- 1 SEP 2014

ENVIRON

29th August 2014

Ruth Fletcher
Sapa Extrusions Limited
Bedwas Plant
Pant Glas Industrial Estate
Bedwas
Caerphilly
CF83 8DR

Our Ref: AG/LC/RH/LUK17-20501_01 Sapa SPMP

Dear Ruth,

Re: Site Protection and Monitoring Programme (SPMP), July 2014 (Round 22): Environmental Permit Ref. BX94551F

Background

Sapa Extrusions Ltd (formerly Hydro Aluminium Extrusions) has carried out regular groundwater monitoring at the installation since August 2005. ENVIRON has carried out sixteen rounds of monitoring between August 2005 and October 2013; and Mabett and Associates Ltd (M&A) carried out monitoring on four occasions (between February 2009 and April 2010). In accordance with the SPMP, groundwater monitoring is required in order to assess the nature of any identified groundwater contamination arising from potential identified sources over the longer term; and to confirm improvements in site control and management have reduced the levels of contamination.

The main manufacturing operations at the site ceased in March 2014; however, some personnel have been retained at the site for operations in the fabrication building and for decommissioning machinery in the main factory. Although manufacturing has ceased, the SPMP will be required to continue up until a point where Sapa surrenders the Environmental Permit and this is accepted by Natural Resources Wales (NRW).

A meeting was held with the Environment Agency (now NRW) on 31st January 2011 to discuss the long term trends in SPMP monitoring data and the future scope of monitoring requirements. The results of statistical analysis have shown that the overall concentrations of SPMP determinands in groundwater are either stable or decreasing, with the exception of total petroleum hydrocarbons (TPH) in BH12. It was agreed with the Environment Agency that a passive skimmer would be installed in BH12 to remove floating phase hydrocarbons.

Given the close proximity of some of the monitoring wells and the stable concentrations detected in the monitoring wells, it was agreed that the following wells would be omitted from future monitoring rounds: BH2, BH3, BH5, BH7 and BH10. Therefore, the remaining eight SPMP monitoring wells are: **BH1, BH4, BH6, BHS6, BH11, BH12, MW1** and **MW2.** The SPMP wells are currently monitored on a six monthly basis as agreed with the Environment Agency / Natural Resources Wales.

This report details the results of the twenty second round of groundwater monitoring, in accordance with the SPMP, which was undertaken on 31st July 2014.

Scope of Works

A groundwater sample was recovered from seven of the eight remaining SPMP monitoring wells as detailed above; no sample was collected from borehole BH12 due to the presence of free phase hydrocarbon (free product). At each location, the depth to groundwater was recorded and, where present, the thickness of free product was monitored.

The monitoring well locations are shown on Figure 1 (attached). The groundwater samples were analysed for metals (As, Cd, Cr, Cu, Pb, Ni, Hg, Se, Zn, V, Be, B), pH, total cyanide, sulphate, ammonia and Total Petroleum Hydrocarbons (TPH).

For continuity, the results have been compared with UK Drinking Water Standards in the groundwater analysis summary table (attached). However, given the objective of the SPMP, to identify any groundwater contamination arising from potential sources over the lifetime of the Environmental Permit, it is appropriate to compare results with the Reference Data (collected by ENVIRON, August 2005).

A graphical representation of results over time is presented on the attached Figures.

Results

A full set of laboratory certificates and a summary table of the ongoing groundwater monitoring results (including Reference Data and results from M&A's monitoring) are attached to this letter and the main findings are summarised below.

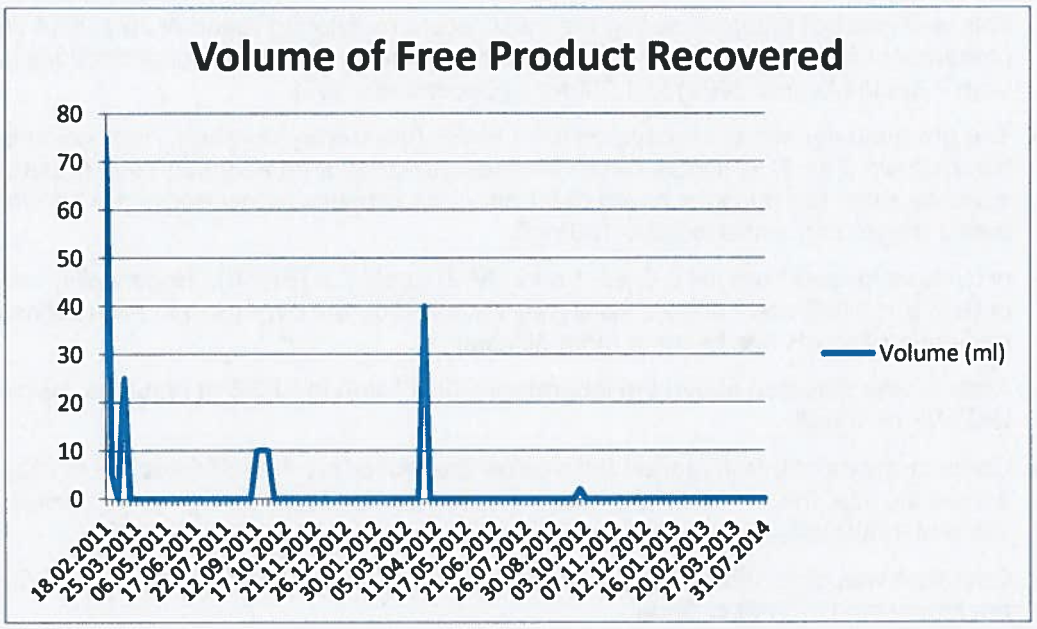
Passive Skimmer

A passive skimmer was installed in BH12 on 11th February 2011. Prior to installation, the depth to floating product and groundwater was measured:

- Floating product: 3.328m bgl
- Groundwater 3.335m bgl

Therefore the thickness of free product at the time of installation was 0.7cm. The membrane of the passive skimmer was installed at the interface between the floating product and the groundwater, i.e. so that the membrane is effectively 'floating' in the oil.

The amount of floating product recovered has been measured weekly by site personnel between installation and April 2013. Due to the limited number of staff currently operating at the site, the amount of free product removed is only recorded by ENVIRON during the periodic SPMP monitoring rounds. To date, 177ml of floating product has been recovered; the volume recovered over time is presented graphically below.



Free product measurements were taken by site personnel since March 2012 with insignificant amounts of product present, i.e. there was no significant thickness of floating product. During this round of monitoring approximately 0.3 cm of free product was detected by ENVIRON. The results indicate that the amount of floating product present in the ground has remained low and has decreased since passive skimming commenced. This also suggests that the source area of free phase hydrocarbons is likely to be limited in extent in the area of the borehole.

Groundwater Monitoring Results

A summary of the key findings of the groundwater monitoring and analysis results are presented below:

- Groundwater levels across the site ranged from 3.18m bgl (MW2) to 4.02m bgl (BHS6) and have fallen since the previous round of monitoring in October 2013.
- During the July 2014 monitoring occasion there was no free product present in the passive skimmer collection vessel in BH12; however, a layer of approximately 0.3 cm of free product was recorded with the interface probe. The passive skimmer was reset at the interface level between the groundwater and potential free product (3.88m bgl).
- Concentrations of TPH in locations where free product has not previously been identified, ranged from below the laboratory limit of detection (<0.01mg/l) in BH4 to 19.01mg/l in BH1; a sample was not collected from BH12, due to the presence of free product detected in the well.
- The concentrations of TPH have slightly increased since the previous monitoring round: in BH1 (from 11.70mg/l to 19.01mg/l), BH11 (from 0.07mg/l to 0.19mg/l), MW1 (from 2.32mg/l to 2.42mg/l), MW2 (from 0.13mg/l to 0.38mg/l) and BHS6 (from 0.02mg/l to 0.05mg/l). The concentration of TPH in MW1 has remained at a concentration above historical concentrations for the two most recent monitoring rounds (the most recent TPH concentration is the maximum detected in MW1 since monitoring commenced).
- The concentrations of TPH have decreased since the previous round of monitoring in BH4 (from 0.02mg/l to <0.01mg/l) and BH6 (from 0.06mg/l to 0.01mg/l). Concentrations of TPH in BH4 and BH6 have historically remained at a relatively low and stable concentration.
- Historically, the highest TPH concentration is found in BH12 with a strong hydrocarbon odour and an oily sheen on the surface of the sample observed during previous sampling occasions.

This well was not sampled during the most recent monitoring round of July 2014 due to the presence of free product. Previous dissolved phase hydrocarbon concentrations have ranged from 7.8mg/l (August 2005) to 1,000mg/l (December 2007).

- The groundwater sample recovered from BHS6 (the 'sentry borehole') was coloured black/brown. The TPH concentration was low (0.05mg/l), and although this represents an increase since the previous round (0.02mg/l); this remains below the sentry borehole risk-based trigger concentration of 0.108mg/l.
- pH values ranged from pH 6.6 (BH1 and MW2) to pH 7.9 (BHS6). Historically, the pH values of BH6 and MW2 have been consistently low (acidic), but over the last five rounds of monitoring, the pH has become more alkaline.
- Arsenic was detected above the laboratory LOD (1µg/l) in BHS6 at 8µg/l, i.e. below the UKDWS of 10µg/l.
- Concentrations of boron ranged from below the laboratory limit of detection (<10µg/l) to 50µg/l across the site; this is consistent with previous rounds of monitoring and is below the UK DWS value of 1,000µg/l.
- Cadmium was detected at and above the laboratory LOD (0.1µg/l) in BHS6 at 0.5µg/l, which are below the UKDWS of 5µg/l.
- Concentrations of chromium ranged from equal to the laboratory LOD (<1µg/l) in MW2 to 8µg/l in BHS6. The maximum concentration detected does not exceed the UK DWS (50µg/l).
- Concentrations of copper ranged from below the laboratory LOD (<1µg/l) to 38µg/l in BHS6. The maximum concentration detected does not exceed the UK DWS (2,000µg/l).
- Lead was below the laboratory LOD (<1ug/l) in all monitoring wells except BHS6 (4µg/l), i.e. below the UKDWS of 25µg/l.
- Mercury was below the laboratory LOD (<0.1µg/l) in all monitoring wells.
- The concentration of nickel ranged from below the laboratory LOD (<1µg/l) to 5µg/l in BHS6 (below the UKDWS of 20µg/l). Elevated concentrations of nickel have consistently been detected in MW2, located at the southern site boundary; however, they have decreased over the monitoring period to date and are now below the screening criteria.
- Selenium ranged from below the laboratory LOD (<1ug/l) to 2µg/l in BHS6, i.e. below the UKDWS of 10µg/l.
- Concentrations of zinc ranged from below the laboratory LOD (<2µg/l) to 40µg/l in MW1. The maximum concentration detected does not exceed the UK DWS (3,000µg/l).
- The concentrations of ammonia across ranged from <10µg/l to 240µg/l. The maximum concentration was identified in BHS6. An elevated concentration of ammonia (60,800µg/l) was recorded in BHS6 during the monitoring round of April 2013; however, subsequent values for October 2013 and July 2014 are within the range of values seen prior to April 2013. The concentration of ammonia in BH11 has also continued to decrease since the exceedance of screening criteria in April 2013 and is now below the UK DWS of 500µg/l.
- Cyanide was detected above the laboratory LOD (20µg/l) in BH11 at 50µg/l, which is equal to the UK DWS of 50µg/l. Elevated concentrations of cyanide have been observed in BH11 on five occasions since September 2010; the most recent monitoring round detected a decrease on the previous monitoring round of October 2013 (which was the highest concentration to date).
- The concentrations of sulphate in groundwater ranged from 6mg/l in BH1 to 47mg/l in BHS6. The sulphate concentrations do not exceed the UK DWS (250mg/l) at any of the monitoring locations.

Conclusions and Recommendations

The results of the twenty second (July 2014) round of groundwater monitoring have identified an increase in TPH concentrations in five of the SPMP monitoring wells. The most notable concentration was in MW1 as the latest recorded value (2.42mg/l) is the maximum observed at that location and also exceeds the Reference Data concentration of 0.17mg/l recorded in 2005. A similarly elevated concentration was detected in the previous round of monitoring in October 2013 (2.32mg/l). The increased concentrations are likely to be a consequence of the lower groundwater level in the monitoring wells.

The highest TPH concentration was identified in BH1 (19.01mg/l); this is an increase since the previous round of monitoring (11.7mg/l).

The TPH concentration in the Sentry Borehole (BHS6) did not exceed the risk based target of 0.108mg/l, which is designed to be protective of the river from hydrocarbon (including free phase product) contamination in the west of the site.

Ammonia has previously been elevated in BHS6, with a concentration of 60,800µg/l detected in April 2013. The ammonia concentration in this monitoring well has now reduced to 240 µg/l. The concentration of ammonia in BH11 was also found to have remained below the UK DWS of 500µg/l.

The concentration of cyanide in BH11 (50µg/l) is equal to the UK DWS of 50µg/l. Although elevated concentrations have been detected at this location on five occasions to date; the most recent concentration represents a reduction in concentration. Cyanide was not detected above the laboratory LOD in any of the other monitoring wells.

The pH values in BH6 and MW1 have been consistently low (acidic) over the monitoring period; however, over the last five rounds of monitoring, the pH has gradually increased to a neutral value at both locations.

It is recommended that the groundwater monitoring programme is continued at a 6 monthly frequency, and providing Natural Resources Wales is in agreement, the next round of monitoring will be due in January 2015. This is also necessary to monitor the concentrations of TPH in the sentry borehole (BHS6) which is intended to be protective of the nearest surface water receptor (the River Rhymney). ENVIRON recommends that monitoring of the passive skimmer by Sapa Aluminium Extrusions Ltd in BH12 is continued on a monthly basis considering the lack of free phase product collected over the last twelve months.

Please do not hesitate to contact us if you wish to discuss any of the above.

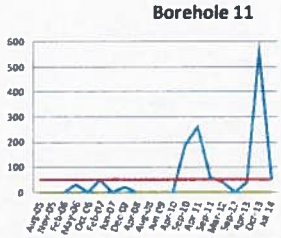
Yours sincerely,

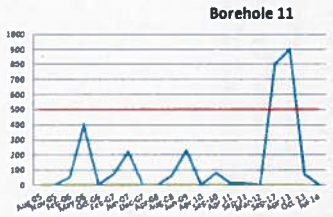
Lucy Cleverley
Senior Consultant

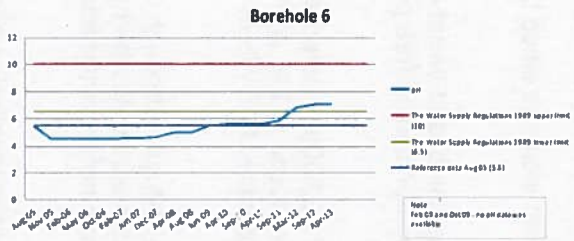
Andy Goddard
Senior Manager

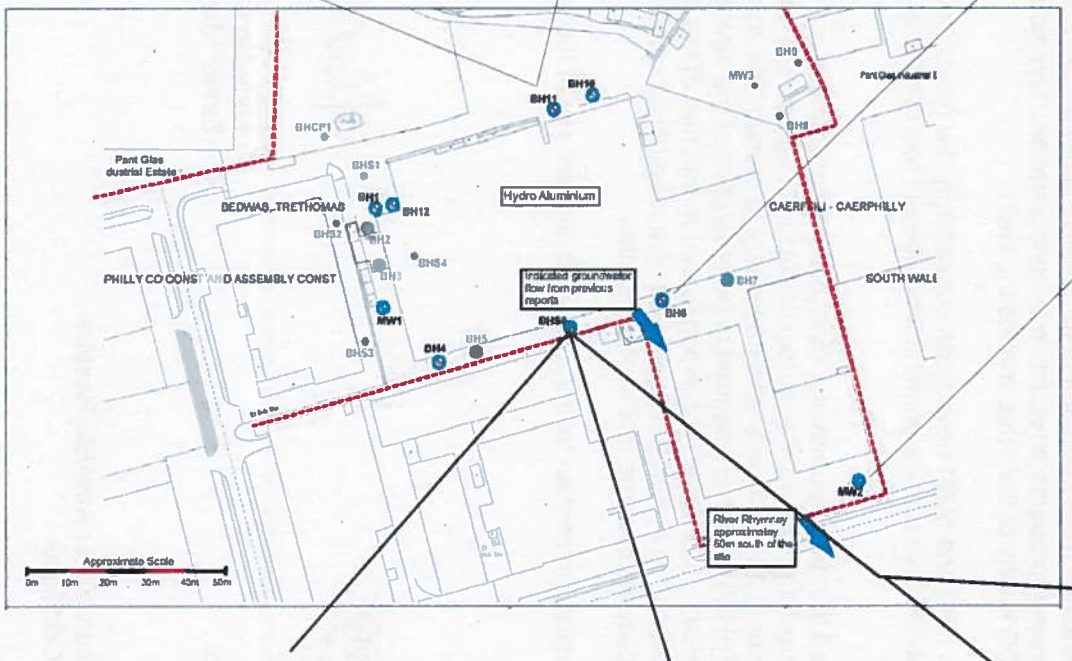
Enc. Figures
Table of Groundwater Analysis Results
Laboratory Certificate

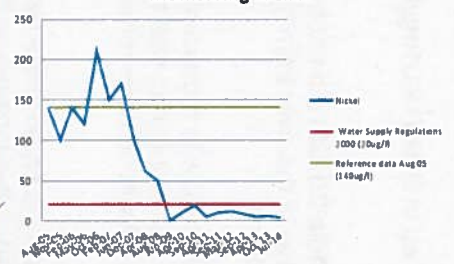
Contaminant Concentration Graphs

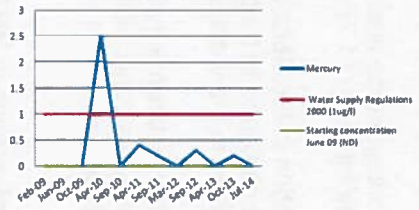


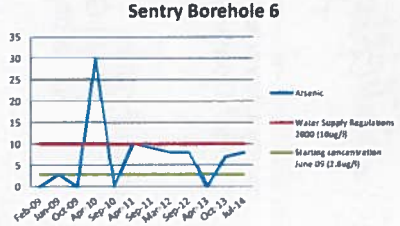


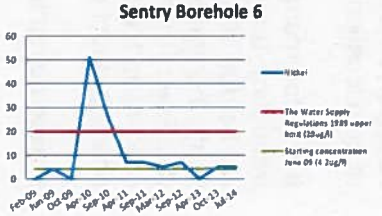


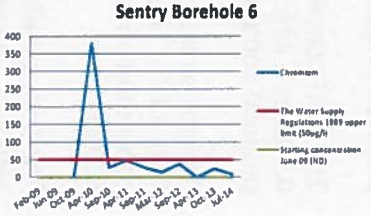












Scale NTS

Legend

- Approximate Site Boundary
- Previously Installed Monitoring Well
- SPMP Monitoring Wells
- Previous locations
- ENVIRON Monitoring Well (installed 2005)
- Monitoring Well Location for Hydrocarbon Delineation

Title	Contaminant Concentration Graphs
Site	Sapa Extrusion Ltd, Bedwas Plant, Pantglas Industrial Estate, Bedwas, Caerphilly
Client	Sapa Extrusion Ltd
Project No.	UK17-20501
Issue	1
Date	July 2014
Drawn by	RH

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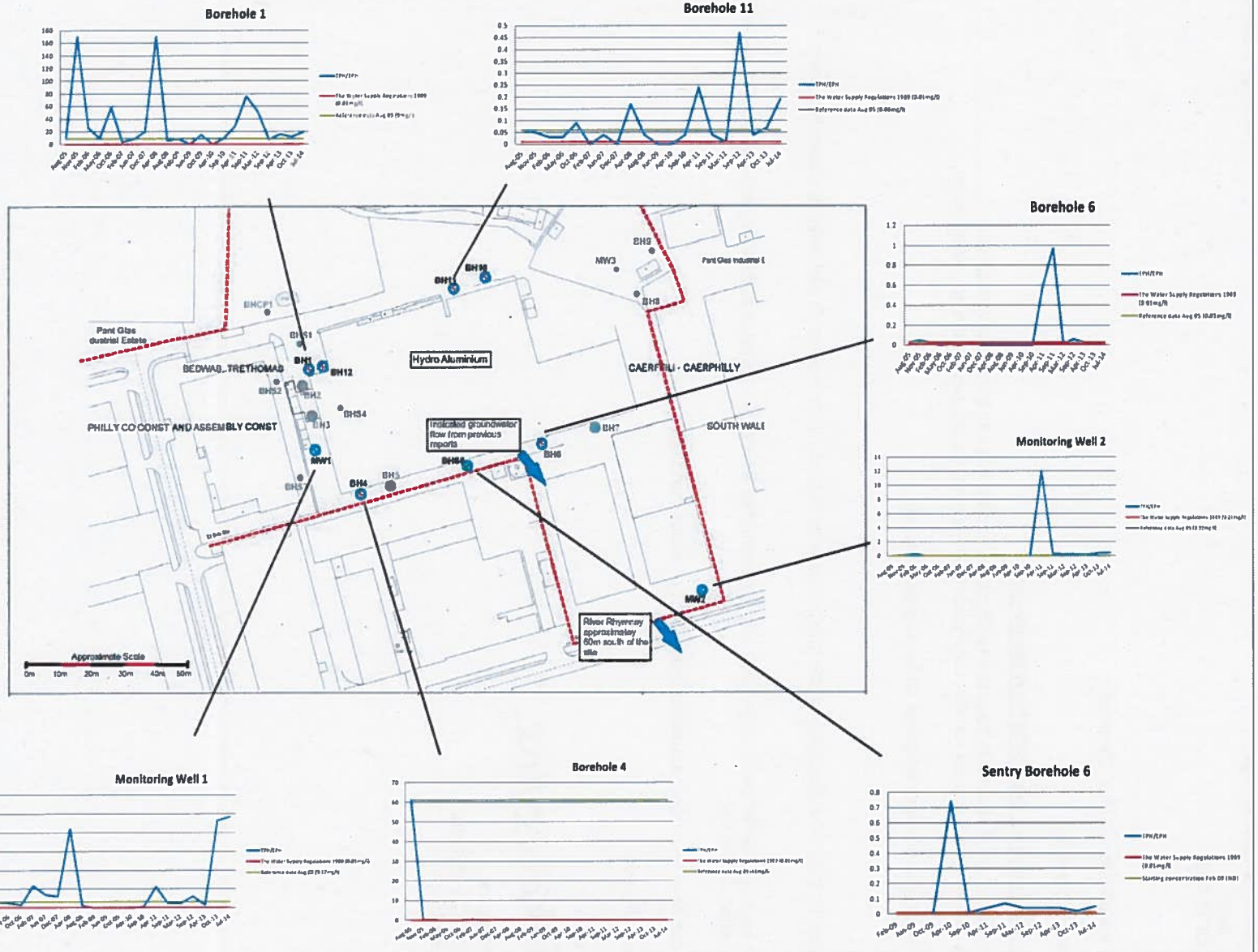
TPH Concentration Graphs



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Client	Sapa Extrusions Ltd
Project No.	UK17-20501
Issue	1
Date	July 2014
Drawn by	RH
Scale	NTS

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Our Ref: EXR/181955 (Ver. 1)
Your Ref: UK17 - 20501

August 14, 2014

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Ms L Cleverley
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CF15 7NE

For the attention of Ms L Cleverley

Dear Ms Cleverley

Sample Analysis - Sapa SPMP GW Monitoring

Samples from the above site have been analysed in accordance with the schedule supplied.
The sample details and the results of analyses for these samples are given in the appended report.

An invoice for this work will follow under a separate cover.

Please be aware that our policy for the retention of paper based laboratory records and analysis reports is 6 years.

The work was carried out in accordance with Environmental Scientifics Group Ltd (Laboratory and Analytical) Standard Terms and Conditions of Contract.

If I can be of any further assistance please do not hesitate to contact me.

Yours sincerely

for ESG

JNColbourne

J Colbourne
Project Co-ordinator
01283 554547

Hydro Aluminium (UK17-20501) - Summary of Groundwater Analysis Results (July 2014)

Borehole Location	Date	Analysis															Water Level (m bgl)
		TPH/EPH (mg/l)	Arsenic (µg/l)	Boron (µg/l)	Cadmium (µg/l)	Chromium (µg/l)	Copper (µg/l)	Lead (µg/l)	Mercury (µg/l)	Nickel (µg/l)	Selenium (µg/l)	Zinc (µg/l)	Ammonia as N (µg/l)	Total Cyanide (µg/l)	pH	Sulphate as SO_4 (mg/l)	
BH3	Aug-05		9	NA	ND	ND	ND	ND	ND	ND	ND	ND		ND	6.5	10	3.85
	Nov-05		8	ND	ND	ND	ND	ND	ND	ND	ND	8	60	ND	6.5	12	2.90
	Feb-06		ND	18	ND	ND	ND	ND	ND	5	ND	ND	60	ND		ND	3.51
	May-06		ND	17	ND	11	ND	ND	ND	ND	ND	ND	ND	ND	6.5	49	3.36
	Oct-06		ND	26	ND	ND	ND	ND	ND	10	ND	7	60	ND	6.5	23	3.56
	Feb-07		ND	25	ND	ND	ND	ND	ND	ND	ND	ND	70	ND	6.5	ND	2.88
	Jun-07		ND	24	ND	ND	ND	ND	ND	8	ND	ND		ND		24	3.45
	Dec-07		ND	26	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	3.13
	Apr-08		ND	20	ND	ND	ND	ND	ND	ND	ND	8	ND	ND	6.6	ND	3.17
	Aug-08		ND	64	ND	7	ND	ND	ND	ND	ND	8	ND	ND	6.6	ND	3.17
	Feb-09		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.10
	Jun-09	ND	1.4	39	ND	9.9	ND	ND	ND	2.3	1.3	100	120	ND	6.5	5.1	3.68
	Oct-09		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.55
	Apr-10	ND	0.9	NA	0.03	14	ND	ND	ND	4	0.5	10	NA	NA	6.5	ND	3.12
	Sep-10		ND	20	ND	6	ND	ND	ND	2	ND	ND	30	ND		12	3.49
	Apr-11		ND	20	ND	2	2	ND	ND	2	ND	9	ND	ND	6.6	6	3.72
	Sep-11		ND	20	ND	7	ND	ND	ND	2	ND	2	50	ND		8	3.53
	Mar-12		1	ND	0.1	6	2	3	ND	2	1	6	20	20	7	6	3.60
	Sep-12		1	40	ND	2	3	4	ND	3	ND	20	70	ND	7.3	11	3.24
	Apr-13		ND	NA	ND	2	ND	ND	ND	ND	ND	5	20	ND	7.3	7	3.39
	Oct-13		ND	20	ND	3	ND	ND	ND	2	ND	7	70	ND	6.9	9	3.70
	Jul-14		ND	20	ND	2	ND	ND	ND	1	ND	3	ND	ND	6.6	6	3.72
BH4	Aug-05			NA	ND	ND	ND	ND	ND	ND	ND	ND	110	ND	6.8	34	4.02
	Nov-05		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.6	20	3.10
	Feb-06		ND	24	ND	10	ND	ND	ND	ND	ND	ND	110	ND	6.8	25	3.73
	May-06		ND	23	ND	10	ND	ND	ND	ND	ND	ND	ND	ND	6.9	28	3.56
	Oct-06		ND	30	ND	ND	17	ND	ND	ND	ND	10	ND	ND	6.8	34	3.61
	Feb-07		ND	27	ND	ND	ND	ND	ND	ND	ND	ND	80	ND	7	21	3.11
	Jun-07		ND	30	ND	ND	ND	ND	ND	ND	ND	ND	210	ND	6.8	24	3.62
	Dec-07	ND	ND	27	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.8	24	3.28
	Apr-08		ND	25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.1	20	3.39
	Aug-08	ND	ND	36	ND	7	ND	ND	ND	ND	ND	ND	ND	ND	6.8	19	3.30
	Feb-09	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.10
	Jun-09	ND	1.3	33	ND	12	1.3	ND	ND	ND	1.4	7.1	40	ND	7	15	3.60
	Oct-09	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.79
	Apr-10	ND	2	NA	ND	12	ND	ND	ND	3	0.7	5	NA	NA	6.9	17	3.35
	Sep-10		ND	20	ND	4	ND	ND	ND	ND	ND	ND	20	ND	6.8	15	3.62
	Apr-11		ND	30	ND	4	2	ND	ND	ND	ND	ND	ND	ND	7	16	3.84
	Sep-11		ND	20	ND	7	ND	ND	ND	ND	1	ND	30	ND	6.8	18	3.61
	Mar-12		ND	ND	0.1	6	3	2	ND	ND	2	5	ND	ND	7.3	21	3.75
	Sep-12	ND	ND	20	ND	3	1	ND	ND	ND	1	ND	ND	ND	7.5	19	3.42
	Apr-13		ND	NA	ND	3	ND	ND	ND	ND	ND	ND	10	ND	7.4	17	3.57
	Oct-13		ND	20	ND	3	ND	ND	ND	ND	ND	ND	ND	ND	7.2	18	3.80
	Jul-14		ND	20	ND	3	ND	ND	ND	ND	ND	ND	ND	ND	7	14	3.86
BH6	Aug-05		9	NA	2	ND	ND	ND	ND		ND	140		ND			3.68
	Nov-05		8	ND	2	ND	ND	ND	ND		ND	200	490	ND			3.07
	Feb-06		ND	23	2	7	7	ND	ND		ND	130		ND			3.45
	May-06	ND	ND	25	2	ND	9	ND	ND		ND	160		ND			3.29
	Oct-06	0.01	ND	21	1	ND	7	ND	ND		ND	130	120	ND			3.41
	Feb-07	ND	ND	29	1	ND	5	ND	ND		ND	95		ND			2.99
	Jun-07		ND	27	ND	ND	ND	ND	ND		ND	54	470	ND		230	3.39
	Dec-07	ND	ND	29	ND	ND	ND	ND	ND	13	ND	53	200	ND		110	3.18
	Apr-08	ND	ND	27	ND	ND	ND	ND	ND	15	ND	39	140	ND		170	3.27
	Aug-08	ND	ND	31	ND	ND	ND	ND	ND	13	ND	31	140	ND		130	3.08
	Jun-09	ND	ND	34	ND	ND	ND	ND	ND	6.7	ND	23	160	ND		97	4.83
	Apr-10	ND	1.1	NA	0.22	3	ND	ND	ND	5	1.1	21	NA	NA		100	3.28
	Sep-10	ND	ND	20	0.3	2	ND	ND	ND	4	ND	54	20	ND		58	3.42
	Apr-11		ND	50	0.2	1	2	ND	ND	3	ND	20	ND	ND		61	3.60
	Sep-11		ND	20	0.2	4	ND	ND	ND	5	ND	11	20	ND		47	3.46
	Mar-12		ND	ND	0.3	2	ND	2	0.1	1	1	9	ND	ND	6.8	50	3.50
	Sep-12		ND	20	0.1	ND	ND	2	ND	1	2	12	ND	ND	7	51	3.24
	Apr-13		ND	NA	0.2	2	ND	ND	ND	1	1	29	ND	ND	7.1	49	3.38
	Oct-13		ND	20	0.1	2	ND	ND	ND	ND	1	13	ND	ND	6.8	32	3.56
	Jul-14		ND	20	ND	1	ND	ND	ND	ND	1	3	ND	ND	6.8	35	3.60
BH31	Aug-05			NA	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	7.4	190	3.62
	Nov-05		6	ND	ND	ND	ND	ND	ND	ND	ND	7	ND	ND	6.8	140	2.79
	Feb-06		ND	34	ND	10	ND	ND	ND	ND	ND	6	50	ND	7.8		3.00
	May-06		ND	31	ND	ND	ND	ND	ND	ND	ND	ND	400	30	7.1	180	3.27
	Oct-06		ND	12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.9	13	3.33
	Feb-07	ND	ND	34	ND	ND	ND	ND	ND	ND	ND	ND	70	50	6.8	31	2.77
	Jun-07		ND	32	ND	ND	ND	ND	ND	ND	ND	ND	220	ND	6.8	44	3.21
	Dec-07	ND	ND	31	ND	ND	ND	ND	ND	ND	ND	ND	ND	20	6.5	49	3.08
	Apr-08		ND	21	ND	ND	ND	ND	ND	ND	ND	ND	47	ND	7.0	30	3.00
	Aug-08		ND	25	ND	6	5	ND	ND	25	ND	94	60	ND	6.8	200	3.10
	Jun-09	ND	ND	ND	ND	ND	1.9	1.6	ND	2.5	ND	24	230	ND	6.7	23	3.50
	Apr-10	ND	1.7	NA	0.04	10	ND	ND	0.05	4	1.8	7	NA	NA	6.5	49	3.05
	Sep-10		ND	40	ND	3	ND	ND	ND	2	ND	12	60		7.0	53	3.36
	Apr-11		ND	30	ND	2	3	ND	ND	1	ND	5	10		7.3	28	3.58
	Sep-11		ND	20	ND	5	1	ND	ND	1	1	18	10		6.5	41	3.48
	Mar-12		ND	ND	ND	3	ND	ND	ND	ND	2	16	ND	40	7.3	28	3.51
	Sep-12		ND	20	ND	1	1	2	ND	6	ND	15		ND	7.1	18	3.11
	Apr-13		ND	NA	0.1	2	ND	ND	ND	3	1	10		40	7.1	31	3.26
	Oct-13		ND	30	ND	2	3	ND	ND	2	1	10	70		7.5	40	3.60
	Jul-14		ND	50	ND	1	1	ND	ND	1	ND	7	ND		6.8	23	3.64
		TPH/EPH (mg/l)	Arsenic (µg/l)	Boron (µg/l)	Cadmium (µg/l)	Chromium (µg/l)	Copper (µg/l)	Lead (µg/l)	Mercury (µg/l)	Nickel (µg/l)	Selenium (µg/l)	Zinc (µg/l)	Ammonia as N (µg/l)	Total Cyanide (µg/l)	pH	Sulphate as SO_4 (mg/l)	Water Level (m bgl)
UK Drinking Water Standard		0.01mg/l**	10µg/l*	1,000* µg/l	5*µg/l	50*µg/l	2,000* µg/l	25*µg/l	1*µg/l	20*µg/l	10*µg/l	5,000µg/l**	500*µg/l	50*µg/l	6.5-10*	250mg/l*	

Notes
The red cells indicate where the concentration exceeds the UK Drinking Water Standard
The yellow cells indicate where laboratory detection limits have been raised due to matrix interference
The green cells indicate rounds of monitoring carried out by Mabbett & Associates Ltd

*Water Supply (Water Quality) Regulations 2000
**The Water Supply (Water Quality) Regulations 1989
No data available but data put in for graphs
Current SPMP monitoring locations

NS* = No sample taken - free product present
ND = Not detected above laboratory detection limits
NA = Not analysed

Borehole Location	Date	Analysis															Water Level (m bgl)
		TPH/EPH (mg/l)	Arsenic (µg/l)	Boron (µg/l)	Cadmium (µg/l)	Chromium (µg/l)	Copper (µg/l)	Lead (µg/l)	Mercury (µg/l)	Nickel (µg/l)	Selenium (µg/l)	Zinc (µg/l)	Ammonia as N (µg/l)	Total Cyanide (µg/l)	pH	Sulphate as SO_4 (mg/l)	
BH12	Aug-05		7	NA	ND	ND	ND	ND	ND	ND	ND	ND		ND	6.6	5	4.00
	Nov-05		ND	ND	ND	20	ND	ND	ND	7	ND	9	ND	ND		22	3.02
	Feb-06		ND	16	ND	ND	ND	ND	ND	10	ND	ND	70	ND		ND	3.64
	May-06		ND	15	ND	10	ND	ND	ND	5	ND	ND	ND	ND	6.5	ND	3.51
	Oct-06		NS*	NS*	NS*	NS*	NS*	NS*	NS*	NS*	NS*	NS*	NS*	NS*	6.5	NS*	3.26
	Feb-07		ND	23	ND	ND	ND	ND	ND	ND	ND	ND	120	ND	6.5	ND	3.01
	Jun-07		NS*	NS*	NS*	NS*	NS*	NS*	NS*	NS*	NS*	NS*	NS*	NS*	6.4	NS*	3.12
	Dec-07		ND	26	ND	ND	ND	ND	ND	7	ND	30	79	ND		ND	3.23
	Apr-08		ND	19	ND	ND	ND	ND	ND	5	ND	ND	ND	ND	6.6	ND	3.33
	Aug-08		ND	23	ND	ND	ND	ND	ND	ND	ND	8	ND	ND	6.5	ND	3.28
	Feb-09		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.45	NA	3.11
	Jun-09		ND	ND	ND	ND	2	1.5	ND	3.7	ND	15	190	ND		4.8	3.68
	Oct-09		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.45	NA	3.85
	Apr-10		1.7	NA	0.04	15	0.9	ND	ND	6	0.9	7	NA	NA	6.5	ND	3.45
	Sep-10		ND	20	ND	5	ND	ND	ND	2	ND	6	40	ND		ND	3.71
	Apr-13		1	NA	ND	2	ND	ND	ND	12	ND	10	10	ND	7.2	8	3.51
	Oct-13		ND	10	ND	3	ND	ND	ND	2	ND	8	80	ND	6.9	ND	3.80
	Jul-14		NS*	NS*	NS*	NS*	NS*	NS*	NS*	NS*	NS*	NS*	NS*	NS*	NS*	NS*	3.88
MW1	Aug-05			NA	ND	ND	ND	ND	ND	ND	ND	32	150	ND	6.6	24	4.01
	Nov-05		ND	ND	ND	ND	ND	ND	ND	ND	ND	43	ND	ND	6.8	33	3.11
	Feb-06		ND	22	ND	ND	ND	ND	ND	ND	ND	80	50	ND	6.6	25	3.73
	May-06		ND	20	ND	8	ND	ND	ND	ND	ND	32	ND	ND	6.8	23	3.58
	Oct-06			20	ND	10	5	ND	ND	ND	ND	24	ND	ND	7.2	22	3.87
	Feb-07		ND	27	ND	ND	ND	ND	ND	ND	ND	51	230	ND	7	22	3.18
	Jun-07		ND	27	ND	ND	ND	ND	ND	ND	ND	40	80	ND	6.7	21	3.61
	Dec-07		ND	29	ND	ND	ND	ND	ND	ND	ND	40	ND	ND	6.5	22	3.29
	Apr-08		ND	26	ND	ND	ND	ND	ND	ND	ND	37	50	ND	6.8	20	3.41
	Aug-08		ND	26	ND	ND	ND	ND	ND	ND	ND	56	ND	ND	6.7	18	3.29
	Feb-09	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.44
	Jun-09	ND	ND	ND	ND	ND	10	14	ND	3.4	ND	120	210	ND	7	2.6	3.15
	Oct-09	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.87
	Apr-10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.41
	Sep-10		ND	20	0.1	4	1	ND	ND	1	ND	86	20	ND	6.6	24	3.64
	Apr-11		ND	30	0.1	1	5	ND	ND	2	ND	126	ND	ND	6.8	22	3.86
	Sep-11		ND	50	ND	4	1	ND	ND	1	ND	49	20	ND	6.7	25	3.64
	Mar-12		ND	ND	0.2	5	3	3	ND	2	1	126	ND	ND	7.1	22	3.75
	Sep-12		ND	20	ND	2	2	2	ND	1	1	46	ND	ND	7.3	19	3.41
	Apr-13		ND	NA	0.1	2	ND	ND	ND	2	ND	84	30	ND	7.3	17	3.56
	Oct-13		ND	20	ND	2	ND	ND	ND	2	1	73	ND	ND	7	22	3.80
	Jul-14		ND	20	ND	1	1	ND	ND	2	ND	40	ND	ND	6.9	15	3.86
MW2	Aug-05		6	NA	ND	ND	ND	ND	ND		ND	120	95	ND			3.19
	Nov-05		ND	ND	2	ND	ND	ND	ND		ND	100	ND	ND			2.60
	Feb-06		ND	24	4	6	ND	ND	ND		ND	110	70	ND			3.00
	May-06	ND	ND	25	3	ND	ND	ND	ND		ND	91	70	ND			2.94
	Oct-06	0.01	ND	27		ND	ND	ND	ND		ND	200	90	ND			3.04
	Feb-07	ND	ND	33	3	ND	ND	ND	ND		ND	110	90	ND			2.69
	Jun-07		ND	28	5	ND	ND	ND	ND		ND	170	240	ND			2.94
	Dec-07	ND	ND	29	3	ND	ND	ND	ND		ND	120	88	ND			2.68
	Apr-08	ND	ND	27	2	ND	ND	ND	ND		ND	72	ND	ND		210	2.83
	Aug-08		ND	30	1	ND	ND	ND	ND		ND	76	ND	ND		170	2.70
	Jun-09	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.78
	Apr-10	ND	0.5	NA	0.54	8	3.6	ND	ND	10	0.6	170	NA	NA		100	2.88
	Sep-10		ND	30	0.8	3	ND	ND	ND		ND	121	30	ND		82	2.94
	Apr-11		ND	30	0.1	2	2	ND	ND	5	ND	7	ND	ND	7.4	71	3.14
	Sep-11		ND	40	0.1	5	ND	ND	ND	10	ND	11	60	ND		71	3.00
	Mar-12		ND	ND	0.5	2	1	6	ND	12	1	33	ND	ND	7	61	3.09
	Sep-12		ND	20	0.1	ND	1	5	ND	8	ND	30	ND	ND	7.1	54	2.82
	Apr-13		ND	NA	0.4	2	ND	ND	ND	5	ND	21	30	ND	7.7	55	2.95
	Oct-13		ND	20	ND	1	ND	ND	ND	6	ND	17	10	ND	6.7	60	3.12
	Jul-14		ND	20	ND	ND	ND	ND	ND	4	ND	16	ND	ND	6.6	45	3.18
BH3a (Bentry Borehole)	Feb-09	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.47
	Jun-09	ND	2.8	ND	ND	ND	13	1.1	ND	4.2	1.8	8.7	310	ND	7.3	NA	4.00
	Oct-09	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.00
	Apr-10			NA	1.8		410	41				71	NA	NA	7.5	81	3.65
	Sep-10		ND	30	1	26	1723	11	ND		ND	338	300	ND	7.3	46	3.86
	Apr-11			40	0.8	48	85	21	0.4	7	4	37	400	ND	7.8	55	4.03
	Sep-11		9	ND	1.1	28	81	22	0.2	7	4	24	400	ND	7.5	81	3.90
	Mar-12		8	ND	0.9	14	66	17	ND	5	3	22	330	ND	7.9	63	3.95
	Sep-12		8	ND	0.8	38	99	20	0.3	7	3	15	160	ND	8.2	59	3.66
	Apr-13		ND	NA		ND	189	ND	ND	ND	ND	515		ND	8.2	60	3.81
	Oct-13		7	50	0.5	24	62	14	0.2	5	2	20	280	ND	7.5	ND	3.97
	Jul-14		8	ND	0.5	8	38	4	ND	5	2	11	240	ND	7.9	47	4.02
		TPH/EPH (mg/l)	Arsenic (µg/l)	Boron (µg/l)	Cadmium (µg/l)	Chromium (µg/l)	Copper (µg/l)	Lead (µg/l)	Mercury (µg/l)	Nickel (µg/l)	Selenium (µg/l)	Zinc (µg/l)	Ammonia as N (µg/l)	Total Cyanide (µg/l)	pH	Sulphate as SO_4 (mg/l)	Water Level (m bgl)
UK Drinking Water Standard		0.01mg/l**	10µg/l*	1,000* µg/l	5*µg/l	50*µg/l	2,000* µg/l	25*µg/l	1*µg/l	20*µg/l	10*µg/l	5 000µg/l**	500*µg/l	50*µg/l	6.5-10*	250mg/l*	

Notes
The red cells indicate where the concentration exceeds the UK Drinking Water Standard
The yellow cells indicate where laboratory detection limits have been raised due to matrix interference
The green cells indicate rounds of monitoring carried out by Mabbett & Associates Ltd

*Water Supply (Water Quality) Regulations 2000
** The Water Supply (Water Quality) Regulations 1989
No data available but data put in for graphs
Current SPMP monitoring locations

NS* = No sample taken - free product present
ND = Not detected above laboratory detection limits
NA = Not analysed

TEST REPORT

UKAS TESTING
1252

Report No. EXR/181955 (Ver. 1)

Environ UK Ltd
Environ
8 Village Way
Greenmeadow Springs
Cardiff
CF15 7NE

Site: Sapa SPMP GW Monitoring

The 7 samples described in this report were registered for analysis by ESG on 01-Aug-2014. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 14-Aug-2014

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited
Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by ESG.

The following tables are contained in this report:

Table 1 Main Analysis Results (Pages 2 to 3)
Table of TPH (Si) banding (0.01) (Page 4)
GC-FID Chromatograms (Pages 5 to 18)
Analytical and Deviating Sample Overview (Pages 19 to 20)
Table of Method Descriptions (Page 21)
Table of Report Notes (Page 22)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
ESG :
Declan Burns

Operations Director
Laboratory and Analytical Business

Date of Issue: 14-Aug-2014

Tests marked '^' have been subcontracted to another laboratory.
Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected.
ESG accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

		Units :	pH units	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
		Method Codes :	WSLM3	ICPWATVAR	ICPWATVAR	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATVAR	ICPMSW	ICPMSW	ICPMSW	KONENS	SFAPI
		Method Reporting Limits :		3	0.01	0.001	0.001	0.0001	0.001	0.001	0.002	0.001	0.01	0.0001	0.001	0.001	0.01	0.02
		UKAS Accredited :	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number EX/	Client Sample Description	Sample Date	pH units w	Total Sulphur as SO4 (Dissolved) a	Barium as Ba (Dissolved) a	Nickel as Ni (Dissolved)	Chromium as Cr (Dissolved)	Cadmium as Cd (Dissolved)	Copper as Cu (Dissolved)	Lead as Pb (Dissolved)	Zinc as Zn (Dissolved)	Arsenic as As (Dissolved)	Boron as B (Dissolved) a	Mercury as Hg (Dissolved)	Selenium as Se (Dissolved)	Vanadium as V (Dissolved)	Ammoniacal Nitrogen as N	Cyanide (Total) as CN
1513052	BH11	31-Jul-14 09:00	6.8	23	0.11	0.001	0.001	<0.0001	0.001	<0.001	0.007	<0.001	0.05	<0.0001	<0.001	<0.001	<0.01	0.05
1513053	BH6	31-Jul-14 09:45	6.8	35	0.05	<0.001	0.001	<0.0001	<0.001	<0.001	0.003	<0.001	0.02	<0.0001	0.001	<0.001	<0.01	<0.02
1513054	MW2	31-Jul-14 10:20	6.6	45	0.05	0.004	<0.001	<0.0001	<0.001	<0.001	0.016	<0.001	0.02	<0.0001	<0.001	<0.001	<0.01	<0.02
1513055	BHS6	31-Jul-14 11:00	7.9	47	0.19	0.005	0.008	0.0005	0.038	0.004	0.011	0.008	<0.1	<0.0001	0.002	0.007	0.24	<0.02
1513056	BH4	31-Jul-14 11:30	7.0	14	0.04	<0.001	0.003	<0.0001	<0.001	<0.001	<0.002	<0.001	0.02	<0.0001	<0.001	<0.001	<0.01	<0.02
1513057	MW1	31-Jul-14 12:00	6.9	15	0.26	0.002	0.001	<0.0001	0.001	<0.001	0.04	<0.001	0.02	<0.0001	<0.001	<0.001	<0.01	<0.02
1513058	BH11	31-Jul-14 12:30	6.6	6	0.04	0.001	0.002	<0.0001	<0.001	<0.001	0.003	<0.001	0.02	<0.0001	<0.001	<0.001	<0.01	<0.02

ESG Environmental Scientifics Group
Bretby Business Park, Ashby Road
Burton-on-Trent, Staffordshire, DE15 0YZ
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Fax +44 (0) 1283 554422

Client Name	Environ UK Ltd
Contact	Ms L Cleverley

Sapa SPMP GW Monitoring

Sample Analysis

Date Printed	14-Aug-2014
Report Number	EXR/181955
Table Number	1

Where individual results are flagged see report notes for status

		Units :	mg/l	mg/l															
		Method Codes :	TPHFID-SI	ICPWATVAR															
		Method Reporting Limits :	0.01	0.01															
		UKAS Accredited :	Yes	No															
LAB ID Number EX/	Client Sample Description	Sample Date	TPH by GC(SI) o	Beryllium as Be (Dissolved) a															
1513052	BH11	31-Jul-14 09:00	Req	<0.01															
1513053	BH6	31-Jul-14 09:45	Req	<0.01															
1513054	MW2	31-Jul-14 10:20	Req	<0.01															
1513055	BHS6	31-Jul-14 11:00	Req	<0.1															
1513056	BH4	31-Jul-14 11:30	Req	<0.01															
1513057	MW1	31-Jul-14 12:00	Req	<0.01															
1513058	BH11	31-Jul-14 12:30	Req	<0.01															

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Client Name	Environ UK Ltd
Contact	Ms L Cleverley

Sapa SPMP GW Monitoring

Sample Analysis

Date Printed	14-Aug-2014
Report Number	EXR/181955
Table Number	1

Where individual results are flagged see report notes for status.

ALIPHATIC / AROMATIC FRACTION BY GC/FID

Customer and Site Details: Environ UK Ltd : Sapa SPMP GW Monitoring
Job Number: W18_1955
QC Batch Number: 140522
Directory: D:\TES\DATA\Y2014\081214TPH_GC17\081214 2014-08-12 08-38-36\069B7601.D
Method: Bottle

Separation: Silica gel
Eluents: Hexane, DCM

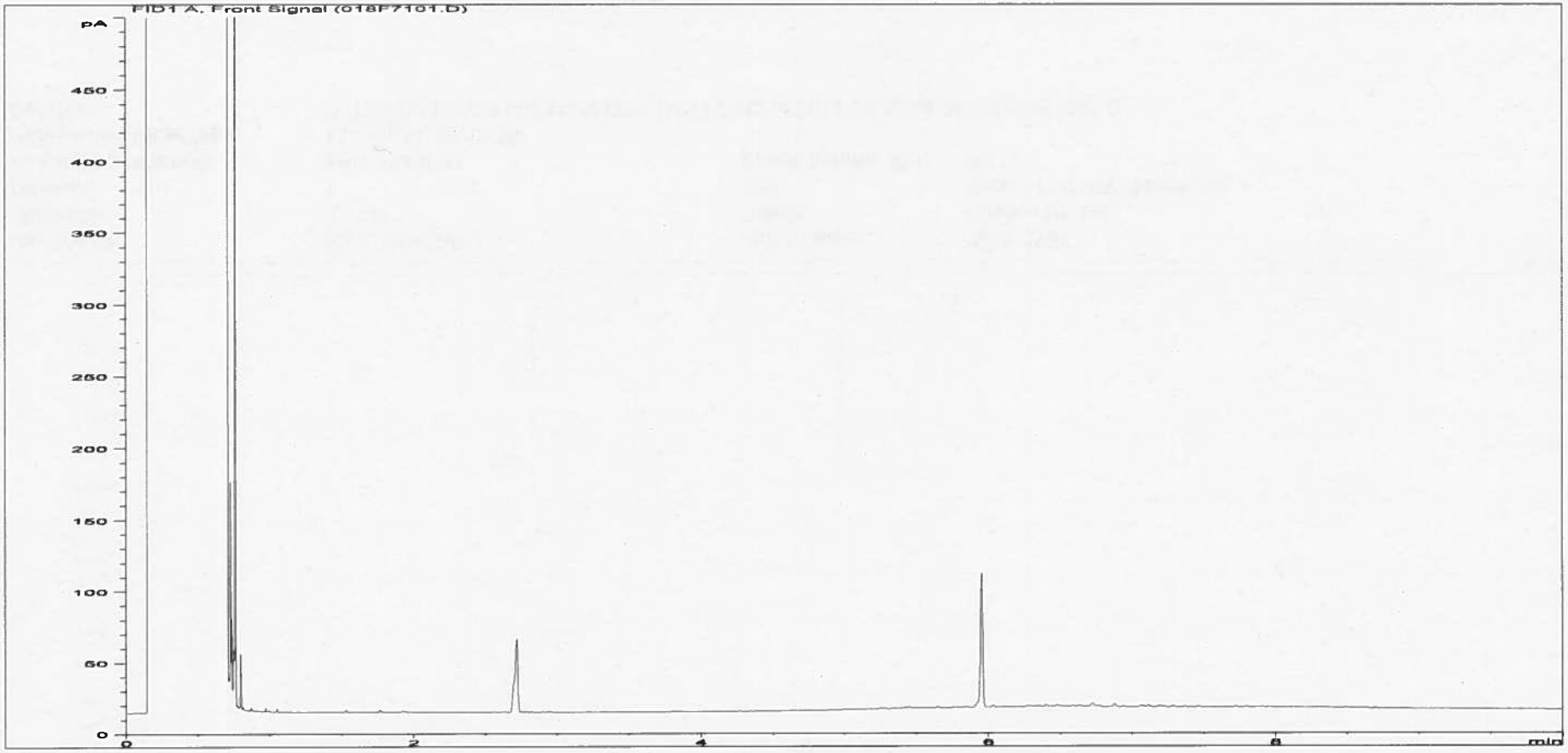
Matrix: Water
Date Booked ir 01-Aug-14
Date Extracted 11-Aug-14
Date Analysed: 13-Aug-14, 08:06:05

* This sample data is not UKAS accredited.

		Concentration, (mg/l)											
		>C8 - C10		>C10 - C12		>C12 - C16		>C16 - C21		>C21 - C35		>C8 - C40	
Sample ID	Client ID	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics	Aliphatics	Aromatics
EX1513052	BH11	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.08	0.058	0.111	0.082
EX1513053	BH6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.011	<0.01	0.014	<0.01
EX1513054	MW2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.013	<0.01	0.21	0.104	0.271	0.144
EX1513055	BHS6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.017	0.014	0.028	0.023
EX1513056	BH4	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
EX1513057	MW1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.07	0.02	1.52	0.476	1.82	0.595
EX1513058	BH11	<0.01	<0.01	<0.01	<0.01	0.064	0.021	0.594	0.141	12.5	4.71	13.8	5.21

Where individual results are flagged see report notes for status.

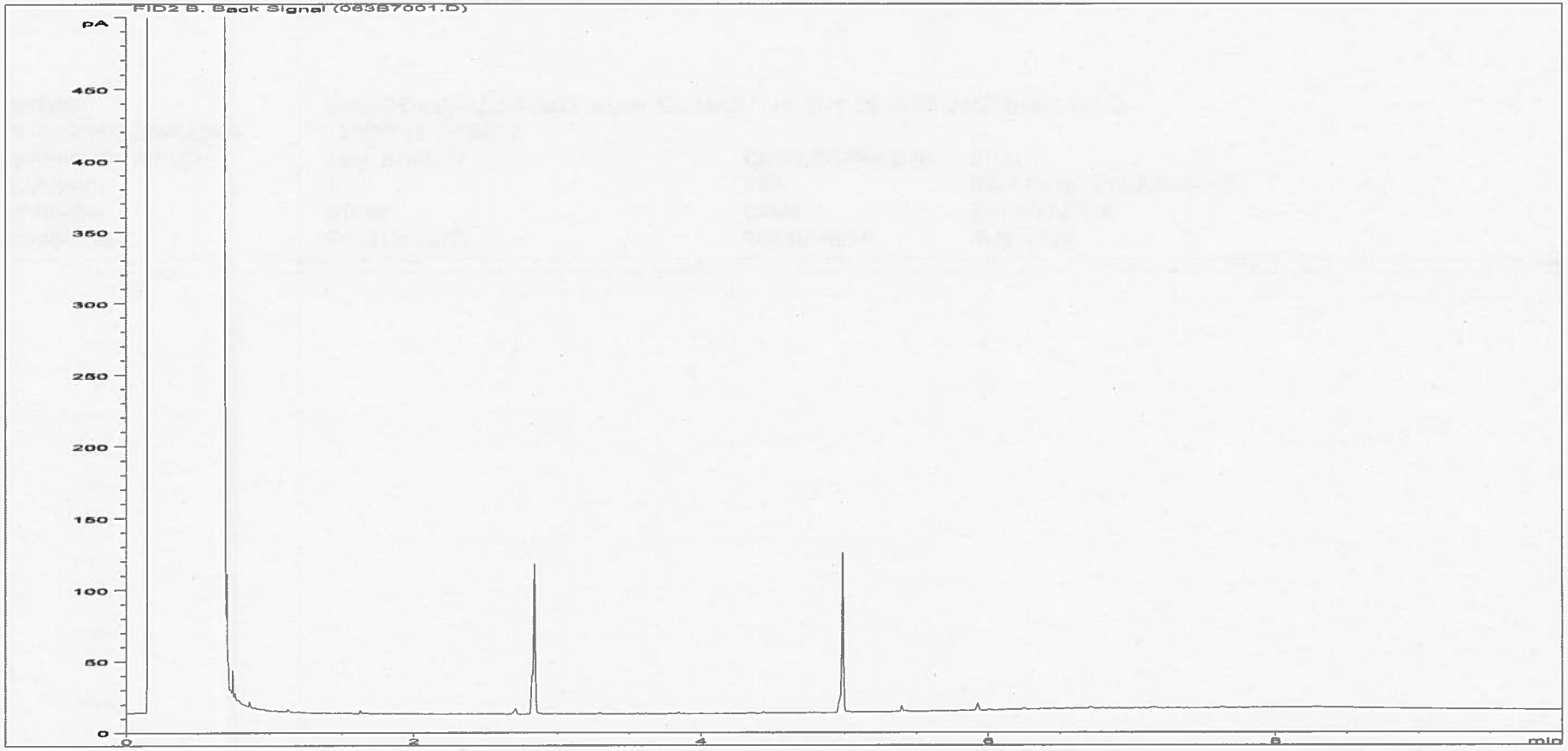
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1513052ALI	**Job Number:**	W18_1955
Multiplier:	0.0194	**Client:**	Environ UK Ltd
Dilution:	1	**Site:**	Sapa SPMP GW Monitoring
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH11
Acquisition Date/Time:	13-Aug-14, 06:32:23		
Datafile:	D:\TES\DATA\Y2014\081214TPH_GC17\081214 2014-08-12 08-38-36\018F7101.D		

Where individual results are flagged see report notes for status.

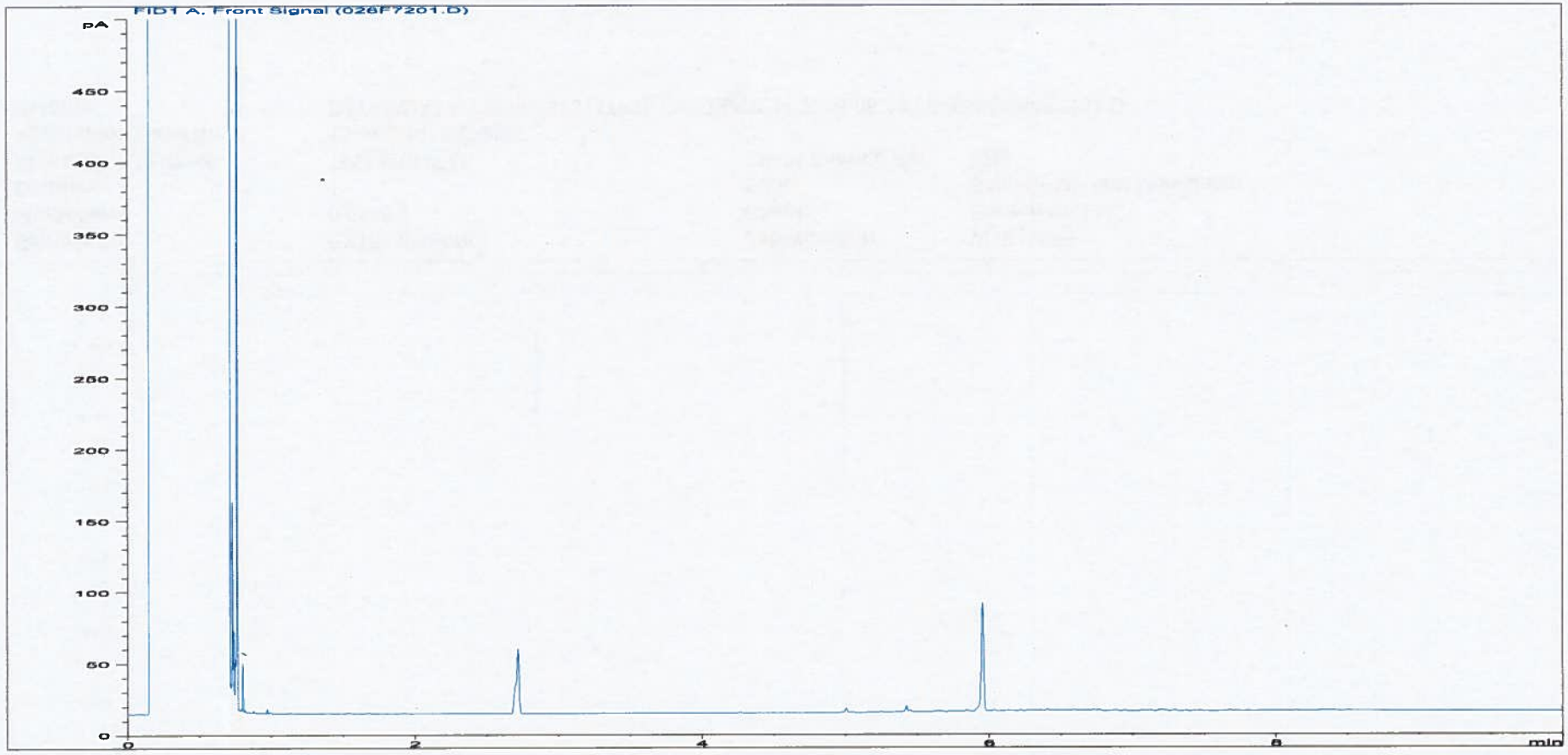
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1513052ARO	**Job Number:**	W18_1955
Multiplier:	0.0146	**Client:**	Environ UK Ltd
Dilution:	1	**Site:**	Sapa SPMP GW Monitoring
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH11
Acquisition Date/Time:	13-Aug-14, 06:13:35		
Datafile:	D:\TES\DATA\Y2014\081214TPH_GC17\081214 2014-08-12 08-38-36\063B7001.D		

Where individual results are flagged see report notes for status.

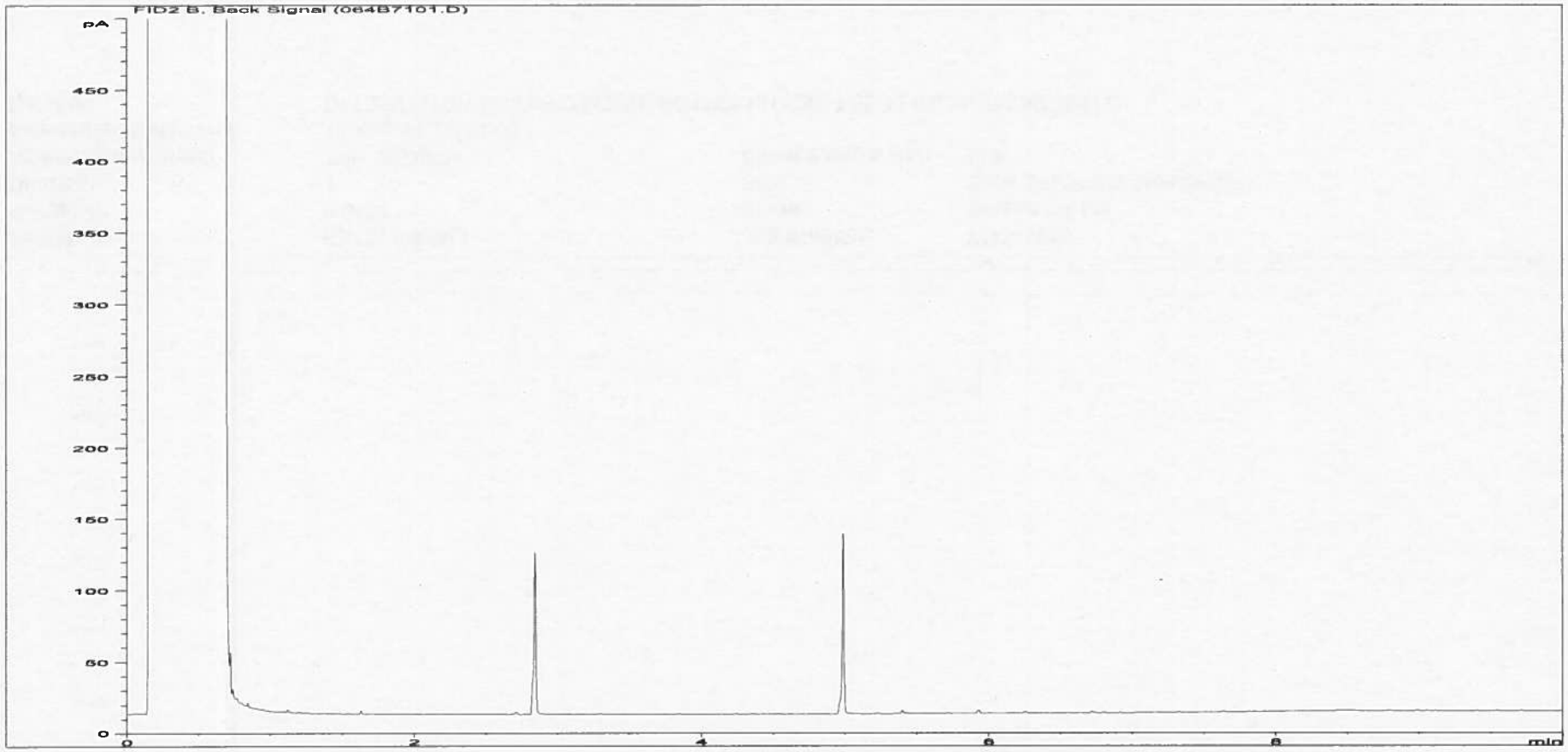
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1513053ALI	**Job Number:**	W18_1955
Multiplier:	0.0194	**Client:**	Environ UK Ltd
Dilution:	1	**Site:**	Sapa SPMP GW Monitoring
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH6
Acquisition Date/Time:	13-Aug-14, 06:51:09		
Datafile:	D:\TES\DATA\Y2014\081214TPH_GC17\081214 2014-08-12 08-38-36\026F7201.D		

Where individual results are flagged see report notes for status.

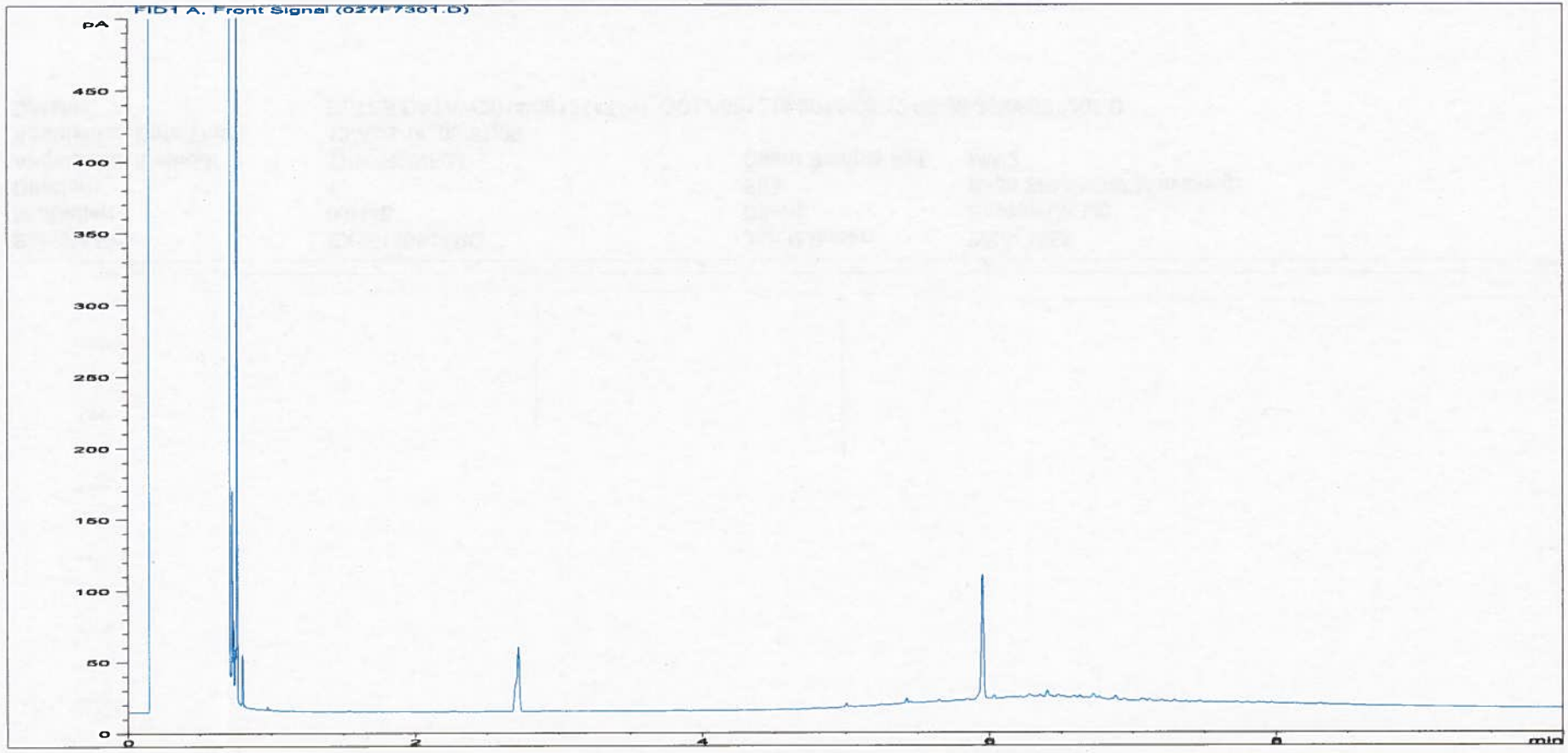
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1513053ARO	**Job Number:**	W18_1955
Multiplier:	0.0145	**Client:**	Environ UK Ltd
Dilution:	1	**Site:**	Sapa SPMP GW Monitoring
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH6
Acquisition Date/Time:	13-Aug-14, 06:32:23		
Datafile:	D:\TES\DATA\Y2014\081214TPH_GC17\081214 2014-08-12 08-38-36\064B7101.D		

Where individual results are flagged see report notes for status.

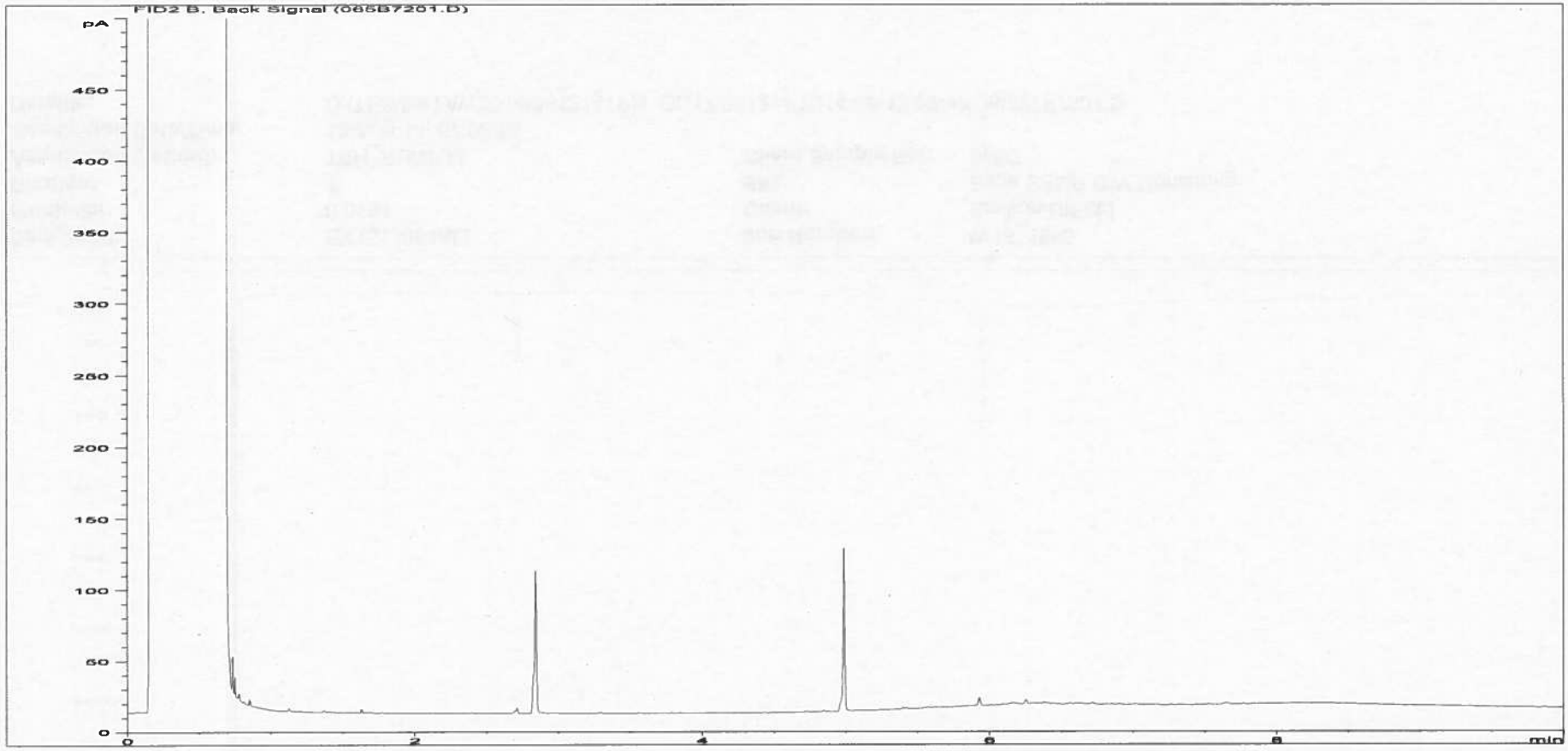
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1513054ALI	**Job Number:**	W18_1955
Multiplier:	0.0194	**Client:**	Environ UK Ltd
Dilution:	1	**Site:**	Sapa SPMP GW Monitoring
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	MW2
Acquisition Date/Time:	13-Aug-14, 07:09:56		
Datafile:	D:\TES\DATA\Y2014\081214TPH_GC17\081214 2014-08-12 08-38-36\027F7301.D		

Where individual results are flagged see report notes for status.

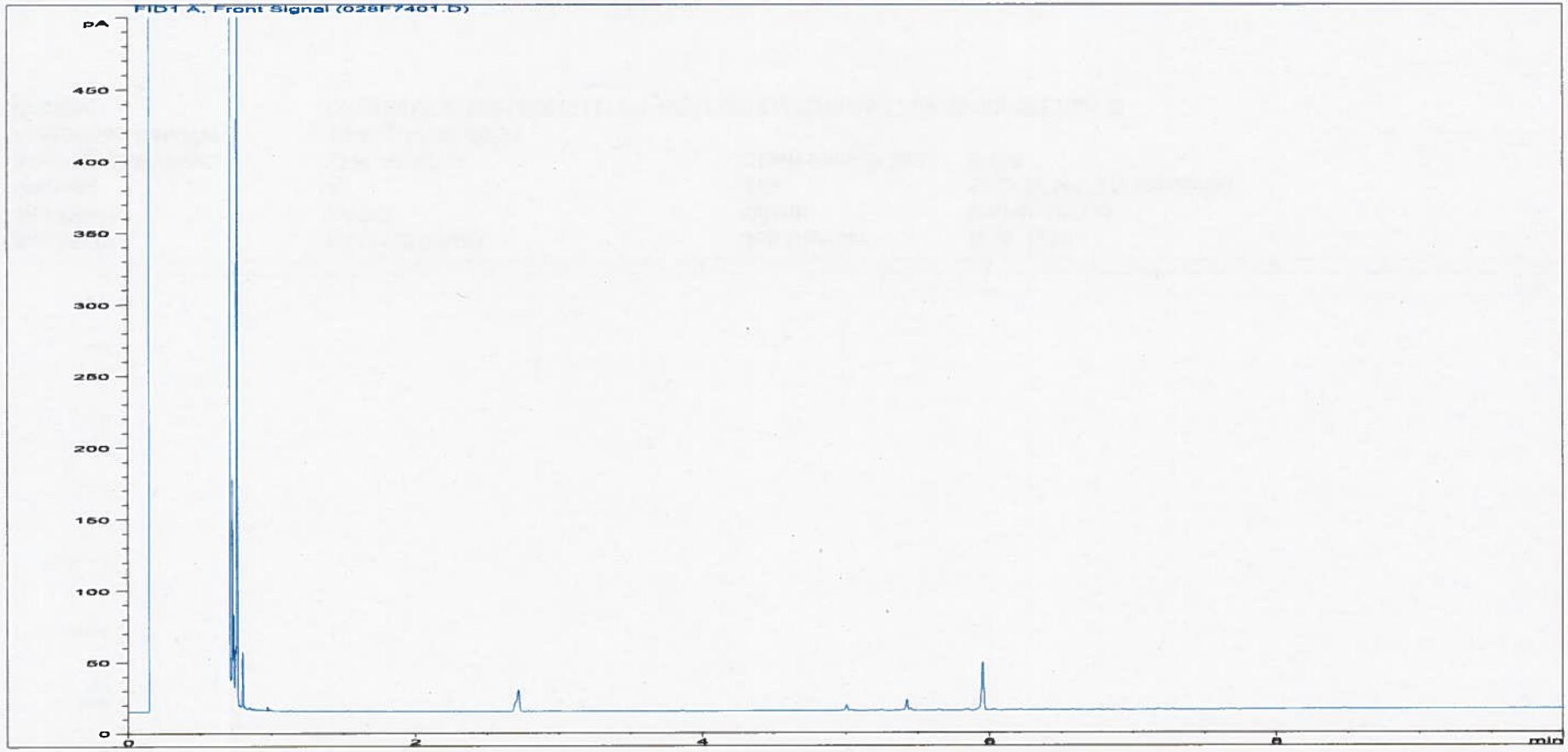
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1513054ARO	**Job Number:**	W18_1955
Multiplier:	0.0146	**Client:**	Environ UK Ltd
Dilution:	1	**Site:**	Sapa SPMP GW Monitoring
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	MW2
Acquisition Date/Time:	13-Aug-14, 06:51:09		
Datafile:	D:\TES\DATA\Y2014\081214TPH_GC17\081214 2014-08-12 08-38-36\065B7201.D		

Where individual results are flagged see report notes for status.

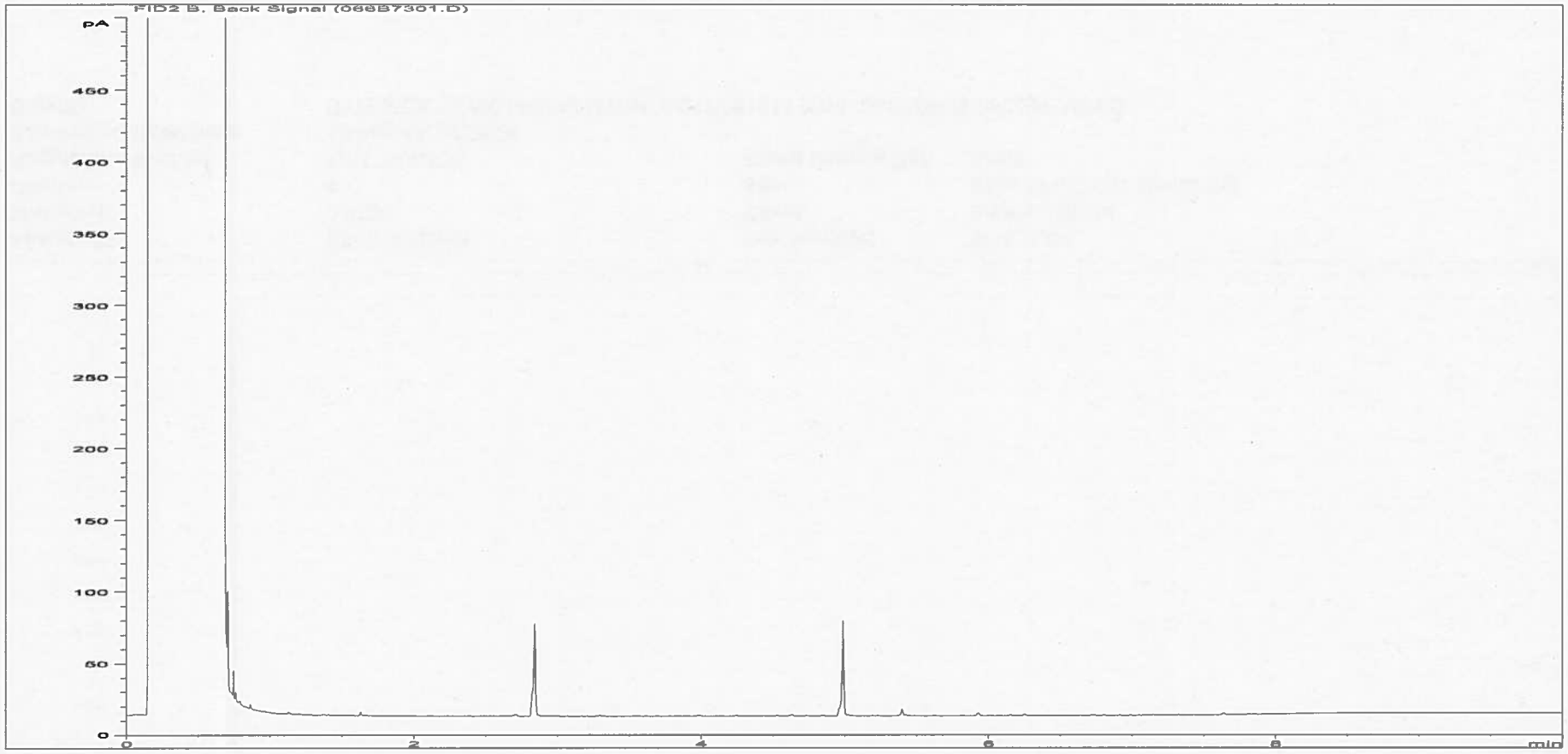
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1513055ALI	**Job Number:**	W18_1955
Multiplier:	0.0194	**Client:**	Environ UK Ltd
Dilution:	4	**Site:**	Sapa SPMP GW Monitoring
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BHS6
Acquisition Date/Time:	13-Aug-14, 07:28:36		
Datafile:	D:\TES\DATA\Y2014\081214TPH_GC17\081214 2014-08-12 08-38-36\028F7401.D		

Where individual results are flagged see report notes for status.

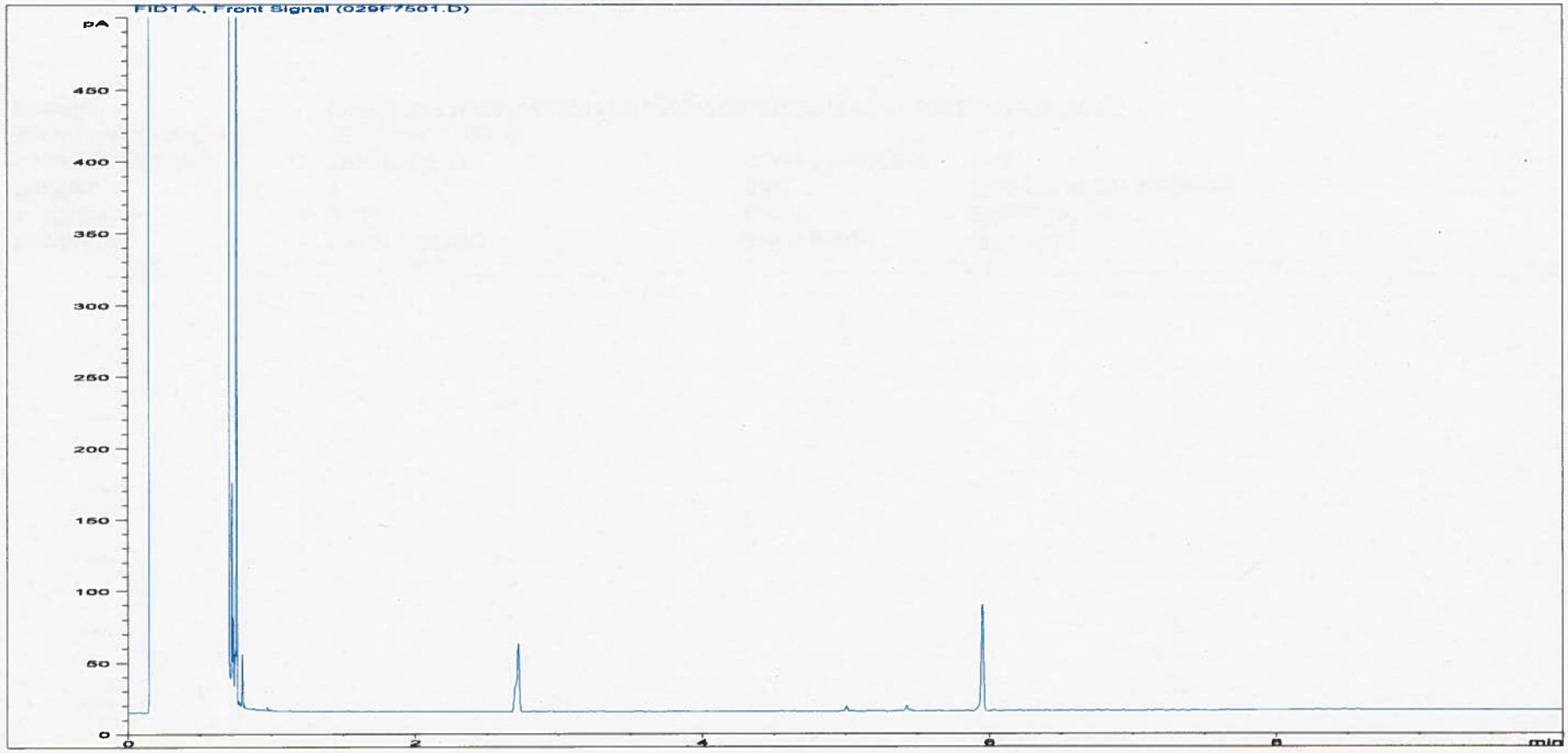
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1513055ARO	**Job Number:**	W18_1955
Multiplier:	0.0142	**Client:**	Environ UK Ltd
Dilution:	4	**Site:**	Sapa SPMP GW Monitoring
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BHS6
Acquisition Date/Time:	13-Aug-14, 07:09:56		
Datafile:	D:\TES\DATA\Y2014\081214TPH_GC17\081214 2014-08-12 08-38-36\066B7301.D		

Where individual results are flagged see report notes for status.

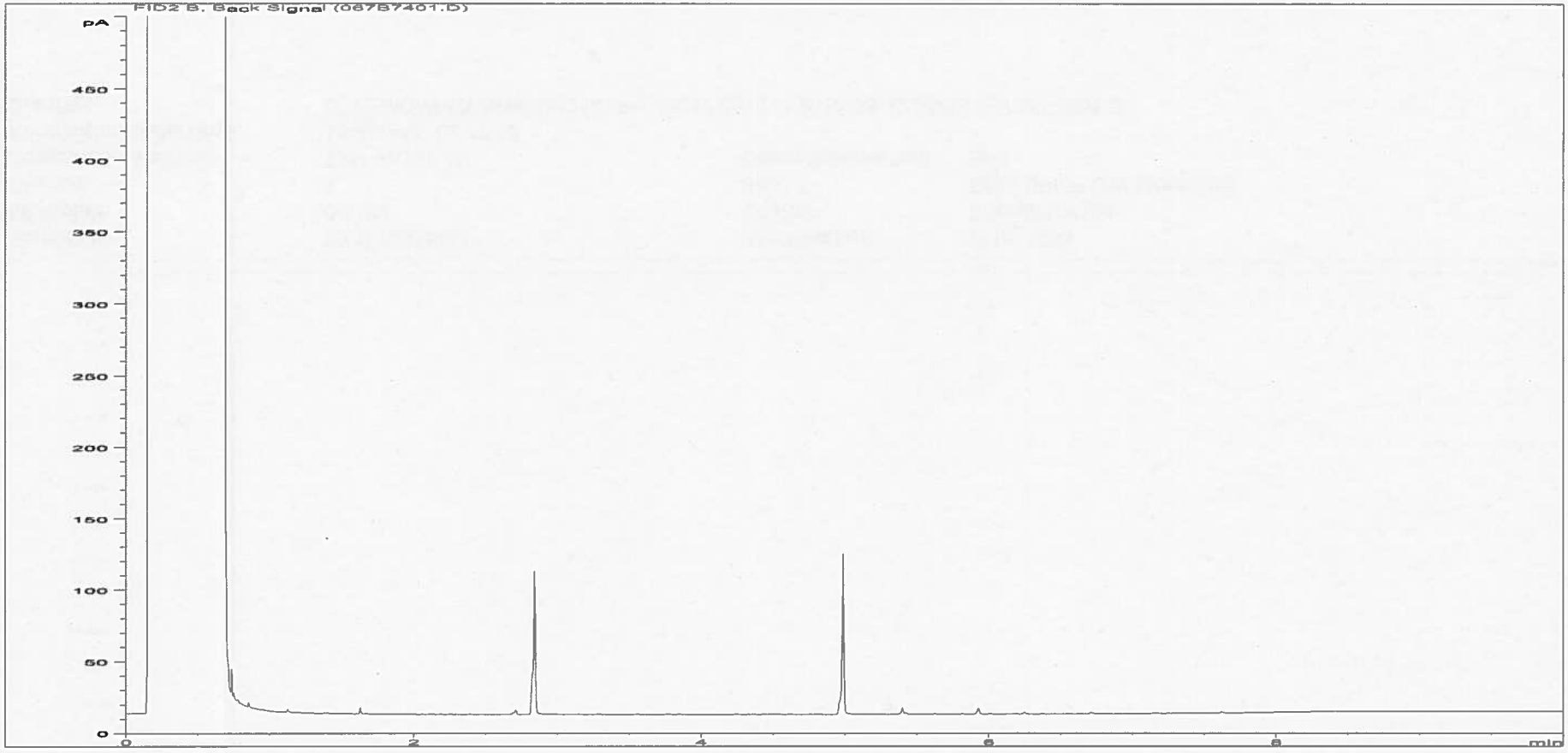
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1513056ALI	**Job Number:**	W18_1955
Multiplier:	0.0192	**Client:**	Environ UK Ltd
Dilution:	1	**Site:**	Sapa SPMP GW Monitoring
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH4
Acquisition Date/Time:	13-Aug-14, 07:47:22		
Datafile:	D:\TES\DATA\Y2014\081214TPH_GC17\081214 2014-08-12 08-38-36\029F7501.D		

Where individual results are flagged see report notes for status.

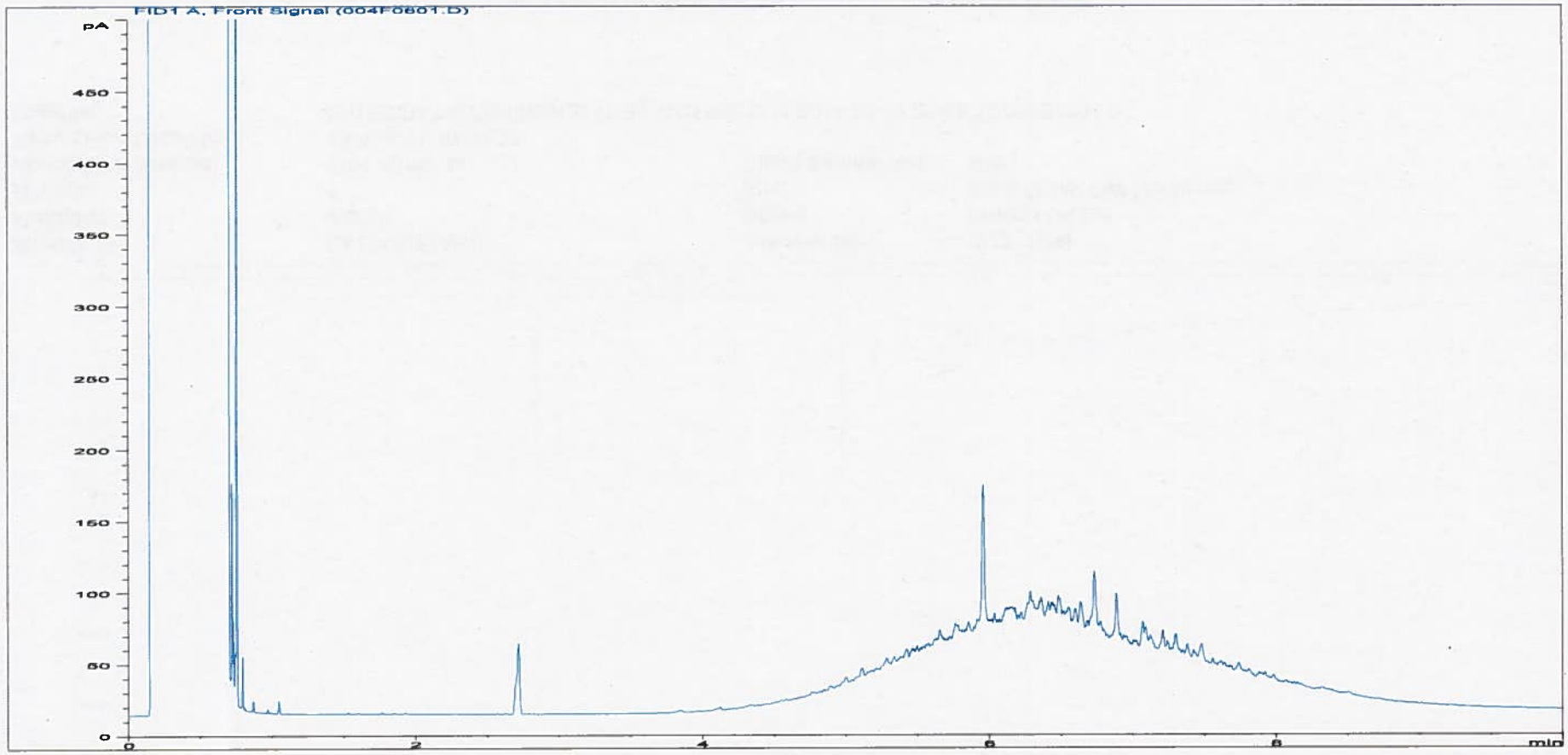
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1513056ARO	**Job Number:**	W18_1955
Multiplier:	0.0145	**Client:**	Environ UK Ltd
Dilution:	1	**Site:**	Sapa SPMP GW Monitoring
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH4
Acquisition Date/Time:	13-Aug-14, 07:28:36		
Datafile:	D:\TES\DATA\Y2014\081214TPH_GC17\081214 2014-08-12 08-38-36\067B7401.D		

Where individual results are flagged see report notes for status.

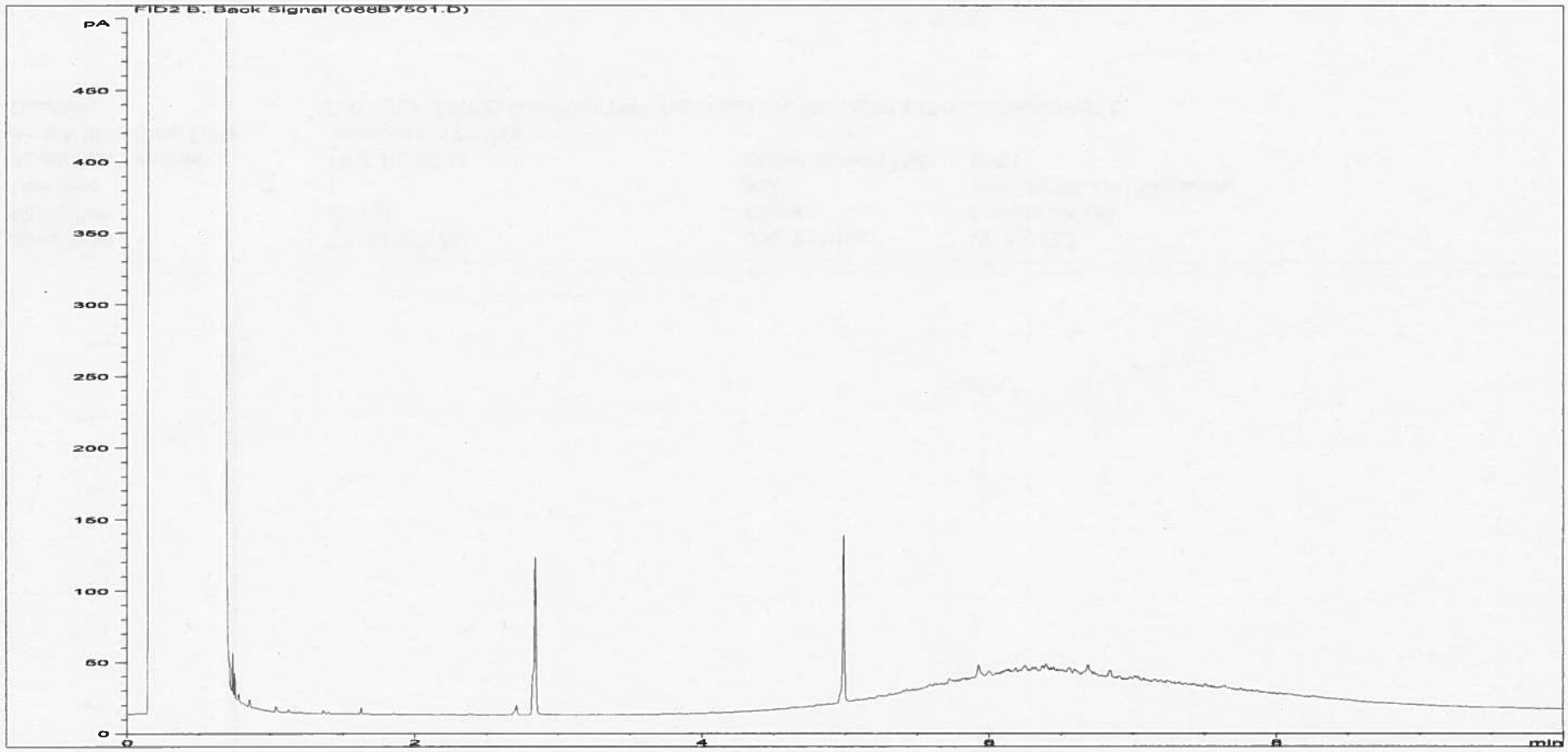
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1513057ALI	**Job Number:**	W18_1955
Multiplier:	0.0194	**Client:**	Environ UK Ltd
Dilution:	1	**Site:**	Sapa SPMP GW Monitoring
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	MW1
Acquisition Date/Time:	13-Aug-14, 12:01:58		
Datafile:	D:\TES\DATA\Y2014\081314TPH_GC17\081314 2014-08-13 10-16-55\004F0601.D		

Where individual results are flagged see report notes for status.

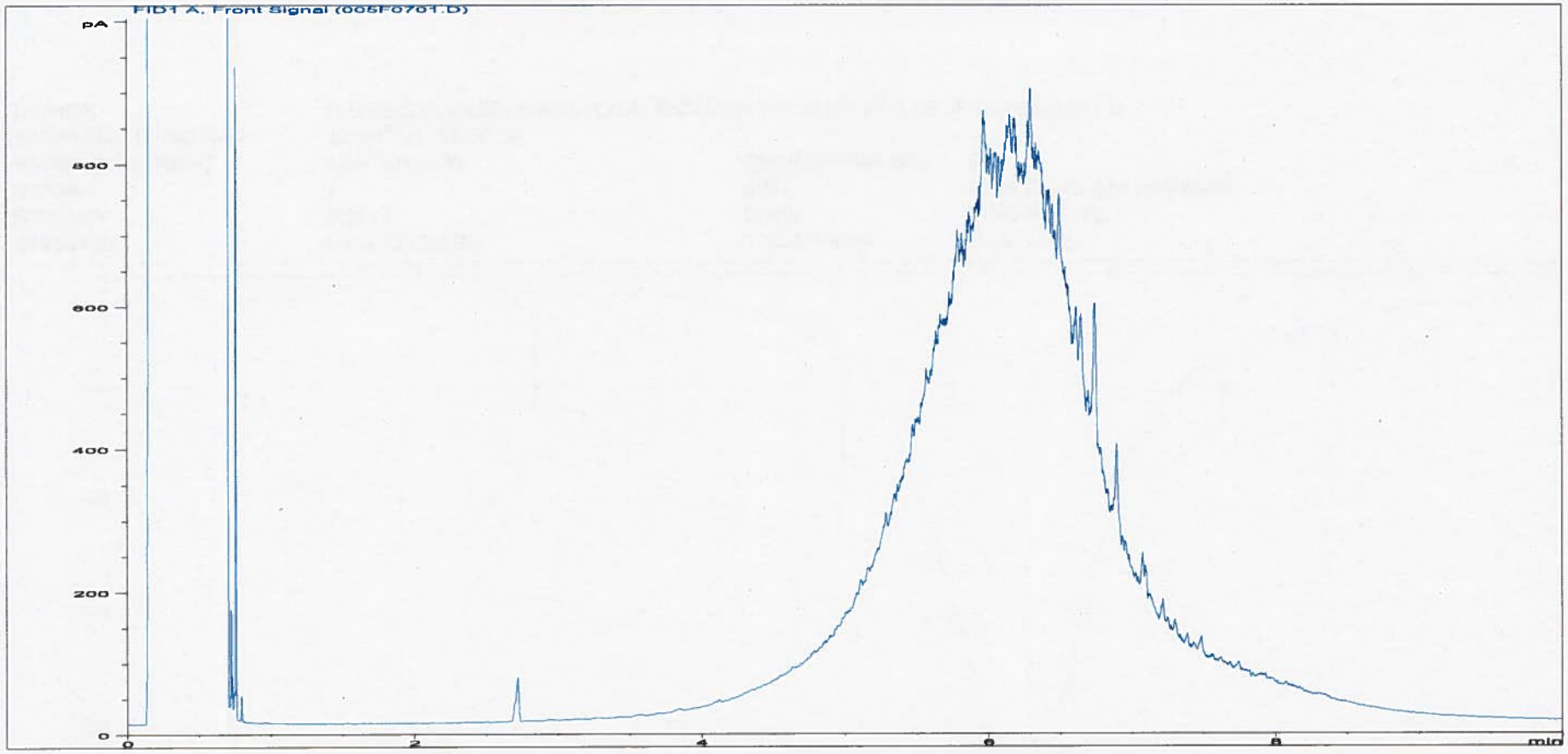
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1513057ARO	**Job Number:**	W18_1955
Multiplier:	0.0148	**Client:**	Environ UK Ltd
Dilution:	1	**Site:**	Sapa SPMP GW Monitoring
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	MW1
Acquisition Date/Time:	13-Aug-14, 07:47:22		
Datafile:	D:\TES\DATA\Y2014\081214TPH_GC17\081214 2014-08-12 08-38-36\068B7501.D		

Where individual results are flagged see report notes for status.

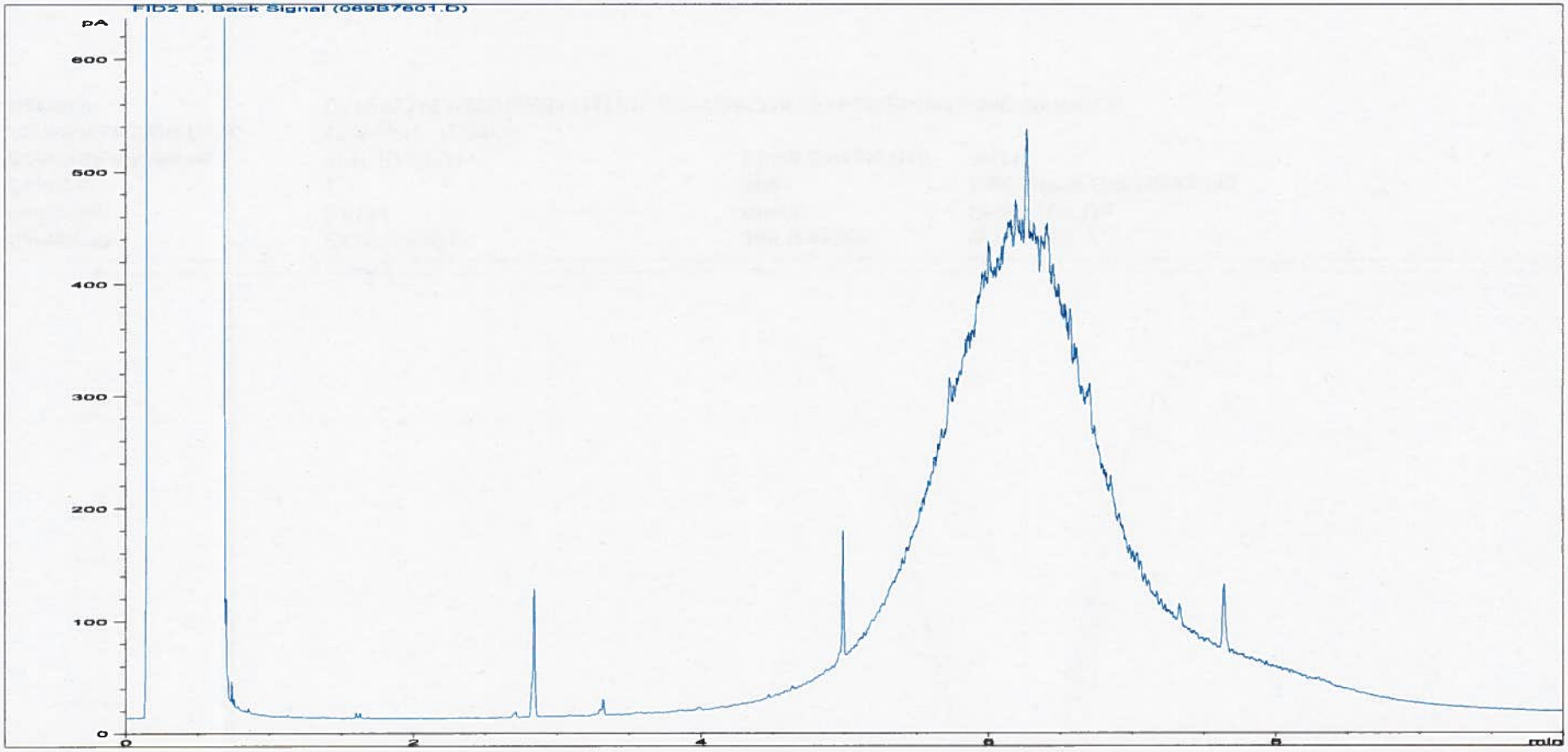
Petroleum Hydrocarbons (C8 to C40) by GC/FID Aliphatics Fraction.



Sample ID:	EX1513058ALI	**Job Number:**	W18_1955
Multiplier:	0.0194	**Client:**	Environ UK Ltd
Dilution:	1	**Site:**	Sapa SPMP GW Monitoring
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH11
Acquisition Date/Time:	13-Aug-14, 12:21:07		
Datafile:	D:\TES\DATA\Y2014\081314TPH_GC17\081314 2014-08-13 10-16-55\005F0701.D		

Where individual results are flagged see report notes for status.

Petroleum Hydrocarbons (C8 to C40) by GC/FID Aromatics Fraction.



Sample ID:	EX1513058ARO	**Job Number:**	W18_1955
Multiplier:	0.0149	**Client:**	Environ UK Ltd
Dilution:	1	**Site:**	Sapa SPMP GW Monitoring
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH11
Acquisition Date/Time:	13-Aug-14, 08:06:05		
Datafile:	D:\TES\DATA\Y2014\081214TPH_GC17\081214 2014-08-12 08-38-36\069B7601.D		

Where individual results are flagged see report notes for status.

Sample Analysis

ESG Environmental Chemistry
Analytical and Deviating Sample Overview

W181955

Customer Environ UK Ltd
Site Sapa SPMP GW Monitoring
Report No W181955

Consignment No W74277
Date Logged 01-Aug-2014

Report Due 14-Aug-2014

ID Number	Description	Matrix Type	Sampled	Report B	Nickel as Ni MS (Dissolved)	Chromium as Cr MS (Dissolved)	Cadmium as Cd MS (Dissolved)	Copper as Cu MS (Dissolved)	Lead as Pb MS (Dissolved)	Zinc as Zn MS (Dissolved)	Arsenic as As MS (Dissolved)	Mercury as Hg MS (Dissolved)	Selenium as Se MS (Dissolved)	Vanadium as V MS (Dissolved)	Total Sulphur as SO4 (Diss) VAR	Barium as Ba (Dissolved) VAR	Boron as B (Dissolved) VAR	Beryllium as Be (Dissolved) VAR	Ammoniacal Nitrogen (Kone)	Cyanide (Total) as CN SFA	TPH by GC(SI)	pH units
MethodID				CUSTSERV	ICPMSW										ICPWATVAR				KONENS	SFAPI	TPHFID-SI	WSLM3
					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
EX/1513052	BH11	Groundwater	31/07/14																			
EX/1513053	BH6	Groundwater	31/07/14																			
EX/1513054	MW2	Groundwater	31/07/14																			
EX/1513055	BHS6	Groundwater	31/07/14																			
EX/1513056	BH4	Groundwater	31/07/14																			
EX/1513057	MW1	Groundwater	31/07/14																			
EX/1513058	BH11	Groundwater	31/07/14																			

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key

A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key

	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.

ESG Environmental Chemistry
Analytical and Deviating Sample Overview

Customer Environ UK Ltd
Site Sapa SPMP GW Monitoring
Report No W181955

Consignment No W74277
Date Logged 01-Aug-2014

Report Due 14-Aug-2014

ID Number	Description	Matrix Type	Sampled	WSLM3 pH units
		MethodID		✓
EX/1513052	BH11	Groundwater	31/07/14	
EX/1513053	BH6	Groundwater	31/07/14	
EX/1513054	MW2	Groundwater	31/07/14	
EX/1513055	BHS6	Groundwater	31/07/14	
EX/1513056	BH4	Groundwater	31/07/14	
EX/1513057	MW1	Groundwater	31/07/14	
EX/1513058	BH11	Groundwater	31/07/14	

Note: For analysis where the scheduled turnaround is greater than the holding time we will do our utmost to prioritise these samples. However, it is possible that samples could become deviant whilst being processed in the laboratory.

In this instance please contact the laboratory immediately should you wish to discuss how you would like us to proceed. If you do not respond within 24 hours, we will proceed as originally requested.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time

Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - **Note: due date may be affected if triggered**
	No analysis scheduled
^	Analysis Subcontracted - **Note: due date may vary**

Where individual results are flagged see report notes for status.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	TPHFID-Si	As Received	Determination of speciated pentane extractable hydrocarbons in water by GCFID
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

Where individual results are flagged see report notes for status.

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,
- Results expressed as mg/kg have been calculated on the basis indicated in the Method Description table.
  All results on MCERTS reports are reported on a 105°C dry weight basis with the exception of pH and conductivity.
- Sulphate analysis not conducted in accordance with BS1377
- Water Soluble Sulphate is on a 2:1 water:soil extract

Waters Analysis

Unless stated otherwise results are expressed as mg/l

Nil: Where "Nil" has been entered against Total Alkalinity or Total Acidity this indicates that a measurement was not required due to the inherent pH of the sample.

Oil analysis specific

Unless stated otherwise,
- Results are expressed as mg/kg
- SG is expressed as g/cm^3@ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile
CR Denotes Crocidolite
AM Denotes Amosite
TR Denotes Tremolite
AC Denotes Actinolite
AN Denotes Anthophylite
NAIIS No Asbestos Identified in Sample
NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.
$$ Unable to analyse due to the nature of the sample
¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols. This may have resulted in deterioration of the sample(s) during transit to the laboratory. Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling
¥ Results for guidance only due to possible interference
& Blank corrected result
I.S Insufficient sample to complete requested analysis
I.S(g) Insufficient sample to re-analyse, results for guidance only
Intf Unable to analyse due to interferences
N.D Not determined
N.Det Not detected
N.F No Flow
NS Information Not Supplied
Req Analysis requested, see attached sheets for results
Þ Raised detection limit due to nature of the sample
* All accreditation has been removed by the laboratory for this result
‡ MCERTS accreditation has been removed for this result
§ accreditation has been removed for this result as it is a non-accredited matrix

Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected. If further details are required of the circumstances which have led to the removal of accreditation then please do not hesitate to contact the laboratory.

Sample Descriptions

Client : Environ UK Ltd
Site : Sapa SPMP GW Monitoring
Report Number : W18_1955

Lab ID Number	Client ID	Description
EX/1513052	BH11	Groundwater
EX/1513053	BH6	Groundwater
EX/1513054	MW2	Groundwater
EX/1513055	BHS6	Groundwater
EX/1513056	BH4	Groundwater
EX/1513057	MW1	Groundwater
EX/1513058	BH11	Groundwater