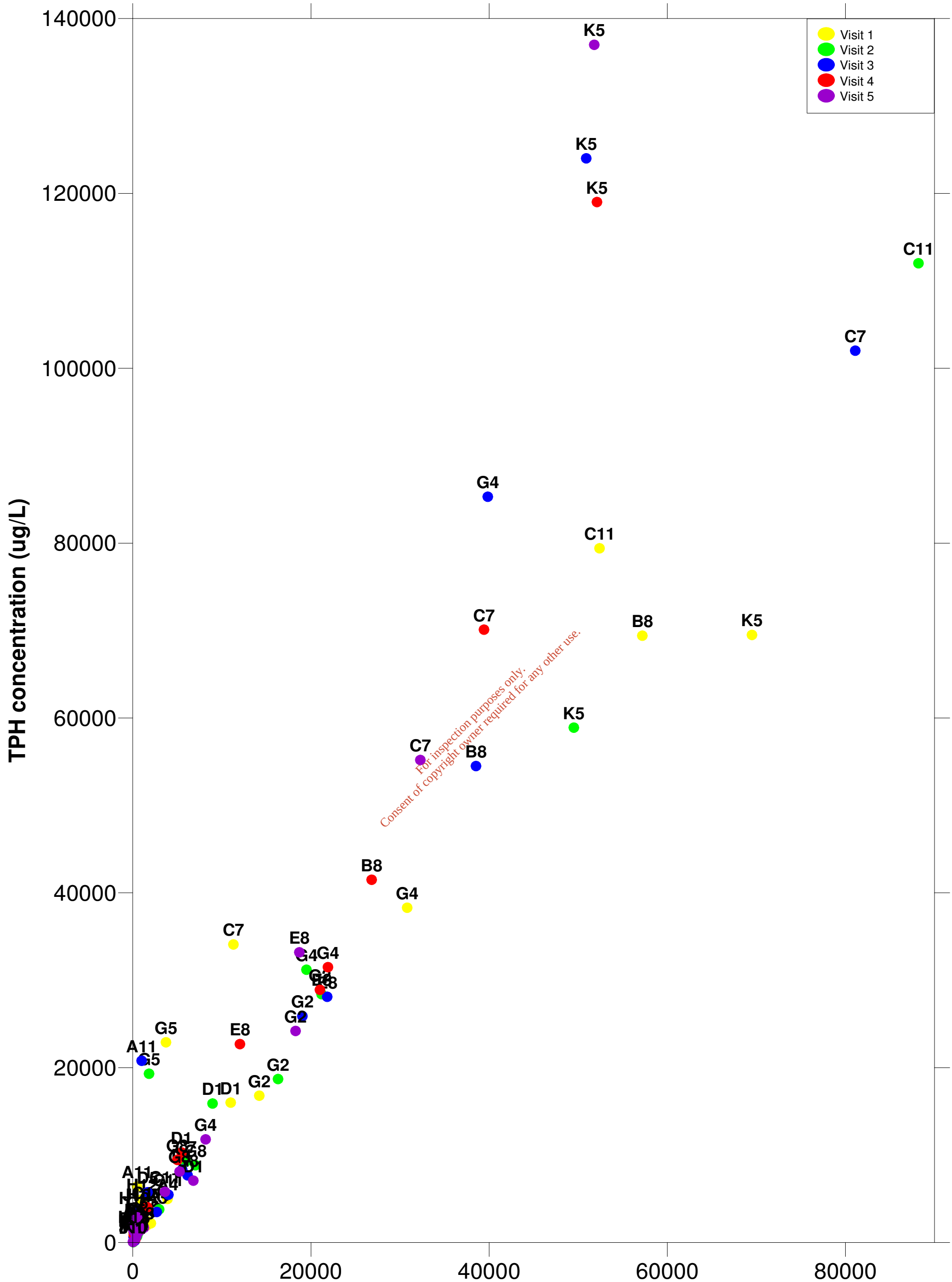

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mouchel	Client: Bord Gais		
	Project: Quarterly Groundwater Monitoring Report - Year end		
Purpose: Information	Drawing Title: Temporal assessment plot of GRO vs TPH		
Scale: N/A	Issuing Office: Ellesmere Port	Drawing Number: 1021927/R14/001	Version: A
	Telephone: 0151 356 5555		

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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: Verity Sankey

CERTIFICATE OF ANALYSIS

Date:	07 January 2010		
Job:	D_MOUCHEL_ELE-94		
Sample Delivery Group (SDG):	091215-60	**Report No.:**	68983
Your Reference:	10/12/09 11/12/09 (E8/A4/A3/A1		
Location:	Limerick Gasworks		

A total of 5 samples was received on Friday December 11, 2009 and completed on Thursday January 07, 2010. 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).

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Approved By:

Chris Crutchley
Operations Director - Land UK & Ireland

UKAS TESTING
1291

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Validated

ALcontrol Laboratories Analytical Services

SDG:	091215-60	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-94	**Attention:**	Verity Sankey
Client Reference:	10/12/09 11/12/09 (E8/A4/A3/A11/D5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68983

LIQUID

Results Legend

X Test

N No Determination Possible

		Sample ID	A11	A3	A4	D5	E8
		Depth (m)	1.50 - 2.50	1.50 - 4.50	1.50 - 4.00	1.50 - 2.50	2.00 - 3.00
		Container	1l green glass bottle / 500ml Plastic / 60g VOC Dublin / H2SO4 / NaOH / ZnAc (D)	1l green glass bottle / 500ml Plastic / 60g VOC Dublin / H2SO4 / NaOH / ZnAc (D)	1l green glass bottle / 500ml Plastic / 60g VOC Dublin / H2SO4 / NaOH / ZnAc	1l green glass bottle / 500ml Plastic / 60g VOC Dublin / H2SO4 / NaOH / ZnAc (D)	1l green glass bottle / 500ml Plastic / 60g VOC Dublin / H2SO4 / NaOH / ZnAc
Ammonium	All			X	X	X	X
Anions by Kone (w)	All		X	X	X	X	X
Cyanide Comp/Free/Total/Thiocyanate	All			X	X	X	X
Dissolved Metals by ICP-MS	All		X	X	X	X	X
EPH CWG (Aliphatic) Aqueous GC (W)	All		X	X	X	X	X
EPH CWG (Aromatic) Aqueous GC (W)	All		X	X	X	X	X
GRO BTEX MTBE GC (W)	All		X	X	X	X	X
Hexavalent Chromium (w)	All		X	X	X	X	X
Mercury Dissolved	All		X	X	X	X	X
PAH Spec MS - Aqueous (W)	All		X	X	X	X	X
pH Value	All		X	X	X	X	X
Phenols by HPLC (W)	All		X	X	X	X	X
Sulphide	All		X	X	X	X	X
Total Metals by ICP-MS	All		X	X	X	X	X
TPH CWG (W)	All		X	X	X	X	X
VOC MS (W)	All		X	X	X	X	X

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Validated

ALcontrol Laboratories Analytical Services

SDG:	091215-60	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-94	**Attention:**	Verity Sankey
Client Reference:	10/12/09 11/12/09 (E8/A4/A3/A11/D5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68983

Test Completion dates

SDG reference: 091215-60

Sample ID	Depth	Type	Ammonium	Anions by Kone (w)	Cyanide Comp/Free/Total/Thiocyana	Dissolved Metals by ICP-MS	EPH CWG (Aliphatic) Aqueous GC (W	EPH CWG (Aromatic) Aqueous GC (	GRO BTEX MTBE GC (W)	Hexavalent Chromium (w)	Mercury Dissolved	PAH Spec MS - Aqueous (W)	pH Value	Phenols by HPLC (W)	Sulphide	Total Metals by ICP-MS	TPH CWG (W)	VOC MS (W)
A11	1.50 - 2.50	LIQUID	21/12/2009	21/12/2009	21/12/2009	23/12/2009	22/12/2009	22/12/2009	21/12/2009	22/12/2009	17/12/2009	23/12/2009	21/12/2009	22/12/2009	21/12/2009	24/12/2009	22/12/2009	23/12/2009
A3	1.50 - 4.50	LIQUID	21/12/2009	21/12/2009	21/12/2009	23/12/2009	22/12/2009	22/12/2009	21/12/2009	22/12/2009	17/12/2009	23/12/2009	21/12/2009	22/12/2009	21/12/2009	24/12/2009	22/12/2009	23/12/2009
A4	1.50 - 4.00	LIQUID	21/12/2009	17/12/2009	21/12/2009	18/12/2009	23/12/2009	23/12/2009	21/12/2009	16/12/2009	17/12/2009	21/12/2009	16/12/2009	22/12/2009	21/12/2009	23/12/2009	23/12/2009	23/12/2009
D5	1.50 - 2.50	LIQUID	21/12/2009	22/12/2009	21/12/2009	23/12/2009	22/12/2009	22/12/2009	21/12/2009	22/12/2009	17/12/2009	23/12/2009	21/12/2009	22/12/2009	21/12/2009	24/12/2009	22/12/2009	
E8	2.00 - 3.00	LIQUID	21/12/2009	17/12/2009	21/12/2009	18/12/2009	22/12/2009	22/12/2009	07/01/2010	16/12/2009	17/12/2009	23/12/2009	16/12/2009	22/12/2009	21/12/2009	23/12/2009		

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Validated

ALcontrol Laboratories Analytical Services

SDG:	091215-60	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-94	**Attention:**	Dave Watts
Client Reference:	10/12/09 11/12/09 (E8/A4/A3/A11/D5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68983

Results Legend

ISO17025 accredited.
M mCERTS accredited.
' subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %
The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	A11	A3	A4	D5	E8
Sample Identity			A11	A3	A4	D5	E8
Depth (m)			1.50 - 2.50	1.50 - 4.50	1.50 - 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)
Date Sampled			11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009
Date Received			091215-60	091215-60	091215-60	091215-60	091215-60
SDG Ref			737876	737822	737773	737904	737682
Lab Sample No.(s)							
Phenol	<0.002 mg/l	TM062	0.03 #	<0.002 #	<0.002 #	0.17 #	121 #
Cresols	<0.006 mg/l	TM062	0.07 #	0.01 #	<0.006 #	0.76 #	191 #
Xylenols	<0.008 mg/l	TM062	0.01 #	<0.008 #	<0.008 #	0.26 #	40.7 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM062	<0.003 #	<0.003 #	<0.003 #	<0.003 #	<0.12 #
2-Isopropylphenol	<0.006 mg/l	TM062	0.17 #	<0.006 #	<0.006 #	0.35 #	<0.24 #
Phenols Total of 5 Speciated	<0.025 mg/l	TM062	0.28	<0.025	<0.025	1.54	353
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099	2.72 #	8.99 #	2.36 #	4.24 #	57.1 #
Sulphide	<0.1 mg/l	TM101	<0.5 #	<2.5 #	<0.5 #	<0.5 #	<0.5 #
Arsenic Dissolved	<0.75 µg/l	TM152	4.83 #	18.2 #	4.8 #	8.26 #	52.3 #
Cadmium Dissolved	<0.22 µg/l	TM152	<0.22 #	<0.22 #	<0.22 #	<0.22 #	0.275 #
Copper Dissolved	<1.6 µg/l	TM152	<1.6 #	<1.6 #	14.3 #	2.99 #	10.6 #
Lead Dissolved	<0.4 µg/l	TM152	<0.4 #	<0.4 #	0.736 #	<0.4 #	0.764 #
Nickel Dissolved	<1.5 µg/l	TM152	3.75 #	5.21 #	3.21 #	3.49 #	75.4 #
Selenium Dissolved	<1 µg/l	TM152	6.28 #	1.45 #	4.68 #	<1 #	29.3 #
Zinc Dissolved	<5 µg/l	TM152	<5 #	<5 #	7.74 #	<5 #	8.6 #
Mercury Dissolved	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	<0.01 #	0.0238 #
Sulphate (soluble)	3 mg/l	TM184	273 #	412 #	292 #	52.6 #	525 #
Chromium (Unfiltered)	<3 µg/l	TM191	18.4	54.4	78.6	137	102
Total Cyanide	<0.05 mg/l	TM227	0.075 #	0.502 #	0.593 #	0.253 #	8.18 #
Hexavalent Chromium	<0.03 mg/l	TM241	<0.03	<0.03	<0.03	<0.03	<0.03
pH value	<1 pH Units	TM256	8.32 #	8.06 #	7.89 #	9.11 #	9.52 #

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ALcontrol Laboratories Analytical Services

SDG:	091215-60	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-94	**Attention:**	Dave Watts
Client Reference:	10/12/09 11/12/09 (E8/A4/A3/A11/D5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68983

PAH Spec MS - Aqueous (W)

Results Legend
ISO17025 accredited.
M mCERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %
The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	A11	A3	A4	D5	E8
			Depth (m)	1.50 - 2.50	1.50 - 4.50	1.50 - 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)
			Date Sampled	11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009
			Date Received	091215-60	091215-60	091215-60	091215-60	091215-60
			SDG Ref	737876	737822	737773	737904	737682
			Lab Sample No.(s)					
Naphthalene (Aqueous)	<0.1 µg/l	TM178		13.3	2.05	<1	3.82	3100
Acenaphthene (Aqueous)	<0.015 µg/l	TM178		12.4	119	<0.15	6.99	49.2
Acenaphthylene (Aqueous)	<0.011 µg/l	TM178		63.5	39.4	0.488	13.8	292
Fluoranthene (Aqueous)	<0.014 µg/l	TM178		29.3	32.5	2.88	27.1	117
Anthracene (Aqueous)	<0.015 µg/l	TM178		9.93	12.2	0.245	11.1	82.4
Phenanthrene (Aqueous)	<0.022 µg/l	TM178		2.54	8.11	0.36	4.77	295
Fluorene (Aqueous)	<0.014 µg/l	TM178		18.7	35.8	<0.14	11.6	167
Chrysene (Aqueous)	<0.013 µg/l	TM178		5.27	6.54	0.798	6.04	14.3
Pyrene (Aqueous)	<0.015 µg/l	TM178		19.1	43.4	2.73	19.2	77.5
Benzo(a)anthracene (Aqueous)	<0.017 µg/l	TM178		8.65	10.1	1.12	9.24	20.9
Benzo(b)fluoranthene (Aqueous)	<0.023 µg/l	TM178		6.47	2.94	1.46	9.36	13.1
Benzo(k)fluoranthene (Aqueous)	<0.027 µg/l	TM178		2.77	1.88	0.514	3.26	5.63
Benzo(a)pyrene (Aqueous)	<0.009 µg/l	TM178		5.59	8.02	1.04	7.39	9.04
Dibenzo(ah)anthracene (Aqueous)	<0.016 µg/l	TM178		0.665	0.664	<0.16	1.05	1.63
Benzo(ghi)perylene (Aqueous)	<0.016 µg/l	TM178		2.54	3.3	0.615	4.23	5.78
Indeno(123cd)pyrene (Aqueous)	<0.014 µg/l	TM178		2.41	2.42	0.499	3.85	4.52
PAH 16 Total (Aqueous)	<0.1 µg/l	TM178		203	328	13.2	143	4260

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Validated

ALcontrol Laboratories Analytical Services

SDG:	091215-60	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-94	**Attention:**	Dave Watts
Client Reference:	10/12/09 11/12/09 (E8/A4/A3/A11/D5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68983

TPH CWG (W)

Results Legend

ISO17025 accredited.
M mCERTS accredited.
***** subcontracted test.
****** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	A11	A3	A4	D5	E8
			Depth (m)	1.50 - 2.50	1.50 - 4.50	1.50 - 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)
			Date Sampled	11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009
			Date Received	091215-60	091215-60	091215-60	091215-60	091215-60
			SDG Ref	737876	737822	737773	737904	737682
			Lab Sample No.(s)					
GRO C5-C12	<42 µg/l	TM245		1080 #	3900 #	490 #	1770 #	22400 #
MTBE	<3 µg/l	TM245		<3 #	3 #	<3 #	<3 #	6 #
Benzene	<7 µg/l	TM245		57 #	430 #	<7 #	469 #	5360 #
Toluene	<4 µg/l	TM245		107 #	62 #	<4 #	226 #	1430 #
Ethyl Benzene	<5 µg/l	TM245		26 #	293 #	<5 #	21 #	95 #
m & p Xylene	<8 µg/l	TM245		84 #	117 #	23 #	111 #	651 #
o Xylene	<3 µg/l	TM245		55 #	84 #	20 #	72 #	331 #
Sum m&p and o Xylene	<10 µg/l	TM245		139 #	201 #	43 #	183 #	982 #
Sum of BTEX	<10 µg/l	TM245		329 #	986 #	43 #	899 #	7870 #
Aliphatics C5-C6	<10 µg/l	TM245		<10	19.2	<10	<10	132
Aliphatics >C6-C8	<10 µg/l	TM245		34.4	116	<10	142	2910
Aliphatics >C8-C10	<10 µg/l	TM245		79.8	208	41.6	86.7	999
Aliphatics >C10-C12	<10 µg/l	TM245		206	904	137	205	3600
Aliphatics >C12-C16 (Aqueous)	<10 µg/l	TM174		<10	<10	1060	13	12
Aliphatics >C16-C21 (Aqueous)	<10 µg/l	TM174		<10	<10	1460	21	<10
Aliphatics >C21-C35 (Aqueous)	<10 µg/l	TM174		<10	<10	646	73	13
Total Aliphatics C5-C12	<10 µg/l	TM245		320	1250	179	434	7640
Total Aliphatics >C12-C35 (Aqueous)	<10 µg/l	TM174		<10	<10	3160	107	25
Aromatics C6-C7	<10 µg/l	TM245		57	430	<10	469	5360
Aromatics >C7-C8	<10 µg/l	TM245		107	62	<10	226	1430
Aromatics >EC8-EC10	<10 µg/l	TM245		285	806	105	334	2570
Aromatics >EC10-EC12	<10 µg/l	TM245		309	1360	206	308	5400
Aromatics >EC12-EC16 (Aqueous)	<10 µg/l	TM174		494	516	227	178	6980
Aromatics >EC16-EC21 (Aqueous)	<10 µg/l	TM174		310	304	811	91	1450
Aromatics >EC21-EC35 (Aqueous)	<10 µg/l	TM174		316	255	1710	252	502
Total Aromatics C6-C12	<10 µg/l	TM245		758	2650	311	1340	14800
Total Aromatics >EC12-EC35 (Aqueous)	<10 µg/l	TM174		1120	1080	2750	521	8930
Surrogate Recovery %**	%	TM245		51	108	100	101	97
Total Aliphatics & Aromatics >C12-C44 (Aqueous)	<10 µg/l	TM174		1120	1080	5910	628	8960
GRO (>C8-C10A)	<10 µg/l	TM245		<10	18.3	<10	<10	179
Total Aliphatics >C5-C35 (Aqueous)	<10 µg/l	TM174		320	1250	3340	541	
Total Aromatics >C6-C35 (Aqueous)	<10 µg/l	TM174		1880	3730	3060	1860	
TPH C5-C35 (Aqueous)	<10 µg/l	TM174		2200	4980	6400	2400	

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ALcontrol Laboratories Analytical Services

SDG:	091215-60	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-94	**Attention:**	Dave Watts
Client Reference:	10/12/09 11/12/09 (E8/A4/A3/A11/D5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68983

VOC MS (W)

Results Legend
ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	A11	A3	A4
			Depth (m)	1.50 - 2.50	1.50 - 4.50	1.50 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	11/12/2009	11/12/2009	11/12/2009
			Date Received	091215-60	091215-60	091215-60
			SDG Ref	737876	737822	737773
			Lab Sample No.(s)			
Dichlorodifluoromethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #
Chloromethane	<1.7 µg/l	TM208		<1.7 #	<1.7 #	<1.7 #
Vinyl Chloride	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #
Bromomethane	<2 µg/l	TM208		<2 #	<2 #	<2 #
Chloroethane	<2.5 µg/l	TM208		<2.5 #	<2.5 #	<2.5 #
Trichlorofluoromethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #
1,1-Dichloroethene	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #
Carbon disulphide	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #
Dichloromethane	<3.7 µg/l	TM208		<3.7 #	<3.7 #	<3.7 #
Methyl Tertiary Butyl Ether	<1.6 µg/l	TM208		<1.6 #	<1.6 #	<1.6 #
trans-1,2-Dichloroethene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #
1,1-Dichloroethane	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #
cis-1,2-Dichloroethene	<2.3 µg/l	TM208		<2.3 #	<2.3 #	<2.3 #
2,2-Dichloropropane	<3.8 µg/l	TM208		<3.8 #	<3.8 #	<3.8 #
Bromochloromethane	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #
Chloroform	<1.8 µg/l	TM208		<1.8 #	<1.8 #	<1.8 #
1,1,1-Trichloroethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #
1,1-Dichloropropene	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #
Carbontetrachloride	<1.4 µg/l	TM208		<1.4 #	<1.4 #	<1.4 #
1,2-Dichloroethane	<3.3 µg/l	TM208		<3.3	<3.3	<3.3
Benzene	<1.3 µg/l	TM208		81.5 #	1.43 #	1.8 #
Trichloroethene	<2.5 µg/l	TM208		<2.5 #	<2.5 #	<2.5 #
1,2-Dichloropropane	<3 µg/l	TM208		<3 #	<3 #	<3 #
Dibromomethane	<2.7 µg/l	TM208		<2.7 #	<2.7 #	<2.7 #
Bromodichloromethane	<0.9 µg/l	TM208		<0.9 #	<0.9 #	<0.9 #
cis-1,3-Dichloropropene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #
Toluene	<1.4 µg/l	TM208		143 #	<1.4 #	<1.4 #
trans-1,3-Dichloropropene	<3.5 µg/l	TM208		<3.5 #	<3.5 #	<3.5 #
1,1,2-Trichloroethane	<2.2 µg/l	TM208		<2.2 #	<2.2 #	<2.2 #
1,3-Dichloropropane	<2.2 µg/l	TM208		<2.2 #	<2.2 #	<2.2 #
Tetrachloroethene	<1.5 µg/l	TM208		<1.5 #	<1.5 #	<1.5 #
Dibromochloromethane	<1.7 µg/l	TM208		<1.7 #	<1.7 #	<1.7 #
1,2-Dibromoethane	<2.3 µg/l	TM208		<2.3 #	<2.3 #	<2.3 #
Chlorobenzene	<3.5 µg/l	TM208		<3.5 #	<3.5 #	<3.5 #
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #
Ethylbenzene	<2.5 µg/l	TM208		11.4 #	10.8 #	<2.5 #
p/m-Xylene	<2.5 µg/l	TM208		82.5 #	81.6 #	<2.5 #
o-Xylene	<1.7 µg/l	TM208		103 #	62.9 #	<1.7 #
Styrene	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #

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ALcontrol Laboratories Analytical Services

SDG:	091215-60	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-94	**Attention:**	Dave Watts
Client Reference:	10/12/09 11/12/09 (E8/A4/A3/A11/D5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68983

VOC MS (W)

Results Legend
- # ISO17025 accredited.
- M *m*CERTS accredited.
- * subcontracted test.
- ** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	A11	A3	A4
			Depth (m)	1.50 - 2.50	1.50 - 4.50	1.50 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	11/12/2009	11/12/2009	11/12/2009
			Date Received	091215-60	091215-60	091215-60
			SDG Ref	737876	737822	737773
			Lab Sample No.(s)			
Bromoform	<3 µg/l	TM208		<3 #	<3 #	<3 #
Isopropylbenzene	<1.4 µg/l	TM208		2.73 #	3.76 #	<1.4 #
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208		<5.2	<5.2	<5.2
1,2,3-Trichloropropane	<7.8 µg/l	TM208		<7.8 #	<7.8 #	<7.8 #
Bromobenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #
Propylbenzene	<2.6 µg/l	TM208		<2.6 #	<2.6 #	<2.6 #
2-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208		17 #	13.5 #	6.63 #
4-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #
tert-Butylbenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208		23.4 #	43.6 #	<1.7 #
sec-Butylbenzene	<1.7 µg/l	TM208		<1.7 #	<1.7 #	<1.7 #
4-Isopropyltoluene	<2.6 µg/l	TM208		<2.6 #	<2.6 #	<2.6 #
1,3-Dichlorobenzene	<2.2 µg/l	TM208		<2.2 #	<2.2 #	<2.2 #
1,4-Dichlorobenzene	<2.7 µg/l	TM208		<2.7 #	<2.7 #	<2.7 #
n-Butylbenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #
1,2-Dichlorobenzene	<3.7 µg/l	TM208		<3.7	<3.7	<3.7
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208		<9.8	<9.8	<9.8
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208		<2.3 #	<2.3 #	<2.3 #
Hexachlorobutadiene	<2.5 µg/l	TM208		<2.5 #	<2.5 #	<2.5 #
Tert-amyl methyl ether	<1 µg/l	TM208		<1 #	<1 #	<1 #
Naphthalene	<3.5 µg/l	TM208		<3.5 #	<3.5 #	<3.5 #
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208		<3.1 #	<3.1 #	<3.1 #
1,3,5-Trichlorobenzene	<10 µg/l	TM208		<10	<10	<10

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Table of Results - Appendix

SDG Number : 091215-60 **Client :** Mouchel **Client Ref :** 10/12/09 11/12/09 (E8/A4/

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]
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	
TM062	MEWAM BOOK 124 1988.HMSO/ Method 17.7, Second Site property, March 2003	Determination of Phenolic compounds by HPLC with electro-chemical detection	
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	
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS	
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	

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

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ALcontrol Laboratories Analytical Services

SDG:	091215-60	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-94	**Attention:**	Dave Watts
Client Ref.:	10/12/09 11/12/09 (E8/A4/A3/A11/D5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68983

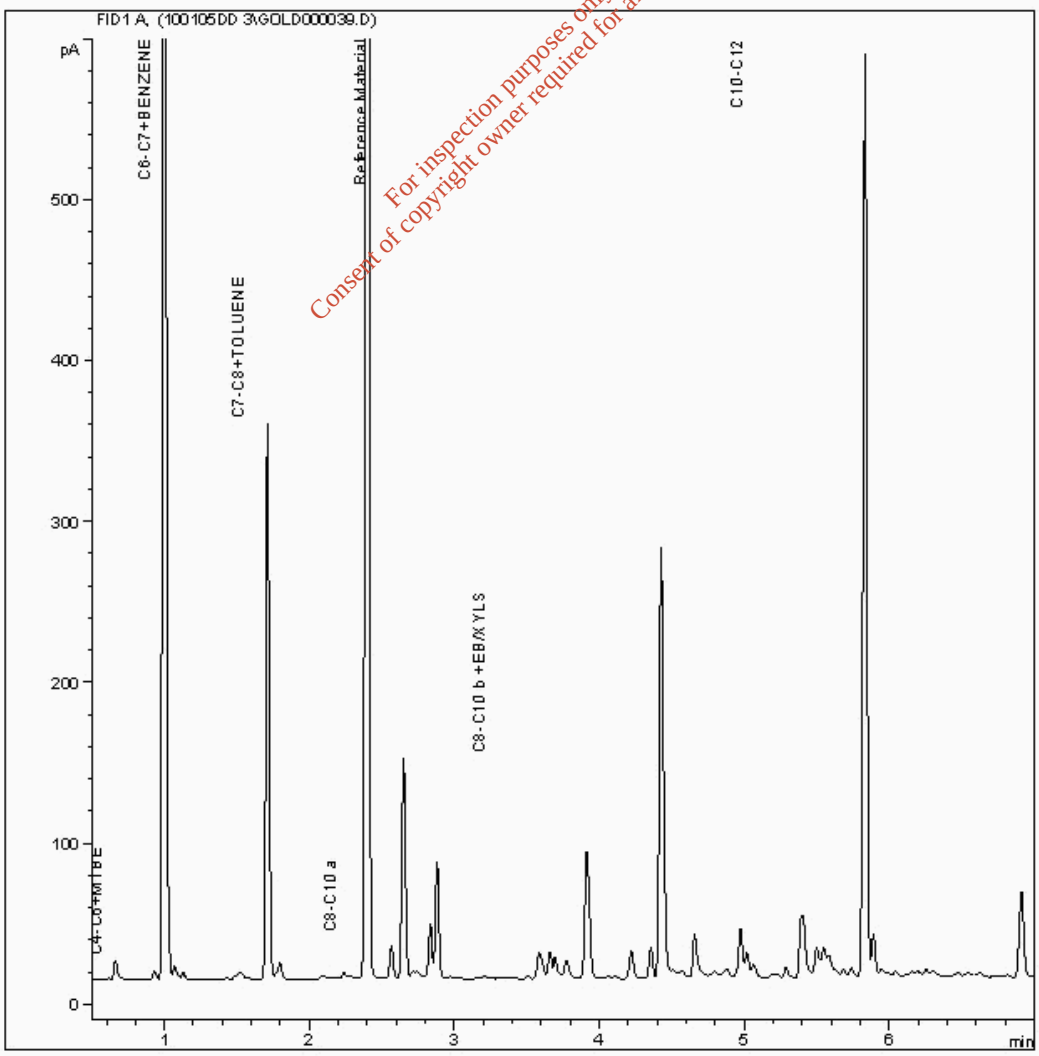
Chromatogram

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	737679
		Sample ID	E8
		Depth	2.00 - 3.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 921662-737679
Date Acquired : 06/01/10 17:21:19
Units : ppb
Dilution : 2

#	Compound Name	Amount
1	C4-C6+MTBE	1522
2	C6-C7+BENZENE	85012
3	C7-C8+TOLUENE	26827
4	C8-C10 a	2058
5	Reference Material	50901
6	C8-C10 b +EB/XYLS	39139
7	C10-C12	103711



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APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH_4 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. **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.
13. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
14. 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).
15. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
16. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
17. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
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 the major 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.

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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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKEN SVOC	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM/EA	SOLID PHASE EXTRACTION	GC MS
TRIAZINE HERBS	DCM/EA	SOLID PHASE EXTRACTION	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
SAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
UNSAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	DCM	LIQUID/LIQUID EXTRACTION	EZ FLASH

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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 (C6-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

Last updated 25 June 2009

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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).

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.

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

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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: Verity Sankey

CERTIFICATE OF ANALYSIS

Date:	31 December 2009		
Job:	D_MOUCHEL_ELE-93		
Sample Delivery Group (SDG):	091214-62	**Report No.:**	68463
Your Reference:	11/12/09 (G4/G3/G2/D1/G5)		
Location:	Limerick Gasworks		

A total of 5 samples was received on Friday December 11, 2009 and completed on Thursday December 31, 2009. 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).

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Approved By:

Chris Crutchley
Operations Director - Land UK & Ireland

UKAS TESTING
1291
GROUP

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Validated

ALcontrol Laboratories Analytical Services

SDG:	091214-62	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-93	**Attention:**	Verity Sankey
Client Reference:	11/12/09 (G4/G3/G2/D1/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68463

LIQUID

Results Legend

X Test

N No Determination Possible

Sample ID		D1	G2								G3						G4						G5					
Depth (m)		3.00 - 5.00	3.00 - 9.00								3.00 - 8.00						2.50 - 7.00						2.00 - 8.00					
Container		1l green glass bottle	500ml Plastic	60g VOC Dublin	H2SO4	NaOH	ZnAc (D)	1l glass bottle (D)	500ml Plastic	60g VOC Dublin	H2SO4	NaOH	ZnAc (D)	1l glass bottle (D)	60g VOC Dublin	H2SO4	NaOH	PLAS BOT (D)	ZnAc (D)	1l glass bottle (D)	500ml Plastic	60g VOC Dublin	H2SO4	NaOH	ZnAc (D)	1l glass bottle (D)	500ml Plastic	60g VOC Dublin	H2SO4	NaOH	ZnAc (D)	
Ammonium	All				X						X						X						X						X			05
Anions by Kone (w)	All		X						X						X			X			X						X				05
Cyanide Comp/Free/Total/Thiocyanate	All					X						X					X						X						X		05
Dissolved Metals by ICP-MS	All		X						X						X			X			X						X				05
EPH CWG (Aliphatic) Aqueous GC (W)	All	X						X						X						X						X					05
EPH CWG (Aromatic) Aqueous GC (W)	All	X						X						X						X						X					05
GRO BTEX MTBE GC (W)	All			X						X					X							X						X			05
Hexavalent Chromium (w)	All		X						X									X			X						X				05
Mercury Dissolved	All	X						X						X						X						X					05
PAH Spec MS - Aqueous (W)	All	X						X						X						X						X					05
pH Value	All		X						X									X			X						X				05
Phenols by HPLC (W)	All					X						X					X						X						X		05
Sulphide	All						X						X						X						X						X	05
Total Metals by ICP-MS	All		X						X									X			X						X				05
TPH CWG (W)	All	X						X						X						X						X					05
VOC MS (W)	All			X						X												X						X				04

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ALcontrol Laboratories Analytical Services

SDG:	091214-62	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-93	**Attention:**	Verity Sankey
Client Reference:	11/12/09 (G4/G3/G2/D1/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68463

Test Completion dates

SDG reference: 091214-62

Sample ID	Depth	Type	Ammonium	Anions by Kone (w)	Cyanide Comp/Free/Total/Thiocyana	Dissolved Metals by ICP-MS	EPH CWG (Aliphatic) Aqueous GC (	EPH CWG (Aromatic) Aqueous GC (	GRO BTEX MTBE GC (W)	Hexavalent Chromium (w)	Mercury Dissolved	PAH Spec MS - Aqueous (W)	pH Value	Phenols by HPLC (W)	Sulphide	Total Metals by ICP-MS	TPH CWG (W)	VOC MS (W)
D1	3.00 - 5.00	LIQUID	19/12/2009	22/12/2009	21/12/2009	30/12/2009	23/12/2009	23/12/2009	21/12/2009	22/12/2009	21/12/2009	22/12/2009	18/12/2009	21/12/2009	21/12/2009	24/12/2009	23/12/2009	22/12/2009
G2	3.00 - 9.00	LIQUID	19/12/2009	22/12/2009	21/12/2009	30/12/2009	23/12/2009	23/12/2009	21/12/2009	22/12/2009	21/12/2009	21/12/2009	18/12/2009	21/12/2009	21/12/2009	24/12/2009	23/12/2009	22/12/2009
G3	3.00 - 8.00	LIQUID	19/12/2009	22/12/2009	21/12/2009	30/12/2009	23/12/2009	23/12/2009	21/12/2009	22/12/2009	21/12/2009	21/12/2009	18/12/2009	21/12/2009	21/12/2009	24/12/2009	23/12/2009	
G4	2.50 - 7.00	LIQUID	30/12/2009	22/12/2009	16/12/2009	30/12/2009	22/12/2009	22/12/2009	30/12/2009	22/12/2009	21/12/2009	21/12/2009	18/12/2009	16/12/2009	21/12/2009	24/12/2009	31/12/2009	22/12/2009
G5	2.00 - 8.00	LIQUID	19/12/2009	22/12/2009	21/12/2009	30/12/2009	22/12/2009	22/12/2009	21/12/2009	22/12/2009	21/12/2009	21/12/2009	18/12/2009	21/12/2009	21/12/2009	24/12/2009	22/12/2009	22/12/2009

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Validated

ALcontrol Laboratories Analytical Services

SDG:	091214-62	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-93	**Attention:**	Dave Watts
Client Reference:	11/12/09 (G4/G3/G2/D1/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68463

Results Legend

ISO17025 accredited.
M *m*CERTS accredited.
***** subcontracted test.
****** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	D1	G2	G3	G4	G5
Sample Identity			D1	G2	G3	G4	G5
Depth (m)			3.00 - 5.00	3.00 - 9.00	3.00 - 8.00	2.50 - 7.00	2.00 - 8.00
Sample Type			Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled							11/12/2009
Date Received			11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009
SDG Ref			091214-62	091214-62	091214-62	091214-62	091214-62
Lab Sample No.(s)			733517	733463	733402	733394	733546
Phenol	<0.002 mg/l	TM062	<0.00200 #	2.20 #	0.840 #	1.24 #	<0.00200 #
Cresols	<0.006 mg/l	TM062	<0.00600 #	5.98 #	1.41 #	9.50 #	<0.00600 #
Xylenols	<0.008 mg/l	TM062	<0.00800 #	3.48 #	0.800 #	19.7 #	<0.00800 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM062	<0.00300 #	<0.00600 #	<0.00300 #	<0.00300 #	<0.00300 #
2-Isopropylphenol	<0.006 mg/l	TM062	<0.00600 #	<0.0120 #	<0.00600 #	11.2 #	<0.00600 #
Phenols Total of 5 Speciated	<0.025 mg/l	TM062	<0.0250	11.7	3.05	41.6	<0.0250
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099	11.6 #	53.3 #	26.6 #	23.0 #	2.08 #
Sulphide	<0.1 mg/l	TM101	5.53 #	3.48 #	<0.500 #	<0.500 #	<0.500 #
Arsenic Dissolved	<0.75 µg/l	TM152	17.1 #	44.2 #	7.65 #	41.6 #	1.46 #
Cadmium Dissolved	<0.22 µg/l	TM152	<0.220 #	<0.220 #	<0.220 #	<0.220 #	<0.220 #
Copper Dissolved	<1.6 µg/l	TM152	2.14 #	2.34 #	2.03 #	2.01 #	5.02 #
Lead Dissolved	<0.4 µg/l	TM152	<0.400 #	<0.400 #	<0.400 #	<0.400 #	<0.400 #
Nickel Dissolved	<1.5 µg/l	TM152	4.88 #	5.62 #	11.1 #	5.87 #	9.13 #
Selenium Dissolved	<1 µg/l	TM152	2.09 #	7.41 #	9.83 #	26.0 #	2.69 #
Zinc Dissolved	<5 µg/l	TM152	<5.00 #	<5.00 #	<5.00 #	<5.00 #	<5.00 #
Mercury Dissolved	<0.01 µg/l	TM183	<0.0100 #	<0.0100 #	<0.0100 #	<0.0100 #	<0.0100 #
Sulphate (soluble)	3 mg/l	TM184	484 #	395 #	486 #	385 #	635 #
Chromium (Unfiltered)	<3 µg/l	TM191	108	92.8	85.1	9.30	197
Total Cyanide	<0.05 mg/l	TM227	1.67 #	1.44 #	0.511 #	0.912 #	5.59 #
Hexavalent Chromium	<0.03 mg/l	TM241	<0.0300	<0.0300	<0.0300	<0.0300	<0.0300
Chromate	<0.06 mg/l	TM241	<0.0600	<0.0600	<0.0600	<0.0600	<0.0600
pH value	<1.00 pH Units	TM256	7.70 #	7.61 #	7.55 #	7.59 #	7.32 #

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ALcontrol Laboratories Analytical Services

SDG:	091214-62	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-93	**Attention:**	Dave Watts
Client Reference:	11/12/09 (G4/G3/G2/D1/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68463

PAH Spec MS - Aqueous (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	D1	G2	G3	G4	G5
			Depth (m)	3.00 - 5.00	3.00 - 9.00	3.00 - 8.00	2.50 - 7.00	2.00 - 8.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled					11/12/2009
			Date Received	11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009
			SDG Ref	091214-62	091214-62	091214-62	091214-62	091214-62
			Lab Sample No.(s)	733517	733463	733402	733394	733546
Naphthalene (Aqueous)	<0.1 µg/l	TM178		104	585	1.40	1690	7330
Acenaphthene (Aqueous)	<0.015 µg/l	TM178		61.6	20.0	3.55	180	145
Acenaphthylene (Aqueous)	<0.011 µg/l	TM178		164	30.8	1.69	582	546
Fluoranthene (Aqueous)	<0.014 µg/l	TM178		147	24.5	5.52	1120	587
Anthracene (Aqueous)	<0.015 µg/l	TM178		64.4	5.98	1.69	517	303
Phenanthrene (Aqueous)	<0.022 µg/l	TM178		240	46.7	2.50	1660	984
Fluorene (Aqueous)	<0.014 µg/l	TM178		121	13.0	1.46	612	416
Chrysene (Aqueous)	<0.013 µg/l	TM178		32.6	4.14	1.28	240	124
Pyrene (Aqueous)	<0.015 µg/l	TM178		97.5	15.7	4.09	738	394
Benzo(a)anthracene (Aqueous)	<0.017 µg/l	TM178		52.5	4.86	1.88	321	155
Benzo(b)fluoranthene (Aqueous)	<0.023 µg/l	TM178		49.7	5.30	2.03	303	155
Benzo(k)fluoranthene (Aqueous)	<0.027 µg/l	TM178		17.2	2.15	0.855	127	65.2
Benzo(a)pyrene (Aqueous)	<0.009 µg/l	TM178		40.6	4.22	1.50	228	119
Dibenzo(ah)anthracene (Aqueous)	<0.016 µg/l	TM178		5.74	0.859	0.257	30.9	18.2
Benzo(ghi)perylene (Aqueous)	<0.016 µg/l	TM178		22.3	2.06	0.966	129	70.4
Indeno(123cd)pyrene (Aqueous)	<0.014 µg/l	TM178		19.1	1.77	0.751	106	56.7
PAH 16 Total (Aqueous)	<0.1 µg/l	TM178		1240	167	31.4	8580	11500

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ALcontrol Laboratories Analytical Services

SDG:	091214-62	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-93	**Attention:**	Dave Watts
Client Reference:	11/12/09 (G4/G3/G2/D1/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68463

TPH CWG (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	D1	G2	G3	G4	G5
			Depth (m)	3.00 - 5.00	3.00 - 9.00	3.00 - 8.00	2.50 - 7.00	2.00 - 8.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled					11/12/2009
			Date Received	11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009
			SDG Ref	091214-62	091214-62	091214-62	091214-62	091214-62
			Lab Sample No.(s)	733517	733463	733402	733394	733546
GRO C5-C12	<42 µg/l	TM245		11000 #	14200 #	2030 #	30800 #	3730 #
MTBE	<3 µg/l	TM245		18.0 #	21.0 #	11.0 #	10.0 #	7.00 #
Benzene	<7 µg/l	TM245		718 #	3810 #	744 #	5080 #	34.0 #
Toluene	<4 µg/l	TM245		591 #	2360 #	306 #	4220 #	73.0 #
Ethyl Benzene	<5 µg/l	TM245		280 #	271 #	34.0 #	367 #	32.0 #
m & p Xylene	<8 µg/l	TM245		846 #	987 #	109 #	2270 #	251 #
o Xylene	<3 µg/l	TM245		427 #	564 #	72.0 #	1010 #	98.0 #
Sum m&p and o Xylene	<10 µg/l	TM245		1270 #	1550 #	181 #	3280 #	349 #
Sum of BTEX	<10 µg/l	TM245		2860 #	7980 #	1270 #	12900 #	488 #
Aliphatics C5-C6	<10 µg/l	TM245		<10.0	<10.0	<10.0	16.3	<10.0
Aliphatics >C6-C8	<10 µg/l	TM245		343	1100	187	2860	60.3
Aliphatics >C8-C10	<10 µg/l	TM245		630	572	67.4	1500	235
Aliphatics >C10-C12	<10 µg/l	TM245		2470	1460	157	4480	1040
Aliphatics >C12-C16 (Aqueous)	<10 µg/l	TM174		228	<10.0	<10.0	1660	915
Aliphatics >C16-C21 (Aqueous)	<10 µg/l	TM174		203	<10.0	55.0	919	435
Aliphatics >C21-C35 (Aqueous)	<10 µg/l	TM174		180	<10.0	18.0	829	386
Total Aliphatics C5-C12	<10 µg/l	TM245		3450	3130	412	8850	1330
Total Aliphatics >C12-C35 (Aqueous)	<10 µg/l	TM174		611	<10.0	73.0	3410	1740
Aromatics C6-C7	<10 µg/l	TM245		718	3810	744	5080	34.0
Aromatics >C7-C8	<10 µg/l	TM245		591	2360	306	4220	73.0
Aromatics >EC8-EC10	<10 µg/l	TM245		2500	2680	316	5890	734
Aromatics >EC10-EC12	<10 µg/l	TM245		3710	2200	235	6730	1550
Aromatics >EC12-EC16 (Aqueous)	<10 µg/l	TM174		1530	1930	85.0	865	5810
Aromatics >EC16-EC21 (Aqueous)	<10 µg/l	TM174		1180	345	11.0	1190	4230
Aromatics >EC21-EC35 (Aqueous)	<10 µg/l	TM174		1670	344	30.0	2110	7370
Total Aromatics C6-C12	<10 µg/l	TM245		7520	11000	1600	21900	2390
Total Aromatics >EC12-EC35 (Aqueous)	<10 µg/l	TM174		4380	2610	126	4160	17400
Surrogate Recovery %**	%	TM245		93.00	103.00	109.00	119.00	62.00
Total Aliphatics & Aromatics >C12-C44 (Aqueous)	<10 µg/l	TM174		4990	2610	199	7560	19100
GRO (>C8-C10A)	<10 µg/l	TM245		24.7	33.8	<10.0	79.3	10.2
Total Aliphatics >C5-C35 (Aqueous)	<10 µg/l	TM174		4060	3130	485	12300	3070
Total Aromatics >C6-C35 (Aqueous)	<10 µg/l	TM174		11900	13700	1730	26100	19800
TPH C5-C35 (Aqueous)	<10 µg/l	TM174		16000	16800	2210	38300	22900

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ALcontrol Laboratories Analytical Services

SDG:	091214-62	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-93	**Attention:**	Dave Watts
Client Reference:	11/12/09 (G4/G3/G2/D1/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68463

VOC MS (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	D1	G2	G4	G5
Sample Identity			D1	G2	G4	G5
Depth (m)			3.00 - 5.00	3.00 - 9.00	2.50 - 7.00	2.00 - 8.00
Sample Type			Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled						11/12/2009
Date Received			11/12/2009	11/12/2009	11/12/2009	11/12/2009
SDG Ref			091214-62	091214-62	091214-62	091214-62
Lab Sample No.(s)			733517	733463	733394	733546
Dichlorodifluoromethane	<1.3 µg/l	TM208	<1.30 #	<1.30 #	<1.30 #	<1.30 #
Chloromethane	<1.7 µg/l	TM208	<1.70 #	<1.70 #	<1.70 #	<1.70 #
Vinyl Chloride	<1.2 µg/l	TM208	<1.20 #	<1.20 #	<1.20 #	<1.20 #
Bromomethane	<2.0 µg/l	TM208	<2.00 #	<2.00 #	<2.00 #	<2.00 #
Chloroethane	<2.5 µg/l	TM208	<2.50 #	<2.50 #	<2.50 #	<2.50 #
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.30 #	<1.30 #	<1.30 #	<1.30 #
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.20 #	<1.20 #	<1.20 #	<1.20 #
Carbon disulphide	<1.3 µg/l	TM208	<1.30 #	4.57 #	<1.30 #	<1.30 #
Dichloromethane	<3.7 µg/l	TM208	<3.70 #	<3.70 #	<3.70 #	<3.70 #
Methyl Tertiary Butyl Ether	<1.6 µg/l	TM208	<1.60 #	<1.60 #	<1.60 #	<1.60 #
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.90 #	<1.90 #	<1.90 #	<1.90 #
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.20 #	<1.20 #	<1.20 #	<1.20 #
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.30 #	<2.30 #	<2.30 #	<2.30 #
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.80 #	<3.80 #	<3.80 #	<3.80 #
Bromochloromethane	<1.9 µg/l	TM208	<1.90 #	<1.90 #	<1.90 #	<1.90 #
Chloroform	<1.8 µg/l	TM208	<1.80 #	<1.80 #	<1.80 #	<1.80 #
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.30 #	<1.30 #	<1.30 #	<1.30 #
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.30 #	<1.30 #	<1.30 #	<1.30 #
Carbontetrachloride	<1.4 µg/l	TM208	<1.40 #	<1.40 #	<1.40 #	<1.40 #
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.30	<3.30	<3.30	<3.30
Benzene	<1.3 µg/l	TM208	752 #	4130 #	5830 #	46.0 #
Trichloroethene	<2.5 µg/l	TM208	<2.50 #	<2.50 #	<2.50 #	<2.50 #
1,2-Dichloropropane	<3 µg/l	TM208	<3.00 #	<3.00 #	<3.00 #	<3.00 #
Dibromomethane	<2.7 µg/l	TM208	<2.70 #	<2.70 #	<2.70 #	<2.70 #
Bromodichloromethane	<0.9 µg/l	TM208	<0.900 #	<0.900 #	<0.900 #	<0.900 #
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.90 #	<1.90 #	<1.90 #	<1.90 #
Toluene	<1.4 µg/l	TM208	606 #	2500 #	4710 #	107 #
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.50 #	<3.50 #	<3.50 #	<3.50 #
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.20 #	<2.20 #	<2.20 #	<2.20 #
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.20 #	<2.20 #	<2.20 #	<2.20 #
Tetrachloroethene	<1.5 µg/l	TM208	<1.50 #	<1.50 #	<1.50 #	<1.50 #
Dibromochloromethane	<1.7 µg/l	TM208	<1.70 #	<1.70 #	<1.70 #	<1.70 #
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.30 #	<2.30 #	<2.30 #	<2.30 #
Chlorobenzene	<3.5 µg/l	TM208	<3.50 #	<3.50 #	<3.50 #	<3.50 #
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.30 #	<1.30 #	<1.30 #	<1.30 #
Ethylbenzene	<2.5 µg/l	TM208	269 #	252 #	384 #	38.4 #
p/m-Xylene	<2.5 µg/l	TM208	837 #	950 #	2280 #	380 #
o-Xylene	<1.7 µg/l	TM208	438 #	543 #	980 #	149 #
Styrene	<1.2 µg/l	TM208	<1.20 #	<1.20 #	<1.20 #	<1.20 #

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ALcontrol Laboratories Analytical Services

SDG:	091214-62	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-93	**Attention:**	Dave Watts
Client Reference:	11/12/09 (G4/G3/G2/D1/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68463

VOC MS (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	D1	G2	G4	G5
			Depth (m)	3.00 - 5.00	3.00 - 9.00	2.50 - 7.00	2.00 - 8.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled				11/12/2009
			Date Received	11/12/2009	11/12/2009	11/12/2009	11/12/2009
			SDG Ref	091214-62	091214-62	091214-62	091214-62
			Lab Sample No.(s)	733517	733463	733394	733546
Bromoform	<3 µg/l	TM208		<3.00 #	<3.00 #	<3.00 #	<3.00 #
Isopropylbenzene	<1.4 µg/l	TM208		25.3 #	17.2 #	24.2 #	7.59 #
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208		<5.20	<5.20	<5.20	<5.20
1,2,3-Trichloropropane	<7.8 µg/l	TM208		<7.80 #	<7.80 #	<7.80 #	<7.80 #
Bromobenzene	<2 µg/l	TM208		<2.00 #	<2.00 #	<2.00 #	<2.00 #
Propylbenzene	<2.6 µg/l	TM208		32.9 #	16.9 #	28.0 #	10.8 #
2-Chlorotoluene	<1.9 µg/l	TM208		<1.90 #	<1.90 #	<1.90 #	<1.90 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208		111 #	55.0 #	147 #	90.1 #
4-Chlorotoluene	<1.9 µg/l	TM208		<1.90 #	<1.90 #	<1.90 #	<1.90 #
tert-Butylbenzene	<2 µg/l	TM208		<2.00 #	<2.00 #	<2.00 #	<2.00 #
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208		346 #	213 #	390 #	239 #
sec-Butylbenzene	<1.7 µg/l	TM208		<1.70 #	<1.70 #	<1.70 #	<1.70 #
4-Isopropyltoluene	<2.6 µg/l	TM208		<2.60 #	<2.60 #	54.4 #	<2.60 #
1,3-Dichlorobenzene	<2.2 µg/l	TM208		<2.20 #	<2.20 #	<2.20 #	<2.20 #
1,4-Dichlorobenzene	<2.7 µg/l	TM208		<2.70 #	<2.70 #	<2.70 #	<2.70 #
n-Butylbenzene	<2 µg/l	TM208		<2.00 #	<2.00 #	<2.00 #	<2.00 #
1,2-Dichlorobenzene	<3.7 µg/l	TM208		<3.70	<3.70	<3.70	<3.70
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208		<9.80	<9.80	<9.80	<9.80
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208		<2.30 #	<2.30 #	<2.30 #	<2.30 #
Hexachlorobutadiene	<2.5 µg/l	TM208		<2.50 #	<2.50 #	<2.50 #	<2.50 #
Tert-amyl methyl ether	<1 µg/l	TM208		<1.00 #	<1.00 #	<1.00 #	<1.00 #
Naphthalene	<3.5 µg/l	TM208		6250 #	2140 #	10900 #	1030 #
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208		<3.10 #	<3.10 #	<3.10 #	<3.10 #
1,3,5-Trichlorobenzene	<10 µg/l	TM208		<10.0	<10.0	<10.0	<10.0

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Table of Results - Appendix

SDG Number : 091214-62 **Client :** Mouchel **Client Ref :** 11/12/09 (G4/G3/G2/D1/G5)

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]
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	
TM062	MEWAM BOOK 124 1988.HMSO/ Method 17.7, Second Site property, March 2003	Determination of Phenolic compounds by HPLC with electro-chemical detection	
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	
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS	
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	

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

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APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH_4 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. **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.
13. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
14. 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).
15. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
16. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
17. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
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 the major 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.

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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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKEN SVOC	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM/EA	SOLID PHASE EXTRACTION	GC MS
TRIAZINE HERBS	DCM/EA	SOLID PHASE EXTRACTION	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
SAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
UNSAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	DCM	LIQUID/LIQUID EXTRACTION	EZ FLASH

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 (C6-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

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Last updated 25 June 2009

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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).

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.

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

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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: Verity Sankey

CERTIFICATE OF ANALYSIS

Date:	04 January 2010		
Job:	D_MOUCHEL_ELE-95		
Sample Delivery Group (SDG):	091215-78	**Report No.:**	68596
Your Reference:	11/12/09 (M3/K5/G8/K1/K10)		
Location:	Limerick Gasworks		

A total of 5 samples was received on Friday December 11, 2009 and completed on Monday January 04, 2010. 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).

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Approved By:

Chris Crutchley
Operations Director - Land UK & Ireland

UKAS TESTING
1291
GROUP

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Validated

ALcontrol Laboratories Analytical Services

SDG:	091215-78	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-95	**Attention:**	Verity Sankey
Client Reference:	11/12/09 (M3/K5/G8/K1/K10)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68596

LIQUID

Results Legend

X Test

N No Determination Possible

		Sample ID	G8					K1						K10					K5					M3					Total
		Depth (m)	0.50 - 2.00					2.00 - 4.00						0.10 - 2.00					1.50 - 4.00					3.00 - 6.00					
		Container	1l green glass bottle	500ml Plastic	60g VOC Dublin	H2SO4	ZnAc	1l green glass bottle	500ml Plastic	60g VOC Dublin	H2SO4	NaOH	ZnAc	1l green glass bottle	500ml Plastic	60g VOC Dublin	H2SO4	ZnAc	1l green glass bottle	500ml Plastic	60g VOC Dublin	H2SO4	ZnAc	1l green glass bottle	500ml Plastic	60g VOC Dublin	H2SO4	ZnAc	
Ammonium	All					X					X						X						X					X		05
Anions by Kone (w)	All			X					X						X					X					X					05
Cyanide Comp/Free/Total/Thiocyanate	All	X										X		X					X					X						05
Dissolved Metals by ICP-MS	All		X						X						X					X					X					05
EPH CWG (Aliphatic) Aqueous GC (W)	All	X						X						X					X					X						05
EPH CWG (Aromatic) Aqueous GC (W)	All	X						X						X					X					X						05
GRO BTEX MTBE GC (W)	All			X						X						X					X					X				05
Hexavalent Chromium (w)	All		X						X						X					X					X					05
Mercury Dissolved	All	X						X						X					X					X						05
PAH Spec MS - Aqueous (W)	All	X						X						X					X					X						05
pH Value	All		X						X						X					X					X					05
Phenols by HPLC (W)	All	X										X		X					X					X						05
Sulphide	All					X							X					X				X						X		05
Total Metals by ICP-MS	All		X						X						X					X					X					05
TPH CWG (W)	All	X						X						X					X					X						05
VOC MS (W)	All																X										X			02

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ALcontrol Laboratories Analytical Services

SDG:	091215-78	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-95	**Attention:**	Verity Sankey
Client Reference:	11/12/09 (M3/K5/G8/K1/K10)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68596

Test Completion dates

SDG reference: 091215-78

Sample ID	Depth	Type	Ammonium	Anions by Kone (w)	Cyanide Comp/Free/Total/Thiocyana	Dissolved Metals by ICP-MS	EPH CWG (Aliphatic) Aqueous GC (	EPH CWG (Aromatic) Aqueous GC (	GRO BTEX MTBE GC (W)	Hexavalent Chromium (w)	Mercury Dissolved	PAH Spec MS - Aqueous (W)	pH Value	Phenols by HPLC (W)	Sulphide	Total Metals by ICP-MS	TPH CWG (W)	VOC MS (W)
G8	0.50 - 2.00	LIQUID	17/12/2009	17/12/2009	17/12/2009	19/12/2009	23/12/2009	23/12/2009	21/12/2009	17/12/2009	21/12/2009	21/12/2009	17/12/2009	18/12/2009	16/12/2009	23/12/2009	23/12/2009	
K1	2.00 - 4.00	LIQUID	17/12/2009	17/12/2009	17/12/2009	19/12/2009	23/12/2009	23/12/2009	21/12/2009	17/12/2009	21/12/2009	21/12/2009	17/12/2009	19/12/2009	16/12/2009	23/12/2009	23/12/2009	
K10	0.10 - 2.00	LIQUID	17/12/2009	17/12/2009	17/12/2009	19/12/2009	22/12/2009	22/12/2009	21/12/2009	17/12/2009	21/12/2009	23/12/2009	17/12/2009	18/12/2009	16/12/2009	23/12/2009	22/12/2009	
K5	1.50 - 4.00	LIQUID	18/12/2009	21/12/2009	17/12/2009	19/12/2009	22/12/2009	22/12/2009	04/01/2010	17/12/2009	21/12/2009	23/12/2009	17/12/2009	19/12/2009	16/12/2009	24/12/2009	04/01/2010	04/01/2010
M3	3.00 - 6.00	LIQUID	18/12/2009	17/12/2009	17/12/2009	19/12/2009	18/12/2009	18/12/2009	21/12/2009	17/12/2009	21/12/2009	17/12/2009	17/12/2009	19/12/2009	18/12/2009	23/12/2009	21/12/2009	23/12/2009

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Validated

ALcontrol Laboratories Analytical Services

SDG:	091215-78	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-95	**Attention:**	Dave Watts
Client Reference:	11/12/09 (M3/K5/G8/K1/K10)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68596

Results Legend

ISO17025 accredited.
M *m*CERTS accredited.
***** subcontracted test.
****** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	G8	K1	K10	K5	M3
Sample Identity			G8	K1	K10	K5	M3
Depth (m)			0.50 - 2.00	2.00 - 4.00	0.10 - 2.00	1.50 - 4.00	3.00 - 6.00
Sample Type			Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled			27/11/2118		03/12/2118	11/12/2009	
Date Received			11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009
SDG Ref			091215-78	091215-78	091215-78	091215-78	091215-78
Lab Sample No.(s)			738673	738698	738832	738630	738584
Phenol	<0.002 mg/l	TM062	1.28 #	<0.00200 #	<0.00200 #	512 #	<0.00200 #
Cresols	<0.006 mg/l	TM062	1.71 #	<0.00600 #	<0.00600 #	1030 #	<0.00600 #
Xylenols	<0.008 mg/l	TM062	2.11 #	<0.00800 #	<0.00800 #	293 #	<0.00800 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM062	<0.00300 #	<0.00300 #	<0.00300 #	<0.600 #	<0.00300 #
2-Isopropylphenol	<0.006 mg/l	TM062	<0.00600 #	<0.00600 #	<0.00600 #	<1.20 #	<0.00600 #
Phenols Total of 5 Speciated	<0.025 mg/l	TM062	5.10	<0.0250	<0.0250	1840	<0.0250
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099	15.1 #	9.27 #	<0.200 #	135 #	1.37 #
Sulphide	<0.1 mg/l	TM101	<0.500 #	<0.500 #	<0.500 #	<0.500 #	<0.500 #
Arsenic Dissolved	<0.75 µg/l	TM152	4.28 #	3.90 #	1.49 #	41.7 #	5.30 #
Cadmium Dissolved	<0.22 µg/l	TM152	<0.220 #	<0.220 #	<0.220 #	<0.220 #	<0.220 #
Copper Dissolved	<1.6 µg/l	TM152	3.27 #	11.5 #	4.83 #	5.44 #	8.55 #
Lead Dissolved	<0.4 µg/l	TM152	<0.400 #	5.04 #	3.88 #	1.53 #	2.90 #
Nickel Dissolved	<1.5 µg/l	TM152	3.41 #	15.9 #	6.26 #	28.7 #	7.43 #
Selenium Dissolved	<1 µg/l	TM152	7.22 #	1.48 #	<1.00 #	22.4 #	3.64 #
Zinc Dissolved	<5 µg/l	TM152	<5.00 #	41.4 #	25.8 #	9.78 #	30.0 #
Mercury Dissolved	<0.01 µg/l	TM183	<0.0100 #	<0.0100 #	<0.0100 #	0.0262 #	<0.0100 #
Sulphate (soluble)	3 mg/l	TM184	83.0 #	472 #	27.3 #	678 #	541 #
Chromium (Unfiltered)	<3 µg/l	TM191	15.6	28.5	19.7	45.3	21.2
Total Cyanide	<0.05 mg/l	TM227	0.449 #	0.577 #	<0.0500 #	5.20 #	0.702 #
Hexavalent Chromium	<0.03 mg/l	TM241	<0.0300	<0.0300	<0.0300	<0.0600	<0.0300
pH value	<1.00 pH Units	TM256	8.37 #	8.10 #	8.06 #	9.56 #	7.86 #

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ALcontrol Laboratories Analytical Services

SDG:	091215-78	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-95	**Attention:**	Dave Watts
Client Reference:	11/12/09 (M3/K5/G8/K1/K10)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68596

PAH Spec MS - Aqueous (W)

Results Legend

ISO17025 accredited.
M *m*CERTS accredited.
***** subcontracted test.
****** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	G8	K1	K10	K5	M3
Sample Identity			G8	K1	K10	K5	M3
Depth (m)			0.50 - 2.00	2.00 - 4.00	0.10 - 2.00	1.50 - 4.00	3.00 - 6.00
Sample Type			Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled			27/11/2118		03/12/2118	11/12/2009	
Date Received			11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009
SDG Ref			091215-78	091215-78	091215-78	091215-78	091215-78
Lab Sample No.(s)			738673	738698	738832	738630	738584
Naphthalene (Aqueous)	<0.1 µg/l	TM178	613	<0.100	0.439	241	0.143
Acenaphthene (Aqueous)	<0.015 µg/l	TM178	5.82	0.712	1.58	3.58	2.19
Acenaphthylene (Aqueous)	<0.011 µg/l	TM178	45.4	0.473	0.475	19.3	0.944
Fluoranthene (Aqueous)	<0.014 µg/l	TM178	11.3	0.667	3.67	2.11	1.91
Anthracene (Aqueous)	<0.015 µg/l	TM178	7.53	0.0939	0.194	2.52	0.239
Phenanthrene (Aqueous)	<0.022 µg/l	TM178	28.4	0.0410	0.0554	9.20	0.233
Fluorene (Aqueous)	<0.014 µg/l	TM178	22.1	0.498	0.430	7.36	0.539
Chrysene (Aqueous)	<0.013 µg/l	TM178	1.73	0.0734	0.124	<1.30	0.480
Pyrene (Aqueous)	<0.015 µg/l	TM178	7.60	0.453	2.00	<1.50	1.49
Benzo(a)anthracene (Aqueous)	<0.017 µg/l	TM178	2.44	0.0864	0.284	<1.70	0.573
Benzo(b)fluoranthene (Aqueous)	<0.023 µg/l	TM178	1.36	0.125	0.0737	<2.30	0.881
Benzo(k)fluoranthene (Aqueous)	<0.027 µg/l	TM178	0.711	0.0473	0.0760	<2.70	0.338
Benzo(a)pyrene (Aqueous)	<0.009 µg/l	TM178	1.07	0.0872	0.0756	<0.900	0.576
Dibenzo(ah)anthracene (Aqueous)	<0.016 µg/l	TM178	0.398	0.0182	<0.0160	<1.60	0.104
Benzo(ghi)perylene (Aqueous)	<0.016 µg/l	TM178	0.815	0.0805	0.0294	<1.60	0.540
Indeno(123cd)pyrene (Aqueous)	<0.014 µg/l	TM178	0.632	0.0602	0.0236	<1.40	0.389
PAH 16 Total (Aqueous)	<0.1 µg/l	TM178	751	3.52	9.53	287	11.6

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ALcontrol Laboratories Analytical Services

SDG:	091215-78	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-95	**Attention:**	Dave Watts
Client Reference:	11/12/09 (M3/K5/G8/K1/K10)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68596

TPH CWG (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	G8	K1	K10	K5	M3
			Depth (m)	0.50 - 2.00	2.00 - 4.00	0.10 - 2.00	1.50 - 4.00	3.00 - 6.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	27/11/2118		03/12/2118	11/12/2009	
			Date Received	11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009
			SDG Ref	091215-78	091215-78	091215-78	091215-78	091215-78
			Lab Sample No.(s)	738673	738698	738832	738630	738584
GRO C5-C12	<42 µg/l	TM245		1590 #	<42.0 #	<42.0 #	69500 #	<42.0 #
MTBE	<3 µg/l	TM245		<3.00 #	<3.00 #	<3.00 #	<3.00 #	<3.00 #
Benzene	<7 µg/l	TM245		309 #	<7.00 #	<7.00 #	18900 #	9.00 #
Toluene	<4 µg/l	TM245		160 #	<4.00 #	<4.00 #	6560 #	<4.00 #
Ethyl Benzene	<5 µg/l	TM245		11.0 #	<5.00 #	<5.00 #	393 #	<5.00 #
m & p Xylene	<8 µg/l	TM245		79.0 #	<8.00 #	<8.00 #	2270 #	<8.00 #
o Xylene	<3 µg/l	TM245		33.0 #	<3.00 #	<3.00 #	1000 #	<3.00 #
Sum m&p and o Xylene	<10 µg/l	TM245		112 #	<10.0 #	<10.0 #	3270 #	<10.0 #
Sum of BTEX	<10 µg/l	TM245		592 #	<10.0 #	<10.0 #	29200 #	<10.0 #
Aliphatics C5-C6	<10 µg/l	TM245		<10.0	<10.0	<10.0	467	<10.0
Aliphatics >C6-C8	<10 µg/l	TM245		76.7	<10.0	<10.0	9560	11.0
Aliphatics >C8-C10	<10 µg/l	TM245		63.7	<10.0	<10.0	2960	<10.0
Aliphatics >C10-C12	<10 µg/l	TM245		306	<10.0	10.1	9170	<10.0
Aliphatics >C12-C16 (Aqueous)	<10 µg/l	TM174		<10.0	<10.0	<10.0	<10.0	<10.0
Aliphatics >C16-C21 (Aqueous)	<10 µg/l	TM174		<10.0	<10.0	<10.0	20.0	<10.0
Aliphatics >C21-C35 (Aqueous)	<10 µg/l	TM174		<10.0	<10.0	<10.0	<10.0	<10.0
Total Aliphatics C5-C12	<10 µg/l	TM245		446	<10.0	10.1	22200	11.0
Total Aliphatics >C12-C35 (Aqueous)	<10 µg/l	TM174		<10.0	<10.0	<10.0	20.0	<10.0
Aromatics C6-C7	<10 µg/l	TM245		309	<10.0	<10.0	18900	<10.0
Aromatics >C7-C8	<10 µg/l	TM245		160	<10.0	<10.0	6560	<10.0
Aromatics >EC8-EC10	<10 µg/l	TM245		219	<10.0	<10.0	8110	<10.0
Aromatics >EC10-EC12	<10 µg/l	TM245		459	<10.0	15.2	13800	<10.0
Aromatics >EC12-EC16 (Aqueous)	<10 µg/l	TM174		283	<10.0	8560	<10.0	<10.0
Aromatics >EC16-EC21 (Aqueous)	<10 µg/l	TM174		82.0	<10.0	520	<10.0	<10.0
Aromatics >EC21-EC35 (Aqueous)	<10 µg/l	TM174		22.0	<10.0	71.0	<10.0	<10.0
Total Aromatics C6-C12	<10 µg/l	TM245		1150	<10.0	15.2	47400	<10.0
Total Aromatics >EC12-EC35 (Aqueous)	<10 µg/l	TM174		387	<10.0	9150	<10.0	<10.0
Surrogate Recovery %**	%	TM245		52.00	101.00	96.00	106.00	98.00
Total Aliphatics & Aromatics >C12-C44 (Aqueous)	<10 µg/l	TM174		387	<10.0	9150	20.0	<10.0
GRO (>C8-C10A)	<10 µg/l	TM245		<10.0	<10.0	<10.0	719	<10.0
Total Aliphatics >C5-C35 (Aqueous)	<10 µg/l	TM174		446	<10.0	10.1	22200	11.0
Total Aromatics >C6-C35 (Aqueous)	<10 µg/l	TM174		1530	<10.0	9170	47400	<10.0
TPH C5-C35 (Aqueous)	<10 µg/l	TM174		1980	<10.0	9180	69500	11.0

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ALcontrol Laboratories Analytical Services

SDG:	091215-78	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-95	**Attention:**	Dave Watts
Client Reference:	11/12/09 (M3/K5/G8/K1/K10)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68596

VOC MS (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %
The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	K5	M3
			Depth (m)	1.50 - 4.00	3.00 - 6.00
			Sample Type	Water(GW/SW)	Water(GW/SW)
			Date Sampled	11/12/2009	
			Date Received	11/12/2009	11/12/2009
			SDG Ref	091215-78	091215-78
			Lab Sample No.(s)	738630	738584
Dichlorodifluoromethane	<1.3 µg/l	TM208		<1.30 #	<1.30 #
Chloromethane	<1.7 µg/l	TM208		<1.70 #	<1.70 #
Vinyl Chloride	<1.2 µg/l	TM208		<1.20 #	<1.20 #
Bromomethane	<2.0 µg/l	TM208		<2.00 #	<2.00 #
Chloroethane	<2.5 µg/l	TM208		<2.50 #	<2.50 #
Trichlorofluoromethane	<1.3 µg/l	TM208		2.79 #	<1.30 #
1,1-Dichloroethene	<1.2 µg/l	TM208		<1.20 #	<1.20 #
Carbon disulphide	<1.3 µg/l	TM208		1.85 #	<1.30 #
Dichloromethane	<3.7 µg/l	TM208		3.80 #	<3.70 #
Methyl Tertiary Butyl Ether	<1.6 µg/l	TM208		<1.60 #	<1.60 #
trans-1,2-Dichloroethene	<1.9 µg/l	TM208		<1.90 #	<1.90 #
1,1-Dichloroethane	<1.2 µg/l	TM208		1.53 #	<1.20 #
cis-1,2-Dichloroethene	<2.3 µg/l	TM208		<2.30 #	<2.30 #
2,2-Dichloropropane	<3.8 µg/l	TM208		<3.80 #	<3.80 #
Bromochloromethane	<1.9 µg/l	TM208		<1.90 #	<1.90 #
Chloroform	<1.8 µg/l	TM208		2.92 #	2.25 #
1,1,1-Trichloroethane	<1.3 µg/l	TM208		8.02 #	51.30 #
1,1-Dichloropropene	<1.3 µg/l	TM208		<1.30 #	<1.30 #
Carbontetrachloride	<1.4 µg/l	TM208		<1.40 #	<1.40 #
1,2-Dichloroethane	<3.3 µg/l	TM208		574	<3.30
Benzene	<1.3 µg/l	TM208		16200 #	1.32 #
Trichloroethene	<2.5 µg/l	TM208		10.3 #	<2.50 #
1,2-Dichloropropane	<3 µg/l	TM208		<3.00 #	<3.00 #
Dibromomethane	<2.7 µg/l	TM208		<2.70 #	<2.70 #
Bromodichloromethane	<0.9 µg/l	TM208		<0.900 #	<0.900 #
cis-1,3-Dichloropropene	<1.9 µg/l	TM208		<1.90 #	<1.90 #
Toluene	<1.4 µg/l	TM208		4540 #	<1.40 #
trans-1,3-Dichloropropene	<3.5 µg/l	TM208		<3.50 #	<3.50 #
1,1,2-Trichloroethane	<2.2 µg/l	TM208		390 #	<2.20 #
1,3-Dichloropropane	<2.2 µg/l	TM208		<2.20 #	<2.20 #
Tetrachloroethene	<1.5 µg/l	TM208		2.21 #	<1.50 #
Dibromochloromethane	<1.7 µg/l	TM208		<1.70 #	<1.70 #
1,2-Dibromoethane	<2.3 µg/l	TM208		<2.30 #	<2.30 #
Chlorobenzene	<3.5 µg/l	TM208		<3.50 #	<3.50 #
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208		<1.30 #	<1.30 #
Ethylbenzene	<2.5 µg/l	TM208		252 #	<2.50 #
p/m-Xylene	<2.5 µg/l	TM208		1810 #	<2.50 #
o-Xylene	<1.7 µg/l	TM208		615 #	<1.70 #
Styrene	<1.2 µg/l	TM208		329 #	<1.20 #

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ALcontrol Laboratories Analytical Services

SDG:	091215-78	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-95	**Attention:**	Dave Watts
Client Reference:	11/12/09 (M3/K5/G8/K1/K10)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68596

VOC MS (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	K5	M3
			Depth (m)	1.50 - 4.00	3.00 - 6.00
			Sample Type	Water(GW/SW)	Water(GW/SW)
			Date Sampled	11/12/2009	
			Date Received	11/12/2009	11/12/2009
			SDG Ref	091215-78	091215-78
			Lab Sample No.(s)	738630	738584
Bromoform	<3 µg/l	TM208		<3.00 #	<3.00 #
Isopropylbenzene	<1.4 µg/l	TM208		12.2 #	<1.40 #
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208		<5.20	<5.20
1,2,3-Trichloropropane	<7.8 µg/l	TM208		<7.80 #	<7.80 #
Bromobenzene	<2 µg/l	TM208		<2.00 #	<2.00 #
Propylbenzene	<2.6 µg/l	TM208		15.5 #	<2.60 #
2-Chlorotoluene	<1.9 µg/l	TM208		11.5 #	<1.90 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208		71.9 #	<1.80 #
4-Chlorotoluene	<1.9 µg/l	TM208		2.46 #	<1.90 #
tert-Butylbenzene	<2 µg/l	TM208		17.6 #	<2.00 #
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208		173 #	<1.70 #
sec-Butylbenzene	<1.7 µg/l	TM208		<1.70 #	<1.70 #
4-Isopropyltoluene	<2.6 µg/l	TM208		24.9 #	<2.60 #
1,3-Dichlorobenzene	<2.2 µg/l	TM208		<2.20 #	<2.20 #
1,4-Dichlorobenzene	<2.7 µg/l	TM208		<2.70 #	<2.70 #
n-Butylbenzene	<2 µg/l	TM208		48.6 #	<2.00 #
1,2-Dichlorobenzene	<3.7 µg/l	TM208		<3.70	<3.70
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208		<9.80	<9.80
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208		<2.30 #	<2.30 #
Hexachlorobutadiene	<2.5 µg/l	TM208		<2.50 #	<2.50 #
Tert-amyl methyl ether	<1 µg/l	TM208		577 #	<1.00 #
Naphthalene	<3.5 µg/l	TM208		7340 #	<3.50 #
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208		<3.10 #	<3.10 #
1,3,5-Trichlorobenzene	<10 µg/l	TM208		<10.0	<10.0

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Table of Results - Appendix

SDG Number : 091215-78 **Client :** Mouchel **Client Ref :** 11/12/09 (M3/K5/G8/K1/K10

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]
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	
TM062	MEWAM BOOK 124 1988.HMSO/ Method 17.7, Second Site property, March 2003	Determination of Phenolic compounds by HPLC with electro-chemical detection	
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	
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS	
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	

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

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APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH_4 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. **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.
13. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
14. 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).
15. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
16. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
17. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
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 the major 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.

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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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKEN SVOC	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM/EA	SOLID PHASE EXTRACTION	GC MS
TRIAZINE HERBS	DCM/EA	SOLID PHASE EXTRACTION	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
SAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
UNSAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	DCM	LIQUID/LIQUID EXTRACTION	EZ FLASH

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 (C6-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

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Last updated 25 June 2009

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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).

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.

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

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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: Verity Sankey

CERTIFICATE OF ANALYSIS

Date:	04 January 2010		
Job:	D_MOUCHEL_ELE-96		
Sample Delivery Group (SDG):	091215-85	**Report No.:**	68637
Your Reference:	10/12/09 11/12/09 (B8/C7/C11/H		
Location:	Limerick Gasworks		

A total of 5 samples was received on Friday December 11, 2009 and completed on Monday January 04, 2010. 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).

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Approved By:

Chris Crutchley
Operations Director - Land UK & Ireland

UKAS TESTING
1291

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Validated

ALcontrol Laboratories Analytical Services

SDG:	091215-85	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-96	**Attention:**	Verity Sankey
Client Reference:	10/12/09 11/12/09 (B8/C7/C11/H12/F11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68637

LIQUID

Results Legend

X Test

N No Determination Possible

Sample ID		B8						C11						C7						F11					H12					Total
Depth (m)		2.00 - 3.00						1.50 - 2.50						2.00 - 7.00						1.50 - 3.50					2.00 - 4.00					
Container		1l green glass bottle	60g VOC Dublin	H2SO4	NaOH	PLAS BOT (D)	ZnAc (D)	1l green glass bottle	60g VOC Dublin	H2SO4	NaOH	PLAS BOT (D)	ZnAc (D)	1l green glass bottle	60g VOC Dublin	H2SO4	NaOH	PLAS BOT (D)	ZnAc (D)	1l green glass bottle	500ml Plastic	60g VOC Dublin	H2SO4	ZnAc	1l green glass bottle	500ml Plastic	60g VOC Dublin	H2SO4	ZnAc	
Ammonium	All			X						X						X							X					X		05
Anions by Kone (w)	All					X						X						X			X					X				05
Cyanide Comp/Free/Total/Thiocyanate	All				X						X						X			X					X					05
Dissolved Metals by ICP-MS	All					X						X						X			X					X				05
EPH CWG (Aliphatic) Aqueous GC (W)	All	X						X						X						X					X					05
EPH CWG (Aromatic) Aqueous GC (W)	All	X						X						X						X					X					05
GRO BTEX MTBE GC (W)	All		X						X						X							X					X			05
Hexavalent Chromium (w)	All					X						X						X			X					X				05
Mercury Dissolved	All	X						X						X						X					X					05
PAH Spec MS - Aqueous (W)	All	X						X						X						X					X					05
pH Value	All					X						X						X			X					X				05
Phenols by HPLC (W)	All				X						X						X			X					X					05
Sulphide	All						X						X						X					X					X	05
Total Metals by ICP-MS	All					X						X						X			X					X				05
TPH CWG (W)	All	X						X						X						X					X					05
VOC MS (W)	All		X												X															02

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ALcontrol Laboratories Analytical Services

SDG:	091215-85	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-96	**Attention:**	Verity Sankey
Client Reference:	10/12/09 11/12/09 (B8/C7/C11/H12/F11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68637

Test Completion dates

SDG reference: 091215-85

Sample ID	Depth	Type	Ammonium	Anions by Kone (w)	Cyanide Comp/Free/Total/Thiocyana	Dissolved Metals by ICP-MS	EPH CWG (Aliphatic) Aqueous GC (	EPH CWG (Aromatic) Aqueous GC (	GRO BTEX MTBE GC (W)	Hexavalent Chromium (w)	Mercury Dissolved	PAH Spec MS - Aqueous (W)	pH Value	Phenols by HPLC (W)	Sulphide	Total Metals by ICP-MS	TPH CWG (W)	VOC MS (W)
B8	2.00 - 3.00	LIQUID	18/12/2009	21/12/2009	17/12/2009	19/12/2009	23/12/2009	23/12/2009	30/12/2009	22/12/2009	17/12/2009	21/12/2009	17/12/2009	18/12/2009	18/12/2009	24/12/2009	31/12/2009	04/01/2010
C11	1.50 - 2.50	LIQUID	17/12/2009	17/12/2009	16/12/2009	19/12/2009	22/12/2009	22/12/2009	21/12/2009	17/12/2009	17/12/2009	23/12/2009	17/12/2009	17/12/2009	21/12/2009	24/12/2009	22/12/2009	
C7	2.00 - 7.00	LIQUID	18/12/2009	21/12/2009	17/12/2009	19/12/2009	30/12/2009	30/12/2009	30/12/2009	17/12/2009	17/12/2009	21/12/2009	17/12/2009	19/12/2009	21/12/2009	24/12/2009	31/12/2009	04/01/2010
F11	1.50 - 3.50	LIQUID	17/12/2009	17/12/2009	16/12/2009	18/12/2009	04/01/2010	04/01/2010	21/12/2009	16/12/2009	17/12/2009	04/01/2010	16/12/2009	17/12/2009	16/12/2009	23/12/2009	04/01/2010	
H12	2.00 - 4.00	LIQUID	17/12/2009	17/12/2009	16/12/2009	18/12/2009	21/12/2009	21/12/2009	21/12/2009	16/12/2009	17/12/2009	21/12/2009	16/12/2009	17/12/2009	16/12/2009	23/12/2009	21/12/2009	

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ALcontrol Laboratories Analytical Services

SDG:	091215-85	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-96	**Attention:**	Dave Watts
Client Reference:	10/12/09 11/12/09 (B8/C7/C11/H12/F11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68637

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	B8	C11	C7	F11	H12
Sample Identity			B8	C11	C7	F11	H12
Depth (m)			2.00 - 3.00	1.50 - 2.50	2.00 - 7.00	1.50 - 3.50	2.00 - 4.00
Sample Type			Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled			10/12/2009		26/11/2118	11/12/2009	11/12/2009
Date Received			11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009
SDG Ref			091215-85	091215-85	091215-85	091215-85	091215-85
Lab Sample No.(s)			739353	739459	739390	739521	739490
Phenol	<0.002 mg/l	TM062	27.0 #	<0.00200 #	180 #	<0.00200 #	0.0400 #
Cresols	<0.006 mg/l	TM062	51.9 #	<0.00600 #	337 #	<0.00600 #	0.290 #
Xylenols	<0.008 mg/l	TM062	51.8 #	<0.00800 #	108 #	0.180 #	0.560 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM062	<0.0300 #	<0.00300 #	<0.150 #	<0.00300 #	<0.00300 #
2-Isopropylphenol	<0.006 mg/l	TM062	<0.0600 #	<0.00600 #	<0.300 #	<0.00600 #	<0.00600 #
Phenols Total of 5 Speciated	<0.025 mg/l	TM062	131	<0.0250	625	0.180	0.890
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099	184 #	6.49 #	94.8 #	4.53 #	3.88 #
Sulphide	<0.1 mg/l	TM101	<0.500 #	<5.00 #	<2.50 #	<0.500 #	<0.500 #
Arsenic Dissolved	<0.75 µg/l	TM152	30.9 #	5.85 #	18.4 #	2.26 #	1.92 #
Cadmium Dissolved	<0.22 µg/l	TM152	0.955 #	<0.220 #	<0.220 #	<0.220 #	<0.220 #
Copper Dissolved	<1.6 µg/l	TM152	7.56 #	3.08 #	5.29 #	1.94 #	12.8 #
Lead Dissolved	<0.4 µg/l	TM152	6.58 #	0.520 #	6.61 #	1.11 #	0.815 #
Nickel Dissolved	<1.5 µg/l	TM152	10.2 #	5.07 #	5.32 #	1.82 #	2.33 #
Selenium Dissolved	<1 µg/l	TM152	3.58 #	1.69 #	8.43 #	4.30 #	3.63 #
Zinc Dissolved	<5 µg/l	TM152	55.4 #	<5.00 #	36.1 #	5.94 #	7.07 #
Mercury Dissolved	<0.01 µg/l	TM183	0.0117 #	<0.0100 #	0.0124 #	<0.0100 #	<0.0100 #
Sulphate (soluble)	3 mg/l	TM184	115 #	264 #	159 #	35.8 #	150 #
Chromium (Unfiltered)	<3 µg/l	TM191	6.54	<3.00	40.1	57.1	67.4
Total Cyanide	<0.05 mg/l	TM227	0.269 #	1.41 #	0.454 #	<0.0500 #	<0.0500 #
Hexavalent Chromium	<0.03 mg/l	TM241	<0.0300	<0.0300	<0.0600	<0.0300	<0.0300
pH value	<1.00 pH Units	TM256	8.63 #	8.06 #	8.75 #	8.10 #	7.91 #

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Validated

ALcontrol Laboratories Analytical Services

SDG:	091215-85	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-96	**Attention:**	Dave Watts
Client Reference:	10/12/09 11/12/09 (B8/C7/C11/H12/F11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68637

PAH Spec MS - Aqueous (W)

Results Legend

ISO17025 accredited.
M *m*CERTS accredited.
***** subcontracted test.
****** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	B8	C11	C7	F11	H12
Sample Identity			B8	C11	C7	F11	H12
Depth (m)			2.00 - 3.00	1.50 - 2.50	2.00 - 7.00	1.50 - 3.50	2.00 - 4.00
Sample Type			Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled			10/12/2009		26/11/2118	11/12/2009	11/12/2009
Date Received			11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009
SDG Ref			091215-85	091215-85	091215-85	091215-85	091215-85
Lab Sample No.(s)			739353	739459	739390	739521	739490
Naphthalene (Aqueous)	<0.1 µg/l	TM178	5590	933	308	2.81	23.3
Acenaphthene (Aqueous)	<0.015 µg/l	TM178	47.7	724	3.72	0.398	25.3
Acenaphthylene (Aqueous)	<0.011 µg/l	TM178	278	247	23.8	3.08	38.4
Fluoranthene (Aqueous)	<0.014 µg/l	TM178	154	421	17.1	7.32	90.3
Anthracene (Aqueous)	<0.015 µg/l	TM178	92.8	162	10.6	1.06	27.6
Phenanthrene (Aqueous)	<0.022 µg/l	TM178	298	889	33.8	1.80	64.1
Fluorene (Aqueous)	<0.014 µg/l	TM178	152	423	14.7	0.355	32.2
Chrysene (Aqueous)	<0.013 µg/l	TM178	31.5	58.2	2.75	5.26	16.8
Pyrene (Aqueous)	<0.015 µg/l	TM178	102	259	11.3	6.29	61.8
Benzo(a)anthracene (Aqueous)	<0.017 µg/l	TM178	42.7	102	4.30	5.48	27.2
Benzo(b)fluoranthene (Aqueous)	<0.023 µg/l	TM178	42.5	97.3	3.75	11.5	28.9
Benzo(k)fluoranthene (Aqueous)	<0.027 µg/l	TM178	17.7	35.0	<2.70	5.44	11.6
Benzo(a)pyrene (Aqueous)	<0.009 µg/l	TM178	35.2	74.1	3.34	10.3	24.9
Dibenzo(ah)anthracene (Aqueous)	<0.016 µg/l	TM178	5.38	9.74	<1.60	1.41	3.73
Benzo(ghi)perylene (Aqueous)	<0.016 µg/l	TM178	18.5	40.1	<1.60	6.86	13.4
Indeno(123cd)pyrene (Aqueous)	<0.014 µg/l	TM178	15.6	34.7	<1.40	5.90	11.4
PAH 16 Total (Aqueous)	<0.1 µg/l	TM178	6920	4510	441	75.2	501

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ALcontrol Laboratories Analytical Services

SDG:	091215-85	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-96	**Attention:**	Dave Watts
Client Reference:	10/12/09 11/12/09 (B8/C7/C11/H12/F11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68637

TPH CWG (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	B8	C11	C7	F11	H12
			Depth (m)	2.00 - 3.00	1.50 - 2.50	2.00 - 7.00	1.50 - 3.50	2.00 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	10/12/2009		26/11/2118	11/12/2009	11/12/2009
			Date Received	11/12/2009	11/12/2009	11/12/2009	11/12/2009	11/12/2009
			SDG Ref	091215-85	091215-85	091215-85	091215-85	091215-85
			Lab Sample No.(s)	739353	739459	739390	739521	739490
GRO C5-C12	<42 µg/l	TM245		57200 #	11300 #	52400 #	78.0 #	1030 #
MTBE	<3 µg/l	TM245		<3.00 #	<3.00 #	<3.00 #	<3.00 #	6.00 #
Benzene	<7 µg/l	TM245		15300 #	86.0 #	16400 #	7.00 #	24.0 #
Toluene	<4 µg/l	TM245		7810 #	106 #	5070 #	8.00 #	20.0 #
Ethyl Benzene	<5 µg/l	TM245		399 #	210 #	232 #	<5.00 #	<5.00 #
m & p Xylene	<8 µg/l	TM245		2800 #	586 #	1540 #	9.00 #	40.0 #
o Xylene	<3 µg/l	TM245		1180 #	332 #	705 #	6.00 #	36.0 #
Sum m&p and o Xylene	<10 µg/l	TM245		3980 #	918 #	2250 #	<10.0 #	76.0 #
Sum of BTEX	<10 µg/l	TM245		27500 #	1320 #	23900 #	<10.0 #	120 #
Aliphatics C5-C6	<10 µg/l	TM245		133	<10.0	176	<10.0	<10.0
Aliphatics >C6-C8	<10 µg/l	TM245		7120	83.8	6980	<10.0	17.1
Aliphatics >C8-C10	<10 µg/l	TM245		2090	829	1950	13.2	77.7
Aliphatics >C10-C12	<10 µg/l	TM245		6900	3120	6970	11.8	278
Aliphatics >C12-C16 (Aqueous)	<10 µg/l	TM174		99.0	5450	203	27.0	185
Aliphatics >C16-C21 (Aqueous)	<10 µg/l	TM174		111	2410	<10.0	222	126
Aliphatics >C21-C35 (Aqueous)	<10 µg/l	TM174		145	896	<10.0	216	682
Total Aliphatics C5-C12	<10 µg/l	TM245		16300	4040	15700	25.0	373
Total Aliphatics >C12-C35 (Aqueous)	<10 µg/l	TM174		355	8760	203	465	993
Aromatics C6-C7	<10 µg/l	TM245		15300	86.0	16400	<10.0	24.0
Aromatics >C7-C8	<10 µg/l	TM245		7810	106	5070	<10.0	20.0
Aromatics >EC8-EC10	<10 µg/l	TM245		7520	2370	5400	19.8	193
Aromatics >EC10-EC12	<10 µg/l	TM245		10400	4680	9850	17.7	417
Aromatics >EC12-EC16 (Aqueous)	<10 µg/l	TM174		7400	8460	20600	75.0	527
Aromatics >EC16-EC21 (Aqueous)	<10 µg/l	TM174		1920	2980	3200	148	718
Aromatics >EC21-EC35 (Aqueous)	<10 µg/l	TM174		2470	2600	3010	376	1700
Total Aromatics C6-C12	<10 µg/l	TM245		41000	7250	36700	37.5	653
Total Aromatics >EC12-EC35 (Aqueous)	<10 µg/l	TM174		11800	14000	26800	599	2950
Surrogate Recovery %**	%	TM245		117.00	104.00	117.00	98.00	101.00
Total Aliphatics & Aromatics >C12-C44 (Aqueous)	<10 µg/l	TM174		12100	22800	27000	1060	3940
GRO (>C8-C10A)	<10 µg/l	TM245		178	31.2	407	<10.0	<10.0
Total Aliphatics >C5-C35 (Aqueous)	<10 µg/l	TM174		16600	12800	15900	490	1370
Total Aromatics >C6-C35 (Aqueous)	<10 µg/l	TM174		52800	21300	63500	636	3600
TPH C5-C35 (Aqueous)	<10 µg/l	TM174		69400	34100	79400	1130	4960

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ALcontrol Laboratories Analytical Services

SDG:	091215-85	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-96	**Attention:**	Dave Watts
Client Reference:	10/12/09 11/12/09 (B8/C7/C11/H12/F11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68637

VOC MS (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %
The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	B8	C7
			Depth (m)	2.00 - 3.00	2.00 - 7.00
			Sample Type	Water(GW/SW)	Water(GW/SW)
			Date Sampled	10/12/2009	26/11/2118
			Date Received	11/12/2009	11/12/2009
			SDG Ref	091215-85	091215-85
			Lab Sample No.(s)	739353	739390
Dichlorodifluoromethane	<1.3 µg/l	TM208		<1.30 #	<1.30 #
Chloromethane	<1.7 µg/l	TM208		<1.70 #	<1.70 #
Vinyl Chloride	<1.2 µg/l	TM208		<1.20 #	<1.20 #
Bromomethane	<2.0 µg/l	TM208		<2.00 #	<2.00 #
Chloroethane	<2.5 µg/l	TM208		<2.50 #	<2.50 #
Trichlorofluoromethane	<1.3 µg/l	TM208		<1.30 #	<1.30 #
1,1-Dichloroethene	<1.2 µg/l	TM208		<1.20 #	<1.20 #
Carbon disulphide	<1.3 µg/l	TM208		<1.30 #	<1.30 #
Dichloromethane	<3.7 µg/l	TM208		<3.70 #	<3.70 #
Methyl Tertiary Butyl Ether	<1.6 µg/l	TM208		<1.60 #	<1.60 #
trans-1,2-Dichloroethene	<1.9 µg/l	TM208		<1.90 #	<1.90 #
1,1-Dichloroethane	<1.2 µg/l	TM208		<1.20 #	<1.20 #
cis-1,2-Dichloroethene	<2.3 µg/l	TM208		<2.30 #	<2.30 #
2,2-Dichloropropane	<3.8 µg/l	TM208		<3.80 #	<3.80 #
Bromochloromethane	<1.9 µg/l	TM208		<1.90 #	<1.90 #
Chloroform	<1.8 µg/l	TM208		<1.80 #	10.0 #
1,1,1-Trichloroethane	<1.3 µg/l	TM208		<1.30 #	<1.30 #
1,1-Dichloropropene	<1.3 µg/l	TM208		<1.30 #	<1.30 #
Carbontetrachloride	<1.4 µg/l	TM208		<1.40 #	<1.40 #
1,2-Dichloroethane	<3.3 µg/l	TM208		<3.30	<3.30
Benzene	<1.3 µg/l	TM208		17100 #	19400 #
Trichloroethene	<2.5 µg/l	TM208		<2.50 #	<2.50 #
1,2-Dichloropropane	<3 µg/l	TM208		<3.00 #	<3.00 #
Dibromomethane	<2.7 µg/l	TM208		<2.70 #	<2.70 #
Bromodichloromethane	<0.9 µg/l	TM208		<0.900 #	1.99 #
cis-1,3-Dichloropropene	<1.9 µg/l	TM208		<1.90 #	<1.90 #
Toluene	<1.4 µg/l	TM208		8020 #	5380 #
trans-1,3-Dichloropropene	<3.5 µg/l	TM208		<3.50 #	<3.50 #
1,1,2-Trichloroethane	<2.2 µg/l	TM208		<2.20 #	<2.20 #
1,3-Dichloropropane	<2.2 µg/l	TM208		<2.20 #	<2.20 #
Tetrachloroethene	<1.5 µg/l	TM208		<1.50 #	<1.50 #
Dibromochloromethane	<1.7 µg/l	TM208		<1.70 #	<1.70 #
1,2-Dibromoethane	<2.3 µg/l	TM208		<2.30 #	<2.30 #
Chlorobenzene	<3.5 µg/l	TM208		<3.50 #	<3.50 #
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208		<1.30 #	<1.30 #
Ethylbenzene	<2.5 µg/l	TM208		343 #	180 #
p/m-Xylene	<2.5 µg/l	TM208		8020 #	1430 #
o-Xylene	<1.7 µg/l	TM208		1140 #	569 #
Styrene	<1.2 µg/l	TM208		<1.20 #	<1.20 #

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ALcontrol Laboratories Analytical Services

SDG:	091215-85	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-96	**Attention:**	Dave Watts
Client Reference:	10/12/09 11/12/09 (B8/C7/C11/H12/F11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	68637

VOC MS (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	B8	C7
			Depth (m)	2.00 - 3.00	2.00 - 7.00
			Sample Type	Water(GW/SW)	Water(GW/SW)
			Date Sampled	10/12/2009	26/11/2118
			Date Received	11/12/2009	11/12/2009
			SDG Ref	091215-85	091215-85
			Lab Sample No.(s)	739353	739390
Bromoform	<3 µg/l	TM208		<3.00 #	<3.00 #
Isopropylbenzene	<1.4 µg/l	TM208		15.6 #	7.65 #
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208		<5.20	<5.20
1,2,3-Trichloropropane	<7.8 µg/l	TM208		<7.80 #	<7.80 #
Bromobenzene	<2 µg/l	TM208		<2.00 #	<2.00 #
Propylbenzene	<2.6 µg/l	TM208		21.0 #	11.2 #
2-Chlorotoluene	<1.9 µg/l	TM208		<1.90 #	<1.90 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208		138 #	73.4 #
4-Chlorotoluene	<1.9 µg/l	TM208		<1.90 #	<1.90 #
tert-Butylbenzene	<2 µg/l	TM208		<2.00 #	<2.00 #
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208		338 #	174 #
sec-Butylbenzene	<1.7 µg/l	TM208		<1.70 #	<1.70 #
4-Isopropyltoluene	<2.6 µg/l	TM208		<2.60 #	<2.60 #
1,3-Dichlorobenzene	<2.2 µg/l	TM208		<2.20 #	<2.20 #
1,4-Dichlorobenzene	<2.7 µg/l	TM208		<2.70 #	<2.70 #
n-Butylbenzene	<2 µg/l	TM208		<2.00 #	<2.00 #
1,2-Dichlorobenzene	<3.7 µg/l	TM208		<3.70	<3.70
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208		<9.80	<9.80
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208		<2.30 #	<2.30 #
Hexachlorobutadiene	<2.5 µg/l	TM208		<2.50 #	<2.50 #
Tert-amyl methyl ether	<1 µg/l	TM208		<1.00 #	<1.00 #
Naphthalene	<3.5 µg/l	TM208		15800 #	10400 #
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208		<3.10 #	<3.10 #
1,3,5-Trichlorobenzene	<10 µg/l	TM208		<10.0	<10.0

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Table of Results - Appendix

SDG Number : 091215-85 **Client :** Mouchel **Client Ref :** 10/12/09 11/12/09 (B8/C7/C

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]
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	
TM062	MEWAM BOOK 124 1988.HMSO/ Method 17.7, Second Site property, March 2003	Determination of Phenolic compounds by HPLC with electro-chemical detection	
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	
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS	
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	

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

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APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH_4 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. **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.
13. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
14. 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).
15. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
16. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
17. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
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 the major 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.

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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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKEN SVOC	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM/EA	SOLID PHASE EXTRACTION	GC MS
TRIAZINE HERBS	DCM/EA	SOLID PHASE EXTRACTION	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
SAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
UNSAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	DCM	LIQUID/LIQUID EXTRACTION	EZ FLASH

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 (C6-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

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Last updated 25 June 2009

EPA Export 25-05-2012:04:42:32

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).

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.

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

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EPA Export 25-05-2012:04:42:32

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: Verity Sankey

CERTIFICATE OF ANALYSIS

Date:	22 January 2010		
Job:	D_MOUCHEL_ELE-98		
Sample Delivery Group (SDG):	100118-36	**Report No.:**	70561
Your Reference:	14/01/10 (E8/C11/G8/F11/A11)		
Location:	Limerick Gasworks		

A total of 5 samples was received on Friday January 15, 2010 and completed on Friday January 22, 2010. 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).

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Approved By:

Chris Crutchley
Operations Director - Land UK & Ireland

UKAS TESTING
1291
GROUP

EPA Export 25-05-2012:04:42:32

Validated

ALcontrol Laboratories Analytical Services

SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Verity Sankey
Client Reference:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70561

LIQUID

Results Legend

X Test

N No Determination Possible

		Sample ID	A11			C11			E8			F11			G8			Total
		Depth (m)	1.0 - 2.5			1.5 - 2.5			1.0 - 6.0			1.0 - 2.0			0.5 - 2.0			
		Container	1l green glass bottle	500ml Plastic	60g VOC Dublin	1l green glass bottle	60g VOC Dublin	PLAS BOT (D)	1l green glass bottle	500ml Plastic	60g VOC Dublin	1l green glass bottle	500ml Plastic	60g VOC Dublin	1l green glass bottle	500ml Plastic	60g VOC Dublin	
Ammonium	All			X				X		X			X			X		05
Anions by Kone (w)	All			X				X		X			X			X		05
Cyanide Comp/Free/Total/Thiocyanate	All		X			X			X			X			X			05
Dissolved Metals by ICP-MS	All			X				X		X			X			X		05
EPH CWG (Aliphatic) Aqueous GC (W)	All		X			X			X			X			X			05
EPH CWG (Aromatic) Aqueous GC (W)	All		X			X			X			X			X			05
GRO BTEX MTBE GC (W)	All				X			X			X			X			X	05
Hexavalent Chromium (w)	All			X				X		X			X			X		05
Mercury Dissolved	All		X			X			X			X			X			05
PAH Spec MS - Aqueous (W)	All		X			X			X			X			X			05
pH Value	All			X				X		X			X			X		05
Phenols by HPLC (W)	All		X			X			X			X			X			05
Sulphide	All			X				X		X			X			X		05
Total Metals by ICP-MS	All			X				X		X			X			X		05
TPH CWG (W)	All		X			X			X			X			X			05
VOC MS (W)	All				X													01

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Verity Sankey
Client Reference:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70561

Test Completion dates

SDG reference: 100118-36

Sample ID	Depth	Type	Ammonium	Anions by Kone (w)	Cyanide Comp/Free/Total/Thiocyana	Dissolved Metals by ICP-MS	EPH CWG (Aliphatic) Aqueous GC (	EPH CWG (Aromatic) Aqueous GC (	GRO BTEX MTBE GC (W)	Hexavalent Chromium (w)	Mercury Dissolved	PAH Spec MS - Aqueous (W)	pH Value	Phenols by HPLC (W)	Sulphide	Total Metals by ICP-MS	TPH CWG (W)	VOC MS (W)
A11	1.0 - 2.5	LIQUID	19/01/2010	19/01/2010	19/01/2010	20/01/2010	21/01/2010	21/01/2010	21/01/2010	19/01/2010	20/01/2010	21/01/2010	19/01/2010	20/01/2010	20/01/2010	21/01/2010	21/01/2010	20/01/2010
C11	1.5 - 2.5	LIQUID	19/01/2010	19/01/2010	19/01/2010	20/01/2010	22/01/2010	22/01/2010	21/01/2010	19/01/2010	20/01/2010	22/01/2010	19/01/2010	20/01/2010	20/01/2010	21/01/2010	22/01/2010	
E8	1.0 - 6.0	LIQUID	19/01/2010	19/01/2010	19/01/2010	20/01/2010	22/01/2010	22/01/2010	21/01/2010	19/01/2010	20/01/2010	22/01/2010	19/01/2010	20/01/2010	20/01/2010	21/01/2010	22/01/2010	
F11	1.0 - 2.0	LIQUID	19/01/2010	19/01/2010	19/01/2010	20/01/2010	22/01/2010	22/01/2010	21/01/2010	19/01/2010	20/01/2010	21/01/2010	19/01/2010	20/01/2010	20/01/2010	21/01/2010	22/01/2010	
G8	0.5 - 2.0	LIQUID	19/01/2010	19/01/2010	19/01/2010	20/01/2010	22/01/2010	22/01/2010	21/01/2010	19/01/2010	20/01/2010	22/01/2010	19/01/2010	20/01/2010	20/01/2010	21/01/2010	22/01/2010	

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Reference:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	A11	C11	E8	F11	G8
Sample Identity			A11	C11	E8	F11	G8
Depth (m)			1.0 - 2.5	1.5 - 2.5	1.0 - 6.0	1.0 - 2.0	0.5 - 2.0
Sample Type			Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled							
Date Received			15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010
SDG Ref			100118-36	100118-36	100118-36	100118-36	100118-36
Lab Sample No.(s)			841167	841205	840752	841168	841170
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099	1.33 #	4.73 #	59.3 #	1.93 #	21.3 #
Sulphide	<0.1 mg/l	TM101	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Arsenic Dissolved	<0.12 µg/l	TM152	1.22 #	4.13 #	2.35 #	13.9 #	5.16 #
Cadmium Dissolved	<0.1 µg/l	TM152	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Copper Dissolved	<0.85 µg/l	TM152	1.52 #	1.27 #	11.2 #	3.2 #	1.4 #
Lead Dissolved	<0.02 µg/l	TM152	2.33 #	0.02 #	0.308 #	0.58 #	0.07 #
Nickel Dissolved	<0.15 µg/l	TM152	3.47 #	5.14 #	5.84 #	3.89 #	4.83 #
Selenium Dissolved	<0.39 µg/l	TM152	5.48 #	4.12 #	8.47 #	8.08 #	4.78 #
Zinc Dissolved	<0.41 µg/l	TM152	11.6 #	0.801 #	0.957 #	1.41 #	1.09 #
Mercury Dissolved	<0.01 µg/l	TM183	<0.01 #	<0.01 #	0.012 #	<0.01 #	<0.01 #
Sulphate (soluble)	3 mg/l	TM184	328 #	222 #	547 #	33.9 #	112 #
Chromium (Unfiltered)	<3 µg/l	TM191	15.9	46.2	17.2	6.41	52
Total Cyanide	<0.05 mg/l	TM227	<0.05 #	0.074 #	18.7 #	<0.05 #	0.817 #
Hexavalent Chromium	<0.03 mg/l	TM241	<0.03	<0.03	<0.06	<0.03	<0.03
pH value	<1 pH Units	TM256	7.9 #	7.81 #	9.74 #	8.15 #	8.6 #
Phenol	<0.002 mg/l	TM259	<0.002 #	<0.002 #	86 #	0.04 #	3.17 #
Cresols	<0.006 mg/l	TM259	<0.006 #	<0.006 #	138 #	0.07 #	6.35 #
Xylenols	<0.008 mg/l	TM259	<0.008 #	0.07 #	67.2 #	0.04 #	5.88 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM259	<0.003 #	<0.003 #	<0.06 #	<0.003 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259	<0.006 #	<0.006 #	<0.12 #	<0.006 #	2.1 #
Phenols Total of 5 Speciated	<0.025 mg/l	TM259	<0.025	0.07	291	0.15	17.5

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ALcontrol Laboratories Analytical Services

SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Reference:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239

PAH Spec MS - Aqueous (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	A11	C11	E8	F11	G8
			Depth (m)	1.0 - 2.5	1.5 - 2.5	1.0 - 6.0	1.0 - 2.0	0.5 - 2.0
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled					
			Date Received	15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010
			SDG Ref	100118-36	100118-36	100118-36	100118-36	100118-36
			Lab Sample No.(s)	841167	841205	840752	841168	841170
Naphthalene (Aqueous)	<0.1 µg/l	TM178		0.445	6.17	2650	<0.1	724
Acenaphthene (Aqueous)	<0.015 µg/l	TM178		8.45	117	29.7	0.044	11.5
Acenaphthylene (Aqueous)	<0.011 µg/l	TM178		19.6	40.9	172	0.198	71.8
Fluoranthene (Aqueous)	<0.014 µg/l	TM178		12.7	52.4	60.9	0.966	17.4
Anthracene (Aqueous)	<0.015 µg/l	TM178		4.07	20.5	37.7	0.15	11.3
Phenanthrene (Aqueous)	<0.022 µg/l	TM178		0.65	82.9	150	0.34	39.4
Fluorene (Aqueous)	<0.014 µg/l	TM178		18	52.1	86.3	0.0567	34.6
Chrysene (Aqueous)	<0.013 µg/l	TM178		2.98	8.74	10.2	0.408	2.32
Pyrene (Aqueous)	<0.015 µg/l	TM178		7.61	32.1	39.7	0.802	11.4
Benzo(a)anthracene (Aqueous)	<0.017 µg/l	TM178		3.7	13.1	12.3	0.607	3.1
Benzo(b)fluoranthene (Aqueous)	<0.023 µg/l	TM178		3.39	12.8	10.2	1.08	1.41
Benzo(k)fluoranthene (Aqueous)	<0.027 µg/l	TM178		1.24	4.71	4.15	0.451	<0.54
Benzo(a)pyrene (Aqueous)	<0.009 µg/l	TM178		2.5	9.61	8.5	0.887	0.863
Dibenzo(ah)anthracene (Aqueous)	<0.016 µg/l	TM178		0.296	1.35	1.53	0.128	<0.32
Benzo(ghi)perylene (Aqueous)	<0.016 µg/l	TM178		1.04	4.72	3.99	0.522	<0.32
Indeno(123cd)pyrene (Aqueous)	<0.014 µg/l	TM178		1.08	4.27	3.57	0.474	<0.28
PAH 16 Total (Aqueous)	<0.1 µg/l	TM178		87.7	463	3270	7.11	930

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ALcontrol Laboratories Analytical Services

SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Reference:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239

TPH CWG (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	A11	C11	E8	F11	G8
			Depth (m)	1.0 - 2.5	1.5 - 2.5	1.0 - 6.0	1.0 - 2.0	0.5 - 2.0
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled					
			Date Received	15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010
			SDG Ref	100118-36	100118-36	100118-36	100118-36	100118-36
			Lab Sample No.(s)	841167	841205	840752	841168	841170
GRO C5-C12	<42 µg/l	TM245		679 #	5970 #	21200 #	48 #	7040 #
MTBE	<3 µg/l	TM245		7 #	21 #	<3 #	6 #	4 #
Benzene	<7 µg/l	TM245		<7 #	61 #	8540 #	<7 #	2170 #
Toluene	<4 µg/l	TM245		<4 #	61 #	2040 #	<4 #	1190 #
Ethyl Benzene	<5 µg/l	TM245		<5 #	65 #	85 #	<5 #	83 #
m & p Xylene	<8 µg/l	TM245		23 #	307 #	640 #	<8 #	595 #
o Xylene	<3 µg/l	TM245		50 #	198 #	300 #	<3 #	229 #
Sum m&p and o Xylene	<10 µg/l	TM245		73 #	505 #	940 #	<10 #	824 #
Sum of BTEX	<10 µg/l	TM245		73 #	692 #	11600 #	<10 #	4270 #
Aliphatics C5-C6	<10 µg/l	TM245		14.3	31.3	136	12.3	18.3
Aliphatics >C6-C8	<10 µg/l	TM245		48.3	124	1620	35.7	<10
Aliphatics >C8-C10	<10 µg/l	TM245		55.2	498	774	<10	208
Aliphatics >C10-C12	<10 µg/l	TM245		162	1540	2360	<10	990
Aliphatics >C12-C16 (Aqueous)	<10 µg/l	TM174		<10	156	<10	<10	<10
Aliphatics >C16-C21 (Aqueous)	<10 µg/l	TM174		<10	325	<10	<10	<10
Aliphatics >C21-C35 (Aqueous)	<10 µg/l	TM174		<10	71	<10	<10	<10
Total Aliphatics C5-C12	<10 µg/l	TM245		280	2200	4890	48	1220
Total Aliphatics >C12-C35 (Aqueous)	<10 µg/l	TM174		<10	552	<10	<10	<10
Aromatics C6-C7	<10 µg/l	TM245		<10	61	8540	<10	2170
Aromatics >C7-C8	<10 µg/l	TM245		<10	61	2040	<10	1190
Aromatics >EC8-EC10	<10 µg/l	TM245		156	1320	2190	<10	1220
Aromatics >EC10-EC12	<10 µg/l	TM245		243	2320	3550	<10	1490
Aromatics >EC12-EC16 (Aqueous)	<10 µg/l	TM174		201	1550	5740	<10	1050
Aromatics >EC16-EC21 (Aqueous)	<10 µg/l	TM174		197	779	904	<10	322
Aromatics >EC21-EC35 (Aqueous)	<10 µg/l	TM174		111	433	543	<10	188
Total Aromatics C6-C12	<10 µg/l	TM245		399	3760	16300	<10	6070
Total Aromatics >EC12-EC35 (Aqueous)	<10 µg/l	TM174		509	2770	7190	<10	1560
Surrogate Recovery %**	%	TM245		94	95	84	91	95
Total Aliphatics & Aromatics >C12-C44 (Aqueous)	<10 µg/l	TM174		509	3320	7190	<10	1560
GRO (>C8-C10A)	<10 µg/l	TM245		<10	20.9	193	<10	25.1
Total Aliphatics >C5-C35 (Aqueous)	<10 µg/l	TM174		280	2750	4890	48	1220
Total Aromatics >C6-C35 (Aqueous)	<10 µg/l	TM174		908	6520	23500	<10	7630
TPH C5-C35 (Aqueous)	<10 µg/l	TM174		1190	9270	28400	48	8840

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ALcontrol Laboratories Analytical Services

SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Reference:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239

VOC MS (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

	Sample Identity	A11
	Depth (m)	1.0 - 2.5
	Sample Type	Water(GW/SW)
	Date Sampled	
	Date Received	15/01/2010
	SDG Ref	100118-36
	Lab Sample No.(s)	841167

Component	LOD/Units	Method	
Dichlorodifluoromethane	<1.3 µg/l	TM208	<1.3 #
Chloromethane	<1.7 µg/l	TM208	<1.7 #
Vinyl Chloride	<1.2 µg/l	TM208	<1.2 #
Bromomethane	<2 µg/l	TM208	<2 #
Chloroethane	<2.5 µg/l	TM208	<2.5 #
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3 #
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2 #
Carbon disulphide	<1.3 µg/l	TM208	<1.3 #
Dichloromethane	<3.7 µg/l	TM208	<3.7 #
Methyl Tertiary Butyl Ether	<1.6 µg/l	TM208	<1.6 #
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9 #
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2 #
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3 #
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8 #
Bromochloromethane	<1.9 µg/l	TM208	<1.9 #
Chloroform	<1.8 µg/l	TM208	<1.8 #
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3 #
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3 #
Carbontetrachloride	<1.4 µg/l	TM208	<1.4 #
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3
Benzene	<1.3 µg/l	TM208	1.72 #
Trichloroethene	<2.5 µg/l	TM208	<2.5 #
1,2-Dichloropropane	<3 µg/l	TM208	<3 #
Dibromomethane	<2.7 µg/l	TM208	<2.7 #
Bromodichloromethane	<0.9 µg/l	TM208	<0.9 #
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9 #
Toluene	<1.4 µg/l	TM208	9.33 #
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5 #
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2 #
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2 #
Tetrachloroethene	<1.5 µg/l	TM208	<1.5 #
Dibromochloromethane	<1.7 µg/l	TM208	<1.7 #
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3 #
Chlorobenzene	<3.5 µg/l	TM208	<3.5 #
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3 #
Ethylbenzene	<2.5 µg/l	TM208	<2.5 #
p/m-Xylene	<2.5 µg/l	TM208	37.5 #
o-Xylene	<1.7 µg/l	TM208	70.3 #
Styrene	<1.2 µg/l	TM208	<1.2 #

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Reference:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239

VOC MS (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

	Sample Identity	A11
	Depth (m)	1.0 - 2.5
	Sample Type	Water(GW/SW)
	Date Sampled	
	Date Received	15/01/2010
	SDG Ref	100118-36
	Lab Sample No.(s)	841167

Component	LOD/Units	Method	
Bromoform	<3 µg/l	TM208	<3 #
Isopropylbenzene	<1.4 µg/l	TM208	<1.4 #
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8 #
Bromobenzene	<2 µg/l	TM208	<2 #
Propylbenzene	<2.6 µg/l	TM208	<2.6 #
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	18.8 #
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #
tert-Butylbenzene	<2 µg/l	TM208	<2 #
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	6.1 #
sec-Butylbenzene	<1.7 µg/l	TM208	<1.7 #
4-Isopropyltoluene	<2.6 µg/l	TM208	<2.6 #
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2 #
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7 #
n-Butylbenzene	<2 µg/l	TM208	<2 #
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3 #
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5 #
Tert-amyl methyl ether	<1 µg/l	TM208	<1 #
Naphthalene	<3.5 µg/l	TM208	<3.5 #
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1 #
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10

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Table of Results - Appendix

SDG Number : 100118-36 **Client :** Mouchel **Client Ref :** 14/01/10 (E8/C11/G8/F11/A

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]
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	
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS	
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			

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

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ALcontrol Laboratories Analytical Services

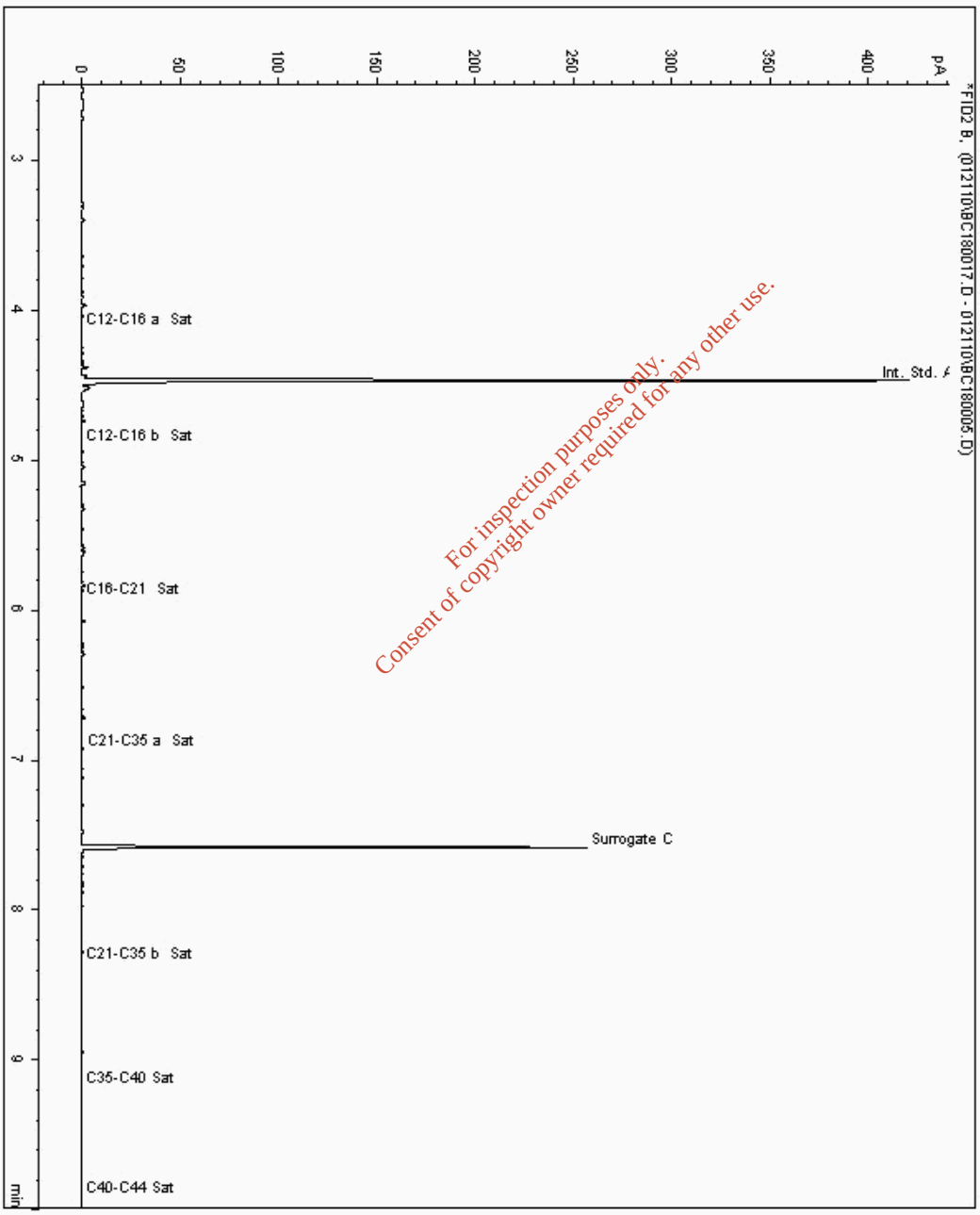
SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239

Chromatogram

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	845640
		Sample ID	E8
		Depth	1.0 - 6.0

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

Sample Identity: 971316-845640
Date Acquired : 21/01/10 13:49:39 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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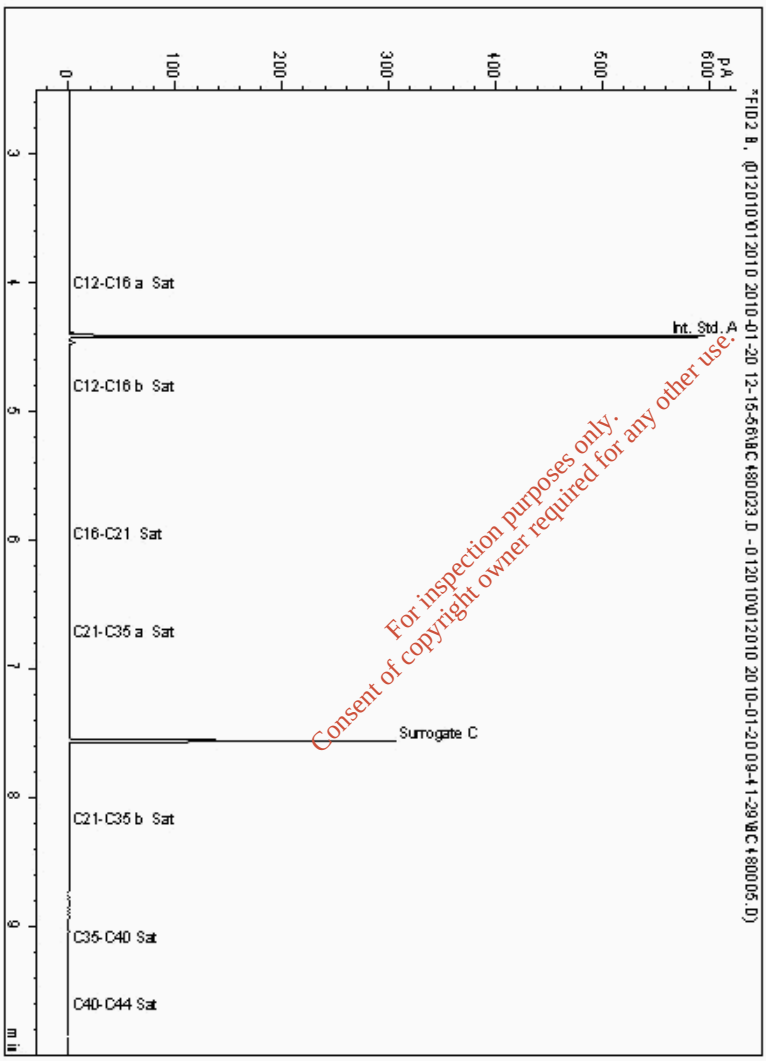
ALcontrol Laboratories Analytical Services

SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	845949
		Sample ID	A11
		Depth	1.0 - 2.5

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

Sample Identity: 971353-845949
Date Acquired : 20/01/10 16:23:28
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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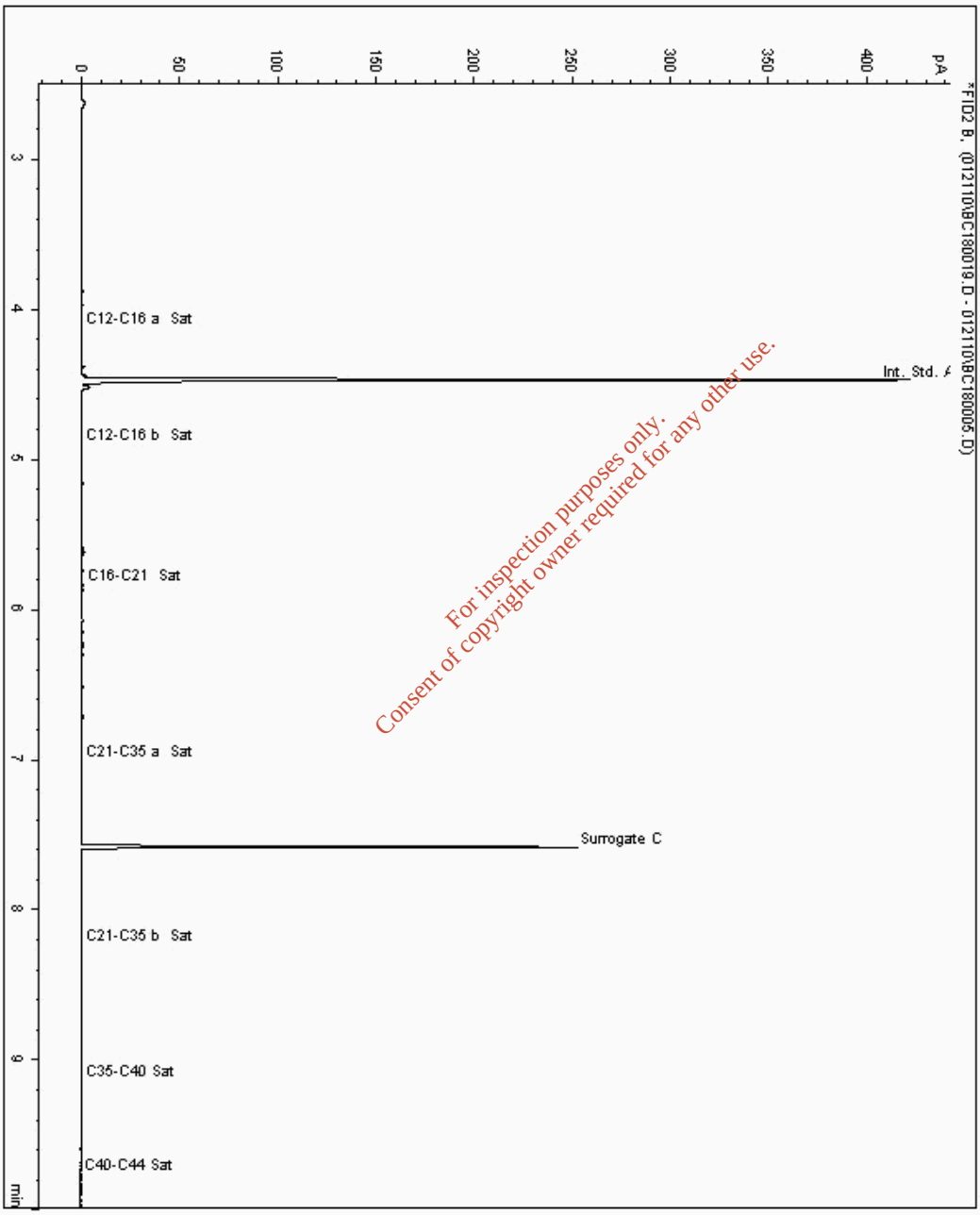
ALcontrol Laboratories Analytical Services

SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239
Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	847090
		Sample ID	F11
		Depth	1.0 - 2.0

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

Sample Identity: 971386-847090
Date Acquired : 21/01/10 14:21:02 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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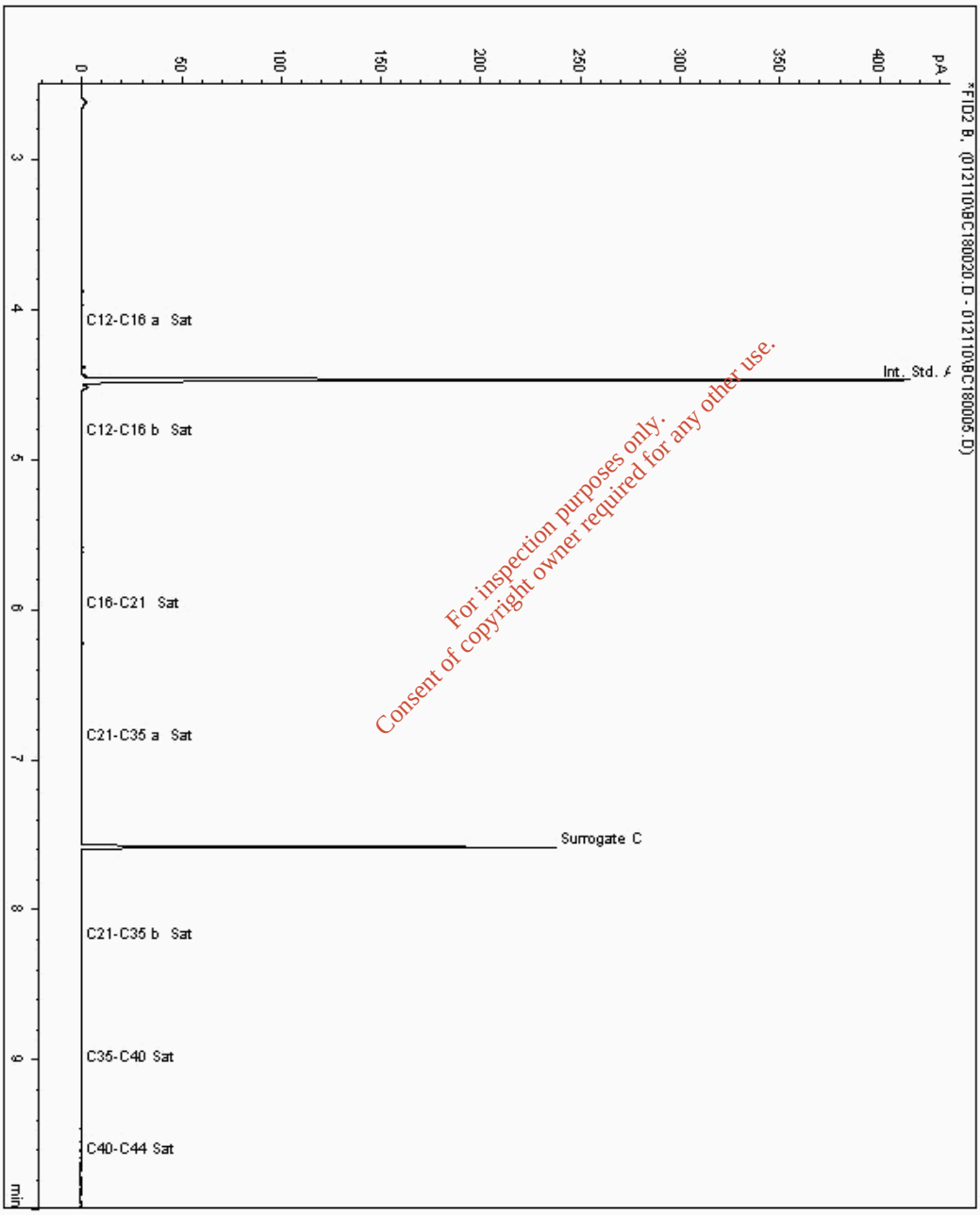
ALcontrol Laboratories Analytical Services

SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	847381
		Sample ID	G8
		Depth	0.5 - 2.0

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

Sample Identity: 971419-847381
Date Acquired : 21/01/10 14:39:37 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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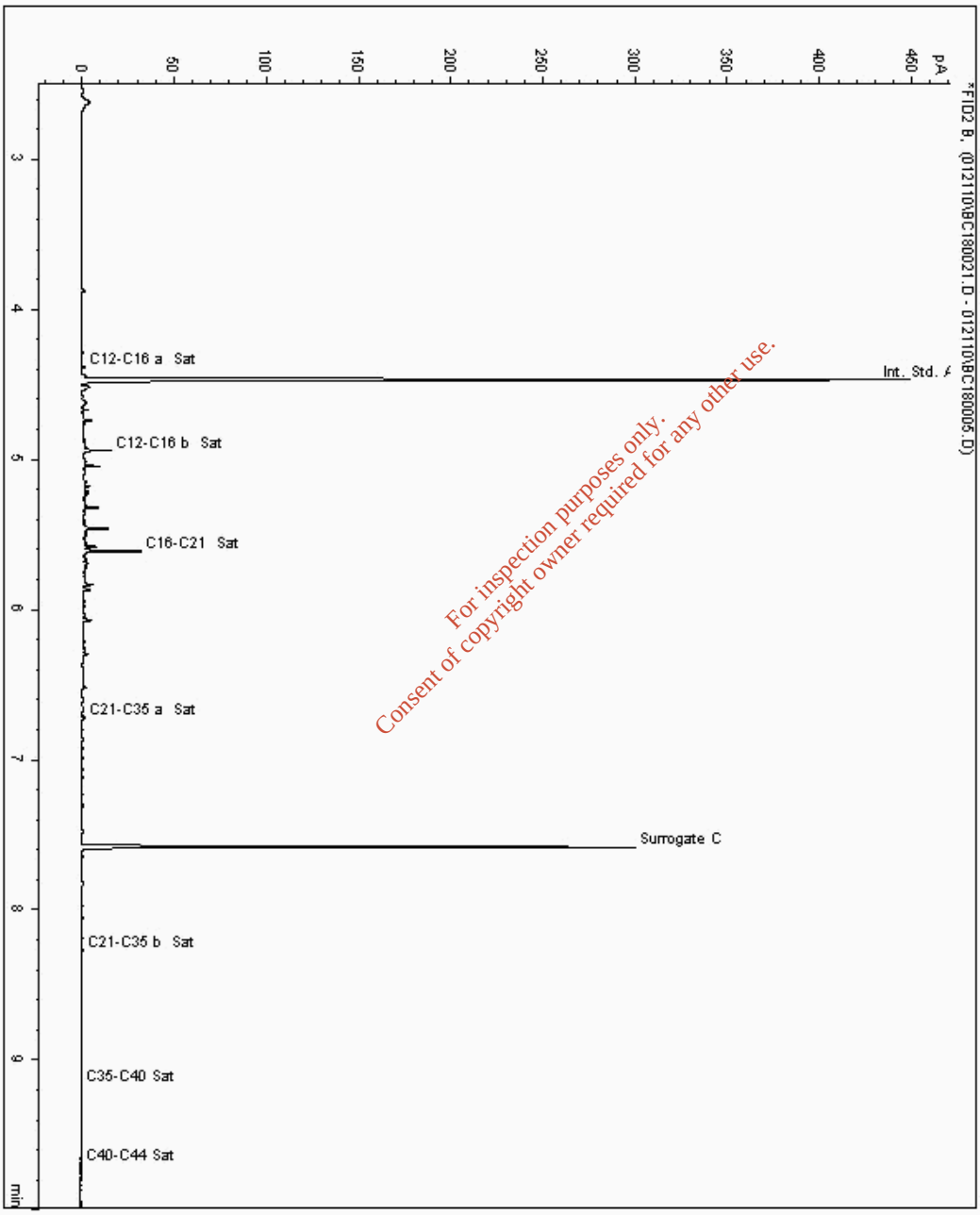
ALcontrol Laboratories Analytical Services

SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	847418
		Sample ID	C11
		Depth	1.5 - 2.5

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

Sample Identity: 971452-847418
Date Acquired : 21/01/10 14:58:17 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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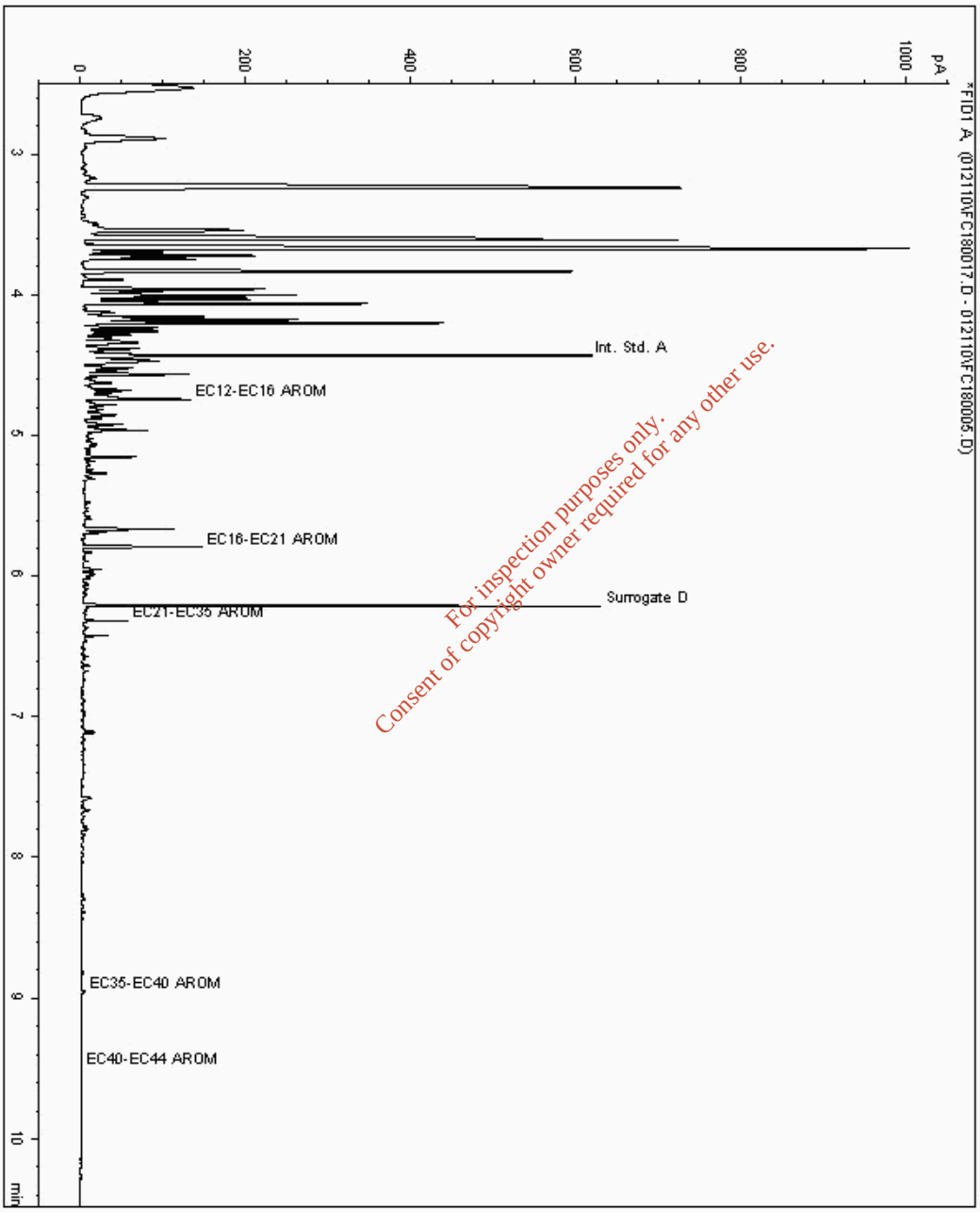
ALcontrol Laboratories Analytical Services

SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	845640
		Sample ID	E8
		Depth	1.0 - 6.0

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

Sample Identity: 971317-845640
Date Acquired : 21/01/10 13:49:39 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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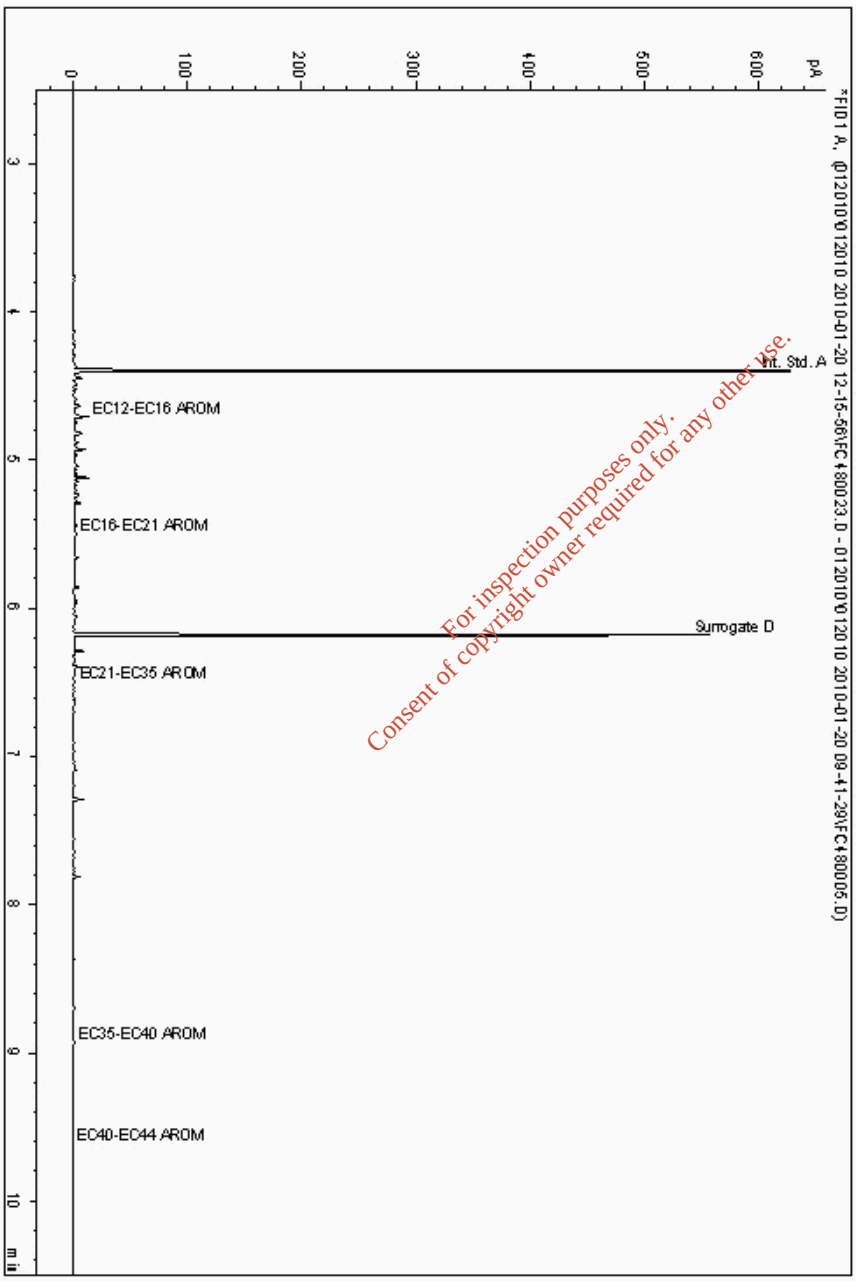
ALcontrol Laboratories Analytical Services

SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	845949
		Sample ID	A11
		Depth	1.0 - 2.5

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

Sample Identity: 971354-845949
Date Acquired : 20/01/10 16:23:28
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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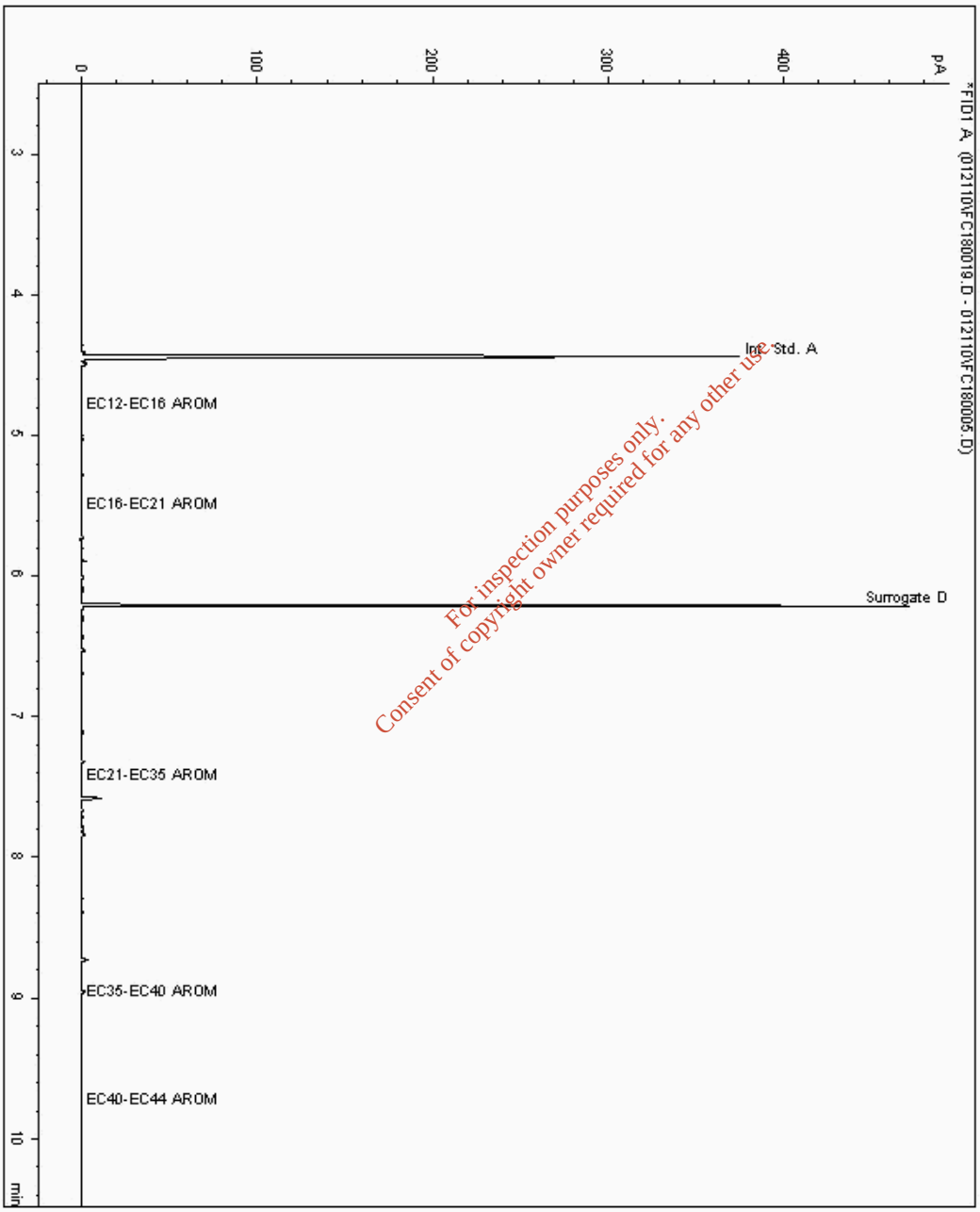
ALcontrol Laboratories Analytical Services

SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	847090
		Sample ID	F11
		Depth	1.0 - 2.0

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

Sample Identity: 971387-847090
Date Acquired : 21/01/10 14:21:02 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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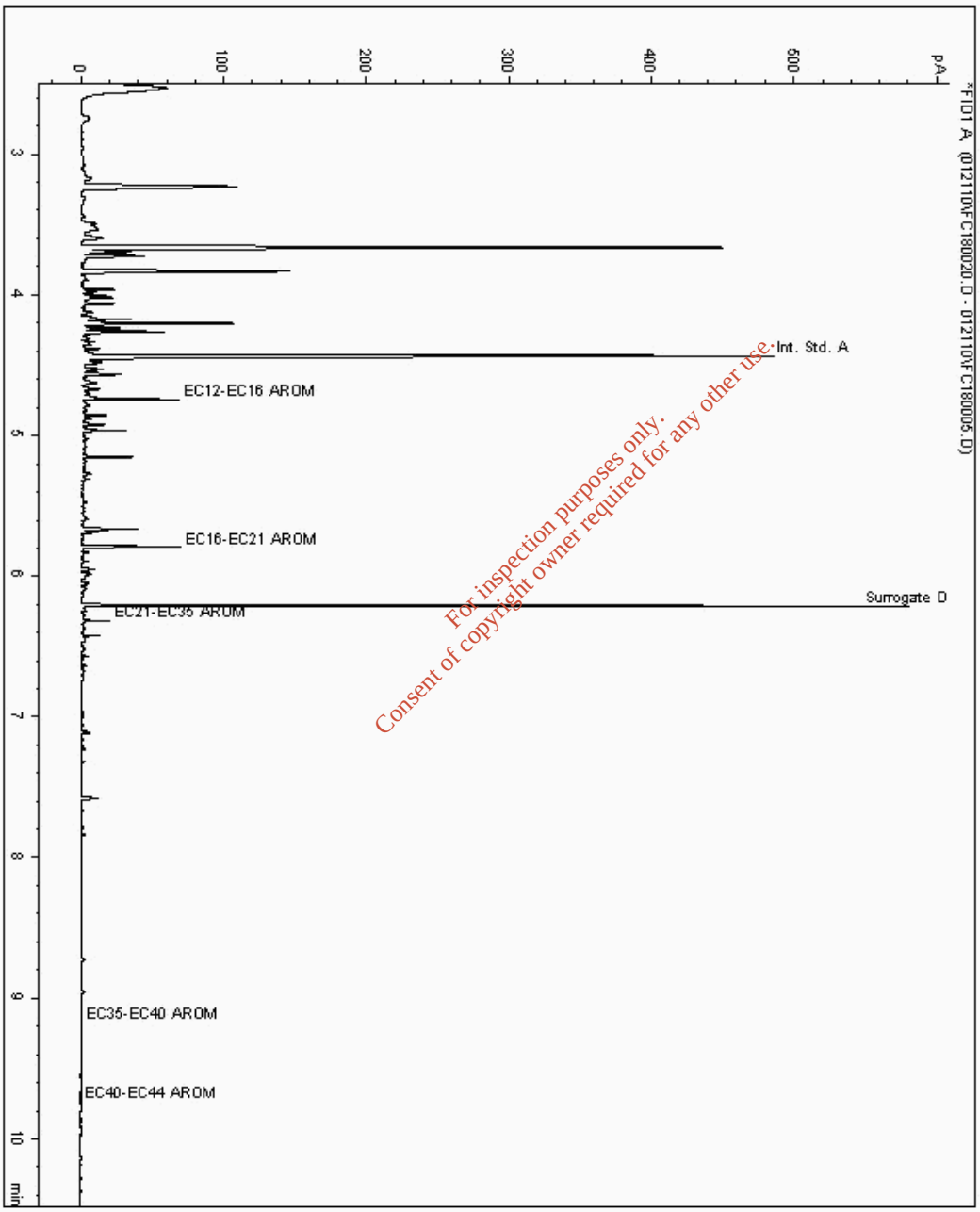
SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239
Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	847381
		Sample ID	G8
		Depth	0.5 - 2.0

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

Sample Identity: 971420-847381
Date Acquired : 21/01/10 14:39:37 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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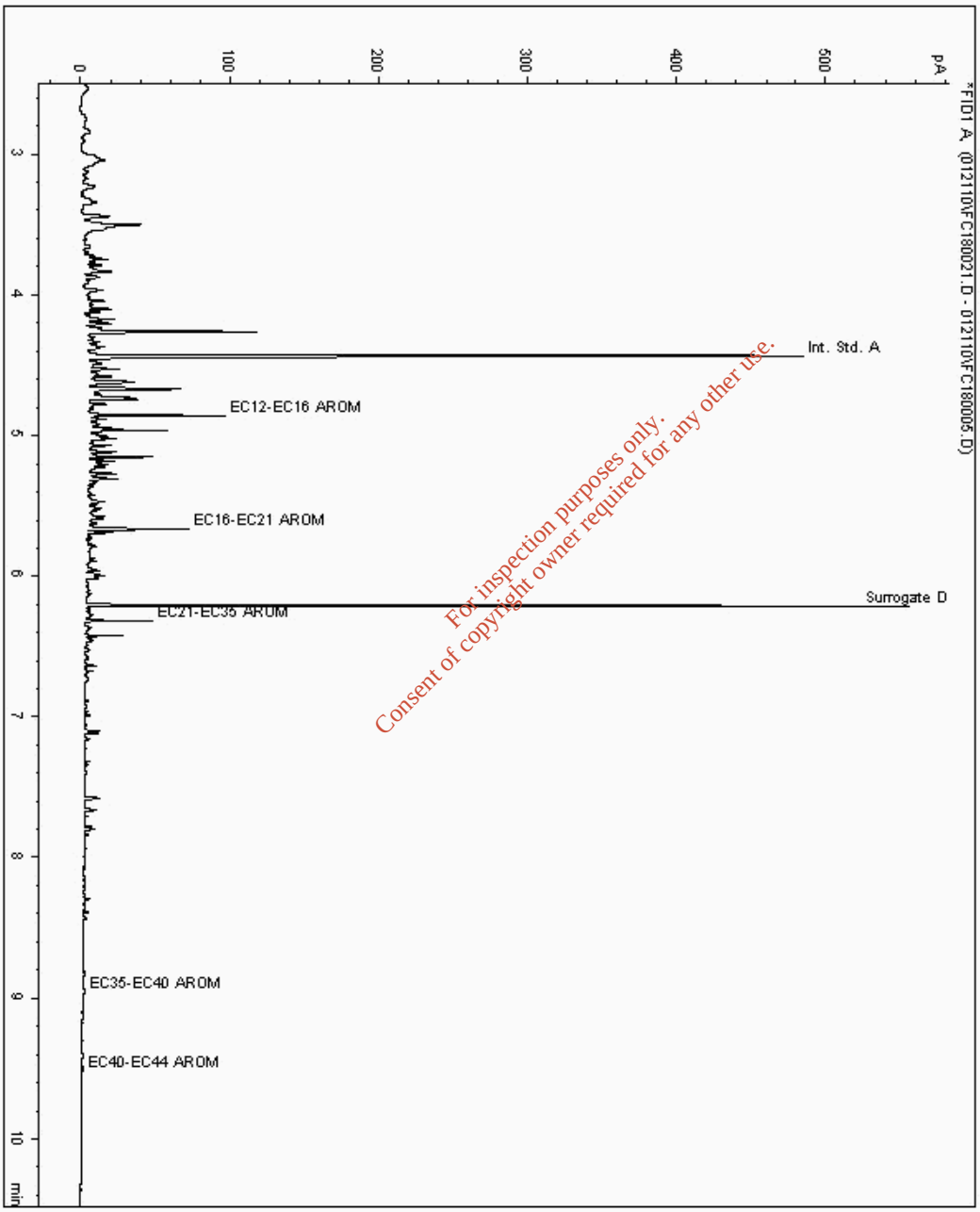
ALcontrol Laboratories Analytical Services

SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	847418
		Sample ID	C11
		Depth	1.5 - 2.5

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

Sample Identity: 971453-847418
Date Acquired : 21/01/10 14:58:17 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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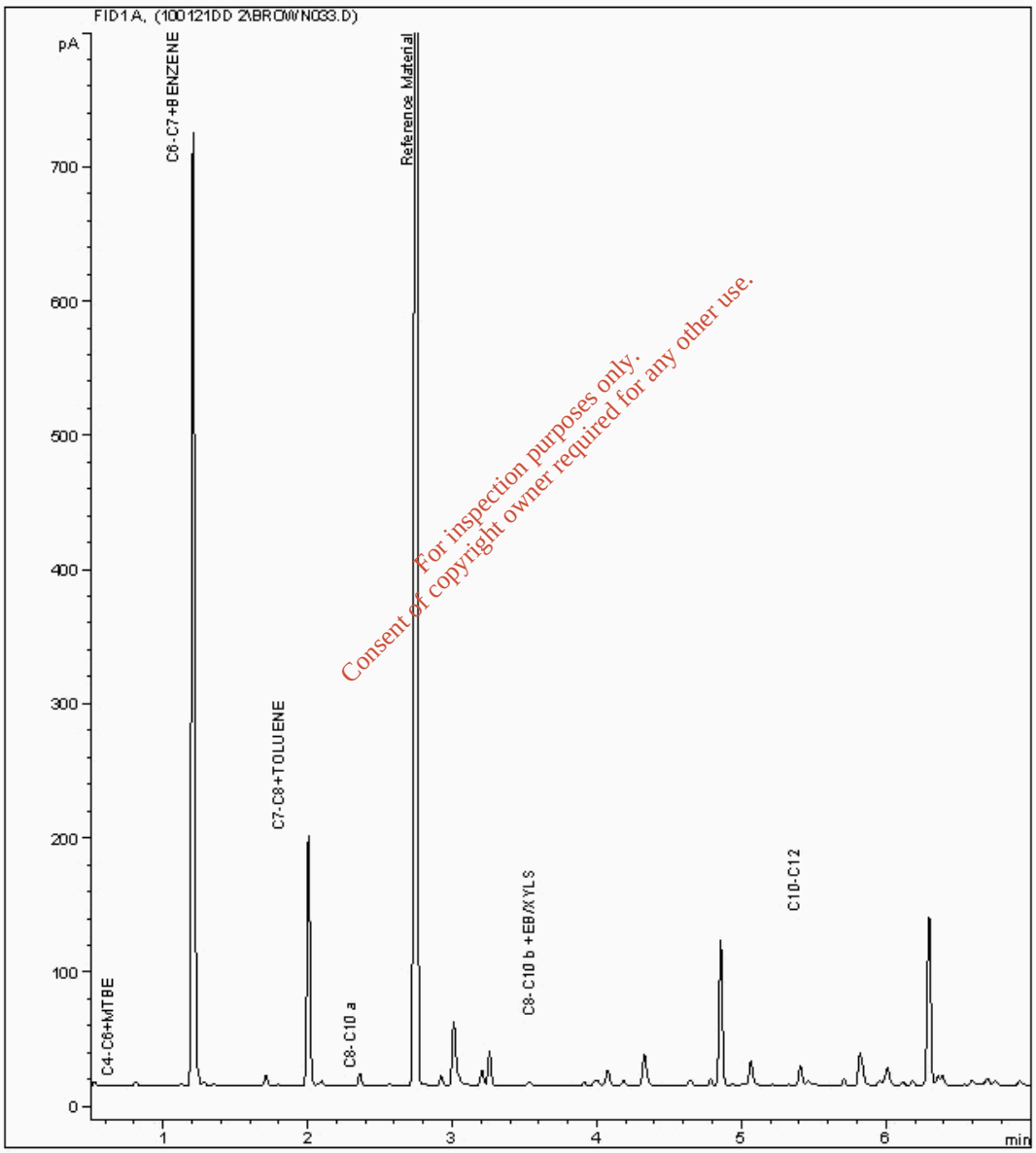
SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	840697
		Sample ID	E8
		Depth	1.0 - 6.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 971315-840697
Date Acquired : 21/01/10 17:24:05
Units : ppb
Dilution : 5



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ALcontrol Laboratories Analytical Services

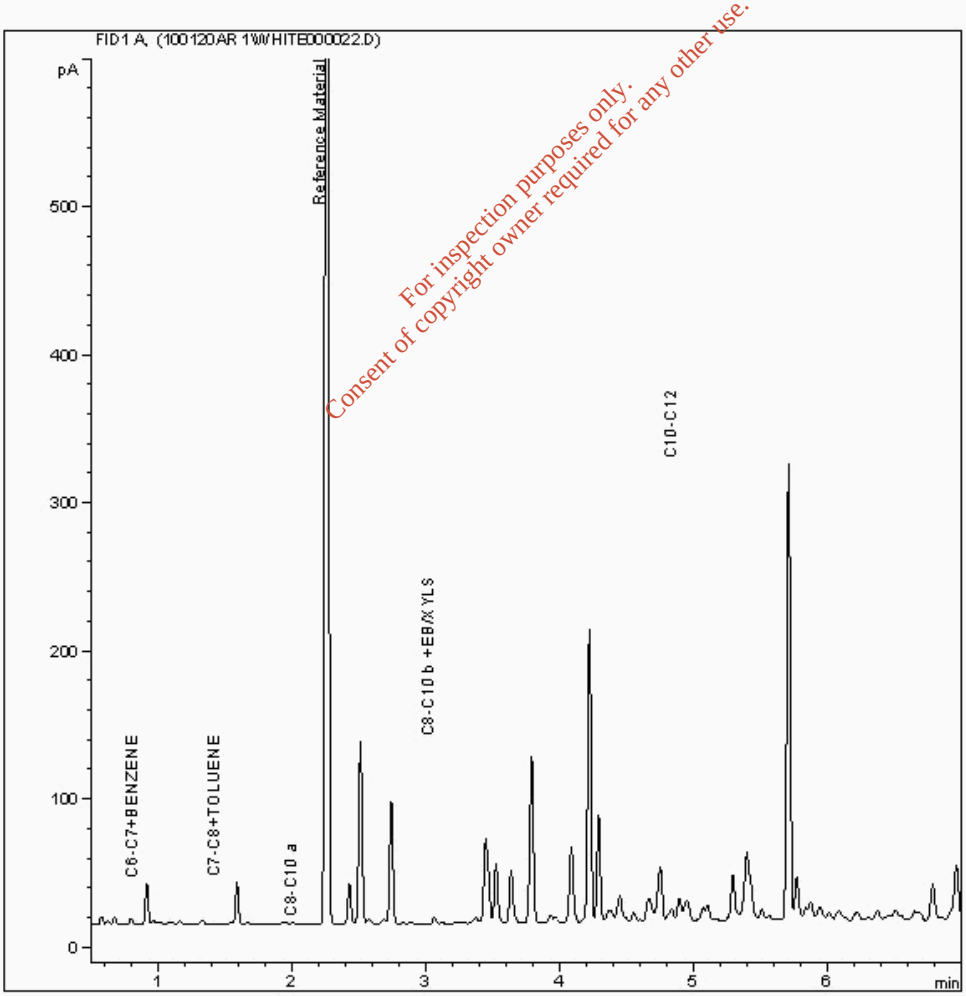
SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	840718
		Sample ID	C11
		Depth	1.5 - 2.5

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 971451-840718
Date Acquired : 20/01/10 23:00:14
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	624
2	C6-C7+BENZENE	1436
3	C7-C8+TOLUENE	1495
4	C8-C10 a	249
5	Reference Material	22558
6	C8-C10 b +EB/XYLS	21393
7	C10-C12	46026



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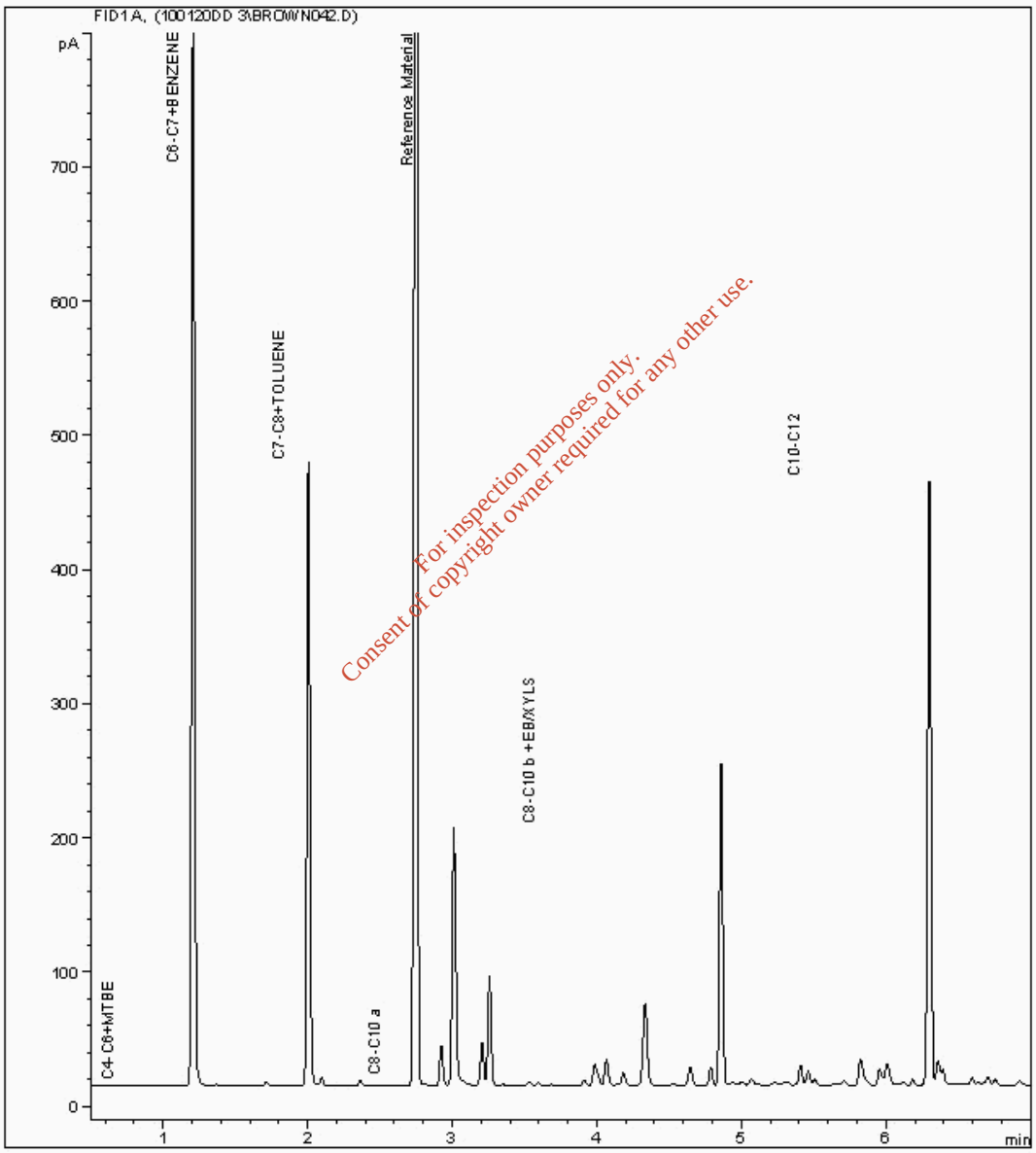
Validated

ALcontrol Laboratories Analytical Services

SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239
Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	840894
		Sample ID	G8
		Depth	0.5 - 2.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 971418-840894
Date Acquired : 20/01/10 18:42:41
Units : ppb
Dilution : 1



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Validated

ALcontrol Laboratories Analytical Services

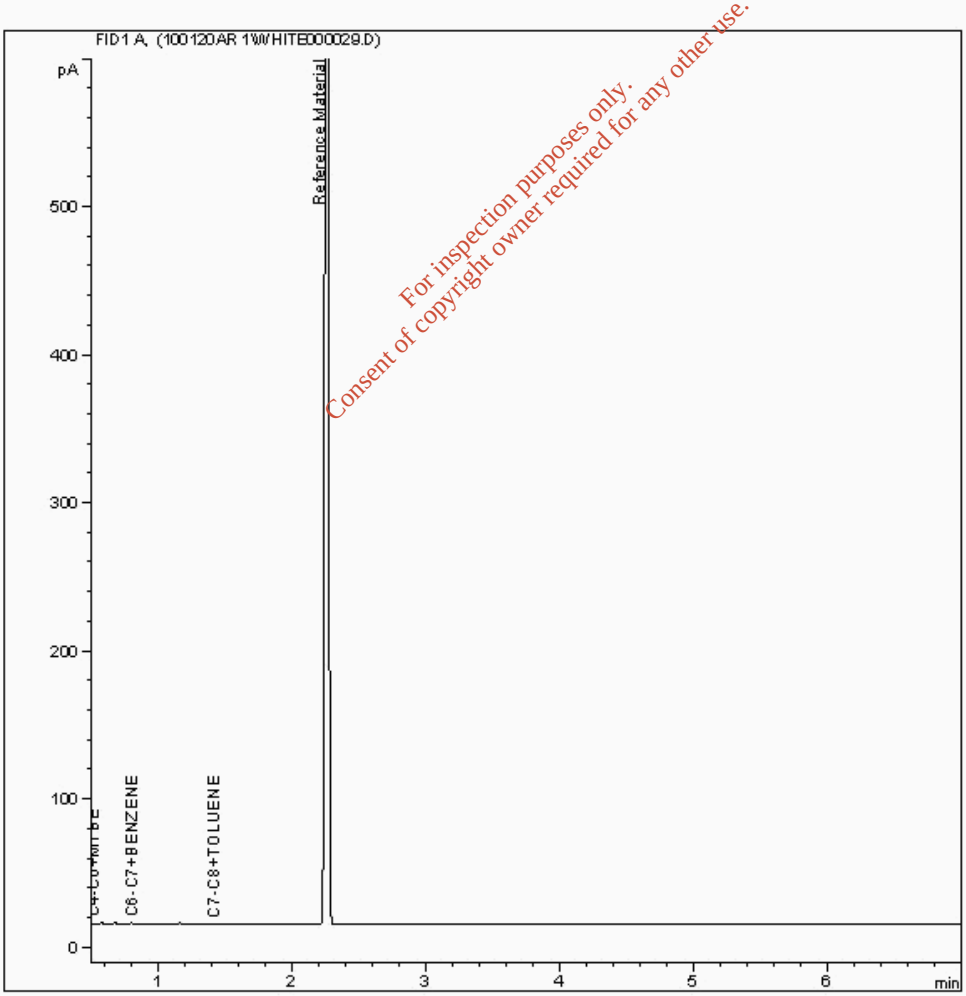
SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	841095
		Sample ID	F11
		Depth	1.0 - 2.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 971385-841095
Date Acquired : 21/01/10 00:35:18
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	143
2	C6-C7+BENZENE	220
3	C7-C8+TOLUENE	195
4	C8-C10 a	0
5	Reference Material	21702
6	C8-C10 b +EB/XYLS	0
7	C10-C12	0



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Validated

ALcontrol Laboratories Analytical Services

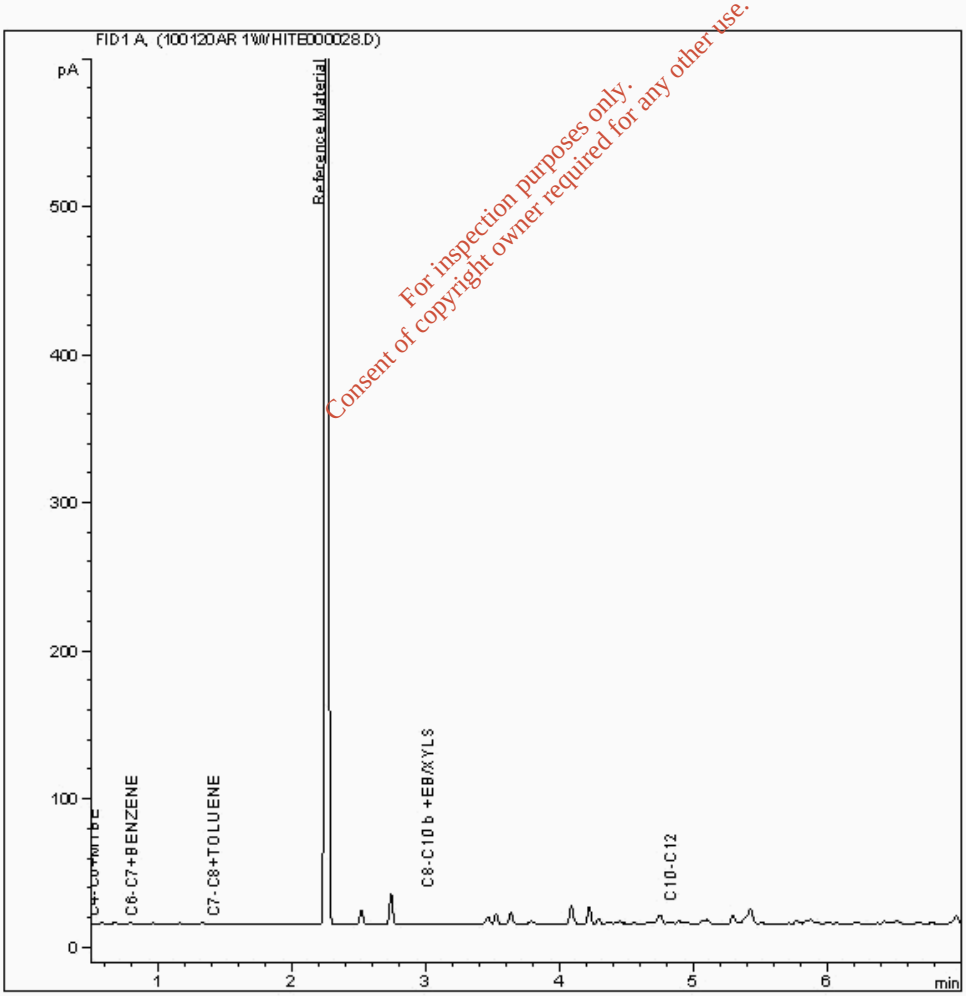
SDG:	100118-36	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-98	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (E8/C11/G8/F11/A11)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70239

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	841122
		Sample ID	A11
		Depth	1.0 - 2.5

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 971352-841122
Date Acquired : 21/01/10 00:21:44
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	170
2	C6-C7+BENZENE	269
3	C7-C8+TOLUENE	305
4	C8-C10 a	0
5	Reference Material	22373
6	C8-C10 b +EB/XYLS	2508
7	C10-C12	4820



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APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH_4 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. **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.
13. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
14. 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).
15. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
16. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
17. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
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 the major 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.

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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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKEN SVOC	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM/EA	SOLID PHASE EXTRACTION	GC MS
TRIAZINE HERBS	DCM/EA	SOLID PHASE EXTRACTION	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
SAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
UNSAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	DCM	LIQUID/LIQUID EXTRACTION	EZ FLASH

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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 (C6-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

Last updated 25 June 2009

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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).

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.

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

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ALcontrol Laboratories

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

Attention: Verity Sankey

CERTIFICATE OF ANALYSIS

Date:	26 January 2010		
Customer:	D_MOUCHEL_ELE-97		
Sample Delivery Group (SDG):	100115-129	**Report No.:**	70911
Your Reference:	14/01/10 (D5/B8/A3/A4/C7)		
Location:	Limerick Gasworks		

We received 5 samples on Friday January 15, 2010 and 5 of these samples were scheduled for analysis which was completed on Tuesday January 26, 2010. 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).

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Approved By:

Chris Crutchley

Operations Director - Land UK & Ireland

UKAS TESTING
1291
GROUP

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Verity Sankey
Client Reference:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

Received Sample Overview

Lab Sample No(s)	Customer Reference	Depth (m)	Sampled Date
836266	A3 EW002	2.0 - 4.5	14/01/2010 06:00:00
836268	A4 EW002	1.5 - 3.0	14/01/2010 06:00:00
836270	B8 EW002	2.0 - 2.5	14/01/2010 00:00:00
836271	C7 EW002	2.0 - 7.0	14/01/2010 00:00:00
836273	D5 EW002	2.0 - 3.0	

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

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ALcontrol Laboratories Analytical Services

SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Verity Sankey
Client Reference:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

LIQUID

Results Legend

X Test

No Determination Possible

N

		Lab Sample No(s)	836266			836268			836270			836271			836273			Total
		Sample ID	A3			A4			B8			C7			D5			
		Depth (m)	2.0 - 4.5			1.5 - 3.0			2.0 - 2.5			2.0 - 7.0			2.0 - 3.0			
		Container	1l green glass bottle	500ml Plastic	60g VOC Dublin	1l green glass bottle	500ml Plastic	60g VOC Dublin	1l green glass bottle	500ml Plastic	60g VOC Dublin	1l green glass bottle	500ml Plastic	60g VOC Dublin	1l green glass bottle	500ml Plastic	60g VOC Dublin	
Ammonium	All			X			X			X			X			X		05
Anions by ion Chromatography	All												X					01
Anions by Kone (w)	All			X			X			X						X		04
Cyanide Comp/Free/Total/Thiocyanate	All		X			X			X			X			X			05
Dissolved Metals by ICP-MS	All			X			X			X			X			X		05
EPH CWG (Aliphatic) Aqueous GC (W)	All		X			X			X			X			X			05
EPH CWG (Aromatic) Aqueous GC (W)	All		X			X			X			X			X			05
GRO BTEX MTBE GC (W)	All				X			X			X			X			X	05
Hexavalent Chromium (w)	All			X			X			X			X			X		05
Mercury Dissolved	All		X			X			X			X			X			05
PAH Spec MS - Aqueous (W)	All		X			X			X			X			X			05
pH Value	All			X			X			X			X			X		05
Phenols by HPLC (W)	All		X			X			X			X			X			05
Sulphide	All			X			X			X			X			X		05
Total Metals by ICP-MS	All			X			X			X			X			X		05
TPH CWG (W)	All		X			X			X			X			X			05
VOC MS (W)	All				X			X			X			X				04

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ALcontrol Laboratories Analytical Services

SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Verity Sankey
Client Reference:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

Test Completion dates

SDG reference: 100115-129

Lab Sample No(s)	836266	836268	836270	836271	836273
Sample ID	A3	A4	B8	C7	D5
Depth	2.0 - 4.5	1.5 - 3.0	2.0 - 2.5	2.0 - 7.0	2.0 - 3.0
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	19/01/2010	19/01/2010	19/01/2010	19/01/2010	19/01/2010
Anions by ion Chromatography				19/01/2010	
Anions by Kone (w)	19/01/2010	19/01/2010	19/01/2010		19/01/2010
Cyanide	19/01/2010	19/01/2010	19/01/2010	19/01/2010	19/01/2010
Dissolved Metals by ICP-MS	18/01/2010	18/01/2010	18/01/2010	18/01/2010	19/01/2010
EPH CWG (Aliphatic) Aqueous GC	22/01/2010	22/01/2010	22/01/2010	22/01/2010	22/01/2010
EPH CWG (Aromatic) Aqueous GC	22/01/2010	22/01/2010	22/01/2010	22/01/2010	22/01/2010
GRO BTEX MTBE GC (W)	19/01/2010	19/01/2010	20/01/2010	20/01/2010	19/01/2010
Hexavalent Chromium (w)	18/01/2010	18/01/2010	18/01/2010	18/01/2010	19/01/2010
Mercury Dissolved	20/01/2010	20/01/2010	20/01/2010	20/01/2010	20/01/2010
PAH Spec MS - Aqueous (W)	23/01/2010	22/01/2010	23/01/2010	23/01/2010	22/01/2010
pH Value	18/01/2010	18/01/2010	18/01/2010	18/01/2010	19/01/2010
Phenols by HPLC (W)	20/01/2010	20/01/2010	20/01/2010	20/01/2010	20/01/2010
Sulphide	18/01/2010	18/01/2010	18/01/2010	18/01/2010	20/01/2010
Total Metals by ICP-MS	19/01/2010	19/01/2010	19/01/2010	19/01/2010	21/01/2010
TPH CWG (W)	22/01/2010	22/01/2010	22/01/2010	22/01/2010	22/01/2010
VOC MS (W)	26/01/2010	25/01/2010	25/01/2010	25/01/2010	

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Reference:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

Results Legend

ISO17025 accredited.
M *m*CERTS accredited.
***** subcontracted test.
****** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	A3	A4	B8	C7	D5
Sample Identity			A3	A4	B8	C7	D5
Depth (m)			2.0 - 4.5	1.5 - 3.0	2.0 - 2.5	2.0 - 7.0	2.0 - 3.0
Sample Type			Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled			14/01/2010	14/01/2010	14/01/2010	14/01/2010	
Date Received			15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010
SDG Ref			100115-129	100115-129	100115-129	100115-129	100115-129
Lab Sample No.(s)			836266	836268	836270	836271	836273
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099	9.27 #	2.93 #	60.3 #	118 #	1.48 #
Sulphide	<0.1 mg/l	TM101	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Arsenic Dissolved	<0.12 µg/l	TM152	29.8 #	3.3 #	18 #	37.1 #	6.04 #
Cadmium Dissolved	<0.1 µg/l	TM152	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Copper Dissolved	<0.85 µg/l	TM152	1.14 #	1.03 #	1.71 #	<0.85 #	0.914 #
Lead Dissolved	<0.02 µg/l	TM152	0.034 #	0.112 #	0.087 #	0.371 #	<0.02 #
Nickel Dissolved	<0.15 µg/l	TM152	5.52 #	4.36 #	7.18 #	6.15 #	7.49 #
Selenium Dissolved	<0.39 µg/l	TM152	1.23 #	1.26 #	14.7 #	44.6 #	1.56 #
Zinc Dissolved	<0.41 µg/l	TM152	2.33 #	1.56 #	1.32 #	1.18 #	0.955 #
Mercury Dissolved	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	0.029 #	<0.01 #
Sulphate (soluble)	3 mg/l	TM184	423 #	310 #	67.5 #		43 #
Chromium (Unfiltered)	<3 µg/l	TM191	11.5	9.21	<3	5.9	<3
Sulphate	<0.1 mg/l	TM226				64.6 #	
Total Cyanide	<0.05 mg/l	TM227	0.242 #	0.177 #	0.118 #	0.814 #	0.179 #
Hexavalent Chromium	<0.03 mg/l	TM241	<0.03	<0.03	<0.06	<0.15	<0.03
pH value	<1 pH Units	TM256	7.88 #	7.84 #	8.57 #	9.15 #	8.5 #
Phenol	<0.002 mg/l	TM259	0.02 #	<0.002 #	12.9 #	63.8 #	<0.002 #
Cresols	<0.006 mg/l	TM259	<0.006 #	<0.006 #	24.8 #	159 #	<0.006 #
Xylenols	<0.008 mg/l	TM259	<0.008 #	<0.008 #	18.6 #	97.3 #	<0.008 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM259	<0.003 #	<0.003 #	<0.015 #	<0.15 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259	<0.006 #	<0.006 #	6.45 #	38 #	<0.006 #
Phenols Total of 5 Speciated	<0.025 mg/l	TM259	<0.025	<0.025	62.8	358	<0.025

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ALcontrol Laboratories Analytical Services

SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Reference:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

PAH Spec MS - Aqueous (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	A3	A4	B8	C7	D5
Sample Identity			A3	A4	B8	C7	D5
Depth (m)			2.0 - 4.5	1.5 - 3.0	2.0 - 2.5	2.0 - 7.0	2.0 - 3.0
Sample Type			Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled			14/01/2010	14/01/2010	14/01/2010	14/01/2010	
Date Received			15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010
SDG Ref			100115-129	100115-129	100115-129	100115-129	100115-129
Lab Sample No.(s)			836266	836268	836270	836271	836273
Naphthalene (Aqueous)	<0.1 µg/l	TM178	0.853	1.64	3680	4410	0.969
Acenaphthene (Aqueous)	<0.015 µg/l	TM178	114	1.26	32.5	19	0.083
Acenaphthylene (Aqueous)	<0.011 µg/l	TM178	65.5	1.56	206	183	0.422
Fluoranthene (Aqueous)	<0.014 µg/l	TM178	4.81	6.43	81.4	21.4	3.89
Anthracene (Aqueous)	<0.015 µg/l	TM178	3.25	0.525	55.3	19.8	0.425
Phenanthrene (Aqueous)	<0.022 µg/l	TM178	<0.11	0.395	198	81.7	0.58
Fluorene (Aqueous)	<0.014 µg/l	TM178	34.1	0.649	107	68.6	0.196
Chrysene (Aqueous)	<0.013 µg/l	TM178	0.261	1.26	18	4.35	0.622
Pyrene (Aqueous)	<0.015 µg/l	TM178	5.47	5.01	56.5	13.8	2.32
Benzo(a)anthracene (Aqueous)	<0.017 µg/l	TM178	0.282	2.23	16.3	<4.25	0.856
Benzo(b)fluoranthene (Aqueous)	<0.023 µg/l	TM178	0.119	2.97	15.4	<5.75	1.32
Benzo(k)fluoranthene (Aqueous)	<0.027 µg/l	TM178	<0.135	1.13	6.81	<6.75	0.503
Benzo(a)pyrene (Aqueous)	<0.009 µg/l	TM178	0.115	2.19	9.92	2.49	0.932
Dibenzo(ah)anthracene (Aqueous)	<0.016 µg/l	TM178	<0.08	0.338	<3.2	<4	0.124
Benzo(ghi)perylene (Aqueous)	<0.016 µg/l	TM178	<0.08	1.35	7.18	<4	0.489
Indeno(123cd)pyrene (Aqueous)	<0.014 µg/l	TM178	<0.07	1.26	5.73	<3.5	0.434
PAH 16 Total (Aqueous)	<0.1 µg/l	TM178	229	30.2	4500	4840	14.2

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ALcontrol Laboratories Analytical Services

SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Reference:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

TPH CWG (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	A3	A4	B8	C7	D5
			Depth (m)	2.0 - 4.5	1.5 - 3.0	2.0 - 2.5	2.0 - 7.0	2.0 - 3.0
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/01/2010	14/01/2010	14/01/2010	14/01/2010	
			Date Received	15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010
			SDG Ref	100115-129	100115-129	100115-129	100115-129	100115-129
			Lab Sample No.(s)	836266	836268	836270	836271	836273
GRO C5-C12	<42 µg/l	TM245		2970 #	216 #	<42 #	88200 #	479 #
MTBE	<3 µg/l	TM245		<3 #	<3 #	<3 #	<30 #	<3 #
Benzene	<7 µg/l	TM245		458 #	<7 #	7150 #	22800 #	38 #
Toluene	<4 µg/l	TM245		36 #	<4 #	4120 #	9130 #	24 #
Ethyl Benzene	<5 µg/l	TM245		82 #	<5 #	310 #	391 #	<5 #
m & p Xylene	<8 µg/l	TM245		77 #	12 #	2120 #	2580 #	32 #
o Xylene	<3 µg/l	TM245		63 #	8 #	885 #	1080 #	39 #
Sum m&p and o Xylene	<10 µg/l	TM245		140 #	12 #	3000 #	3660 #	71 #
Sum of BTEX	<10 µg/l	TM245		716 #	12 #	14600 #	36000 #	133 #
Aliphatics C5-C6	<10 µg/l	TM245		<10	<10	<10	402	<10
Aliphatics >C6-C8	<10 µg/l	TM245		319	<10	<10	<100	23.2
Aliphatics >C8-C10	<10 µg/l	TM245		205	31.2	<10	6680	37.3
Aliphatics >C10-C12	<10 µg/l	TM245		567	50.4	340	16500	91.8
Aliphatics >C12-C16 (Aqueous)	<10 µg/l	TM174		<10	126	11	<10	<10
Aliphatics >C16-C21 (Aqueous)	<10 µg/l	TM174		<10	247	50	<10	<10
Aliphatics >C21-C35 (Aqueous)	<10 µg/l	TM174		<10	85	44	<10	<10
Total Aliphatics C5-C12	<10 µg/l	TM245		1090	81.6	<10	23600	152
Total Aliphatics >C12-C35 (Aqueous)	<10 µg/l	TM174		<10	458	105	<10	<10
Aromatics C6-C7	<10 µg/l	TM245		458	<10	7150	22800	38
Aromatics >C7-C8	<10 µg/l	TM245		36	<10	4120	9130	24
Aromatics >EC8-EC10	<10 µg/l	TM245		529	58.8	1320	14100	127
Aromatics >EC10-EC12	<10 µg/l	TM245		850	75.6	<10	24800	138
Aromatics >EC12-EC16 (Aqueous)	<10 µg/l	TM174		634	61	5200	16400	83
Aromatics >EC16-EC21 (Aqueous)	<10 µg/l	TM174		185	116	1340	1050	51
Aromatics >EC21-EC35 (Aqueous)	<10 µg/l	TM174		22	156	1060	306	93
Total Aromatics C6-C12	<10 µg/l	TM245		1870	134	12600	70800	327
Total Aromatics >EC12-EC35 (Aqueous)	<10 µg/l	TM174		841	333	7600	17800	227
Surrogate Recovery %**	%	TM245		92	92	85	84	95
Total Aliphatics & Aromatics >C12-C44 (Aqueous)	<10 µg/l	TM174		841	791	7710	17800	227
GRO (>C8-C10A)	<10 µg/l	TM245		14.9	<10	<10	742	<10
Total Aliphatics >C5-C35 (Aqueous)	<10 µg/l	TM174		1090	540	105	23600	152
Total Aromatics >C6-C35 (Aqueous)	<10 µg/l	TM174		2710	467	20200	88500	554
TPH C5-C35 (Aqueous)	<10 µg/l	TM174		3800	1010	20300	112000	706

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Reference:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

VOC MS (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	A3	A4	B8	C7
Sample Identity			A3	A4	B8	C7
Depth (m)			2.0 - 4.5	1.5 - 3.0	2.0 - 2.5	2.0 - 7.0
Sample Type			Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled			14/01/2010	14/01/2010	14/01/2010	14/01/2010
Date Received			15/01/2010	15/01/2010	15/01/2010	15/01/2010
SDG Ref			100115-129	100115-129	100115-129	100115-129
Lab Sample No.(s)			836266	836268	836270	836271
Dichlorodifluoromethane	<1.3 µg/l	TM208	<1.3 #	<1.3 #	<1.3 #	<1.3 #
Chloromethane	<1.7 µg/l	TM208	<1.7 #	<1.7 #	<1.7 #	<1.7 #
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 #	<1.3 #	2.8 #
Dichloromethane	<3.7 µg/l	TM208	<3.7 #	<3.7 #	<3.7 #	<3.7 #
Methyl Tertiary Butyl Ether	<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 #	<1.3 #	<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	536 #	<1.3 #	9930 #	28300 #
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	41 #	<1.4 #	5020 #	9990 #
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 #
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	87.6 #	<2.5 #	296 #	388 #
p/m-Xylene	<2.5 µg/l	TM208	91.2 #	8.7 #	2280 #	2910 #
o-Xylene	<1.7 µg/l	TM208	75.8 #	<1.7 #	946 #	1240 #
Styrene	<1.2 µg/l	TM208	<1.2 #	<1.2 #	196 #	540 #

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ALcontrol Laboratories Analytical Services

SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Reference:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

VOC MS (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	A3	A4	B8	C7
			Depth (m)	2.0 - 4.5	1.5 - 3.0	2.0 - 2.5	2.0 - 7.0
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/01/2010	14/01/2010	14/01/2010	14/01/2010
			Date Received	15/01/2010	15/01/2010	15/01/2010	15/01/2010
			SDG Ref	100115-129	100115-129	100115-129	100115-129
			Lab Sample No.(s)	836266	836268	836270	836271
Bromoform	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #
Isopropylbenzene	<1.4 µg/l	TM208		15 #	<1.4 #	18.1 #	14.2 #
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 #	26.5 #	18.9 #
2-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208		10.4 #	5.18 #	158 #	115 #
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		41.7 #	2.65 #	392 #	276 #
sec-Butylbenzene	<1.7 µg/l	TM208		<1.7 #	<1.7 #	<1.7 #	<1.7 #
4-Isopropyltoluene	<2.6 µg/l	TM208		<2.6 #	<2.6 #	36.7 #	46.4 #
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	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #
Naphthalene	<3.5 µg/l	TM208		32.7 #	<3.5 #	10400 #	11300 #
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

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Table of Results - Appendix

SDG Number : 100115-129 **Client :** Mouchel **Client Ref :** 14/01/10 (D5/B8/A3/A4/C7)

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]
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	
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS	
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters	
TM226	In-House Method	Determination of Anions in Waters using Ion Chromatography	
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			

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

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ALcontrol Laboratories Analytical Services

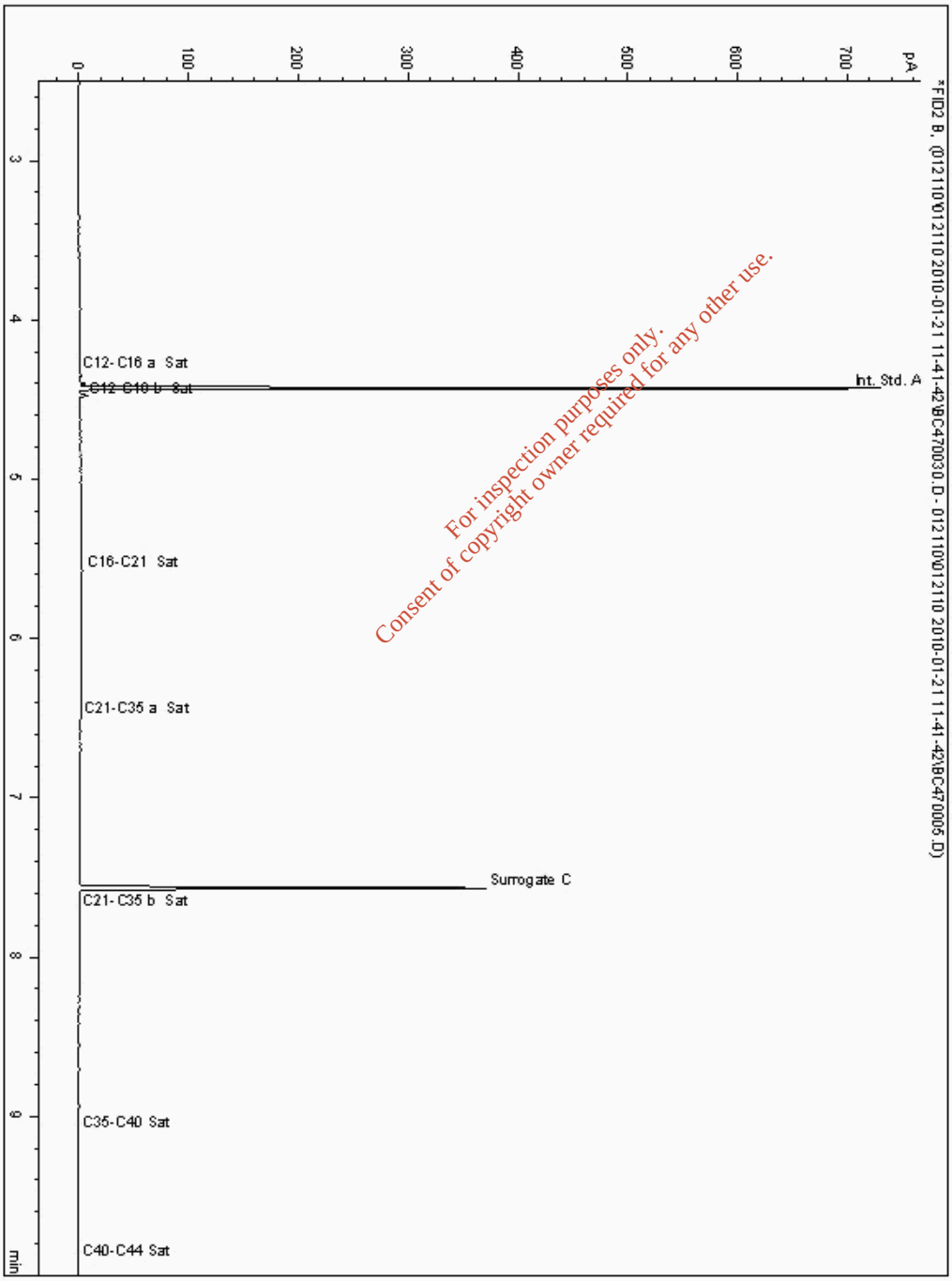
SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

Chromatogram

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	843244
		Sample ID	A4
		Depth	1.5 - 3.0

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

Sample Identity: 970673-843244
Date Acquired : 21/01/10 20:35:50
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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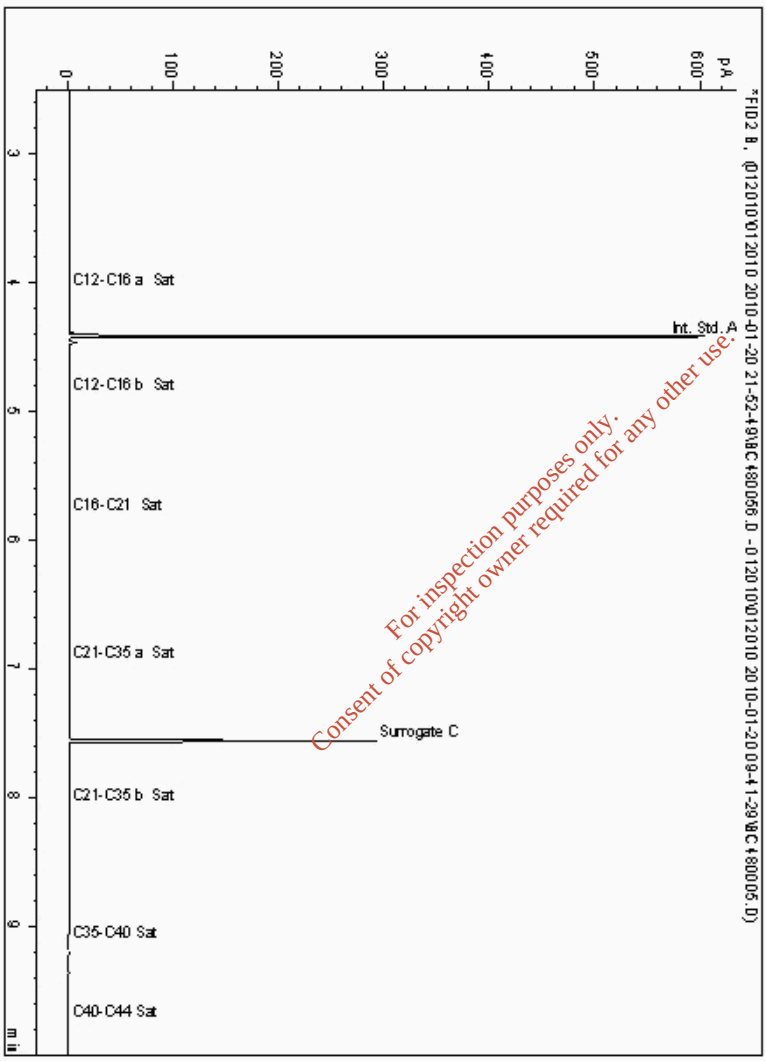
ALcontrol Laboratories Analytical Services

SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	843593
		Sample ID	D5
		Depth	2.0 - 3.0

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

Sample Identity: 970748-843593
Date Acquired : 21/01/10 03:20:14
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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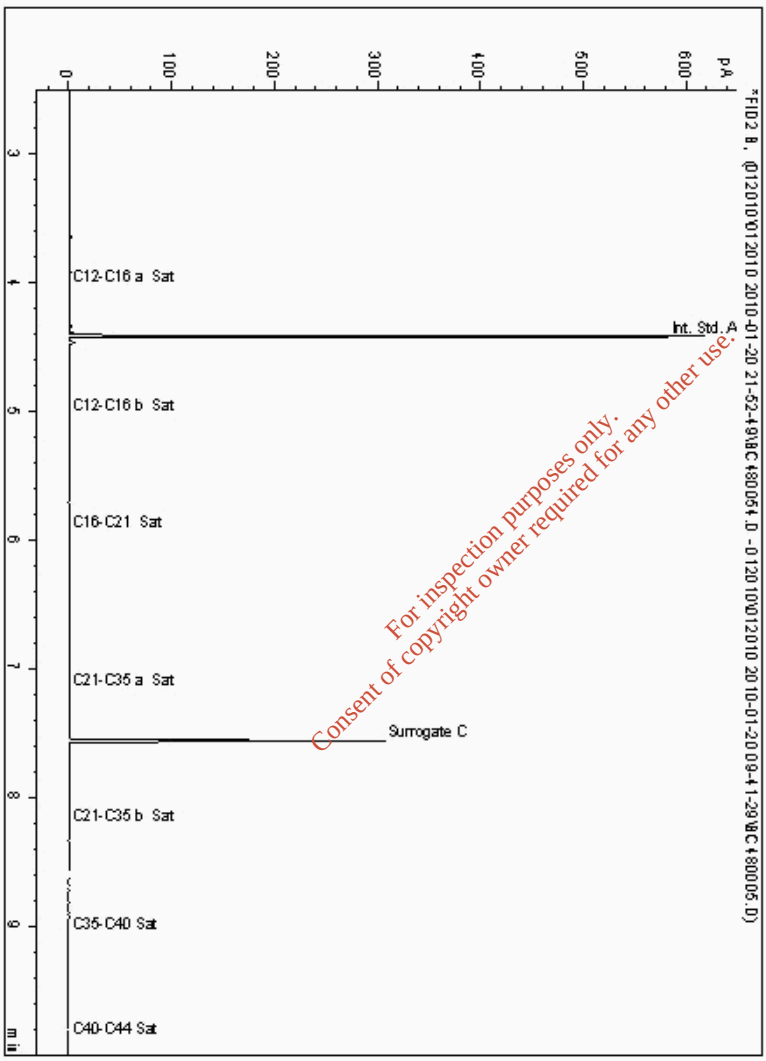
ALcontrol Laboratories Analytical Services

SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	843635
		Sample ID	C7
		Depth	2.0 - 7.0

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

Sample Identity: 970731-843635
Date Acquired : 21/01/10 02:48:34
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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Validated

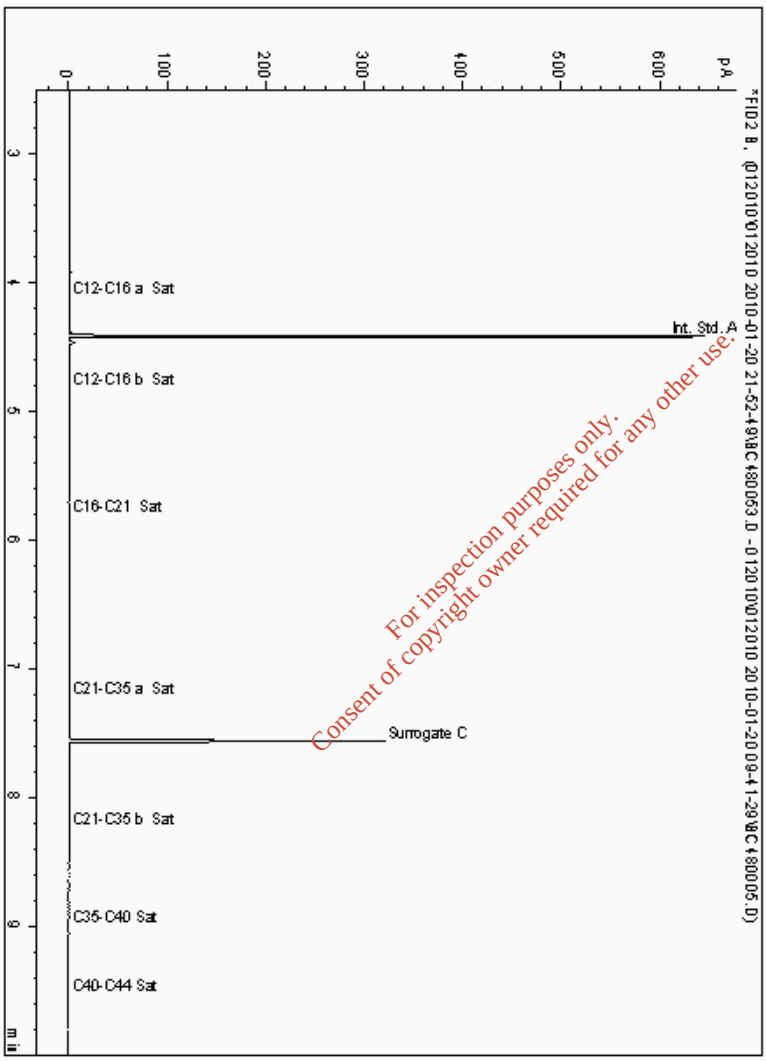
ALcontrol Laboratories Analytical Services

SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	843846
		Sample ID	A3
		Depth	2.0 - 4.5

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

Sample Identity: 970644-843846
Date Acquired : 21/01/10 02:29:53
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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Validated

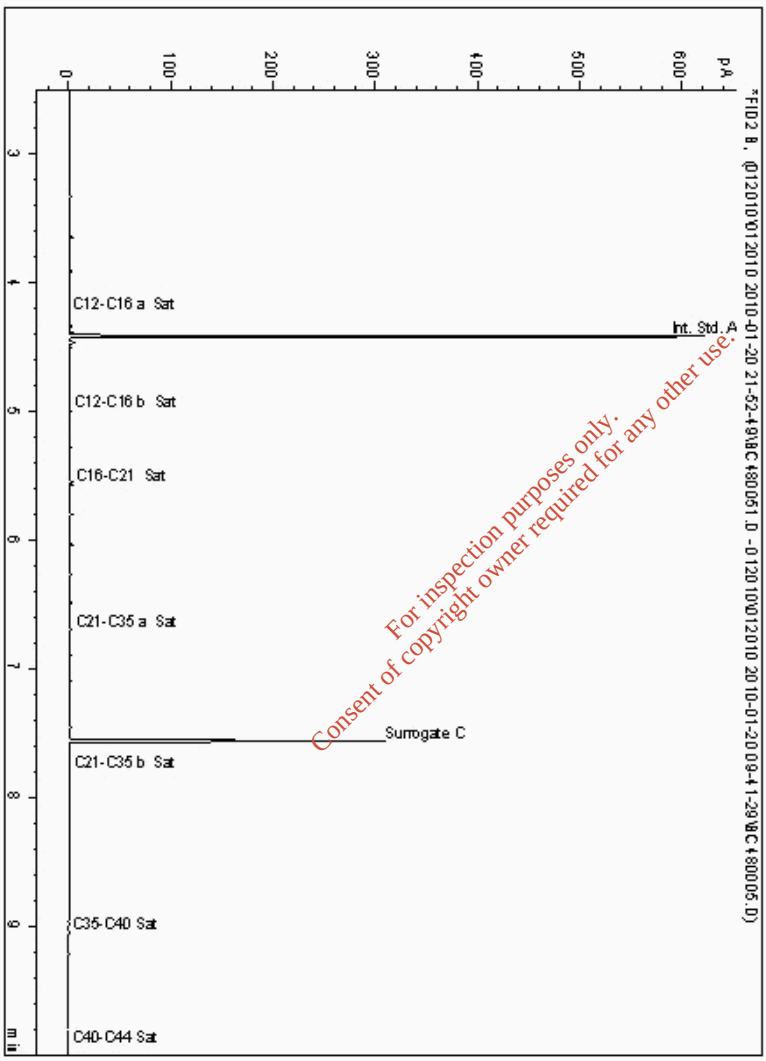
ALcontrol Laboratories Analytical Services

SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	843896
		Sample ID	B8
		Depth	2.0 - 2.5

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

Sample Identity: 970713-843896
Date Acquired : 21/01/10 01:58:09
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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EPA Export 25-05-2012:04:42:34

Validated

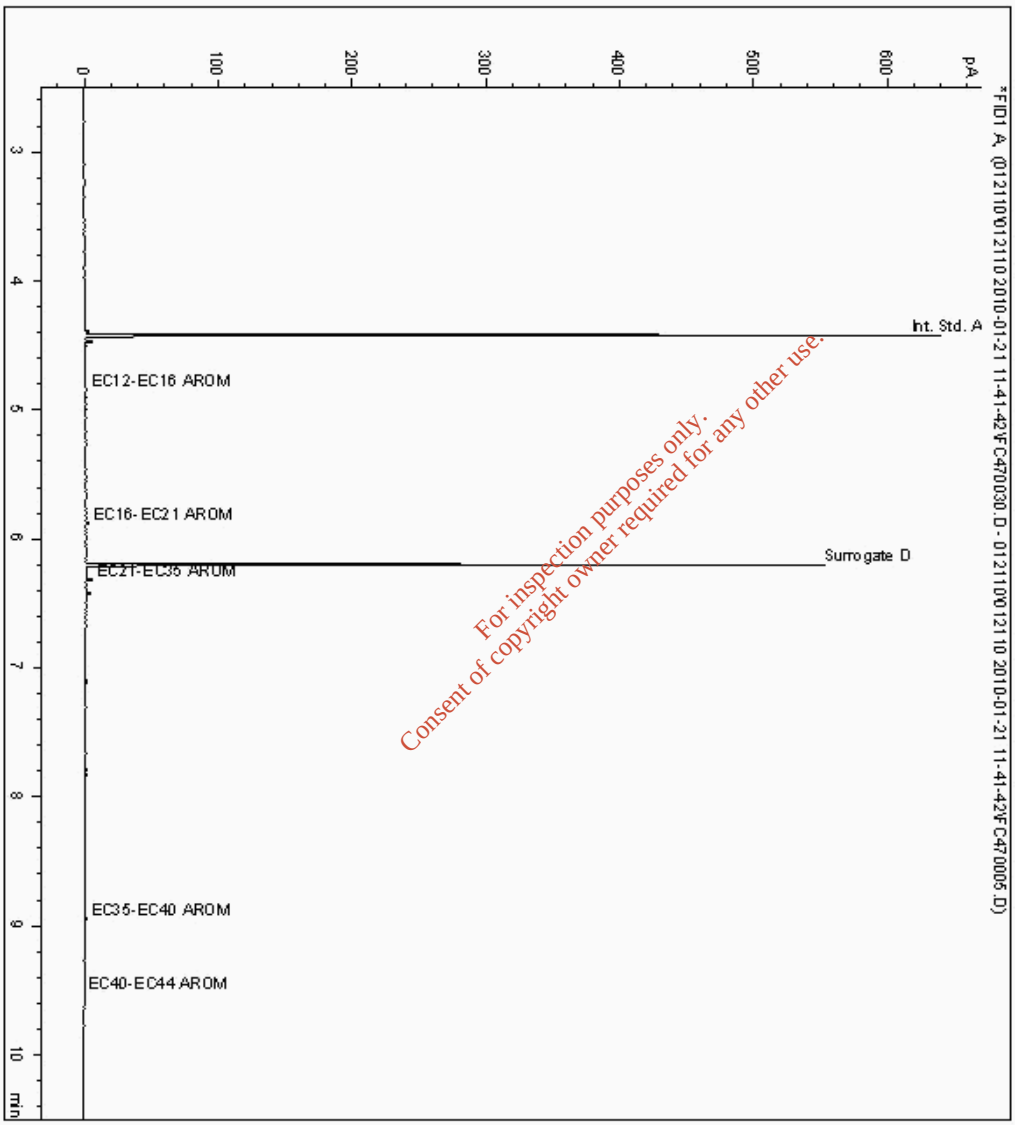
ALcontrol Laboratories Analytical Services

SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	843244
		Sample ID	A4
		Depth	1.5 - 3.0

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

Sample Identity: 970674-843244
Date Acquired : 21/01/10 20:35:50
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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Validated

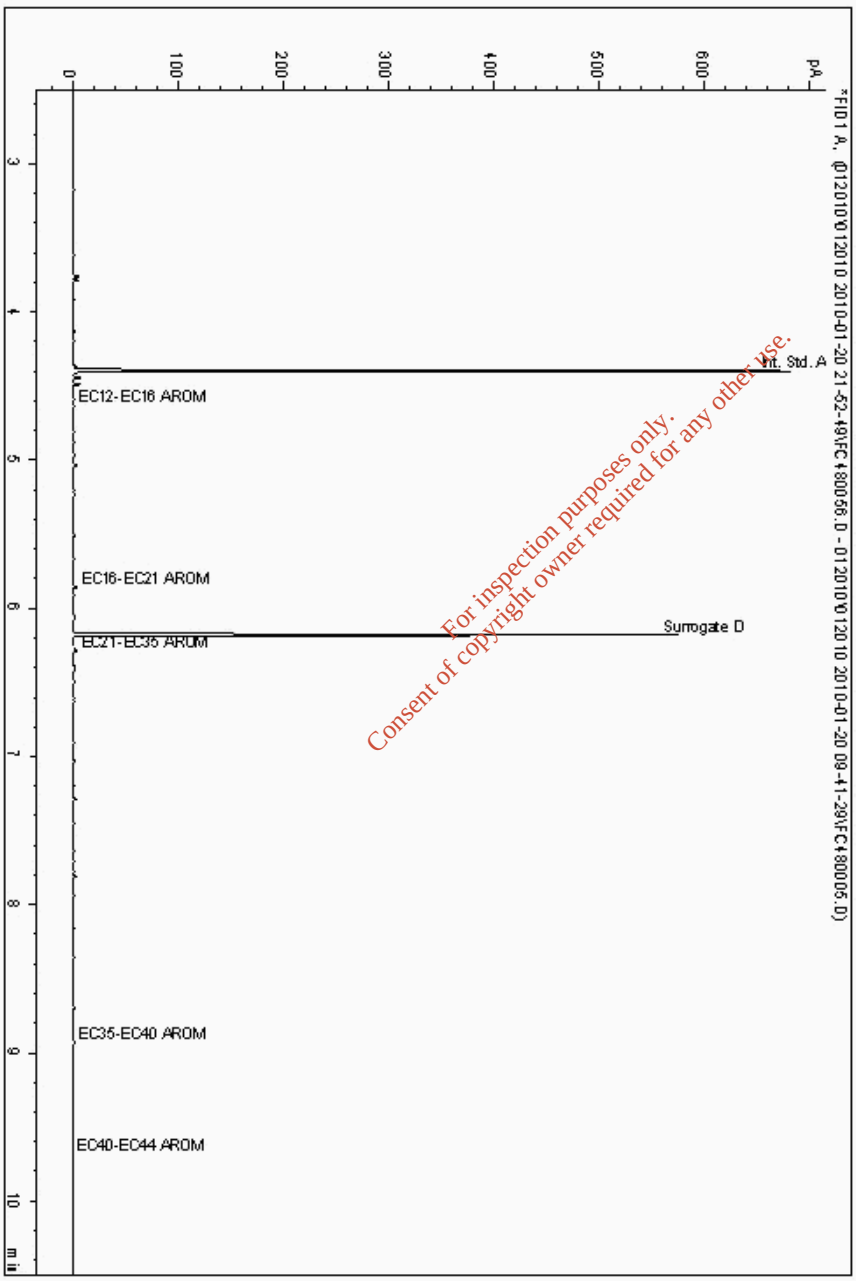
ALcontrol Laboratories Analytical Services

SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	843593
		Sample ID	D5
		Depth	2.0 - 3.0

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

Sample Identity: 970749-843593
Date Acquired : 21/01/10 03:20:14
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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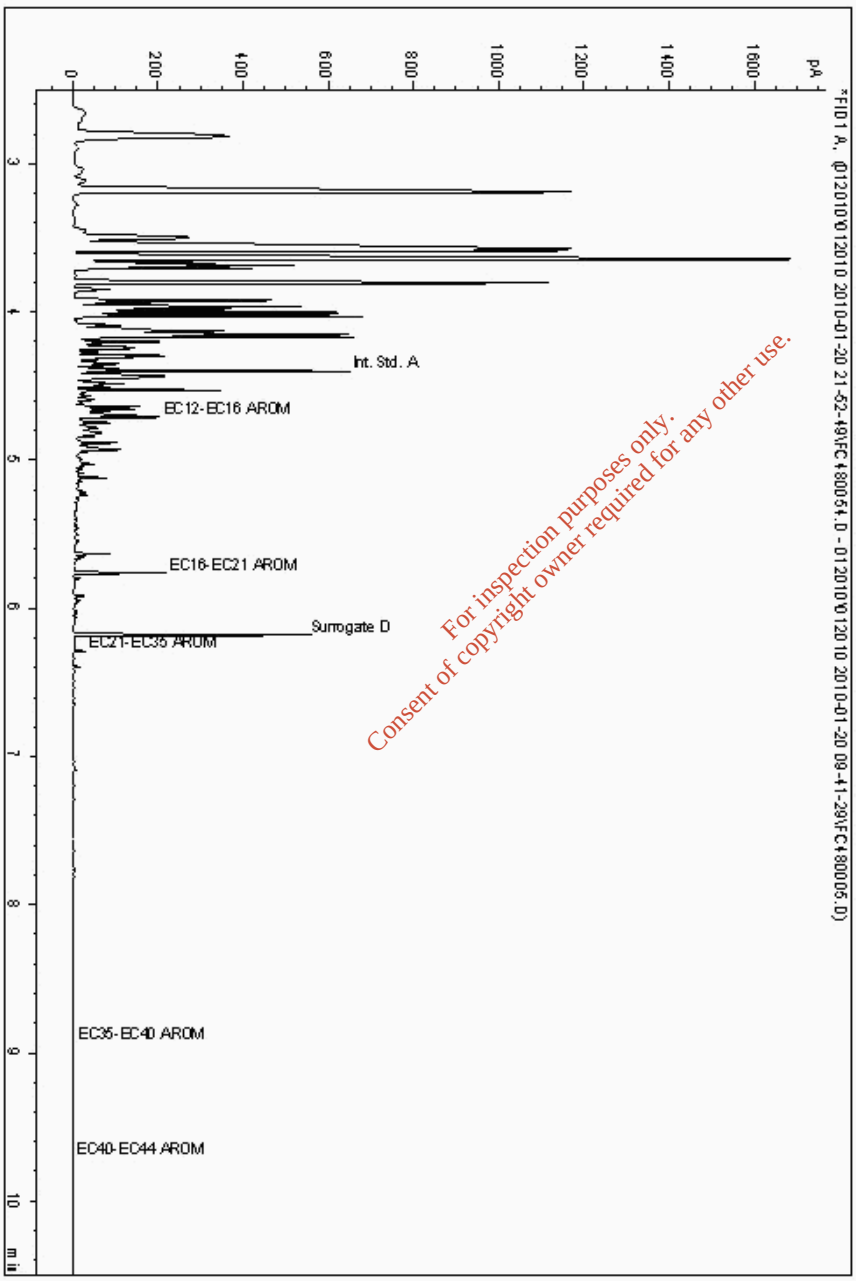
ALcontrol Laboratories Analytical Services

SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	843635
		Sample ID	C7
		Depth	2.0 - 7.0

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

Sample Identity: 970732-843635
Date Acquired : 21/01/10 02:48:34
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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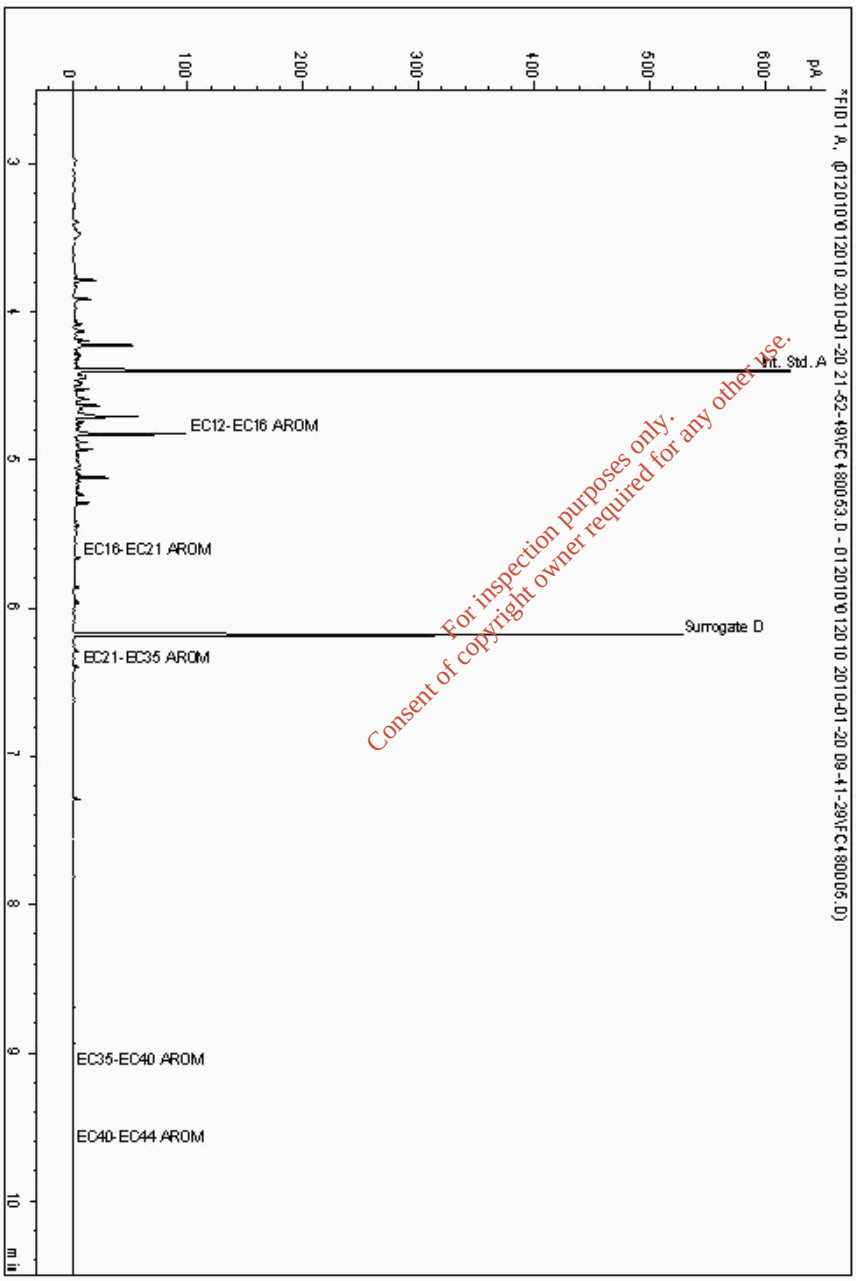
ALcontrol Laboratories Analytical Services

SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	843846
		Sample ID	A3
		Depth	2.0 - 4.5

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

Sample Identity: 970645-843846
Date Acquired : 21/01/10 02:29:53
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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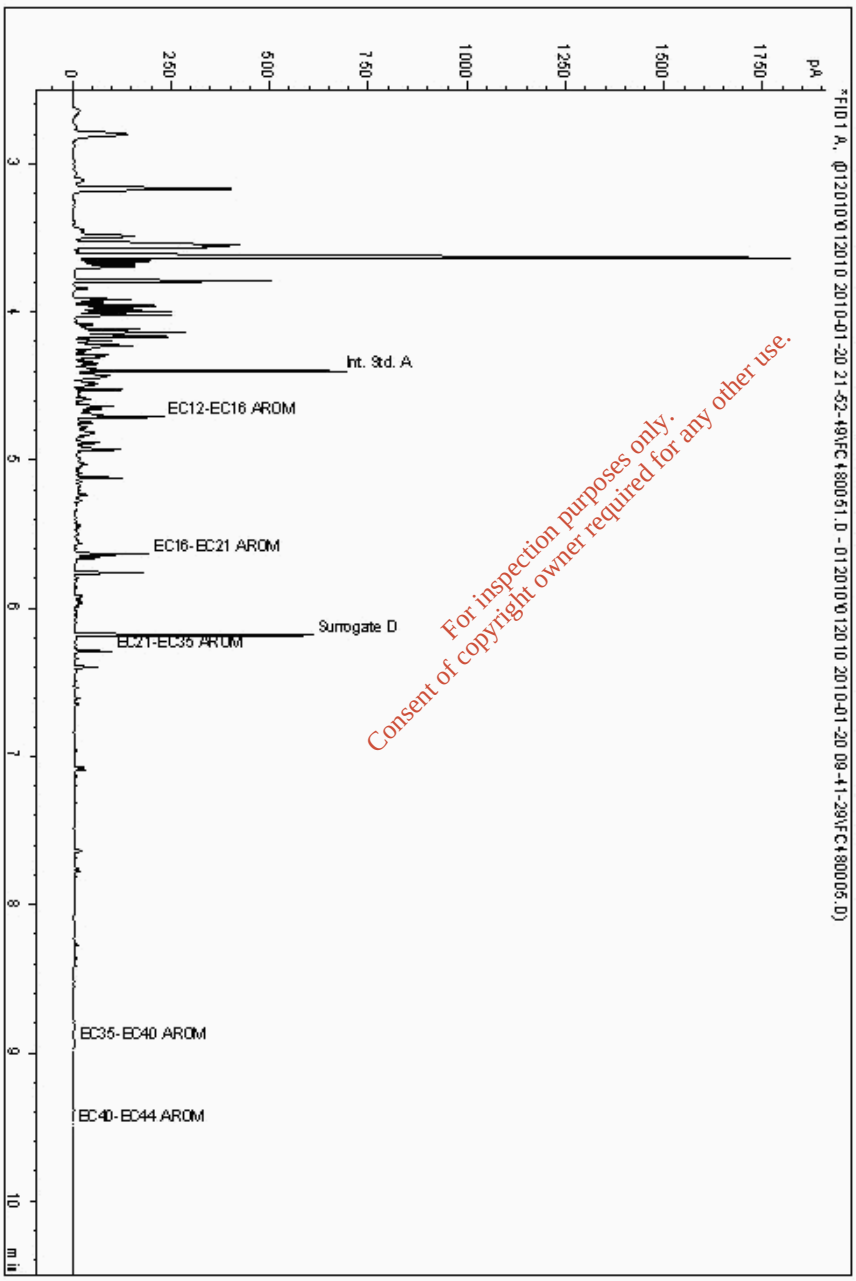
ALcontrol Laboratories Analytical Services

SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	843896
		Sample ID	B8
		Depth	2.0 - 2.5

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

Sample Identity: 970714-843896
Date Acquired : 21/01/10 01:58:09
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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Validated

ALcontrol Laboratories Analytical Services

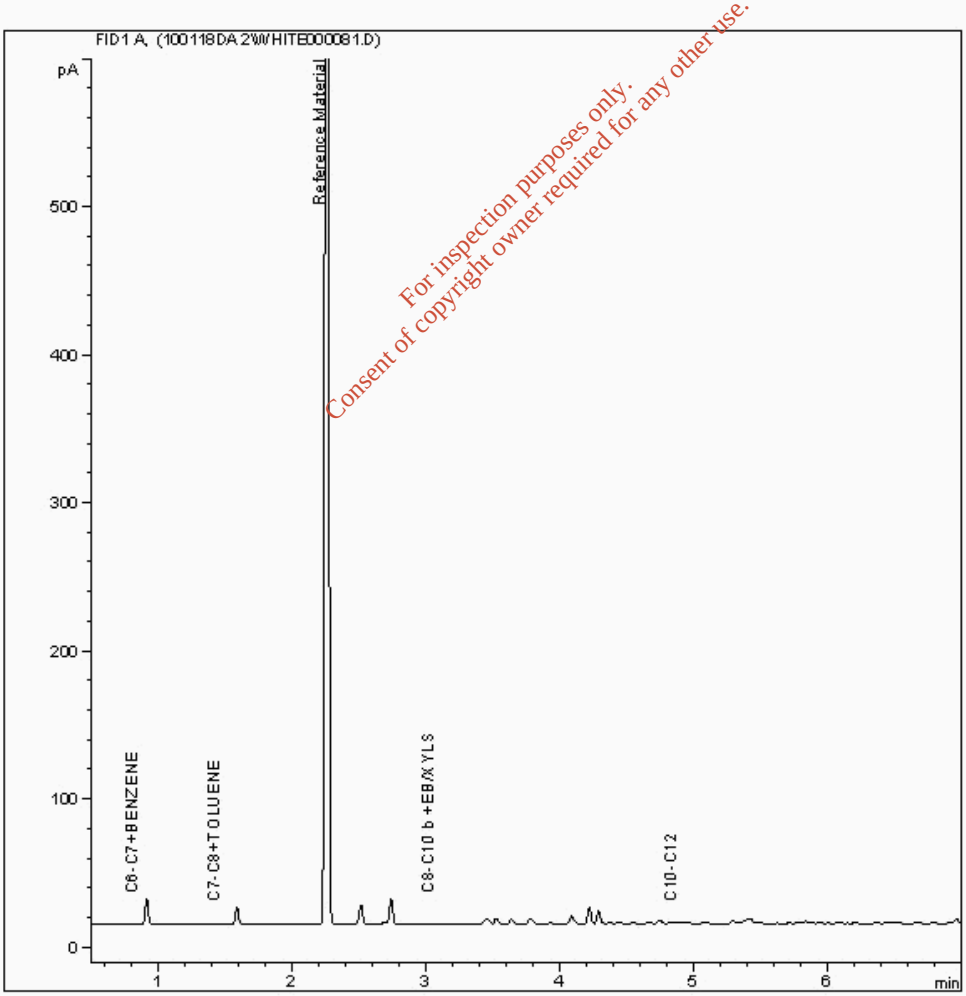
SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	836100
		Sample ID	D5
		Depth	2.0 - 3.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 970747-836100
Date Acquired : 19/01/10 06:37:30
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	0
2	C6-C7+BENZENE	617
3	C7-C8+TOLUENE	488
4	C8-C10 a	0
5	Reference Material	24408
6	C8-C10 b +EB/XYLS	2132
7	C10-C12	2977



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Validated

ALcontrol Laboratories Analytical Services

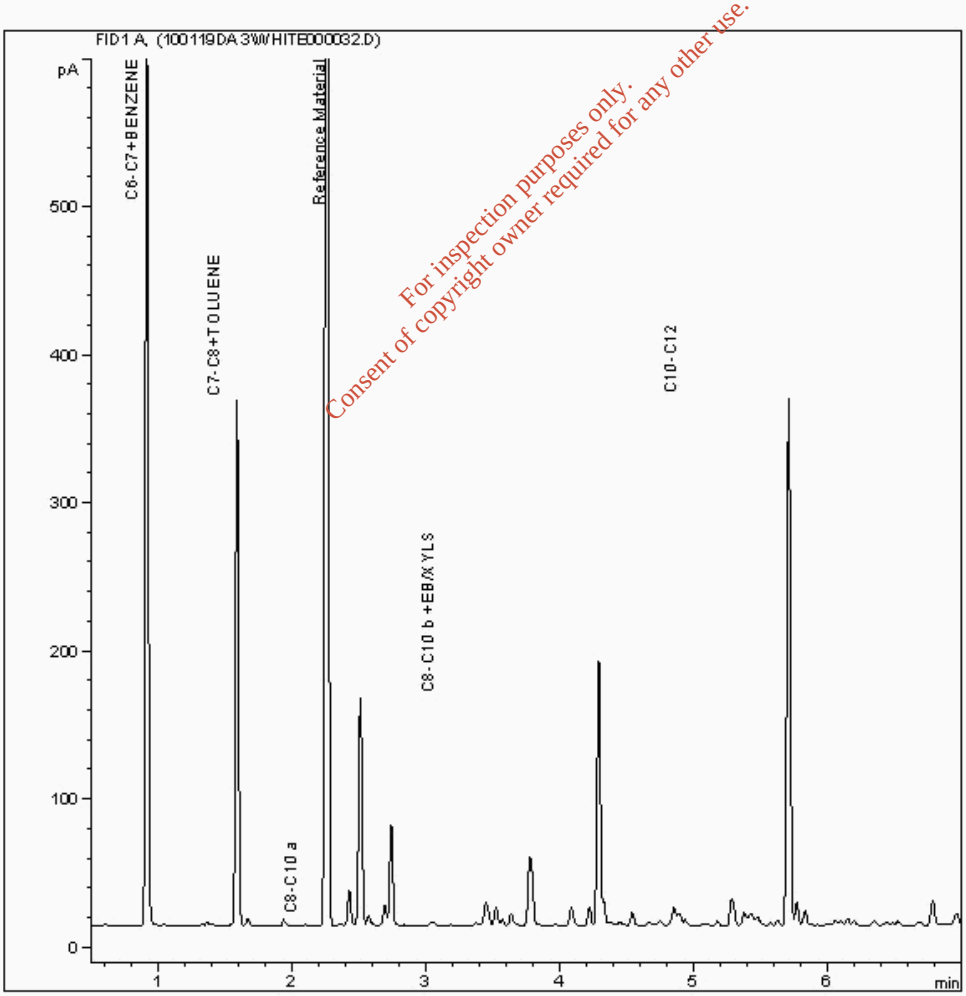
SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	836125
		Sample ID	B8
		Depth	2.0 - 2.5

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 970712-836125
Date Acquired : 19/01/10 23:06:12
Units : ppb
Dilution : 5

#	Compound Name	Amount
1	C4-C6+MTBE	937
2	C6-C7+BENZENE	99187
3	C7-C8+TOLUENE	61198
4	C8-C10 a	1503
5	Reference Material	102578
6	C8-C10 b +EB/XYLS	77265
7	C10-C12	144740



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Validated

ALcontrol Laboratories Analytical Services

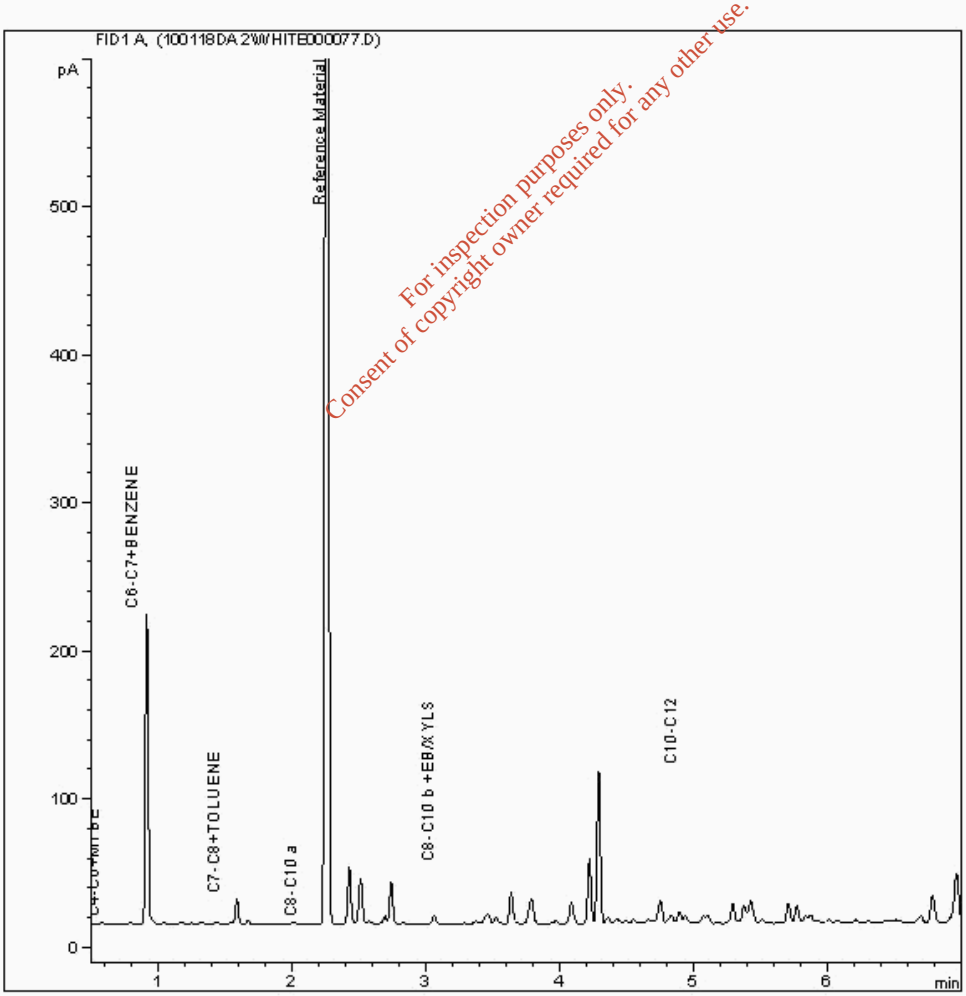
SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	836157
		Sample ID	A3
		Depth	2.0 - 4.5

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 970643-836157
Date Acquired : 19/01/10 05:43:15
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	74
2	C6-C7+BENZENE	7007
3	C7-C8+TOLUENE	940
4	C8-C10 a	146
5	Reference Material	23450
6	C8-C10 b +EB/XYLS	7027
7	C10-C12	13860



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Validated

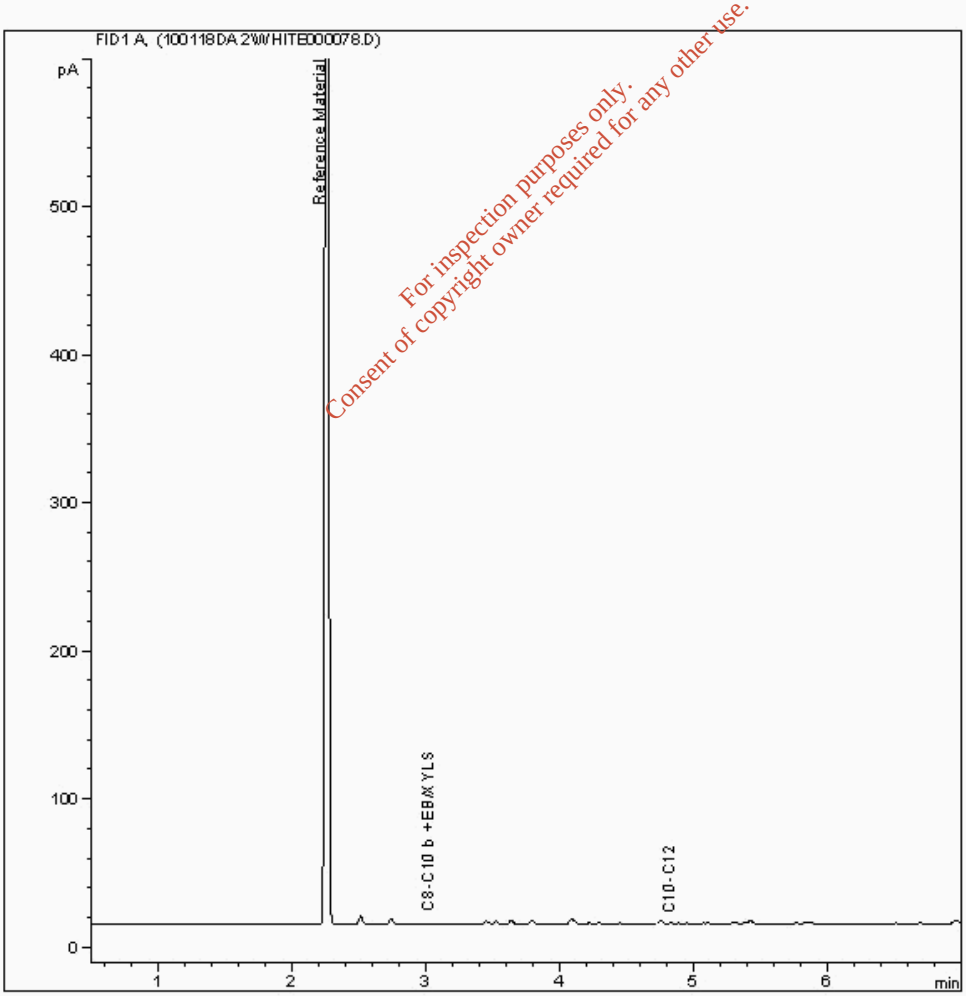
ALcontrol Laboratories Analytical Services

SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911
Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	836175
		Sample ID	A4
		Depth	1.5 - 3.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 970672-836175
Date Acquired : 19/01/10 05:56:47
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	0
2	C6-C7+BENZENE	0
3	C7-C8+TOLUENE	0
4	C8-C10 a	0
5	Reference Material	23685
6	C8-C10 b +EB/XYLS	898
7	C10-C12	1259



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Validated

ALcontrol Laboratories Analytical Services

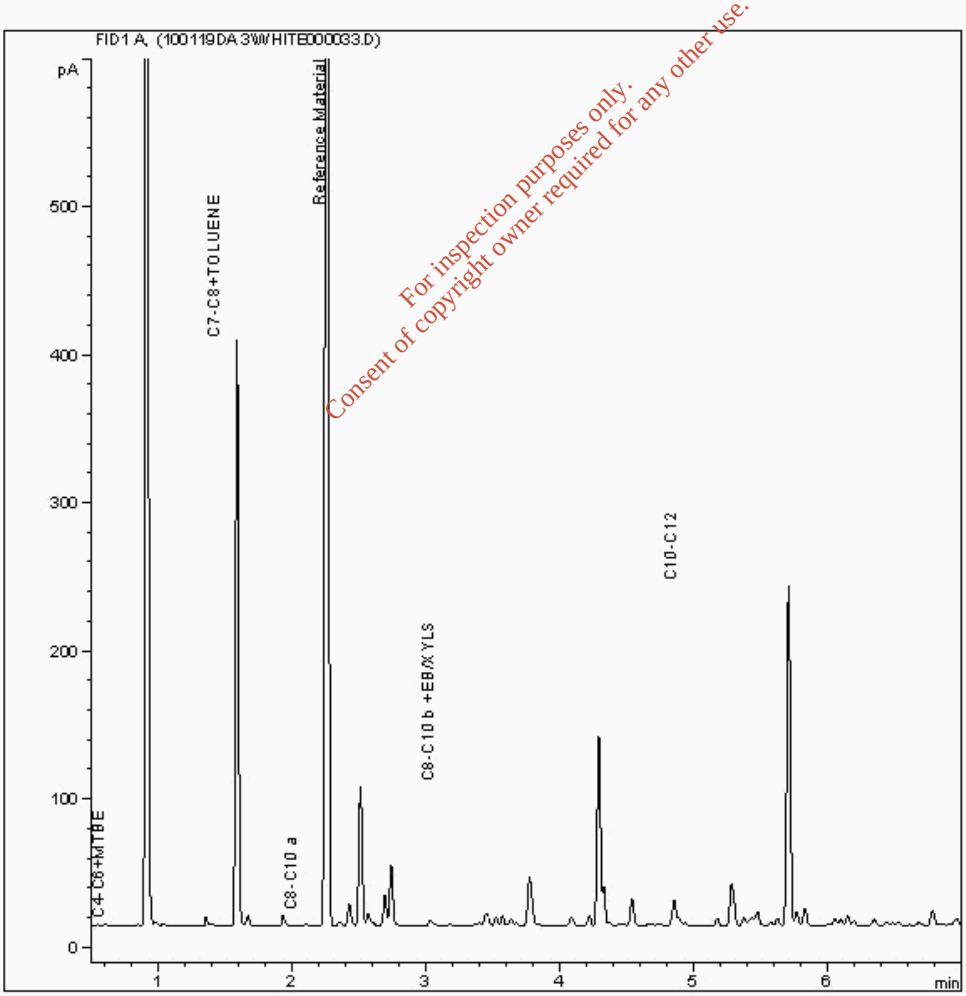
SDG:	100115-129	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-97	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (D5/B8/A3/A4/C7)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70911

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	836239
		Sample ID	C7
		Depth	2.0 - 7.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 970730-836239
Date Acquired : 19/01/10 23:19:45
Units : ppb
Dilution : 10

#	Compound Name	Amount
1	C4-C6+MTBE	2129
2	C6-C7+BENZENE	0
3	C7-C8+TOLUENE	136203
4	C8-C10 a	3927
5	Reference Material	202174
6	C8-C10 b +EB/XYLS	105844
7	C10-C12	218525



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APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH_4 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. **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.
13. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
14. 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).
15. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
16. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
17. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
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 the major 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.

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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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKEN SVOC	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM/EA	SOLID PHASE EXTRACTION	GC MS
TRIAZINE HERBS	DCM/EA	SOLID PHASE EXTRACTION	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
SAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
UNSAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	DCM	LIQUID/LIQUID EXTRACTION	EZ FLASH

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 (C6-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

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Last updated 25 June 2009

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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).

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.

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

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ALcontrol Laboratories

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

Attention: Verity Sankey

CERTIFICATE OF ANALYSIS

Date:	25 January 2010		
Customer:	D_MOUCHEL_ELE-99		
Sample Delivery Group (SDG):	100118-49	**Report No.:**	70700
Your Reference:	14/01/10 (G4/D1/G2/G3/G5)		
Location:	Limerick Gasworks		

We received 5 samples on Friday January 15, 2010 and 5 of these samples were scheduled for analysis which was completed on Monday January 25, 2010. 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).

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Approved By:

Chris Crutchley

Operations Director - Land UK & Ireland

UKAS TESTING
1291
GROUP

Validated

ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Verity Sankey
Client Reference:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700

Received Sample Overview

Lab Sample No(s)	Customer Reference	Depth (m)	Sampled Date
841477	D1 EW002	3.0 - 5.0	
841478	G2 EW002	4.0 - 9.0	
841479	G3 EW002	5.0 - 7.0	14/01/2010 00:00:00
841371	G4	3.0 - 9.0	
841481	G5 EW002	4.0 - 6.0	

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

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ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Verity Sankey
Client Reference:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700

LIQUID

Results Legend

X Test

No Determination Possible

N

		Lab Sample No(s)	841371			841477			841478			841479			841481			Total
		Sample ID	G4			D1			G2			G3			G5			
		Depth (m)	3.0 - 9.0			3.0 - 5.0			4.0 - 9.0			5.0 - 7.0			4.0 - 6.0			
		Container	1l green glass bottle	500ml Plastic	60g VOC Dublin	1l green glass bottle	500ml Plastic	60g VOC Dublin	1l green glass bottle	500ml Plastic	60g VOC Dublin	1l green glass bottle	500ml Plastic	60g VOC Dublin	1l green glass bottle	500ml Plastic	60g VOC Dublin	
Ammonium	All			X			X			X			X			X		05
Anions by Kone (w)	All			X			X			X			X			X		05
Cyanide Comp/Free/Total/Thiocyanate	All		X			X			X			X			X			05
Dissolved Metals by ICP-MS	All			X			X			X			X			X		05
EPH CWG (Aliphatic) Aqueous GC (W)	All		X			X			X			X			X			05
EPH CWG (Aromatic) Aqueous GC (W)	All		X			X			X			X			X			05
GRO BTEX MTBE GC (W)	All				X			X			X			X			X	05
Hexavalent Chromium (w)	All			X			X			X			X			X		05
Mercury Dissolved	All		X			X			X			X			X			05
PAH Spec MS - Aqueous (W)	All		X			X			X			X			X			05
pH Value	All			X			X			X			X			X		05
Phenols by HPLC (W)	All		X			X			X			X			X			05
Sulphide	All			X			X			X			X			X		05
Total Metals by ICP-MS	All			X			X			X			X			X		05
TPH CWG (W)	All		X			X			X			X			X			05
VOC MS (W)	All				X			X			X						X	04

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ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Verity Sankey
Client Reference:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700

Test Completion dates

SDG reference: 100118-49

Lab Sample No(s)	841371	841477	841478	841479	841481
Sample ID	G4	D1	G2	G3	G5
Depth	3.0 - 9.0	3.0 - 5.0	4.0 - 9.0	5.0 - 7.0	4.0 - 6.0
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	19/01/2010	20/01/2010	20/01/2010	20/01/2010	20/01/2010
Anions by Kone (w)	19/01/2010	20/01/2010	20/01/2010	20/01/2010	20/01/2010
Cyanide	19/01/2010	19/01/2010	19/01/2010	19/01/2010	19/01/2010
Dissolved Metals by ICP-MS	20/01/2010	20/01/2010	20/01/2010	20/01/2010	20/01/2010
EPH CWG (Aliphatic) Aqueous GC	21/01/2010	21/01/2010	21/01/2010	21/01/2010	21/01/2010
EPH CWG (Aromatic) Aqueous GC	21/01/2010	21/01/2010	21/01/2010	21/01/2010	21/01/2010
GRO BTEX MTBE GC (W)	21/01/2010	21/01/2010	21/01/2010	21/01/2010	21/01/2010
Hexavalent Chromium (w)	19/01/2010	19/01/2010	19/01/2010	19/01/2010	20/01/2010
Mercury Dissolved	20/01/2010	20/01/2010	20/01/2010	20/01/2010	20/01/2010
PAH Spec MS - Aqueous (W)	21/01/2010	21/01/2010	21/01/2010	21/01/2010	21/01/2010
pH Value	19/01/2010	19/01/2010	19/01/2010	19/01/2010	19/01/2010
Phenols by HPLC (W)	20/01/2010	20/01/2010	20/01/2010	20/01/2010	20/01/2010
Sulphide	20/01/2010	21/01/2010	21/01/2010	20/01/2010	20/01/2010
Total Metals by ICP-MS	21/01/2010	22/01/2010	22/01/2010	22/01/2010	22/01/2010
TPH CWG (W)	21/01/2010	21/01/2010	21/01/2010	21/01/2010	21/01/2010
VOC MS (W)	25/01/2010	22/01/2010	25/01/2010		20/01/2010

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Reference:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700

Results Legend

ISO17025 accredited.
M *m*CERTS accredited.
***** subcontracted test.
****** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	D1	G2	G3	G4	G5
Sample Identity			D1	G2	G3	G4	G5
Depth (m)			3.0 - 5.0	4.0 - 9.0	5.0 - 7.0	3.0 - 9.0	4.0 - 6.0
Sample Type			Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled					14/01/2010		
Date Received			15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010
SDG Ref			100118-49	100118-49	100118-49	100118-49	100118-49
Lab Sample No.(s)			841477	841478	841479	841371	841481
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099	10.4 #	48.3 #	22.5 #	9.46 #	4.19 #
Sulphide	<0.1 mg/l	TM101	34.1 #	0.2 #	<0.1 #	<0.1 #	<0.1 #
Arsenic Dissolved	<0.12 µg/l	TM152	15.4 #	24.4 #	6.11 #	4.29 #	3.76 #
Cadmium Dissolved	<0.1 µg/l	TM152	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Copper Dissolved	<0.85 µg/l	TM152	1.34 #	1.83 #	1.6 #	3.31 #	2.71 #
Lead Dissolved	<0.02 µg/l	TM152	0.03 #	<0.02 #	0.077 #	<0.02 #	0.139 #
Nickel Dissolved	<0.15 µg/l	TM152	7.91 #	10.4 #	14.2 #	3.95 #	15.2 #
Selenium Dissolved	<0.39 µg/l	TM152	3.05 #	9.82 #	8.98 #	5.32 #	4.58 #
Zinc Dissolved	<0.41 µg/l	TM152	<0.41 #	<0.41 #	<0.41 #	<0.41 #	<0.41 #
Mercury Dissolved	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	0.01 #	<0.01 #
Sulphate (soluble)	3 mg/l	TM184	456 #	583 #	571 #	127 #	671 #
Chromium (Unfiltered)	<3 µg/l	TM191	37.3	22.9	47.9	6.83	124
Total Cyanide	<0.05 mg/l	TM227	0.663 #	0.809 #	0.495 #	0.243 #	0.321 #
Hexavalent Chromium	<0.03 mg/l	TM241	<0.03	<0.03	<0.03	<0.03	<0.03
pH value	<1 pH Units	TM256	7.78 #	7.77 #	7.79 #	7.91 #	7.34 #
Phenol	<0.002 mg/l	TM259	0.01 #	2.77 #	0.01 #	0.18 #	<0.002 #
Cresols	<0.006 mg/l	TM259	0.06 #	6.96 #	<0.006 #	1.42 #	<0.006 #
Xylenols	<0.008 mg/l	TM259	0.34 #	13.2 #	0.02 #	2.58 #	<0.008 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM259	<0.003 #	<0.003 #	<0.003 #	<0.003 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259	<0.006 #	<0.006 #	<0.006 #	1.62 #	<0.006 #
Phenols Total of 5 Speciated	<0.025 mg/l	TM259	0.41	22.9	0.03	5.8	<0.025

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ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Reference:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700

PAH Spec MS - Aqueous (W)

Results Legend

ISO17025 accredited.
M *m*CERTS accredited.
***** subcontracted test.
****** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	D1	G2	G3	G4	G5
			Depth (m)	3.0 - 5.0	4.0 - 9.0	5.0 - 7.0	3.0 - 9.0	4.0 - 6.0
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled			14/01/2010		
			Date Received	15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010
			SDG Ref	100118-49	100118-49	100118-49	100118-49	100118-49
			Lab Sample No.(s)	841477	841478	841479	841371	841481
Naphthalene (Aqueous)	<0.1 µg/l	TM178		1950	563	0.103	1770	297
Acenaphthene (Aqueous)	<0.015 µg/l	TM178		137	29.4	1.63	97.5	98.1
Acenaphthylene (Aqueous)	<0.011 µg/l	TM178		286	45.7	1.75	372	283
Fluoranthene (Aqueous)	<0.014 µg/l	TM178		215	23.2	8.92	339	640
Anthracene (Aqueous)	<0.015 µg/l	TM178		95.5	6.74	2.12	177	307
Phenanthrene (Aqueous)	<0.022 µg/l	TM178		400	49.5	3.35	625	948
Fluorene (Aqueous)	<0.014 µg/l	TM178		180	19	1.25	274	336
Chrysene (Aqueous)	<0.013 µg/l	TM178		38.4	5.83	3.67	70	154
Pyrene (Aqueous)	<0.015 µg/l	TM178		136	15	6.88	224	419
Benzo(a)anthracene (Aqueous)	<0.017 µg/l	TM178		44.8	5.63	4.29	87.2	193
Benzo(b)fluoranthene (Aqueous)	<0.023 µg/l	TM178		42	6.76	4.81	72.4	169
Benzo(k)fluoranthene (Aqueous)	<0.027 µg/l	TM178		17.2	2.39	1.8	28.2	60.2
Benzo(a)pyrene (Aqueous)	<0.009 µg/l	TM178		29.9	4.8	3.5	48.7	122
Dibenzo(ah)anthracene (Aqueous)	<0.016 µg/l	TM178		4.96	0.914	0.565	6.13	15.8
Benzo(ghi)perylene (Aqueous)	<0.016 µg/l	TM178		17.7	2.61	2.1	21.6	54.6
Indeno(123cd)pyrene (Aqueous)	<0.014 µg/l	TM178		16.4	2.45	1.89	21.1	54
PAH 16 Total (Aqueous)	<0.1 µg/l	TM178		3610	783	48.6	4230	4150

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ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Reference:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700

TPH CWG (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	D1	G2	G3	G4	G5
			Depth (m)	3.0 - 5.0	4.0 - 9.0	5.0 - 7.0	3.0 - 9.0	4.0 - 6.0
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled			14/01/2010		
			Date Received	15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010
			SDG Ref	100118-49	100118-49	100118-49	100118-49	100118-49
			Lab Sample No.(s)	841477	841478	841479	841371	841481
GRO C5-C12	<42 µg/l	TM245		8960 #	16300 #	571 #	19500 #	1830 #
MTBE	<3 µg/l	TM245		12 #	<3 #	12 #	24 #	10 #
Benzene	<7 µg/l	TM245		644 #	4140 #	158 #	2150 #	30 #
Toluene	<4 µg/l	TM245		512 #	2890 #	13 #	2840 #	34 #
Ethyl Benzene	<5 µg/l	TM245		227 #	281 #	14 #	293 #	14 #
m & p Xylene	<8 µg/l	TM245		670 #	1270 #	44 #	1840 #	148 #
o Xylene	<3 µg/l	TM245		351 #	679 #	34 #	779 #	70 #
Sum m&p and o Xylene	<10 µg/l	TM245		1020 #	1950 #	78 #	2620 #	218 #
Sum of BTEX	<10 µg/l	TM245		2400 #	9270 #	263 #	7910 #	296 #
Aliphatics C5-C6	<10 µg/l	TM245		<10	<20	15.2	30.6	13.2
Aliphatics >C6-C8	<10 µg/l	TM245		405	629	83.4	1510	83.7
Aliphatics >C8-C10	<10 µg/l	TM245		609	647	32.1	1130	209
Aliphatics >C10-C12	<10 µg/l	TM245		1840	1910	44.7	2860	360
Aliphatics >C12-C16 (Aqueous)	<10 µg/l	TM174		267	<10	<10	342	906
Aliphatics >C16-C21 (Aqueous)	<10 µg/l	TM174		207	<10	135	364	725
Aliphatics >C21-C35 (Aqueous)	<10 µg/l	TM174		115	<10	95	265	524
Total Aliphatics C5-C12	<10 µg/l	TM245		2860	3200	175	5540	666
Total Aliphatics >C12-C35 (Aqueous)	<10 µg/l	TM174		589	<10	230	971	2160
Aromatics C6-C7	<10 µg/l	TM245		644	4140	158	2150	30
Aromatics >C7-C8	<10 µg/l	TM245		512	2890	13	2840	34
Aromatics >EC8-EC10	<10 µg/l	TM245		2160	3200	140	4610	545
Aromatics >EC10-EC12	<10 µg/l	TM245		2760	2860	67.1	4300	540
Aromatics >EC12-EC16 (Aqueous)	<10 µg/l	TM174		1840	1980	48	3570	2580
Aromatics >EC16-EC21 (Aqueous)	<10 µg/l	TM174		1840	250	75	3070	4460
Aromatics >EC21-EC35 (Aqueous)	<10 µg/l	TM174		2660	172	189	4180	8260
Total Aromatics C6-C12	<10 µg/l	TM245		6080	13100	378	13900	1150
Total Aromatics >EC12-EC35 (Aqueous)	<10 µg/l	TM174		6340	2410	312	10800	15300
Surrogate Recovery %**	%	TM245		91	82	87	88	97
Total Aliphatics & Aromatics >C12-C44 (Aqueous)	<10 µg/l	TM174		6930	2410	542	11800	17500
GRO (>C8-C10A)	<10 µg/l	TM245		22.2	44.9	<10	35.2	12.1
Total Aliphatics >C5-C35 (Aqueous)	<10 µg/l	TM174		3440	3200	405	6510	2820
Total Aromatics >C6-C35 (Aqueous)	<10 µg/l	TM174		12400	15500	690	24700	16400
TPH C5-C35 (Aqueous)	<10 µg/l	TM174		15900	18700	1100	31200	19300

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ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Reference:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700

VOC MS (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	D1	G2	G4	G5
			Depth (m)	3.0 - 5.0	4.0 - 9.0	3.0 - 9.0	4.0 - 6.0
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled				
			Date Received	15/01/2010	15/01/2010	15/01/2010	15/01/2010
			SDG Ref	100118-49	100118-49	100118-49	100118-49
			Lab Sample No.(s)	841477	841478	841371	841481
Dichlorodifluoromethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #	<1.3 #
Chloromethane	<1.7 µg/l	TM208		<1.7 #	<1.7 #	<1.7 #	<1.7 #
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		2.36 #	5.03 #	<1.3 #	<1.3 #
Dichloromethane	<3.7 µg/l	TM208		<3.7 #	<3.7 #	<3.7 #	<3.7 #
Methyl Tertiary Butyl Ether	<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 #	<1.3 #	<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		822 #	5680 #	2900 #	38.1 #
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		623 #	3990 #	3620 #	44.1 #
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 #
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		276 #	397 #	331 #	19.4 #
p/m-Xylene	<2.5 µg/l	TM208		829 #	1670 #	2370 #	185 #
o-Xylene	<1.7 µg/l	TM208		447 #	874 #	1020 #	81.1 #
Styrene	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #	<1.2 #

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ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Reference:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700

VOC MS (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	D1	G2	G4	G5
			Depth (m)	3.0 - 5.0	4.0 - 9.0	3.0 - 9.0	4.0 - 6.0
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled				
			Date Received	15/01/2010	15/01/2010	15/01/2010	15/01/2010
			SDG Ref	100118-49	100118-49	100118-49	100118-49
			Lab Sample No.(s)	841477	841478	841371	841481
Bromoform	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #
Isopropylbenzene	<1.4 µg/l	TM208		26.4 #	26.2 #	25.8 #	4.2 #
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		33.2 #	28.2 #	29.4 #	4 #
2-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208		110 #	94.9 #	168 #	60.4 #
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		360 #	345 #	426 #	134 #
sec-Butylbenzene	<1.7 µg/l	TM208		<1.7 #	<1.7 #	<1.7 #	<1.7 #
4-Isopropyltoluene	<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	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #
Naphthalene	<3.5 µg/l	TM208		3480 #	3250 #	6270 #	457 #
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

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Table of Results - Appendix

SDG Number : 100118-49 **Client :** Mouchel **Client Ref :** 14/01/10 (G4/D1/G2/G3/G5)

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]
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	
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS	
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			

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

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Validated

ALcontrol Laboratories Analytical Services

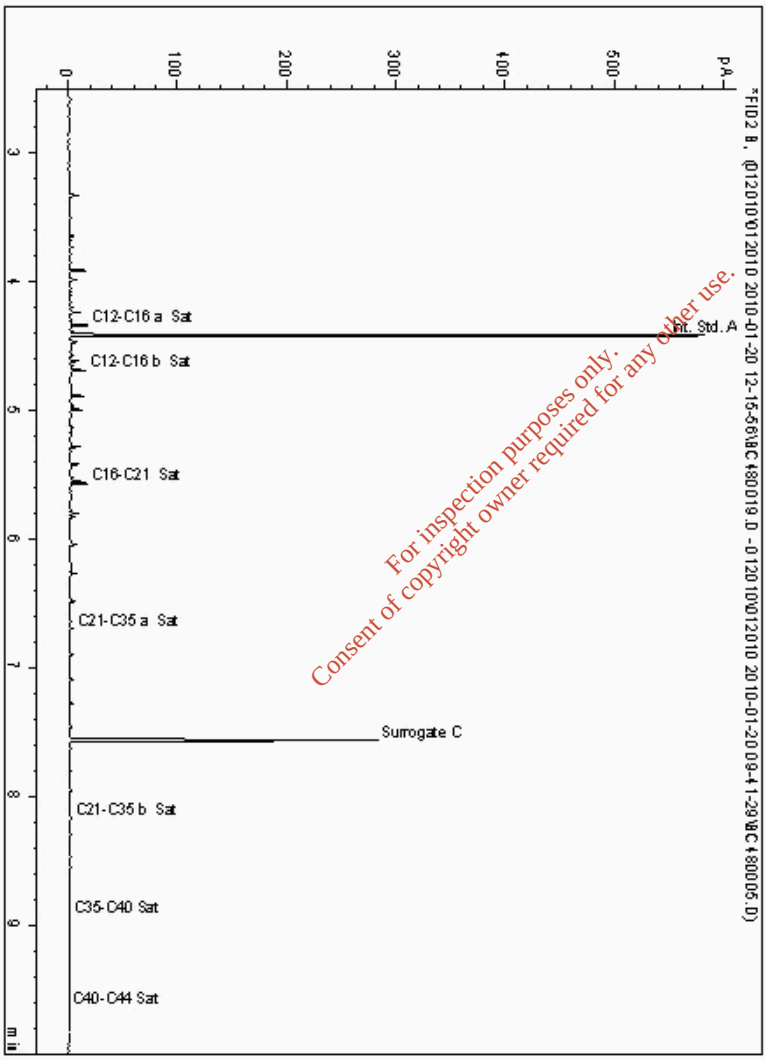
SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700

Chromatogram

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	845696
		Sample ID	D1
		Depth	3.0 - 5.0

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

Sample Identity: 971898-845696
Date Acquired : 20/01/10 15:19:47
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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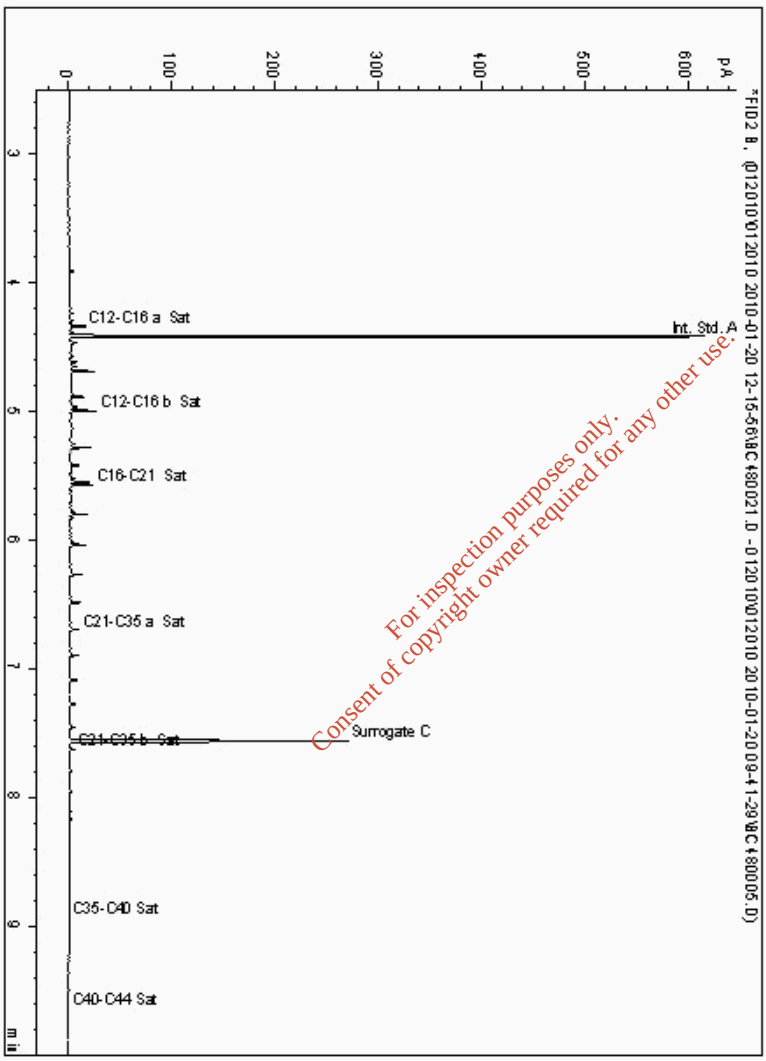
Validated

ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700
Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	845739
		Sample ID	G4
		Depth	3.0 - 9.0

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

Sample Identity: 971852-845739
Date Acquired : 20/01/10 15:51:44
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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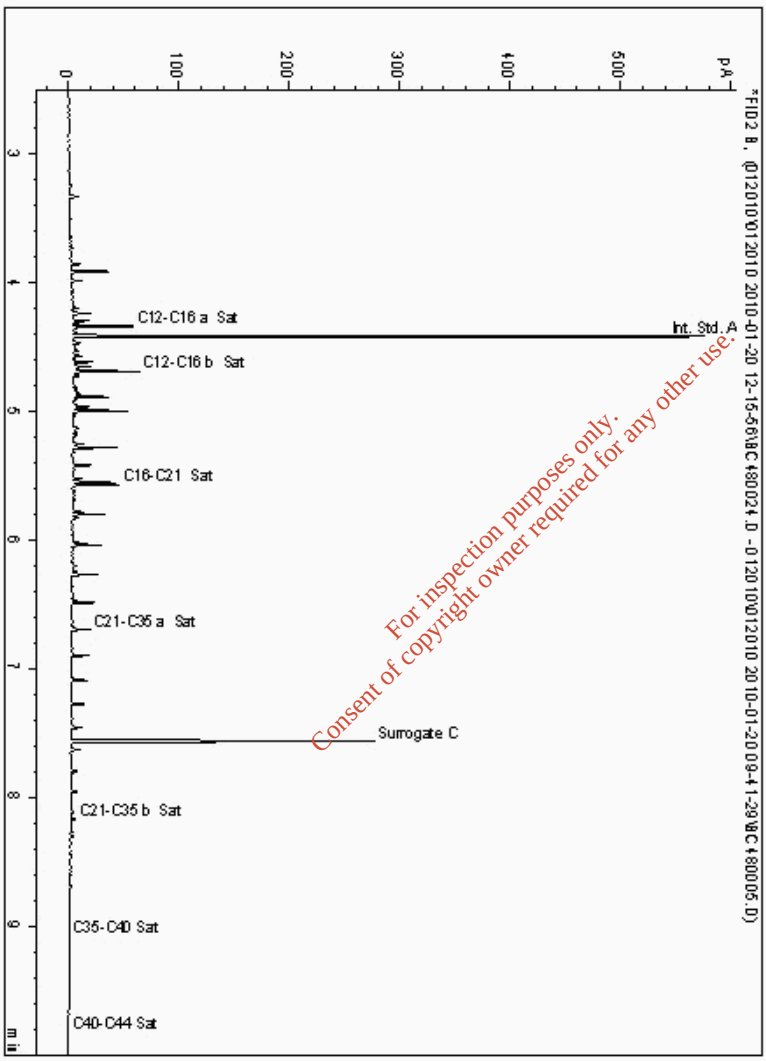
ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700
Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	845979
		Sample ID	G5
		Depth	4.0 - 6.0

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

Sample Identity: 972004-845979
Date Acquired : 20/01/10 16:41:56
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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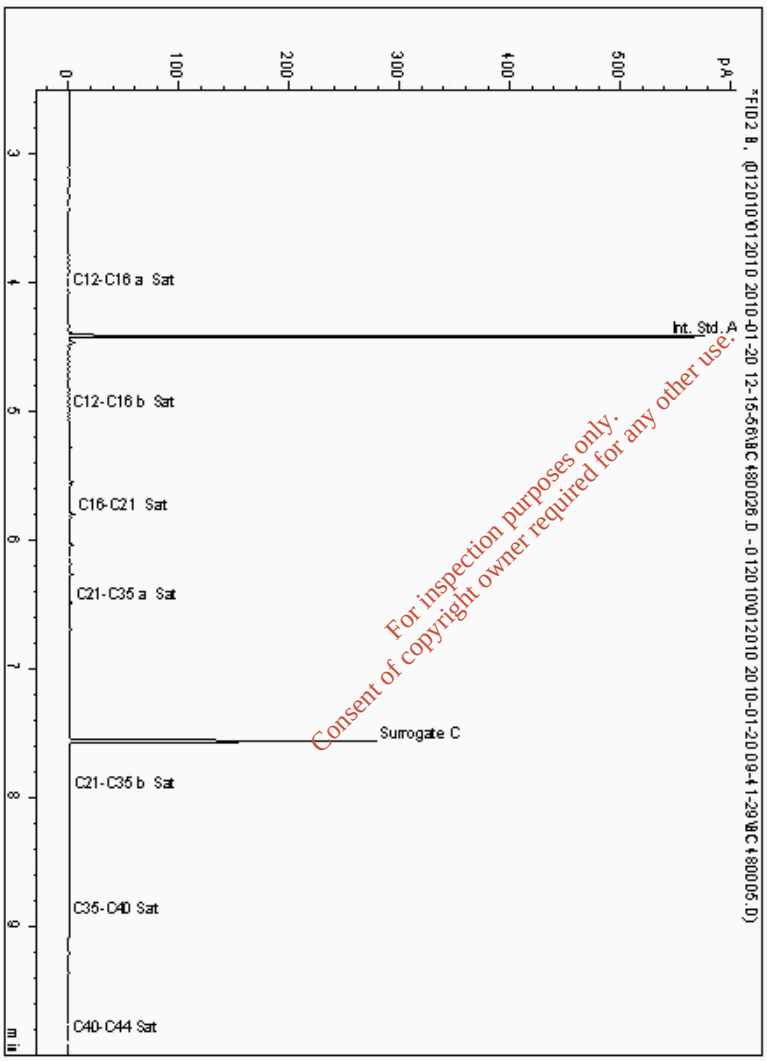
ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700
Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	846009
		Sample ID	G3
		Depth	5.0 - 7.0

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

Sample Identity: 971972-846009
Date Acquired : 20/01/10 17:13:53
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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Validated

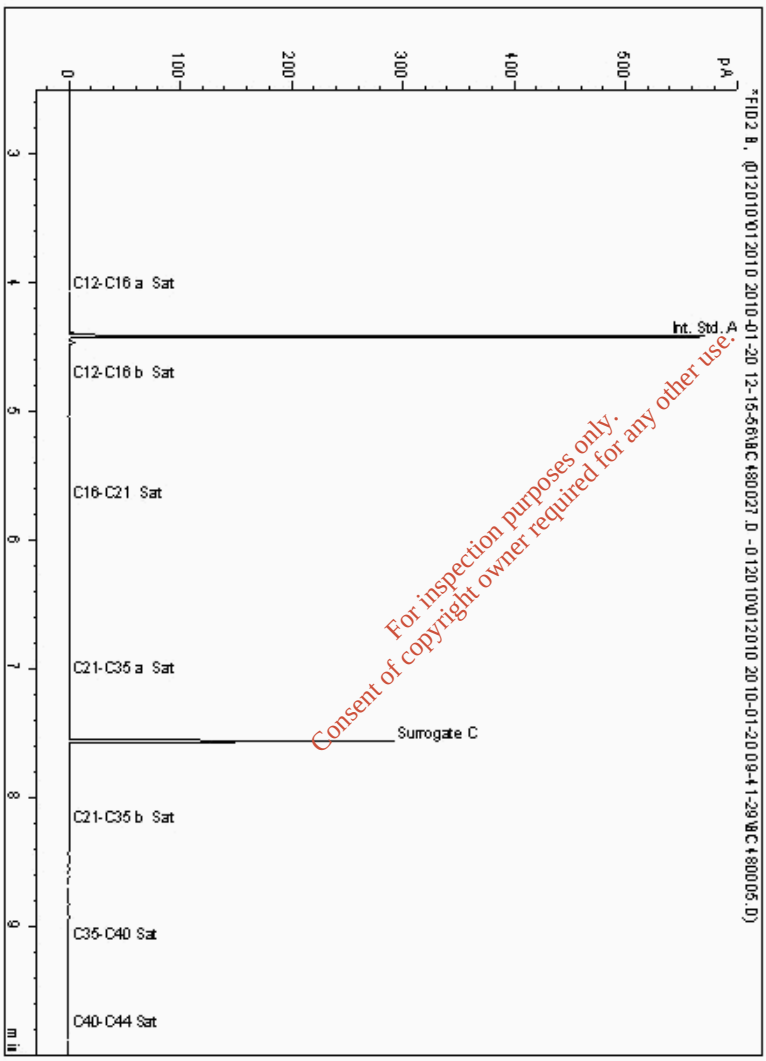
ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	846024
		Sample ID	G2
		Depth	4.0 - 9.0

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

Sample Identity: 971918-846024
Date Acquired : 20/01/10 17:32:21
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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Validated

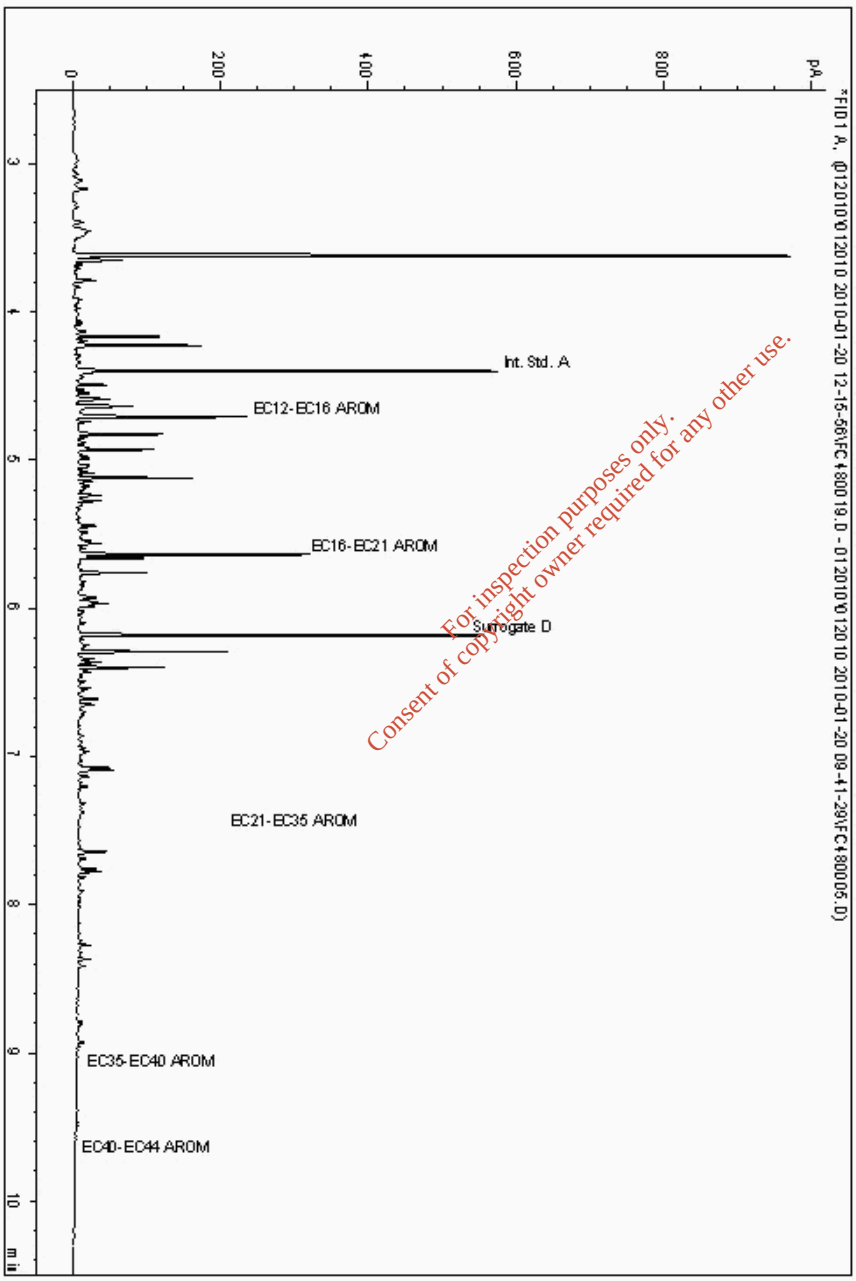
ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	845696
		Sample ID	D1
		Depth	3.0 - 5.0

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

Sample Identity: 971899-845696
Date Acquired : 20/01/10 15:19:47
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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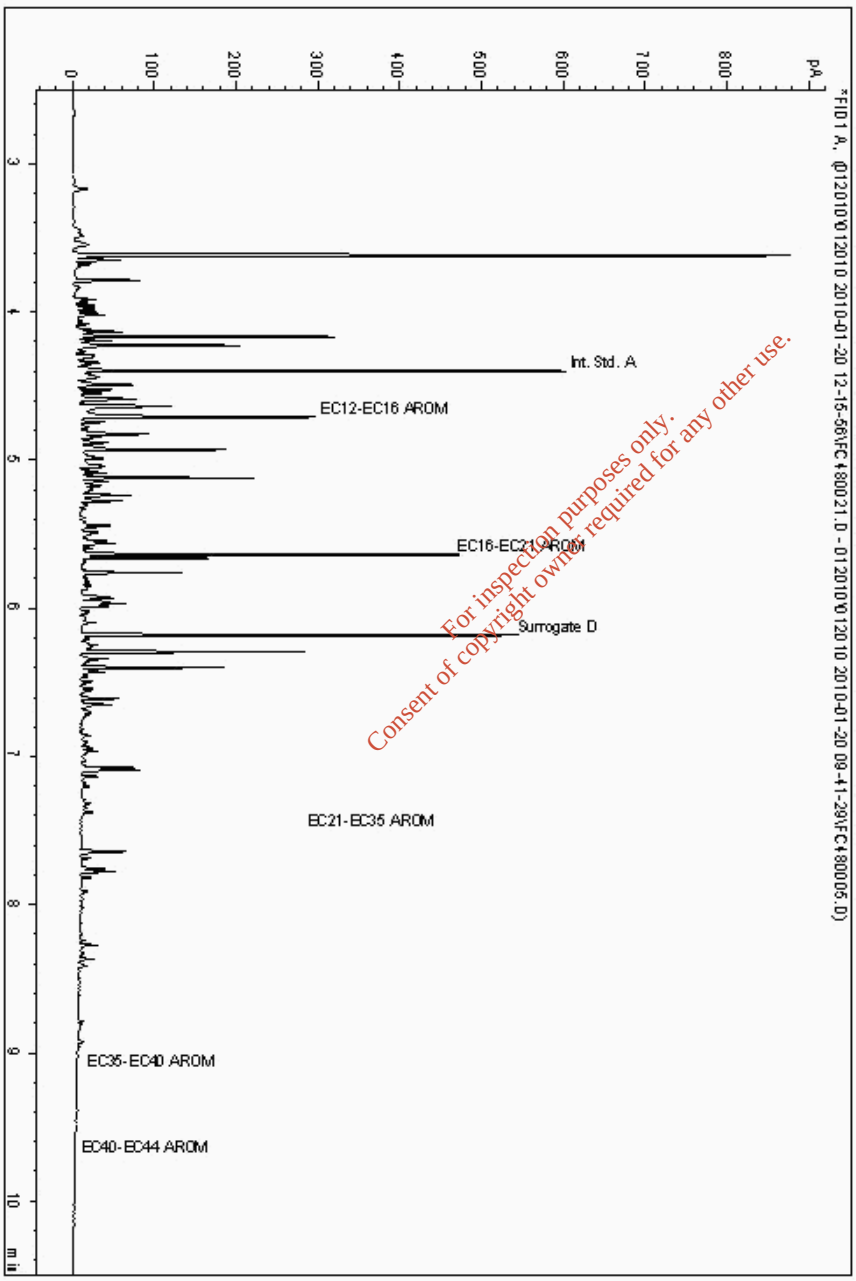
ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	845739
		Sample ID	G4
		Depth	3.0 - 9.0

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

Sample Identity: 971853-845739
Date Acquired : 20/01/10 15:51:44
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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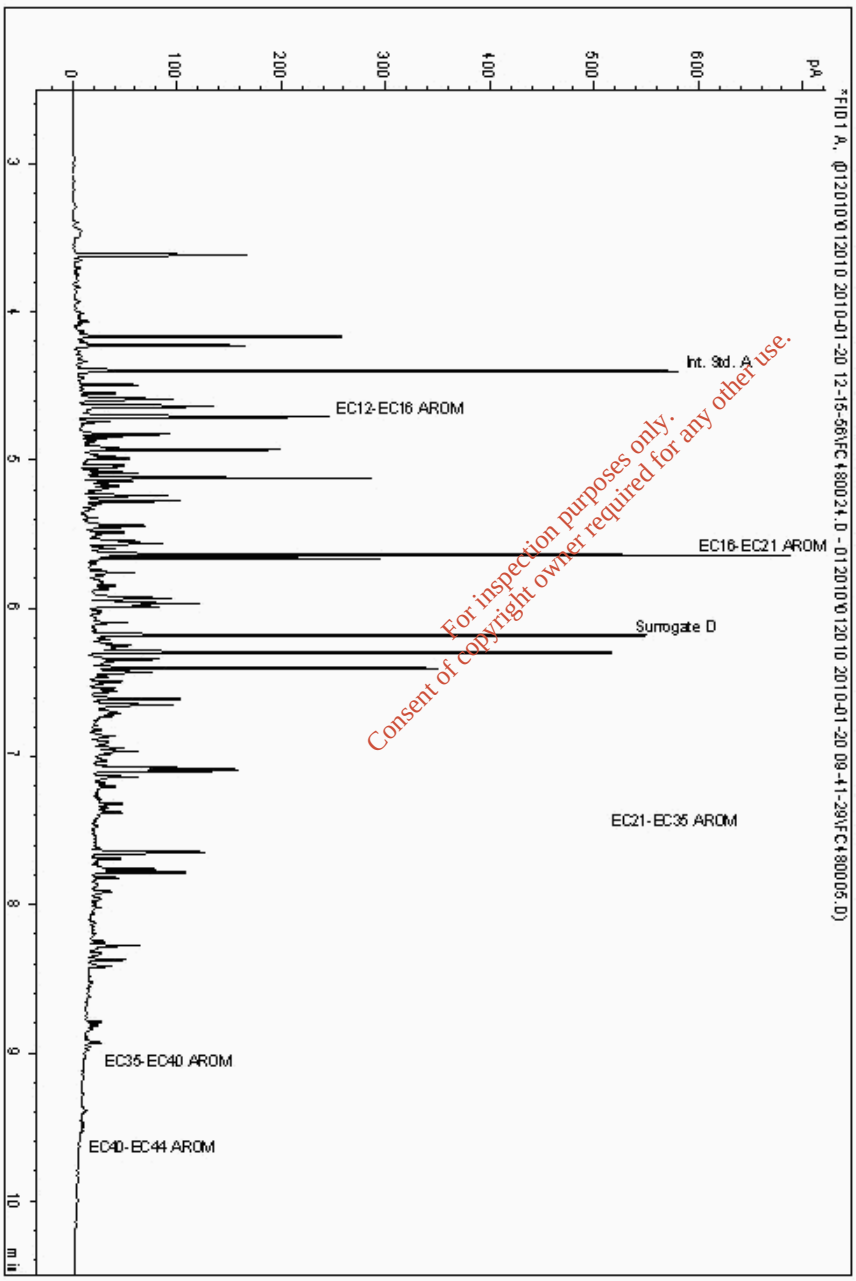
SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	845979
		Sample ID	G5
		Depth	4.0 - 6.0

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

Sample Identity: 972005-845979
Date Acquired : 20/01/10 16:41:56
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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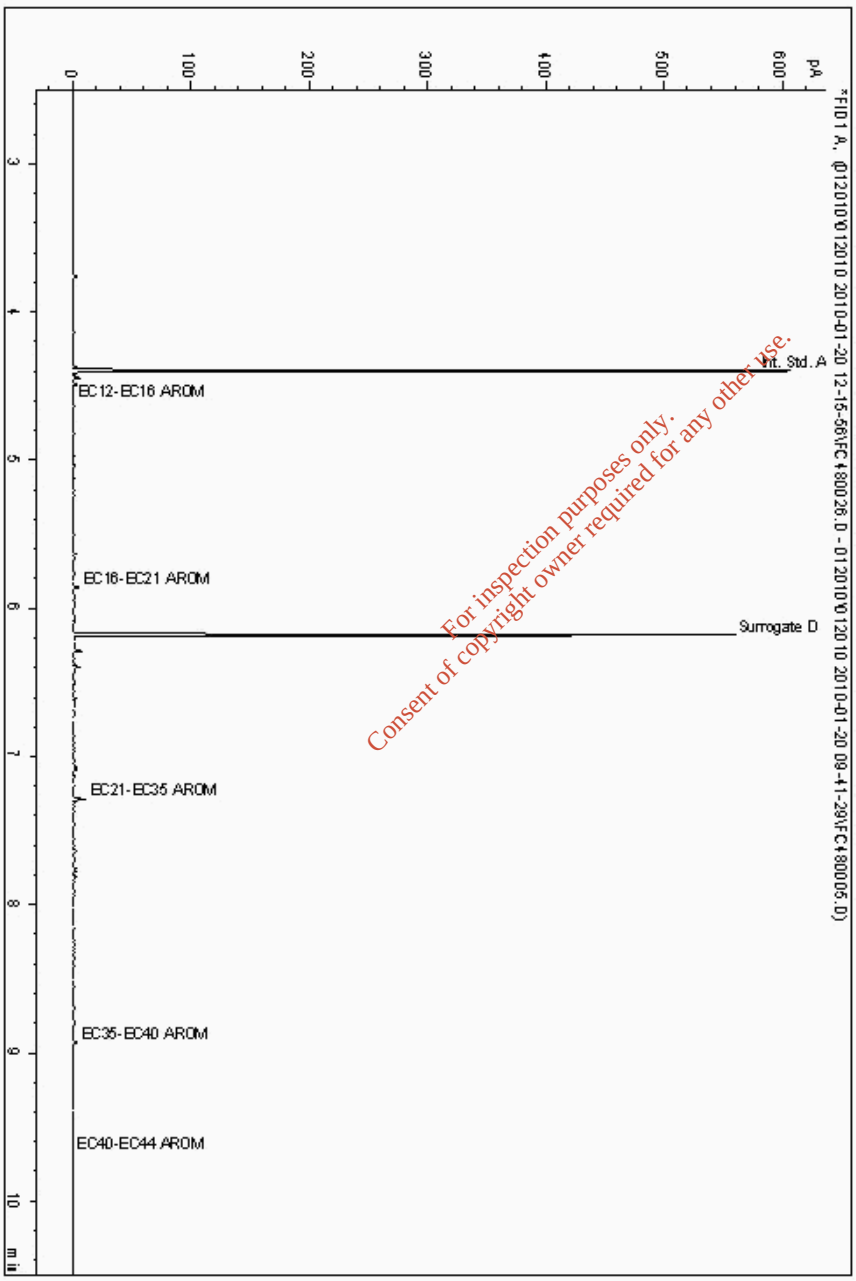
ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	846009
		Sample ID	G3
		Depth	5.0 - 7.0

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

Sample Identity: 971973-846009
Date Acquired : 20/01/10 17:13:53
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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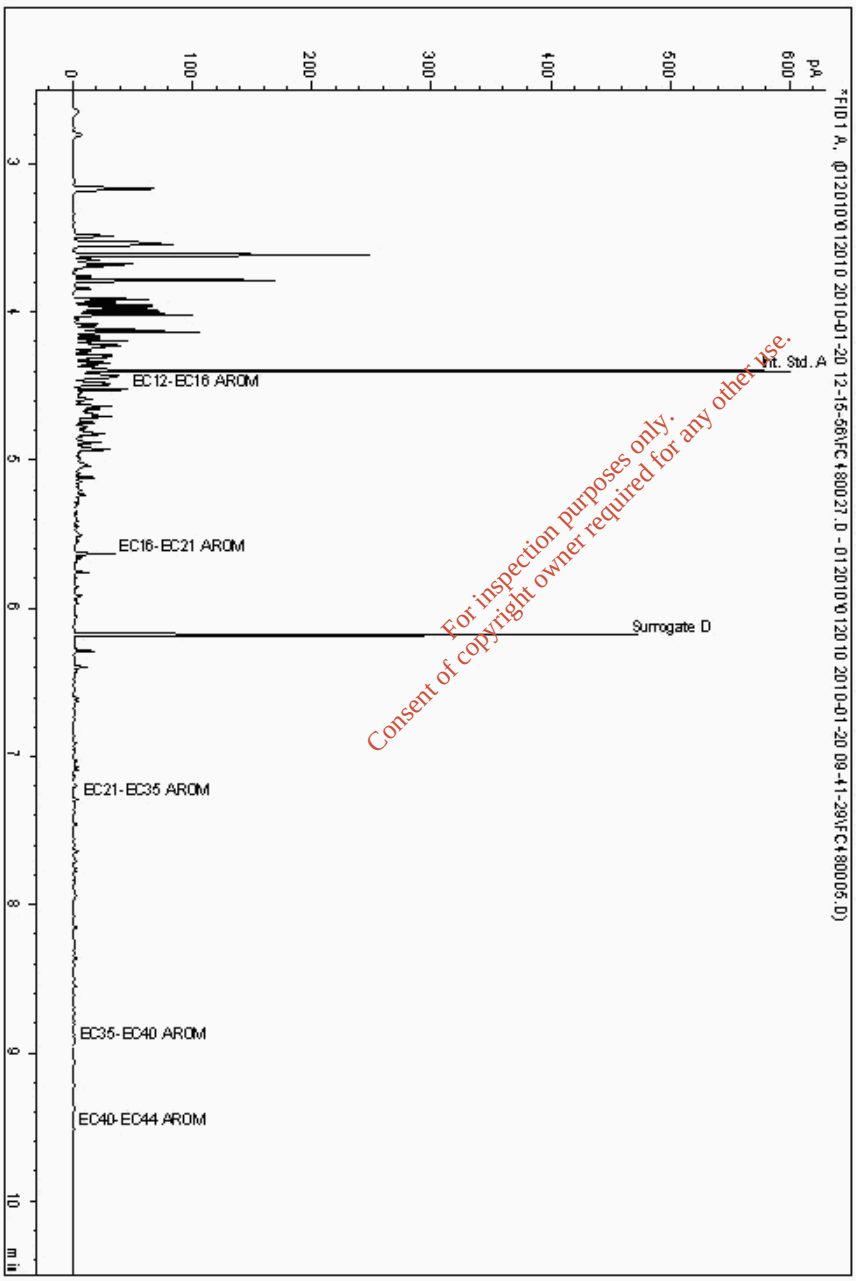
ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	846024
		Sample ID	G2
		Depth	4.0 - 9.0

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

Sample Identity: 971919-846024
Date Acquired : 20/01/10 17:32:21
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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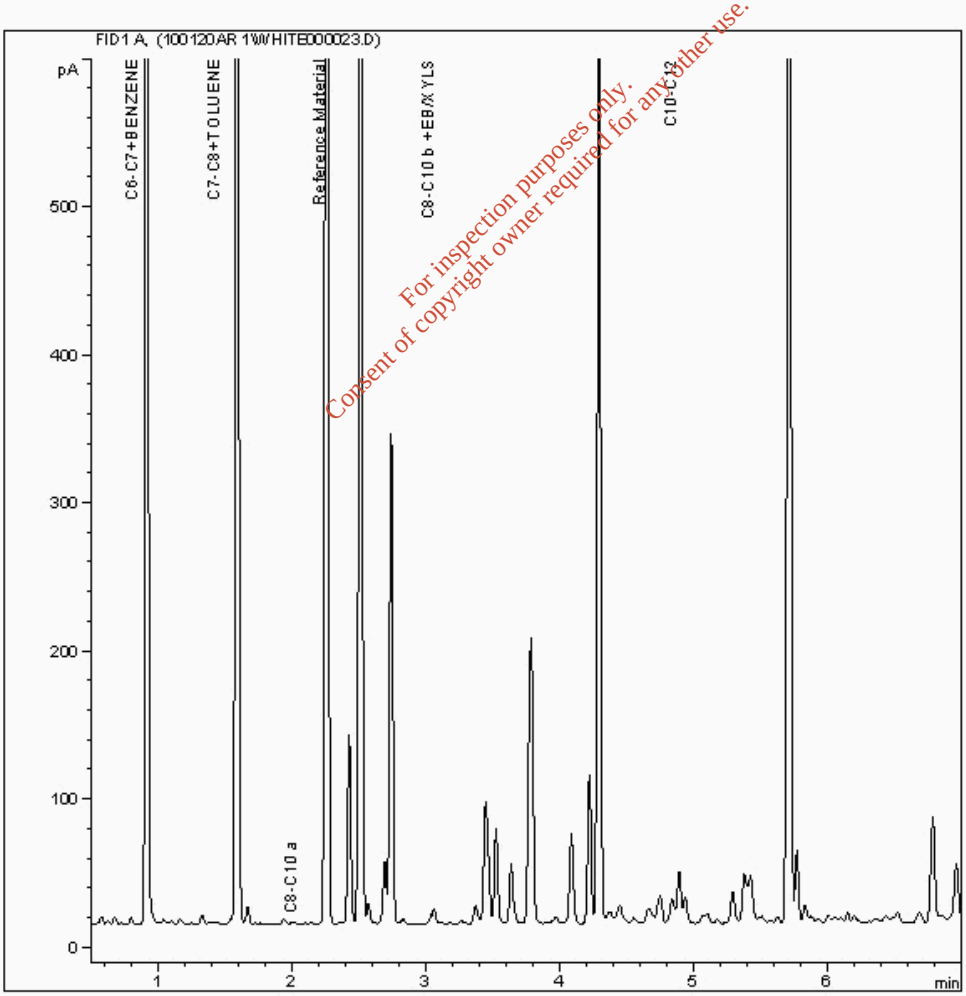
ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700
Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	841360
		Sample ID	G4
		Depth	3.0 - 9.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 971851-841360
Date Acquired : 20/01/10 23:13:52
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	652
2	C6-C7+BENZENE	32580
3	C7-C8+TOLUENE	45115
4	C8-C10 a	421
5	Reference Material	20773
6	C8-C10 b +EB/XYLS	68185
7	C10-C12	85512



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Validated

ALcontrol Laboratories Analytical Services

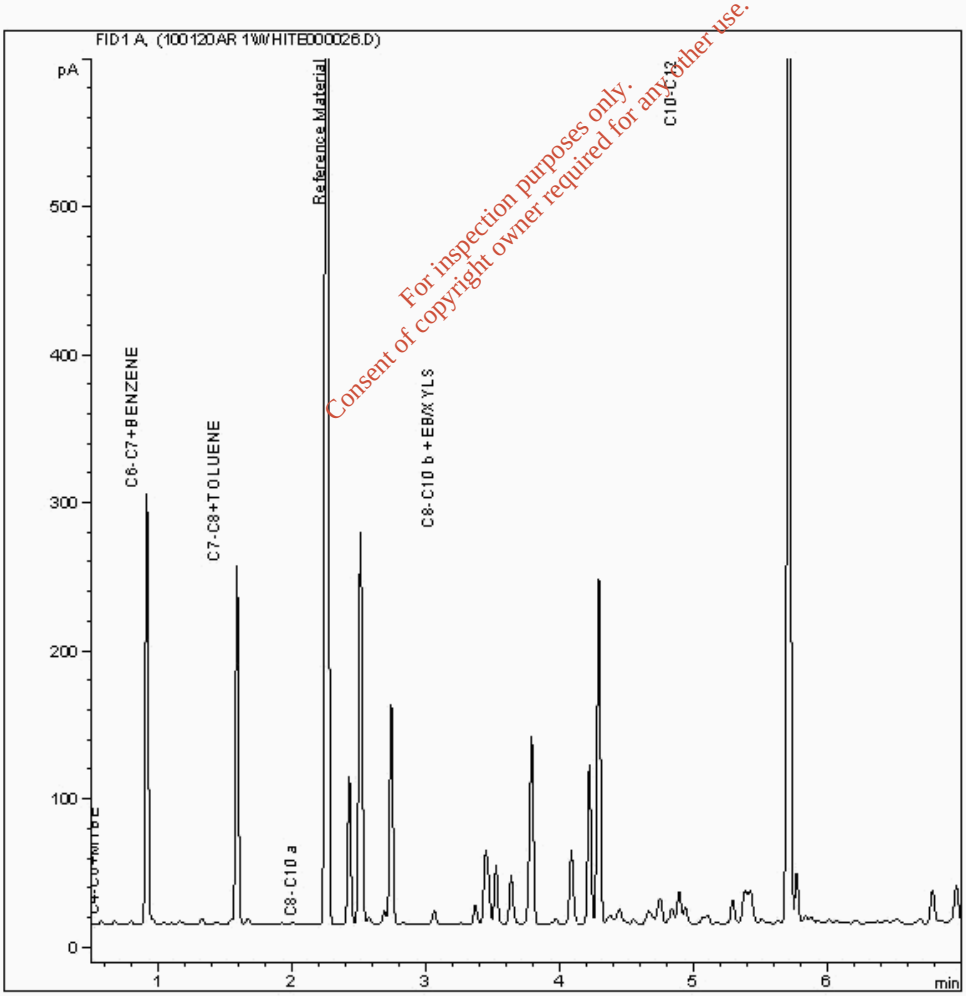
SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	841384
		Sample ID	D1
		Depth	3.0 - 5.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 971897-841384
Date Acquired : 20/01/10 23:54:34
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	253
2	C6-C7+BENZENE	9892
3	C7-C8+TOLUENE	8779
4	C8-C10 a	266
5	Reference Material	21506
6	C8-C10 b +EB/XYLS	32871
7	C10-C12	55033



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Validated

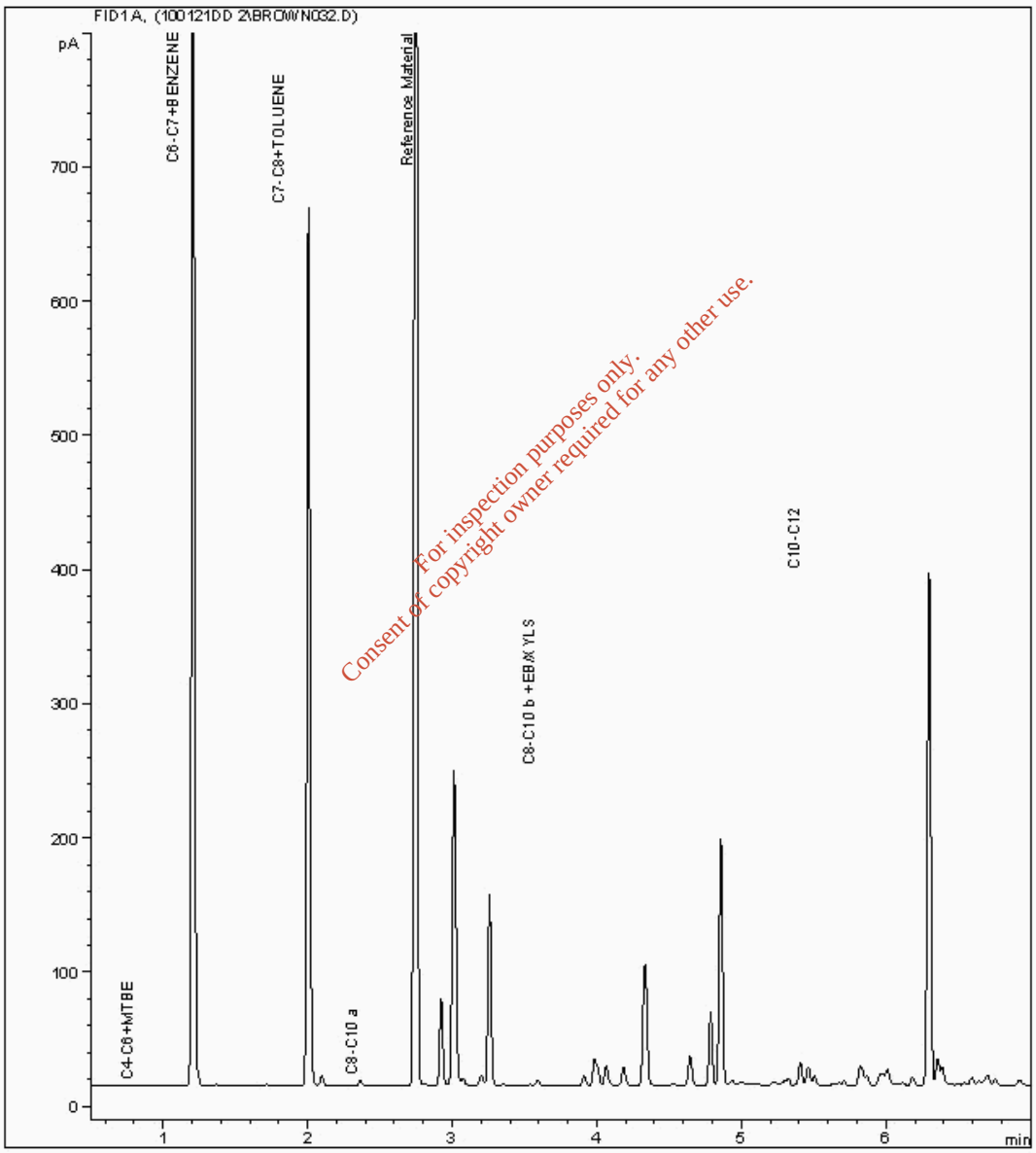
ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	841399
		Sample ID	G2
		Depth	4.0 - 9.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 971917-841399
Date Acquired : 21/01/10 17:09:58
Units : ppb
Dilution : 2



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Validated

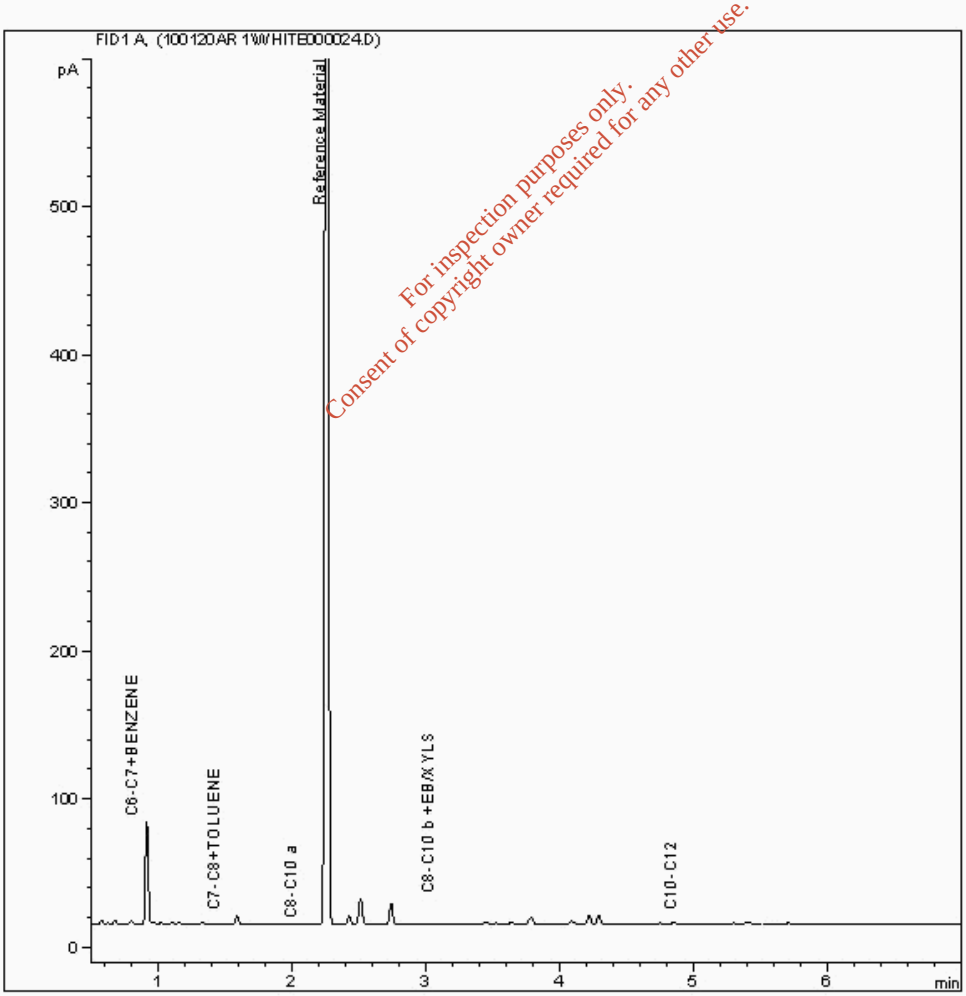
ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700
Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	841415
		Sample ID	G3
		Depth	5.0 - 7.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 971971-841415
Date Acquired : 20/01/10 23:27:25
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	333
2	C6-C7+BENZENE	2613
3	C7-C8+TOLUENE	501
4	C8-C10 a	65
5	Reference Material	20712
6	C8-C10 b +EB/XYLS	2108
7	C10-C12	1369



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Validated

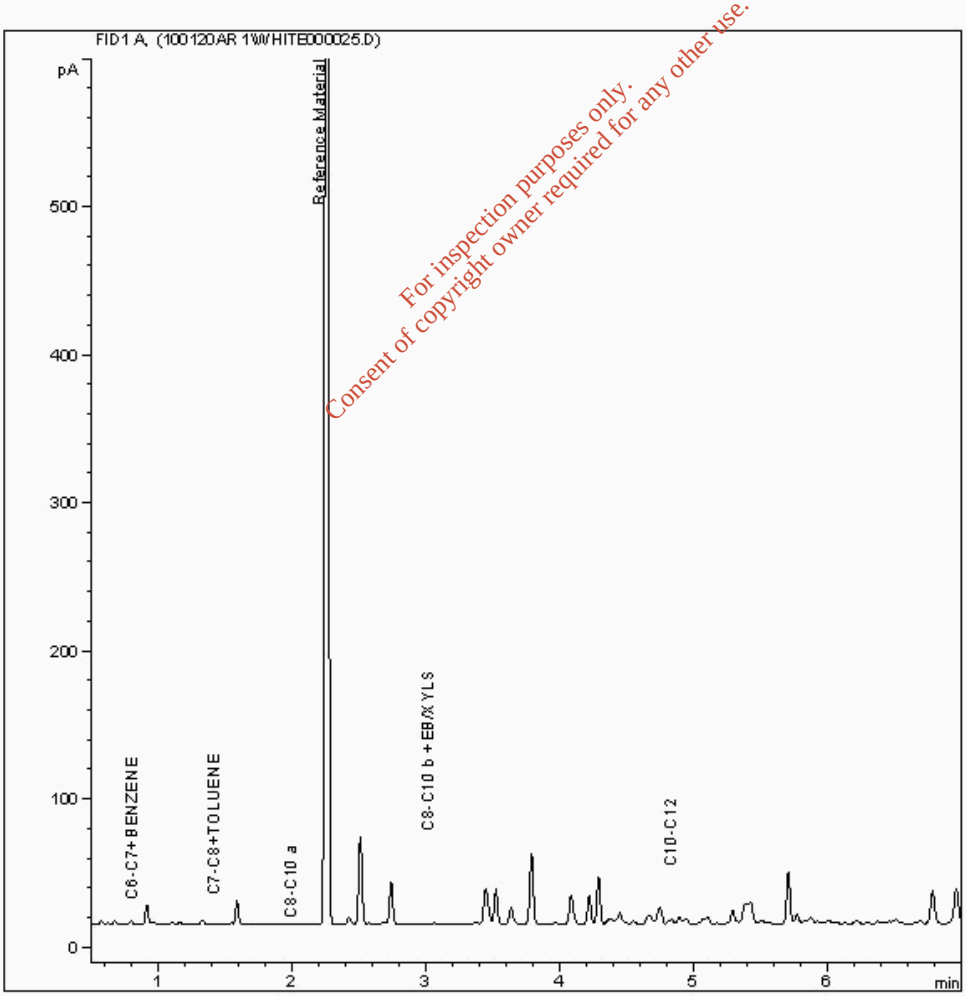
ALcontrol Laboratories Analytical Services

SDG:	100118-49	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-99	**Attention:**	Dave Watts
Client Ref.:	14/01/10 (G4/D1/G2/G3/G5)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70700
Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	841447
		Sample ID	G5
		Depth	4.0 - 6.0

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 972003-841447
Date Acquired : 20/01/10 23:41:01
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	276
2	C6-C7+BENZENE	776
3	C7-C8+TOLUENE	984
4	C8-C10 a	144
5	Reference Material	23095
6	C8-C10 b +EB/XYLS	8840
7	C10-C12	10732



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APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH_4 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. **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.
13. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
14. 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).
15. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
16. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
17. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
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 the major 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.

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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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKEN SVOC	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM/EA	SOLID PHASE EXTRACTION	GC MS
TRIAZINE HERBS	DCM/EA	SOLID PHASE EXTRACTION	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
SAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
UNSAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	DCM	LIQUID/LIQUID EXTRACTION	EZ FLASH

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 (C6-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

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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).

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.

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

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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: Verity Sankey

CERTIFICATE OF ANALYSIS

Date:	22 January 2010		
Job:	D_MOUCHEL_ELE-100		
Sample Delivery Group (SDG):	100115-123	**Report No.:**	70516
Your Reference:	15/01/10 (K5/J10/K1/H12/M3)		
Location:	Limerick Gasworks		

A total of 5 samples was received on Friday January 15, 2010 and completed on Friday January 22, 2010. 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).

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Approved By:

Chris Crutchley
Operations Director - Land UK & Ireland

UKAS TESTING
1291
GROUP

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Verity Sankey
Client Reference:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

LIQUID

Results Legend

X Test

N No Determination Possible

		Sample ID	H12			J10			K1			K5			M3			Total
		Depth (m)	1.00 - 4.00			0.50 - 2.00			2.00 - 4.00			1.00 - 5.00			3.00 - 6.00			
		Container	1l green glass bottle	500ml Plastic	Vial	1l green glass bottle	500ml Plastic	Vial	1l green glass bottle	500ml Plastic	Vial	1l green glass bottle	500ml Plastic	Vial	1l green glass bottle	500ml Plastic	Vial	
Ammonium	All			X			X			X			X			X		05
Anions by ion Chromatography	All												X					01
Anions by Kone (w)	All			X			X			X						X		04
Cyanide Comp/Free/Total/Thiocyanate	All		X			X			X			X			X			05
Dissolved Metals by ICP-MS	All			X			X			X			X			X		05
EPH CWG (Aliphatic) Aqueous GC (W)	All		X			X			X			X			X			05
EPH CWG (Aromatic) Aqueous GC (W)	All		X			X			X			X			X			05
GRO BTEX MTBE GC (W)	All				X			X			X			X			X	05
Hexavalent Chromium (w)	All			X			X			X			X			X		05
Mercury Dissolved	All		X			X			X			X			X			05
PAH Spec MS - Aqueous (W)	All		X			X			X			X			X			05
pH Value	All			X			X			X			X			X		05
Phenols by HPLC (W)	All		X			X			X			X			X			05
Sulphide	All			X			X			X			X			X		05
Total Metals by ICP-MS	All			X			X			X			X			X		05
TPH CWG (W)	All		X			X			X			X			X			05
VOC MS (W)	All																X	01

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ALcontrol Laboratories Analytical Services

SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Verity Sankey
Client Reference:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

Test Completion dates

SDG reference: 100115-123

Sample ID	Depth	Type	Ammonium	Anions by Ion Chromatography	Anions by Kone (w)	Cyanide Comp/Free/Total/Thiocyana	Dissolved Metals by ICP-MS	EPH CWG (Aliphatic) Aqueous GC (	EPH CWG (Aromatic) Aqueous GC (	GRO BTEX MTBE GC (W)	Hexavalent Chromium (w)	Mercury Dissolved	PAH Spec MS - Aqueous (W)	pH Value	Phenols by HPLC (W)	Sulphide	Total Metals by ICP-MS	TPH CWG (W)	VOC MS (W)
H12	1.00 - 4.00	LIQUID	19/01/2010		19/01/2010	19/01/2010	20/01/2010	22/01/2010	22/01/2010	19/01/2010	19/01/2010	19/01/2010	22/01/2010	19/01/2010	19/01/2010	19/01/2010	21/01/2010	22/01/2010	
J10	0.50 - 2.00	LIQUID	20/01/2010		19/01/2010	19/01/2010	20/01/2010	22/01/2010	22/01/2010	19/01/2010	19/01/2010	19/01/2010	22/01/2010	19/01/2010	19/01/2010	20/01/2010	21/01/2010	22/01/2010	
K1	2.00 - 4.00	LIQUID	19/01/2010		19/01/2010	19/01/2010	20/01/2010	22/01/2010	22/01/2010	19/01/2010	19/01/2010	19/01/2010	22/01/2010	19/01/2010	19/01/2010	19/01/2010	21/01/2010	22/01/2010	
K5	1.00 - 5.00	LIQUID	20/01/2010	19/01/2010		19/01/2010	20/01/2010	22/01/2010	22/01/2010	21/01/2010	19/01/2010	19/01/2010	22/01/2010	19/01/2010	20/01/2010	19/01/2010	21/01/2010	22/01/2010	
M3	3.00 - 6.00	LIQUID	19/01/2010		19/01/2010	19/01/2010	20/01/2010	22/01/2010	22/01/2010	19/01/2010	19/01/2010	19/01/2010	22/01/2010	19/01/2010	19/01/2010	19/01/2010	21/01/2010	22/01/2010	21/01/2010

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Reference:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	H12	J10	K1	K5	M3
Sample Identity			H12	J10	K1	K5	M3
Depth (m)			1.00 - 4.00	0.50 - 2.00	2.00 - 4.00	1.00 - 5.00	3.00 - 6.00
Sample Type			Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled					14/01/2010		
Date Received			15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010
SDG Ref			100115-123	100115-123	100115-123	100115-123	100115-123
Lab Sample No.(s)			835807	835708	835759	835661	835837
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099	6.27 #	0.439 #	11.8 #	202 #	0.89 #
Sulphide	<0.1 mg/l	TM101	<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Arsenic Dissolved	<0.12 µg/l	TM152	2.36 #	2.01 #	3.9 #	290 #	3.53 #
Cadmium Dissolved	<0.1 µg/l	TM152	<0.1 #	<0.1 #	<0.1 #	0.439 #	<0.1 #
Copper Dissolved	<0.85 µg/l	TM152	<0.85 #	3.9 #	1.57 #	3.19 #	2.2 #
Lead Dissolved	<0.02 µg/l	TM152	0.094 #	0.063 #	0.582 #	5.31 #	0.066 #
Nickel Dissolved	<0.15 µg/l	TM152	4.88 #	4.75 #	13.9 #	69.6 #	7.08 #
Selenium Dissolved	<0.39 µg/l	TM152	1.6 #	1.35 #	1.62 #	68 #	2.62 #
Zinc Dissolved	<0.41 µg/l	TM152	<0.41 #	<0.41 #	<0.41 #	107 #	<0.41 #
Mercury Dissolved	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	0.187 #	<0.01 #
Sulphate (soluble)	3 mg/l	TM184	169 #	35.9 #	709 #		556 #
Chromium (Unfiltered)	<3 µg/l	TM191	17.6	<3	95.7	56.8	14.7
Sulphate	<0.1 mg/l	TM226				715 #	
Total Cyanide	<0.05 mg/l	TM227	<0.05 #	<0.05 #	0.152 #	12 #	0.794 #
Hexavalent Chromium	<0.03 mg/l	TM241	<0.03	<0.03	0.05	<0.6	<0.03
pH value	<1 pH Units	TM256	8.07 #	8.4 #	8.01 #	10.34 #	7.97 #
Phenol	<0.002 mg/l	TM259	<0.002 #	0.02 #	<0.002 #	464 #	<0.002 #
Cresols	<0.006 mg/l	TM259	<0.006 #	0.02 #	<0.006 #	765 #	<0.006 #
Xylenols	<0.008 mg/l	TM259	0.05 #	<0.008 #	<0.008 #	256 #	<0.008 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM259	<0.003 #	<0.003 #	<0.003 #	<0.6 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259	<0.006 #	<0.006 #	<0.006 #	27.8 #	<0.006 #
Phenols Total of 5 Speciated	<0.025 mg/l	TM259	0.05	0.04	<0.025	1510	<0.025

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ALcontrol Laboratories Analytical Services

SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Reference:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

PAH Spec MS - Aqueous (W)

Results Legend

ISO17025 accredited.
M *m*CERTS accredited.
***** subcontracted test.
****** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	H12	J10	K1	K5	M3
Sample Identity			H12	J10	K1	K5	M3
Depth (m)			1.00 - 4.00	0.50 - 2.00	2.00 - 4.00	1.00 - 5.00	3.00 - 6.00
Sample Type			Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled					14/01/2010		
Date Received			15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010
SDG Ref			100115-123	100115-123	100115-123	100115-123	100115-123
Lab Sample No.(s)			835807	835708	835759	835661	835837
Naphthalene (Aqueous)	<0.1 µg/l	TM178	9.9	<0.1	0.467	3440	0.241
Acenaphthene (Aqueous)	<0.015 µg/l	TM178	4.76	0.185	0.43	35.4	0.0522
Acenaphthylene (Aqueous)	<0.011 µg/l	TM178	11.9	0.203	0.882	191	0.156
Fluoranthene (Aqueous)	<0.014 µg/l	TM178	52.3	0.597	6.85	41.1	2.18
Anthracene (Aqueous)	<0.015 µg/l	TM178	6.08	0.0562	0.765	31.9	0.152
Phenanthrene (Aqueous)	<0.022 µg/l	TM178	13.4	0.0613	1.83	104	0.261
Fluorene (Aqueous)	<0.014 µg/l	TM178	4.9	0.0317	0.385	72.7	0.0527
Chrysene (Aqueous)	<0.013 µg/l	TM178	12	0.107	3.22	4.42	1.23
Pyrene (Aqueous)	<0.015 µg/l	TM178	40.9	0.431	7.39	26.9	2.16
Benzo(a)anthracene (Aqueous)	<0.017 µg/l	TM178	17.9	0.193	4.76	5.99	1.67
Benzo(b)fluoranthene (Aqueous)	<0.023 µg/l	TM178	23.3	0.381	8.12	4.08	3.16
Benzo(k)fluoranthene (Aqueous)	<0.027 µg/l	TM178	8.45	0.126	3.15	<2.7	1.16
Benzo(a)pyrene (Aqueous)	<0.009 µg/l	TM178	18.3	0.296	6.18	3	2.15
Dibenzo(ah)anthracene (Aqueous)	<0.016 µg/l	TM178	2.93	0.0522	1.32	<1.6	0.409
Benzo(ghi)perylene (Aqueous)	<0.016 µg/l	TM178	11.1	0.2	5.43	2	1.94
Indeno(123cd)pyrene (Aqueous)	<0.014 µg/l	TM178	10	0.172	4.65	2.1	1.62
PAH 16 Total (Aqueous)	<0.1 µg/l	TM178	248	3.09	55.8	3970	18.6

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ALcontrol Laboratories Analytical Services

SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Reference:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

TPH CWG (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Component	LOD/Units	Method	Sample Identity	H12	J10	K1	K5	M3
			Depth (m)	1.00 - 4.00	0.50 - 2.00	2.00 - 4.00	1.00 - 5.00	3.00 - 6.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled			14/01/2010		
			Date Received	15/01/2010	15/01/2010	15/01/2010	15/01/2010	15/01/2010
			SDG Ref	100115-123	100115-123	100115-123	100115-123	100115-123
			Lab Sample No.(s)	835807	835708	835759	835661	835837
GRO C5-C12	<42 µg/l	TM245		949 #	66 #	<42 #	49500 #	<42 #
MTBE	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		12 #	<7 #	<7 #	13800 #	<7 #
Toluene	<4 µg/l	TM245		14 #	<4 #	<4 #	4670 #	<4 #
Ethyl Benzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	236 #	<5 #
m & p Xylene	<8 µg/l	TM245		31 #	<8 #	<8 #	1510 #	<8 #
o Xylene	<3 µg/l	TM245		27 #	<3 #	<3 #	672 #	<3 #
Sum m&p and o Xylene	<10 µg/l	TM245		58 #	<10 #	<10 #	2180 #	<10 #
Sum of BTEX	<10 µg/l	TM245		84 #	<10 #	<10 #	20900 #	<10 #
Aliphatics C5-C6	<10 µg/l	TM245		<10	<10	<10	760	<10
Aliphatics >C6-C8	<10 µg/l	TM245		17.2	<10	<10	4600	<10
Aliphatics >C8-C10	<10 µg/l	TM245		82.8	26.4	<10	1990	<10
Aliphatics >C10-C12	<10 µg/l	TM245		256	<10	<10	7310	<10
Aliphatics >C12-C16 (Aqueous)	<10 µg/l	TM174		223	<10	<10	<10	<10
Aliphatics >C16-C21 (Aqueous)	<10 µg/l	TM174		195	<10	<10	<10	<10
Aliphatics >C21-C35 (Aqueous)	<10 µg/l	TM174		595	<10	<10	<10	<10
Total Aliphatics C5-C12	<10 µg/l	TM245		356	26.4	<10	14700	<10
Total Aliphatics >C12-C35 (Aqueous)	<10 µg/l	TM174		1010	<10	<10	<10	<10
Aromatics C6-C7	<10 µg/l	TM245		12	<10	<10	13800	<10
Aromatics >C7-C8	<10 µg/l	TM245		14	<10	<10	4670	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		182	39.6	<10	5400	<10
Aromatics >EC10-EC12	<10 µg/l	TM245		384	<10	<10	11000	<10
Aromatics >EC12-EC16 (Aqueous)	<10 µg/l	TM174		235	<10	<10	8490	<10
Aromatics >EC16-EC21 (Aqueous)	<10 µg/l	TM174		353	<10	<10	789	<10
Aromatics >EC21-EC35 (Aqueous)	<10 µg/l	TM174		1260	<10	184	149	<10
Total Aromatics C6-C12	<10 µg/l	TM245		593	39.6	<10	34800	<10
Total Aromatics >EC12-EC35 (Aqueous)	<10 µg/l	TM174		1850	<10	184	9430	<10
Surrogate Recovery %**	%	TM245		97	94	86	81	99
Total Aliphatics & Aromatics >C12-C44 (Aqueous)	<10 µg/l	TM174		2870	<10	184	9430	<10
GRO (>C8-C10A)	<10 µg/l	TM245		<10	<10	<10	466	<10
Total Aliphatics >C5-C35 (Aqueous)	<10 µg/l	TM174		1370	26.4	<10	14700	<10
Total Aromatics >C6-C35 (Aqueous)	<10 µg/l	TM174		2440	39.6	184	44300	<10
TPH C5-C35 (Aqueous)	<10 µg/l	TM174		3810	66	184	58900	<10

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ALcontrol Laboratories Analytical Services

SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Reference:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

VOC MS (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Sample Identity	M3
Depth (m)	3.00 - 6.00
Sample Type	Water(GW/SW)
Date Sampled	
Date Received	15/01/2010
SDG Ref	100115-123
Lab Sample No.(s)	835837

Component	LOD/Units	Method	
Dichlorodifluoromethane	<1.3 µg/l	TM208	<1.3 #
Chloromethane	<1.7 µg/l	TM208	<1.7 #
Vinyl Chloride	<1.2 µg/l	TM208	<1.2 #
Bromomethane	<2 µg/l	TM208	<2 #
Chloroethane	<2.5 µg/l	TM208	<2.5 #
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3 #
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2 #
Carbon disulphide	<1.3 µg/l	TM208	<1.3 #
Dichloromethane	<3.7 µg/l	TM208	<3.7 #
Methyl Tertiary Butyl Ether	<1.6 µg/l	TM208	<1.6 #
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9 #
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2 #
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3 #
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8 #
Bromochloromethane	<1.9 µg/l	TM208	<1.9 #
Chloroform	<1.8 µg/l	TM208	<1.8 #
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3 #
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3 #
Carbontetrachloride	<1.4 µg/l	TM208	<1.4 #
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3
Benzene	<1.3 µg/l	TM208	4.84 #
Trichloroethene	<2.5 µg/l	TM208	<2.5 #
1,2-Dichloropropane	<3 µg/l	TM208	<3 #
Dibromomethane	<2.7 µg/l	TM208	<2.7 #
Bromodichloromethane	<0.9 µg/l	TM208	<0.9 #
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9 #
Toluene	<1.4 µg/l	TM208	<1.4 #
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5 #
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2 #
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2 #
Tetrachloroethene	<1.5 µg/l	TM208	<1.5 #
Dibromochloromethane	<1.7 µg/l	TM208	<1.7 #
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3 #
Chlorobenzene	<3.5 µg/l	TM208	<3.5 #
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3 #
Ethylbenzene	<2.5 µg/l	TM208	<2.5 #
p/m-Xylene	<2.5 µg/l	TM208	<2.5 #
o-Xylene	<1.7 µg/l	TM208	<1.7 #
Styrene	<1.2 µg/l	TM208	<1.2 #

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ALcontrol Laboratories Analytical Services

SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Reference:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

VOC MS (W)

Results Legend

\# ISO17025 accredited.
M *m*CERTS accredited.
* subcontracted test.
** This result relates to the % recovery of the surrogate standard added to the sample to check on the efficiency of the method. Acceptable limits for most organic methods are 70 - 130 %. The results of the individual compounds within the sample are not corrected for this recovery.

Sample Identity	M3
Depth (m)	3.00 - 6.00
Sample Type	Water(GW/SW)
Date Sampled	
Date Received	15/01/2010
SDG Ref	100115-123
Lab Sample No.(s)	835837

Component	LOD/Units	Method	
Bromoform	<3 µg/l	TM208	<3 #
Isopropylbenzene	<1.4 µg/l	TM208	<1.4 #
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8 #
Bromobenzene	<2 µg/l	TM208	<2 #
Propylbenzene	<2.6 µg/l	TM208	<2.6 #
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	<1.8 #
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #
tert-Butylbenzene	<2 µg/l	TM208	<2 #
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	<1.7 #
sec-Butylbenzene	<1.7 µg/l	TM208	<1.7 #
4-Isopropyltoluene	<2.6 µg/l	TM208	<2.6 #
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2 #
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7 #
n-Butylbenzene	<2 µg/l	TM208	<2 #
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3 #
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5 #
Tert-amyl methyl ether	<1 µg/l	TM208	<1 #
Naphthalene	<3.5 µg/l	TM208	<3.5 #
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1 #
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10

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Table of Results - Appendix

SDG Number : 100115-123 **Client :** Mouchel **Client Ref :** 15/01/10 (K5/J10/K1/H12/M3

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]
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	
TM191	Standard Methods for the examination of waters and wastewaters 16th Edition, ALPHA, Washington DC, USA. ISBN 0-87553-131-8.	Determination of Unfiltered Metals in Water Matrices by ICP-MS	
TM208	Modified: US EPA Method 8260b & 624	Determination of Volatile Organic Compounds by Headspace / GC-MS in Waters	
TM226	In-House Method	Determination of Anions in Waters using Ion Chromatography	
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			

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

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ALcontrol Laboratories Analytical Services

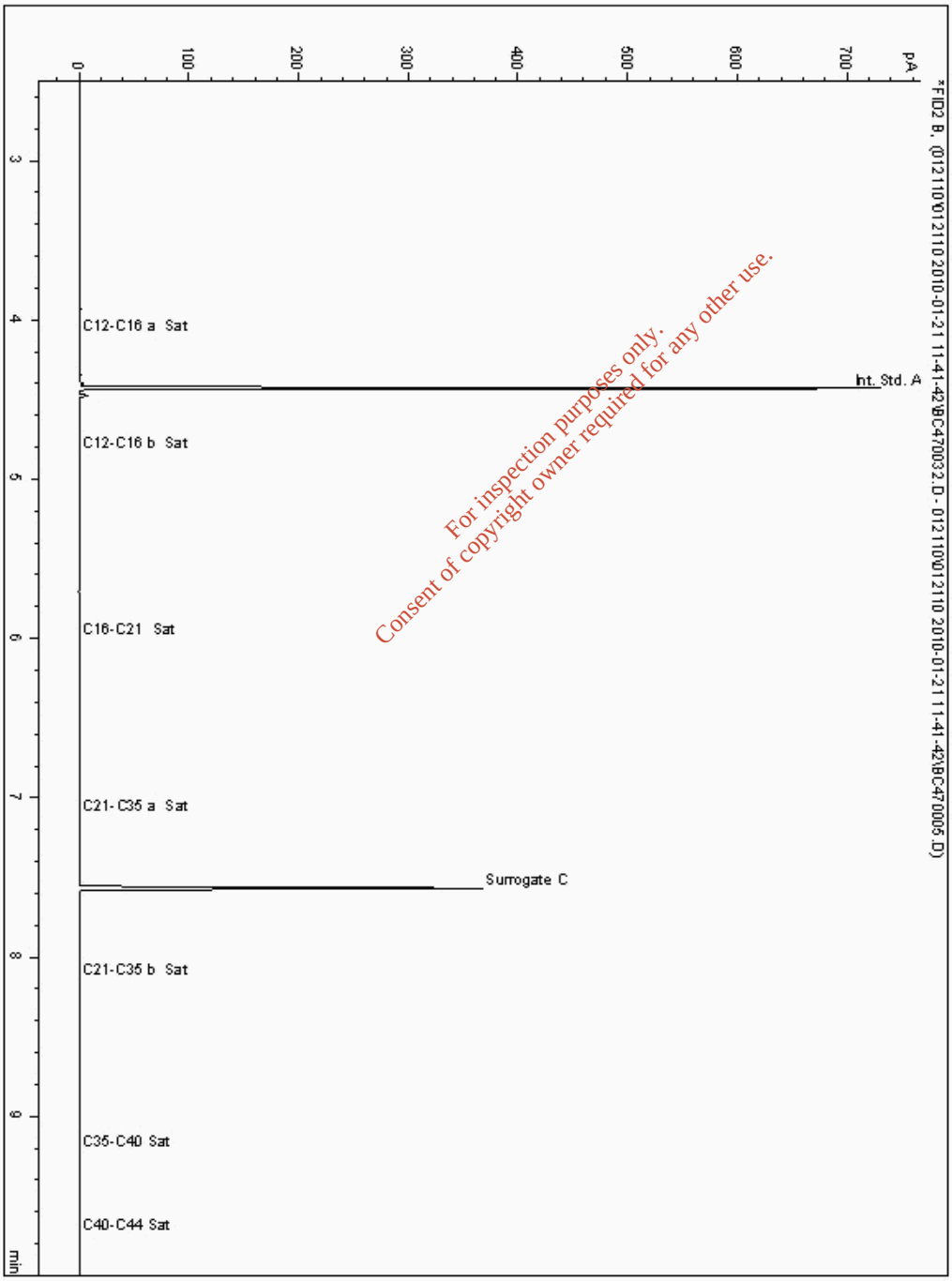
SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Ref.:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

Chromatogram

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	844032
		Sample ID	M3
		Depth	3.00 - 6.00

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

Sample Identity: 972933-844032
Date Acquired : 21/01/10 21:12:54
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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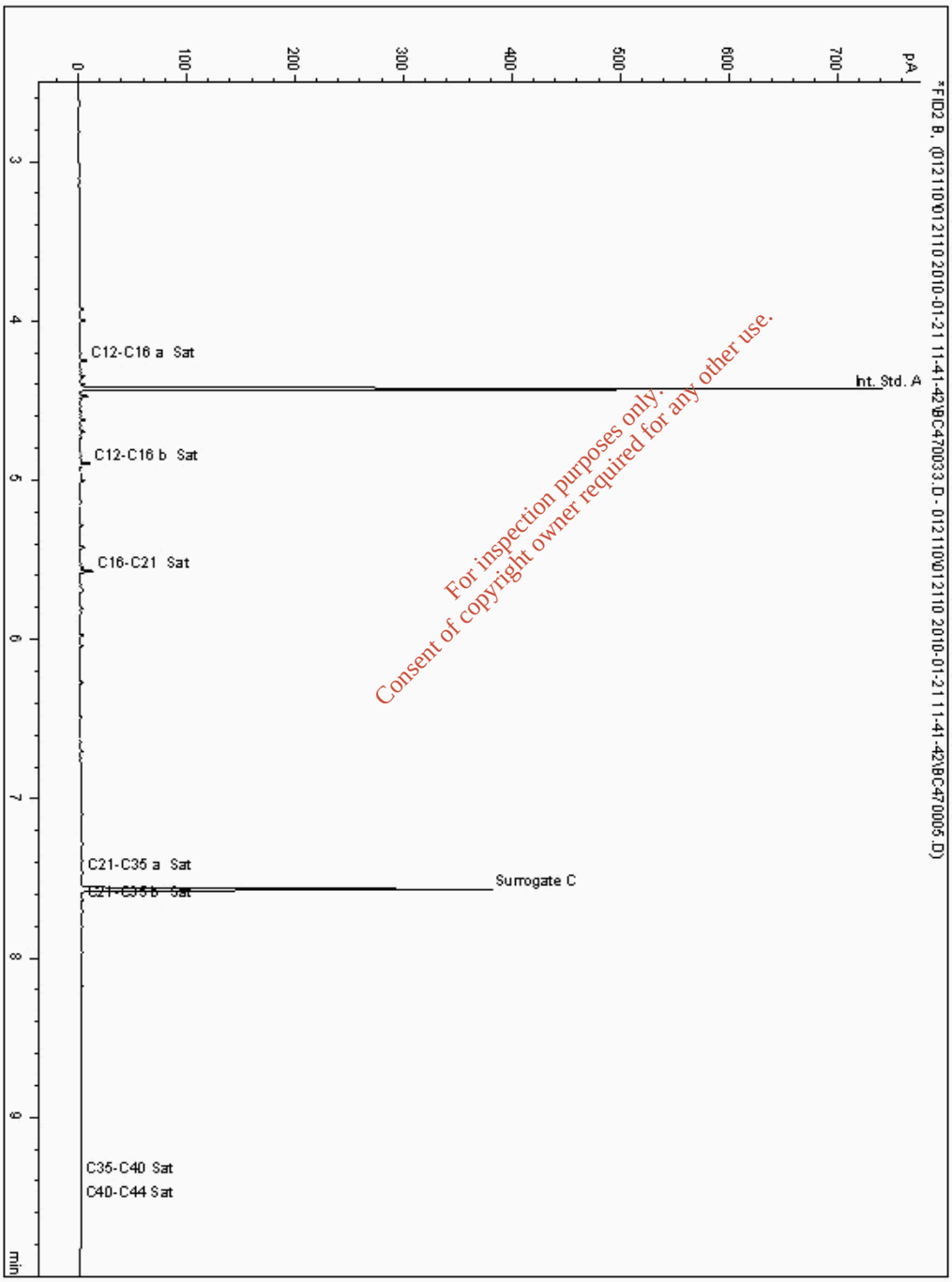
ALcontrol Laboratories Analytical Services

SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Ref.:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	844052
		Sample ID	H12
		Depth	1.00 - 4.00

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

Sample Identity: 972914-844052
Date Acquired : 21/01/10 22:00:31
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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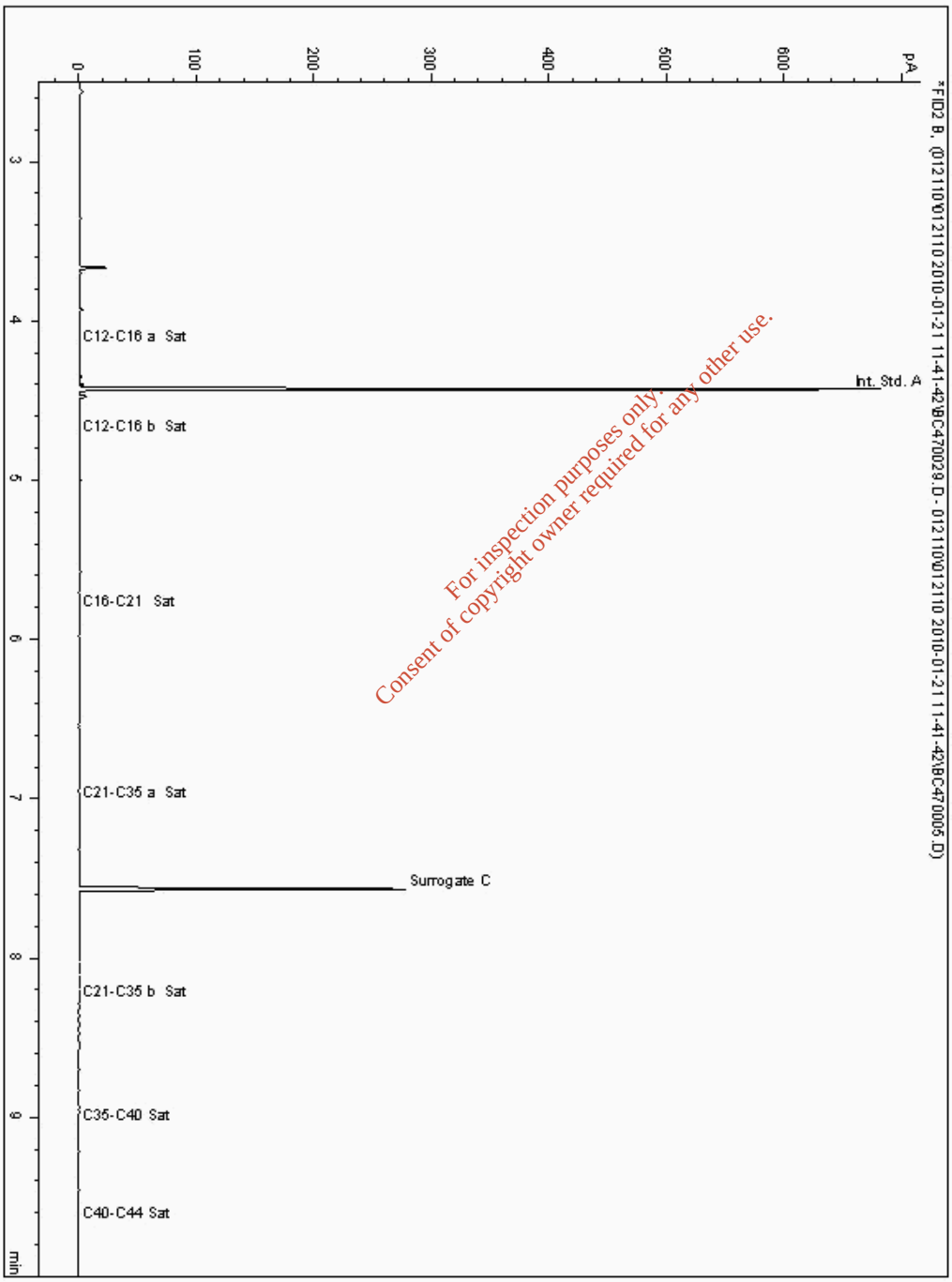
ALcontrol Laboratories Analytical Services

SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Ref.:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	844075
		Sample ID	K5
		Depth	1.00 - 5.00

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

Sample Identity: 972845-844075
Date Acquired : 21/01/10 20:17:20
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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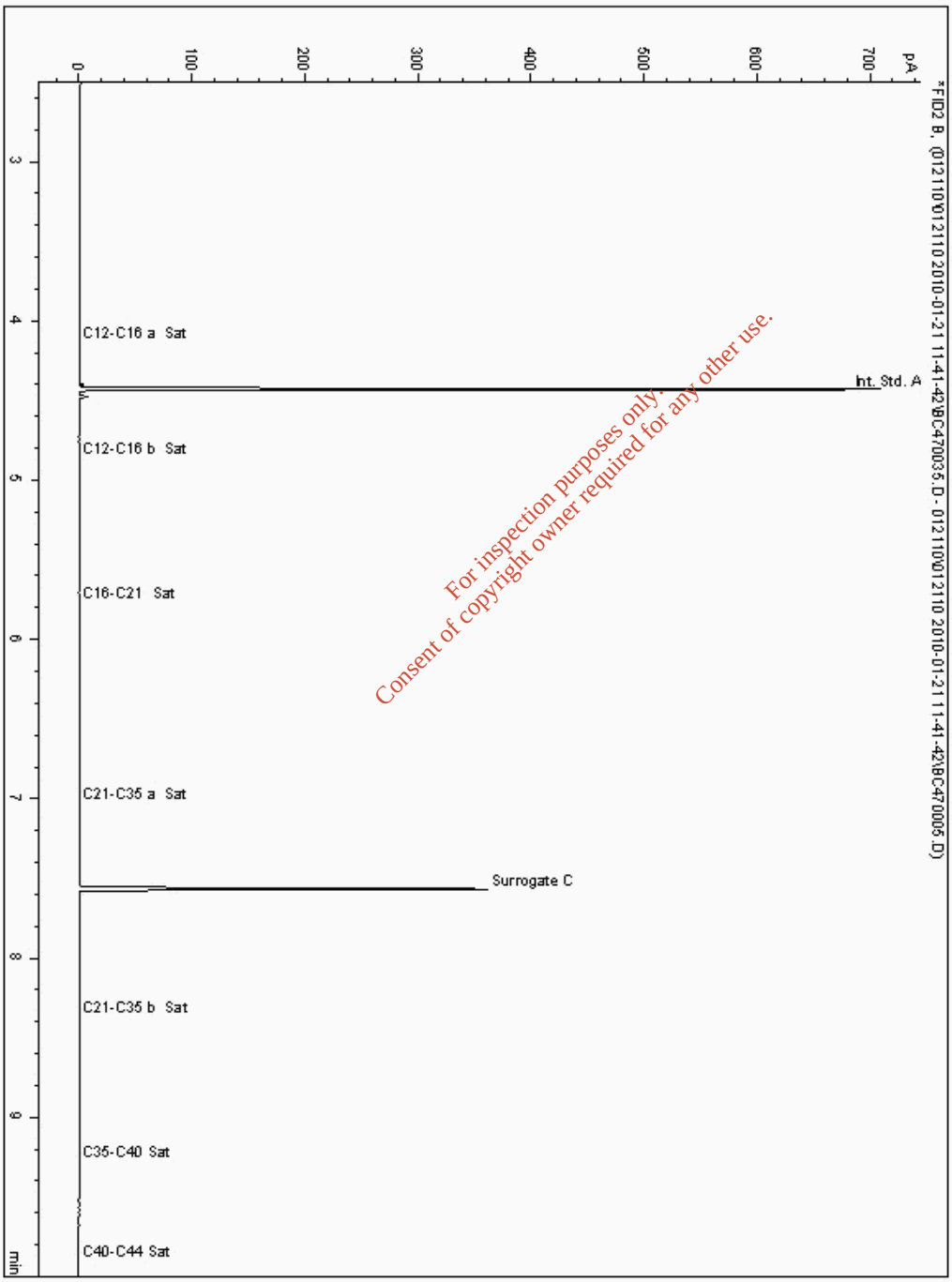
ALcontrol Laboratories Analytical Services

SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Ref.:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	844086
		Sample ID	K1
		Depth	2.00 - 4.00

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

Sample Identity: 972893-844086
Date Acquired : 21/01/10 22:32:47
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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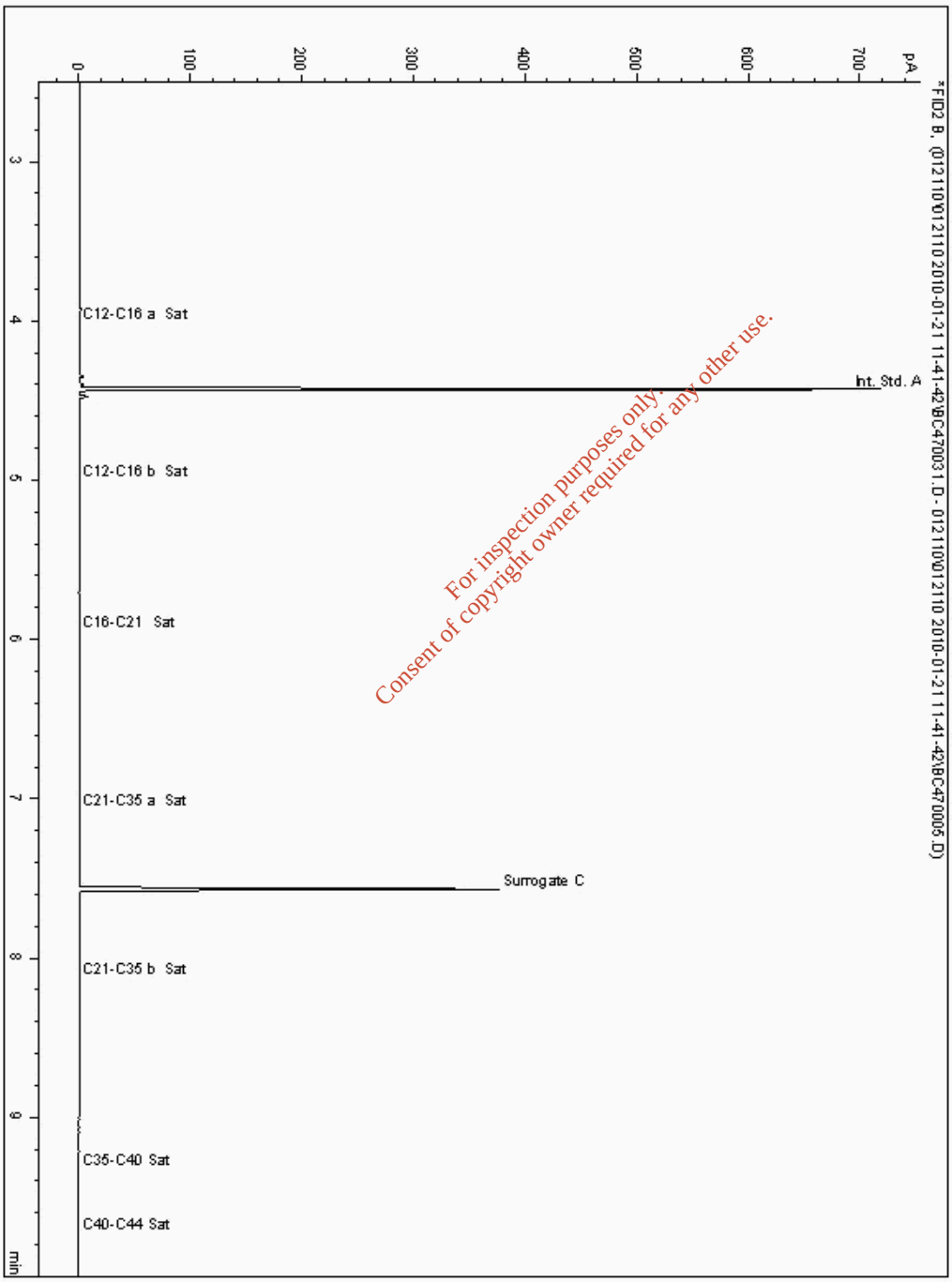
ALcontrol Laboratories Analytical Services

SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Ref.:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	844102
		Sample ID	J10
		Depth	0.50 - 2.00

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

Sample Identity: 972866-844102
Date Acquired : 21/01/10 20:54:22
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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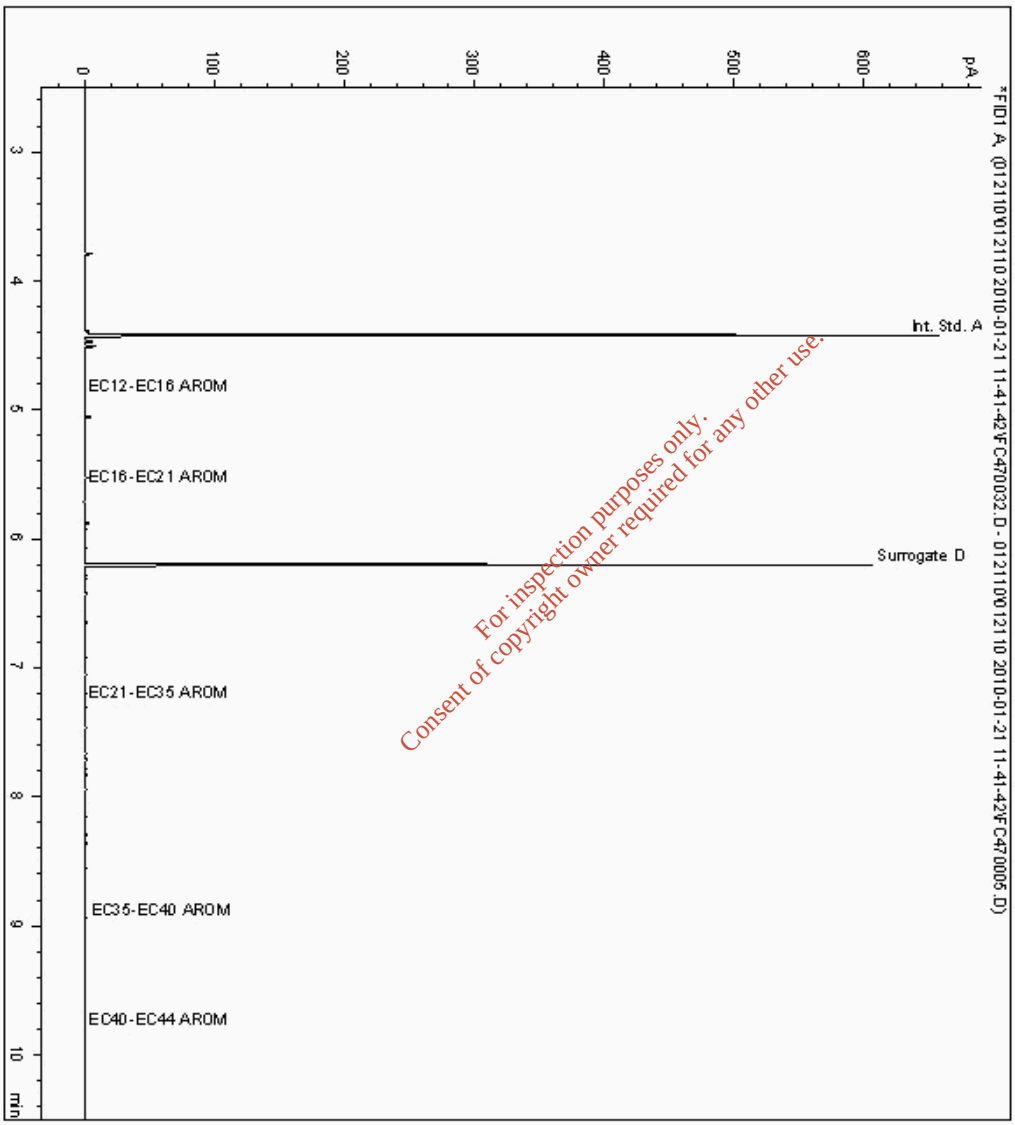
ALcontrol Laboratories Analytical Services

SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Ref.:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	844032
		Sample ID	M3
		Depth	3.00 - 6.00

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

Sample Identity: 972934-844032
Date Acquired : 21/01/10 21:12:54
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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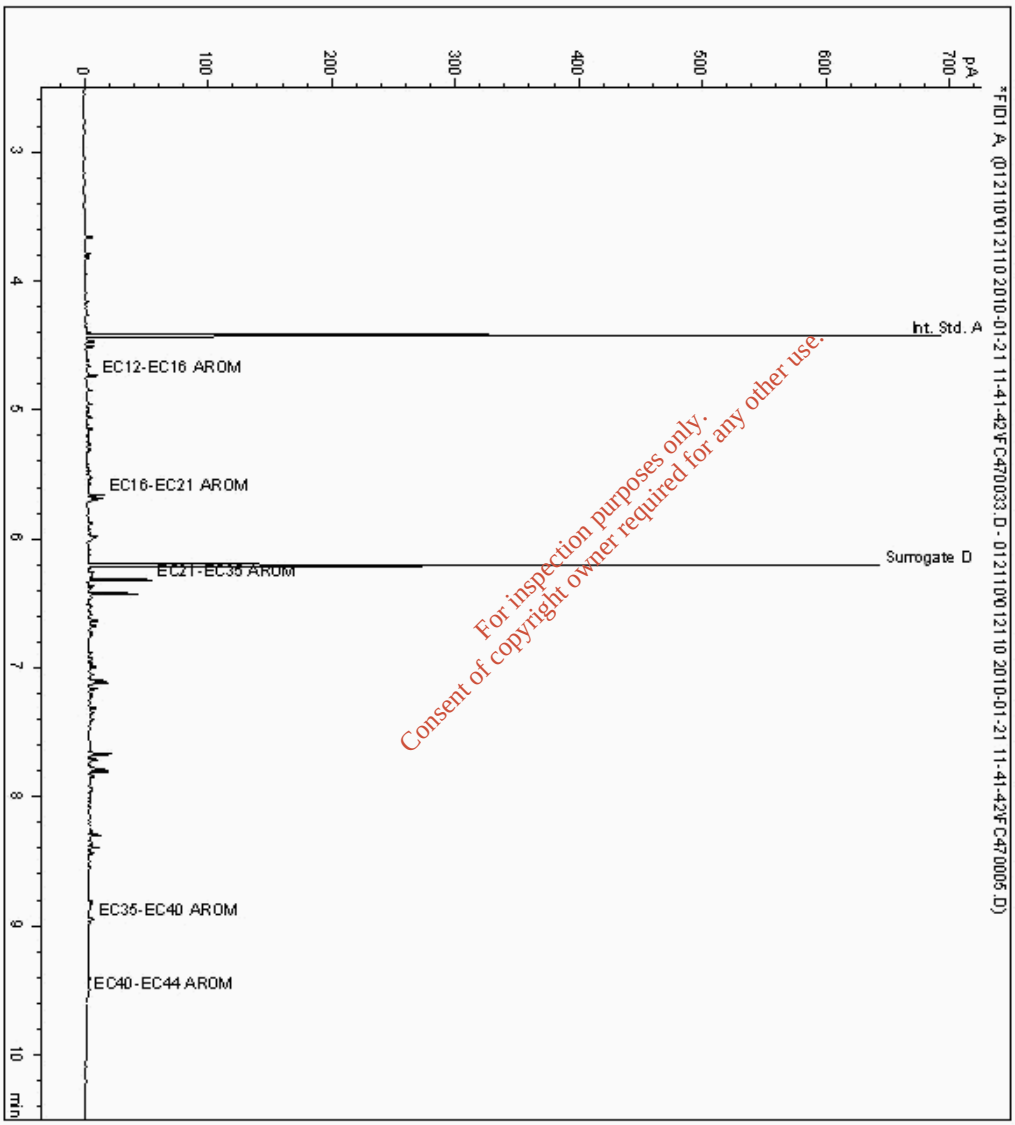
ALcontrol Laboratories Analytical Services

SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Ref.:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	844052
		Sample ID	H12
		Depth	1.00 - 4.00

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

Sample Identity: 972915-844052
Date Acquired : 21/01/10 22:00:31
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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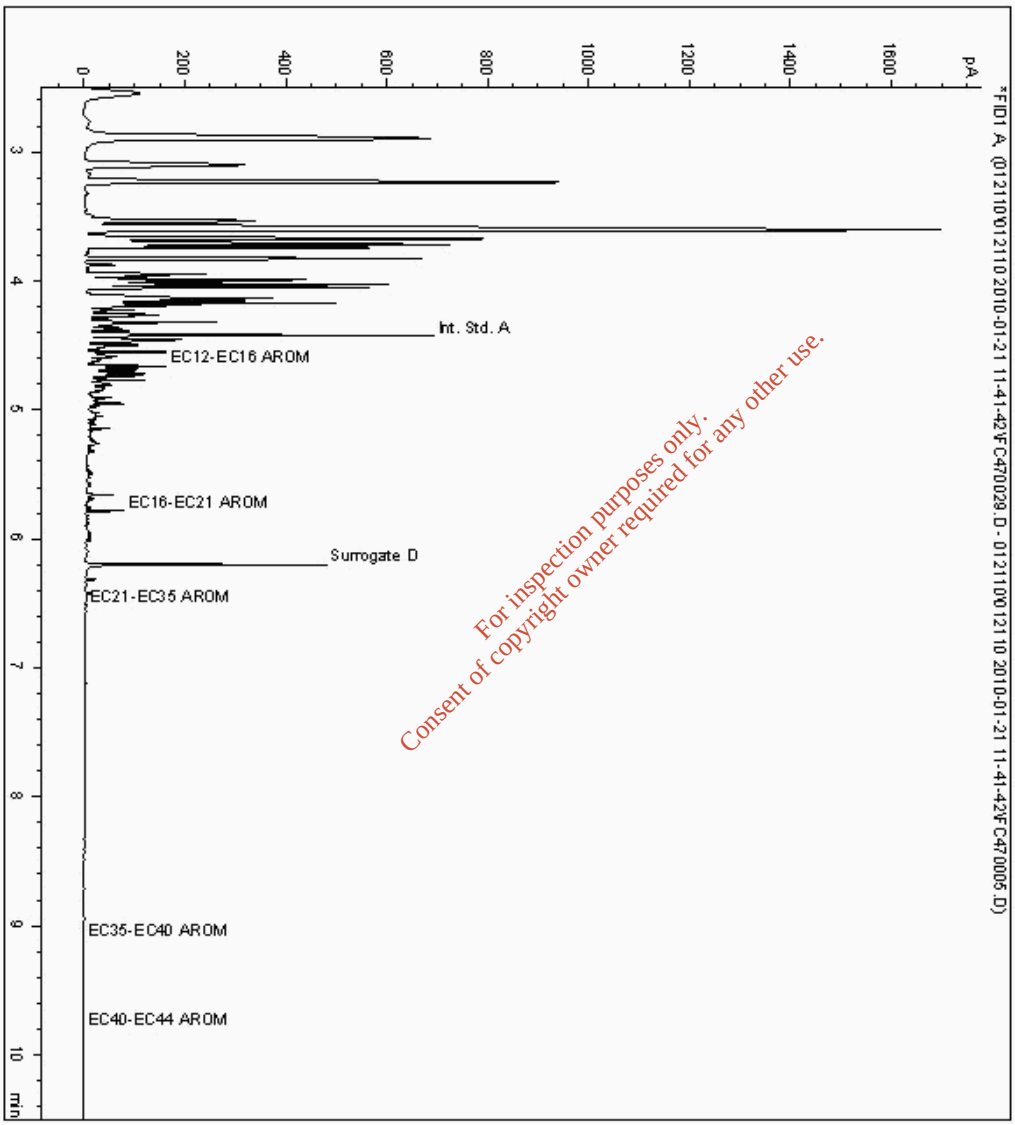
SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Ref.:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	844075
		Sample ID	K5
		Depth	1.00 - 5.00

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

Sample Identity: 972846-844075
Date Acquired : 21/01/10 20:17:20
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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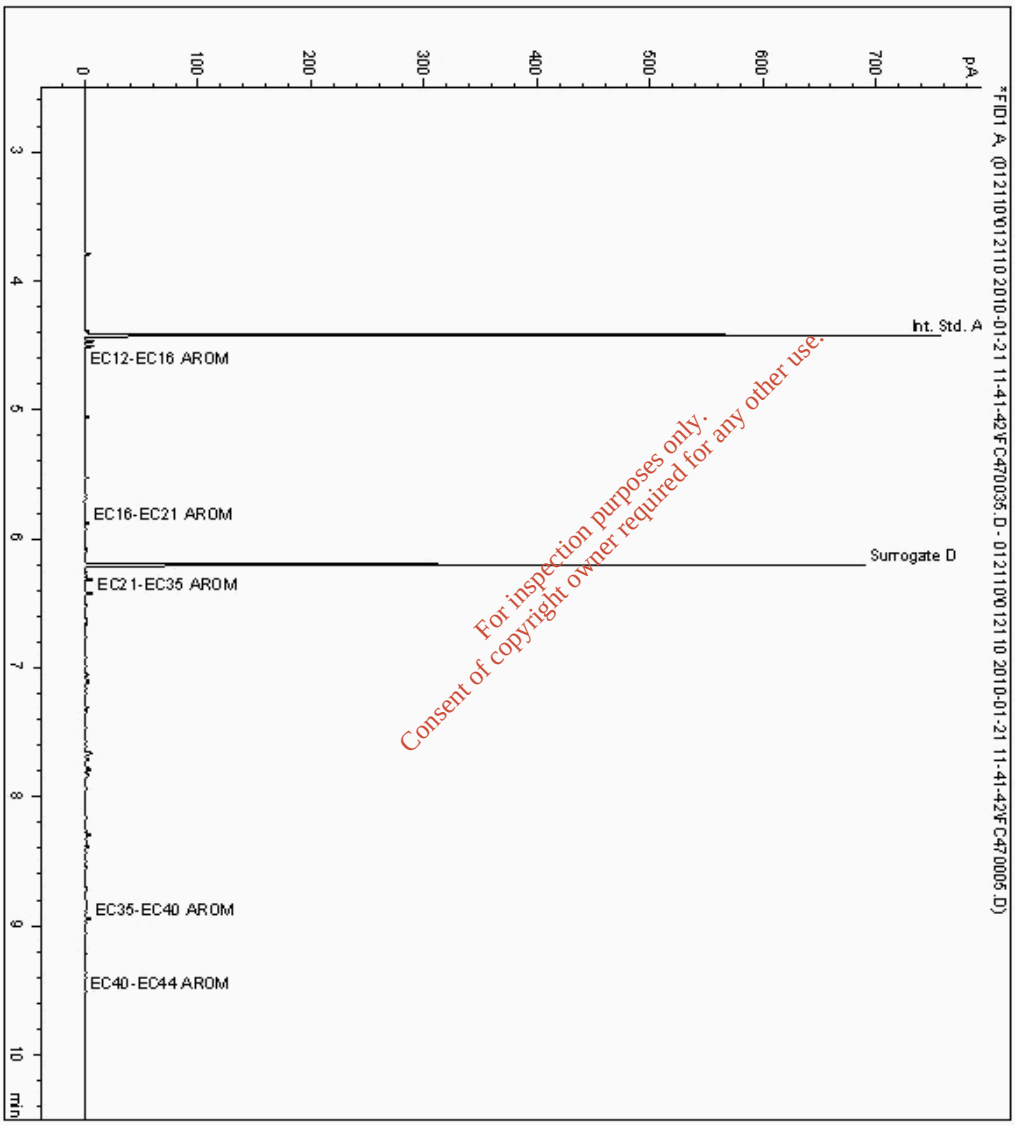
SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Ref.:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	844086
		Sample ID	K1
		Depth	2.00 - 4.00

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

Sample Identity: 972894-844086
Date Acquired : 21/01/10 22:32:47
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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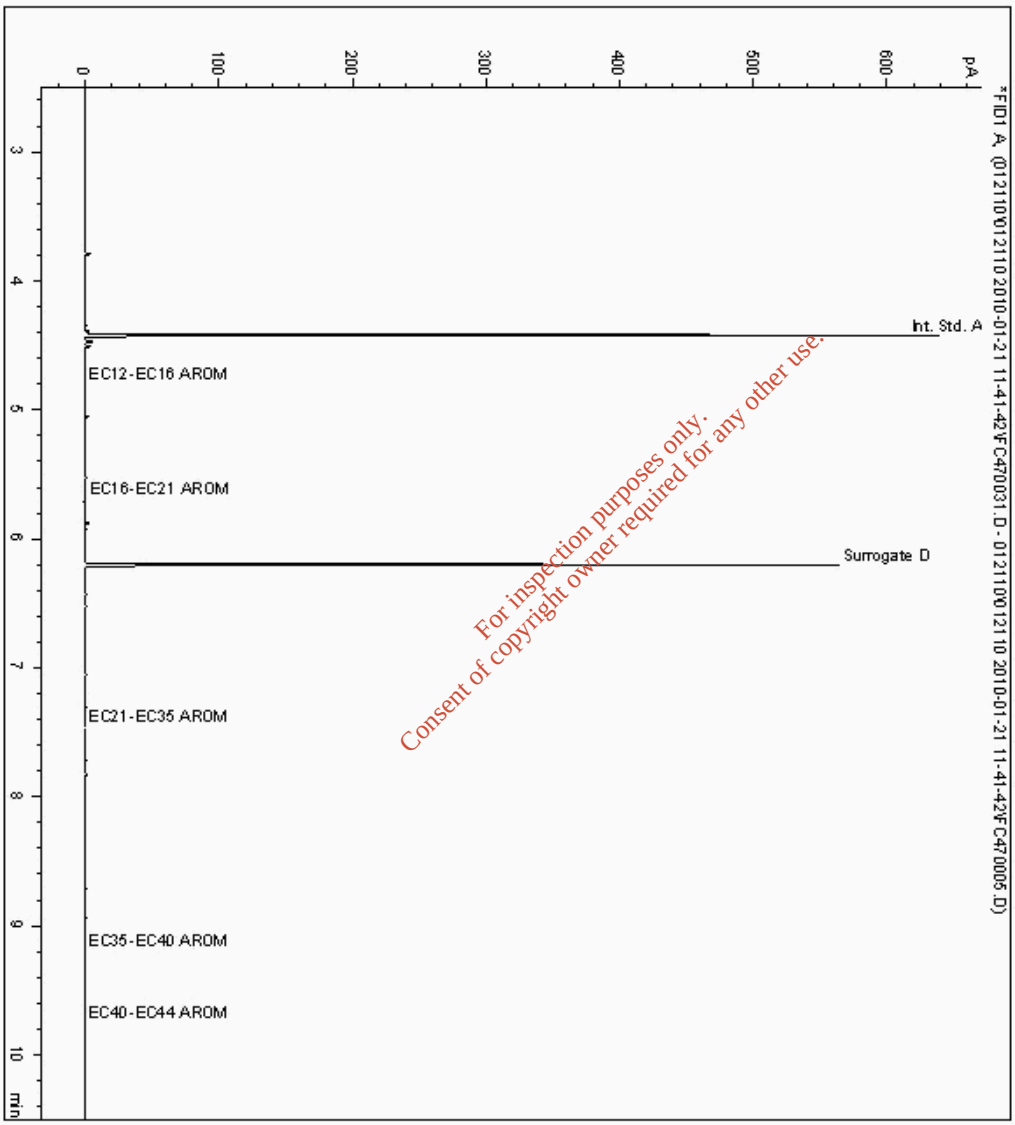
ALcontrol Laboratories Analytical Services

SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Ref.:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	844102
		Sample ID	J10
		Depth	0.50 - 2.00

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

Sample Identity: 972867-844102
Date Acquired : 21/01/10 20:54:22
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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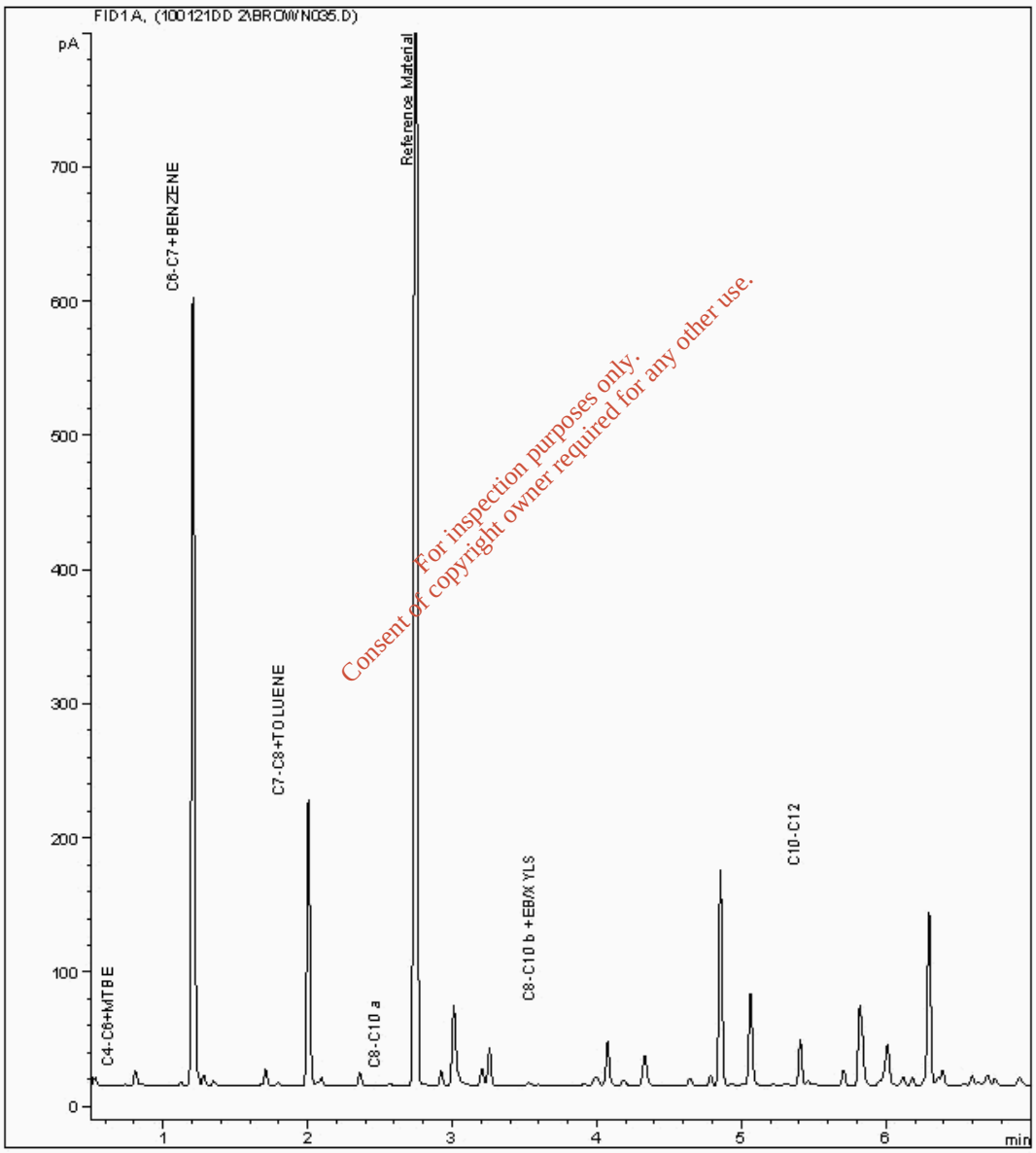
ALcontrol Laboratories Analytical Services

SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Ref.:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	835658
		Sample ID	K5
		Depth	1.00 - 5.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 972844-835658
Date Acquired : 21/01/10 17:52:12
Units : ppb
Dilution : 10



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Validated

ALcontrol Laboratories Analytical Services

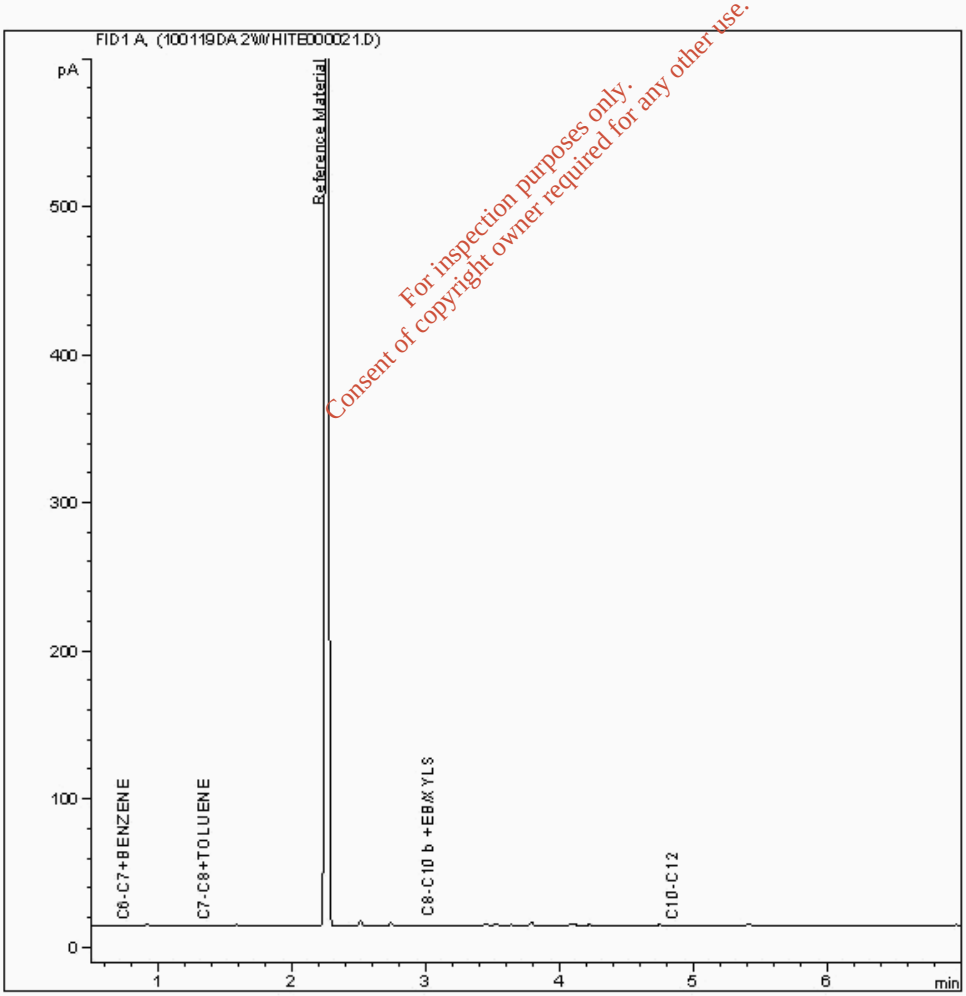
SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Ref.:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	835706
		Sample ID	J10
		Depth	0.50 - 2.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 972865-835706
Date Acquired : 19/01/10 20:00:16
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	0
2	C6-C7+BENZENE	0
3	C7-C8+TOLUENE	0
4	C8-C10 a	0
5	Reference Material	22732
6	C8-C10 b +EB/XYLS	634
7	C10-C12	0



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Validated

ALcontrol Laboratories Analytical Services

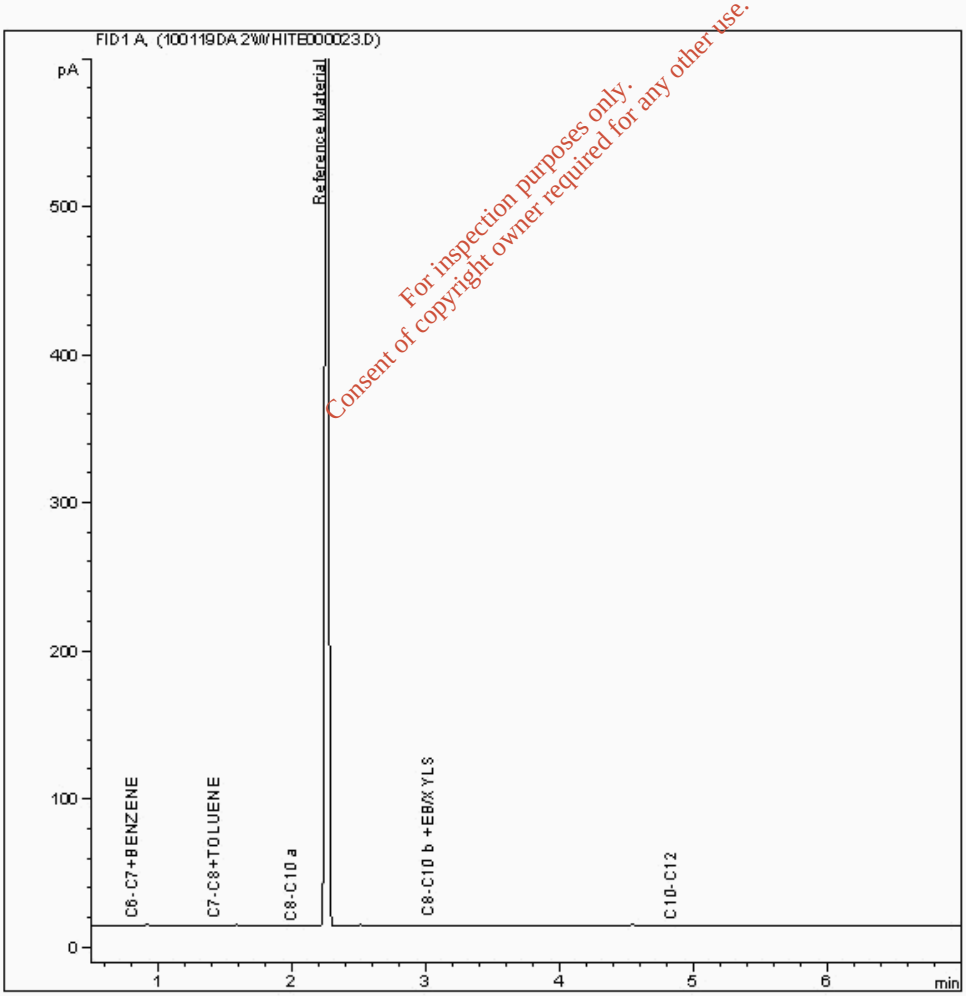
SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Ref.:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	835756
		Sample ID	K1
		Depth	2.00 - 4.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 972892-835756
Date Acquired : 19/01/10 20:27:27
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	47
2	C6-C7+BENZENE	97
3	C7-C8+TOLUENE	88
4	C8-C10 a	9
5	Reference Material	20731
6	C8-C10 b +EB/XYLS	176
7	C10-C12	288



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Validated

ALcontrol Laboratories Analytical Services

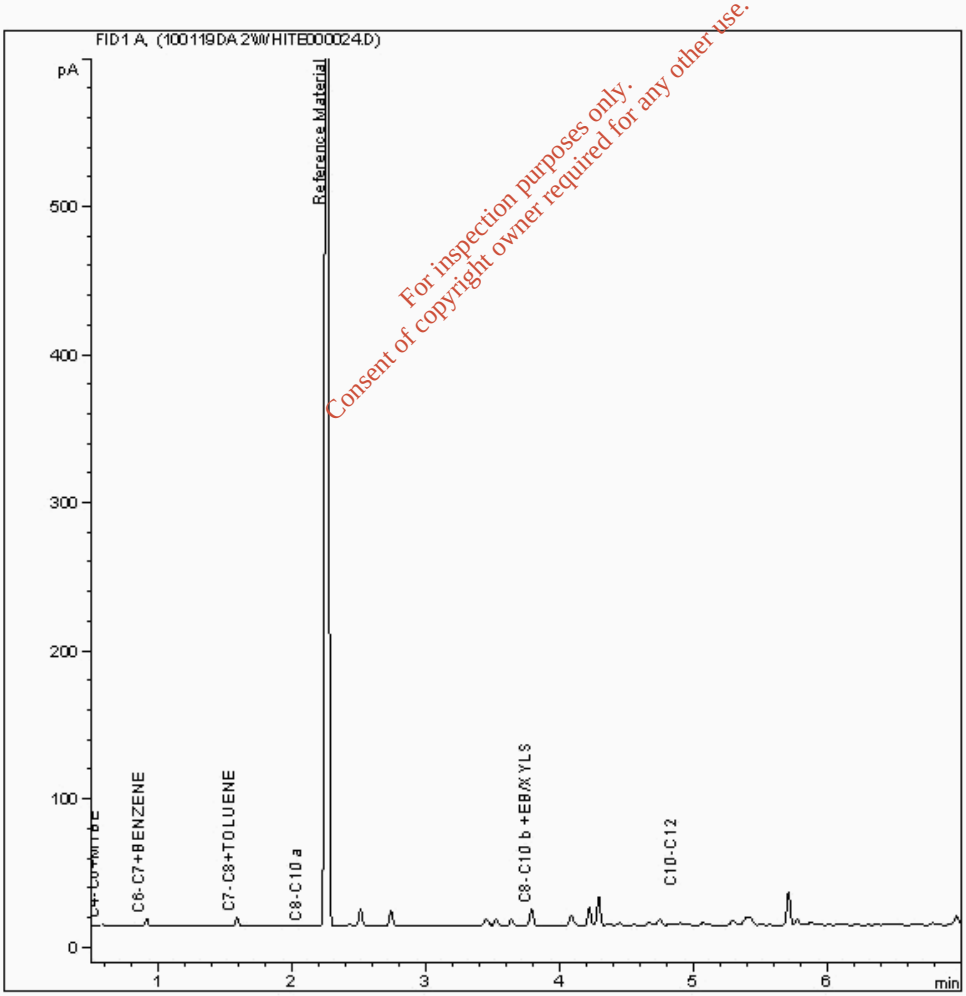
SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Ref.:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	835802
		Sample ID	H12
		Depth	1.00 - 4.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 972913-835802
Date Acquired : 19/01/10 20:41:00
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	0
2	C6-C7+BENZENE	172
3	C7-C8+TOLUENE	200
4	C8-C10 a	0
5	Reference Material	23277
6	C8-C10 b +EB/XYLS	2282
7	C10-C12	5517



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Validated

ALcontrol Laboratories Analytical Services

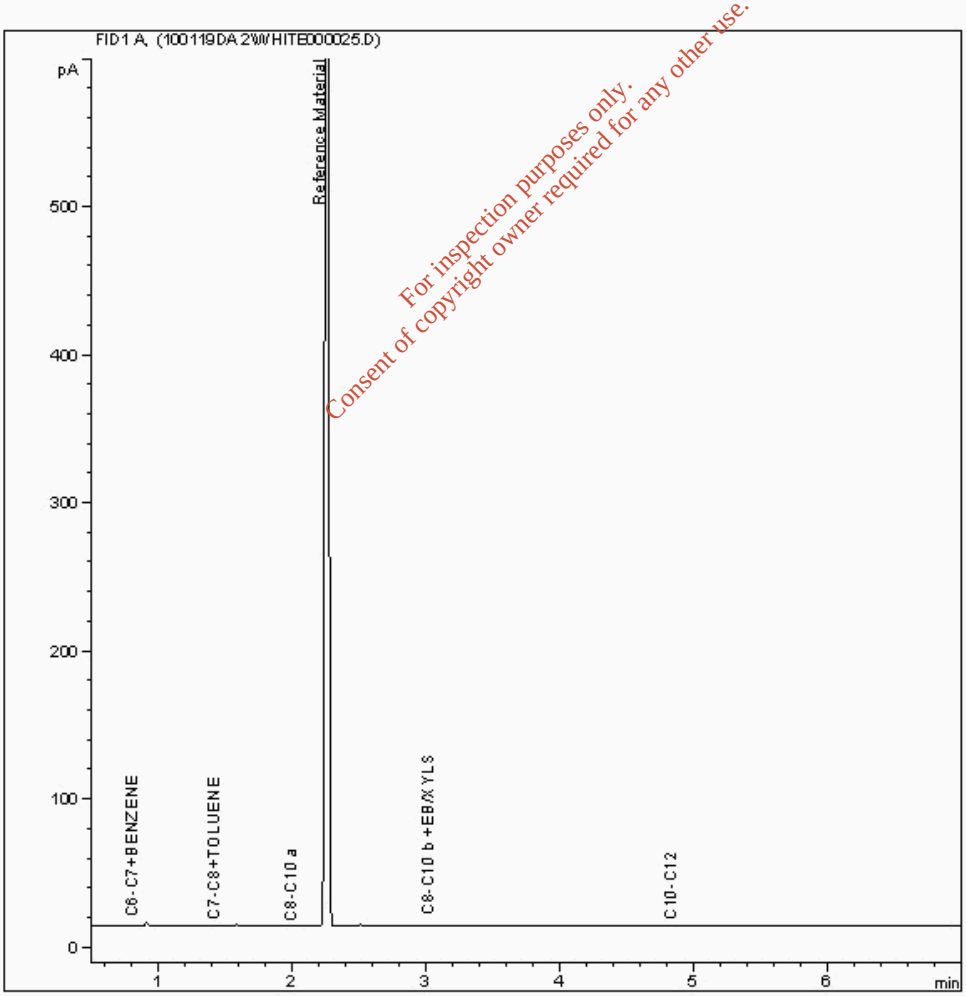
SDG:	100115-123	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-100	**Attention:**	Dave Watts
Client Ref.:	15/01/10 (K5/J10/K1/H12/M3)	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	70516

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	835836
		Sample ID	M3
		Depth	3.00 - 6.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 972932-835836
Date Acquired : 19/01/10 20:54:36
Units : ppb
Dilution : 1

#	Compound Name	Amount
1	C4-C6+MTBE	48
2	C6-C7+BENZENE	128
3	C7-C8+TOLUENE	70
4	C8-C10 a	5
5	Reference Material	23770
6	C8-C10 b +EB/XYLS	149
7	C10-C12	170



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APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH_4 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. **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.
13. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
14. 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).
15. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
16. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
17. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
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 the major 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.

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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)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKEN SVOC	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM/EA	SOLID PHASE EXTRACTION	GC MS
TRIAZINE HERBS	DCM/EA	SOLID PHASE EXTRACTION	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
SAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
UNSAPONIFIABLE	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	DCM	LIQUID/LIQUID EXTRACTION	EZ FLASH

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 (C6-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

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Last updated 25 June 2009

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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).

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.

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

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ALcontrol Laboratories

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

Attention: Verity Sankey

CERTIFICATE OF ANALYSIS

Date:	30 April 2010		
Customer:	D_MOUCHEL_ELE-101		
Sample Delivery Group (SDG):	100422-72	**Report No.:**	82277
Your Reference:	22/04/10		
Location:	Limerick Gasworks		

We received 5 samples on Thursday April 22, 2010 and 5 of these samples were scheduled for analysis which was completed on Friday April 30, 2010. 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).

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Approved By:

Iain Swinton

Operations Director - Land UK & Ireland

UKAS TESTING
1291

GROUP

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Verity Sankey
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Sampled Date
1436363	D1 EW003	3.00 - 4.50	21/04/2010
1436362	G2 EW003	4.00 - 10.00	21/04/2010
1436367	G3 EW003	3.50 - 8.50	21/04/2010
1436368	G4 EW003	3.00 - 9.50	21/04/2010
1436369	G5 EW003	2.50 - 8.50	21/04/2010

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

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Verity Sankey
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

LIQUID

Results Legend

X Test

N No Determination Possible

		Lab Sample No(s)	1436362			1436363			1436367			1436368			1436369			Total
		Customer Sample Ref.	G2 EW003			D1 EW003			G3 EW003			G4 EW003			G5 EW003			
		Depth (m)	4.00 - 10.00			3.00 - 4.50			3.50 - 8.50			3.00 - 9.50			2.50 - 8.50			
		Container	1l green glass bottle	500ml Plastic	Vial	1l green glass bottle	500ml Plastic	Vial	1l green glass bottle	500ml Plastic	Vial	1l green glass bottle	500ml Plastic	Vial	1l green glass bottle	500ml Plastic	Vial	
Ammonium	All			X			X			X			X			X		05
Anions by Kone (w)	All			X			X			X			X			X		05
Cyanide Comp/Free/Total/Thiocyanate	All		X			X			X			X			X			05
Dissolved Metals by ICP-MS	All			X			X			X			X			X		05
EPH CWG (Aliphatic) Aqueous GC (W)	All		X			X			X			X			X			05
EPH CWG (Aromatic) Aqueous GC (W)	All		X			X			X			X			X			05
GRO BTEX MTBE GC (W)	All				X			X			X			X			X	05
Hexavalent Chromium (w)	All			X			X			X			X			X		05
Mercury Dissolved	All		X			X			X			X			X			05
PAH Spec MS - Aqueous (W)	All		X			X			X			X			X			05
pH Value	All			X			X			X			N			X		14
Phenols by HPLC (W)	All		X			X			X			X			X			05
Sulphide	All			X			X			X			X			X		05
TPH CWG (W)	All		X			X			X			X			X			05
VOC MS (W)	All				X			X						X			X	04

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Verity Sankey
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

Test Completion dates

SDG reference: 100422-72

Lab Sample No(s)	1436362	1436363	1436367	1436368	1436369
Customer Sample Ref.	G2	D1	G3	G4	G5
Depth	4.00 - 10.00	3.00 - 4.50	3.50 - 8.50	3.00 - 9.50	2.50 - 8.50
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Anions by Kone (w)	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Cyanide	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
Dissolved Metals by ICP-MS	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
EPH CWG (Aliphatic) Aqueous GC	29/04/2010	29/04/2010	29/04/2010	30/04/2010	29/04/2010
EPH CWG (Aromatic) Aqueous GC	29/04/2010	29/04/2010	29/04/2010	30/04/2010	29/04/2010
GRO BTEX MTBE GC (W)	27/04/2010	26/04/2010	26/04/2010	27/04/2010	26/04/2010
Hexavalent Chromium (w)	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Mercury Dissolved	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
PAH Spec MS - Aqueous (W)	30/04/2010	29/04/2010	29/04/2010	30/04/2010	29/04/2010
pH Value	23/04/2010	23/04/2010	23/04/2010		23/04/2010
Phenols by HPLC (W)	26/04/2010	26/04/2010	26/04/2010	27/04/2010	26/04/2010
Sulphide	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
TPH CWG (W)	29/04/2010	29/04/2010	29/04/2010	30/04/2010	29/04/2010
VOC MS (W)	28/04/2010	28/04/2010		28/04/2010	26/04/2010

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	D1 EW003	G2 EW003	G3 EW003	G4 EW003	G5 EW003
			Depth (m)	3.00 - 4.50	4.00 - 10.00	3.50 - 8.50	3.00 - 9.50	2.50 - 8.50
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-72	100422-72	100422-72	100422-72	100422-72
			Lab Sample No.(s)	1436363	1436362	1436367	1436368	1436369
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099		12 #	46.6 #	24.9 #	27.6 #	6.48 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099		15.4 #	59.9 #	32 #	35.5 #	8.33 #
Sulphide	<0.01 mg/l	TM101		1.34 #	0.319 #	<0.01 #	<0.01 #	0.016 #
Arsenic (diss.filt)	<0.12 µg/l	TM152		12 #	18.6 #	6.1 #	30.6 #	4.35 #
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		20.6 #	28.1 #	20.9 #	23.4 #	26.1 #
Copper (diss.filt)	<0.85 µg/l	TM152		<0.85 #	1.11 #	<0.85 #	<0.85 #	1.99 #
Lead (diss.filt)	<0.02 µg/l	TM152		0.033 #	0.022 #	0.034 #	0.107 #	0.092 #
Nickel (diss.filt)	<0.15 µg/l	TM152		5.13 #	6.96 #	8.31 #	6.61 #	11.1 #
Selenium (diss.filt)	<0.39 µg/l	TM152		14.5 #	22 #	6.28 #	24.9 #	5.91 #
Zinc (diss.filt)	<0.41 µg/l	TM152		2.7 #	2.23 #	1.95 #	3.49 #	3.86 #
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	0.0117 #	<0.01 #	0.0153 #	<0.01 #
Sulphate	3 mg/l	TM184		401 #	565 #	304 #	254 #	729 #
Cyanide, Total	<0.05 mg/l	TM227		0.93 #	1.11 #	0.279 #	0.202 #	0.38 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.06	<0.03	<0.03	<0.06	<0.06
pH	<1 pH Units	TM256		7.59 #	7.8 #	7.66 #		7.44 #
Resorcinol	<0.01 mg/l	TM259		<0.01	<0.01	<0.01	<0.02	<0.01
Catechol	<0.01 mg/l	TM259		<0.01	<0.01	<0.01	<0.02	<0.01
Phenol	<0.002 mg/l	TM259		0.01 #	2.11 #	<0.002 #	2.37 #	<0.002 #
Cresols	<0.006 mg/l	TM259		0.06 #	5.89 #	<0.006 #	17.2 #	<0.006 #
Xylenols	<0.008 mg/l	TM259		0.44 #	13.4 #	<0.008 #	29.2 #	<0.008 #
1-Naphthol	<0.01 mg/l	TM259		<0.01 #	<0.01 #	<0.01 #	<0.02 #	<0.01 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM259		<0.003 #	<0.003 #	<0.003 #	<0.006 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259		0.15 #	<0.006 #	<0.006 #	7.87 #	<0.006 #
Phenols, Total 5 speciated	<0.025 mg/l	TM259		0.66	21.4	<0.025	56.6	<0.025

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ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	D1 EW003	G2 EW003	G3 EW003	G4 EW003	G5 EW003
			Depth (m)	3.00 - 4.50	4.00 - 10.00	3.50 - 8.50	3.00 - 9.50	2.50 - 8.50
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-72	100422-72	100422-72	100422-72	100422-72
			Lab Sample No.(s)	1436363	1436362	1436367	1436368	1436369
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		56	<10	<10	1270	40
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		84	<10	57	1310	38
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		27	<10	46	1280	23
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		167	<10	103	3860	101
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174		2800	6880	263	45500	458

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ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	D1 EW003	G2 EW003	G3 EW003	G4 EW003	G5 EW003
			Depth (m)	3.00 - 4.50	4.00 - 10.00	3.50 - 8.50	3.00 - 9.50	2.50 - 8.50
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-72	100422-72	100422-72	100422-72	100422-72
			Lab Sample No.(s)	1436363	1436362	1436367	1436368	1436369
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		1310	6280	21	19900	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		826	534	11	8400	39
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		497	70	128	13400	318
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		2630	6880	160	41700	357

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ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

GRO BTEX MTBE GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	Depth (m)	Sample Type	Date Sampled	Date Received	SDG Ref	Lab Sample No.(s)
			D1 EW003	3.00 - 4.50	Water(GW/SW)	21/04/2010	22/04/2010	100422-72	1436363
			G2 EW003	4.00 - 10.00	Water(GW/SW)	21/04/2010	22/04/2010	100422-72	1436362
			G3 EW003	3.50 - 8.50	Water(GW/SW)	21/04/2010	22/04/2010	100422-72	1436367
			G4 EW003	3.00 - 9.50	Water(GW/SW)	21/04/2010	22/04/2010	100422-72	1436368
			G5 EW003	2.50 - 8.50	Water(GW/SW)	21/04/2010	22/04/2010	100422-72	1436369
Benzene	<7 µg/l	TM245	681 #	4830 #	112 #	9250 #	20 #		
Toluene	<4 µg/l	TM245	360 #	3680 #	<4 #	6920 #	<4 #		
Ethylbenzene	<5 µg/l	TM245	219 #	392 #	<5 #	606 #	<5 #		
m,p-Xylene	<8 µg/l	TM245	554 #	1670 #	11 #	3710 #	10 #		
o-Xylene	<3 µg/l	TM245	307 #	901 #	12 #	1540 #	<3 #		
m,p,o-Xylene	<10 µg/l	TM245	861 #	2570 #	23 #	5250 #	10 #		
BTEX, Total	<10 µg/l	TM245	2120 #	11500 #	135 #	22000 #	30 #		
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3 #	<6 #	<3 #	<15 #	<3 #		
Aliphatics >C5-C6	<10 µg/l	TM245	<10	20	<10	<50	<10		
Aliphatics >C6-C8	<10 µg/l	TM245	<10	1200	27	1860	13.5		
Aliphatics >C8-C10	<10 µg/l	TM245	249	773	18.6	1670	44.1		
Aliphatics >C10-C12	<10 µg/l	TM245	1120	1750	29	4680	107		
Total Aliphatics >C5-C12	<10 µg/l	TM245	1370	3740	74.6	8250	165		
Aromatics >C6-C7	<10 µg/l	TM245	681	4830	112	9250	20		
Aromatics >C7-C8	<10 µg/l	TM245	360	3680	<10	6920	<10		
Aromatics >EC8-EC10	<10 µg/l	TM245	1450	4120	50.9	8360	76.1		
Aromatics >EC10-EC12	<10 µg/l	TM245	1680	2620	43.5	7010	161		
Total Aromatics >C6-C12	<10 µg/l	TM245	4170	15300	206	31600	257		

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ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	D1 EW003	G2 EW003	G3 EW003	G4 EW003	G5 EW003
			Depth (m)	3.00 - 4.50	4.00 - 10.00	3.50 - 8.50	3.00 - 9.50	2.50 - 8.50
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-72	100422-72	100422-72	100422-72	100422-72
			Lab Sample No.(s)	1436363	1436362	1436367	1436368	1436369
Naphthalene (aq)	<0.1 µg/l	TM178		14.2	750	0.918	4870	0.981
Acenaphthene (aq)	<0.015 µg/l	TM178		49.5	26.9	1.58	167	0.295
Acenaphthylene (aq)	<0.011 µg/l	TM178		79.5	32.1	1.1	749	4.67
Fluoranthene (aq)	<0.014 µg/l	TM178		59.5	3.48	5.8	482	19.9
Anthracene (aq)	<0.015 µg/l	TM178		30.7	2.51	1.08	321	2.74
Phenanthrene (aq)	<0.022 µg/l	TM178		93.5	21.3	1.79	994	3.74
Fluorene (aq)	<0.014 µg/l	TM178		65.4	12.6	0.944	482	0.785
Chrysene (aq)	<0.013 µg/l	TM178		5.86	<0.65	2.84	86.5	7.34
Pyrene (aq)	<0.015 µg/l	TM178		36.1	2.13	4.72	320	12.4
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		9.81	<0.85	4.7	89	12.5
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		6.27	<1.15	5.99	72.1	17.2
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		1.8	<1.35	1.99	32.3	5.61
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		5.01	<0.45	4.79	54.6	14.4
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		0.559	<0.8	0.908	6.24	2.43
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		2.17	<0.8	2.76	26.2	7.97
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		1.95	<0.7	2.54	21.8	7.38
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178		462	852	44.5	8770	120

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ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	Depth (m)	Sample Type	Date Sampled	Date Received	SDG Ref	Lab Sample No.(s)
			D1 EW003	3.00 - 4.50	Water(GW/SW)	21/04/2010	22/04/2010	100422-72	1436363
			G2 EW003	4.00 - 10.00	Water(GW/SW)	21/04/2010	22/04/2010	100422-72	1436362
			G3 EW003	3.50 - 8.50	Water(GW/SW)	21/04/2010	22/04/2010	100422-72	1436367
			G4 EW003	3.00 - 9.50	Water(GW/SW)	21/04/2010	22/04/2010	100422-72	1436368
			G5 EW003	2.50 - 8.50	Water(GW/SW)	21/04/2010	22/04/2010	100422-72	1436369
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174	1540	3740	178	12100	266		
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174	6810	22100	366	73200	614		
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	8340	25900	544	85300	880		

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ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	D1 EW003	G2 EW003	G4 EW003	G5 EW003
			Depth (m)	3.00 - 4.50	4.00 - 10.00	3.00 - 9.50	2.50 - 8.50
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-72	100422-72	100422-72	100422-72
			Lab Sample No.(s)	1436363	1436362	1436368	1436369
Dibromofluoromethane**	%	TM208		114	119	111	136
Toluene-d8**	%	TM208		99	98.4	98.3	99.3
4-Bromofluorobenzene**	%	TM208		99.9	101	94.4	106
Dichlorodifluoromethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #	<1.3 #
Chloromethane	<1.7 µg/l	TM208		<1.7 #	<1.7 #	<1.7 #	<1.7 #
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		1.38 #	6.04 #	<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 #	<1.3 #	<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		735 #	6040 #	6420 #	27.7 #
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		406 #	4130 #	4410 #	2.41 #
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 #
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		225 #	434 #	538 #	3.22 #

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ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	Depth (m)	Sample Type	Date Sampled	Date Received	SDG Ref	Lab Sample No.(s)
			D1 EW003	3.00 - 4.50	Water(GW/SW)	21/04/2010	22/04/2010	100422-72	1436363
			G2 EW003	4.00 - 10.00	Water(GW/SW)	21/04/2010	22/04/2010	100422-72	1436362
			G4 EW003	3.00 - 9.50	Water(GW/SW)	21/04/2010	22/04/2010	100422-72	1436368
			G5 EW003	2.50 - 8.50	Water(GW/SW)	21/04/2010	22/04/2010	100422-72	1436369
m,p-Xylene	<2.5 µg/l	TM208	570 #						1770 #				3290 #				7.19 #			
o-Xylene	<1.7 µg/l	TM208	335 #						931 #				1390 #				5.19 #			
Styrene	<1.2 µg/l	TM208	<1.2 #						<1.2 #				<1.2 #				<1.2 #			
Bromoform	<3 µg/l	TM208	<3 #						<3 #				<3 #				<3 #			
Isopropylbenzene	<1.4 µg/l	TM208	22.4 #						29.5 #				33.4 #				<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	27.7 #						32.7 #				39.7 #				<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	82.7 #						114 #				219 #				4.66 #			
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	275 #						421 #				555 #				8.39 #			
sec-Butylbenzene	<1.7 µg/l	TM208	2.15 #						<1.7 #				<1.7 #				<1.7 #			
4-iso-Propyltoluene	<2.6 µg/l	TM208	<2.6 #						<2.6 #				55.5 #				<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	6.1 #						<2 #				7.83 #				<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	3810 #						4350 #				8290 #				4.13 #			
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			

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Table of Results - Appendix

SDG Number : 100422-72 **Client :** Mouchel **Client Ref :** 22/04/10

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]
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			

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

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ALcontrol Laboratories Analytical Services

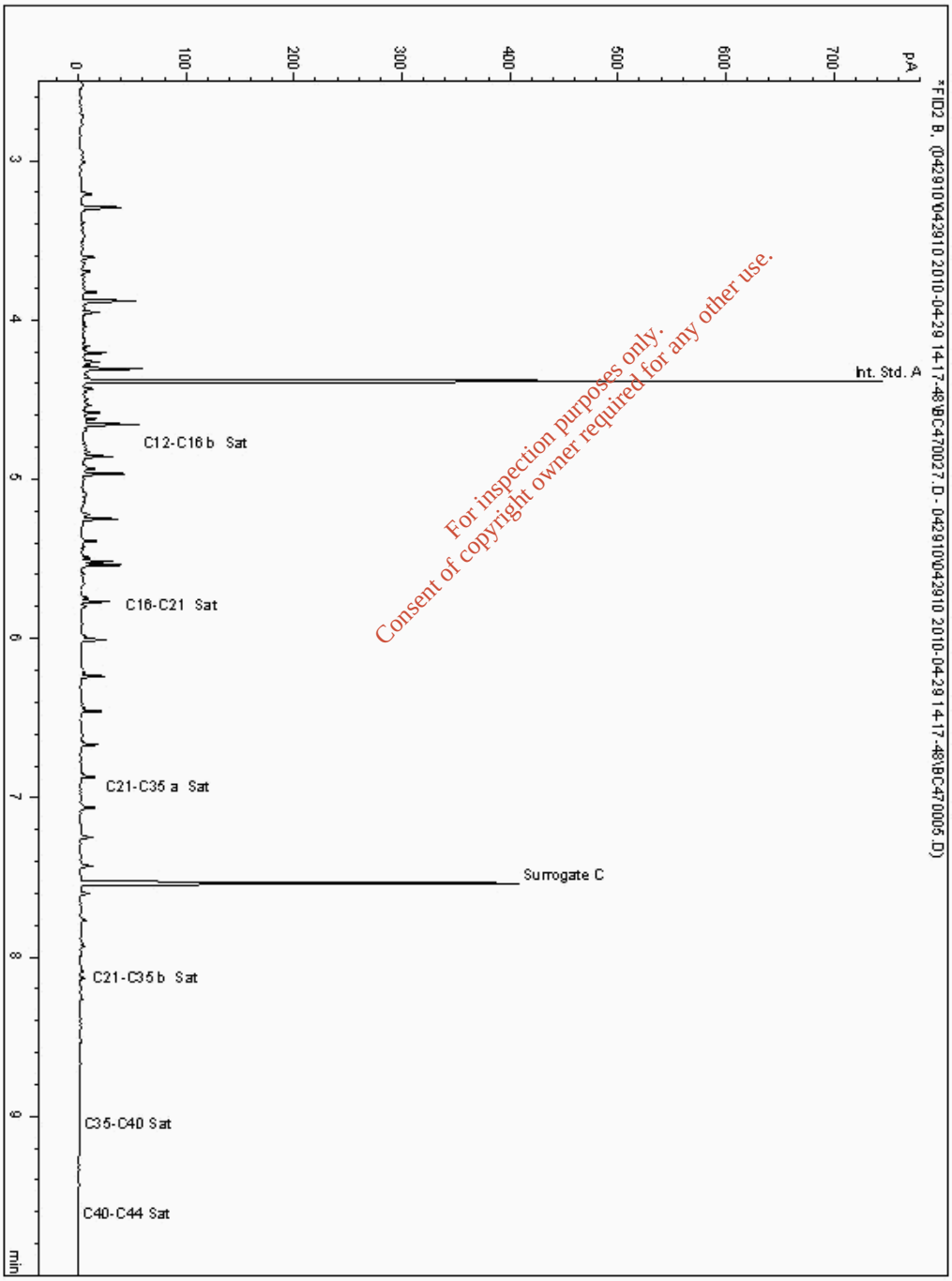
SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

Chromatogram

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1438732
		Sample ID	G4
		Depth	3.00 - 9.50

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

Sample Identity: 1559916-1438732
Date Acquired : 29/04/10 22:35:26
Units :
Dilution :
CF : 1
Multiplier : 0.033



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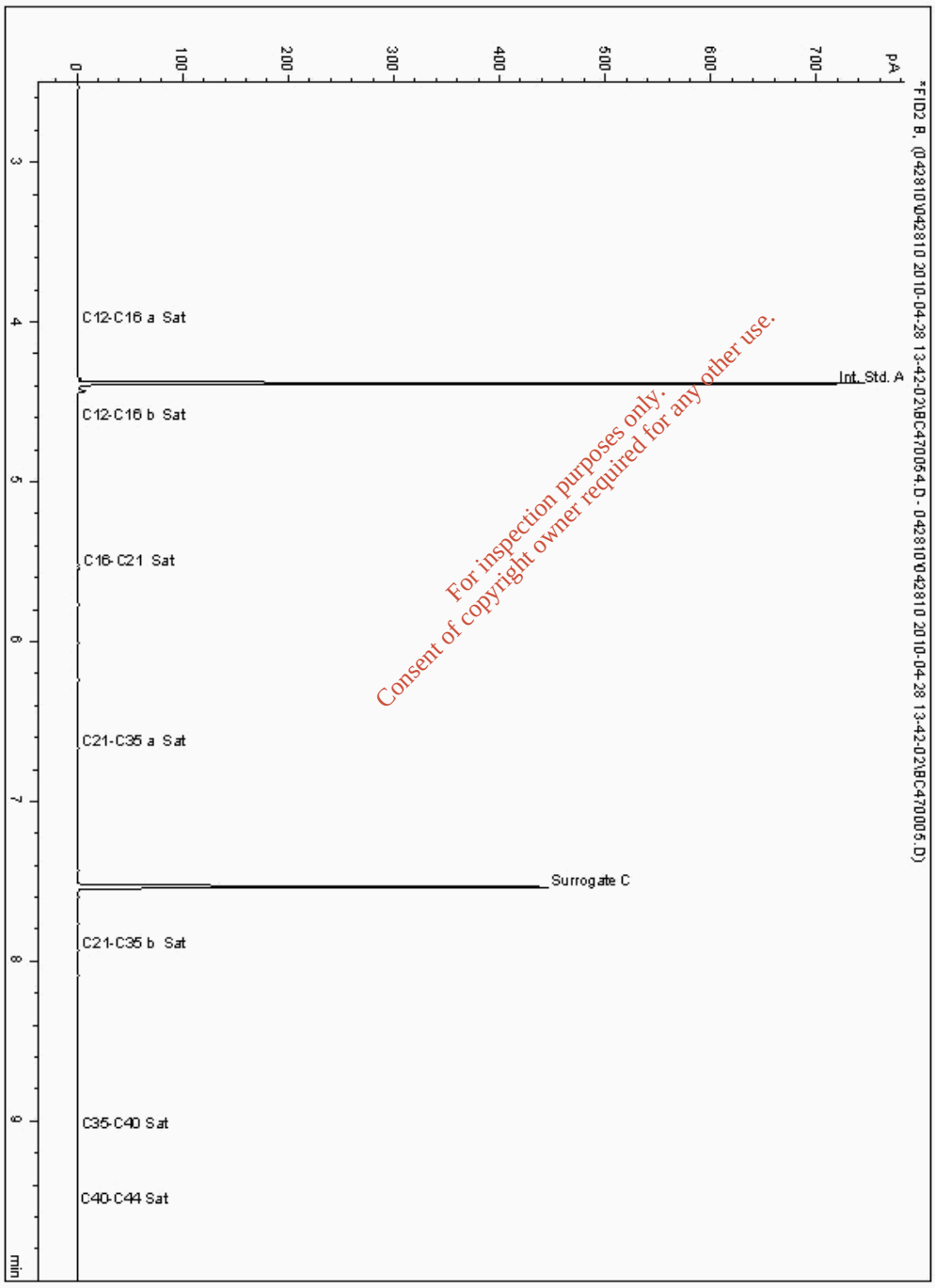
ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1438763
		Sample ID	G3
		Depth	3.50 - 8.50

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

Sample Identity: 1559932-1438763
Date Acquired : 29/04/10 05:48:41
Units :
Dilution :
CF : 1
Multiplier : 0.017



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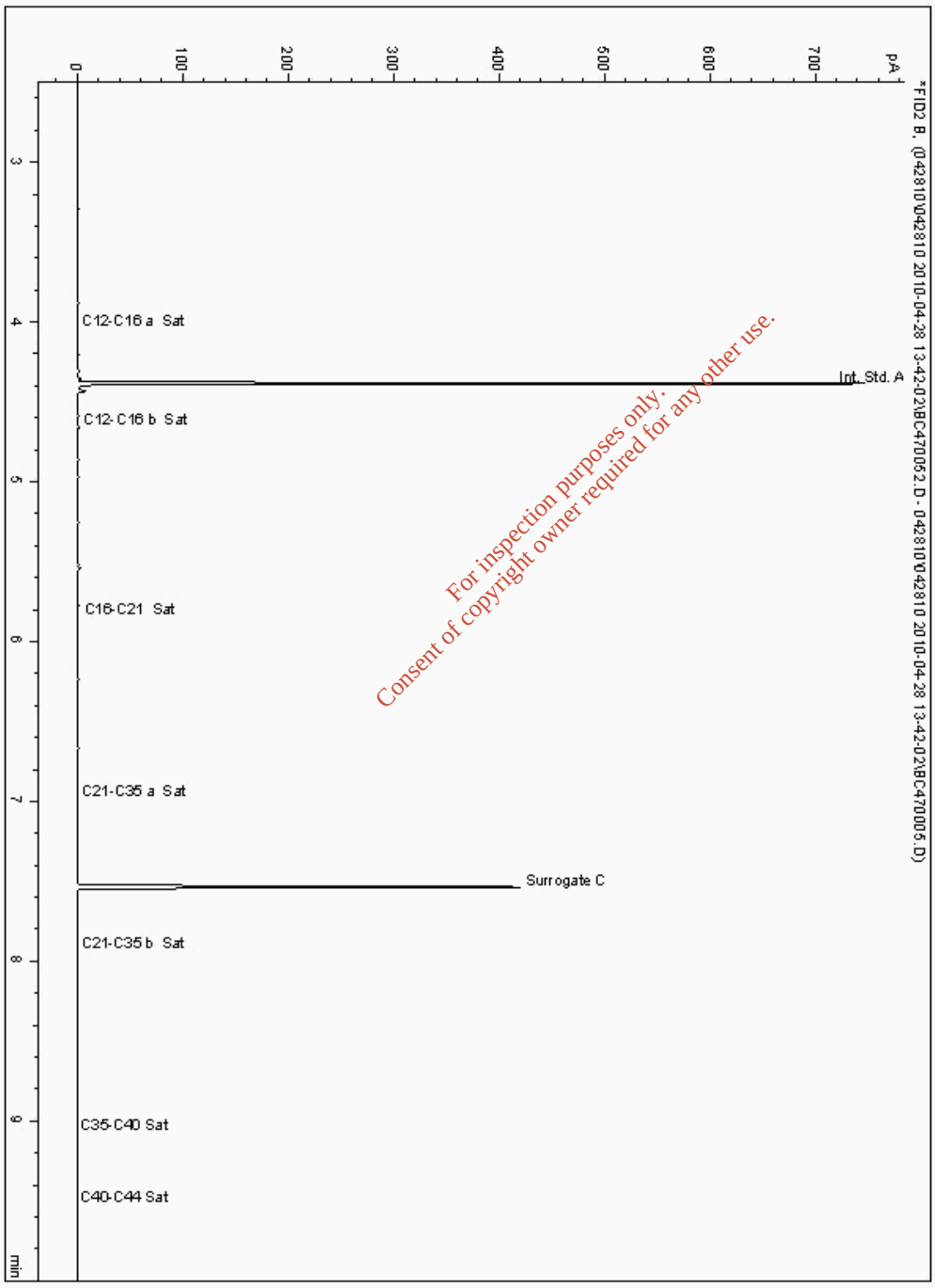
ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1438779
		Sample ID	G5
		Depth	2.50 - 8.50

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

Sample Identity: 1559980-1438779
Date Acquired : 29/04/10 05:15:56
Units :
Dilution :
CF : 1
Multiplier : 0.017



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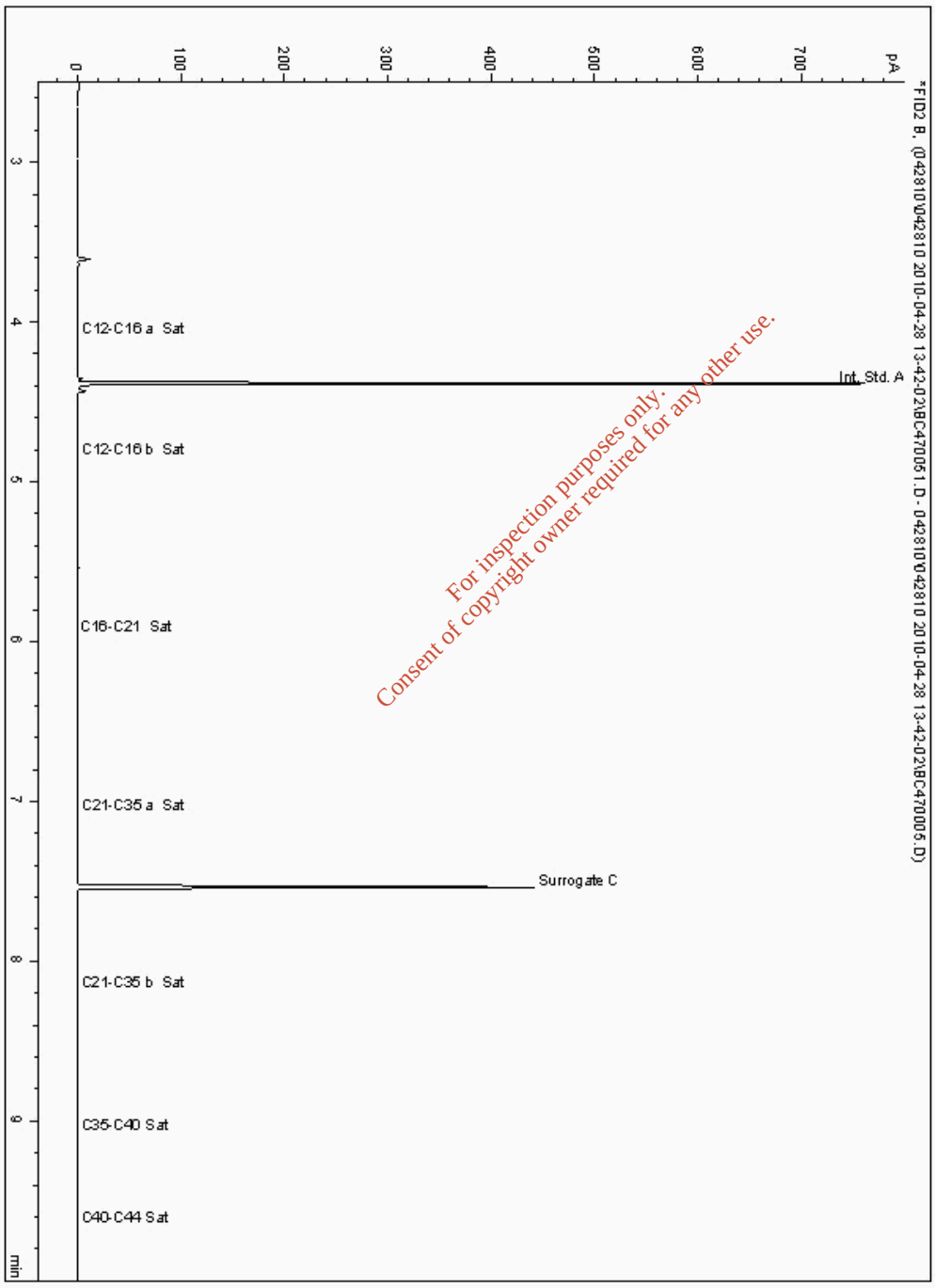
ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1438805
		Sample ID	G2
		Depth	4.00 - 10.00

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

Sample Identity: 1559948-1438805
Date Acquired : 29/04/10 04:57:09
Units :
Dilution :
CF : 1
Multiplier : 0.017



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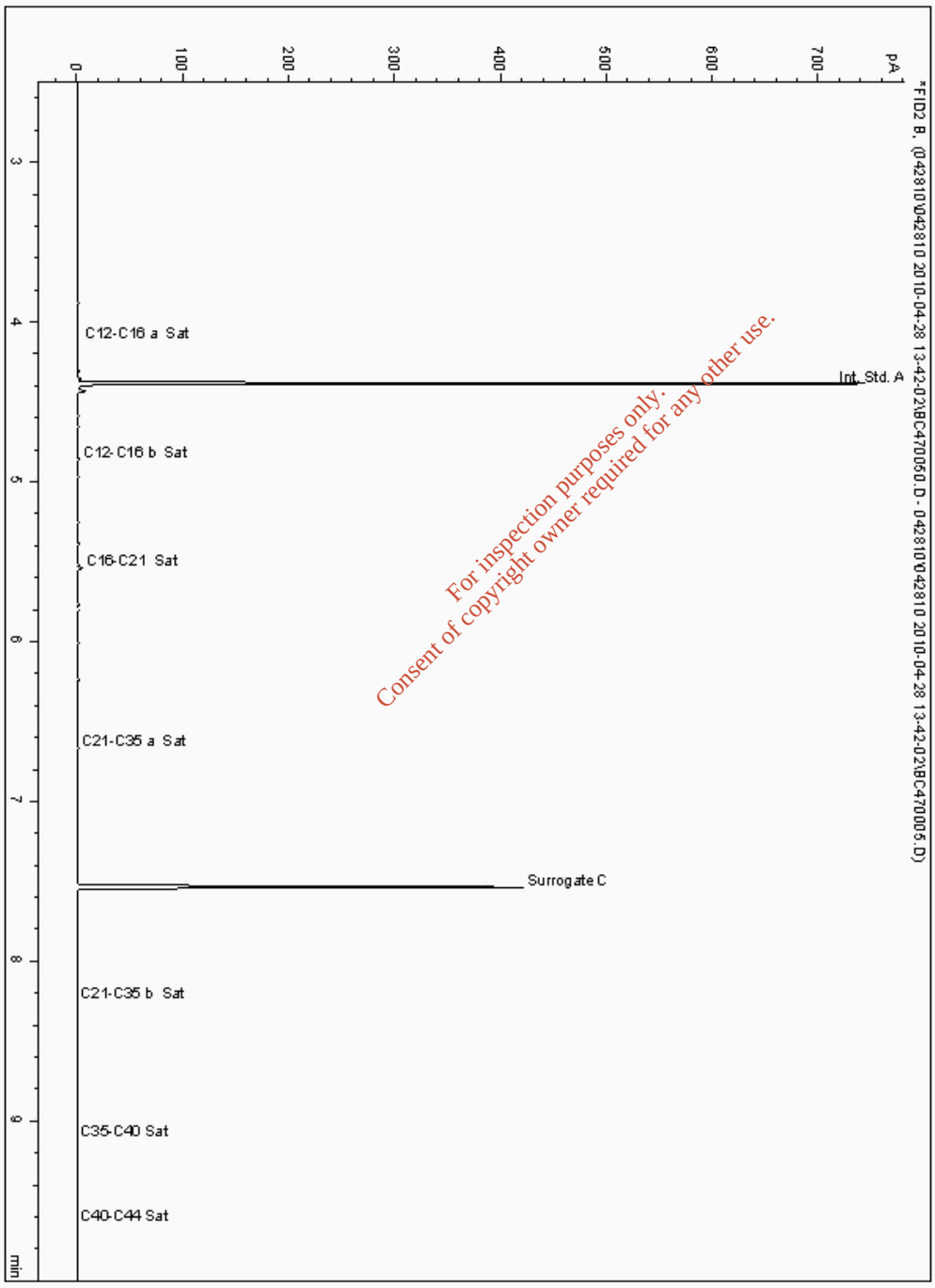
ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1438830
		Sample ID	D1
		Depth	3.00 - 4.50

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

Sample Identity: 1559964-1438830
Date Acquired : 29/04/10 04:38:08
Units :
Dilution :
CF : 1
Multiplier : 0.017



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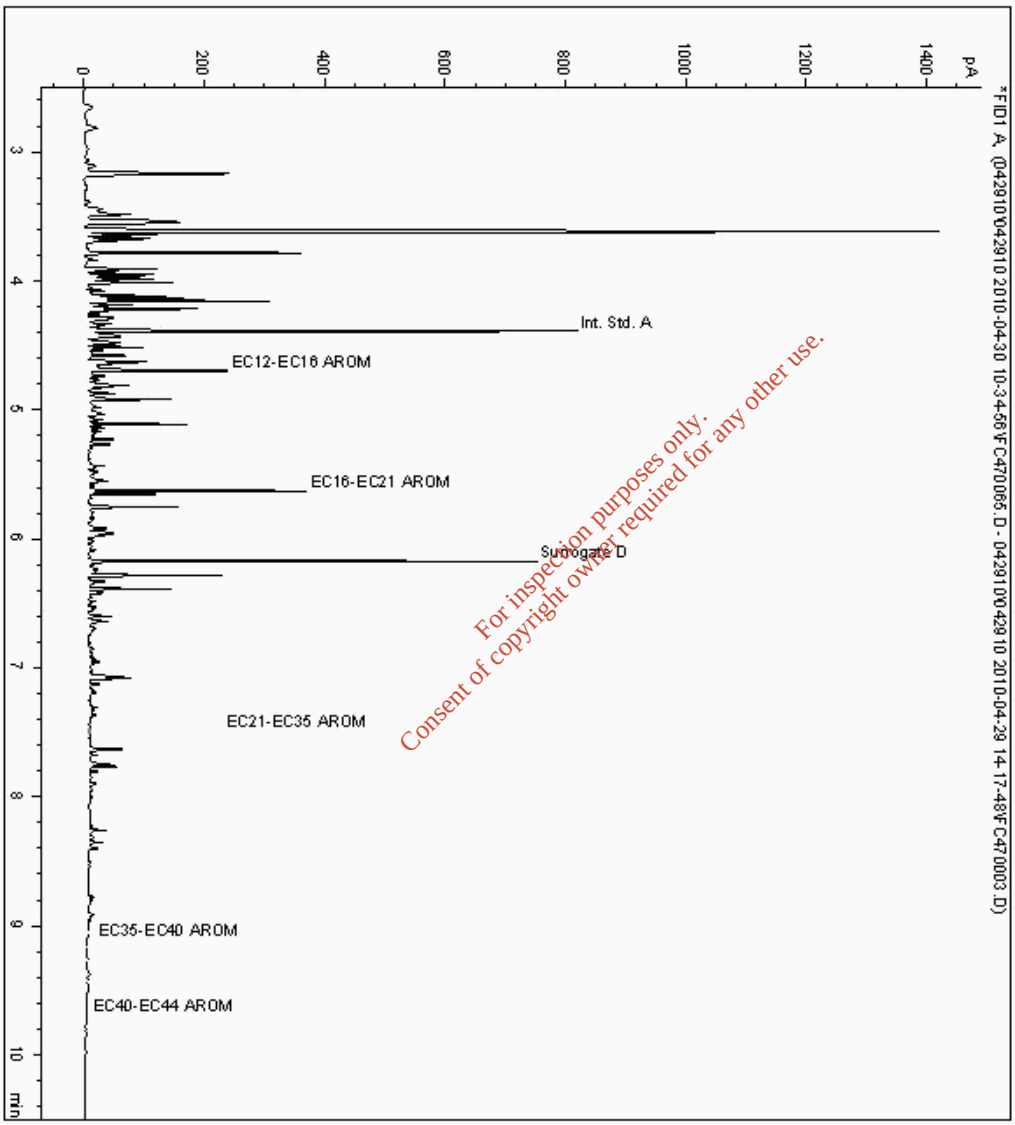
ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1438732
		Sample ID	G4
		Depth	3.00 - 9.50

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

Sample Identity: 1559917-1438732
Date Acquired : 30/04/10 11:18:50
Units : ppb
Dilution :
CF : 1
Multiplier : 0.067



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Validated

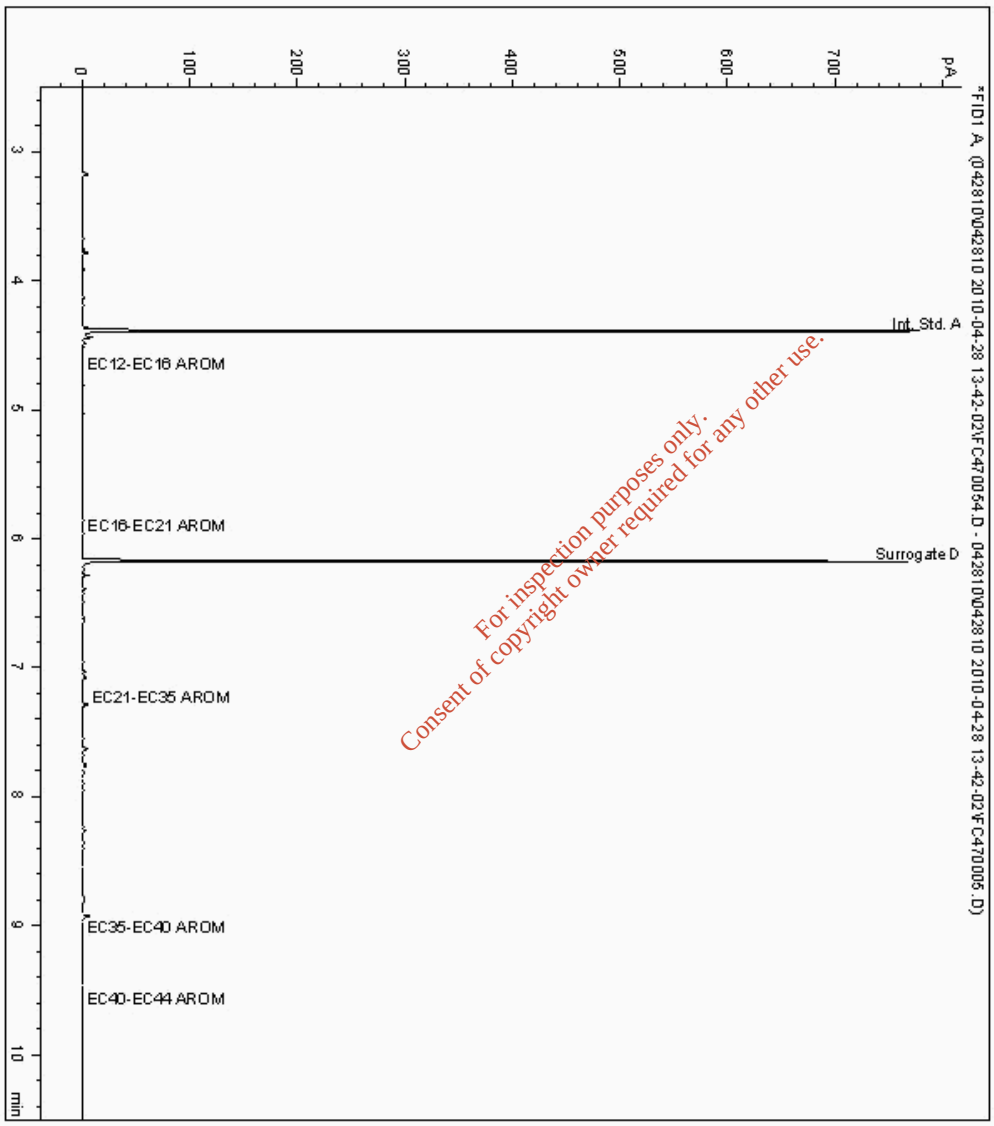
ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1438763
		Sample ID	G3
		Depth	3.50 - 8.50

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

Sample Identity: 1559933-1438763
Date Acquired : 29/04/10 05:48:41
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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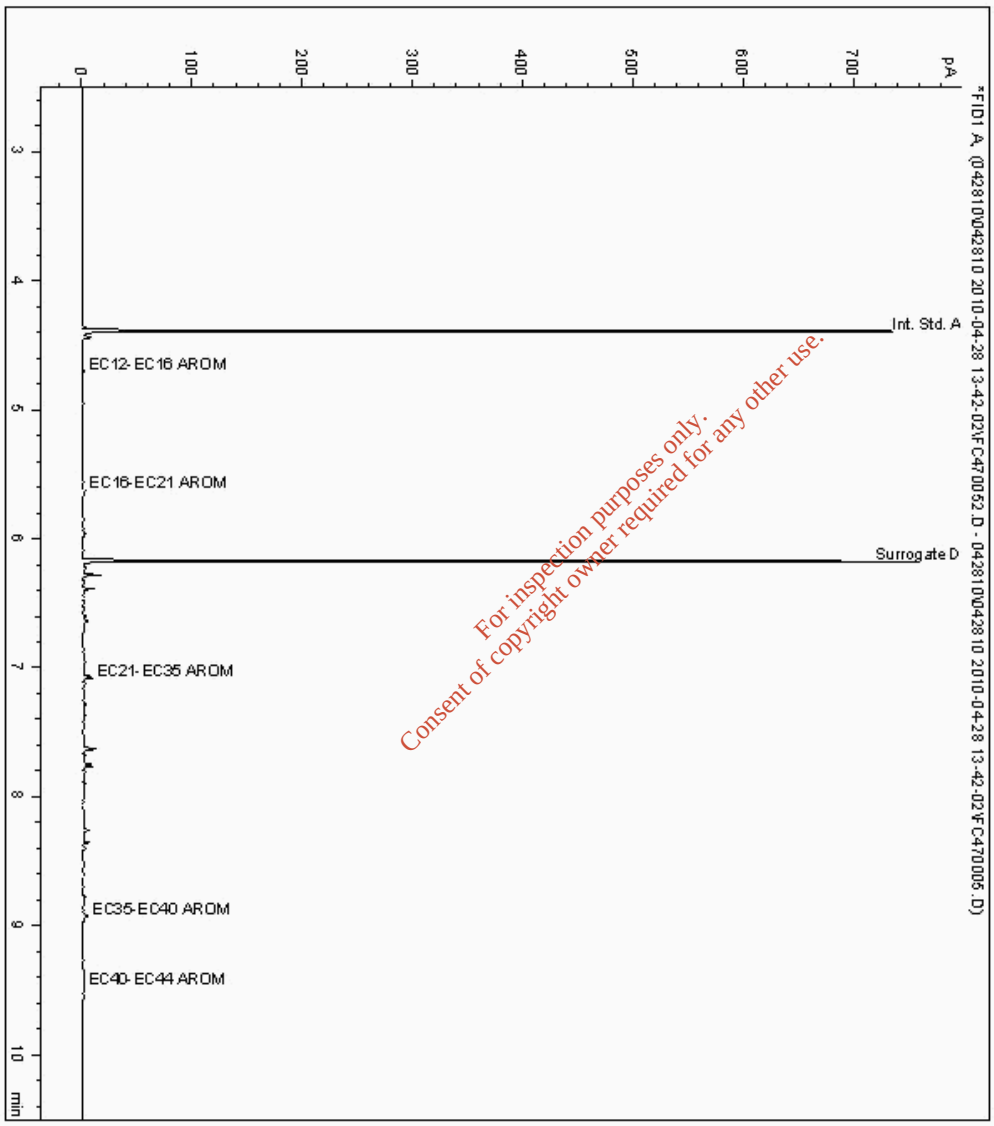
ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1438779
		Sample ID	G5
		Depth	2.50 - 8.50

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

Sample Identity: 1559981-1438779
Date Acquired : 29/04/10 05:15:56
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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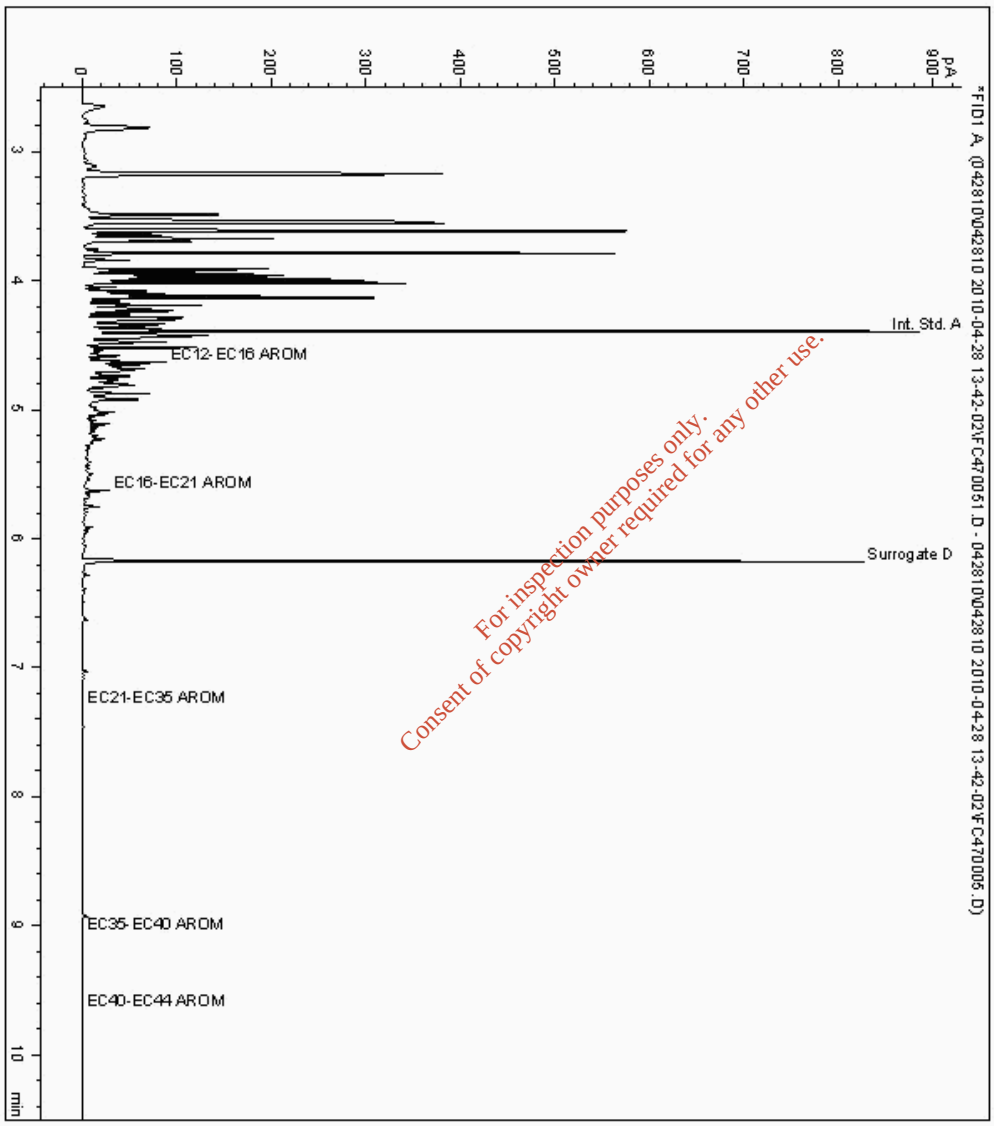
SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1438805
		Sample ID	G2
		Depth	4.00 - 10.00

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

Sample Identity: 1559949-1438805
Date Acquired : 29/04/10 04:57:09
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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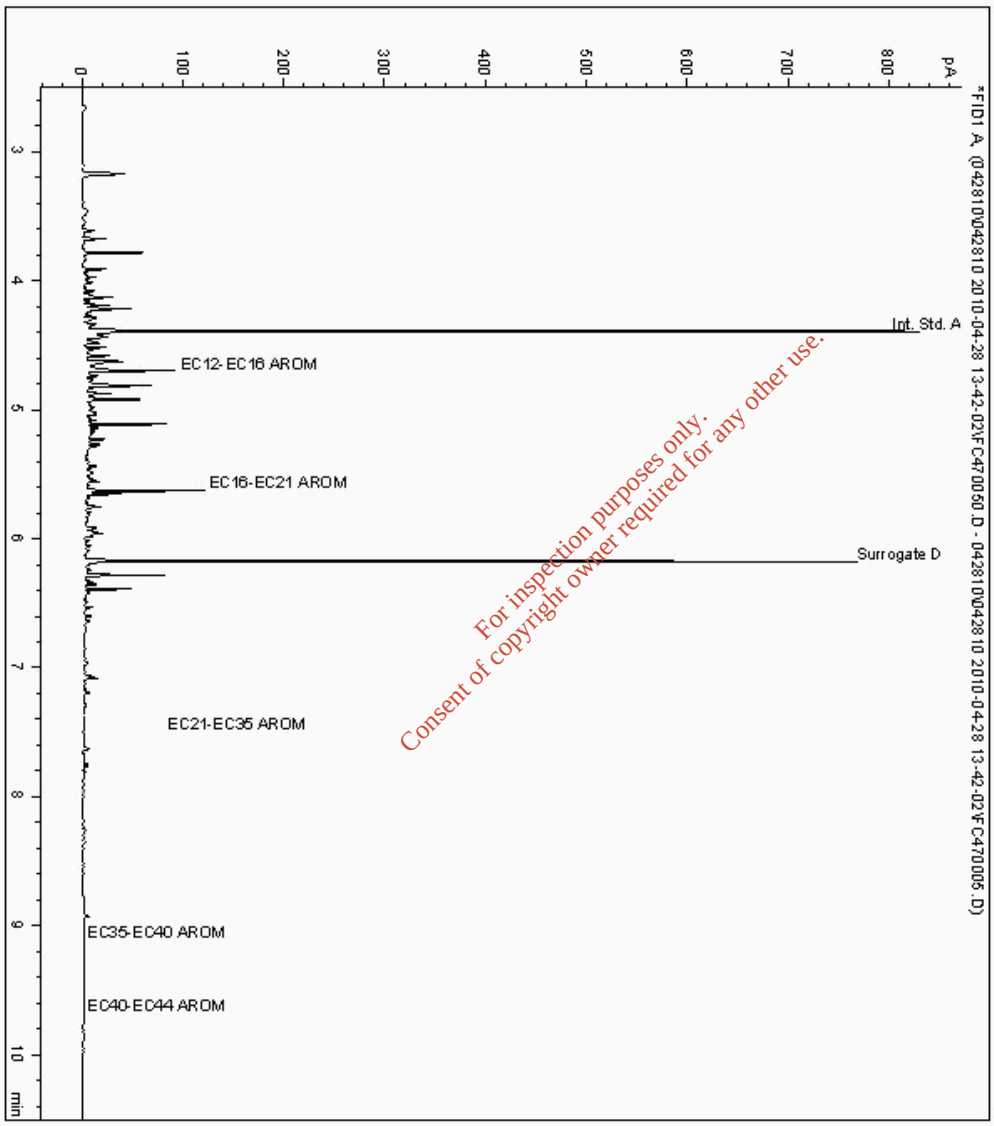
ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1438830
		Sample ID	D1
		Depth	3.00 - 4.50

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

Sample Identity: 1559965-1438830
Date Acquired : 29/04/10 04:38:08
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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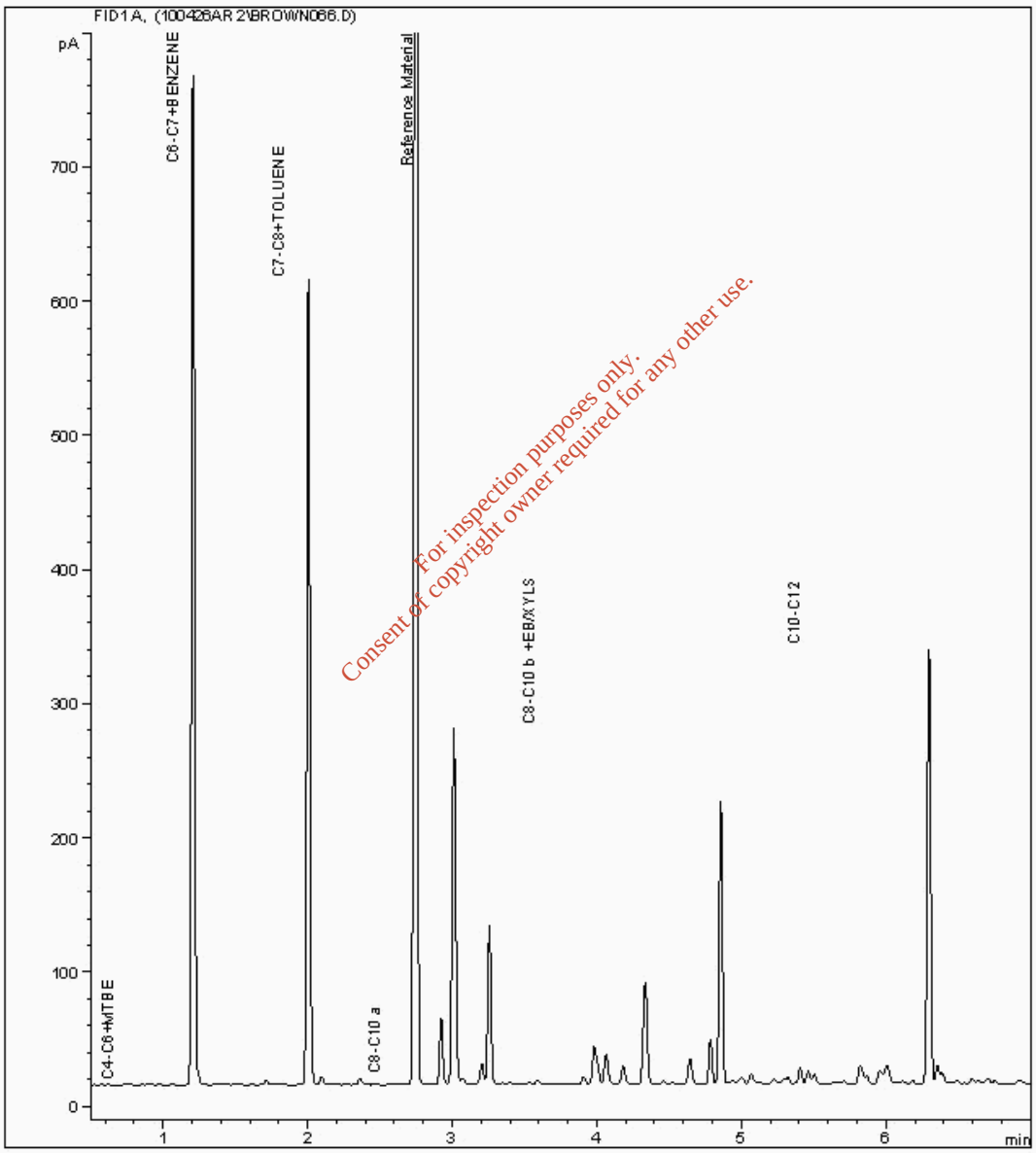
SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1435824
		Sample ID	G4
		Depth	3.00 - 9.50

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1559918-1435824
Date Acquired : 27/04/10 09:58:04
Units : ppb
Dilution : 5



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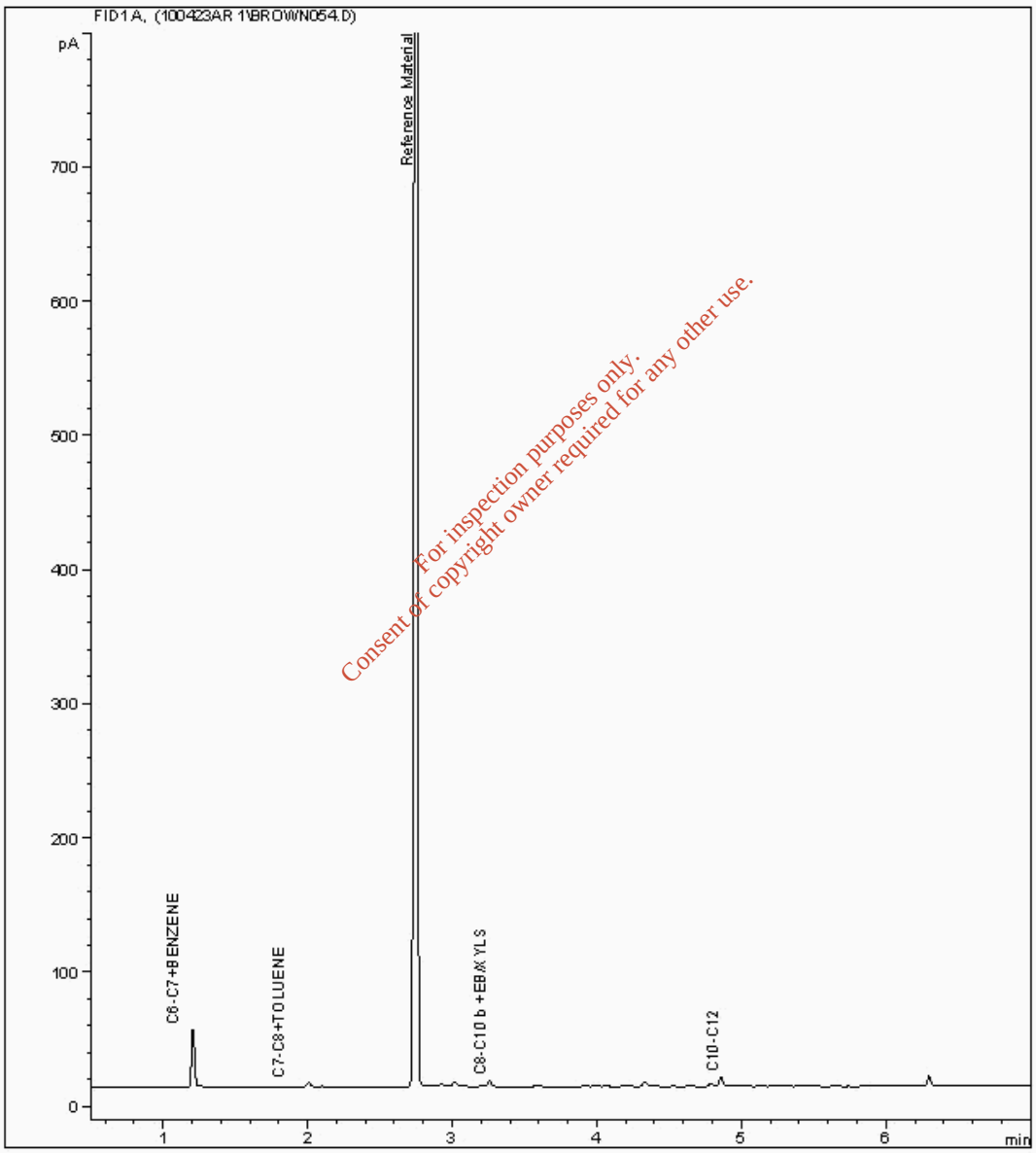
ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1435864
		Sample ID	G3
		Depth	3.50 - 8.50

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1559934-1435864
Date Acquired : 24/04/10 01:57:32
Units : ppb
Dilution : 1



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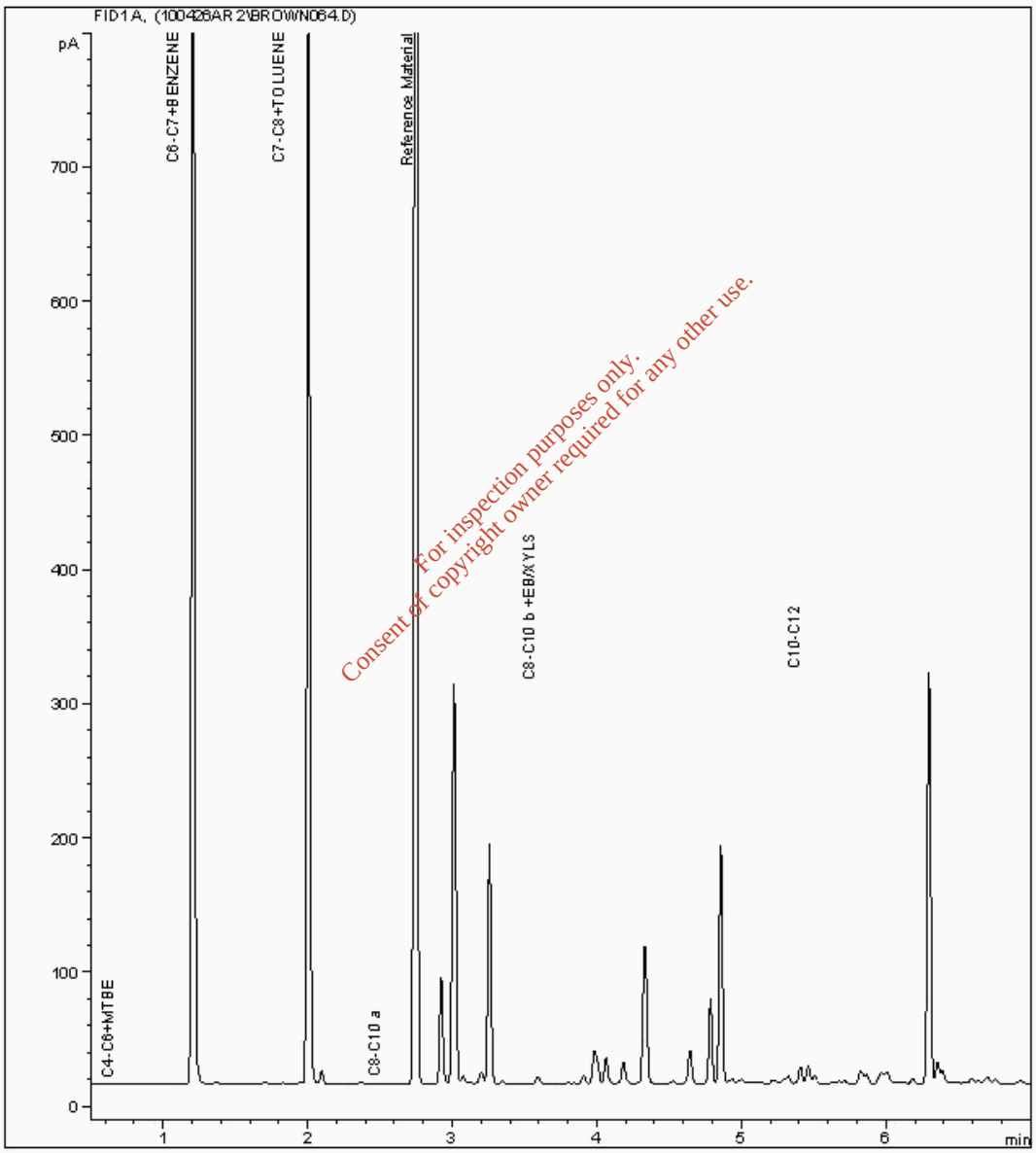
SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1435901
		Sample ID	G2
		Depth	4.00 - 10.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1559950-1435901
Date Acquired : 27/04/10 09:29:57
Units : ppb
Dilution : 2



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Validated

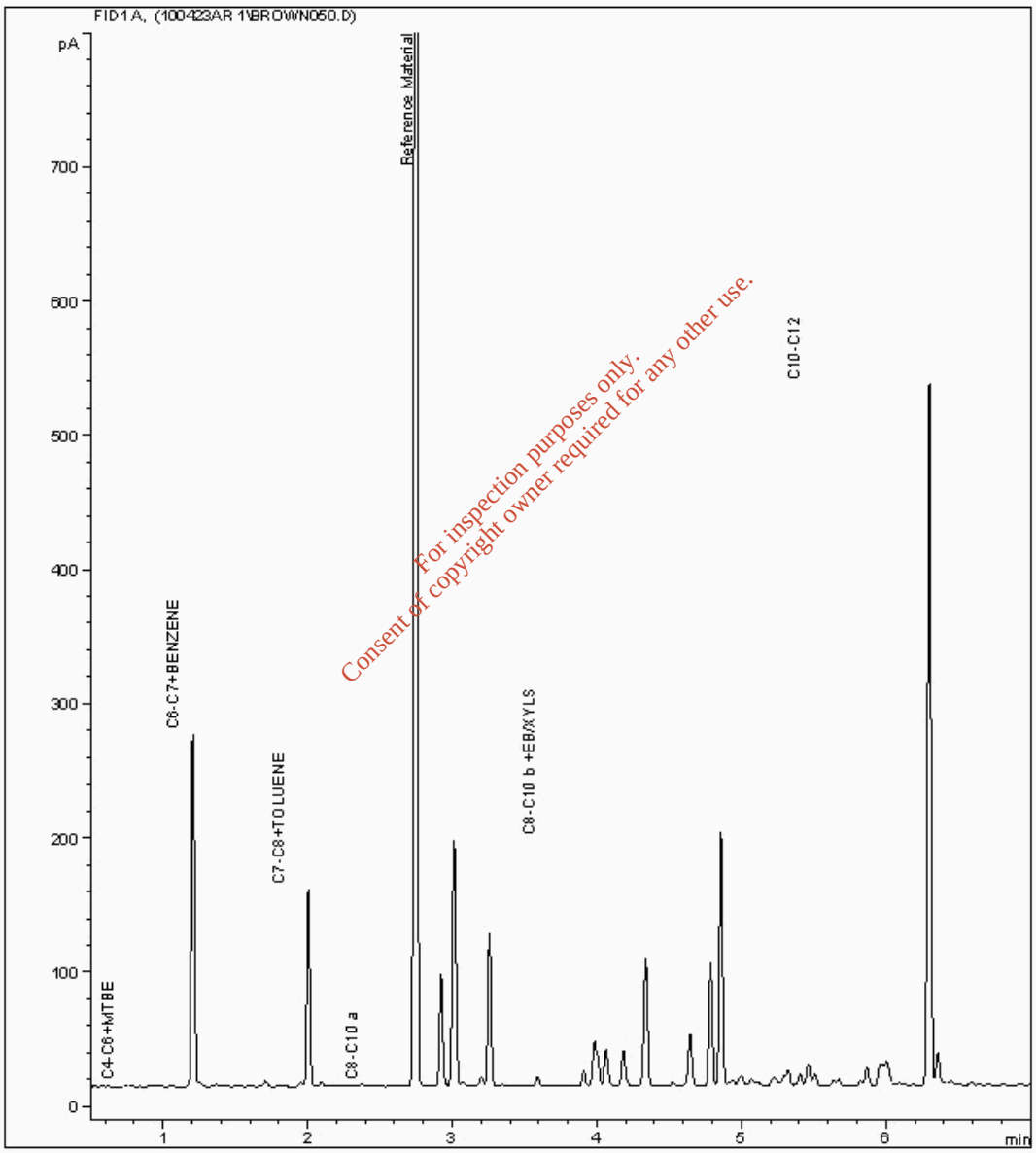
ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1435927
		Sample ID	D1
		Depth	3.00 - 4.50

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1559966-1435927
Date Acquired : 24/04/10 01:01:18
Units : ppb
Dilution : 1



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Validated

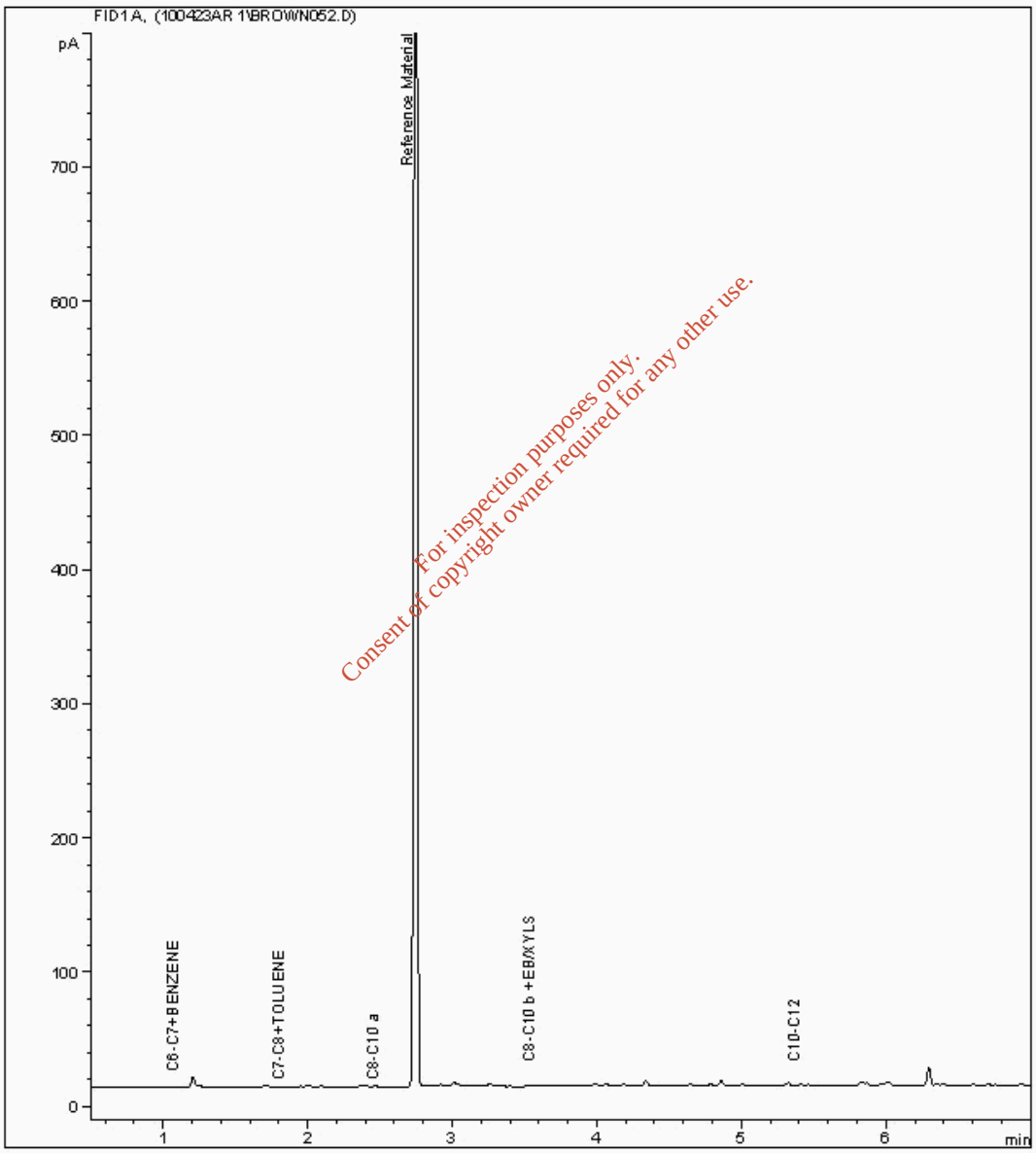
ALcontrol Laboratories Analytical Services

SDG:	100422-72	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82277

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1435958
		Sample ID	G5
		Depth	2.50 - 8.50

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1559982-1435958
Date Acquired : 24/04/10 01:29:25
Units : ppb
Dilution : 1



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Notification of NDPs (No determination possible)

SDG Number	100422-72	**Location**	Limerick Gasworks
Client	D_MOUCHEL_ELE	**Order No.**	
Client Reference	22/04/10	**Report No.**	45707-0
Attention	Dave Watts	**Date Received**	22/04/2010 13:59:21

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
1436368	G4 EW003	3.00 - 9.50	pH Value	Sample contains oil / product
1436368	G4 EW003	3.00 - 9.50	pH Value	Sample contains oil / product
1436368	G4 EW003	3.00 - 9.50	pH Value	Sample contains oil / product

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APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH_4 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.
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 the major 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.

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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)	GS 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 INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC FID

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 (C6-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

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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).

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.

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

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ALcontrol Laboratories

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

Attention: Verity Sankey

CERTIFICATE OF ANALYSIS

Date:	29 April 2010		
Customer:	D_MOUCHEL_ELE-102		
Sample Delivery Group (SDG):	100422-73	**Report No.:**	82119
Your Reference:	21.4.10		
Location:	Limerick Gasworks		

We received 5 samples on Thursday April 22, 2010 and 5 of these samples were scheduled for analysis which was completed on Thursday April 29, 2010. 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).

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Approved By:

Iain Swinton

Operations Director - Land UK & Ireland

UKAS TESTING
1291
GROUP

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Verity Sankey
Client Reference:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Sampled Date
1436330	A11 EW003	1.00 - 2.50	21/04/2010
1436158	C11 EW003	1.50 - 2.50	21/04/2010
1436125	E8 EW003	1.50 - 6.00	21/04/2010
1436276	F11 EW003	1.00 - 4.00	21/04/2010
1436197	G8 EW003	1.00 - 2.00	21/04/2010

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

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ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Verity Sankey
Client Reference:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

LIQUID

Results Legend

X Test

N No Determination Possible

		Lab Sample No(s)	1436125			1436158			1436197			1436276			1436330			Total
		Customer Sample Ref.	E8 EW003			C11 EW003			G8 EW003			F11 EW003			A11 EW003			
		Depth (m)	1.50 - 6.00			1.50 - 2.50			1.00 - 2.00			1.00 - 4.00			1.00 - 2.50			
		Container	1l green glass bottle	500ml Plastic	VIAL (D)	1l green glass bottle	500ml Plastic	VIAL (D)	1l green glass bottle	500ml Plastic	VIAL (D)	1l green glass bottle	500ml Plastic	VIAL (D)	1l green glass bottle	500ml Plastic	VIAL (D)	
Ammonium	All			X			X			X			X			X		05
Anions by Kone (w)	All			X			X			X			X			X		05
Cyanide Comp/Free/Total/Thiocyanate	All		X			X			X			X			X			05
Dissolved Metals by ICP-MS	All			X			X			X			X			X		05
EPH CWG (Aliphatic) Aqueous GC (W)	All		X			X			X			X			X			05
EPH CWG (Aromatic) Aqueous GC (W)	All		X			X			X			X			X			05
GRO BTEX MTBE GC (W)	All				X			X			X			X			X	05
Hexavalent Chromium (w)	All			X			X			X			X			X		05
Mercury Dissolved	All		X			X			X			X			X			05
PAH Spec MS - Aqueous (W)	All		X			X			X			X			X			05
pH Value	All			X			X			X			X			X		05
Phenols by HPLC (W)	All		X			X			X			X			X			05
Sulphide	All			X			X			X			X			X		05
TPH CWG (W)	All		X			X			X			X			X			05
VOC MS (W)	All																X	01

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ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Verity Sankey
Client Reference:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

Test Completion dates

SDG reference: 100422-73

Lab Sample No(s)	1436125	1436158	1436197	1436276	1436330
Customer Sample Ref.	E8	C11	G8	F11	A11
Depth	1.50 - 6.00	1.50 - 2.50	1.00 - 2.00	1.00 - 4.00	1.00 - 2.50
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Anions by Kone (w)	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Cyanide	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
Dissolved Metals by ICP-MS	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
EPH CWG (Aliphatic) Aqueous GC	28/04/2010	28/04/2010	28/04/2010	28/04/2010	28/04/2010
EPH CWG (Aromatic) Aqueous GC	28/04/2010	28/04/2010	28/04/2010	28/04/2010	28/04/2010
GRO BTEX MTBE GC (W)	27/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
Hexavalent Chromium (w)	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Mercury Dissolved	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
PAH Spec MS - Aqueous (W)	29/04/2010	28/04/2010	29/04/2010	28/04/2010	29/04/2010
pH Value	23/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
Phenols by HPLC (W)	27/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
Sulphide	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
TPH CWG (W)	28/04/2010	28/04/2010	28/04/2010	28/04/2010	28/04/2010
VOC MS (W)					26/04/2010

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ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Reference:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11 EW003	C11 EW003	E8 EW003	F11 EW003	G8 EW003
			Depth (m)	1.00 - 2.50	1.50 - 2.50	1.50 - 6.00	1.00 - 4.00	1.00 - 2.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-73	100422-73	100422-73	100422-73	100422-73
			Lab Sample No.(s)	1436330	1436158	1436125	1436276	1436197
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099		1.28 #	6.01 #	62.3 #	4.64 #	30.4 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099		1.65 #	7.73 #	80.1 #	5.97 #	39.1 #
Sulphide	<0.1 mg/l	TM101		<0.1 #	<0.1 #	0.663 #	<0.1 #	<0.1 #
Arsenic (diss.filt)	<0.12 µg/l	TM152		2.98 #	7.81 #	137 #	7.15 #	5.93 #
Cadmium (diss.filt)	<0.1 µg/l	TM152		0.102 #	<0.1 #	0.721 #	<0.1 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152		3.59 #	8.31 #	3.35 #	4.28 #	4.48 #
Copper (diss.filt)	<0.85 µg/l	TM152		1.34 #	<0.85 #	2.47 #	<0.85 #	1.62 #
Lead (diss.filt)	<0.02 µg/l	TM152		0.153 #	0.029 #	0.415 #	0.05 #	0.023 #
Nickel (diss.filt)	<0.15 µg/l	TM152		4.97 #	3.37 #	50.9 #	2.06 #	5.16 #
Selenium (diss.filt)	<0.39 µg/l	TM152		2.16 #	4.82 #	30.2 #	1.86 #	9.84 #
Zinc (diss.filt)	<0.41 µg/l	TM152		1.13 #	0.991 #	38.3 #	0.709 #	0.817 #
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	0.0559 #	<0.01 #	<0.01 #
Sulphate	3 mg/l	TM184		353 #	128 #	496 #	37.3 #	162 #
Cyanide, Total	<0.05 mg/l	TM227		0.066 #	0.069 #	12.8 #	<0.05 #	0.581 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03	<0.03	<0.06	<0.03	<0.06
pH	<1 pH Units	TM256		8.05 #	8.24 #	9.34 #	7.72 #	8.31 #
Resorcinol	<0.01 mg/l	TM259		<0.01	<0.01	0.21	<0.01	<0.01
Catechol	<0.01 mg/l	TM259		<0.01	<0.01	<0.2	<0.01	<0.01
Phenol	<0.002 mg/l	TM259		<0.002 #	<0.002 #	67.3 #	0.08 #	1.89 #
Cresols	<0.006 mg/l	TM259		<0.006 #	<0.006 #	110 #	0.09 #	4.08 #
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #	66.8 #	0.08 #	4.89 #
1-Naphthol	<0.01 mg/l	TM259		<0.01 #	<0.01 #	0.26 #	<0.01 #	<0.01 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM259		<0.003 #	<0.003 #	<0.06 #	<0.003 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259		<0.006 #	<0.006 #	3.79 #	<0.006 #	1.33 #
Phenols, Total 5 speciated	<0.025 mg/l	TM259		<0.025	<0.025	248	0.25	12.2

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ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Reference:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11 EW003	C11 EW003	E8 EW003	F11 EW003	G8 EW003
			Depth (m)	1.00 - 2.50	1.50 - 2.50	1.50 - 6.00	1.00 - 4.00	1.00 - 2.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-73	100422-73	100422-73	100422-73	100422-73
			Lab Sample No.(s)	1436330	1436158	1436125	1436276	1436197
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		797	357	46	65	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		560	131	41	398	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		1280	21	55	820	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		2630	509	142	1280	<10
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174		19800	1470	6270	2470	1540

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ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Reference:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11 EW003	C11 EW003	E8 EW003	F11 EW003	G8 EW003
			Depth (m)	1.00 - 2.50	1.50 - 2.50	1.50 - 6.00	1.00 - 4.00	1.00 - 2.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-73	100422-73	100422-73	100422-73	100422-73
			Lab Sample No.(s)	1436330	1436158	1436125	1436276	1436197
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		2280	349	4110	27	917
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		4480	297	1010	142	304
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		10400	318	1010	1020	320
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		17100	964	6130	1190	1540

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ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Reference:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

GRO BTEX MTBE GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11 EW003	C11 EW003	E8 EW003	F11 EW003	G8 EW003
			Depth (m)	1.00 - 2.50	1.50 - 2.50	1.50 - 6.00	1.00 - 4.00	1.00 - 2.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-73	100422-73	100422-73	100422-73	100422-73
			Lab Sample No.(s)	1436330	1436158	1436125	1436276	1436197
Benzene	<7 µg/l	TM245		48 #	41 #	9090 #	55 #	1520 #
Toluene	<4 µg/l	TM245		76 #	40 #	2480 #	<4 #	996 #
Aliphatics >C6-C8	<10 µg/l	TM245		36.4	31.3	2060	<10	155
Aliphatics >C8-C10	<10 µg/l	TM245		95.8	368	665	<10	236
Aliphatics >C10-C12	<10 µg/l	TM245		176	937	1980	<10	818
Aromatics >C7-C8	<10 µg/l	TM245		76	40	2480	<10	996
Aromatics >EC8-EC10	<10 µg/l	TM245		291	1180	2430	14.4	1190
Aromatics >EC10-EC12	<10 µg/l	TM245		264	1400	2980	11.9	1230
Ethylbenzene	<5 µg/l	TM245		7 #	85 #	119 #	<5 #	75 #
m,p-Xylene	<8 µg/l	TM245		86 #	307 #	936 #	<8 #	544 #
o-Xylene	<3 µg/l	TM245		61 #	235 #	377 #	<3 #	213 #
m,p,o-Xylene	<10 µg/l	TM245		147 #	542 #	1310 #	<10 #	757 #
BTEX, Total	<10 µg/l	TM245		278 #	708 #	13000 #	55 #	3340 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<15 #	<3 #	<3 #
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	118	<10	16.2
Total Aliphatics >C5-C12	<10 µg/l	TM245		309	1340	4820	<10	1230
Aromatics >C6-C7	<10 µg/l	TM245		48	41	9090	55	1520
Total Aromatics >C6-C12	<10 µg/l	TM245		679	2660	17000	81.3	4920

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ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Reference:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11 EW003	C11 EW003	E8 EW003	F11 EW003	G8 EW003
			Depth (m)	1.00 - 2.50	1.50 - 2.50	1.50 - 6.00	1.00 - 4.00	1.00 - 2.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-73	100422-73	100422-73	100422-73	100422-73
			Lab Sample No.(s)	1436330	1436158	1436125	1436276	1436197
Naphthalene (aq)	<0.1 µg/l	TM178		87.9	2.59	1460	20.4	12.1
Acenaphthene (aq)	<0.015 µg/l	TM178		62.3	13.6	22.3	1.56	6.97
Acenaphthylene (aq)	<0.011 µg/l	TM178		267	4.77	127	5.77	40.8
Fluoranthene (aq)	<0.014 µg/l	TM178		678	18.5	93.9	19.6	23.8
Anthracene (aq)	<0.015 µg/l	TM178		282	2.79	48.7	2.79	14
Phenanthrene (aq)	<0.022 µg/l	TM178		782	5.8	175	5.96	39.1
Fluorene (aq)	<0.014 µg/l	TM178		266	4.76	77.3	1.67	25.2
Chrysene (aq)	<0.013 µg/l	TM178		138	3.36	16.8	10.2	6.46
Pyrene (aq)	<0.015 µg/l	TM178		442	11.5	61.9	16.6	16.3
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		205	5.49	18.6	13.2	10.6
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		175	5.6	11	25.7	8.33
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		64.5	1.68	4.62	8.59	3.07
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		140	4.53	8.61	21	6.28
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		19.1	0.685	0.975	4.23	0.957
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		69.9	2.45	4.28	15.8	2.67
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		61.6	2.27	3.28	13.8	2.46
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178		3740	90.5	2130	187	219

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ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Reference:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11 EW003	C11 EW003	E8 EW003	F11 EW003	G8 EW003
			Depth (m)	1.00 - 2.50	1.50 - 2.50	1.50 - 6.00	1.00 - 4.00	1.00 - 2.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-73	100422-73	100422-73	100422-73	100422-73
			Lab Sample No.(s)	1436330	1436158	1436125	1436276	1436197
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174		2940	1840	4970	1280	1230
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174		17800	3630	23100	1270	6470
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		20800	5470	28100	2550	7690

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ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Reference:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11 EW003
			Depth (m)	1.00 - 2.50
			Sample Type	Water(GW/SW)
			Date Sampled	21/04/2010
			Date Received	22/04/2010
			SDG Ref	100422-73
			Lab Sample No.(s)	1436330
Dibromofluoromethane**	%	TM208		117
Toluene-d8**	%	TM208		96
4-Bromofluorobenzene**	%	TM208		100
Dichlorodifluoromethane	<1.3 µg/l	TM208		<1.3 #
Chloromethane	<1.7 µg/l	TM208		<1.7 #
Vinyl chloride	<1.2 µg/l	TM208		<1.2 #
Bromomethane	<2 µg/l	TM208		<2 #
Chloroethane	<2.5 µg/l	TM208		<2.5 #
Trichlorofluoromethane	<1.3 µg/l	TM208		<1.3 #
1,1-Dichloroethene	<1.2 µg/l	TM208		<1.2 #
Carbon disulphide	<1.3 µg/l	TM208		<1.3 #
Dichloromethane	<3.7 µg/l	TM208		<3.7 #
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208		<1.6 #
trans-1,2-Dichloroethene	<1.9 µg/l	TM208		<1.9 #
1,1-Dichloroethane	<1.2 µg/l	TM208		<1.2 #
cis-1,2-Dichloroethene	<2.3 µg/l	TM208		<2.3 #
2,2-Dichloropropane	<3.8 µg/l	TM208		<3.8 #
Bromochloromethane	<1.9 µg/l	TM208		<1.9 #
Chloroform	<1.8 µg/l	TM208		<1.8 #
1,1,1-Trichloroethane	<1.3 µg/l	TM208		<1.3 #
1,1-Dichloropropene	<1.3 µg/l	TM208		<1.3 #
Carbontetrachloride	<1.4 µg/l	TM208		<1.4 #
1,2-Dichloroethane	<3.3 µg/l	TM208		<3.3
Benzene	<1.3 µg/l	TM208		47.5 #
Trichloroethene	<2.5 µg/l	TM208		<2.5 #
1,2-Dichloropropane	<3 µg/l	TM208		<3 #
Dibromomethane	<2.7 µg/l	TM208		<2.7 #
Bromodichloromethane	<0.9 µg/l	TM208		<0.9 #
cis-1,3-Dichloropropene	<1.9 µg/l	TM208		<1.9 #
Toluene	<1.4 µg/l	TM208		61.6 #
trans-1,3-Dichloropropene	<3.5 µg/l	TM208		<3.5 #
1,1,2-Trichloroethane	<2.2 µg/l	TM208		<2.2 #
1,3-Dichloropropane	<2.2 µg/l	TM208		<2.2 #
Tetrachloroethene	<1.5 µg/l	TM208		<1.5 #
Dibromochloromethane	<1.7 µg/l	TM208		<1.7 #
1,2-Dibromoethane	<2.3 µg/l	TM208		<2.3 #
Chlorobenzene	<3.5 µg/l	TM208		<3.5 #
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208		<1.3 #
Ethylbenzene	<2.5 µg/l	TM208		3.44 #

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ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Reference:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11 EW003
			Depth (m)	1.00 - 2.50
			Sample Type	Water(GW/SW)
			Date Sampled	21/04/2010
			Date Received	22/04/2010
			SDG Ref	100422-73
			Lab Sample No.(s)	1436330
m,p-Xylene	<2.5 µg/l	TM208		22.9 #
o-Xylene	<1.7 µg/l	TM208		40.5 #
Styrene	<1.2 µg/l	TM208		<1.2 #
Bromoform	<3 µg/l	TM208		<3 #
Isopropylbenzene	<1.4 µg/l	TM208		<1.4 #
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208		<5.2
1,2,3-Trichloropropane	<7.8 µg/l	TM208		<7.8 #
Bromobenzene	<2 µg/l	TM208		<2 #
Propylbenzene	<2.6 µg/l	TM208		<2.6 #
2-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208		11.3 #
4-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #
tert-Butylbenzene	<2 µg/l	TM208		<2 #
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208		3.77 #
sec-Butylbenzene	<1.7 µg/l	TM208		<1.7 #
4-iso-Propyltoluene	<2.6 µg/l	TM208		<2.6 #
1,3-Dichlorobenzene	<2.2 µg/l	TM208		<2.2 #
1,4-Dichlorobenzene	<2.7 µg/l	TM208		<2.7 #
n-Butylbenzene	<2 µg/l	TM208		<2 #
1,2-Dichlorobenzene	<3.7 µg/l	TM208		<3.7
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208		<9.8
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208		<2.3 #
Hexachlorobutadiene	<2.5 µg/l	TM208		<2.5 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #
Naphthalene	<3.5 µg/l	TM208		<3.5 #
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208		<3.1 #
1,3,5-Trichlorobenzene	<10 µg/l	TM208		<10

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Table of Results - Appendix

SDG Number : 100422-73 **Client :** Mouchel **Client Ref :** 21.4.10

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]
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			

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

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ALcontrol Laboratories Analytical Services

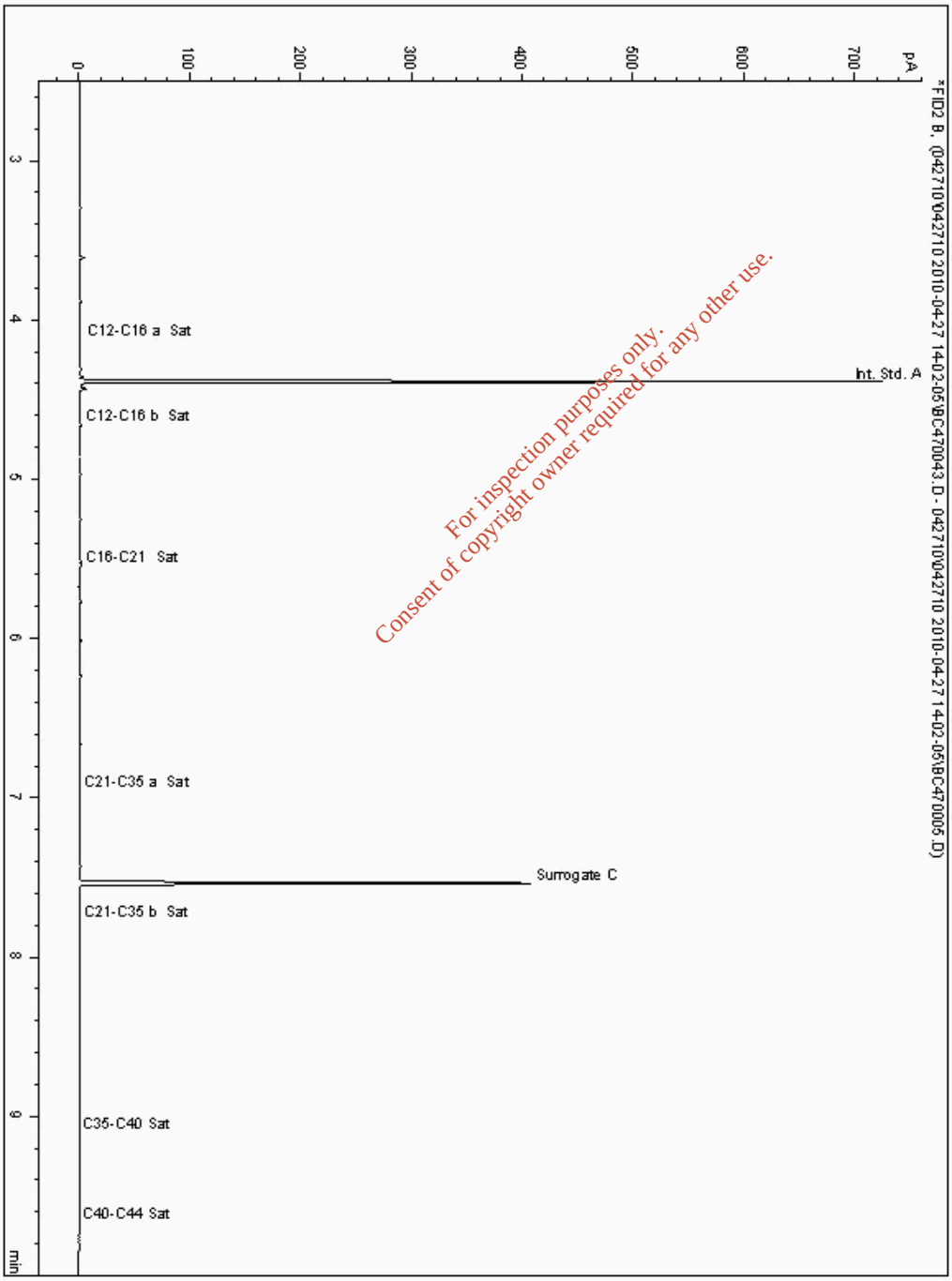
SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Ref.:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

Chromatogram

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1439400
		Sample ID	E8
		Depth	1.50 - 6.00

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

Sample Identity: 1560247-1439400
Date Acquired : 28/04/10 02:57:33
Units :
Dilution :
CF : 1
Multiplier : 0.017



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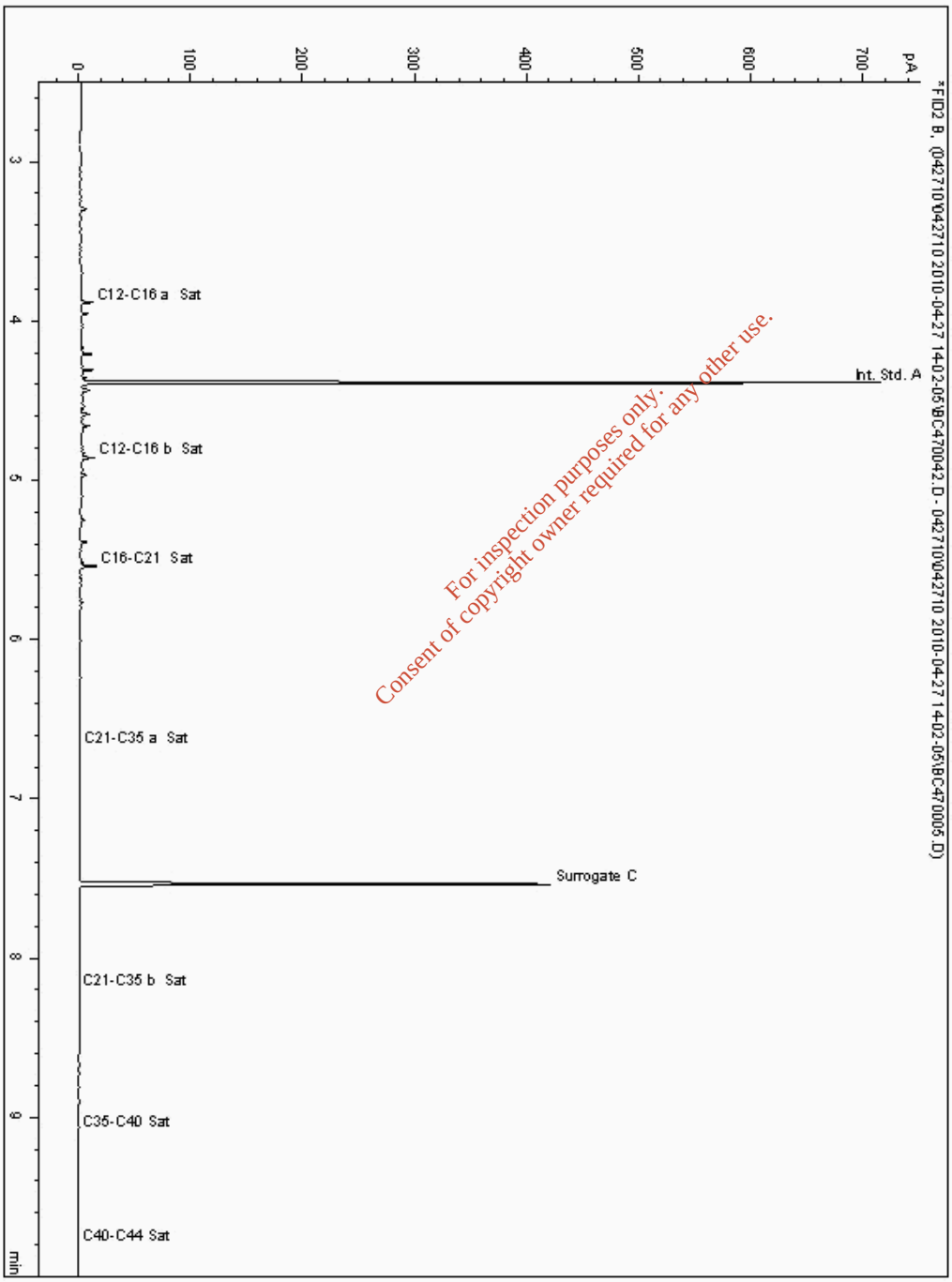
ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Ref.:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1439437
		Sample ID	C11
		Depth	1.50 - 2.50

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

Sample Identity: 1560262-1439437
Date Acquired : 28/04/10 02:38:45
Units :
Dilution :
CF : 1
Multiplier : 0.017



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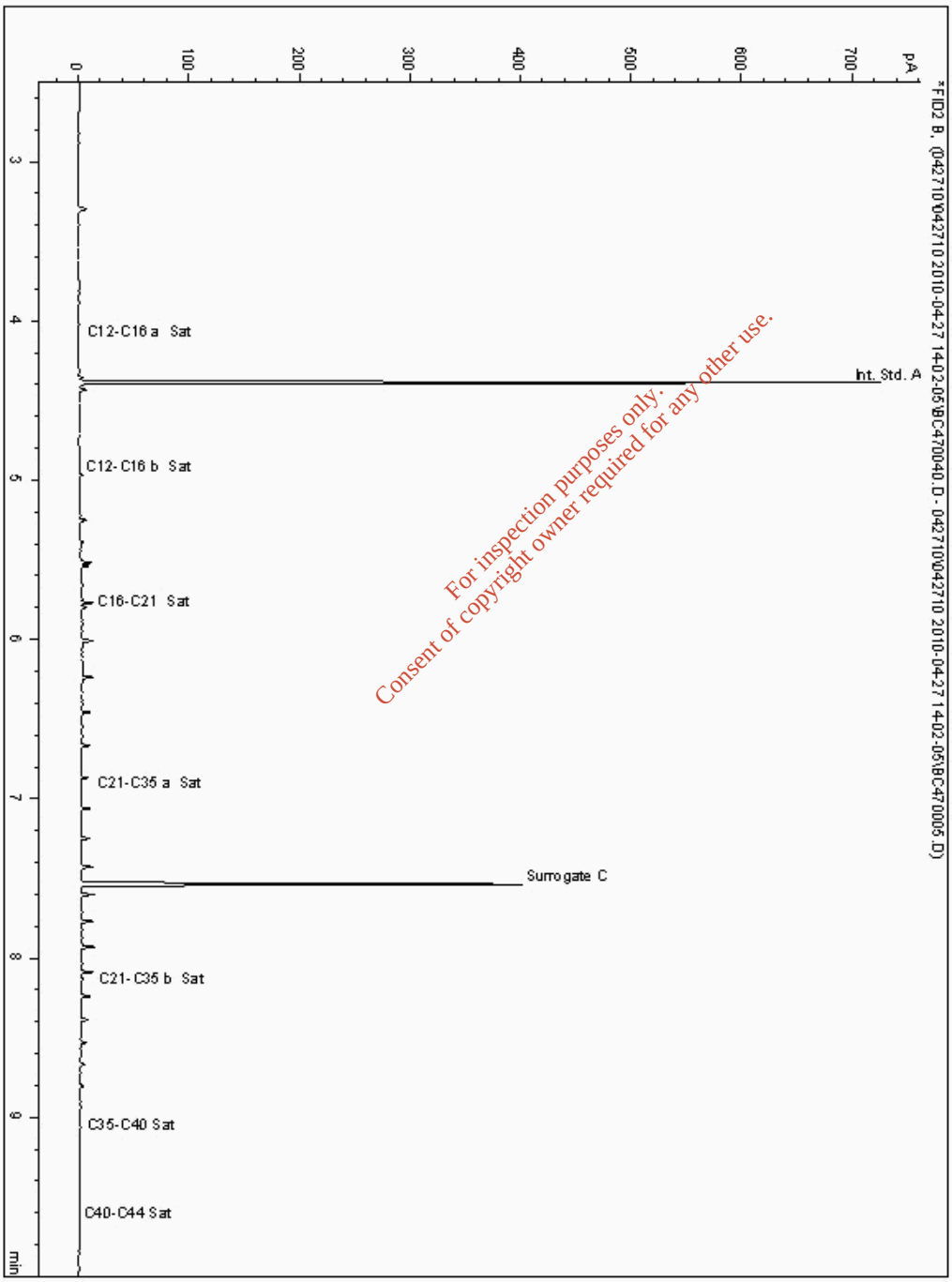
ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Ref.:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1439475
		Sample ID	F11
		Depth	1.00 - 4.00

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

Sample Identity: 1560292-1439475
Date Acquired : 28/04/10 02:05:53
Units :
Dilution :
CF : 1
Multiplier : 0.017



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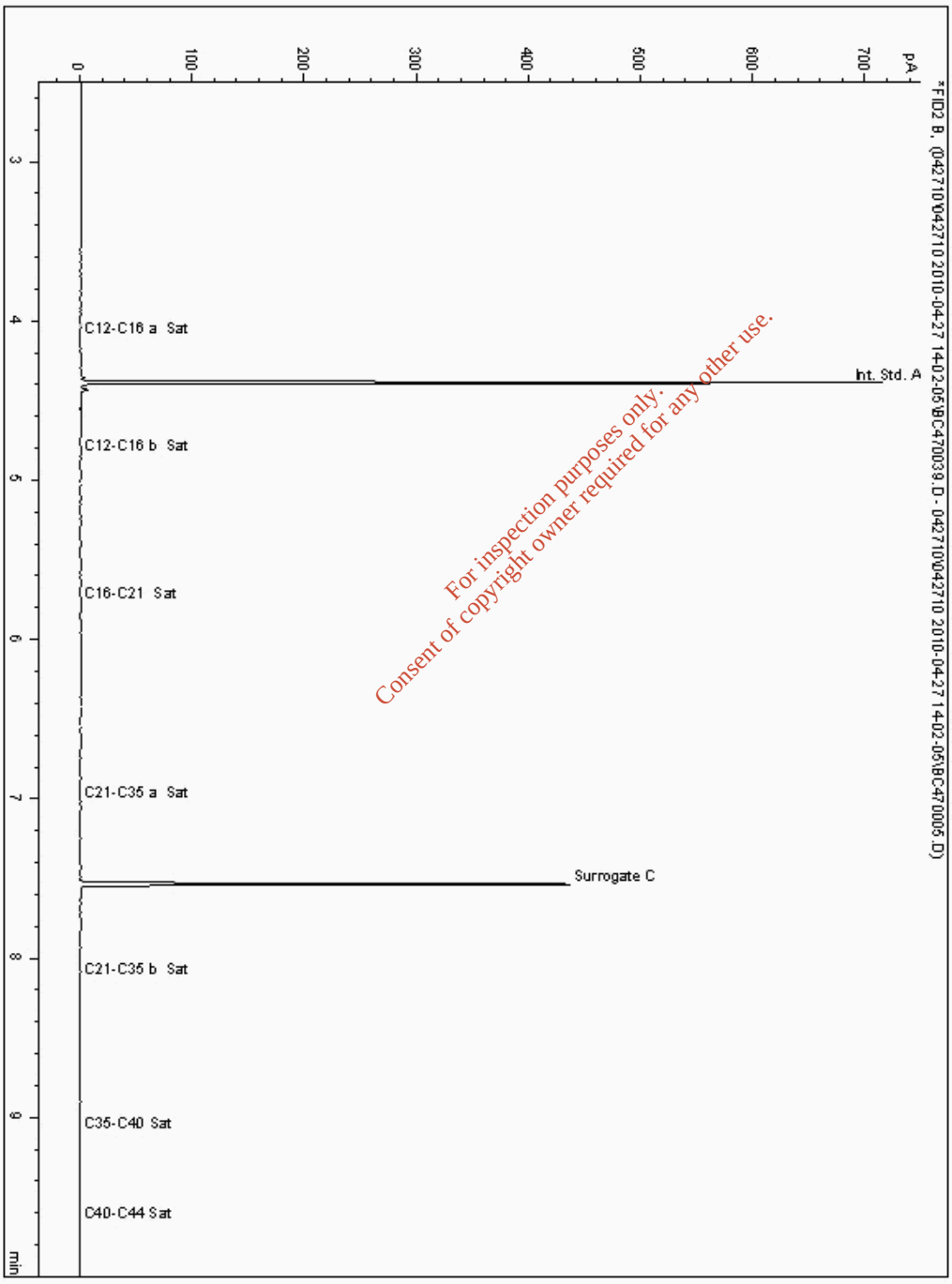
ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Ref.:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1439510
		Sample ID	G8
		Depth	1.00 - 2.00

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

Sample Identity: 1560277-1439510
Date Acquired : 28/04/10 01:47:05
Units :
Dilution :
CF : 1
Multiplier : 0.017



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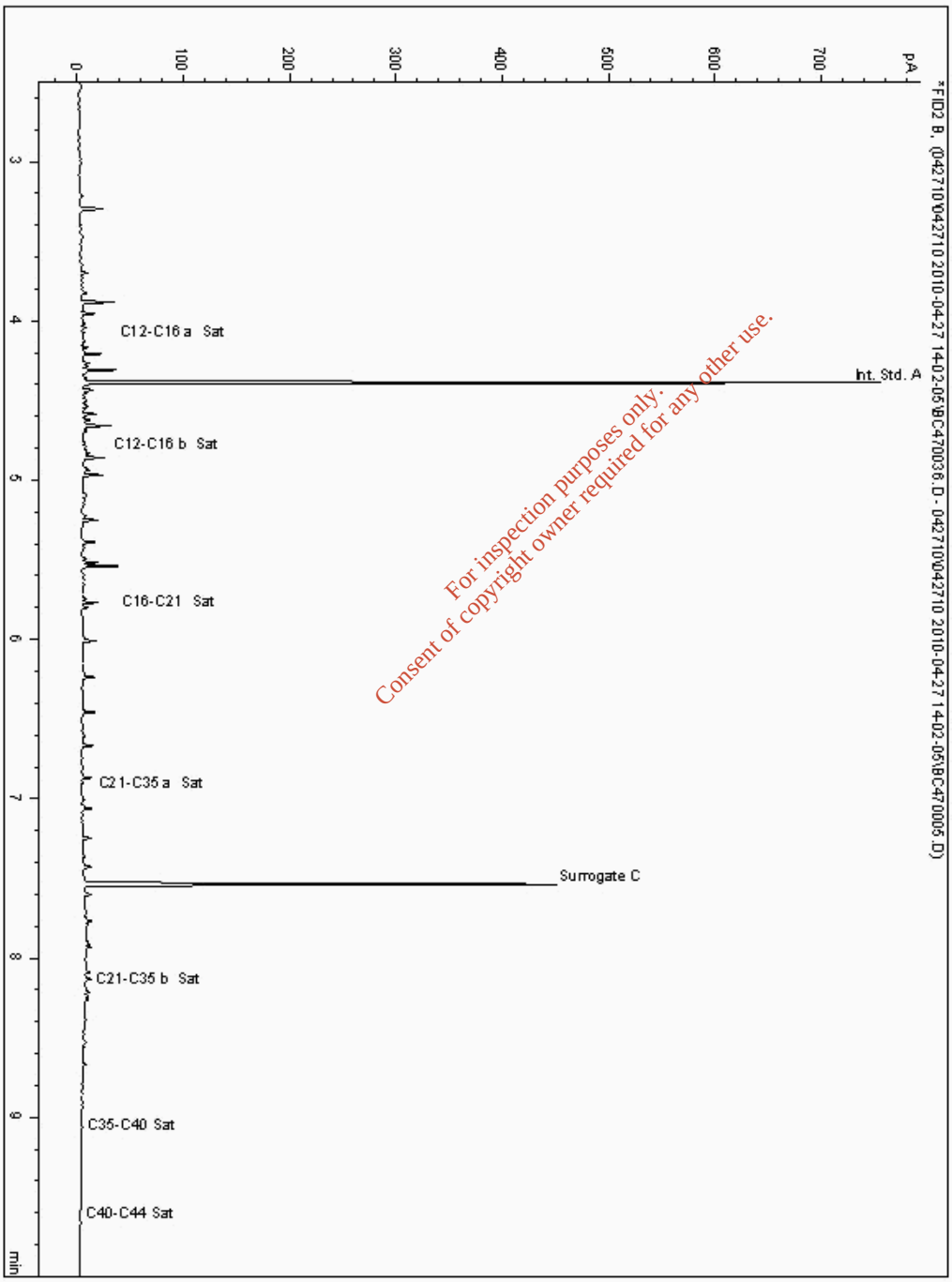
ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Ref.:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1439526
		Sample ID	A11
		Depth	1.00 - 2.50

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

Sample Identity: 1560307-1439526
Date Acquired : 28/04/10 01:00:34
Units :
Dilution :
CF : 1
Multiplier : 0.017



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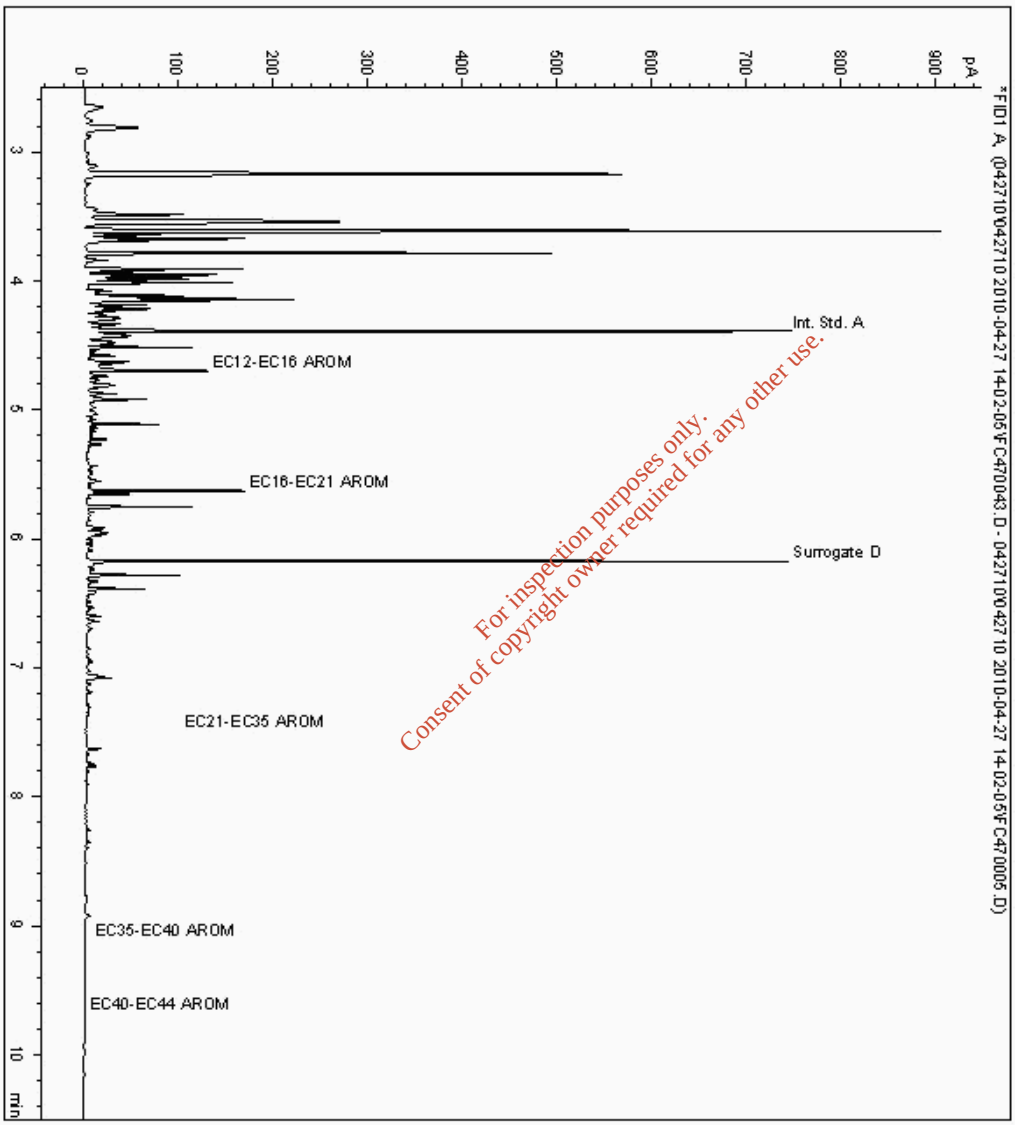
ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Ref.:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1439400
		Sample ID	E8
		Depth	1.50 - 6.00

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

Sample Identity: 1560248-1439400
Date Acquired : 28/04/10 02:57:33
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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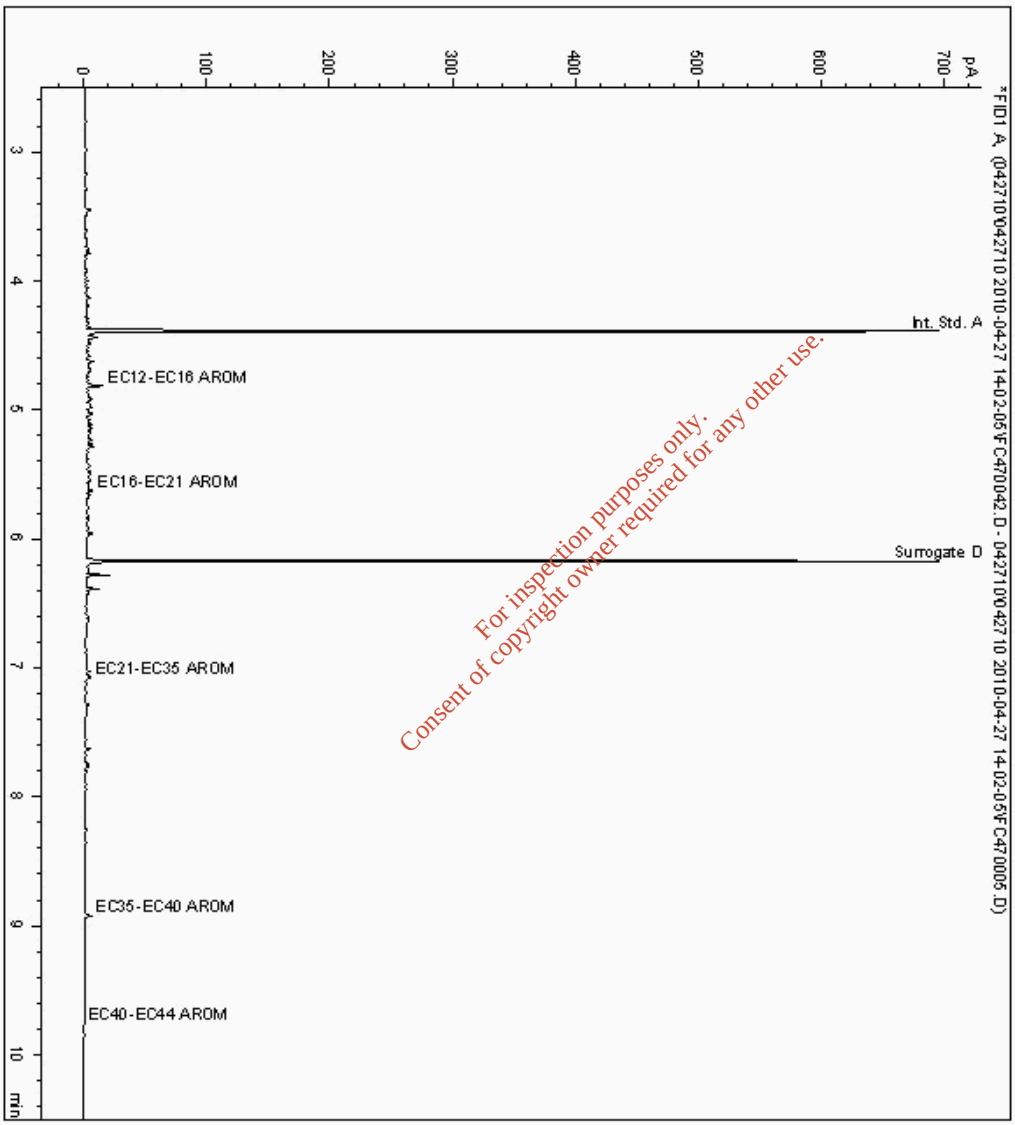
ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Ref.:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1439437
		Sample ID	C11
		Depth	1.50 - 2.50

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

Sample Identity: 1560263-1439437
Date Acquired : 28/04/10 02:38:45
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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Validated

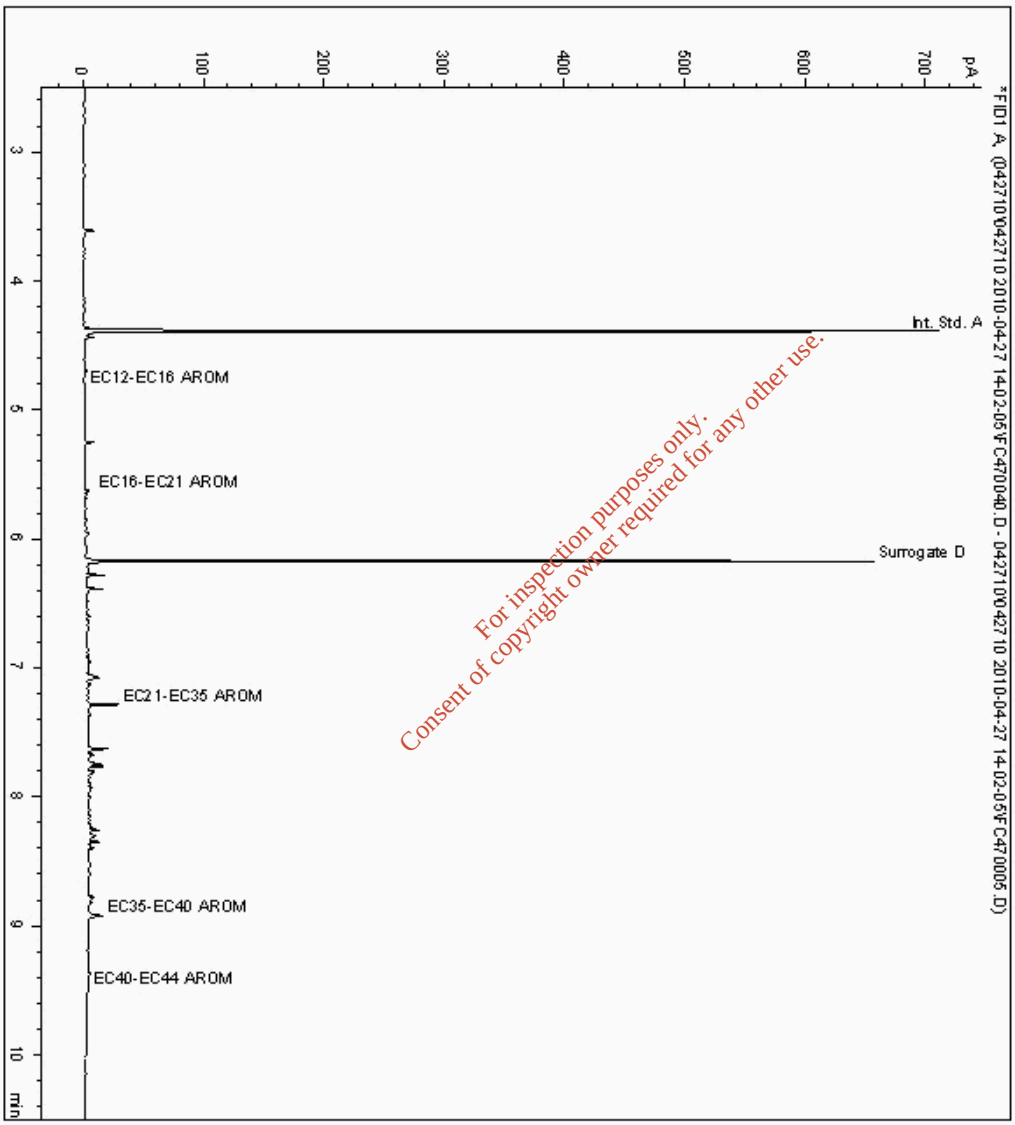
ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Ref.:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1439475
		Sample ID	F11
		Depth	1.00 - 4.00

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

Sample Identity: 1560293-1439475
Date Acquired : 28/04/10 02:05:53
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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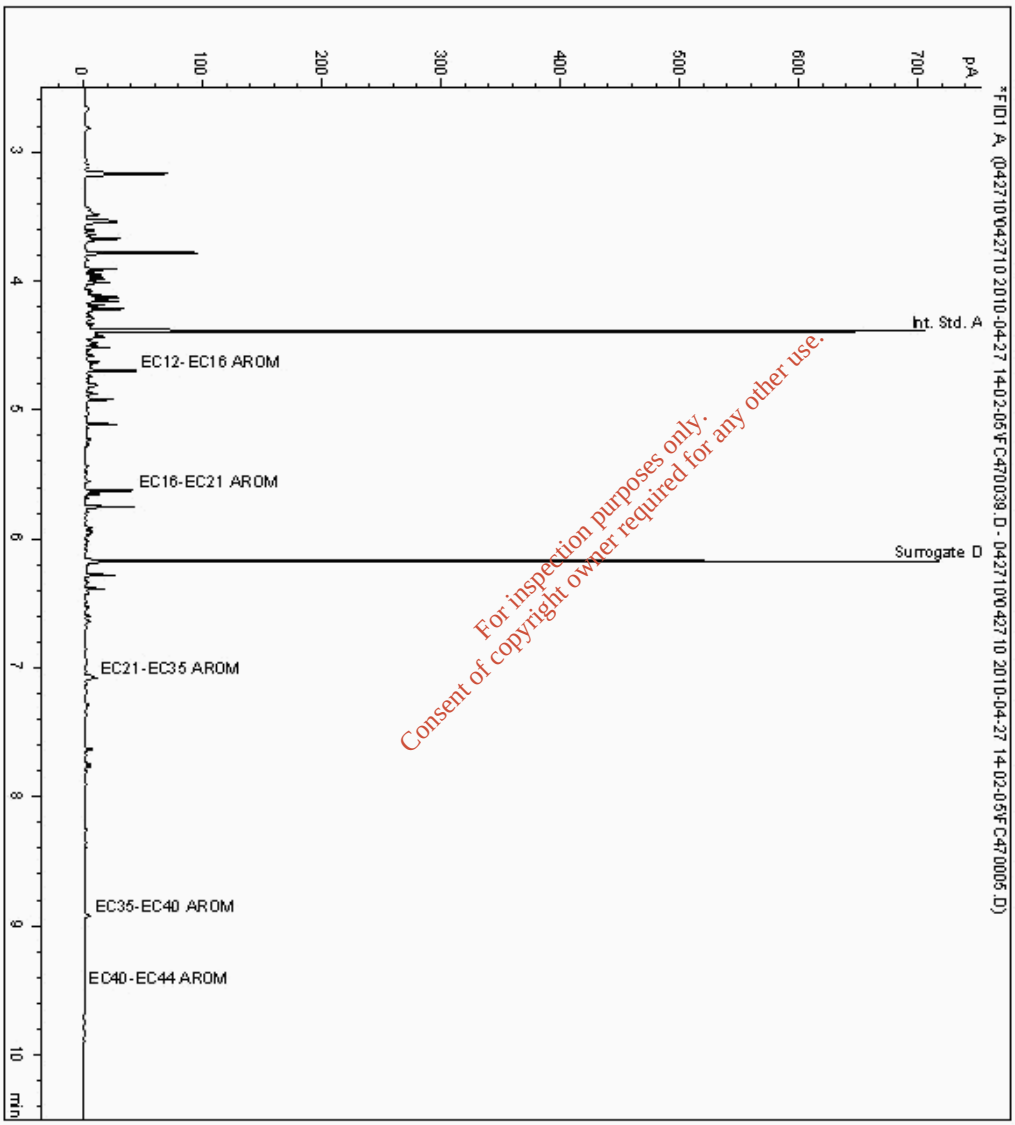
ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Ref.:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1439510
		Sample ID	G8
		Depth	1.00 - 2.00

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

Sample Identity: 1560278-1439510
Date Acquired : 28/04/10 01:47:05
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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Validated

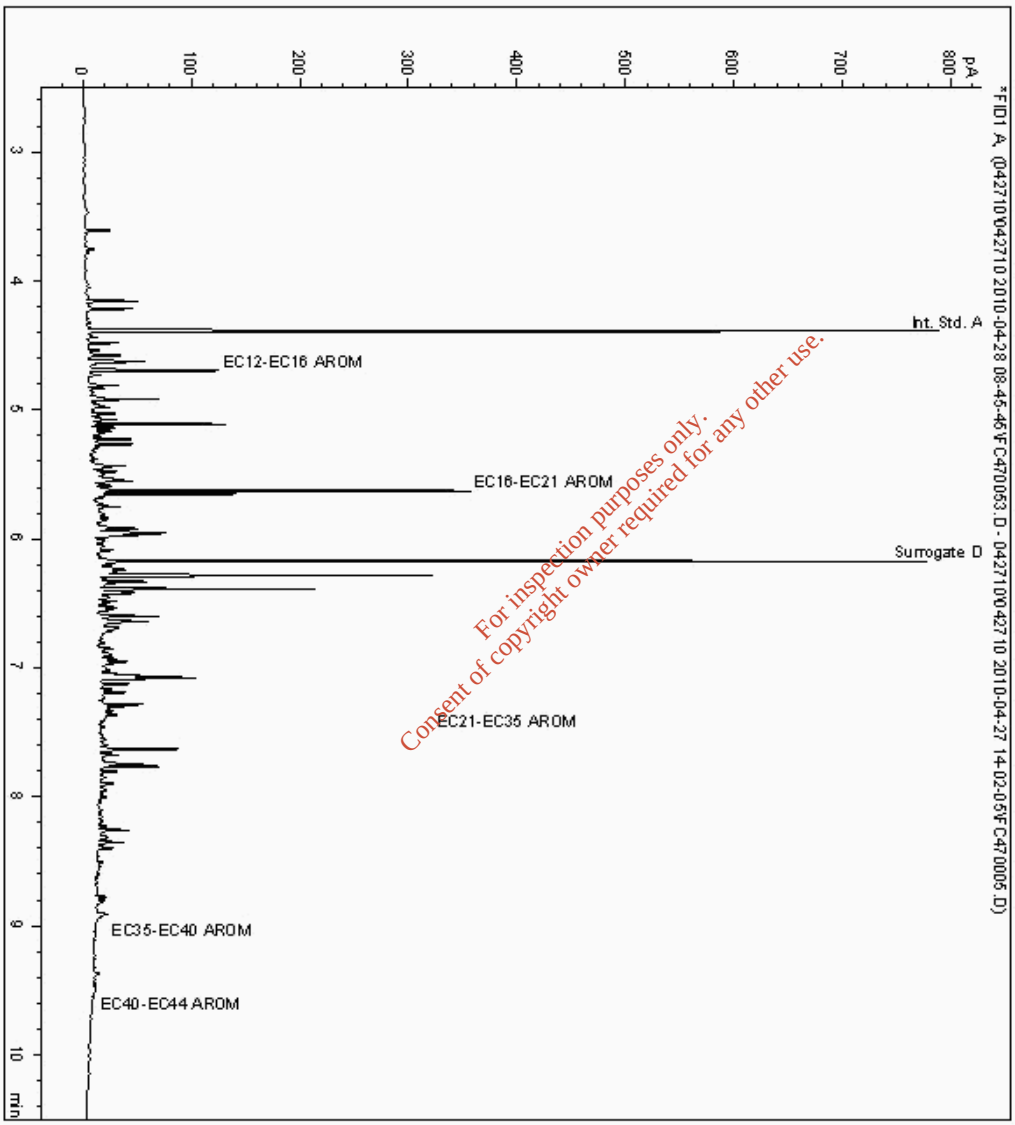
ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Ref.:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1439526
		Sample ID	A11
		Depth	1.00 - 2.50

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

Sample Identity: 1560308-1439526
Date Acquired : 28/04/10 08:56:11
Units : ppb
Dilution :
CF : 1
Multiplier : 0.033



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Validated

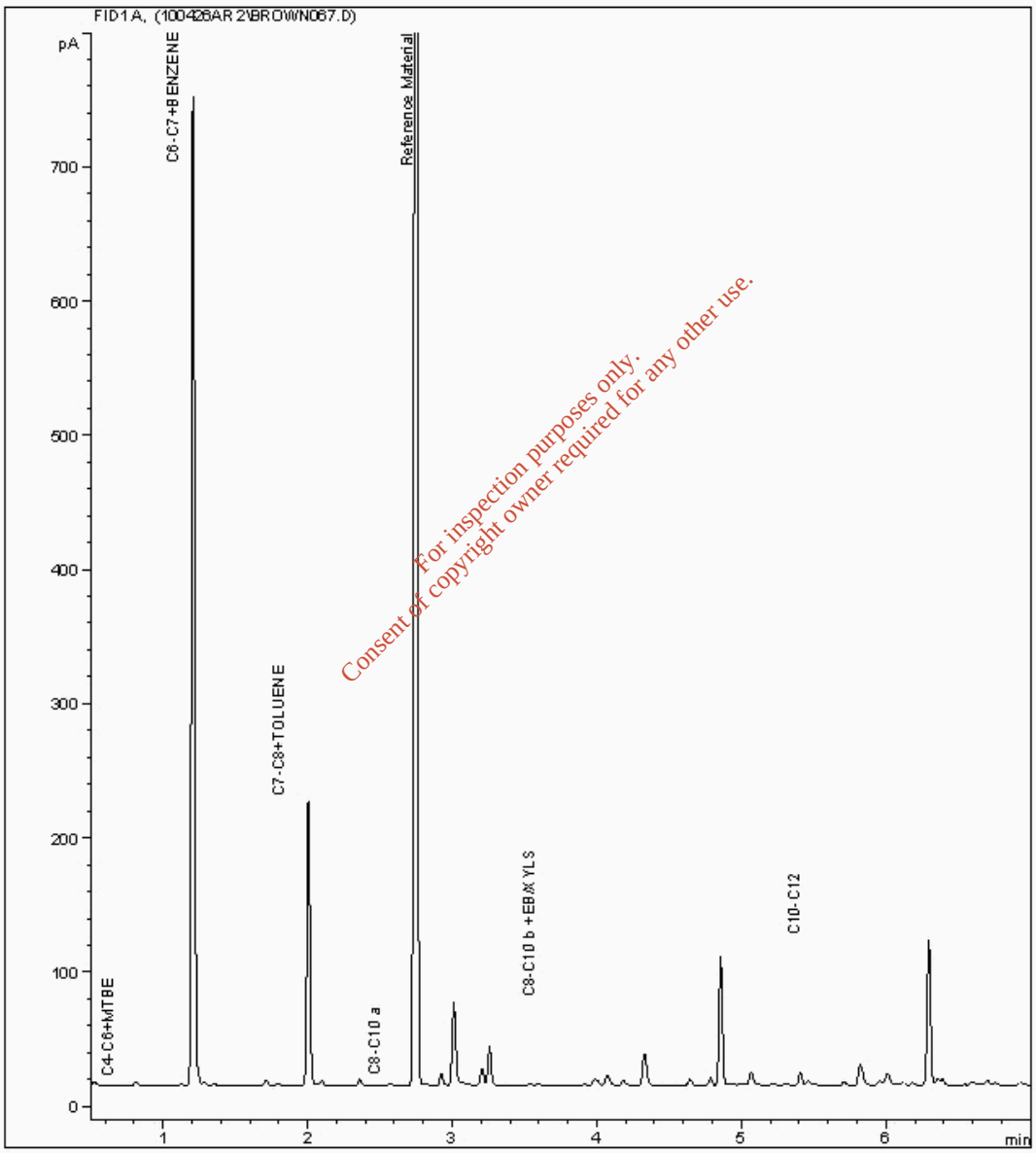
ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Ref.:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1436123
		Sample ID	E8
		Depth	1.50 - 6.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560249-1436123
Date Acquired : 27/04/10 10:12:09
Units : ppb
Dilution : 5



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Validated

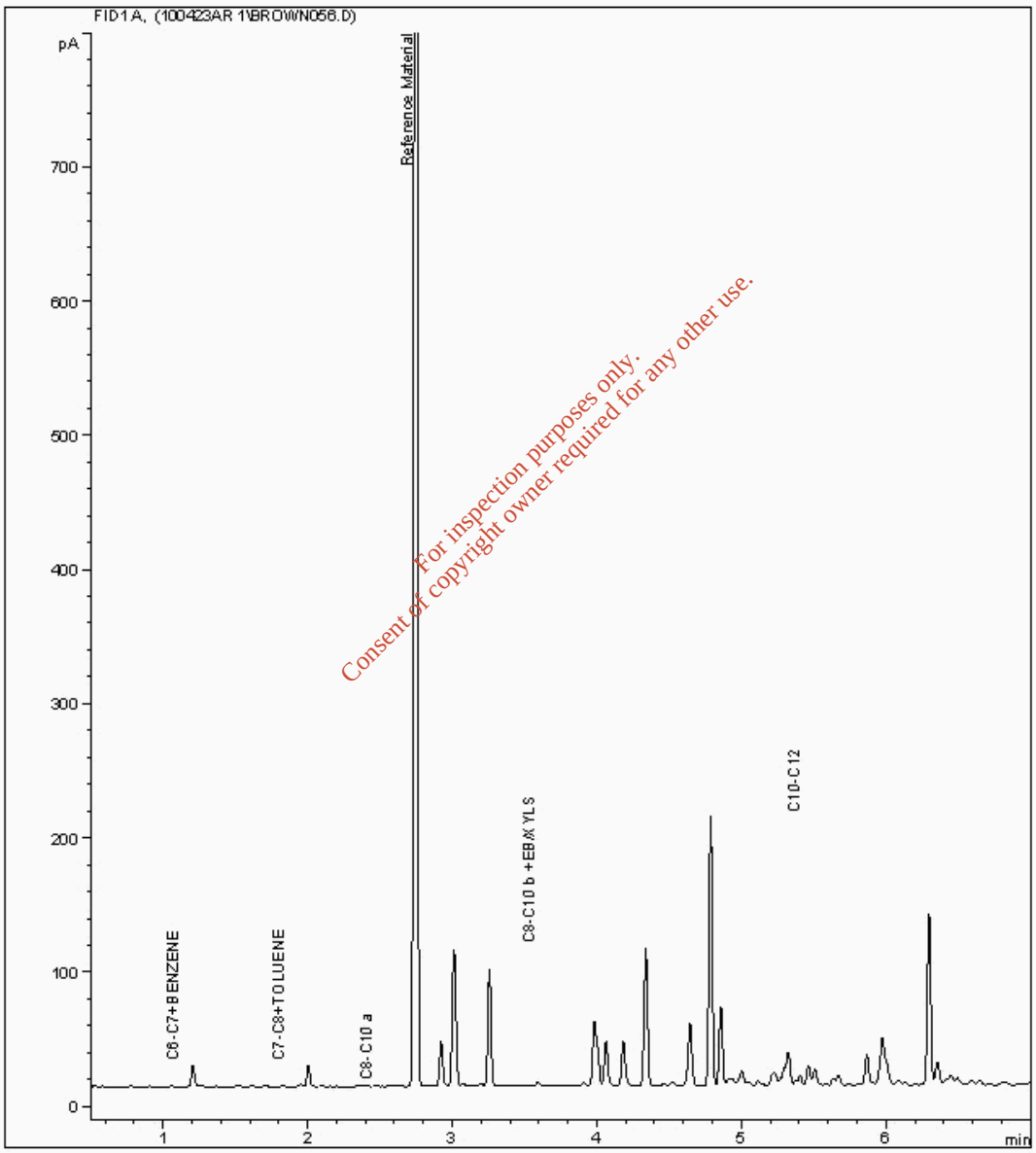
ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Ref.:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1436154
		Sample ID	C11
		Depth	1.50 - 2.50

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560264-1436154
Date Acquired : 24/04/10 02:25:37
Units : ppb
Dilution : 1



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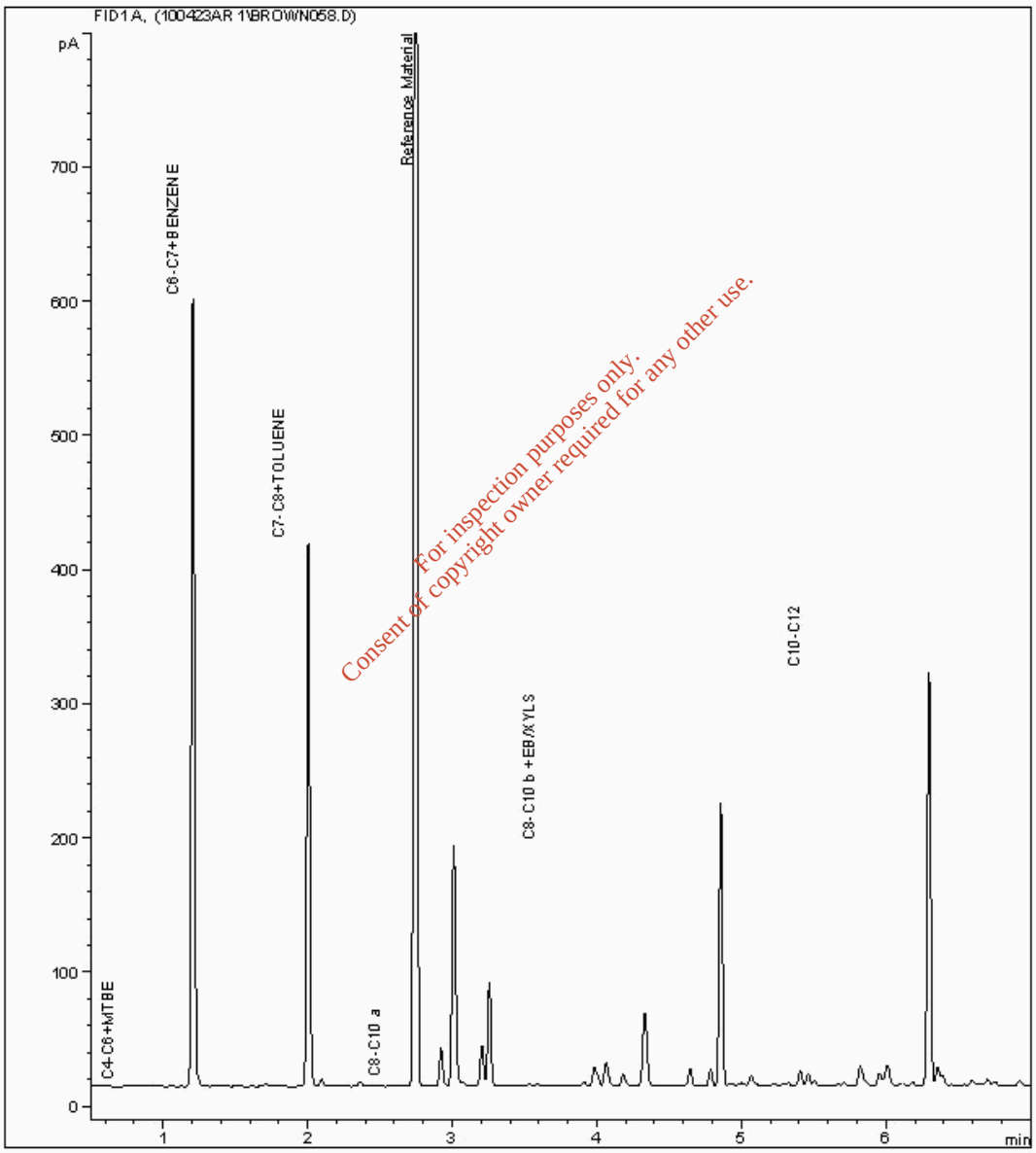
ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Ref.:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1436195
		Sample ID	G8
		Depth	1.00 - 2.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560279-1436195
Date Acquired : 24/04/10 02:53:45
Units : ppb
Dilution : 1



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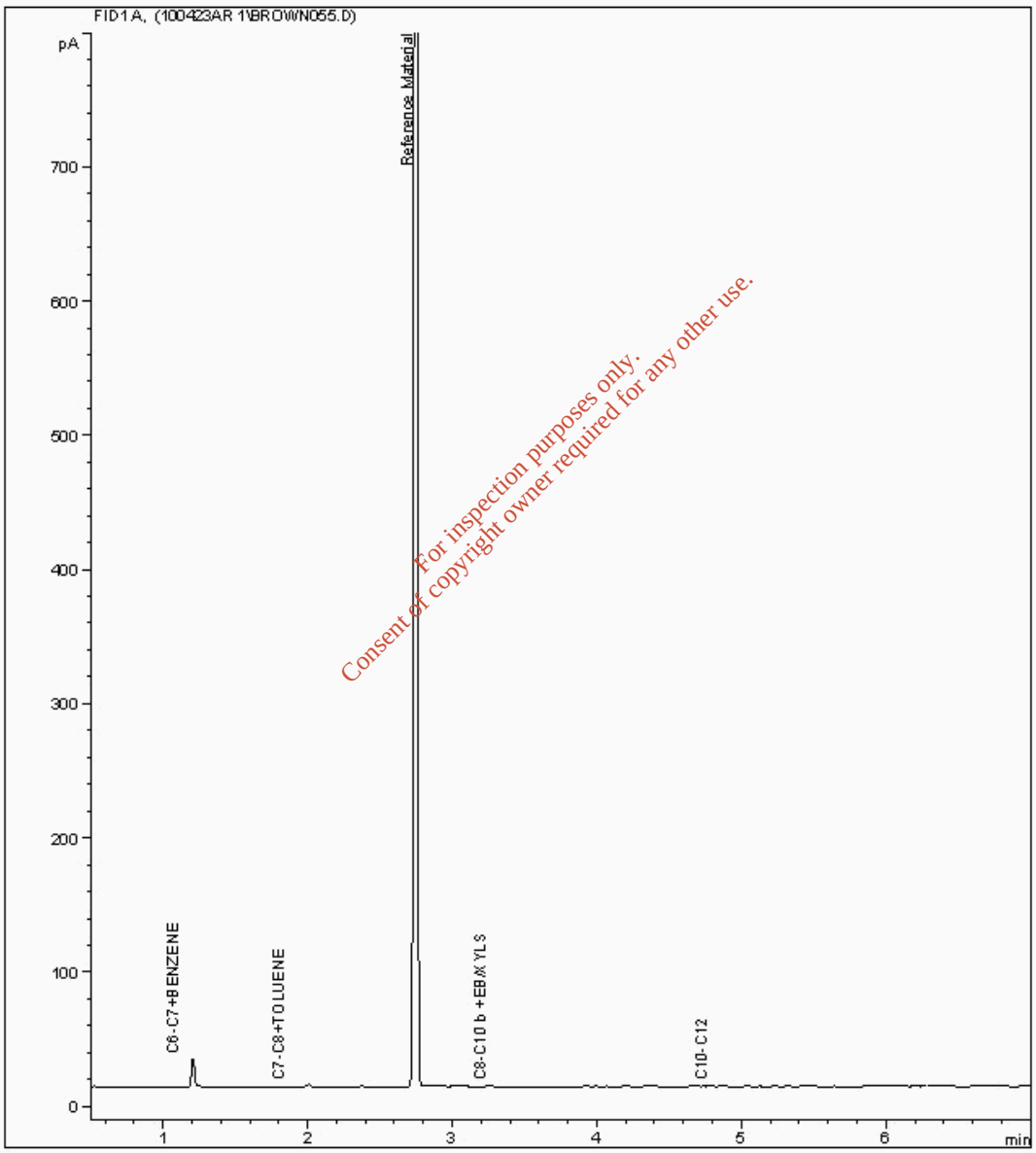
ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Ref.:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1436275
		Sample ID	F11
		Depth	1.00 - 4.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560294-1436275
Date Acquired : 24/04/10 02:11:36
Units : ppb
Dilution : 1



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Validated

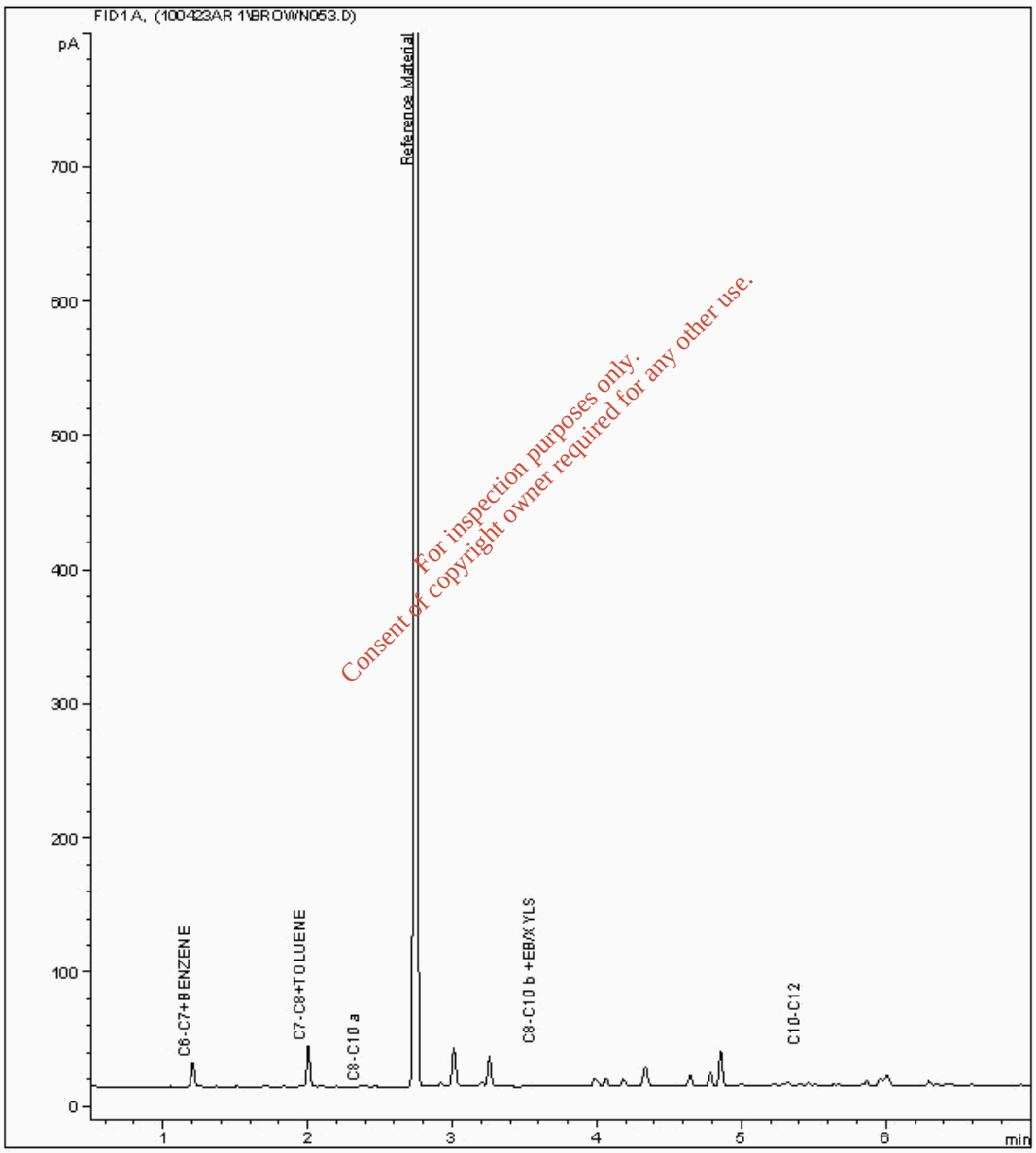
ALcontrol Laboratories Analytical Services

SDG:	100422-73	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-102	**Attention:**	Dave Watts
Client Ref.:	21.4.10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82119

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1436327
		Sample ID	A11
		Depth	1.00 - 2.50

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560309-1436327
Date Acquired : 24/04/10 01:43:28
Units : ppb
Dilution : 1



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APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH_4 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.
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 the major 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.

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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)	GS 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 INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC FID

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 (C6-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

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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).

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.

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

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ALcontrol Laboratories

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

Attention: Verity Sankey

CERTIFICATE OF ANALYSIS

Date:	30 April 2010		
Customer:	D_MOUCHEL_ELE-103		
Sample Delivery Group (SDG):	100422-76	**Report No.:**	82278
Your Reference:	22/04/10		
Location:	Limerick Gasworks		

We received 5 samples on Thursday April 22, 2010 and 5 of these samples were scheduled for analysis which was completed on Friday April 30, 2010. 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).

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Approved By:

Iain Swinton

Operations Director - Land UK & Ireland

UKAS TESTING
1291

GROUP

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Verity Sankey
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Sampled Date
1436660	H12 EW003	1.50 - 4.00	21/04/2010
1436467	J10 EW003	1.00 - 2.00	21/04/2010
1436508	K1 EW003	2.50 - 4.40	21/04/2010
1436325	K5 SW003	1.00 - 5.00	21/04/2010
1436697	M3 EW003	3.50 - 6.00	21/04/2010

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

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Verity Sankey
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

LIQUID

Results Legend

X Test

N No Determination Possible

		Lab Sample No(s)	1436325			1436467			1436508			1436660			1436697			Total
		Customer Sample Ref.	K5 SW003			J10 EW003			K1 EW003			H12 EW003			M3 EW003			
		Depth (m)	1.00 - 5.00			1.00 - 2.00			2.50 - 4.40			1.50 - 4.00			3.50 - 6.00			
		Container	1l green glass bottle	500ml Plastic	Vial	1l green glass bottle	500ml Plastic	Vial	1l green glass bottle	500ml Plastic	Vial	1l green glass bottle	500ml Plastic	Vial	1l green glass bottle	500ml Plastic	Vial	
Ammonium	All			X			X			X			X			X		05
Anions by ion Chromatography	All			X														01
Anions by Kone (w)	All						X			X			X			X		04
Cyanide Comp/Free/Total/Thiocyanate	All		X			X			X			X			X			05
Dissolved Metals by ICP-MS	All			X			X			X			X			X		05
EPH CWG (Aliphatic) Aqueous GC (W)	All		X			X			X			X			X			05
EPH CWG (Aromatic) Aqueous GC (W)	All		X			X			X			X			X			05
GRO BTEX MTBE GC (W)	All				X			X			X			X			X	05
Hexavalent Chromium (w)	All			N			X			X			X			X		14
Mercury Dissolved	All		X			X			X			X			X			05
PAH Spec MS - Aqueous (W)	All		X			X			X			X			X			05
pH Value	All			X			X			X			X			X		05
Phenols by HPLC (W)	All		X			X			X			X			X			05
Sulphide	All			X			X			X			X			X		05
TPH CWG (W)	All		X			X			X			X			X			05
VOC MS (W)	All				X												X	02

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Verity Sankey
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

Test Completion dates

SDG reference: 100422-76

Lab Sample No(s)	1436325	1436467	1436508	1436660	1436697
Customer Sample Ref.	K5	J10	K1	H12	M3
Depth	1.00 - 5.00	1.00 - 2.00	2.50 - 4.40	1.50 - 4.00	3.50 - 6.00
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Anions by ion Chromatography	26/04/2010				
Anions by Kone (w)		23/04/2010	23/04/2010	23/04/2010	23/04/2010
Cyanide	26/04/2010	23/04/2010	23/04/2010	23/04/2010	27/04/2010
Dissolved Metals by ICP-MS	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
EPH CWG (Aliphatic) Aqueous GC	30/04/2010	29/04/2010	29/04/2010	29/04/2010	29/04/2010
EPH CWG (Aromatic) Aqueous GC	30/04/2010	29/04/2010	29/04/2010	29/04/2010	29/04/2010
GRO BTEX MTBE GC (W)	27/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
Hexavalent Chromium (w)		23/04/2010	23/04/2010	23/04/2010	23/04/2010
Mercury Dissolved	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
PAH Spec MS - Aqueous (W)	30/04/2010	29/04/2010	29/04/2010	29/04/2010	29/04/2010
pH Value	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Phenols by HPLC (W)	27/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
Sulphide	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
TPH CWG (W)	30/04/2010	29/04/2010	29/04/2010	29/04/2010	29/04/2010
VOC MS (W)	28/04/2010				26/04/2010

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ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref. / Depth (m) / Sample Type / Date Sampled / Date Received / SDG Ref / Lab Sample No.(s)				
			H12 EW003 1.50 - 4.00 Water(GW/SW) 21/04/2010 22/04/2010 100422-76 1436660	J10 EW003 1.00 - 2.00 Water(GW/SW) 21/04/2010 22/04/2010 100422-76 1436467	K1 EW003 2.50 - 4.40 Water(GW/SW) 21/04/2010 22/04/2010 100422-76 1436508	K5 SW003 1.00 - 5.00 Water(GW/SW) 21/04/2010 22/04/2010 100422-76 1436325	M3 EW003 3.50 - 6.00 Water(GW/SW) 21/04/2010 22/04/2010 100422-76 1436697
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099				119 #	
	<0.2 mg/l as N	TM099	8.14 #	1.13 #	6.79 #		0.83 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099	10.5 #	1.45 #	8.73 #	153 #	1.07 #
Sulphide	<0.1 mg/l	TM101	<0.1 #	<0.1 #	<0.1 #	<0.1 #	0.117 #
Arsenic (diss.filt)	<0.12 µg/l	TM152	3.38 #	5.25 #	2.2 #	121 #	3.8 #
Cadmium (diss.filt)	<0.1 µg/l	TM152	<0.1 #	<0.1 #	<0.1 #	0.118 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152	12.8 #	14.8 #	10 #	26.1 #	4.63 #
Copper (diss.filt)	<0.85 µg/l	TM152	<0.85 #	<0.85 #	2.37 #	5.2 #	5.4 #
Lead (diss.filt)	<0.02 µg/l	TM152	0.091 #	0.042 #	0.321 #	0.836 #	0.146 #
Nickel (diss.filt)	<0.15 µg/l	TM152	4.78 #	6.21 #	8.64 #	33.9 #	5.4 #
Selenium (diss.filt)	<0.39 µg/l	TM152	2.26 #	1.99 #	1.92 #	35.7 #	2.54 #
Zinc (diss.filt)	<0.41 µg/l	TM152	1.31 #	1.18 #	2.49 #	20.3 #	1.37 #
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	0.144 #	<0.01 #
Sulphate	3 mg/l	TM184	188 #	58.4 #	733 #		530 #
Sulphate	<0.1 mg/l	TM226				698 #	
Cyanide, Total	<0.05 mg/l	TM227	<0.05 #	<0.05 #	0.411 #	9.53 #	0.946 #
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03	<0.03	<0.03		<0.03
pH	<1 pH Units	TM256	7.57 #	7.45 #	7.68 #	9.76 #	7.76 #
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 #	368 #	<0.002 #
Cresols	<0.006 mg/l	TM259	<0.006 #	<0.006 #	<0.006 #	645 #	<0.006 #
Xylenols	<0.008 mg/l	TM259	<0.008 #	<0.008 #	<0.008 #	262 #	<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 5 speciated	<0.025 mg/l	TM259	<0.025	<0.025	<0.025	1280	<0.025

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ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	Depth (m)	Sample Type	Date Sampled	Date Received	SDG Ref	Lab Sample No.(s)
			H12 EW003	1.50 - 4.00	Water(GW/SW)	21/04/2010	22/04/2010	100422-76	1436660
			J10 EW003	1.00 - 2.00	Water(GW/SW)	21/04/2010	22/04/2010	100422-76	1436467
			K1 EW003	2.50 - 4.40	Water(GW/SW)	21/04/2010	22/04/2010	100422-76	1436508
			K5 SW003	1.00 - 5.00	Water(GW/SW)	21/04/2010	22/04/2010	100422-76	1436325
			M3 EW003	3.50 - 6.00	Water(GW/SW)	21/04/2010	22/04/2010	100422-76	1436697
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	186						
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	142						
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	685						
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	1010						
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174	3220						
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	328						
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	186						
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	276						
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	790						
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174	3320						
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						
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174	<10						
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	2360						
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	1770						
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	2000						
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	6130						
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174	72900						
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						
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174	<10						

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ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	H12 EW003	J10 EW003	K1 EW003	K5 SW003	M3 EW003
			Depth (m)	1.50 - 4.00	1.00 - 2.00	2.50 - 4.40	1.00 - 5.00	3.50 - 6.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-76	100422-76	100422-76	100422-76	100422-76
			Lab Sample No.(s)	1436660	1436467	1436508	1436325	1436697
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		117	118	<10	40600	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		353	413	<10	12300	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		1740	2000	<10	13900	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		2210	2530	<10	66800	<10

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ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

GRO BTEX MTBE GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	H12 EW003	J10 EW003	K1 EW003	K5 SW003	M3 EW003
			Depth (m)	1.50 - 4.00	1.00 - 2.00	2.50 - 4.40	1.00 - 5.00	3.50 - 6.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-76	100422-76	100422-76	100422-76	100422-76
			Lab Sample No.(s)	1436660	1436467	1436508	1436325	1436697
Benzene	<7 µg/l	TM245		<7 #	13 #	<7 #	16700 #	<7 #
Toluene	<4 µg/l	TM245		<4 #	<4 #	<4 #	5930 #	<4 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	359 #	<5 #
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	<8 #	2220 #	<8 #
o-Xylene	<3 µg/l	TM245		<3 #	11 #	<3 #	922 #	<3 #
m,p,o-Xylene	<10 µg/l	TM245		<10 #	11 #	<10 #	3140 #	<10 #
BTEX, Total	<10 µg/l	TM245		<10 #	24 #	<10 #	26100 #	<10 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<15 #	<3 #
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	489	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	<10	4660	<10
Aliphatics >C8-C10	<10 µg/l	TM245		24.5	51.1	<10	1860	27.6
Aliphatics >C10-C12	<10 µg/l	TM245		45.7	124	<10	5990	60.8
Total Aliphatics >C5-C12	<10 µg/l	TM245		70.2	176	<10	13000	88.4
Aromatics >C6-C7	<10 µg/l	TM245		<10	13	<10	16700	<10
Aromatics >C7-C8	<10 µg/l	TM245		<10	<10	<10	5930	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		36.7	87.7	<10	6300	41.4
Aromatics >EC10-EC12	<10 µg/l	TM245		68.6	287	<10	8980	91.2
Total Aromatics >C6-C12	<10 µg/l	TM245		105	287	<10	37900	133

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ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	H12 EW003	J10 EW003	K1 EW003	K5 SW003	M3 EW003
			Depth (m)	1.50 - 4.00	1.00 - 2.00	2.50 - 4.40	1.00 - 5.00	3.50 - 6.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-76	100422-76	100422-76	100422-76	100422-76
			Lab Sample No.(s)	1436660	1436467	1436508	1436325	1436697
Naphthalene (aq)	<0.1 µg/l	TM178		10.3	6.43	0.108	5960	0.228
Acenaphthene (aq)	<0.015 µg/l	TM178		2.32	2.53	0.0366	129	<0.015
Acenaphthylene (aq)	<0.011 µg/l	TM178		9.78	13.3	0.145	543	0.105
Fluoranthene (aq)	<0.014 µg/l	TM178		53.7	88.9	1.17	471	1.4
Anthracene (aq)	<0.015 µg/l	TM178		7.78	15.7	0.123	245	0.0962
Phenanthrene (aq)	<0.022 µg/l	TM178		18.5	53.8	0.318	794	0.18
Fluorene (aq)	<0.014 µg/l	TM178		5.7	11.1	0.0477	374	0.0315
Chrysene (aq)	<0.013 µg/l	TM178		13.1	23.7	0.59	107	0.892
Pyrene (aq)	<0.015 µg/l	TM178		41.1	61.2	1.21	309	1.25
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		24.5	54.2	1.11	113	1.51
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		32.4	51.9	2.06	105	2.98
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		11.6	18.5	0.681	48.2	0.949
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		28.2	46.2	1.54	79.2	2.23
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		5.12	7.94	0.312	9.6	0.455
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		17.3	17.9	1.31	46.4	1.95
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		15.3	17.9	1.06	34.9	1.56
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178		297	491	11.8	9370	14.9

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ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	H12 EW003	J10 EW003	K1 EW003	K5 SW003	M3 EW003
			Depth (m)	1.50 - 4.00	1.00 - 2.00	2.50 - 4.40	1.00 - 5.00	3.50 - 6.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-76	100422-76	100422-76	100422-76	100422-76
			Lab Sample No.(s)	1436660	1436467	1436508	1436325	1436697
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174		1080	966	<10	19100	88.4
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174		2320	2820	<10	105000	133
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		3400	3780	<10	124000	221

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ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	K5 SW003	M3 EW003
			Depth (m)	1.00 - 5.00	3.50 - 6.00
			Sample Type	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010
			SDG Ref	100422-76	100422-76
			Lab Sample No.(s)	1436325	1436697
Dibromofluoromethane**	%	TM208		36.6	115
Toluene-d8**	%	TM208		89	98.5
4-Bromofluorobenzene**	%	TM208		65.1	101
Dichlorodifluoromethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #
Chloromethane	<1.7 µg/l	TM208		<1.7 #	<1.7 #
Vinyl chloride	<1.2 µg/l	TM208		<1.2 #	<1.2 #
Bromomethane	<2 µg/l	TM208		<2 #	<2 #
Chloroethane	<2.5 µg/l	TM208		<2.5 #	<2.5 #
Trichlorofluoromethane	<1.3 µg/l	TM208		1.82 #	<1.3 #
1,1-Dichloroethene	<1.2 µg/l	TM208		<1.2 #	<1.2 #
Carbon disulphide	<1.3 µg/l	TM208		<1.3 #	<1.3 #
Dichloromethane	<3.7 µg/l	TM208		<3.7 #	<3.7 #
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208		<1.6 #	<1.6 #
trans-1,2-Dichloroethene	<1.9 µg/l	TM208		<1.9 #	<1.9 #
1,1-Dichloroethane	<1.2 µg/l	TM208		<1.2 #	<1.2 #
cis-1,2-Dichloroethene	<2.3 µg/l	TM208		<2.3 #	<2.3 #
2,2-Dichloropropane	<3.8 µg/l	TM208		<3.8 #	<3.8 #
Bromochloromethane	<1.9 µg/l	TM208		<1.9 #	<1.9 #
Chloroform	<1.8 µg/l	TM208		2.2 #	<1.8 #
1,1,1-Trichloroethane	<1.3 µg/l	TM208		7.07 #	<1.3 #
1,1-Dichloropropene	<1.3 µg/l	TM208		<1.3 #	<1.3 #
Carbontetrachloride	<1.4 µg/l	TM208		<1.4 #	<1.4 #
1,2-Dichloroethane	<3.3 µg/l	TM208		<3.3	<3.3
Benzene	<1.3 µg/l	TM208		16900 #	3.94 #
Trichloroethene	<2.5 µg/l	TM208		11.3 #	<2.5 #
1,2-Dichloropropane	<3 µg/l	TM208		<3 #	<3 #
Dibromomethane	<2.7 µg/l	TM208		<2.7 #	<2.7 #
Bromodichloromethane	<0.9 µg/l	TM208		<0.9 #	<0.9 #
cis-1,3-Dichloropropene	<1.9 µg/l	TM208		<1.9 #	<1.9 #
Toluene	<1.4 µg/l	TM208		5440 #	<1.4 #
trans-1,3-Dichloropropene	<3.5 µg/l	TM208		<3.5 #	<3.5 #
1,1,2-Trichloroethane	<2.2 µg/l	TM208		<2.2 #	<2.2 #
1,3-Dichloropropane	<2.2 µg/l	TM208		<2.2 #	<2.2 #
Tetrachloroethene	<1.5 µg/l	TM208		<1.5 #	<1.5 #
Dibromochloromethane	<1.7 µg/l	TM208		<1.7 #	<1.7 #
1,2-Dibromoethane	<2.3 µg/l	TM208		<2.3 #	<2.3 #
Chlorobenzene	<3.5 µg/l	TM208		<3.5 #	<3.5 #
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #
Ethylbenzene	<2.5 µg/l	TM208		282 #	<2.5 #

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ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	K5 SW003	M3 EW003
Depth (m)	1.00 - 5.00	3.50 - 6.00
Sample Type	Water(GW/SW)	Water(GW/SW)
Date Sampled	21/04/2010	21/04/2010
Date Received	22/04/2010	22/04/2010
SDG Ref	100422-76	100422-76
Lab Sample No.(s)	1436325	1436697

Component	LOD/Units	Method		
m,p-Xylene	<2.5 µg/l	TM208	1620 #	<2.5 #
o-Xylene	<1.7 µg/l	TM208	722 #	<1.7 #
Styrene	<1.2 µg/l	TM208	337 #	<1.2 #
Bromoform	<3 µg/l	TM208	<3 #	<3 #
Isopropylbenzene	<1.4 µg/l	TM208	11.6 #	<1.4 #
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2	<5.2
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8 #	<7.8 #
Bromobenzene	<2 µg/l	TM208	<2 #	<2 #
Propylbenzene	<2.6 µg/l	TM208	14.5 #	<2.6 #
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	66.5 #	<1.8 #
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #
tert-Butylbenzene	<2 µg/l	TM208	<2 #	<2 #
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	156 #	<1.7 #
sec-Butylbenzene	<1.7 µg/l	TM208	<1.7 #	<1.7 #
4-iso-Propyltoluene	<2.6 µg/l	TM208	<2.6 #	<2.6 #
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2 #	<2.2 #
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7 #	<2.7 #
n-Butylbenzene	<2 µg/l	TM208	<2 #	<2 #
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7	<3.7
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8	<9.8
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3 #	<2.3 #
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5 #	<2.5 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1 #	<1 #
Naphthalene	<3.5 µg/l	TM208	5950 #	<3.5 #
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1 #	<3.1 #
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10	<10

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Table of Results - Appendix

SDG Number : 100422-76 **Client :** Mouchel **Client Ref :** 22/04/10

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]
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	
TM226	In-House Method	Determination of Anions in Waters using Ion Chromatography	
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			

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

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ALcontrol Laboratories Analytical Services

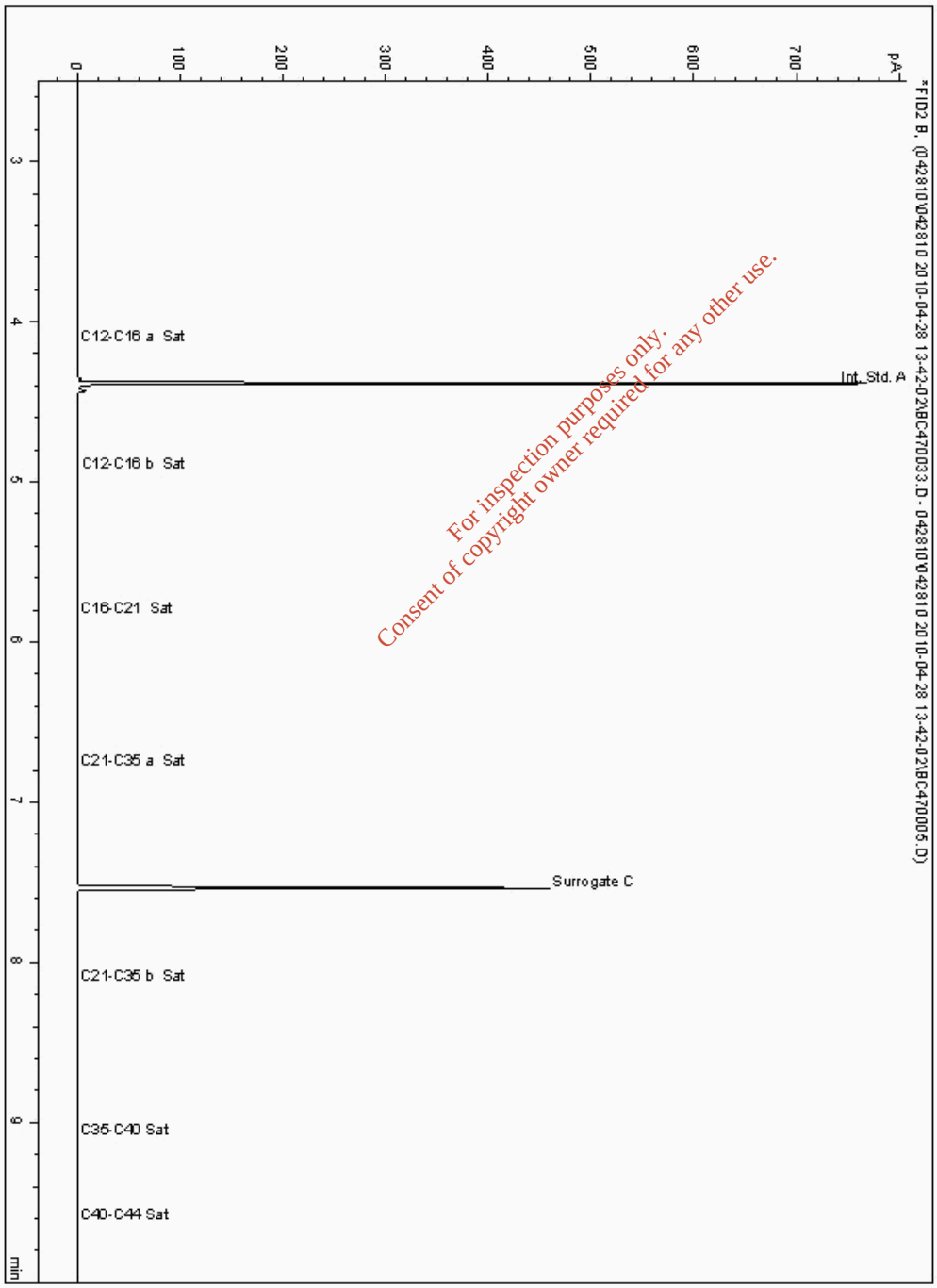
SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

Chromatogram

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1438427
		Sample ID	K1
		Depth	2.50 - 4.40

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

Sample Identity: 1560702-1438427
Date Acquired : 28/04/10 23:46:28
Units :
Dilution :
CF : 1
Multiplier : 0.017



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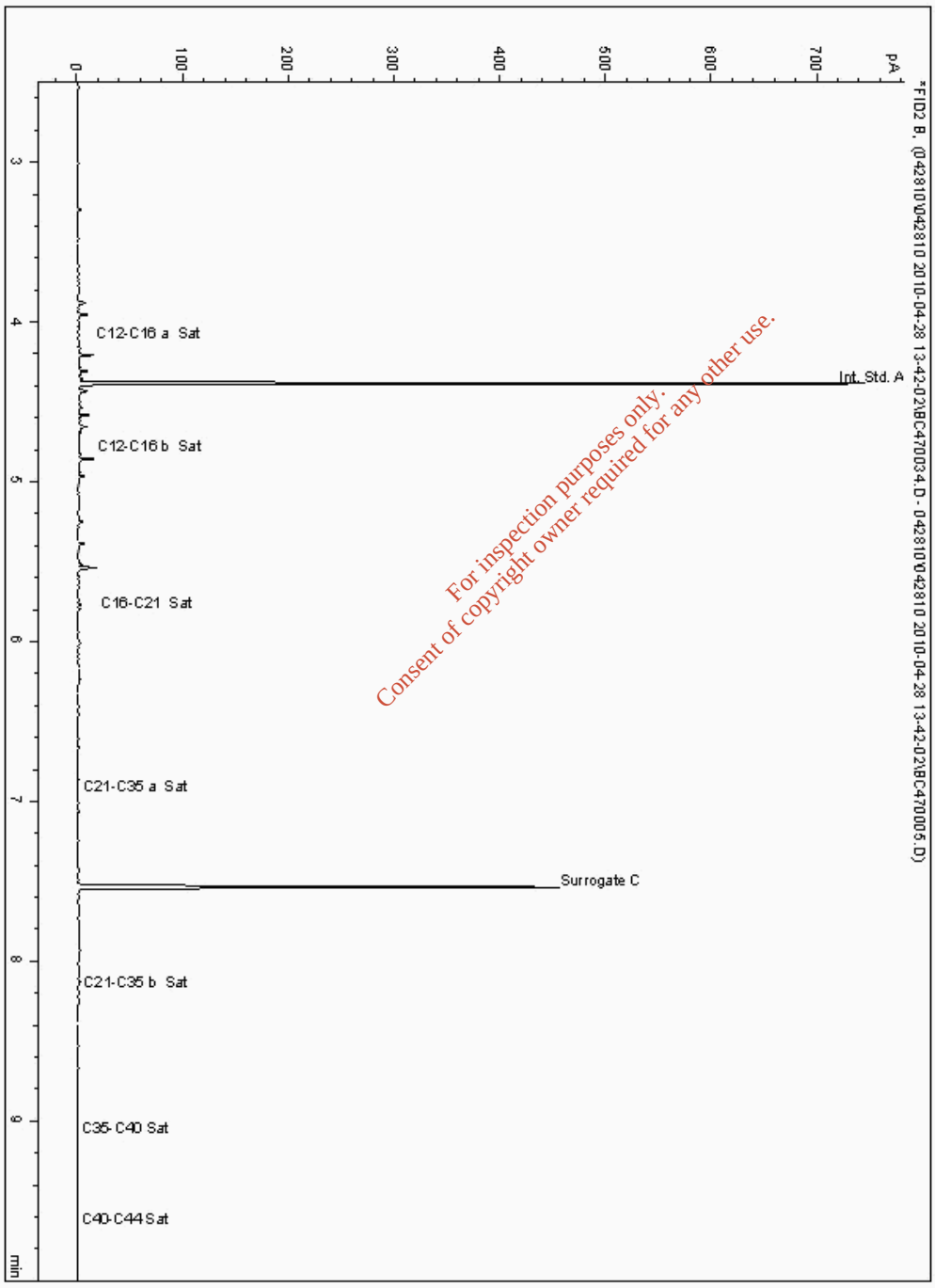
ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1438451
		Sample ID	J10
		Depth	1.00 - 2.00

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

Sample Identity: 1560681-1438451
Date Acquired : 29/04/10 00:05:16
Units :
Dilution :
CF : 1
Multiplier : 0.017



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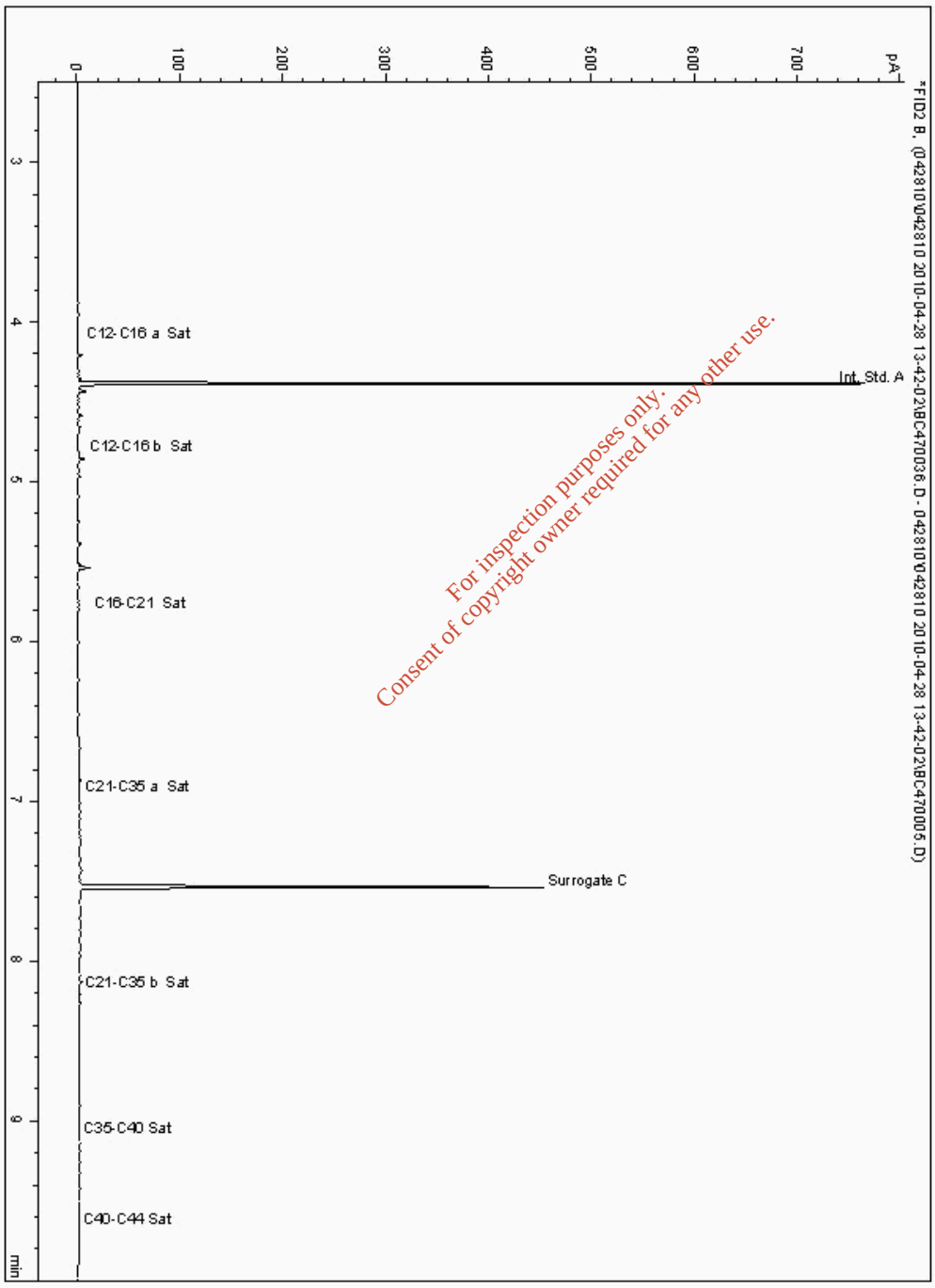
ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1438479
		Sample ID	H12
		Depth	1.50 - 4.00

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

Sample Identity: 1560717-1438479
Date Acquired : 29/04/10 00:38:16
Units :
Dilution :
CF : 1
Multiplier : 0.017



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Validated

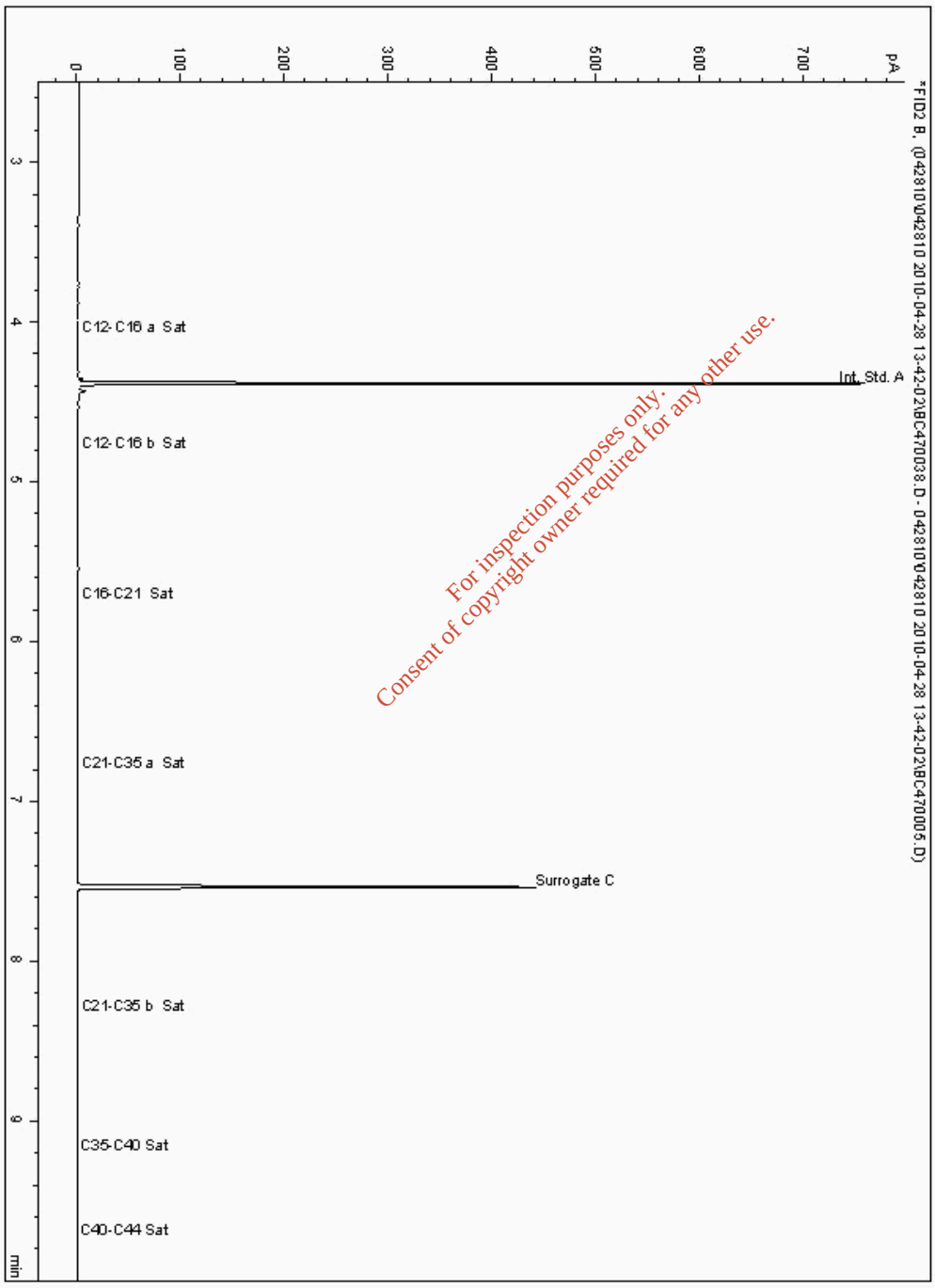
ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1438505
		Sample ID	M3
		Depth	3.50 - 6.00

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

Sample Identity: 1560732-1438505
Date Acquired : 29/04/10 01:11:04
Units :
Dilution :
CF : 1
Multiplier : 0.017



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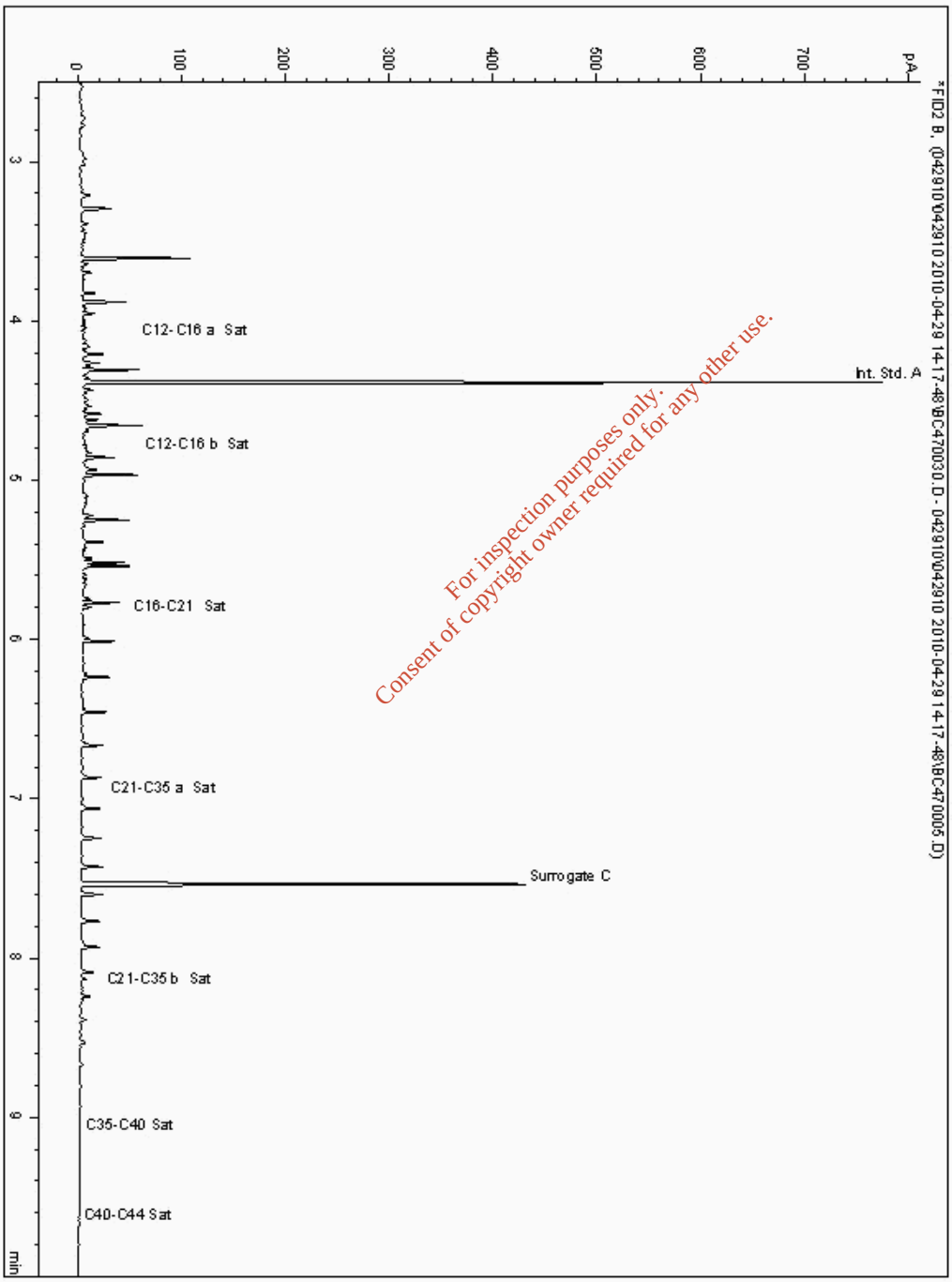
ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1438715
		Sample ID	K5
		Depth	1.00 - 5.00

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

Sample Identity: 1560661-1438715
Date Acquired : 29/04/10 23:22:03
Units :
Dilution :
CF : 1
Multiplier : 0.033



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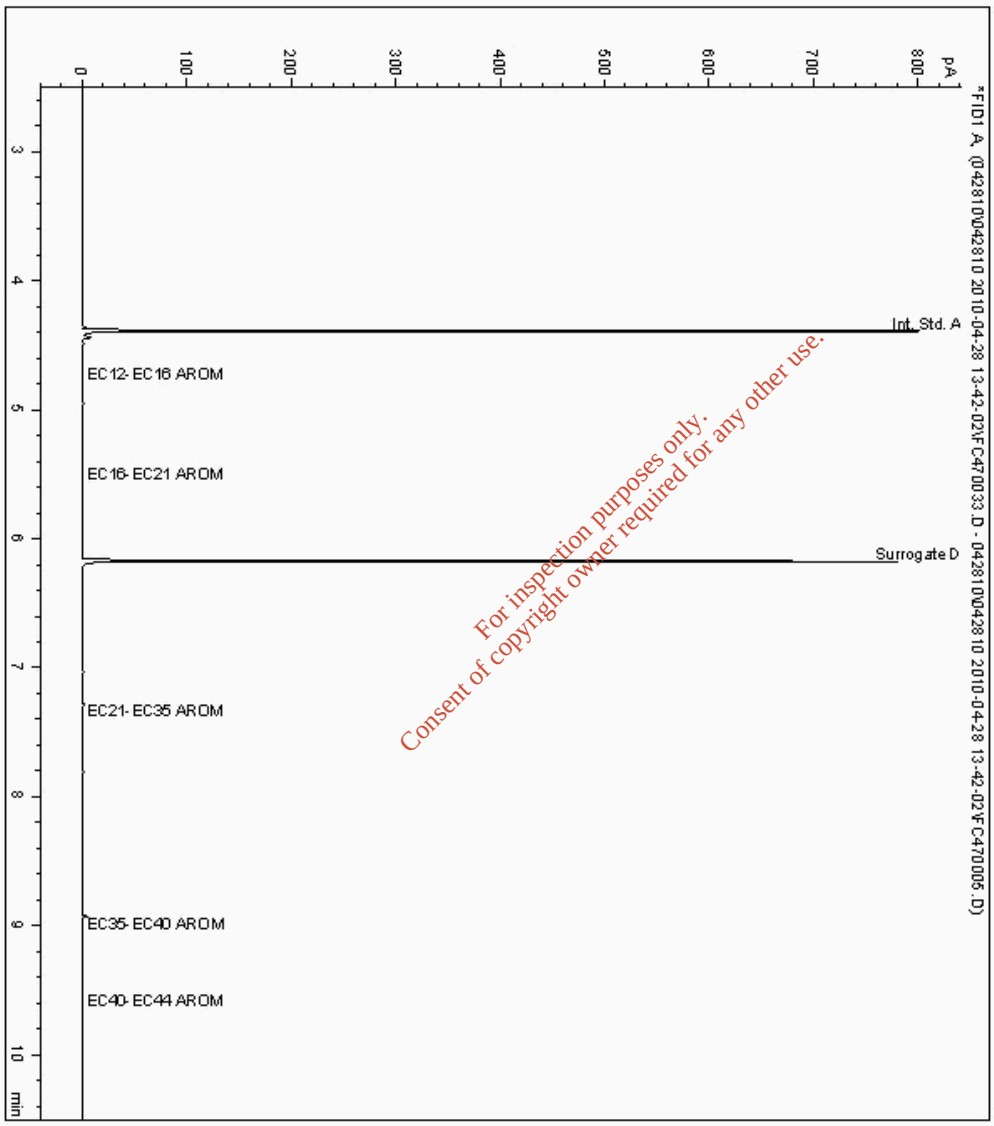
ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1438427
		Sample ID	K1
		Depth	2.50 - 4.40

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

Sample Identity: 1560703-1438427
Date Acquired : 28/04/10 23:46:28
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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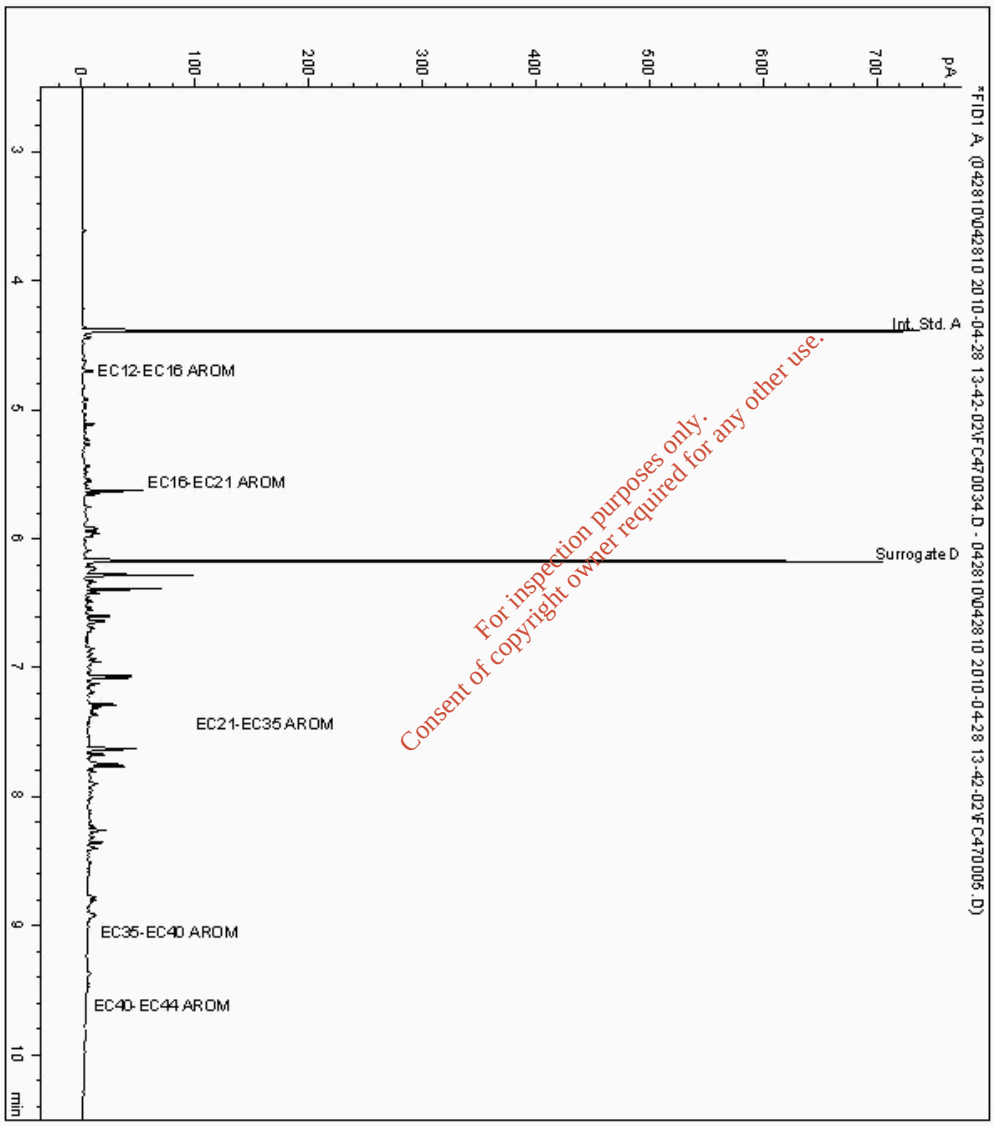
ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1438451
		Sample ID	J10
		Depth	1.00 - 2.00

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

Sample Identity: 1560682-1438451
Date Acquired : 29/04/10 00:05:16
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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Validated

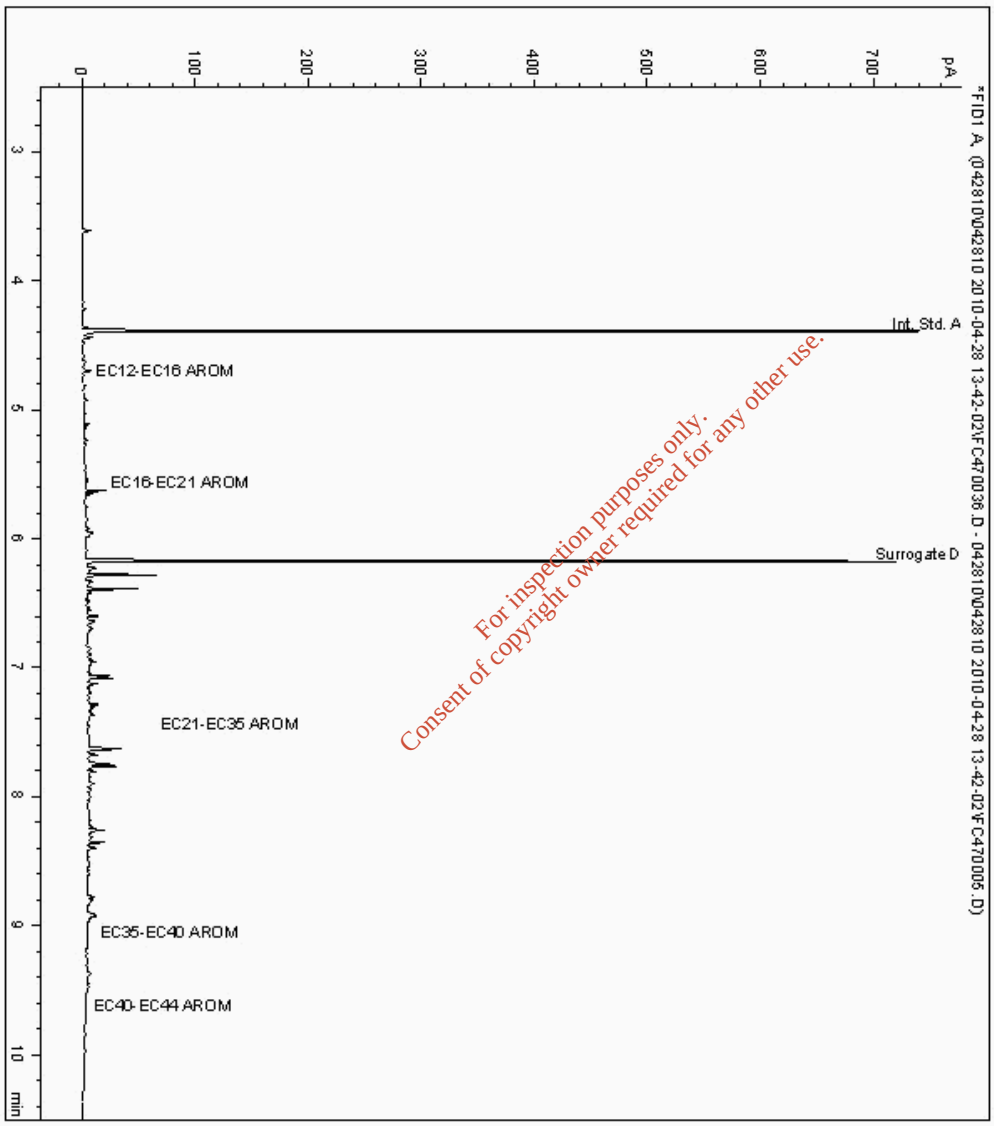
ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1438479
		Sample ID	H12
		Depth	1.50 - 4.00

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

Sample Identity: 1560718-1438479
Date Acquired : 29/04/10 00:38:16
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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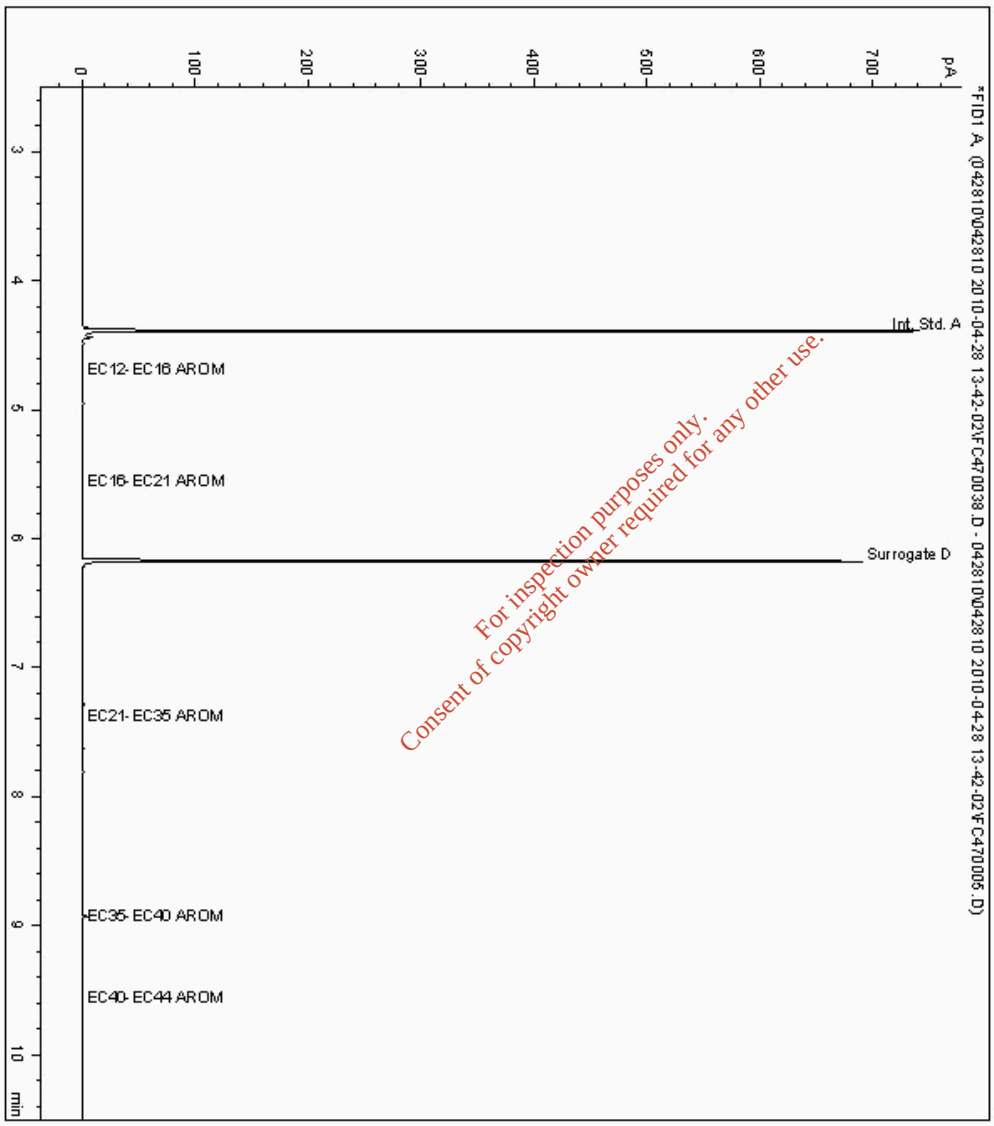
SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1438505
		Sample ID	M3
		Depth	3.50 - 6.00

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

Sample Identity: 1560733-1438505
Date Acquired : 29/04/10 01:11:04
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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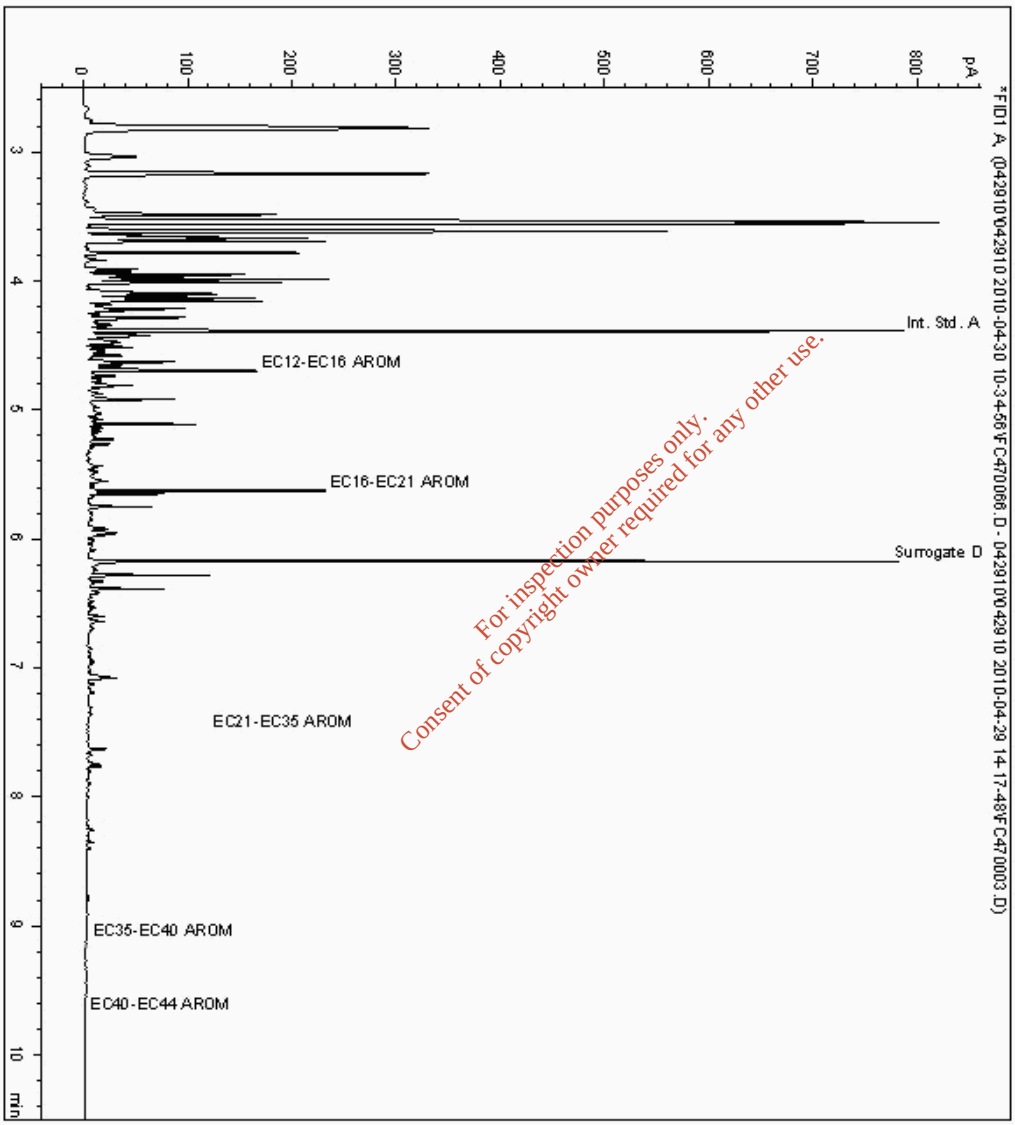
ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1438715
		Sample ID	K5
		Depth	1.00 - 5.00

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

Sample Identity: 1560662-1438715
Date Acquired : 30/04/10 11:37:48
Units : ppb
Dilution :
CF : 1
Multiplier : 0.167



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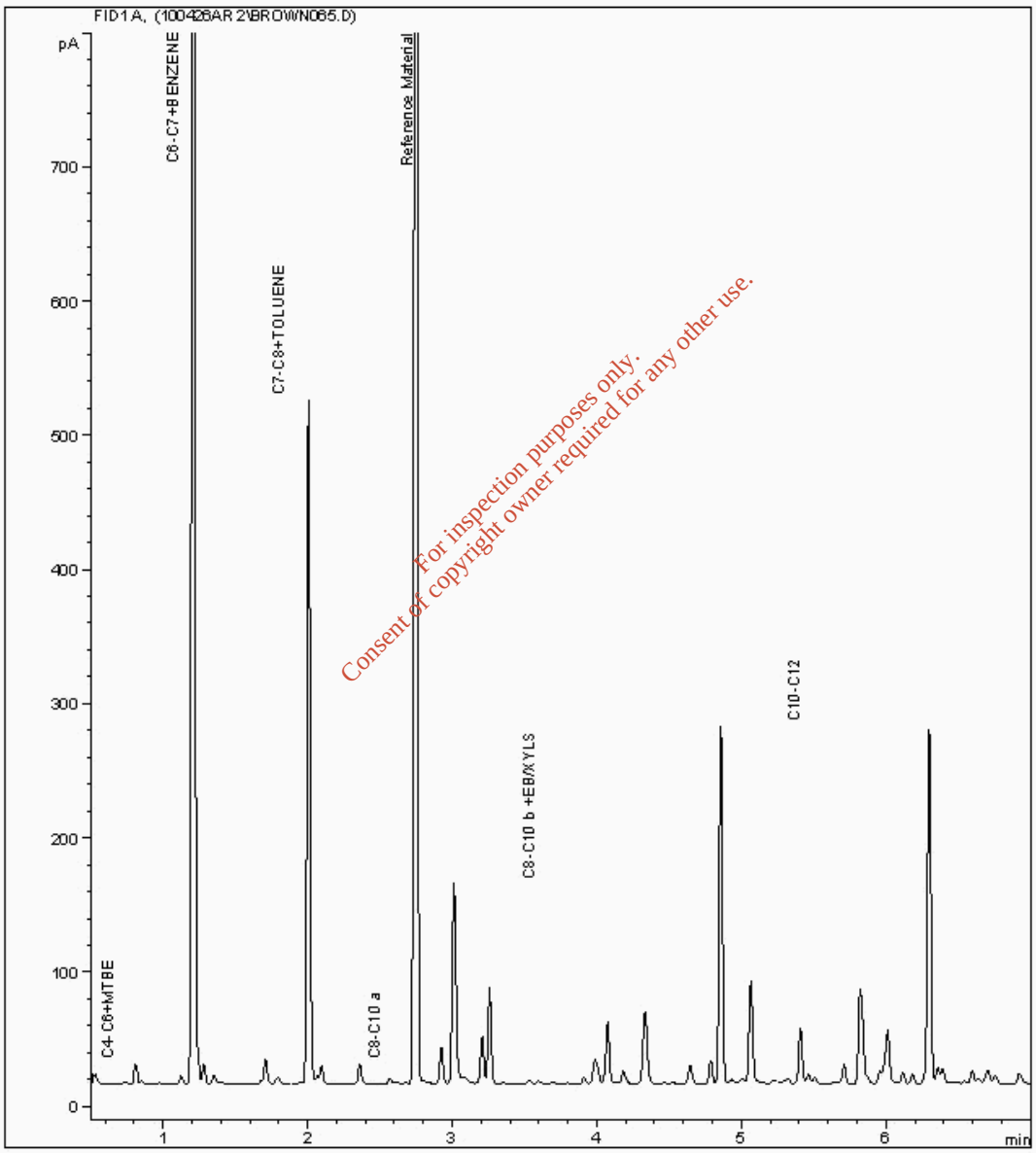
SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1436322
		Sample ID	K5
		Depth	1.00 - 5.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560663-1436322
Date Acquired : 27/04/10 09:44:03
Units : ppb
Dilution : 5



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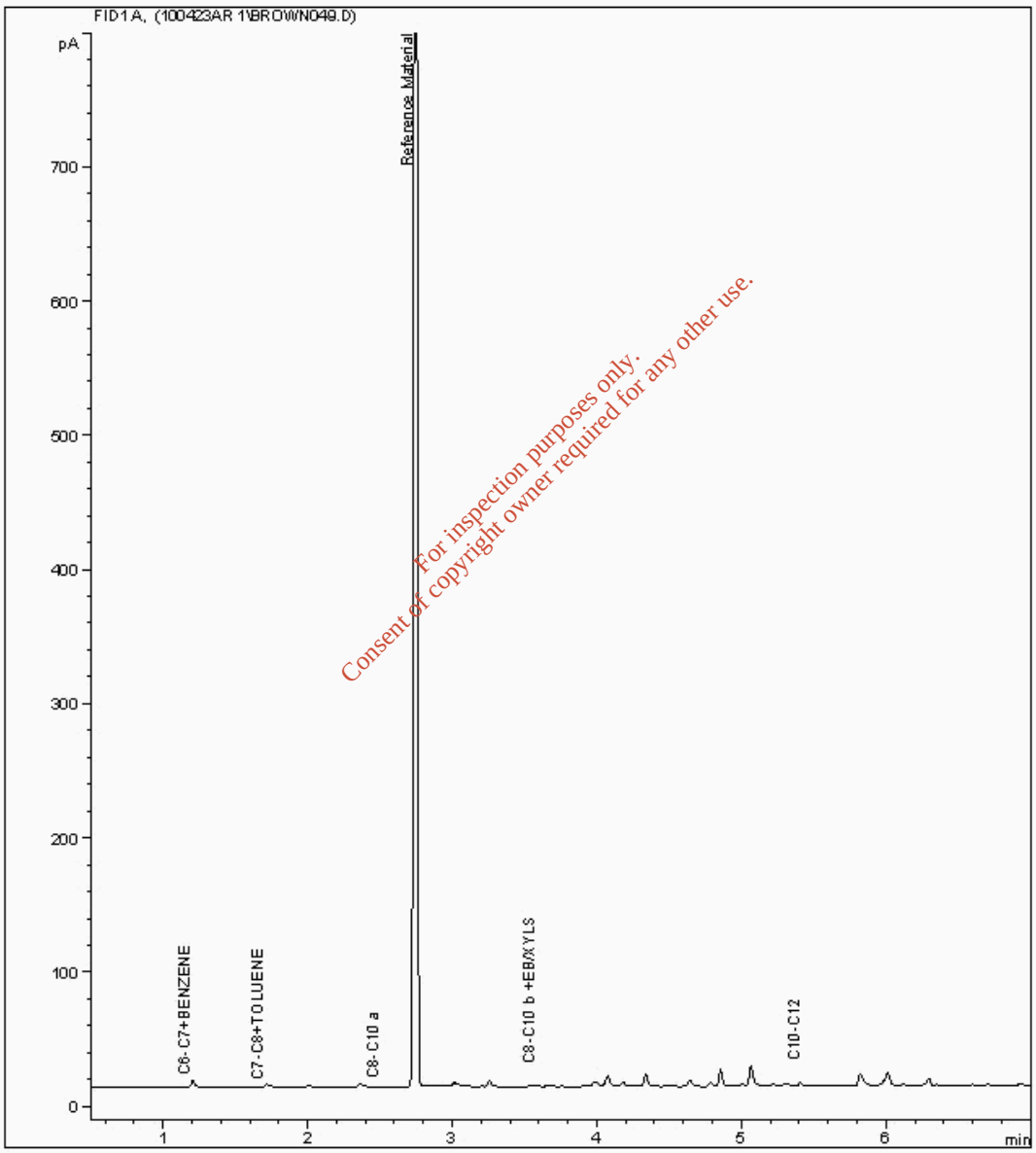
SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1436465
		Sample ID	J10
		Depth	1.00 - 2.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560683-1436465
Date Acquired : 24/04/10 00:47:11
Units : ppb
Dilution : 1



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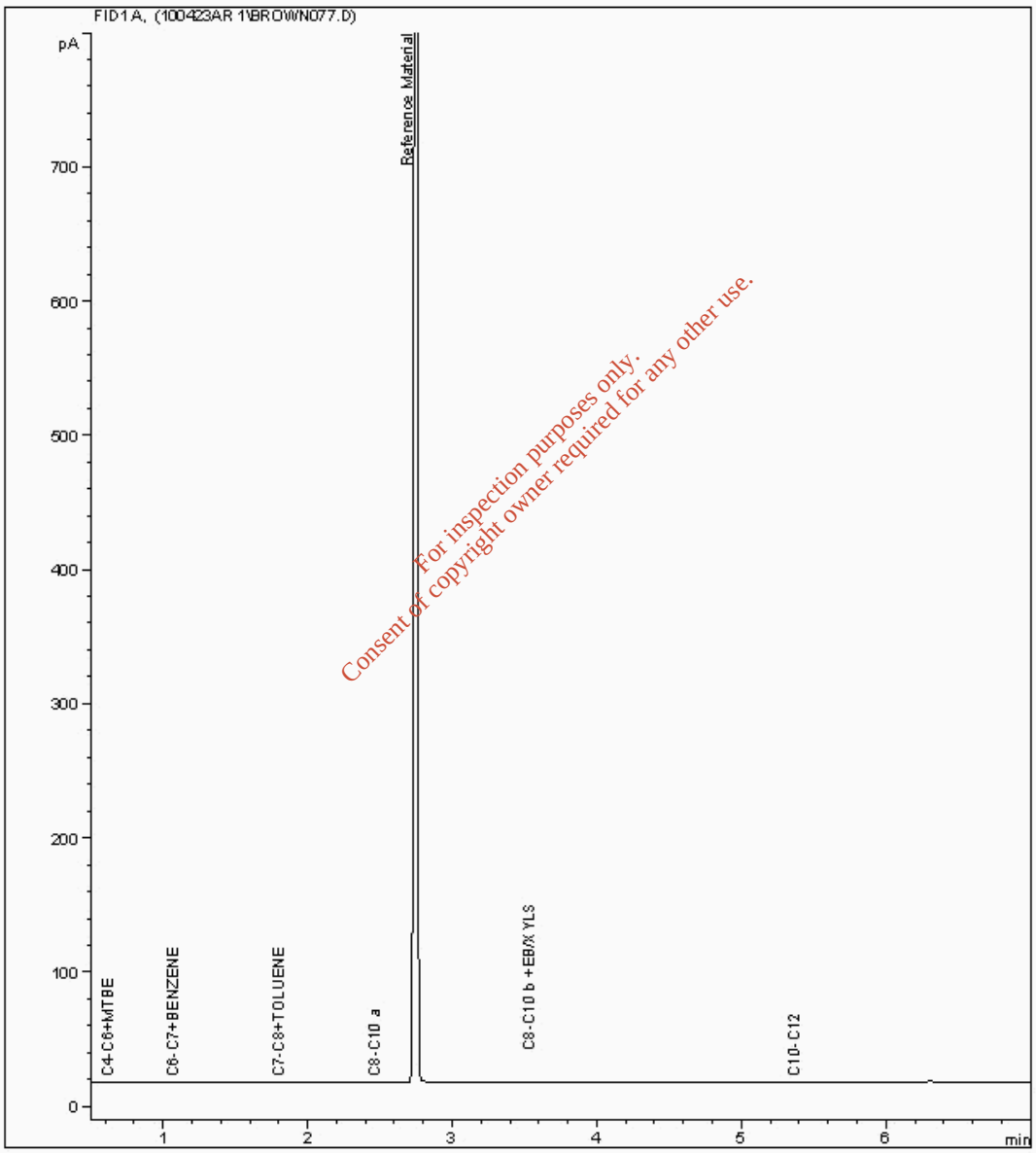
SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1436505
		Sample ID	K1
		Depth	2.50 - 4.40

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560704-1436505
Date Acquired : 24/04/10 07:20:50
Units : ppb
Dilution : 1



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Validated

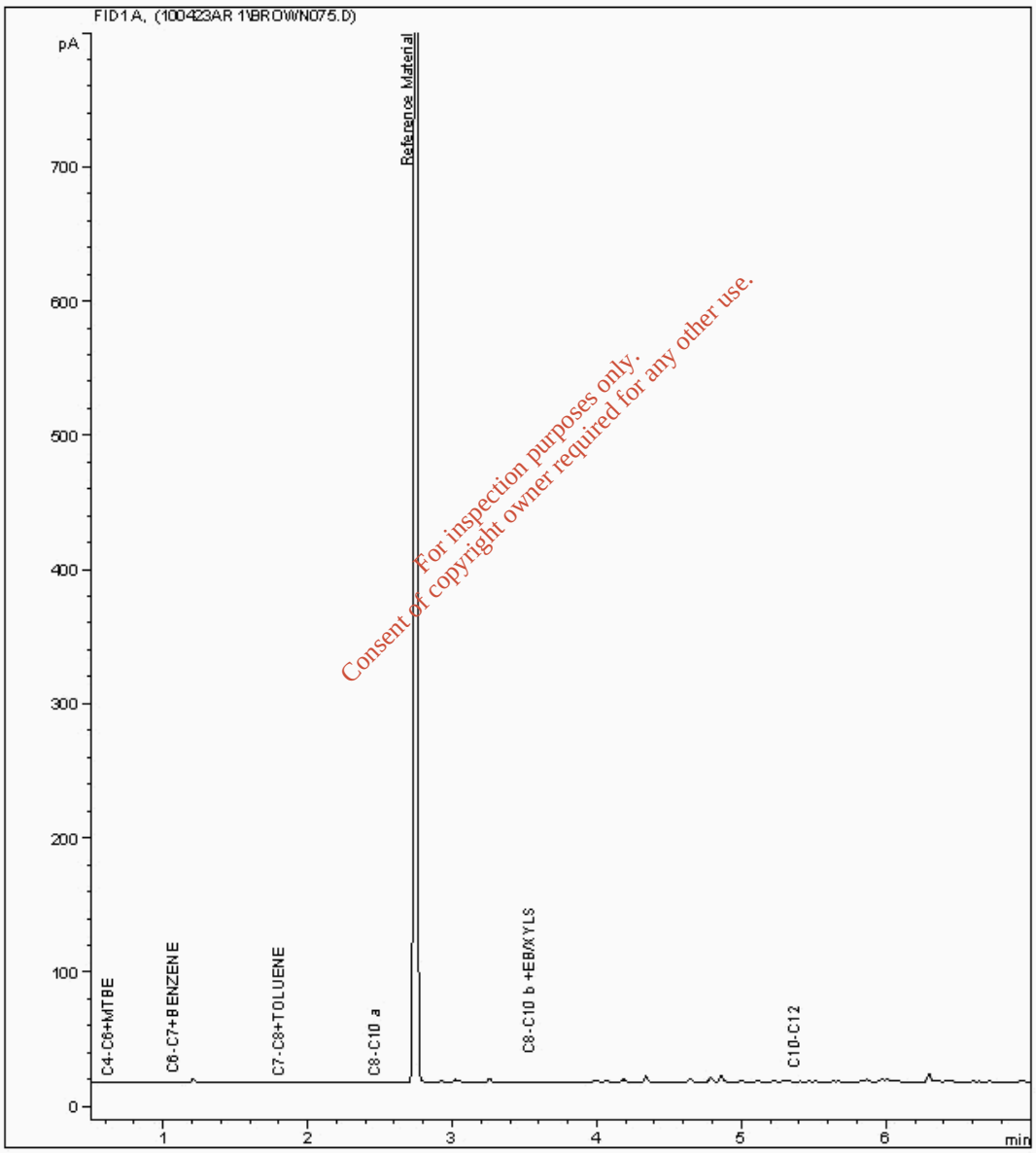
ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1436658
		Sample ID	H12
		Depth	1.50 - 4.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560719-1436658
Date Acquired : 24/04/10 06:52:43
Units : ppb
Dilution : 1



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Validated

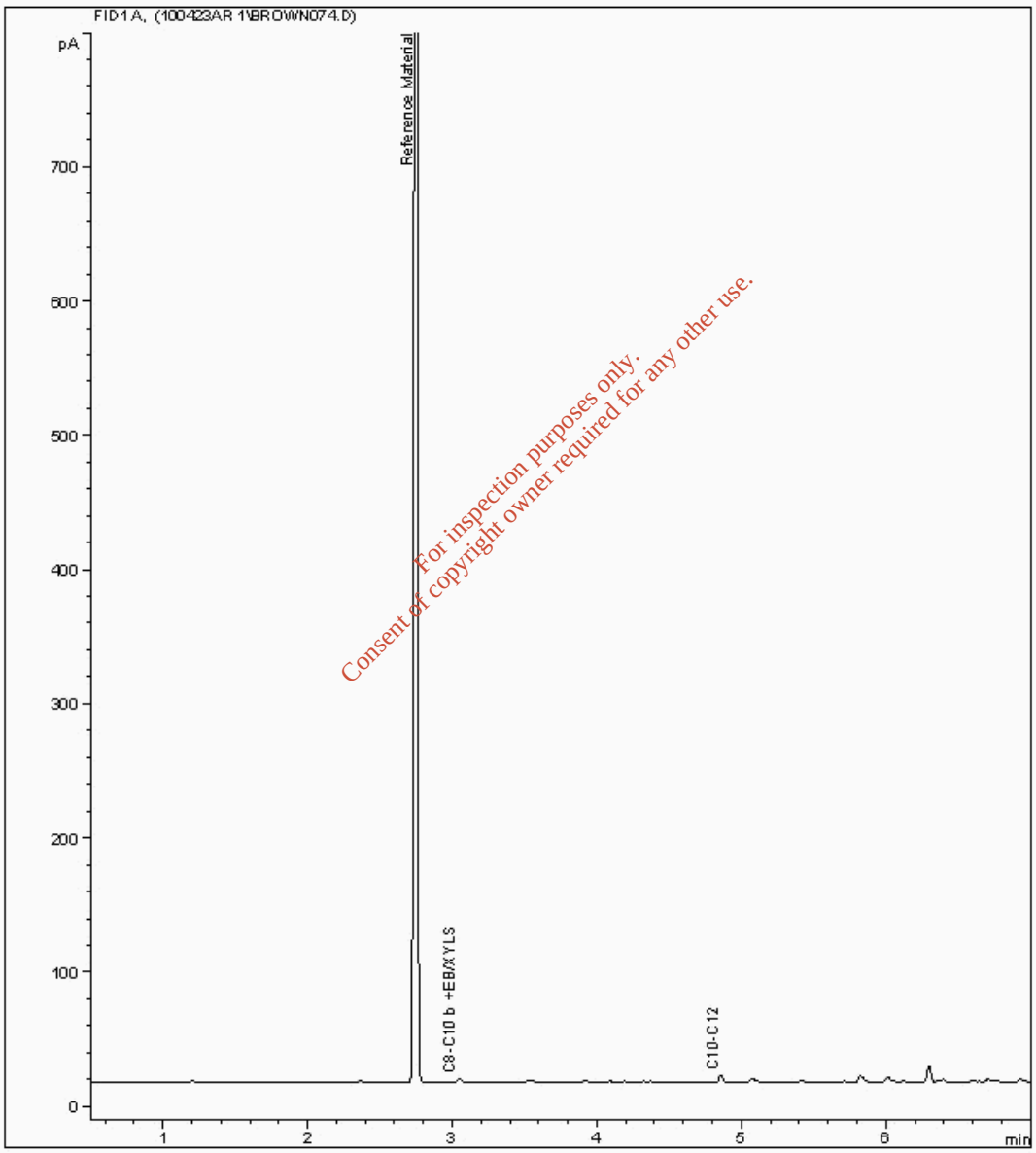
ALcontrol Laboratories Analytical Services

SDG:	100422-76	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-103	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82278

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1436696
		Sample ID	M3
		Depth	3.50 - 6.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1560734-1436696
Date Acquired : 24/04/10 06:38:39
Units : ppb
Dilution : 1



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Notification of NDPs (No determination possible)

SDG Number	100422-76	**Location**	Limerick Gasworks
Client	D_MOUCHEL_ELE	**Order No.**	
Client Reference	22/04/10	**Report No.**	45708-0
Attention	Dave Watts	**Date Received**	22/04/2010 15:21:20

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
1436325	K5 EW003	1.00 - 5.00	Hexavalent Chromium (w)	Sample too coloured
1436325	K5 EW003	1.00 - 5.00	Hexavalent Chromium (w)	Sample too coloured
1436325	K5 EW003	1.00 - 5.00	Hexavalent Chromium (w)	Sample too coloured

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APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH_4 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.
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 the major 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.

Last updated 1 April 2010

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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)	GS 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 INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC FID

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 (C6-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

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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).

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.

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

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ALcontrol Laboratories

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

Attention: Verity Sankey

CERTIFICATE OF ANALYSIS

Date:	01 May 2010		
Customer:	D_MOUCHEL_ELE-104		
Sample Delivery Group (SDG):	100422-86	**Report No.:**	82282
Your Reference:	22/04/10		
Location:	Limerick Gasworks		

We received 5 samples on Thursday April 22, 2010 and 5 of these samples were scheduled for analysis which was completed on Saturday May 01, 2010. 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).

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Approved By:

Iain Swinton

Operations Director - Land UK & Ireland

UKAS TESTING
1291

GROUP

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Verity Sankey
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Sampled Date
1436891	A3 EW003	1.50 - 4.50	21/04/2010
1436916	A4 EW003	1.50 - 2.30	21/04/2010
1436862	B8 EW003	1.60 - 2.80	21/04/2010
1436933	C7 EW003	2.00 - 6.50	21/04/2010
1436836	D5 EW003	2.00 - 3.00	21/04/2010

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

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ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Verity Sankey
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

LIQUID

Results Legend

X Test

N No Determination Possible

		Lab Sample No(s)	1436836			1436862			1436891			1436916			1436933			Total
		Customer Sample Ref.	D5 EW003			B8 EW003			A3 EW003			A4 EW003			C7 EW003			
		Depth (m)	2.00 - 3.00			1.60 - 2.80			1.50 - 4.50			1.50 - 2.30			2.00 - 6.50			
		Container	1l green glass bottle	500ml Plastic	Vial	1l green glass bottle	500ml Plastic	Vial	1l green glass bottle	500ml Plastic	Vial	1l green glass bottle	500ml Plastic	Vial	1l green glass bottle	500ml Plastic	Vial	
Ammonium	All			X			X			X			X			X		05
Anions by Kone (w)	All			X			X			X			X			X		05
Cyanide Comp/Free/Total/Thiocyanate	All		X			X			X			X			X			05
Dissolved Metals by ICP-MS	All			X			X			X			X			X		05
EPH CWG (Aliphatic) Aqueous GC (W)	All		X			X			X			X			X			05
EPH CWG (Aromatic) Aqueous GC (W)	All		X			X			X			X			X			05
GRO BTEX MTBE GC (W)	All				X			X			X			X			X	05
Hexavalent Chromium (w)	All			X			X			X			X			X		05
Mercury Dissolved	All		X			X			X			X			X			05
PAH Spec MS - Aqueous (W)	All		X			X			X			X			X			05
pH Value	All			X			X			X			X			X		05
Phenols by HPLC (W)	All		X			X			X			X			X			05
Sulphide	All			X			X			X			X			X		05
TPH CWG (W)	All		X			X			X			X			X			05
VOC MS (W)	All							X			X			X			X	04

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Verity Sankey
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

Test Completion dates

SDG reference: 100422-86

Lab Sample No(s)	1436836	1436862	1436891	1436916	1436933
Customer Sample Ref.	D5	B8	A3	A4	C7
Depth	2.00 - 3.00	1.60 - 2.80	1.50 - 4.50	1.50 - 2.30	2.00 - 6.50
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Anions by Kone (w)	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Cyanide	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Dissolved Metals by ICP-MS	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
EPH CWG (Aliphatic) Aqueous GC	29/04/2010	29/04/2010	29/04/2010	29/04/2010	29/04/2010
EPH CWG (Aromatic) Aqueous GC	29/04/2010	29/04/2010	29/04/2010	29/04/2010	29/04/2010
GRO BTEX MTBE GC (W)	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
Hexavalent Chromium (w)	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Mercury Dissolved	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
PAH Spec MS - Aqueous (W)	29/04/2010	30/04/2010	29/04/2010	29/04/2010	01/05/2010
pH Value	23/04/2010	23/04/2010	23/04/2010	23/04/2010	23/04/2010
Phenols by HPLC (W)	26/04/2010	26/04/2010	26/04/2010	26/04/2010	27/04/2010
Sulphide	26/04/2010	26/04/2010	26/04/2010	26/04/2010	26/04/2010
TPH CWG (W)	29/04/2010	29/04/2010	29/04/2010	29/04/2010	29/04/2010
VOC MS (W)		29/04/2010	29/04/2010	26/04/2010	28/04/2010

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ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A3 EW003	A4 EW003	B8 EW003	C7 EW003	D5 EW003
			Depth (m)	1.50 - 4.50	1.50 - 2.30	1.60 - 2.80	2.00 - 6.50	2.00 - 3.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-86	100422-86	100422-86	100422-86	100422-86
			Lab Sample No.(s)	1436891	1436916	1436862	1436933	1436836
Ammoniacal Nitrogen as N	<0.2 mg/l as N	TM099		9.65 #	3.27 #	138 #	100 #	0.483 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099		12.4 #	4.2 #	177 #	129 #	0.621 #
Sulphide	<0.1 mg/l	TM101		<0.1 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Arsenic (diss.filt)	<0.12 µg/l	TM152		39.2 #	7.31 #	52.8 #	27.9 #	3.7 #
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		21.3 #	14.5 #	22.7 #	15.5 #	9.27 #
Copper (diss.filt)	<0.85 µg/l	TM152		<0.85 #	<0.85 #	<0.85 #	<0.85 #	<0.85 #
Lead (diss.filt)	<0.02 µg/l	TM152		0.034 #	0.054 #	0.143 #	0.046 #	0.034 #
Nickel (diss.filt)	<0.15 µg/l	TM152		7.05 #	4.86 #	9.62 #	2.92 #	7.47 #
Selenium (diss.filt)	<0.39 µg/l	TM152		2.14 #	2.8 #	26.7 #	27 #	1.34 #
Zinc (diss.filt)	<0.41 µg/l	TM152		1.18 #	1.76 #	1.21 #	0.755 #	0.655 #
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	0.0188 #	0.0321 #	<0.01 #
Sulphate	3 mg/l	TM184		375 #	277 #	102 #	36.8 #	32.1 #
Cyanide, Total	<0.05 mg/l	TM227		0.267 #	0.154 #	0.259 #	0.522 #	0.295 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03	<0.03	<0.15	<0.15	<0.03
pH	<1 pH Units	TM256		7.98 #	7.82 #	8.64 #	8.82 #	7.89 #
Resorcinol	<0.01 mg/l	TM259		<0.01	<0.01	<0.1	<0.2	<0.01
Catechol	<0.01 mg/l	TM259		<0.01	<0.01	<0.1	<0.2	<0.01
Phenol	<0.002 mg/l	TM259		0.01 #	<0.002 #	24.3 #	29.6 #	0.08 #
Cresols	<0.006 mg/l	TM259		0.01 #	<0.006 #	47.2 #	81.1 #	0.65 #
Xylenols	<0.008 mg/l	TM259		<0.008 #	<0.008 #	46.4 #	81.4 #	1.4 #
1-Naphthol	<0.01 mg/l	TM259		<0.01 #	<0.01 #	<0.1 #	<0.2 #	<0.01 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM259		<0.003 #	<0.003 #	<0.03 #	<0.06 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259		<0.006 #	<0.006 #	<0.06 #	23.2 #	<0.006 #
Phenols, Total 5 speciated	<0.025 mg/l	TM259		<0.025	<0.025	118	215	2.13

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ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A3 EW003	A4 EW003	B8 EW003	C7 EW003	D5 EW003
			Depth (m)	1.50 - 4.50	1.50 - 2.30	1.60 - 2.80	2.00 - 6.50	2.00 - 3.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-86	100422-86	100422-86	100422-86	100422-86
			Lab Sample No.(s)	1436891	1436916	1436862	1436933	1436836
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	89	174	<10	225
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	230	156	<10	255
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	106	188	<10	876
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	425	518	<10	1360
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174		794	529	16000	20500	4090

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ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A3 EW003	A4 EW003	B8 EW003	C7 EW003	D5 EW003
			Depth (m)	1.50 - 4.50	1.50 - 2.30	1.60 - 2.80	2.00 - 6.50	2.00 - 3.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-86	100422-86	100422-86	100422-86	100422-86
			Lab Sample No.(s)	1436891	1436916	1436862	1436933	1436836
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		196	13	10700	19100	161
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		177	61	2200	1250	411
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		421	30	2590	142	2170
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		794	104	15500	20500	2740

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ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

GRO BTEX MTBE GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A3 EW003	A4 EW003	B8 EW003	C7 EW003	D5 EW003
			Depth (m)	1.50 - 4.50	1.50 - 2.30	1.60 - 2.80	2.00 - 6.50	2.00 - 3.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-86	100422-86	100422-86	100422-86	100422-86
			Lab Sample No.(s)	1436891	1436916	1436862	1436933	1436836
Benzene	<7 µg/l	TM245		574 #	<7 #	10900 #	28400 #	405 #
Toluene	<4 µg/l	TM245		30 #	<4 #	5450 #	12500 #	91 #
Ethylbenzene	<5 µg/l	TM245		189 #	<5 #	312 #	527 #	39 #
m,p-Xylene	<8 µg/l	TM245		87 #	<8 #	2130 #	3560 #	107 #
o-Xylene	<3 µg/l	TM245		71 #	<3 #	910 #	1470 #	79 #
m,p,o-Xylene	<10 µg/l	TM245		158 #	<10 #	3040 #	5030 #	186 #
BTEX, Total	<10 µg/l	TM245		951 #	<10 #	19700 #	46500 #	721 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<15 #	<30 #	<3 #
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	118	240	<10
Aliphatics >C6-C8	<10 µg/l	TM245		121	<10	3400	8370	91.4
Aliphatics >C8-C10	<10 µg/l	TM245		150	13.4	1390	2550	105
Aliphatics >C10-C12	<10 µg/l	TM245		498	23.8	4710	7840	233
Total Aliphatics >C5-C12	<10 µg/l	TM245		769	37.2	9820	19000	429
Aromatics >C6-C7	<10 µg/l	TM245		574	<10	10900	28400	405
Aromatics >C7-C8	<10 µg/l	TM245		30	<10	5450	12500	91
Aromatics >EC8-EC10	<10 µg/l	TM245		572	20.1	5430	9380	383
Aromatics >EC10-EC12	<10 µg/l	TM245		747	35.7	7060	11800	349
Total Aromatics >C6-C12	<10 µg/l	TM245		1920	55.8	28900	62100	1230

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ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A3 EW003	A4 EW003	B8 EW003	C7 EW003	D5 EW003
			Depth (m)	1.50 - 4.50	1.50 - 2.30	1.60 - 2.80	2.00 - 6.50	2.00 - 3.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-86	100422-86	100422-86	100422-86	100422-86
			Lab Sample No.(s)	1436891	1436916	1436862	1436933	1436836
Naphthalene (aq)	<0.1 µg/l	TM178		0.295	<0.1	4500	23600	2.3
Acenaphthene (aq)	<0.015 µg/l	TM178		0.979	<0.015	45.7	125	1.28
Acenaphthylene (aq)	<0.011 µg/l	TM178		6.24	0.124	258	1050	9.82
Fluoranthene (aq)	<0.014 µg/l	TM178		21	0.963	153	41.4	58.7
Anthracene (aq)	<0.015 µg/l	TM178		1.66	0.0872	84.9	64.9	7.57
Phenanthrene (aq)	<0.022 µg/l	TM178		0.759	0.0257	290	252	16
Fluorene (aq)	<0.014 µg/l	TM178		0.613	0.0442	144	314	2.95
Chrysene (aq)	<0.013 µg/l	TM178		8.35	0.131	37.9	8.47	18.7
Pyrene (aq)	<0.015 µg/l	TM178		40.5	0.99	105	26.6	39.3
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		16.6	0.334	39.5	8.72	33.4
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		13.1	0.354	44.1	7.74	37.7
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		4.84	0.113	14.2	4.29	13.4
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		18.8	0.227	28.8	6.07	34
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		1.97	0.0245	4.25	2.34	5.25
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		8.44	0.0812	20.8	6.43	18.4
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		6.61	0.0718	15	4.67	16.9
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178		151	3.47	5790	25600	316

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A3 EW003	A4 EW003	B8 EW003	C7 EW003	D5 EW003
Depth (m)	1.50 - 4.50	1.50 - 2.30	1.60 - 2.80	2.00 - 6.50	2.00 - 3.00
Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010	21/04/2010
Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010	22/04/2010
SDG Ref	100422-86	100422-86	100422-86	100422-86	100422-86
Lab Sample No.(s)	1436891	1436916	1436862	1436933	1436836

Component	LOD/Units	Method					
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174	769	462	10100	19000	1790
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174	2720	160	44400	82600	3960
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	3490	622	54500	102000	5750

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ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A3 EW003	A4 EW003	B8 EW003	C7 EW003
			Depth (m)	1.50 - 4.50	1.50 - 2.30	1.60 - 2.80	2.00 - 6.50
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-86	100422-86	100422-86	100422-86
			Lab Sample No.(s)	1436891	1436916	1436862	1436933
Dibromofluoromethane**	%	TM208		105	120	107	103
Toluene-d8**	%	TM208		95.2	96.9	97.7	97.7
4-Bromofluorobenzene**	%	TM208		101	101	91.1	84
Dichlorodifluoromethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #	<1.3 #
Chloromethane	<1.7 µg/l	TM208		<1.7 #	<1.7 #	<1.7 #	<1.7 #
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 #	<1.3 #	<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 #	<1.3 #	<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		<1.3 #	<1.3 #	13500 #	24700 #
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		<1.4 #	<1.4 #	6170 #	9900 #
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 #
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		<2.5 #	2.94 #	294 #	396 #

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ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Reference:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A3 EW003	A4 EW003	B8 EW003	C7 EW003
			Depth (m)	1.50 - 4.50	1.50 - 2.30	1.60 - 2.80	2.00 - 6.50
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	21/04/2010	21/04/2010	21/04/2010	21/04/2010
			Date Received	22/04/2010	22/04/2010	22/04/2010	22/04/2010
			SDG Ref	100422-86	100422-86	100422-86	100422-86
			Lab Sample No.(s)	1436891	1436916	1436862	1436933
m,p-Xylene	<2.5 µg/l	TM208		68.1 #	3.37 #	2200 #	2650 #
o-Xylene	<1.7 µg/l	TM208		59.4 #	5.55 #	913 #	1130 #
Styrene	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #	538 #
Bromoform	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #
Isopropylbenzene	<1.4 µg/l	TM208		<1.4 #	<1.4 #	14.3 #	14.9 #
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 #	19.2 #	19.8 #
2-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208		9.69 #	1.91 #	133 #	123 #
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		29.8 #	2.73 #	325 #	299 #
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		<3.5 #	<3.5 #	8680 #	9170 #
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

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Table of Results - Appendix

SDG Number : 100422-86 **Client :** Mouchel **Client Ref :** 22/04/10

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]
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			

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

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ALcontrol Laboratories Analytical Services

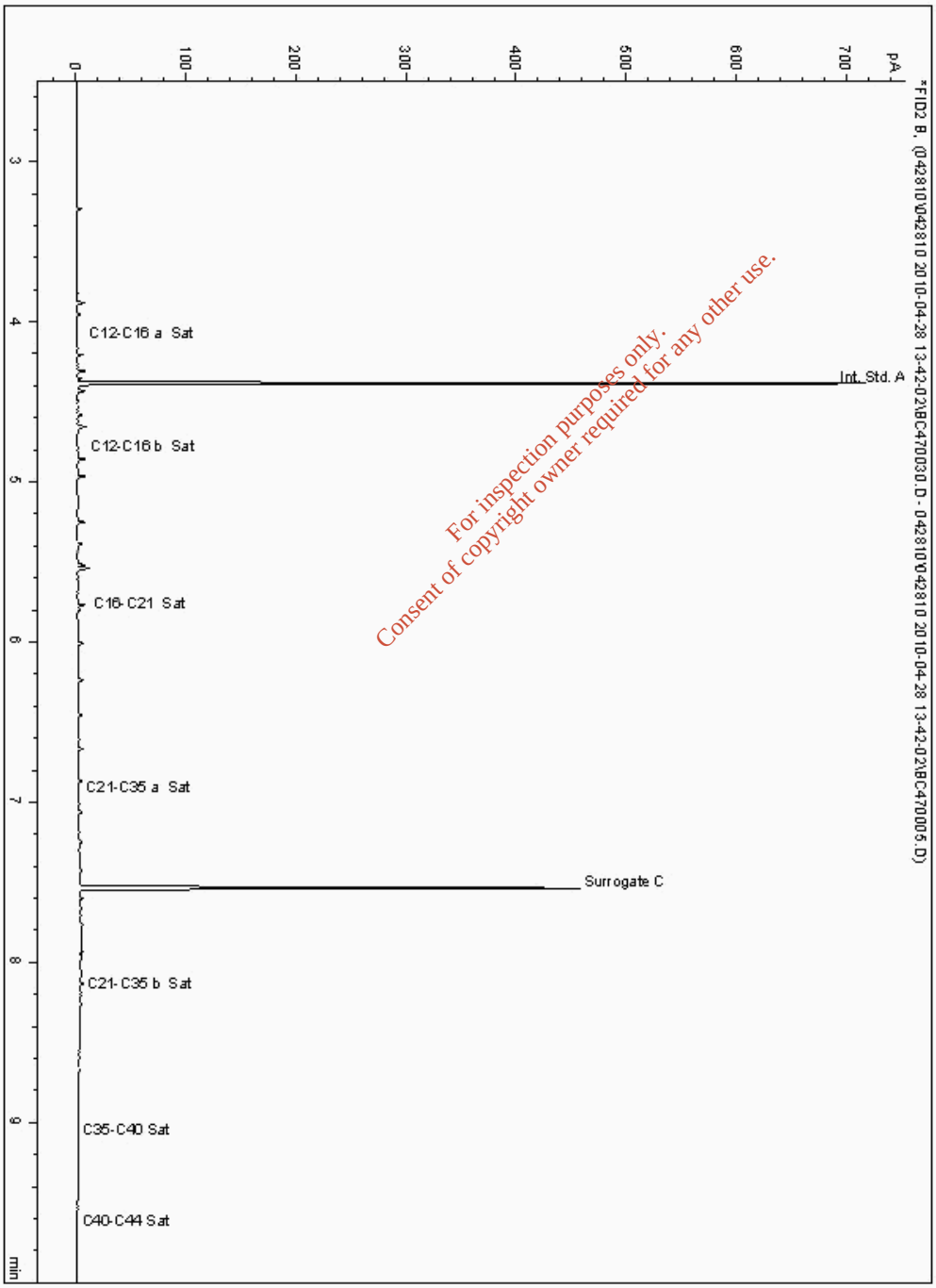
SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

Chromatogram

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1438327
		Sample ID	D5
		Depth	2.00 - 3.00

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

Sample Identity: 1561075-1438327
Date Acquired : 28/04/10 22:54:42
Units :
Dilution :
CF : 1
Multiplier : 0.017



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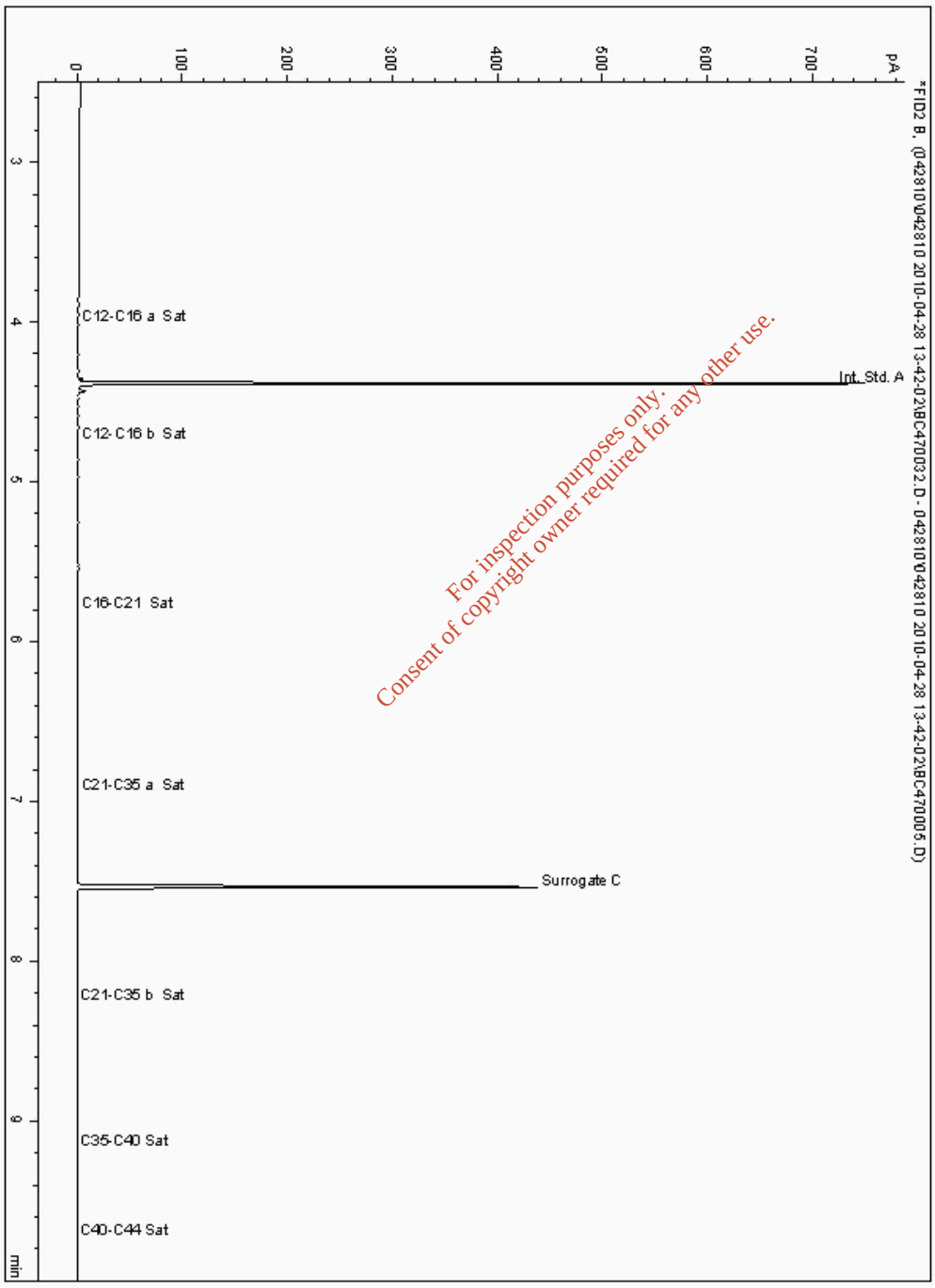
ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1438399
		Sample ID	A3
		Depth	1.50 - 4.50

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

Sample Identity: 1561106-1438399
Date Acquired : 28/04/10 23:27:38
Units :
Dilution :
CF : 1
Multiplier : 0.017



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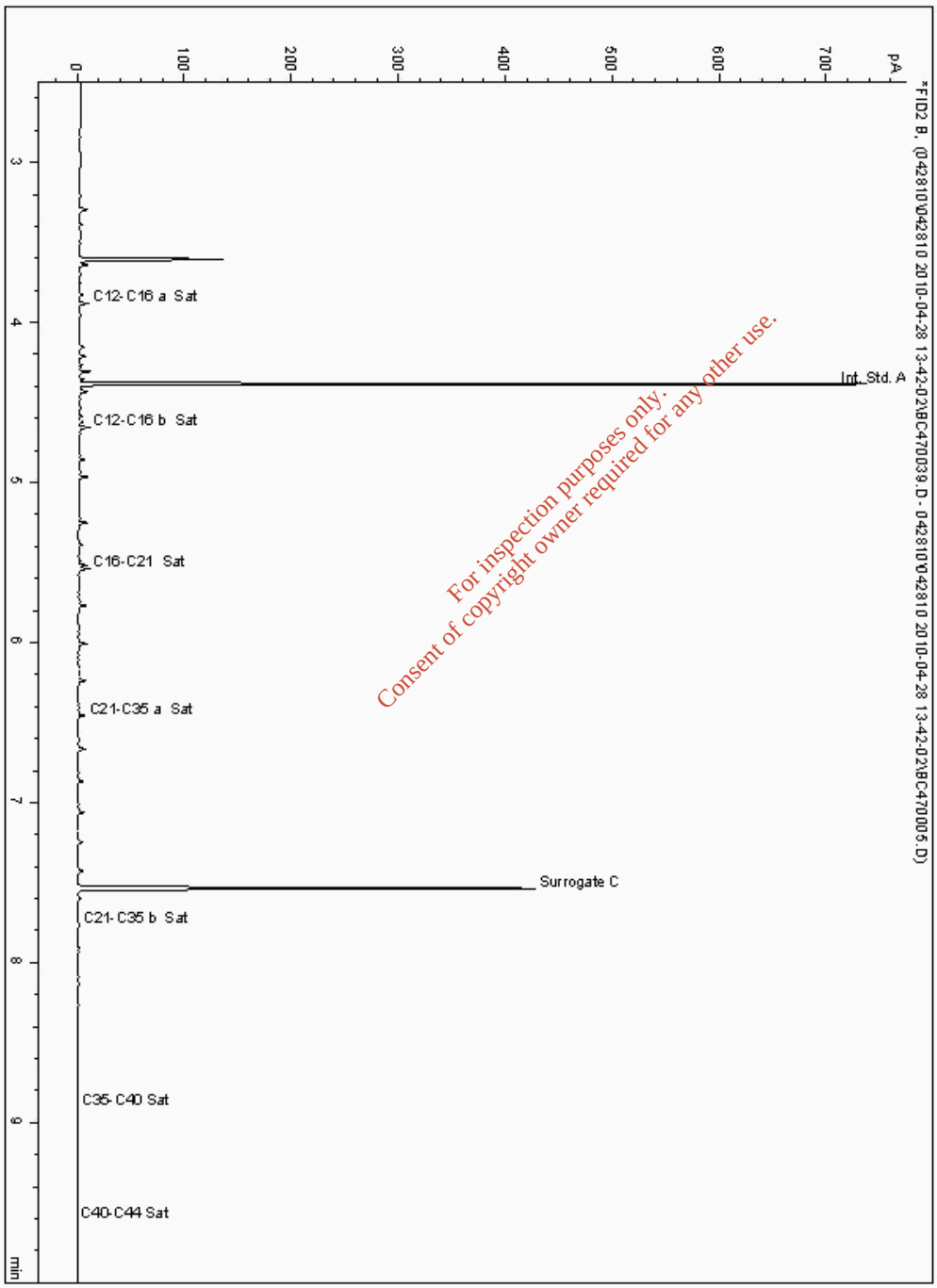
ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1438534
		Sample ID	B8
		Depth	1.60 - 2.80

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

Sample Identity: 1561090-1438534
Date Acquired : 29/04/10 01:30:07
Units :
Dilution :
CF : 1
Multiplier : 0.017



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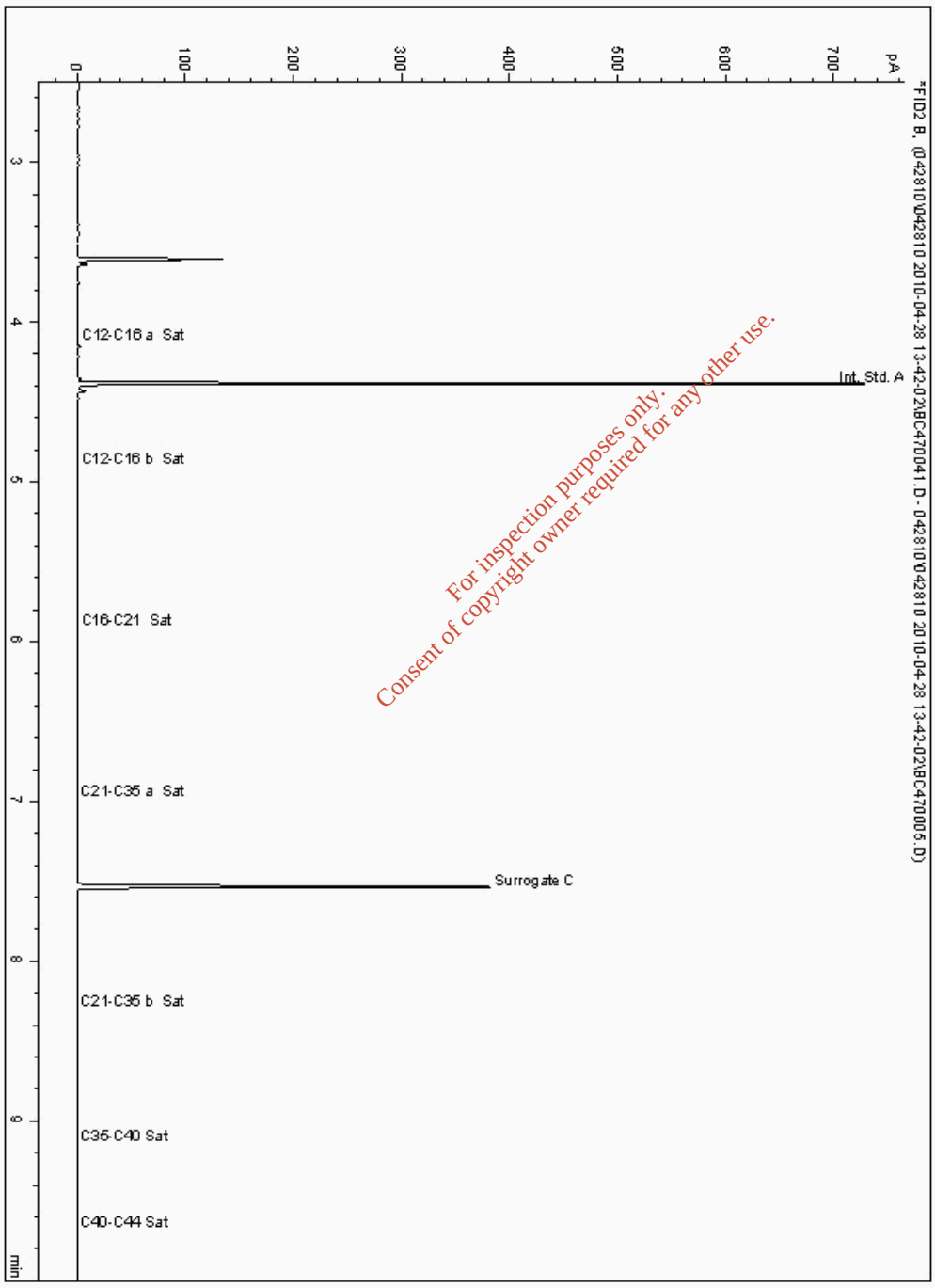
ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1439570
		Sample ID	C7
		Depth	2.00 - 6.50

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

Sample Identity: 1561138-1439570
Date Acquired : 29/04/10 02:02:54
Units :
Dilution :
CF : 1
Multiplier : 0.017



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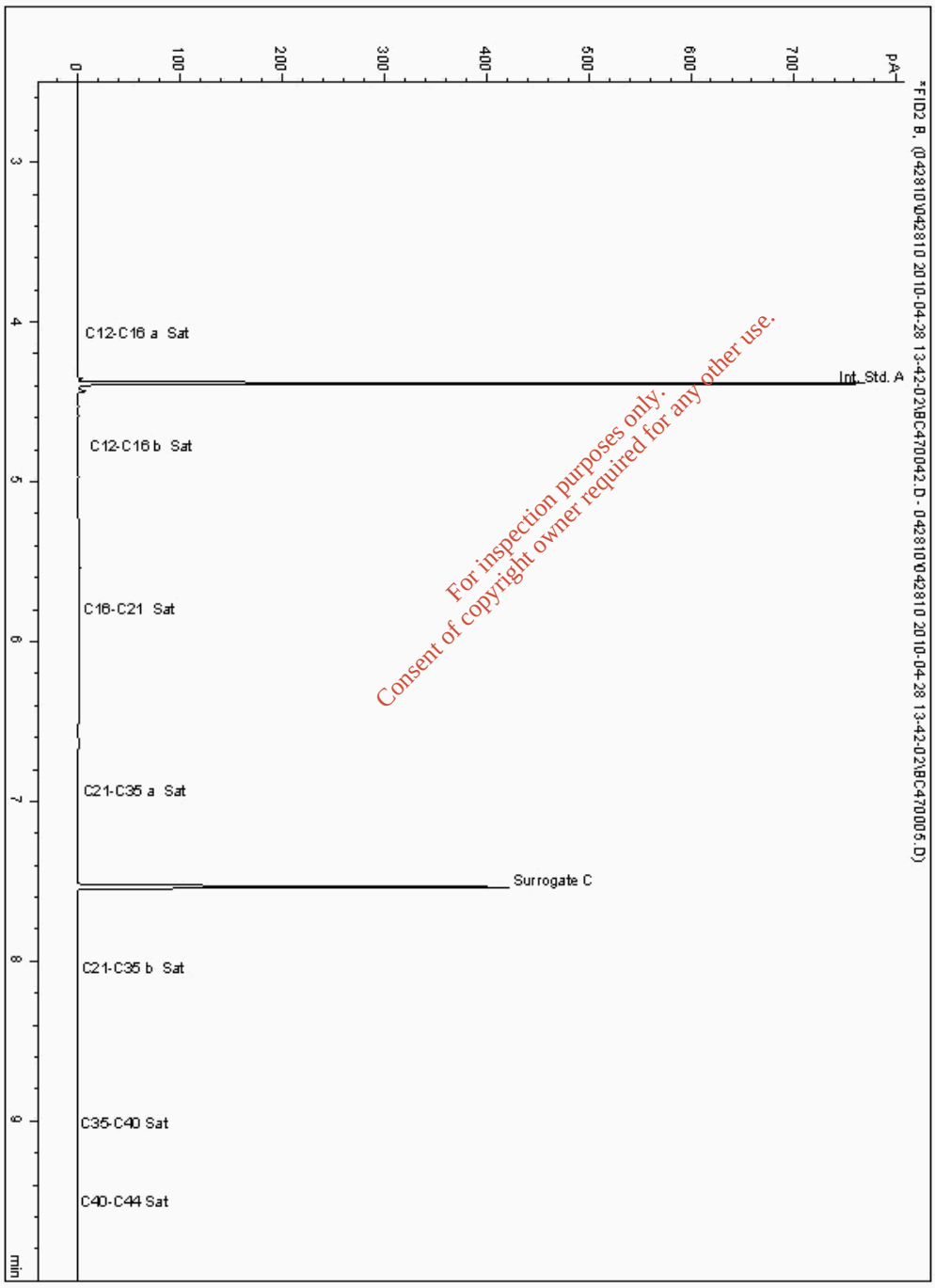
ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1439645
		Sample ID	A4
		Depth	1.50 - 2.30

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

Sample Identity: 1561122-1439645
Date Acquired : 29/04/10 02:21:44
Units :
Dilution :
CF : 1
Multiplier : 0.017



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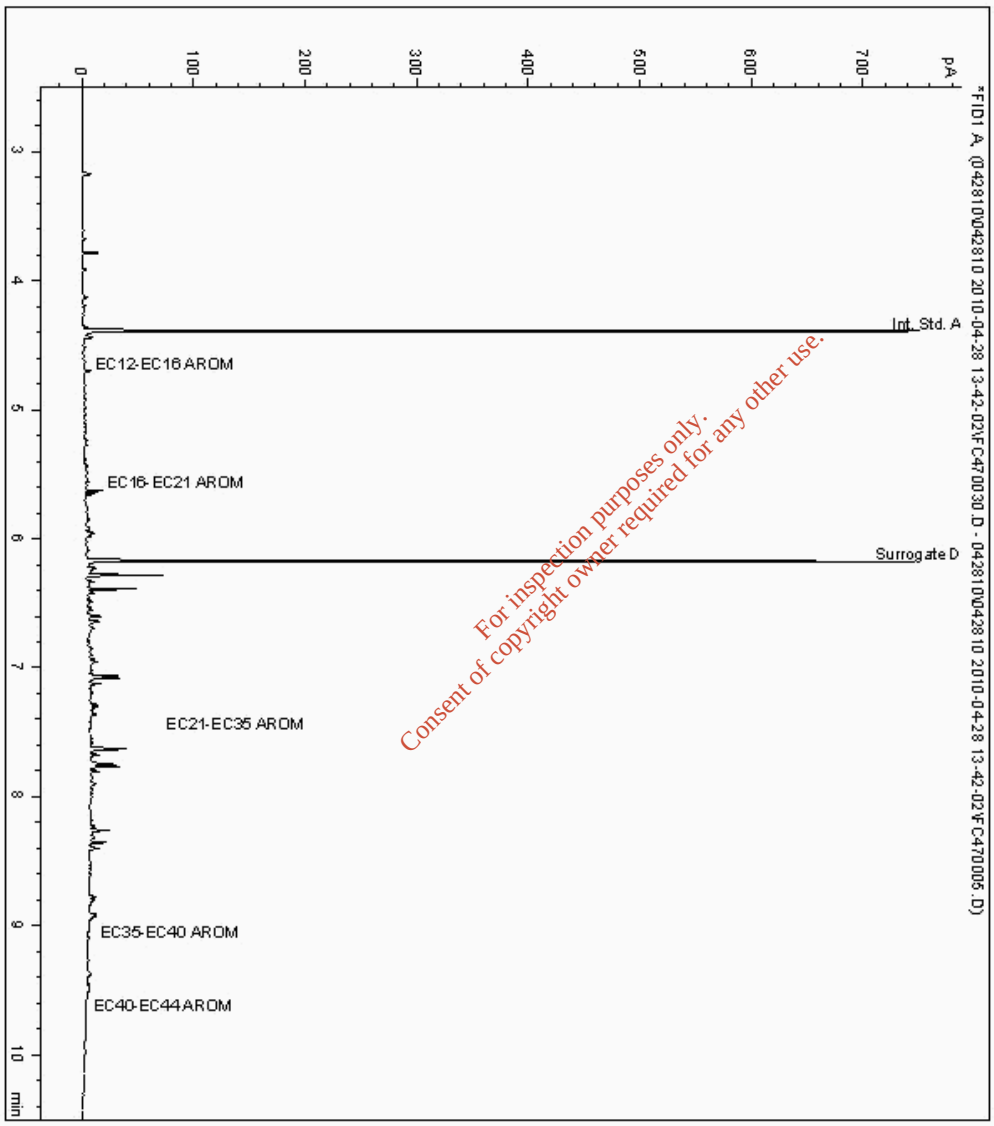
ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1438327
		Sample ID	D5
		Depth	2.00 - 3.00

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

Sample Identity: 1561076-1438327
Date Acquired : 28/04/10 22:54:42
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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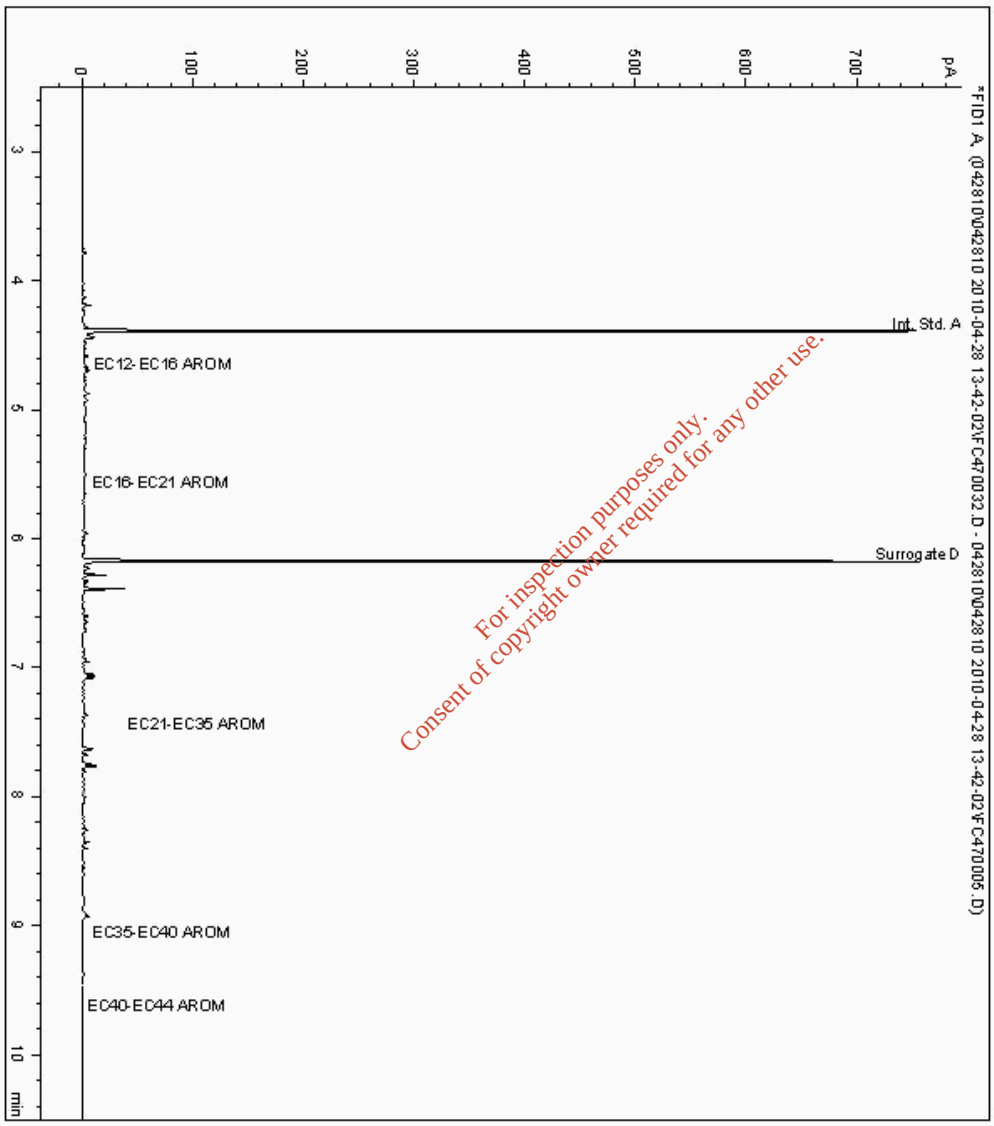
ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1438399
		Sample ID	A3
		Depth	1.50 - 4.50

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

Sample Identity: 1561107-1438399
Date Acquired : 28/04/10 23:27:38
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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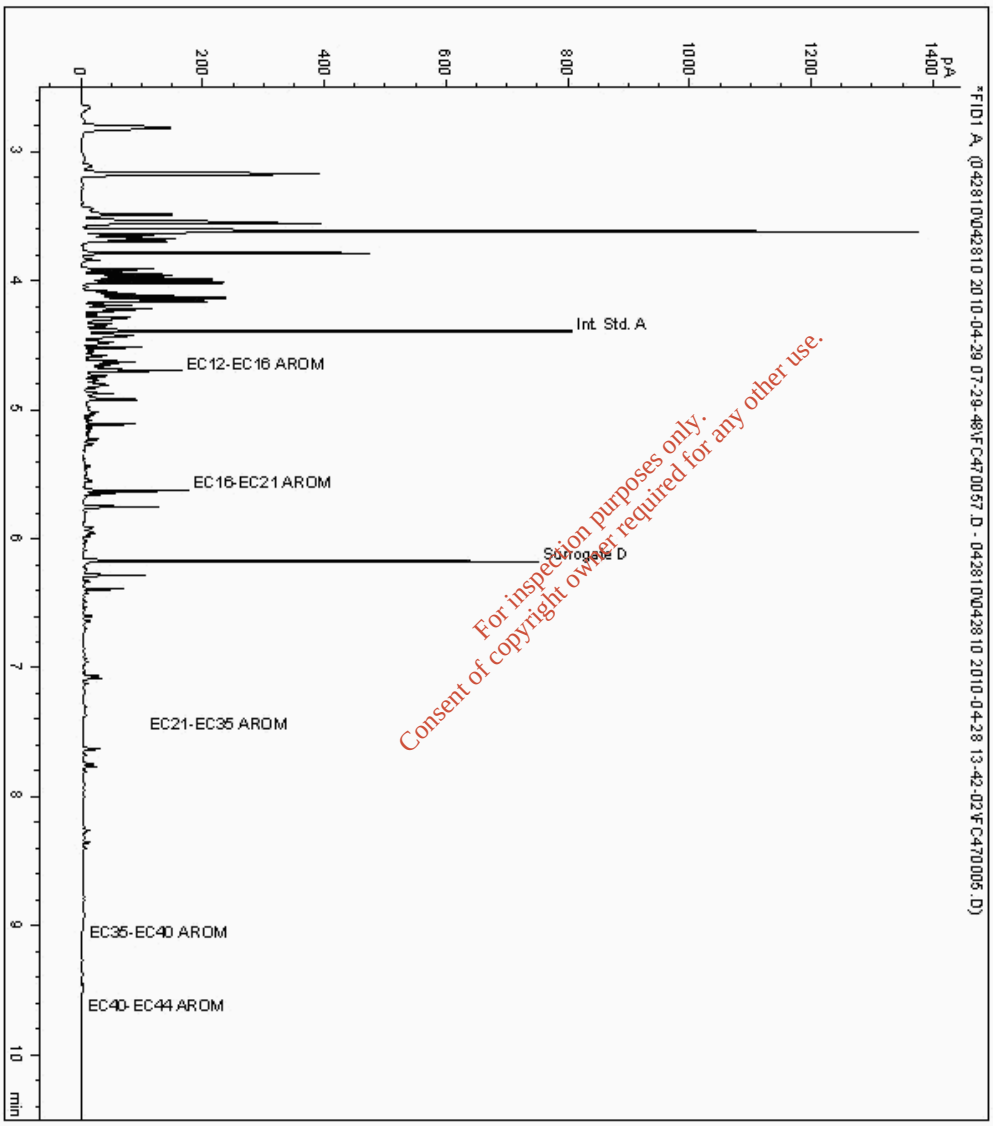
ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1438534
		Sample ID	B8
		Depth	1.60 - 2.80

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

Sample Identity: 1561091-1438534
Date Acquired : 29/04/10 07:39:29
Units : ppb
Dilution :
CF : 1
Multiplier : 0.033



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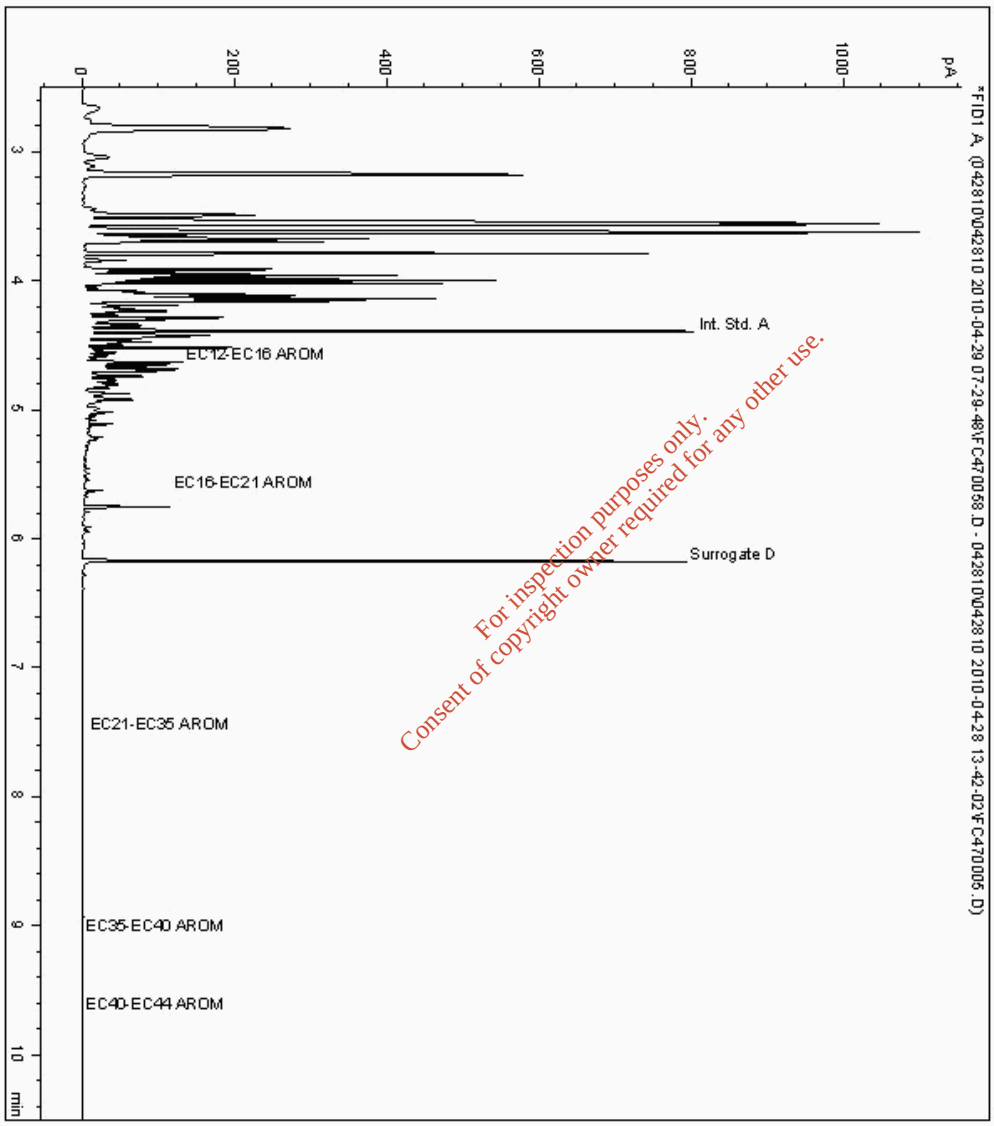
ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1439570
		Sample ID	C7
		Depth	2.00 - 6.50

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

Sample Identity: 1561139-1439570
Date Acquired : 29/04/10 07:58:20
Units : ppb
Dilution :
CF : 1
Multiplier : 0.033



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Validated

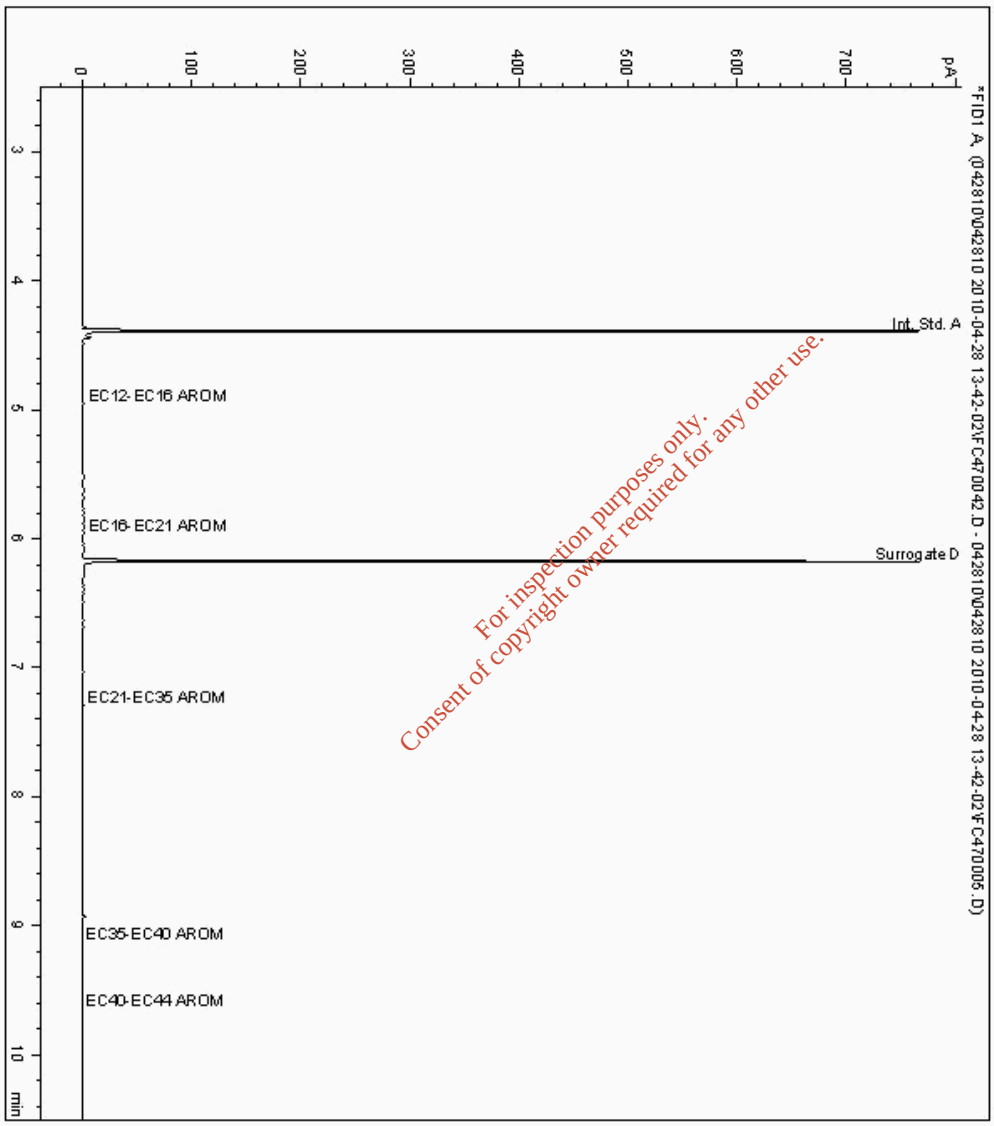
ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1439645
		Sample ID	A4
		Depth	1.50 - 2.30

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

Sample Identity: 1561123-1439645
Date Acquired : 29/04/10 02:21:44
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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Validated

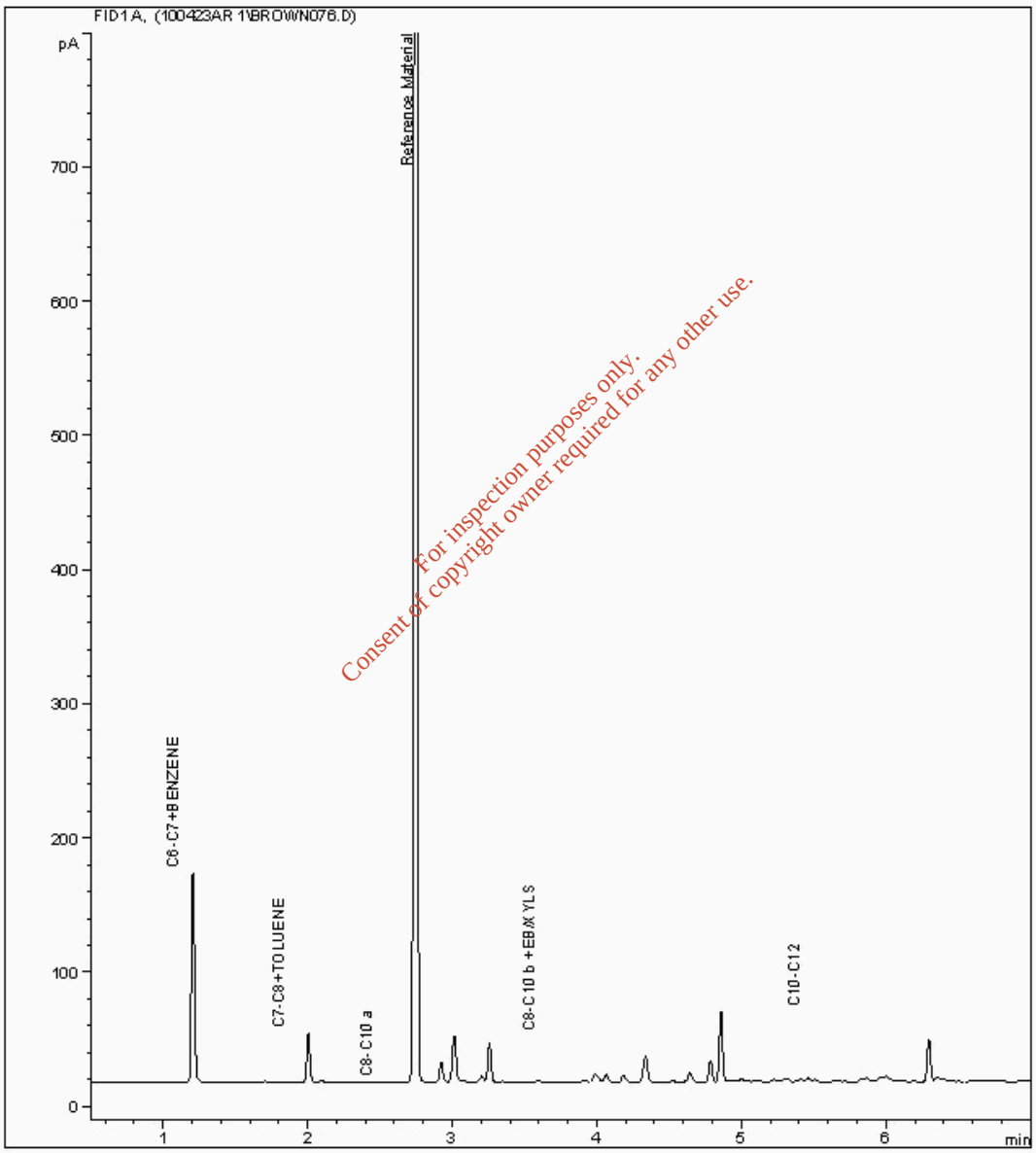
ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1436833
		Sample ID	D5
		Depth	2.00 - 3.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1561077-1436833
Date Acquired : 24/04/10 07:06:46
Units : ppb
Dilution : 1



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Validated

ALcontrol Laboratories Analytical Services

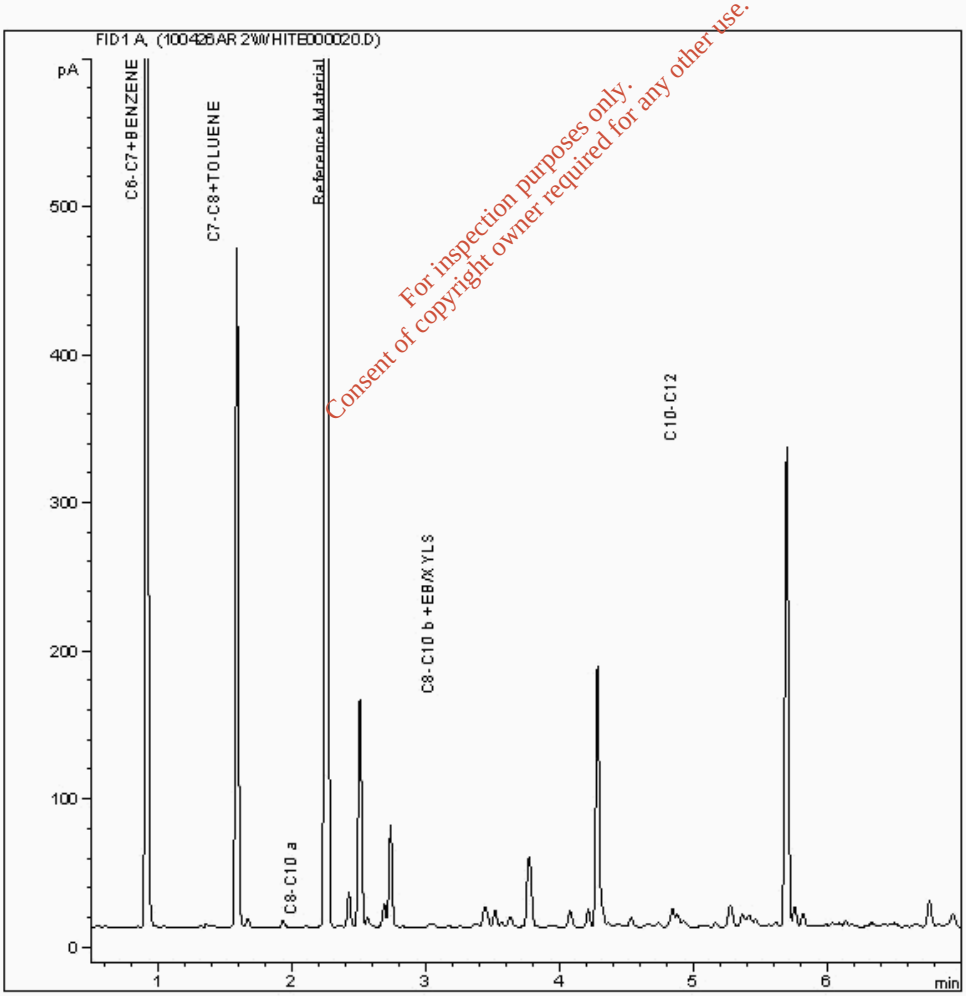
SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1436861
		Sample ID	B8
		Depth	1.60 - 2.80

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1561092-1436861
Date Acquired : 26/04/10 14:48:45
Units : ppb
Dilution : 5

#	Compound Name	Amount
1	C4-C6+MTBE	1336
2	C6-C7+BENZENE	146253
3	C7-C8+TOLUENE	77307
4	C8-C10 a	1469
5	Reference Material	116486
6	C8-C10 b +EB/XYLS	75490
7	C10-C12	132980



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Validated

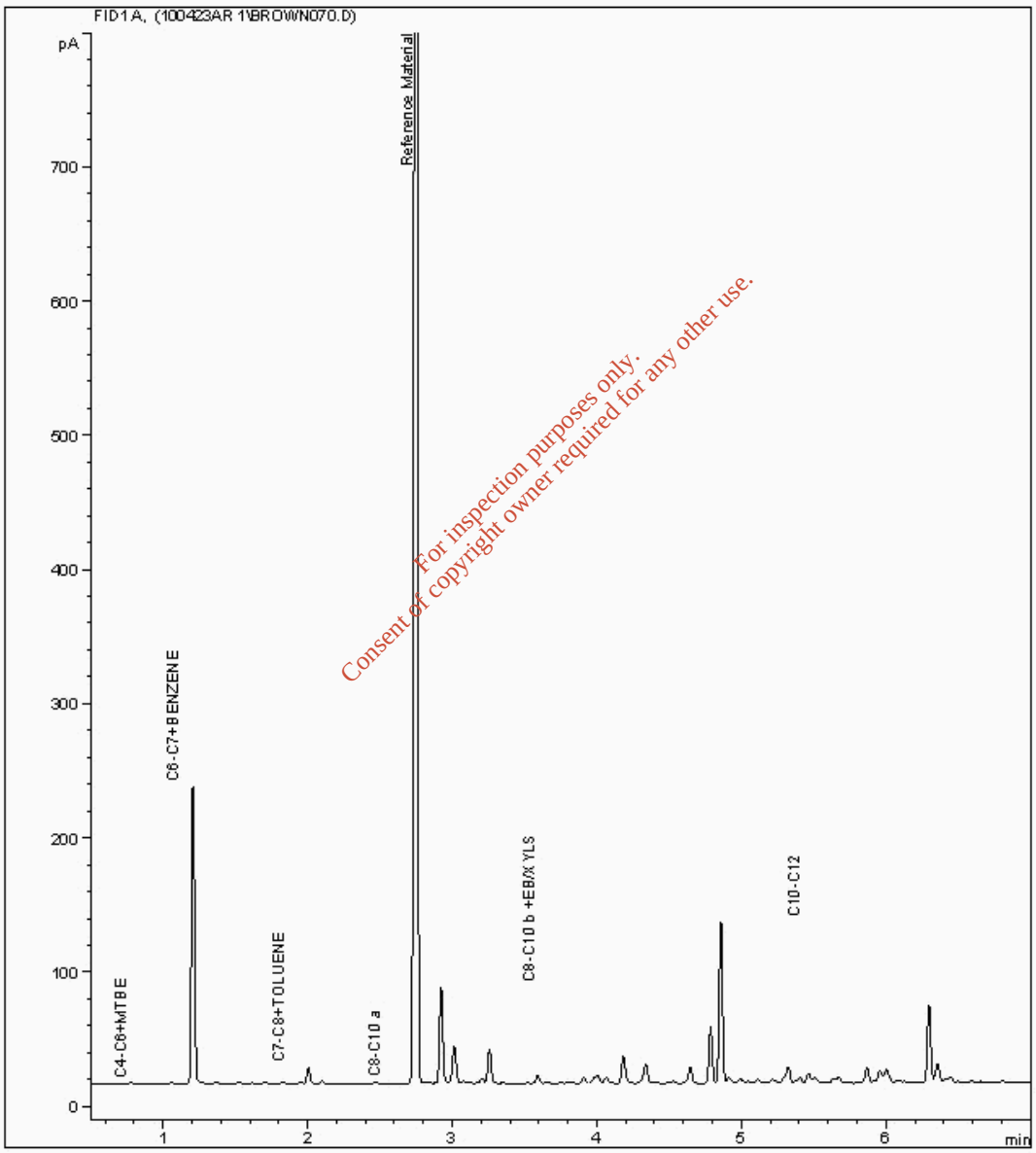
ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1436889
		Sample ID	A3
		Depth	1.50 - 4.50

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1561108-1436889
Date Acquired : 24/04/10 05:42:27
Units : ppb
Dilution : 1



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Validated

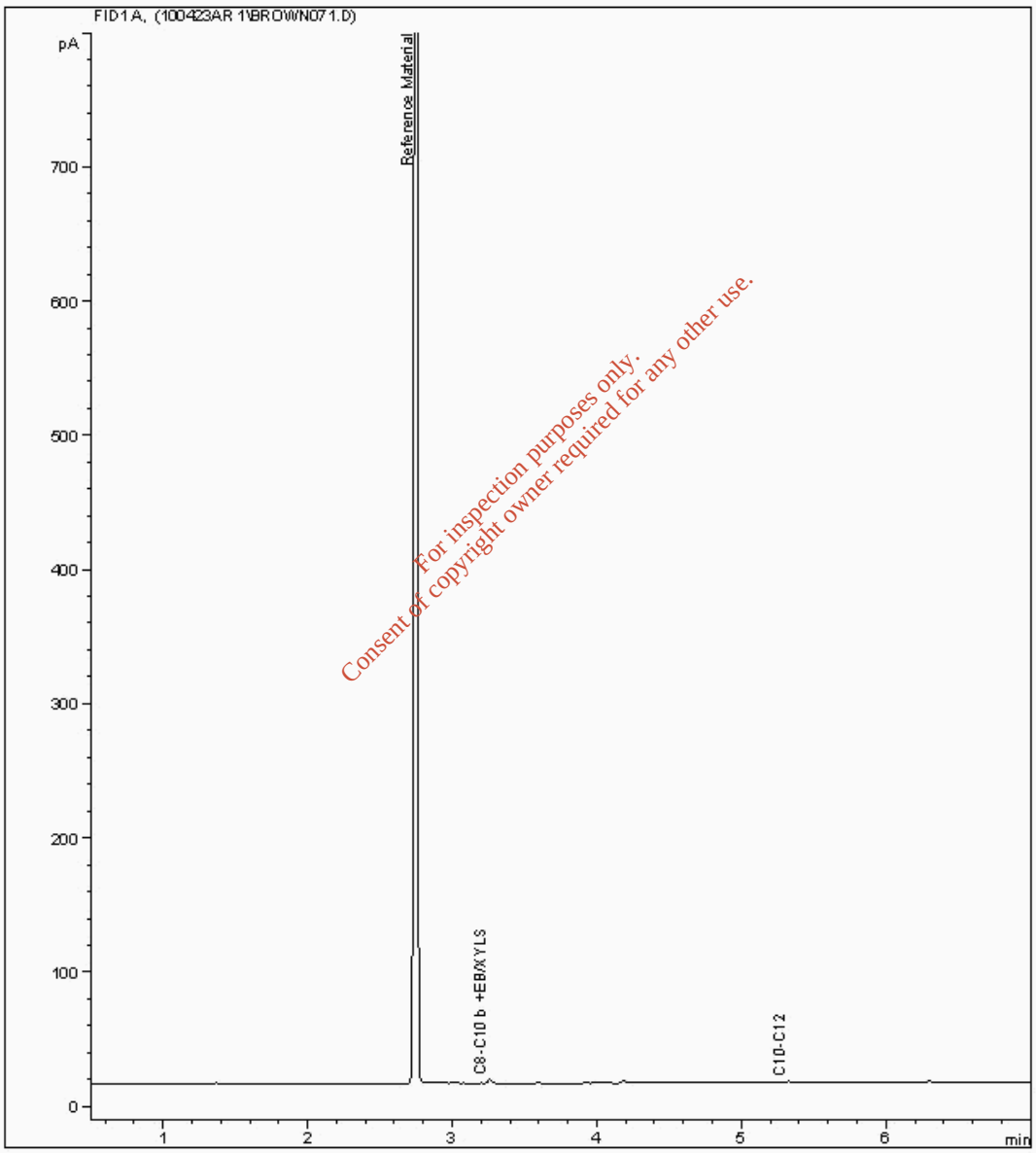
ALcontrol Laboratories Analytical Services

SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1436915
		Sample ID	A4
		Depth	1.50 - 2.30

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1561124-1436915
Date Acquired : 24/04/10 05:56:30
Units : ppb
Dilution : 1



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Validated

ALcontrol Laboratories Analytical Services

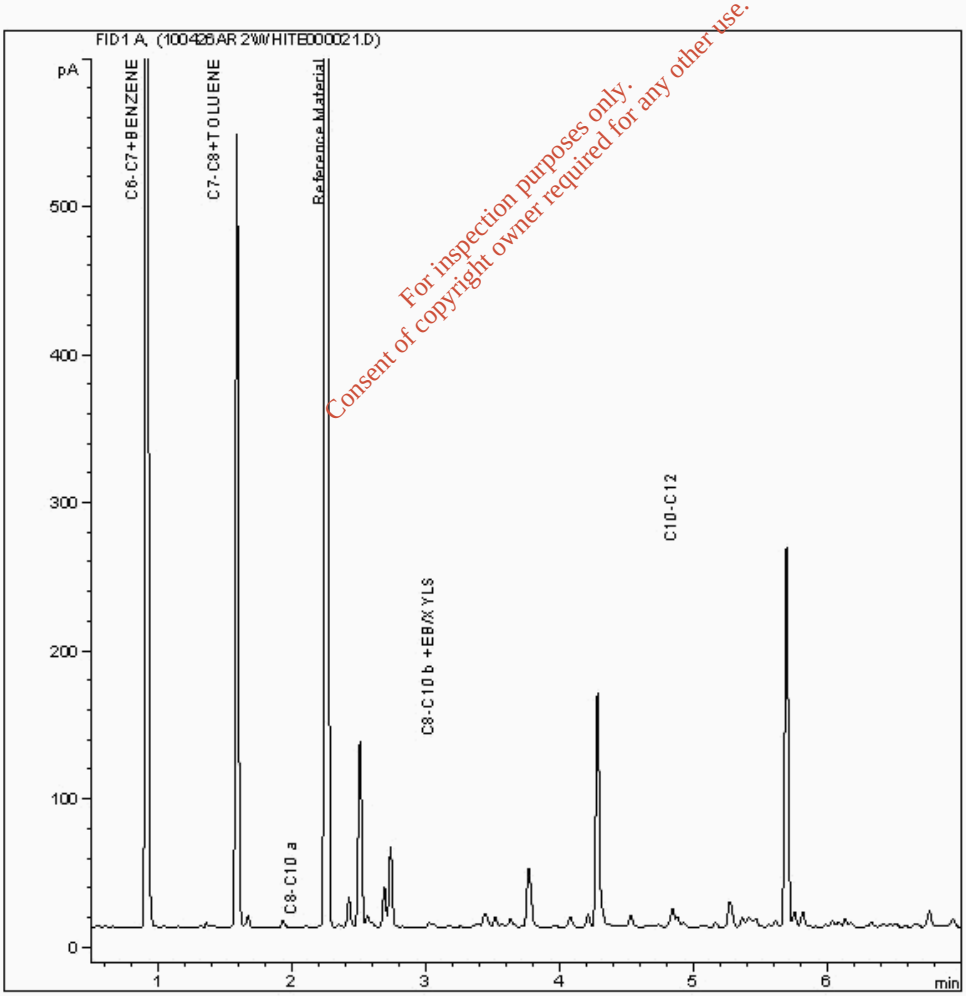
SDG:	100422-86	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-104	**Attention:**	Dave Watts
Client Ref.:	22/04/10	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	82282

Analysis:	GRO BTEX MTBE GC (W)	**Sample No**	1436931
		Sample ID	C7
		Depth	2.00 - 6.50

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1561140-1436931
Date Acquired : 26/04/10 15:02:21
Units : ppb
Dilution : 10

#	Compound Name	Amount
1	C4-C6+MTBE	2709
2	C6-C7+BENZENE	379617
3	C7-C8+TOLUENE	177879
4	C8-C10 a	3064
5	Reference Material	253413
6	C8-C10 b +EB/XYLS	131718
7	C10-C12	221506



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APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH_4 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.
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 the major 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.

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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)	GS 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 INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC FID

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 (C6-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

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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).

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.

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

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ALcontrol Laboratories

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

Attention: David Megson

CERTIFICATE OF ANALYSIS

Date:	22 July 2010		
Customer:	D_MOUCHEL_ELE-105		
Sample Delivery Group (SDG):	100715-55	**Report No.:**	91179
Your Reference:	15/07/10		
Location:	Limerick Gasworks		

We received 10 samples on Thursday July 15, 2010 and 10 of these samples were scheduled for analysis which was completed on Thursday July 22, 2010. 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).

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Approved By:

Iain Swinton

Operations Director - Land UK & Ireland

UKAS TESTING
1291
GROUP

EPA Export 25-05-2012:04:42:42

Validated

ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	David Megson
Client Reference:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Sampled Date
1823349	A3 W004	1.50 - 3.50	14/07/2010
1823419	A4 W004	1.50 - 3.00	14/07/2010
1823304	B8 W004	2.00 - 2.70	14/07/2010
1824006	C7 W004	5.00 - 6.00	14/07/2010
1823229	D5 W004	2.00 - 3.50	14/07/2010
1824196	H12 W004	1.00 - 3.00	14/07/2010
1824106	J10 W004	0.00 - 0.10	14/07/2010
1824138	K1 W004	3.00 - 4.00	14/07/2010
1824074	K5 W004	1.50 - 3.00	14/07/2010
1824262	M3 W004	4.50 - 6.00	14/07/2010

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

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	David Megson
Client Reference:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

LIQUID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)	1823229			1823304			1823349			1823419			1824006			1824074			1824106			1824138			1824196			1824262			Total
Customer Sample Ref.	D5 W004			B8 W004			A3 W004			A4 W004			C7 W004			K5 W004			J10 W004			K1 W004			H12 W004			M3 W004			
Depth (m)	2.00 - 3.50			2.00 - 2.70			1.50 - 3.50			1.50 - 3.00			5.00 - 6.00			1.50 - 3.00			0.00 - 0.10			3.00 - 4.00			1.00 - 3.00			4.50 - 6.00			
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	
Ammonium	All	X			X			X			X			X			X			X			X			X			X		0 10
Anions by ion Chromatography	All				X									X			X													0 3
Anions by Kone (w)	All	X						X			X									X			X			X			X		0 7
Cyanide Comp/Free/Total/Thiocyanate	All	X			X			X			X			X			X			X			X			X			X		0 10
Dissolved Metals by ICP-MS	All		X			X			X			X			X			N X			X			X			X			X	1 10
EPH CWG (Aliphatic) Aqueous GC (W)	All	X			X			X			X			X			X			X			X			X			X		0 10
EPH CWG (Aromatic) Aqueous GC (W)	All	X			X			X			X			X			X			X			X			X			X		0 10
GRO BTEX MTBE GC (W)	All			X			X			X			X			X			X			X			X			X		X	0 10
Hexavalent Chromium (w)	All		X			X			X			X			X			X			X			X			X			X		0 10
Mercury Dissolved	All	X			X			X			X			X			X			X			X			X			X		0 10
PAH Spec MS - Aqueous (W)	All	X			X			X			X			X			X			X			X			X			X		0 10
pH Value	All		X			X			X			X			X			X			X			X			X			X		0 10
Phenols by HPLC (W)	All	X			X			X			X			X			X			X			X			X			X		0 10
Sulphide	All		X			X			X			X			X			X			X			X			X			X		0 10
TPH CWG (W)	All	X			X			X			X			X			X			X			X			X			X		0 10
VOC MS (W)	All						X			X			X			X														X	0 6

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ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	David Megson
Client Reference:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Test Completion dates

SDG reference: 100715-55

Lab Sample No(s)	1823229	1823304	1823349	1823419	1824006	1824074	1824106	1824138	1824196	1824262
Customer Sample Ref.	D5	B8	A3	A4	C7	K5	J10	K1	H12	M3
Depth	2.00 - 3.50	2.00 - 2.70	1.50 - 3.50	1.50 - 3.00	5.00 - 6.00	1.50 - 3.00	0.00 - 0.10	3.00 - 4.00	1.00 - 3.00	4.50 - 6.00
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	16/07/2010	16/07/2010	16/07/2010
Anions by ion Chromatography		19/07/2010			19/07/2010	19/07/2010				
Anions by Kone (w)	20/07/2010		20/07/2010	20/07/2010			20/07/2010	19/07/2010	19/07/2010	19/07/2010
Cyanide	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
Dissolved Metals by ICP-MS	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	22/07/2010	21/07/2010	19/07/2010	19/07/2010	19/07/2010
EPH CWG (Aliphatic) Aqueous GC	20/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010
EPH CWG (Aromatic) Aqueous GC	20/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010
GRO by GC-FID (W)	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010
Hexavalent Chromium (w)	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	20/07/2010	19/07/2010	16/07/2010	16/07/2010	16/07/2010
Mercury Dissolved	19/07/2010	19/07/2010	19/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010
PAH Spec MS - Aqueous (W)	18/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010
pH Value	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
Phenols by HPLC (W)	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010
Sulphide	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
TPH CWG (W)	21/07/2010	22/07/2010	21/07/2010	21/07/2010	22/07/2010	22/07/2010	21/07/2010	21/07/2010	21/07/2010	22/07/2010
VOC MS (W)		21/07/2010	21/07/2010	19/07/2010	21/07/2010	21/07/2010				21/07/2010

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ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Reference:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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	A3 W004	A4 W004	B8 W004	C7 W004	D5 W004	H12 W004
Customer Sample Ref.								
Depth (m)			1.50 - 3.50	1.50 - 3.00	2.00 - 2.70	5.00 - 6.00	2.00 - 3.50	1.00 - 3.00
Sample Type			Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled			14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
Date Received			15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
SDG Ref			100715-55	100715-55	100715-55	100715-55	100715-55	100715-55
Lab Sample No.(s)			1823349	1823419	1823304	1824006	1823229	1824196
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	9.5 #	2.83 #	103 #	83.3 #	0.605 #	13.5 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099	12.2 #	3.64 #	132 #	107 #	0.778 #	17.4 #
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	31.8 #	7.35 #	38.3 #	23.9 #	1.68 #	3.44 #
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	7.49 #	5.34 #	6.43 #	5.21 #	1.45 #	6.83 #
Copper (diss.filt)	<0.85 µg/l	TM152	<0.85 #	0.915 #	<0.85 #	<0.85 #	1.52 #	<0.85 #
Lead (diss.filt)	<0.02 µg/l	TM152	0.02 #	0.05 #	0.054 #	0.422 #	0.341 #	0.055 #
Nickel (diss.filt)	<0.15 µg/l	TM152	4.93 #	3.84 #	9.24 #	2.28 #	2.17 #	3.53 #
Selenium (diss.filt)	<0.39 µg/l	TM152	1.08 #	1.02 #	5.73 #	16.9 #	0.928 #	1.07 #
Zinc (diss.filt)	<0.41 µg/l	TM152	10.8 #	4.29 #	3.48 #	3.16 #	3.79 #	2.1 #
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	0.0179 #	<0.01 #	<0.01 #
Sulphate	<3 mg/l	TM184	324 #	233 #			13.7 #	189 #
Sulphate	<0.1 mg/l	TM226			130 #	49.4 #		
Cyanide, Total	<0.05 mg/l	TM227	0.241 #	0.166 #	0.206 #	0.363 #	0.097 #	<0.05 #
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03	<0.03	<0.03	<0.06	<0.03	<0.03
pH	<1 pH Units	TM256	8.26 #	8.32 #	8.45 #	8.37 #	8.04 #	8.04 #
Resorcinol	<0.02 mg/l	TM259	<0.02	<0.02	<0.1	<2	<0.02	<0.02
Catechol	<0.03 mg/l	TM259	<0.03	<0.03	<0.15	<3	<0.03	<0.03
Phenol	<0.02 mg/l	TM259	<0.02 #	<0.02 #	24.2 #	62.3 #	<0.02 #	<0.02 #
Cresols	<0.07 mg/l	TM259	<0.07 #	<0.07 #	54 #	121 #	<0.07 #	<0.07 #
Xylenols	<0.17 mg/l	TM259	<0.17 #	<0.17 #	48.8 #	97.8 #	<0.17 #	<0.17 #
1-Naphthol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<0.15 #	<3 #	<0.03 #	<0.03 #
2,3,5-Trimethylphenol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<0.15 #	<3 #	<0.03 #	<0.03 #
2-Isopropylphenol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<0.15 #	22.9 #	<0.03 #	<0.03 #
Phenols, Total 5 speciated	<0.2 mg/l	TM259	<0.2	<0.2	127	304	<0.2	<0.2

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ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Reference:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A3 W004	A4 W004	B8 W004	C7 W004	D5 W004	H12 W004
			Depth (m)	1.50 - 3.50	1.50 - 3.00	2.00 - 2.70	5.00 - 6.00	2.00 - 3.50	1.00 - 3.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
			SDG Ref	100715-55	100715-55	100715-55	100715-55	100715-55	100715-55
			Lab Sample No.(s)	1823349	1823419	1823304	1824006	1823229	1824196
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	334	35	<10	65	26
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	580	14	<10	72	43
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	328	<10	<10	203	281
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	1240	49	<10	340	350
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174		1260	1710	14600	30600	1670	751

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ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Reference:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A3 W004	A4 W004	B8 W004	C7 W004	D5 W004	H12 W004
			Depth (m)	1.50 - 3.50	1.50 - 3.00	2.00 - 2.70	5.00 - 6.00	2.00 - 3.50	1.00 - 3.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
			SDG Ref	100715-55	100715-55	100715-55	100715-55	100715-55	100715-55
			Lab Sample No.(s)	1823349	1823419	1823304	1824006	1823229	1824196
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		615	43	12700	28300	52	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		377	139	1510	1980	174	54
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		272	288	385	348	1100	347
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		1260	470	14600	30600	1330	401

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ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Reference:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

GRO BTEX MTBE GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A3 W004	A4 W004	B8 W004	C7 W004	D5 W004	H12 W004
			Depth (m)	1.50 - 3.50	1.50 - 3.00	2.00 - 2.70	5.00 - 6.00	2.00 - 3.50	1.00 - 3.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
			SDG Ref	100715-55	100715-55	100715-55	100715-55	100715-55	100715-55
			Lab Sample No.(s)	1823349	1823419	1823304	1824006	1823229	1824196
Benzene	<7 µg/l	TM245		117 #	<7 #	8020 #	16300 #	<7 #	<7 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	275 #	203 #	<5 #	<5 #
Toluene	<4 µg/l	TM245		<4 #	<4 #	4550 #	5220 #	<4 #	<4 #
m,p-Xylene	<8 µg/l	TM245		24 #	<8 #	1810 #	1390 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245		25 #	<3 #	779 #	597 #	<3 #	<3 #
m,p,o-Xylene	<10 µg/l	TM245		49 #	<10 #	2590 #	1990 #	<10 #	<10 #
BTEX, Total	<10 µg/l	TM245		166 #	<10 #	15400 #	23700 #	<10 #	<10 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<6 #	<15 #	<3 #	<3 #
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	83.9	124	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		58.9	<10	651	2900	<10	<10
Aliphatics >C8-C10	<10 µg/l	TM245		53.2	15	777	1110	<10	10.2
Aliphatics >C10-C12	<10 µg/l	TM245		190	46.4	3500	3990	<10	30.6
Aromatics >C6-C7	<10 µg/l	TM245		117	<10	8020	16300	<10	<10
Aromatics >C7-C8	<10 µg/l	TM245		<10	<10	4550	5220	<10	<10
Aromatics >EC8-EC10	<10 µg/l	TM245		129	22.4	4030	3850	12.1	15.4
Aromatics >EC10-EC12	<10 µg/l	TM245		286	69.5	5250	5990	14.1	45.9
Total Aliphatics >C5-C12	<10 µg/l	TM245		303	61.3	5010	8120	<10	40.8
Total Aromatics >C6-C12	<10 µg/l	TM245		531	92	21800	31300	26.3	61.3

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ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Reference:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A3 W004	A4 W004	B8 W004	C7 W004	D5 W004	H12 W004
			Depth (m)	1.50 - 3.50	1.50 - 3.00	2.00 - 2.70	5.00 - 6.00	2.00 - 3.50	1.00 - 3.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
			SDG Ref	100715-55	100715-55	100715-55	100715-55	100715-55	100715-55
			Lab Sample No.(s)	1823349	1823419	1823304	1824006	1823229	1824196
Naphthalene (aq)	<0.1 µg/l	TM178		1.97	0.59	2860	5040	3.86	3.03
Acenaphthene (aq)	<0.015 µg/l	TM178		26.7	0.17	23.2	36.3	2.94	1.93
Acenaphthylene (aq)	<0.011 µg/l	TM178		7.54	1.49	174	277	9.41	4.1
Fluoranthene (aq)	<0.014 µg/l	TM178		13.8	8.31	33.4	47	37.7	19
Anthracene (aq)	<0.015 µg/l	TM178		1.48	0.65	28.6	42.6	6.19	1.83
Phenanthrene (aq)	<0.022 µg/l	TM178		1.71	0.94	95.9	155	12.1	5.77
Fluorene (aq)	<0.014 µg/l	TM178		3.63	0.3	68.6	114	3.78	1.81
Chrysene (aq)	<0.013 µg/l	TM178		4.25	2.08	5.46	5.31	11.9	5.04
Pyrene (aq)	<0.015 µg/l	TM178		20	8.08	22.5	31.8	25.3	13
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		6.06	3.43	6.75	6.06	15.4	7.24
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		4.86	5.6	5.65	3.52	17.4	12.3
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		1.83	2.17	2.18	<2.7	7.37	4.33
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		6.92	4.73	4.09	2.18	16.1	9.57
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		0.73	0.78	<0.64	<1.6	2.68	1.47
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		3.45	2.93	2.01	<1.6	10.1	5.26
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		2.57	2.85	1.67	<1.4	8.97	5.22
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178		108	45.1	3340	5760	191	101

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Reference:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A3 W004	A4 W004	B8 W004	C7 W004	D5 W004	H12 W004
Depth (m)	1.50 - 3.50	1.50 - 3.00	2.00 - 2.70	5.00 - 6.00	2.00 - 3.50	1.00 - 3.00
Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
SDG Ref	100715-55	100715-55	100715-55	100715-55	100715-55	100715-55
Lab Sample No.(s)	1823349	1823419	1823304	1824006	1823229	1824196

Component	LOD/Units	Method					
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174	303	1300	5060	8120	340	391
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174	1800	562	36400	62000	1350	462
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	2100	1870	41500	70100	1690	853

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ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Reference:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A3 W004	A4 W004	B8 W004	C7 W004		
			Depth (m)	1.50 - 3.50	1.50 - 3.00	2.00 - 2.70	5.00 - 6.00		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010		
			Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010		
			SDG Ref	100715-55	100715-55	100715-55	100715-55		
			Lab Sample No.(s)	1823349	1823419	1823304	1824006		
Dibromofluoromethane**	%	TM208		108	112	111	108		
Toluene-d8**	%	TM208		96.4	98.4	100	97.2		
4-Bromofluorobenzene**	%	TM208		107	101	92.4	87.3		
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 #	<1.3 #	<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 #	<1.3 #	<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		307 #	<1.3 #	6880 #	11100 #		
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		4.42 #	<1.4 #	4220 #	3860 #		
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 #		
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		<2.5 #	<2.5 #	211 #	158 #		

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ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Reference:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A3 W004	A4 W004	B8 W004	C7 W004
			Depth (m)	1.50 - 3.50	1.50 - 3.00	2.00 - 2.70	5.00 - 6.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010
			SDG Ref	100715-55	100715-55	100715-55	100715-55
			Lab Sample No.(s)	1823349	1823419	1823304	1824006
m,p-Xylene	<2.5 µg/l	TM208		41.9 #	3.48 #	1450 #	1070 #
o-Xylene	<1.7 µg/l	TM208		45.8 #	4.33 #	621 #	472 #
Styrene	<1.2 µg/l	TM208		<1.2 #	<1.2 #	161 #	237 #
Bromoform	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #
Isopropylbenzene	<1.4 µg/l	TM208		<1.4 #	<1.4 #	11.2 #	6.27 #
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 #	14.1 #	8.72 #
2-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208		6.29 #	<1.8 #	88.8 #	52.5 #
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		19.1 #	2.63 #	217 #	131 #
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		<3.5 #	<3.5 #	4430 #	5070 #
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

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ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Reference:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref. / Depth (m) / Sample Type / Date Sampled / Date Received / SDG Ref / Lab Sample No.(s)			
			J10 W004 0.00 - 0.10 Water(GW/SW) 14/07/2010 15/07/2010 100715-55 1824106	K1 W004 3.00 - 4.00 Water(GW/SW) 14/07/2010 15/07/2010 100715-55 1824138	K5 W004 1.50 - 3.00 Water(GW/SW) 14/07/2010 15/07/2010 100715-55 1824074	M3 W004 4.50 - 6.00 Water(GW/SW) 14/07/2010 15/07/2010 100715-55 1824262
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	0.444 #	8.45 #	167 #	1.28 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099	0.571 #	10.9 #	215 #	1.65 #
Sulphide	<0.01 mg/l	TM101	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Arsenic (diss.filt)	<0.12 µg/l	TM152	1.73 #	2.5 #	167 #	2.91 #
Cadmium (diss.filt)	<0.1 µg/l	TM152	0.172 #	<0.1 #	0.32 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152	3.74 #	5.5 #	22.9 #	2.51 #
Copper (diss.filt)	<0.85 µg/l	TM152	7.73 #	1.47 #	3.84 #	4.84 #
Lead (diss.filt)	<0.02 µg/l	TM152	0.144 #	0.212 #	4.15 #	0.122 #
Nickel (diss.filt)	<0.15 µg/l	TM152	5.61 #	6.69 #	35.4 #	3.6 #
Selenium (diss.filt)	<0.39 µg/l	TM152	1.56 #	1.08 #	26.1 #	1.69 #
Zinc (diss.filt)	<0.41 µg/l	TM152	4.82 #	2.9 #	173 #	2.49 #
Mercury (diss.filt)	<0.01 µg/l	TM183	0.0101 #	<0.01 #	0.0677 #	<0.01 #
Sulphate	<3 mg/l	TM184	266 #	800 #		564 #
Sulphate	<0.1 mg/l	TM226			728 #	
Cyanide, Total	<0.05 mg/l	TM227	<0.05 #	0.267 #	14.6 #	0.771 #
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03	<0.03	<0.3	<0.03
pH	<1 pH Units	TM256	8.19 #	7.72 #	9.33 #	7.94 #
Resorcinol	<0.02 mg/l	TM259	<0.02	<0.02	<20	<0.02
Catechol	<0.03 mg/l	TM259	<0.03	<0.03	<30	<0.03
Phenol	<0.02 mg/l	TM259	<0.02 #	<0.02 #	587 #	<0.02 #
Cresols	<0.07 mg/l	TM259	<0.07 #	<0.07 #	879 #	<0.07 #
Xylenols	<0.17 mg/l	TM259	<0.17 #	<0.17 #	355 #	<0.17 #
1-Naphthol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<30 #	<0.03 #
2,3,5-Trimethylphenol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<30 #	<0.03 #
2-Isopropylphenol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<30 #	<0.03 #
Phenols, Total 5 speciated	<0.2 mg/l	TM259	<0.2	<0.2	1820	<0.2

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ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Reference:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	J10 W004	K1 W004	K5 W004	M3 W004
			Depth (m)	0.00 - 0.10	3.00 - 4.00	1.50 - 3.00	4.50 - 6.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010
			SDG Ref	100715-55	100715-55	100715-55	100715-55
			Lab Sample No.(s)	1824106	1824138	1824074	1824262
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	<10	<10
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174		<10	20	66500	<10

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Reference:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	J10 W004	K1 W004	K5 W004	M3 W004		
Depth (m)	0.00 - 0.10	3.00 - 4.00	1.50 - 3.00	4.50 - 6.00		
Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010		
Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010		
SDG Ref	100715-55	100715-55	100715-55	100715-55		
Lab Sample No.(s)	1824106	1824138	1824074	1824262		
Component	**LOD/Units**	**Method**				
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	<10	<10	62200	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	<10	<10	3500	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	<10	20	756	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	<10	20	66500	<10

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EPA Export 25-05-2012:04:42:43

ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Reference:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

GRO BTEX MTBE GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	J10 W004	K1 W004	K5 W004	M3 W004		
			Depth (m)	0.00 - 0.10	3.00 - 4.00	1.50 - 3.00	4.50 - 6.00		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010		
			Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010		
			SDG Ref	100715-55	100715-55	100715-55	100715-55		
			Lab Sample No.(s)	1824106	1824138	1824074	1824262		
Benzene	<7 µg/l	TM245		<7 #	<7 #	14300 #	<7 #		
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	271 #	<5 #		
Toluene	<4 µg/l	TM245		<4 #	<4 #	4870 #	<4 #		
m,p-Xylene	<8 µg/l	TM245		<8 #	<8 #	1920 #	<8 #		
o-Xylene	<3 µg/l	TM245		<3 #	<3 #	732 #	<3 #		
m,p,o-Xylene	<10 µg/l	TM245		<10 #	<10 #	2650 #	<10 #		
BTEX, Total	<10 µg/l	TM245		<10 #	<10 #	22100 #	<10 #		
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<15 #	<3 #		
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	868	<10		
Aliphatics >C6-C8	<10 µg/l	TM245		<10	<10	3910	<10		
Aliphatics >C8-C10	<10 µg/l	TM245		<10	<10	1850	<10		
Aliphatics >C10-C12	<10 µg/l	TM245		<10	<10	8230	<10		
Aromatics >C6-C7	<10 µg/l	TM245		<10	<10	14300	<10		
Aromatics >C7-C8	<10 µg/l	TM245		<10	<10	4870	<10		
Aromatics >EC8-EC10	<10 µg/l	TM245		<10	<10	5700	<10		
Aromatics >EC10-EC12	<10 µg/l	TM245		<10	<10	12300	<10		
Total Aliphatics >C5-C12	<10 µg/l	TM245		<10	<10	14900	<10		
Total Aromatics >C6-C12	<10 µg/l	TM245		<10	<10	37200	<10		

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ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Reference:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	J10 W004	K1 W004	K5 W004	M3 W004
			Depth (m)	0.00 - 0.10	3.00 - 4.00	1.50 - 3.00	4.50 - 6.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010
			SDG Ref	100715-55	100715-55	100715-55	100715-55
			Lab Sample No.(s)	1824106	1824138	1824074	1824262
Naphthalene (aq)	<0.1 µg/l	TM178		<0.1	0.15	2580	0.22
Acenaphthene (aq)	<0.015 µg/l	TM178		<0.015	0.1	31.6	<0.015
Acenaphthylene (aq)	<0.011 µg/l	TM178		0.16	0.22	190	0.07
Fluoranthene (aq)	<0.014 µg/l	TM178		0.21	2.01	14.9	1.38
Anthracene (aq)	<0.015 µg/l	TM178		0.05	0.2	21.6	0.09
Phenanthrene (aq)	<0.022 µg/l	TM178		0.1	0.57	72.5	0.18
Fluorene (aq)	<0.014 µg/l	TM178		0.04	0.1	67.2	0.03
Chrysene (aq)	<0.013 µg/l	TM178		0.1	1.02	<1.3	0.77
Pyrene (aq)	<0.015 µg/l	TM178		0.17	2.03	9.42	1.23
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		0.16	1.26	<1.7	0.97
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		0.32	2.34	<2.3	1.97
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		0.11	0.85	<2.7	0.67
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		0.3	1.7	<0.9	1.39
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		0.06	0.34	<1.6	0.27
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		0.22	1.43	<1.6	1.3
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		0.18	1.21	<1.4	1.06
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178		2.08	15.5	2990	10.9

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Reference:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	J10 W004	K1 W004	K5 W004	M3 W004		
			Depth (m)	0.00 - 0.10	3.00 - 4.00	1.50 - 3.00	4.50 - 6.00		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010		
			Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010		
			SDG Ref	100715-55	100715-55	100715-55	100715-55		
			Lab Sample No.(s)	1824106	1824138	1824074	1824262		
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174		<10	<10	14900	<10		
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174		<10	20	104000	<10		
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		<10	20	119000	<10		

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ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Reference:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	K5 W004	M3 W004
			Depth (m)	1.50 - 3.00	4.50 - 6.00
			Sample Type	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010
			SDG Ref	100715-55	100715-55
			Lab Sample No.(s)	1824074	1824262
Dibromofluoromethane**	%	TM208		7.8	109
Toluene-d8**	%	TM208		81.6	98.2
4-Bromofluorobenzene**	%	TM208		62.1	97.7
Dichlorodifluoromethane	<7 µg/l	TM208		<7 #	<7 #
Chloromethane	<9 µg/l	TM208		<9 #	<9 #
Vinyl chloride	<1.2 µg/l	TM208		<1.2 #	<1.2 #
Bromomethane	<2 µg/l	TM208		<2 #	<2 #
Chloroethane	<2.5 µg/l	TM208		<2.5 #	<2.5 #
Trichlorofluoromethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #
1,1-Dichloroethene	<1.2 µg/l	TM208		<1.2 #	<1.2 #
Carbon disulphide	<1.3 µg/l	TM208		5.51 #	<1.3 #
Dichloromethane	<3.7 µg/l	TM208		<3.7 #	<3.7 #
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208		<1.6 #	<1.6 #
trans-1,2-Dichloroethene	<1.9 µg/l	TM208		<1.9 #	<1.9 #
1,1-Dichloroethane	<1.2 µg/l	TM208		<1.2 #	<1.2 #
cis-1,2-Dichloroethene	<2.3 µg/l	TM208		<2.3 #	<2.3 #
2,2-Dichloropropane	<3.8 µg/l	TM208		<3.8 #	<3.8 #
Bromochloromethane	<1.9 µg/l	TM208		<1.9 #	<1.9 #
Chloroform	<1.8 µg/l	TM208		<1.8 #	<1.8 #
1,1,1-Trichloroethane	<1.3 µg/l	TM208		4.67 #	<1.3 #
1,1-Dichloropropene	<1.3 µg/l	TM208		<1.3 #	<1.3 #
Carbontetrachloride	<1.4 µg/l	TM208		<1.4 #	<1.4 #
1,2-Dichloroethane	<3.3 µg/l	TM208		<3.3	<3.3
Benzene	<1.3 µg/l	TM208		13000 #	<1.3 #
Trichloroethene	<2.5 µg/l	TM208		8.52 #	<2.5 #
1,2-Dichloropropane	<3 µg/l	TM208		<3 #	<3 #
Dibromomethane	<2.7 µg/l	TM208		<2.7 #	<2.7 #
Bromodichloromethane	<0.9 µg/l	TM208		<0.9 #	<0.9 #
cis-1,3-Dichloropropene	<1.9 µg/l	TM208		<1.9 #	<1.9 #
Toluene	<1.4 µg/l	TM208		4260 #	<1.4 #
trans-1,3-Dichloropropene	<3.5 µg/l	TM208		<3.5 #	<3.5 #
1,1,2-Trichloroethane	<2.2 µg/l	TM208		<2.2 #	<2.2 #
1,3-Dichloropropane	<2.2 µg/l	TM208		<2.2 #	<2.2 #
Tetrachloroethene	<1.5 µg/l	TM208		<1.5 #	<1.5 #
Dibromochloromethane	<1.7 µg/l	TM208		<1.7 #	<1.7 #
1,2-Dibromoethane	<2.3 µg/l	TM208		<2.3 #	<2.3 #
Chlorobenzene	<3.5 µg/l	TM208		<3.5 #	<3.5 #
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #
Ethylbenzene	<2.5 µg/l	TM208		206 #	<2.5 #

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ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Reference:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	K5 W004	M3 W004
			Depth (m)	1.50 - 3.00	4.50 - 6.00
			Sample Type	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010
			SDG Ref	100715-55	100715-55
			Lab Sample No.(s)	1824074	1824262
m,p-Xylene	<2.5 µg/l	TM208		1310 #	<2.5 #
o-Xylene	<1.7 µg/l	TM208		515 #	<1.7 #
Styrene	<1.2 µg/l	TM208		247 #	<1.2 #
Bromoform	<3 µg/l	TM208		<3 #	<3 #
Isopropylbenzene	<1.4 µg/l	TM208		8.7 #	<1.4 #
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208		<5.2	<5.2
1,2,3-Trichloropropane	<7.8 µg/l	TM208		<7.8 #	<7.8 #
Bromobenzene	<2 µg/l	TM208		<2 #	<2 #
Propylbenzene	<2.6 µg/l	TM208		9.99 #	<2.6 #
2-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #	<1.9 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208		50.6 #	<1.8 #
4-Chlorotoluene	<1.9 µg/l	TM208		2.28 #	<1.9 #
tert-Butylbenzene	<2 µg/l	TM208		<2 #	<2 #
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208		116 #	<1.7 #
sec-Butylbenzene	<1.7 µg/l	TM208		<1.7 #	<1.7 #
4-iso-Propyltoluene	<2.6 µg/l	TM208		<2.6 #	<2.6 #
1,3-Dichlorobenzene	<2.2 µg/l	TM208		<2.2 #	<2.2 #
1,4-Dichlorobenzene	<2.7 µg/l	TM208		<2.7 #	<2.7 #
n-Butylbenzene	<2 µg/l	TM208		<2 #	<2 #
1,2-Dichlorobenzene	<3.7 µg/l	TM208		<3.7	<3.7
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208		<9.8	<9.8
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208		<2.3 #	<2.3 #
Hexachlorobutadiene	<2.5 µg/l	TM208		<2.5 #	<2.5 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #
Naphthalene	<3.5 µg/l	TM208		4590 #	<3.5 #
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208		<3.1 #	<3.1 #
1,3,5-Trichlorobenzene	<10 µg/l	TM208		<10	<10

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Table of Results - Appendix

SDG Number : 100715-55 **Client :** Mouchel **Client Ref :** 15/07/10

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]
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	
TM226	In-House Method	Determination of Anions in Waters using Ion Chromatography	
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			

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

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ALcontrol Laboratories Analytical Services

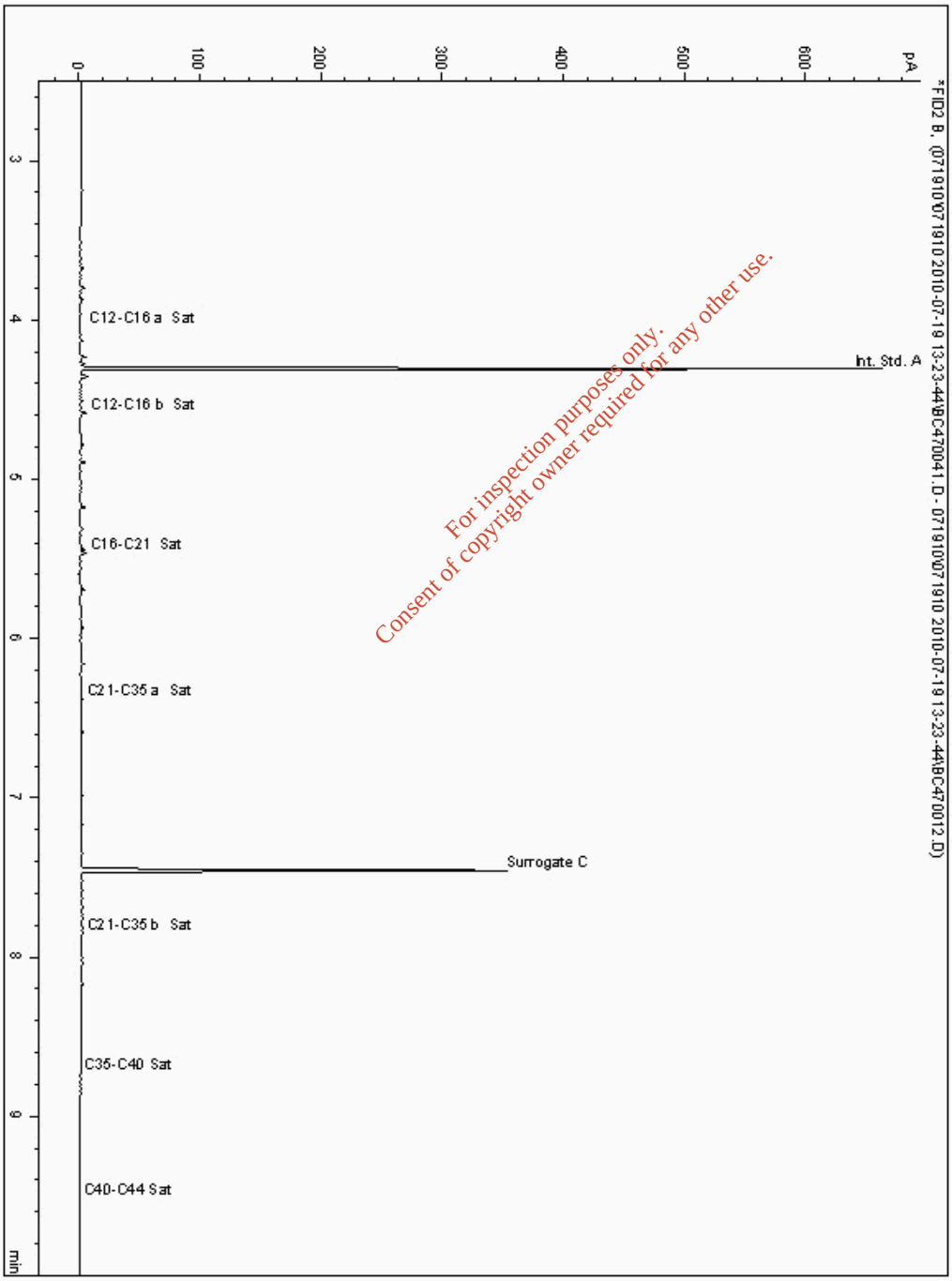
SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Chromatogram

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1830454
		Sample ID	D5
		Depth	2.00 - 3.50

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

Sample Identity: 1939156-1830454
Date Acquired : 20/07/10 01:42:55
Units :
Dilution :
CF : 1
Multiplier : 0.017



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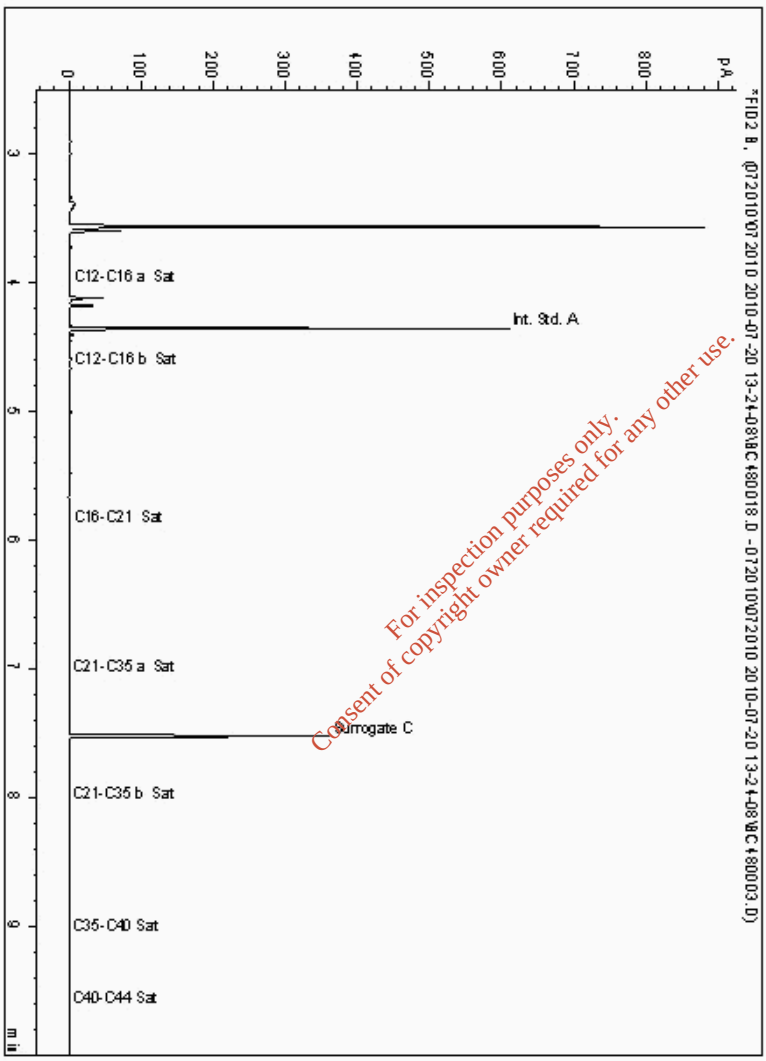
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1830469
		Sample ID	B8
		Depth	2.00 - 2.70

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

Sample Identity: 1939174-1830469
Date Acquired : 20/07/10 18:46:41
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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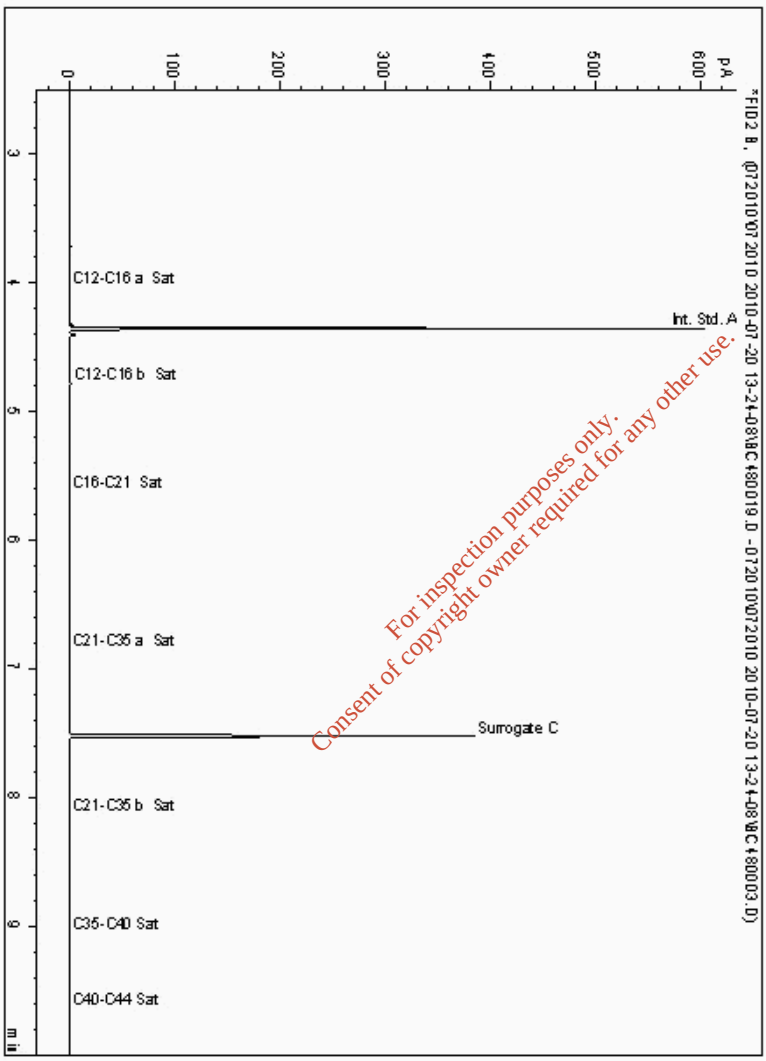
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1830483
		Sample ID	A3
		Depth	1.50 - 3.50

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

Sample Identity: 1939193-1830483
Date Acquired : 20/07/10 19:05:32
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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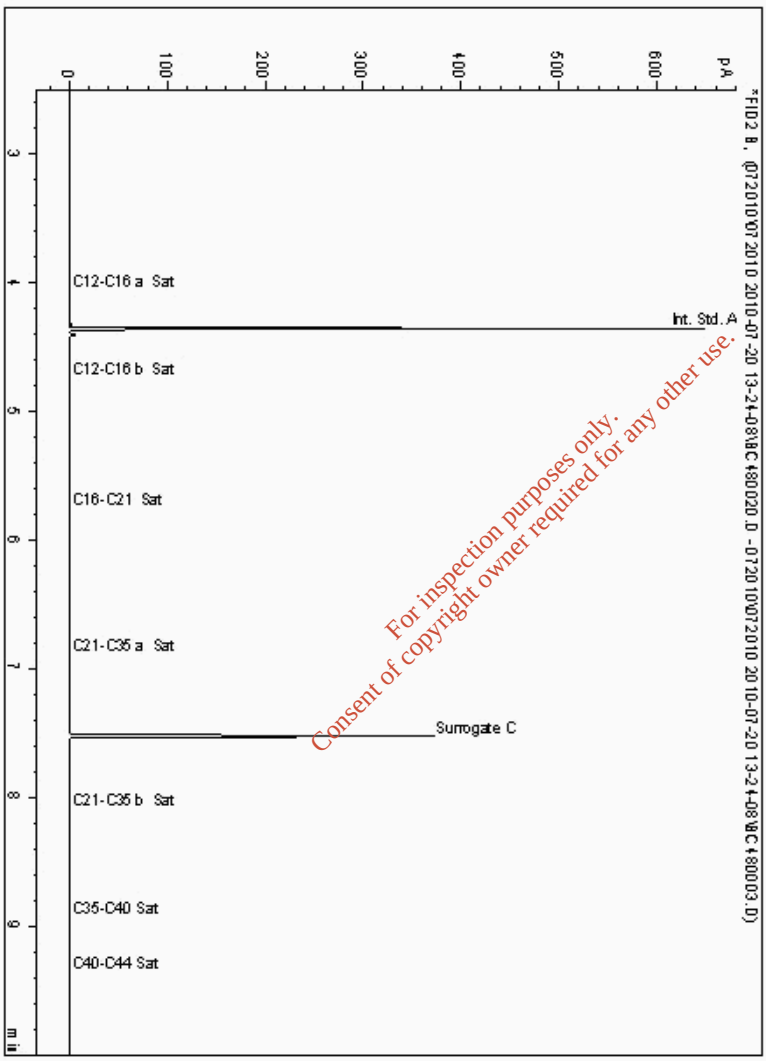
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1832109
		Sample ID	M3
		Depth	4.50 - 6.00

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

Sample Identity: 1939318-1832109
Date Acquired : 20/07/10 19:24:23
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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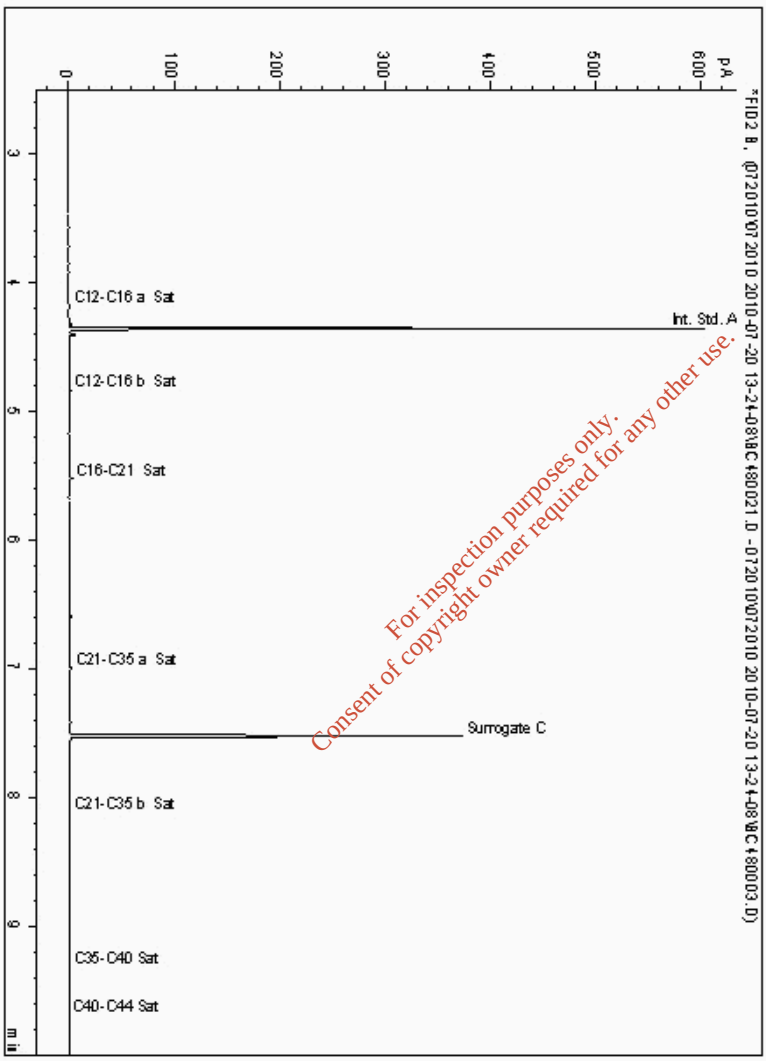
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1832165
		Sample ID	H12
		Depth	1.00 - 3.00

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

Sample Identity: 1939303-1832165
Date Acquired : 20/07/10 19:43:26
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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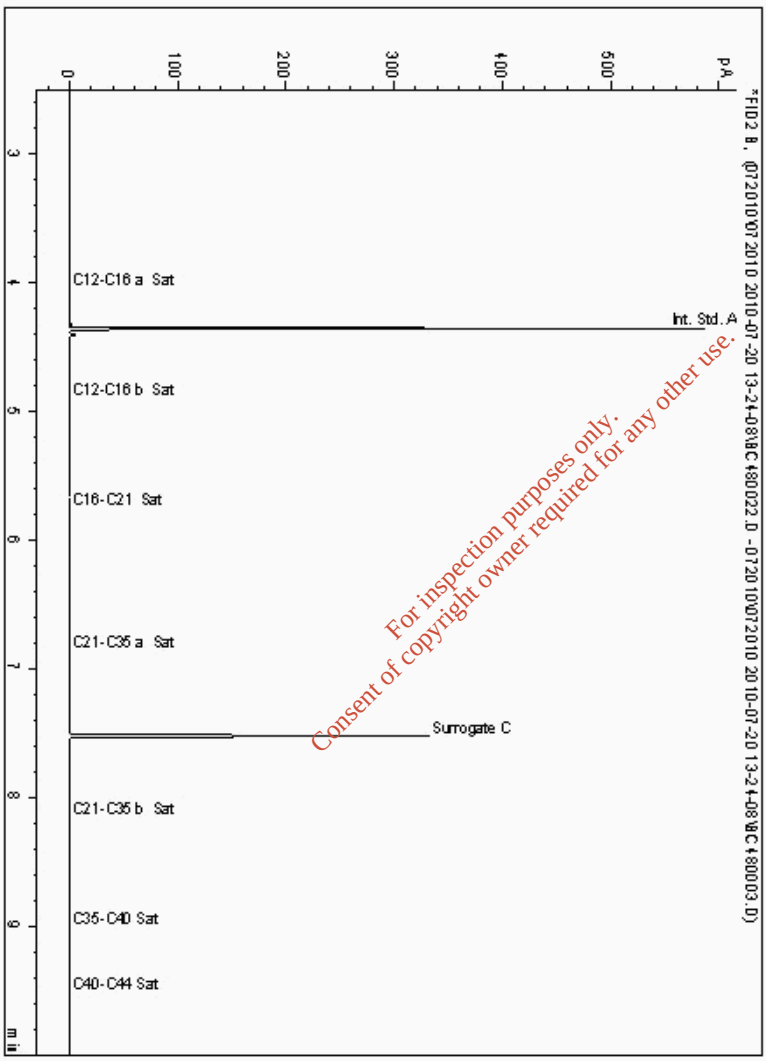
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1832208
		Sample ID	J10
		Depth	0.00 - 0.10

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

Sample Identity: 1939271-1832208
Date Acquired : 20/07/10 20:02:17
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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Validated

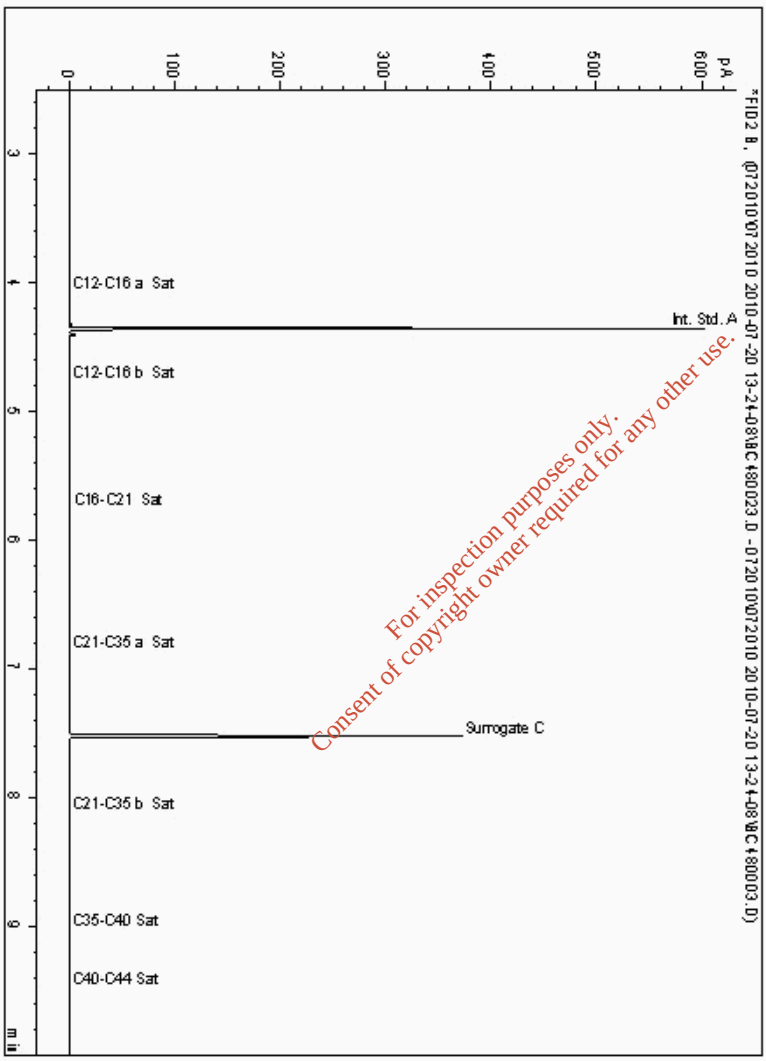
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1832248
		Sample ID	K1
		Depth	3.00 - 4.00

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

Sample Identity: 1939286-1832248
Date Acquired : 20/07/10 20:21:07
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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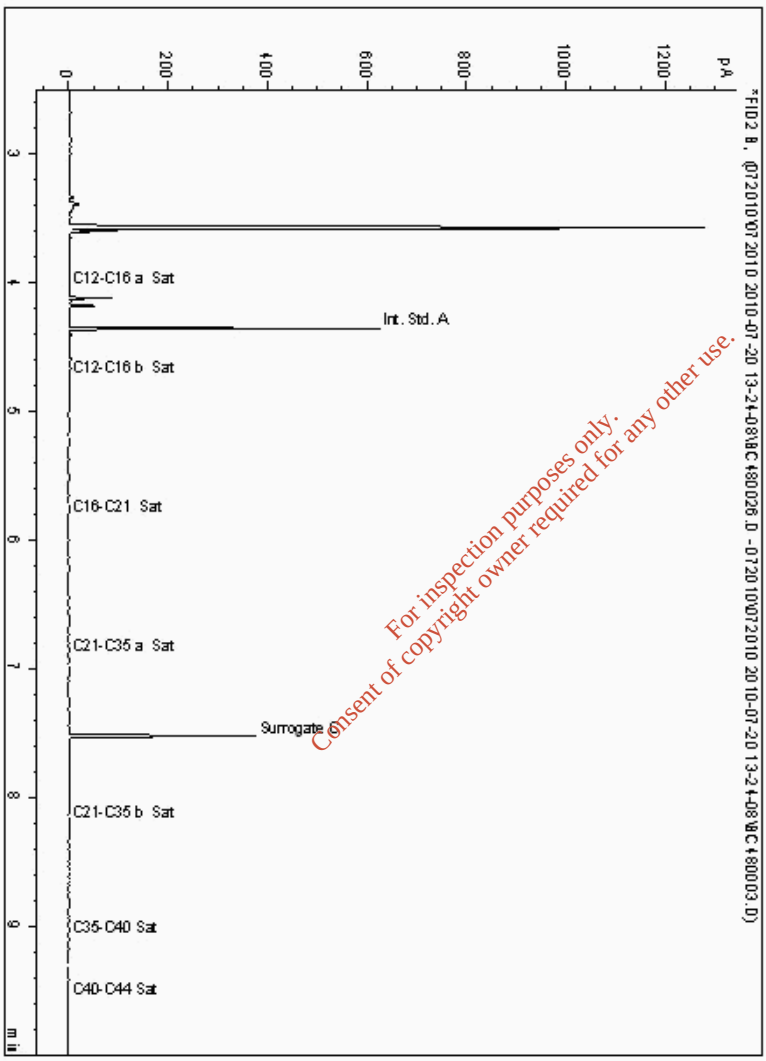
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1832618
		Sample ID	C7
		Depth	5.00 - 6.00

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

Sample Identity: 1939239-1832618
Date Acquired : 20/07/10 21:17:44
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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Validated

ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1832660
		Sample ID	K5
		Depth	1.50 - 3.00

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

Sample Identity: 1939255-1832660
Date Acquired : 20/07/10 21:37:29
Units : ppb
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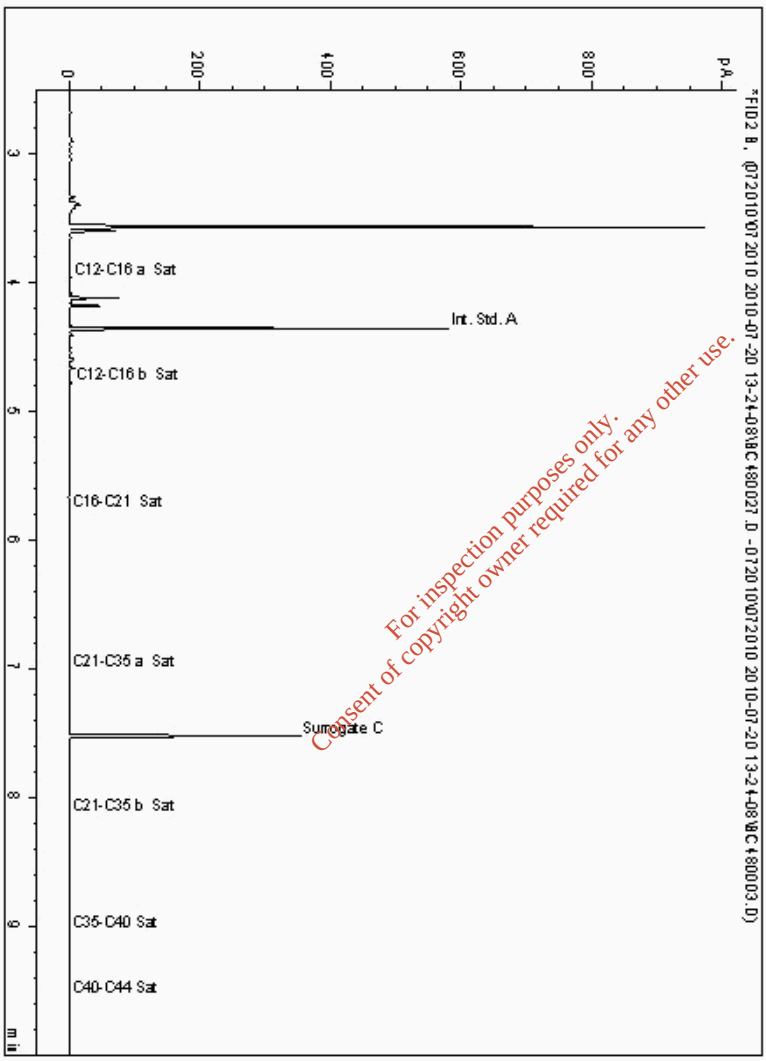
Multiplier : 0.017



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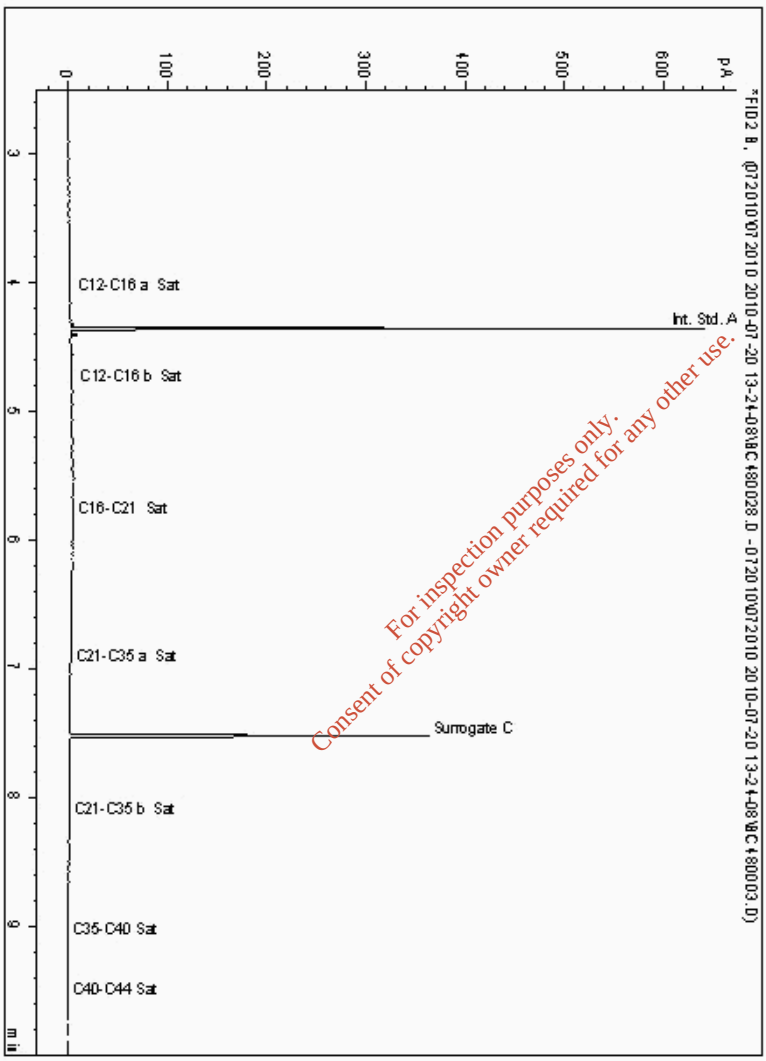
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1832689
		Sample ID	A4
		Depth	1.50 - 3.00

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

Sample Identity: 1939209-1832689
Date Acquired : 20/07/10 21:56:17
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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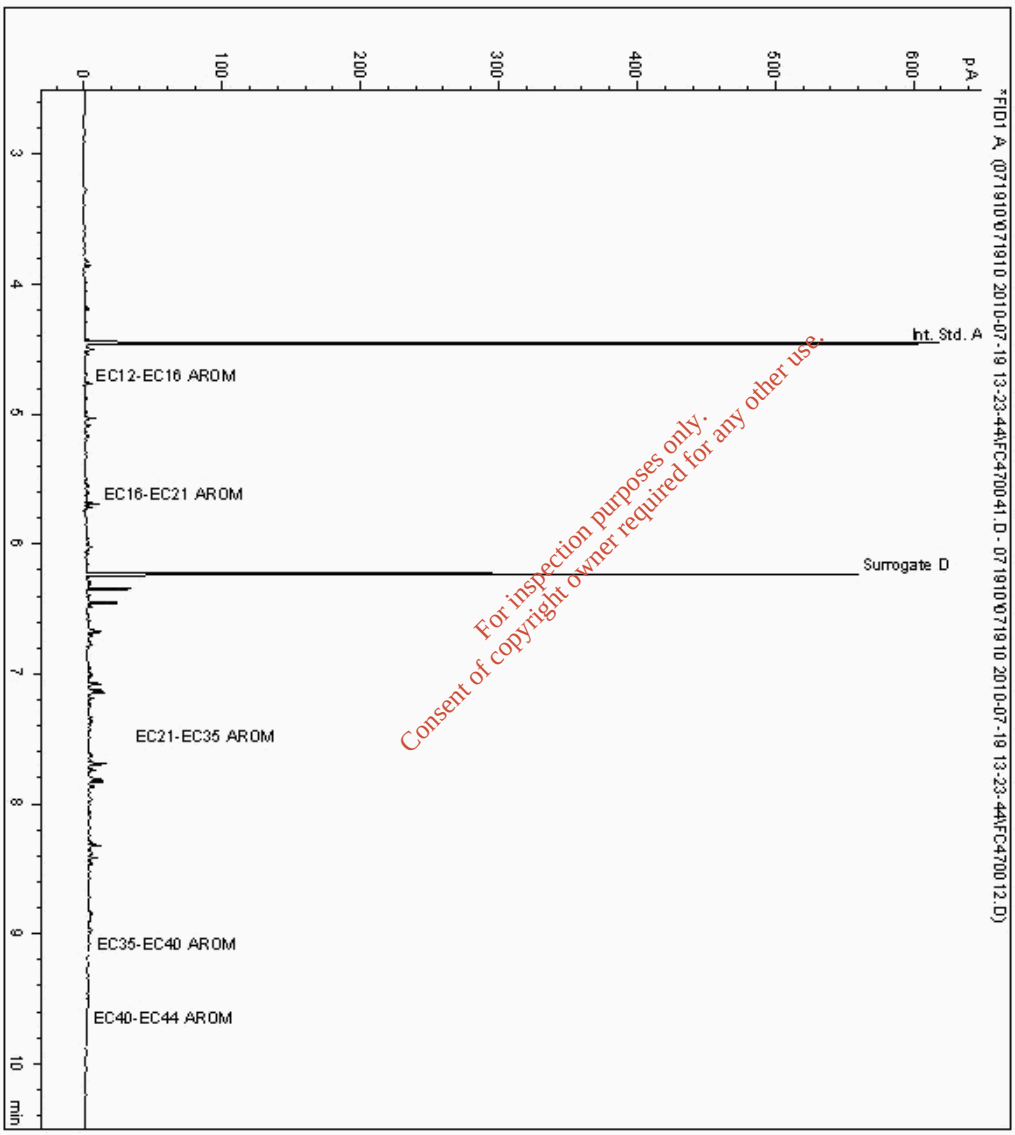
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1830454
		Sample ID	D5
		Depth	2.00 - 3.50

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

Sample Identity: 1939157-1830454
Date Acquired : 20/07/10 01:42:56
Units :
Dilution :
CF : 1
Multiplier : 0.017



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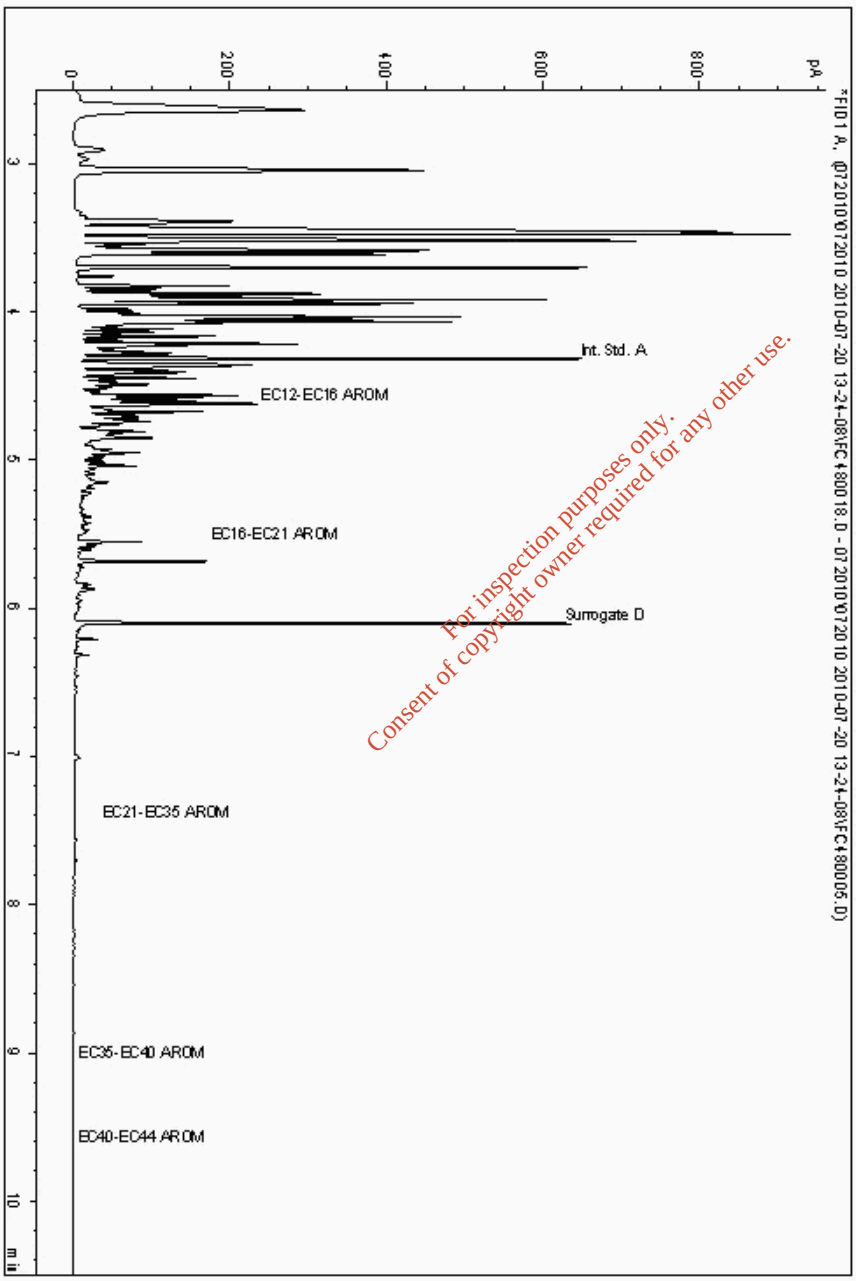
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1830469
		Sample ID	B8
		Depth	2.00 - 2.70

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

Sample Identity: 1939175-1830469
Date Acquired : 20/07/10 18:46:41
Units :
Dilution :
CF : 1
Multiplier : 0.017



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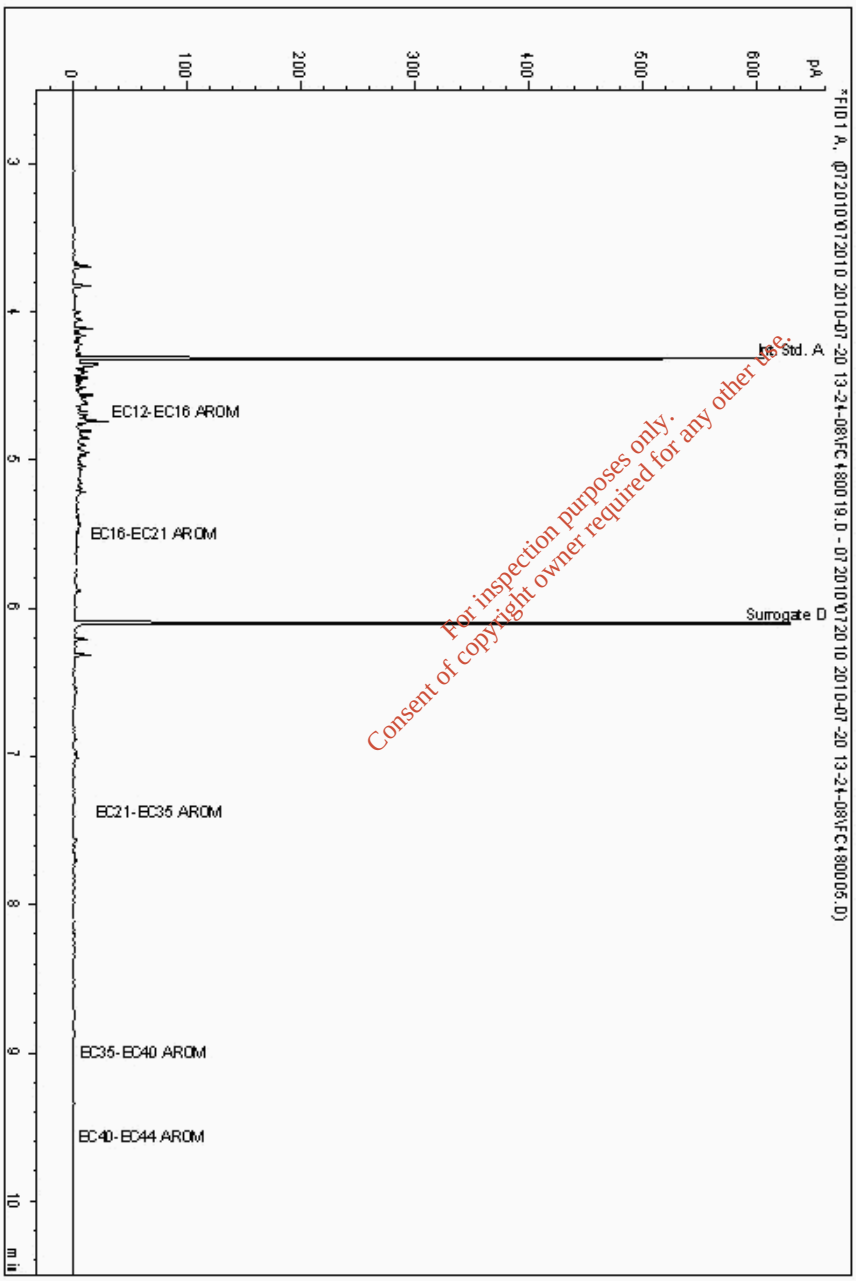
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1830483
		Sample ID	A3
		Depth	1.50 - 3.50

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

Sample Identity: 1939194-1830483
Date Acquired : 20/07/10 19:05:32
Units :
Dilution :
CF : 1
Multiplier : 0.017



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Validated

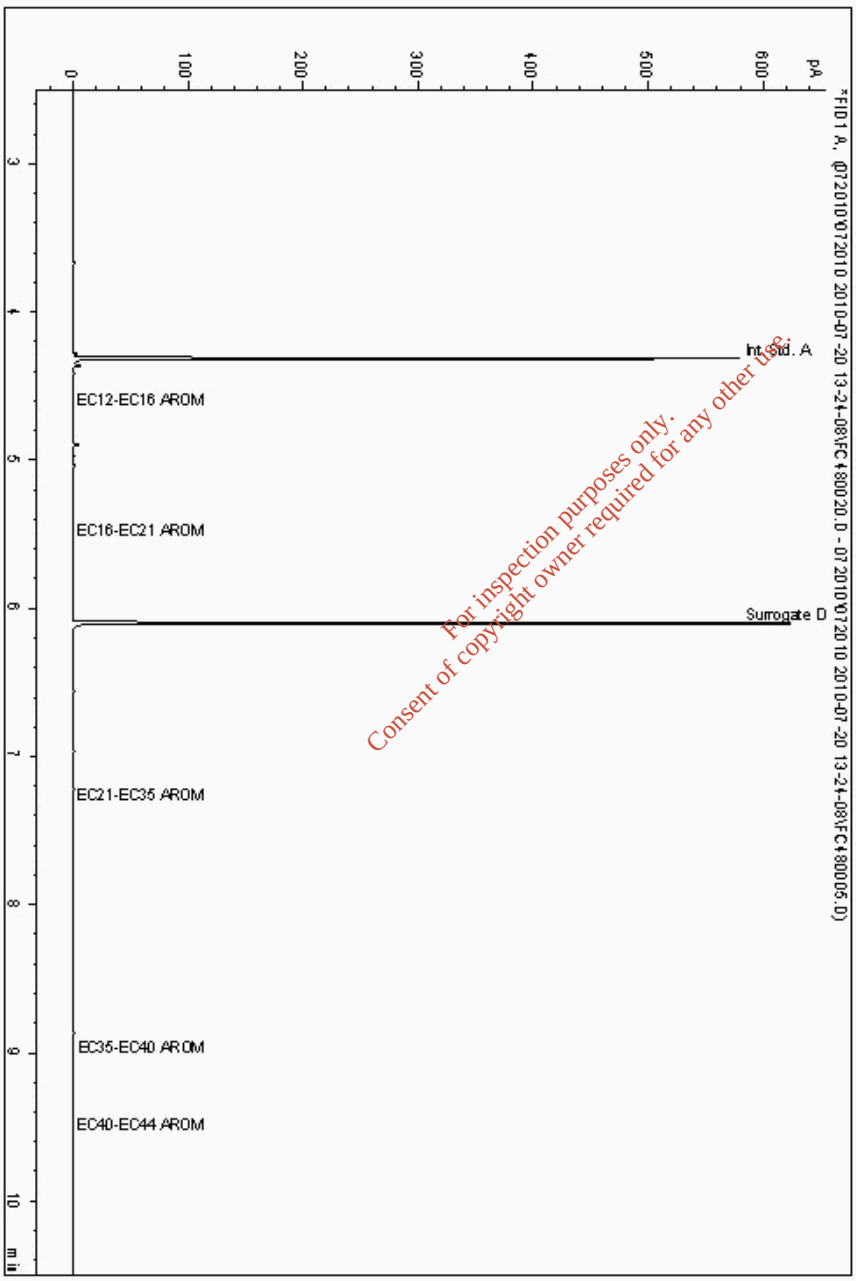
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1832109
		Sample ID	M3
		Depth	4.50 - 6.00

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

Sample Identity: 1939319-1832109
Date Acquired : 20/07/10 19:24:23
Units :
Dilution :
CF : 1
Multiplier : 0.017



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Validated

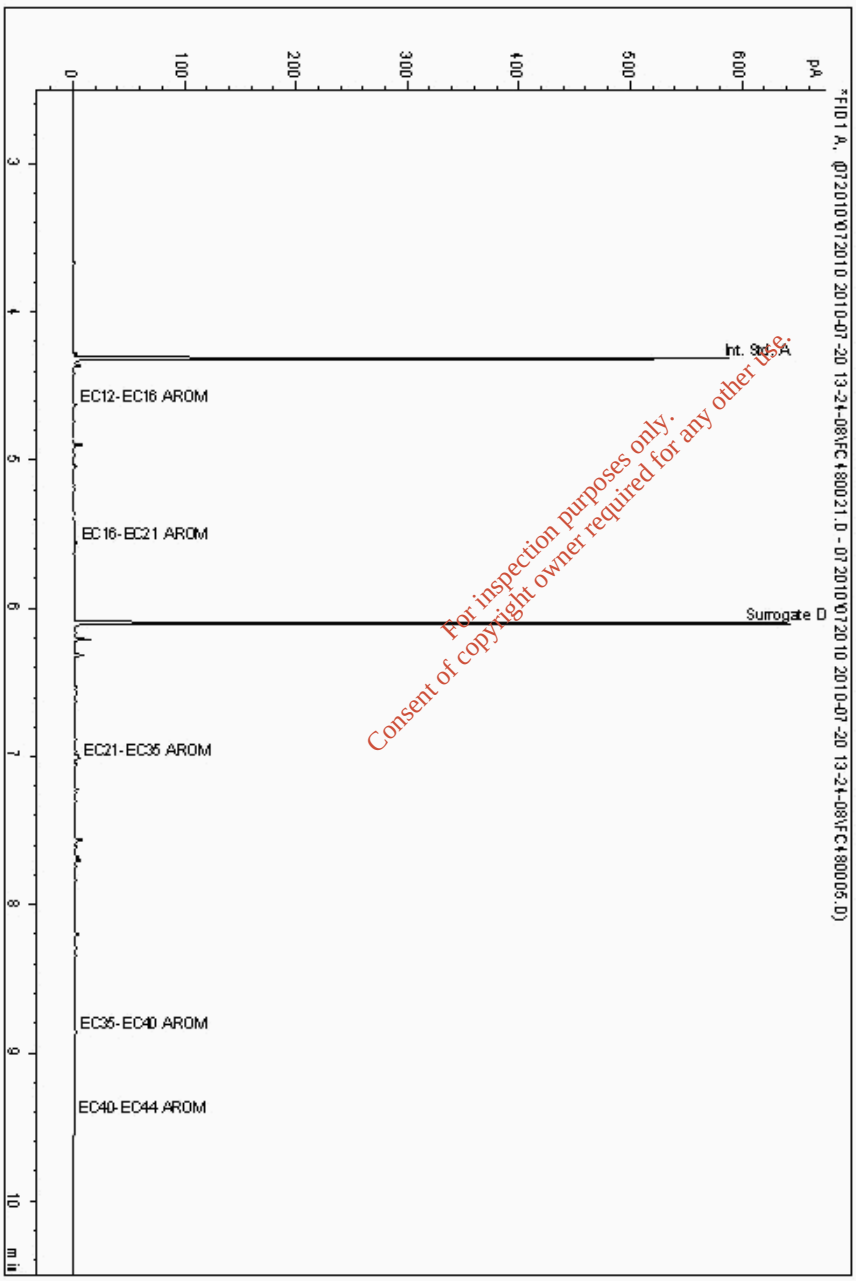
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1832165
		Sample ID	H12
		Depth	1.00 - 3.00

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

Sample Identity: 1939304-1832165
Date Acquired : 20/07/10 19:43:26
Units :
Dilution :
CF : 1
Multiplier : 0.017



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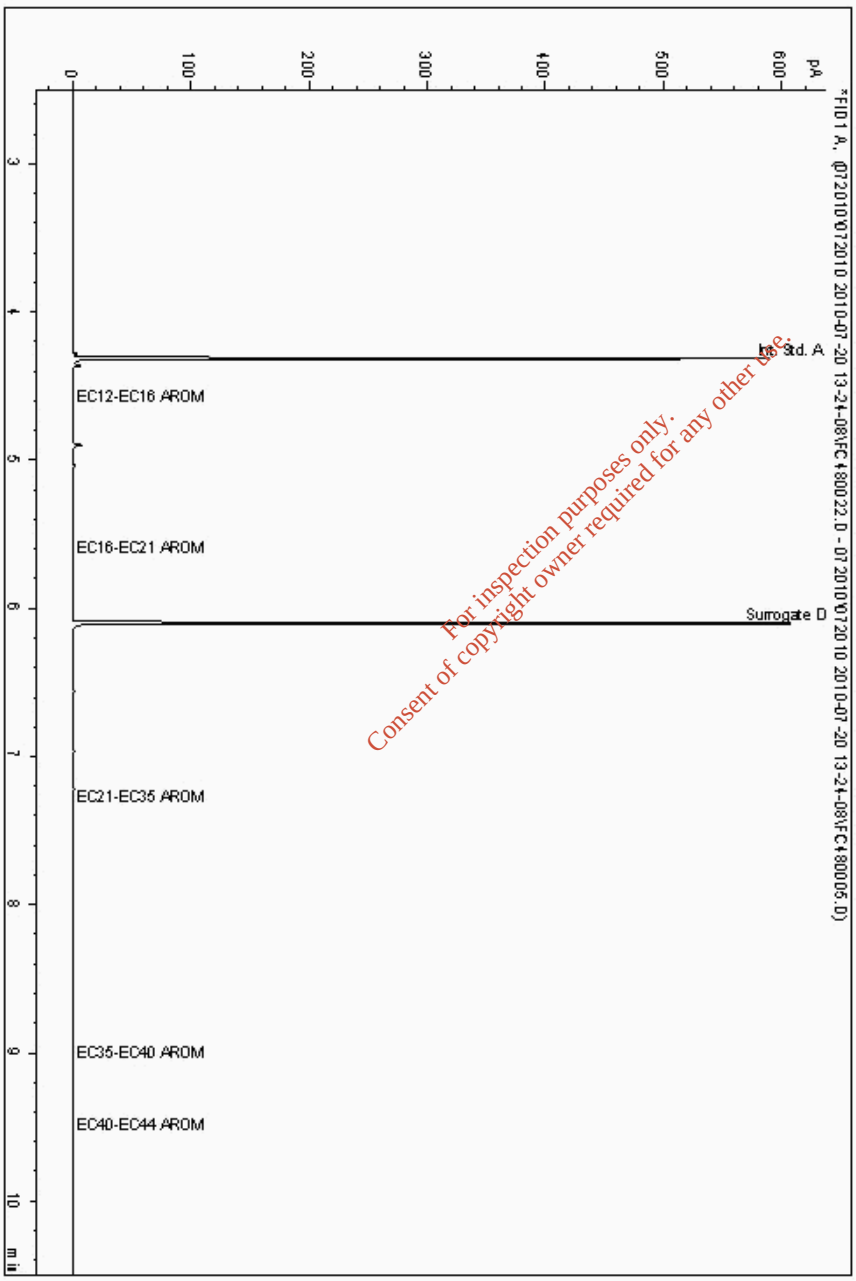
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1832208
		Sample ID	J10
		Depth	0.00 - 0.10

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

Sample Identity: 1939272-1832208
Date Acquired : 20/07/10 20:02:17
Units :
Dilution :
CF : 1
Multiplier : 0.017



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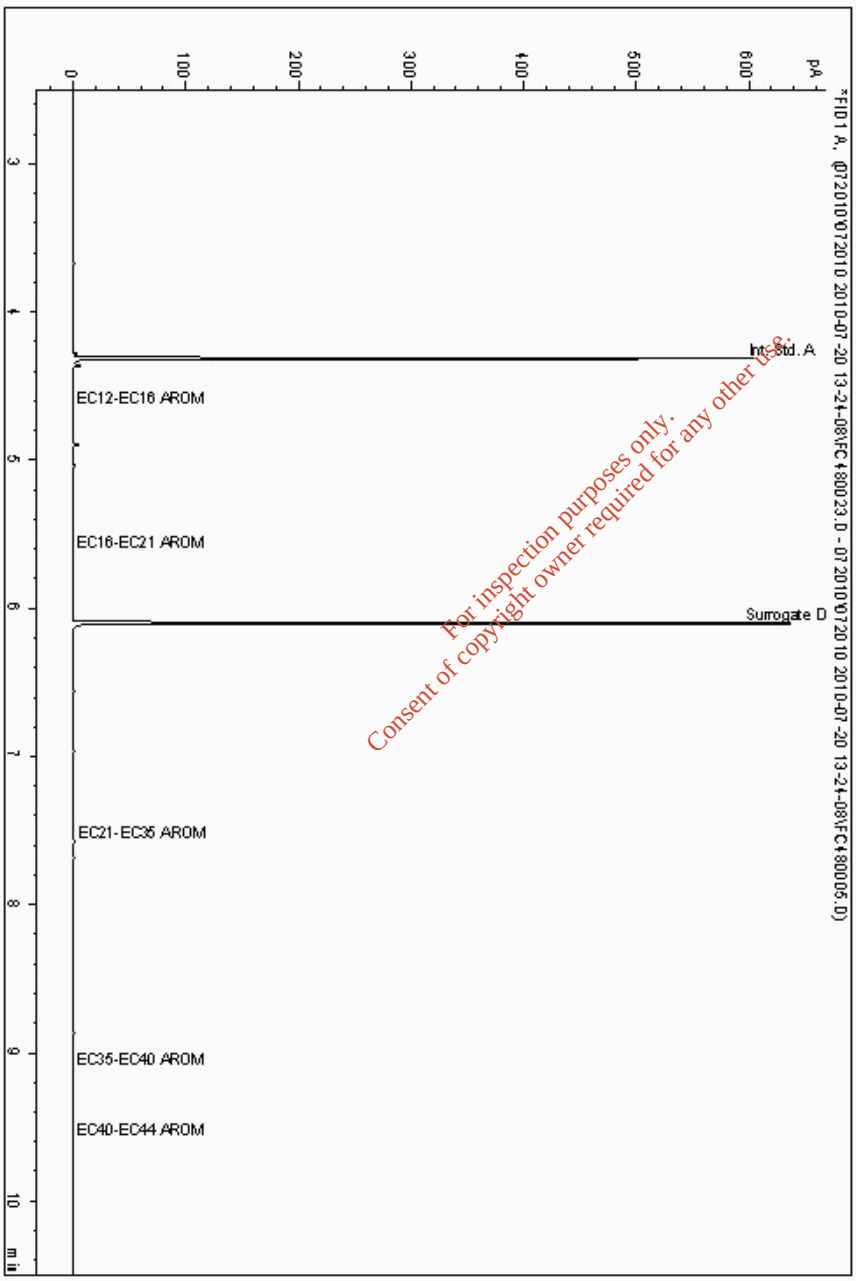
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1832248
		Sample ID	K1
		Depth	3.00 - 4.00

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

Sample Identity: 1939287-1832248
Date Acquired : 20/07/10 20:21:07
Units :
Dilution :
CF : 1
Multiplier : 0.017



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Validated

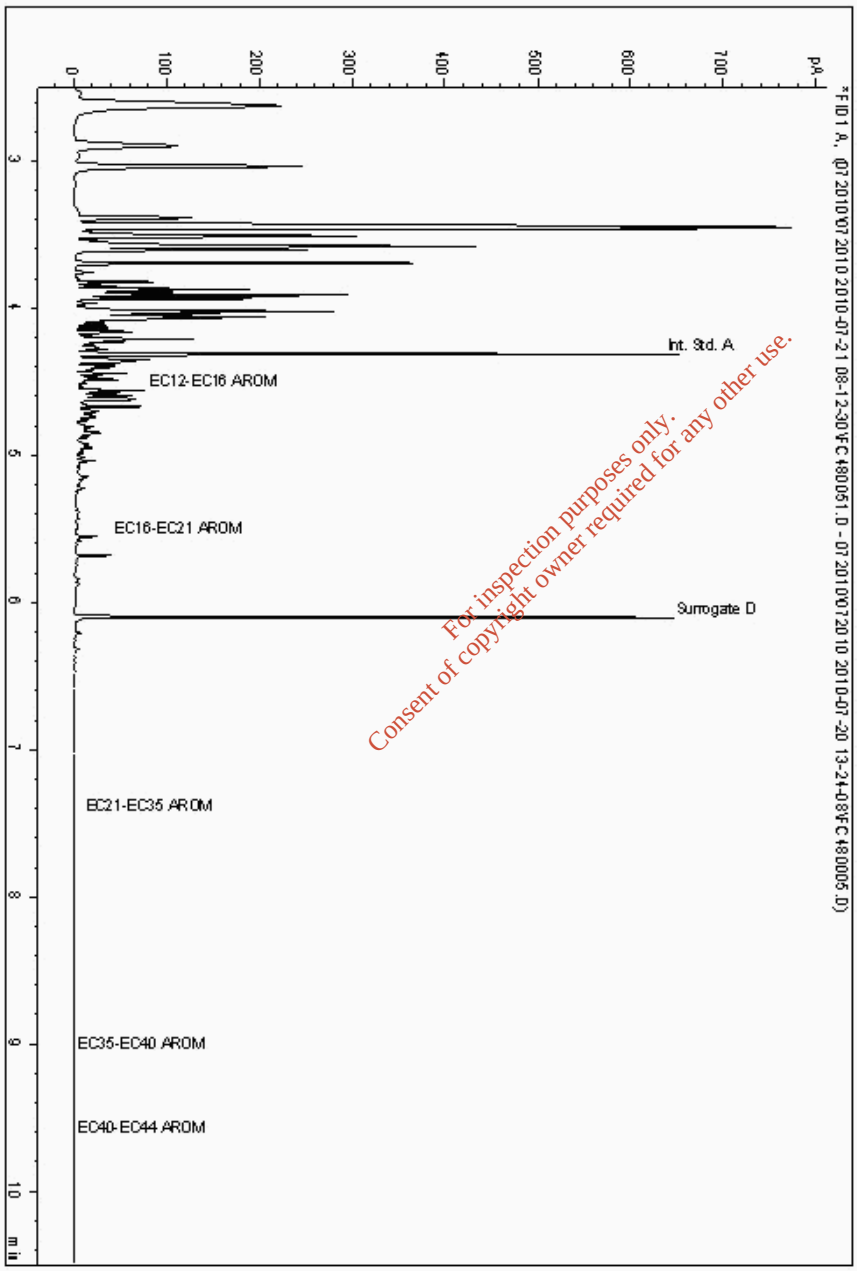
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1832618
		Sample ID	C7
		Depth	5.00 - 6.00

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

Sample Identity: 1939240-1832618
Date Acquired : 21/07/10 08:22:42
Units :
Dilution :
CF : 1
Multiplier : 0.083



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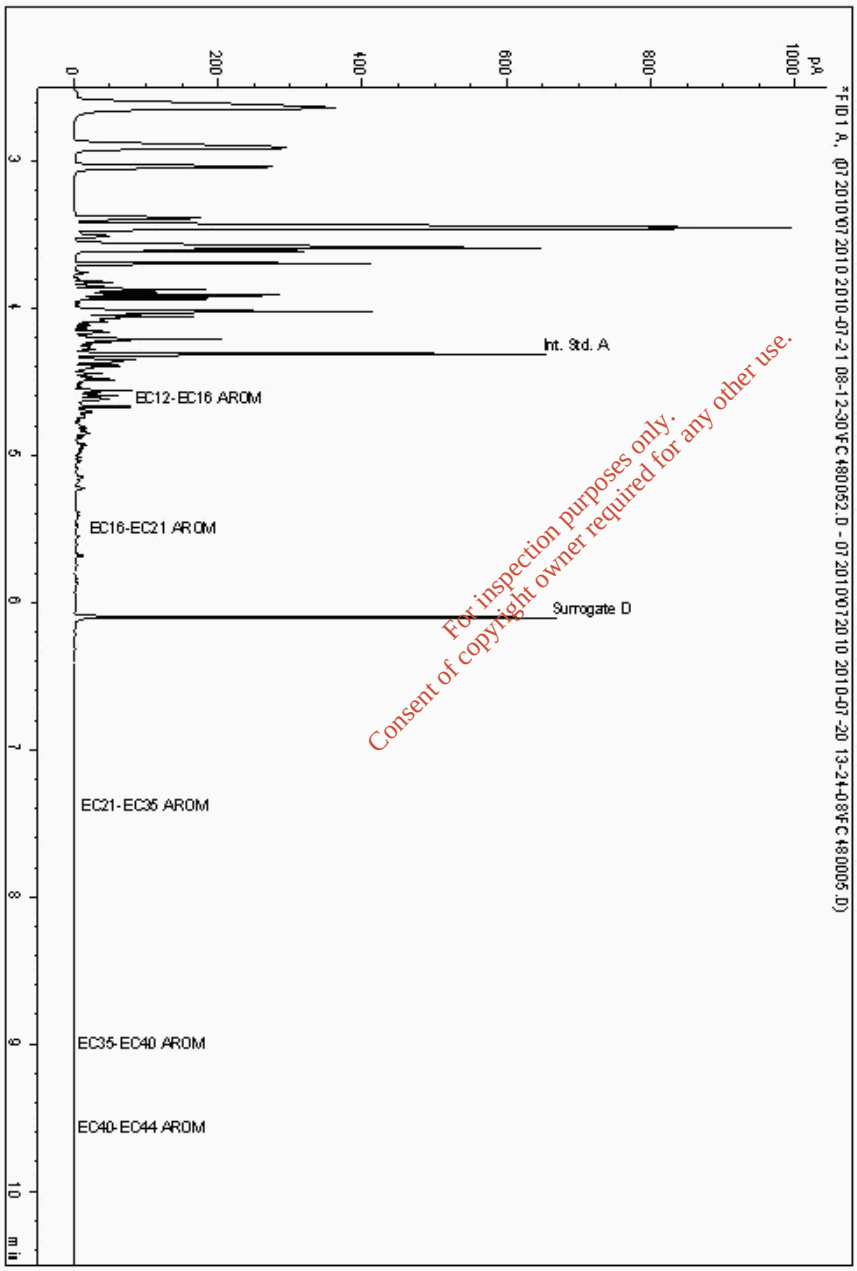
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1832660
		Sample ID	K5
		Depth	1.50 - 3.00

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

Sample Identity: 1939256-1832660
Date Acquired : 21/07/10 08:41:30
Units :
Dilution :
CF : 1
Multiplier : 0.167



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Validated

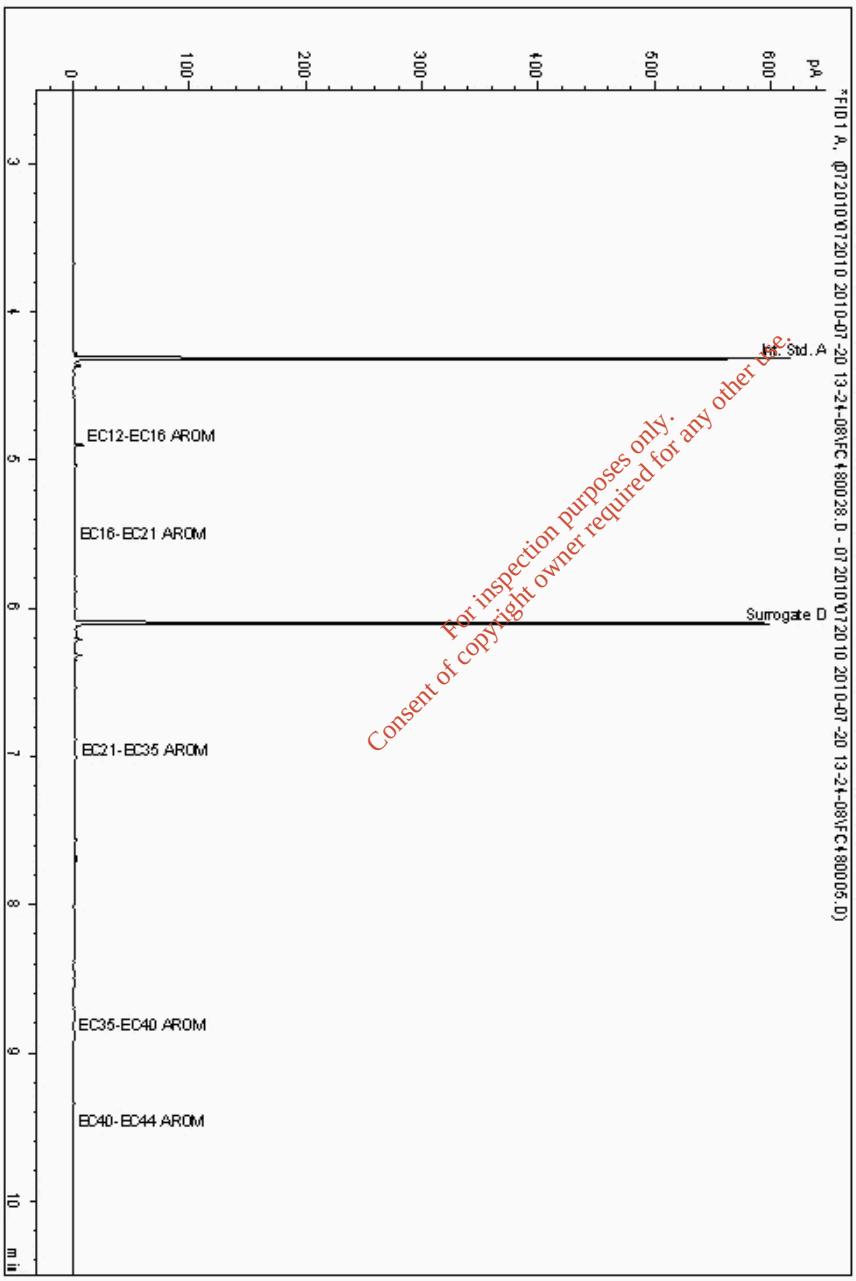
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1832689
		Sample ID	A4
		Depth	1.50 - 3.00

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

Sample Identity: 1939210-1832689
Date Acquired : 20/07/10 21:56:18
Units :
Dilution :
CF : 1
Multiplier : 0.017



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ALcontrol Laboratories Analytical Services

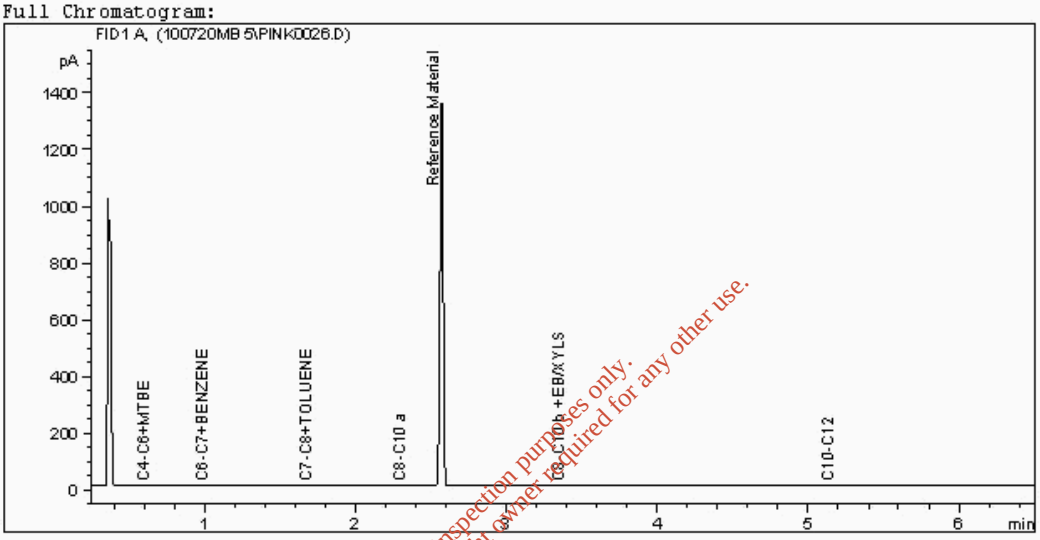
SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	GRO by GC-FID (W)	**Sample No**	1823228
		Sample ID	D5
		Depth	2.00 - 3.50

ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1939158-1823228
Date Acquired : 20/07/10 23:00:34
Units : ppb
Dilution : 1

Full Chromatogram:



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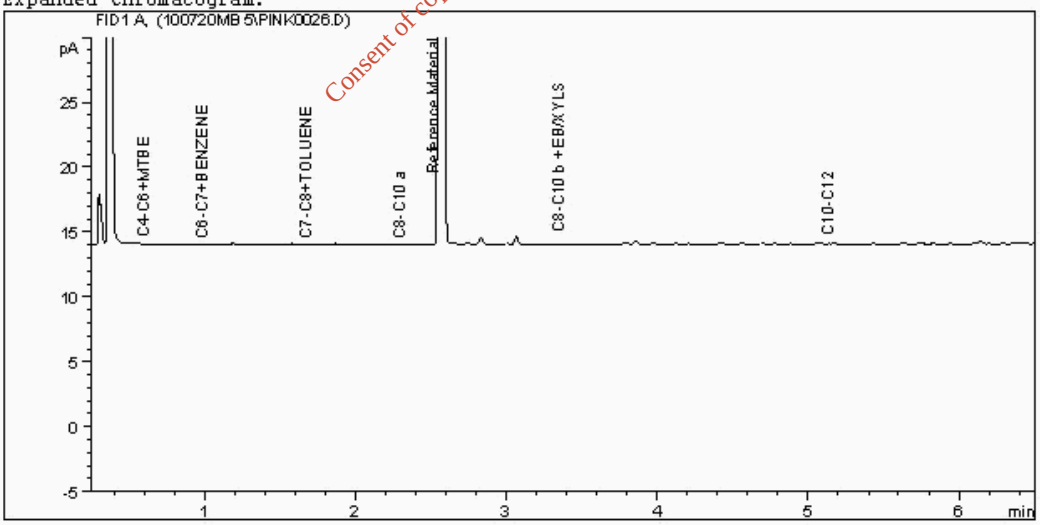
Expanded Chromatogram:



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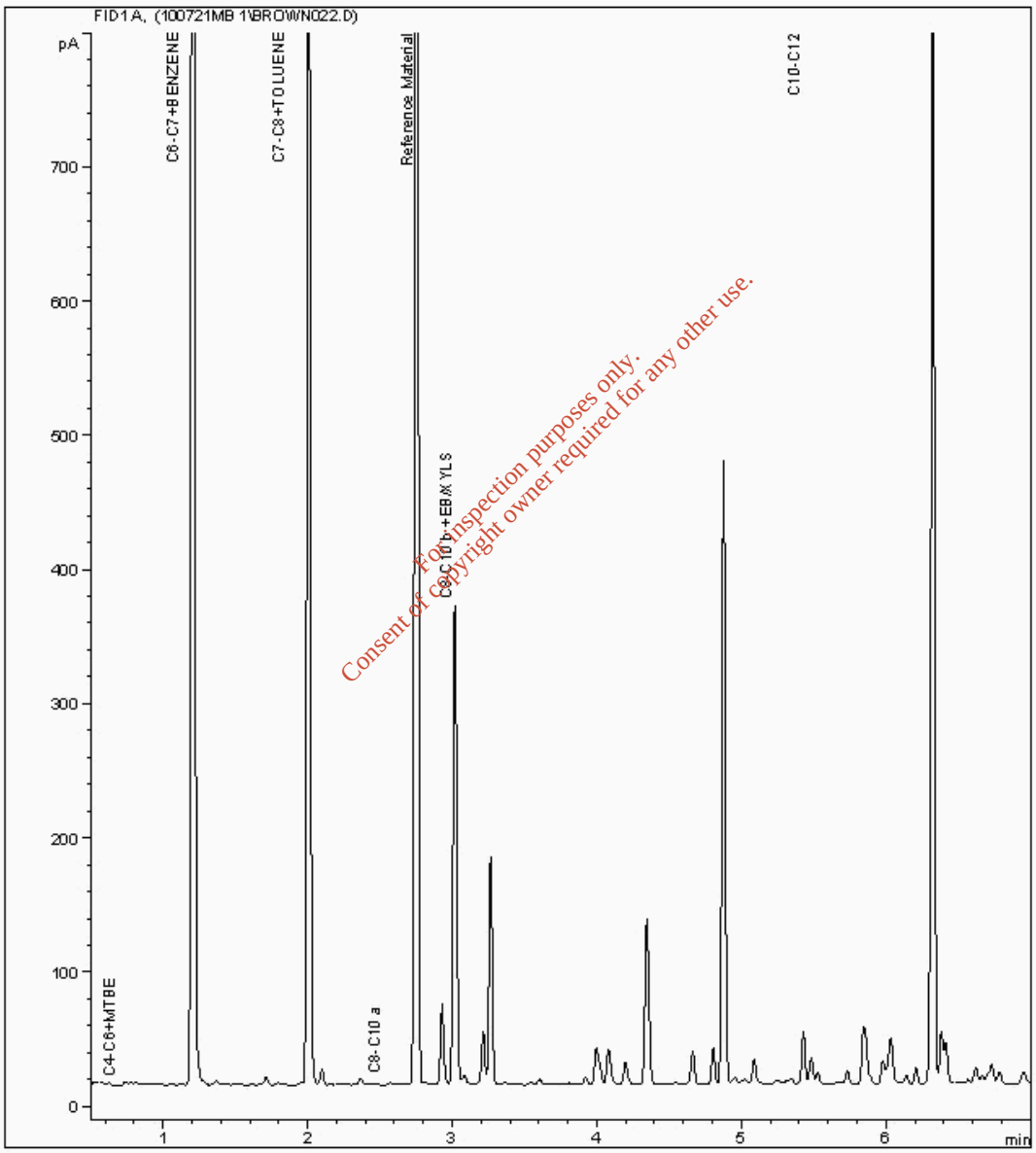
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	GRO by GC-FID (W)	**Sample No**	1823301
		Sample ID	B8
		Depth	2.00 - 2.70

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1939176-1823301
Date Acquired : 21/07/10 14:51:26
Units : ppb
Dilution : 2



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ALcontrol Laboratories Analytical Services

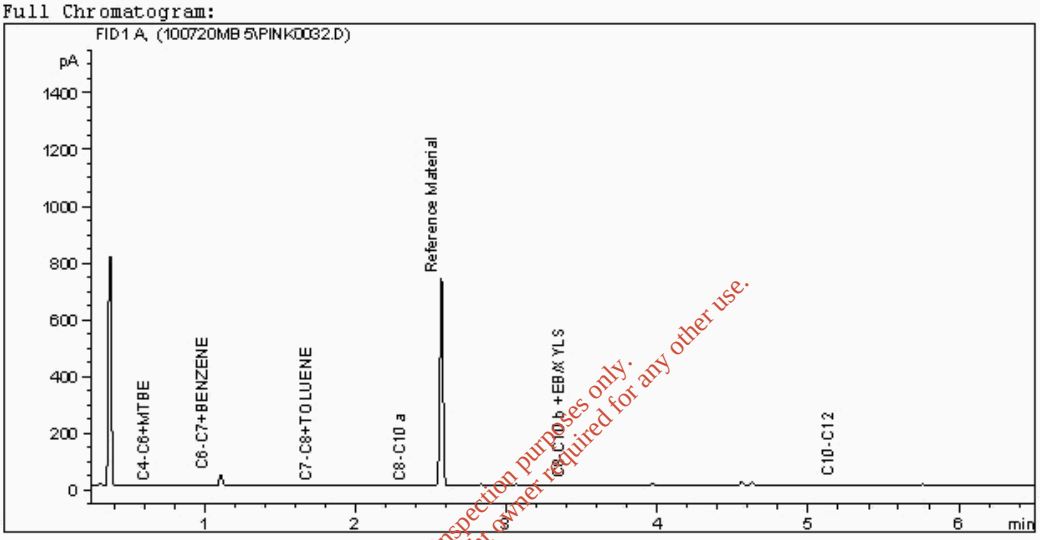
SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	GRO by GC-FID (W)	**Sample No**	1823348
		Sample ID	A3
		Depth	1.50 - 3.50

ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1939195-1823348
Date Acquired : 21/07/10 00:25:01
Units : ppb
Dilution : 1

Full Chromatogram:



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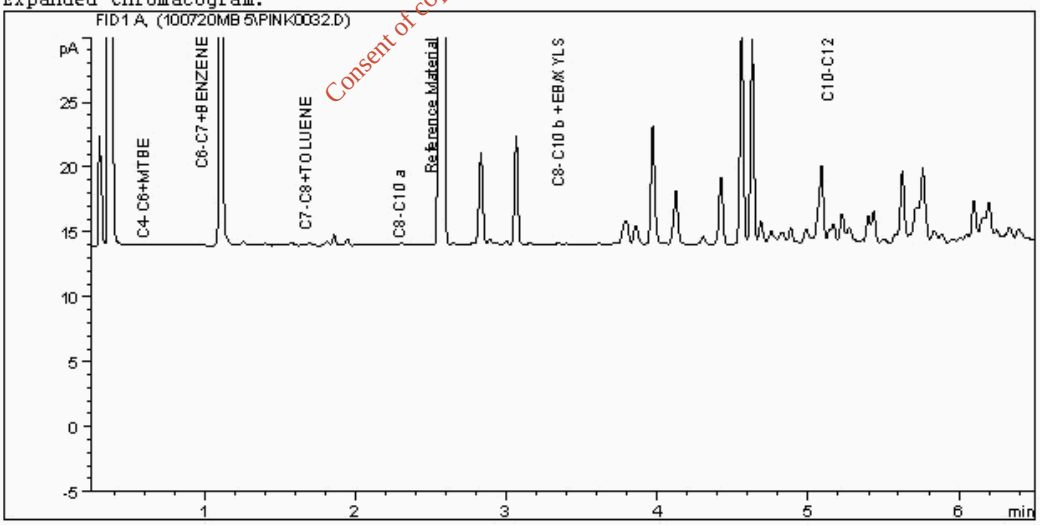
Expanded Chromatogram:



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ALcontrol Laboratories Analytical Services

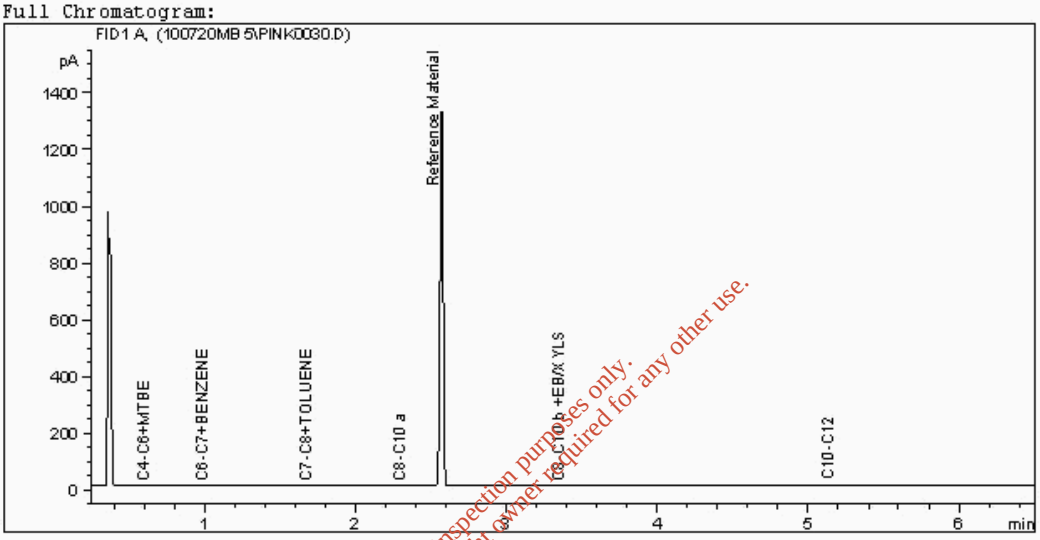
SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	GRO by GC-FID (W)	**Sample No**	1823417
		Sample ID	A4
		Depth	1.50 - 3.00

ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1939211-1823417
Date Acquired : 20/07/10 23:56:53
Units : ppb
Dilution : 1

Full Chromatogram:



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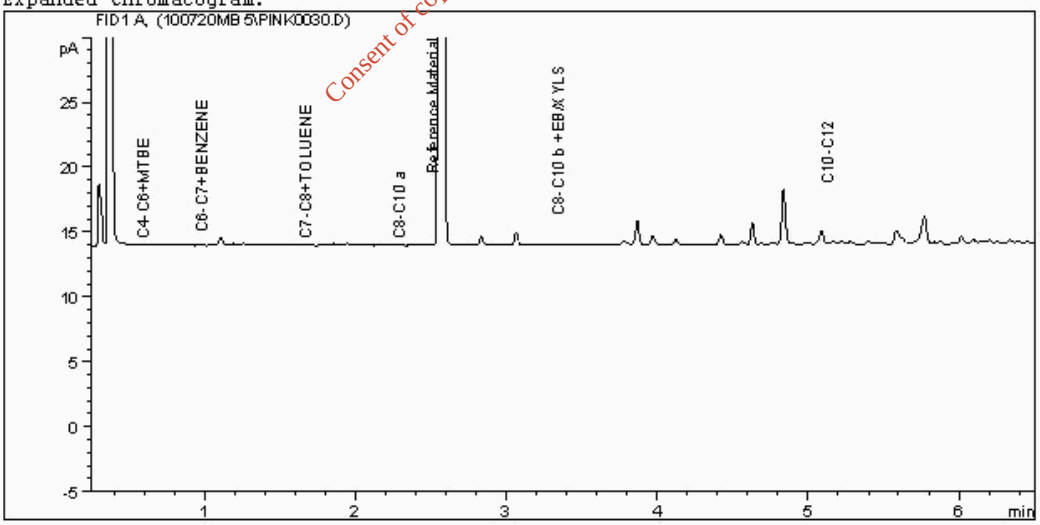
Expanded Chromatogram:



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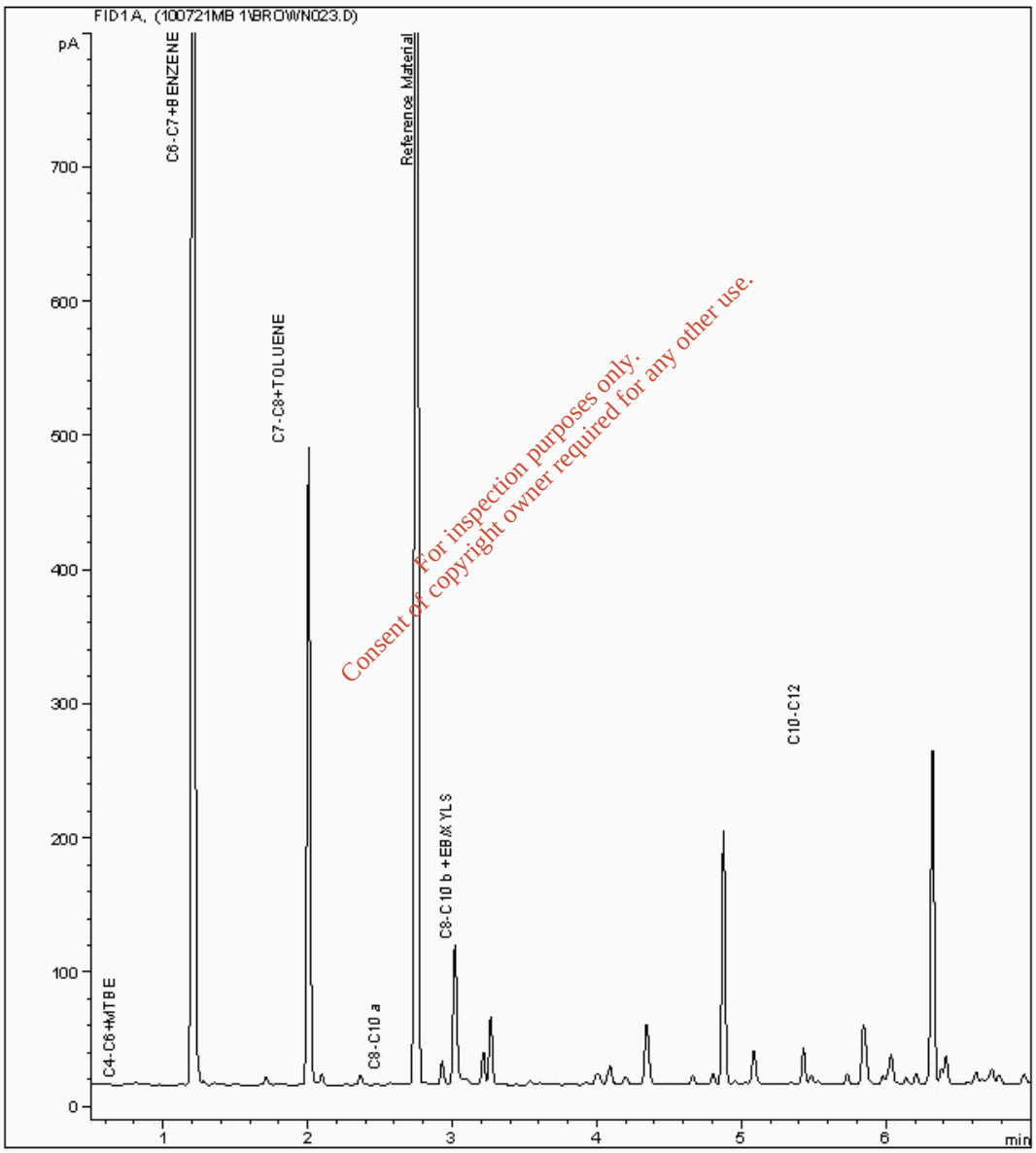
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	GRO by GC-FID (W)	**Sample No**	1824005
		Sample ID	C7
		Depth	5.00 - 6.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1939241-1824005
Date Acquired : 21/07/10 15:05:32
Units : ppb
Dilution : 5



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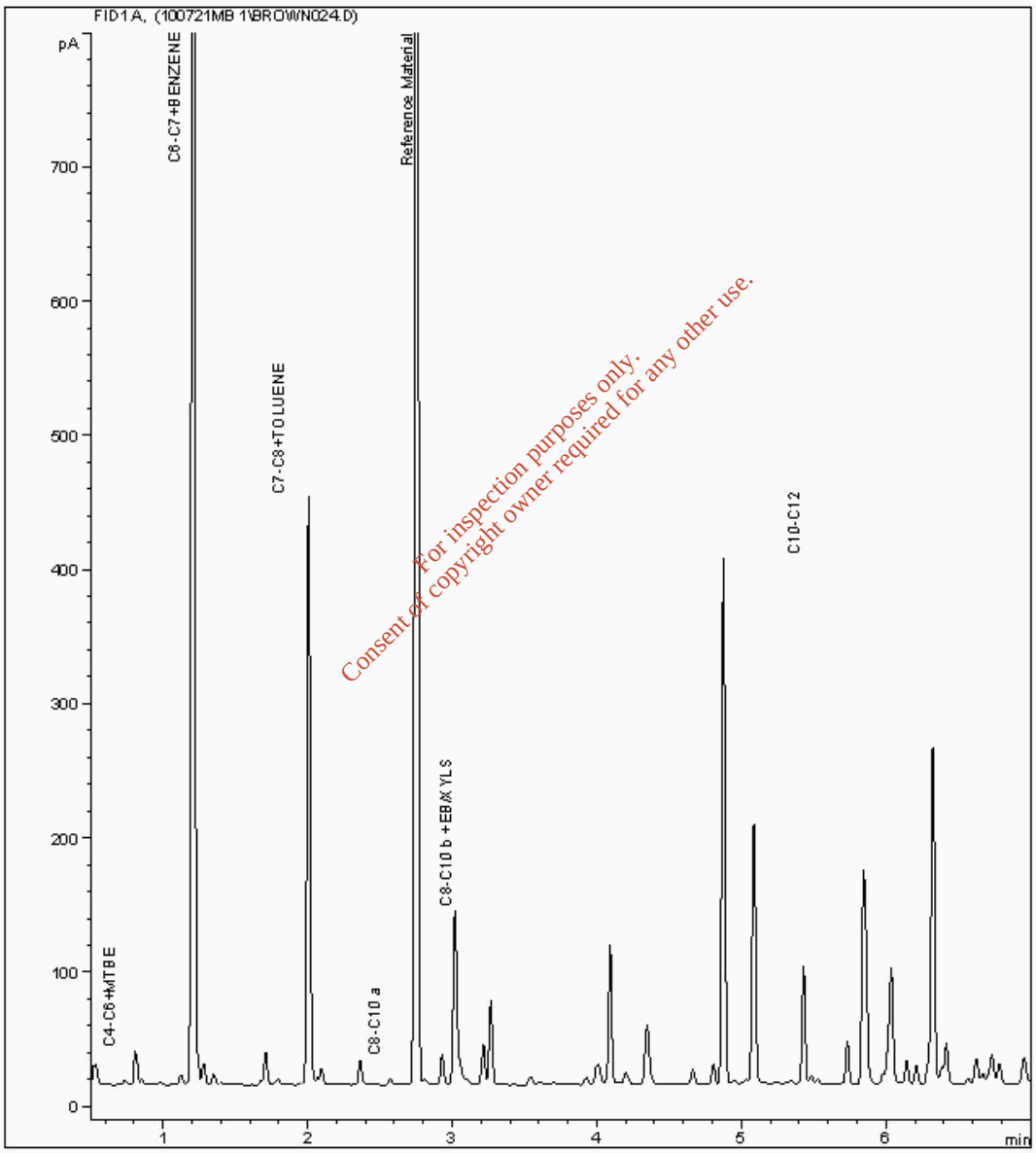
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	GRO by GC-FID (W)	**Sample No**	1824073
		Sample ID	K5
		Depth	1.50 - 3.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1939257-1824073
Date Acquired : 21/07/10 15:19:35
Units : ppb
Dilution : 5



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EPA Export 25-05-2012:04:42:44

Validated

ALcontrol Laboratories Analytical Services

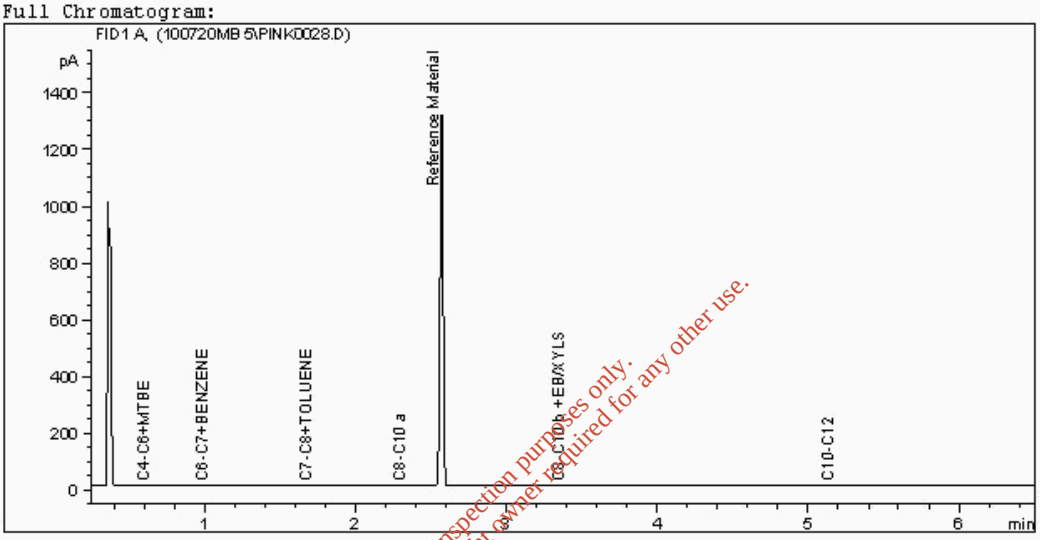
SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	GRO by GC-FID (W)	**Sample No**	1824105
		Sample ID	J10
		Depth	0.00 - 0.10

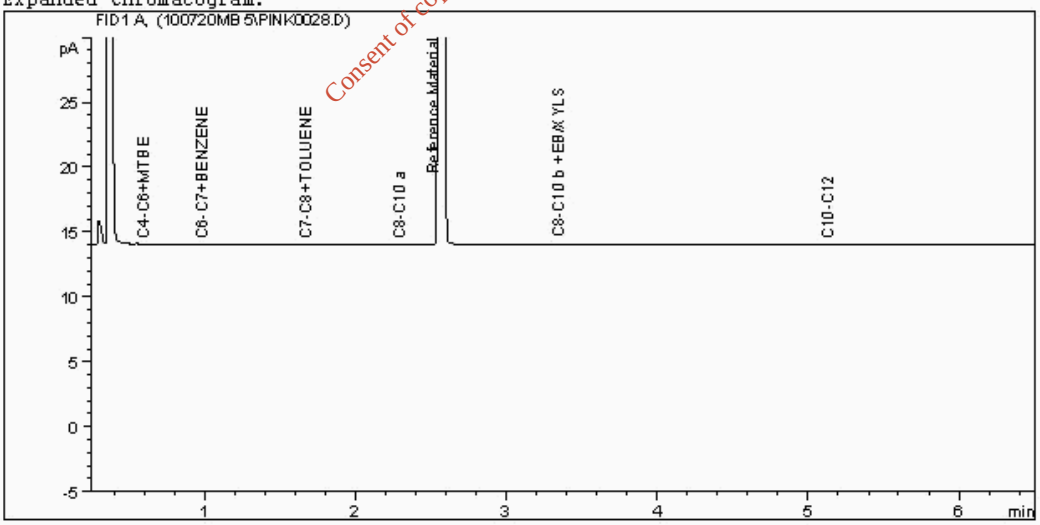
ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1939273-1824105
Date Acquired : 20/07/10 23:28:44
Units : ppb
Dilution : 1

Full Chromatogram:



Expanded Chromatogram:



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ALcontrol Laboratories Analytical Services

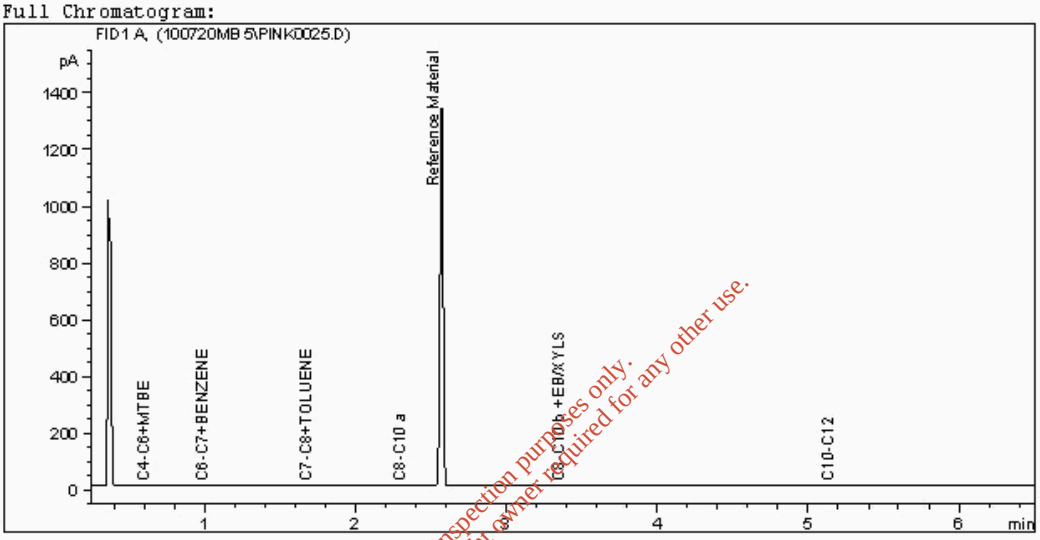
SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	GRO by GC-FID (W)	**Sample No**	1824136
		Sample ID	K1
		Depth	3.00 - 4.00

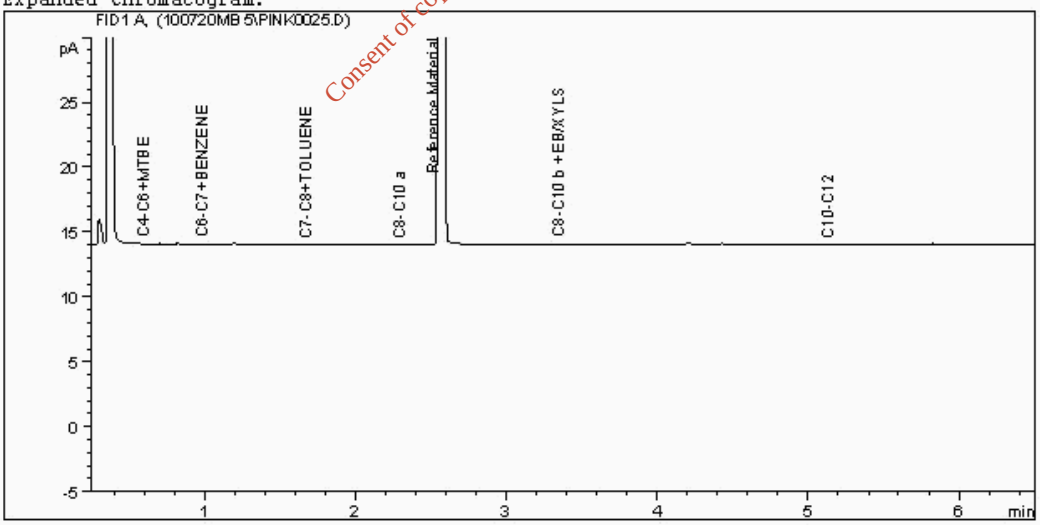
ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1939288-1824136
Date Acquired : 20/07/10 22:46:32
Units : ppb
Dilution : 1

Full Chromatogram:



Expanded Chromatogram:



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Validated

ALcontrol Laboratories Analytical Services

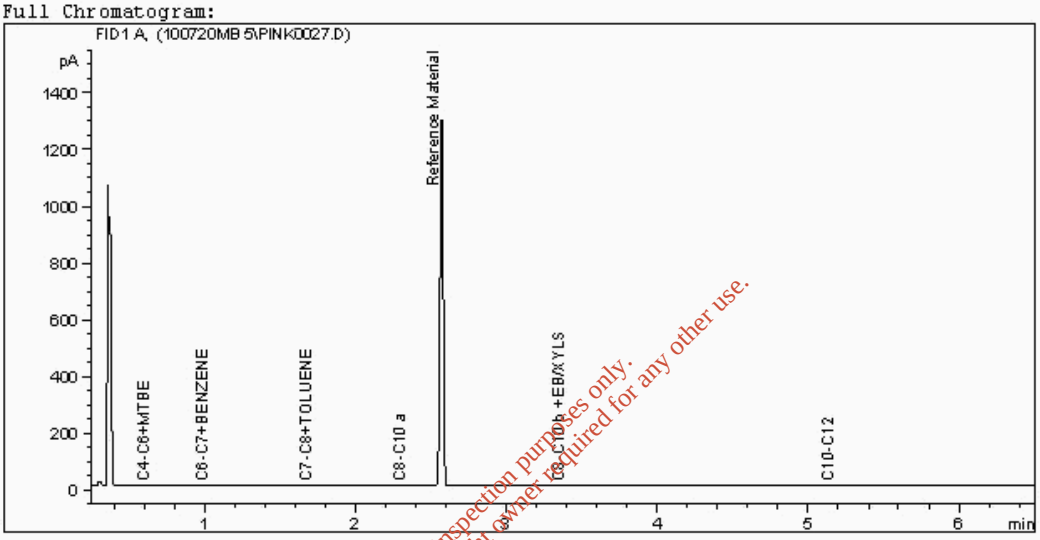
SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	GRO by GC-FID (W)	**Sample No**	1824192
		Sample ID	H12
		Depth	1.00 - 3.00

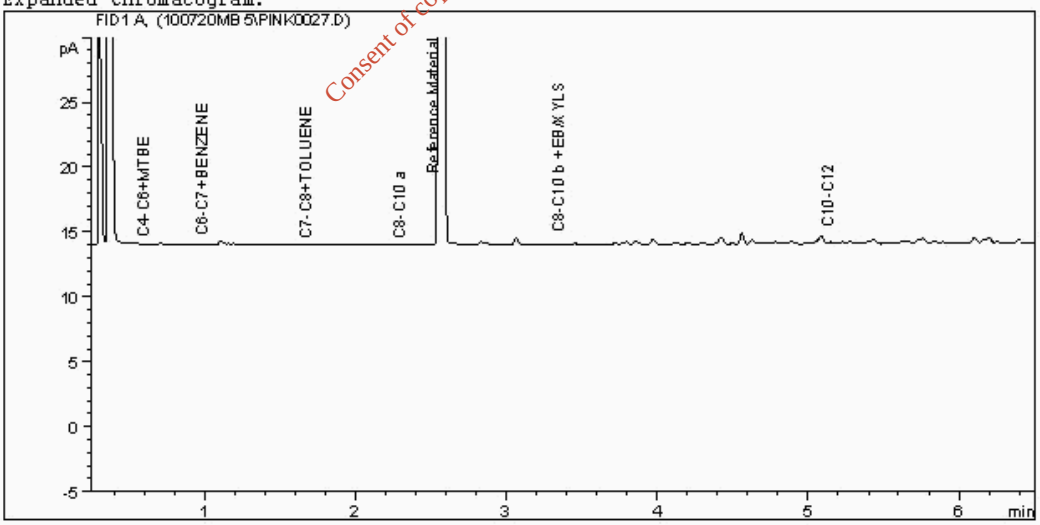
ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1939305-1824192
Date Acquired : 20/07/10 23:14:41
Units : ppb
Dilution : 1

Full Chromatogram:



Expanded Chromatogram:



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Validated

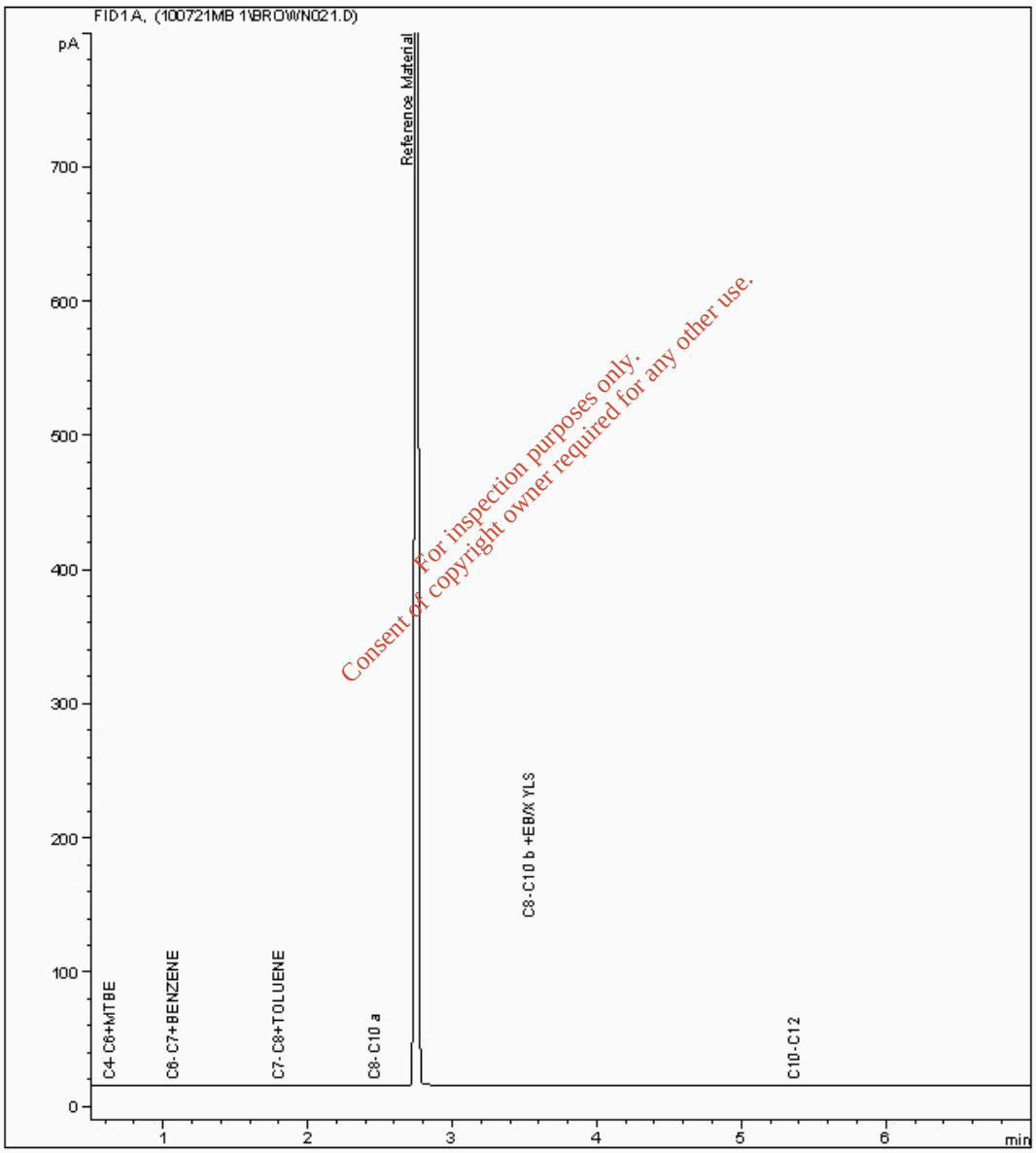
ALcontrol Laboratories Analytical Services

SDG:	100715-55	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-105	**Attention:**	Dave Watts
Client Ref.:	15/07/10	**Order No.:**	22541
Location:	Limerick Gasworks	**Report No:**	91179

Analysis:	GRO by GC-FID (W)	**Sample No**	1824261
		Sample ID	M3
		Depth	4.50 - 6.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1939320-1824261
Date Acquired : 21/07/10 14:37:21
Units : ppb
Dilution : 1



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Notification of NDPs (No determination possible)

SDG Number	100715-55	**Location**	Limerick Gasworks
Client	D_MOUCHEL_ELE	**Order No.**	22541
Client Reference	15/07/10	**Report No.**	52912-1
Attention	David Meqson	**Date Received**	15/07/2010 11:40:52

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
1824074	K5 W004	1.50 - 3.00	Dissolved Metals by ICP-MS	Sample precipitated

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APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH_4 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.
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 the major 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.

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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)	GS 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 INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC FID

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 (C6-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

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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).

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.

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

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ALcontrol Laboratories

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

Attention: David Megson

CERTIFICATE OF ANALYSIS

Date:	23 July 2010		
Customer:	D_MOUCHEL_ELE-106		
Sample Delivery Group (SDG):	100715-75	**Report No.:**	91383
Your Reference:	E8 - G5		
Location:	Limerick Gasworks		

We received 10 samples on Thursday July 15, 2010 and 10 of these samples were scheduled for analysis which was completed on Friday July 23, 2010. 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).

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Approved By:

Iain Swinton

Operations Director - Land UK & Ireland

UKAS TESTING
1291

GROUP

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Validated

ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	David Megson
Client Reference:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Sampled Date
1824728	A11 W004	1.00 - 3.00	14/07/2010
1824523	C11 W004	1.00 - 3.00	14/07/2010
1824882	D1 W004	3.50 - 5.00	14/07/2010
1824498	E8 W004	1.00 - 3.00	14/07/2010
1824633	F11 W004	0.00 - 2.00	14/07/2010
1824845	G2 W004	3.50 - 5.00	14/07/2010
1824812	G3 W004	3.00 - 4.50	14/07/2010
1824768	G4 W004	3.00 - 5.00	14/07/2010
1824915	G5 W004	2.50 - 4.00	14/07/2010
1824547	G8 W004	1.50 - 3.50	14/07/2010

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

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ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	David Megson
Client Reference:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

LIQUID

Results Legend

X Test

N No Determination Possible

		Lab Sample No(s)	1824498			1824523			1824547			1824633			1824728			1824768			1824812			1824845			1824882			1824915			Total
		Customer Sample Ref.	E8 W004			C11 W004			G8 W004			F11 W004			A11 W004			G4 W004			G3 W004			G2 W004			D1 W004			G5 W004			
		Depth (m)	1.00 - 3.00			1.00 - 3.00			1.50 - 3.50			0.00 - 2.00			1.00 - 3.00			3.00 - 5.00			3.00 - 4.50			3.50 - 5.00			3.50 - 5.00			2.50 - 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	
Ammonium	All			X		X			X			X			X			X			X			X			X			X		0 10
Anions by ion Chromatography	All			X																												0 1
Anions by Kone (w)	All					X			X			X			X			X			X			X			X			X		0 9
Cyanide Comp/Free/Total/Thiocyanate	All	X			X			X			X			X			X			X			X			X			X			0 10
Dissolved Metals by ICP-MS	All		X			X			X			X			X			X			X			X			X			X		0 10
EPH CWG (Aliphatic) Aqueous GC (W)	All	X			X			X			X			X			X			X			X			X			X			0 10
EPH CWG (Aromatic) Aqueous GC (W)	All	X			X			X			X			X			X			X			X			X			X			0 10
GRO BTEX MTBE GC (W)	All			X			X			X			X			X			X			X			X			X			X	0 10
Hexavalent Chromium (w)	All		X			X			X			X			X			X			X			X			X			X		0 10
Mercury Dissolved	All	X			X			X			X			X			X			X			X			X			X			0 10
PAH Spec MS - Aqueous (W)	All	X			X			X			X			X			X			X			X			X			X			0 10
pH Value	All		X			X			X			X			X			X			X			X			X			X		0 10
Phenols by HPLC (W)	All	X			X			X			X			X			X			X			X			X			X			0 10
Sulphide	All		X			X			X			X			X			X			X			X			X			X		0 10
TPH CWG (W)	All	X			X			X			X			X			X			X			X			X			X			0 10
VOC MS (W)	All															X			X						X			X			X	0 5

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ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	David Megson
Client Reference:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Test Completion dates

SDG reference: 100715-75

Lab Sample No(s)	1824498	1824523	1824547	1824633	1824728	1824768	1824812	1824845	1824882	1824915
Customer Sample Ref.	E8	C11	G8	F11	A11	G4	G3	G2	D1	G5
Depth	1.00 - 3.00	1.00 - 3.00	1.50 - 3.50	0.00 - 2.00	1.00 - 3.00	3.00 - 5.00	3.00 - 4.50	3.50 - 5.00	3.50 - 5.00	2.50 - 4.00
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	16/07/2010	21/07/2010	16/07/2010	21/07/2010	21/07/2010
Anions by ion Chromatography	19/07/2010									
Anions by Kone (w)		20/07/2010	20/07/2010	20/07/2010	20/07/2010	19/07/2010	20/07/2010	19/07/2010	20/07/2010	20/07/2010
Cyanide	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
Dissolved Metals by ICP-MS	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	19/07/2010	20/07/2010	19/07/2010	20/07/2010	20/07/2010
EPH CWG (Aliphatic) Aqueous GC	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	20/07/2010	20/07/2010	21/07/2010	20/07/2010
EPH CWG (Aromatic) Aqueous GC	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	20/07/2010	20/07/2010	21/07/2010	20/07/2010
GRO by GC-FID (W)	23/07/2010	21/07/2010	21/07/2010	21/07/2010	23/07/2010	21/07/2010	23/07/2010	23/07/2010	21/07/2010	21/07/2010
Hexavalent Chromium (w)	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010
Mercury Dissolved	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
PAH Spec MS - Aqueous (W)	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	19/07/2010	18/07/2010	19/07/2010	20/07/2010	19/07/2010
pH Value	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	19/07/2010	16/07/2010	16/07/2010
Phenols by HPLC (W)	20/07/2010	19/07/2010	20/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	20/07/2010	19/07/2010	19/07/2010
Sulphide	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
TPH CWG (W)	23/07/2010	22/07/2010	22/07/2010	22/07/2010	23/07/2010	22/07/2010	23/07/2010	23/07/2010	23/07/2010	22/07/2010
VOC MS (W)					21/07/2010	22/07/2010		22/07/2010	22/07/2010	21/07/2010

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ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Reference:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref. / Depth (m) / Sample Type / Date Sampled / Date Received / SDG Ref / Lab Sample No.(s)					
			A11 W004 1.00 - 3.00 Water(GW/SW) 14/07/2010 15/07/2010 100715-75 1824728	C11 W004 1.00 - 3.00 Water(GW/SW) 14/07/2010 15/07/2010 100715-75 1824523	D1 W004 3.50 - 5.00 Water(GW/SW) 14/07/2010 15/07/2010 100715-75 1824882	E8 W004 1.00 - 3.00 Water(GW/SW) 14/07/2010 15/07/2010 100715-75 1824498	F11 W004 0.00 - 2.00 Water(GW/SW) 14/07/2010 15/07/2010 100715-75 1824633	G2 W004 3.50 - 5.00 Water(GW/SW) 14/07/2010 15/07/2010 100715-75 1824845
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	16.5 #	5.18 #	11 #	46.6 #	0.245 #	52.1 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099	21.2 #	6.66 #	14.1 #	59.9 #	0.315 #	67 #
Sulphide	<0.01 mg/l	TM101	0.365 #	<0.01 #	1.03 #	<0.01 #	<0.01 #	<0.01 #
Arsenic (diss.filt)	<0.12 µg/l	TM152	11.2 #	7.8 #	9.07 #	104 #	<0.12 #	17.6 #
Cadmium (diss.filt)	<0.1 µg/l	TM152	<0.1 #	<0.1 #	<0.1 #	0.567 #	<0.1 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152	2.63 #	2.57 #	4.39 #	1.7 #	0.577 #	15.9 #
Copper (diss.filt)	<0.85 µg/l	TM152	<0.85 #	<0.85 #	<0.85 #	3.95 #	2.03 #	1.29 #
Lead (diss.filt)	<0.02 µg/l	TM152	<0.02 #	<0.02 #	<0.02 #	0.06 #	<0.02 #	<0.02 #
Nickel (diss.filt)	<0.15 µg/l	TM152	7.73 #	6.18 #	5.8 #	53.4 #	1.94 #	4.39 #
Selenium (diss.filt)	<0.39 µg/l	TM152	2.86 #	1.19 #	1.48 #	22.7 #	<0.39 #	13.6 #
Zinc (diss.filt)	<0.41 µg/l	TM152	3.63 #	4.23 #	1.57 #	24.7 #	3.07 #	2.04 #
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	0.0283 #	<0.01 #	<0.01 #
Sulphate	<3 mg/l	TM184	319 #	344 #	384 #		123 #	545 #
Sulphate	<0.1 mg/l	TM226				416 #		
Cyanide, Total	<0.05 mg/l	TM227	<0.05 #	0.129 #	0.826 #	5.99 #	<0.05 #	0.783 #
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03	<0.03	<0.06	<0.03	<0.03	<0.03
pH	<1 pH Units	TM256	7.75 #	7.96 #	7.96 #	9.12 #	7.95 #	7.75 #
Resorcinol	<0.02 mg/l	TM259	0.07	<0.02	<0.02	<0.4	<0.02	<0.04
Catechol	<0.03 mg/l	TM259	<0.03	<0.03	<0.03	<0.6	<0.03	<0.06
Phenol	<0.02 mg/l	TM259	0.07 #	<0.02 #	0.02 #	37.1 #	<0.02 #	1.24 #
Cresols	<0.07 mg/l	TM259	0.89 #	<0.07 #	<0.07 #	55.1 #	<0.07 #	9.7 #
Xylenols	<0.17 mg/l	TM259	<0.17 #	<0.17 #	0.5 #	28.7 #	<0.17 #	21.7 #
1-Naphthol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<0.03 #	<0.6 #	<0.03 #	<0.06 #
2,3,5-Trimethylphenol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<0.03 #	<0.6 #	<0.03 #	<0.06 #
2-Isopropylphenol	<0.03 mg/l	TM259	<0.03 #	<0.03 #	<0.03 #	3.98 #	<0.03 #	<0.06 #
Phenols, Total 5 speciated	<0.2 mg/l	TM259	0.96	<0.2	0.52	125	<0.2	32.6

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ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Reference:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	Depth (m)	Sample Type	Date Sampled	Date Received	SDG Ref	Lab Sample No.(s)
			A11 W004	1.00 - 3.00	Water(GW/SW)	14/07/2010	15/07/2010	100715-75	1824728
			C11 W004	1.00 - 3.00	Water(GW/SW)	14/07/2010	15/07/2010	100715-75	1824523
			D1 W004	3.50 - 5.00	Water(GW/SW)	14/07/2010	15/07/2010	100715-75	1824882
			E8 W004	1.00 - 3.00	Water(GW/SW)	14/07/2010	15/07/2010	100715-75	1824498
			F11 W004	0.00 - 2.00	Water(GW/SW)	14/07/2010	15/07/2010	100715-75	1824633
			G2 W004	3.50 - 5.00	Water(GW/SW)	14/07/2010	15/07/2010	100715-75	1824845
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	<10	367	99	<10	<10	<10	
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	<10	235	162	<10	<10	<10	
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	<10	110	108	<10	<10	<10	
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	<10	712	369	<10	<10	<10	
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174	1270	2420	4830	10700	<10	7900	

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ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Reference:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11 W004	C11 W004	D1 W004	E8 W004	F11 W004	G2 W004
			Depth (m)	1.00 - 3.00	1.00 - 3.00	3.50 - 5.00	1.00 - 3.00	0.00 - 2.00	3.50 - 5.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
			SDG Ref	100715-75	100715-75	100715-75	100715-75	100715-75	100715-75
			Lab Sample No.(s)	1824728	1824523	1824882	1824498	1824633	1824845
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		608	702	2000	9600	<10	6940
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		391	537	1350	809	<10	734
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		267	464	1120	313	<10	223
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		1270	1700	4460	10700	<10	7900

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ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Reference:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

GRO BTEX MTBE GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11 W004	C11 W004	D1 W004	E8 W004	F11 W004	G2 W004
			Depth (m)	1.00 - 3.00	1.00 - 3.00	3.50 - 5.00	1.00 - 3.00	0.00 - 2.00	3.50 - 5.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
			SDG Ref	100715-75	100715-75	100715-75	100715-75	100715-75	100715-75
			Lab Sample No.(s)	1824728	1824523	1824882	1824498	1824633	1824845
Benzene	<7 µg/l	TM245		40 #	13 #	618 #	3690 #	<7 #	4940 #
Ethylbenzene	<5 µg/l	TM245		17 #	<5 #	194 #	45 #	<5 #	377 #
Toluene	<4 µg/l	TM245		64 #	<4 #	237 #	954 #	<4 #	3580 #
m,p-Xylene	<8 µg/l	TM245		66 #	31 #	476 #	362 #	<8 #	1620 #
o-Xylene	<3 µg/l	TM245		47 #	43 #	269 #	150 #	<3 #	838 #
m,p,o-Xylene	<10 µg/l	TM245		113 #	74 #	745 #	512 #	<10 #	2460 #
BTEX, Total	<10 µg/l	TM245		234 #	87 #	1790 #	5200 #	<10 #	11400 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<6 #	<3 #	<6 #
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	107	<10	20.2
Aliphatics >C6-C8	<10 µg/l	TM245		24.7	<10	11.3	1220	<10	1890
Aliphatics >C8-C10	<10 µg/l	TM245		75.1	190	241	484	<10	940
Aliphatics >C10-C12	<10 µg/l	TM245		190	425	1230	1710	<10	2140
Aromatics >C6-C7	<10 µg/l	TM245		40	13	618	3690	<10	4940
Aromatics >C7-C8	<10 µg/l	TM245		64	<10	237	954	<10	3580
Aromatics >EC8-EC10	<10 µg/l	TM245		243	359	1300	1280	<10	4250
Aromatics >EC10-EC12	<10 µg/l	TM245		285	637	1840	2570	<10	3220
Total Aliphatics >C5-C12	<10 µg/l	TM245		290	615	1480	3530	<10	5000
Total Aromatics >C6-C12	<10 µg/l	TM245		632	1010	3990	8500	<10	16000

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ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Reference:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11 W004	C11 W004	D1 W004	E8 W004	F11 W004	G2 W004
			Depth (m)	1.00 - 3.00	1.00 - 3.00	3.50 - 5.00	1.00 - 3.00	0.00 - 2.00	3.50 - 5.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
			SDG Ref	100715-75	100715-75	100715-75	100715-75	100715-75	100715-75
			Lab Sample No.(s)	1824728	1824523	1824882	1824498	1824633	1824845
Naphthalene (aq)	<0.1 µg/l	TM178		4.17	0.83	1390	1100	2.86	3270
Acenaphthene (aq)	<0.015 µg/l	TM178		10.9	34.3	63.5	12.5	0.04	49.1
Acenaphthylene (aq)	<0.011 µg/l	TM178		54.5	5	137	89	0.32	75.9
Fluoranthene (aq)	<0.014 µg/l	TM178		13.4	20.5	104	23.6	1.1	12.8
Anthracene (aq)	<0.015 µg/l	TM178		8.87	4.57	52.3	15.9	0.08	4.91
Phenanthrene (aq)	<0.022 µg/l	TM178		30.8	12.2	184	55.3	0.22	48.1
Fluorene (aq)	<0.014 µg/l	TM178		24.6	16.1	108	36.8	0.06	25.4
Chrysene (aq)	<0.013 µg/l	TM178		2.09	3.23	10.3	3.51	0.57	1.69
Pyrene (aq)	<0.015 µg/l	TM178		8.24	13.1	67.1	15.5	1	8.26
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		3.19	5.29	14.9	4.75	0.68	<1.7
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		3.01	5.2	10.5	3.29	1.41	<2.3
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		1.13	1.8	3.73	1.25	0.44	<2.7
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		2.34	4.19	7.32	2.15	1.04	1.28
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		0.28	0.62	0.8	<0.32	0.18	<1.6
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		0.96	2.04	3.14	0.88	0.74	<1.6
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		0.99	2.09	2.79	0.85	0.67	<1.4
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178		169	331	2160	1370	11.4	3500

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ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Reference:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11 W004	C11 W004	D1 W004	E8 W004	F11 W004	G2 W004
Depth (m)	1.00 - 3.00	1.00 - 3.00	3.50 - 5.00	1.00 - 3.00	0.00 - 2.00	3.50 - 5.00
Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010
Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
SDG Ref	100715-75	100715-75	100715-75	100715-75	100715-75	100715-75
Lab Sample No.(s)	1824728	1824523	1824882	1824498	1824633	1824845

Component	LOD/Units	Method					
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174	290	1330	1850	3530	<10	5000
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174	1900	2710	8450	19200	<10	23900
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	2190	4040	10300	22700	<10	28900

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ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Reference:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11 W004	D1 W004	G2 W004
			Depth (m)	1.00 - 3.00	3.50 - 5.00	3.50 - 5.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010	15/07/2010
			SDG Ref	100715-75	100715-75	100715-75
			Lab Sample No.(s)	1824728	1824882	1824845
Dibromofluoromethane**	%	TM208		113	106	110
Toluene-d8**	%	TM208		100	99.6	98.2
4-Bromofluorobenzene**	%	TM208		104	101	99.7
Dichlorodifluoromethane	<7 µg/l	TM208		<7 #	<7 #	<7 #
Chloromethane	<9 µg/l	TM208		<9 #	<9 #	<9 #
Vinyl chloride	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #
Bromomethane	<2 µg/l	TM208		<2 #	<2 #	<2 #
Chloroethane	<2.5 µg/l	TM208		<2.5 #	<2.5 #	<2.5 #
Trichlorofluoromethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #
1,1-Dichloroethene	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #
Carbon disulphide	<1.3 µg/l	TM208		<1.3 #	1.55 #	4.47 #
Dichloromethane	<3.7 µg/l	TM208		<3.7 #	<3.7 #	<3.7 #
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208		<1.6 #	<1.6 #	<1.6 #
trans-1,2-Dichloroethene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #
1,1-Dichloroethane	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #
cis-1,2-Dichloroethene	<2.3 µg/l	TM208		<2.3 #	<2.3 #	<2.3 #
2,2-Dichloropropane	<3.8 µg/l	TM208		<3.8 #	<3.8 #	<3.8 #
Bromochloromethane	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #
Chloroform	<1.8 µg/l	TM208		<1.8 #	<1.8 #	<1.8 #
1,1,1-Trichloroethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #
1,1-Dichloropropene	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #
Carbontetrachloride	<1.4 µg/l	TM208		<1.4 #	<1.4 #	<1.4 #
1,2-Dichloroethane	<3.3 µg/l	TM208		<3.3	<3.3	<3.3
Benzene	<1.3 µg/l	TM208		41.7 #	608 #	4890 #
Trichloroethene	<2.5 µg/l	TM208		<2.5 #	<2.5 #	<2.5 #
1,2-Dichloropropane	<3 µg/l	TM208		<3 #	<3 #	<3 #
Dibromomethane	<2.7 µg/l	TM208		<2.7 #	<2.7 #	<2.7 #
Bromodichloromethane	<0.9 µg/l	TM208		<0.9 #	<0.9 #	<0.9 #
cis-1,3-Dichloropropene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #
Toluene	<1.4 µg/l	TM208		63.5 #	297 #	3870 #
trans-1,3-Dichloropropene	<3.5 µg/l	TM208		<3.5 #	<3.5 #	<3.5 #
1,1,2-Trichloroethane	<2.2 µg/l	TM208		<2.2 #	<2.2 #	<2.2 #
1,3-Dichloropropane	<2.2 µg/l	TM208		<2.2 #	<2.2 #	<2.2 #
Tetrachloroethene	<1.5 µg/l	TM208		<1.5 #	<1.5 #	<1.5 #
Dibromochloromethane	<1.7 µg/l	TM208		<1.7 #	<1.7 #	<1.7 #
1,2-Dibromoethane	<2.3 µg/l	TM208		<2.3 #	<2.3 #	<2.3 #
Chlorobenzene	<3.5 µg/l	TM208		<3.5 #	<3.5 #	<3.5 #
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #
Ethylbenzene	<2.5 µg/l	TM208		11.5 #	193 #	373 #

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ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Reference:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11 W004	D1 W004	G2 W004
			Depth (m)	1.00 - 3.00	3.50 - 5.00	3.50 - 5.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010	15/07/2010
			SDG Ref	100715-75	100715-75	100715-75
			Lab Sample No.(s)	1824728	1824882	1824845
m,p-Xylene	<2.5 µg/l	TM208		48.7 #	514 #	1620 #
o-Xylene	<1.7 µg/l	TM208		38.8 #	306 #	872 #
Styrene	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #
Bromoform	<3 µg/l	TM208		<3 #	<3 #	<3 #
Isopropylbenzene	<1.4 µg/l	TM208		<1.4 #	19.5 #	22.1 #
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208		<5.2	<5.2	<5.2
1,2,3-Trichloropropane	<7.8 µg/l	TM208		<7.8 #	<7.8 #	<7.8 #
Bromobenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #
Propylbenzene	<2.6 µg/l	TM208		<2.6 #	24.1 #	23 #
2-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208		7.63 #	76 #	94.6 #
4-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #
tert-Butylbenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208		18 #	248 #	338 #
sec-Butylbenzene	<1.7 µg/l	TM208		<1.7 #	<1.7 #	<1.7 #
4-iso-Propyltoluene	<2.6 µg/l	TM208		<2.6 #	<2.6 #	<2.6 #
1,3-Dichlorobenzene	<2.2 µg/l	TM208		<2.2 #	<2.2 #	<2.2 #
1,4-Dichlorobenzene	<2.7 µg/l	TM208		<2.7 #	<2.7 #	<2.7 #
n-Butylbenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #
1,2-Dichlorobenzene	<3.7 µg/l	TM208		<3.7	<3.7	<3.7
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208		<9.8	<9.8	<9.8
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208		<2.3 #	<2.3 #	<2.3 #
Hexachlorobutadiene	<2.5 µg/l	TM208		<2.5 #	<2.5 #	<2.5 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #
Naphthalene	<3.5 µg/l	TM208		5.71 #	3680 #	5180 #
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208		<3.1 #	<3.1 #	<3.1 #
1,3,5-Trichlorobenzene	<10 µg/l	TM208		<10	<10	<10

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ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Reference:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	G3 W004	G4 W004	G5 W004	G8 W004
			Depth (m)	3.00 - 4.50	3.00 - 5.00	2.50 - 4.00	1.50 - 3.50
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010
			SDG Ref	100715-75	100715-75	100715-75	100715-75
			Lab Sample No.(s)	1824812	1824768	1824915	1824547
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		31.3 #	10.9 #	5.14 #	52.3 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099		40.2 #	14 #	6.61 #	67.2 #
Sulphide	<0.01 mg/l	TM101		<0.01 #	<0.01 #	<0.01 #	<0.01 #
Arsenic (diss.filt)	<0.12 µg/l	TM152		9.3 #	11.8 #	1.27 #	7.57 #
Cadmium (diss.filt)	<0.1 µg/l	TM152		<0.1 #	<0.1 #	<0.1 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152		6.72 #	6.41 #	4.59 #	2.44 #
Copper (diss.filt)	<0.85 µg/l	TM152		<0.85 #	2.2 #	2.51 #	1.64 #
Lead (diss.filt)	<0.02 µg/l	TM152		<0.02 #	0.19 #	<0.02 #	<0.02 #
Nickel (diss.filt)	<0.15 µg/l	TM152		12.3 #	6.01 #	14.3 #	9 #
Selenium (diss.filt)	<0.39 µg/l	TM152		8.99 #	8.46 #	1.51 #	3.93 #
Zinc (diss.filt)	<0.41 µg/l	TM152		3.48 #	5.29 #	6 #	2.27 #
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	<0.01 #
Sulphate	<3 mg/l	TM184		254 #	426 #	442 #	426 #
Cyanide, Total	<0.05 mg/l	TM227		0.301 #	0.358 #	0.422 #	0.961 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03	<0.03	<0.03	<0.06
pH	<1 pH Units	TM256		7.73 #	8.05 #	7.59 #	8.18 #
Resorcinol	<0.02 mg/l	TM259		<0.02	<0.02	<0.02	<0.04
Catechol	<0.03 mg/l	TM259		<0.03	<0.03	<0.03	<0.06
Phenol	<0.02 mg/l	TM259		<0.02 #	0.17 #	<0.02 #	2.3 #
Cresols	<0.07 mg/l	TM259		<0.07 #	2.25 #	<0.07 #	5.21 #
Xylenols	<0.17 mg/l	TM259		<0.17 #	6.52 #	<0.17 #	1.75 #
1-Naphthol	<0.03 mg/l	TM259		<0.03 #	<0.03 #	<0.03 #	<0.06 #
2,3,5-Trimethylphenol	<0.03 mg/l	TM259		<0.03 #	<0.03 #	<0.03 #	<0.06 #
2-Isopropylphenol	<0.03 mg/l	TM259		0.12 #	5.19 #	<0.03 #	0.99 #
Phenols, Total 5 speciated	<0.2 mg/l	TM259		<0.2	14.1	<0.2	10.3

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ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Reference:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	G3 W004	G4 W004	G5 W004	G8 W004		
			Depth (m)	3.00 - 4.50	3.00 - 5.00	2.50 - 4.00	1.50 - 3.50		
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)		
			Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010		
			Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010		
			SDG Ref	100715-75	100715-75	100715-75	100715-75		
			Lab Sample No.(s)	1824812	1824768	1824915	1824547		
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	90	625	<10		
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	79	389	<10		
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	65	448	<10		
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	234	1460	<10		
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174		73	9540	9220	4460		

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ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Reference:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	G3 W004	G4 W004	G5 W004	G8 W004
			Depth (m)	3.00 - 4.50	3.00 - 5.00	2.50 - 4.00	1.50 - 3.50
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010
			SDG Ref	100715-75	100715-75	100715-75	100715-75
			Lab Sample No.(s)	1824812	1824768	1824915	1824547
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		14	5800	1120	3640
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		10	1940	1920	617
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		49	1570	4720	198
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		73	9310	7760	4460

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ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Reference:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

GRO BTEX MTBE GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	G3 W004	G4 W004	G5 W004	G8 W004
			Depth (m)	3.00 - 4.50	3.00 - 5.00	2.50 - 4.00	1.50 - 3.50
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010
			SDG Ref	100715-75	100715-75	100715-75	100715-75
			Lab Sample No.(s)	1824812	1824768	1824915	1824547
Benzene	<7 µg/l	TM245		91 #	3140 #	<7 #	1040 #
Ethylbenzene	<5 µg/l	TM245		<5 #	269 #	<5 #	36 #
Toluene	<4 µg/l	TM245		<4 #	2860 #	<4 #	554 #
m,p-Xylene	<8 µg/l	TM245		<8 #	1720 #	<8 #	260 #
o-Xylene	<3 µg/l	TM245		<3 #	732 #	<3 #	105 #
m,p,o-Xylene	<10 µg/l	TM245		<10 #	2450 #	<10 #	365 #
BTEX, Total	<10 µg/l	TM245		91 #	8710 #	<10 #	1990 #
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		14.4	2030	<10	513
Aliphatics >C8-C10	<10 µg/l	TM245		25.1	1100	<10	201
Aliphatics >C10-C12	<10 µg/l	TM245		48.3	3380	<10	798
Aromatics >C6-C7	<10 µg/l	TM245		91	3140	<10	1040
Aromatics >C7-C8	<10 µg/l	TM245		<10	2860	<10	554
Aromatics >EC8-EC10	<10 µg/l	TM245		37.7	4360	<10	702
Aromatics >EC10-EC12	<10 µg/l	TM245		72.5	5070	<10	1200
Total Aliphatics >C5-C12	<10 µg/l	TM245		87.8	6510	<10	1510
Total Aromatics >C6-C12	<10 µg/l	TM245		201	15400	<10	3490

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ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Reference:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	G3 W004	G4 W004	G5 W004	G8 W004
			Depth (m)	3.00 - 4.50	3.00 - 5.00	2.50 - 4.00	1.50 - 3.50
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010
			SDG Ref	100715-75	100715-75	100715-75	100715-75
			Lab Sample No.(s)	1824812	1824768	1824915	1824547
Naphthalene (aq)	<0.1 µg/l	TM178		29	3690	354	890
Acenaphthene (aq)	<0.015 µg/l	TM178		4.95	47.1	46	12.5
Acenaphthylene (aq)	<0.011 µg/l	TM178		2.5	198	131	76.2
Fluoranthene (aq)	<0.014 µg/l	TM178		7.64	81.4	289	15.8
Anthracene (aq)	<0.015 µg/l	TM178		1.69	47.7	130	12.9
Phenanthrene (aq)	<0.022 µg/l	TM178		4.86	165	378	43.9
Fluorene (aq)	<0.014 µg/l	TM178		1.94	96	142	39.8
Chrysene (aq)	<0.013 µg/l	TM178		3.31	15.4	67.7	1.82
Pyrene (aq)	<0.015 µg/l	TM178		6.23	53.5	196	10.4
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		4.28	19	90.7	2.63
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		5.15	17	94.3	1.32
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		2.23	7.69	37.8	0.54
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		4.22	11.4	79.3	0.81
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		0.739	2.6	12.6	<0.32
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		2.45	8.92	43.9	<0.32
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		2.17	8.23	39.6	<0.28
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178		83.3	447	2130	1110

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ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Reference:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	G3 W004	G4 W004	G5 W004	G8 W004
			Depth (m)	3.00 - 4.50	3.00 - 5.00	2.50 - 4.00	1.50 - 3.50
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010	15/07/2010	15/07/2010
			SDG Ref	100715-75	100715-75	100715-75	100715-75
			Lab Sample No.(s)	1824812	1824768	1824915	1824547
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174		87.8	6740	1460	1510
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174		274	24700	7760	7940
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174		362	31500	9220	9450

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ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Reference:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	G4 W004	G5 W004
			Depth (m)	3.00 - 5.00	2.50 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)
			Date Sampled	14/07/2010	14/07/2010
			Date Received	15/07/2010	15/07/2010
			SDG Ref	100715-75	100715-75
			Lab Sample No.(s)	1824768	1824915
Dibromofluoromethane**	%	TM208		106	106
Toluene-d8**	%	TM208		99.6	99.8
4-Bromofluorobenzene**	%	TM208		100	102
Dichlorodifluoromethane	<7 µg/l	TM208		<7 #	<7 #
Chloromethane	<9 µg/l	TM208		<9 #	<9 #
Vinyl chloride	<1.2 µg/l	TM208		<1.2 #	<1.2 #
Bromomethane	<2 µg/l	TM208		<2 #	<2 #
Chloroethane	<2.5 µg/l	TM208		<2.5 #	<2.5 #
Trichlorofluoromethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #
1,1-Dichloroethene	<1.2 µg/l	TM208		<1.2 #	<1.2 #
Carbon disulphide	<1.3 µg/l	TM208		<1.3 #	<1.3 #
Dichloromethane	<3.7 µg/l	TM208		<3.7 #	<3.7 #
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208		<1.6 #	<1.6 #
trans-1,2-Dichloroethene	<1.9 µg/l	TM208		<1.9 #	<1.9 #
1,1-Dichloroethane	<1.2 µg/l	TM208		<1.2 #	<1.2 #
cis-1,2-Dichloroethene	<2.3 µg/l	TM208		<2.3 #	<2.3 #
2,2-Dichloropropane	<3.8 µg/l	TM208		<3.8 #	<3.8 #
Bromochloromethane	<1.9 µg/l	TM208		<1.9 #	<1.9 #
Chloroform	<1.8 µg/l	TM208		<1.8 #	<1.8 #
1,1,1-Trichloroethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #
1,1-Dichloropropene	<1.3 µg/l	TM208		<1.3 #	<1.3 #
Carbontetrachloride	<1.4 µg/l	TM208		<1.4 #	<1.4 #
1,2-Dichloroethane	<3.3 µg/l	TM208		<3.3	<3.3
Benzene	<1.3 µg/l	TM208		2890 #	<1.3 #
Trichloroethene	<2.5 µg/l	TM208		<2.5 #	<2.5 #
1,2-Dichloropropane	<3 µg/l	TM208		<3 #	<3 #
Dibromomethane	<2.7 µg/l	TM208		<2.7 #	<2.7 #
Bromodichloromethane	<0.9 µg/l	TM208		<0.9 #	<0.9 #
cis-1,3-Dichloropropene	<1.9 µg/l	TM208		<1.9 #	<1.9 #
Toluene	<1.4 µg/l	TM208		2830 #	<1.4 #
trans-1,3-Dichloropropene	<3.5 µg/l	TM208		<3.5 #	<3.5 #
1,1,2-Trichloroethane	<2.2 µg/l	TM208		<2.2 #	<2.2 #
1,3-Dichloropropane	<2.2 µg/l	TM208		<2.2 #	<2.2 #
Tetrachloroethene	<1.5 µg/l	TM208		<1.5 #	<1.5 #
Dibromochloromethane	<1.7 µg/l	TM208		<1.7 #	<1.7 #
1,2-Dibromoethane	<2.3 µg/l	TM208		<2.3 #	<2.3 #
Chlorobenzene	<3.5 µg/l	TM208		<3.5 #	<3.5 #
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #
Ethylbenzene	<2.5 µg/l	TM208		179 #	<2.5 #

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ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Reference:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	G4 W004	G5 W004
Depth (m)	3.00 - 5.00	2.50 - 4.00
Sample Type	Water(GW/SW)	Water(GW/SW)
Date Sampled	14/07/2010	14/07/2010
Date Received	15/07/2010	15/07/2010
SDG Ref	100715-75	100715-75
Lab Sample No.(s)	1824768	1824915

Component	LOD/Units	Method		
m,p-Xylene	<2.5 µg/l	TM208	1680 #	<2.5 #
o-Xylene	<1.7 µg/l	TM208	745 #	<1.7 #
Styrene	<1.2 µg/l	TM208	<1.2 #	<1.2 #
Bromoform	<3 µg/l	TM208	<3 #	<3 #
Isopropylbenzene	<1.4 µg/l	TM208	15.5 #	<1.4 #
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2	<5.2
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8 #	<7.8 #
Bromobenzene	<2 µg/l	TM208	<2 #	<2 #
Propylbenzene	<2.6 µg/l	TM208	7.52 #	<2.6 #
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	127 #	<1.8 #
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #
tert-Butylbenzene	<2 µg/l	TM208	<2 #	<2 #
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	325 #	<1.7 #
sec-Butylbenzene	<1.7 µg/l	TM208	<1.7 #	<1.7 #
4-iso-Propyltoluene	<2.6 µg/l	TM208	<2.6 #	<2.6 #
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2 #	<2.2 #
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7 #	<2.7 #
n-Butylbenzene	<2 µg/l	TM208	<2 #	<2 #
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7	<3.7
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8	<9.8
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3 #	<2.3 #
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5 #	<2.5 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1 #	<1 #
Naphthalene	<3.5 µg/l	TM208	3070 #	<3.5 #
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1 #	<3.1 #
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10	<10

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Table of Results - Appendix

SDG Number : 100715-75 **Client :** Mouchel **Client Ref :** E8 - G5

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]
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	
TM226	In-House Method	Determination of Anions in Waters using Ion Chromatography	
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			

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

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ALcontrol Laboratories Analytical Services

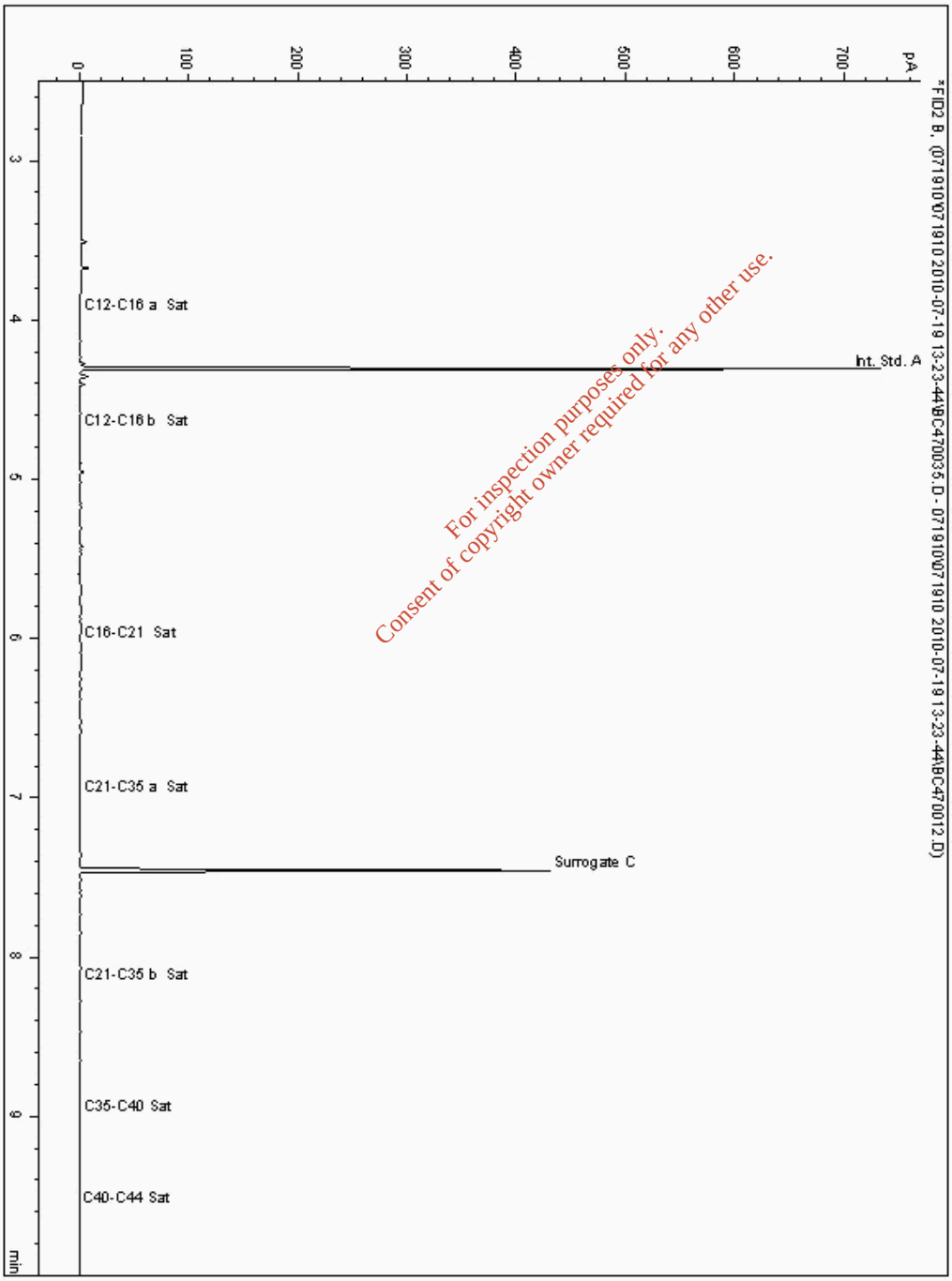
SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Chromatogram

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1830250
		Sample ID	G3
		Depth	3.00 - 4.50

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

Sample Identity: 1940109-1830250
Date Acquired : 19/07/10 23:58:53
Units :
Dilution :
CF : 1
Multiplier : 0.017



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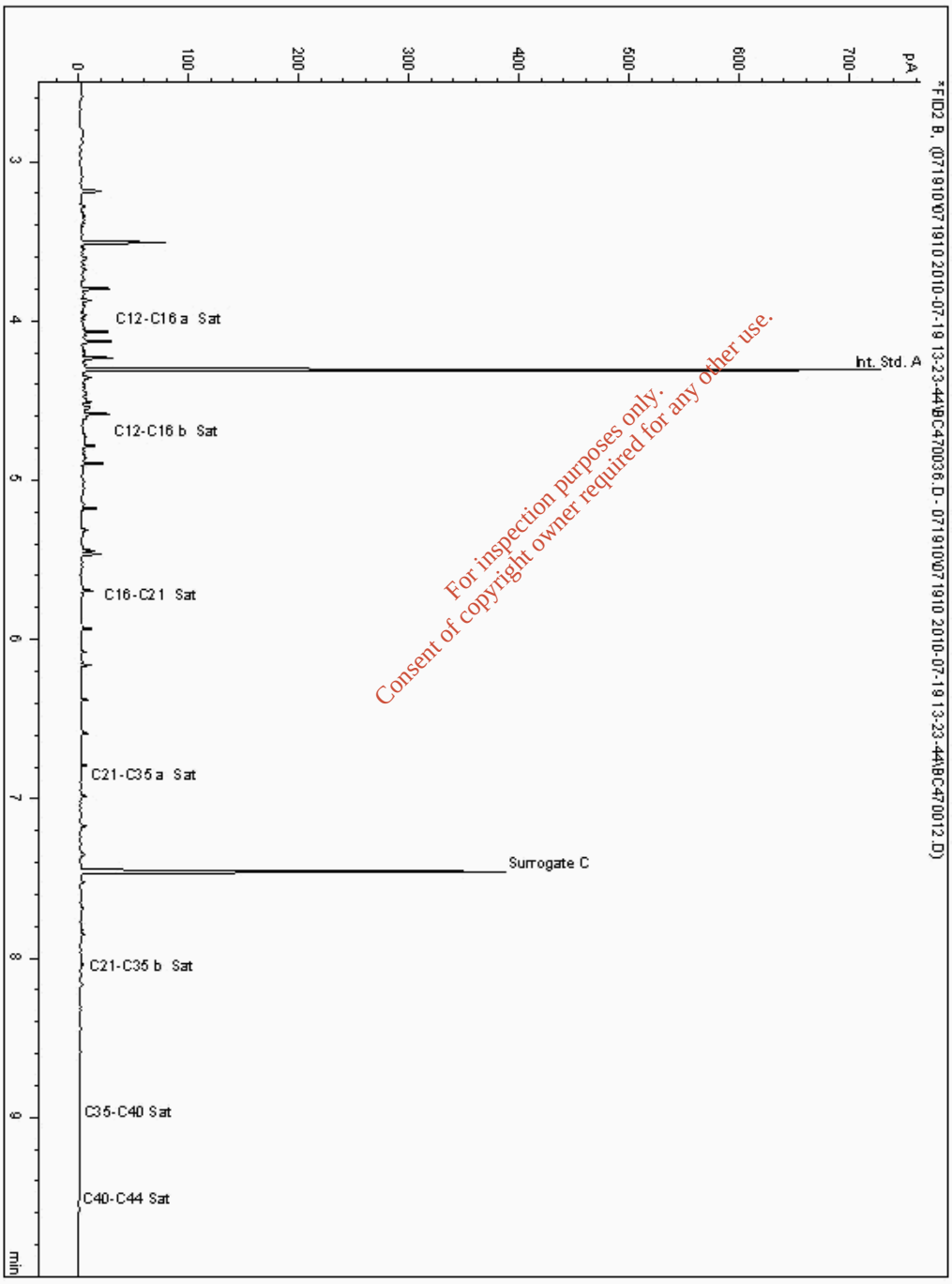
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1830273
		Sample ID	G5
		Depth	2.50 - 4.00

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

Sample Identity: 1940156-1830273
Date Acquired : 20/07/10 00:17:43
Units :
Dilution :
CF : 1
Multiplier : 0.017



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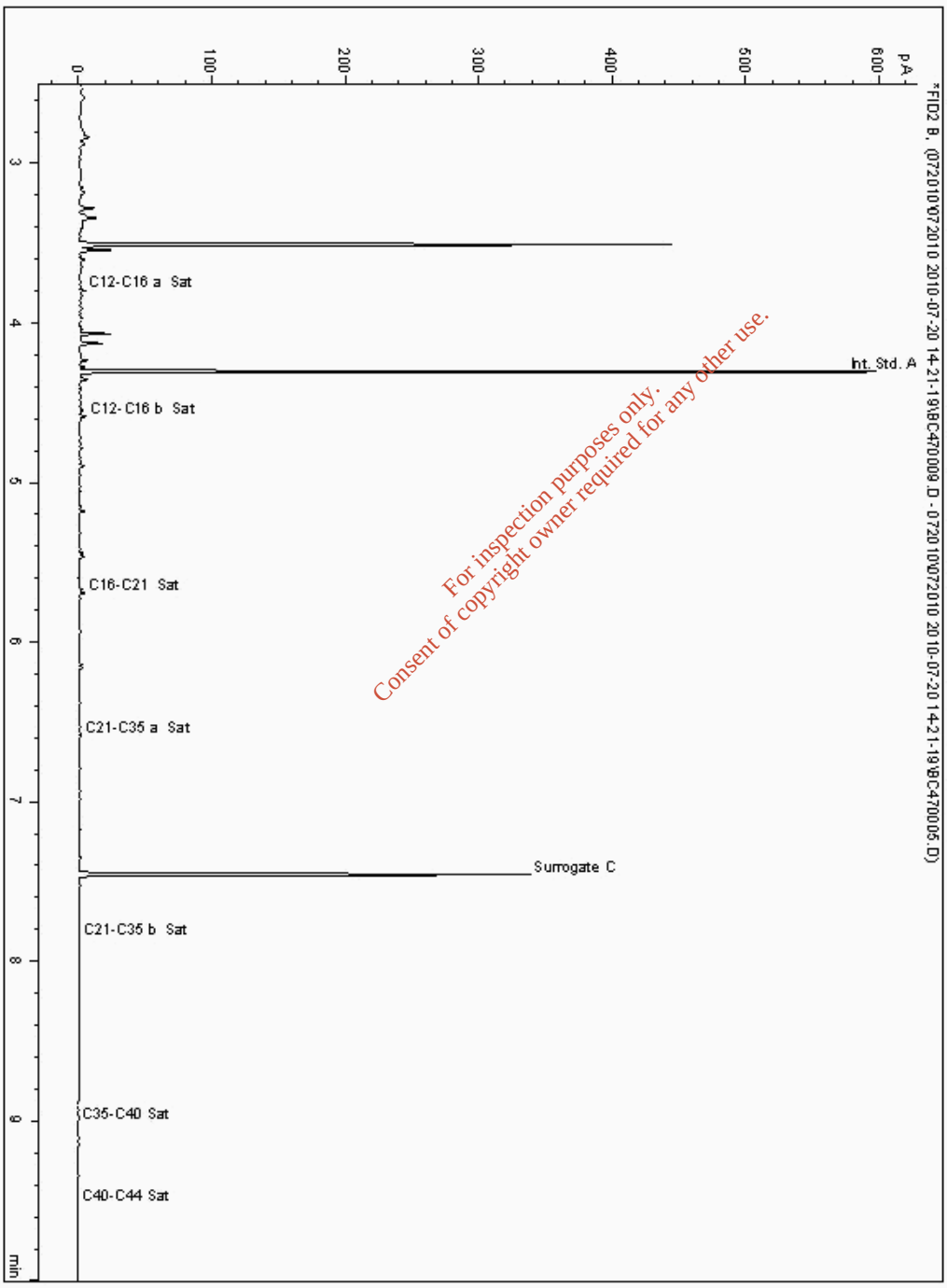
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1830290
		Sample ID	G4
		Depth	3.00 - 5.00

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

Sample Identity: 1940090-1830290
Date Acquired : 20/07/10 16:55:52
Units :
Dilution :
CF : 1
Multiplier : 0.017



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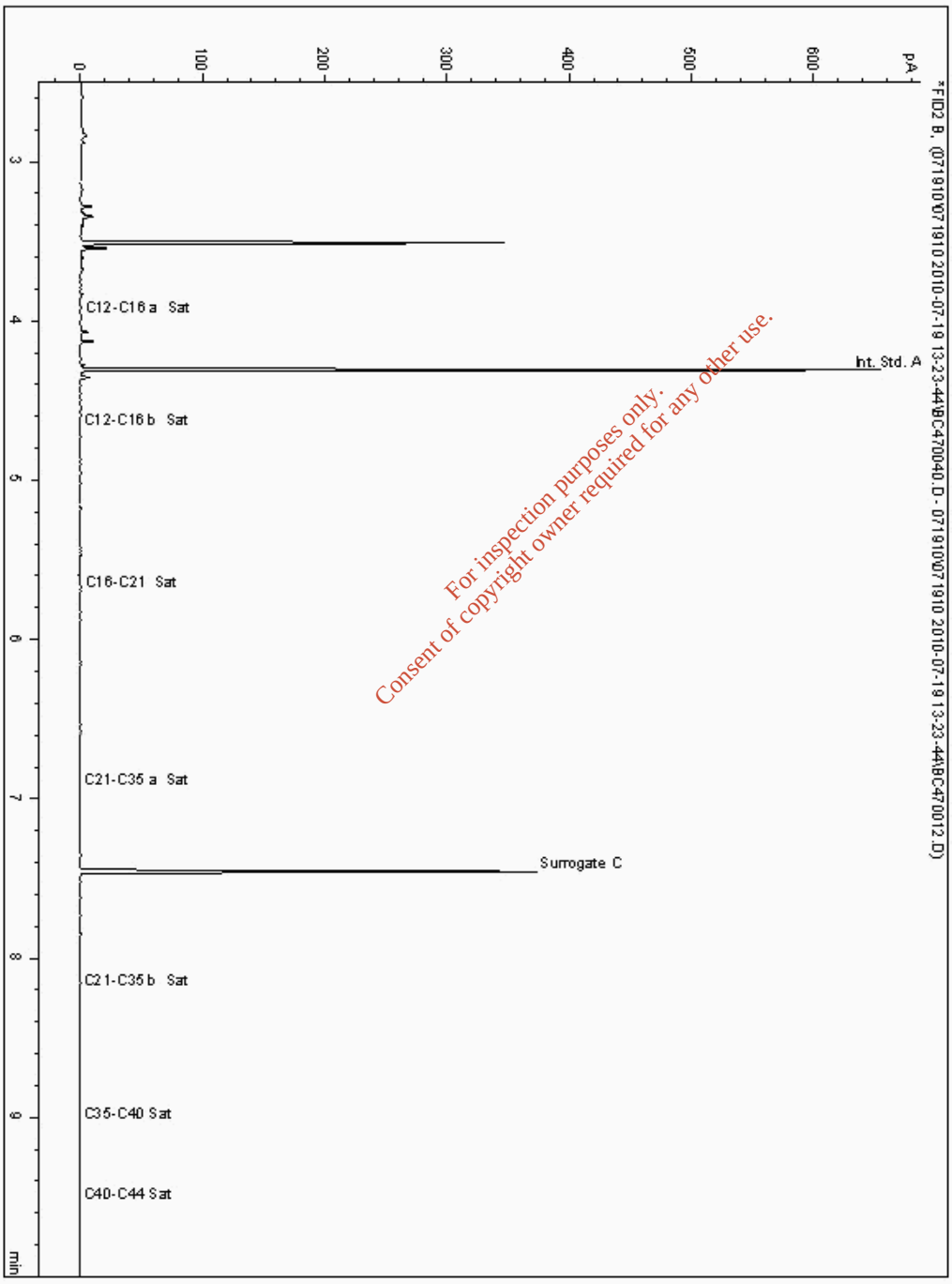
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1830313
		Sample ID	G2
		Depth	3.50 - 5.00

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

Sample Identity: 1940124-1830313
Date Acquired : 20/07/10 01:23:44
Units :
Dilution :
CF : 1
Multiplier : 0.017



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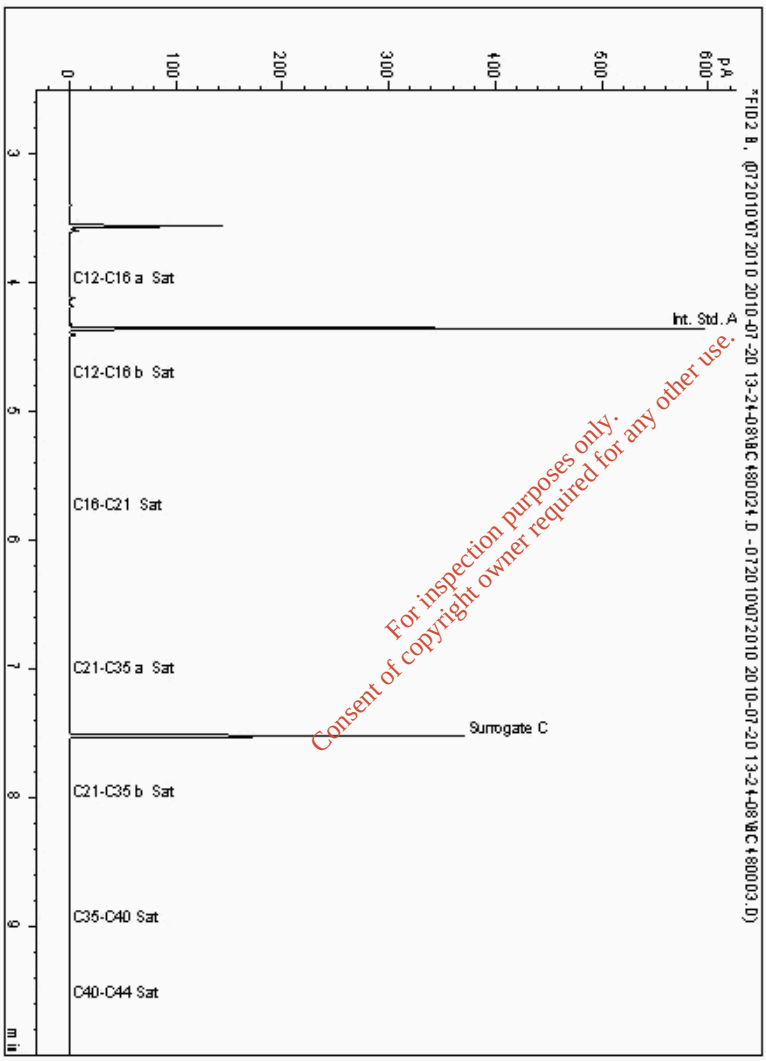
SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1831603
		Sample ID	G8
		Depth	1.50 - 3.50

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

Sample Identity: 1940044-1831603
Date Acquired : 20/07/10 20:39:55
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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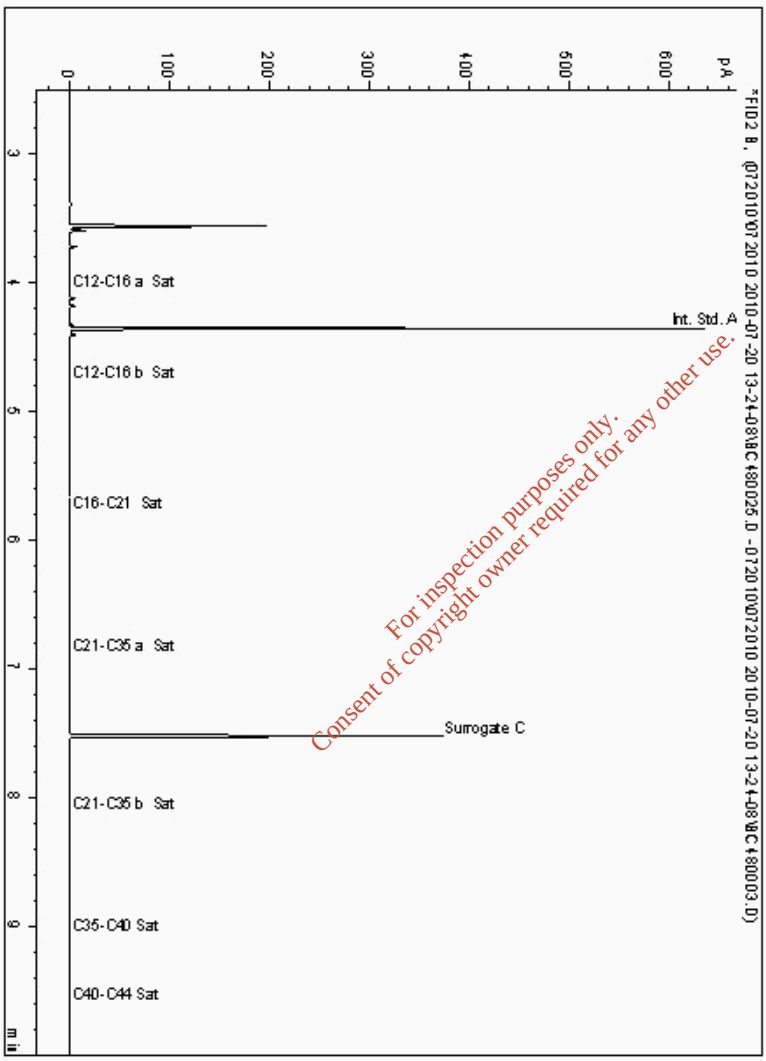
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1831654
		Sample ID	E8
		Depth	1.00 - 3.00

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

Sample Identity: 1940014-1831654
Date Acquired : 20/07/10 20:58:57
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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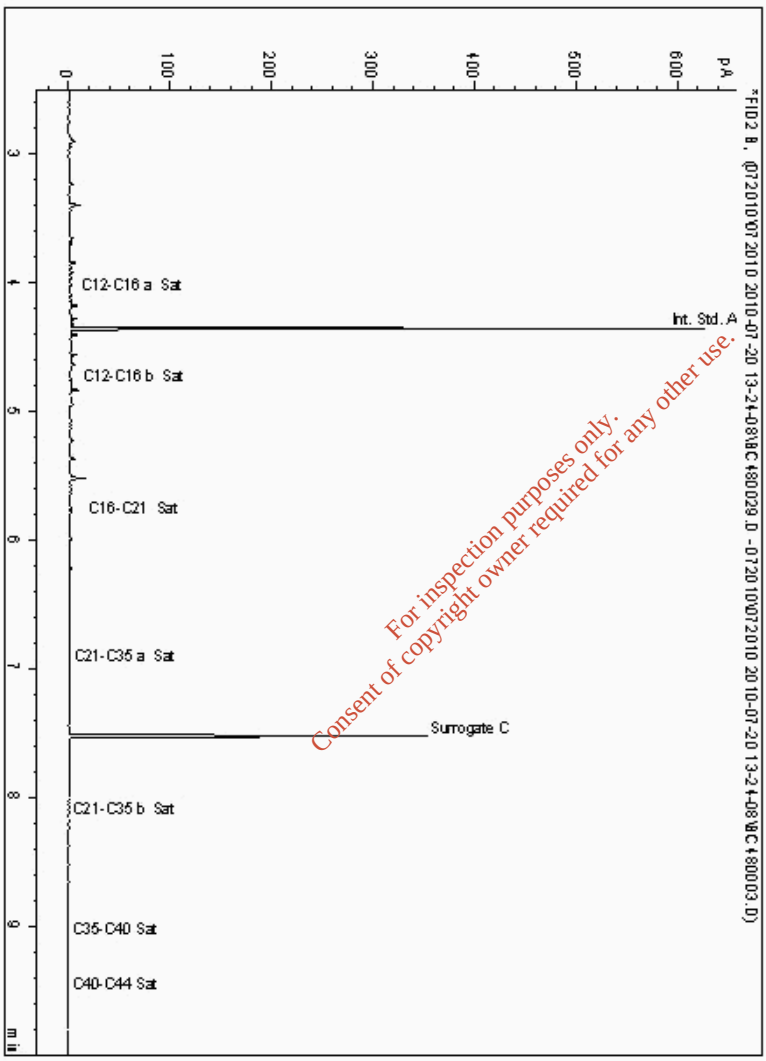
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1831700
		Sample ID	C11
		Depth	1.00 - 3.00

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

Sample Identity: 1940029-1831700
Date Acquired : 20/07/10 22:15:20
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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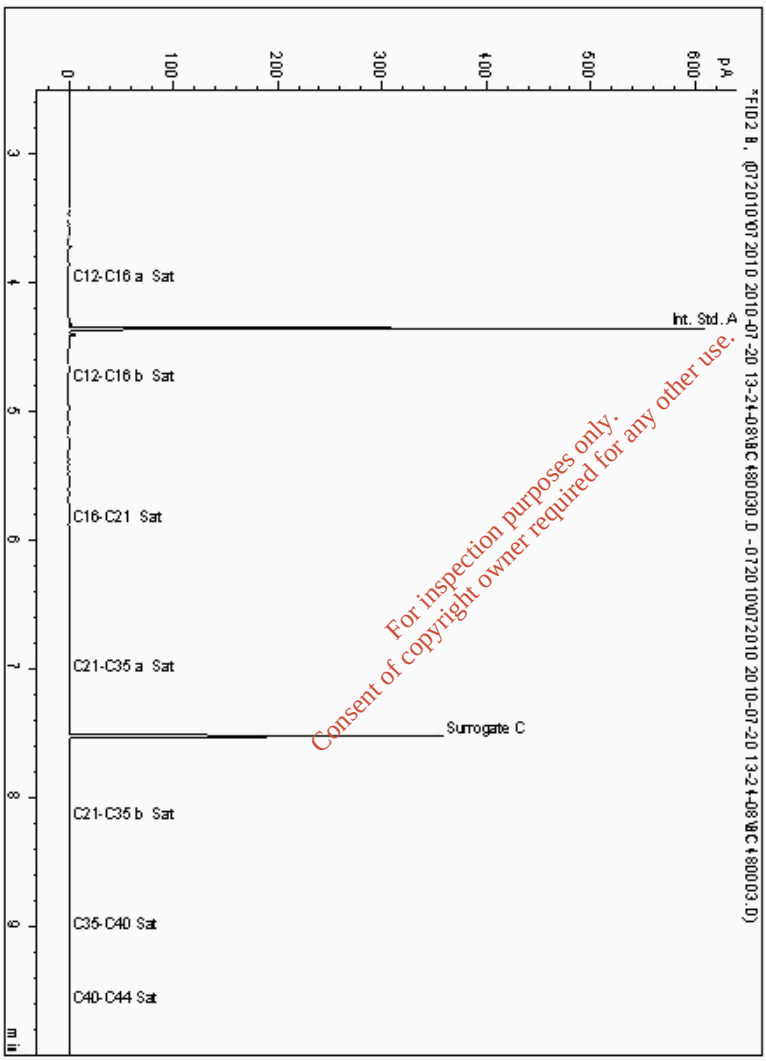
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1831737
		Sample ID	F11
		Depth	0.00 - 2.00

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

Sample Identity: 1940059-1831737
Date Acquired : 20/07/10 22:34:16
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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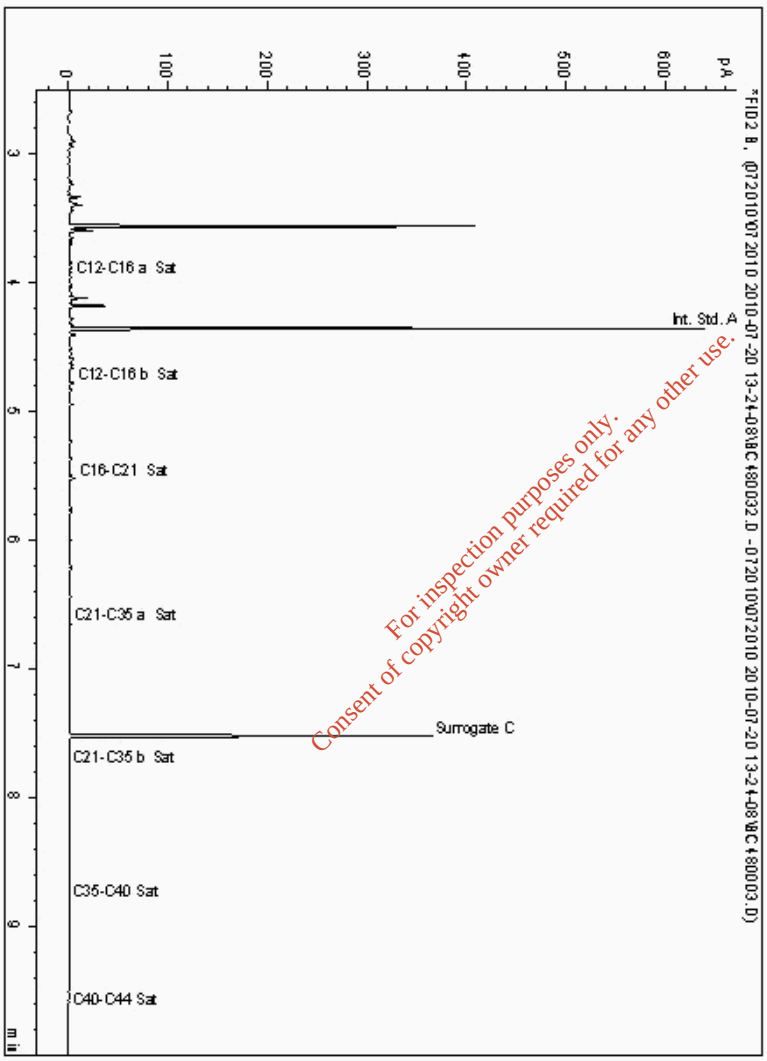
SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1831777
		Sample ID	D1
		Depth	3.50 - 5.00

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

Sample Identity: 1940140-1831777
Date Acquired : 20/07/10 23:11:53
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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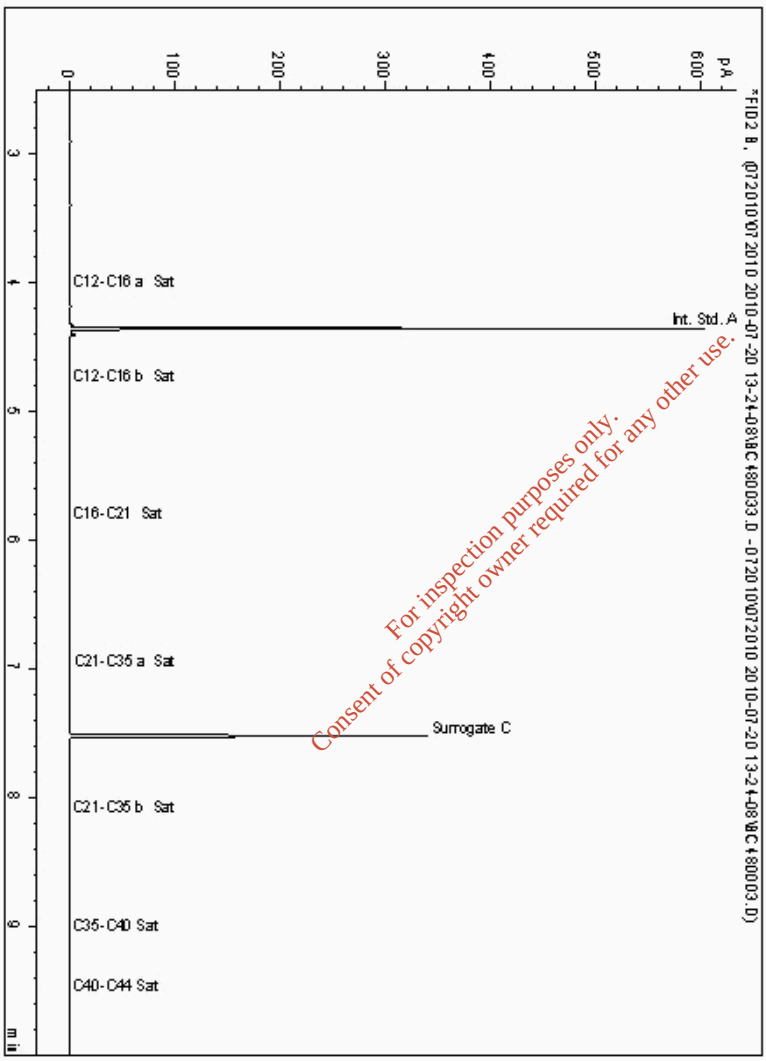
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	1831814
		Sample ID	A11
		Depth	1.00 - 3.00

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

Sample Identity: 1940074-1831814
Date Acquired : 20/07/10 23:30:48
Units : ppb
Dilution :
CF : 1
Multiplier : 0.017



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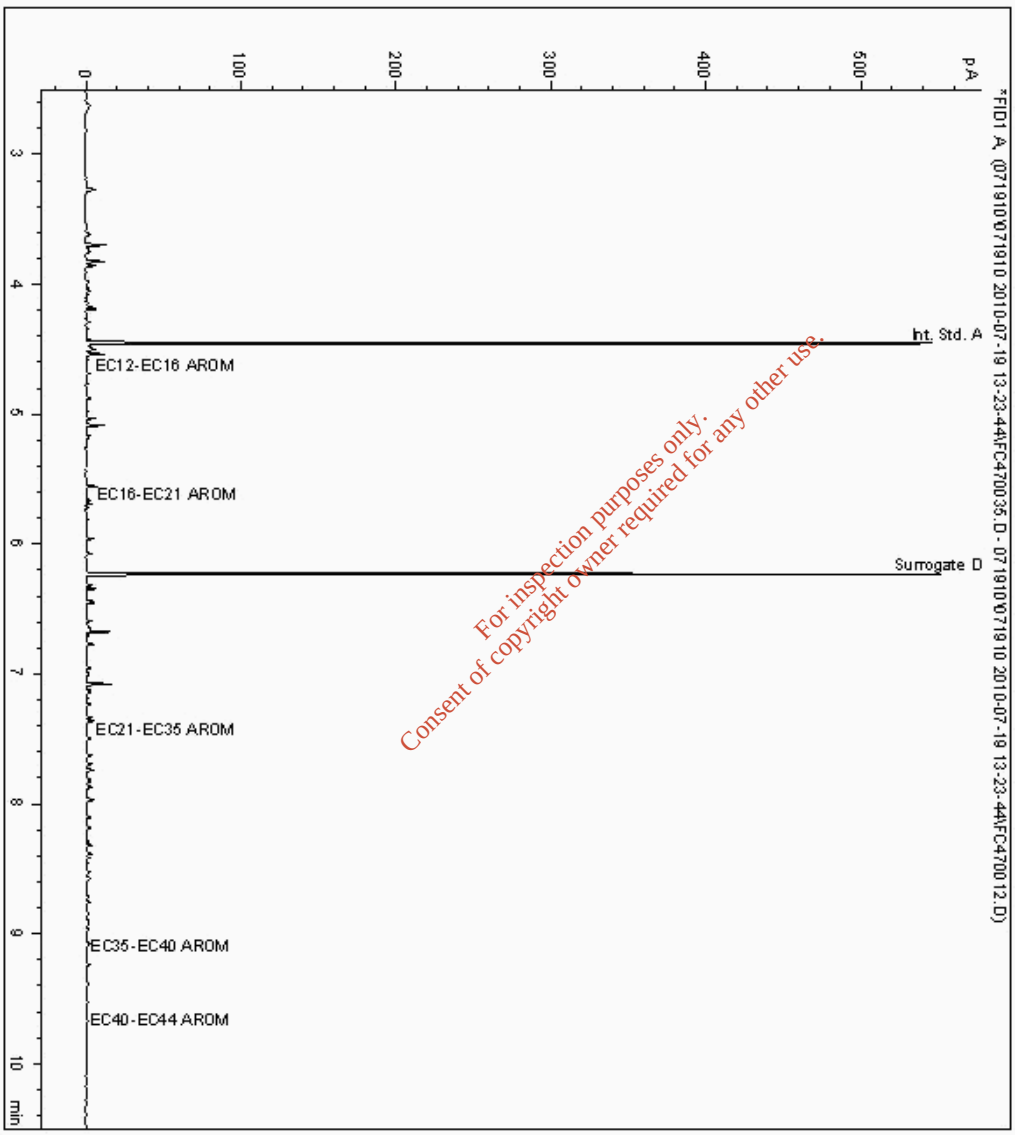
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1830250
		Sample ID	G3
		Depth	3.00 - 4.50

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

Sample Identity: 1940110-1830250
Date Acquired : 19/07/10 23:58:53
Units :
Dilution :
CF : 1
Multiplier : 0.017



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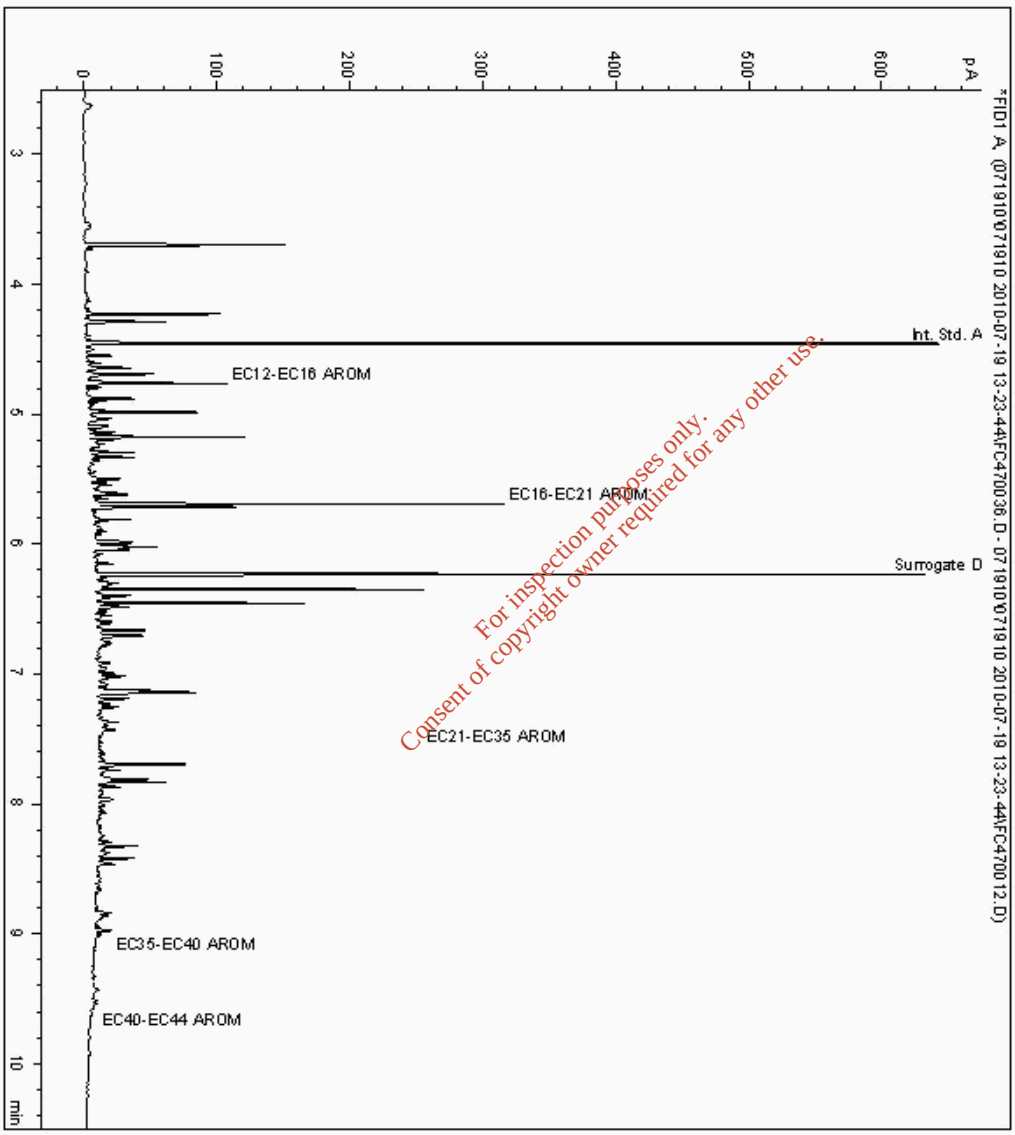
SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1830273
		Sample ID	G5
		Depth	2.50 - 4.00

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

Sample Identity: 1940157-1830273
Date Acquired : 20/07/10 00:17:43
Units :
Dilution :
CF : 1
Multiplier : 0.017



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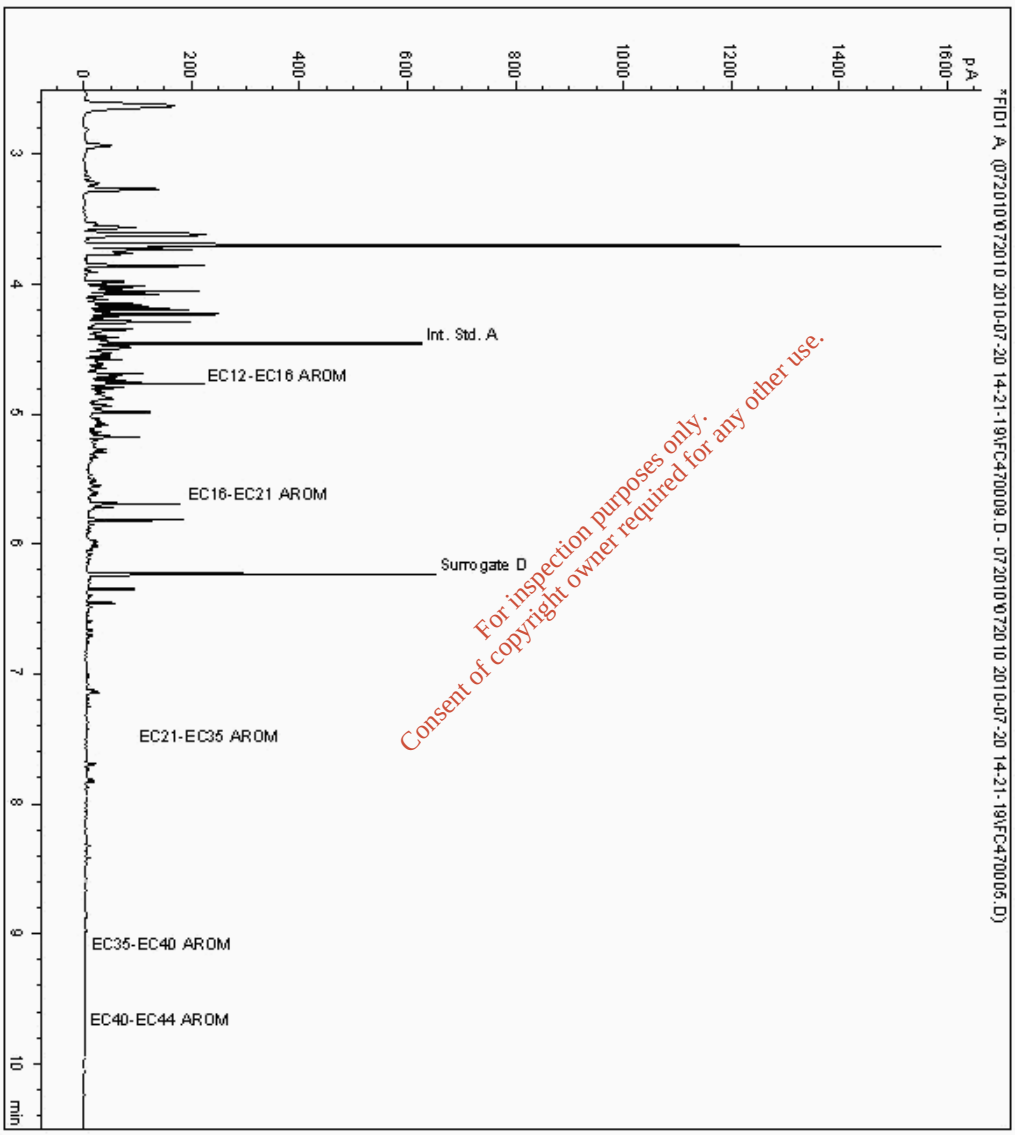
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1830290
		Sample ID	G4
		Depth	3.00 - 5.00

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

Sample Identity: 1940091-1830290
Date Acquired : 20/07/10 16:55:52
Units :
Dilution :
CF : 1
Multiplier : 0.017



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Validated

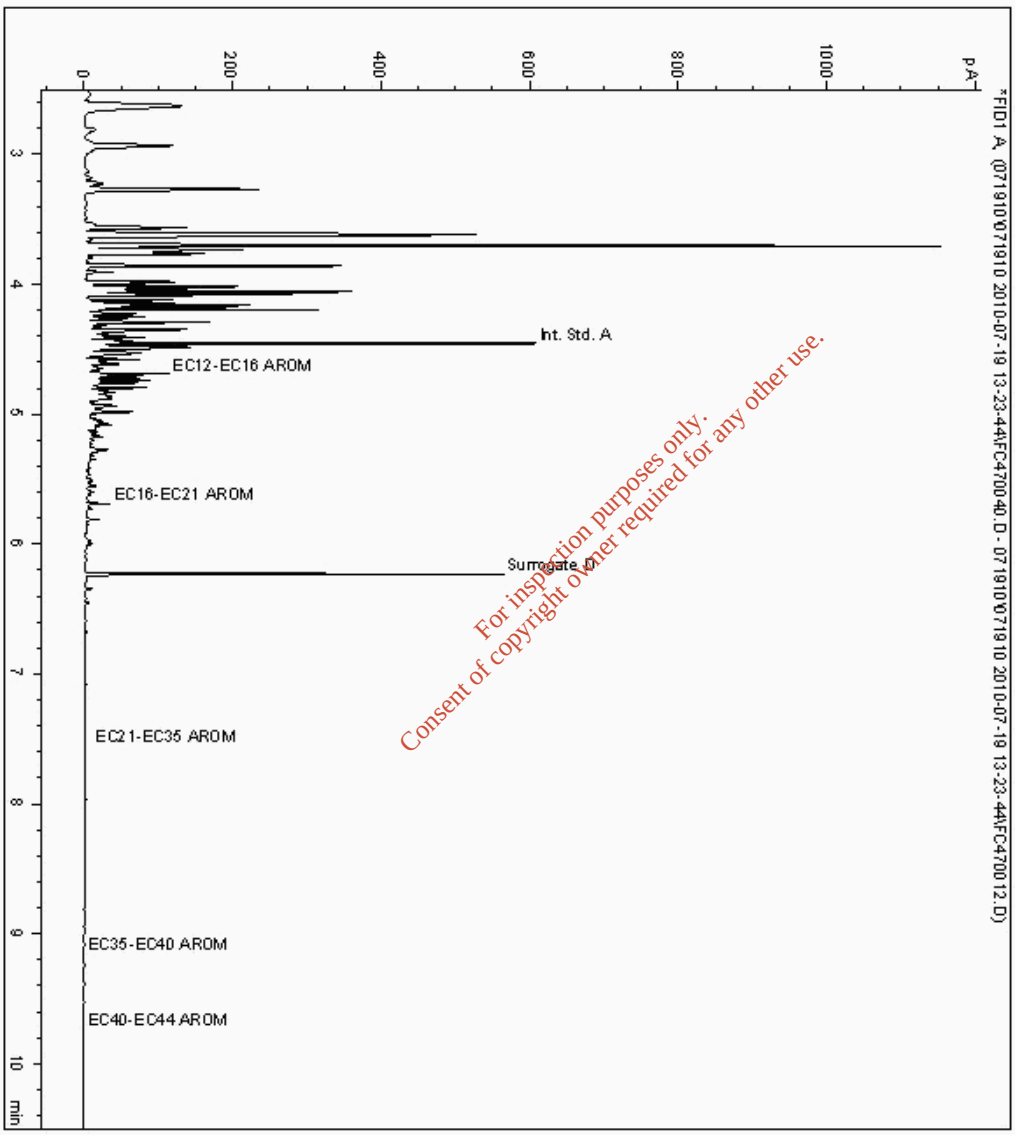
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1830313
		Sample ID	G2
		Depth	3.50 - 5.00

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

Sample Identity: 1940125-1830313
Date Acquired : 20/07/10 01:23:44
Units :
Dilution :
CF : 1
Multiplier : 0.017



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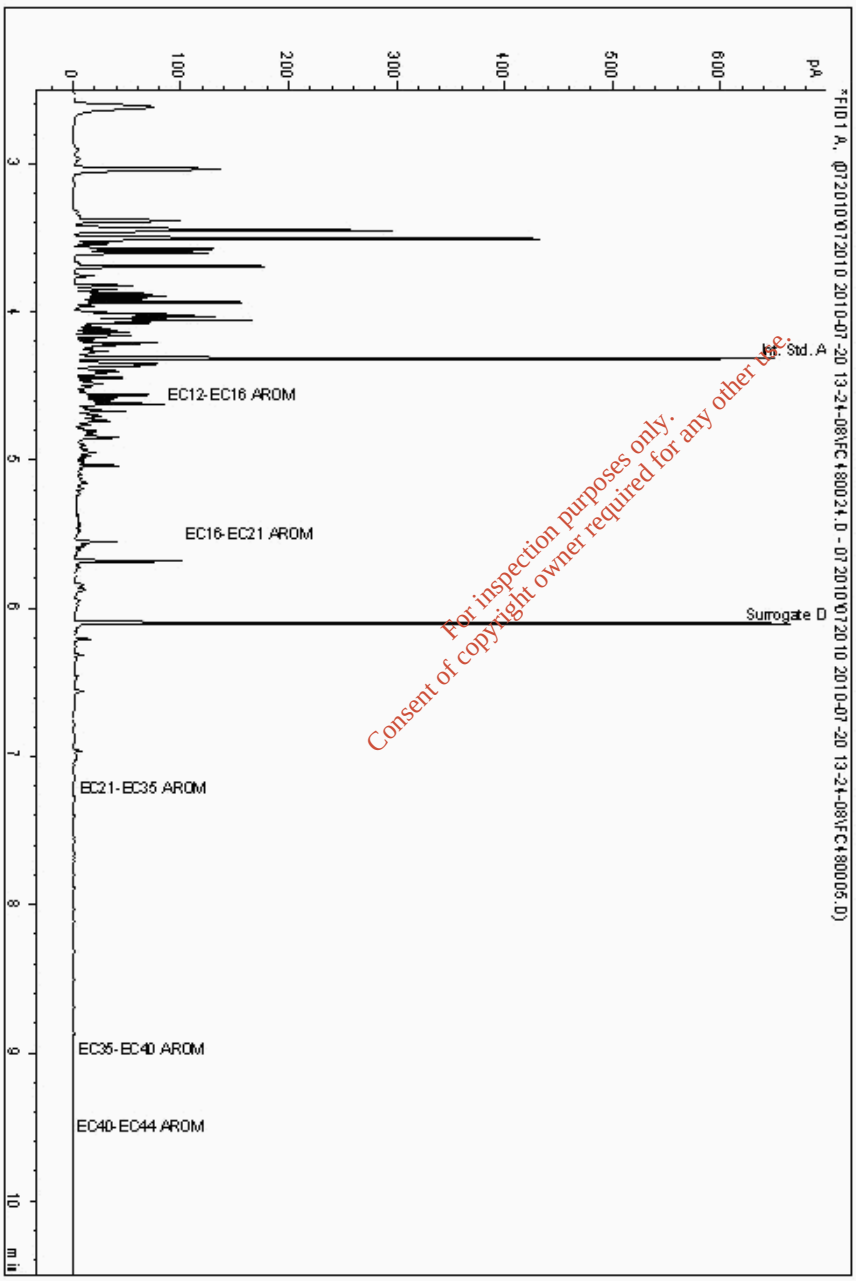
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1831603
		Sample ID	G8
		Depth	1.50 - 3.50

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

Sample Identity: 1940045-1831603
Date Acquired : 20/07/10 20:39:56
Units :
Dilution :
CF : 1
Multiplier : 0.017



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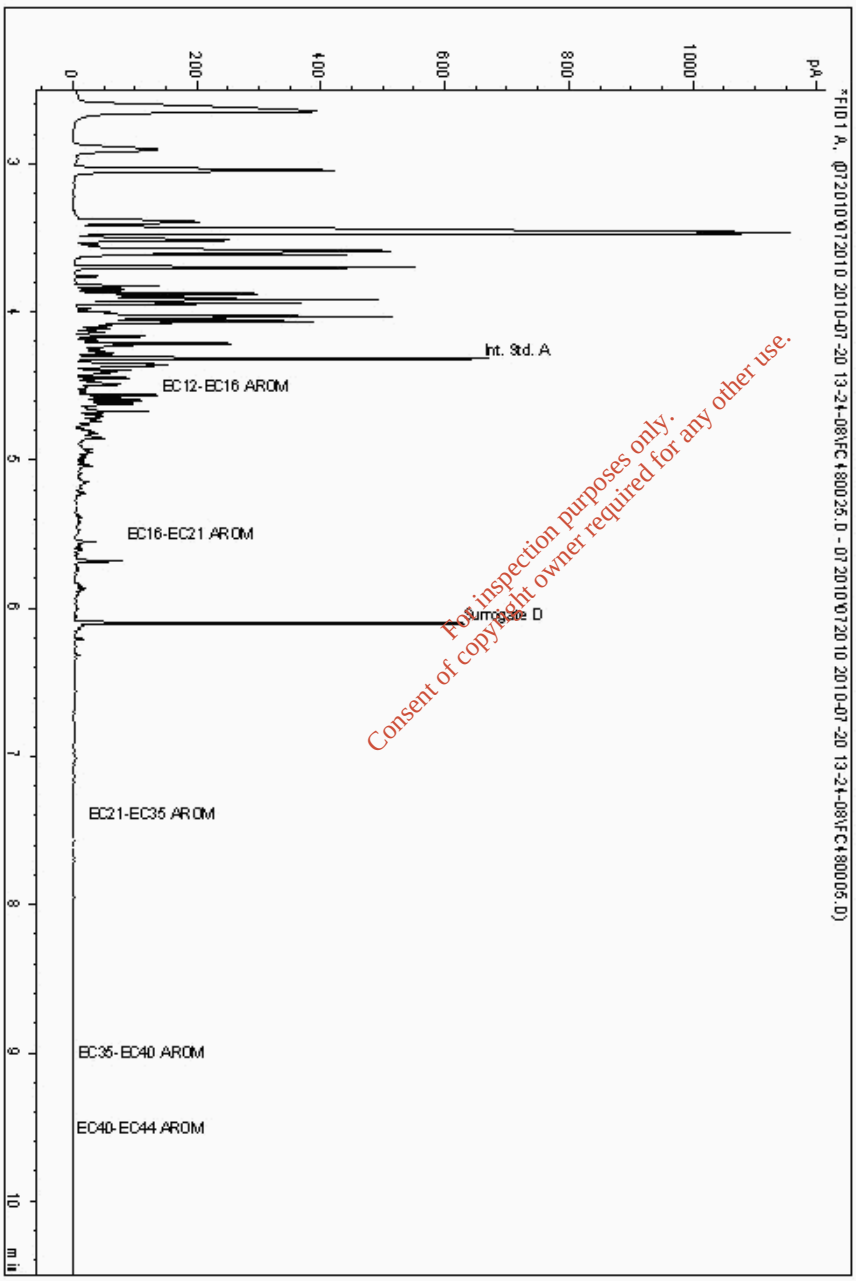
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1831654
		Sample ID	E8
		Depth	1.00 - 3.00

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

Sample Identity: 1940015-1831654
Date Acquired : 20/07/10 20:58:58
Units :
Dilution :
CF : 1
Multiplier : 0.017



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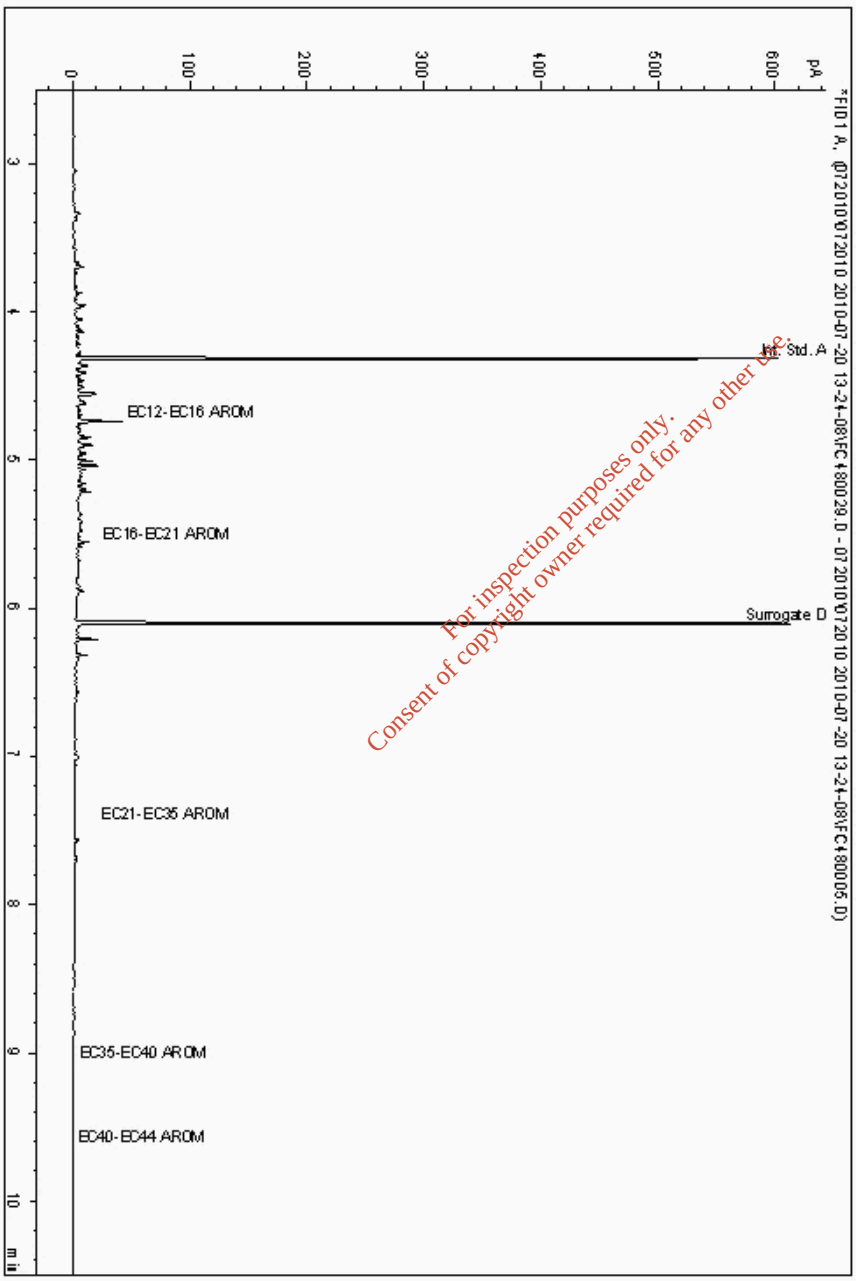
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1831700
		Sample ID	C11
		Depth	1.00 - 3.00

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

Sample Identity: 1940030-1831700
Date Acquired : 20/07/10 22:15:20
Units :
Dilution :
CF : 1
Multiplier : 0.017



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Validated

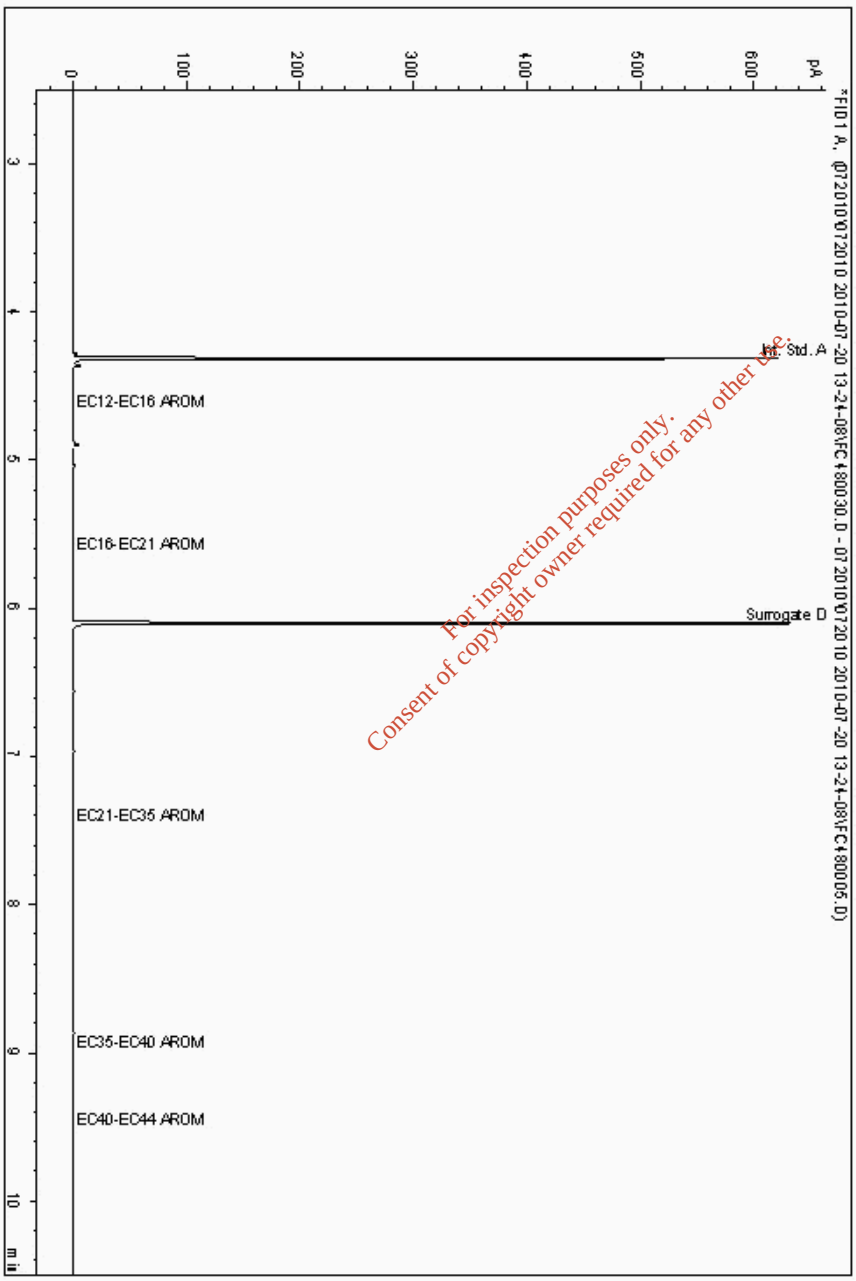
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1831737
		Sample ID	F11
		Depth	0.00 - 2.00

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

Sample Identity: 1940060-1831737
Date Acquired : 20/07/10 22:34:16
Units :
Dilution :
CF : 1
Multiplier : 0.017



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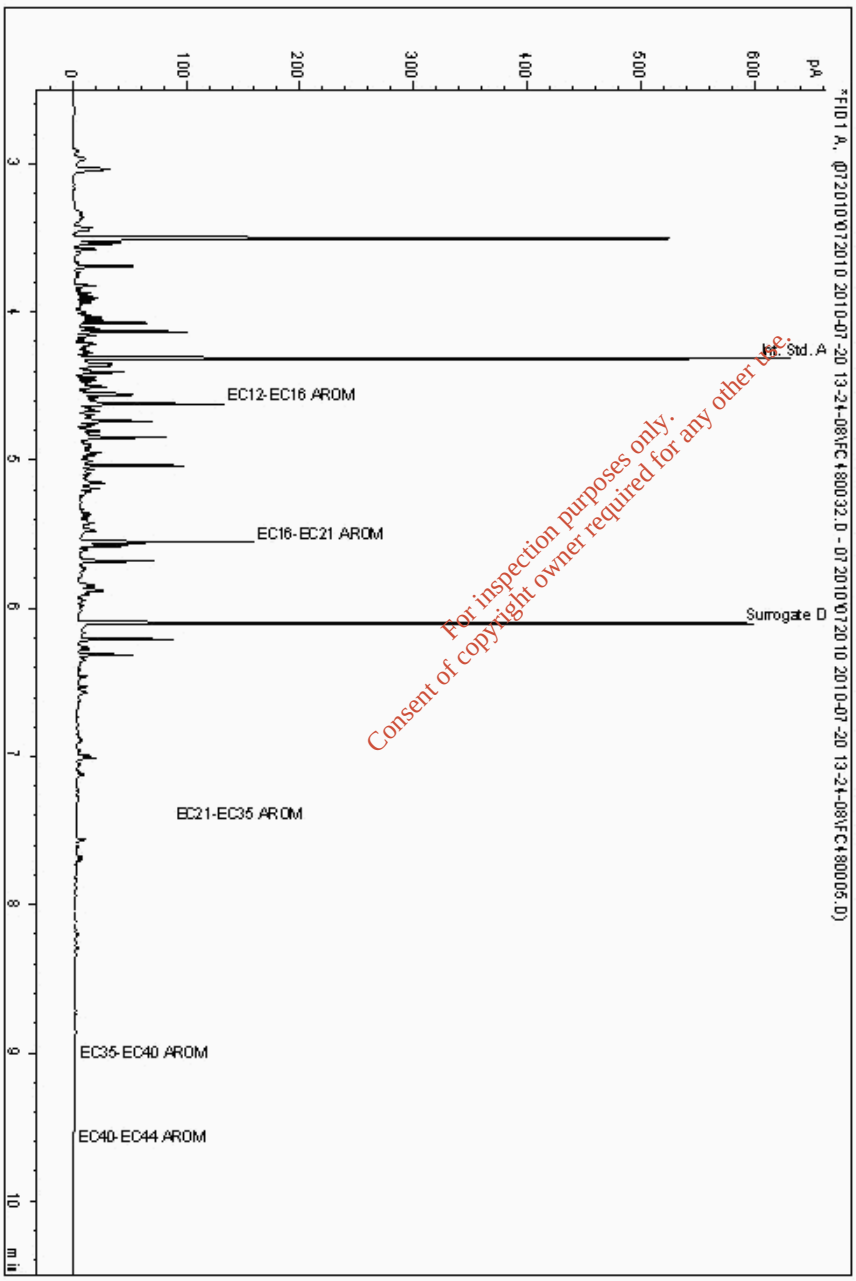
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1831777
		Sample ID	D1
		Depth	3.50 - 5.00

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

Sample Identity: 1940141-1831777
Date Acquired : 20/07/10 23:11:53
Units :
Dilution :
CF : 1
Multiplier : 0.017



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Validated

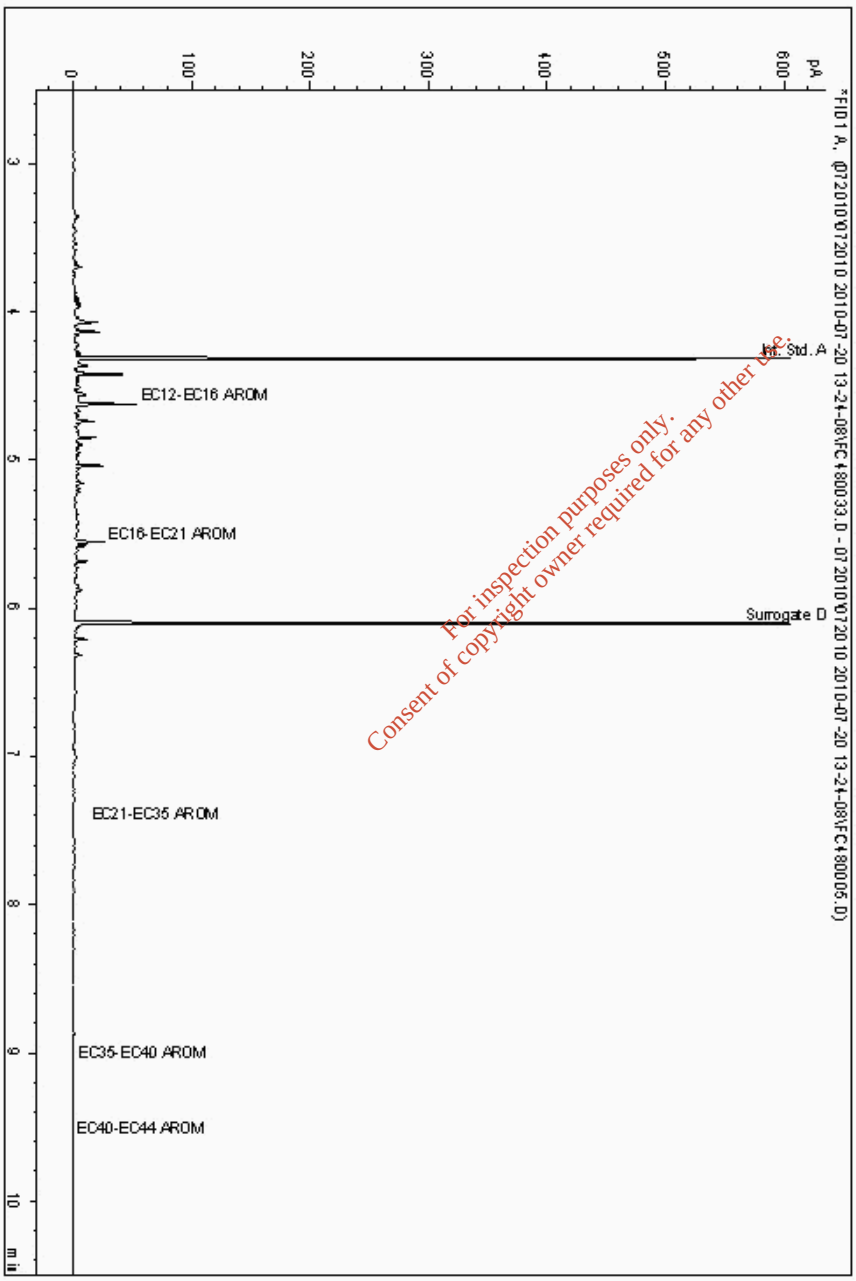
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	1831814
		Sample ID	A11
		Depth	1.00 - 3.00

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

Sample Identity: 1940075-1831814
Date Acquired : 20/07/10 23:30:48
Units :
Dilution :
CF : 1
Multiplier : 0.017



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Validated

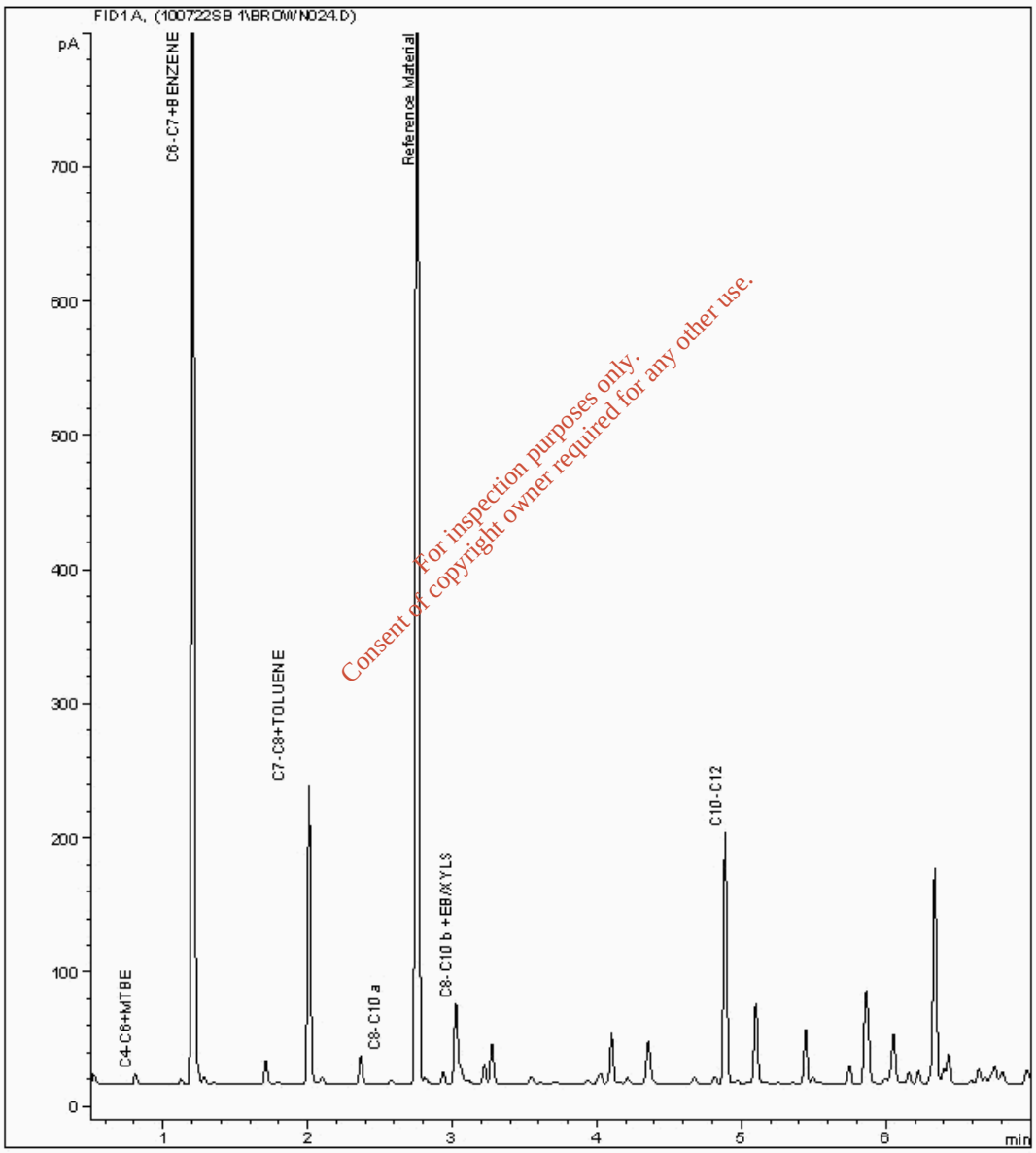
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	GRO by GC-FID (W)	**Sample No**	1824496
		Sample ID	E8
		Depth	1.00 - 3.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1940016-1824496
Date Acquired : 22/07/10 17:06:23
Units : ppb
Dilution : 2



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Validated

ALcontrol Laboratories Analytical Services

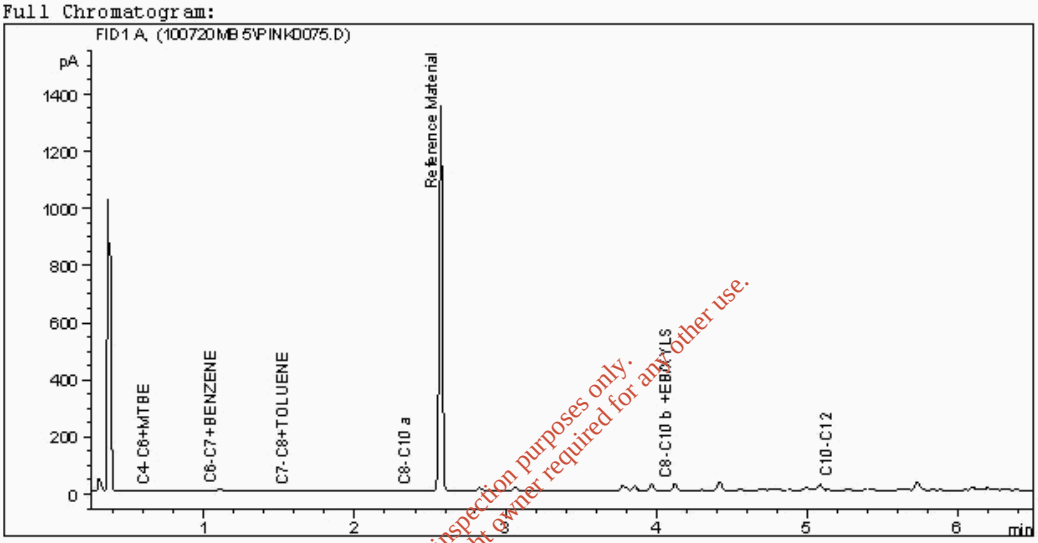
SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	GRO by GC-FID (W)	**Sample No**	1824522
		Sample ID	C11
		Depth	1.00 - 3.00

ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1940031-1824522
Date Acquired : 21/07/10 10:38:28
Units : ppb
Dilution : 1

Full Chromatogram:



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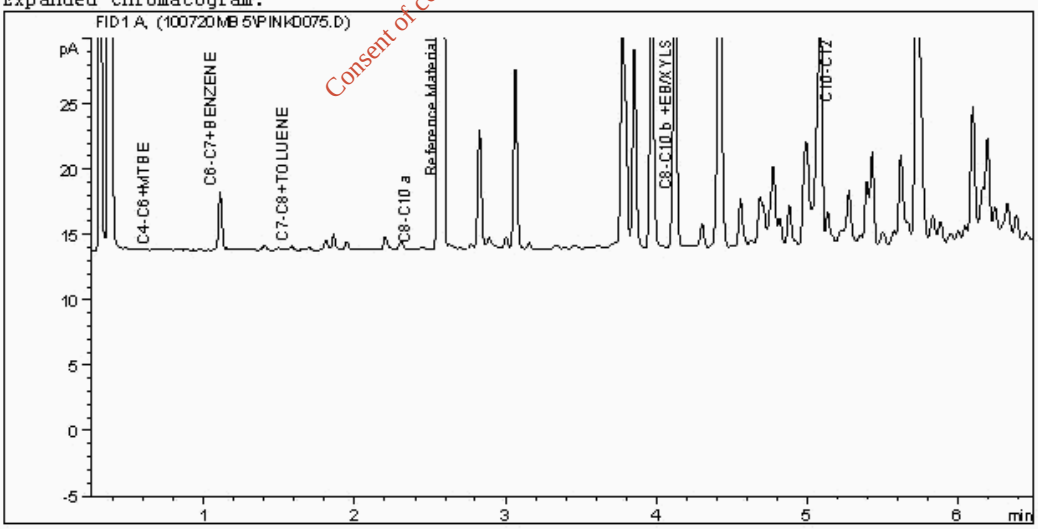
Expanded Chromatogram:



EPA Export 25-05-2012:04:42:46

Validated

ALcontrol Laboratories Analytical Services

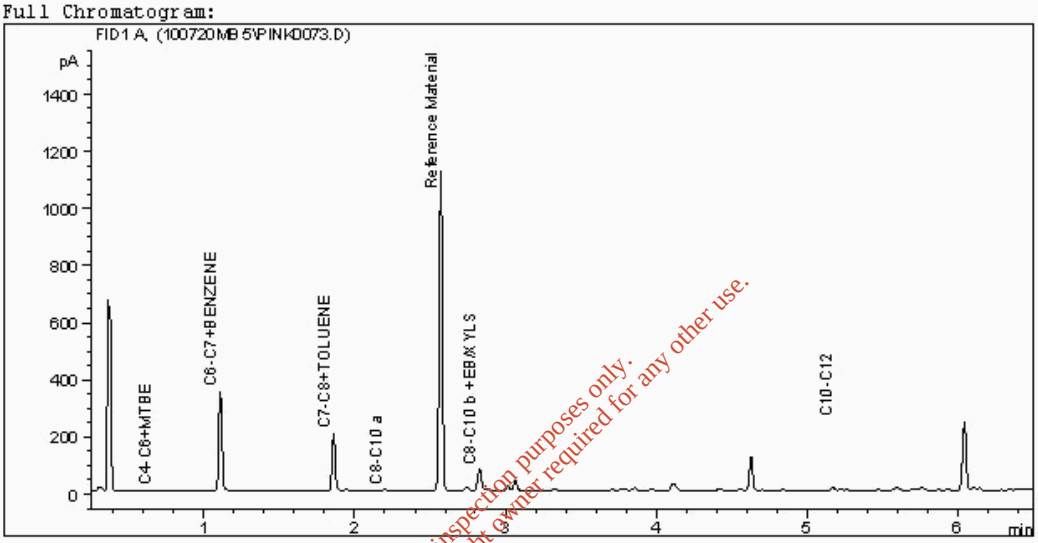
SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	GRO by GC-FID (W)	**Sample No**	1824545
		Sample ID	G8
		Depth	1.50 - 3.50

ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1940046-1824545
Date Acquired : 21/07/10 10:10:20
Units : ppb
Dilution : 1

Full Chromatogram:



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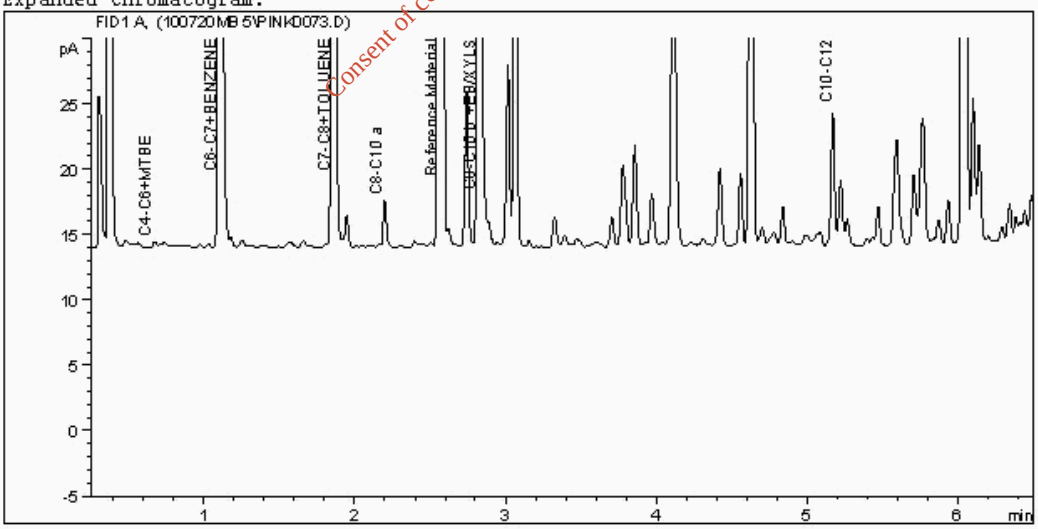

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Validated

ALcontrol Laboratories Analytical Services

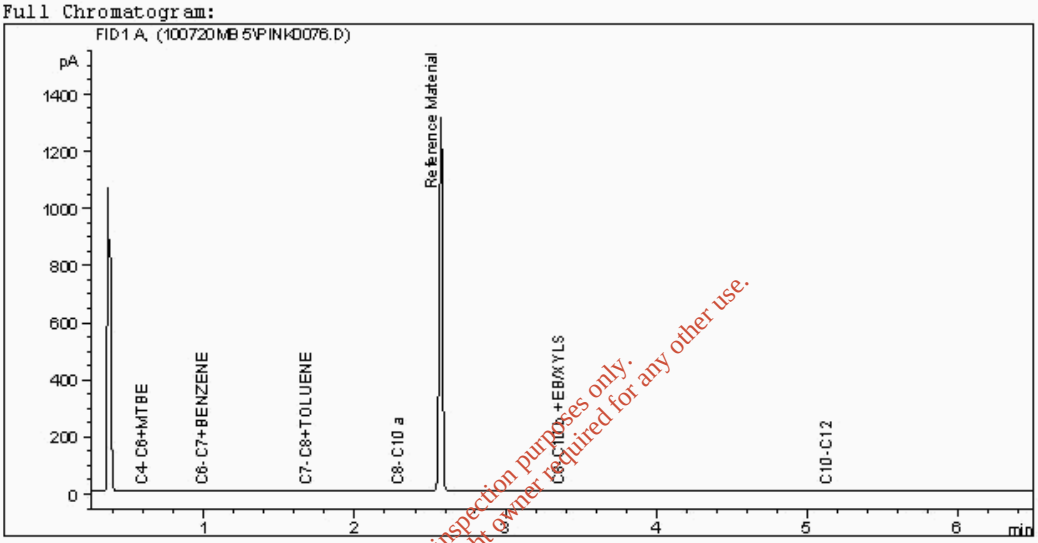
SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	GRO by GC-FID (W)	**Sample No**	1824630
		Sample ID	F11
		Depth	0.00 - 2.00

ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1940061-1824630
Date Acquired : 21/07/10 10:52:30
Units : ppb
Dilution : 1

Full Chromatogram:



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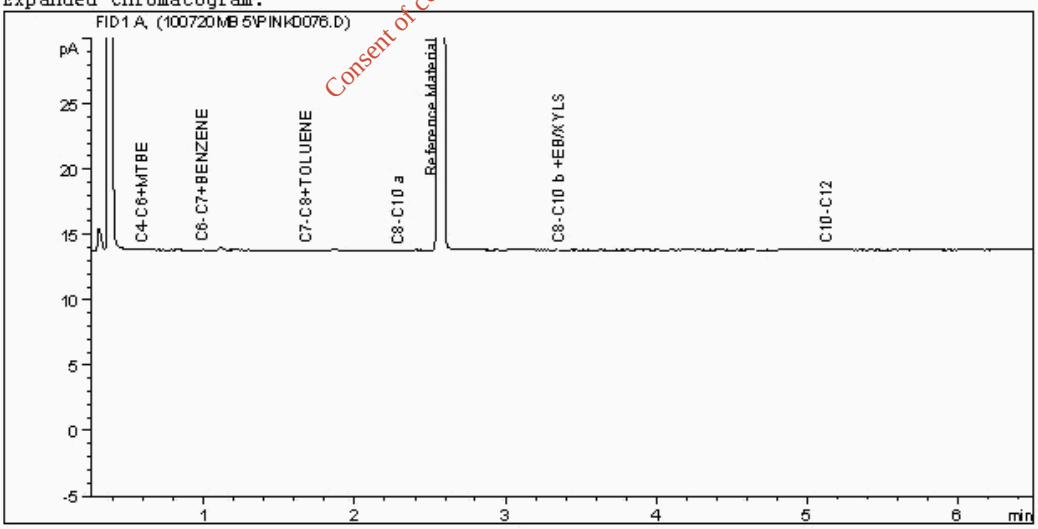

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Validated

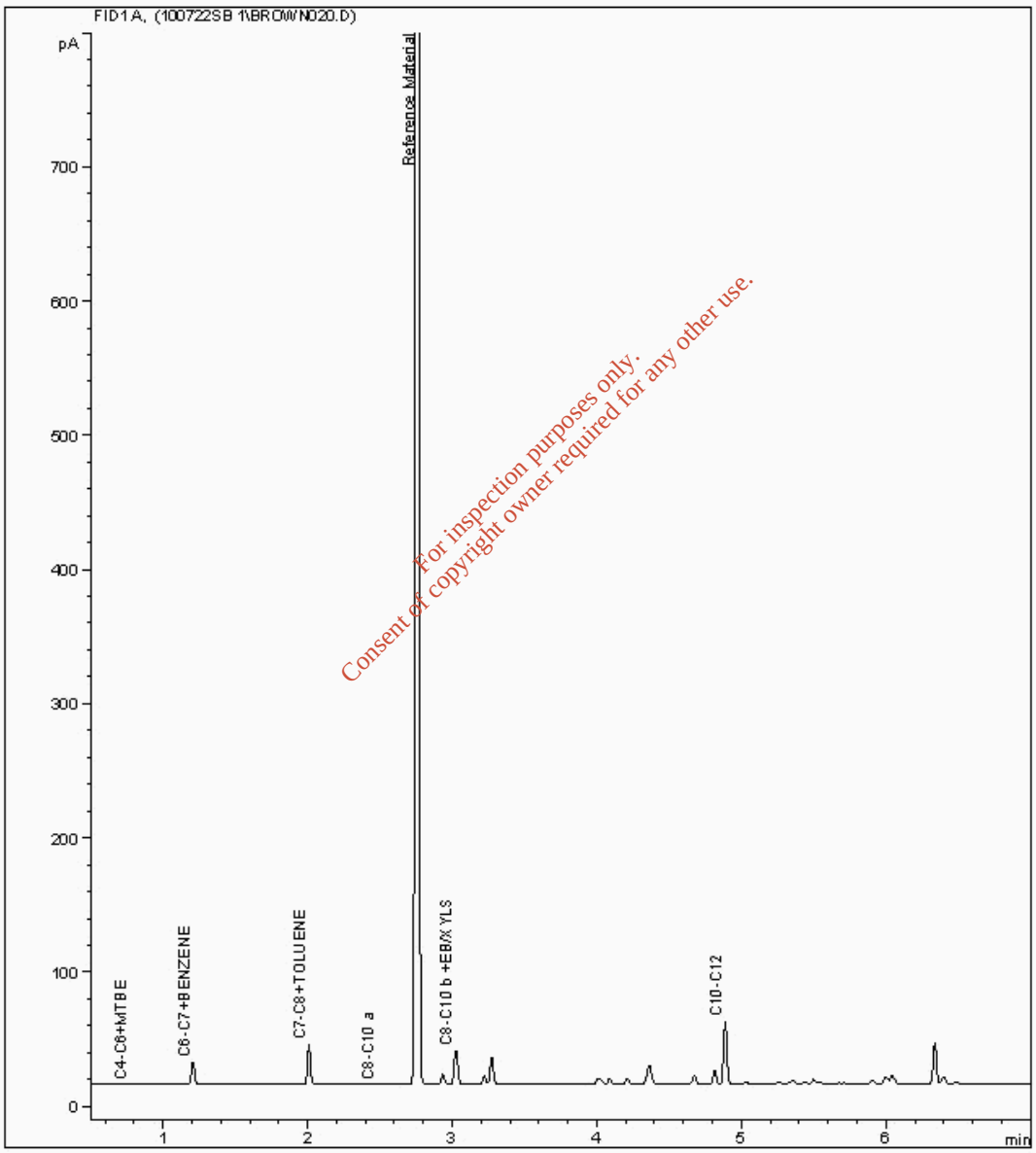
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	GRO by GC-FID (W)	**Sample No**	1824733
		Sample ID	A11
		Depth	1.00 - 3.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1940076-1824733
Date Acquired : 22/07/10 16:10:04
Units : ppb
Dilution : 1



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Validated

ALcontrol Laboratories Analytical Services

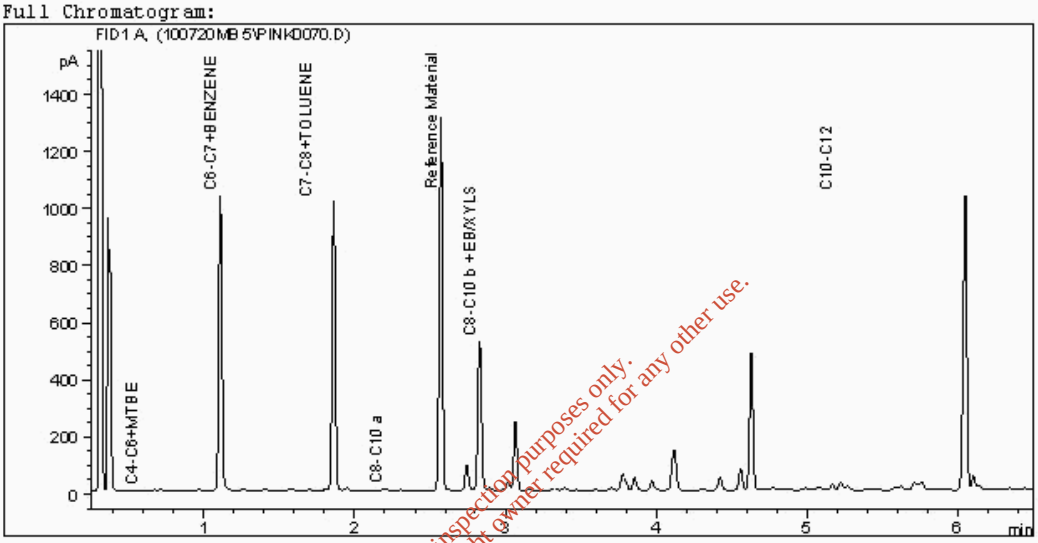
SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	GRO by GC-FID (W)	**Sample No**	1824772
		Sample ID	G4
		Depth	3.00 - 5.00

ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1940092-1824772
Date Acquired : 21/07/10 09:28:05
Units : ppb
Dilution : 1

Full Chromatogram:



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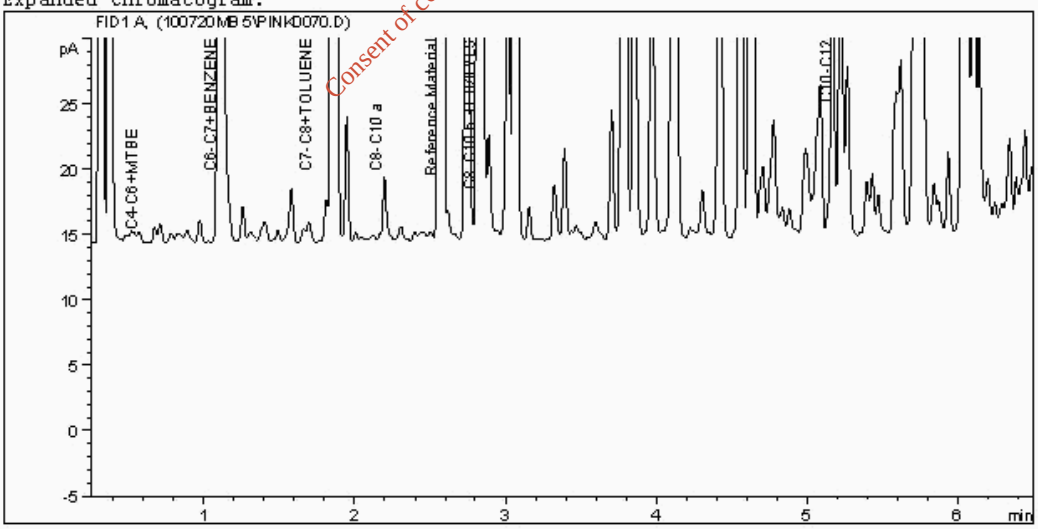
Expanded Chromatogram:



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Validated

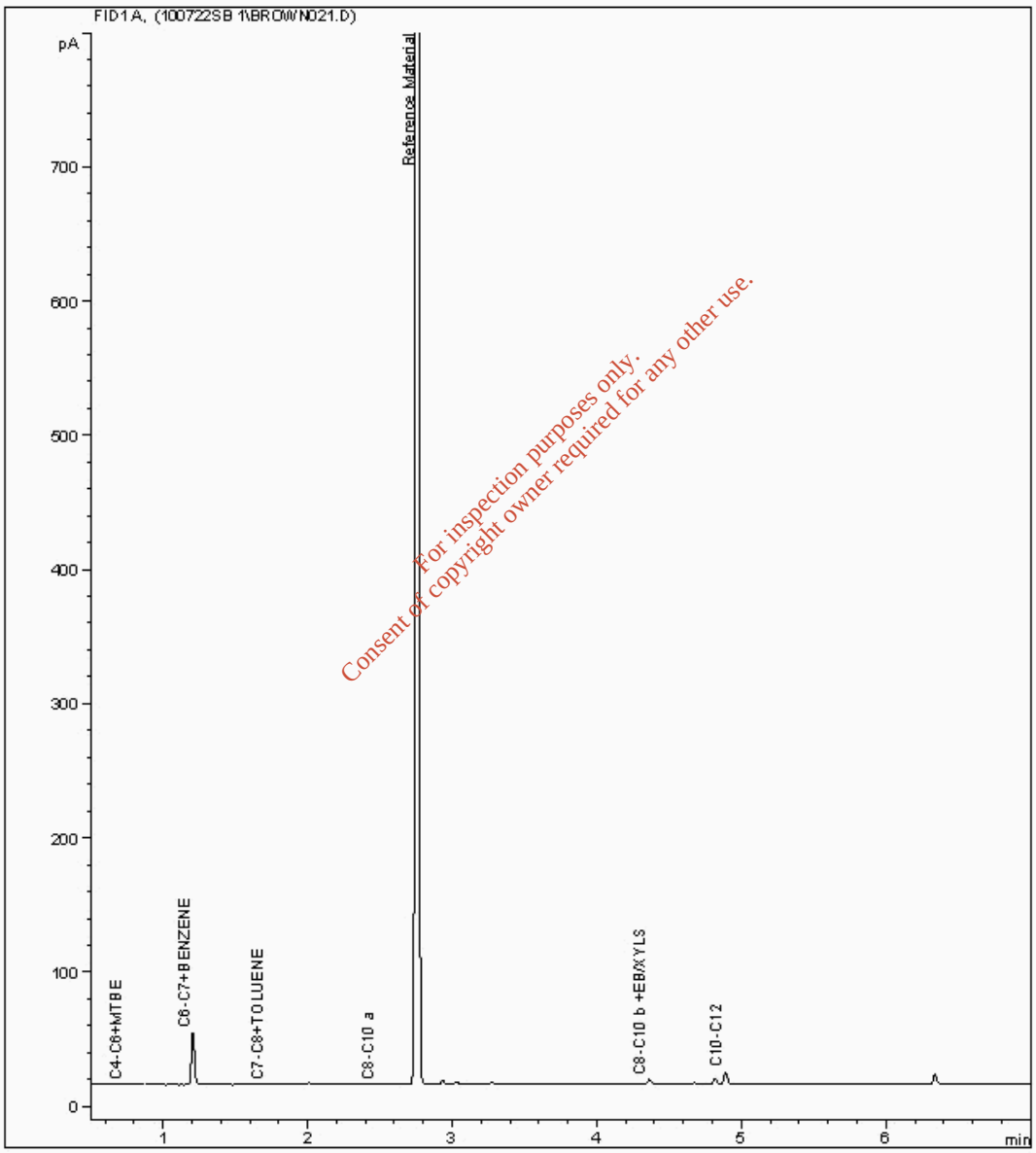
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	GRO by GC-FID (W)	**Sample No**	1824811
		Sample ID	G3
		Depth	3.00 - 4.50

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1940111-1824811
Date Acquired : 22/07/10 16:24:09
Units : ppb
Dilution : 1



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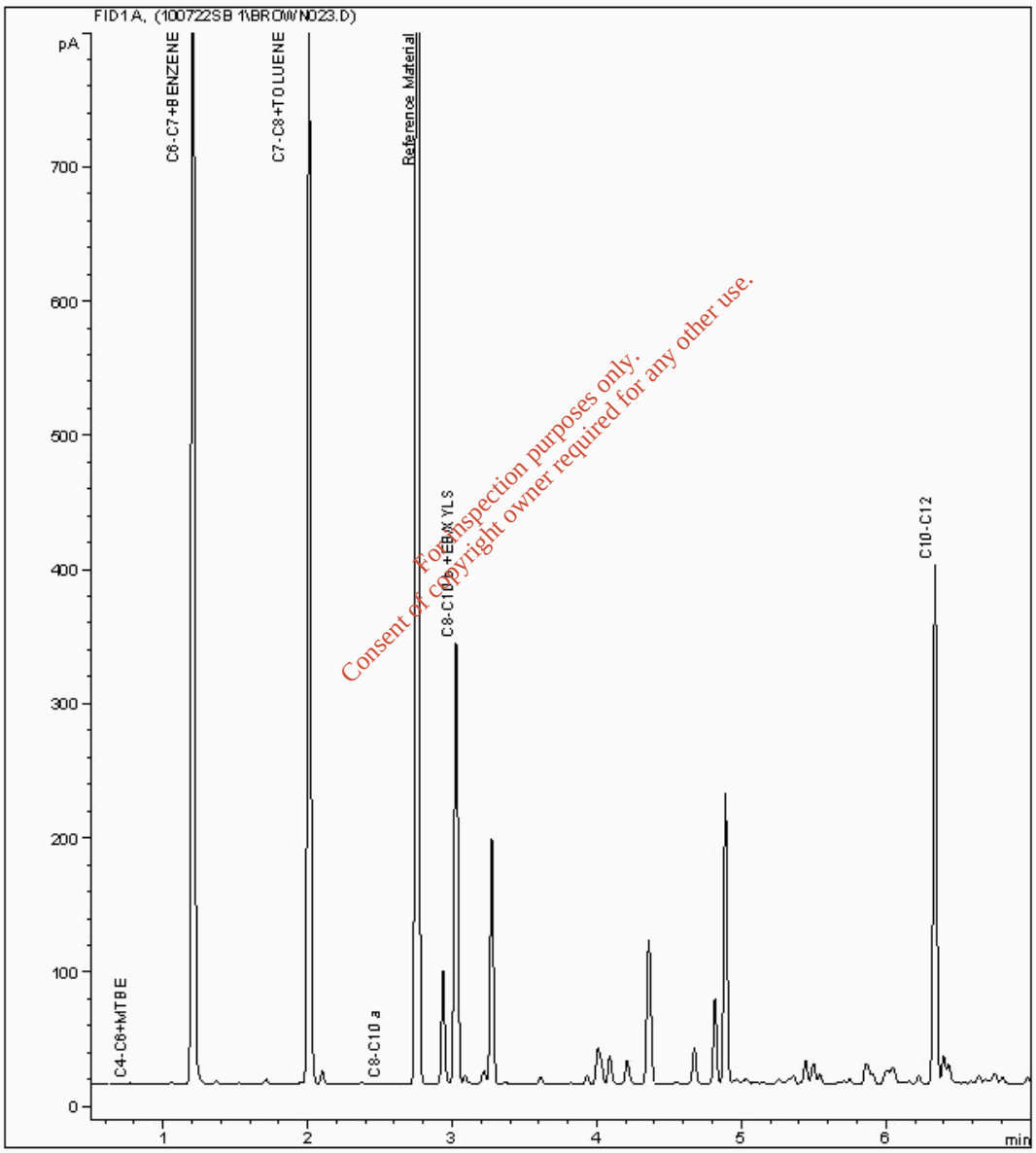
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	GRO by GC-FID (W)	**Sample No**	1824849
		Sample ID	G2
		Depth	3.50 - 5.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1940126-1824849
Date Acquired : 22/07/10 16:52:20
Units : ppb
Dilution : 2



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Validated

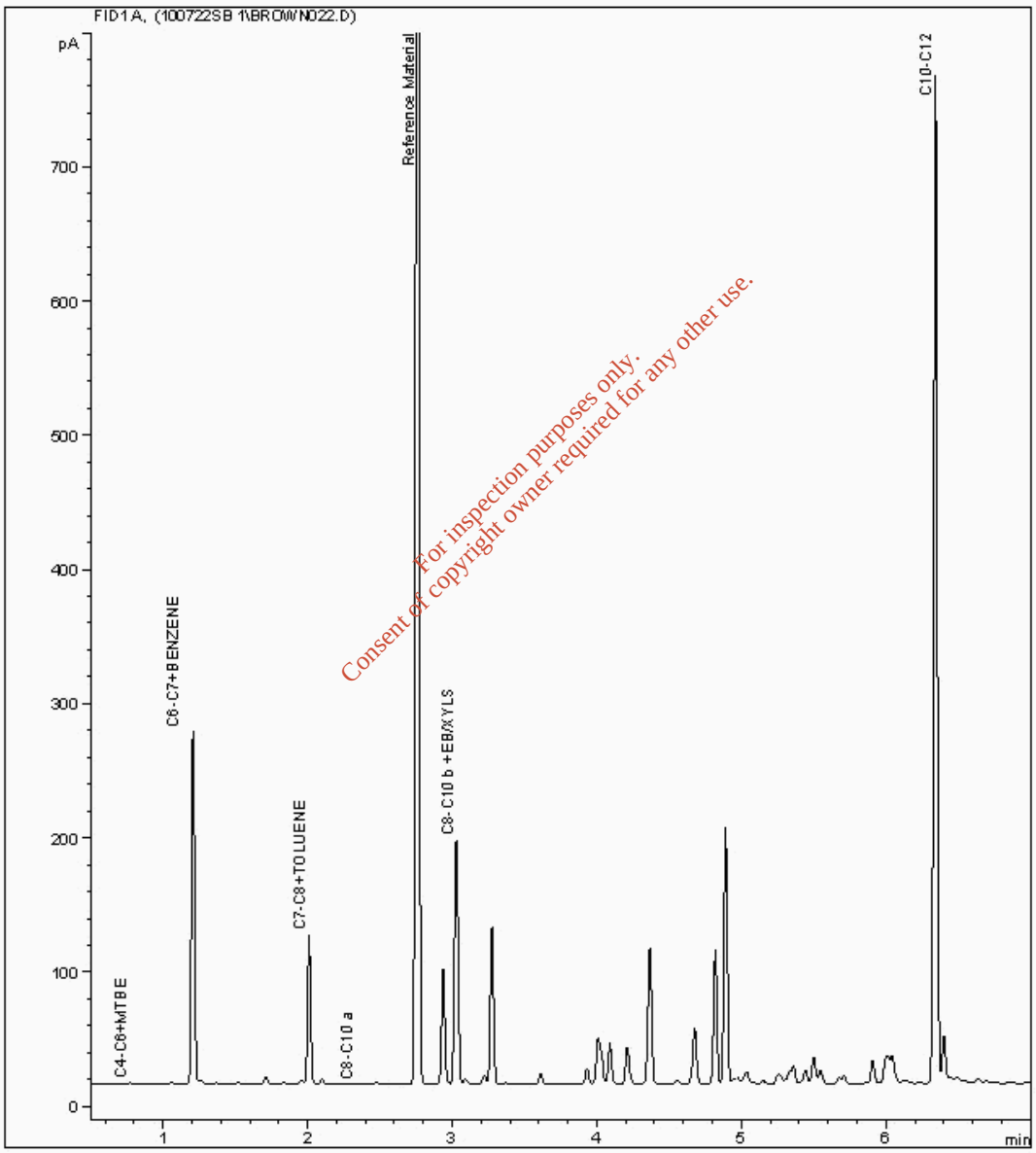
ALcontrol Laboratories Analytical Services

SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	GRO by GC-FID (W)	**Sample No**	1824885
		Sample ID	D1
		Depth	3.50 - 5.00

ALcontrol Geochem Analytical Services
Gasoline Range Organics

Sample Identity : 1940142-1824885
Date Acquired : 22/07/10 16:38:13
Units : ppb
Dilution : 1



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Validated

ALcontrol Laboratories Analytical Services

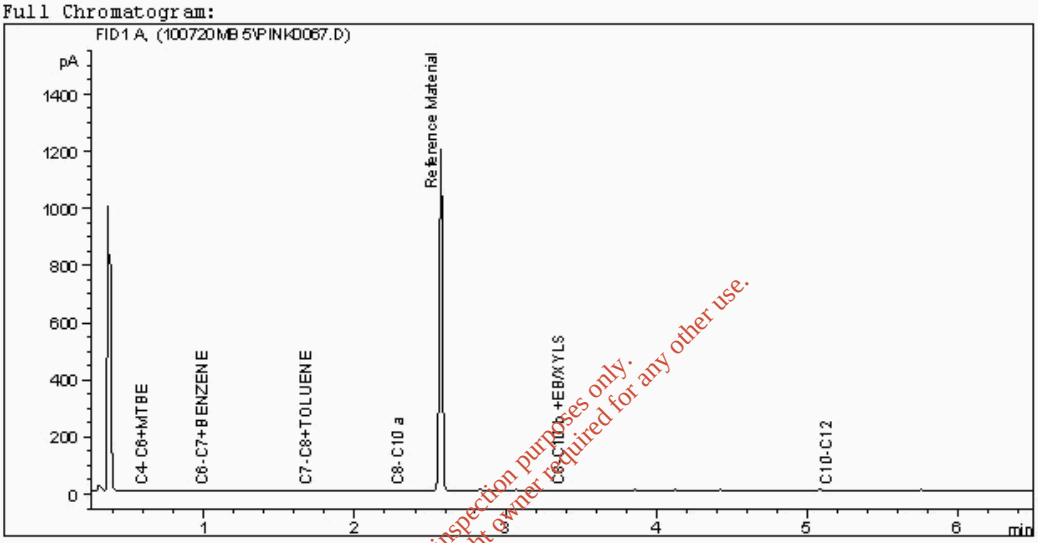
SDG:	100715-75	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-106	**Attention:**	Dave Watts
Client Ref.:	E8 - G5	**Order No.:**	
Location:	Limerick Gasworks	**Report No:**	91383

Analysis:	GRO by GC-FID (W)	**Sample No**	1824917
		Sample ID	G5
		Depth	2.50 - 4.00

ALcontrol Analytical Services
Gasoline Range Organics

Sample Identity : 1940158-1824917
Date Acquired : 21/07/10 08:45:57
Units : ppb
Dilution : 1

Full Chromatogram:



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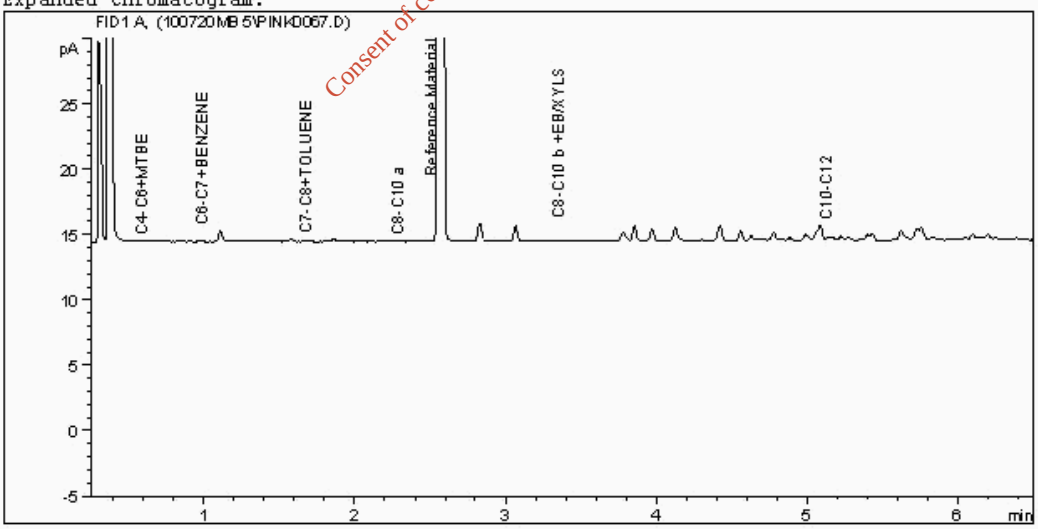
Expanded Chromatogram:



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APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH_4 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.
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 the major 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.

Last updated 1 April 2010

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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)	GS 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 INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC FID

SOLID MATRICES EXTRACTION SUMMARY

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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 (C6-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

EPA Export 25-05-2012:04:42:46

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).

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.

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

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ALcontrol Laboratories

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

Attention: David Megson

CERTIFICATE OF ANALYSIS

Date:	29 October 2010		
Customer:	D_MOUCHEL_ELE-101		
Sample Delivery Group (SDG):	101021-66	**Report No.:**	101686
Your Reference:	21.10.10		
Location:	Limerick Gasworks		

We received 19 samples on Thursday October 21, 2010 and 19 of these samples were scheduled for analysis which was completed on Friday October 29, 2010. 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).

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Approved By:

Iain Swinton

Business Director - Land, UK & Ireland

UKAS TESTING
1291
GROUP

EPA Export 25-05-2012:04:42:47

Validated

ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	David Megson
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
2271645	A11	WW5	1.50 - 2.50	20/10/2010
2271027	A3	WW5	2.00 - 4.00	20/10/2010
2271053	A4	WW5	2.00 - 4.00	20/10/2010
2271508	C11	WW5	1.50 - 2.50	20/10/2010
2271134	C7	WW5	3.00 - 6.00	20/10/2010
2271832	D1	WW5	3.00 - 4.00	20/10/2010
2271008	D5	WW5	2.00 - 3.00	20/10/2010
2271471	E8	WW5	2.00 - 5.00	20/10/2010
2271579	F11	WW5	2.00 - 4.00	20/10/2010
2271824	G2	WW5	4.00 - 7.00	20/10/2010
2271754	G3	WW5	4.00 - 5.00	20/10/2010
2271690	G4	WW5	3.00 - 3.50	20/10/2010
2271850	G5	WW5	3.00 - 6.00	20/10/2010
2271547	G8	WW5	1.00 - 2.00	20/10/2010
2271381	H12	WW5	1.50 - 4.00	20/10/2010
2271231	J10	WW5	1.00 - 1.30	20/10/2010
2271310	K1	WW5	3.00 - 4.00	20/10/2010
2271174	K5	WW5	1.00 - 2.00	20/10/2010
2271451	M3	WW5	3.50 - 5.50	20/10/2010

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

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Validated

ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	David Megson
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

LIQUID

Results Legend

X Test

N No Determination Possible

			Lab Sample No(s)	2271008	2271027	2271053	2271134	2271174	2271231	2271310	2271381	2271451	2271471	2271508	2271547	2271579	2271645
			Customer Sample Ref.	D5	A3	A4	C7	K5	J10	K1	H12	M3	E8	C11	G8	F11	A11
			AGS Ref.	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5
			Depth (m)	2.00 - 3.00	2.00 - 4.00	2.00 - 4.00	3.00 - 6.00	1.00 - 2.00	1.00 - 1.30	3.00 - 4.00	1.50 - 4.00	3.50 - 5.50	2.00 - 5.00	1.50 - 2.50	1.00 - 2.00	2.00 - 4.00	1.50 - 2.50
			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
Ammonium	All	NDPs: 0 Tests: 19			X			X			X		X			X			X			X			X			X			X			X		
Anions by ion Chromatography	All	NDPs: 0 Tests: 1											X																								
Anions by Kone (w)	All	NDPs: 0 Tests: 18		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
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 19		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
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 19	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	
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 19		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
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 19	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		
Phenols by HPLC (W)	All	NDPs: 0 Tests: 19	X			X			X			X			X			X			X			X			X			X			X			X
Sulphide	All	NDPs: 1 Tests: 18		X			X			X			X			X			X			X			X			X			N					
TPH CWG (W)	All	NDPs: 0 Tests: 19	X			X			X			X			X			X			X			X			X			X			X			X
VOC MS (W)	All	NDPs: 0 Tests: 10			X			X			X													X												

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	David Megson
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

LIQUID

Results Legend

X Test

N No Determination Possible

			Lab Sample No(s)	2271645		2271690		2271754		2271824		2271832		2271850	
			Customer Sample Ref.	A11		G4		G3		G2		D1		G5	
			AGS Ref.	WW5		WW5		WW5		WW5		WW5		WW5	
			Depth (m)	1.50 - 2.50		3.00 - 3.50		4.00 - 5.00		4.00 - 7.00		3.00 - 4.00		3.00 - 6.00	
			Container	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	
Anions by Kone (w)	All	NDPs: 0 Tests: 18		X			X			X			X			X	
Cyanide Comp/Free/Total/Thiocyanate	All	NDPs: 0 Tests: 19				X			X			X			X		
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 19		X			X			X			X			X	
EPH CWG (Aliphatic) Aqueous GC (W)	All	NDPs: 0 Tests: 19				X			X			X			X		
EPH CWG (Aromatic) Aqueous GC (W)	All	NDPs: 0 Tests: 19				X			X			X			X		
GRO by GC-FID (W)	All	NDPs: 0 Tests: 19			X			X			X			X			X
Hexavalent Chromium (w)	All	NDPs: 0 Tests: 19		X			X			X			X			X	
Mercury Dissolved	All	NDPs: 0 Tests: 19				X			X			X			X		
PAH Spec MS - Aqueous (W)	All	NDPs: 0 Tests: 19				X			X			X			X		
pH Value	All	NDPs: 0 Tests: 19		X			X			X			X			X	
Phenols by HPLC (W)	All	NDPs: 0 Tests: 19				X			X			X			X		
Sulphide	All	NDPs: 1 Tests: 18		X			X			X			X			X	
TPH CWG (W)	All	NDPs: 0 Tests: 19				X			X			X			X		
VOC MS (W)	All	NDPs: 0 Tests: 10			X			X			X			X			X

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	David Megson
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

Test Completion Dates

Lab Sample No(s)	2271008	2271027	2271053	2271134	2271174	2271231	2271310	2271381	2271451	2271471
Customer Sample Ref.	D5	A3	A4	C7	K5	J10	K1	H12	M3	E8
AGS Ref.	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5
Depth	2.00 - 3.00	2.00 - 4.00	2.00 - 4.00	3.00 - 6.00	1.00 - 2.00	1.00 - 1.30	3.00 - 4.00	1.50 - 4.00	3.50 - 5.50	2.00 - 5.00
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	22/10/2010	25/10/2010	25/10/2010	22/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	26/10/2010
Anions by ion Chromatography					25/10/2010					
Anions by Kone (w)	22/10/2010	22/10/2010	22/10/2010	22/10/2010		22/10/2010	22/10/2010	22/10/2010	22/10/2010	22/10/2010
Cyanide Comp/Free/Total/Thiocyanate	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
Dissolved Metals by ICP-MS	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
EPH CWG (Aliphatic) Aqueous GC (W)	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010
EPH CWG (Aromatic) Aqueous GC (W)	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010
GRO by GC-FID (W)	28/10/2010	28/10/2010	28/10/2010	29/10/2010	29/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	29/10/2010
Hexavalent Chromium (w)	25/10/2010	26/10/2010	25/10/2010	26/10/2010	26/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
Mercury Dissolved	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
PAH Spec MS - Aqueous (W)	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	27/10/2010
pH Value	25/10/2010	22/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
Phenols by HPLC (W)	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010	26/10/2010
Sulphide	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
TPH CWG (W)	28/10/2010	28/10/2010	28/10/2010	29/10/2010	29/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	29/10/2010
VOC MS (W)		28/10/2010	28/10/2010	29/10/2010	29/10/2010				28/10/2010	

Lab Sample No(s)	2271508	2271547	2271579	2271645	2271690	2271754	2271824	2271832	2271850
Customer Sample Ref.	C11	G8	F11	A11	G4	G3	G2	D1	G5
AGS Ref.	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5	WW5
Depth	1.50 - 2.50	1.00 - 2.00	2.00 - 4.00	1.50 - 2.50	3.00 - 3.50	4.00 - 5.00	4.00 - 7.00	3.00 - 4.00	3.00 - 6.00
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	26/10/2010	25/10/2010	25/10/2010	26/10/2010	25/10/2010	26/10/2010	25/10/2010	25/10/2010	25/10/2010
Anions by Kone (w)	22/10/2010	22/10/2010	22/10/2010	22/10/2010	22/10/2010	22/10/2010	22/10/2010	22/10/2010	22/10/2010
Cyanide Comp/Free/Total/Thiocyanate	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
Dissolved Metals by ICP-MS	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
EPH CWG (Aliphatic) Aqueous GC (W)	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010
EPH CWG (Aromatic) Aqueous GC (W)	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010	27/10/2010
GRO by GC-FID (W)	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010
Hexavalent Chromium (w)	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
Mercury Dissolved	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
PAH Spec MS - Aqueous (W)	26/10/2010	26/10/2010	27/10/2010	28/10/2010	26/10/2010	26/10/2010	28/10/2010	26/10/2010	26/10/2010
pH Value	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
Phenols by HPLC (W)	26/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	27/10/2010	27/10/2010
Sulphide	25/10/2010	25/10/2010		25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010	25/10/2010
TPH CWG (W)	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010	28/10/2010
VOC MS (W)				28/10/2010	29/10/2010		29/10/2010	29/10/2010	27/10/2010

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11	A3	A4	C11	C7	D1
			Depth (m)	1.50 - 2.50	2.00 - 4.00	2.00 - 4.00	1.50 - 2.50	3.00 - 6.00	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	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
			Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
			SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
			Lab Sample No.(s)	2271645	2271027	2271053	2271508	2271134	2271832
			AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		5.03 #	10 #	2.99 #	7.15 #	98.4 #	11.4 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099		6.47 #	12.9 #	3.84 #	9.19 #	127 #	14.7 #
Sulphide	<0.01 mg/l	TM101		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	53.2 #
Arsenic (diss.filt)	<0.12 µg/l	TM152		12.3 #	33.3 #	10.7 #	17 #	32.9 #	11.4 #
Cadmium (diss.filt)	<0.1 µg/l	TM152		<0.1 #	0.107 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152		3.11 #	6.1 #	5.09 #	5.48 #	7.87 #	6.42 #
Copper (diss.filt)	<0.85 µg/l	TM152		<0.85 #	1.88 #	<0.85 #	<0.85 #	1.18 #	1.19 #
Lead (diss.filt)	<0.02 µg/l	TM152		0.07 #	0.125 #	0.072 #	0.027 #	0.248 #	<0.02 #
Nickel (diss.filt)	<0.15 µg/l	TM152		5.64 #	6.19 #	4.24 #	4.07 #	1.59 #	4.13 #
Selenium (diss.filt)	<0.39 µg/l	TM152		3.49 #	1.54 #	1.65 #	3.1 #	48.6 #	16.5 #
Zinc (diss.filt)	<0.41 µg/l	TM152		0.664 #	1.29 #	0.526 #	0.599 #	0.877 #	<0.41 #
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	<0.01 #	0.0185 #	<0.01 #
Sulphate	<3 mg/l	TM184		272 #	315 #	245 #	79.9 #	54.8 #	420 #
Cyanide, Total	<0.05 mg/l	TM227		0.073 #	0.254 #	0.142 #	0.088 #	0.4 #	0.967 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
pH	<1 pH Units	TM256		7.5 #	8.08 #	8.3 #	8.28 #	8.45 #	7.54 #
Resorcinol	<0.01 mg/l	TM259		<0.01	<0.01	<0.01	<0.01	<0.05	<0.01
Catechol	<0.01 mg/l	TM259		<0.01	<0.01	<0.01	<0.01	<0.05	<0.01
Phenol	<0.002 mg/l	TM259		0.01 #	0.02 #	<0.002 #	<0.002 #	23.2 #	0.07 #
Cresols	<0.006 mg/l	TM259		0.1 #	0.02 #	<0.006 #	0.07 #	56.3 #	0.11 #
Xylenols	<0.008 mg/l	TM259		0.03 #	<0.008 #	<0.008 #	0.33 #	63.9 #	0.93 #
1-Naphthol	<0.01 mg/l	TM259		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.05 #	0.04 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM259		<0.003 #	0.06 #	<0.003 #	<0.003 #	<0.015 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259		<0.006 #	0.32 #	<0.006 #	<0.006 #	23.5 #	1.41 #
Phenols, Total 5 speciated	<0.025 mg/l	TM259		0.14	0.42	<0.025	0.4	167	2.52

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11	A3	A4	C11	C7	D1
			Depth (m)	1.50 - 2.50	2.00 - 4.00	2.00 - 4.00	1.50 - 2.50	3.00 - 6.00	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	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
			Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
			SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
			Lab Sample No.(s)	2271645	2271027	2271053	2271508	2271134	2271832
			AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	<10	427	306	11	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		<10	<10	520	140	17	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	<10	314	32	12	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		<10	<10	1260	478	40	<10
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174		129	455	2050	2190	23000	272

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Validated

ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11	A3	A4	C11	C7	D1
			Depth (m)	1.50 - 2.50	2.00 - 4.00	2.00 - 4.00	1.50 - 2.50	3.00 - 6.00	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	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
			Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
			SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
			Lab Sample No.(s)	2271645	2271027	2271053	2271508	2271134	2271832
			AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		41	209	89	802	20900	144
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		27	183	231	472	1520	101
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		61	63	473	442	514	27
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		129	455	793	1720	22900	272

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

GRO by GC-FID (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11	A3	A4	C11	C7	D1
			Depth (m)	1.50 - 2.50	2.00 - 4.00	2.00 - 4.00	1.50 - 2.50	3.00 - 6.00	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	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
			Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
			SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
			Lab Sample No.(s)	2271645	2271027	2271053	2271508	2271134	2271832
			AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<15 #	<3 #
Benzene	<7 µg/l	TM245		<7 #	<7 #	<7 #	62 #	13500 #	616 #
Toluene	<4 µg/l	TM245		12 #	<4 #	<4 #	43 #	4470 #	460 #
Ethylbenzene	<5 µg/l	TM245		<5 #	<5 #	<5 #	87 #	152 #	166 #
m,p-Xylene	<8 µg/l	TM245		22 #	46 #	<8 #	156 #	1040 #	508 #
o-Xylene	<3 µg/l	TM245		20 #	51 #	<3 #	151 #	480 #	266 #
Aliphatics >C5-C6	<10 µg/l	TM245		<10	<10	<10	<10	69	<10
Aliphatics >C6-C8	<10 µg/l	TM245		<10	38	10	32	506	67
Aliphatics >C8-C10	<10 µg/l	TM245		35	144	19	395	1470	492
Aliphatics >C10-C12	<10 µg/l	TM245		76	519	31	1450	5720	2330
Total Aliphatics >C5-C12	<10 µg/l	TM245		121	705	61	1880	7770	2900
Aromatics >EC5-EC7	<10 µg/l	TM245		<10	<10	<10	62	13500	616
Aromatics >EC7-EC8	<10 µg/l	TM245		12	<10	<10	43	4470	460
Aromatics >EC8-EC10	<10 µg/l	TM245		68	194	14	657	2660	1270
Aromatics >EC10-EC12	<10 µg/l	TM245		51	346	21	964	3810	1550
Total Aromatics >EC5-EC12	<10 µg/l	TM245		135	539	35	1730	24500	3900
m,p,o-Xylene	<10 µg/l	TM245		42	97	<10	307	1520	774
BTEX, Total	<10 µg/l	TM245		54	97	<10	499	19600	2020

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11	A3	A4	C11	C7	D1
			Depth (m)	1.50 - 2.50	2.00 - 4.00	2.00 - 4.00	1.50 - 2.50	3.00 - 6.00	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	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
			Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
			SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
			Lab Sample No.(s)	2271645	2271027	2271053	2271508	2271134	2271832
			AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5
Naphthalene (aq)	<0.1 µg/l	TM178		95.2 #	0.315 #	0.441 #	4.45 #	5170 #	23 #
Acenaphthene (aq)	<0.015 µg/l	TM178		67 #	0.855 #	0.142 #	47.8 #	21.8 #	31.9 #
Acenaphthylene (aq)	<0.011 µg/l	TM178		331 #	1.01 #	1.28 #	6.93 #	211 #	34.4 #
Fluoranthene (aq)	<0.014 µg/l	TM178		805 #	4.31 #	7.24 #	22.7 #	32.9 #	33.4 #
Anthracene (aq)	<0.015 µg/l	TM178		212 #	0.478 #	0.514 #	4.04 #	28 #	9.89 #
Phenanthrene (aq)	<0.022 µg/l	TM178		383 #	0.65 #	0.746 #	7.84 #	95.4 #	71.2 #
Fluorene (aq)	<0.014 µg/l	TM178		222 #	0.398 #	0.281 #	18 #	73.6 #	57.1 #
Chrysene (aq)	<0.013 µg/l	TM178		216 #	0.92 #	2.89 #	5.68 #	8.51 #	4.97 #
Pyrene (aq)	<0.015 µg/l	TM178		600 #	9.25 #	7.64 #	13.9 #	20.7 #	20.6 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		354 #	1.12 #	3.24 #	7.04 #	5.3 #	6.22 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		386 #	0.564 #	6.76 #	9.15 #	3.14 #	3.03 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		400 #	1.07 #	5.84 #	7.91 #	3.46 #	2.77 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		443 #	1.55 #	7.2 #	10.1 #	3.12 #	3.41 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		87.4 #	0.107 #	1.44 #	1.51 #	0.814 #	0.464 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		313 #	0.733 #	4.72 #	6.08 #	2.08 #	1.64 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		292 #	0.619 #	4.8 #	6.04 #	2.29 #	1.75 #
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178		5210 #	2.3.8 #	55.2 #	179 #	5680 #	306 #

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11	A3	A4	C11	C7	D1
Depth (m)	1.50 - 2.50	2.00 - 4.00	2.00 - 4.00	1.50 - 2.50	3.00 - 6.00	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	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
Lab Sample No.(s)	2271645	2271027	2271053	2271508	2271134	2271832
AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5

Component	LOD/Units	Method					
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174	121	705	1320	2350	7810	2900
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174	264	994	828	3440	47400	4170
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	385	1700	2150	5800	55200	7070

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11	A3	A4	C7	D1
			Depth (m)	1.50 - 2.50	2.00 - 4.00	2.00 - 4.00	3.00 - 6.00	3.00 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
			Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
			SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66
			Lab Sample No.(s)	2271645	2271027	2271053	2271134	2271832
			AGS Reference	WW5	WW5	WW5	WW5	WW5
Dibromofluoromethane**	%	TM208		107	104	105	95.6	108
Toluene-d8**	%	TM208		97.8	78.2	98.8	95.2	97.7
4-Bromofluorobenzene**	%	TM208		100	105	100	87.3	92.8
Dichlorodifluoromethane	<7 µg/l	TM208		<7 #	<7 #	<7 #	<7 #	<7 #
Chloromethane	<9 µg/l	TM208		<9 #	<9 #	<9 #	<9 #	<9 #
Vinyl chloride	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #	<1.2 #	<1.2 #
Bromomethane	<2 µg/l	TM208		<2 #	<2 #	<2 #	<2 #	<2 #
Chloroethane	<2.5 µg/l	TM208		<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 #
1,1-Dichloroethene	<1.2 µg/l	TM208		<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 #	1.43 #
Dichloromethane	<3.7 µg/l	TM208		<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 #
trans-1,2-Dichloroethene	<1.9 µg/l	TM208		<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 #
cis-1,2-Dichloroethene	<2.3 µg/l	TM208		<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 #
Bromochloromethane	<1.9 µg/l	TM208		<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 #
1,1,1-Trichloroethane	<1.3 µg/l	TM208		<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 #
Carbontetrachloride	<1.4 µg/l	TM208		<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
Benzene	<1.3 µg/l	TM208		15.1 #	44.8 #	<1.3 #	11500 #	906 #
Trichloroethene	<2.5 µg/l	TM208		<2.5 #	<2.5 #	<2.5 #	<2.5 #	<2.5 #
1,2-Dichloropropane	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #	<3 #
Dibromomethane	<2.7 µg/l	TM208		<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 #
cis-1,3-Dichloropropene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #
Toluene	<1.4 µg/l	TM208		32.2 #	2.49 #	<1.4 #	4070 #	620 #
trans-1,3-Dichloropropene	<3.5 µg/l	TM208		<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 #
1,3-Dichloropropane	<2.2 µg/l	TM208		<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 #
Dibromochloromethane	<1.7 µg/l	TM208		<1.7 #	<1.7 #	<1.7 #	<1.7 #	<1.7 #
1,2-Dibromoethane	<2.3 µg/l	TM208		<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 #
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208		<1.3 #	<1.3 #	<1.3 #	<1.3 #	<1.3 #
Ethylbenzene	<2.5 µg/l	TM208		12.9 #	61.7 #	<2.5 #	132 #	234 #

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	A11	A3	A4	C7	D1
			Depth (m)	1.50 - 2.50	2.00 - 4.00	2.00 - 4.00	3.00 - 6.00	3.00 - 4.00
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
			Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
			SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66
			Lab Sample No.(s)	2271645	2271027	2271053	2271134	2271832
			AGS Reference	WW5	WW5	WW5	WW5	WW5
m,p-Xylene	<2.5 µg/l	TM208		29.9 #	53.8 #	<2.5 #	905 #	716 #
o-Xylene	<1.7 µg/l	TM208		25.2 #	62.4 #	<1.7 #	419 #	379 #
Styrene	<1.2 µg/l	TM208		<1.2 #	<1.2 #	<1.2 #	219 #	<1.2 #
Bromoform	<3 µg/l	TM208		<3 #	<3 #	<3 #	<3 #	<3 #
Isopropylbenzene	<1.4 µg/l	TM208		1.4 #	9.59 #	<1.4 #	5.38 #	20.6 #
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208		<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 #
Bromobenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #	<2 #	<2 #
Propylbenzene	<2.6 µg/l	TM208		<2.6 #	<2.6 #	<2.6 #	6.16 #	24.9 #
2-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208		2.67 #	8.04 #	<1.8 #	42.9 #	74.9 #
4-Chlorotoluene	<1.9 µg/l	TM208		<1.9 #	<1.9 #	<1.9 #	<1.9 #	<1.9 #
tert-Butylbenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #	<2 #	<2 #
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208		14.9 #	26.6 #	<1.7 #	106 #	239 #
sec-Butylbenzene	<1.7 µg/l	TM208		<1.7 #	<1.7 #	<1.7 #	<1.7 #	1.72 #
4-iso-Propyltoluene	<2.6 µg/l	TM208		<2.6 #	<2.6 #	<2.6 #	<2.6 #	11.5 #
1,3-Dichlorobenzene	<2.2 µg/l	TM208		<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 #
n-Butylbenzene	<2 µg/l	TM208		<2 #	<2 #	<2 #	<2 #	6.84 #
1,2-Dichlorobenzene	<3.7 µg/l	TM208		<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
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208		<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 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208		<1 #	<1 #	<1 #	<1 #	<1 #
Naphthalene	<3.5 µg/l	TM208		228 #	48.6 #	<3.5 #	3490 #	5200 #
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208		<3.1 #	<3.1 #	<3.1 #	<3.1 #	<3.1 #
1,3,5-Trichlorobenzene	<10 µg/l	TM208		<10	<10	<10	<10	<10

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	D5	E8	F11	G2	G3	G4
			Depth (m)	2.00 - 3.00	2.00 - 5.00	2.00 - 4.00	4.00 - 7.00	4.00 - 5.00	3.00 - 3.50
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
			Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
			SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
			Lab Sample No.(s)	2271008	2271471	2271579	2271824	2271754	2271690
			AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		1.9 #	45.7 #	17.7 #	38.7 #	27 #	13 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099		2.44 #	58.8 #	22.8 #	49.8 #	34.7 #	16.7 #
Sulphide	<0.01 mg/l	TM101		<0.01 #	<0.01 #		<0.01 #	<0.01 #	<0.01 #
Arsenic (diss.filt)	<0.12 µg/l	TM152		6.86 #	113 #	4.55 #	17.7 #	7.54 #	16.1 #
Cadmium (diss.filt)	<0.1 µg/l	TM152		<0.1 #	0.452 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152		4.88 #	1.83 #	5.14 #	9.16 #	7.17 #	4.26 #
Copper (diss.filt)	<0.85 µg/l	TM152		1.3 #	0.864 #	<0.85 #	3.44 #	1.05 #	<0.85 #
Lead (diss.filt)	<0.02 µg/l	TM152		0.118 #	0.183 #	0.065 #	<0.02 #	0.065 #	0.166 #
Nickel (diss.filt)	<0.15 µg/l	TM152		8.01 #	56.3 #	8.41 #	6.14 #	9.24 #	4.99 #
Selenium (diss.filt)	<0.39 µg/l	TM152		1.95 #	35.7 #	2.36 #	40.1 #	5.97 #	9.38 #
Zinc (diss.filt)	<0.41 µg/l	TM152		0.98 #	44.8 #	1.5 #	1.67 #	1.7 #	3.26 #
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Sulphate	<3 mg/l	TM184		112 #	462 #	62.7 #	605 #	506 #	158 #
Cyanide, Total	<0.05 mg/l	TM227		0.159 #	7.86 #	<0.05 #	0.98 #	0.379 #	0.127 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
pH	<1 pH Units	TM256		8.28 #	8.41 #	7.68 #	8.04 #	8.2 #	8.38 #
Resorcinol	<0.01 mg/l	TM259		<0.01	<0.1	0.04	<0.01	<0.01	<0.01
Catechol	<0.01 mg/l	TM259		<0.01	<0.1	<0.01	<0.01	<0.01	<0.01
Phenol	<0.002 mg/l	TM259		0.01 #	47 #	0.74 #	<0.002 #	0.02 #	<0.002 #
Cresols	<0.006 mg/l	TM259		0.01 #	71.4 #	1.65 #	<0.006 #	0.04 #	0.38 #
Xylenols	<0.008 mg/l	TM259		0.07 #	52 #	0.24 #	4.18 #	0.46 #	2.55 #
1-Naphthol	<0.01 mg/l	TM259		<0.01 #	<0.1 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM259		<0.003 #	<0.03 #	<0.003 #	<0.003 #	<0.003 #	<0.003 #
2-Isopropylphenol	<0.006 mg/l	TM259		0.26 #	9.2 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #
Phenols, Total 5 speciated	<0.025 mg/l	TM259		0.35	180	2.63	4.18	0.52	2.93

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	D5	E8	F11	G2	G3	G4
			Depth (m)	2.00 - 3.00	2.00 - 5.00	2.00 - 4.00	4.00 - 7.00	4.00 - 5.00	3.00 - 3.50
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
			Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
			SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
			Lab Sample No.(s)	2271008	2271471	2271579	2271824	2271754	2271690
			AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		108	18	<10	<10	<10	43
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		125	29	<10	<10	77	27
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		431	22	136	<10	151	17
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		664	69	136	<10	228	87
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174		1830	14500	325	5990	576	3600

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	D5	E8	F11	G2	G3	G4
			Depth (m)	2.00 - 3.00	2.00 - 5.00	2.00 - 4.00	4.00 - 7.00	4.00 - 5.00	3.00 - 3.50
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
			Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
			SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
			Lab Sample No.(s)	2271008	2271471	2271579	2271824	2271754	2271690
			AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		107	12400	121	5310	152	1910
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		148	1170	<10	550	20	820
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		908	871	68	127	176	781
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		1160	14400	189	5990	348	3510

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

GRO by GC-FID (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	D5	E8	F11	G2	G3	G4
			Depth (m)	2.00 - 3.00	2.00 - 5.00	2.00 - 4.00	4.00 - 7.00	4.00 - 5.00	3.00 - 3.50
			Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
			Date Sampled	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
			Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
			SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
			Lab Sample No.(s)	2271008	2271471	2271579	2271824	2271754	2271690
			AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<6 #	<3 #	<3 #	<3 #	<3 #
Benzene	<7 µg/l	TM245		25 #	7750 #	206 #	4310 #	266 #	1180 #
Toluene	<4 µg/l	TM245		5 #	2040 #	47 #	3100 #	11 #	1290 #
Ethylbenzene	<5 µg/l	TM245		11 #	86 #	<5 #	352 #	17 #	151 #
m,p-Xylene	<8 µg/l	TM245		15 #	654 #	8 #	1530 #	14 #	1010 #
o-Xylene	<3 µg/l	TM245		21 #	286 #	7 #	815 #	35 #	434 #
Aliphatics >C5-C6	<10 µg/l	TM245		<10	73	<10	18	<10	<10
Aliphatics >C6-C8	<10 µg/l	TM245		11	525	11	217	17	70
Aliphatics >C8-C10	<10 µg/l	TM245		36	949	22	1040	49	644
Aliphatics >C10-C12	<10 µg/l	TM245		62	3450	58	3690	149	1770
Total Aliphatics >C5-C12	<10 µg/l	TM245		111	5000	93	4970	217	2490
Aromatics >EC5-EC7	<10 µg/l	TM245		25	7750	206	4310	266	1180
Aromatics >EC7-EC8	<10 µg/l	TM245		<10	2040	47	3100	11	1290
Aromatics >EC8-EC10	<10 µg/l	TM245		71	1660	32	3390	98	2030
Aromatics >EC10-EC12	<10 µg/l	TM245		41	2300	38	2460	99	1180
Total Aromatics >EC5-EC12	<10 µg/l	TM245		142	13700	324	13300	475	5680
m,p,o-Xylene	<10 µg/l	TM245		36	940	15	2350	49	1440
BTEX, Total	<10 µg/l	TM245		77	10800	268	10100	343	4060

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	D5	E8	F11	G2	G3	G4
Depth (m)	2.00 - 3.00	2.00 - 5.00	2.00 - 4.00	4.00 - 7.00	4.00 - 5.00	3.00 - 3.50
Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
Lab Sample No.(s)	2271008	2271471	2271579	2271824	2271754	2271690
AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5

Component	LOD/Units	Method						
Naphthalene (aq)	<0.1 µg/l	TM178	2.41 #	2030 #	17.7 #	4640 #	1.71 #	99.7 #
Acenaphthene (aq)	<0.015 µg/l	TM178	1.22 #	11.6 #	1.37 #	58.9 #	4.1 #	36 #
Acenaphthylene (aq)	<0.011 µg/l	TM178	5.57 #	100 #	4.97 #	72.2 #	1.9 #	141 #
Fluoranthene (aq)	<0.014 µg/l	TM178	24.6 #	16.9 #	34.2 #	10.7 #	10.2 #	61.3 #
Anthracene (aq)	<0.015 µg/l	TM178	2.3 #	11.5 #	2.69 #	10.9 #	1.42 #	35 #
Phenanthrene (aq)	<0.022 µg/l	TM178	5.42 #	42.3 #	6.89 #	50.7 #	3 #	90.6 #
Fluorene (aq)	<0.014 µg/l	TM178	1.42 #	35.2 #	1.45 #	42.2 #	1.43 #	74.4 #
Chrysene (aq)	<0.013 µg/l	TM178	12.8 #	2.65 #	39.4 #	2.1 #	7.32 #	16 #
Pyrene (aq)	<0.015 µg/l	TM178	14.1 #	11.2 #	30.8 #	7.26 #	8.14 #	38.2 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178	14.6 #	5.99 #	64.5 #	1.92 #	7.59 #	19.5 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178	28.8 #	<2.3 #	128 #	1.36 #	10.4 #	12.3 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178	27.4 #	<2.7 #	110 #	1.39 #	11.1 #	13.2 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178	33.8 #	2.05 #	132 #	1.19 #	11.3 #	15.5 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178	6.46 #	<1.6 #	20.9 #	0.74 #	1.76 #	2.36 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178	21.1 #	<1.6 #	72.1 #	1.14 #	7.28 #	8.19 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178	20.9 #	1.4 #	70.4 #	1.2 #	6.98 #	8.25 #
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178	223 #	2280 #	737 #	4910 #	95.7 #	672 #

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	D5	E8	F11	G2	G3	G4
Depth (m)	2.00 - 3.00	2.00 - 5.00	2.00 - 4.00	4.00 - 7.00	4.00 - 5.00	3.00 - 3.50
Sample Type	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
Lab Sample No.(s)	2271008	2271471	2271579	2271824	2271754	2271690
AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5

Component	LOD/Units	Method					
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174	775	5070	229	4970	445	2580
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174	1310	28200	513	19200	823	9190
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	2080	33200	742	24200	1270	11800

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	G2	G4
Depth (m)	4.00 - 7.00	3.00 - 3.50
Sample Type	Water(GW/SW)	Water(GW/SW)
Date Sampled	20/10/2010	20/10/2010
Date Received	21/10/2010	21/10/2010
SDG Ref	101021-66	101021-66
Lab Sample No.(s)	2271824	2271690
AGS Reference	WW5	WW5

Component	LOD/Units	Method		
Dibromofluoromethane**	%	TM208	103	105
Toluene-d8**	%	TM208	96.7	97.9
4-Bromofluorobenzene**	%	TM208	96.2	97.8
Dichlorodifluoromethane	<7 µg/l	TM208	<7 #	<7 #
Chloromethane	<9 µg/l	TM208	<9 #	<9 #
Vinyl chloride	<1.2 µg/l	TM208	<1.2 #	<1.2 #
Bromomethane	<2 µg/l	TM208	<2 #	<2 #
Chloroethane	<2.5 µg/l	TM208	<2.5 #	<2.5 #
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3 #	<1.3 #
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2 #	<1.2 #
Carbon disulphide	<1.3 µg/l	TM208	<1.3 #	<1.3 #
Dichloromethane	<3.7 µg/l	TM208	<3.7 #	<3.7 #
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208	<1.6 #	<1.6 #
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9 #	<1.9 #
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2 #	<1.2 #
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3 #	<2.3 #
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8 #	<3.8 #
Bromochloromethane	<1.9 µg/l	TM208	<1.9 #	<1.9 #
Chloroform	<1.8 µg/l	TM208	<1.8 #	<1.8 #
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3 #	<1.3 #
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3 #	<1.3 #
Carbontetrachloride	<1.4 µg/l	TM208	<1.4 #	<1.4 #
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3	<3.3
Benzene	<1.3 µg/l	TM208	5100 #	1570 #
Trichloroethene	<2.5 µg/l	TM208	<2.5 #	<2.5 #
1,2-Dichloropropane	<3 µg/l	TM208	<3 #	<3 #
Dibromomethane	<2.7 µg/l	TM208	<2.7 #	<2.7 #
Bromodichloromethane	<0.9 µg/l	TM208	<0.9 #	<0.9 #
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9 #	<1.9 #
Toluene	<1.4 µg/l	TM208	3720 #	1650 #
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5 #	<3.5 #
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2 #	<2.2 #
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2 #	<2.2 #
Tetrachloroethene	<1.5 µg/l	TM208	<1.5 #	<1.5 #
Dibromochloromethane	<1.7 µg/l	TM208	<1.7 #	<1.7 #
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3 #	<2.3 #
Chlorobenzene	<3.5 µg/l	TM208	<3.5 #	<3.5 #
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3 #	<1.3 #
Ethylbenzene	<2.5 µg/l	TM208	441 #	204 #

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	G2	G4
Depth (m)	4.00 - 7.00	3.00 - 3.50
Sample Type	Water(GW/SW)	Water(GW/SW)
Date Sampled	20/10/2010	20/10/2010
Date Received	21/10/2010	21/10/2010
SDG Ref	101021-66	101021-66
Lab Sample No.(s)	2271824	2271690
AGS Reference	WW5	WW5

Component	LOD/Units	Method		
m,p-Xylene	<2.5 µg/l	TM208	1740 #	1210 #
o-Xylene	<1.7 µg/l	TM208	934 #	505 #
Styrene	<1.2 µg/l	TM208	<1.2 #	77.4 #
Bromoform	<3 µg/l	TM208	<3 #	<3 #
Isopropylbenzene	<1.4 µg/l	TM208	30.1 #	15.9 #
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2	<5.2
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8 #	<7.8 #
Bromobenzene	<2 µg/l	TM208	<2 #	<2 #
Propylbenzene	<2.6 µg/l	TM208	31.3 #	17 #
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	109 #	117 #
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #
tert-Butylbenzene	<2 µg/l	TM208	<2 #	<2 #
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	395 #	300 #
sec-Butylbenzene	<1.7 µg/l	TM208	1.88 #	<1.7 #
4-iso-Propyltoluene	<2.6 µg/l	TM208	36.7 #	20.2 #
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2 #	<2.2 #
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7 #	<2.7 #
n-Butylbenzene	<2 µg/l	TM208	5.58 #	<2 #
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7	<3.7
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8	<9.8
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3 #	<2.3 #
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5 #	<2.5 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1 #	<1 #
Naphthalene	<3.5 µg/l	TM208	4870 #	4870 #
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1 #	<3.1 #
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10	<10

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	G5	G8	H12	J10	K1	K5
			Depth (m)	3.00 - 6.00	1.00 - 2.00	1.50 - 4.00	1.00 - 1.30	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	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
			Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
			SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
			Lab Sample No.(s)	2271850	2271547	2271381	2271231	2271310	2271174
			AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099		11.4 #	33.8 #	14.9 #	0.824 #	5.81 #	56.7 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099		14.7 #	43.5 #	19.2 #	1.06 #	7.47 #	72.9 #
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		6.49 #	16.7 #	5.39 #	2.84 #	4.28 #	42.7 #
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		8.96 #	3.69 #	4.3 #	4.5 #	3.31 #	7.76 #
Copper (diss.filt)	<0.85 µg/l	TM152		1.31 #	<0.85 #	<0.85 #	1.85 #	1.61 #	2.14 #
Lead (diss.filt)	<0.02 µg/l	TM152		0.064 #	0.059 #	0.024 #	0.052 #	0.393 #	0.534 #
Nickel (diss.filt)	<0.15 µg/l	TM152		7.83 #	7.1 #	4.24 #	4.96 #	7.57 #	15.7 #
Selenium (diss.filt)	<0.39 µg/l	TM152		2.05 #	19 #	1.2 #	3.45 #	1.36 #	23 #
Zinc (diss.filt)	<0.41 µg/l	TM152		1.37 #	<0.41 #	0.452 #	0.809 #	0.83 #	3.11 #
Mercury (diss.filt)	<0.01 µg/l	TM183		<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	0.0244 #
Sulphate	<3 mg/l	TM184		676 #	385 #	203 #	165 #	734 #	
Sulphate	<0.1 mg/l	TM226							573 #
Cyanide, Total	<0.05 mg/l	TM227		0.933 #	0.292 #	<0.05 #	<0.05 #	0.62 #	1.84 #
Chromium, Hexavalent	<0.03 mg/l	TM241		<0.03	<0.03	<0.03	<0.03	<0.03	<0.15
pH	<1 pH Units	TM256		8.03 #	8.29 #	8.09 #	8.12 #	7.9 #	7.9 #
Resorcinol	<0.01 mg/l	TM259		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5
Catechol	<0.01 mg/l	TM259		<0.01	<0.01	<0.01	<0.01	<0.01	<0.5
Phenol	<0.002 mg/l	TM259		0.08 #	2.47 #	<0.002 #	<0.002 #	<0.002 #	204 #
Cresols	<0.006 mg/l	TM259		0.12 #	4.71 #	0.05 #	<0.006 #	<0.006 #	442 #
Xylenols	<0.008 mg/l	TM259		1.01 #	3.2 #	<0.008 #	<0.008 #	<0.008 #	272 #
1-Naphthol	<0.01 mg/l	TM259		0.05 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.5 #
2,3,5-Trimethylphenol	<0.003 mg/l	TM259		<0.003 #	<0.003 #	<0.003 #	<0.003 #	<0.003 #	<0.15 #
2-Isopropylphenol	<0.006 mg/l	TM259		1.5 #	<0.006 #	<0.006 #	<0.006 #	<0.006 #	94.5 #
Phenols, Total 5 speciated	<0.025 mg/l	TM259		2.71	10.4	0.05	<0.025	<0.025	1010

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	G5	G8	H12	J10	K1	K5
			Depth (m)	3.00 - 6.00	1.00 - 2.00	1.50 - 4.00	1.00 - 1.30	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	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
			Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
			SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
			Lab Sample No.(s)	2271850	2271547	2271381	2271231	2271310	2271174
			AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174		<10	13	58	<10	<10	552
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174		11	31	39	<10	<10	683
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174		<10	13	246	<10	<10	861
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174		11	57	343	<10	<10	2100
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174		2410	2870	1170	44	41	85500

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	G5	G8	H12	J10	K1	K5
			Depth (m)	3.00 - 6.00	1.00 - 2.00	1.50 - 4.00	1.00 - 1.30	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	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
			Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
			SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
			Lab Sample No.(s)	2271850	2271547	2271381	2271231	2271310	2271174
			AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174		1540	1910	55	<10	<10	69400
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174		593	454	120	<10	<10	7220
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174		268	443	649	44	41	6780
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174		2400	2810	824	44	41	83400

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

GRO by GC-FID (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	G5	G8	H12	J10	K1	K5
			Depth (m)	3.00 - 6.00	1.00 - 2.00	1.50 - 4.00	1.00 - 1.30	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	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
			Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
			SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
			Lab Sample No.(s)	2271850	2271547	2271381	2271231	2271310	2271174
			AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245		<3 #	<3 #	<3 #	<3 #	<3 #	<30 #
Benzene	<7 µg/l	TM245		43 #	1030 #	11 #	<7 #	<7 #	18200 #
Toluene	<4 µg/l	TM245		29 #	609 #	<4 #	<4 #	<4 #	5680 #
Ethylbenzene	<5 µg/l	TM245		7 #	54 #	<5 #	<5 #	<5 #	268 #
m,p-Xylene	<8 µg/l	TM245		41 #	384 #	<8 #	<8 #	<8 #	1720 #
o-Xylene	<3 µg/l	TM245		19 #	153 #	<3 #	<3 #	<3 #	713 #
Aliphatics >C5-C6	<10 µg/l	TM245		<10	11	<10	<10	<10	269
Aliphatics >C6-C8	<10 µg/l	TM245		15	73	<10	<10	<10	1980
Aliphatics >C8-C10	<10 µg/l	TM245		64	312	14	<10	<10	2650
Aliphatics >C10-C12	<10 µg/l	TM245		130	1450	28	11	<10	11100
Total Aliphatics >C5-C12	<10 µg/l	TM245		211	1850	49	19	18	16000
Aromatics >EC5-EC7	<10 µg/l	TM245		43	1030	11	<10	<10	18200
Aromatics >EC7-EC8	<10 µg/l	TM245		29	609	<10	<10	<10	5680
Aromatics >EC8-EC10	<10 µg/l	TM245		110	799	11	<10	<10	4470
Aromatics >EC10-EC12	<10 µg/l	TM245		87	967	19	<10	<10	7380
Total Aromatics >EC5-EC12	<10 µg/l	TM245		269	3400	41	12	10	35800
m,p,o-Xylene	<10 µg/l	TM245		60	537	<10	<10	<10	2430
BTEX, Total	<10 µg/l	TM245		139	2230	11	<10	<10	26600

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	G5	G8	H12	J10	K1	K5
			Depth (m)	3.00 - 6.00	1.00 - 2.00	1.50 - 4.00	1.00 - 1.30	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	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
			Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
			SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
			Lab Sample No.(s)	2271850	2271547	2271381	2271231	2271310	2271174
			AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5
Naphthalene (aq)	<0.1 µg/l	TM178		2.14 #	19.5 #	3.44 #	0.202 #	0.196 #	6130 #
Acenaphthene (aq)	<0.015 µg/l	TM178		3.91 #	8.72 #	2.3 #	0.0512 #	0.139 #	50.1 #
Acenaphthylene (aq)	<0.011 µg/l	TM178		2.83 #	58.1 #	4.66 #	0.465 #	0.134 #	380 #
Fluoranthene (aq)	<0.014 µg/l	TM178		10.3 #	28.5 #	27 #	0.864 #	1.59 #	53.5 #
Anthracene (aq)	<0.015 µg/l	TM178		1.09 #	15.7 #	2.35 #	0.178 #	0.157 #	50.3 #
Phenanthrene (aq)	<0.022 µg/l	TM178		1.12 #	51.4 #	7.89 #	0.548 #	0.395 #	154 #
Fluorene (aq)	<0.014 µg/l	TM178		1.54 #	36.5 #	2.49 #	0.173 #	0.0853 #	126 #
Chrysene (aq)	<0.013 µg/l	TM178		2.16 #	10.6 #	14.7 #	0.719 #	1.19 #	6.72 #
Pyrene (aq)	<0.015 µg/l	TM178		4.23 #	18.7 #	17 #	0.605 #	1.62 #	34.3 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178		2.32 #	14.1 #	17.8 #	0.8 #	1.2 #	6.87 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178		1.99 #	9.84 #	29.3 #	2.95 #	2.37 #	3.1 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178		2.23 #	14.6 #	27.7 #	2.49 #	2.2 #	2.99 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178		2.5 #	14.1 #	32.5 #	3.95 #	2.35 #	2.94 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178		0.391 #	1.89 #	6.49 #	0.668 #	0.542 #	0.848 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178		1.44 #	5.21 #	20.2 #	2.21 #	2.32 #	1.66 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178		1.51 #	6.18 #	18.8 #	1.99 #	2.03 #	1.93 #
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178		41.7 #	114 #	235 #	18.9 #	18.5 #	7010 #

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	G5	G8	H12	J10	K1	K5
Depth (m)	3.00 - 6.00	1.00 - 2.00	1.50 - 4.00	1.00 - 1.30	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	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010	20/10/2010
Date Received	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010	21/10/2010
SDG Ref	101021-66	101021-66	101021-66	101021-66	101021-66	101021-66
Lab Sample No.(s)	2271850	2271547	2271381	2271231	2271310	2271174
AGS Reference	WW5	WW5	WW5	WW5	WW5	WW5

Component	LOD/Units	Method					
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174	222	1900	392	19	18	18100
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174	2670	6220	865	56	51	119000
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	2890	8120	1260	75	69	137000

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Validated

ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	G5	K5
Depth (m)	3.00 - 6.00	1.00 - 2.00
Sample Type	Water(GW/SW)	Water(GW/SW)
Date Sampled	20/10/2010	20/10/2010
Date Received	21/10/2010	21/10/2010
SDG Ref	101021-66	101021-66
Lab Sample No.(s)	2271850	2271174
AGS Reference	WW5	WW5

Component	LOD/Units	Method		
Dibromofluoromethane**	%	TM208	106	102
Toluene-d8**	%	TM208	99.6	94.7
4-Bromofluorobenzene**	%	TM208	102	65.6
Dichlorodifluoromethane	<7 µg/l	TM208	<7 #	<7 #
Chloromethane	<9 µg/l	TM208	<9 #	<9 #
Vinyl chloride	<1.2 µg/l	TM208	<1.2 #	<1.2 #
Bromomethane	<2 µg/l	TM208	<2 #	<2 #
Chloroethane	<2.5 µg/l	TM208	<2.5 #	<2.5 #
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3 #	2.3 #
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2 #	<1.2 #
Carbon disulphide	<1.3 µg/l	TM208	<1.3 #	<1.3 #
Dichloromethane	<3.7 µg/l	TM208	<3.7 #	<3.7 #
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208	<1.6 #	<1.6 #
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9 #	<1.9 #
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2 #	<1.2 #
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3 #	<2.3 #
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8 #	<3.8 #
Bromochloromethane	<1.9 µg/l	TM208	<1.9 #	<1.9 #
Chloroform	<1.8 µg/l	TM208	<1.8 #	2.26 #
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3 #	8.31 #
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3 #	<1.3 #
Carbontetrachloride	<1.4 µg/l	TM208	<1.4 #	<1.4 #
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3	<3.3
Benzene	<1.3 µg/l	TM208	68.8 #	15200 #
Trichloroethene	<2.5 µg/l	TM208	<2.5 #	11.2 #
1,2-Dichloropropane	<3 µg/l	TM208	<3 #	<3 #
Dibromomethane	<2.7 µg/l	TM208	<2.7 #	<2.7 #
Bromodichloromethane	<0.9 µg/l	TM208	<0.9 #	<0.9 #
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9 #	<1.9 #
Toluene	<1.4 µg/l	TM208	44.1 #	4380 #
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5 #	<3.5 #
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2 #	<2.2 #
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2 #	<2.2 #
Tetrachloroethene	<1.5 µg/l	TM208	<1.5 #	2.49 #
Dibromochloromethane	<1.7 µg/l	TM208	<1.7 #	<1.7 #
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3 #	<2.3 #
Chlorobenzene	<3.5 µg/l	TM208	<3.5 #	<3.5 #
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3 #	<1.3 #
Ethylbenzene	<2.5 µg/l	TM208	13.8 #	230 #

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	G5	K5
Depth (m)	3.00 - 6.00	1.00 - 2.00
Sample Type	Water(GW/SW)	Water(GW/SW)
Date Sampled	20/10/2010	20/10/2010
Date Received	21/10/2010	21/10/2010
SDG Ref	101021-66	101021-66
Lab Sample No.(s)	2271850	2271174
AGS Reference	WW5	WW5

Component	LOD/Units	Method		
m,p-Xylene	<2.5 µg/l	TM208	62.5 #	1400 #
o-Xylene	<1.7 µg/l	TM208	26.7 #	650 #
Styrene	<1.2 µg/l	TM208	<1.2 #	352 #
Bromoform	<3 µg/l	TM208	<3 #	<3 #
Isopropylbenzene	<1.4 µg/l	TM208	2.28 #	9.19 #
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2	<5.2
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8 #	<7.8 #
Bromobenzene	<2 µg/l	TM208	<2 #	<2 #
Propylbenzene	<2.6 µg/l	TM208	<2.6 #	11.3 #
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	11.5 #	56.2 #
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #	<1.9 #
tert-Butylbenzene	<2 µg/l	TM208	<2 #	<2 #
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	27.1 #	131 #
sec-Butylbenzene	<1.7 µg/l	TM208	<1.7 #	<1.7 #
4-iso-Propyltoluene	<2.6 µg/l	TM208	<2.6 #	<2.6 #
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2 #	<2.2 #
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7 #	<2.7 #
n-Butylbenzene	<2 µg/l	TM208	<2 #	<2 #
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7	<3.7
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8	<9.8
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3 #	<2.3 #
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5 #	<2.5 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1 #	<1 #
Naphthalene	<3.5 µg/l	TM208	293 #	5220 #
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1 #	<3.1 #
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10	<10

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	M3
Depth (m)	3.50 - 5.50
Sample Type	Water(GW/SW)
Date Sampled	20/10/2010
Date Received	21/10/2010
SDG Ref	101021-66
Lab Sample No.(s)	2271451
AGS Reference	WW5

Component	LOD/Units	Method	
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	1.35 #
Ammoniacal Nitrogen as NH4	<0.3 mg/l	TM099	1.74 #
Sulphide	<0.01 mg/l	TM101	<0.01 #
Arsenic (diss.filt)	<0.12 µg/l	TM152	3.25 #
Cadmium (diss.filt)	<0.1 µg/l	TM152	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152	1.1 #
Copper (diss.filt)	<0.85 µg/l	TM152	2.08 #
Lead (diss.filt)	<0.02 µg/l	TM152	0.039 #
Nickel (diss.filt)	<0.15 µg/l	TM152	3.86 #
Selenium (diss.filt)	<0.39 µg/l	TM152	1.34 #
Zinc (diss.filt)	<0.41 µg/l	TM152	0.553 #
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #
Sulphate	<3 mg/l	TM184	576 #
Cyanide, Total	<0.05 mg/l	TM227	0.941 #
Chromium, Hexavalent	<0.03 mg/l	TM241	<0.03
pH	<1 pH Units	TM256	8 #
Resorcinol	<0.01 mg/l	TM259	<0.01
Catechol	<0.01 mg/l	TM259	<0.01
Phenol	<0.002 mg/l	TM259	<0.002 #
Cresols	<0.006 mg/l	TM259	<0.006 #
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 5 speciated	<0.025 mg/l	TM259	<0.025

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

EPH CWG (Aliphatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	M3
			Depth (m)	3.50 - 5.50
			Sample Type	Water(GW/SW)
			Date Sampled	20/10/2010
			Date Received	21/10/2010
			SDG Ref	101021-66
			Lab Sample No.(s)	2271451
			AGS Reference	WW5
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
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174		79

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

EPH CWG (Aromatic) Aqueous GC (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	M3
Depth (m)	3.50 - 5.50
Sample Type	Water(GW/SW)
Date Sampled	20/10/2010
Date Received	21/10/2010
SDG Ref	101021-66
Lab Sample No.(s)	2271451
AGS Reference	WW5

Component	LOD/Units	Method	
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	79
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	79

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

GRO by GC-FID (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	M3
Depth (m)	3.50 - 5.50
Sample Type	Water(GW/SW)
Date Sampled	20/10/2010
Date Received	21/10/2010
SDG Ref	101021-66
Lab Sample No.(s)	2271451
AGS Reference	WW5

Component	LOD/Units	Method	
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 #
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
Total Aliphatics >C5-C12	<10 µg/l	TM245	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
Total Aromatics >EC5-EC12	<10 µg/l	TM245	<10
m,p,o-Xylene	<10 µg/l	TM245	<10
BTEX, Total	<10 µg/l	TM245	<10

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

PAH Spec MS - Aqueous (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	M3
Depth (m)	3.50 - 5.50
Sample Type	Water(GW/SW)
Date Sampled	20/10/2010
Date Received	21/10/2010
SDG Ref	101021-66
Lab Sample No.(s)	2271451
AGS Reference	WW5

Component	LOD/Units	Method	
Naphthalene (aq)	<0.1 µg/l	TM178	0.266 #
Acenaphthene (aq)	<0.015 µg/l	TM178	0.0197 #
Acenaphthylene (aq)	<0.011 µg/l	TM178	0.148 #
Fluoranthene (aq)	<0.014 µg/l	TM178	3.43 #
Anthracene (aq)	<0.015 µg/l	TM178	0.243 #
Phenanthrene (aq)	<0.022 µg/l	TM178	0.342 #
Fluorene (aq)	<0.014 µg/l	TM178	0.061 #
Chrysene (aq)	<0.013 µg/l	TM178	2.91 #
Pyrene (aq)	<0.015 µg/l	TM178	3.07 #
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178	3.07 #
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178	5.7 #
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178	5.08 #
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178	5.6 #
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178	1.26 #
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178	5.61 #
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178	5.01 #
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178	41.8 #

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

TPH CWG (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	M3
Depth (m)	3.50 - 5.50
Sample Type	Water(GW/SW)
Date Sampled	20/10/2010
Date Received	21/10/2010
SDG Ref	101021-66
Lab Sample No.(s)	2271451
AGS Reference	WW5

Component	LOD/Units	Method	
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174	10
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174	85
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	95

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	M3
Depth (m)	3.50 - 5.50
Sample Type	Water(GW/SW)
Date Sampled	20/10/2010
Date Received	21/10/2010
SDG Ref	101021-66
Lab Sample No.(s)	2271451
AGS Reference	WW5

Component	LOD/Units	Method	
Dibromofluoromethane**	%	TM208	107
Toluene-d8**	%	TM208	98.8
4-Bromofluorobenzene**	%	TM208	101
Dichlorodifluoromethane	<7 µg/l	TM208	<7 #
Chloromethane	<9 µg/l	TM208	<9 #
Vinyl chloride	<1.2 µg/l	TM208	<1.2 #
Bromomethane	<2 µg/l	TM208	<2 #
Chloroethane	<2.5 µg/l	TM208	<2.5 #
Trichlorofluoromethane	<1.3 µg/l	TM208	<1.3 #
1,1-Dichloroethene	<1.2 µg/l	TM208	<1.2 #
Carbon disulphide	<1.3 µg/l	TM208	<1.3 #
Dichloromethane	<3.7 µg/l	TM208	<3.7 #
Methyl tertiary butyl ether (MTBE)	<1.6 µg/l	TM208	<1.6 #
trans-1,2-Dichloroethene	<1.9 µg/l	TM208	<1.9 #
1,1-Dichloroethane	<1.2 µg/l	TM208	<1.2 #
cis-1,2-Dichloroethene	<2.3 µg/l	TM208	<2.3 #
2,2-Dichloropropane	<3.8 µg/l	TM208	<3.8 #
Bromochloromethane	<1.9 µg/l	TM208	<1.9 #
Chloroform	<1.8 µg/l	TM208	<1.8 #
1,1,1-Trichloroethane	<1.3 µg/l	TM208	<1.3 #
1,1-Dichloropropene	<1.3 µg/l	TM208	<1.3 #
Carbontetrachloride	<1.4 µg/l	TM208	<1.4 #
1,2-Dichloroethane	<3.3 µg/l	TM208	<3.3
Benzene	<1.3 µg/l	TM208	<1.3 #
Trichloroethene	<2.5 µg/l	TM208	<2.5 #
1,2-Dichloropropane	<3 µg/l	TM208	<3 #
Dibromomethane	<2.7 µg/l	TM208	<2.7 #
Bromodichloromethane	<0.9 µg/l	TM208	<0.9 #
cis-1,3-Dichloropropene	<1.9 µg/l	TM208	<1.9 #
Toluene	<1.4 µg/l	TM208	<1.4 #
trans-1,3-Dichloropropene	<3.5 µg/l	TM208	<3.5 #
1,1,2-Trichloroethane	<2.2 µg/l	TM208	<2.2 #
1,3-Dichloropropane	<2.2 µg/l	TM208	<2.2 #
Tetrachloroethene	<1.5 µg/l	TM208	<1.5 #
Dibromochloromethane	<1.7 µg/l	TM208	<1.7 #
1,2-Dibromoethane	<2.3 µg/l	TM208	<2.3 #
Chlorobenzene	<3.5 µg/l	TM208	<3.5 #
1,1,1,2-Tetrachloroethane	<1.3 µg/l	TM208	<1.3 #
Ethylbenzene	<2.5 µg/l	TM208	<2.5 #

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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Reference:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101686

VOC MS (W)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
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 Ref.	M3
Depth (m)	3.50 - 5.50
Sample Type	Water(GW/SW)
Date Sampled	20/10/2010
Date Received	21/10/2010
SDG Ref	101021-66
Lab Sample No.(s)	2271451
AGS Reference	WW5

Component	LOD/Units	Method	
m,p-Xylene	<2.5 µg/l	TM208	<2.5 #
o-Xylene	<1.7 µg/l	TM208	<1.7 #
Styrene	<1.2 µg/l	TM208	<1.2 #
Bromoform	<3 µg/l	TM208	<3 #
Isopropylbenzene	<1.4 µg/l	TM208	<1.4 #
1,1,2,2-Tetrachloroethane	<5.2 µg/l	TM208	<5.2
1,2,3-Trichloropropane	<7.8 µg/l	TM208	<7.8 #
Bromobenzene	<2 µg/l	TM208	<2 #
Propylbenzene	<2.6 µg/l	TM208	<2.6 #
2-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #
1,3,5-Trimethylbenzene	<1.8 µg/l	TM208	<1.8 #
4-Chlorotoluene	<1.9 µg/l	TM208	<1.9 #
tert-Butylbenzene	<2 µg/l	TM208	<2 #
1,2,4-Trimethylbenzene	<1.7 µg/l	TM208	<1.7 #
sec-Butylbenzene	<1.7 µg/l	TM208	<1.7 #
4-iso-Propyltoluene	<2.6 µg/l	TM208	<2.6 #
1,3-Dichlorobenzene	<2.2 µg/l	TM208	<2.2 #
1,4-Dichlorobenzene	<2.7 µg/l	TM208	<2.7 #
n-Butylbenzene	<2 µg/l	TM208	<2 #
1,2-Dichlorobenzene	<3.7 µg/l	TM208	<3.7
1,2-Dibromo-3-chloropropane	<9.8 µg/l	TM208	<9.8
1,2,4-Trichlorobenzene	<2.3 µg/l	TM208	<2.3 #
Hexachlorobutadiene	<2.5 µg/l	TM208	<2.5 #
tert-Amyl methyl ether (TAME)	<1 µg/l	TM208	<1 #
Naphthalene	<3.5 µg/l	TM208	<3.5 #
1,2,3-Trichlorobenzene	<3.1 µg/l	TM208	<3.1 #
1,3,5-Trichlorobenzene	<10 µg/l	TM208	<10

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Table of Results - Appendix

SDG Number : 101021-66 **Client :** D_MOUCHEL_ELE **Client Ref :** 21.10.10

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		
TM226	In-House Method	Determination of Anions in Waters using Ion Chromatography		
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		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.

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ALcontrol Laboratories Analytical Services

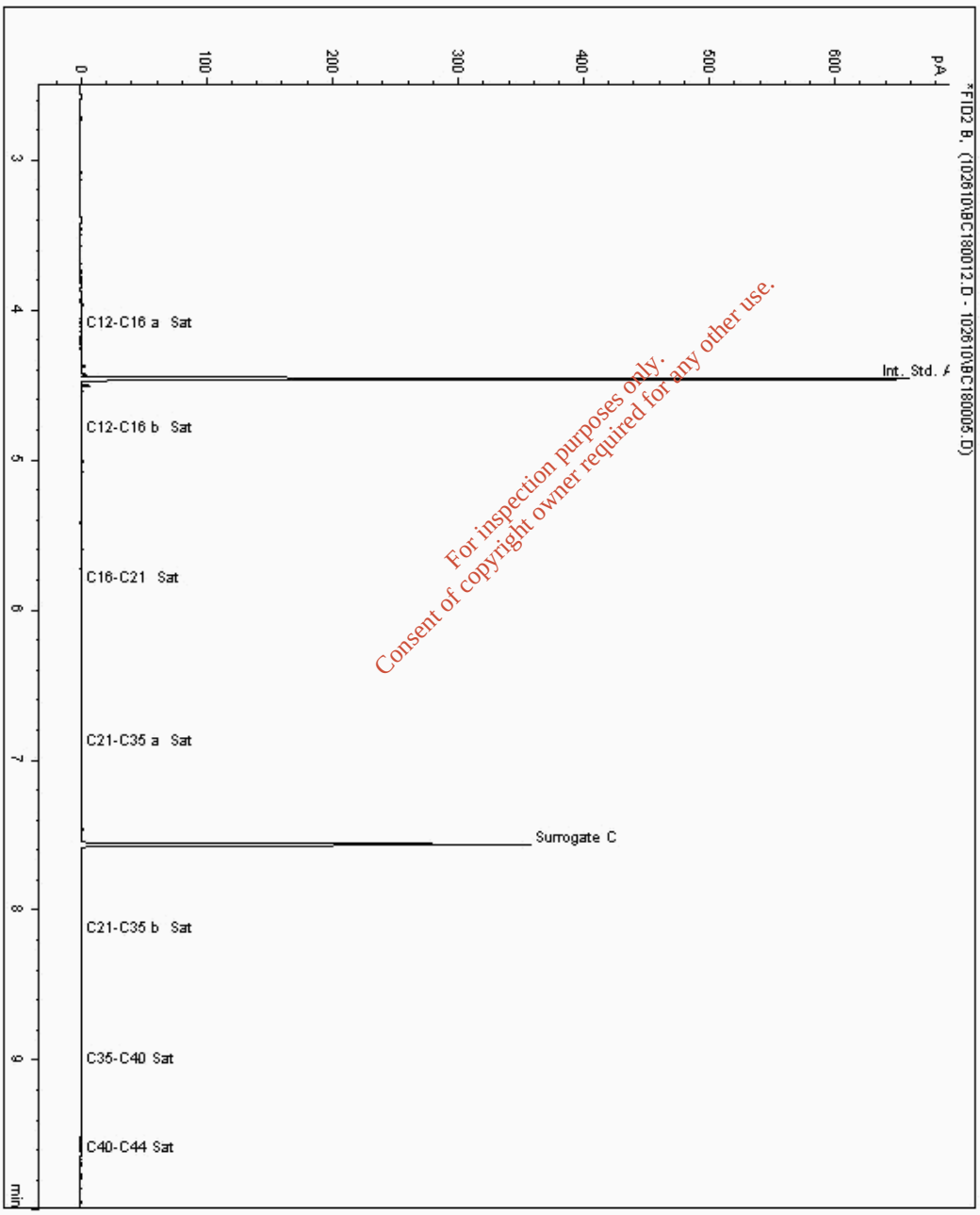
SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Chromatogram

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	2275998
		Sample ID	A11
		Depth	1.50 - 2.50

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

Sample Identity: 2371976-2275998
Date Acquired : 26/10/10 21:38:56 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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Validated

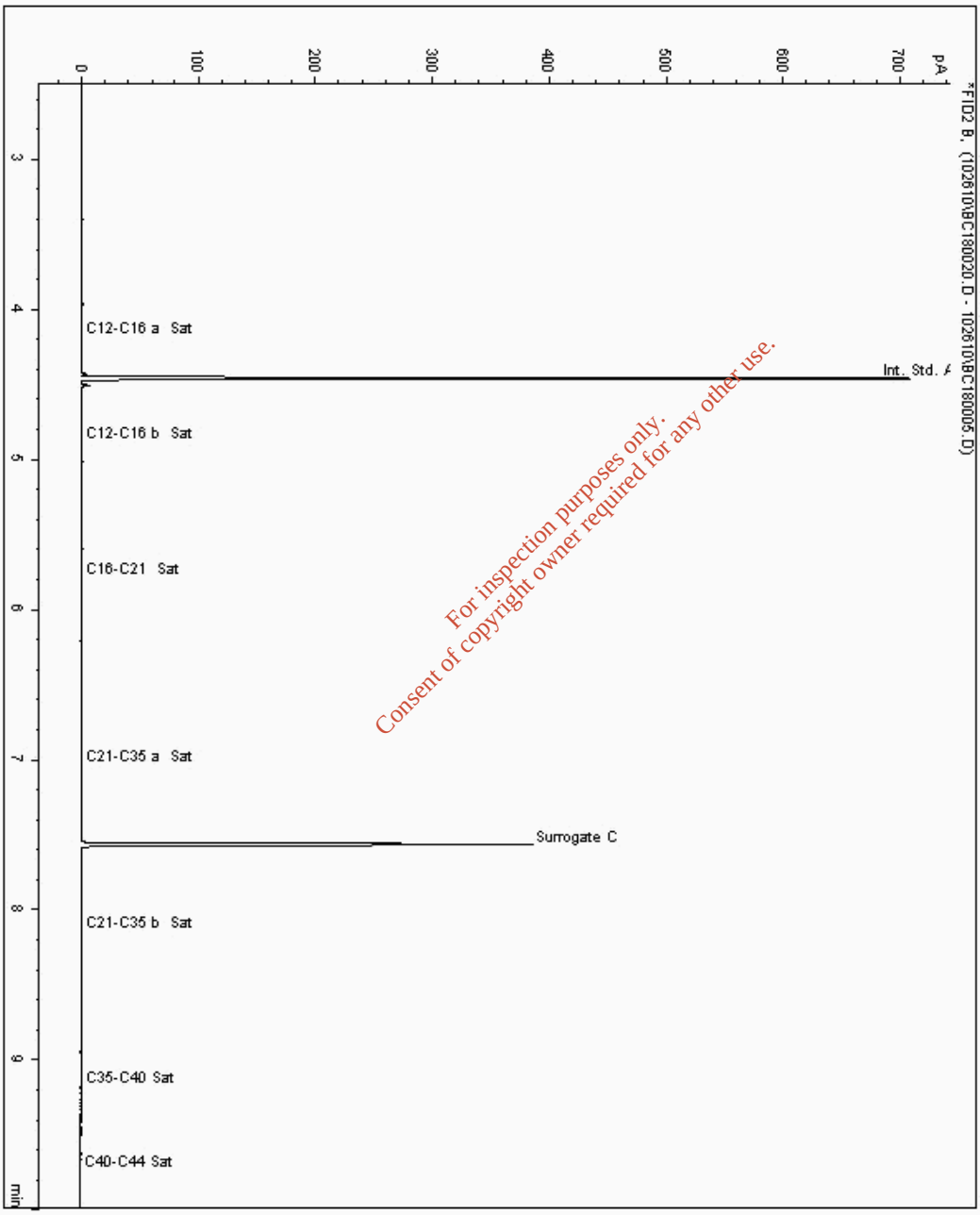
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	2276097
		Sample ID	A3
		Depth	2.00 - 4.00

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

Sample Identity: 2371792-2276097
Date Acquired : 26/10/10 23:52:28 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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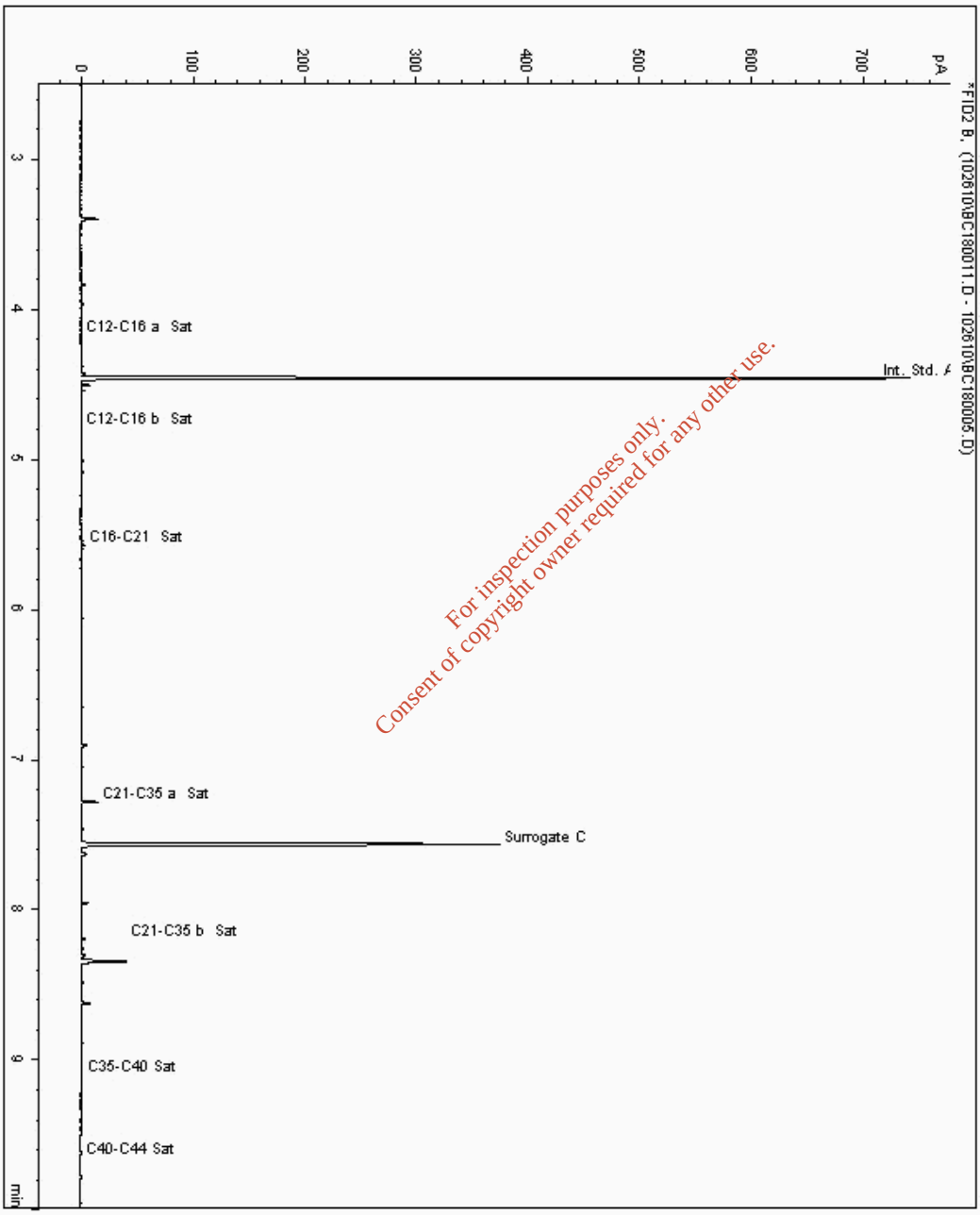
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	2276183
		Sample ID	F11
		Depth	2.00 - 4.00

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

Sample Identity: 2371961-2276183
Date Acquired : 26/10/10 21:20:18 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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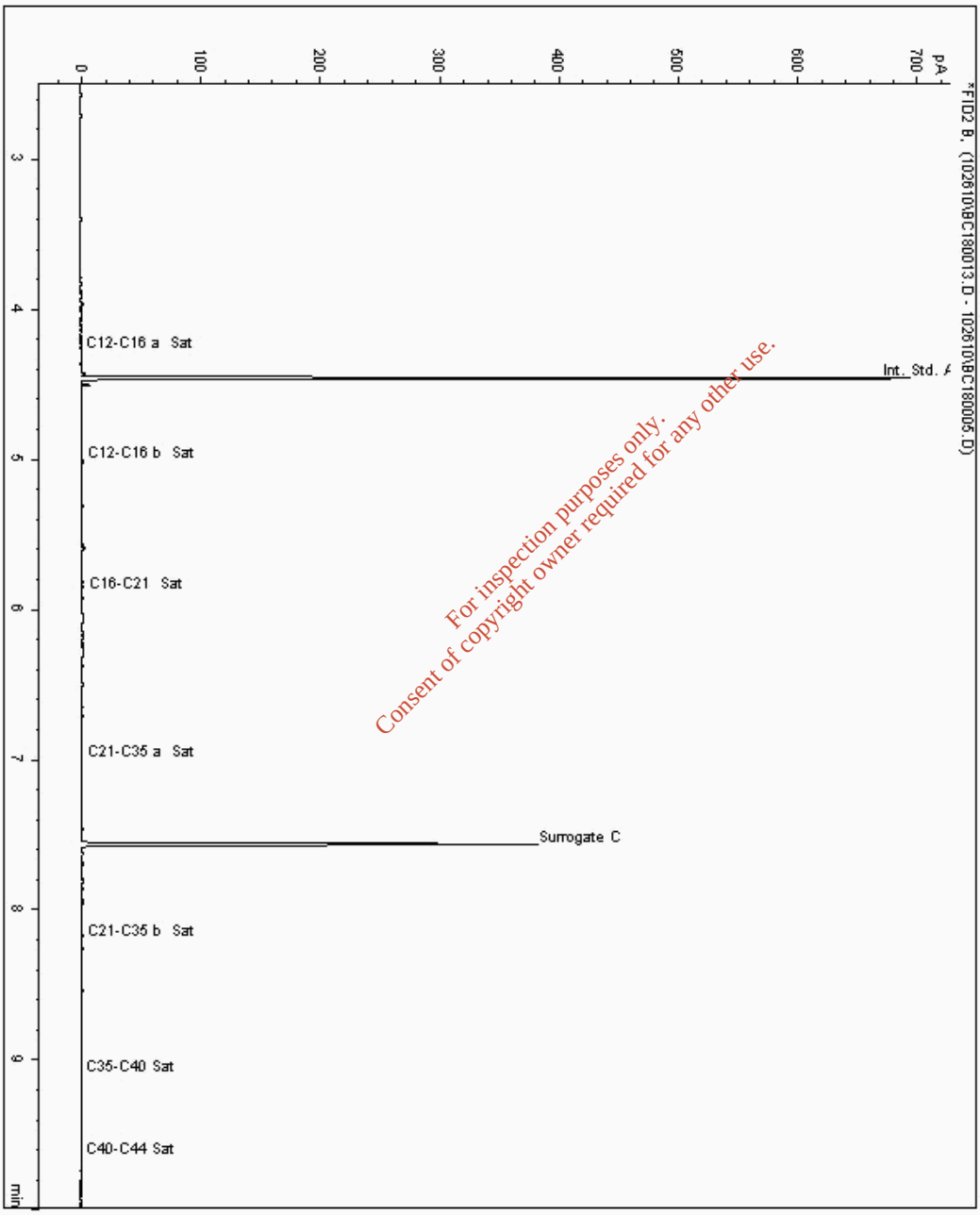
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	2276270
		Sample ID	G3
		Depth	4.00 - 5.00

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

Sample Identity: 2372006-2276270
Date Acquired : 26/10/10 21:57:52 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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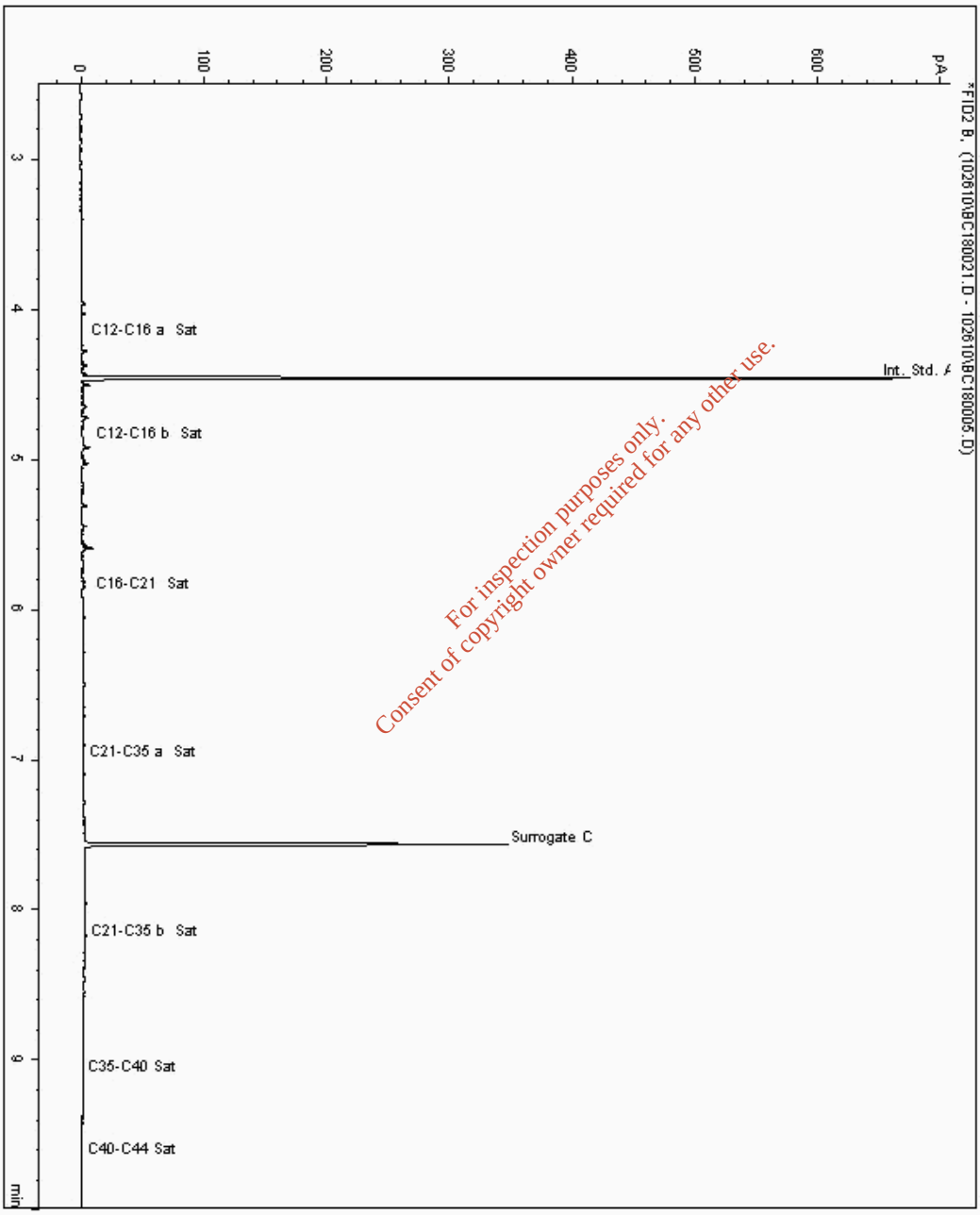
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	2276326
		Sample ID	D5
		Depth	2.00 - 3.00

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

Sample Identity: 2371774-2276326
Date Acquired : 27/10/10 00:11:32 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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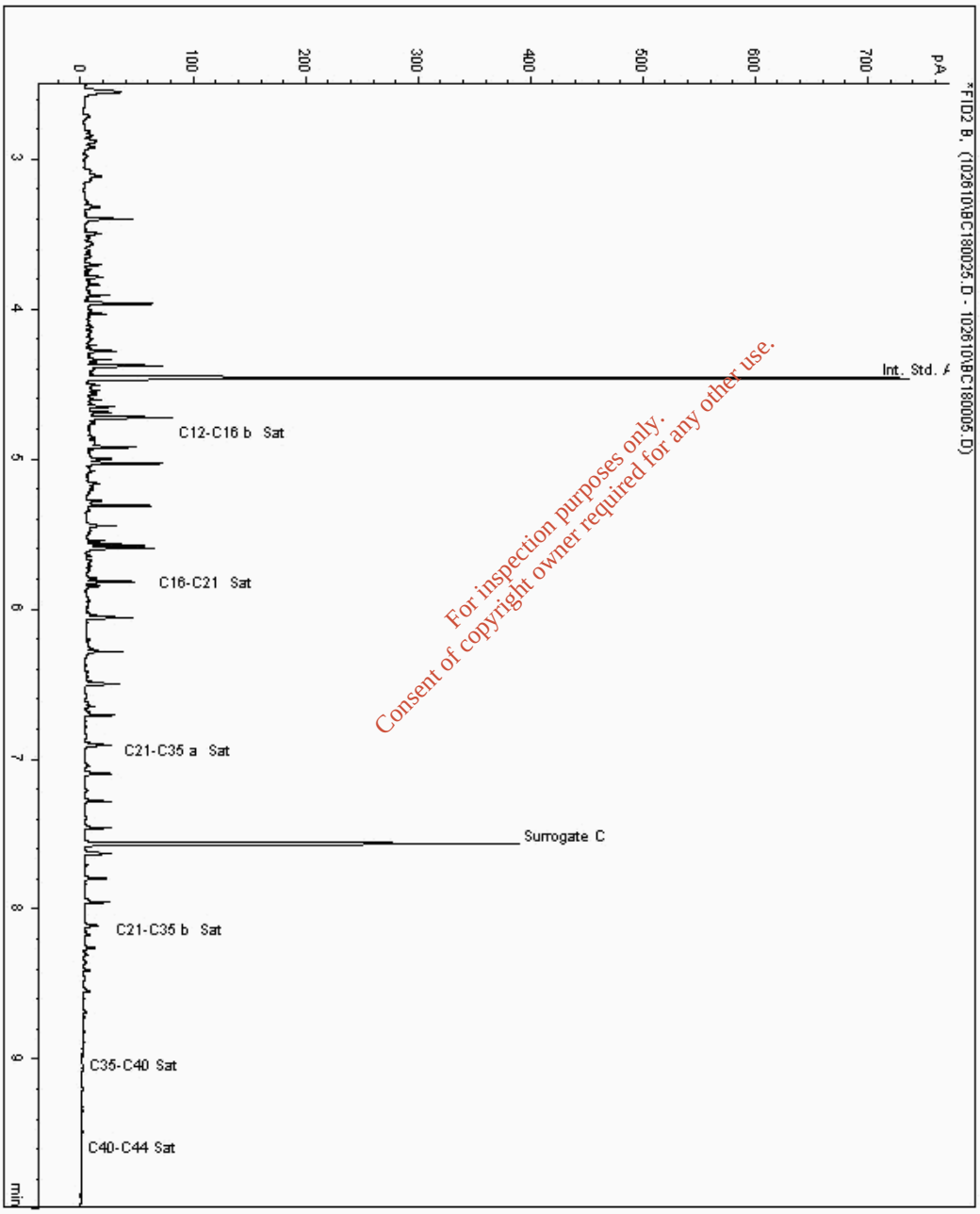
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	2276388
		Sample ID	K5
		Depth	1.00 - 2.00

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

Sample Identity: 2371837-2276388
Date Acquired : 27/10/10 01:15:45 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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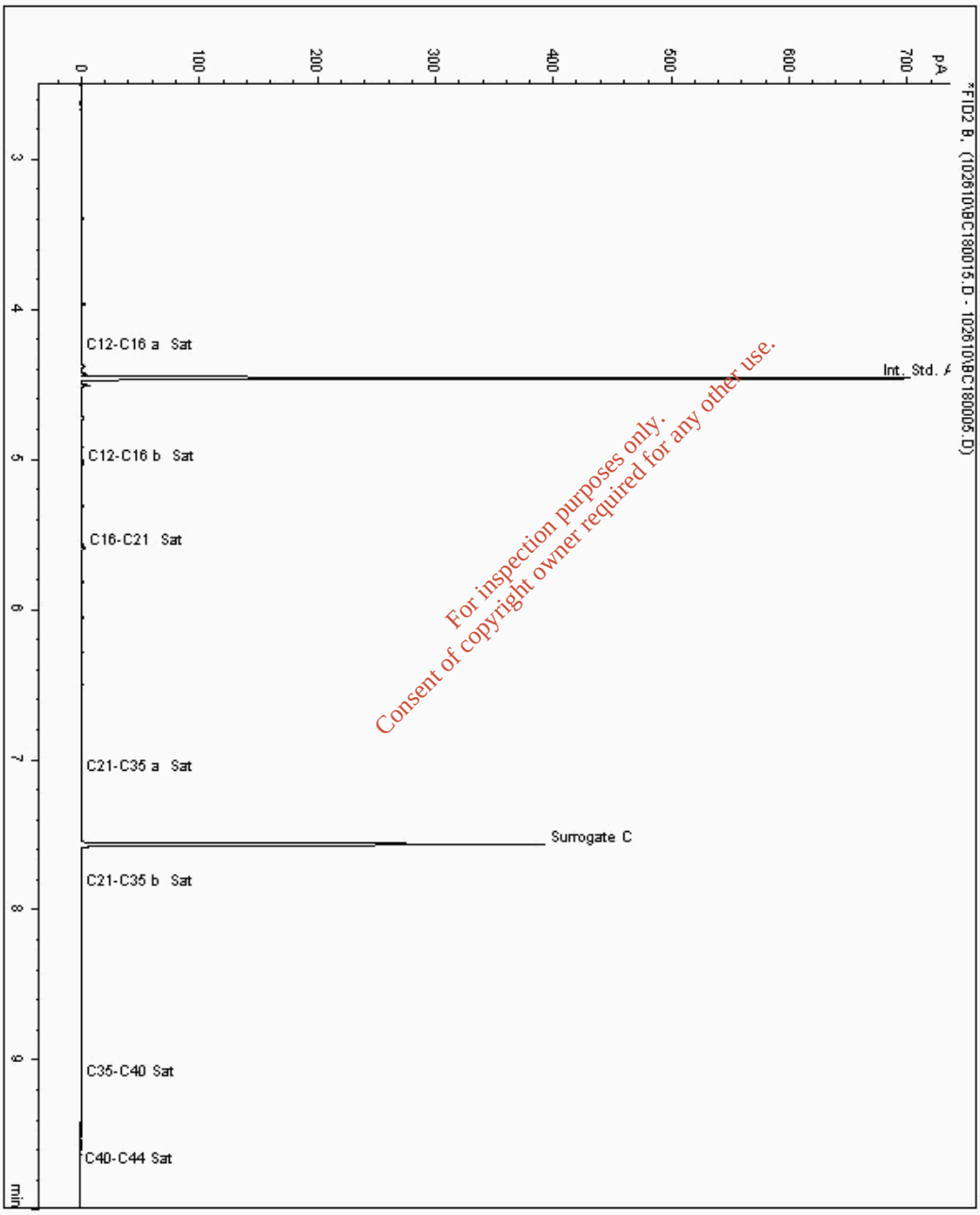
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	2276390
		Sample ID	G8
		Depth	1.00 - 2.00

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

Sample Identity: 2371944-2276390
Date Acquired : 26/10/10 22:29:38 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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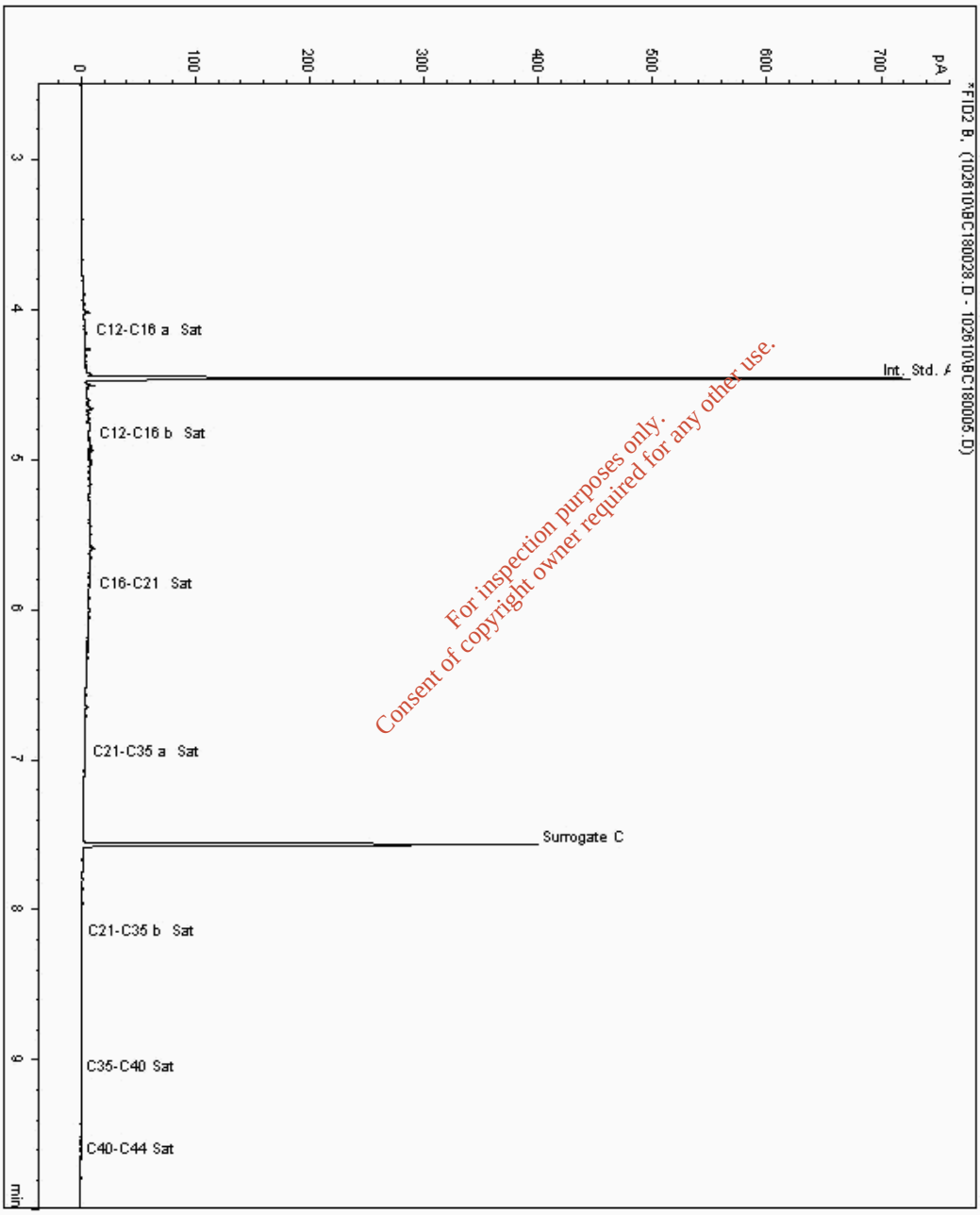
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	2276440
		Sample ID	A4
		Depth	2.00 - 4.00

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

Sample Identity: 2371807-2276440
Date Acquired : 27/10/10 02:00:39 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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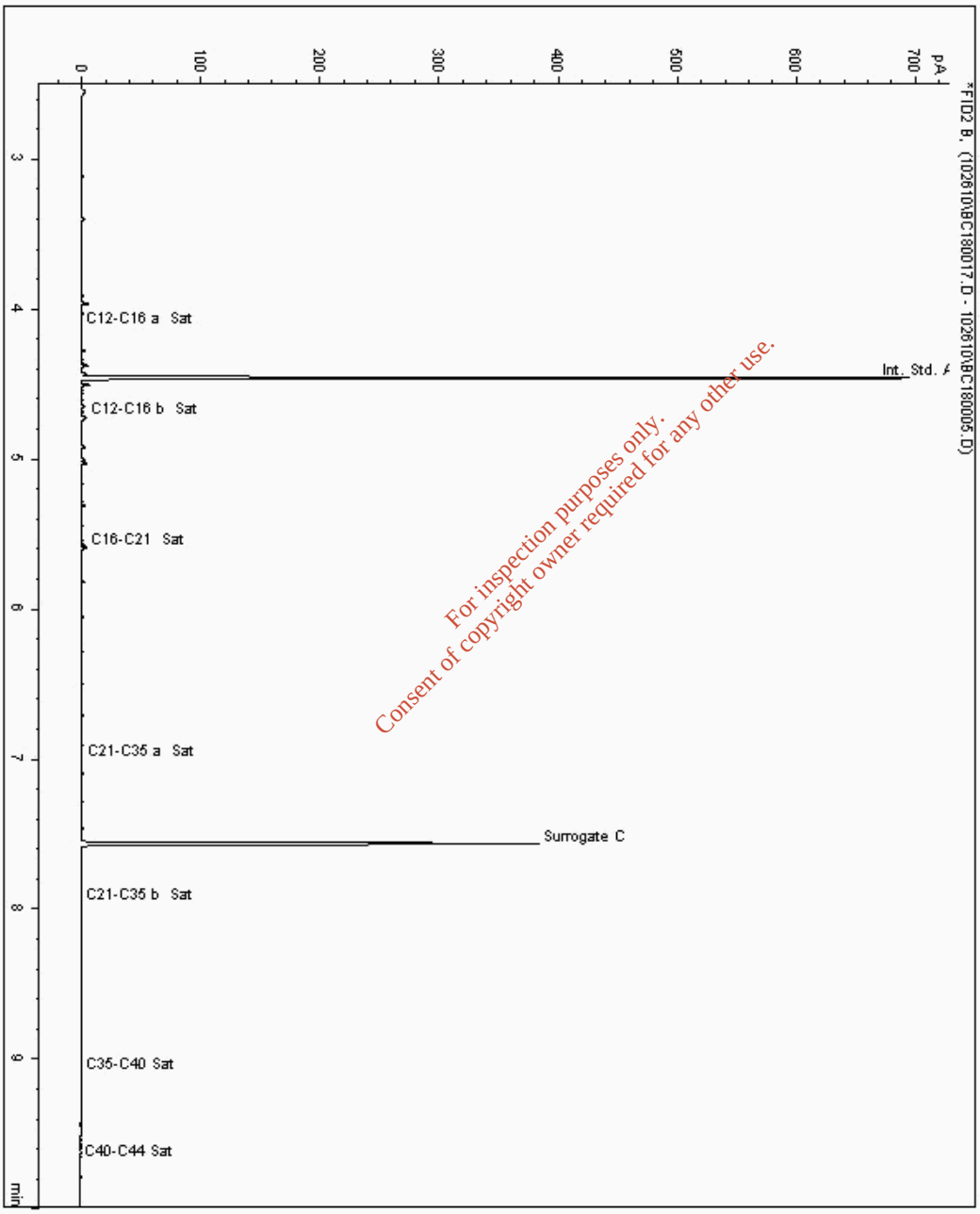
SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	2276451
		Sample ID	G4
		Depth	3.00 - 3.50

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

Sample Identity: 2371991-2276451
Date Acquired : 26/10/10 23:01:45 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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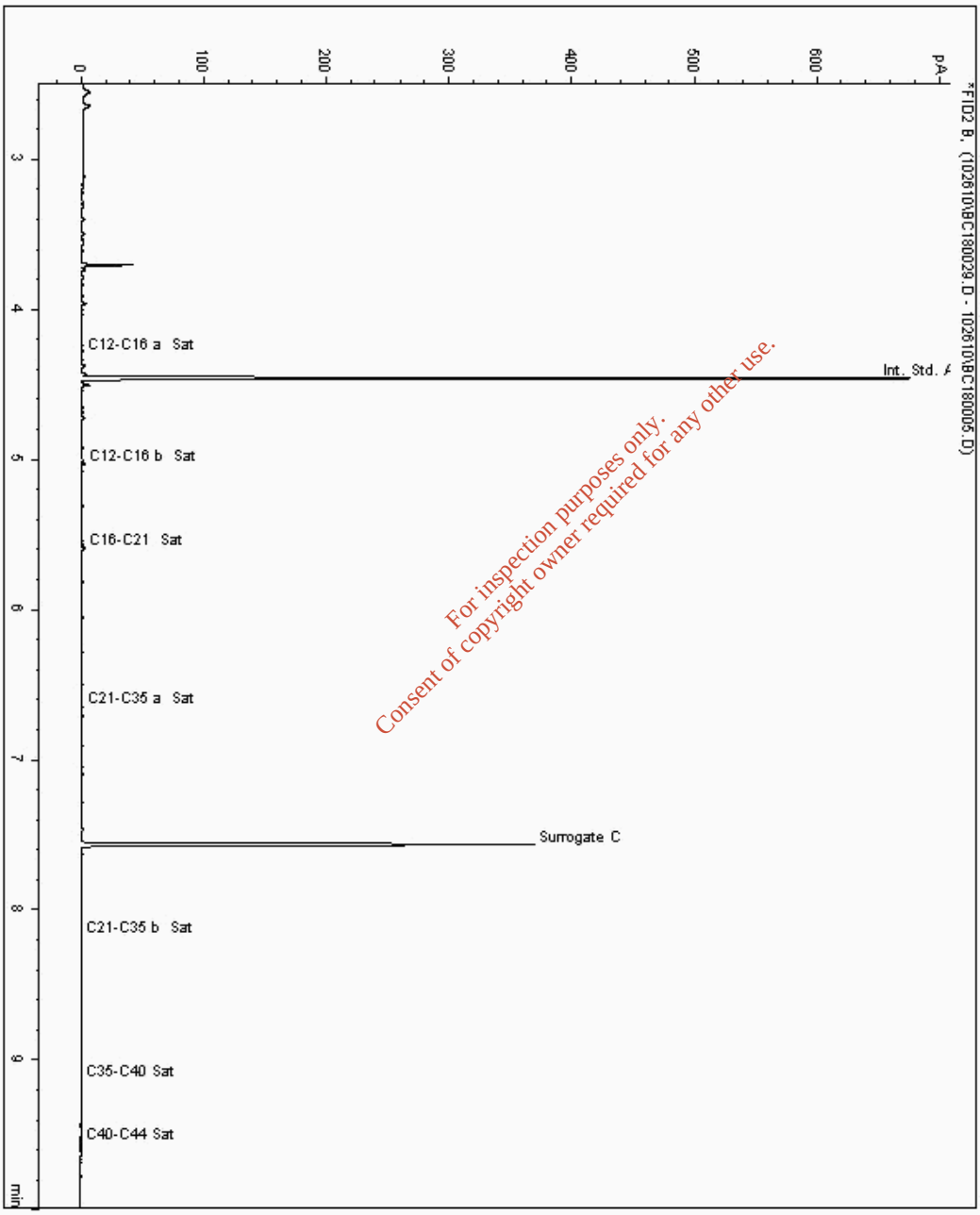
SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	2276479
		Sample ID	C7
		Depth	3.00 - 6.00

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

Sample Identity: 2371822-2276479
Date Acquired : 27/10/10 02:19:46 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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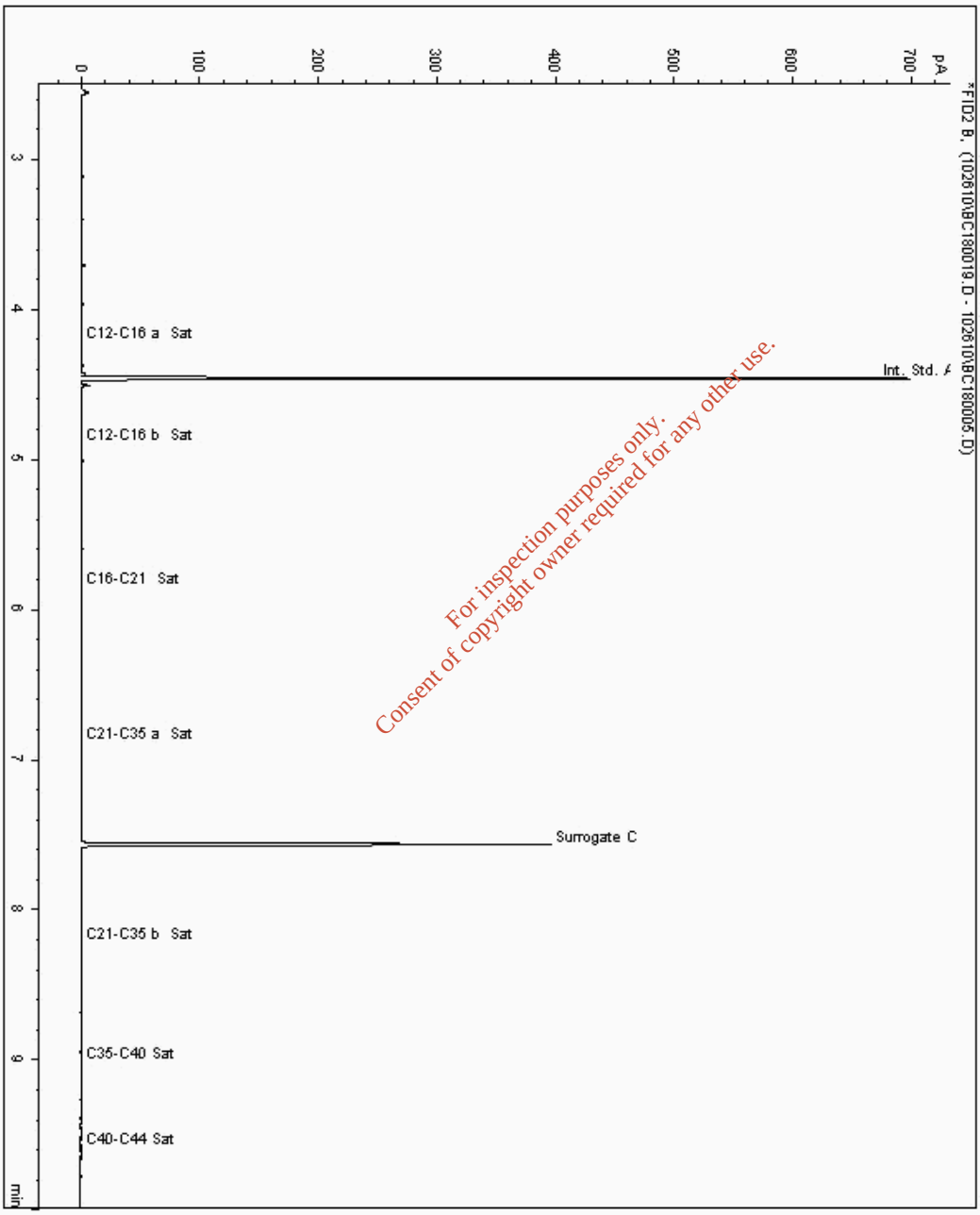
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	2276518
		Sample ID	G2
		Depth	4.00 - 7.00

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

Sample Identity: 2372021-2276518
Date Acquired : 26/10/10 23:33:38 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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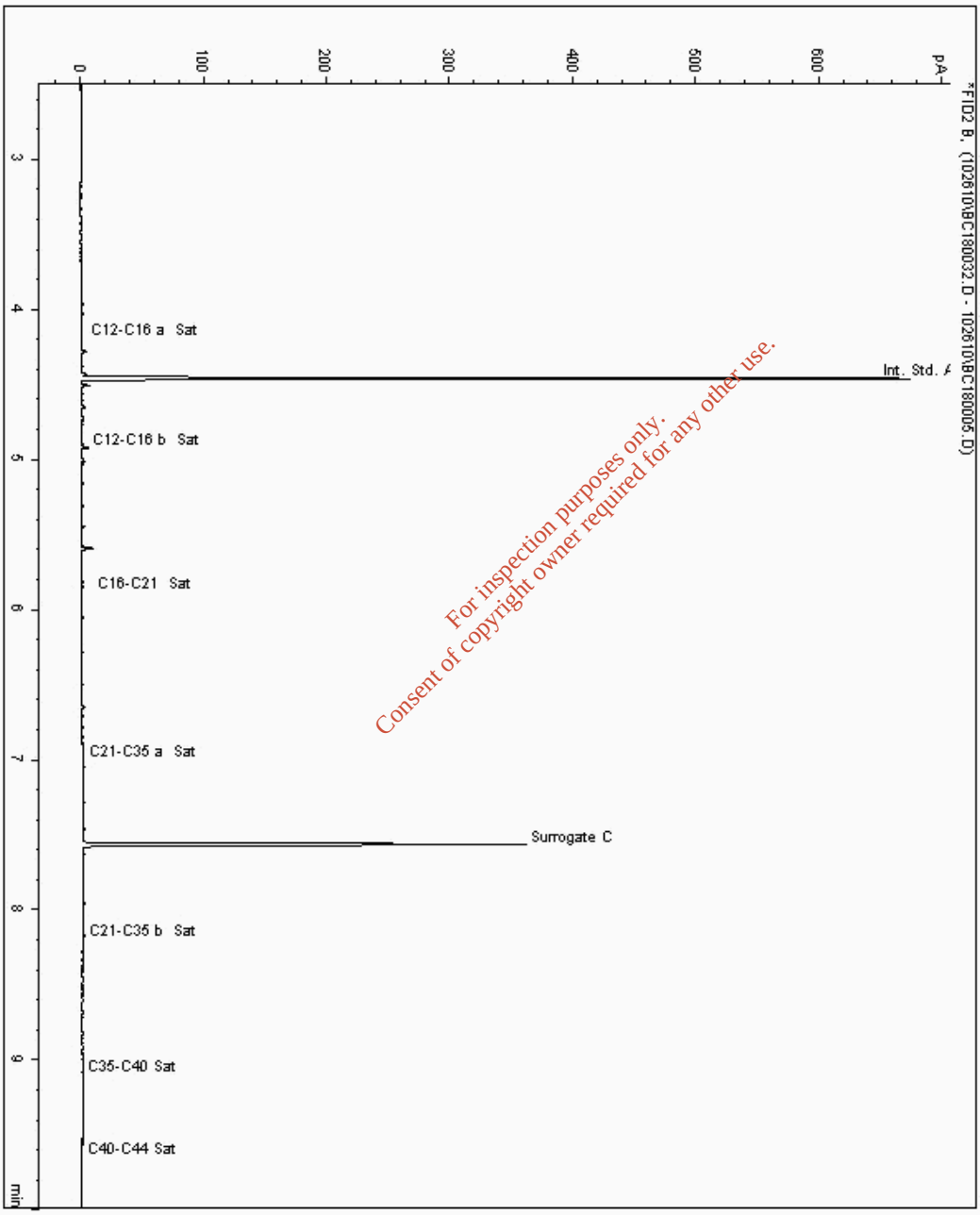
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	2276670
		Sample ID	H12
		Depth	1.50 - 4.00

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

Sample Identity: 2371882-2276670
Date Acquired : 27/10/10 03:04:38 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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Validated

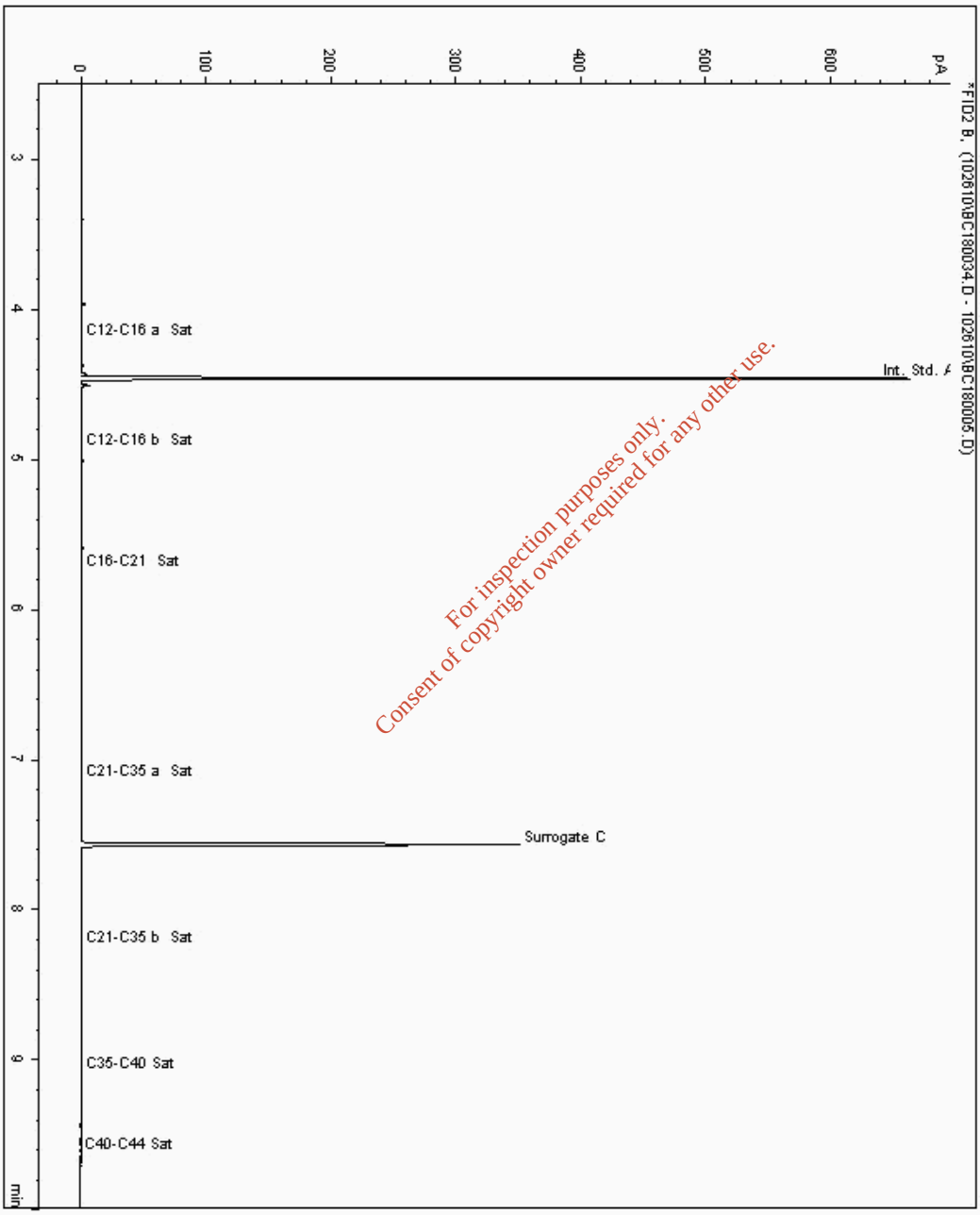
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	2276894
		Sample ID	J10
		Depth	1.00 - 1.30

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

Sample Identity: 2371852-2276894
Date Acquired : 27/10/10 03:36:54 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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Validated

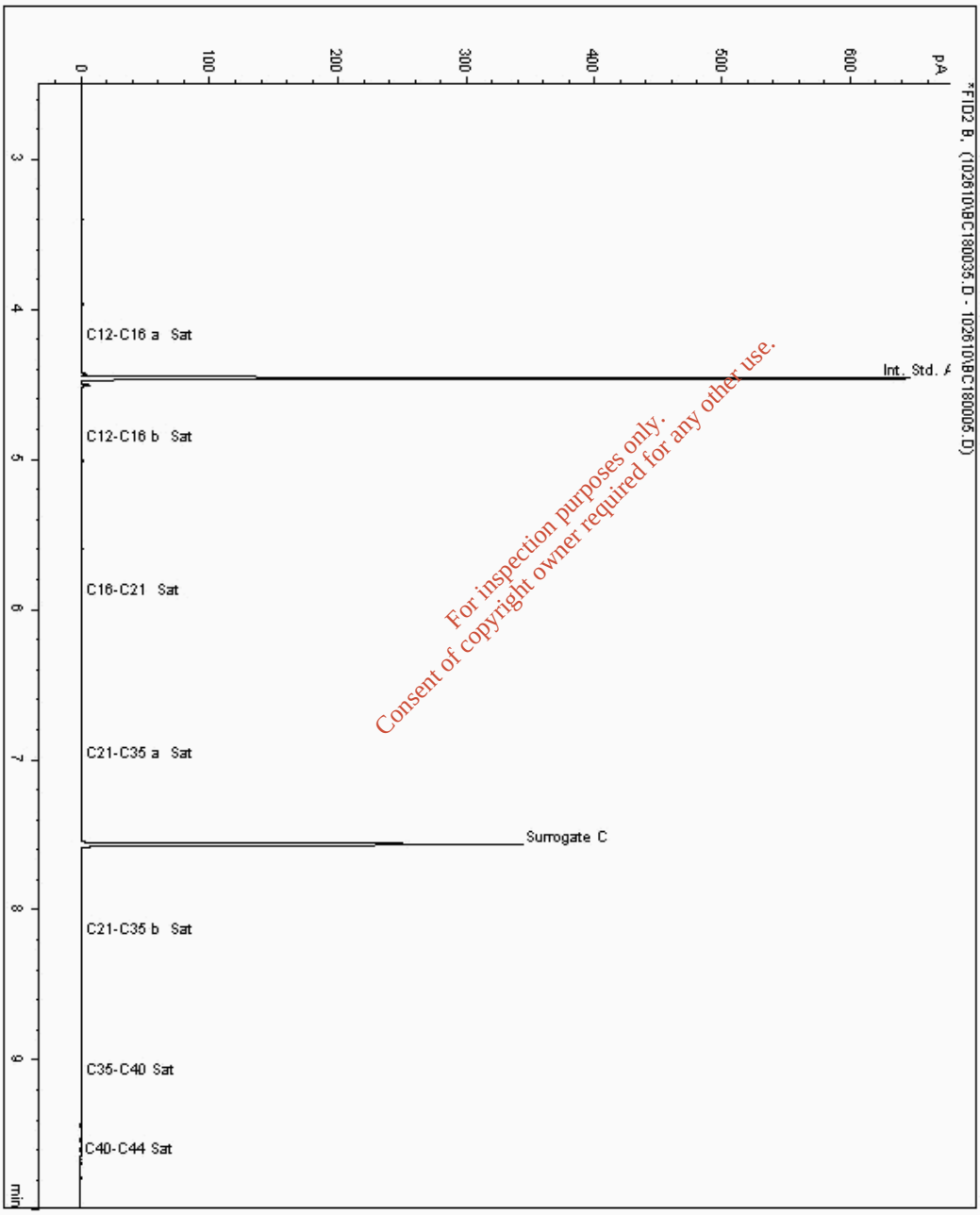
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	2276951
		Sample ID	M3
		Depth	3.50 - 5.50

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

Sample Identity: 2371897-2276951
Date Acquired : 27/10/10 03:55:48 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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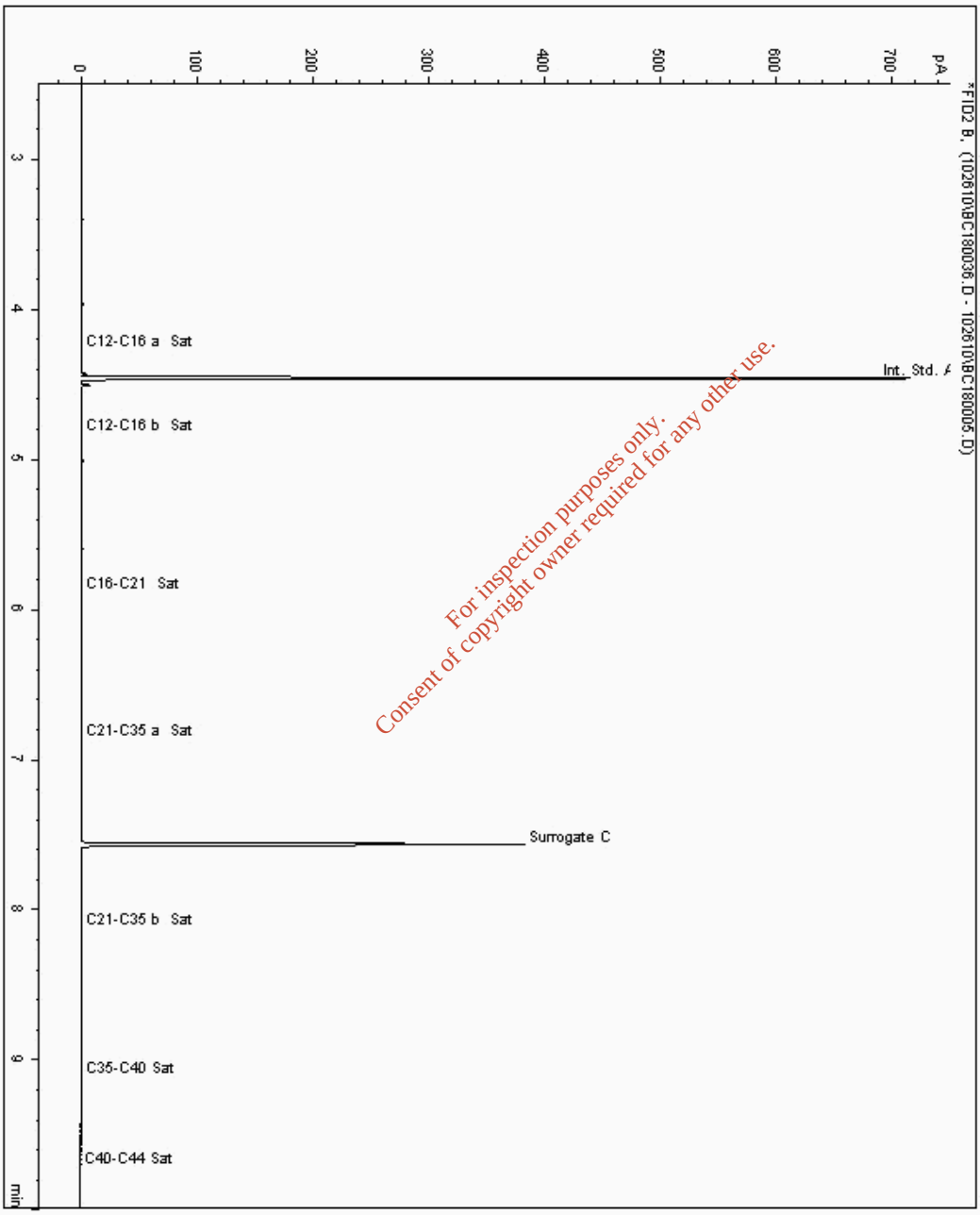
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	2277026
		Sample ID	K1
		Depth	3.00 - 4.00

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

Sample Identity: 2371867-2277026
Date Acquired : 27/10/10 04:14:36 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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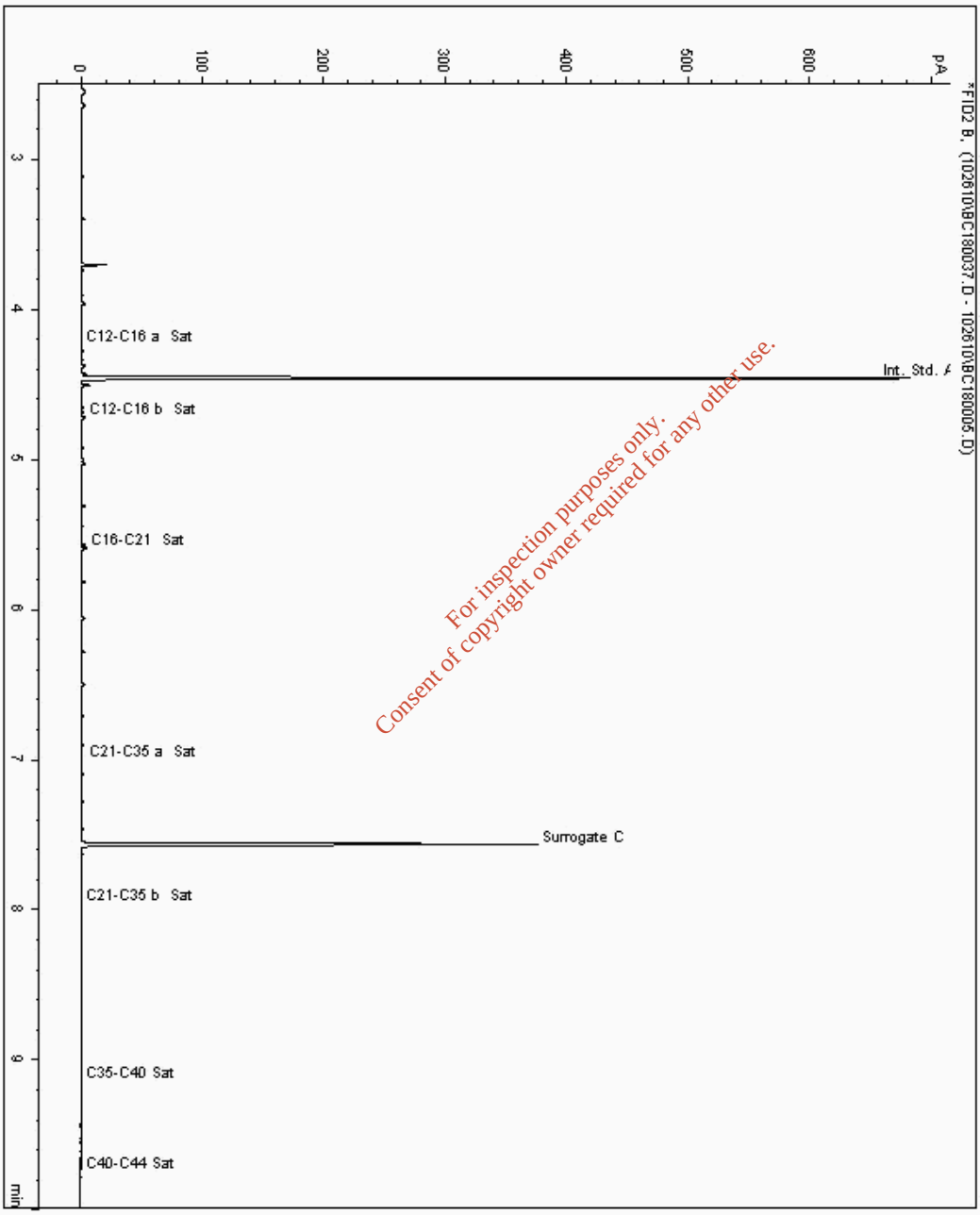
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	2277134
		Sample ID	E8
		Depth	2.00 - 5.00

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

Sample Identity: 2371912-2277134
Date Acquired : 27/10/10 04:33:40 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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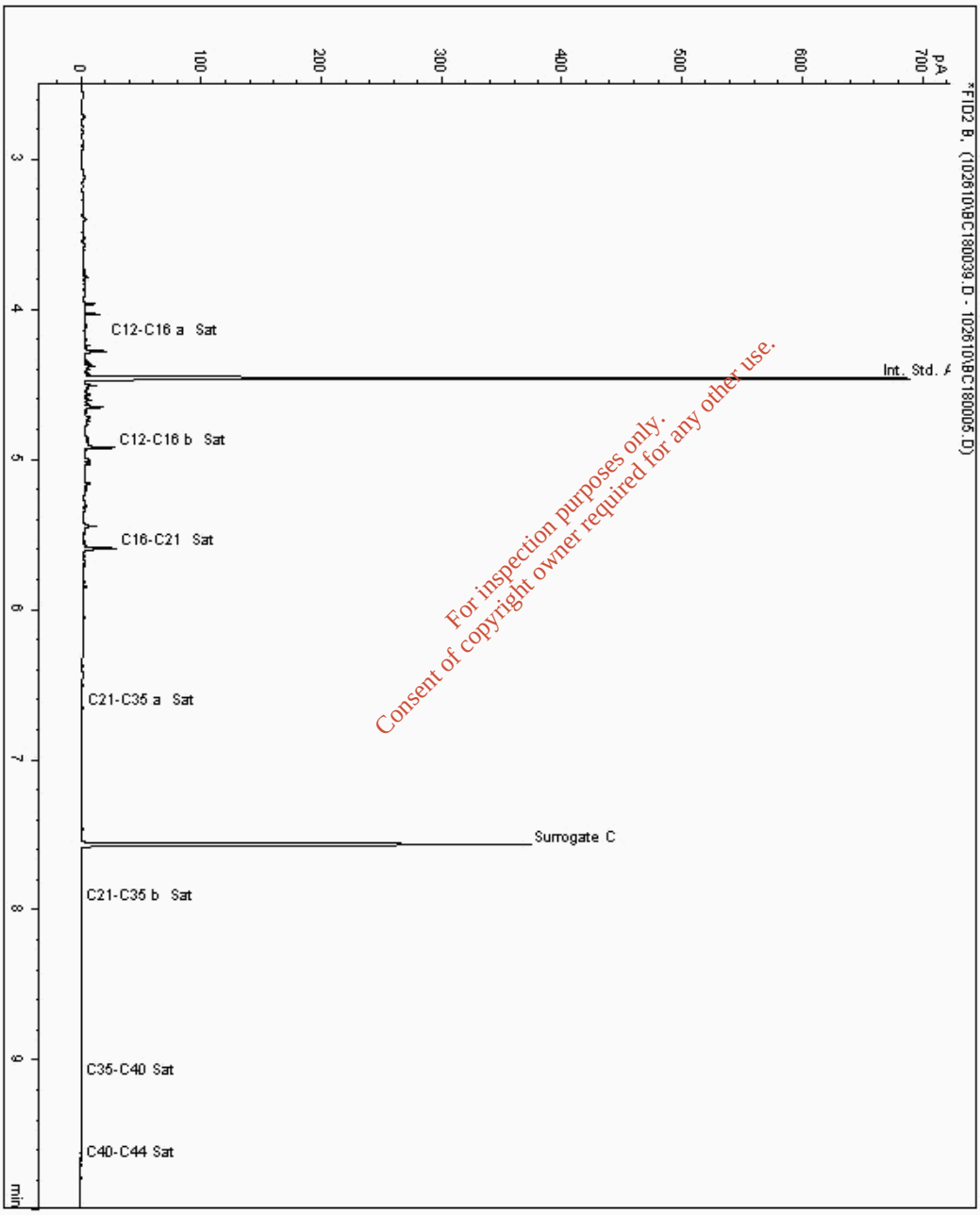
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	2277639
		Sample ID	C11
		Depth	1.50 - 2.50

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

Sample Identity: 2371927-2277639
Date Acquired : 27/10/10 05:05:35 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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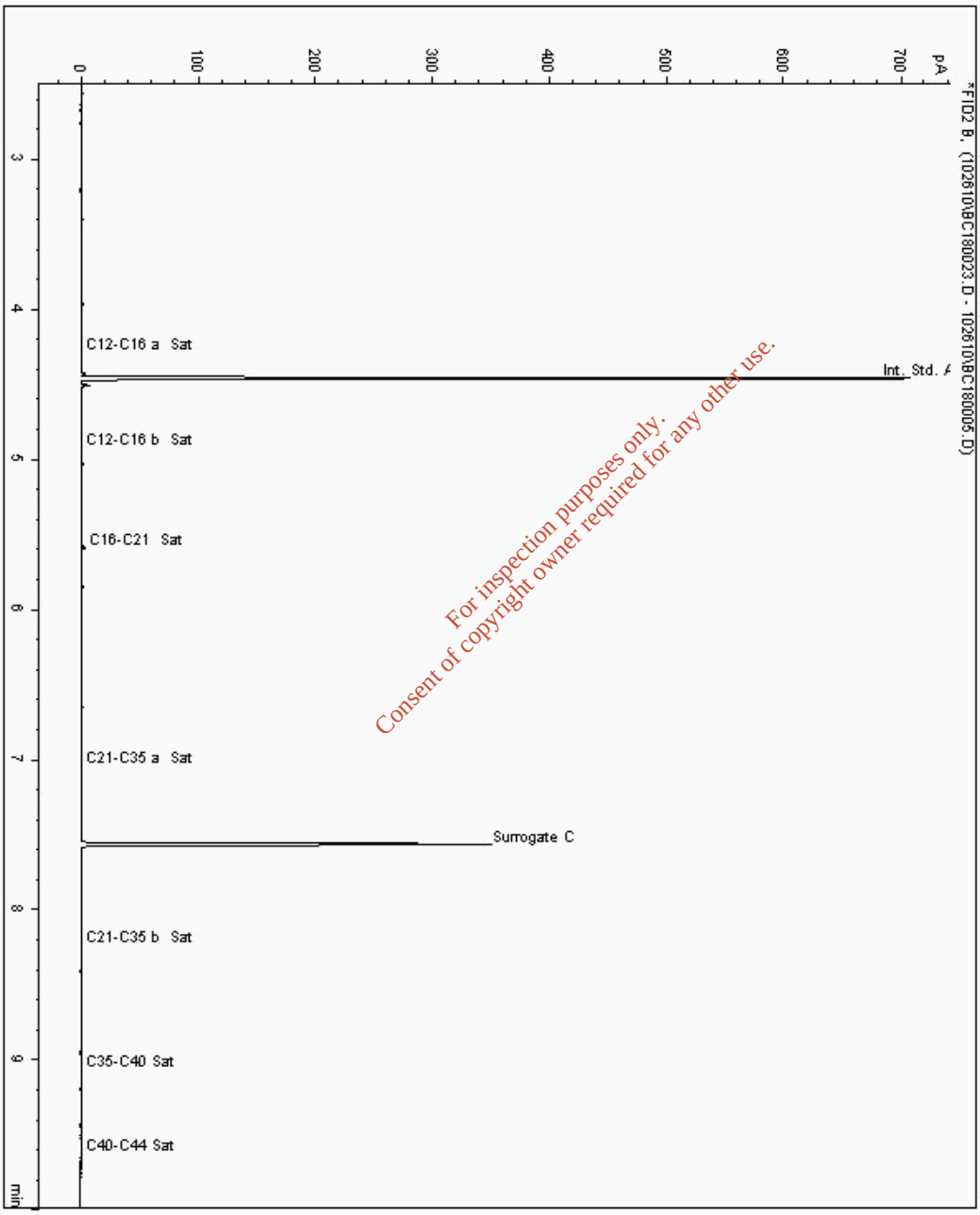
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	2278045
		Sample ID	G5
		Depth	3.00 - 6.00

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

Sample Identity: 2372051-2278045
Date Acquired : 27/10/10 00:43:31 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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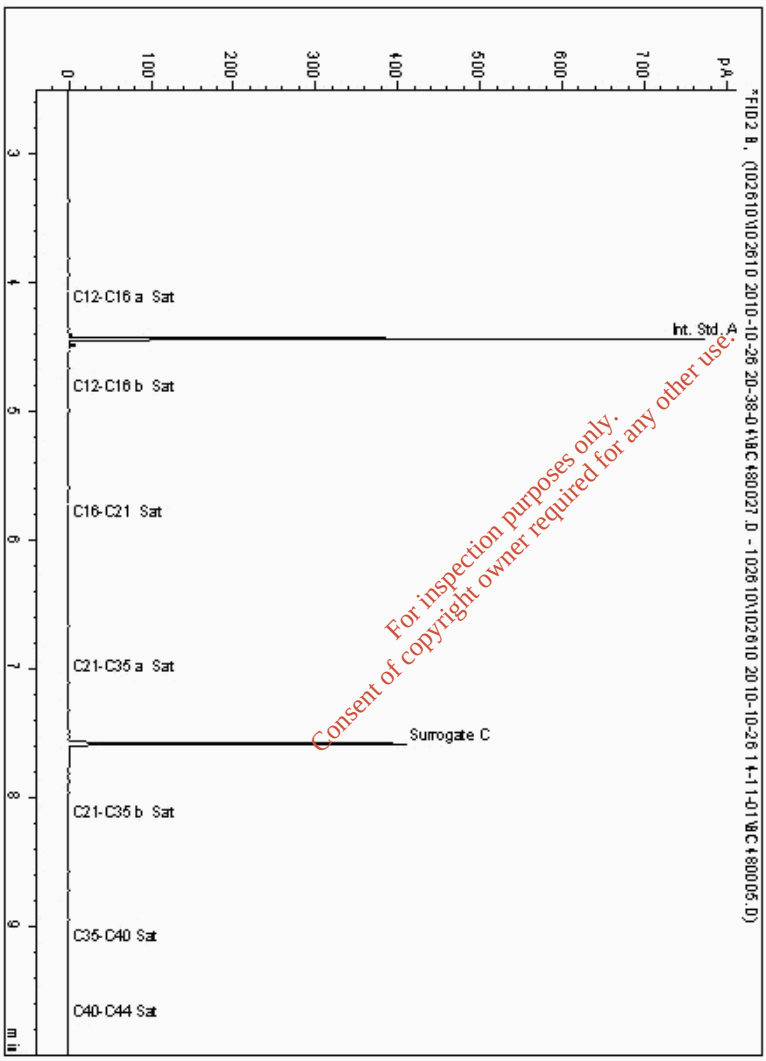
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aliphatic) Aqueous GC (W)	**Sample No**	2278087
		Sample ID	D1
		Depth	3.00 - 4.00

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

Sample Identity: 2372036-2278087
Date Acquired : 27/10/10 02:20:13
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	2275998
		Sample ID	A11
		Depth	1.50 - 2.50

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

Sample Identity: 2371977-2275998
Date Acquired : 26/10/10 21:38:56 PM
Units : ppb
Dilution :
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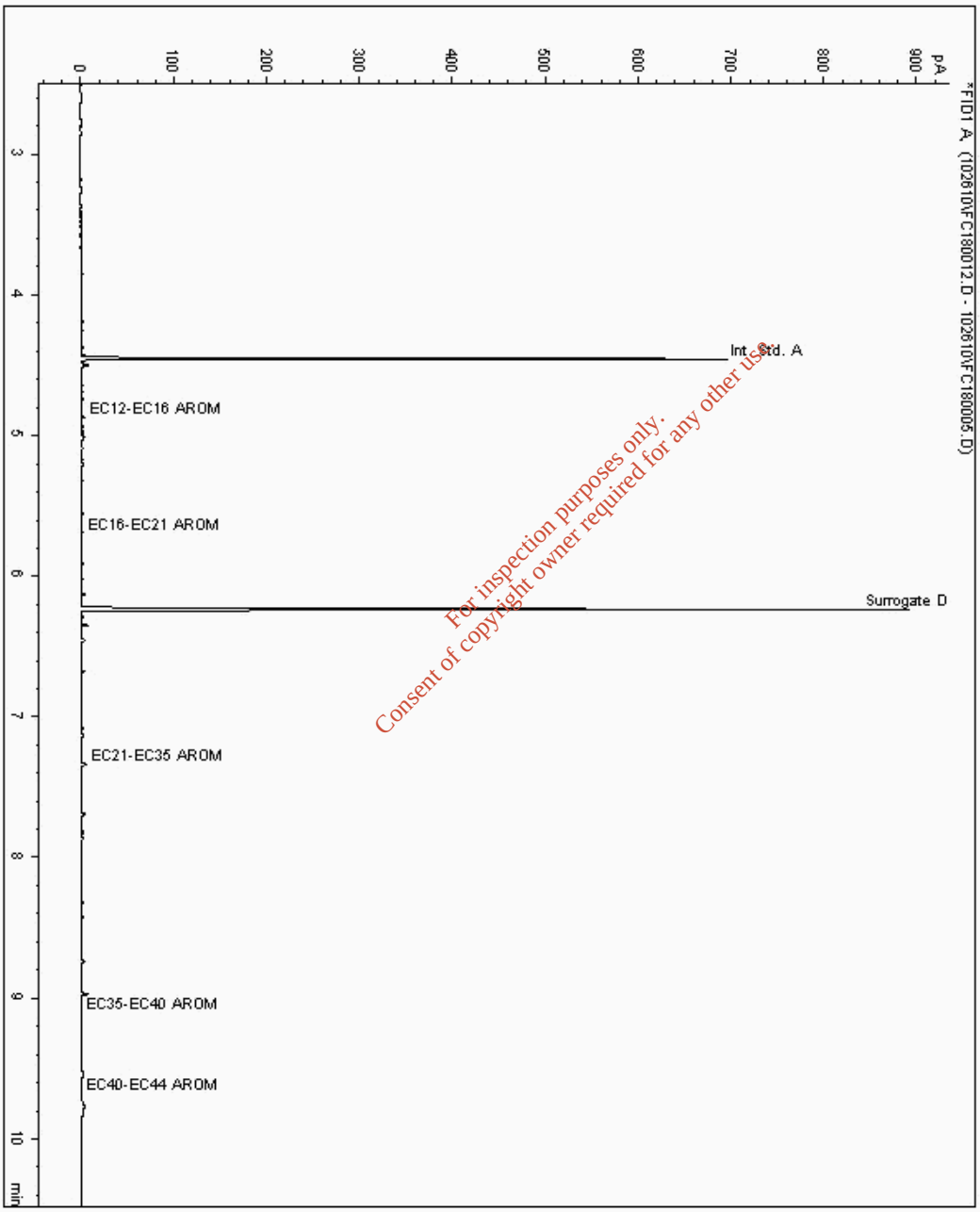
Multiplier : 0.008



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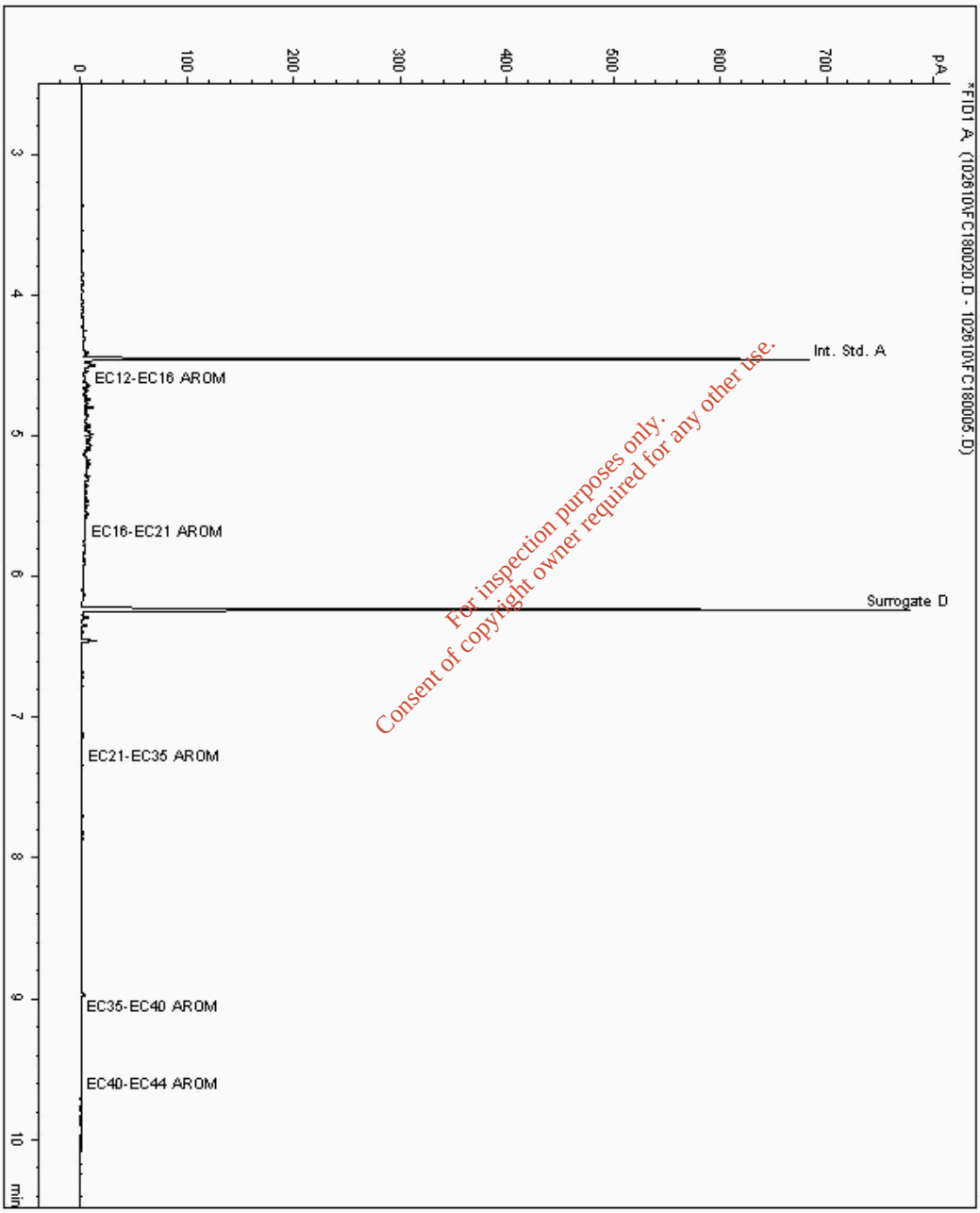
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	2276097
		Sample ID	A3
		Depth	2.00 - 4.00

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

Sample Identity: 2371793-2276097
Date Acquired : 26/10/10 23:52:28 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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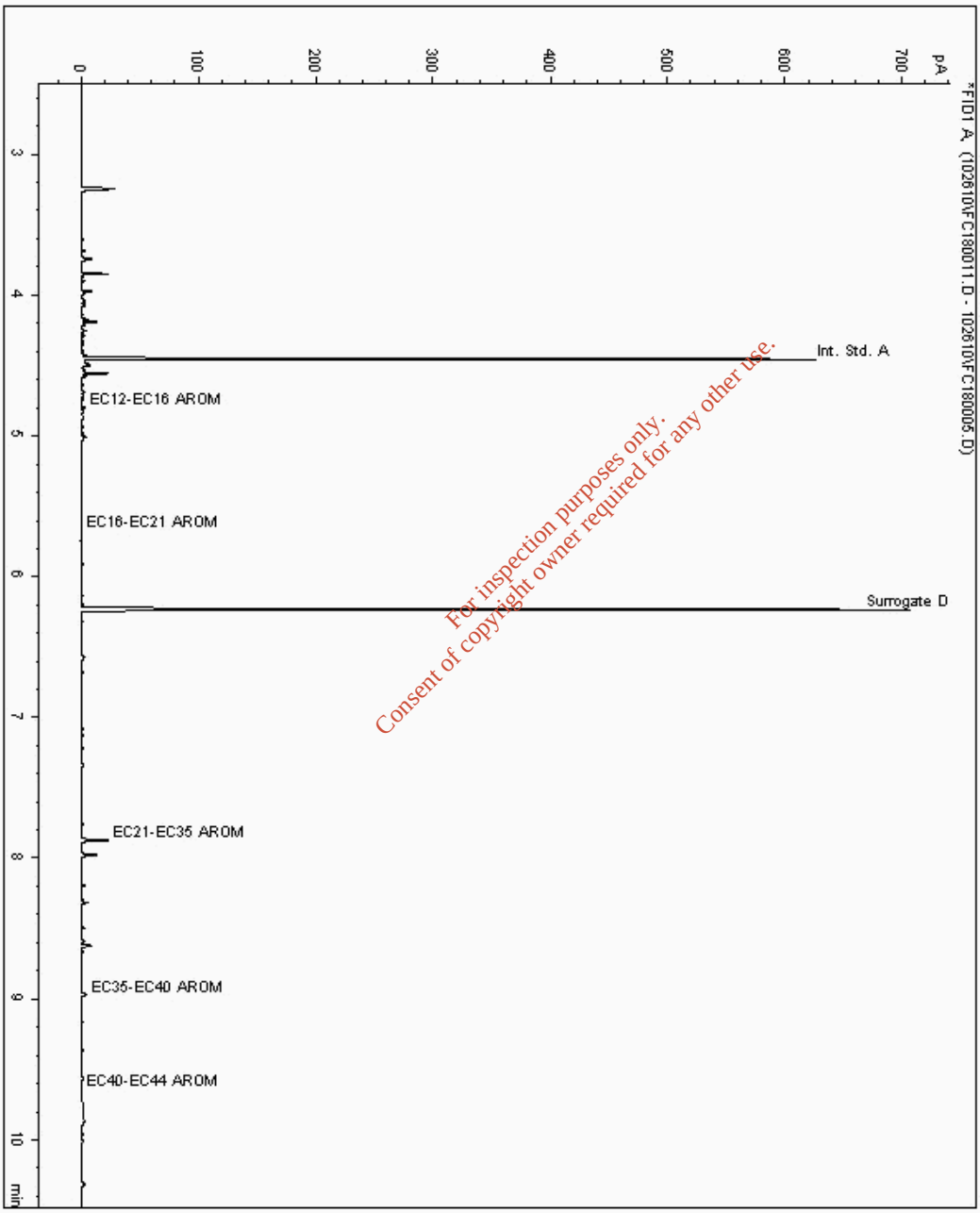
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	2276183
		Sample ID	F11
		Depth	2.00 - 4.00

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

Sample Identity: 2371962-2276183
Date Acquired : 26/10/10 21:20:19 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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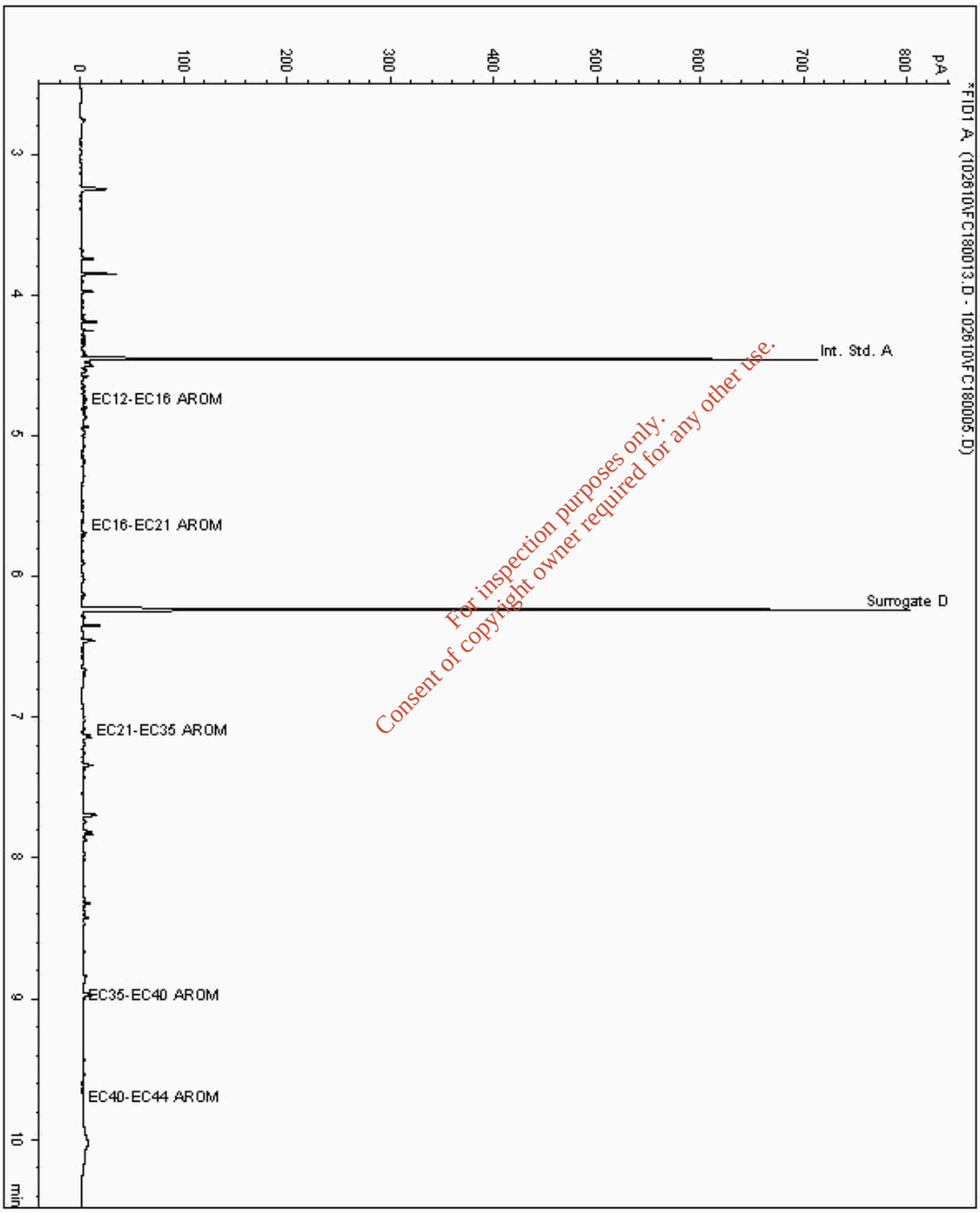
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	2276270
		Sample ID	G3
		Depth	4.00 - 5.00

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

Sample Identity: 2372007-2276270
Date Acquired : 26/10/10 21:57:51 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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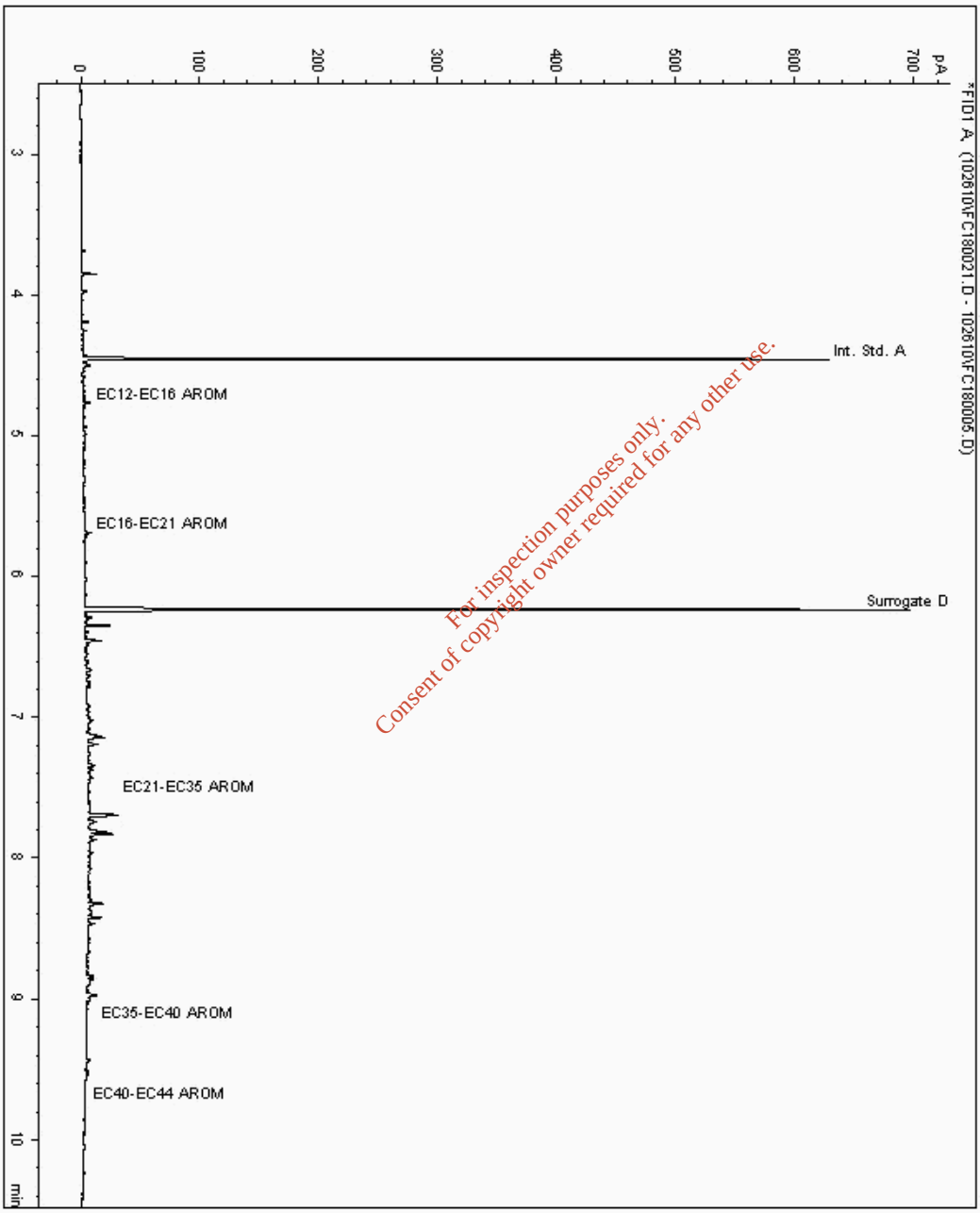
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	2276326
		Sample ID	D5
		Depth	2.00 - 3.00

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

Sample Identity: 2371775-2276326
Date Acquired : 27/10/10 00:11:32 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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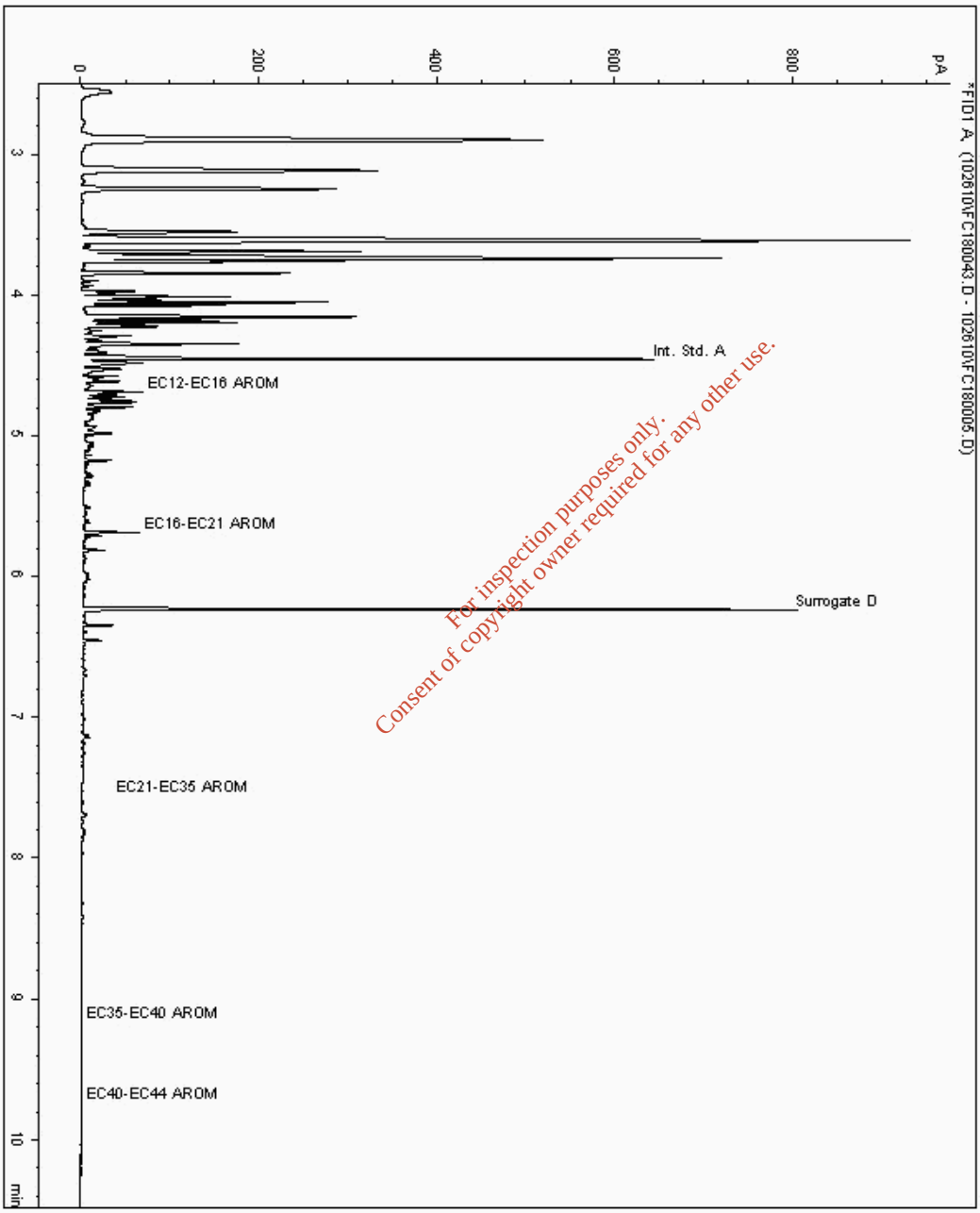
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	2276388
		Sample ID	K5
		Depth	1.00 - 2.00

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

Sample Identity: 2371838-2276388
Date Acquired : 27/10/10 10:10:26 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.208



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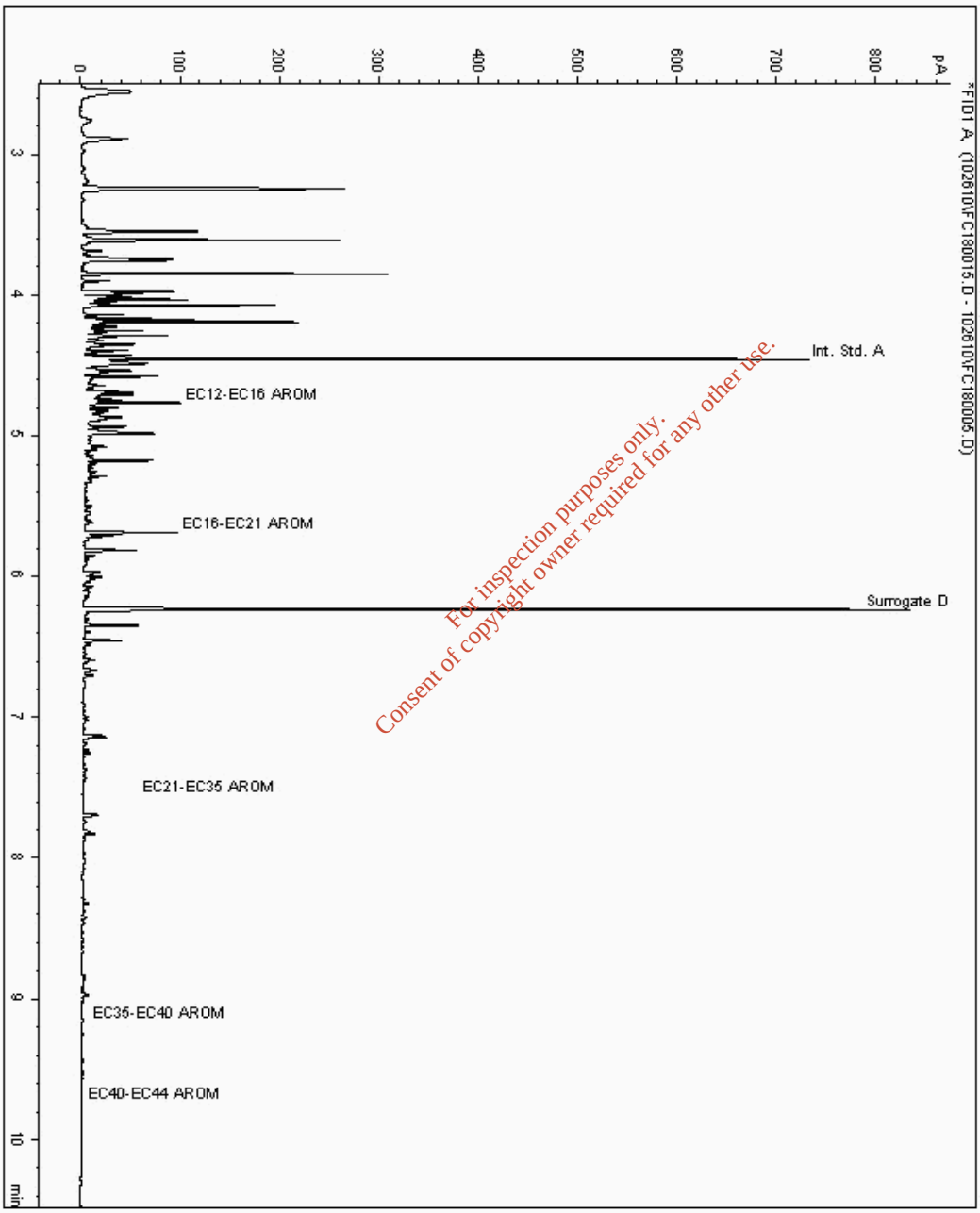
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	2276390
		Sample ID	G8
		Depth	1.00 - 2.00

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

Sample Identity: 2371945-2276390
Date Acquired : 26/10/10 22:29:38 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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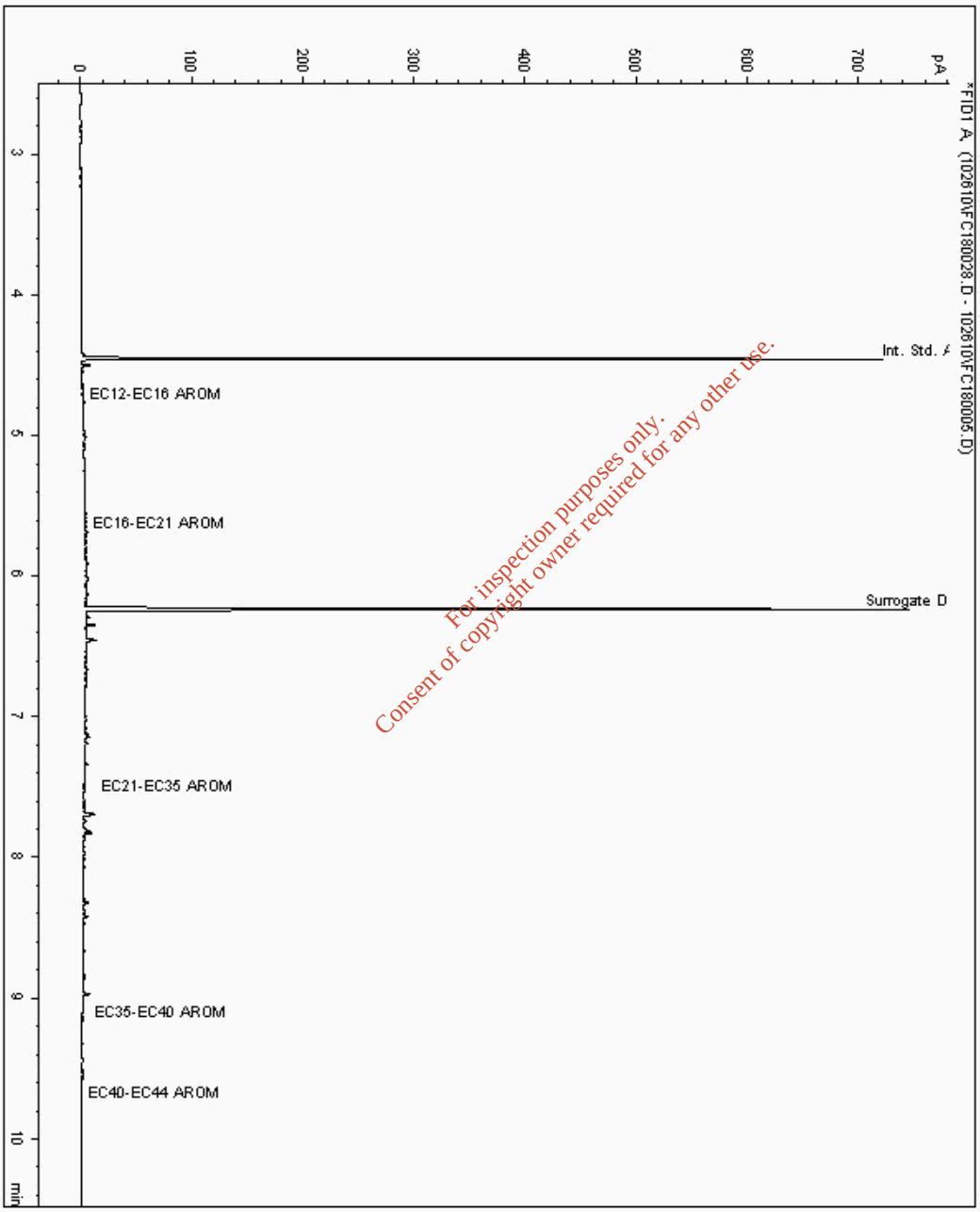
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	2276440
		Sample ID	A4
		Depth	2.00 - 4.00

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

Sample Identity: 2371808-2276440
Date Acquired : 27/10/10 02:00:39 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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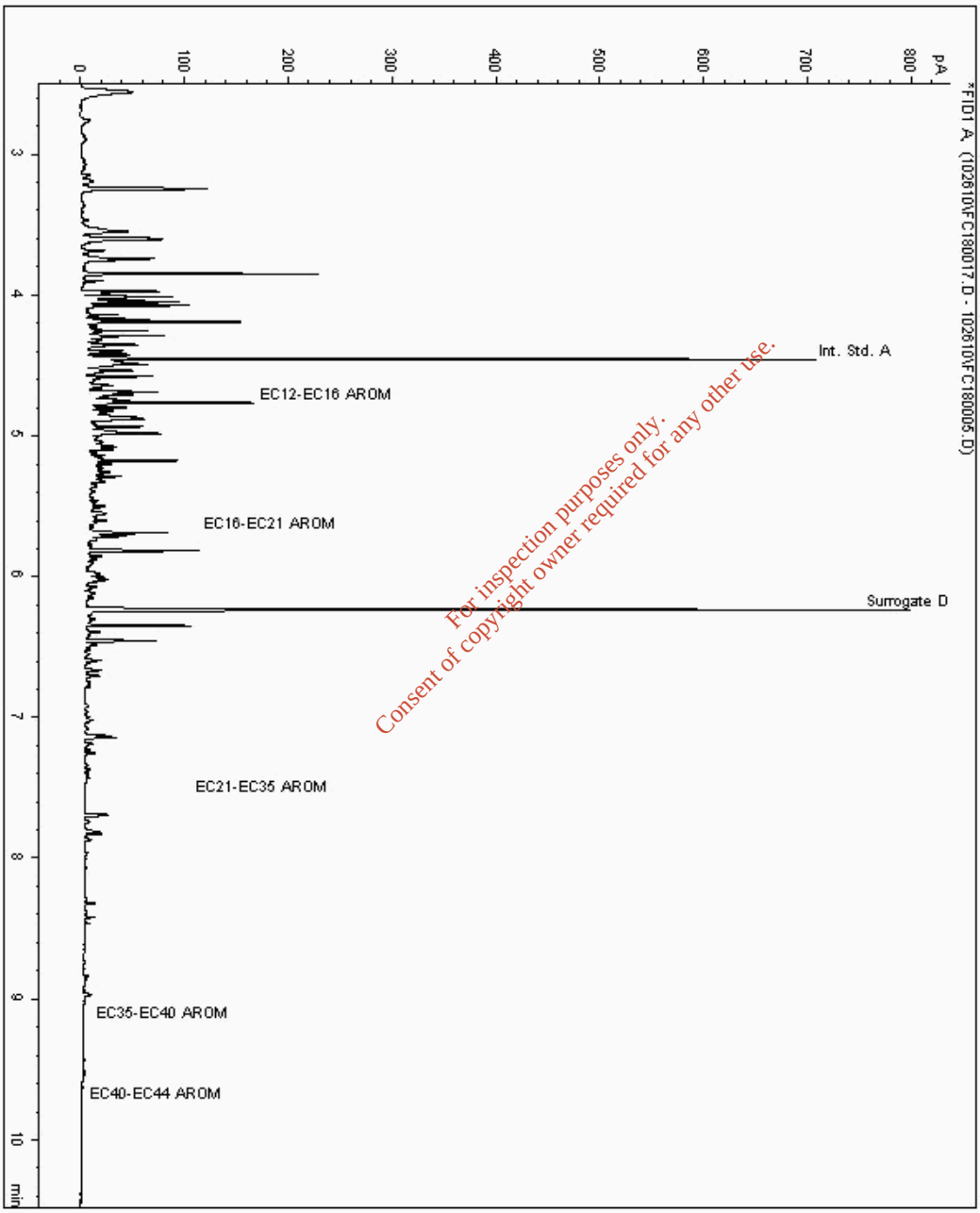
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	2276451
		Sample ID	G4
		Depth	3.00 - 3.50

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

Sample Identity: 2371992-2276451
Date Acquired : 26/10/10 23:01:46 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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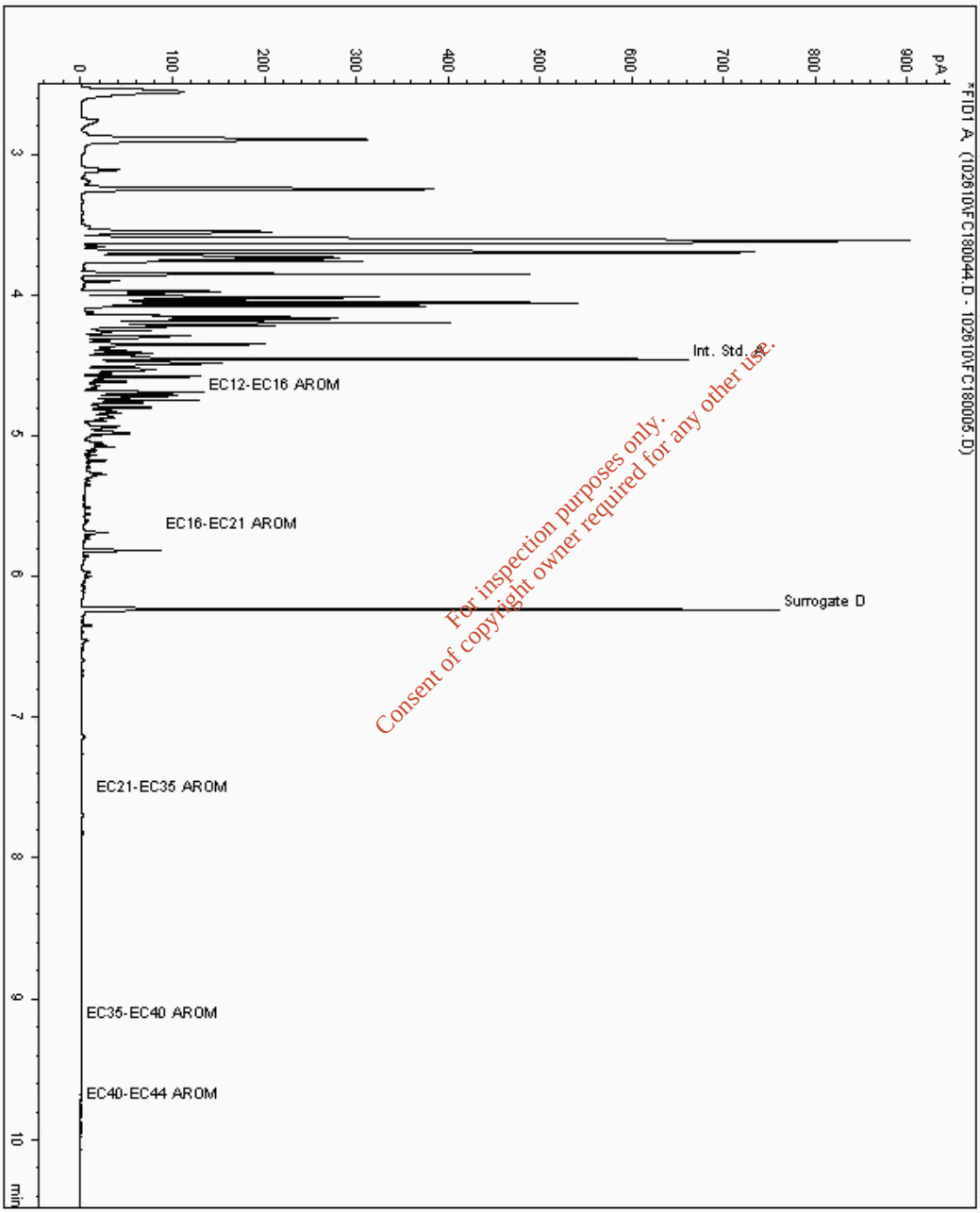
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	2276479
		Sample ID	C7
		Depth	3.00 - 6.00

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

Sample Identity: 2371823-2276479
Date Acquired : 27/10/10 10:29:11 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.042



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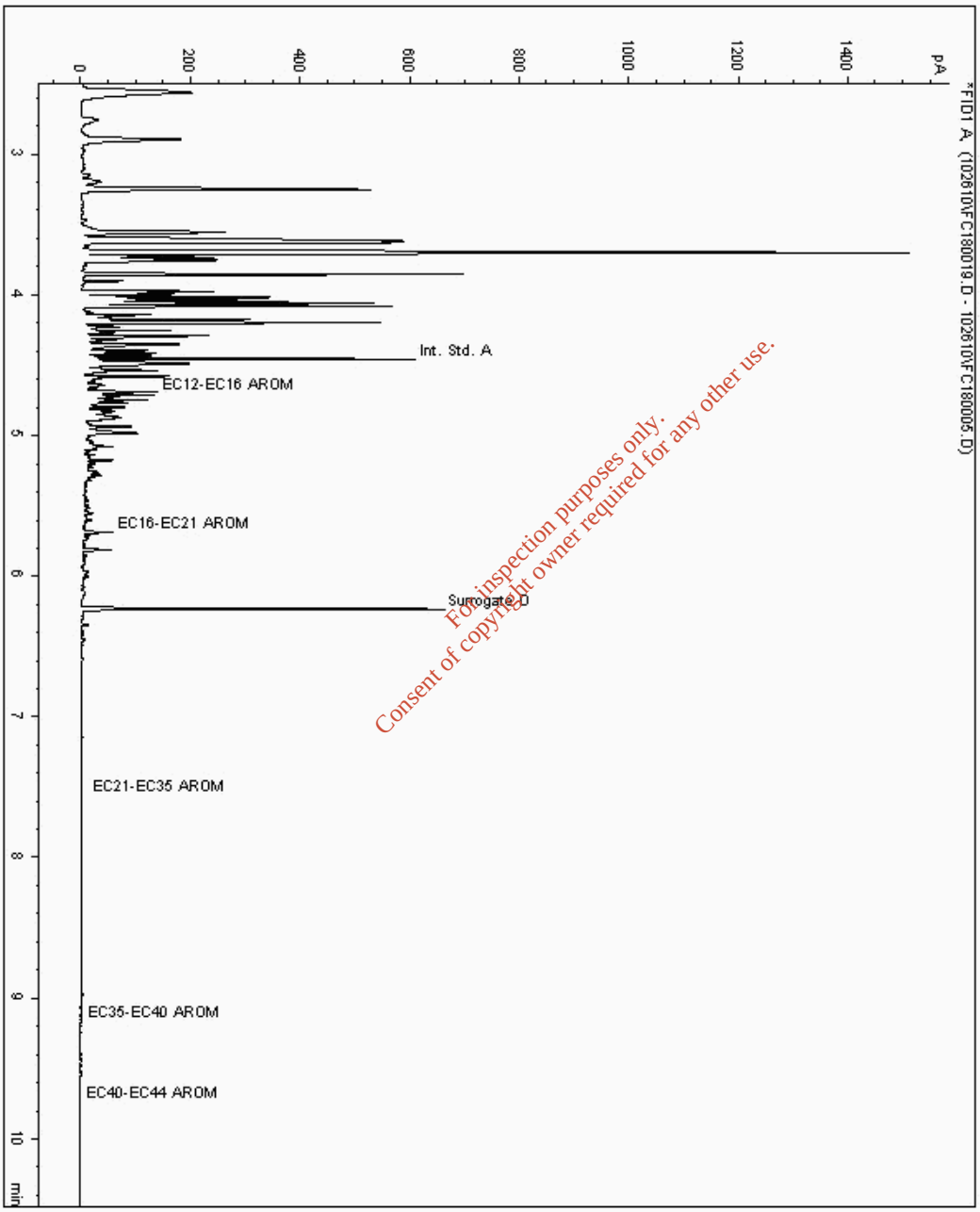
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	2276518
		Sample ID	G2
		Depth	4.00 - 7.00

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

Sample Identity: 2372022-2276518
Date Acquired : 26/10/10 23:33:38 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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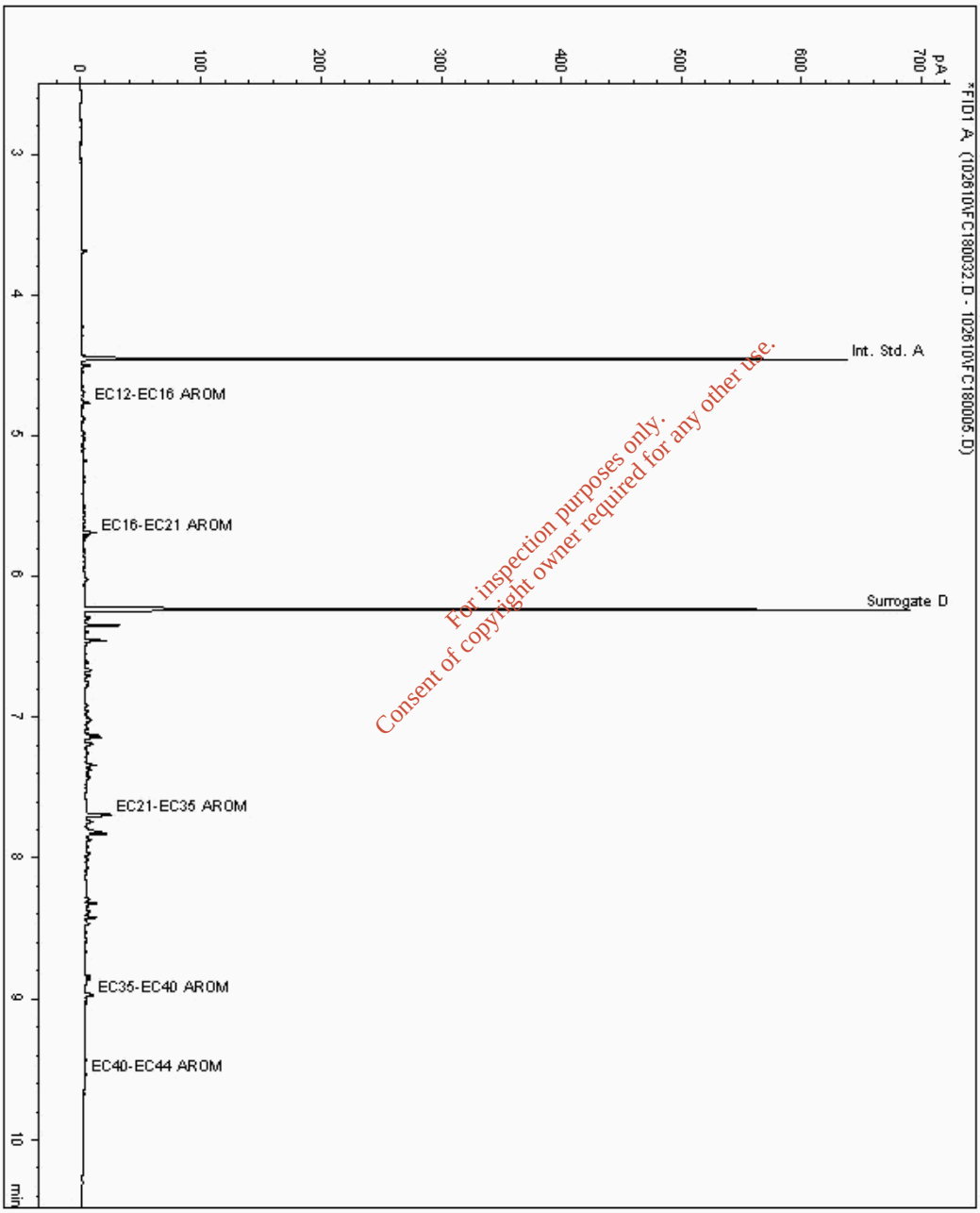
SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046
Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	2276670
		Sample ID	H12
		Depth	1.50 - 4.00

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

Sample Identity: 2371883-2276670
Date Acquired : 27/10/10 03:04:38 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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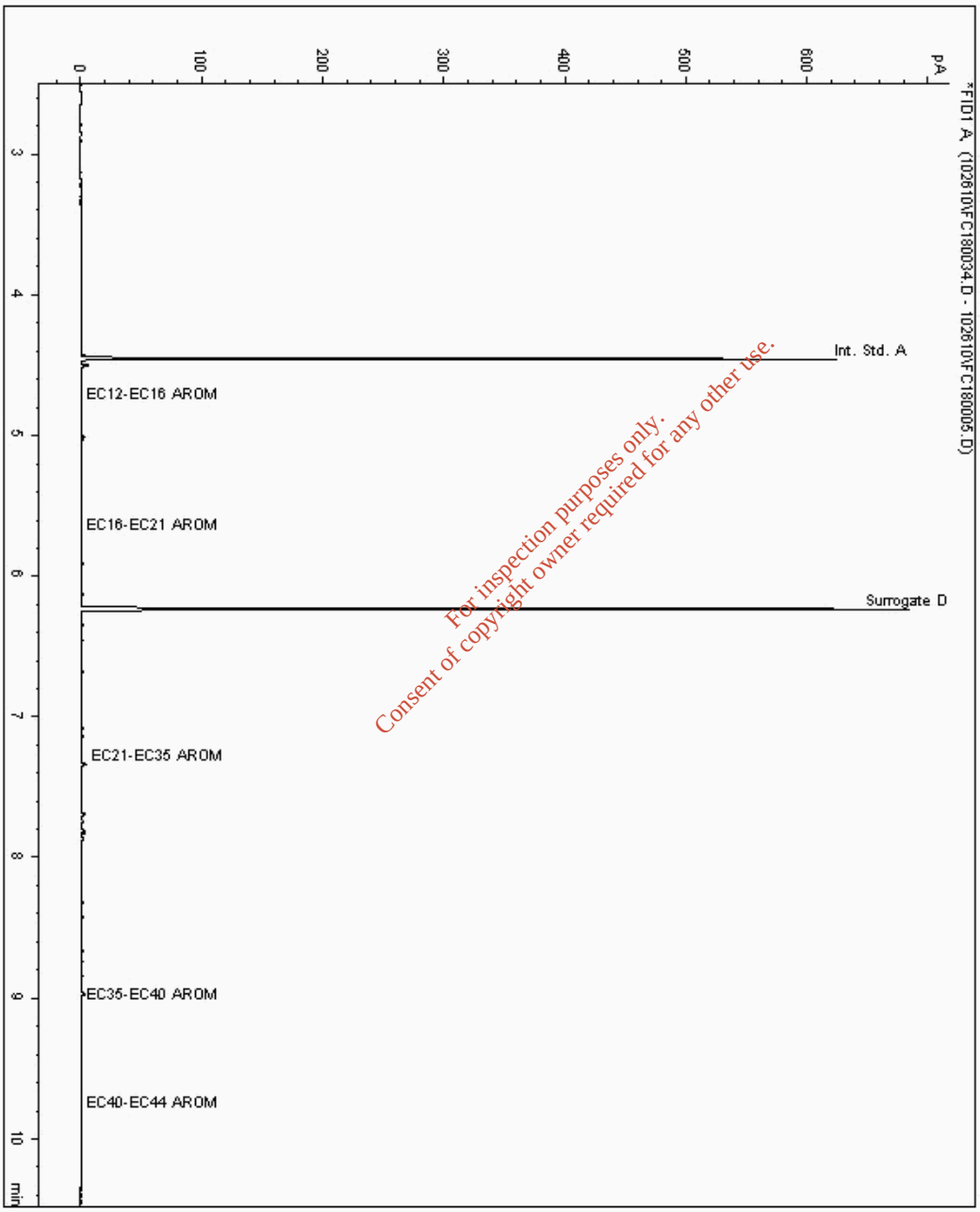
SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	2276894
		Sample ID	J10
		Depth	1.00 - 1.30

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

Sample Identity: 2371853-2276894
Date Acquired : 27/10/10 03:36:54 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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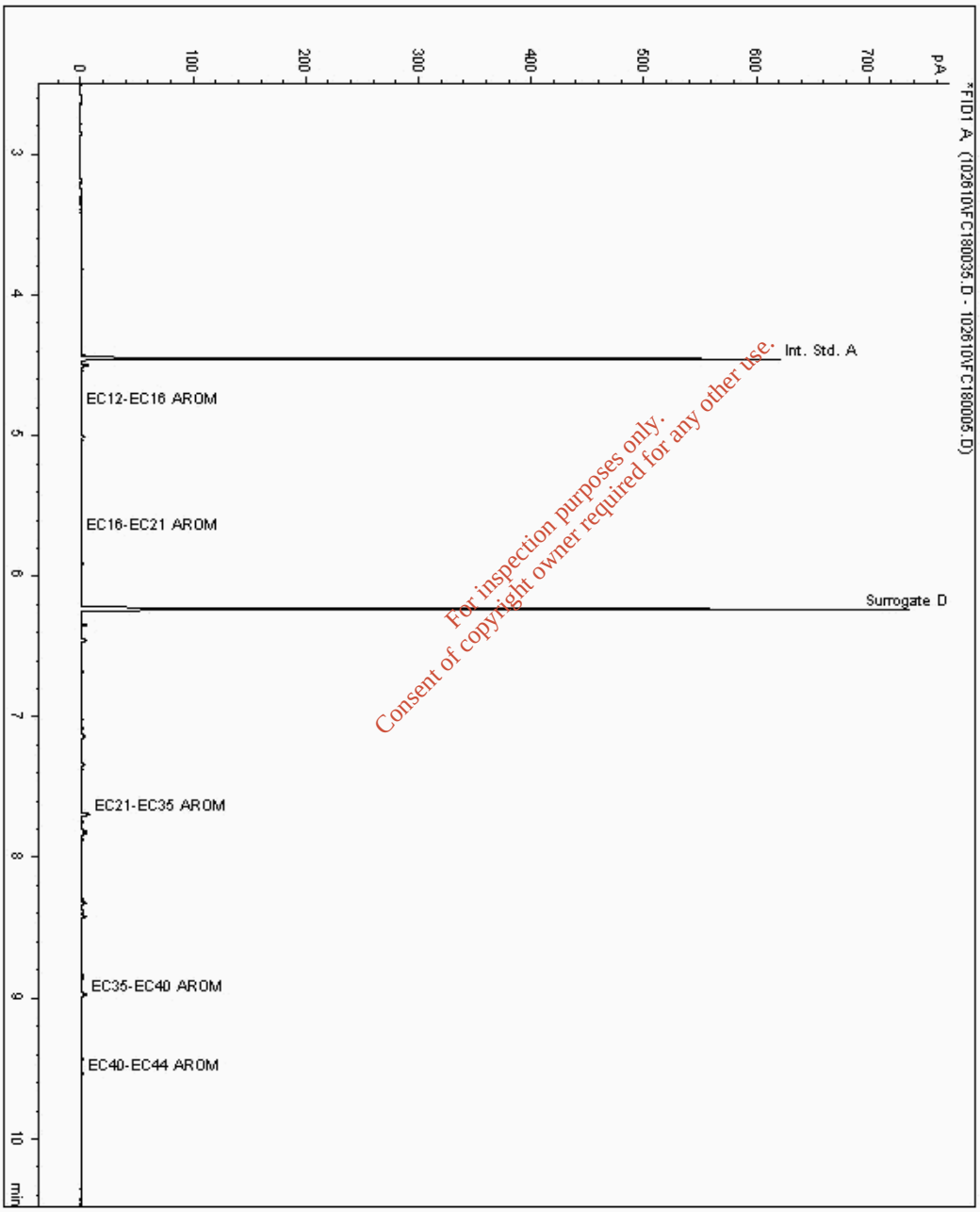
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	2276951
		Sample ID	M3
		Depth	3.50 - 5.50

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

Sample Identity: 2371898-2276951
Date Acquired : 27/10/10 03:55:48 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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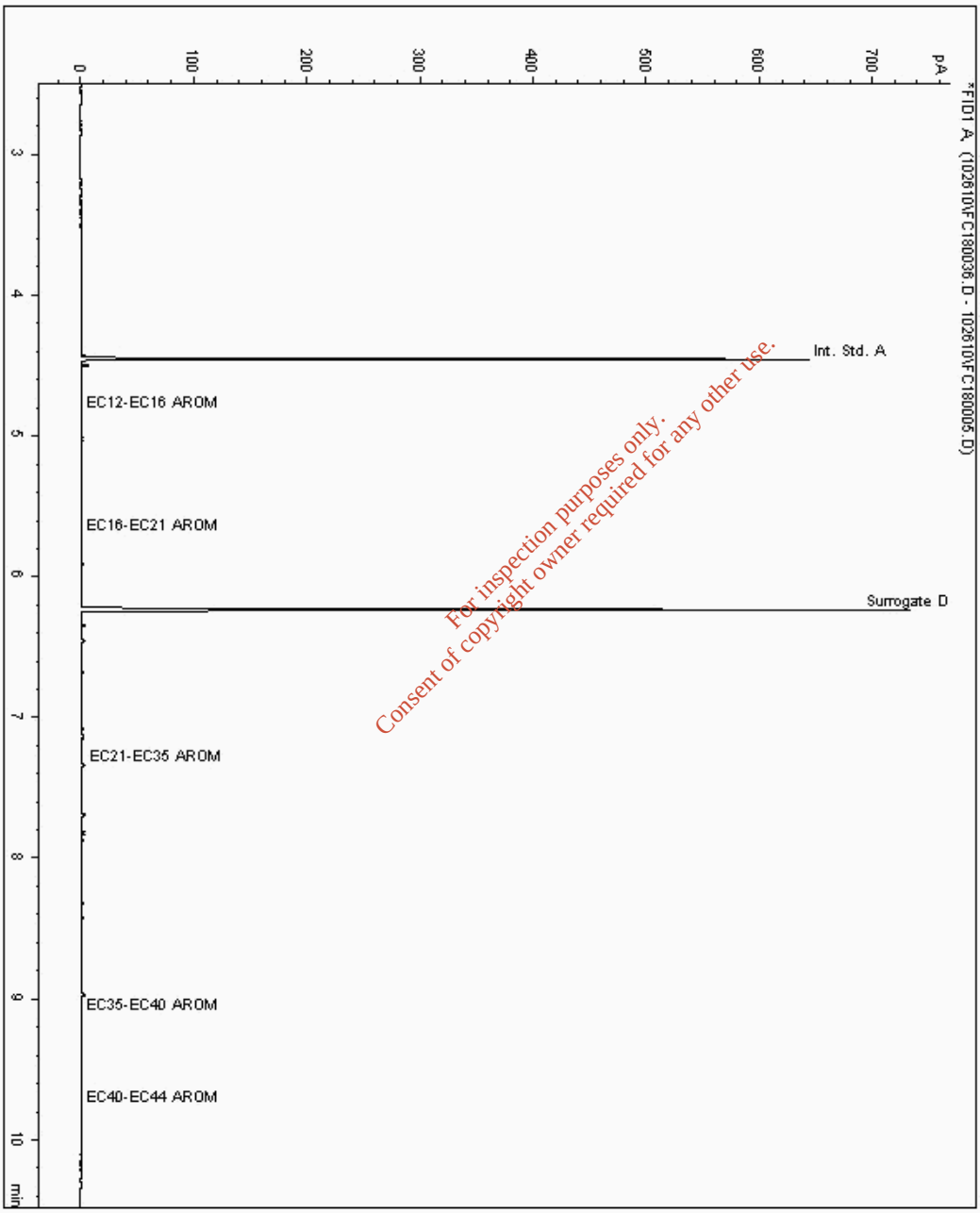
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	2277026
		Sample ID	K1
		Depth	3.00 - 4.00

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

Sample Identity: 2371868-2277026
Date Acquired : 27/10/10 04:14:36 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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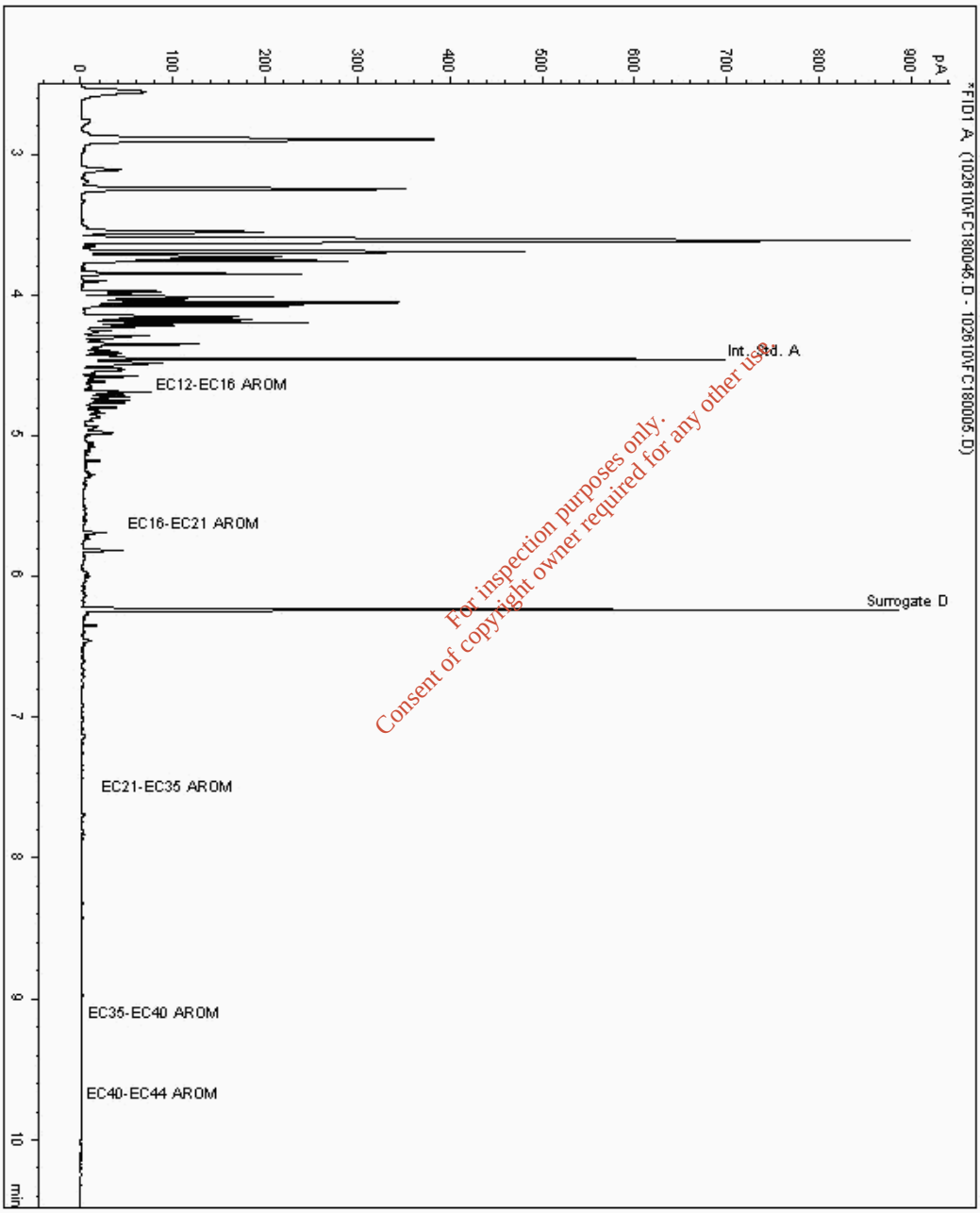
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	2277134
		Sample ID	E8
		Depth	2.00 - 5.00

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

Sample Identity: 2371913-2277134
Date Acquired : 27/10/10 10:47:51 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.042



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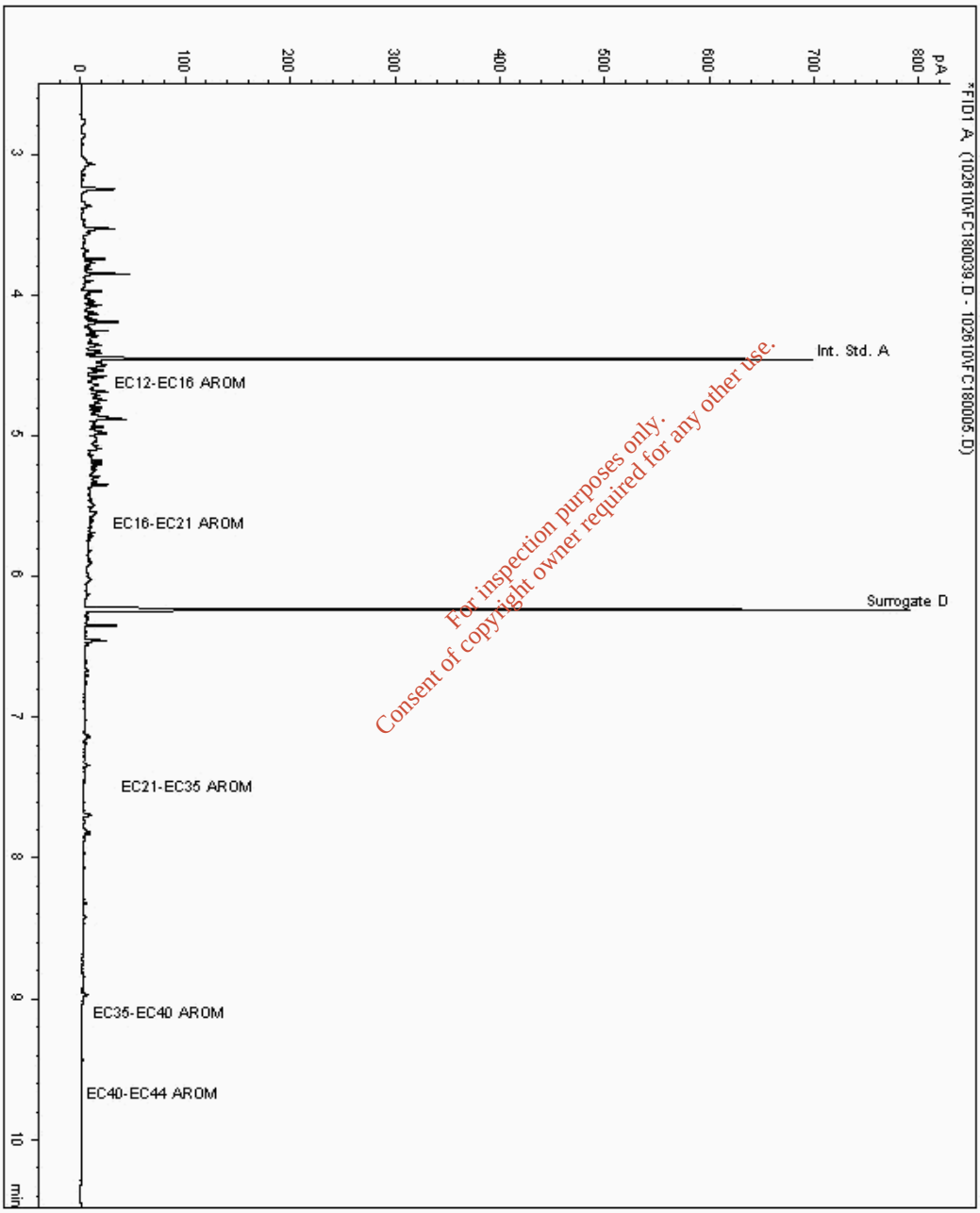
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	2277639
		Sample ID	C11
		Depth	1.50 - 2.50

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

Sample Identity: 2371928-2277639
Date Acquired : 27/10/10 05:05:35 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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Validated

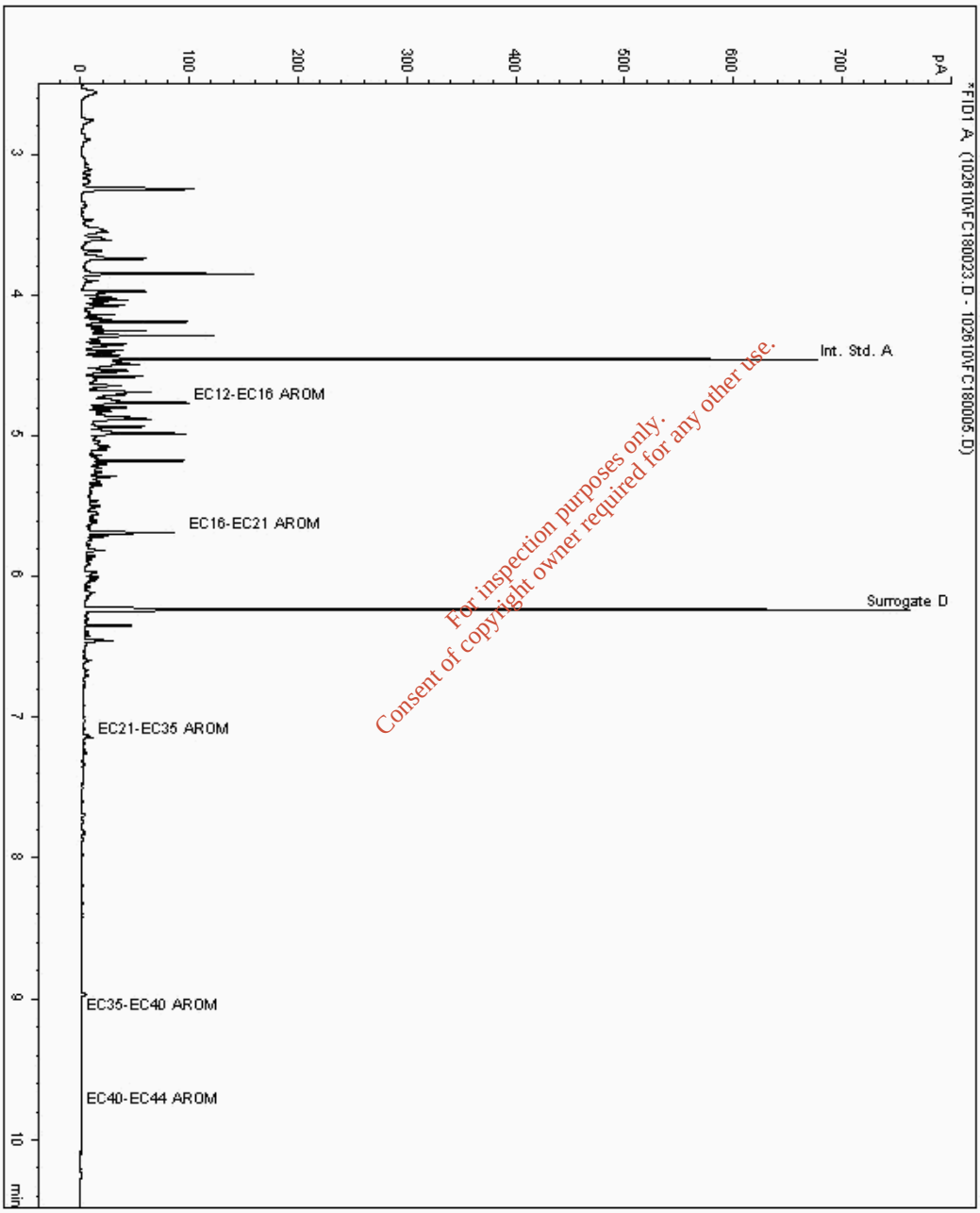
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	2278045
		Sample ID	G5
		Depth	3.00 - 6.00

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

Sample Identity: 2372052-2278045
Date Acquired : 27/10/10 00:43:31 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.008



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Validated

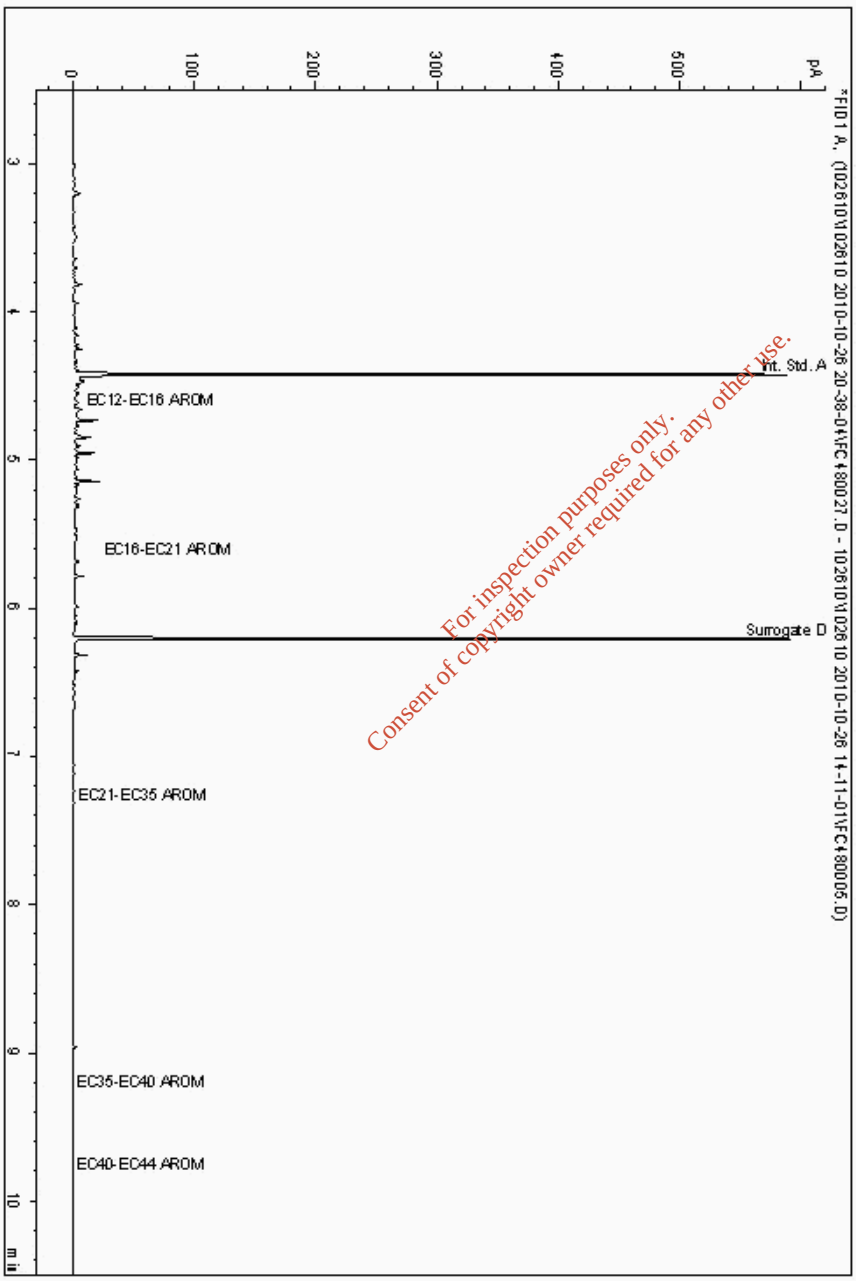
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	EPH CWG (Aromatic) Aqueous GC (W)	**Sample No**	2278087
		Sample ID	D1
		Depth	3.00 - 4.00

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

Sample Identity: 2372037-2278087
Date Acquired : 27/10/10 02:20:13
Units :
Dilution :
CF : 1
Multiplier : 0.008



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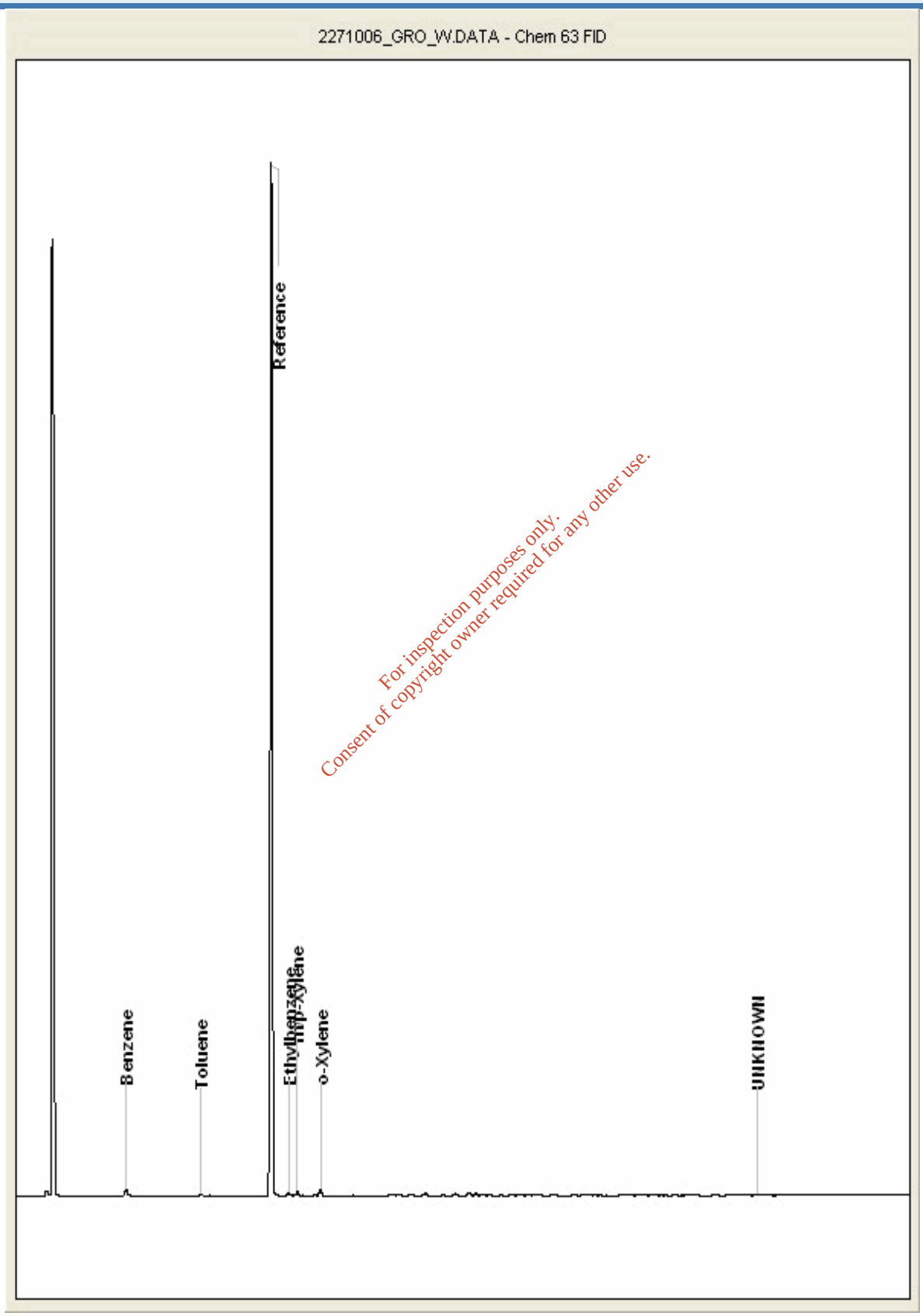
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	GRO by GC-FID (W)	**Sample No**	2271006
		Sample ID	D5
		Depth	2.00 - 3.00



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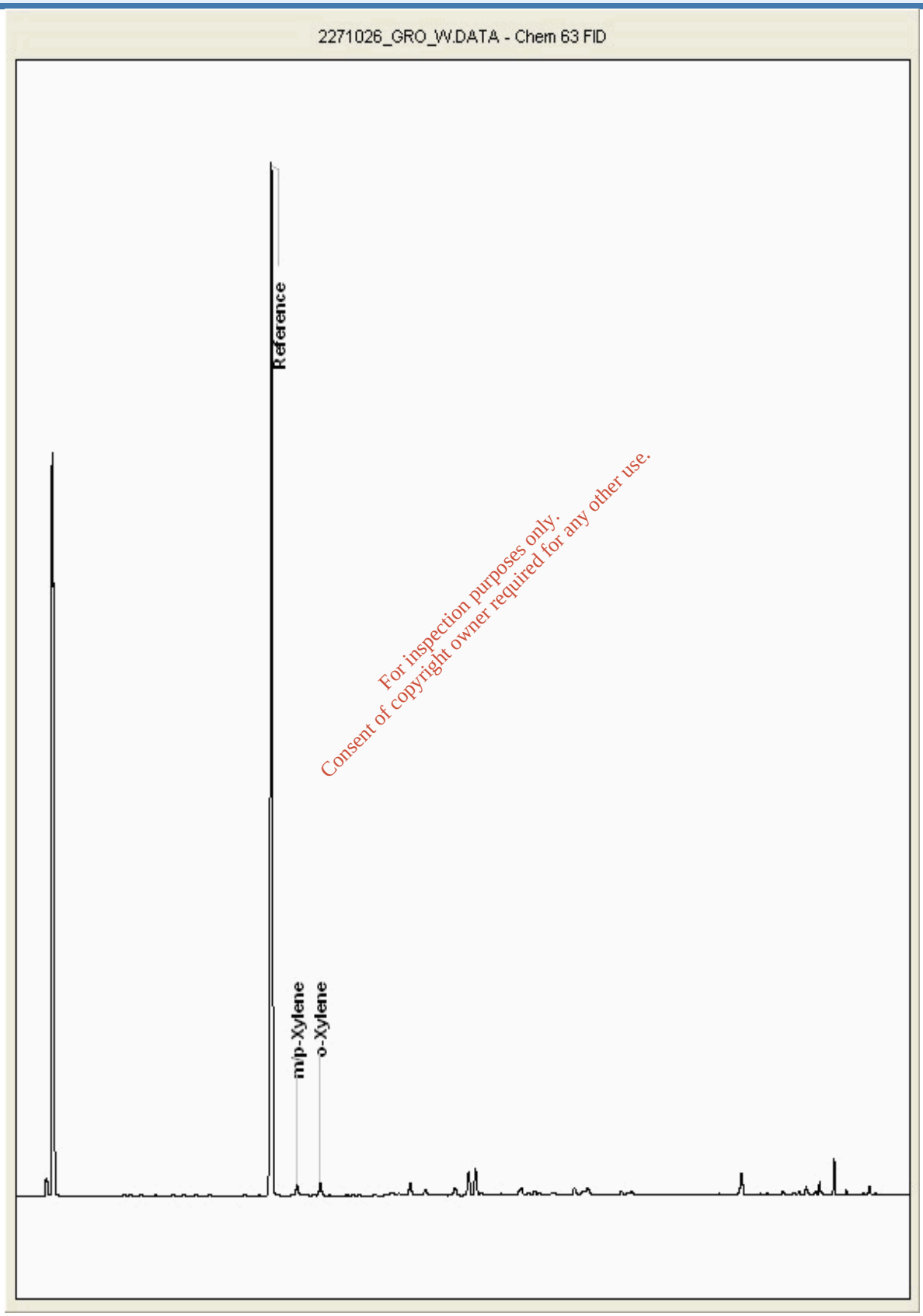
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	GRO by GC-FID (W)	**Sample No**	2271026
		Sample ID	A3
		Depth	2.00 - 4.00



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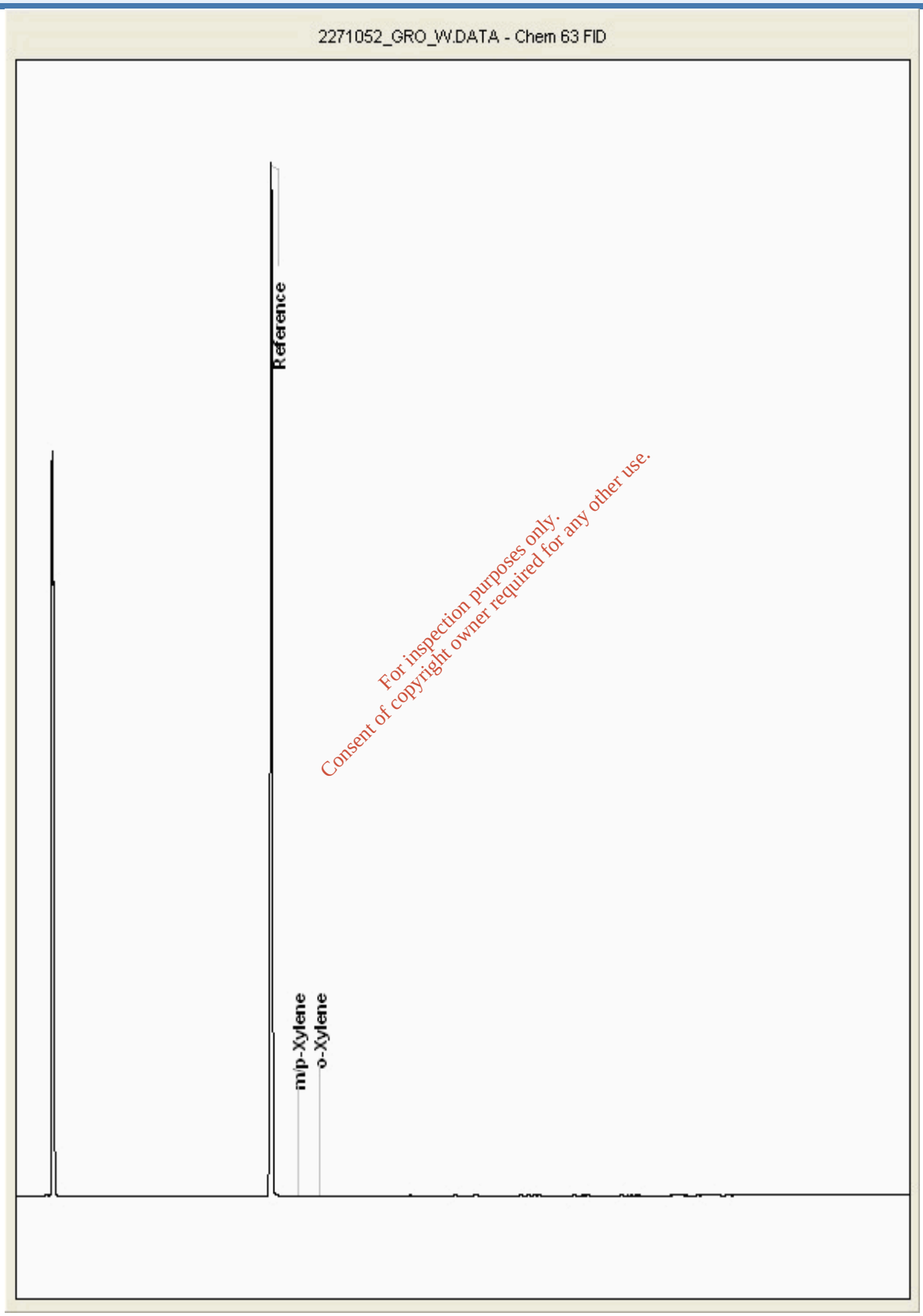
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	GRO by GC-FID (W)	**Sample No**	2271052
		Sample ID	A4
		Depth	2.00 - 4.00



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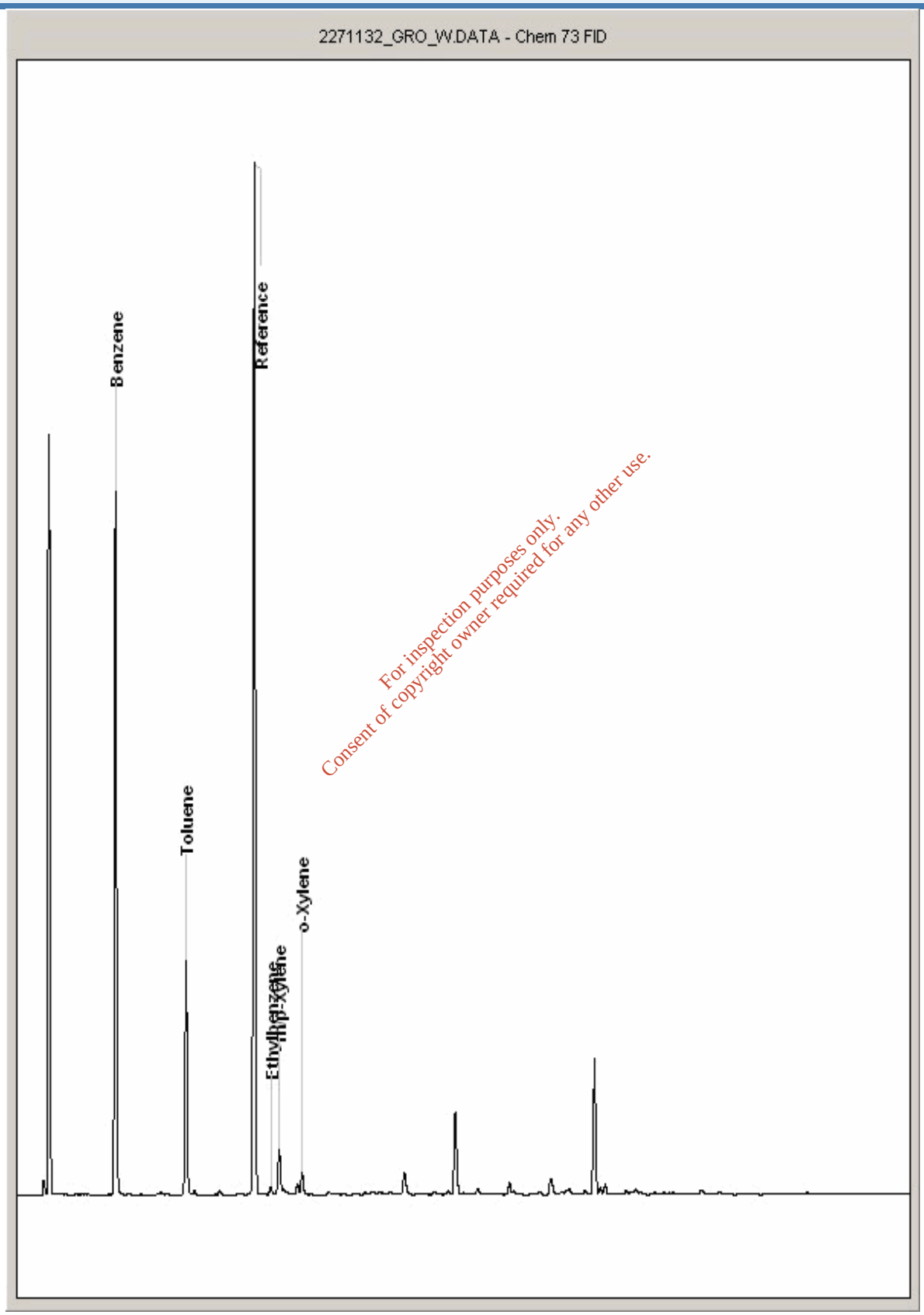
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	GRO by GC-FID (W)	**Sample No**	2271132
		Sample ID	C7
		Depth	3.00 - 6.00



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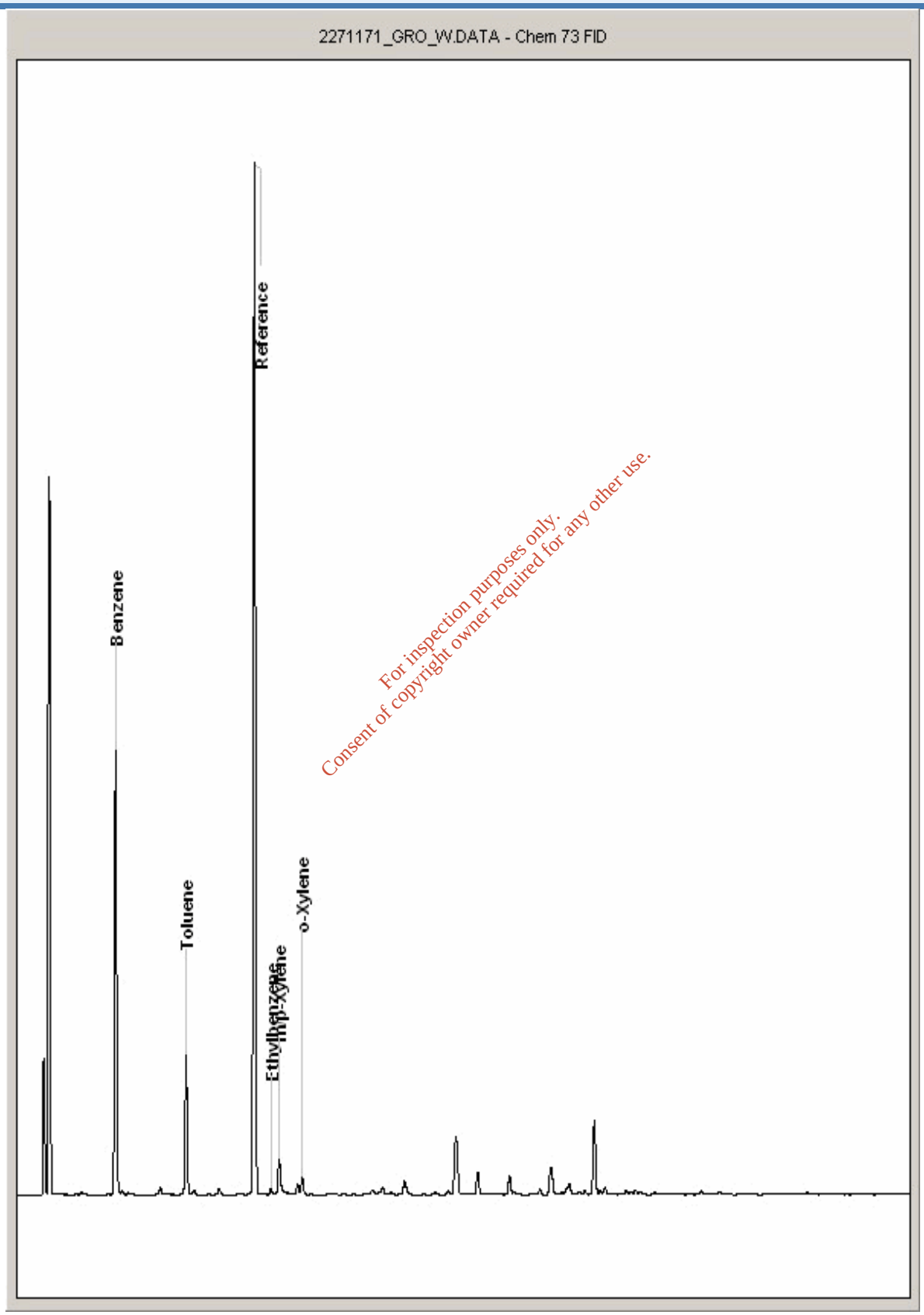
Validated

ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	GRO by GC-FID (W)	**Sample No**	2271171
		Sample ID	K5
		Depth	1.00 - 2.00



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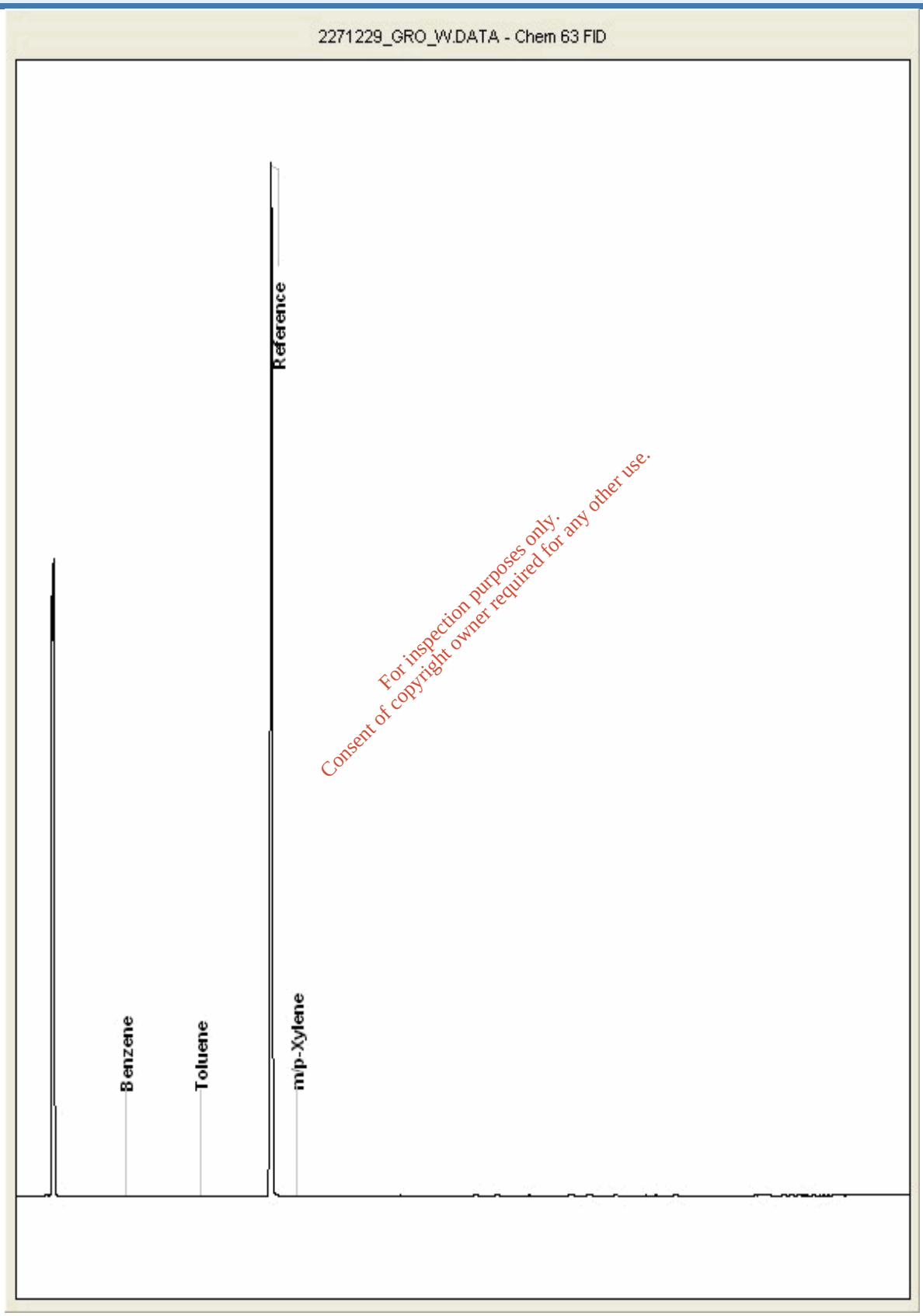
Validated

ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	GRO by GC-FID (W)	**Sample No**	2271229
		Sample ID	J10
		Depth	1.00 - 1.30



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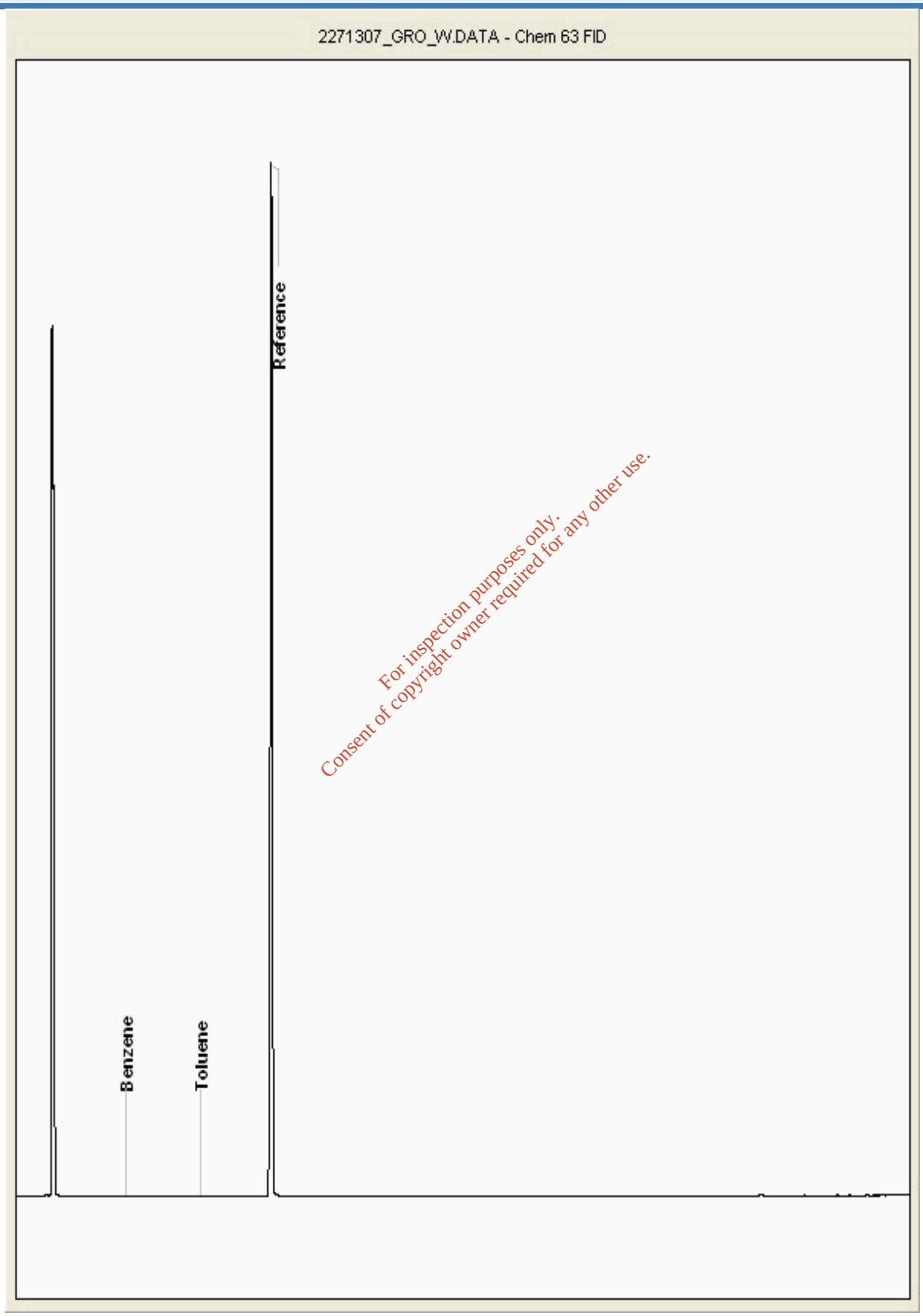
SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	GRO by GC-FID (W)	**Sample No**	2271307
		Sample ID	K1
		Depth	3.00 - 4.00



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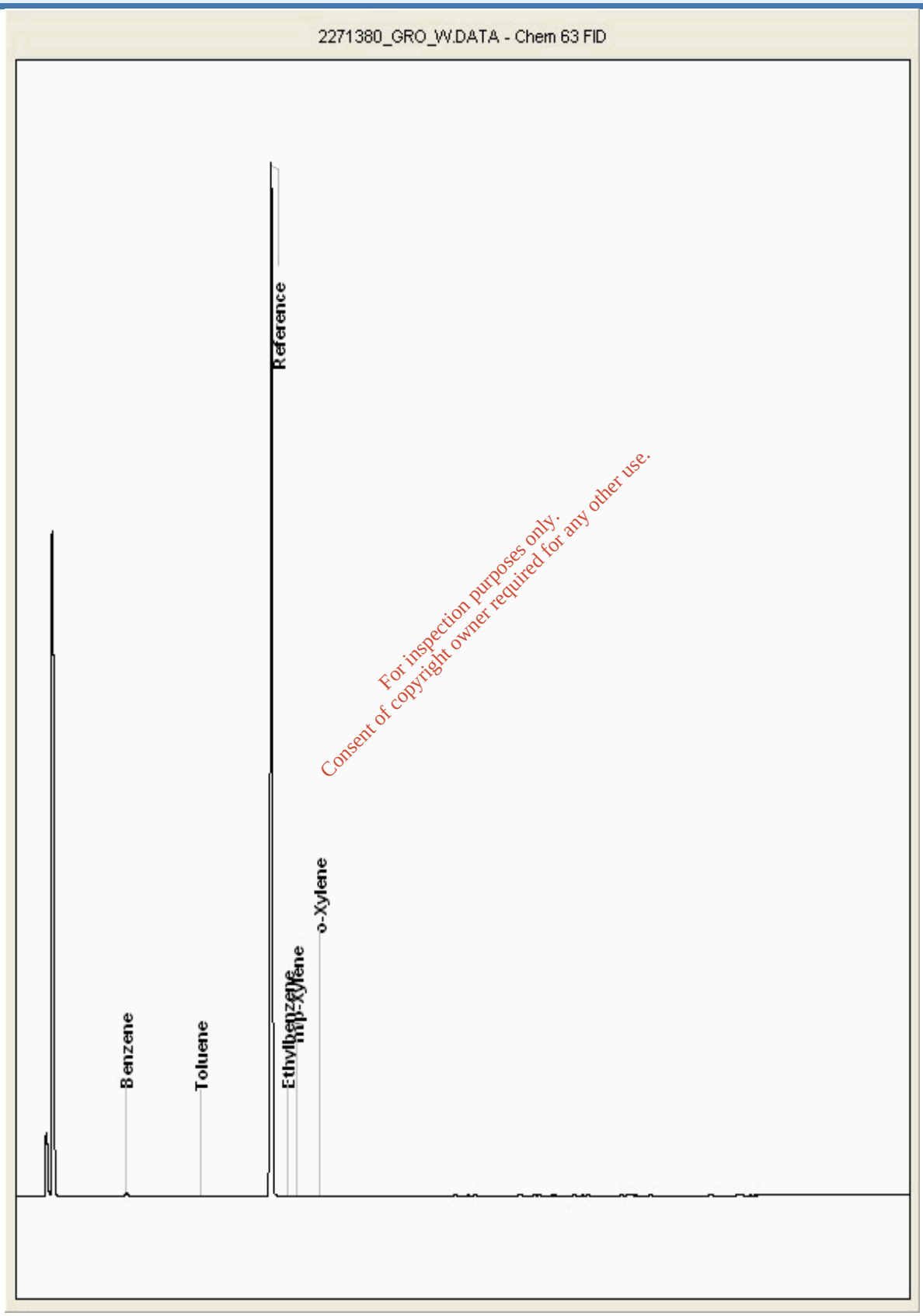
SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	GRO by GC-FID (W)	**Sample No**	2271380
		Sample ID	H12
		Depth	1.50 - 4.00



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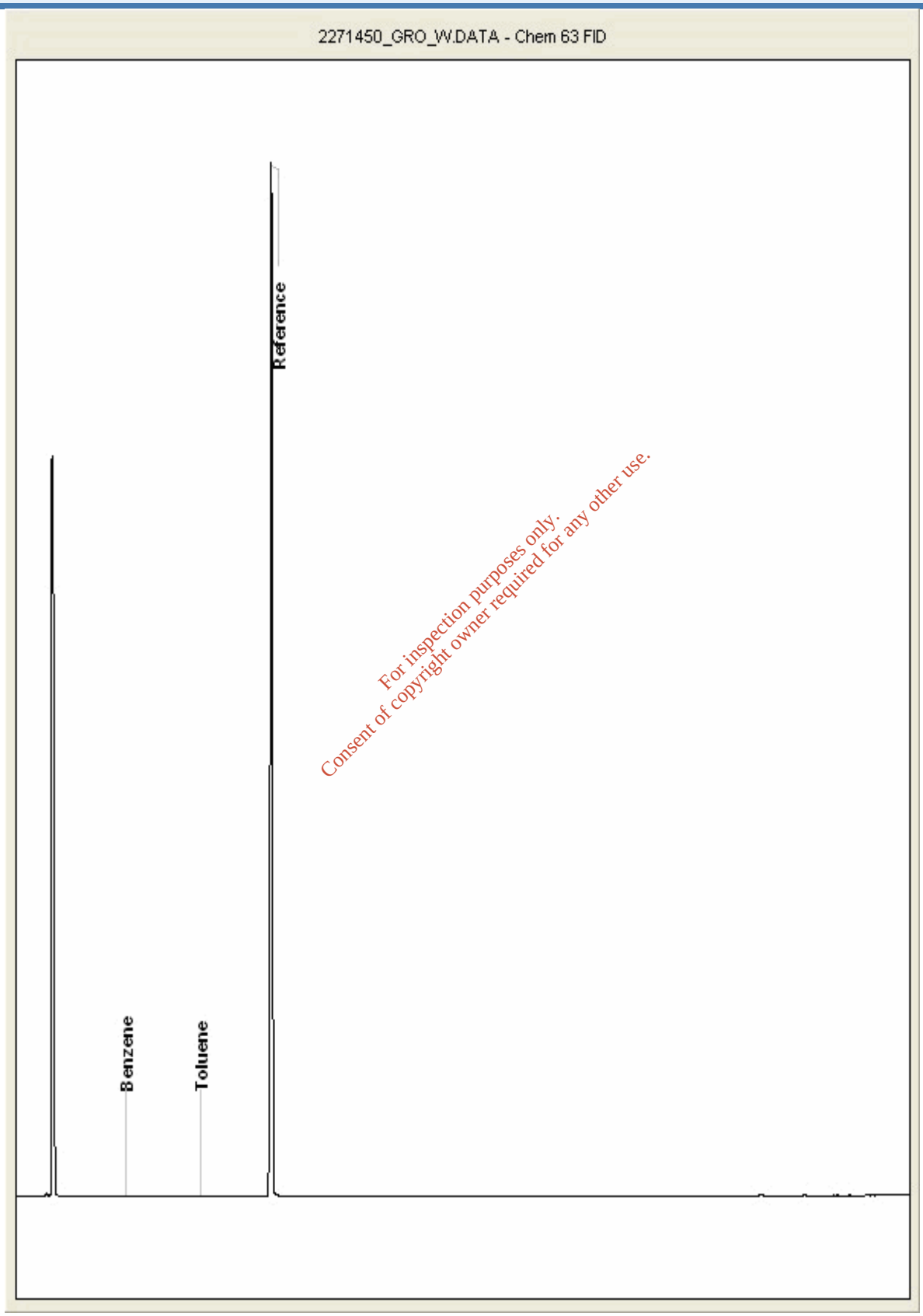
SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	GRO by GC-FID (W)	**Sample No**	2271450
		Sample ID	M3
		Depth	3.50 - 5.50



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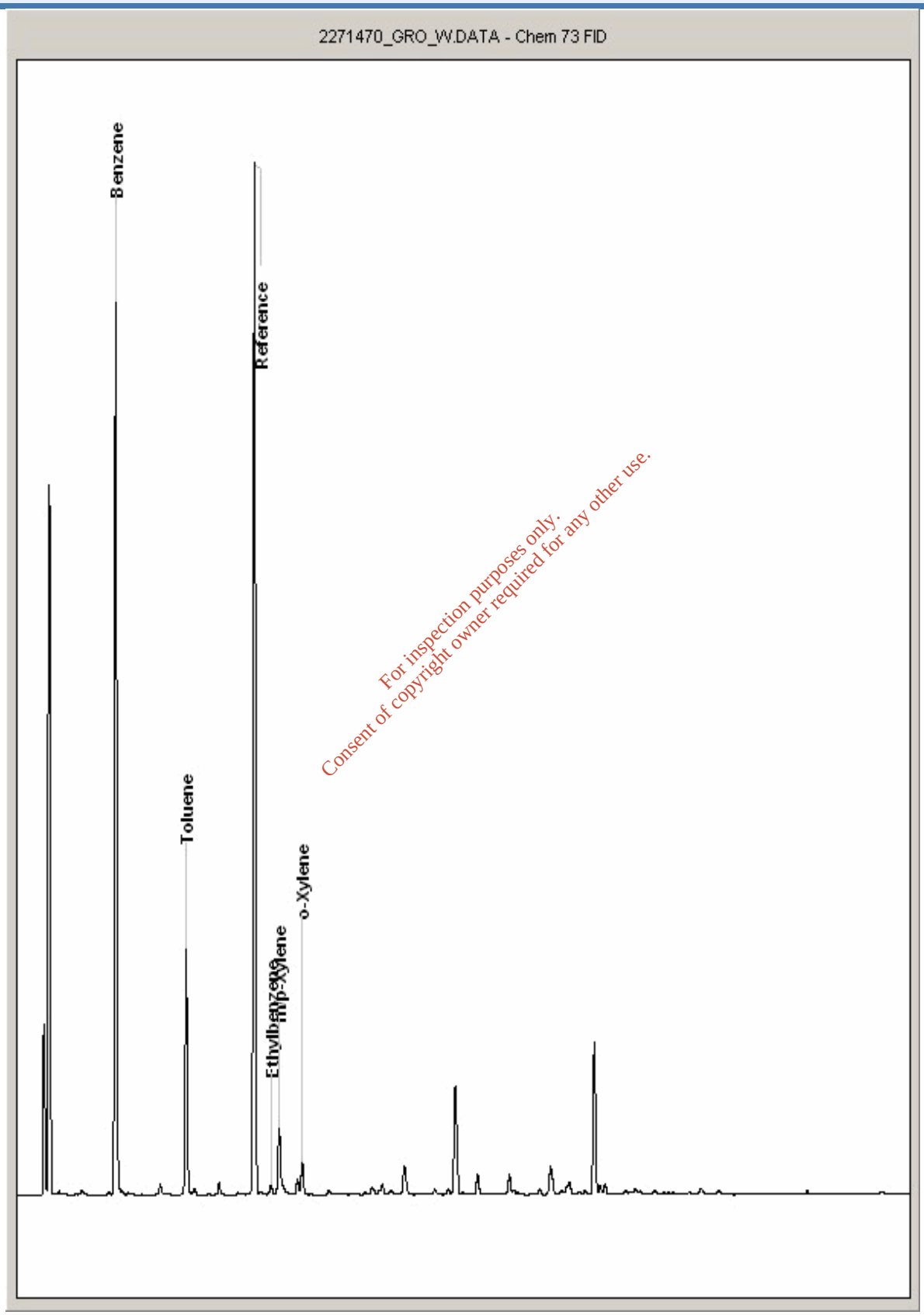
SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	GRO by GC-FID (W)	**Sample No**	2271470
		Sample ID	E8
		Depth	2.00 - 5.00



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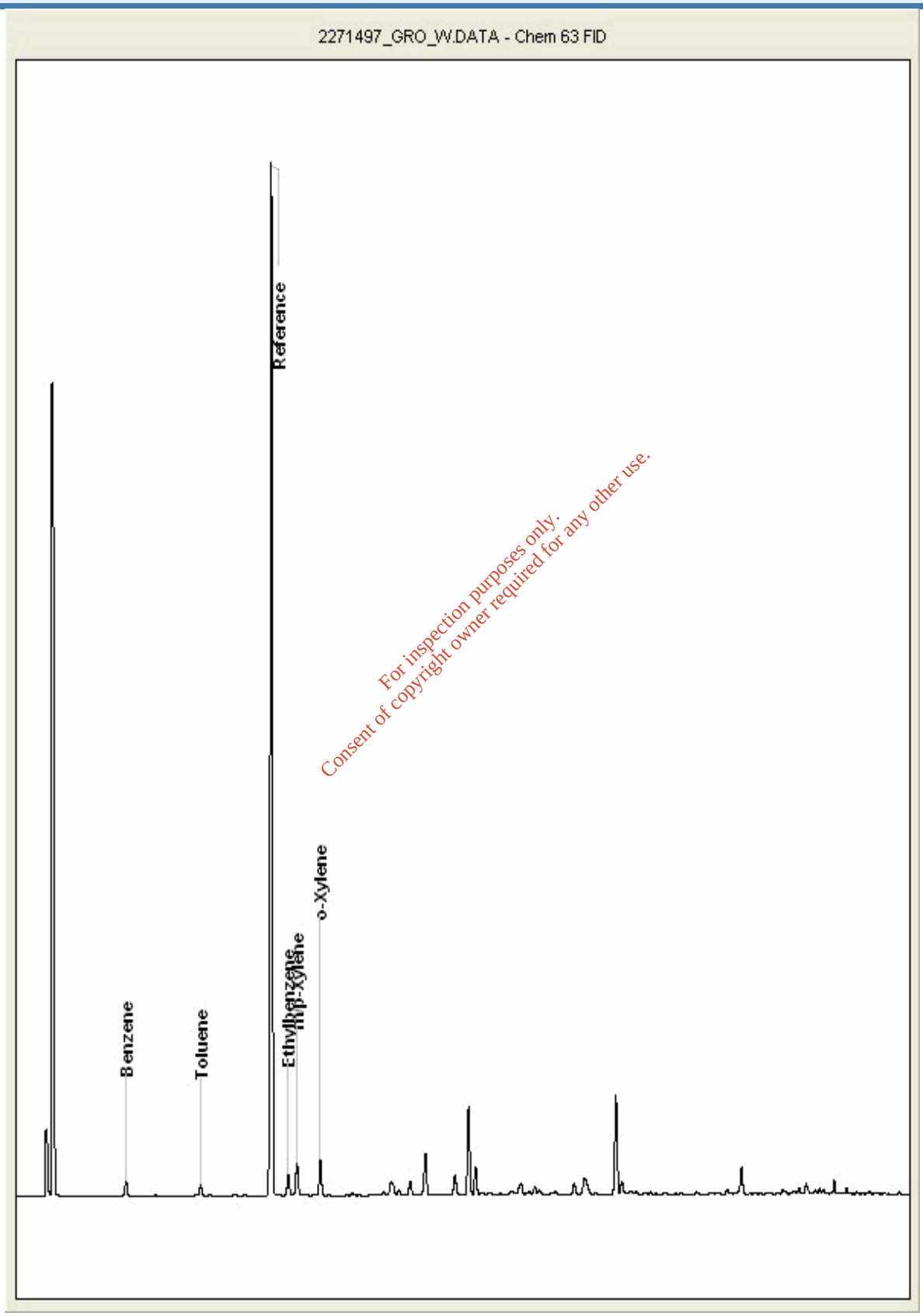
SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	GRO by GC-FID (W)	**Sample No**	2271497
		Sample ID	C11
		Depth	1.50 - 2.50



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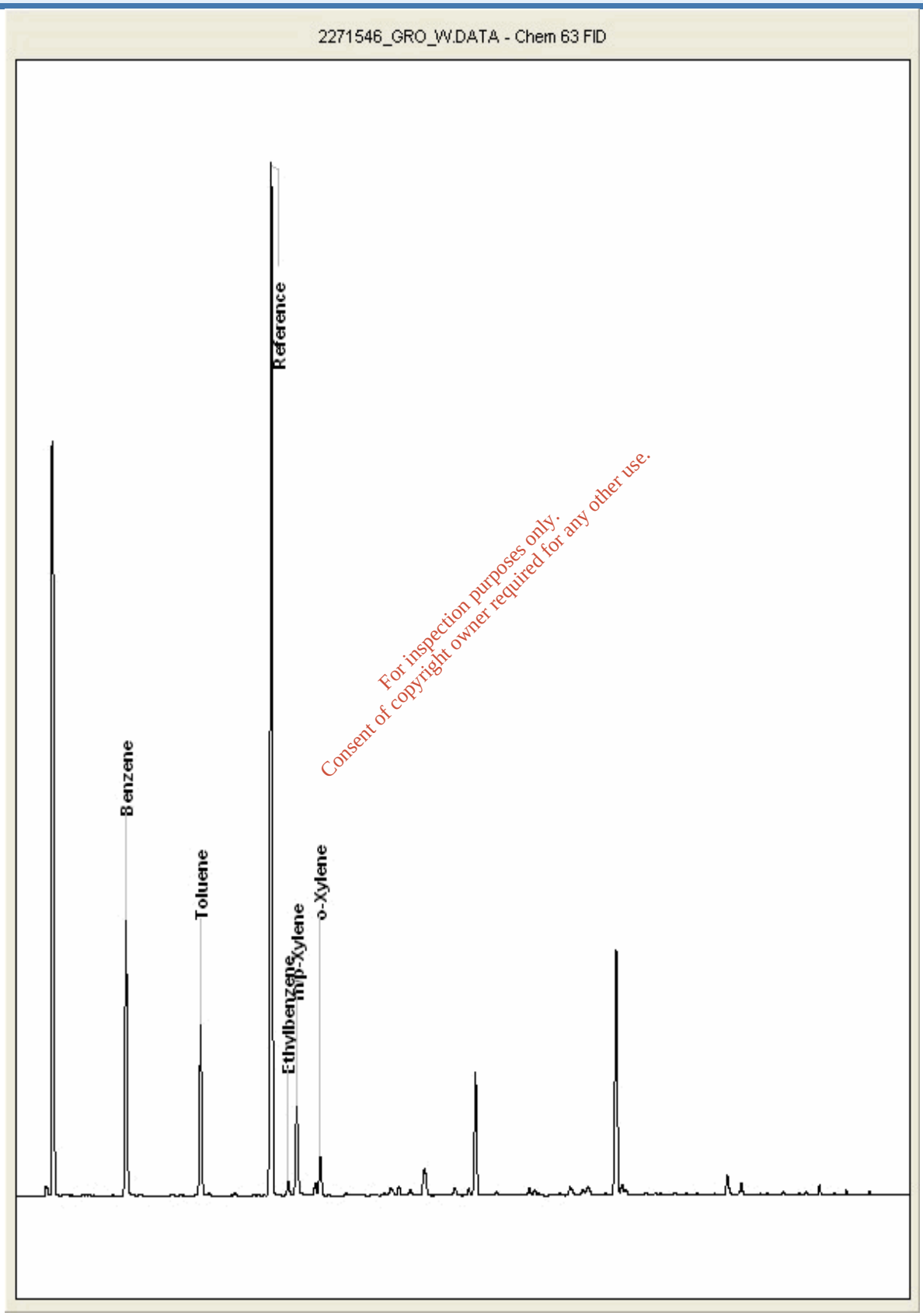
SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	GRO by GC-FID (W)	**Sample No**	2271546
		Sample ID	G8
		Depth	1.00 - 2.00



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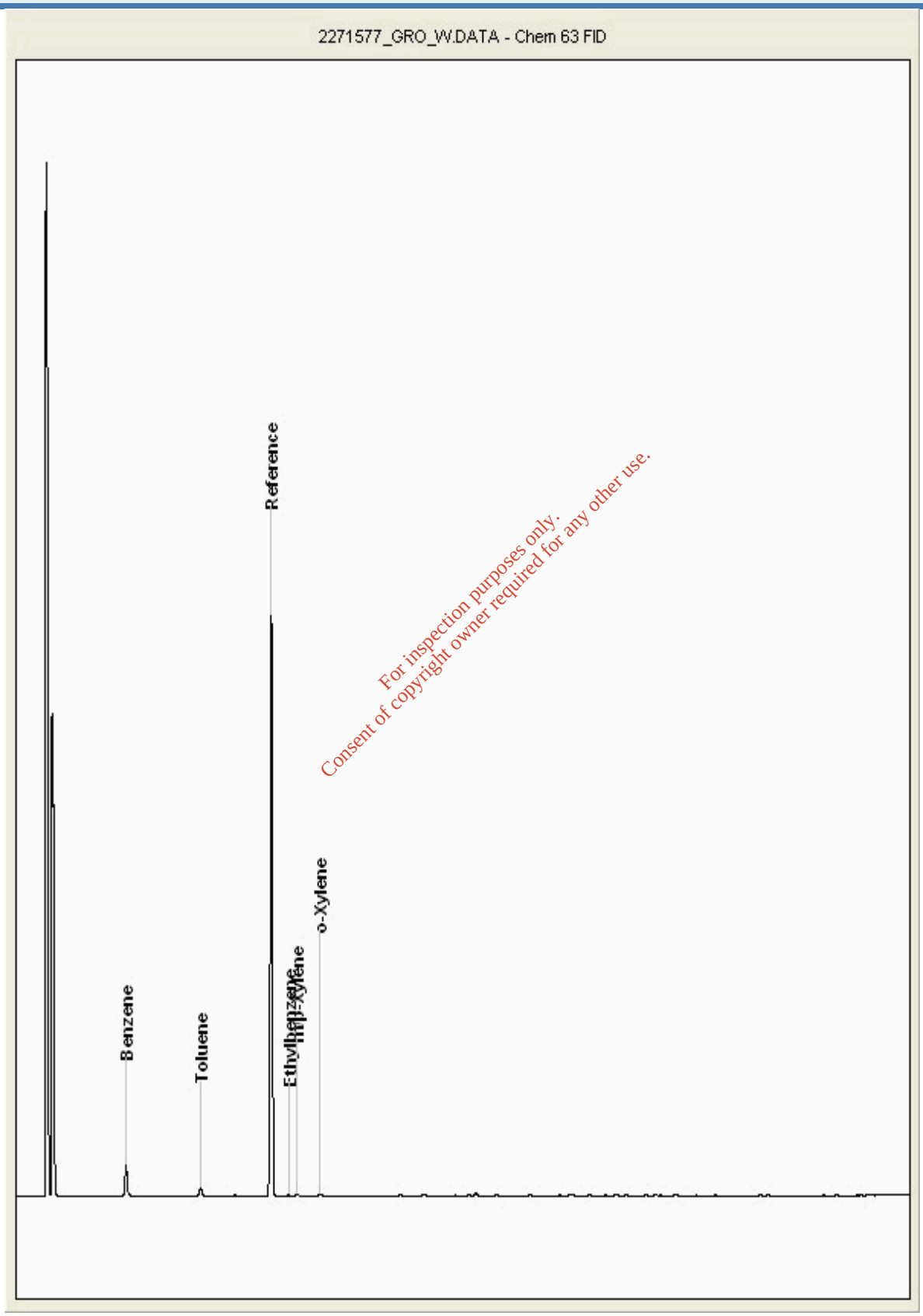
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	GRO by GC-FID (W)	**Sample No**	2271577
		Sample ID	F11
		Depth	2.00 - 4.00



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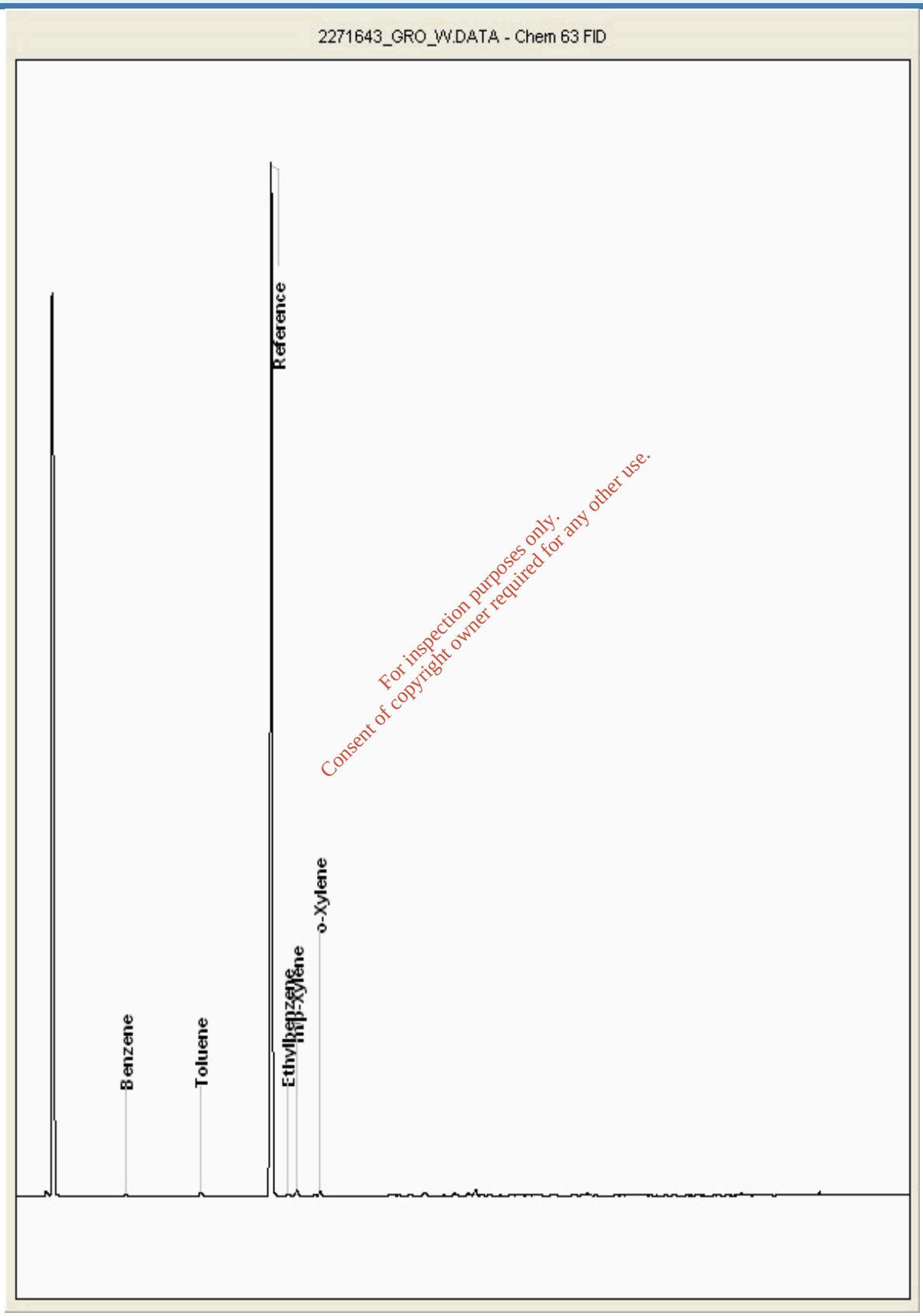
SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	GRO by GC-FID (W)	**Sample No**	2271643
		Sample ID	A11
		Depth	1.50 - 2.50



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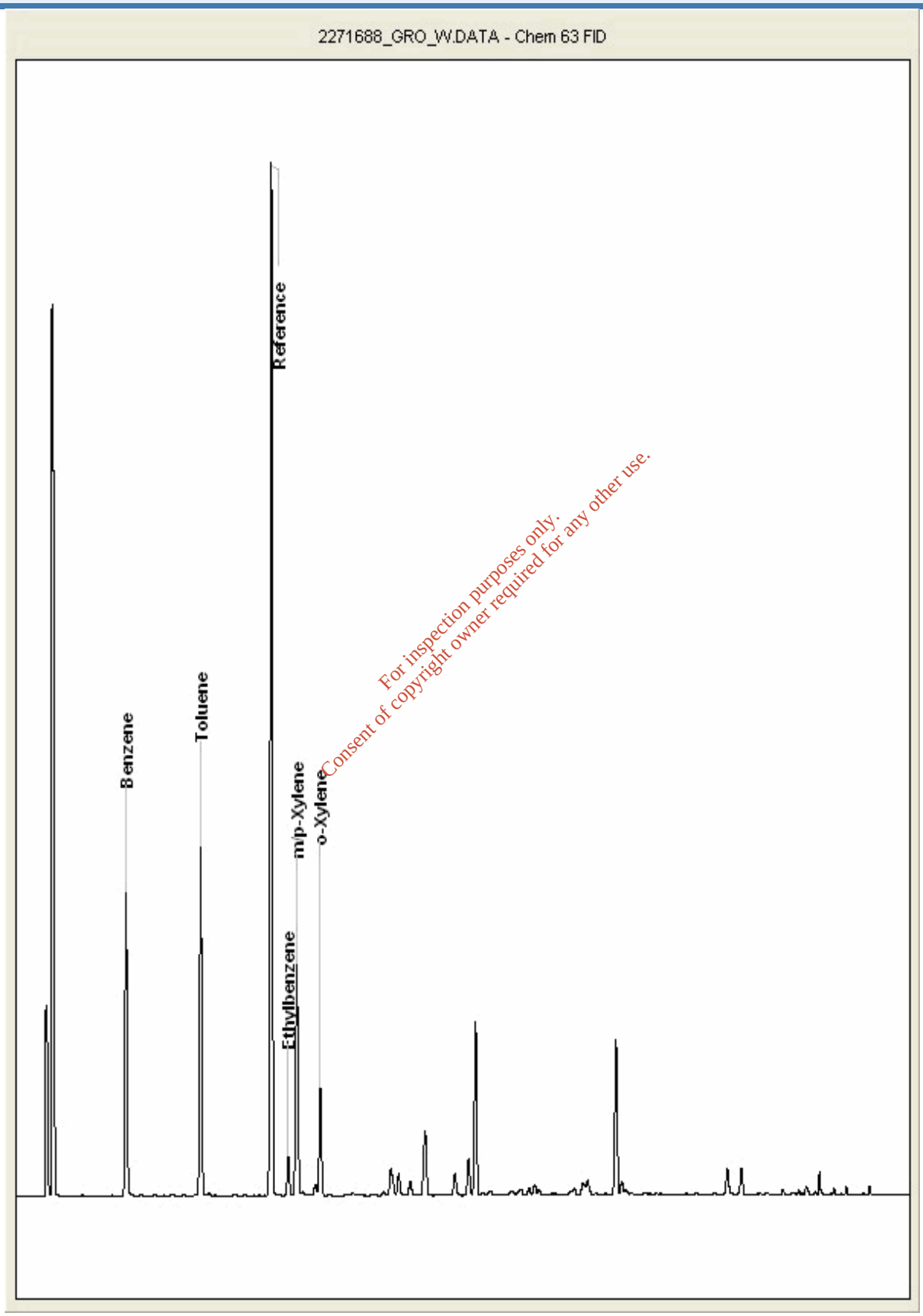
SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	GRO by GC-FID (W)	**Sample No**	2271688
		Sample ID	G4
		Depth	3.00 - 3.50



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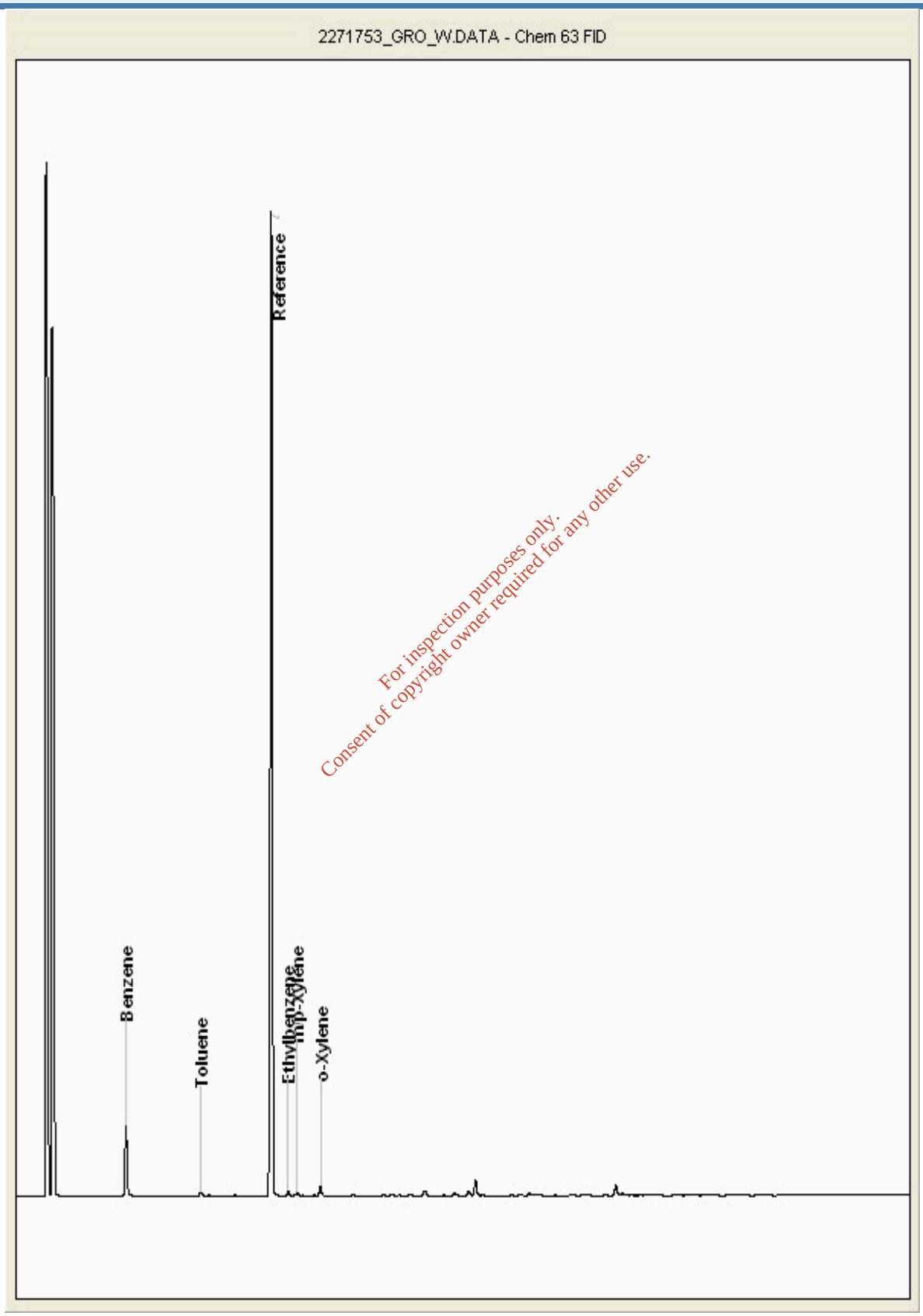
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	GRO by GC-FID (W)	**Sample No**	2271753
		Sample ID	G3
		Depth	4.00 - 5.00



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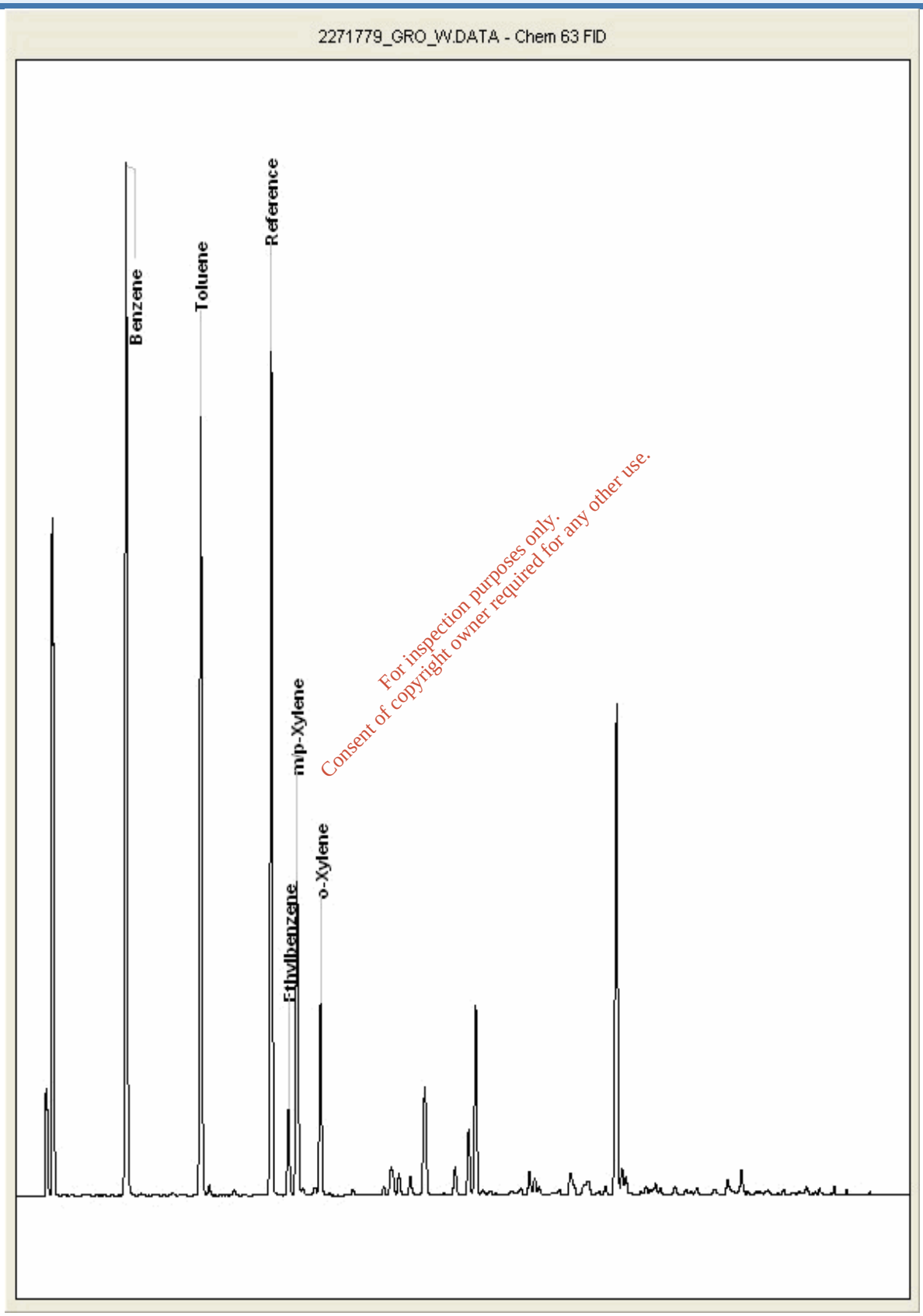
ALcontrol Laboratories Analytical Services

SDG:	101021-66	**Customer:**	Mouchel
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	GRO by GC-FID (W)	**Sample No**	2271779
		Sample ID	G2
		Depth	4.00 - 7.00



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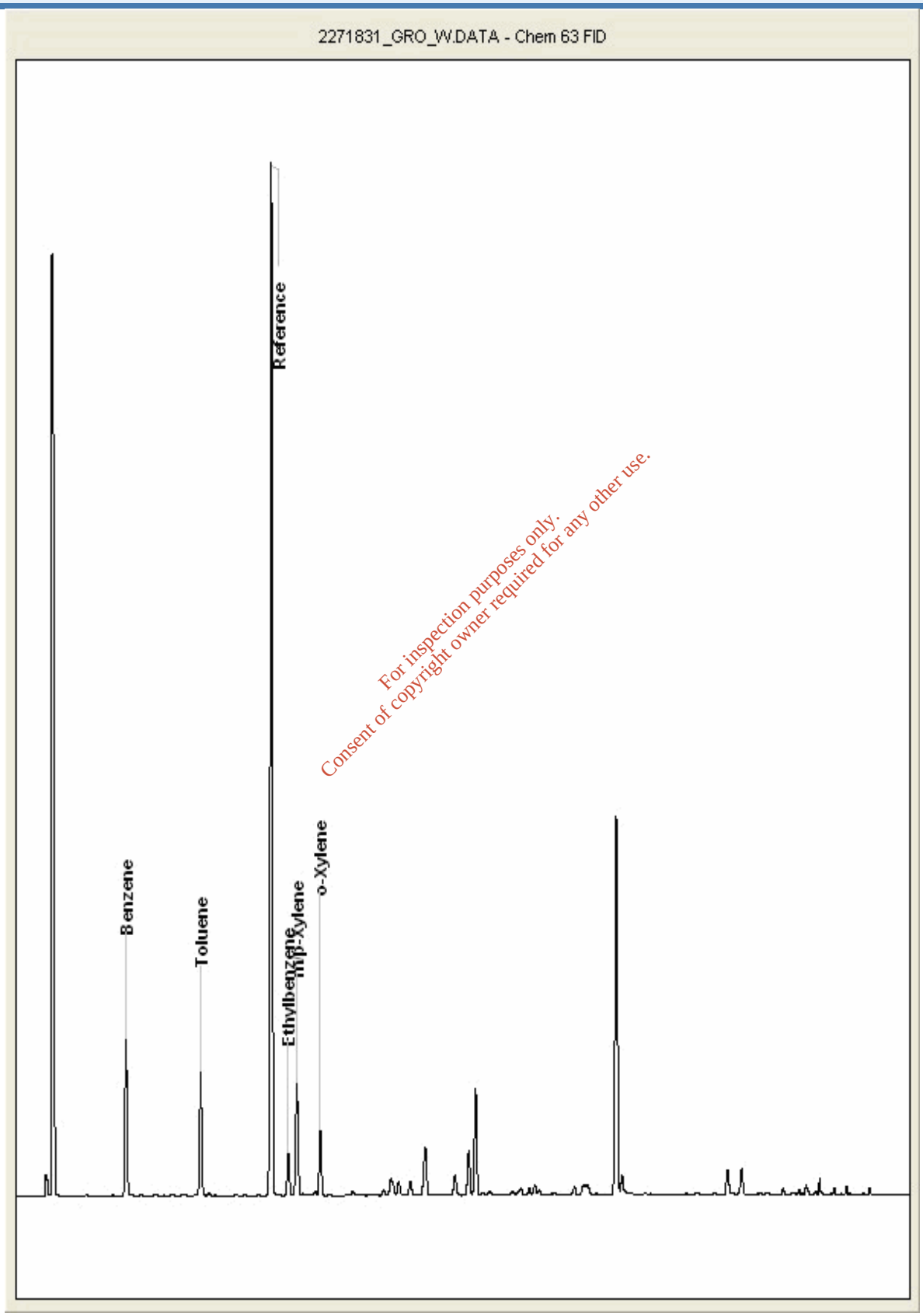
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	GRO by GC-FID (W)	**Sample No**	2271831
		Sample ID	D1
		Depth	3.00 - 4.00



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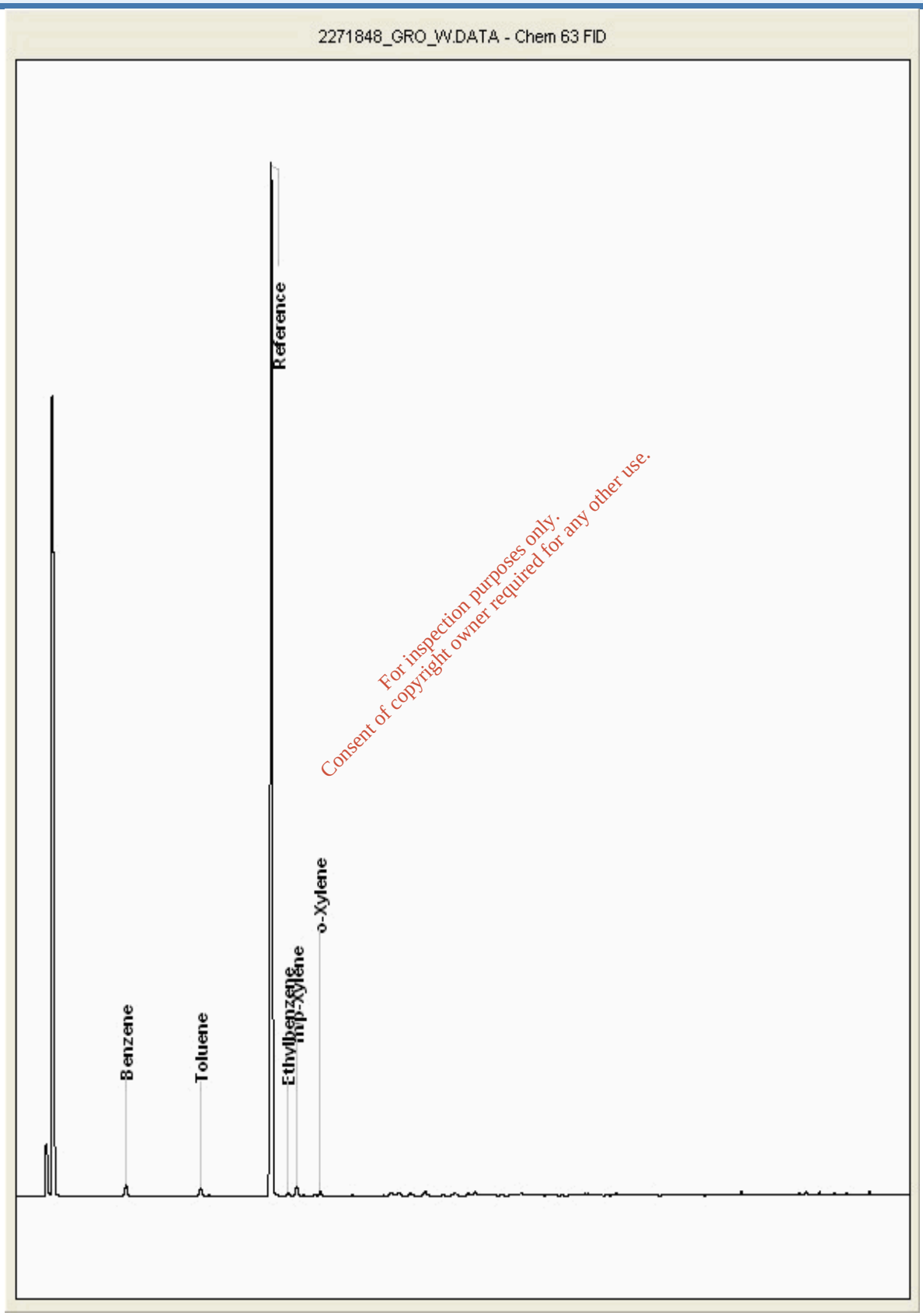
Job:	D_MOUCHEL_ELE-101	**Attention:**	
Client Ref.:	21.10.10	**Order No.:**	4500056413
Location:	Limerick Gasworks	**Report No:**	101046

Analysis:	GRO by GC-FID (W)	**Sample No**	2271848
		Sample ID	G5
		Depth	3.00 - 6.00



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Notification of NDPs (No determination possible)

SDG Number	101021-66	**Location**	Limerick Gasworks
Client	D_MOUCHEL_ELE	**Order No.**	4500056413
Client Reference	21.10.10	**Report No.**	61738-1
Attention	David Megson	**Date Received**	21/10/2010 14:11:26

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
2271579	F11 WW5	2.00 - 4.00	Sulphide	Sample too coloured

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APPENDIX

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APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH_4 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.
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 the major 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.

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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)	GS 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 INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC FID

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 (C6-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

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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).

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.

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

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ANALYSIS OF GROUNDWATER - Limerick Gasworks, 2003 data.

Screening Values - Drinking Water Standards

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

Concentration exceeds screening value

				Ground type																																	
				Borehole	BH31	BH31	BH31	BH32	BH32	BH32	BH33	BH33	BH33	BH35	BH35	BH35	BH35A	BH35A	BH36	BH36	BH36	BH36A	BH36A	BH36A	BH37	BH37	BH37A	BH37A	BH38	BH38	BH38	BH38A	BH38A	BH38A	BH38A	BH39	BH39	BH40	BH40
				Depth (mbgl)	2.52	2.61	2.65	1.20	1.27	2.24	6.80	1.63	0.85	2.97	3.14	3.21	3.159	2.205	1.84	1.979	1.865	2.46	2.284	2.035	2.2	2.36	2.197	2.351	4.62	2.513	2.12	9.73	3.099	2.416	2.416	1.984	2.033	2.685	2.752
Determinand	**Units**	**Screening Value (ug/l)**	**Source of screening value**		20/08/2003	01/09/2003	16/09/2003	20/08/2003	01/09/2003	16/09/2003	20/08/2003	01/09/2003	16/09/2003	20/08/2003	01/09/2003	16/03/2009	01/09/2003	16/09/2003	20/08/2003	01/09/2003	16/09/2003	20/08/2003	01/09/2003	16/09/2003	01/09/2003	16/09/2003	01/09/2003	16/09/2003	20/08/2003	01/09/2003	16/09/2003	20/08/2003	01/09/2003	16/09/2003	16/09/2003	01/09/2003	16/09/2003	01/09/2003	16/09/2003
Inorganics																																					
Arsenic	ug/l	10	SI 278/2007		4	4	4	11	8	10	9	7	11	5	3	5	3	3	8	9	3	17	8	13	10	3	3	12	7	93	69	32	20	0	26	10	6	4	3
Cadmium	ug/l	5	SI 278/2007		0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0	0.4	0.4	0.4	0.4	0.4
Chromium	ug/l	50	SI 278/2007		2	1	3	2	1	1	5	3	6	2	2	6	1	4	6	1	6	2	1	4	4	4	5	6	7	57	48	42	7	0	16	3	6	11	9
Copper	ug/l	2000	SI 278/2007		5	4	3	2	1	1	4	2	1	5	1	1	1	1	5	1	1	4	1	1	1	5	1	1	5	18	19	51	4	0	4	1	2	33	19
Lead	ug/l	25	SI 278/2007		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	4	1	1	1	2
Nickel	ug/l	20	SI 278/2007		7	9	4	4	11	1	10	14	14	7	3	2	5	8	7	8	4	7	5	6	4	1	2	4	6	31	31	22	2	0	8	5	4	25	23
Selenium	ug/l	10	SI 278/2007		1	2	1	2	1	1	3	1	1	4	1	3	10	2	10	1	1	3	1	1	17	3	7	19	10	21	25	35	13	0	16	1	1	5	3
Zinc (dissolved)	ug/l	5000	WHO Drinking water Quality Guideline Value		25	46	26	14	63	17	12	37	34	28	7	20	15	18	18	8	21	19	11	20	28	17	19	14	16	14	28	37	10	0	27	6	24	5	16
Mercury	ug/l	1	SI 278/2007		0.05	0.05	0.06	0.05	0.05	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.07	0.05	0.05	0.05	0.05	0.05	0.14	0	0.05	0.13	0.05	0.05	0.05
total Ammonium	ug/l	300	SI 278/2007		1200	900	1200	200	800	900	25100	47000	45900	18200	21000	16200	15900	18200	2800	4900	6100	8500	9500	10200	26400	85300	29700	24900	48800	568600	514200	455200	64900	0	152300	29000	13000	88000	79800
Nitrate	ug/l	50000	SI 278/2007		1000	300	300	700	300	400	500	220	300	700	780	600	230	500	800	250	600	600	400	300	400	300	220	300	300	2750	500	800	180	0	400	400	500	8400	1900
Sulphate (soluble)	ug/l	250000	SI 278/2007		242000	252000	246000	50000	53000	42000	190000	182000	192000	580000	575000	573000	539000	657000	292000	271000	261000	400000	410000	380000	122000	198000	149000	149000	463000	790	997000	967000	544000	0	716000	1197000	98000	56000	453000
Phenols	ug/l	0.5	SI 81/1988		10	10	10	10	10	9350	40	10410	10	10	3550	10	10	10	10	10	10	10	10	10	540	48760	20850	6000	1360	13604000	139600	142090	43110	0	54900	13930	2380	10	140
cresols		-			10	10	10	10	10	13010	60	15880	10	10	9780	10	10	10	10	10	10	10	10	10	710	37660	14060	11560	1920	128170	200170	139270	54200	0	98500	35070	4630	10	120
Cyanide	ug/l	50	SI 278/2007		500	900	500	500	500	500	500	500	500	700	900	700	800	800	500	500	500	500	500	500	500	500	500	500	1300	2300	2200	2200	1800	0	2100	1500	900	500	500
pH Value	ug/l	6.5	SI 278/2007		7.83	7.94	7.12	8.23	8.5	7.3	8.08	8.19	7.02	7.99	8.01	7.21	8	7.18	8.27	7.91	7.29	8.1	8.43	7.13	8.27	7.19	8.19	7.39	7.54	8.6	9.59	8.01	7.66		9.12	7.99	6.9	8.33	11.75
pH Value	ug/l	9.5	SI 278/2007		7.83	7.94	7.12	8.23	8.5	7.3	8.08	8.19	7.02	7.99	8.01	7.21	8	7.18	8.27	7.91	7.29	8.1	8.43	7.13	8.27	7.19	8.19	7.39	7.54	8.6	9.59	8.01	7.66		9.12	7.99	6.9	8.33	11.75
BTEX																																						
Benzene	ug/l	1	SI 278/2007		1	1	10	1	1	10664	8244	17545	7912	17	917	768	595	480	1	1	1	1	1	10	1579	2645	2425	5964	10853	14408	18253	20500	23098	1665286	969958	1608	1205	2	10
Toluene	ug/l	700	WHO Drinking Water Quality Guideline Value		1	1	10	1	1	6110	3570	3220	3145	6	167	92	48	37	1	1	1	1	1	10	524	351	1574	2744	5300	1641	5281	5412	4763	162474	1007852	1500	347	2	10
Ethyl benzene	ug/l	300	WHO Drinking Water Quality Guideline Value		1	1	10	1	1	408	255	5047	636	36	222	125	63	35	1	1	1	1	1	10	35	451	141	2744	324	2955	6474	7016	8725	1393232	175504	383	473	2	10
Xylene	ug/l	500	WHO Drinking Water Quality Guideline Value		1	1	10	5	15	3903	2861	2017	1917	277	771	302	171	185	1	1	1	1	1	18	132	126	1414	2171	3525	831	3393	3261	3501	1231561	1590720	2534	894	3189	10
Petroleum Hydrocarbons																																						
GRO (C4-C12)	ug/l	-																																				
MTBE	ug/l	-					10			10		10	10			10		10	10		10			10		10		10		10	10	1125	27	46859	87		10		10
Aliphatics C5-C6	ug/l	-					10.00			10.00			10.00			10			10		10			10		10		10			10	10			92		10		10
Aliphatics C6-C8	ug/l	-					10.00			10.00			46			15	16		10		10			14		16		211			27	135			395		113		10
Aliphatics C8-C10	ug/l	-			50.00	50.00	10.00	50.00	50.00	10.00	50	50	23	50	50	44	50	10	50	10	50	50	22	50	49	50	214	50	50	240	558				1192	50	164	50	10
Aliphatics C10-C12	ug/l	-			50.00	50.00	10.00	50.00	50.00	10.00	50.00	50.00	248	50.00	50.00	20	56		10		10	50	50	35	50	241	50	1266	50	50	3033	4144				5991	50	614	50	10
Aliphatics C12-C16	ug/l	-					10.00			67			10.00			10			671		42			10		10		10			10	198				84		751		10
Aliphatics C16-C21	ug/l	-			50.00	50.00	10.00	50.00	50.00	35	50.00	50.00	10.00	50.00	50.00	10	10		634		42	50	50	10	50	10	50	10	50	50	10	29				55	50	1216	50	10
Aliphatics C21-C35	ug/l	-			50.00	50.00	10.00	50.00	50.00	16	50.00	50.00	10.00	55.00	68.00	10	10		219		10	50	50	10	50	10	50	10	50	50	10	10				30	50	470	50	10
Aromatics C6-C7	ug/l	-					10.00			10			2040			768	283		10		10			10		2645		5964			18253	20500			18618		1205		10
Aromatics C7-C8	ug/l	-					10.00			10			636			89	25		10		10			10		451		2463			6474	7016			11612		473		10
Aromatics 8-10	ug/l	-			50.00	50.00	10.00	50.00	50.00	10	50.00	50.00	303	50	50	411	184		10	50	10	50	50	50	50	200	50	1784	50	50	3925	5061			12882	50	1330	50	10
Aromatics 10-12	ug/l	-			50.00	50.00	10.00	351.00	50.00	10	159.00	50.00	371	281	191	307	85		10	50	10	50	50	53	101	361	50	1898	340	711	4549	6215			8987	50	922	50	10
Aromatics 12-16	ug/l	-					14.00			220			102			233	72		401		102			10		65		99			32	1322			902		12		1022
Aromatics 16-21	ug/l	-			50.00	50.00	10.00	207.00	50.00	58	851.00	72.00	15	244	652	102	22		51	50	10	50	50	10	300	20	74	10	885	131	10	324			185	152	10	50	412
Aromatics 21-35	ug/l	-			50.00	50.00	10.00	69.00	50.00	19	319.00	50.00	10	86	752	31	10		10	50	10	50	50	10	140	10	87	10	1044	50	10	130			40	97	10	50	82
TPH (Aliphatics and Aromatics C5-C35)	ug/l	10	SI 81/1988		716	566		5067	767		22345	45936		7085	16350						1489		2561	2703		18921		8137		205681	103689					9974		392	
PAHs																																						
Acenaphthene	ug/l	-			1.547	0.536	3.704	35.828	17.871	33.303	12.405	10.854	13.922	12.243	4.055	32.639	2.274	15.105	63.819	10.122	79.758	23.14	9.183	4.201	14.593	3.682	4.062	17.551	179.215	4.925	4.491	18.603	4.025		30.335	14.06	51.542	1.769	1.921
Acenaphthylene	ug/l	-																																				
Anthracene	ug/l	-			0.038	0.017	0.12	13.038	4.192	15.077	16.014	7.894	10.372	6.763	7.95	29.541	1.519	8.041	7.328	0.419	4.134	0.761	0.116	0.255	22.771	3.535	8.194	14.72	573.582	4.141	3.37	25.429	10.051		48.79	13.938	39.326	0.29	0.489
Benzo(a)anthracene	ug/l	-			0.01	0.027	0.032	1.951	0.474	5.025	7.608	0.637	7.102	3.923	5.096	8.232	0.48	2.443	1.458	0.237	0.901	0.12	0.047	0.314	10.424	4.081	5.388	1.773	514.131	2.203	0.997	16.973	5.936		23.077	6.932	32.024	0.067	0.082
Benzo(a)pyrene	ug/l	0.01	SI 278/2007		0.01	0.01	0.01	1.041	0.214	2.729	4.407	0.206	5.083	2.851	3.232	5.154	0.287	1.483	1.026	0.141	0.496	0.054	0.01	0.111	5.997	3.312	3.254	0.87	382.959	1.42	0.513	11.609	3.688		15.033	4.431	20.061	0.019	0.017
Benzo(b)fluoranthene	ug/l	-			0.01	0.014	0.01	1.748	0.072	2.449	5.06	0.067	5.404	5.47	5.185	4.054	0.147	1.556	0.831	0.169	0.323	0.063	0.01	0.061	7.518	3.482	6.433	0.613	415.653	2.169	0.64	21.634	1.779		13.149	6.236	23.928	0.025	0.024
Benzo(ghi)perylene	ug/l	-			0.01	0.01	0.01	0.524	0.106	1.401	2.038	0.125	2.915	1.792	1.921	2.822	0.189	0.846	0.544	0.078	0.21	0.047	0.01	0.058	3.215	1.95	1.83	0.405	195.363	0.893	0.296	6.477	2.24		7.786	2.682	10.857	0.012	0.01
Benzo(k)fluoranthene	ug/l	-			0.01	0.011	0.01	1.117	0.253	1.925	4.84	0.282	4.588	3.179	3.175	3.538	0.332	1.41	0.765	0.133	0.329	0.086	0.015	0.138	6.959	2.573	3.507	0.642	355.949	1.561	0.411	11.278	4.007		9.443	5.071	19.069	0.025	0.019
Chrysene	ug/l	-			0.01	0.013	0.013	1.254	0.321	3.813	4.777	0.38	5.636	2.657	3.629	6.06	0.335	1.808	1.035	0.168	0.683	0.09	0.023	0.205	6.873	3.486	3.905	1.228	358.777	1.531	0.564	10.656	4.189		17.982	4.96	23.547	0.048	0.059
Dibenzo(ah)anthracene	ug/l	-			0.01	0.01	0.01	0.234	0.044	0.378	1.146	0.097	0.708	0.785	0.723	0.691	0.091	0.226	0.168	0.023	0.097	0.015	0.01	0.031	1.343	0.58	0.682	0.098	107.265	0.304	0.198	3.054	0.753		1.846	1.001	3.098	0.01	0.01
Fluoranthene	ug/l	4	WHO Drinking Water Quality Guideline Value		0.069	0.045	0.155	9.697	4.049	23.354	17.992	4.335	21.925	10.229	15.128	34.134	2.139	10.521	5.075	0.821	3.215	0.646	0.2	1.698	29.049	9.937	16.018	10.684	780.186	6.17	3.64	43.489	16.737		78.701	21.579	108.676	0.446	0.976
Fluorene	ug/l	-			0.606	0.147	1.845	52.158	22.153	39.498	47.83	33.702	22.015	21.714	10.52	114.33	3.84	25.097	30.366	1.751	24.343	6.86	1.102	0.677	52.403	6.268	12.455	58.464	659.971	8.284	7.409	48.648	14.741		99.125	31.075	98.435	1.528	1.724
Indeno(123cd)pyrene	ug/l	-			0.01	0.01	0.01	0.514	0.107	1.285	2.219	0.124	2.541	1.733	1.793	2.495	0.162	0.686	0.395	0.057	0.137	0.041	0.01	0.043	3.054	1.55	1.641	0.34	203.381	0.687	0.234	6.571	1.901		6.59	2.499	10.751	0.01	0.01
Naphthalene	ug/l	-			0.281	0.463	0.65	343.692	1.147	2.044	85.537	284.058	272.85	87.859	85.752	6749.088	8.813	26.872	3.889	0.797	1.732	1.2	0.292	0.686	381.225	74.108	4.2	3283.746	1304.606	124.298	445.696	462.302	170.803		8319.944	40.949	576.602	11.512	4.843
Phenanthrene	ug/l	-			0.027	0.03	0.041	40.824	6.147	38.047	39.03	27.364	35.272	20.385	23.212	101.499	5.156	17.269	22.34	0.416	3.719	1.993	0.05	0.259	69.609	14.71	18.979	50.757	1003.547	16.164	9.612	79.368	28.776		144.792	44.719	133.527	1.613	2.757
Pyrene	ug/l	-			0.045	0.035	0.153	5.183	2.066	13.649	10.992	2.577	14.039	6.314	9.722	22.571	1.254	6.639	6.558	0.86	4.429	0.443	0.141	1.333	19.304	8.31	9.685	7.229	606.318	4.51	2.665	28.97	11.013		54.105	13.831	75.198	0.257	0.583
Sum of Benzo (b + k) fluoranthene, benzo(ghi)perylene and indeno(123-cd)pyrene	ug/l	0.1	SI 278/2007		0.04	0.045	0.04	3.903	0.538	7.06	14.157	0.598	15.448	12.174	12.074	12.909	0.83	4.498	2.535	0.437	0.999	0.237	0.045	0.3	20.746	9.555	13.411	2	1170.346	5.31	1.581	45.96	9.927		36.968	16.488	64.605	0.072	0.063

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metals * - total - freshwater, dissolved - marine

ANALYSIS OF GROUNDWATER - Limerick Gasworks, 2003 data.

Screening Values - Drinking Water Standards

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

Concentration exceeds screening value

			Ground type														
			Borehole	BH41C	BH41C	BH42	BH42	BH43	BH43	BH7	BH7	BH7	TT101	TT54	TT55	TT58	TT59
			Depth (mbgl)	2.797	2.89	0.779	0.95	3.436	3.522	1.15	1.121	1.121	1	1	1	1	1
Determinand	Units	Screening Value (ug/l)	Source of screening value	01/09/2003	16/09/2003	01/09/2003	16/09/2003	01/09/2003	16/09/2003	01/09/2003	16/09/2003	16/09/2003	30/07/2003	30/07/2003	15/08/2003	31/07/2003	30/07/2003
Inorganics																	
Arsenic	ug/l	10	SI 278/2007	18	13	67	127	2	4	20		30	6	13	11	11	7
Cadmium	ug/l	5	SI 278/2007	0.4	0.4	0.4	0.4	0.4	0.4	0.4		0.4	0.4	0.4	0.4	0.4	0.4
Chromium	ug/l	50	SI 278/2007	1	5	16	25	1	2	9		7	10	2	3	3	7
Copper	ug/l	2000	SI 278/2007	1	1	8	6	3	3	3		8	2	1	2	2	1
Lead	ug/l	25	SI 278/2007	1	1	1	1	1	1	1		1	9	1	1	47	59
Nickel	ug/l	20	SI 278/2007	3	3	81	68	7	4	19		19	12	5	7	6	14
Selenium	ug/l	10	SI 278/2007	3	1	46	55	1	1	5		6	-888000	2	4	1	1
Zinc (dissolved)	ug/l	5000	WHO Drinking water Quality Guideline Value	13	15	12	67	14	40	83		121	50	3	3	5	20
Mercury	ug/l	1	SI 278/2007	0.07	0.05	0.05	0.05	0.05	0.05	0.05		0.05	0.05	0.05	0.05	0.05	0.05
total Ammonium	ug/l	300	SI 278/2007	16200	14100	256000	282800	2100	2900	18000		20500	20400	6300	7500	700	2000
Nitrate	ug/l	50000	SI 278/2007	320	400	5190	400	300	600	980		300	700	900	670	3700	3800
Sulphate (soluble)	ug/l	250000	SI 278/2007	468000	718000	1180	1284000	825000	770000	1444000		1563000	728000	789000	962000	1142000	559000
Phenols	ug/l	0.5	SI 81/1988	440	460	2710	382180	10	1500	680		320	10	10	4790	10	10
cresols		-		1080	1650	3070	522840	10	2010	2660		1200	10	20	17890	10	10
Cyanide	ug/l	50	SI 278/2007	3300	2500	17500	11200	1200	700	21700		15500	500	1300	500	1400	2100
pH Value	ug/l	6.5	SI 278/2007	8.14	7.46	8.98	9.71	8.03	7.36	8.59		9.24	7.82	7.75	7.68	7.98	7.93
pH Value	ug/l	9.5	SI 278/2007	8.14	7.46	8.98	9.71	8.03	7.36	8.59		9.24	7.82	7.75	7.68	7.98	7.93
BTEX																	
Benzene	ug/l	1	SI 278/2007	1434	2102	19407	16221	1	10	10647	2848849	4558	313	1	5628	11	99
Toluene	ug/l	700	WHO Drinking Water Quality Guideline Value	1560	1651	4015	4750	1	10	2875	155584	1262	25	1	8824	3	12
Ethyl benzene	ug/l	300	WHO Drinking Water Quality Guideline Value	731	1994	6051	5618	1	10	4292	1482170	1753	90	1	8984	4	21
Xylene	ug/l	500	WHO Drinking Water Quality Guideline Value	5654	6551	2488	2809	375	10	2939	1173072	1606	283	9	7469	12	95
Petroleum Hydrocarbons																	
GRO (C4-C12)	ug/l	-															
MTBE	ug/l	-			23	45	10		10	10	61701	10			10		10
Aliphatics C5-C6	ug/l	-			12		49		10			10			10		
Aliphatics C6-C8	ug/l	-			354		226		10			13			15		
Aliphatics C8-C10	ug/l	-		50	568	50	511		10	50		60	50	50	726	50	50
Aliphatics C10-C12	ug/l	-		50	3568	50	2676		10	50		740	50	50	4502	50	50
Aliphatics C12-C16	ug/l	-			10		561		10			10			1560		
Aliphatics C16-C21	ug/l	-		50	10	50	77		10	50		10	50	50	4629	107	69
Aliphatics C21-C35	ug/l	-		50	10	50	10		10	50		10	50	50	1066	89	321
Aromatics C6-C7	ug/l	-			2102		16221		10			4558			5628		
Aromatics C7-C8	ug/l	-			1994		5618		10			1753			8984		
Aromatics 8-10	ug/l	-		50	6441	50	3907		10	50		1924	50	50	8617	50	50
Aromatics 10-12	ug/l	-		157	5353	20910	4013		10	50		1110	50	50	6754	50	50
Aromatics 12-16	ug/l	-			50		2548		27			205			11566		
Aromatics 16-21	ug/l	-		192	10	704	480		10	115		55	50	50	3587	180	383
Aromatics 21-35	ug/l	-		50	10	119	61		10	115		18	78	50	1317	92	1070
TPH (Aliphatics and Aromatics C5-C35)	ug/l	10	SI 81/1988	14142		307320				14703			14444	2397		17488	11899
PAHs																	
Acenaphthene	ug/l	-		18.558	15.425	2.636	17.996	7.651	18.542	18.09		19.163	3.96	25.057	474.681	480.11	23.335
Acenaphthylene	ug/l	-															
Anthracene	ug/l	-		5.808	2.89	1.625	7.088	0.22	0.275	41.071		17.855	4.571	1.89	304.11	46.985	15.022
Benzo(a)anthracene	ug/l	-		2.545	0.201	0.491	0.01	0.061	0.04	24.671		6.658	3.204	2.266	140.66	23.485	9.065
Benzo(a)pyrene	ug/l	0.01	SI 278/2007	1.686	0.036	0.248	0.01	0.037	0.01	13.966		3.921	2.149	2.661	91.992	11.469	4.717
Benzo(b)fluoranthene	ug/l	-		3.886	0.027	0.17	0.01	0.014	0.01	18.301		3.958	1.931	6.67	83.258	12.207	14.527
Benzo(ghi)perylene	ug/l	-		1.1	0.017	0.122	0.01	0.03	0.01	7.26		1.989	0.972	2.854	54.98	5.534	3.189
Benzo(k)fluoranthene	ug/l	-		1.732	0.033	0.272	0.01	0.043	0.01	16.737		3.934	1.839	1.726	75.323	6.053	4.294
Chrysene	ug/l	-		1.878	0.1	0.316	0.01	0.051	0.018	16.983		4.645	2.574	2.829	112.885	19.869	8.061
Dibenzo(ah)anthracene	ug/l	-		0.385	0.012	0.051	0.01	0.01	0.01	3.148		0.629	0.353	0.853	17.58	1.9	1.396
Fluoranthene	ug/l	4	WHO Drinking Water Quality Guideline Value	7.392	1.796	1.408	2.52	0.51	0.827	67.632		21.84	10.069	4.604	450.161	135.588	28.098
Fluorene	ug/l	-		23.588	20.234	6.034	33.248	0.248	1.029	69.522		57.296	7.293	4.782	529.709	357.307	28.184
Indeno(123cd)pyrene	ug/l	-		0.962	0.014	0.133	0.01	0.025	0.01	6.841		1.757	0.931	2.143	46.595	4.509	2.932
Naphthalene	ug/l	-		486.479	3306.788	55.04	140.798	0.232	0.614	646.531		493.635	19.001	29.572	6440.862	249.089	222.348
Phenanthrene	ug/l	-		22.167	13.994	4.65	22.117	0.077	0.076	122.56		62.102	13.896	7.191	972.581	548.016	48.069
Pyrene	ug/l	-		4.604	1.058	0.883	1.958	0.12	0.374	42.363		15.948	6.625	4.097	306.281	97.39	17.591
Sum of Benzo (b + k) fluoranthene, benzo(ghi)perylene and indeno(123-cd)pyrene	ug/l	0.1	SI 278/2007	7.68	0.091	0.697	0.04	0.112	0.04	49.139		11.638	5.673	13.393	260.156	28.303	24.942

metals * - total - freshwater, dissolved - marine

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ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring visit 1.

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	A11	A3	A4	B8	C11	C7	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3
			Depth (mbgl)	1.50-2.50	1.50-4.50	1.50-4.00	2.00-3.00	1.50-2.50	2.00-7.00	3.00-5.00	1.50-2.50	2.00-3.00	1.50-3.50	3.00-9.00	3.00-8.00	2.50-7.00	2.00-8.00	0.50-2.00	2.00-4.00	0.10-2.00	2.00-4.00	1.50-4.00	3.00-6.00
Determinand	**Units**	**Screening Value (ug/l)**	**Source of screening value**																			
Inorganics																						
Arsenic (dissolved)	ug/l	10	SI 278/2007	4.83	18.2	4.8	30.9	5.85	18.4	17.1	8.26	52.3	2.26	44.2	7.65	41.6	1.46	4.28	1.92	1.49	3.9	41.7	5.3
Cadmium (dissolved)	ug/l	5	SI 278/2007	<0.22	<0.22	<0.22	0.955	<0.22	<0.22	<0.22	<0.22	0.275	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22
Chromium (dissolved)	ug/l	50	SI 278/2007	18.4	54.4	78.6	6.54	<3	40.1	108	137	102	57.1	92.8	85.1	9.3	197	15.6	67.4	19.7	28.5	45.3	21.2
Copper (dissolved)	ug/l	2000	SI 278/2007	<1.6	<1.6	14.3	7.56	3.08	5.29	2.14	2.99	10.6	1.94	2.34	2.03	2.01	5.02	3.27	12.8	4.83	11.5	5.44	8.55
Lead (dissolved)	ug/l	25	SI 278/2007	<0.4	<0.4	0.736	6.58	0.52	6.61	<0.4	<0.4	0.764	1.11	<0.4	<0.4	<0.4	<0.4	<0.4	0.815	3.88	5.04	1.53	2.9
Nickel (dissolved)	ug/l	20	SI 278/2007	3.75	5.21	3.21	10.2	5.07	5.32	4.88	3.49	75.4	1.82	5.62	11.1	5.87	9.13	3.41	2.33	6.26	15.9	28.7	7.43
Selenium (dissolved)	ug/l	10	SI 278/2007	6.28	1.45	4.68	3.58	1.69	8.43	2.09	<1	29.3	4.3	7.41	9.83	26	2.69	7.22	3.63	<1	1.48	22.4	3.64
Zinc (dissolved)	ug/l	5000	WHO Drinking water Quality Guideline Value	<5	<5	7.74	55.4	<5	36.1	<5	<5	8.6	5.94	<5	<5	<5	<5	<5	7.07	25.8	41.4	9.78	30
Mercury (dissolved)	ug/l	1	SI 278/2007	<0.01	<0.01	<0.01	0.0117	<0.01	0.0124	<0.01	<0.01	0.0238	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0262	<0.01
Ammonium	ug/l	300	SI 278/2007	2720	8990	2360	184000	6490	94800	11600	4240	57100	4530	53300	26600	23000	2080	15100	3880	<200	9270	135000	1370
Sulphate (soluble)	ug/l	250000	SI 278/2007	273000	412000	292000	115000	264000	159000	484000	52600	525000	35800	595000	486000	385000	635000	83000	150000	27300	472000	678000	541000
Phenols	ug/l	0.5	SI 81/1988	280	<25	<25	131000	<25	625000	<25	1540	353000	180	11700	3050	41600	<25	5100	890	<25	<25	1840000	<25
Total Cyanide	ug/l	50	SI 278/2007	75	502	593	269	1410	454	1670	253	8180	<50	1440	511	912	5590	449	<50	<50	577	5200	702
pH Value	ug/l	6.5	SI 278/2007	8.32	8.06	7.89	8.63	8.06	8.75	7.7	9.11	9.52	8.1	7.61	7.55	7.59	7.32	8.37	7.91	8.06	8.1	9.56	7.86
pH Value	ug/l	9.5	SI 278/2007	8.32	8.06	7.89	8.63	8.06	8.75	7.7	9.11	9.52	8.1	7.61	7.55	7.59	7.32	8.37	7.91	8.06	8.1	9.56	7.86
BTEX																						
Benzene	ug/l	1	SI 278/2007	57	430	<7	15300	86	16400	718	469	5360	7	3810	744	5080	34	309	24	<7	<7	18900	9
Toluene	ug/l	700	WHO Drinking Water Quality Guideline Value	107	62	<4	7810	106	5070	591	226	1430	8	2360	306	4220	73	160	20	<4	<4	6560	<4
Ethyl benzene	ug/l	300	WHO Drinking Water Quality Guideline Value	26	293	<5	399	210	232	280	21	95	<5	271	34	367	32	11	<5	<5	<5	393	<5
Xylene	ug/l	500	WHO Drinking Water Quality Guideline Value	139	201	43	3980	918	2250	1270	183	982	<10	1550	181	3280	349	112	76	<10	<10	3270	<10
Petroleum Hydrocarbons																						
GRO (C4-C12)	ug/l	10	SI 81/1988	1080	3900	490	57200	11300	52400	11000	1770	22400	78	14200	2030	30800	3730	1590	1030	<42	<42	69500	<42
MTBE	ug/l	-	-	<3	3	<3	<3	<3	<3	18	<3	6	<3	21	11	10	7	<3	6	<3	<3	<3	<3
Aliphatics C5-C6	ug/l			<10	19.2	<10	133	<10	176	<10	<10	132	<10	<10	<10	16.3	<10	<10	<10	<10	<10	467	<10
Aliphatics C6-C8	ug/l			34.4	116	<10	7120	83.8	6980	343	142	2910	<10	1100	187	2860	60.3	76.7	17.1	<10	<10	9560	11
Aliphatics C8-C10	ug/l			79.8	208	41.5	2090	829	1950	630	86.7	999	13.2	572	67.4	1500	235	63.7	77.7	<10	<10	2960	<10
Aliphatics C10-C12	ug/l			206	904	137	6900	3120	6570	2470	205	3600	11.8	1460	157	4480	1040	306	278	10.1	<10	9170	<10
Aliphatics C12-C16	ug/l			<10	<10	1060	99	5450	203	228	13	12	27	<10	<10	1660	915	<10	185	<10	<10	<10	<10
Aliphatics C16-C21	ug/l			<10	<10	1460	111	2410	<10	203	21	<10	222	<10	55	919	435	<10	126	<10	<10	20	<10
Aliphatics C21-C35	ug/l			<10	<10	646	145	896	<10	180	73	13	216	<10	18	829	386	<10	682	<10	<10	<10	<10
Aromatics C6-C7	ug/l			57	430	<10	15300	86	16400	718	469	5360	<10	3810	744	5080	34	309	24	<10	<10	18900	<10
Aromatics C7-C8	ug/l			107	62	<10	7810	106	5070	591	226	1430	<10	2360	306	4220	73	160	20	<10	<10	6560	<10
Aromatics 8-10	ug/l			285	806	105	7520	2370	5400	2500	334	2570	19.8	2680	316	5890	734	219	193	<10	<10	8110	<10
Aromatics 10-12	ug/l			309	1360	206	10400	4680	9850	3710	308	5400	17.7	2200	235	6730	1550	459	417	15.2	<10	13800	<10
Aromatics 12-16	ug/l			494	516	227	7400	8460	20600	1530	178	6980	75	1930	85	865	5810	283	527	8560	<10	<10	<10
Aromatics 16-21	ug/l			310	304	811	1920	2980	3200	1180	91	1450	148	345	11	1190	4230	82	718	520	<10	<10	<10
Aromatics 21-35	ug/l			316	255	1710	2470	2600	3010	1670	252	502	376	344	30	2110	7370	22	1700	71	<10	<10	<10
TPH (Aliphatics and Aromatics C5-C35)	ug/l	10	SI 81/1988	2200	4980	6400	69400	34100	79400	16000	2400		1130	16800	2210	38300	22900	1980	4960	9180	<10	69500	11
PAHs																						
Acenaphthene	ug/l			12.4	119	<0.15	47.7	724	3.72	61.6	6.99	49.2	0.398	20	3.55	180	145	5.82	25.3	1.58	0.712	3.58	2.19
Acenaphthylene	ug/l			63.5	39.4	0.488	278	247	23.8	164	13.8	292	3.08	30.8	1.69	582	546	45.4	38.4	0.475	0.473	19.3	0.944
Anthracene	ug/l			9.93	12.2	0.245	92.8	162	10.6	64.4	11.1	82.4	1.06	5.98	1.69	517	303	7.53	27.6	0.194	0.0939	2.52	0.239
Benzo(a)anthracene	ug/l			8.65	10.1	1.12	42.7	102	4.3	52.5	9.24	20.9	5.48	4.86	1.88	321	155	2.44	27.2	0.284	0.0864	<1.7	0.573
Benzo(a)pyrene	ug/l	0.01	SI 278/2007	5.59	8.02	1.04	35.2	74.1	3.34	40.6	7.39	9.04	10.3	4.22	1.5	228	119	1.07	24.9	0.0756	0.0872	<0.9	0.576
Benzo(b)fluoranthene	ug/l			6.47	2.94	1.46	42.5	97.3	3.75	49.7	9.36	13.1	11.5	5.3	2.03	303	155	1.36	28.9	0.0737	0.125	<2.3	0.881
Benzo(ghi)perylene	ug/l			2.54	3.3	0.615	18.5	40.1	<1.6	22.3	4.23	5.78	6.86	2.06	0.966	129	70.4	0.815	13.4	0.0294	0.0805	<1.6	0.54
Benzo(k)fluoranthene	ug/l			2.77	1.88	0.514	17.7	35	<2.7	17.2	3.26	5.63	5.44	2.15	0.855	127	65.2	0.711	11.6	0.076	0.0473	<2.7	0.338
Chrysene	ug/l			5.27	6.54	0.798	31.5	58.2	2.75	32.6	6.04	14.3	5.26	4.14	1.28	240	124	1.73	16.8	0.124	0.0734	<1.3	0.48
Dibenzo(ah)anthracene	ug/l			0.665	0.664	<0.16	5.38	9.74	<1.6	5.74	1.05	1.63	1.41	0.859	0.257	30.9	18.2	0.398	3.73	<0.016	0.0182	<1.6	0.104
Fluoranthene	ug/l	4	WHO Drinking Water Quality Guideline Value	29.3	32.5	2.88	154	421	17.1	147	27.1	117	7.32	24.5	5.52	1120	587	11.3	90.3	3.67	0.667	2.11	1.91
Fluorene	ug/l			18.7	35.8	<0.14	152	423	14.7	121	11.6	167	0.355	13	1.46	612	416	22.1	32.2	0.43	0.498	7.36	0.539
Indeno(123cd)pyrene	ug/l			2.41	2.42	0.499	15.6	34.7	<1.4	19.1	3.85	4.52	5.9	1.77	0.751	106	56.7	0.632	11.4	0.0236	0.0602	<1.4	0.389
Naphthalene	ug/l			13.3	2.05	<1	5590	933	308	104	3.82	3100	2.81	585	1.4	1690	7330	613	23.3	0.439	<0.1	241	0.143
Phenanthrene	ug/l			2.54	8.11	0.36	298	889	33.8	240	4.77	295	1.8	46.7	2.5	1660	984	28.4	64.1	0.0554	0.041	9.2	0.233
Pyrene	ug/l			19.1	43.4	2.73	102	259	11.3	97.5	19.2	77.5	6.29	15.7	4.09	738	394	7.6	61.8	2	0.453	<1.5	1.49
Total PAH # (Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)perylene & Indeno(123cd)pyrene)	ug/l	0.1	SI 278/2007	14.19	10.54	3.088	94.3	207.1	<9.45	108.3	20.7	29.03	29.7	11.28	4.602	665	347.3	3.518	65.3	0.2027	0.313	<8	2.148
Volatile Organic Compounds																						
1.1.1.2-Tetrachloroethane	ug/l	-	-	<1.3	<1.3	<1.3	<1.3		<1.3	<1.3				<1.3		<1.3	<1.3					<1.3	<1.3
1.1.1-Trichloroethane	ug/l	2000	WHO Drinking Water Quality Guideline Value	<1.3	<1.3	<1.3	<1.3		<1.3	<1.3				<1.3		<1.3	<1.3					8.02	<1.3
1.1.2-Trichloroethane	ug/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					390	<2.2
1.1-Dichloroethane	ug/l	-	-	<1.2	<1.2	<1.2	<1.2		<1.2	<1.2				<1.2		<1.2	<1.2					1.53	<1.2
1.1-Dichloroethene	ug/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	<1.2
1.1-Dichloropropene	ug/l	-	-	<1.3	<1.3	<1.3	<1.3		<1.3	<1.3				<1.3		<1.3	<1.3					<1.3	<1.3
1.2.3-Trichlorobenzene	ug/l	-	-	<3.1	<3.1	<3.1	<3.1		<3.1	<3.1				<3.1		<3.1	<3.1					<3.1	<3.1
1.2.3-Trichloropropane	ug/l	-	-	<7.8	<7.8	<7.8	<7.8		<7.8	<7.8				<7.8		<7.8	<7.8					<7.8	<7.8
1.2.4-Trimethylbenzene	ug/l	-	-	23.4	43.6	<1.7	338		174	346				213		390	239					173	<1.7
1.2-Dibromo-3-chloropropane (DBCP)	ug/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	<9.8
1.2-Dibromoethane	ug/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	<2.3
1.2-Dichloroethane	ug/l	3	SI 278/2007	<3.3	<3.3	<3.3	<3.3		<3.3	<3.3				<3.3		<3.3	<3.3					574	<3.3
1.2-Dichloropropane	ug/l	40	**Provisional** WHO Drinking Water Quality Guideline Value	<3	<3	<3	<3		<3	<3				<3		<3	<3					<3	<3
1.3.5-Trimethylbenzene	ug/l	-	-	17	13.5	6.63	138		73.4	111				55		147	90.1					71.9	<1.8
1.3-Dichloropropane	ug/l	-	-	<2.2	<2.2	<2.2	<2.2		<2.2	<2.2				<2.2		<2.2	<2.2					<2.2	<2.2
2.2-Dichloropropane	ug/l	-	-	<3.8	<3.8	<3.8	<3.8		<3.8	<3.8				<3.8		<3.8	<3.8					<3.8	<3.8
2-Chlorotoluene	ug/l	-	-	<1.9	<1.9	<1.9	<1.9		<1.9	<1.9				<1.9		<1.9	<1.9					11.5	<1.9
4-Chlorotoluene	ug/l	-	-	<1.9	<1.9	<1.9	<1.9		<1.9	<1.9				<1.9		<1.9	<1.9					2.46	<1.9
4-Isopropyltoluene	ug/l	-	-	<2.6	<2.6	<2.6	<2.6		<2.6	<2.6				<2.6		54.4	<2.6					24.9	<2.6
Bromobenzene	ug/l	-	-	<2	<2	<2	<2		<2	<2				<2		<2	<2					<2	<2
Bromochloromethane	ug/l	-	-	<1.9	<1.9	<1.9	<1.9		<1.9	<1.9				<1.9		<1.9	<1.9					<1.9	<1.9
Bromodichloromethane	ug/l	100	UK DWS for total Trihalomethanes (chloroform, bromoform, dibromochloromethane and bromodichloromethane)	<0.9	<0.9	<0.9	<0.9		1.99	<0.9				<0.9		<0.9	<0.9					<0.9	<0.9
Bromoform	ug/l	100	UK DWS for total Trihalomethanes (chloroform, bromoform, dibromochloromethane and bromodichloromethane)	<3	<3	<3	<3		<3	<3				<3		<3	<3					<3	<3
Bromomethane	ug/l	-	-	<2	<2	<2	<2		<2	<2				<2		<2	<2					<2	<2
Carbon Disulphide	ug/l	-	-	<1.3	<1.3	<1.3	<1.3		<1.3	<1.3				4.57		<1.3	<1.3					1.85	<1.3
Carbontetrachloride	ug/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	<1.4
Chlorobenzene	ug/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	<3.5
Chloroethane	ug/l	-	-	<2.5	<2.5	<2.5	<2.5		<2.5	<2.5				<2.5		<2.5	<2.5					<2.5	<2.5
Chloroform	ug/l	100	SI 278/2007 for total Trihalomethanes (chloroform, bromoform, dibromochloromethane and bromodichloromethane)	<1.8	<1.8	<1.8	<1.8		10	<1.8				<1.8		<1.8	<1.8					2.92	2.25
Chloromethane	ug/l	-	-	<1.7	<1.7	<1.7	<1.7		<1.7	<1.7				<1.7		<1.7	<1.7					<1.7	<1.7
cis-1-2-Dichloroethene	ug/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	<2.3
cis-1-3-Dichloropropene	ug/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	<1.9
Dibromochloromethane	ug/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	<1.7
Dibromomethane	ug/l	-	-	<2.7	<2.7	<2.7	<2.7		<2.7	<2.7				<2.7		<2.7	<2.7					<2.7	<2.7
Dichlorodifluoromethane	ug/l	-	-	<1.3	<1.3	<1.3	<1.3		<1.3	<1.3				<1.3		<1.3	<1.3					<1.3	<1.3
Dichloromethane	ug/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					3.8	<3.7
Isopropylbenzene	ug/l	-	-	2.73	3.76	<1.4	15.6		7.65	25.3				17.2		24.2	7.59					12.2	<1.4
n-Butylbenzene	ug/l	-	-	<2	<2	<2	<2		<2	<2				<2		<2	<2					48.6	<2
Propylbenzene	ug/l	-	-	<2.6	<2.6	<2.6	21		11.2	32.9				16.9		28	10.8					15.5	<2.6
sec-Butylbenzene	ug/l	-	-	<1.7	<1.7	<1.7	<1.7		<1.7	<1.7				<1.7		<1.7	<1.7					<1.7	<1.7
Styrene	ug/l	20	WHO Drinking Water Quality Guideline Value	<1.2	<1.2	<1.2	<1.2		<1.2	<1.2				<1.2		<1.2	<1.2					329	<1.2
tert-Butylbenzene	ug/l	-	-	<2	<2	<2	<2		<2	<2				<2		<2	<2					17.6	<2
Tetrachloroethene	ug/l	10	SI 278/2007	<1.5	<1.5	<1.5	<1.5		<1.5	<1.5				<1.5		<1.5	<1.5					2.21	<1.5
trans-1-2-Dichloroethene	ug/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	<1.9
trans-1-3-Dichloropropene	ug/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	<3.5
Trichloroethene	ug/l	10	SI 278/2007	<2.5	<2.5	<2.5	<2.5		<2.5	<2.5				<2.5		<2.5	<2.5					10.3	<2.5
Trichlorofluoromethane	ug/l	-	-	<1.3	<1.3	<1.3	<1.3		<1.3	<1.3				<1.3		<1.3	<1.3					2.79	<1.3
Vinyl Chloride	ug/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	<1.2

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ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring visit 2.

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	A11	A3	A4	B8	C11	C7	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3
			Depth (mbgl)	1.50-2.50	1.50-4.50	1.50-4.00	2.00-3.00	1.50-2.50	2.00-7.00	3.00-5.00	1.50-2.50	2.00-3.00	1.50-3.50	3.00-9.00	3.00-8.00	2.50-7.00	2.00-8.00	0.50-2.00	2.00-4.00	0.10-2.00	2.00-4.00	1.50-4.00	3.00-6.00
Determinand	**Units**	**Screening Value (ug/l)**	**Source of screening value**																				
Inorganics																							
Arsenic (dissolved)	ug/l	10	SI 278/2007	1.22	29.8	3.3	18	4.13	37.1	15.4	6.04	2.35	13.9	24.4	6.11	4.29	3.76	5.16	2.36	2.01	3.9	290	3.53
Cadmium (dissolved)	ug/l	5	SI 278/2007	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.439	<0.1
Chromium (dissolved)	ug/l	50	SI 278/2007	15.9	11.5	9.21	<3	46.2	5.9	37.3	<3	17.2	6.41	22.9	47.9	6.83	124	52	17.6	<3	95.7	56.8	14.7
Copper (dissolved)	ug/l	2000	SI 278/2007	1.52	1.14	1.03	1.71	1.27	<0.85	1.34	0.914	11.2	3.2	1.83	1.6	3.31	2.71	1.4	<0.85	3.9	1.57	3.19	2.2
Lead (dissolved)	ug/l	25	SI 278/2007	2.33	0.034	0.112	0.087	0.02	0.371	0.03	<0.02	0.308	0.58	<0.02	0.077	<0.02	0.139	0.07	0.094	0.063	0.582	5.31	0.066
Nickel (dissolved)	ug/l	20	SI 278/2007	3.47	5.52	4.36	7.18	5.14	6.15	7.91	7.49	5.84	3.89	10.4	14.2	3.95	15.2	4.83	4.88	4.75	13.9	69.6	7.08
Selenium (dissolved)	ug/l	10	SI 278/2007	5.48	1.23	1.26	14.7	4.12	44.6	3.05	1.56	8.47	8.08	9.82	8.98	5.32	4.58	4.78	1.6	1.35	1.62	68	2.62
Zinc (dissolved)	ug/l	5000	WHO Drinking water Quality Guideline Value	11.6	2.33	1.56	1.32	0.801	1.18	<0.41	0.955	0.957	1.41	<0.41	<0.41	<0.41	<0.41	1.09	<0.41	<0.41	<0.41	107	<0.41
Mercury (dissolved)	ug/l	1	SI 278/2007	<0.01	<0.01	<0.01	<0.01	<0.01	0.029	<0.01	<0.01	0.012	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.187	<0.01
Ammonium	ug/l	300	SI 278/2007	1330	9270	2930	60300	4730	118000	10400	1480	59300	1930	48300	22500	9460	4190	21300	6270	439	11800	202000	890
Sulphate (soluble)	ug/l	250000	SI 278/2007	328000	423000	310000	67500	222000	64600	456000	43000	547000	33900	583000	571000	127000	671000	112000	169000	35900	709000	715000	556000
Phenols	ug/l	0.5	SI 81/1988	<2	20	<2	12900	<2	63800	10	<2	86000	40	2770	10	180	<2	3170	<2	20	<2	464000	<2
Total Cyanide	ug/l	50	SI 278/2007	<50	242	177	118	74	814	663	179	13700	<50	809	495	243	321	817	<50	<50	152	12000	794
pH Value	ug/l	6.5	SI 278/2007	7.9	7.88	7.84	8.57	7.81	9.15	7.78	8.5	9.74	8.15	7.77	7.79	7.91	7.34	8.6	8.07	8.4	8.01	10.34	7.97
pH Value	ug/l	9.5	SI 278/2007	7.9	7.88	7.84	8.57	7.81	9.15	7.78	8.5	9.74	8.15	7.77	7.79	7.91	7.34	8.6	8.07	8.4	8.01	10.34	7.97
BTEX																							
Benzene	ug/l	1	SI 278/2007	<7	458	<7	7150	61	22800	644	38	8540	<7	4140	158	2150	30	2170	12	<7	<7	13800	<7
Toluene	ug/l	700	WHO Drinking Water Quality Guideline Value	<4	36	<4	4120	61	9130	512	24	2040	<4	2890	13	2840	34	1190	14	<4	<4	4670	<4
Ethyl benzene	ug/l	300	WHO Drinking Water Quality Guideline Value	<5	82	<5	310	65	391	227	<5	85	<5	281	14	293	14	83	<5	<5	<5	236	<5
Xylene	ug/l	500	WHO Drinking Water Quality Guideline Value	73	140	12	3000	505	3660	1020	71	940	<10	1950	78	2620	218	824	58	<10	<10	2180	<10
Petroleum Hydrocarbons																							
GRO (C4-C12)	ug/l	10	SI 81/1988	679	2970	216	<42	5970	88200	8960	479	21200	48	16300	571	19500	1830	7040	949	66	<42	49500	<42
MTBE	ug/l	-	-	7	<3	<3	<3	21	<30	12	<3	<3	6	<3	12	24	10	4	<3	<3	<3	<3	<3
Aliphatics C5-C6	ug/l			14.3	<10	<10	<10	31.3	402	<10	<10	136	12.3	<20	15.2	30.6	13.2	18.3	<10	<10	<10	760	<10
Aliphatics C6-C8	ug/l			48.3	319	<10	<10	124	<100	405	23.2	1620	35.7	629	83.4	1510	83.7	<10	17.2	<10	<10	4600	<10
Aliphatics C8-C10	ug/l			55.2	205	31.2	<10	498	6680	609	37.3	774	<10	647	32.1	1130	209	208	82.8	26.4	<10	1990	<10
Aliphatics C10-C12	ug/l			162	567	50.4	<10	1540	16500	1840	91.8	2360	<10	1910	44.7	2860	360	990	256	<10	<10	7310	<10
Aliphatics C12-C16	ug/l			<10	<10	126	11	156	<10	267	<10	<10	<10	<10	<10	342	906	<10	223	<10	<10	<10	<10
Aliphatics C16-C21	ug/l			<10	<10	247	50	325	<10	207	<10	<10	<10	<10	135	364	725	<10	195	<10	<10	<10	<10
Aliphatics C21-C35	ug/l			<10	<10	85	44	71	<10	115	<10	<10	<10	<10	95	265	524	<10	595	<10	<10	<10	<10
Aromatics C6-C7	ug/l			<10	458	<10	7150	61	22800	644	38	8540	<10	4140	158	2150	30	2170	12	<10	<10	13800	<10
Aromatics C7-C8	ug/l			<10	36	<10	4120	61	9130	512	24	2040	<10	2890	13	2840	34	1190	14	<10	<10	4670	<10
Aromatics 8-10	ug/l			156	529	58.8	1320	1320	14100	2160	127	2190	<10	3200	140	4610	545	1220	182	39.6	<10	5400	<10
Aromatics 10-12	ug/l			243	850	75.6	<10	2320	24800	2760	138	3550	<10	2860	67.1	4300	540	1490	384	<10	<10	11000	<10
Aromatics 12-16	ug/l			201	634	61	5200	1550	16400	1840	83	5740	<10	1980	48	3570	2580	1050	235	<10	<10	8490	<10
Aromatics 16-21	ug/l			197	185	116	1340	779	1050	1840	51	904	<10	250	75	3070	4460	322	353	<10	<10	789	<10
Aromatics 21-35	ug/l			111	22	156	1060	433	306	2660	93	543	<10	172	189	4180	8260	188	1260	<10	184	149	<10
TPH (Aliphatics and Aromatics C5-C35)	ug/l	10	SI 81/1988	1190	3800	1010	20300	9270	112000	15900	706	28400	48	18700	1100	31200	19300	8840	3810	66	184	58900	<10
PAHs																							
Acenaphthene	ug/l			8.45	114	1.26	32.5	117	19	137	0.083	29.7	0.044	29.4	1.63	97.5	98.1	11.5	4.76	0.185	0.43	35.4	0.0522
Acenaphthylene	ug/l			19.6	65.5	1.56	206	40.9	183	286	0.422	172	0.198	45.7	1.75	372	283	71.8	11.9	0.203	0.882	191	0.156
Anthracene	ug/l			4.07	3.25	0.525	55.3	20.5	19.8	95.5	0.425	37.7	0.15	6.74	2.12	177	307	11.3	6.08	0.0562	0.765	31.9	0.152
Benzo(a)anthracene	ug/l			3.7	0.282	2.23	16.3	13.1	<4.25	44.8	0.856	12.3	0.607	5.63	4.29	87.2	193	3.1	17.9	0.193	4.76	5.99	1.67
Benzo(a)pyrene	ug/l	0.01	SI 278/2007	2.5	0.115	2.19	9.92	9.61	2.49	29.9	0.932	6.5	0.887	4.8	3.5	48.7	122	0.863	18.3	0.296	6.18	3	2.15
Benzo(b)fluoranthene	ug/l			3.39	0.119	2.97	15.4	12.8	<5.75	42	1.32	10.2	1.08	6.76	4.81	72.4	169	1.41	23.3	0.381	8.12	4.08	3.16
Benzo(ghi)perylene	ug/l			1.04	<0.08	1.35	7.18	4.72	<4	17.7	0.489	3.99	0.522	2.61	2.1	21.6	54.6	<0.32	11.1	0.2	5.43	2	1.94
Benzo(k)fluoranthene	ug/l			1.24	<0.135	1.13	6.81	4.71	<6.75	17.2	0.503	4.15	0.451	2.39	1.8	28.2	60.2	<0.54	8.45	0.126	3.15	<2.7	1.16
Chrysene	ug/l			2.98	0.261	1.26	18	8.74	4.35	38.4	0.622	10.2	0.408	5.83	3.67	70	154	2.32	12	0.107	3.22	4.42	1.23
Dibenzo(ah)anthracene	ug/l			0.296	<0.08	0.338	<3.2	1.35	<4	4.96	0.124	1.53	0.128	0.914	0.565	6.13	15.8	<0.32	2.93	0.0522	1.32	<1.6	0.409
Fluoranthene	ug/l	4	WHO Drinking Water Quality Guideline Value	12.7	4.81	6.43	81.4	52.4	21.4	215	3.89	60.9	0.966	23.2	8.92	339	640	17.4	52.3	0.597	6.85	41.1	2.18
Fluorene	ug/l			18	34.1	0.649	107	52.1	68.6	180	0.196	86.3	0.0567	19	1.25	274	336	34.6	4.9	0.0317	0.385	72.7	0.0527
Indeno(123cd)pyrene	ug/l			1.08	<0.07	1.26	5.73	4.27	<3.5	16.4	0.434	3.57	0.474	2.45	1.89	21.1	54	<0.28	10	0.172	4.65	2.1	1.62
Naphthalene	ug/l			0.445	0.853	1.64	3680	6.17	4410	1950	0.969	2650	<0.1	563	0.103	1770	297	724	9.9	<0.1	0.467	3440	0.241
Phenanthrene	ug/l			0.65	<0.11	0.395	198	82.9	81.7	400	0.58	150	0.34	49.5	3.35	625	948	39.4	13.4	0.0613	1.83	104	0.261
Pyrene	ug/l			7.61	5.47	5.01	56.5	32.1	13.8	136	2.32	39.7	0.602	15	6.88	224	419	11.4	40.9	0.431	7.39	26.9	2.16
Total PAH # (Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)perylene & Indeno(123cd)pyrene)	ug/l	0.1	SI 278/2007	6.75	<0.404	6.71	35.12	26.5	<20	93.3	2.746	21.9	2.527	14.21	10.6	143.3	337.8	<2.55	52.85	0.879	21.35	<10.88	7.88
Volatile Organic Compounds																							
1.1.1.2-Tetrachloroethane	ug/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	ug/l	2000	WHO Drinking Water Quality Guideline Value	<1.3	<1.3	<1.3	<1.3		<1.3	<1.3				<1.3		<1.3	<1.3						<1.3
1.1.2-Trichloroethane	ug/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	ug/l	-	-	<1.2	<1.2	<1.2	<1.2		<1.2	<1.2				<1.2		<1.2	<1.2						<1.2
1.1-Dichloroethene	ug/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	ug/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	ug/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	ug/l	-	-	<7.8	<7.8	<7.8	<7.8		<7.8	<7.8				<7.8		<7.8	<7.8						<7.8
1.2.4-Trimethylbenzene	ug/l	-	-	6.1	41.7	2.65	392		276	360				345		426	134						<1.7
1.2-Dibromo-3-chloropropane (DBCP)	ug/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	ug/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-Dichloroethane	ug/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	ug/l	40	**Provisional** WHO Drinking Water Quality Guideline Value	<3	<3	<3	<3		<3	<3				<3		<3	<3						<3
1.3.5-Trimethylbenzene	ug/l	-	-	18.8	10.4	5.18	158		115	110				94.9		168	60.4						<1.8
1.3-Dichloropropane	ug/l	-	-	<2.2	<2.2	<2.2	<2.2		<2.2	<2.2				<2.2		<2.2	<2.2						<2.2
2.2-Dichloropropane	ug/l	-	-	<3.8	<3.8	<3.8	<3.8		<3.8	<3.8				<3.8		<3.8	<3.8						<3.8
2-Chlorotoluene	ug/l	-	-	<1.9	<1.9	<1.9	<1.9		<1.9	<1.9				<1.9		<1.9	<1.9						<1.9
4-Chlorotoluene	ug/l	-	-	<1.9	<1.9	<1.9	<1.9		<1.9	<1.9				<1.9		<1.9	<1.9						<1.9
4-Isopropyltoluene	ug/l	-	-	<2.6	<2.6	<2.6	36.7		46.4	<2.6				<2.6		<2.6	<2.6						<2.6
Bromobenzene	ug/l	-	-	<2	<2	<2	<2		<2	<2				<2		<2	<2						<2
Bromochloromethane	ug/l	-	-	<1.9	<1.9	<1.9	<1.9		<1.9	<1.9				<1.9		<1.9	<1.9						<1.9
Bromodichloromethane	ug/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	ug/l	100	UK DWS for total Trihalomethanes (chloroform, bromoform, dibromochloromethane and bromodichloromethane)	<3	<3	<3	<3		<3	<3				<3		<3	<3						<3
Bromomethane	ug/l	-	-	<2	<2	<2	<2		<2	<2				<2		<2	<2						<2
Carbon Disulphide	ug/l	-	-	<1.3	<1.3	<1.3	<1.3		2.8	2.36				5.03		<1.3	<1.3						<1.3
Carbontetrachloride	ug/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	ug/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	ug/l	-	-	<2.5	<2.5	<2.5	<2.5		<2.5	<2.5				<2.5		<2.5	<2.5						<2.5
Chloroform	ug/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	ug/l	-	-	<1.7	<1.7	<1.7	<1.7		<1.7	<1.7				<1.7		<1.7	<1.7						<1.7
cis-1-2-Dichloroethene	ug/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	ug/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	ug/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	ug/l	-	-	<2.7	<2.7	<2.7	<2.7		<2.7	<2.7				<2.7		<2.7	<2.7						<2.7
Dichlorodifluoromethane	ug/l	-	-	<1.3	<1.3	<1.3	<1.3		<1.3	<1.3				<1.3		<1.3	<1.3						<1.3
Dichloromethane	ug/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
Isopropylbenzene	ug/l	-	-	<1.4	15	<1.4	18.1		14.2	26.4				26.2		25.8	4.2						<1.4
n-Butylbenzene	ug/l	-	-	<2	<2	<2	<2		<2	<2				<2		<2	<2						<2
Propylbenzene	ug/l	-	-	<2.6	<2.6	<2.6	26.5		18.9	33.2				28.2		29.4	4						<2.6
sec-Butylbenzene	ug/l	-	-	<1.7	<1.7	<1.7	<1.7		<1.7	<1.7				<1.7		<1.7	<1.7						<1.7
Styrene	ug/l	20	WHO Drinking Water Quality Guideline Value	<1.2	<1.2	<1.2	196		540	<1.2				<1.2		<1.2	<1.2						<1.2
tert-Butylbenzene	ug/l	-	-	<2	<2	<2	<2		<2	<2				<2		<2	<2						<2
Tetrachloroethene	ug/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	ug/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	ug/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	ug/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	ug/l	-	-	<1.3	<1.3	<1.3	<1.3		<1.3	<1.3				<1.3		<1.3	<1.3						<1.3
Vinyl Chloride	ug/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

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ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring Visit 3 (21st - 22nd April 2010)

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	B8	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	1.60-2.80	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	39.2	7.31	2.98	52.8	27.9	7.81	12	3.7	137	7.15	18.6	6.1	30.6	4.35	5.93	3.38	5.25	2.2	121	3.8
Cadmium (dissolved)	µg/l	5	SI 278/2007	<0.1	<0.1	0.102	<0.1	<0.1	<0.1	<0.1	<0.1	0.721	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.118	<0.1
Chromium (dissolved)	µg/l	50	SI 278/2007	21.3	14.5	3.59	22.7	15.5	8.31	20.6	9.27	3.35	4.28	28.1	20.9	23.4	26.1	4.48	12.8	14.8	10	26.1	4.63
Copper (dissolved)	µg/l	2000	SI 278/2007	<0.85	<0.85	1.34	<0.85	<0.85	<0.85	<0.85	<0.85	2.47	<0.85	1.11	<0.85	<0.85	1.99	1.62	<0.85	<0.85	2.37	5.2	5.4
Lead (dissolved)	µg/l	25	SI 278/2007	0.034	0.054	0.153	0.143	0.046	0.029	0.033	0.034	0.415	0.05	0.022	0.034	0.107	0.092	0.023	0.091	0.042	0.321	0.836	0.146
Nickel (dissolved)	µg/l	20	SI 278/2007	7.05	4.86	4.97	9.62	2.92	3.37	5.13	7.47	50.9	2.06	6.96	8.31	6.61	11.1	5.16	4.78	6.21	8.64	33.9	5.4
Selenium (dissolved)	µg/l	10	SI 278/2007	2.14	2.8	2.16	26.7	27	4.82	14.5	1.34	30.2	1.86	22	6.28	24.9	5.91	9.84	2.26	1.99	1.92	35.7	2.54
Zinc (dissolved)	µg/l	5000	WHO Drinking water Quality Guideline Value	1.18	1.76	1.13	1.21	0.755	0.991	2.7	0.655	38.3	0.709	2.23	1.95	3.49	3.86	0.817	1.31	1.18	2.49	20.3	1.37
Mercury (dissolved)	µg/l	1	SI 278/2007	<0.01	<0.01	<0.01	0.0188	0.0321	<0.01	<0.01	<0.01	0.0559	<0.01	0.0117	<0.01	0.0153	<0.01	<0.01	<0.01	<0.01	<0.01	0.144	<0.01
Ammonium	µg/l	300	SI 278/2007	9650	3270	1280	138000	100000	6010	12000	483	62300	4640	46600	24900	27600	6480	30400	8140	1130	6790	119000	830
Sulphate (soluble)	µg/l	250000	SI 278/2007	375000	277000	353000	102000	36800	128000	401000	32100	496000	37300	565000	304000	254000	729000	162000	188000	58400	733000	-	530000
Phenols	µg/l	0.5	SI 81/1988	<25	<25	<25	118000	215000	<25	660	2130	248000	250	21400	<25	56600	<25	12200	<25	<25	<25	1280000	<25
Total Cyanide	µg/l	50	SI 278/2007	267	154	66	259	522	69	930	295	12800	<50	1110	279	202	380	581	<50	<50	411	9530	946
pH Value	µg/l	6.5	SI 278/2007	7.98	7.82	8.05	8.64	8.82	8.24	7.59	7.89	9.34	7.72	7.8	7.66	-	7.44	8.31	7.57	7.45	7.68	9.76	7.76
pH Value	µg/l	9.5	SI 278/2007	7.98	7.82	8.05	8.64	8.82	8.24	7.59	7.89	9.34	7.72	7.8	7.66	-	7.44	8.31	7.57	7.45	7.68	9.76	7.76
BTEX																							
Benzene	µg/l	1	SI 278/2007	574	<7	48	10900	28400	41	681	405	9090	55	4830	112	9250	20	1520	<7	13	<7	16700	<7
Toluene	µg/l	700	WHO Drinking Water Quality Guideline Value	30	<4	76	5450	12500	40	360	91	2480	<4	3680	<4	6920	<4	996	<4	<4	<4	5930	<4
Ethyl benzene	µg/l	300	WHO Drinking Water Quality Guideline Value	189	<5	7	312	527	85	219	39	119	<5	392	<5	606	<5	75	<5	<5	<5	359	<5
Xylene	µg/l	500	WHO Drinking Water Quality Guideline Value	158	<10	147	3040	5030	542	861	186	1310	<10	2570	23	5250	10	757	<10	11	<10	3140	<10
Petroleum Hydrocarbons																							
GRO (C4-C12)	µg/l	10	SI 81/1988	2689	93	988	38520	81100	4000	5540	1659	21820	<91.3	19040	280.6	39850	422	6150	175.2	463	<20	50900	221.4
MTBE	µg/l			<3	<3	<3	<15	<30	<3	<3	<3	<15	<3	<6	<3	<15	<3	<3	<3	<3	<3	<15	<3
Aliphatics C5-C6	µg/l			<10	<10	<10	118	240	<10	<10	<10	118	<10	20	<10	<50	<10	16.2	<10	<10	<10	489	<10
Aliphatics C6-C8	µg/l			121	<10	36.4	3400	8370	31.3	<10	91.4	2060	<10	1200	27	1860	13.5	155	<10	<10	<10	4660	<10
Aliphatics C8-C10	µg/l			150	13.4	95.8	1390	2550	368	249	105	665	<10	773	18.6	1670	44.1	236	24.5	51.1	<10	1860	27.6
Aliphatics C10-C12	µg/l			498	23.8	176	4710	7840	937	1120	233	1980	<10	1750	29	4680	107	818	45.7	124	<10	5990	60.8
Aliphatics C12-C16	µg/l			<10	89	797	174	<10	357	56	225	46	65	<10	<10	1270	40	<10	186	328	<10	2360	<10
Aliphatics C16-C21	µg/l			<10	230	560	156	<10	131	84	255	41	398	<10	57	1310	38	<10	142	186	<10	1770	<10
Aliphatics C21-C35	µg/l			<10	106	1280	188	<10	21	27	876	55	820	<10	46	1280	23	<10	685	276	<10	2000	<10
Aromatics C6-C7	µg/l			574	<10	48	10900	28400	41	681	405	9090	55	4830	112	9250	20	1520	<10	13	<10	16700	<10
Aromatics C7-C8	µg/l			30	<10	76	5450	12500	40	360	91	2480	<10	3680	<10	6920	<10	996	<10	<10	<10	5930	<10
Aromatics 8-10	µg/l			572	20.1	291	5430	9380	1180	1450	383	2430	14.4	4120	50.9	8360	76.1	1190	36.7	87.7	<10	6300	41.4
Aromatics 10-12	µg/l			747	35.7	264	7060	11800	1400	1680	349	2980	11.9	2620	43.5	7010	161	1230	68.6	187	<10	8980	91.2
Aromatics 12-16	µg/l			196	13	2280	10700	19100	349	1310	161	4110	27	6280	21	19900	<10	917	117	118	<10	40600	<10
Aromatics 16-21	µg/l			177	61	4480	2200	1250	297	826	411	1010	142	534	11	8400	39	304	353	413	<10	12300	<10
Aromatics 21-35	µg/l			421	30	10400	2590	142	318	497	2170	1010	1020	70	128	13400	318	320	1740	2000	<10	13900	<10
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	SI 81/1988	3490	622	20800	54500	102000	5470	8340	5750	28100	2550	25900	544	85300	880	7690	3400	3780	<10	124000	221
PAHs																							
Acenaphthene	µg/l			0.979	<0.015	62.3	45.7	125	13.6	49.5	1.28	22.3	1.56	26.9	1.58	167	0.295	6.97	2.32	2.53	0.0366	129	<0.015
Acenaphthylene	µg/l			6.24	0.124	267	258	1050	4.77	79.5	9.82	127	5.77	32.1	1.1	749	4.67	40.8	9.78	13.3	0.145	543	0.105
Anthracene	µg/l			1.66	0.0872	282	84.9	64.9	2.79	30.7	7.57	48.7	2.79	2.51	1.08	321	2.74	14	7.78	15.7	0.123	245	0.0962
Benzo(a)anthracene	µg/l			16.6	0.334	205	39.5	8.72	5.49	9.81	33.4	18.6	13.2	<0.85	4.7	89	12.5	10.6	24.5	54.2	1.11	113	1.51
Benzo(a)pyrene	µg/l	0.01	SI 278/2007	18.8	0.227	140	28.8	6.07	4.53	5.01	34	8.61	21	<0.45	4.79	54.6	14.4	6.28	28.2	46.2	1.54	79.2	2.23
Benzo(b)fluoranthene	µg/l			13.1	0.354	175	44.1	7.74	5.6	6.27	37.7	11	25.7	<1.15	5.99	72.1	17.2	8.33	32.4	51.9	2.06	105	2.98
Benzo(ghi)perylene	µg/l			8.44	0.0812	69.9	20.8	6.43	2.45	2.17	18.4	4.28	15.8	<0.8	2.76	26.2	7.97	2.67	17.3	17.9	1.31	46.4	1.95
Benzo(k)fluoranthene	µg/l			4.84	0.113	64.5	14.2	4.29	1.68	1.8	13.4	4.62	8.59	<1.35	1.99	32.3	5.61	3.07	11.6	18.5	0.681	48.2	0.949
Chrysene	µg/l			8.35	0.131	138	37.9	8.47	3.36	5.86	18.7	16.8	10.2	<0.65	2.84	86.5	7.34	6.46	13.1	23.7	0.59	107	0.892
Dibenzo(ah)anthracene	µg/l			1.97	0.0245	19.1	4.25	2.34	0.685	0.559	5.25	0.975	4.23	<0.8	0.908	6.24	2.43	0.957	5.12	7.94	0.312	9.6	0.455
Fluoranthene	µg/l	4	WHO Drinking Water Quality Guideline Value	21	0.963	678	153	41.4	18.5	59.5	58.7	93.9	19.6	3.48	5.8	482	19.9	23.8	53.7	88.9	1.17	471	1.4
Fluorene	µg/l			0.613	0.0442	266	144	314	4.76	65.4	2.95	77.3	1.67	12.6	0.944	482	0.785	25.2	5.7	11.1	0.0477	374	0.0315
Indeno(123cd)pyrene	µg/l			6.61	0.0718	61.6	15	4.67	2.27	1.95	16.9	3.28	13.8	<0.7	2.54	21.8	7.38	2.46	15.3	17.9	1.06	34.9	1.56
Naphthalene	µg/l			0.295	<0.1	87.9	4500	23600	2.59	14.2	2.3	1460	20.4	750	0.918	4870	0.981	12.1	10.3	6.43	0.108	5960	0.228
Phenanthrene	µg/l			0.759	0.0257	782	290	252	5.8	93.5	16	175	5.96	21.3	1.79	994	3.74	39.1	18.5	53.8	0.318	794	0.18
Pyrene	µg/l			40.5	0.99	442	105	26.6	11.5	36.1	39.3	61.9	16.6	2.13	4.72	320	12.4	16.3	41.1	61.2	1.21	309	1.25
Total PAH # (Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)perylene & Indeno(123cd)pyrene)	µg/l	0.1	SI 278/2007	32.99	0.62	371	94.1	23.13	12	12.19	86.4	23.18	63.89	<4	13.28	152.4	38.16	16.53	76.6	106.2	5.111	234.5	7.439
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	<1.3
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	<1.3	-	-	-	-	7.07	<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	<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	<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	<1.2
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	<1.2
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	<1.3
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	<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	<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	<2.3
1.2.4-Trimethylbenzene	µg/l			29.8	2.73	3.77	325	299	-	275	-	-	-	421	-	555	8.39	-	-	-	-	156	<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	<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	<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	<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	<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	<3
1,3,5-Trichlorobenzene	µg/l			<10	<10	<10	<10	<10	-	<10	-	-	-	<10	-	<10	<10	-	-	-	-	<10	<10
1,3,5-Trimethylbenzene	µg/l			9.69	1.91	11.3	133	123	-	82.7	-	-	-	114	-	219	4.66	-	-	-	-	66.5	<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	<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	<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	<2.7
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	<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	<1.9
4-Bromofluorobenzene	%			101	101	100	91.1	84	-	99.9	-	-	-	101	-	94.4	106	-	-	-	-	65.1	101
4-Chlorotoluene	µg/l			<1.9	<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	-	55.5	<2.6	-	-	-	-	<2.6	<2.6
Bromobenzene	µg/l			<2	<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	<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	<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	<3
Bromomethane	µg/l			<2	<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Carbon Disulphide	µg/l			<1.3	<1.3	<1.3	<1.3	<1.3	-	1.38	-	-	-	6.04	-	<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	<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	<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	<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	-	-	-	-	2.2	<1.8
Chloromethane	µg/l			<1.7	<1.7	<1.7	<1.7	<1.7	-	<1.7	-	-	-	<1.7	-	<1.7	<1.7	-	-	-	-	<1.7	<1.7
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	<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	<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	<1.7
Dibromofluoromethane	%			105	120	117	107	103	-	114	-	-	-	119	-	111	136	-	-	-	-	36.6	115
Dibromomethane	µg/l			<2.7	<2.7	<2.7	<2.7	<2.7	-	<2.7	-	-	-	<2.7	-	<2.7	<2.7	-	-	-	-	<2.7	<2.7
Dichlorodifluoromethane	µg/l			<1.3	<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	<1.3	<1.3
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	<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	<2.5
Isopropylbenzene	µg/l			<1.4	<1.4	<1.4	14.3	14.9	-	22.4	-	-	-	29.5	-	33.4	<1.4	-	-	-	-	11.6	<1.4
n-Butylbenzene	µg/l			<2	<2	<2	<2	<2	-	6.1	-	-	-	<2	-	7.83	<2	-	-	-	-	<2	<2
Propylbenzene	µg/l			<2.6	<2.6	<2.6	19.2	19.8	-	27.7	-	-	-	32.7	-	39.7	<2.6	-	-	-	-	14.5	<2.6
sec-Butylbenzene	µg/l			<1.7	<1.7	<1.7	<1.7	<1.7	-	2.15	-	-	-	<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	<1.2	538	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	337	<1.2
tert-Amyl methyl ether (TAME)	µg/l			<1	<1	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
tert-Butylbenzene	µg/l			<2	<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	<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	<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	<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	-	-	-	-	11.3	<2.5
Trichlorofluoromethane	µg/l			<1.3	<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	1.82	<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	<1.2

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ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring Visit 4 (15th - 16th July 2010)

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	B8	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	1.60-2.80	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	31.8	7.35	11.2	38.3	23.9	7.8	9.07	1.68	104	<0.12	17.6	9.3	11.8	1.27	7.57	3.44	1.73	2.5	167	2.91
Cadmium (dissolved)	µg/l	5	SI 278/2007	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.567	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.172	<0.1	0.32	<0.1
Chromium (dissolved)	µg/l	50	SI 278/2007	7.49	5.34	2.63	6.43	5.21	2.57	4.39	1.45	1.7	0.577	15.9	6.72	6.41	4.59	2.44	6.83	3.74	5.5	22.9	2.51
Copper (dissolved)	µg/l	2000	SI 278/2007	<0.85	0.915	<0.85	<0.85	<0.85	<0.85	<0.85	1.52	3.95	2.03	1.29	<0.85	2.2	2.51	1.64	<0.85	7.73	1.47	3.84	4.84
Lead (dissolved)	µg/l	25	SI 278/2007	0.02	0.05	<0.02	0.054	0.422	<0.02	<0.02	0.341	0.06	<0.02	<0.02	<0.02	0.19	<0.02	<0.02	0.055	0.144	0.212	4.15	0.122
Nickel (dissolved)	µg/l	20	SI 278/2007	4.93	3.84	7.73	9.24	2.28	6.18	5.8	2.17	53.4	1.94	4.39	12.3	6.01	14.3	9	3.53	5.61	6.69	35.4	3.6
Selenium (dissolved)	µg/l	10	SI 278/2007	1.08	1.02	2.86	5.73	16.9	1.19	1.48	0.928	22.7	<0.39	13.6	8.99	8.46	1.51	3.93	1.07	1.56	1.08	26.1	1.69
Zinc (dissolved)	µg/l	5000	WHO Drinking water Quality Guideline Value	10.8	4.29	3.63	3.48	3.16	4.23	1.57	3.79	24.7	3.07	2.04	3.48	5.29	6	2.27	2.1	4.82	2.9	173	2.49
Mercury (dissolved)	µg/l	1	SI 278/2007	<0.01	<0.01	<0.01	<0.01	0.0179	<0.01	<0.01	<0.01	0.0283	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0101	<0.01	0.0677	<0.01
Ammonium	µg/l	300	SI 278/2007	12200	3640	21200	132000	107000	6660	14100	778	59900	315	67000	40200	14000	6610	67200	17400	571	10900	215000	1650
Sulphate (soluble)	µg/l	250000	SI 278/2007	324000	233000	319000	130000	49400	344000	384000	13700	416000	123000	545000	254000	426000	942000	426000	189000	266000	800000	728000	564000
Phenols	µg/l	0.5	SI 81/1988	<0.2	<0.2	960	127000	304000	<0.2	520	<0.2	125000	<0.2	32600	<0.2	14100	<0.2	10300	<0.2	<0.2	<0.2	1820000	<0.2
Total Cyanide	µg/l	50	SI 278/2007	241	166	<0.05	206	363	129	826	97	5990	<0.05	783	301	358	422	961	<0.05	<0.05	267	14600	771
pH Value	µg/l	6.5	SI 278/2007	8.26	8.32	7.75	8.45	8.37	7.96	7.96	8.04	9.12	7.95	7.75	7.73	8.05	7.59	8.18	8.04	8.19	7.72	9.33	7.94
pH Value	µg/l	9.5	SI 278/2007	8.26	8.32	7.75	8.45	8.37	7.96	7.96	8.04	9.12	7.95	7.75	7.73	8.05	7.59	8.18	8.04	8.19	7.72	9.33	7.94
BTEX																							
Benzene	µg/l	1	SI 278/2007	117	<7	40	8020	16300	13	618	<7	3690	<7	4940	91	3140	<7	1040	<7	<7	<7	14300	<7
Toluene	µg/l	700	WHO Drinking Water Quality Guideline Value	<4	<4	64	4550	5220	<4	237	<4	954	<4	3580	<4	2860	<4	554	<4	<4	<4	4870	<4
Ethyl benzene	µg/l	300	WHO Drinking Water Quality Guideline Value	<5	<5	17	275	203	<5	194	<5	45	<5	377	<5	269	<5	36	<5	<5	<5	271	<5
Xylene	µg/l	500	WHO Drinking Water Quality Guideline Value	49	<10	113	2590	1990	74	745	<10	512	<10	2460	<10	2450	<10	365	<10	<10	<10	2650	<10
Petroleum Hydrocarbons																							
GRO (C4-C12)	µg/l	10	SI 81/1988	834	153.3	922	26810	39420	1625	5470	<36.3	12030	<20	21000	288.8	21910	<20	5000	102.1	<20	<20	52100	<20
MTBE	µg/l			<3	<3	<3	<6	<15	<3	<3	<3	<6	<3	<6	<3	<3	<3	<3	<3	<3	<3	<15	<3
Aliphatics C5-C6	µg/l			<10	<10	<10	83.9	124	<10	<10	<10	107	<10	20.2	<10	<10	<10	<10	<10	<10	<10	868	<10
Aliphatics C6-C8	µg/l			58.9	<10	24.7	651	2900	<10	11.3	<10	1220	<10	1890	14.4	2030	<10	513	<10	<10	<10	3910	<10
Aliphatics C8-C10	µg/l			53.2	15	75.1	777	1110	190	241	<10	484	<10	940	25.1	1100	<10	201	10.2	<10	<10	1850	<10
Aliphatics C10-C12	µg/l			190	46.4	190	3500	3990	425	1230	<10	1710	<10	2140	48.3	3380	<10	798	30.6	<10	<10	8230	<10
Aliphatics C12-C16	µg/l			<10	334	<10	35	<10	367	99	65	<10	<10	<10	<10	90	625	<10	26	<10	<10	<10	<10
Aliphatics C16-C21	µg/l			<10	580	<10	14	<10	235	162	72	<10	<10	<10	<10	79	389	<10	43	<10	<10	<10	<10
Aliphatics C21-C35	µg/l			<10	328	<10	<10	<10	110	108	203	<10	<10	<10	<10	65	448	<10	281	<10	<10	<10	<10
Aromatics C6-C7	µg/l			117	<10	40	8020	16300	13	618	<10	3690	<10	4940	91	3140	<10	1040	<10	<10	<10	14300	<10
Aromatics C7-C8	µg/l			<10	<10	64	4550	5220	<10	237	<10	954	<10	3580	<10	2860	<10	554	<10	<10	<10	4870	<10
Aromatics C8-C10	µg/l			129	22.4	243	4030	3850	359	1300	12.1	1280	<10	4250	37.7	4360	<10	702	15.4	<10	<10	5700	<10
Aromatics C10-C12	µg/l			286	69.5	285	5250	5990	637	1840	14.1	2570	<10	3220	72.5	5070	<10	1200	45.9	<10	<10	12300	<10
Aromatics C12-C16	µg/l			615	43	608	12700	28300	702	2000	52	9600	<10	6940	14	5800	1120	3640	<10	<10	<10	62200	<10
Aromatics C16-C21	µg/l			377	139	391	1510	1980	537	1350	174	809	<10	734	10	1940	1920	617	54	<10	<10	3500	<10
Aromatics C21-C35	µg/l			272	288	267	385	348	464	1120	1100	313	<10	223	49	1570	4720	198	347	<10	20	756	<10
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	SI 81/1988	2100	1870	2190	41500	70100	4040	10300	1690	22700	<10	28900	362	31500	9220	9450	853	<10	20	119000	<10
PAHs																							
Acenaphthene	µg/l			26.7	0.17	10.9	23.2	36.3	34.3	63.5	2.94	12.5	0.04	49.1	4.95	47.1	46	12.5	1.93	<0.015	0.1	31.6	<0.015
Acenaphthylene	µg/l			7.54	1.49	54.5	174	277	5	137	9.41	89	0.32	75.9	2.5	198	131	76.2	4.1	0.16	0.22	190	0.07
Anthracene	µg/l			1.48	0.65	8.87	28.6	42.6	4.57	52.3	6.19	15.9	0.08	4.91	1.69	47.7	130	12.9	1.83	0.05	0.2	21.6	0.09
Benzo(a)anthracene	µg/l			6.06	3.43	3.19	6.75	6.06	5.29	14.9	15.4	4.75	0.68	<1.7	4.28	19	90.7	2.63	7.24	0.16	1.26	<1.7	0.97
Benzo(a)pyrene	µg/l	0.01	SI 278/2007	6.92	4.73	2.34	4.09	2.18	4.19	7.32	16.1	2.15	1.04	1.28	4.22	11.4	75.3	0.81	9.57	0.3	1.7	<0.9	1.39
Benzo(b)fluoranthene	µg/l			4.86	5.6	3.01	5.65	3.52	5.2	10.5	17.4	3.29	1.41	<2.3	5.15	17	94.3	1.32	12.3	0.32	2.34	<2.3	1.97
Benzo(ghi)perylene	µg/l			3.45	2.93	0.96	2.01	<1.6	2.04	3.14	10.1	0.88	0.74	<1.6	2.45	8.92	43.9	<0.32	5.26	0.22	1.43	<1.6	1.3
Benzo(k)fluoranthene	µg/l			1.83	2.17	1.13	2.18	<2.7	1.8	3.73	7.37	1.25	0.44	<2.7	2.23	7.69	37.8	0.54	4.33	0.11	0.85	<2.7	0.67
Chrysene	µg/l			4.25	2.08	2.09	5.46	5.31	3.23	10.3	11.9	3.51	0.57	1.69	3.31	15.4	67.7	1.82	5.04	0.1	1.02	<1.3	0.77
Dibenzo(ah)anthracene	µg/l			0.73	0.78	0.28	<0.64	<1.6	0.62	0.8	2.68	<0.32	0.18	<1.6	0.739	2.6	12.6	<0.32	1.47	0.06	0.34	<1.6	0.27
Fluoranthene	µg/l	4	WHO Drinking Water Quality Guideline Value	13.8	8.31	13.4	33.4	47	20.5	104	37.7	23.6	1.1	12.8	7.64	81.4	289	15.8	19	0.21	2.01	14.9	1.38
Fluorene	µg/l			3.63	0.3	24.6	68.6	114	16.1	108	3.78	36.8	0.06	25.4	1.94	96	142	39.8	1.81	0.04	0.1	67.2	0.03
Indeno(123cd)pyrene	µg/l			2.57	2.85	0.99	1.67	<1.4	2.09	2.79	8.97	0.85	0.67	<1.4	2.17	8.23	39.6	<0.28	5.22	0.18	1.21	<1.4	1.06
Naphthalene	µg/l			1.97	0.59	4.17	2860	5040	0.83	1390	3.86	1100	2.86	3270	29	3690	354	890	3.03	<0.1	0.15	2580	0.22
Phenanthrene	µg/l			1.71	0.94	30.8	95.9	155	12.2	184	12.1	55.3	0.22	48.1	4.86	165	378	43.9	5.77	0.1	0.57	72.5	0.18
Pyrene	µg/l			20	8.08	8.24	22.5	31.8	13.1	67.1	25.3	15.5	<5	8.26	6.23	53.5	196	10.4	13	0.17	2.03	9.42	1.23
Total PAH # (Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)perylene & Indeno(123cd)pyrene)	µg/l	0.1	SI 278/2007	12.71	13.55	6.09	11.51	<9.22	11.13	20.16	43.84	6.27	3.26	<8	12	41.84	215.6	<2.46	27.11	0.83	5.83	<8	5
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	<1.3
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	<1.3	-	-	-	-	4.67	<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	<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	<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	<1.2
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	<1.2
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	<1.3
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	<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	<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	<2.3
1.2.4-Trimethylbenzene	µg/l			19.1	2.63	18	217	731	-	248	-	-	-	338	-	325	<1.7	-	-	-	-	116	<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	<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	<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	<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	<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	<3
1,3,5-Trichlorobenzene	µg/l			<10	<10	<10	<10	<10	-	<10	-	-	-	<10	-	<10	<10	-	-	-	-	<10	<10
1,3,5-Trimethylbenzene	µg/l			6.29	<1.8	7.63	88.8	52.5	-	76	-	-	-	94.6	-	127	<1.8	-	-	-	-	50.6	<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	<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	<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	<2.7
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	<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	<1.9
4-Chlorotoluene	µg/l			<1.9	<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	2.28	<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	<2.6
Bromobenzene	µg/l			<2	<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	<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	<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	<3
Bromomethane	µg/l			<2	<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Carbon Disulphide	µg/l			<1.3	<1.3	<1.3	<1.3	<1.3	-	1.55	-	-	-	4.47	-	<1.3	<1.3	-	-	-	-	5.51	<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	<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	<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	<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	<1.8
Chloromethane	µg/l			<9	<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	<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	<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	<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	<2.7
Dichlorodifluoromethane	µg/l			<7	<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	<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	<2.5
Isopropylbenzene	µg/l			<1.4	<1.4	<1.4	11.2	6.27	-	19.5	-	-	-	22.1	-	15.5	<1.4	-	-	-	-	8.7	<1.4
n-Butylbenzene	µg/l			<2	<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Propylbenzene	µg/l			<2.6	<2.6	<2.6	14.1	8.72	-	24.1	-	-	-	23	-	7.52	<2.6	-	-	-	-	9.99	<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	<1.7
Styrene	µg/l	20	WHO Drinking Water Quality Guideline Value	<1.2	<1.2	<1.2	161	237	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	247	<1.2
tert-Amyl methyl ether (TAME)	µg/l			<1	<1	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
tert-Butylbenzene	µg/l			<2	<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	<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	<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	<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	-	-	-	-	8.52	<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	<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	<1.2

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ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring Visit 5 (20th - 21st Oct 2010)

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	33.3	10.7	12.3	32.9	17	11.4	6.86	113	4.55	17.7	7.54	16.1	6.49	16.7	5.39	2.84	4.28	42.7	3.25
Cadmium (dissolved)	µg/l	5	SI 278/2007	0.107	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.452	<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	6.1	5.09	3.11	7.87	5.48	6.42	4.88	1.83	5.14	9.16	7.17	4.26	8.96	3.69	4.3	4.5	3.31	7.76	1.1
Copper (dissolved)	µg/l	2000	SI 278/2007	1.88	<0.85	<0.85	1.18	<0.85	1.19	1.3	0.864	<0.85	3.44	1.05	<0.85	1.31	<0.85	<0.85	1.85	1.61	2.14	2.08
Lead (dissolved)	µg/l	25	SI 278/2007	0.125	0.072	0.07	0.248	0.027	<0.02	0.118	0.183	0.065	<0.02	0.065	0.166	0.064	0.059	0.024	0.052	0.393	0.534	0.039
Nickel (dissolved)	µg/l	20	SI 278/2007	6.19	4.24	5.64	1.59	4.07	4.13	8.01	56.3	8.41	6.14	9.24	4.99	7.83	7.1	4.24	4.96	7.57	15.7	3.86
Selenium (dissolved)	µg/l	10	SI 278/2007	1.54	1.65	3.49	48.6	3.1	16.5	1.95	35.7	2.36	40.1	5.97	9.38	2.05	19	1.2	3.45	1.36	23	1.34
Zinc (dissolved)	µg/l	5000	WHO Drinking water Quality Guideline Value	1.29	0.526	0.664	0.877	0.599	<0.41	0.98	44.8	1.5	1.67	1.7	3.26	1.37	<0.41	0.452	0.809	0.83	3.11	0.553
Mercury (dissolved)	µg/l	1	SI 278/2007	<0.01	<0.01	<0.01	0.0185	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0244	<0.01
Ammonium	µg/l	300	SI 278/2007	10000	2990	5030	98400	7150	11400	1900	45700	17700	38700	27000	13000	11400	33800	14900	824	5810	56700	1350
Sulphate (soluble)	µg/l	250000	SI 278/2007	315000	245000	272000	54800	79900	420000	112000	462000	62700	605000	506000	158000	676000	385000	203000	165000	734000	573000	576000
Phenols	µg/l	0.5	SI 81/1988	420	<25	140	167000	400	2520	350	180000	2630	4180	520	2930	2710	10400	50	<25	<25	1010000	<25
Total Cyanide	µg/l	50	SI 278/2007	254	142	73	400	88	967	159	7860	<50	980	379	127	933	292	<50	<50	620	1840	941
pH Value	µg/l	6.5	SI 278/2007	8.08	8.3	7.5	8.45	8.28	7.54	8.28	8.41	7.68	8.04	8.2	8.38	8.03	8.29	8.09	8.12	7.9	7.9	8
pH Value	µg/l	9.5	SI 278/2007	8.08	8.3	7.5	8.45	8.28	7.54	8.28	8.41	7.68	8.04	8.2	8.38	8.03	8.29	8.09	8.12	7.9	7.9	8
BTEX																						
Benzene	µg/l	1	SI 278/2007	<7	<7	<7	13500	62	616	25	7750	206	4310	266	1180	43	1030	11	<7	<7	18200	<7
Toluene	µg/l	700	WHO Drinking Water Quality Guideline Value	<4	<4	12	4470	43	460	5	2040	47	3100	11	1290	29	609	<4	<4	<4	5680	<4
Ethyl benzene	µg/l	300	WHO Drinking Water Quality Guideline Value	<5	<5	<5	152	87	166	11	86	<5	352	17	151	7	54	<5	<5	<5	268	<5
Xylene	µg/l	500	WHO Drinking Water Quality Guideline Value	97	<10	42	1520	307	774	36	940	15	2350	49	1440	60	537	<10	<10	<10	2430	<10
Petroleum Hydrocarbons																						
GRO (C4-C12)	µg/l	10	SI 81/1988	1244	96	256	32270	3610	6800	253	18700	417	18270	692	8170	480	5250	90	31	28	51800	<20
MTBE	µg/l			<3	<3	<3	<15	<3	<3	<3	<6	<3	<3	<3	<3	<3	<3	<3	<3	<3	<30	<3
Aliphatics C5-C6	µg/l			<10	<10	<10	69	<10	<10	<10	73	<10	18	<10	<10	<10	11	<10	<10	<10	269	<10
Aliphatics C6-C8	µg/l			38	10	<10	506	32	67	11	525	11	217	17	70	15	73	<10	<10	<10	1980	<10
Aliphatics C8-C10	µg/l			144	19	35	1470	395	492	36	949	22	1040	49	644	64	312	14	<10	<10	2650	<10
Aliphatics C10-C12	µg/l			519	31	76	5720	1450	2330	62	3450	58	3690	149	1770	130	1450	28	11	<10	11100	<10
Aliphatics C12-C16	µg/l			<10	427	<10	11	306	<10	108	18	<10	<10	<10	43	<10	13	58	<10	<10	552	<10
Aliphatics C16-C21	µg/l			<10	520	<10	17	140	<10	125	29	<10	<10	77	27	11	31	39	<10	<10	683	<10
Aliphatics C21-C35	µg/l			<10	314	<10	12	32	<10	431	22	136	<10	151	17	<10	13	246	<10	<10	861	<10
Aromatics C6-C7	µg/l			<10	<10	<10	13500	62	616	25	7750	206	4310	266	1180	43	1030	11	<10	<10	18200	<10
Aromatics C7-C8	µg/l			<10	<10	12	4470	43	460	<10	2040	47	3100	11	1290	29	609	<10	<10	<10	5680	<10
Aromatics C8-C10	µg/l			194	14	68	2660	657	1270	71	1660	32	3390	98	2030	110	799	11	<10	<10	4470	<10
Aromatics C10-C12	µg/l			346	21	51	3810	964	1550	41	2300	38	2460	99	1180	87	967	19	<10	<10	7380	<10
Aromatics C12-C16	µg/l			209	89	41	20900	802	144	107	12400	121	5310	152	1910	1540	1910	55	<10	<10	69400	<10
Aromatics C16-C21	µg/l			183	231	27	1520	472	101	148	1170	<10	550	20	820	593	454	120	<10	<10	7220	<10
Aromatics C21-C35	µg/l			63	473	61	514	442	27	908	871	68	127	176	781	268	443	649	44	41	6780	79
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	SI 81/1988	1700	2150	385	55200	5800	7070	2080	33200	742	24200	1270	11800	2690	8120	1260	75	69	137000	95
PAHs																						
Acenaphthene	µg/l			0.855	0.142	67	21.8	47.8	31.9	1.22	11.6	1.37	58.9	4.1	36	3.91	8.72	2.3	0.0512	0.139	50.1	0.0197
Acenaphthylene	µg/l			1.01	1.28	331	211	6.93	34.4	5.57	100	4.97	72.2	1.9	141	2.83	58.1	4.66	0.465	0.134	380	0.148
Anthracene	µg/l			0.478	0.514	212	28	4.04	9.89	2.3	11.5	2.69	10.9	1.42	35	1.09	15.7	2.35	0.178	0.157	50.3	0.243
Benzo(a)anthracene	µg/l			1.12	3.24	354	5.3	7.04	6.22	14.6	5.99	64.5	1.92	7.59	19.5	2.32	14.1	17.8	0.8	1.2	6.87	3.07
Benzo(a)pyrene	µg/l	0.01	SI 278/2007	1.55	7.2	443	3.12	10.1	3.41	33.8	2.05	132	1.19	11.3	15.5	2.5	14.1	32.5	3.95	2.35	2.94	5.6
Benzo(b)fluoranthene	µg/l			0.564	6.76	386	3.14	9.15	3.03	28.8	<2.3	128	1.36	10.4	12.3	1.99	9.84	29.3	2.95	2.37	3.1	5.7
Benzo(ghi)perylene	µg/l			0.733	4.72	313	2.08	6.08	1.64	21.1	<1.6	72.1	1.14	7.28	8.19	1.44	5.21	20.2	2.21	2.32	1.66	5.61
Benzo(k)fluoranthene	µg/l			1.07	5.84	400	3.46	7.91	2.77	27.4	<2.7	110	1.39	11.1	13.2	2.23	14.6	27.7	2.49	2.2	2.99	5.08
Chrysene	µg/l			0.92	2.89	216	8.51	5.68	4.97	12.8	2.65	39.4	2.1	7.32	16	2.16	10.6	14.7	0.719	1.19	6.72	2.91
Dibenzo(ah)anthracene	µg/l			0.107	1.44	87.4	0.814	1.51	0.464	6.46	<1.6	20.9	0.74	1.76	2.36	0.391	1.89	6.49	0.668	0.542	0.848	1.26
Fluoranthene	µg/l	4	WHO Drinking Water Quality Guideline Value	4.31	7.24	805	32.9	22.7	33.4	24.6	16.9	34.2	10.7	10.2	61.3	10.3	28.5	27	0.864	1.59	53.5	3.43
Fluorene	µg/l			0.398	0.281	222	73.6	18	57.1	1.42	35.2	1.45	42.2	1.43	74.4	1.54	36.5	2.49	0.173	0.0853	126	0.061
Indeno(123cd)pyrene	µg/l			0.519	4.8	292	2.29	6.04	1.75	20.9	<1.4	70.4	1.2	6.98	8.25	1.51	6.18	18.8	1.99	2.03	1.93	5.01
Naphthalene	µg/l			0.315	0.441	95.2	5170	4.45	23	2.41	2030	17.7	4640	1.71	99.7	2.14	19.5	3.44	0.202	0.196	6130	0.266
Phenanthrene	µg/l			0.65	0.746	383	95.4	7.84	71.2	5.42	42.3	6.89	50.7	3	90.6	1.12	51.4	7.89	0.548	0.395	154	0.342
Pyrene	µg/l			9.25	7.64	600	20.7	13.9	20.6	14.1	11.2	30.8	326	8.14	38.2	4.23	18.7	17	0.605	1.62	34.3	3.07
Total PAH # (Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(ghi)perylene & Indeno(123cd)pyrene)	µg/l	0.1	SI 278/2007	2.886	22.12	1391	10.97	29.18	9.19	98.2	<8	380.5	5.09	35.76	41.94	7.17	35.83	96	9.64	8.92	9.68	21.4
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	-	-	-	-	8.31	<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			26.6	<1.7	14.9	106	-	239	-	-	-	395	-	300	27.1	-	-	-	-	131	<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			8.04	<1.8	2.67	42.9	-	74.9	-	-	-	109	-	117	11.5	-	-	-	-	56.2	<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	-	11.5	-	-	-	36.7	-	20.2	<2.6	-	-	-	-	18	<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	-	1.43	-	-	-	<1.3	-	<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	-	-	-	-	2.26	<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			9.59	<1.4	1.4	5.38	-	20.6	-	-	-	30.1	-	15.9	2.28	-	-	-	-	9.19	<1.4
n-Butylbenzene	µg/l			<2	<2	<2	<2	-	6.84	-	-	-	5.58	-	<2	<2	-	-	-	-	<2	<2
Propylbenzene	µg/l			<2.6	<2.6	<2.6	6.16	-	24.9	-	-	-	31.3	-	17	<2.6	-	-	-	-	11.3	<2.6
sec-Butylbenzene	µg/l			<1.7	<1.7	<1.7	<1.7	-	1.72	-	-	-	1.88	-	<1.7	<1.7	-	-	-	-	<1.7	<1.7
Styrene	µg/l	20	WHO Drinking Water Quality Guideline Value	<1.2	<1.2	<1.2	219	-	<1.2	-	-	-	<1.2	-	77.4	<1.2	-	-	-	-	352	<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	-	-	-	-	2.49	<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	<2.5
Trichlorofluoromethane	µg/l			<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	2.3	<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

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ANALYSIS OF GROUNDWATER - Limerick Gasworks, 2003 data.

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

Determinand	Units	Screening Value (ug/l) Freshwater	Screening Value (ug/l) Coastal/Estuary /Marine	Source of screening value	Ground type																														
					Borehole	BH31	BH31	BH31	BH32	BH32	BH32	BH33	BH33	BH33	BH35	BH35	BH35	BH35A	BH35A	BH36	BH36	BH36	BH36A	BH36A	BH36A	BH37	BH37	BH37A	BH37A	BH38	BH38	BH38	BH38A	BH38A	BH38A
					Depth (mbgl)	2.52	2.61	2.65	1.20	1.27	2.24	6.80	1.63	0.85	2.97	3.14	3.21	3.159	2.205	1.84	1.979	1.865	2.46	2.284	2.035	2.2	2.36	2.197	2.351	4.62	2.513	2.12	9.73	3.099	2.416		
						20/08/2003	01/09/2003	16/09/2003	20/08/2003	01/09/2003	16/09/2003	20/08/2003	01/09/2003	16/09/2003	20/08/2003	01/09/2003	16/03/2009	01/09/2003	16/09/2003	20/08/2003	01/09/2003	16/09/2003	20/08/2003	01/09/2003	16/09/2003	01/09/2003	16/09/2003	20/08/2003	01/09/2003	16/09/2003	20/08/2003	01/09/2003	16/09/2003		
Inorganics																																			
Arsenic (dissolved)	ug/l	25	20	SI 272/2009 Annual Ave		4	4	4	11	8	10	9	7	11	5	3	5	3	3	8	9	3	17	8	13	10	3	3	12	7	93	69	32	20		
Cadmium*	ug/l	1.5	1.5	SI272/2009 MAC		0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4		
Chromium (dissolved)	ug/l	32	32	SI272/2009 MAC		2	1	3	2	1	1	5	3	6	2	2	6	1	4	6	1	6	2	1	4	4	4	5	6	7	57	48	42	7		
Copper (dissolved)	ug/l	30*		SI 272/2009 Annual Ave		5	4	3	2	1	1	4	2	1	5	1	1	1	1	5	1	1	4	1	1	1	5	1	1	5	18	19	51	4		
Lead (dissolved)	ug/l	7.2	7.2	SI 272/2009 Annual Ave		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Nickel (dissolved)	ug/l	20	20	SI 272/2009 Annual Ave		7	9	4	4	11	1	10	14	14	7	3	2	5	8	7	8	4	7	5	6	4	1	2	4	6	31	31	22	2		
Selenium (dissolved)	ug/l	1	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		1	2	1	2	1	1	3	1	1	4	1	3	10	2	10	1	1	3	1	1	17	3	7	19	10	21	25	35	13		
Zinc (dissolved)	ug/l	100*	40	SI 272/2009 Annual Ave		25	46	26	14	63	17	12	37	34	28	7	20	15	18	18	8	21	19	11	20	28	17	19	14	16	14	28	37	10		
Mercury*	ug/l	0.07	0.07	SI272/2009 MAC		0.05	0.05	0.06	0.05	0.05	0.07	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.07	0.05	0.05	0.05	0.05	0.05	0.14		
total Ammonium	ug/l	1000	-	Freshwater Fish Directive		1200	900	1200	200	800	900	25100	47000	45900	18200	21000	16200	15900	18200	2800	4900	6100	8500	9500	10200	26400	85300	29700	24900	48800	568600	514200	455200	64900		
Nitrate	ug/l	50000	50000	EQS		1000	300	300	700	300	400	500	220	300	700	780	600	230	500	800	250	600	600	400	300	400	300	220	300	300	2750	500	800	180		
Sulphate (soluble)	ug/l	200000	-	EQS & IGV		242000	252000	246000	50000	53000	42000	190000	182000	192000	580000	575000	573000	539000	657000	292000	271000	261000	400000	410000	380000	122000	198000	149000	149000	463000	790	997000	967000	544000		
Phenols	ug/l	46	46	SI272/2009 MAC		10	10	10	10	10	9350	40	10410	10	10	3550	10	10	10	10	10	10	10	10	10	540	48760	20850	6000	1360	13604000	139600	142090	43110		
cresols						10	10	10	10	10	13010	60	15880	10	10	9780	10	10	10	10	10	10	10	10	10	710	37660	14060	11560	1920	128170	200170	139270	54200		
Free Cyanide - (total CN in lab results)	ug/l	10	10	SI 272/2009 Annual Ave		500	900	500	500	500	500	500	500	500	700	900	700	800	800	500	500	500	500	500	500	500	500	500	500	1300	2300	2200	2200	1800		
pH Value	ug/l	6.5	6.5	Interim Guideline Values		7.83	7.94	7.12	8.23	8.5	7.3	8.08	8.19	7.02	7.99	8.01	7.21	8	7.18	8.27	7.91	7.29	8.1	8.43	7.13	8.27	7.19	8.19	7.39	7.54	8.6	9.59	8.01	7.66		
pH Value	ug/l	9.5	9.5	Interim Guideline Values		7.83	7.94	7.12	8.23	8.5	7.3	8.08	8.19	7.02	7.99	8.01	7.21	8	7.18	8.27	7.91	7.29	8.1	8.43	7.13	8.27	7.19	8.19	7.39	7.54	8.6	9.59	8.01	7.66		
BTEX																																			
Benzene	ug/l	50	50	SI272/2009 MAC		1	1	10	1	1	10664	8244	17545	7912	17	917	768	595	480	1	1	1	1	1	10	1579	2645	2425	5964	10853	14408	18253	20500	23098	1665286		
Toluene	ug/l	10	10	SI 272/2009 Annual Ave		1	1	10	1	1	6110	3570	3220	3145	6	167	92	48	37	1	1	1	1	1	10	524	351	1574	2744	5300	1641	5281	5412	4763	162474		
Ethyl benzene	ug/l	10	10	EQS & IGV		1	1	10	1	1	408	255	5047	636	36	222	125	63	35	1	1	1	1	1	10	35	451	141	2744	324	2955	6474	7016	8725	1393232		
Xylene	ug/l	10	10	SI 272/2009 Annual Ave		1	1	10	5	15	3903	2861	2017	1917	277	771	302	171	185	1	1	1	1	1	18	132	126	1414	2171	3525	831	3393	3261	3501	1231561		
Petroleum Hydrocarbons																																			
GRO (C4-C12)	ug/l	-	-	-																															
MTBE	ug/l	30	30	IGV				10			10		10	10			10		10			10			10		10		10		10	10	1125	27	46859	
Aliphatics C5-C6	ug/l	-	-	-				10.00			10.00			10.00			10	10		10		10			10		10		10			10	10			
Aliphatics C6-C8	ug/l	-	-	-				10.00			10.00			46			15	16		10		10			14		16		211			27	135			
Aliphatics C8-C10	ug/l	-	-	-		50.00	50.00	10.00	50.00	50.00	10.00	50	50	23	50	50	44	25	50	10	50	10	50	50	22	50	49	50	214	50	50	240	558			
Aliphatics C10-C12	ug/l	-	-	-		50.00	50.00	10.00	50.00	50.00	10.00	50.00	50.00	248	50.00	50.00	204	56		10		10	50	50	35	50	241	50	1266	50	50	3033	4144			
Aliphatics C12-C16	ug/l	-	-	-				10.00			67			10.00			21	10		671		42			10		10		10			10	198			
Aliphatics C16-C21	ug/l	-	-	-		50.00	50.00	10.00	50.00	50.00	35	50.00	50.00	10.00	50.00	50.00	10	10		634		42	50	50	10	50	10	50	10	50	50	10	29			
Aliphatics C21-C35	ug/l	-	-	-		50.00	50.00	10.00	50.00	50.00	16	50.00	50.00	10.00	50.00	68.00	10	10		219		10	50	50	10	50	10	50	10	50	50	10	10			
Aromatics C6-C7	ug/l	-	-	-				10.00			10			2040			768	283		10		10			10		2645		5964			18253	20500			
Aromatics C7-C8	ug/l	-	-	-				10.00			10			636			89	25		10		10			10		451		2463			6474	7016			
Aromatics 8-10	ug/l	-	-	-		50.00	50.00	10.00	50.00	50.00	10	50.00	50.00	303	50	50	411	184		10	50	10	50	50	50	50	200	50	1784	50	50	3925	5061			
Aromatics 10-12	ug/l	-	-	-		50.00	50.00	10.00	351.00	50.00	10	159.00	50.00	371	281	91	307	85		10	50	10	50	50	53	101	361	50	1898	340	711	4549	6215			
Aromatics 12-16	ug/l	-	-	-				14.00			220			102			233	72		401		102			10		65		99			32	1322			
Aromatics 16-21	ug/l	-	-	-		50.00	50.00	10.00	207.00	50.00	58	851.00	72.00	15	244	652	102	22		51	50	10	50	50	10	300	20	74	10	885	131	10	324			
Aromatics 21-35	ug/l	-	-	-		50.00	50.00	10.00	69.00	50.00	19	319.00	50.00	10	86	752	31	10		10	50	10	50	50	10	140	10	87	10	1044	50	10	130			
TPH (Aliphatics and Aromatics C5-C35)	ug/l	10	10	EQS & IGV		716	566		5067	767		22345	45936		7085	16350					1489		2561	2703		18921		8137		20568	103689					
PAHs																																			
Acenaphthene	ug/l	5.8	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		1.547	0.536	3.704	35.828	17.871	33.303	12.405	10.854	13.922	12.243	4.055	32.639	2.274	15.105	63.819	10.122	79.758	23.14	9.183	4.201	14.593	3.682	4.062	17.551	179.215	4.925	4.491	18.603	4.025		
Acenaphthylene	ug/l	-	-	-																															
Anthracene	ug/l	0.4	0.4	SI272/2009 MAC		0.038	0.017	0.12	13.038	4.192	15.077	16.014	7.894	10.372	6.763	7.95	29.541	1.519	8.041	7.328	0.419	4.134	0.761	0.116	0.255	22.771	3.535	8.194	14.72	573.582	4.141	3.37	25.429	10.051		
Benzo(a)anthracene	ug/l	0.018	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		0.01	0.027	0.032	1.951	0.474	5.025	7.608	0.637	7.102	3.923	5.096	8.232	0.48	2.443	1.458	0.237	0.901	0.12	0.047	0.314	10.424	4.081	5.388	1.773	514.131	2.203	0.997	16.973	5.936		
Benzo(a)pyrene	ug/l	0.1	0.1	SI272/2009 MAC		0.01	0.01	0.01	1.041	0.214	2.729	4.407	0.206	5.083	2.851	3.232	5.154	0.287	1.483	1.026	0.141	0.496	0.054	0.01	0.111	5.997	3.312	3.254	0.87	382.959	1.42	0.513	11.609	3.688		
Benzo(b)fluoranthene	ug/l	0.5	-	Interim Guideline Value		0.01	0.014	0.01	1.748	0.072	2.449	5.06	0.067	5.404	5.47	5.185	4.054	0.147	1.556	0.831	0.169	0.323	0.063	0.01	0.061	7.518	3.482	6.433	0.613	415.653	2.169	0.64	21.634	1.779		
Benzo(ghi)perylene	ug/l	0.05	-	Interim Guideline Value		0.01	0.01	0.01	0.524	0.106	1.401	2.038	0.125	2.915	1.792	1.921	2.822	0.189	0.846	0.544	0.078	0.21	0.047	0.01	0.058	3.215	1.95	1.83	0.405	195.363	0.893	0.296	6.477	2.24		
Benzo(k)fluoranthene	ug/l	0.05	-	Interim Guideline Value		0.01	0.011	0.01	1.117	0.253	1.925	4.84	0.282	4.588	3.179	3.175	3.538	0.332	1.41	0.765	0.133	0.329	0.086	0.015	0.138	6.959	2.573	3.507	0.642	355.949	1.561	0.411	11.278	4.007		
Chrysene	ug/l	-	-	-		0.01	0.013	0.013	1.254	0.321	3.813	4.777	0.38	5.636	2.657	3.629	6.06	0.335	1.808	1.035	0.168	0.683	0.09	0.023	0.205	6.873	3.486	3.905	1.228	358.777	1.531	0.564	10.656	4.189		
Dibenzo(ah)anthracene	ug/l	-	-	-		0.01	0.01	0.01	0.234	0.044	0.378	1.146	0.097	0.708	0.785	0.723	0.691	0.091	0.226	0.168	0.023	0.097	0.015	0.01	0.031	1.343	0.58	0.682	0.098	107.265	0.304	0.198	3.054	0.753		
Fluoranthene	ug/l	1	1	SI272/2009 MAC		0.069	0.045	0.155	9.697	4.049	23.354	17.992	4.335	21.925	10.229	15.128	34.134	2.139	10.521	5.075	0.821	3.215	0.646	0.2	1.698	29.049	9.937	16.018	10.684	780.186	6.17	3.64	43.489	16.737		
Fluorene	ug/l	3	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		0.606	0.147	1.845	52.158	22.153	39.498	47.83	33.702	22.015	21.714	10.52	114.33	3.84	25.097	30.366	1.751	24.343	6.86	1.102	0.677	52.403	6.268	12.455	58.464	659.971	8.284	7.409	48.648	14.741		
Indeno(123cd)pyrene	ug/l	0.05	-	Interim Guideline Value		0.01	0.01	0.01	0.514	0.107	1.285	2.219	0.124	2.541	1.733	1.793	2.495	0.162	0.686	0.395	0.057	0.137	0.041	0.01	0.043	3.054	1.55	1.641	0.34	203.381	0.687	0.234	6.571	1.901		
Naphthalene	ug/l	2.4	1.2	SI 272/2009 Annual Ave		0.281	0.463	0.65	343.692	1.147	2.044	85.537	284.058	272.85	87.859	85.752	6749.088	8.813	26.872	3.889	0.797	1.732	1.2	0.292	0.686	381.225	74.108	4.2	3283.746	1304.606	124.298	445.696	462.302	170.803		
Phenanthrene	ug/l	0.4	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		0.027	0.03	0.041	40.824	6.147	38.047	39.03	27.364	35.272	20.385	23.212	101.499	5.156	17.269	22.34	0.416	3.719	1.993	0.05	0.259	69.609	14.71	18.979	50.757	1003.547	16.164	9.612	79.368	28.776		
Pyrene	ug/l	0.025	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		0.045	0.035	0.153	5.183	2.066	13.649	10.992	2.577	14.039	6.314	9.722	22.571	1.254	6.639	6.558	0.86	4.429	0.443	0.141	1.333	19.304	8.31	9.685	7.229	606.318	4.51	2.665	28.97	11.013		
sum benzo(ghi)perylene and indeno(123-cd)pyrene	ug/l	0.002	0.002	SI 272/2009 Annual Ave		0.02	0.02	0.02	1.038	0.213	2.686	4.257	0.249	5.456	3.525	3.714	5.317	0.351	1.532	0.939	0.135	0.347	0.088	0.02	0.101	6.269	3.5	3.471	0.745	398.744	1.58	0.53	13.048	4.141		
sum benzo (b + K) fluoranthene	ug/l	0.03	0.03	SI 272/2009 Annual Ave		0.02	0.025	0.02	2.865	0.325	4.374	9.9	0.349	9.992	8.649	8.36	7.592	0.479	2.966	1.596	0.302	0.652	0.149	0.025	0.199	14.477	6.055	9.94	1.255	771.602	3.73	1.051	32.912	5.786		

metals * - total - freshwater, dissolved - marine

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ANALYSIS OF GROUNDWATER - Limerick Gasworks, 2003 data.

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

					Ground type																	
					Borehole	BH38A	BH39	BH39	BH40	BH40	BH41C	BH41C	BH42	BH42	BH43	BH43	BH7	BH7	BH7	TT101	TT54	TT55	TT58	TT59
					Depth (mbgl)	2.416	1.984	2.033	2.685	2.752	2.797	2.89	0.779	0.95	3.436	3.522	1.15	1.121	1.121	1	1	1	1	1
Determinand	**Units**	**Screening Value (ug/l)**		**Source of screening value**		16/09/2003	01/09/2003	16/09/2003	01/09/2003	16/09/2003	01/09/2003	16/09/2003	01/09/2003	16/09/2003	01/09/2003	16/09/2003	01/09/2003	16/09/2003	16/09/2003	30/07/2003	30/07/2003	15/08/2003	31/07/2003	30/07/2003
		Freshwater	Coastal/Estuary /Marine																			
Inorganics																						
Arsenic (dissolved)	ug/l	25	20	SI 272/2009 Annual Ave		26	10	6	4	3	18	13	67	127	2	4	20		30	6	13	11	11	7
Cadmium*	ug/l	1.5	1.5	SI272/2009 MAC		0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4		0.4	0.4	0.4	0.4	0.4	0.4
Chromium (dissolved)	ug/l	32	32	SI272/2009 MAC		16	3	6	11	9	1	5	16	25	1	2	9		7	10	2	3	3	7
Copper (dissolved)	ug/l	30*		SI 272/2009 Annual Ave		4	1	2	33	19	1	1	8	6	3	3	3		8	2	1	2	2	1
Lead (dissolved)	ug/l	7.2	7.2	SI 272/2009 Annual Ave		4	1	1	1	2	1	1	1	1	1	1	1		1	9	1	1	47	59
Nickel (dissolved)	ug/l	20	20	SI 272/2009 Annual Ave		8	5	4	25	23	3	3	81	68	7	4	19		19	12	5	7	6	14
Selenium (dissolved)	ug/l	1	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		16	1	1	5	3	3	1	46	55	1	1	5		6	-888000	2	4	1	1
Zinc (dissolved)	ug/l	100*	40	SI 272/2009 Annual Ave		27	6	24	5	16	13	15	12	67	14	40	83		121	50	3	3	5	20
Mercury*	ug/l	0.07	0.07	SI272/2009 MAC		0.05	0.13	0.05	0.05	0.05	0.07	0.05	0.05	0.05	0.05	0.05	0.05		0.05	0.05	0.05	0.05	0.05	0.05
total Ammonium	ug/l	1000	-	Freshwater Fish Directive		152300	29000	13000	88000	79800	16200	14100	256000	282800	2100	2900	18000		20500	20400	6300	7500	700	2000
Nitrate	ug/l	50000	50000	EQS		400	400	500	8400	1900	320	400	5190	400	300	600	980		300	700	900	670	3700	3800
Sulphate (soluble)	ug/l	200000	-	EQS & IGV		716000	1197000	98000	56000	453000	468000	718000	1180	1284000	825000	770000	1444000		1563000	728000	789000	962000	1142000	559000
Phenols	ug/l	46	46	SI272/2009 MAC		54900	13930	2380	10	140	440	460	2710	382180	10	1500	680		320	10	10	4790	10	10
cresols						98500	35070	4630	10	120	1080	1650	3070	522840	10	2010	2660		1200	10	20	17890	10	10
Free Cyanide - (total CN in lab results)	ug/l	10	10	SI 272/2009 Annual Ave		2100	1500	900	500	500	3300	2500	17500	11200	1200	700	21700		15500	500	1300	500	1400	2100
pH Value	ug/l	6.5	6.5	Interim Guideline Values		9.12	7.99	6.9	8.33	11.75	8.14	7.46	8.98	9.71	8.03	7.36	8.59		9.24	7.82	7.75	7.68	7.98	7.93
pH Value	ug/l	9.5	9.5	Interim Guideline Values		9.12	7.99	6.9	8.33	11.75	8.14	7.46	8.98	9.71	8.03	7.36	8.59		9.24	7.82	7.75	7.68	7.98	7.93
BTEX																								
Benzene	ug/l	50	50	SI272/2009 MAC		969958	1608	1205	2	10	1434	2102	19407	16221	1	10	10647	2848849	4558	313	1	5628	11	99
Toluene	ug/l	10	10	SI 272/2009 Annual Ave		1007852	1500	347	2	10	1560	1651	4015	4750	1	10	2875	155584	1262	25	1	8824	3	12
Ethyl benzene	ug/l	10	10	EQS & IGV		175504	383	473	2	10	731	1994	6051	5618	1	10	4292	1482170	1753	90	1	8984	4	21
Xylene	ug/l	10	10	SI 272/2009 Annual Ave		1590720	2534	894	3189	10	5654	6551	2488	2809	375	10	2939	1173072	1606	283	9	7469	12	95
Petroleum Hydrocarbons																								
GRO (C4-C12)	ug/l	-	-	-																				
MTBE	ug/l	30	30	IGV		87		10		10		23	45	10		10	10	61701	10			10		10
Aliphatics C5-C6	ug/l	-	-	-		92		10		10		12		49		10			10			10		
Aliphatics C6-C8	ug/l	-	-	-		395		113		10		354		226		10			13			15		
Aliphatics C8-C10	ug/l	-	-	-		1192	50	164	50	10	50	568	50	511		10	50		60	50	50	726	50	50
Aliphatics C10-C12	ug/l	-	-	-		5991	50	614	50	10	50	3568	50	2676		10	50		740	50	50	4502	50	50
Aliphatics C12-C16	ug/l	-	-	-		84		751		10		10		561		10			10			15501		
Aliphatics C16-C21	ug/l	-	-	-		55	50	1216	50	10	50	10	50	77		10	50		10	50	50	4629	107	69
Aliphatics C21-C35	ug/l	-	-	-		30	50	470	50	10	50	10	50	10		10	50		10	50	50	1006	89	321
Aromatics C6-C7	ug/l	-	-	-		18618		1205		10		2102		16221		10			4558			5628		
Aromatics C7-C8	ug/l	-	-	-		11612		473		10		1994		5618		10			1753			8984		
Aromatics 8-10	ug/l	-	-	-		12882	50	1330	50	10	50	6441	50	3997		10	50		1924	50	50	8617	50	50
Aromatics 10-12	ug/l	-	-	-		8987	50	922	50	10	157	5353	20910	14013		10	50		1110	50	50	6754	50	50
Aromatics 12-16	ug/l	-	-	-		902		12		1022		50		2548		27			205			11566		
Aromatics 16-21	ug/l	-	-	-		185	152	10	50	412	192	10	704	480		10	115		55	50	50	3587	180	383
Aromatics 21-35	ug/l	-	-	-		40	97	10	50	82	50	10	119	61		10	115		18	78	50	1317	92	1070
TPH (Aliphatics and Aromatics C5-C35)	ug/l	10	10	EQS & IGV			9974		392		14142		307320				14703			14444	2397		17488	11899
PAHs																								
Acenaphthene	ug/l	5.8	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		30.335	14.06	51.542	1.769	1.921	18.558	15.425	2.636	17.996	7.651	18.542	18.09		19.163	3.96	25.057	474.681	480.11	23.335
Acenaphthylene	ug/l	-	-	-																				
Anthracene	ug/l	0.4	0.4	SI272/2009 MAC		48.79	13.938	39.326	0.29	0.489	5.808	2.89	1.625	7.088	0.22	0.275	41.071		17.855	4.571	1.89	304.11	46.985	15.022
Benzo(a)anthracene	ug/l	0.018	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		23.077	6.932	32.024	0.067	0.082	2.545	0.201	0.491	0.01	0.061	0.04	24.671		6.658	3.204	2.266	140.66	23.485	9.065
Benzo(a)pyrene	ug/l	0.1	0.1	SI272/2009 MAC		15.033	4.431	20.061	0.019	0.017	1.686	0.036	0.248	0.01	0.037	0.01	13.966		3.921	2.149	2.661	91.992	11.469	4.717
Benzo(b)fluoranthene	ug/l	0.5	-	Interim Guideline Value		13.149	6.236	23.928	0.025	0.024	3.886	0.027	0.17	0.01	0.014	0.01	18.301		3.958	1.931	6.67	83.258	12.207	14.527
Benzo(ghi)perylene	ug/l	0.05	-	Interim Guideline Value		7.786	2.682	10.857	0.012	0.01	1.1	0.017	0.122	0.01	0.03	0.01	7.26		1.989	0.972	2.854	54.98	5.534	3.189
Benzo(k)fluoranthene	ug/l	0.05	-	Interim Guideline Value		9.443	5.071	19.069	0.025	0.019	1.732	0.033	0.272	0.01	0.043	0.01	16.737		3.934	1.839	1.726	75.323	6.053	4.294
Chrysene	ug/l	-	-	-		17.982	4.96	23.547	0.048	0.059	1.878	0.1	0.316	0.01	0.051	0.018	16.983		4.645	2.574	2.829	112.885	19.869	8.061
Dibenzo(ah)anthracene	ug/l	-	-	-		1.846	1.001	3.098	0.01	0.01	0.385	0.012	0.051	0.01	0.01	0.01	3.148		0.629	0.353	0.853	17.58	1.9	1.396
Fluoranthene	ug/l	1	1	SI272/2009 MAC		78.701	21.579	108.676	0.446	0.976	7.392	1.796	1.408	2.52	0.51	0.827	67.632		21.84	10.069	4.604	450.161	135.588	28.098
Fluorene	ug/l	3	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		99.125	31.075	98.435	1.528	1.724	23.588	20.234	6.034	33.248	0.248	1.029	69.522		57.296	7.293	4.782	529.709	357.307	28.184
Indeno(123cd)pyrene	ug/l	0.05	-	Interim Guideline Value		6.59	2.499	10.751	0.01	0.01	0.962	0.014	0.133	0.01	0.025	0.01	6.841		1.757	0.931	2.143	46.595	4.509	2.932
Naphthalene	ug/l	2.4	1.2	SI 272/2009 Annual Ave		8319.944	40.949	576.602	11.512	4.843	486.479	3306.788	55.04	140.798	0.232	0.614	646.531		493.635	19.001	29.572	6440.862	249.089	222.348
Phenanthrene	ug/l	0.4	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		144.792	44.719	133.527	1.613	2.757	22.167	13.994	4.65	22.117	0.077	0.076	122.56		62.102	13.896	7.191	972.581	548.016	48.069
Pyrene	ug/l	0.025	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		54.105	13.831	75.198	0.257	0.583	4.604	1.058	0.883	1.958	0.12	0.374	42.363		15.948	6.625	4.097	306.281	97.39	17.591
sum benzo(ghi)perylene and indeno(123-cd)pyrene	ug/l	0.002	0.002	SI 272/2009 Annual Ave		14.376	5.181	21.608	0.022	0.02	2.062	0.031	0.255	0.02	0.055	0.02	14.101		3.746	1.903	4.997	101.575	10.043	6.121
sum benzo (b + K) fluoranthene	ug/l	0.03	0.03	SI 272/2009 Annual Ave		22.592	11.307	42.997	0.05	0.043	5.618	0.06	0.442	0.02	0.057	0.02	35.038		7.892	3.77	8.396	158.581	18.26	18.821

metals * - total - freshwater, dissolved - marine

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ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring visit 1.

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 (ug/l)		Source of screening value	Ground type																		
					Borehole	A11	A3	A4	B8	C11	C7	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3
		Freshwater	Coastal/Estuary/Marine		Depth (mbgl)	1.50-2.50	1.50-4.50	1.50-4.00	2.00-3.00	1.50-2.50	2.00-7.00	3.00-5.00	1.50-2.50	2.00-3.00	1.50-3.50	3.00-9.00	3.00-8.00	2.50-7.00	2.00-8.00	0.50-2.00	2.00-4.00	0.10-2.00	2.00-4.00	1.50-4.00	3.00-6.00
Inorganics																									
Arsenic (dissolved)	ug/l	25	20	SI 272/2009 Annual Ave		4.83	18.2	4.8	30.9	5.85	18.4	17.1	8.26	52.3	2.26	44.2	7.65	41.6	1.46	4.28	1.92	1.49	3.9	41.7	5.3
Cadmium (dissolved)	ug/l	1.5	1.5	SI272/2009 MAC		<0.22	<0.22	<0.22	0.955	<0.22	<0.22	<0.22	<0.22	0.275	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22
Chromium (dissolved)	ug/l	32	32	SI272/2009 MAC		18.4	54.4	78.6	6.54	<3	40.1	108	137	102	57.1	92.8	85.1	9.3	197	15.6	67.4	19.7	28.5	45.3	21.2
Copper (dissolved)	ug/l	30*		SI 272/2009 Annual Ave		<1.6	<1.6	14.3	7.56	3.08	5.29	2.14	2.99	10.6	1.94	2.34	2.03	2.01	5.02	3.27	12.8	4.83	11.5	5.44	8.55
Lead (dissolved)	ug/l	7.2	7.2	SI 272/2009 Annual Ave		<0.4	<0.4	0.736	6.58	0.52	6.61	<0.4	<0.4	0.764	1.11	<0.4	<0.4	<0.4	<0.4	<0.4	0.815	3.88	5.04	1.53	2.9
Nickel (dissolved)	ug/l	20	20	SI 272/2009 Annual Ave		3.75	5.21	3.21	10.2	5.07	5.32	4.88	3.49	75.4	1.82	5.62	11.1	5.87	9.13	3.41	2.33	6.26	15.9	28.7	7.43
Selenium (dissolved)	ug/l	1	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		6.28	1.45	4.68	3.58	1.69	8.43	2.09	<1	29.3	4.3	7.41	9.83	26	2.69	7.22	3.63	<1	1.48	22.4	3.64
Zinc (dissolved)	ug/l	100*	40	SI 272/2009 Annual Ave		<5	<5	7.74	55.4	<5	36.1	<5	<5	8.6	5.94	<5	<5	<5	<5	<5	7.07	25.8	41.4	9.78	30
Mercury (dissolved)	ug/l	0.07	0.07	SI272/2009 MAC		<0.01	<0.01	<0.01	0.0117	<0.01	0.0124	<0.01	<0.01	0.0238	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0262	<0.01
Ammoniacal Nitrogen	ug/l	1000	-	Freshwater Fish Directive		2720	8990	2360	184000	6490	94800	11600	4240	57100	4530	53300	26600	23000	2080	15100	3880	<200	9270	135000	1370
Sulphate (soluble)	ug/l	200000	-	EQS & IGV		273000	412000	292000	115000	264000	159000	484000	52600	525000	35800	595000	486000	385000	635000	83000	150000	27300	472000	678000	541000
Phenols	ug/l	46	46	SI272/2009 MAC		280	<25	<25	131000	<25	625000	<25	1540	353000	180	11700	3050	41600	<25	5100	890	<25	<25	1840000	<25
Free Cyanide - (total CN in lab results)	ug/l	10	10	SI 272/2009 Annual Ave		75	502	593	269	1410	454	1670	253	8180	<50	1440	511	912	5590	449	<50	<50	577	5200	702
pH Value	ug/l	6.5	6.5	Interim Guideline Values		8.32	8.06	7.89	8.63	8.06	8.75	7.7	9.11	9.52	8.1	7.61	7.55	7.59	7.32	8.37	7.91	8.06	8.1	9.56	7.86
pH Value	ug/l	9.5	9.5	Interim Guideline Values		8.32	8.06	7.89	8.63	8.06	8.75	7.7	9.11	9.52	8.1	7.61	7.55	7.59	7.32	8.37	7.91	8.06	8.1	9.56	7.86
BTEX																									
Benzene	ug/l	50	50	SI272/2009 MAC		57	430	<7	15300	86	16400	718	469	5360	7	3810	744	5080	34	309	24	<7	<7	18900	9
Toluene	ug/l	10	10	SI 272/2009 Annual Ave		107	62	<4	7810	106	5070	591	226	1430	8	2360	306	4220	73	160	20	<4	<4	6560	<4
Ethyl benzene	ug/l	10	10	EQS & IGV		26	293	<5	399	210	232	280	21	95	<5	271	34	367	32	11	<5	<5	<5	393	<5
Xylene	ug/l	10	10	SI 272/2009 Annual Ave		139	201	43	3980	918	2250	1270	183	982	<10	1550	181	3280	349	112	76	<10	<10	3270	<10
Petroleum Hydrocarbons																									
GRO (C4-C12)	ug/l	-	-	-		1080	3900	490	57200	11300	52400	11000	1770	22400	78	14200	2030	30800	3730	1590	1030	<42	<42	69500	<42
MTBE	ug/l	30	30	IGV		<3	3	<3	<3	<3	<3	18	<3	6	<3	21	11	10	7	<3	6	<3	<3	<3	<3
Aliphatics C5-C6	ug/l	-	-	-		<10	19.2	<10	133	<10	176	<10	<10	132	<10	<10	<10	16.3	<10	<10	<10	<10	<10	467	<10
Aliphatics C6-C8	ug/l	-	-	-		34.4	116	<10	7120	83.8	6980	343	142	2910	<10	1100	187	2860	60.3	76.7	17.1	<10	<10	9560	11
Aliphatics C8-C10	ug/l	-	-	-		79.8	208	41.5	2090	829	1950	630	86.7	999	13.2	572	67.4	1500	235	63.7	77.7	<10	<10	2960	<10
Aliphatics C10-C12	ug/l	-	-	-		206	904	137	6900	3120	6570	2470	205	3600	11.8	1460	157	4480	1040	306	278	10.1	<10	9170	<10
Aliphatics C12-C16	ug/l	-	-	-		<10	<10	1060	99	5450	203	228	13	12	27	<10	<10	1660	915	<10	185	<10	<10	<10	<10
Aliphatics C16-C21	ug/l	-	-	-		<10	<10	1460	111	2410	<10	203	21	<10	222	<10	55	919	435	<10	126	<10	<10	20	<10
Aliphatics C21-C35	ug/l	-	-	-		<10	<10	646	145	896	<10	180	73	13	216	<10	18	829	386	<10	682	<10	<10	<10	<10
Aromatics C6-C7	ug/l	-	-	-		57	430	<10	15300	86	16400	718	469	5360	<10	3810	744	5080	34	309	24	<10	<10	18900	<10
Aromatics C7-C8	ug/l	-	-	-		107	62	<10	7810	106	5070	591	226	1430	<10	2360	306	4220	73	160	20	<10	<10	6560	<10
Aromatics 8-10	ug/l	-	-	-		285	806	105	7520	2370	5400	2500	334	2570	19.8	2680	316	5890	734	219	193	<10	<10	8110	<10
Aromatics 10-12	ug/l	-	-	-		309	1360	206	10400	4680	9850	3710	308	5400	17.7	2200	235	6730	1550	459	417	15.2	<10	13800	<10
Aromatics 12-16	ug/l	-	-	-		494	516	227	7400	8460	20600	1530	178	6980	75	1930	85	865	5810	283	527	8560	<10	<10	<10
Aromatics 16-21	ug/l	-	-	-		310	304	811	1920	2980	3200	1180	91	1450	148	345	11	1190	4230	82	718	520	<10	<10	<10
Aromatics 21-35	ug/l	-	-	-		316	255	1710	2470	2600	3010	1670	252	502	376	344	30	2110	7370	22	1700	71	<10	<10	<10
TPH (Aliphatics and Aromatics C5-C35)	ug/l	10	10	EQS & IGV		2200	4980	6400	69400	34100	79400	16000	2400		1130	16800	2210	38300	22900	1980	4960	9180	<10	69500	11
PAHs																									
Acenaphthene	ug/l	5.8	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		12.4	119	<0.15	47.7	724	3.72	61.6	6.99	49.2	0.398	20	3.55	180	145	5.82	25.3	1.58	0.712	3.58	2.19
Acenaphthylene	ug/l	-	-	-		63.5	39.4	0.488	278	247	23.8	164	13.8	292	3.08	30.8	1.69	582	546	45.4	38.4	0.475	0.473	19.3	0.944
Anthracene	ug/l	0.4	0.4	SI272/2009 MAC		9.93	12.2	0.245	92.8	162	10.6	64.4	11.1	82.4	1.06	5.98	1.69	517	303	7.53	27.6	0.194	0.0939	2.52	0.239
Benzo(a)anthracene	ug/l	0.018	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		8.65	10.1	1.12	42.7	102	4.3	52.5	9.24	20.9	5.48	4.86	1.88	321	155	2.44	27.2	0.284	0.0864	<1.7	0.573
Benzo(a)pyrene	ug/l	0.1	0.1	SI272/2009 MAC		5.59	8.02	1.04	35.2	74.1	3.34	40.6	7.39	9.04	10.3	4.22	1.5	228	119	1.07	24.9	0.0756	0.0872	<0.9	0.576
Benzo(b)fluoranthene	ug/l	0.5	-	Interim Guideline Value		6.47	2.94	1.46	42.5	97.3	3.75	49.7	9.36	13.1	11.5	5.3	2.03	303	155	1.36	28.9	0.0737	0.125	<2.3	0.881
Benzo(ghi)perylene	ug/l	0.05	-	Interim Guideline Value		2.54	3.3	0.615	18.5	40.1	<1.6	22.3	4.23	5.78	6.86	2.06	0.966	129	70.4	0.815	13.4	0.0294	0.0805	<1.6	0.54
Benzo(k)fluoranthene	ug/l	0.05	-	Interim Guideline Value		2.77	1.88	0.514	17.7	35	<2.7	17.2	3.26	5.63	5.44	2.15	0.855	127	65.2	0.711	11.6	0.076	0.0473	<2.7	0.338
Chrysene	ug/l	-	-	-		5.27	6.54	0.798	31.5	58.2	2.75	32.6	6.04	14.3	5.26	4.14	1.28	240	124	1.73	16.8	0.124	0.0734	<1.3	0.48
Dibenzo(ah)anthracene	ug/l	-	-	-		0.665	0.664	<0.16	5.38	9.74	<1.6	5.74	1.05	1.63	1.41	0.859	0.257	30.9	18.2	0.398	3.73	<0.016	0.0182	<1.6	0.104
Fluoranthene	ug/l	1	1	SI272/2009 MAC		29.3	32.5	2.88	154	421	17.1	147	27.1	117	7.32	24.5	5.52	1120	587	11.3	90.3	3.67	0.667	2.11	1.91
Fluorene	ug/l	3	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		18.7	35.8	<0.14	152	423	14.7	121	11.6	167	0.355	13	1.46	612	416	22.1	32.2	0.43	0.498	7.36	0.539
Indeno(123cd)pyrene	ug/l	0.05	-	Interim Guideline Value		2.41	2.42	0.499	15.6	34.7	11.4	19.1	3.85	4.52	5.9	1.77	0.751	106	56.7	0.632	11.4	0.0236	0.0602	<1.4	0.389
Naphthalene	ug/l	2.4	1.2	SI 272/2009 Annual Ave		13.3	2.05	<1	5590	933	308	104	3.82	3100	2.81	585	1.4	1690	7330	613	23.3	0.439	<0.1	241	0.143
Phenanthrene	ug/l	0.4	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		2.54	8.11	0.36	298	889	33.8	240	4.77	295	1.8	46.7	2.5	1660	984	28.4	64.1	0.0554	0.041	9.2	0.233
Pyrene	ug/l	0.025	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		19.1	43.4	2.73	102	259	11.3	97.5	19.2	77.5	6.29	15.7	4.09	738	394	7.6	61.8	2	0.453	<1.5	1.49
sum benzo(ghi)perylene and indeno(123-cd)pyrene	ug/l	0.002	0.002	SI 272/2009 Annual Ave		4.95	5.72	1.114	34.1	74.8	<3	41.4	8.08	10.3	12.76	3.83	1.717	235	127.1	1.447	24.8	0.053	0.1407	<3	0.929
sum benzo (b + K) fluoranthene	ug/l	0.03	0.03	SI 272/2009 Annual Ave		9.24	4.82	1.974	60.2	132.3	<6.45	66.9	12.62	18.73	16.94	7.45	2.885	430	220.2	2.071	40.5	0.1497	0.1723	<5	1.219
Total PAH	ug/l	-	-	-		203	328	13.2	6920	4510	441	1240	143	4260	75.2	767	31.4	8580	11500	751	501	9.53	3.52	287	11.6
Volatile Organic Compounds																									
1.1.1.2-Tetrachloroethane	ug/l	-	-	-		<1.3	<1.3	<1.3	<1.3		<1.3	<1.3				<1.3		<1.3	<1.3					<1.3	<1.3
1.1.1-Trichloroethane	ug/l	100	100	EQS 76/464/EEC		<1.3	<1.3	<1.3	<1.3		<1.3	<1.3				<1.3		<1.3	<1.3					8.02	<1.3
1.1.2-Trichloroethane	ug/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					390	<2.2
1.1-Dichloroethane	ug/l	-	-	-		<1.2	<1.2	<1.2	<1.2		<1.2	<1.2				<1.2		<1.2	<1.2					1.53	<1.2
1.1-Dichloroethene	ug/l	-	-	-		<1.2	<1.2	<1.2	<1.2		<1.2	<1.2				<1.2		<1.2	<1.2					<1.2	<1.2
1.1-Dichloropropene	ug/l	-	-	-		<1.3	<1.3	<1.3	<1.3		<1.3	<1.3				<1.3		<1.3	<1.3					<1.3	<1.3
1.2.3-Trichlorobenzene	ug/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	<3.1
1.2.3-Trichloropropane	ug/l	-	-	-		<7.8	<7.8	<7.8	<7.8		<7.8	<7.8				<7.8		<7.8	<7.8					<7.8	<7.8
1.2.4-Trimethylbenzene	ug/l	-	-	-		23.4	43.6	<1.7	338		174	346				213		390	239					173	<1.7
1.2-Dibromo-3-chloropropane (DBCP)	ug/l	-	-	-		<9.8	<9.8	<9.8	<9.8		<9.8	<9.8				<9.8		<9.8	<9.8					<9.8	<9.8
1.2-Dibromoethane	ug/l	-	-	-		<2.3	<2.3	<2.3	<2.3		<2.3	<2.3				<2.3		<2.3	<2.3					<2.3	<2.3
1.2-Dichloroethane	ug/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					574	<3.3
1.2-Dichloropropane	ug/l	-	-	-		<3	<3	<3	<3		<3	<3				<3		<3	<3					<3	<3
1.3.5-Trimethylbenzene	ug/l	-	-	-		17	13.5	6.63	138		73.4	111				55		147	90.1					71.9	<1.8
1.3-Dichloropropane	ug/l	-	-	-		<2.2	<2.2	<2.2	<2.2		<2.2	<2.2				<2.2		<2.2	<2.2					<2.2	<2.2
2.2-Dichloropropane	ug/l	-	-	-		<3.8	<3.8	<3.8	<3.8		<3.8	<3.8				<3.8		<3.8	<3.8					<3.8	<3.8
2-Chlorotoluene	ug/l	-	-	-		<1.9	<1.9	<1.9	<1.9		<1.9	<1.9				<1.9		<1.9	<1.9					11.5	<1.9
4-Chlorotoluene	ug/l	-	-	-		<1.9	<1.9	<1.9	<1.9		<1.9	<1.9				<1.9		<1.9	<1.9					2.46	<1.9
4-Isopropyltoluene	ug/l	-	-	-		<2.6	<2.6	<2.6	<2.6		<2.6	<2.6				<2.6		54.4	<2.6					24.9	<2.6
Bromobenzene	ug/l	-	-	-		<2	<2	<2	<2		<2	<2				<2		<2	<2					<2	<2
Bromochloromethane	ug/l	-	-	-		<1.9	<1.9	<1.9	<1.9		<1.9	<1.9				<1.9		<1.9	<1.9					<1.9	<1.9
Bromodichloromethane	ug/l	-	-	-		<0.9	<0.9	<0.9	<0.9		1.99	<0.9				<0.9		<0.9	<0.9					<0.9	<0.9
Bromoform	ug/l	-	-	-		<3	<3	<3	<3		<3	<3				<3		<3	<3					<3	<3
Bromomethane	ug/l	-	-	-		<2	<2	<2	<2		<2	<2				<2		<2	<2					<2	<2
Carbon Disulphide	ug/l	-	-	-		<1.3	<1.3	<1.3	<1.3		<1.3	<1.3				4.57		<1.3	<1.3					1.85	<1.3
Tetrachloromethane	ug/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	<1.4
Chlorobenzene	ug/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	<3.5
Chloroethane	ug/l	-	-	-		<2.5	<2.5	<2.5	<2.5		<2.5	<2.5				<2.5		<2.5	<2.5					<2.5	<2.5
Chloroform	ug/l	12	12	EQS 76/464/EEC		<1.8	<1.8	<1.8	<1.8		10	<1.8				<1.8		<1.8	<1.8					2.92	2.25
Chloromethane	ug/l	-	-	-		<1.7	<1.7	<1.7	<1.7		<1.7	<1.7				<1.7		<1.7	<1.7					<1.7	<1.7
cis-1-2-Dichloroethene	ug/l	-	-	-		<2.3	<2.3	<2.3	<2.3		<2.3	<2.3				<2.3		<2.3	<2.3					<2.3	<2.3
cis-1-3-Dichloropropene	ug/l	-	-	-		<1.9	<1.9	<1.9	<1.9		<1.9	<1.9				<1.9		<1.9	<1.9					<1.9	<1.9
Dibromochloromethane	ug/l	-	-	-		<1.7	<1.7	<1.7	<1.7		<1.7	<1.7				<1.7		<1.7	<1.7					<1.7	<1.7
Dibromomethane	ug/l	-	-	-		<2.7	<2.7	<2.7	<2.7		<2.7	<2.7				<2.7		<2.7	<2.7					<2.7	<2.7
Dichlorodifluoromethane	ug/l	-	-	-		<1.3	<1.3	<1.3	<1.3		<1.3	<1.3				<1.3		<1.3	<1.3					<1.3	<1.3
Dichloromethane	ug/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					3.8	<3.7
Isopropylbenzene	ug/l	-	-	-		2.73	3.76	<1.4	15.6		7.65	25.3				17.2		24.2	7.59					12.2	<1.4
n-Butylbenzene	ug/l	-	-	-		<2	<2	<2	<2		<2	<2				<2		<2	<2					48.6	<2
Propylbenzene	ug/l	-	-	-		<2.6	<2.6	<2.6	21		11.2	32.9				16.9		28	10.8					15.5	<2.6
sec-Butylbenzene	ug/l	-	-	-		<1.7	<1.7	<1.7	<1.7		<1.7	<1.7				<1.7		<1.7	<1.7					<1.7	<1.7
Styrene	ug/l	72	-	Canadian Water Quality Guidelines for Aquatic Life (2007)		<1.2	<1.2	<1.2	<1.2		<1.2	<1.2				<1.2		<1.2	<1.2					329	<1.2
tert-Butylbenzene	ug/l	-	-	-		<2	<2	<2	<2		<2	<2				<2		<2	<2					17.6	<2
Tetrachloroethene	ug/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					2.21	<1.5
trans-1-2-Dichloroethene	ug/l	-	-	-		<1.9	<1.9	<1.9	<1.9		<1.9	<1.9				<1.9		<1.9	<1.9					<1.9	<1.9
trans-1-3-Dichloropropene	ug/l	-	-	-		<3.5	<3.5	<3.5	<3.5		<3.5	<3.5				<3.5		<3.5	<3.5					<3.5	<3.5
Trichloroethene	ug/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					10.3	<2.5
Trichlorofluoromethane	ug/l	-	-	-		<1.3	<1.3	<1.3	<1.3		<1.3	<1.3				<1.3		<1.3	<1.3					2.79	<1.3
Vinyl Chloride	ug/l	-	-	-		<1.2	<1.2	<1.2	<1.2		<1.2	<1.2				<1.2		<1.2	<1.2					<1.2	<1.2

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ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring visit 2.

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	A11	A3	A4	B8	C11	C7	D1	D5	E8	F11	G2	G3	G4	G5	G8	H12	J10	K1	K5	M3
				Depth (mbgl)	1.50-2.50	1.50-4.50	1.50-4.00	2.00-3.00	1.50-2.50	2.00-7.00	3.00-5.00	1.50-2.50	2.00-3.00	1.50-3.50	3.00-9.00	3.00-8.00	2.50-7.00	2.00-8.00	0.50-2.00	2.00-4.00	0.10-2.00	2.00-4.00	1.50-4.00	3.00-6.00
Determinand	**Units**	**Screening Value (ug/l)** Freshwater	Coastal/Estuary /Marine	**Source of screening value**																				
Inorganics																								
Arsenic (dissolved)	ug/l	25	20	SI 272/2009 Annual Ave	1.22	29.8	3.3	18	4.13	37.1	15.4	6.04	2.35	13.9	24.4	6.11	4.29	3.76	5.16	2.36	2.01	3.9	290	3.53
Cadmium (dissolved)	ug/l	1.5	1.5	SI272/2009 MAC	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.439	<0.1
Chromium (dissolved)	ug/l	32	32	SI272/2009 MAC	15.9	11.5	9.21	<3	46.2	5.9	37.3	<3	17.2	6.41	22.9	47.9	6.83	124	52	17.6	<3	95.7	56.8	14.7
Copper (dissolved)	ug/l	30*		SI 272/2009 Annual Ave	1.52	1.14	1.03	1.71	1.27	<0.85	1.34	0.914	11.2	3.2	1.83	1.6	3.31	2.71	1.4	<0.85	3.9	1.57	3.19	2.2
Lead (dissolved)	ug/l	7.2	7.2	SI 272/2009 Annual Ave	2.33	0.034	0.112	0.087	0.02	0.371	0.03	<0.02	0.308	0.58	<0.02	0.077	<0.02	0.139	0.07	0.094	0.063	0.582	5.31	0.066
Nickel (dissolved)	ug/l	20	20	SI 272/2009 Annual Ave	3.47	5.52	4.36	7.18	5.14	6.15	7.91	7.49	5.84	3.89	10.4	14.2	3.95	15.2	4.83	4.88	4.75	13.9	69.6	7.08
Selenium (dissolved)	ug/l	1	-	Canadian Water Quality Guidelines for Aquatic Life (2007)	5.48	1.23	1.26	14.7	4.12	44.6	3.05	1.56	8.47	8.08	9.82	8.98	5.32	4.58	4.78	1.6	1.35	1.62	68	2.62
Zinc (dissolved)	ug/l	100*	40	SI 272/2009 Annual Ave	11.6	2.33	1.56	1.32	0.801	1.18	<0.41	0.955	0.957	1.41	<0.41	<0.41	<0.41	<0.41	1.09	<0.41	<0.41	<0.41	107	<0.41
Mercury (dissolved)	ug/l	0.07	0.07	SI272/2009 MAC	<0.01	<0.01	<0.01	<0.01	<0.01	0.029	<0.01	<0.01	0.012	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.187	<0.01
Ammoniacal Nitrogen	ug/l	1000	-	Freshwater Fish Directive	1330	9270	2930	60300	4730	118000	10400	1480	59300	1930	48300	22500	9460	4190	21300	6270	439	11800	202000	890
Sulphate (soluble)	ug/l	200000	-	EQS & IGV	328000	423000	310000	67500	222000	64600	456000	43000	547000	33900	583000	571000	127000	671000	112000	169000	35900	709000	715000	556000
Phenols	ug/l	46	46	SI272/2009 MAC	<2	20	<2	12900	<2	63800	10	<2	86000	40	2770	10	180	<2	3170	<2	20	<2	464000	<2
Free Cyanide - (total CN in lab results)	ug/l	10	10	SI 272/2009 Annual Ave	<50	242	177	118	74	814	663	179	13700	<50	809	495	243	321	817	<50	<50	152	12000	794
pH Value	ug/l	6.5	6.5	Interim Guideline Values	7.9	7.88	7.84	8.57	7.81	9.15	7.78	8.5	9.74	8.15	7.77	7.79	7.91	7.34	8.6	8.07	8.4	8.01	10.34	7.97
pH Value	ug/l	9.5	9.5	Interim Guideline Values	7.9	7.88	7.84	8.57	7.81	9.15	7.78	8.5	9.74	8.15	7.77	7.79	7.91	7.34	8.6	8.07	8.4	8.01	10.34	7.97
BTEX																								
Benzene	ug/l	50	50	SI272/2009 MAC	<7	458	<7	7150	61	22800	644	38	8540	<7	4140	158	2150	30	2170	12	<7	<7	13800	<7
Toluene	ug/l	10	10	SI 272/2009 Annual Ave	<4	36	<4	4120	61	9130	512	24	2040	<4	2890	13	2840	34	1190	14	<4	<4	4670	<4
Ethyl benzene	ug/l	10	10	EQS & IGV	<5	82	<5	310	65	391	227	<5	85	<5	281	14	293	14	83	<5	<5	<5	236	<5
Xylene	ug/l	10	10	SI 272/2009 Annual Ave	73	140	12	3000	505	3660	1020	71	940	<10	1950	78	2620	218	824	58	<10	<10	2180	<10
Petroleum Hydrocarbons																								
GRO (C4-C12)	ug/l	-	-	-	679	2970	216	<42	5970	88200	8960	479	21200	48	16300	571	19500	1830	7040	949	66	<42	49500	<42
MTBE	ug/l	30	30	IGV	7	<3	<3	<3	21	<30	12	<3	<3	6	<3	12	24	10	4	<3	<3	<3	<3	<3
Aliphatics C5-C6	ug/l	-	-	-	14.3	<10	<10	<10	31.3	402	<10	<10	136	12.3	<20	15.2	30.6	13.2	18.3	<10	<10	<10	760	<10
Aliphatics C6-C8	ug/l	-	-	-	48.3	319	<10	<10	124	<100	405	23.2	1620	35.7	629	83.4	1510	83.7	<10	17.2	<10	<10	4600	<10
Aliphatics C8-C10	ug/l	-	-	-	55.2	205	31.2	<10	498	6680	609	37.3	774	<10	647	32.1	1130	209	208	82.8	26.4	<10	1990	<10
Aliphatics C10-C12	ug/l	-	-	-	162	567	50.4	<10	1540	16500	1840	91.8	2360	<10	1910	44.7	2860	360	990	256	<10	<10	7310	<10
Aliphatics C12-C16	ug/l	-	-	-	<10	<10	126	11	156	<10	267	<10	<10	<10	<10	<10	342	906	<10	223	<10	<10	<10	<10
Aliphatics C16-C21	ug/l	-	-	-	<10	<10	247	50	325	<10	207	<10	<10	<10	<10	135	364	725	<10	195	<10	<10	<10	<10
Aliphatics C21-C35	ug/l	-	-	-	<10	<10	85	44	71	<10	115	<10	<10	<10	<10	95	265	524	<10	595	<10	<10	<10	<10
Aromatics C6-C7	ug/l	-	-	-	<10	458	<10	7150	61	22800	644	38	8540	<10	4140	158	2150	30	2170	12	<10	<10	13800	<10
Aromatics C7-C8	ug/l	-	-	-	<10	36	<10	4120	61	9130	512	24	2040	<10	2890	13	2840	34	1190	14	<10	<10	4670	<10
Aromatics 8-10	ug/l	-	-	-	156	529	58.8	1320	1320	14100	2160	127	2190	<10	3200	140	4610	545	1220	182	39.6	<10	5400	<10
Aromatics 10-12	ug/l	-	-	-	243	850	75.6	<10	2320	24800	2760	138	3550	<10	2860	67.1	4300	540	1490	384	<10	<10	11000	<10
Aromatics 12-16	ug/l	-	-	-	201	634	61	5200	1550	16400	1840	83	5740	<10	1980	48	3570	2580	1050	235	<10	<10	8490	<10
Aromatics 16-21	ug/l	-	-	-	197	185	116	1340	779	1050	1840	51	904	<10	250	75	3070	4460	322	353	<10	<10	789	<10
Aromatics 21-35	ug/l	-	-	-	111	22	156	1060	433	306	2660	93	543	<10	172	189	4180	8260	188	1260	<10	184	149	<10
TPH (Aliphatics and Aromatics C5-C35)	ug/l	10	10	EQS & IGV	1190	3800	1010	20300	9270	112000	15900	706	28400	48	18700	1100	31200	19300	8840	3810	66	184	58900	<10
PAHs																								
Acenaphthene	ug/l	5.8	-	Canadian Water Quality Guidelines for Aquatic Life (2007)	8.45	114	1.26	32.5	117	19	137	0.083	29.7	0.044	29.4	1.63	97.5	98.1	11.5	4.76	0.185	0.43	35.4	0.0522
Acenaphthylene	ug/l	-	-	-	19.6	65.5	1.56	206	40.9	183	286	0.422	172	0.198	45.7	1.75	372	283	71.8	11.9	0.203	0.882	191	0.156
Anthracene	ug/l	0.4	0.4	SI272/2009 MAC	4.07	3.25	0.525	55.3	20.5	19.8	95.5	0.425	37.7	0.15	6.74	2.12	177	307	11.3	6.08	0.0562	0.765	31.9	0.152
Benzo(a)anthracene	ug/l	0.018	-	Canadian Water Quality Guidelines for Aquatic Life (2007)	3.7	0.282	2.23	16.3	13.1	<4.25	44.8	0.856	12.3	0.607	5.63	4.29	87.2	193	3.1	17.9	0.193	4.76	5.99	1.67
Benzo(a)pyrene	ug/l	0.1	0.1	SI272/2009 MAC	2.5	0.115	2.19	9.92	9.61	2.49	29.9	0.932	6.5	0.887	4.8	3.5	48.7	122	0.863	18.3	0.296	6.18	3	2.15
Benzo(b)fluoranthene	ug/l	0.5	-	Interim Guideline Value	3.39	0.119	2.97	15.4	12.8	<5.75	42	1.32	10.2	1.08	6.76	4.81	72.4	169	1.41	23.3	0.381	8.12	4.08	3.16
Benzo(ghi)perylene	ug/l	0.05	-	Interim Guideline Value	1.04	<0.08	1.35	7.18	4.72	<4	17.7	0.489	3.99	0.522	2.61	2.1	21.6	54.6	<0.32	11.1	0.2	5.43	2	1.94
Benzo(k)fluoranthene	ug/l	0.05	-	Interim Guideline Value	1.24	<0.135	1.13	6.81	4.71	<6.75	17.2	0.503	4.15	0.451	2.39	1.8	28.2	60.2	<0.54	8.45	0.126	3.15	<2.7	1.16
Chrysene	ug/l	-	-	-	2.98	0.261	1.26	18	8.74	4.35	38.4	0.822	10.2	0.408	5.83	3.67	70	154	2.32	12	0.107	3.22	4.42	1.23
Dibenzo(ah)anthracene	ug/l	-	-	-	0.296	<0.08	0.338	<3.2	1.35	<4	4.96	0.124	1.53	0.128	0.914	0.565	6.13	15.8	<0.32	2.93	0.0522	1.32	<1.6	0.409
Fluoranthene	ug/l	1	1	SI272/2009 MAC	12.7	4.81	6.43	81.4	52.4	21.4	215	3.89	60.9	0.966	23.2	8.92	339	640	17.4	52.3	0.597	6.85	41.1	2.18
Fluorene	ug/l	3	-	Canadian Water Quality Guidelines for Aquatic Life (2007)	18	34.1	0.649	107	52.1	66.6	180	0.196	86.3	0.0567	19	1.25	274	336	34.6	4.9	0.0317	0.385	72.7	0.0527
Indeno(123cd)pyrene	ug/l	0.05	-	Interim Guideline Value	1.08	<0.07	1.26	5.73	4.27	<3.5	16.4	0.434	3.57	0.474	2.45	1.89	21.1	54	<0.28	10	0.172	4.65	2.1	1.62
Naphthalene	ug/l	2.4	1.2	SI 272/2009 Annual Ave	0.445	0.853	1.64	3680	6.17	4410	1950	0.969	2650	<0.1	563	0.103	1770	297	724	9.9	<0.1	0.467	3440	0.241
Phenanthrene	ug/l	0.4	-	Canadian Water Quality Guidelines for Aquatic Life (2007)	0.65	<0.11	0.395	198	82.9	81.7	400	0.58	150	0.34	49.5	3.35	625	948	39.4	13.4	0.0613	1.83	104	0.261
Pyrene	ug/l	0.025	-	Canadian Water Quality Guidelines for Aquatic Life (2007)	7.61	5.47	5.01	86.5	32.1	13.8	136	2.32	39.7	0.802	15	6.88	224	419	11.4	40.9	0.431	7.39	26.9	2.16
sum benzo(ghi)perylene and indeno(123-cd)pyrene	ug/l	0.002	0.002	SI 272/2009 Annual Ave	2.12	<0.15	2.61	12.91	8.99	<7.5	34.1	0.923	7.56	0.996	5.06	3.99	42.7	108.6	<0.6	21.1	0.372	10.08	4.1	3.56
sum benzo (b + K) fluoranthene	ug/l	0.03	0.03	SI 272/2009 Annual Ave	4.63	<0.254	4.1	22.21	17.51	<21.5	59.2	1.823	14.35	1.531	9.15	6.61	100.6	229.2	<1.95	31.75	0.507	11.27	<6.78	4.32
Total PAH	ug/l	-	-	-																				
Volatile Organic Compounds																								
1.1.1.2-Tetrachloroethane	ug/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	ug/l	100	100	EQS 76/464/EEC	<1.3	<1.3	<1.3	<1.3		<1.3	<1.3				<1.3		<1.3	<1.3						<1.3
1.1.2-Trichloroethane	ug/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	ug/l	-	-	-	<1.2	<1.2	<1.2	<1.2		<1.2	<1.2				<1.2		<1.2	<1.2						<1.2
1.1-Dichloroethene	ug/l	-	-	-	<1.2	<1.2	<1.2	<1.2		<1.2	<1.2				<1.2		<1.2	<1.2						<1.2
1.1-Dichloropropene	ug/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	ug/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	ug/l	-	-	-	<7.8	<7.8	<7.8	<7.8		<7.8	<7.8				<7.8		<7.8	<7.8						<7.8
1.2.4-Trimethylbenzene	ug/l	-	-	-	6.1	41.7	2.65	392		276	360				345		426	134						<1.7
1.2-Dibromo-3-chloropropane (DBCP)	ug/l	-	-	-	<9.8	<9.8	<9.8	<9.8		<9.8	<9.8				<9.8		<9.8	<9.8						<9.8
1.2-Dibromoethane	ug/l	-	-	-	<2.3	<2.3	<2.3	<2.3		<2.3	<2.3				<2.3		<2.3	<2.3						<2.3
1.2-Dichloroethane	ug/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	ug/l	-	-	-	<3	<3	<3	<3		<3	<3				<3		<3	<3						<3
1.3.5-Trimethylbenzene	ug/l	-	-	-	18.8	10.4	5.18	158		115	110				94.9		168	60.4						<1.8
1.3-Dichloropropane	ug/l	-	-	-	<2.2	<2.2	<2.2	<2.2		<2.2	<2.2				<2.2		<2.2	<2.2						<2.2
2.2-Dichloropropane	ug/l	-	-	-	<3.8	<3.8	<3.8	<3.8		<3.8	<3.8				<3.8		<3.8	<3.8						<3.8
2-Chlorotoluene	ug/l	-	-	-	<1.9	<1.9	<1.9	<1.9		<1.9	<1.9				<1.9		<1.9	<1.9						<1.9
4-Chlorotoluene	ug/l	-	-	-	<1.9	<1.9	<1.9	<1.9		<1.9	<1.9				<1.9		<1.9	<1.9						<1.9
4-Isopropyltoluene	ug/l	-	-	-	<2.6	<2.6	<2.6	36.7		46.4	<2.6				<2.6		<2.6	<2.6						<2.6
Bromobenzene	ug/l	-	-	-	<2	<2	<2	<2		<2	<2				<2		<2	<2						<2
Bromochloromethane	ug/l	-	-	-	<1.9	<1.9	<1.9	<1.9		<1.9	<1.9				<1.9		<1.9	<1.9						<1.9
Bromodichloromethane	ug/l	-	-	-	<0.9	<0.9	<0.9	<0.9		<0.9	<0.9				<0.9		<0.9	<0.9						<0.9
Bromoform	ug/l	-	-	-	<3	<3	<3	<3		<3	<3				<3		<3	<3						<3
Bromomethane	ug/l	-	-	-	<2	<2	<2	<2		<2	<2				<2		<2	<2						<2
Carbon Disulphide	ug/l	-	-	-	<1.3	<1.3	<1.3	<1.3		2.8	2.36				5.03		<1.3	<1.3						<1.3
Tetrachloromethane	ug/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	ug/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	ug/l	-	-	-	<2.5	<2.5	<2.5	<2.5		<2.5	<2.5				<2.5		<2.5	<2.5						<2.5
Chloroform	ug/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	ug/l	-	-	-	<1.7	<1.7	<1.7	<1.7		<1.7	<1.7				<1.7		<1.7	<1.7						<1.7
cis-1-2-Dichloroethene	ug/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	ug/l	-	-	-	<1.9	<1.9	<1.9	<1.9		<1.9	<1.9				<1.9		<1.9	<1.9						<1.9
Dibromochloromethane	ug/l	-	-	-	<1.7	<1.7	<1.7	<1.7		<1.7	<1.7				<1.7		<1.7	<1.7						<1.7
Dibromomethane	ug/l	-	-	-	<2.7	<2.7	<2.7	<2.7		<2.7	<2.7				<2.7		<2.7	<2.7						<2.7
Dichlorodifluoromethane	ug/l	-	-	-	<1.3	<1.3	<1.3	<1.3		<1.3	<1.3				<1.3		<1.3	<1.3						<1.3
Dichloromethane	ug/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
Isopropylbenzene	ug/l	-	-	-	<1.4	15	<1.4	18.1		14.2	26.4				26.2		25.8	4.2						<1.4
n-Butylbenzene	ug/l	-	-	-	<2	<2	<2	<2		<2	<2				<2		<2	<2						<2
Propylbenzene	ug/l	-	-	-	<2.6	<2.6	<2.6	26.5		18.9	33.2				28.2		29.4	4						<2.6
sec-Butylbenzene	ug/l	-	-	-	<1.7	<1.7	<1.7	<1.7		<1.7	<1.7				<1.7		<1.7	<1.7						<1.7
Styrene	ug/l	72	-	Canadian Water Quality Guidelines for Aquatic Life (2007)	<1.2	<1.2	<1.2	196		540	<1.2				<1.2		<1.2	<1.2						<1.2
tert-Butylbenzene	ug/l	-	-	-	<2	<2	<2	<2		<2	<2				<2		<2	<2						<2
Tetrachloroethene	ug/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	ug/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	ug/l	-	-	-	<3.5	<3.5	<3.5	<3.5		<3.5	<3.5				<3.5		<3.5	<3.5						<3.5
Trichloroethene	ug/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	ug/l	-	-	-	<1.3	<1.3	<1.3	<1.3		<1.3	<1.3				<1.3		<1.3	<1.3						<1.3
Vinyl Chloride	ug/l	-	-	-	<1.2	<1.2	<1.2	<1.2		<1.2	<1.2				<1.2		<1.2	<1.2						<1.2

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ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring visit 3 (21st - 22nd April 2010)

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	B8	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	1.60-2.80	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)** Freshwater	Coastal/Estuary /Marine	**Source of screening value**																				
Inorganics																								
Arsenic (dissolved)	µg/l	25	20	SI 272/2009 Annual Ave	39.2	7.31	2.98	52.8	27.9	7.81	12	3.7	137	7.15	18.6	6.1	30.6	4.35	5.93	3.38	5.25	2.2	121	3.8
Cadmium (dissolved)	µg/l	1.5	1.5	SI272/2009 MAC	<0.1	<0.1	0.102	<0.1	<0.1	<0.1	<0.1	<0.1	0.721	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.118	<0.1
Chromium (dissolved)	µg/l	32	32	SI272/2009 MAC	21.3	14.5	3.59	22.7	15.5	8.31	20.6	9.27	3.35	4.28	28.1	20.9	23.4	26.1	4.48	12.8	14.8	10	26.1	4.63
Copper (dissolved)	µg/l	30*		SI 272/2009 Annual Ave	<0.85	<0.85	1.34	<0.85	<0.85	<0.85	<0.85	<0.85	2.47	<0.85	1.11	<0.85	<0.85	1.99	1.62	<0.85	<0.85	2.37	5.2	5.4
Lead (dissolved)	µg/l	7.2	7.2	SI 272/2009 Annual Ave	0.034	0.054	0.153	0.143	0.046	0.029	0.033	0.034	0.415	0.05	0.022	0.034	0.107	0.092	0.023	0.091	0.042	0.321	0.836	0.146
Nickel (dissolved)	µg/l	20	20	SI 272/2009 Annual Ave	7.05	4.86	4.97	9.62	2.92	3.37	5.13	7.47	50.9	2.06	6.96	8.31	6.61	11.1	5.16	4.78	6.21	8.64	33.9	5.4
Selenium (dissolved)	µg/l	1	-	Guidelines for Aquatic Life (2007)	2.14	2.8	2.16	26.7	27	4.82	14.5	1.34	30.2	1.86	22	6.28	24.9	5.91	9.84	2.26	1.99	1.92	35.7	2.54
Zinc (dissolved)	µg/l	100*	40	SI 272/2009 Annual Ave	1.18	1.76	1.13	1.21	0.755	0.991	2.7	0.655	38.3	0.709	2.23	1.95	3.49	3.86	0.817	1.31	1.18	2.49	20.3	1.37
Mercury (dissolved)	µg/l	0.07	0.07	SI272/2009 MAC	<0.01	<0.01	<0.01	0.0188	0.0321	<0.01	<0.01	<0.01	0.0559	<0.01	0.0117	<0.01	0.0153	<0.01	<0.01	<0.01	<0.01	<0.01	0.144	<0.01
Ammoniacal Nitrogen	µg/l	1000	-	Freshwater Fish Directive	12400	4200	1650	177000	129000	7730	15400	621	80100	5970	59900	32000	35500	8330	39100	10500	1450	8730	153000	1070
Sulphate (soluble)	µg/l	200000	-	EQS & IGV	375000	277000	353000	102000	36800	128000	401000	32100	496000	37300	565000	304000	254000	729000	162000	188000	58400	733000	-	530000
Phenols	µg/l	46	46	SI272/2009 MAC	<25	<25	<25	118000	215000	<25	660	2130	248000	250	21400	<25	56600	<25	12200	<25	<25	<25	1280000	<25
Free Cyanide - (total CN in lab results)	µg/l	10	10	SI 272/2009 Annual Ave	267	154	66	259	522	69	930	295	12800	<50	1110	279	202	380	581	<50	<50	411	9530	946
pH Value	µg/l	6.5	6.5	Interim Guideline Values	7.98	7.82	8.05	8.64	8.82	8.24	7.59	7.89	9.34	7.72	7.8	7.66	-	7.44	8.31	7.57	7.45	7.68	9.76	7.76
pH Value	µg/l	9.5	9.5	Interim Guideline Values	7.98	7.82	8.05	8.64	8.82	8.24	7.59	7.89	9.34	7.72	7.8	7.66	-	7.44	8.31	7.57	7.45	7.68	9.76	7.76
BTEX																								
Benzene	µg/l	50	50	SI272/2009 MAC	574	<7	48	10900	28400	41	681	405	9090	55	4830	112	9250	20	1520	<7	13	<7	16700	<7
Toluene	µg/l	10	10	SI 272/2009 Annual Ave	30	<4	76	5450	12500	40	360	91	2480	<4	3680	<4	6920	<4	996	<4	<4	<4	5930	<4
Ethyl benzene	µg/l	10	10	EQS & IGV	189	<5	7	312	527	85	219	39	119	<5	392	<5	606	<5	75	<5	<5	<5	359	<5
Xylene	µg/l	10	10	SI 272/2009 Annual Ave	158	<10	147	3040	5030	542	861	186	1310	<10	2570	23	5250	10	757	<10	11	<10	3140	<10
Petroleum Hydrocarbons																								
GRO (C4-C12)	µg/l				2689	93	988	38520	81100	4000	5540	1659	21820	<91.3	19040	280.6	39850	422	6150	175.2	463	<20	50900	221.4
MTBE	µg/l	30	30	IGV	<3	<3	<3	<15	<30	<3	<3	<3	<15	<3	<6	<3	<15	<3	<3	<3	<3	<3	<15	<3
Aliphatics C5-C6	µg/l				<10	<10	<10	118	240	<10	<10	<10	118	<10	20	<10	<50	<10	16.2	<10	<10	<10	489	<10
Aliphatics C6-C8	µg/l				121	<10	36.4	3400	8370	31.3	<10	91.4	2060	<10	1200	27	1860	13.5	155	<10	<10	<10	4660	<10
Aliphatics C8-C10	µg/l				150	13.4	95.8	1390	2550	368	249	105	665	<10	773	18.6	1670	44.1	236	24.5	51.1	<10	1860	27.6
Aliphatics C10-C12	µg/l				498	23.8	176	4710	7840	937	1120	233	1980	<10	1750	29	4680	107	818	45.7	124	<10	5990	60.8
Aliphatics C12-C16	µg/l				<10	89	797	174	<10	357	56	225	46	65	<10	<10	1270	40	<10	186	328	<10	2360	<10
Aliphatics C16-C21	µg/l				<10	230	560	156	<10	131	84	255	41	398	<10	57	1310	38	<10	142	186	<10	1770	<10
Aliphatics C21-C35	µg/l				<10	106	1280	188	<10	21	27	876	55	820	<10	46	1280	23	<10	685	276	<10	2000	<10
Aromatics C6-C7	µg/l				574	<10	48	10900	28400	41	681	405	9090	55	4830	112	9250	20	1520	<10	13	<10	16700	<10
Aromatics C7-C8	µg/l				30	<10	76	5450	12500	40	360	91	2480	<10	3680	<10	6920	<10	996	<10	<10	<10	5930	<10
Aromatics 8-10	µg/l				572	20.1	291	5430	9380	1180	1450	383	2430	14.4	4120	50.9	8360	76.1	1190	36.7	87.7	<10	6300	41.4
Aromatics 10-12	µg/l				747	35.7	264	7060	11800	1400	1680	349	2980	11.9	2620	43.5	7010	161	1230	68.6	187	<10	8980	91.2
Aromatics 12-16	µg/l				196	13	2280	10700	19100	349	1310	161	4110	27	6280	21	19900	<10	917	117	118	<10	40600	<10
Aromatics 16-21	µg/l				177	61	4480	2200	1250	297	826	411	1010	142	534	11	8400	39	304	353	413	<10	12300	<10
Aromatics 21-35	µg/l				421	30	10400	2590	142	318	497	2170	1010	1020	70	128	13400	318	320	1740	2000	<10	13900	<10
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	10	EQS & IGV	3490	622	20800	54500	102000	5470	8340	5750	28100	2550	25900	544	85300	880	7690	3400	3780	<10	124000	221
PAHs																								
Acenaphthene	µg/l	5.8	-	Canadian Water Quality Guidelines for Aquatic Life (2007)	0.979	<0.015	62.3	45.7	125	13.6	49.5	1.28	22.3	1.56	26.9	1.58	167	0.295	6.97	2.32	2.53	0.0366	129	<0.015
Acenaphthylene	µg/l	-	-	-	6.24	0.124	267	258	1050	4.77	79.5	9.82	127	5.77	32.1	1.1	749	4.67	40.8	9.78	13.3	0.145	543	0.105
Anthracene	µg/l	0.4	0.4	SI272/2009 MAC	1.66	0.0872	282	84.9	64.9	2.79	30.7	7.57	48.7	2.79	2.51	1.08	321	2.74	14	7.78	15.7	0.123	245	0.0962
Benzo(a)anthracene	µg/l	0.018	-	Guidelines for Aquatic Life (2007)	16.6	0.334	205	39.5	8.72	5.49	9.81	33.4	18.6	13.2	<0.85	4.7	89	12.5	10.6	24.5	54.2	1.11	113	1.51
Benzo(a)pyrene	µg/l	0.1	0.1	SI272/2009 MAC	18.8	0.227	140	28.8	6.07	4.53	5.01	34	8.61	21	<0.45	4.79	54.6	14.4	6.28	28.2	46.2	1.54	79.2	2.23
Benzo(b)fluoranthene	µg/l	0.5	-	Interim Guideline Value	13.1	0.354	175	44.1	7.74	5.6	6.27	37.7	11	25.7	<1.15	5.99	72.1	17.2	8.33	32.4	51.9	2.06	105	2.98
Benzo(ghi)perylene	µg/l	0.05	-	Interim Guideline Value	8.44	0.0812	69.9	20.8	6.43	2.45	2.17	18.4	4.28	15.8	<0.8	2.76	26.2	7.97	2.67	17.3	17.9	1.31	46.4	1.95
Benzo(k)fluoranthene	µg/l	0.05	-	Interim Guideline Value	4.84	0.113	64.5	14.2	4.29	1.68	1.8	13.4	4.62	8.59	<1.35	1.99	32.3	5.61	3.07	11.6	18.5	0.681	48.2	0.949
Chrysene	µg/l	-	-	-	8.35	0.131	138	37.9	8.47	3.36	5.86	18.7	16.8	10.2	<0.65	2.84	86.5	7.34	6.46	13.1	23.7	0.59	107	0.892
Dibenzo(ah)anthracene	µg/l	-	-	-	1.97	0.0245	19.1	4.25	2.34	0.685	0.559	5.25	0.975	4.23	<0.8	0.908	6.24	2.43	0.957	5.12	7.94	0.312	9.6	0.455
Fluoranthene	µg/l	1	1	SI272/2009 MAC	21	0.963	678	153	41.4	18.5	59.5	58.7	93.9	19.6	3.48	5.8	482	19.9	23.8	53.7	88.9	1.17	471	1.4
Fluorene	µg/l	3	-	Guidelines for Aquatic Life (2007)	0.613	0.0442	266	144	314	4.76	65.4	2.95	77.3	1.67	12.6	0.944	482	0.785	25.2	5.7	11.1	0.0477	374	0.0315
Indeno(123cd)pyrene	µg/l	0.05	-	Interim Guideline Value	6.61	0.0718	61.6	15	4.67	2.27	1.95	16.9	3.28	13.8	<0.7	2.54	21.8	7.38	2.46	15.3	17.9	1.06	34.9	1.56
Naphthalene	µg/l	2.4	1.2	SI 272/2009 Annual Ave	0.295	<0.1	87.9	4500	23600	2.59	14.2	2.3	460	20.4	750	0.918	4870	0.981	12.1	10.3	6.43	0.108	5960	0.228
Phenanthrene	µg/l	0.4	-	Guidelines for Aquatic Life (2007)	0.759	0.0257	782	290	252	5.8	93.5	16	175	5.96	21.3	1.79	994	3.74	39.1	18.5	53.8	0.318	794	0.18
Pyrene	µg/l	0.025	-	Guidelines for Aquatic Life (2007)	40.5	0.99	442	105	26.6	11.5	36.1	39.3	61.9	16.6	2.13	4.72	320	12.4	16.3	41.1	61.2	1.21	309	1.25
Sum benzo(ghi)perylene and indeno(123-cd)pyrene	µg/l	0.002	0.002	SI 272/2009 Annual Ave	15.05	0.153	131.5	35.8	11.1	4.72	35.3	7.56	29.6	<1.5	5.3	48	15.35	5.13	32.6	35.8	2.37	81.3	3.51
Sum benzo (b + K) fluoranthene	µg/l	0.03	0.03	SI 272/2009 Annual Ave	17.94	0.467	239.5	58.3	12.03	7.28	8.07	51.1	15.62	34.29	<2.5	7.98	104.4	22.81	11.4	44	70.4	2.741	153.2	3.929
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	<1.3
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	<1.3	-	-	-	-	7.07	<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	<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	<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	<1.2
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	<1.2
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	<1.3
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	<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	<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	<2.3
1.2.4-Trimethylbenzene	µg/l				29.8	2.73	3.77	325	299	-	275	-	-	-	421	-	555	8.39	-	-	-	-	156	<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	<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	<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	<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	<3.3
1.2-Dichloropropane	µg/l				<3	<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	<10
1.3.5-Trimethylbenzene	µg/l				9.69	1.91	11.3	133	123	-	82.7	-	-	-	114	-	219	4.66	-	-	-	-	66.5	<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	<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	<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	<2.7
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	<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	<1.9
4-Bromofluorobenzene**	%				101	101	100	91.1	84	-	99.9	-	-	-	101	-	94.4	106	-	-	-	-	65.1	101
4-Chlorotoluene	µg/l				<1.9	<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	-	55.5	<2.6	-	-	-	-	<2.6	<2.6
Bromobenzene	µg/l				<2	<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	<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	<0.9
Bromoform	µg/l				<3	<3	<3	<3	<3	-	<3	-	-	-	<3	-	<3	<3	-	-	-	-	<3	<3
Bromomethane	µg/l				<2	<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Carbon Disulphide	µg/l				<1.3	<1.3	<1.3	<1.3	<1.3	-	1.38	-	-	-	6.04	-	<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	<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	<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	<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	-	-	-	-	2.2	<1.8
Chloromethane	µg/l				<1.7	<1.7	<1.7	<1.7	<1.7	-	<1.7	-	-	-	<1.7	-	<1.7	<1.7	-	-	-	-	<1.7	<1.7
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	<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	<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	<1.7
Dibromofluoromethane**	%				105	120	117	107	103	-	114	-	-	-	119	-	111	136	-	-	-	-	36.6	115
Dibromomethane	µg/l				<2.7	<2.7	<2.7	<2.7	<2.7	-	<2.7	-	-	-	<2.7	-	<2.7	<2.7	-	-	-	-	<2.7	<2.7
Dichlorodifluoromethane	µg/l				<1.3	<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	<1.3	<1.3
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	<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	<2.5
Isopropylbenzene	µg/l				<1.4	<1.4	<1.4	14.3	14.9	-	22.4	-	-	-	29.5	-	33.4	<1.4	-	-	-	-	11.6	<1.4
n-Butylbenzene	µg/l				<2	<2	<2	<2	<2	-	6.1	-	-	-	<2	-	7.83	<2	-	-	-	-	<2	<2
Propylbenzene	µg/l				<2.6	<2.6	<2.6	19.2	19.8	-	27.7	-	-	-	32.7	-	39.7	<2.6	-	-	-	-	14.5	<2.6
sec-Butylbenzene	µg/l				<1.7	<1.7	<1.7	<1.7	<1.7	-	2.15	-	-	-	<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	<1.2	538	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	337	<1.2
tert-Amyl methyl ether (TAME)	µg/l				<1	<1	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
tert-Butylbenzene	µg/l				<2	<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	<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	<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	<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	-	-	-	-	11.3	<2.5
Trichlorofluoromethane	µg/l				<1.3	<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	1.82	<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	<1.2

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ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring visit 4 (15th - 16th July 2010)

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	B8	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	1.60-2.80	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)** Freshwater	Coastal/Estuary /Marine	**Source of screening value**																				
Inorganics																								
Arsenic (dissolved)	µg/l	25	20	SI 272/2009 Annual Ave	31.8	7.35	11.2	38.3	23.9	7.8	9.07	1.68	104	<0.12	17.6	9.3	11.8	1.27	7.57	3.44	1.73	2.5	167	2.91
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	<0.1	0.567	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.172	<0.1	0.32	<0.1
Chromium (dissolved)	µg/l	32	32	SI272/2009 MAC	7.49	5.34	2.63	6.43	5.21	2.57	4.39	1.45	1.7	0.577	15.9	6.72	6.41	4.59	2.44	6.83	3.74	5.5	22.9	2.51
Copper (dissolved)	µg/l	30*		SI 272/2009 Annual Ave	<0.85	0.915	<0.85	<0.85	<0.85	<0.85	<0.85	1.52	3.95	2.03	1.29	<0.85	2.2	2.51	1.64	<0.85	7.73	1.47	3.84	4.84
Lead (dissolved)	µg/l	7.2	7.2	SI 272/2009 Annual Ave	0.02	0.05	<0.02	0.054	0.422	<0.02	<0.02	0.341	0.06	<0.02	<0.02	<0.02	0.19	<0.02	<0.02	0.055	0.144	0.212	4.15	0.122
Nickel (dissolved)	µg/l	20	20	SI 272/2009 Annual Ave	4.93	3.84	7.73	9.24	2.28	6.18	5.8	2.17	53.4	1.94	4.39	12.3	6.01	14.3	9	3.53	5.61	6.69	35.4	3.6
Selenium (dissolved)	µg/l	1	-	Guidelines for Aquatic Life (2007)	1.08	1.02	2.86	5.73	16.9	1.19	1.48	0.928	22.7	<0.39	13.6	8.99	8.46	1.51	3.93	1.07	1.56	1.08	26.1	1.69
Zinc (dissolved)	µg/l	100*	40	SI 272/2009 Annual Ave	10.8	4.29	3.63	3.48	3.16	4.23	1.57	3.79	24.7	3.07	2.04	3.48	5.29	6	2.27	2.1	4.82	2.9	173	2.49
Mercury (dissolved)	µg/l	0.07	0.07	SI272/2009 MAC	<0.01	<0.01	<0.01	<0.01	0.0179	<0.01	<0.01	<0.01	0.0283	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0101	<0.01	0.0677	<0.01
Ammoniacal Nitrogen	µg/l	1000	-	Freshwater Fish Directive	12200	3640	21200	132000	107000	6660	14100	778	59900	315	67000	40200	14000	6610	67200	17400	571	10900	215000	1650
Sulphate (soluble)	µg/l	200000	-	EQS & IGV	324000	233000	319000	130000	49400	344000	384000	13700	416000	123000	545000	254000	426000	942000	426000	189000	266000	800000	728000	564000
Phenols	µg/l	46	46	SI272/2009 MAC	<0.2	<0.2	960	127000	304000	<0.2	520	<0.2	125000	<0.2	32600	<0.2	14100	<0.2	10300	<0.2	<0.2	<0.2	1820000	<0.2
Free Cyanide - (total CN in lab results)	µg/l	10	10	SI 272/2009 Annual Ave	241	166	<0.05	206	363	129	826	97	5990	<0.05	783	301	358	422	961	<0.05	<0.05	267	14600	771
pH Value	µg/l	6.5	6.5	Interim Guideline Values	8.26	8.32	7.75	8.45	8.37	7.96	7.96	8.04	9.12	7.95	7.75	7.73	8.05	7.59	8.18	8.04	8.19	7.72	9.33	7.94
pH Value	µg/l	9.5	9.5	Interim Guideline Values	8.26	8.32	7.75	8.45	8.37	7.96	7.96	8.04	9.12	7.95	7.75	7.73	8.05	7.59	8.18	8.04	8.19	7.72	9.33	7.94
BTEX																								
Benzene	µg/l	50	50	SI272/2009 MAC	117	<7	40	8020	16300	13	618	<7	3690	<7	4940	91	3140	<7	1040	<7	<7	<7	14300	<7
Toluene	µg/l	10	10	SI 272/2009 Annual Ave	<4	<4	64	4550	5220	<4	237	<4	954	<4	3580	<4	2860	<4	554	<4	<4	<4	4870	<4
Ethyl benzene	µg/l	10	10	EQS & IGV	<5	<5	17	275	203	<5	194	<5	45	<5	377	<5	269	<5	36	<5	<5	<5	271	<5
Xylene	µg/l	10	10	SI 272/2009 Annual Ave	49	<10	113	2590	1990	74	745	<10	512	<10	2460	<10	2450	<10	365	<10	<10	<10	2650	<10
Petroleum Hydrocarbons																								
GRO (C4-C12)	µg/l				834	153.3	922	26810	39420	1625	5470	<36.3	12030	<20	21000	288.8	21910	<20	5000	102.1	<20	<20	52100	<20
MTBE	µg/l	30	30	IGV	<3	<3	<3	<6	<15	<3	<3	<3	<6	<3	<6	<3	<3	<3	<3	<3	<3	<3	<15	<3
Aliphatics C5-C6	µg/l				<10	<10	<10	83.9	124	<10	<10	<10	107	<10	20.2	<10	<10	<10	<10	<10	<10	<10	868	<10
Aliphatics C6-C8	µg/l				58.9	<10	24.7	651	2900	<10	11.3	<10	1220	<10	1890	14.4	2030	<10	513	<10	<10	<10	3910	<10
Aliphatics C8-C10	µg/l				53.2	15	75.1	777	1110	190	241	<10	484	<10	940	25.1	1100	<10	201	10.2	<10	<10	1850	<10
Aliphatics C10-C12	µg/l				190	46.4	190	3500	3990	425	1230	<10	1710	<10	2140	48.3	3380	<10	798	30.6	<10	<10	8230	<10
Aliphatics C12-C16	µg/l				<10	334	<10	35	<10	367	99	65	<10	<10	<10	<10	90	625	<10	26	<10	<10	<10	<10
Aliphatics C16-C21	µg/l				<10	580	<10	14	<10	235	162	72	<10	<10	<10	<10	79	389	<10	43	<10	<10	<10	<10
Aliphatics C21-C35	µg/l				<10	328	<10	<10	<10	110	108	203	<10	<10	<10	<10	65	448	<10	281	<10	<10	<10	<10
Aromatics C6-C7	µg/l				117	<10	40	8020	16300	13	618	<10	3690	<10	4940	91	3140	<10	1040	<10	<10	<10	14300	<10
Aromatics C7-C8	µg/l				<10	<10	64	4550	5220	<10	237	<10	954	<10	3580	<10	2860	<10	554	<10	<10	<10	4870	<10
Aromatics 8-10	µg/l				129	22.4	243	4030	3850	359	1300	12.1	1280	<10	4250	37.7	4360	<10	702	15.4	<10	<10	5700	<10
Aromatics 10-12	µg/l				286	69.5	285	5250	5990	637	1840	14.1	2570	<10	3220	72.5	5070	<10	1200	45.9	<10	<10	12300	<10
Aromatics 12-16	µg/l				615	43	608	12700	28300	702	2000	52	9600	<10	6940	14	5800	1120	3640	<10	<10	<10	62200	<10
Aromatics 16-21	µg/l				377	139	391	1510	1980	537	1350	174	809	<10	734	10	1940	1920	617	54	<10	<10	3500	<10
Aromatics 21-35	µg/l				272	288	267	385	348	464	1120	1100	313	<10	223	49	1570	4720	198	347	<10	20	756	<10
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	10	EQS & IGV	2100	1870	2190	41500	70100	4040	10300	1690	22700	<10	28900	362	31500	9220	9450	853	<10	20	119000	<10
PAHs																								
Acenaphthene	µg/l	5.8	-	Canadian Water Quality Guidelines for Aquatic Life (2007)	26.7	0.17	10.9	23.2	36.3	34.3	63.5	2.94	12.5	0.04	49.1	4.95	47.1	46	12.5	1.93	<0.015	0.1	31.6	<0.015
Acenaphthylene	µg/l	-	-	-	7.54	1.49	54.5	174	277	5	137	9.41	89	0.32	75.9	2.5	198	131	76.2	4.1	0.16	0.22	190	0.07
Anthracene	µg/l	0.4	0.4	SI272/2009 MAC	1.48	0.65	8.87	28.6	42.6	4.57	52.3	6.19	15.9	0.08	4.91	1.69	47.7	130	12.9	1.83	0.05	0.2	21.6	0.09
Benzo(a)anthracene	µg/l	0.018	-	Guidelines for Aquatic Life (2007)	6.06	3.43	3.19	6.75	6.06	5.29	14.9	15.4	4.75	0.68	<1.7	4.28	19	90.7	2.63	7.24	0.16	1.26	<1.7	0.97
Benzo(a)pyrene	µg/l	0.1	0.1	SI272/2009 MAC	6.92	4.73	2.34	4.09	2.18	4.19	7.32	16.1	2.15	1.04	1.28	4.22	11.4	75.3	0.81	9.57	0.3	1.7	<0.9	1.39
Benzo(b)fluoranthene	µg/l	0.5	-	Interim Guideline Value	4.86	5.6	3.01	5.65	3.52	5.2	10.5	17.4	3.29	1.41	<2.3	5.15	17	94.3	1.32	12.3	0.32	2.34	<2.3	1.97
Benzo(ghi)perylene	µg/l	0.05	-	Interim Guideline Value	3.45	2.93	0.96	2.01	<1.6	2.04	3.14	10.1	0.88	0.74	<1.6	2.45	8.92	43.9	<0.32	5.26	0.22	1.43	<1.6	1.3
Benzo(k)fluoranthene	µg/l	0.05	-	Interim Guideline Value	1.83	2.17	1.13	2.18	<2.7	1.8	3.73	7.37	1.25	0.44	<2.7	2.23	7.69	37.8	0.54	4.33	0.11	0.85	<2.7	0.67
Chrysene	µg/l	-	-	-	4.25	2.08	2.09	5.46	5.31	3.23	10.3	11.9	3.51	0.57	1.69	3.31	15.4	67.7	1.82	5.04	0.1	1.02	<1.3	0.77
Dibenzo(ah)anthracene	µg/l	-	-	-	0.73	0.78	0.28	<0.64	<1.6	0.62	0.8	2.68	<0.32	0.18	<1.6	0.739	2.6	12.6	<0.32	1.47	0.06	0.34	<1.6	0.27
Fluoranthene	µg/l	1	1	SI272/2009 MAC	13.8	8.31	13.4	33.4	47	20.5	104	37.7	23.6	1.1	12.8	7.64	81.4	289	15.8	19	0.21	2.01	14.9	1.38
Fluorene	µg/l	3	-	Guidelines for Aquatic Life (2007)	3.63	0.3	24.6	68.6	114	16.1	108	3.78	36.8	0.06	25.4	1.94	96	142	39.8	1.81	0.04	0.1	67.2	0.03
Indeno(123cd)pyrene	µg/l	0.05	-	Interim Guideline Value	2.57	2.85	0.99	1.67	<1.4	2.09	2.79	8.97	0.55	0.67	<1.4	2.17	8.23	39.6	<0.28	5.22	0.18	1.21	<1.4	1.06
Naphthalene	µg/l	2.4	1.2	SI 272/2009 Annual Ave	1.97	0.59	4.17	2860	5040	0.83	1390	3.86	100	2.86	3270	29	3690	354	890	3.03	<0.1	0.15	2580	0.22
Phenanthrene	µg/l	0.4	-	Guidelines for Aquatic Life (2007)	1.71	0.94	30.8	95.9	155	12.2	184	12.1	55.3	0.22	48.1	4.86	165	378	43.9	5.77	0.1	0.57	72.5	0.18
Pyrene	µg/l	0.025	-	Guidelines for Aquatic Life (2007)	20	8.08	8.24	22.5	31.8	13.1	67.1	25.3	15.5	1	8.26	6.23	53.5	196	10.4	13	0.17	2.03	9.42	1.23
Sum benzo(ghi)perylene and indeno(123-cd)pyrene	µg/l	0.002	0.002	SI 272/2009 Annual Ave																				
Sum benzo (b + K) fluoranthene	µg/l	0.03	0.03	SI 272/2009 Annual Ave																				
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	<1.3
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	<1.3	-	-	-	-	4.67	<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	<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	<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	<1.2
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	<1.2
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	<1.3
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	<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	<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	<2.3
1.2.4-Trimethylbenzene	µg/l				19.1	2.63	18	217	131	-	248	-	-	-	338	-	325	<1.7	-	-	-	-	116	<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	<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	<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	<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	<3.3
1.2-Dichloropropane	µg/l				<3	<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	<10
1.3.5-Trimethylbenzene	µg/l				6.29	<1.8	7.63	88.8	52.5	-	76	-	-	-	94.6	-	127	<1.8	-	-	-	-	50.6	<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	<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	<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	<2.7
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	<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	<1.9
4-Chlorotoluene	µg/l				<1.9	<1.9	<1.9	<1.9	<1.9	-	<1.9	-	-	-	<1.9	-	<1.9	<1.9	-	-	-	-	2.28	<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	<2.6
Bromobenzene	µg/l				<2	<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	<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	<0.9
Bromoform	µg/l				<3	<3	<3	<3	<3	-	<3	-	-	-	<3	-	<3	<3	-	-	-	-	<3	<3
Bromomethane	µg/l				<2	<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Carbon Disulphide	µg/l				<1.3	<1.3	<1.3	<1.3	<1.3	-	1.55	-	-	-	4.47	-	<1.3	<1.3	-	-	-	-	5.51	<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	<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	<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	<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	<1.8
Chloromethane	µg/l				<9	<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	<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	<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	<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	<2.7
Dichlorodifluoromethane	µg/l				<7	<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	<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	<2.5
Isopropylbenzene	µg/l				<1.4	<1.4	<1.4	11.2	6.27	-	19.5	-	-	-	22.1	-	15.5	<1.4	-	-	-	-	8.7	<1.4
n-Butylbenzene	µg/l				<2	<2	<2	<2	<2	-	<2	-	-	-	<2	-	<2	<2	-	-	-	-	<2	<2
Propylbenzene	µg/l				<2.6	<2.6	<2.6	14.1	8.72	-	24.1	-	-	-	23	-	7.52	<2.6	-	-	-	-	9.99	<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	<1.7
Styrene	µg/l	72	-	Guidelines for Aquatic Life (2007)	<1.2	<1.2	<1.2	161	237	-	<1.2	-	-	-	<1.2	-	<1.2	<1.2	-	-	-	-	247	<1.2
tert-Amyl methyl ether (TAME)	µg/l				<1	<1	<1	<1	<1	-	<1	-	-	-	<1	-	<1	<1	-	-	-	-	<1	<1
tert-Butylbenzene	µg/l				<2	<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	<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	<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	<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	-	-	-	-	8.52	<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	<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	<1.2

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ANALYSIS OF GROUNDWATER - Limerick Gasworks, Monitoring visit 5 (20th - 21st July 2010)

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)	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)** Freshwater	Coastal/Estuary /Marine	**Source of screening value**																			
Inorganics																							
Arsenic (dissolved)	µg/l	25	20	SI 272/2009 Annual Ave	33.3	10.7	12.3	32.9	17	11.4	6.86	113	4.55	17.7	7.54	16.1	6.49	16.7	5.39	2.84	4.28	42.7	3.25
Cadmium (dissolved)	µg/l	1.5	1.5	SI272/2009 MAC	0.107	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.452	<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	6.1	5.09	3.11	7.87	5.48	6.42	4.88	1.83	5.14	9.16	7.17	4.26	8.96	3.69	4.3	4.5	3.31	7.76	1.1
Copper (dissolved)	µg/l	30*		SI 272/2009 Annual Ave	1.88	<0.85	<0.85	1.18	<0.85	1.19	1.3	0.864	<0.85	3.44	1.05	<0.85	1.31	<0.85	<0.85	1.85	1.61	2.14	2.08
Lead (dissolved)	µg/l	7.2	7.2	SI 272/2009 Annual Ave	0.125	0.072	0.07	0.248	0.027	<0.02	0.118	0.183	0.065	<0.02	0.065	0.166	0.064	0.059	0.024	0.052	0.393	0.534	0.039
Nickel (dissolved)	µg/l	20	20	SI 272/2009 Annual Ave	6.19	4.24	5.64	1.59	4.07	4.13	8.01	56.3	8.41	6.14	9.24	4.99	7.83	7.1	4.24	4.96	7.57	15.7	3.86
Selenium (dissolved)	µg/l	1	-	Guidelines for Aquatic Life (2007)	1.54	1.65	3.49	48.6	3.1	16.5	1.95	35.7	2.36	40.1	5.97	9.38	2.05	19	1.2	3.45	1.36	23	1.34
Zinc (dissolved)	µg/l	100*	40	SI 272/2009 Annual Ave	1.29	0.526	0.664	0.877	0.599	<0.41	0.98	44.8	1.5	1.67	1.7	3.26	1.37	<0.41	0.452	0.809	0.83	3.11	0.553
Mercury (dissolved)	µg/l	0.07	0.07	SI272/2009 MAC	<0.01	<0.01	<0.01	0.0185	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0244	<0.01
Ammoniacal Nitrogen	µg/l	1000	-	Freshwater Fish Directive	10000	2990	5030	98400	7150	11400	1900	45700	17700	38700	27000	13000	11400	33800	14900	824	5810	56700	1350
Sulphate (soluble)	µg/l	200000	-	EQS & IGV	315000	245000	272000	54800	79900	420000	112000	462000	62700	605000	506000	158000	676000	385000	203000	165000	734000	573000	576000
Phenols	µg/l	46	46	SI272/2009 MAC	420	<25	140	167000	400	2520	350	180000	2630	4180	520	2930	2710	10400	50	<25	<25	1010000	<25
Free Cyanide - (total CN in lab results)	µg/l	10	10	SI 272/2009 Annual Ave	254	142	73	400	88	967	159	7860	<50	980	379	127	933	292	<50	<50	620	1840	941
pH Value	µg/l	6.5	6.5	Interim Guideline Values	8.08	8.3	7.5	8.45	8.28	7.54	8.28	8.41	7.68	8.04	8.2	8.38	8.03	8.29	8.09	8.12	7.9	7.9	8
pH Value	µg/l	9.5	9.5	Interim Guideline Values	8.08	8.3	7.5	8.45	8.28	7.54	8.28	8.41	7.68	8.04	8.2	8.38	8.03	8.29	8.09	8.12	7.9	7.9	8
BTEX																							
Benzene	µg/l	50	50	SI272/2009 MAC	<7	<7	<7	13500	62	616	25	7750	206	4310	266	1180	43	1030	11	<7	<7	18200	<7
Toluene	µg/l	10	10	SI 272/2009 Annual Ave	<4	<4	12	4470	43	460	5	2040	47	3100	11	1290	29	609	<4	<4	<4	5680	<4
Ethyl benzene	µg/l	10	10	EQS & IGV	<5	<5	<5	152	87	166	11	86	<5	352	17	151	7	54	<5	<5	<5	268	<5
Xylene	µg/l	10	10	SI 272/2009 Annual Ave	97	<10	42	1520	307	774	36	940	15	2350	49	1440	60	537	<10	<10	<10	2430	<10
Petroleum Hydrocarbons																							
GRO (C4-C12)	µg/l				1244	96	256	32270	3610	6800	253	18700	417	18270	692	8170	480	5250	90	31	28	51800	<20
MTBE	µg/l	30	30	IGV	<3	<3	<3	<15	<3	<3	<3	<6	<3	<3	<3	<3	<3	<3	<3	<3	<3	<30	<3
Aliphatics C5-C6	µg/l				<10	<10	<10	69	<10	<10	<10	73	<10	18	<10	<10	<10	11	<10	<10	<10	269	<10
Aliphatics C6-C8	µg/l				38	10	<10	506	32	67	11	525	11	217	17	70	15	73	<10	<10	<10	1980	<10
Aliphatics C8-C10	µg/l				144	19	35	1470	395	492	36	949	22	1040	49	644	64	312	14	<10	<10	2650	<10
Aliphatics C10-C12	µg/l				519	31	76	5720	1450	2330	62	3450	58	3690	149	1770	130	1450	28	11	<10	11100	<10
Aliphatics C12-C16	µg/l				<10	427	<10	11	306	<10	108	18	<10	<10	<10	43	<10	13	58	<10	<10	552	<10
Aliphatics C16-C21	µg/l				<10	520	<10	17	140	<10	125	29	<10	<10	77	27	11	31	39	<10	<10	683	<10
Aliphatics C21-C35	µg/l				<10	314	<10	12	32	<10	431	22	136	<10	151	17	<10	13	246	<10	<10	861	<10
Aromatics C6-C7	µg/l				<10	<10	<10	13500	62	616	25	7750	206	4310	266	1180	43	1030	11	<10	<10	18200	<10
Aromatics C7-C8	µg/l				<10	<10	12	4470	43	460	<10	2040	47	3100	11	1290	29	609	<10	<10	<10	5680	<10
Aromatics 8-10	µg/l				194	14	68	2660	657	1270	71	1660	32	3390	98	2030	110	799	11	<10	<10	4470	<10
Aromatics 10-12	µg/l				346	21	51	3810	964	1550	41	2300	38	2460	99	1180	87	967	19	<10	<10	7380	<10
Aromatics 12-16	µg/l				209	89	41	20900	802	144	107	12400	121	5310	152	1910	1540	1910	55	<10	<10	69400	<10
Aromatics 16-21	µg/l				183	231	27	1520	472	101	148	1170	<10	550	20	820	593	454	120	<10	<10	7220	<10
Aromatics 21-35	µg/l				63	473	61	514	442	27	908	871	68	127	176	781	268	443	649	44	41	6780	79
TPH (Aliphatics and Aromatics C5-C35)	µg/l	10	10	EQS & IGV	1700	2150	385	55200	5800	7070	2080	33200	742	24200	1270	11800	2890	8120	1260	75	69	137000	95
PAHs																							
Acenaphthene	µg/l	5.8	-	Canadian Water Quality Guidelines for Aquatic Life (2007)	0.855	0.142	67	21.8	47.8	31.9	1.22	11.6	1.37	58.9	4.1	36	3.91	8.72	2.3	0.0512	0.139	50.1	0.0197
Acenaphthylene	µg/l	-	-	-	1.01	1.28	331	211	6.93	34.4	5.57	100	4.97	72.2	1.9	141	2.83	58.1	4.66	0.465	0.134	380	0.148
Anthracene	µg/l	0.4	0.4	SI272/2009 MAC	0.478	0.514	212	28	4.04	9.89	2.3	11.5	2.69	10.9	1.42	35	1.09	15.7	2.35	0.178	0.157	50.3	0.243
Benzo(a)anthracene	µg/l	0.018	-	Guidelines for Aquatic Life (2007)	1.12	3.24	354	5.3	7.04	6.22	14.6	5.99	64.5	1.92	7.59	19.5	2.32	14.1	17.8	0.8	1.2	6.87	3.07
Benzo(a)pyrene	µg/l	0.1	0.1	SI272/2009 MAC	1.55	7.2	443	3.12	10.1	3.41	33.8	2.05	132	1.19	11.3	15.5	2.5	14.1	32.5	3.95	2.35	2.94	5.6
Benzo(b)fluoranthene	µg/l	0.5	-	Interim Guideline Value	0.564	6.76	386	3.14	9.15	3.03	28.8	<2.3	128	1.36	10.4	12.3	1.99	9.84	29.3	2.95	2.37	3.1	5.7
Benzo(ghi)perylene	µg/l	0.05	-	Interim Guideline Value	0.733	4.72	313	2.08	6.08	1.64	21.1	<1.6	72.1	1.14	7.28	8.19	1.44	5.21	20.2	2.21	2.32	1.66	5.61
Benzo(k)fluoranthene	µg/l	0.05	-	Interim Guideline Value	1.07	5.84	400	3.46	7.91	2.77	27.4	<2.7	110	1.39	11.1	13.2	2.23	14.6	27.7	2.49	2.2	2.99	5.08
Chrysene	µg/l	-	-	-	0.92	2.89	216	8.51	5.68	4.97	12.8	2.65	39.4	2.1	7.32	16	2.16	10.6	14.7	0.719	1.19	6.72	2.91
Dibenzo(ah)anthracene	µg/l	-	-	-	0.107	1.44	87.4	0.814	1.51	0.464	6.46	<1.6	20.9	0.74	1.76	2.36	0.391	1.89	6.49	0.668	0.542	0.848	1.26
Fluoranthene	µg/l	1	1	SI272/2009 MAC	4.31	7.24	805	32.9	22.7	33.4	24.6	16.9	34.2	10.7	10.2	61.3	10.3	28.5	27	0.864	1.59	53.5	3.43
Fluorene	µg/l	3	-	Guidelines for Aquatic Life (2007)	0.398	0.281	222	73.6	18	57.1	1.42	35.2	1.45	42.2	1.43	74.4	1.54	36.5	2.49	0.173	0.0853	126	0.061
Indeno(123cd)pyrene	µg/l	0.05	-	Interim Guideline Value	0.519	4.8	292	2.29	6.04	1.75	20.9	<1.4	70.4	1.2	6.98	8.25	1.51	6.18	18.8	1.99	2.03	1.93	5.01
Naphthalene	µg/l	2.4	1.2	SI 272/2009 Annual Ave	0.315	0.441	95.2	5170	4.45	23	2.41	2030	17.7	4640	1.71	99.7	2.14	19.5	3.44	0.202	0.196	6130	0.266
Phenanthrene	µg/l	0.4	-	Guidelines for Aquatic Life (2007)	0.65	0.746	383	95.4	7.84	71.2	5.42	42.3	6.89	50.7	3	90.6	1.12	51.4	7.89	0.548	0.395	154	0.342
Pyrene	µg/l	0.025	-	Guidelines for Aquatic Life (2007)	9.25	7.64	600	20.7	13.9	20.6	14.1	11.2	30.8	7.26	8.14	38.2	4.23	18.7	17	0.605	1.62	34.3	3.07
Sum benzo(ghi)perylene and indeno(123-cd)pyrene	µg/l	0.002	0.002	SI 272/2009 Annual Ave	1.252	9.52	605	4.37	12.12	3.39	42	<3	142.5	2.34	14.26	16.44	2.95	11.39	39	4.2	4.35	3.59	10.62
Sum benzo (b + K) fluoranthene	µg/l	0.03	0.03	SI 272/2009 Annual Ave	1.634	12.6	786	6.6	17.06	5.8	56.2	<5	238	2.75	21.5	25.5	4.22	24.44	57	5.44	4.57	6.09	10.78
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	-	-	-	-	8.31	<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				26.6	<1.7	14.9	106	-	239	-	-	-	395	-	300	27.1	-	-	-	-	131	<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				8.04	<1.8	2.67	42.9	-	74.9	-	-	-	109	-	117	11.5	-	-	-	-	56.2	<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	-	11.5	-	-	-	36.7	-	20.2	<2.6	-	-	-	-	18	<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	-	1.43	-	-	-	<1.3	-	<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	-	-	-	-	2.26	<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				9.59	<1.4	1.4	5.38	-	20.6	-	-	-	30.1	-	15.9	2.28	-	-	-	-	9.19	<1.4
n-Butylbenzene	µg/l				<2	<2	<2	<2	-	6.84	-	-	-	5.58	-	<2	<2	-	-	-	-	<2	<2
Propylbenzene	µg/l				<2.6	<2.6	<2.6	6.16	-	24.9	-	-	-	31.3	-	17	<2.6	-	-	-	-	11.3	<2.6
sec-Butylbenzene	µg/l				<1.7	<1.7	<1.7	<1.7	-	1.72	-	-	-	1.88	-	<1.7	<1.7	-	-	-	-	<1.7	<1.7
Styrene	µg/l	72	-	Guidelines for Aquatic Life (2007)	<1.2	<1.2	<1.2	219	-	<1.2	-	-	-	<1.2	-	77.4	<1.2	-	-	-	-	352	<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	-	-	-	-	2.49	<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	<2.5
Trichlorofluoromethane	µg/l				<1.3	<1.3	<1.3	<1.3	-	<1.3	-	-	-	<1.3	-	<1.3	<1.3	-	-	-	-	2.3	<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

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