24th February 2015

Steve Jones
Sapa Extrusions Limited
Bedwas Plant
Pant Glas Industrial Estate
Bedwas
Caerphilly
CF83 8DR

Our Ref: AG/RH/LUK14-21107_1 Sapa SPMP Round 23

Dear Steve,

Re: Site Protection and Monitoring Programme (SPMP), January 2015 (Round 23): 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 nineteen rounds of monitoring between August 2005 and January 2015; 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.

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 Natural Resources Wales [formerly the Environment Agency].

This report details the results of the twenty third round of groundwater monitoring, in accordance with the SPMP, which was undertaken on 27th January 2015.

Scope of Works

A groundwater sample was recovered from all eight remaining SPMP monitoring wells as detailed above. 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.

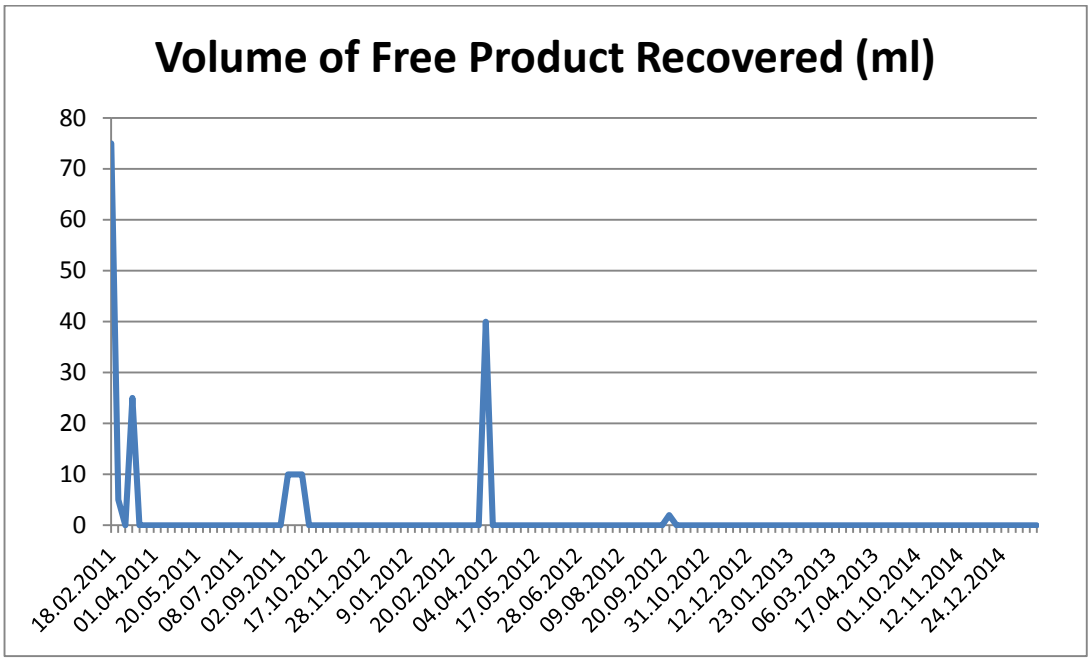
Passive Skimmer

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, and again from September 2014 to the present. Due to the limited number of staff operating at the site, the amount of free product was not recorded in the interim period. To date, 177ml of floating product has been recovered; the volume recovered over time is presented graphically below.



During the most recent round of monitoring, no 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 2.58m below ground level (bgl) (MW2) to 3.30m bgl (BHS6) and have risen since the previous round of monitoring in July 2014.
- During the January 2015 monitoring round there was no free product present in the passive skimmer collection vessel in BH12 and no free product was recorded with the interface probe; however, purged water and the sample were noted to have a moderate to strong hydrocarbon odour. The passive skimmer was reset at the interface level between the groundwater and potential free product (2.92m 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 0.98mg/l in BH1.
- Overall, concentrations of TPH have decreased since the previous monitoring round: in BH1 (from 19.01mg/l to 0.98mg/l), BH11 (from 0.19mg/l to 0.01mg/l), MW1 (from 2.42mg/l to 0.31mg/l), MW2 (from 0.42mg/l to 0.11mg/l) and BHS6 (from 0.05mg/l to 0.03mg/l).
- The concentration of TPH in BH4 has remained below the limit of detection (<0.01mg/l) and the concentration in BH6 has increased slightly since the previous round of monitoring (from 0.01mg/l to 0.08mg/l), which remains at a relatively low level.
- Historically, the highest TPH concentration is found in BH12; with a hydrocarbon odour and an oily sheen on the surface of the sample observed during sampling. A sample was collected from BH12 on this occasion and the concentration of TPH was 34.2mg/l; which is a lower concentration than the last time this borehole was sampled in October 2013 (128mg/l). 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 (0.03mg/l), and remains below the sentry borehole risk-based trigger concentration of 0.108mg/l.
- pH values ranged from pH 6.8 (BH12 and MW2) to pH 7.7 (BHS6 and BH11). Historically, the pH values of BH6 and MW2 have been consistently low (acidic), but over the last six rounds of monitoring, the pH has become more alkaline.
- Arsenic was detected above the laboratory LOD (1µg/l) in BHS6 at 9µg/l, i.e. below the UK DWS of 10µg/l.
- Boron was below the LOD (<10µg/l) in all monitoring wells.
- Cadmium was detected at and above the laboratory LOD (0.1µg/l) in MW2 at 0.1µg/l and BHS6 at 0.4µg/l, which are below the UK DWS of 5µg/l.
- Concentrations of chromium were below the laboratory LOD (<1µg/l) in all monitoring wells except BH4 at 1µg/l and BHS6 at 33µg/l. The maximum concentration detected does not exceed the UK DWS of 50µg/l.
- Concentrations of copper were below the laboratory LOD (<1µg/l) in all monitoring wells except BH6 at 2µg/l and BHS6 at 119µg/l. The maximum concentration detected does not exceed the UK DWS of 2,000µg/l.

- Lead was below the laboratory LOD (<1ug/l) in all monitoring wells except BHS6 at 12µg/l, i.e. below the UK DWS of 25µg/l.
- Mercury was recorded above the laboratory LOD (0.1µg/l) in monitoring wells BH11 at 0.3µg/l and BHS6 at 0.2µg/l. Recorded concentrations do not exceed the UK DWS of 1µg/l.
- The concentration of nickel ranged from below the laboratory LOD (<1µg/l) in BH4 and MW1 to 8µg/l in BHS6 (below the UK DWS of 20µg/l). Historically, elevated concentrations of nickel have been detected in MW2, located at the southern site boundary; however, concentrations have decreased over the monitoring period to date and are now below the screening criteria.
- Selenium was recorded below the laboratory LOD (<1ug/l) in all monitoring wells except BHS6 at 1µg/l, which is below the UK DWS of 10µg/l.
- Concentrations of zinc ranged from below the laboratory LOD (<2µg/l) in BH4 to 67µg/l in BH12. The maximum concentration detected does not exceed the UK DWS (3,000µg/l).
- Concentrations of ammonia ranged from <10µg/l in BH4 to 250µg/l in BHS6. An elevated concentration of ammonia (60,800µg/l) was recorded in BHS6 during the monitoring round of April 2013; however, subsequent values have returned to 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 below the laboratory LOD (<20µg/l) in all monitoring wells. Elevated concentrations of cyanide were recorded in BH11 on five occasions between September 2010 and July 2014. The monitoring round of October 2013 recorded the highest concentration to date, which has decreased over the two subsequent monitoring rounds.
- The concentrations of sulphate in groundwater ranged from below the laboratory LOD (<3mg/l) in BH12 to 44mg/l in MW2. Sulphate concentrations do not exceed the UK DWS of 250mg/l at any of the monitoring locations.

Conclusions and Recommendations

The results of the twenty third (January 2015) round of groundwater monitoring have identified a decrease in TPH concentrations in five of the SPMP monitoring wells. The TPH concentration of BH1 is significantly lower than previous monitoring rounds, having decreased from 19.01mg/l in July 2014 to 0.98mg/l in January 2015 (the lowest recorded concentration at this location to date). The TPH concentration in MW1 has decrease from 2.42mg/l in July 2014 (the maximum recorded concentration at this location) to 0.31mg/l in January 2015, which is comparable to the baseline data collected in 2005.

A sample was not collected from BH12 in July 2014 due to the presence of free product detected in the well. However, in January 2015 a sample was collected and the concentration of TPH was recorded at 34.2mg/l, which is a lower concentration than the last time this borehole was sampled in October 2013 (128mg/l). An overall decrease in TPH recorded across the site is likely to be a consequence of the higher groundwater level in the monitoring wells.

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.

Elevated concentrations of cyanide were recorded in BH11 on five occasions between September 2010 and July 2014. The monitoring round of October 2013 recorded the highest concentration to date, which has decreased over the two subsequent monitoring rounds to below the laboratory LOD (<20µg/l). Cyanide was not detected above the laboratory LOD in any of the monitoring wells.

The pH values in BH6 and MW1 have been consistently low (acidic) over the monitoring period; however, over the last six rounds of monitoring, the pH has gradually improved, increasing 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 July 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.

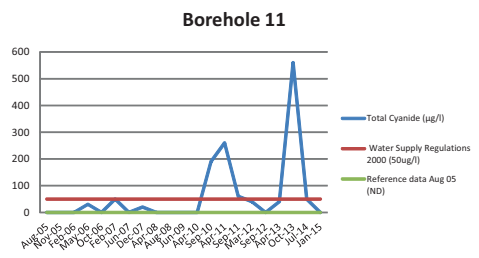
Yours sincerely,

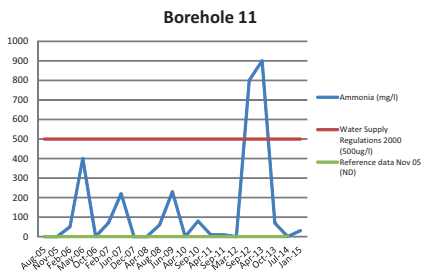
Robert Hodgson
Consultant

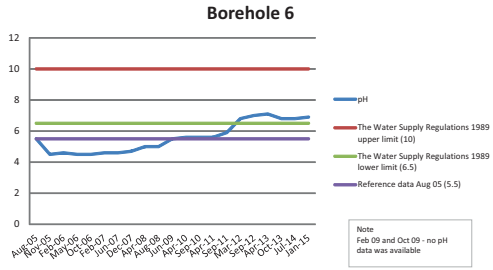
Andy Goddard
Principal

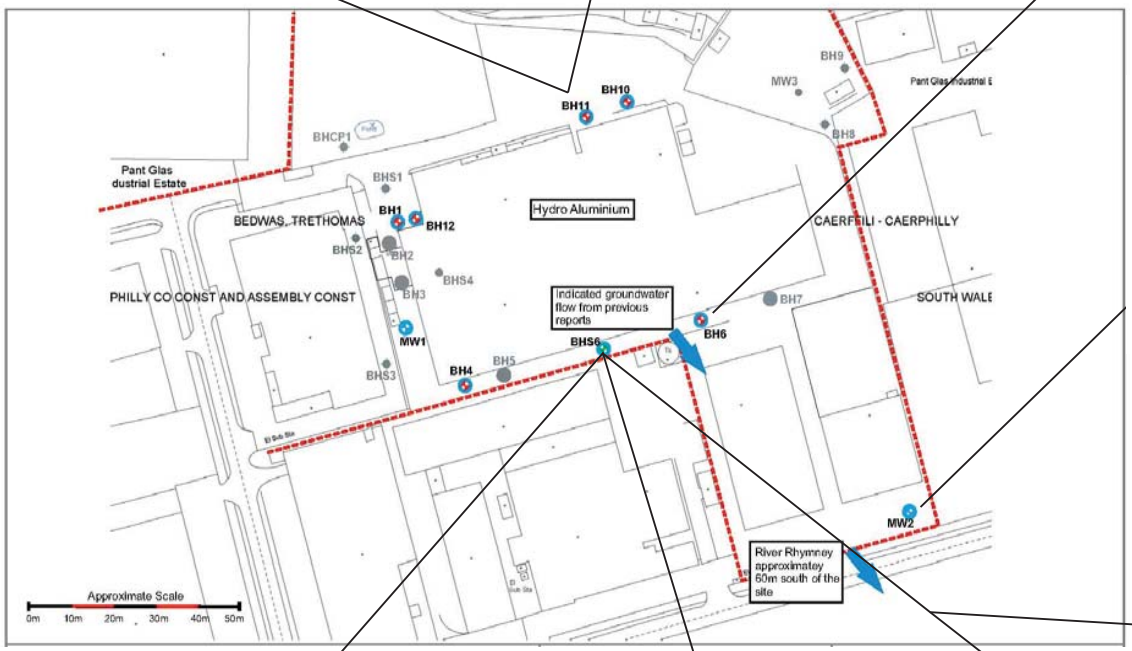
Enc. Figures
Table of Groundwater Analysis Results
Laboratory Certificate of Analysis

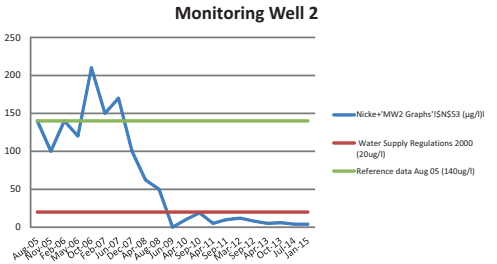
Contaminant Concentration Graphs

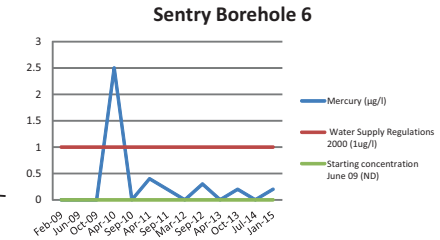


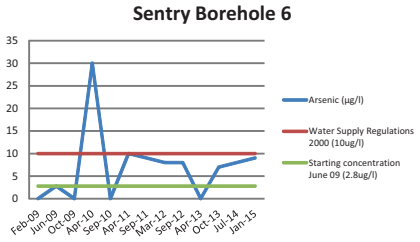


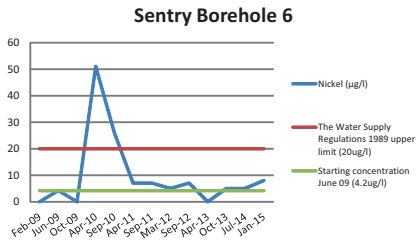


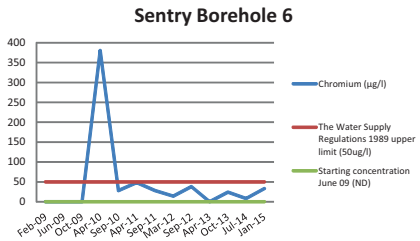












Legend

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

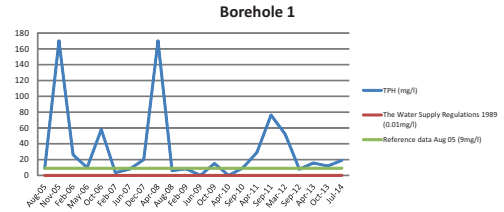
Title	Contaminant Concentration Graphs
Site	Sapa Extrusion Ltd, Bedwas Plant, Pantglas Industrial Estate, Bedwas, Caerphilly

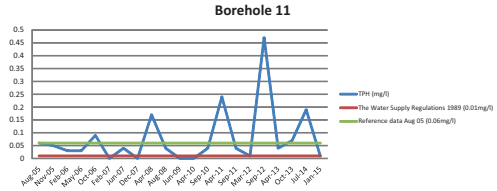
Client	Sapa Extrusion Ltd
Project No.	UK14-21107
Issue	1
Date	January 2015
Drawn by	RH

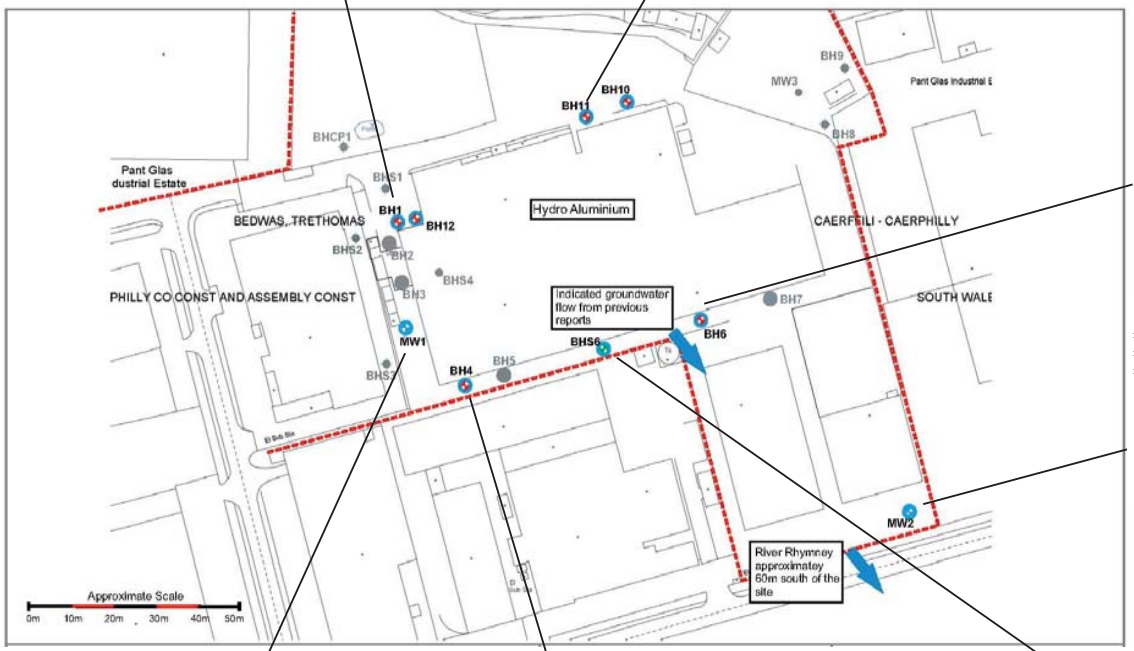
Scale NTS

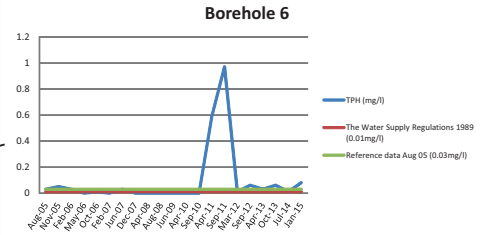
ENVIRON

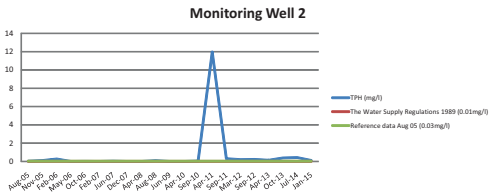
TPH Concentration Graphs

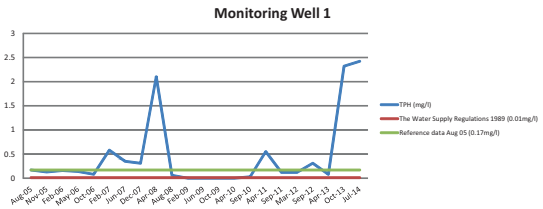


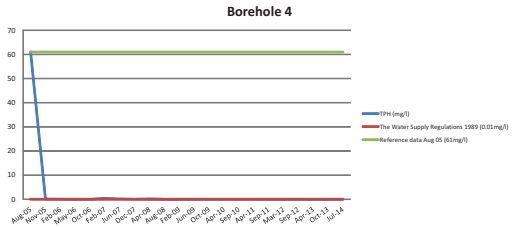


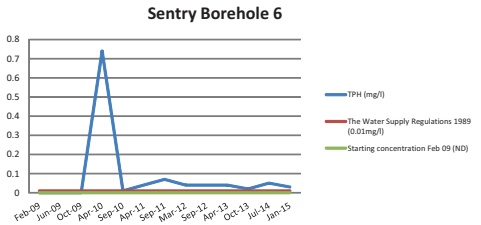












Legend

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

Title **TPH Concentration Graphs**

Site **Sapa Extrusions Ltd, Bedwas Plant, Pantglas Industrial Estate, Bedwas, Caerphilly**

Client	**Sapa Extrusions Ltd**
Project No.	**UK14-21107**
Issue	**1**
Date	**January 2015**
Drawn by	**RH**

Scale **NTS**

ENVIRON

Hydro Aluminium (UK14-21107) - Summary of Groundwater Analysis Results (January 2015)

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)	
BH1	Aug-05	9	9	NA	ND	ND	ND	ND	ND	ND	ND	ND	1200	ND	6.5	10	3.85
	Nov-05	170	8	ND	ND	ND	ND	ND	ND	ND	ND	8	60	ND	6.5	12	2.90
	Feb-06	26	ND	16	ND	ND	ND	ND	ND	5	ND	ND	60	ND	6.4	ND	3.51
	May-06	9.7	ND	17	ND	11	ND	ND	ND	ND	ND	ND	ND	ND	6.5	49	3.36
	Oct-06	58	ND	26	ND	ND	ND	ND	ND	10	ND	7	60	ND	6.5	23	3.56
	Feb-07	3.4	ND	25	ND	ND	ND	ND	ND	ND	ND	ND	70	ND	6.5	ND	2.88
	Jun-07	7.9	ND	24	ND	ND	ND	ND	ND	8	ND	ND	730	ND	6.4	24	3.45
	Dec-07	20	ND	26	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.2	ND	3.13
	Apr-08	170	ND	20	ND	ND	ND	ND	ND	ND	ND	8	ND	ND	6.6	ND	3.17
	Aug-08	6	ND	64	ND	7	ND	ND	ND	ND	ND	8	ND	ND	6.6	ND	3.17
	Feb-09	8.3	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	15	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	9.39	ND	20	ND	6	ND	ND	ND	2	ND	ND	30	ND	6.4	12	3.49
	Apr-11	28.95	ND	20	ND	2	2	ND	ND	2	ND	9	ND	ND	6.6	6	3.72
	Sep-11	76.31	ND	20	ND	7	ND	ND	ND	2	ND	2	50	ND	6.4	8	3.53
	Mar-12	51.97	1	ND	0.1	6	2	3	ND	2	1	6	20	20	7	8	3.60
	Sep-12	7.81	1	40	ND	2	3	4	ND	3	ND	20	70	ND	7.3	11	3.24
	Apr-13	15.75	ND	NA	ND	2	ND	ND	ND	ND	ND	5	20	ND	7.3	7	3.39
	Oct-13	11.7	ND	20	ND	3	ND	ND	ND	2	ND	7	70	ND	6.9	9	3.70
	Jul-14	19.01	ND	20	ND	2	ND	ND	ND	1	ND	3	ND	ND	6.6	6	3.72
	Jan-15	0.98	ND	ND	ND	ND	ND	ND	ND	1	ND	25	110	ND	6.9	7	2.80
BH4	Aug-05	61	10	NA	ND	ND	ND	ND	ND	ND	ND	ND	110	ND	6.8	34	4.02
	Nov-05	0.11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.6	20	3.10
	Feb-06	0.07	ND	24	ND	10	ND	ND	ND	ND	ND	ND	110	ND	6.8	25	3.73
	May-06	0.02	ND	23	ND	10	ND	ND	ND	ND	ND	ND	ND	ND	6.9	26	3.56
	Oct-06	0.02	ND	30	ND	ND	17	ND	ND	ND	ND	10	ND	ND	6.8	34	3.81
	Feb-07	0.4	ND	27	ND	ND	ND	ND	ND	ND	ND	ND	80	ND	7	21	3.11
	Jun-07	0.15	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	0.19	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	3.80
	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	0.01	ND	20	ND	4	ND	ND	ND	ND	ND	ND	20	ND	6.8	15	3.62
	Apr-11	0.03	ND	30	ND	4	2	ND	ND	ND	ND	ND	ND	ND	7	16	3.84
	Sep-11	0.01	ND	20	ND	7	ND	ND	ND	ND	1	ND	30	ND	6.6	18	3.61
	Mar-12	0.03	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	0.02	ND	NA	ND	3	ND	ND	ND	ND	ND	ND	10	ND	7.4	17	3.57
	Oct-13	0.02	ND	20	ND	3	ND	ND	ND	ND	ND	ND	ND	ND	7.2	18	3.80
	Jul-14	ND	ND	20	ND	3	ND	ND	ND	ND	ND	ND	ND	ND	7	14	3.86
	Jan-15	ND	ND	ND	ND	1	ND	ND	ND	ND	ND	ND	ND	ND	7.3	15	2.97
BH6	Aug-05	0.03	9	NA	2	ND	ND	ND	ND	48	ND	140	700	ND	5.5	440	3.68
	Nov-05	0.05	8	ND	2	ND	ND	ND	ND	58	ND	200	490	ND	4.5	450	3.07
	Feb-06	0.03	ND	23	2	7	7	ND	ND	45	ND	130	1200	ND	4.6	740	3.45
	May-06	ND	ND	25	2	ND	9	ND	ND	56	ND	160	920	ND	4.5	830	3.29
	Oct-06	0.01	ND	21	1	ND	7	ND	ND	46	ND	130	120	ND	4.5	380	3.41
	Feb-07	ND	ND	29	1	ND	5	ND	ND	36	ND	95	630	ND	4.6	340	2.99
	Jun-07	0.03	ND	27	ND	ND	ND	ND	ND	24	ND	54	470	ND	4.6	230	3.39
	Dec-07	ND	ND	29	ND	ND	ND	ND	ND	13	ND	53	200	ND	4.7	110	3.18
	Apr-08	ND	ND	27	ND	ND	ND	ND	ND	15	ND	39	140	ND	5.0	170	3.27
	Aug-08	ND	ND	31	ND	ND	ND	ND	ND	13	ND	31	140	ND	5.0	130	3.08
	Jun-09	ND	ND	34	ND	ND	ND	ND	ND	6.7	ND	23	160	ND	5.5	97	4.83
	Apr-10	ND	1.1	NA	0.22	3	ND	ND	ND	5	1.1	21	NA	NA	5.6	100	3.28
	Sep-10	ND	ND	20	0.3	2	ND	ND	ND	4	ND	54	20	ND	5.6	58	3.42
	Apr-11	0.59	ND	50	0.2	1	2	ND	ND	3	ND	20	ND	ND	5.6	61	3.60
	Sep-11	0.97	ND	20	0.2	4	ND	ND	ND	5	ND	11	20	ND	5.9	47	3.46
	Mar-12	0.01	ND	ND	0.3	2	ND	2	0.1	1	1	9	ND	ND	6.8	60	3.50
	Sep-12	0.06	ND	20	0.1	ND	ND	2	ND	1	2	12	ND	ND	7	51	3.24
	Apr-13	0.03	ND	NA	0.2	2	ND	ND	ND	1	1	29	ND	ND	7.1	49	3.36
	Oct-13	0.06	ND	20	0.1	2	ND	ND	ND	ND	1	13	ND	ND	6.8	32	3.56
	Jul-14	0.01	ND	20	ND	1	ND	ND	ND	ND	1	3	ND	ND	6.8	35	3.60
	Jan-15	0.08	ND	ND	ND	ND	2	ND	ND	4	ND	4	10	ND	6.9	37	2.95
BH11	Aug-05	0.06	11	NA	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	7.4	190	3.62
	Nov-05	0.05	6	ND	ND	ND	ND	ND	ND	ND	ND	7	ND	ND	6.8	140	2.79
	Feb-06	0.03	ND	34	ND	10	ND	ND	ND	ND	ND	6	50	ND	7.6	560	3.00
	May-06	0.03	ND	31	ND	ND	ND	ND	ND	ND	ND	ND	400	30	7.1	180	3.27
	Oct-06	0.09	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	0.04	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	0.17	ND	21	ND	ND	ND	ND	ND	ND	ND	47	ND	ND	7.0	30	3.00
	Aug-08	0.04	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	1.8	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	0.04	ND	40	ND	3	ND	ND	ND	2	ND	12	80	190	7.0	53	3.36
	Apr-11	0.24	ND	30	ND	2	3	ND	ND	1	ND	5	10	260	7.3	28	3.56
	Sep-11	0.04	ND	20	ND	5	1	ND	ND	1	1	18	10	60	6.5	41	3.48
	Mar-12	0.01	ND	ND	ND	3	ND	ND	ND	ND	2	16	ND	40	7.3	28	3.51
	Sep-12	0.47	ND	20	ND	1	1	2	ND	6	ND	15	800	ND	7.1	18	3.11
	Apr-13	0.04	ND	NA	0.1	2	ND	ND	ND	3	1	10	900	40	7.1	31	3.26
	Oct-13	0.07	ND	30	ND	2	3	ND	ND	2	1	10	70	560	7.5	40	3.60
	Jul-14	0.19	ND	50	ND	1	1	ND	ND	1	ND	7	ND	50	6.8	23	3.64
	Jan-15	0.01	ND	ND	ND	ND	ND	ND	0.3	1	ND	18	30	ND	7.7	26	2.71
		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

		Analysis															
Borehole Location	**Date**	**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)**
BH12	Aug-05	7.8	7	NA	ND	ND	ND	ND	ND	ND	ND	ND	1400	ND	6.6	5	4.00
	Nov-05	34	ND	ND	ND	20	ND	ND	ND	7	ND	9	ND	ND	6.4	22	3.02
	Feb-06	13	ND	16	ND	ND	ND	ND	ND	10	ND	ND	70	ND	6.3	ND	3.64
	May-06	71	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*	NS*	6.5	NS*	3.26
	Feb-07	21	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*	NS*	6.4	NS*	3.12
	Dec-07	1000	ND	26	ND	ND	ND	ND	ND	7	ND	30	79	ND	6.3	ND	3.23
	Apr-08	34	ND	19	ND	ND	ND	ND	ND	5	ND	ND	ND	ND	6.6	ND	3.33
	Aug-08	260	ND	23	ND	ND	ND	ND	ND	ND	ND	8	ND	ND	6.5	ND	3.28
	Feb-09	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.45	NA	3.11
	Jun-09	240	ND	ND	ND	ND	2	1.5	ND	3.7	ND	15	190	ND	6.4	4.8	3.68
	Oct-09	380	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.45	NA	3.85
	Apr-10	72	1.7	NA	0.04	15	0.9	ND	ND	6	0.9	7	NA	NA	6.5	ND	3.45
	Sep-10	160.7	ND	20	ND	5	ND	ND	ND	2	ND	6	40	ND	6.4	ND	3.71
	Apr-13	45.98	1	NA	ND	2	ND	ND	ND	12	ND	10	10	ND	7.2	8	3.51
	Oct-13	128	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*	NS*	3.88
	Jan-15	34.2	ND	ND	ND	ND	ND	ND	ND	1	ND	67	60	ND	6.8	ND	2.92
MW1	Aug-05	0.17	11	NA	ND	ND	ND	ND	ND	ND	ND	32	160	ND	6.6	24	4.01
	Nov-05	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	43	ND	ND	6.8	33	3.11
	Feb-06	0.16	ND	22	ND	ND	ND	ND	ND	ND	ND	80	50	ND	6.6	25	3.73
	May-06	0.14	ND	20	ND	8	ND	ND	ND	ND	ND	32	ND	ND	6.8	23	3.58
	Oct-06	0.08	12	20	ND	10	5	ND	ND	ND	ND	24	ND	ND	7.2	22	3.87
	Feb-07	0.58	ND	27	ND	ND	ND	ND	ND	ND	ND	51	230	ND	7	22	3.18
	Jun-07	0.35	ND	27	ND	ND	ND	ND	ND	ND	ND	40	80	ND	6.7	21	3.61
	Dec-07	0.31	ND	29	ND	ND	ND	ND	ND	ND	ND	40	ND	ND	6.5	22	3.29
	Apr-08	2.1	ND	26	ND	ND	ND	ND	ND	ND	ND	37	50	ND	6.8	20	3.41
	Aug-08	0.06	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	0.03	ND	20	0.1	4	1	ND	ND	1	ND	86	20	ND	6.6	24	3.64
	Apr-11	0.55	ND	30	0.1	1	5	ND	ND	2	ND	126	ND	ND	6.8	22	3.86
	Sep-11	0.12	ND	50	ND	4	1	ND	ND	1	ND	49	20	ND	6.7	26	3.64
	Mar-12	0.12	ND	ND	0.2	5	3	3	ND	2	1	126	ND	ND	7.1	22	3.75
	Sep-12	0.31	ND	20	ND	2	2	2	ND	1	1	46	ND	ND	7.3	19	3.41
	Apr-13	0.08	ND	NA	0.1	2	ND	ND	ND	2	ND	84	30	ND	7.3	17	3.56
	Oct-13	2.32	ND	20	ND	2	ND	ND	ND	2	1	73	ND	ND	7	22	3.80
	Jul-14	2.42	ND	20	ND	1	1	ND	ND	2	ND	40	ND	ND	6.9	15	3.86
	Jan-15	0.31	ND	ND	ND	ND	ND	ND	ND	ND	ND	36	10	ND	7.2	14	2.95
MW2	Aug-05	0.03	6	NA	ND	ND	ND	ND	ND	140	ND	120	95	ND	5.5	370	3.19
	Nov-05	0.1	ND	ND	2	ND	ND	ND	ND	100	ND	100	ND	ND	5.4	380	2.60
	Feb-06	0.27	ND	24	4	6	ND	ND	ND	140	ND	110	70	ND	5.5	480	3.00
	May-06	ND	ND	25	3	ND	ND	ND	ND	120	ND	91	70	ND	5.6	580	2.94
	Oct-06	0.01	ND	27	7	ND	ND	ND	ND	210	ND	200	90	ND	5.8	790	3.04
	Feb-07	ND	ND	33	3	ND	ND	ND	ND	150	ND	110	90	ND	5.6	510	2.69
	Jun-07	0.03	ND	28	5	ND	ND	ND	ND	170	ND	170	240	ND	5.4	510	2.94
	Dec-07	ND	ND	29	3	ND	ND	ND	ND	100	ND	120	88	ND	5.5	350	2.68
	Apr-08	ND	ND	27	2	ND	ND	ND	ND	62	ND	72	ND	ND	5.5	210	2.83
	Aug-08	0.09	ND	30	1	ND	ND	ND	ND	50	ND	76	ND	ND	5.6	170	2.70
	Jun-09	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.95	NA	2.78
	Apr-10	ND	0.5	NA	0.54	8	3.6	ND	ND	10	0.6	170	NA	NA	6.3	100	2.86
	Sep-10	0.04	ND	30	0.8	3	ND	ND	ND	19	ND	121	30	ND	6.1	82	2.94
	Apr-11	11.97	ND	30	0.1	2	2	ND	ND	5	ND	7	ND	ND	7.4	71	3.14
	Sep-11	0.3	ND	40	0.1	5	ND	ND	ND	10	ND	11	60	ND	6.4	71	3.00
	Mar-12	0.2	ND	ND	0.5	2	1	6	ND	12	1	33	ND	ND	7	61	3.09
	Sep-12	0.22	ND	20	0.1	ND	1	5	ND	8	ND	30	ND	ND	7.1	54	2.82
	Apr-13	0.13	ND	NA	0.4	2	ND	ND	ND	5	ND	21	30	ND	7.7	55	2.95
	Oct-13	0.38	ND	20	ND	1	ND	ND	ND	6	ND	17	10	ND	6.7	60	3.12
	Jul-14	0.42	ND	20	ND	ND	ND	ND	ND	4	ND	16	ND	ND	6.6	45	3.18
	Jan-15	0.11	ND	ND	0.1	ND	ND	ND	ND	4	ND	17	50	ND	6.8	44	2.58
BHS6 (Sentry 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	6.7	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	0.74	30	NA	1.8	380	410	41	2.5	51	21	71	NA	NA	7.5	81	3.65
	Sep-10	0.01	ND	30	1	28	1723	11	ND	26	ND	338	300	ND	7.3	46	3.86
	Apr-11	0.04	10	40	0.8	48	85	21	0.4	7	4	37	400	ND	7.8	55	4.03
	Sep-11	0.07	9	ND	1.1	28	81	22	0.2	7	4	24	400	ND	7.5	61	3.90
	Mar-12	0.04	8	ND	0.9	14	66	17	ND	5	3	22	330	ND	7.9	63	3.95
	Sep-12	0.04	8	ND	0.8	38	99	20	0.3	7	3	15	160	ND	8.2	59	3.66
	Apr-13	0.04	ND	NA	10.6	ND	189	ND	ND	ND	ND	515	60800	ND	8.2	60	3.81
	Oct-13	0.02	7	50	0.5	24	62	14	0.2	5	2	20	280	ND	7.5	ND	3.97
	Jul-14	0.05	8	ND	0.5	8	38	4	ND	5	2	11	240	ND	7.9	47	4.02
	Jan-15	0.03	9	ND	0.4	33	119	12	0.2	8	1	9	250	ND	7.7	3	3.30
		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

Our Ref: EXR/192802 (Ver. 2)
Your Ref: UK14-21107

February 10, 2015

Environmental Chemistry
ESG
Bretby Business Park
Ashby Road
Burton-on-Trent
Staffordshire
DE15 0YZ

Telephone: 01283 554400
Facsimile: 01283 554422

Mr R Hodgson
Environ UK Ltd
8 Village Way
Greenmeadow Springs
Coryton
Cardiff
CF15 7NE

For the attention of Mr R Hodgson

Dear Mr Hodgson

Sample Analysis - Sapa SPMP Round 23

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 (Multi-Sector Services) 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

J Colbourne
Project Co-ordinator
01283 554547

TEST REPORT

1252

Report No. EXR/192802 (Ver. 2)

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

Site: Sapa SPMP Round 23

The 8 samples described in this report were registered for analysis by ESG on 28-Jan-2015. This report supersedes any versions previously issued by the laboratory.
The analysis was completed by: 10-Feb-2015

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

The following tables are contained in this report:

On behalf of
ESG :
Declan Burns

Managing Director
Multi-Sector Services

Date of Issue: 10-Feb-2015

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.

		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**
1563673	BH11	27-Jan-15 09:30	7.7	26	0.06	0.001	<0.001	<0.0001	<0.001	<0.001	0.018	<0.001	<0.01	0.0003	<0.001	<0.001	0.03	<0.02
1563674	MW2	27-Jan-15 10:00	6.8	44	0.03	0.004	<0.001	0.0001	<0.001	<0.001	0.017	<0.001	<0.01	<0.0001	<0.001	<0.001	0.05	<0.02
1563675	BH6	27-Jan-15 10:30	6.9	37	0.04	0.004	<0.001	<0.0001	0.002	<0.001	0.004	<0.001	<0.01	<0.0001	<0.001	<0.001	0.01	<0.02
1563676	BHS6	27-Jan-15 11:00	7.7	3	0.02	0.008	0.033	0.0004	0.119	0.012	0.009	0.009	<0.01	0.0002	0.001	0.009	0.25	<0.02
1563677	BH4	27-Jan-15 11:30	7.3	15	0.03	<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
1563678	MW1	27-Jan-15 12:00	7.2	14	0.05	<0.001	<0.001	<0.0001	<0.001	<0.001	0.036	<0.001	<0.01	<0.0001	<0.001	<0.001	0.01	<0.02
1563679	BH1	27-Jan-15 12:30	6.9	7	0.06	0.001	<0.001	<0.0001	<0.001	<0.001	0.025	<0.001	<0.01	<0.0001	<0.001	<0.001	0.11	<0.02
1563680	BH12	27-Jan-15 13:00	6.8	<3	0.08	0.001	<0.001	<0.0001	<0.001	<0.001	0.067	<0.001	<0.01	<0.0001	<0.001	<0.001	0.06	<0.02

ESG

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Client Name **Environ UK Ltd**

Contact Mr R Hodgson

Sapa SPMP Round 23

Sample Analysis

Date Printed	**10-Feb-2015**
Report Number	**EXR/192802**
Table Number	**1**

Where individual results are flagged see report notes for status.

		Units :	mg/l	mg/l															
		Method Codes :	TPHFID	ICPWATVAR															
		Method Reporting Limits :	0.01	0.01															
		UKAS Accredited :	Yes	No															
LAB ID Number EXR	**Client Sample Description**	**Sample Date**	**TPH GC**	**Beryllium as Be (Dissolved) a**															
1563673	BH11	**27-Jan-15 09:30**	0.01	<0.01															
1563674	MW2	**27-Jan-15 10:00**	0.11	<0.01															
1563675	BH6	**27-Jan-15 10:30**	0.08	<0.01															
1563676	BHS6	**27-Jan-15 11:00**	0.03	<0.01															
1563677	BH4	**27-Jan-15 11:30**	<0.01	<0.01															
1563678	MW1	**27-Jan-15 12:00**	0.31	<0.01															
1563679	BH1	**27-Jan-15 12:30**	0.98	<0.01															
1563680	BH12	**27-Jan-15 13:00**	34.2	<0.01															

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Client Name **Environ UK Ltd**

Contact Mr R Hodgson

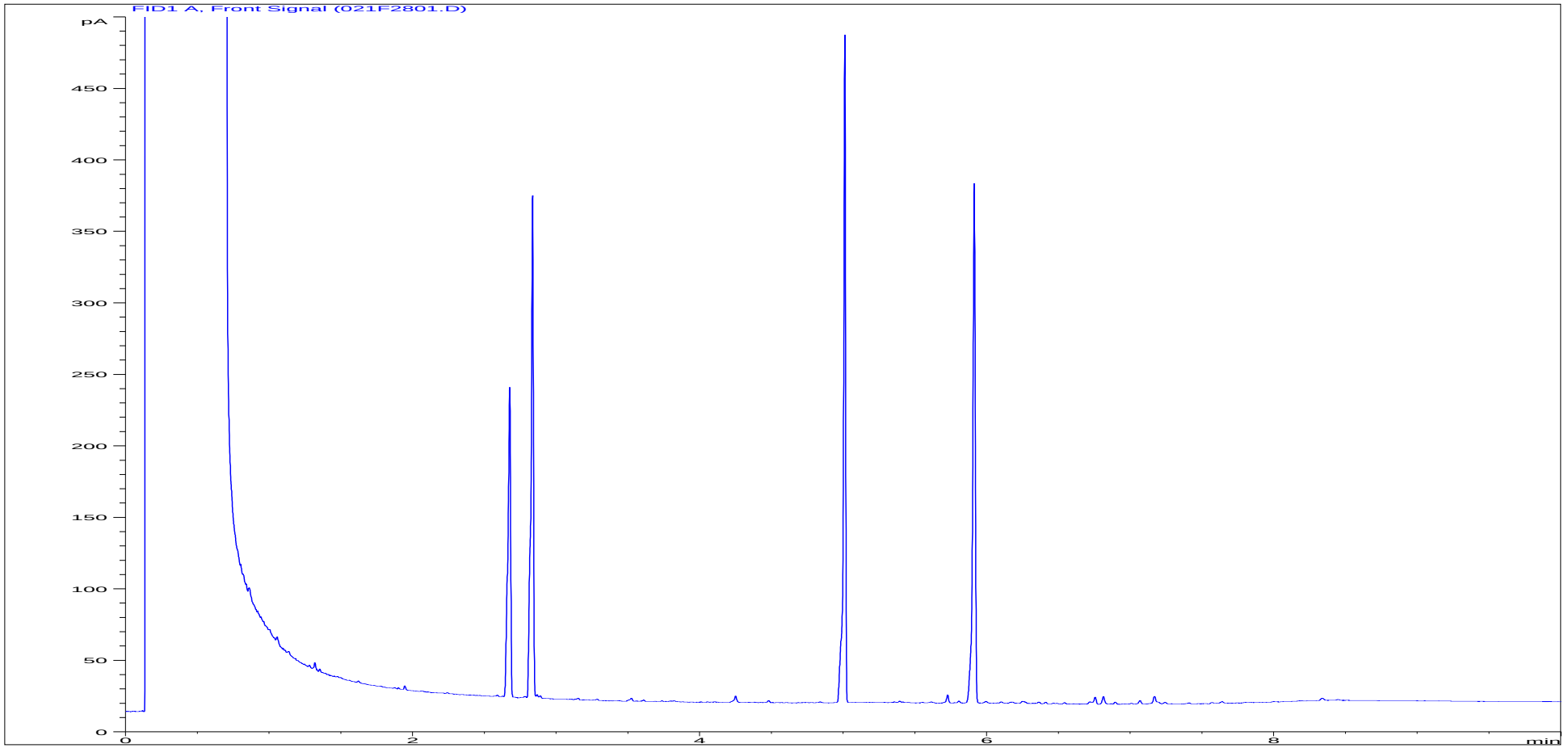
Sapa SPMP Round 23

Sample Analysis

Date Printed	**10-Feb-2015**
Report Number	**EXR/192802**
Table Number	**1**

Where individual results are flagged see report notes for status.

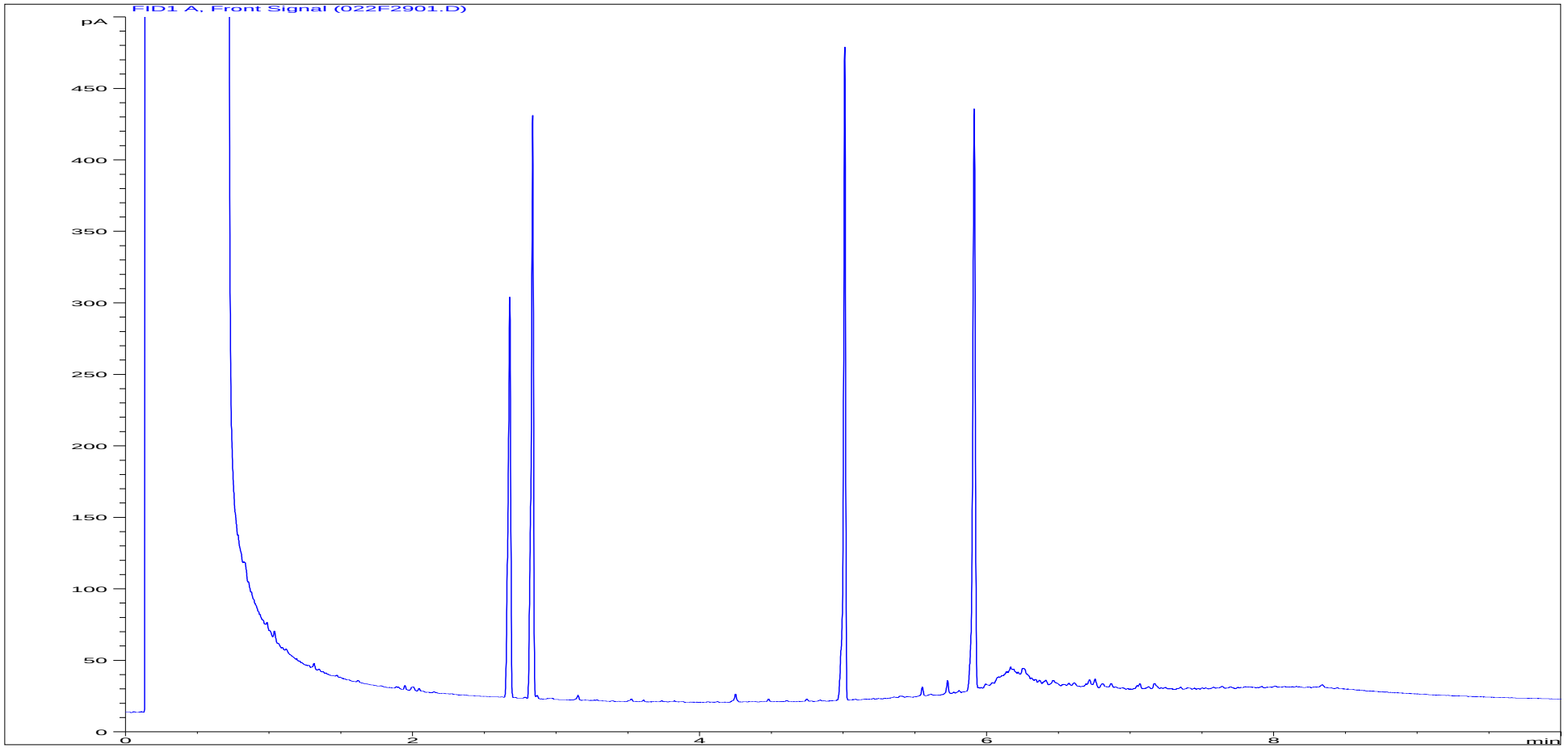
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1563673	**Job Number:**	W19_2802
Multiplier:	0.005	**Client:**	Environ UK Ltd
Dilution:	1	**Site:**	Sapa SPMP Round 23
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH11
Acquisition Date/Time:	03-Feb-15, 17:27:49		
Datafile:	D:\TES\DATA\Y2015\020315TPH_GC17\020315 2015-02-03 08-54-24\021F2801.D		

Where individual results are flagged see report notes for status.

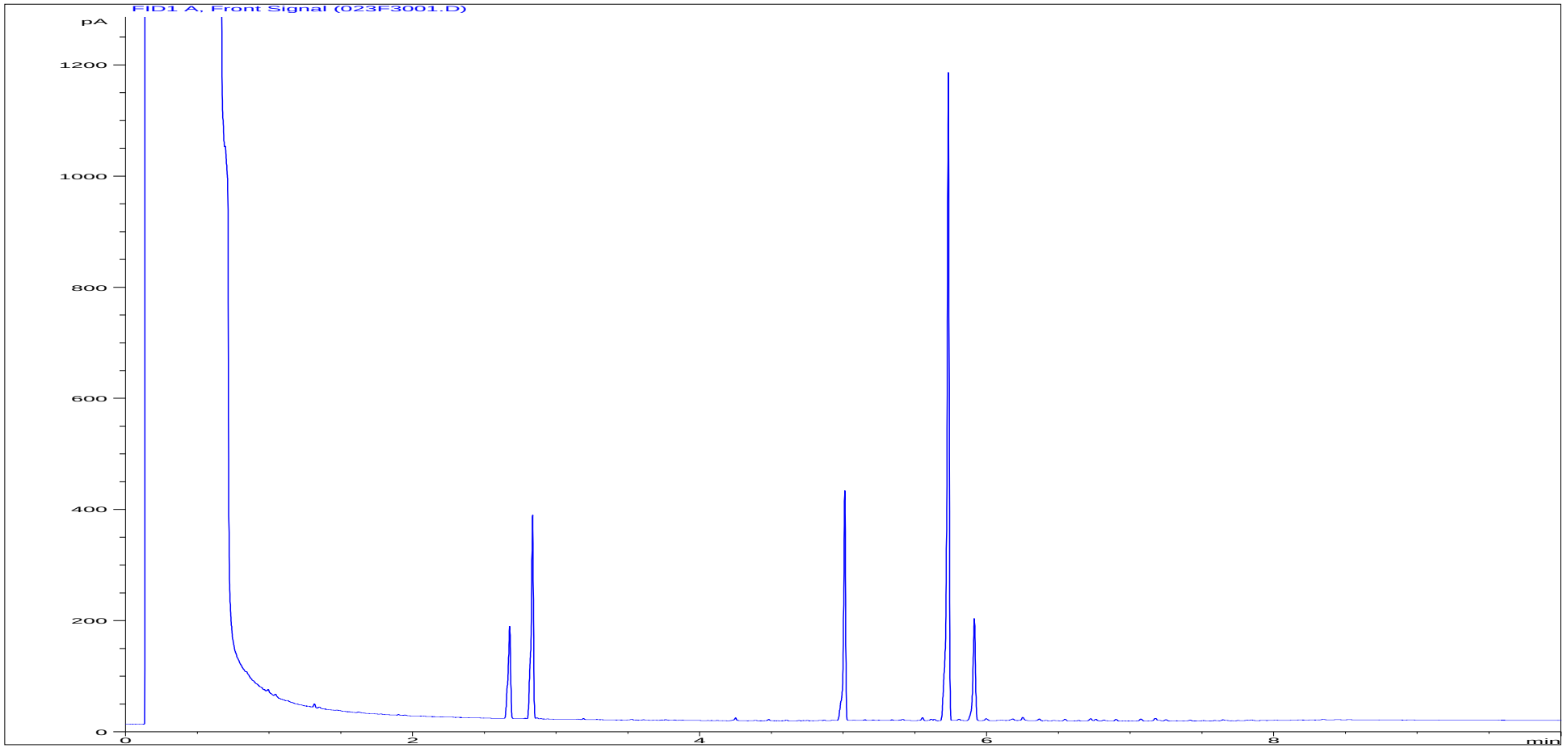
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1563674	**Job Number:**	W19_2802
Multiplier:	0.005	**Client:**	Environ UK Ltd
Dilution:	1	**Site:**	Sapa SPMP Round 23
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	MW2
Acquisition Date/Time:	03-Feb-15, 17:46:06		
Datafile:	D:\TES\DATA\Y2015\020315TPH_GC17\020315 2015-02-03 08-54-24\022F2901.D		

Where individual results are flagged see report notes for status.

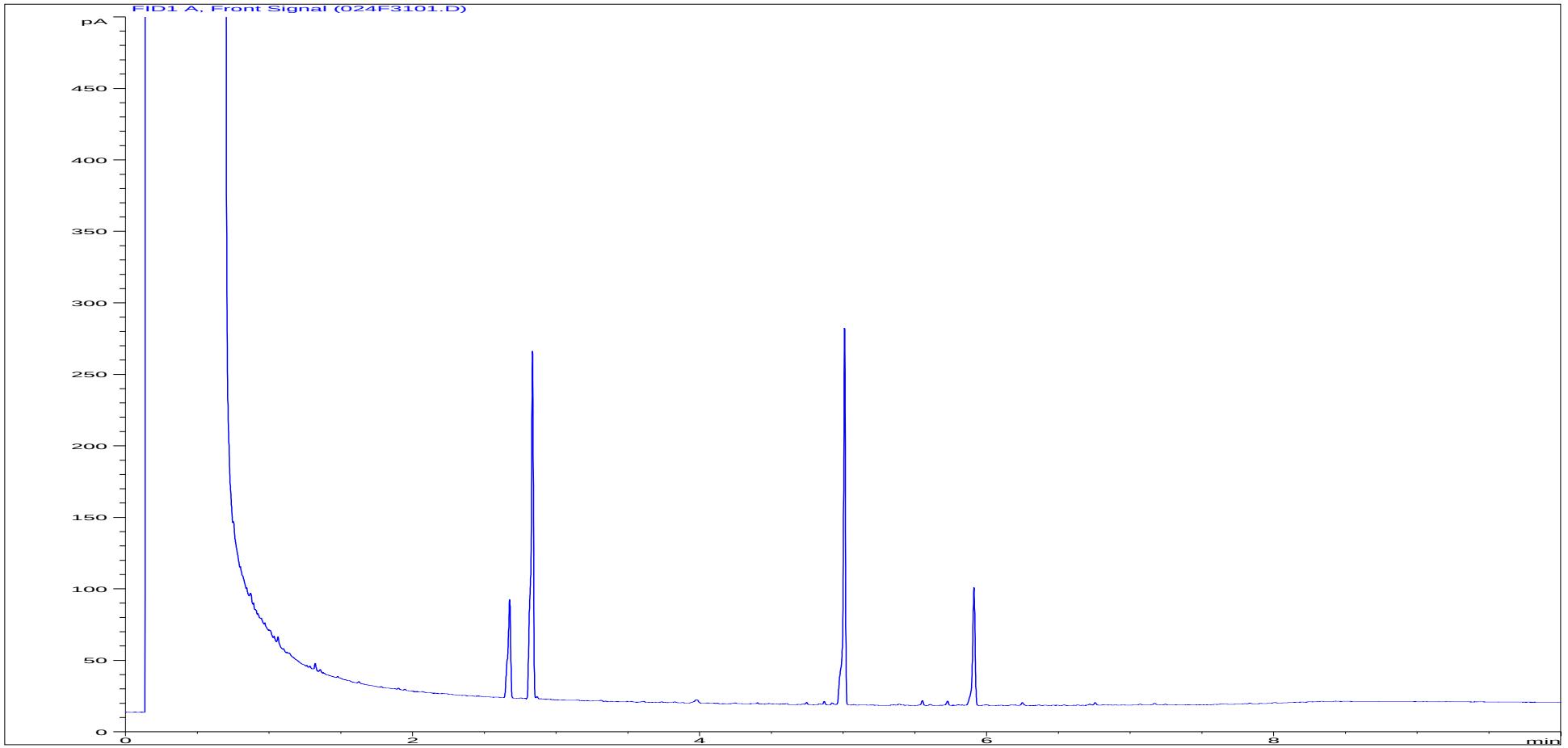
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1563675	**Job Number:**	W19_2802
Multiplier:	0.005	**Client:**	Environ UK Ltd
Dilution:	1	**Site:**	Sapa SPMP Round 23
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH6
Acquisition Date/Time:	03-Feb-15, 18:04:18		
Datafile:	D:\TES\DATA\Y2015\020315TPH_GC17\020315 2015-02-03 08-54-24\023F3001.D		

Where individual results are flagged see report notes for status.

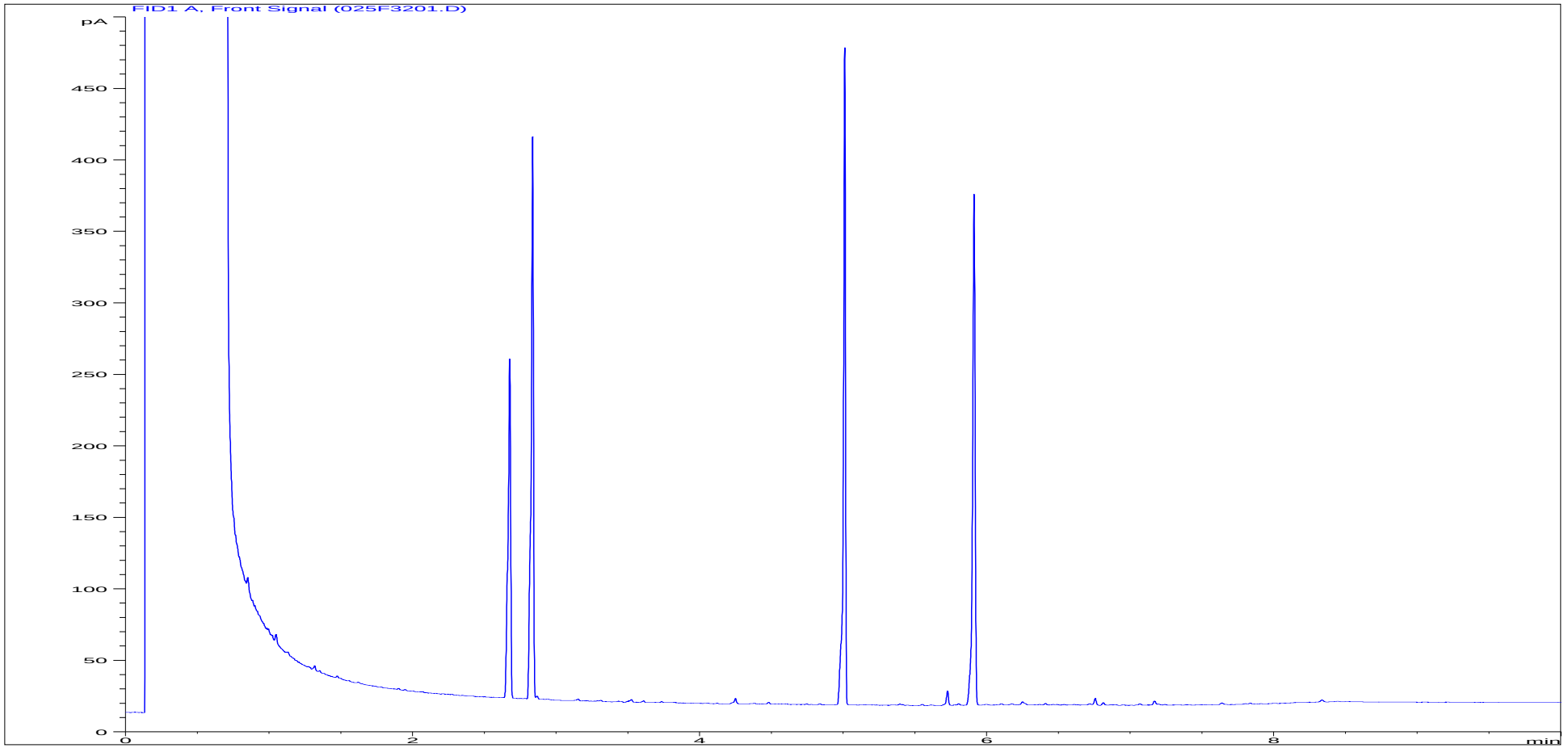
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1563676	**Job Number:**	W19_2802
Multiplier:	0.005	**Client:**	Environ UK Ltd
Dilution:	4	**Site:**	Sapa SPMP Round 23
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BHS6
Acquisition Date/Time:	03-Feb-15, 18:22:22		
Datafile:	D:\TES\DATA\Y2015\020315TPH_GC17\020315 2015-02-03 08-54-24\024F3101.D		

Where individual results are flagged see report notes for status.

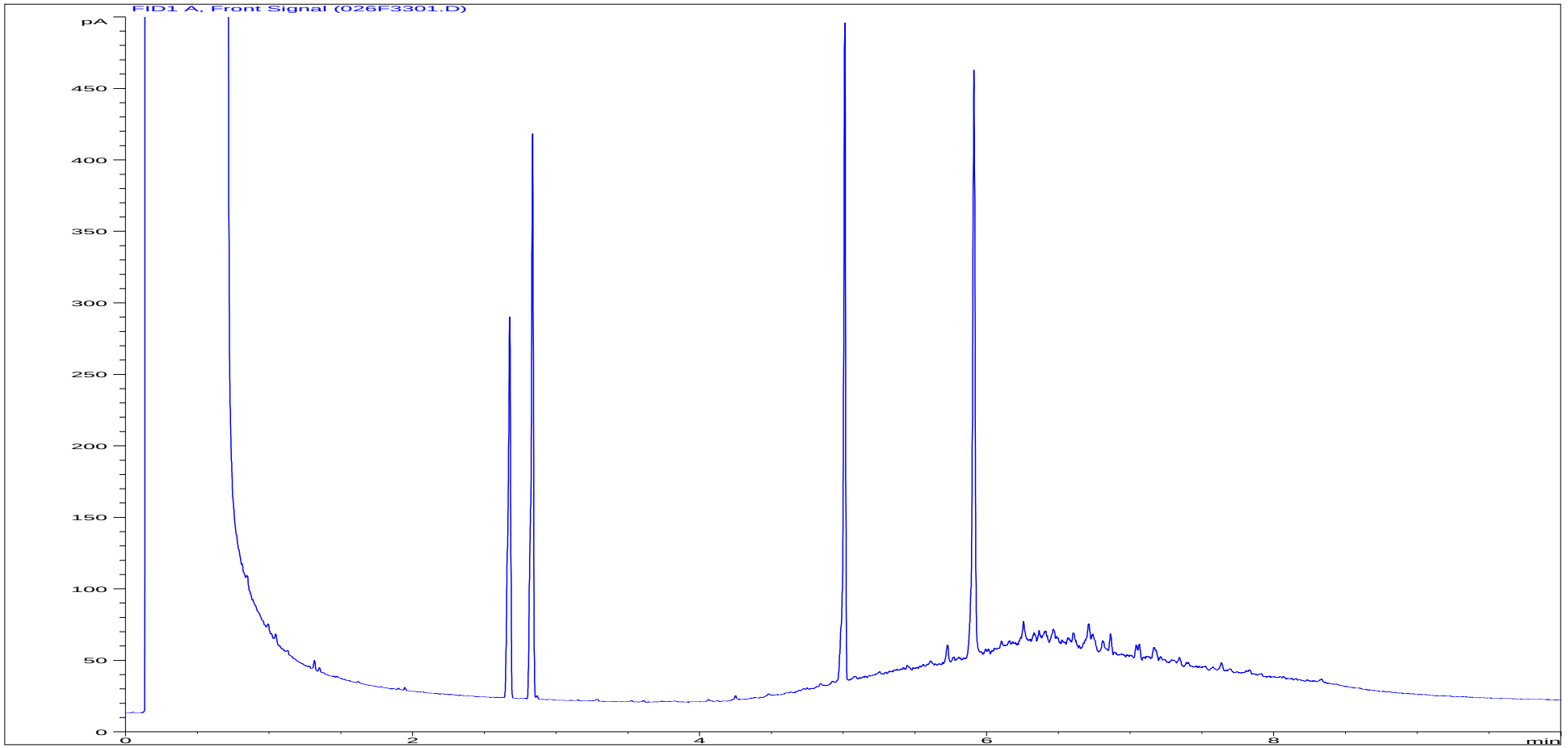
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1563677	**Job Number:**	W19_2802
Multiplier:	0.005	**Client:**	Environ UK Ltd
Dilution:	1	**Site:**	Sapa SPMP Round 23
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH4
Acquisition Date/Time:	03-Feb-15, 18:40:36		
Datafile:	D:\TES\DATA\Y2015\020315TPH_GC17\020315 2015-02-03 08-54-24\025F3201.D		

Where individual results are flagged see report notes for status.

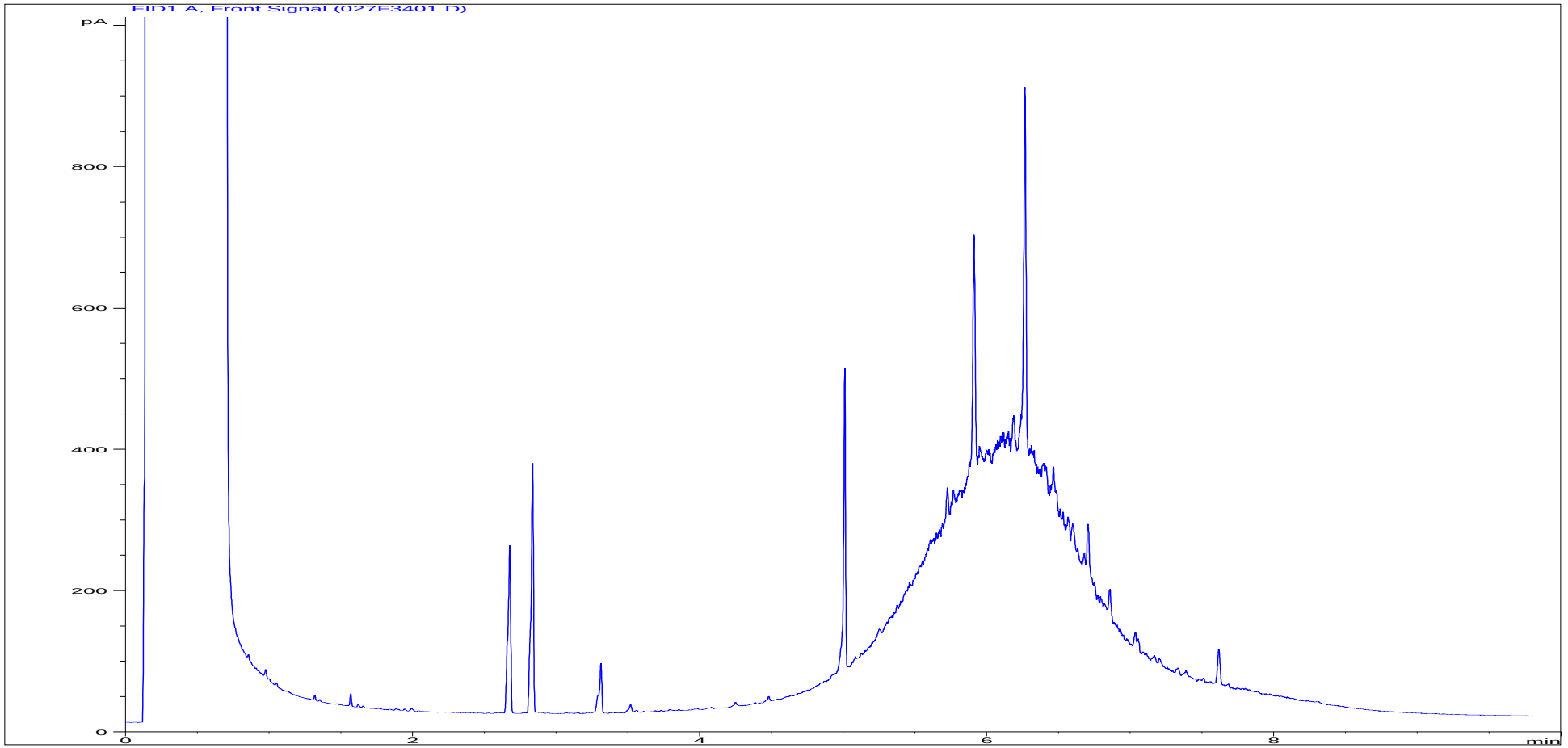
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1563678	**Job Number:**	W19_2802
Multiplier:	0.005	**Client:**	Environ UK Ltd
Dilution:	1	**Site:**	Sapa SPMP Round 23
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	MW1
Acquisition Date/Time:	03-Feb-15, 18:58:41		
Datafile:	D:\TES\DATA\Y2015\020315TPH_GC17\020315 2015-02-03 08-54-24\026F3301.D		

Where individual results are flagged see report notes for status.

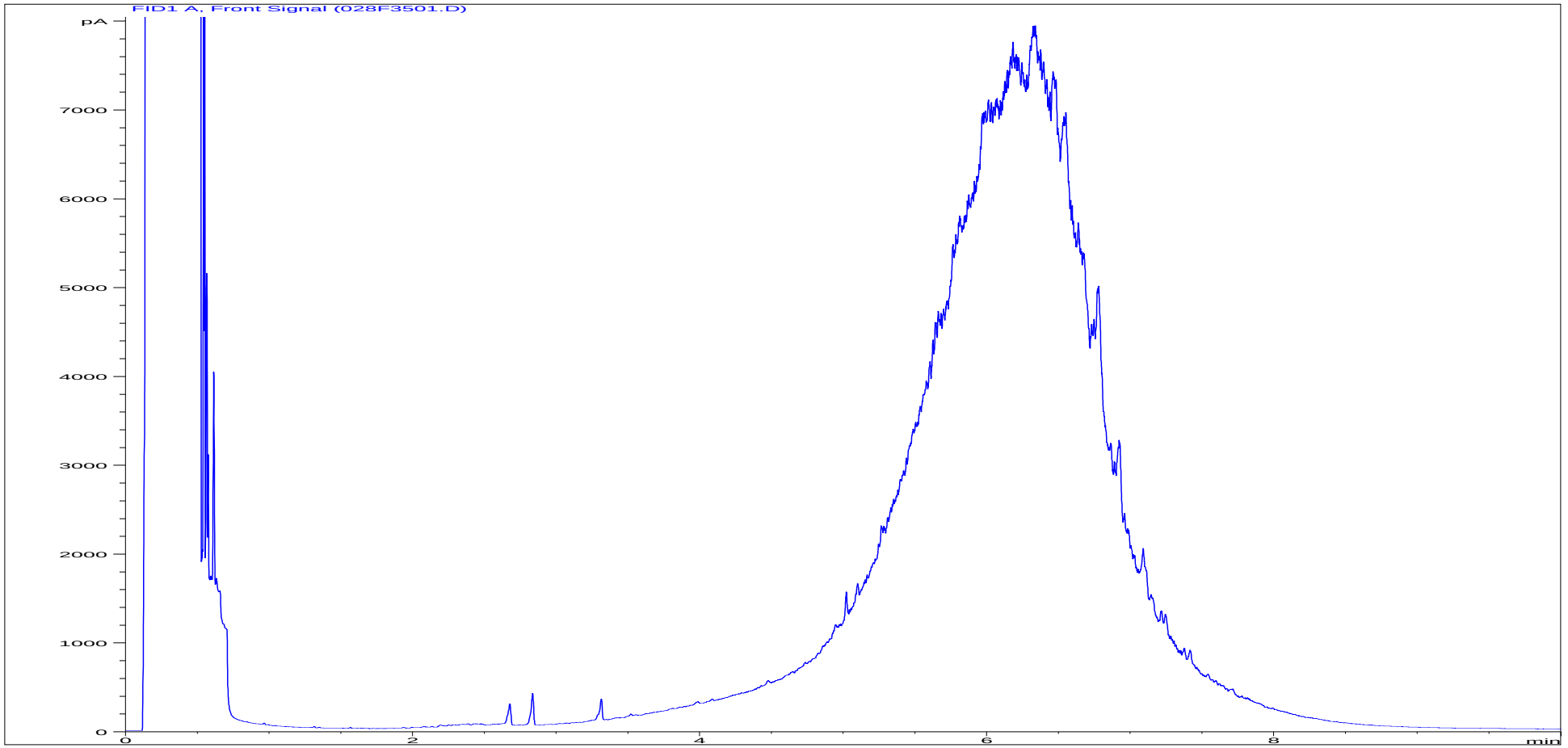
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1563679	**Job Number:**	W19_2802
Multiplier:	0.005	**Client:**	Environ UK Ltd
Dilution:	1	**Site:**	Sapa SPMP Round 23
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH1
Acquisition Date/Time:	03-Feb-15, 19:16:43		
Datafile:	D:\TES\DATA\Y2015\020315TPH_GC17\020315 2015-02-03 08-54-24\027F3401.D		

Where individual results are flagged see report notes for status.

Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1563680	**Job Number:**	W19_2802
Multiplier:	0.005	**Client:**	Environ UK Ltd
Dilution:	1	**Site:**	Sapa SPMP Round 23
Acquisition Method:	TPH_RUNF.M	**Client Sample Ref:**	BH12
Acquisition Date/Time:	03-Feb-15, 19:34:43		
Datafile:	D:\TES\DATA\Y2015\020315TPH_GC17\020315 2015-02-03 08-54-24\028F3501.D		

Where individual results are flagged see report notes for status.

Sample Analysis

ESG Environmental Chemistry
Analytical and Deviating Sample Overview

W192802

Customer Environ UK Ltd
Site Sapa SPMP Round 23
Report No W192802

Consignment No W83026
Date Logged 28-Jan-2015

Report Due 10-Feb-2015

ID Number	Description	Matrix Type	Sampled	MethodID	CUSTSERV	ICPMSW										ICPWATVAR				KONENS	SFAPI	TPHFID	WSLM3
					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 GC	pH units
						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EX/1563673	BH11	Groundwater	27/01/15																				
EX/1563674	MW2	Groundwater	27/01/15																				
EX/1563675	BH6	Groundwater	27/01/15																				
EX/1563676	BHS6	Groundwater	27/01/15																				
EX/1563677	BH4	Groundwater	27/01/15																				
EX/1563678	MW1	Groundwater	27/01/15																				
EX/1563679	BH1	Groundwater	27/01/15																				
EX/1563680	BH12	Groundwater	27/01/15																				

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.

Customer Environ UK Ltd
Site Sapa SPMP Round 23
Report No W192802

Consignment No W83026
Date Logged 28-Jan-2015

Report Due 10-Feb-2015

ID Number	Description	Matrix Type	Sampled	WSLM3 pH units
		MethodID		✓
EX/1563673	BH11	Groundwater	27/01/15	
EX/1563674	MW2	Groundwater	27/01/15	
EX/1563675	BH6	Groundwater	27/01/15	
EX/1563676	BHS6	Groundwater	27/01/15	
EX/1563677	BH4	Groundwater	27/01/15	
EX/1563678	MW1	Groundwater	27/01/15	
EX/1563679	BH1	Groundwater	27/01/15	
EX/1563680	BH12	Groundwater	27/01/15	

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.

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
ICPWATVAR	EX1563676	The matrix of this sample has been found to interfere with the result for this test. The sample has therefore been diluted to improve the signal to noise ratio but in doing so, the detection limit for this test has been elevated.

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	As Received	Determination of pentane extractable hydrocarbons in water by GCFID
Water	WSLM3	As Received	Determination of the pH of water samples by pH probe

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 105ºC 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^{o}C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile **TR** Denotes Tremolite
CR Denotes Crocidolite **AC** Denotes Actinolite
AM Denotes Amosite **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 Round 23

Report Number : W19_2802

Lab ID Number	Client ID	Description
EX/1563673	BH11	Groundwater
EX/1563674	MW2	Groundwater
EX/1563675	BH6	Groundwater
EX/1563676	BHS6	Groundwater
EX/1563677	BH4	Groundwater
EX/1563678	MW1	Groundwater
EX/1563679	BH1	Groundwater
EX/1563680	BH12	Groundwater