

Martyn Grant
Environmental Manager
The Royal Mint
Llantrisant
Pontyclun
CF72 8YT

Dear Martyn

**FACTUAL REPORT ON GROUNDWATER AND SURFACE WATER
SAMPLING IN OCTOBER 2015**

Date 02/11/2015

Ramboll Environ UK Limited ("Ramboll Environ") was instructed by The Royal Mint to carry out surface water sampling from selected locations in the Nant Mychydd River and groundwater sampling from selected boreholes in the area of Building 9A, the Coin Press Room ("CPR"), the COMAH area and the northern and southern site boundaries. This letter presents a factual report on the second of three scheduled rounds of monitoring to be undertaken from June 2015 to February 2016.

Ramboll Environ
8 Village Way
Tongwynlais
Cardiff
CF15 7NE
United Kingdom

T +44 292 054 3550
www.ramboll-environ.com

Background

Ref LUK17-21704_01_R2

Surface water monitoring during 2014/15 identified elevated concentrations of copper and zinc in the culverted stream that enters the Nant Mychydd (sampling points R7 and R7A). While the source of contamination is being investigated by The Royal Mint, Ramboll Environ recommended that the surface water monitoring programme should be continued from selected sampling points at a reduced frequency of once every four months, or until the contamination reduces to below the respective environmental quality standards (EQS).

Ramboll Environ also carried out groundwater sampling at the site, which has previously identified elevated concentrations of metals in several areas. With the exception of boreholes BH11 and BH12, elevated concentrations of nickel, copper and zinc have been identified in all boreholes monitored throughout 2014. The pH was also below [more acidic than] the acceptable EQS range at several locations across the site. It was recommended that monitoring should continue from selected boreholes at a frequency of once every four months, or until the contamination reduces to below the respective EQS.

Ramboll Environ UK Limited
Registered in England
Company No: 2331163
Registered Office:
Artillery House
11-19 Artillery Row
London
SW1P 1RT

Due to recorded results from boreholes BH11 and BH12 being stable and consistently below the EQS over the last few years; these boreholes have been removed from the monitoring programme and replaced with up gradient boreholes BH001, BH002 and COMAH area borehole BH801, which form part of the ongoing Site Protection and Monitoring Programme (SPMP). SPMP boreholes are monitored on an annual basis by Ramboll Environ.

Surface Water

Surface water samples were collected on the 12th October 2015 from five sampling locations on the Nant Mychydd River and the culverted watercourse that passes through the site (sampling points R1, R6, R7, R7A and C1), as shown on Figure 2. Samples were analysed for a range of metals, pH, cyanide and alkalinity at a UKAS accredited laboratory. The laboratory certificates of analysis are attached which provide the method of analysis for each determinand. The surface water analysis results from April 2011 to October 2015 are summarised in the attached table and are presented graphically on Figures 6, 7 and 8.

During the October 2015 monitoring, the concentration of copper exceeded the EQS of 0.006mg/l (for hardness between 50mg/l and 100mg/l) at sampling point R7A, where the culverted stream emerges from site prior to entering the Nant Mychydd. The concentration of copper also exceeded the EQS of 0.001mg/l (for hardness between 0mg/l and 50mg/l CaCO₃) at sampling point C1, where the watercourse to the north of the site is culverted under the site. It should be noted that sampling location C1 is upstream of the site.

The concentration of zinc was below the relevant (hardness dependant) EQS values at each surface water sampling location during the most recent round of monitoring. Concentrations of nickel were below the EQS value of 0.02mg/l at all surface water sampling locations.

TPH was detected in three samples during this monitoring round. Concentrations in samples C1 (located upstream of the site) and R7 (the Nant Mychydd, downstream of the site) were equal to the UK DWS of 0.01mg/l. The TPH concentration in sample R6 exceeded the UK DWS with a value of 0.13mg/l, located on the Nant Mychydd. TPH concentrations have remained relatively stable at the surface water sampling locations when compared to the previous round of monitoring in June 2015; however, slight increases have been observed in samples from R6 and R7.

Natural Resources Wales (formerly The Environment Agency Wales) has requested that rainfall data is collected at the time of sampling since this may influence the levels of contaminants in the receiving watercourse. In order to provide data for the October 2015 round of monitoring, weather station information for a location approximately 13km east of the site (weather station reference IMIDGLAM3) has been obtained (www.wunderground.com).

This data are presented in Table 1 below. Rainfall data has been provided for the five days preceding the monitoring visit and compared with the daily average rainfall for 13th September to 12th October 2015 and the daily average based on data from the same period in 2006 to 2014.

Table 1: Rainfall Data

Date	Rainfall data (mm)*	13 th September to 12 th October 2015 daily average (mm)*	2006 – 2014 September/October daily average (mm)*
07/10/15	0.5	3.0	2.7
08/10/15	0.0		
09/10/15	0.0		
10/10/15	0.0		
11/10/15	0.0		
12/10/15	0.0		
* Data gathered from 'IMIDGLAM3' weather station in Caerphilly located 13km East of site (www.wunderground.com) (accessed 19/10/15)			

The rainfall data indicates that rainfall in the period of 13th September to 12th October 2015 was close to the average for recent years. However, very little rainfall occurred during the five days preceding sampling.

Groundwater Sampling

Groundwater samples were collected from the following boreholes: BH8, BH10, BH13, BH32, BH001, BH002 and BH801 (shown on Figure 1). Samples were analysed for a range of metals, pH and alkalinity at a UKAS accredited laboratory. The laboratory certificates of analysis are attached which provide the method of analysis for each determinand. The analysis results are summarised in the attached table and are represented graphically on Figures 3, 4 and 5. Since the previous round of monitoring in June 2015, borehole BH901 has been decommissioned and removed as part of engineering works to the adjacent embankment. Due to the presence of ongoing engineering works, it was also not possible to access and sample borehole BH9 during the most recent sampling round.

The results have been benchmarked against previous analytical results from these monitoring wells and screened against EQS for freshwater. The results are summarised as follows:

- Borehole BH8 has been monitored since 2013. During the most recent round of monitoring, the concentrations of nickel (0.135mg/l), copper (0.168mg/l) and zinc (0.280mg/l) all exceeded their respective EQS values of 0.02mg/l for nickel, 0.006mg/l for copper and 0.050mg/l for zinc. Concentrations of these determinands have all slightly decreased since the previous round of monitoring in June 2015.
- Due to ongoing engineering works, it was not possible to sample boreholes BH901 (decommissioned) and BH9 during this round of monitoring.
- Due to the consistently stable concentrations of nickel, copper and zinc (below their respective EQS values) in boreholes BH11 and BH12; these sampling locations have been removed from the monitoring programme for 2015/2016.
- Concentrations of nickel, copper and zinc in borehole BH10 have remained similar to the lower concentrations first recorded in October 2014. However, the concentration of nickel (0.020mg/l)

was recorded at a concentration equal to the EQS value during the most recent round of monitoring. The concentration of copper (0.015mg/l) was recorded slightly above the relevant EQS value of 0.06mg/l. Whilst the overall concentration of zinc has increased since the previous round of monitoring, the recorded concentration (0.048mg/l) is slightly below the relevant EQS of 0.050mg/l.

- In BH32, concentrations of nickel (0.200mg/l) and zinc (0.459mg/l) have slightly increased since the previous round of monitoring in June 2015 and remain above the relevant EQS of 0.02mg/l and 0.050mg/l respectively. The concentration of copper (0.005mg/l) has remained relatively unchanged since the previous round of monitoring; below the relevant EQS of 0.006mg/l.
- Concentrations of nickel (0.102mg/l), copper (0.059mg/l) and zinc (0.227mg/l) in borehole BH13 have remained similar to the previous round of monitoring in June 2015. Concentrations remain above the relevant EQS for these determinands.
- Groundwater monitoring wells BH001, BH002 and BH801, all located in the north of the site and included within ongoing SPMP groundwater sampling, are included in the 2015/2016 rounds of monitoring. Historically, concentrations of nickel, copper and zinc have all exceeded their respective EQS values in each of these sampling locations.
 - Borehole BH001 (located at the northern site boundary) recorded concentrations of nickel (0.086mg/l), copper (0.024mg/l) and zinc (0.160mg/l) that all exceed the relevant EQS during the most recent round of monitoring in October 2015.
 - Borehole BH801 (located adjacent to the copper plating building) recorded concentrations of nickel (0.031mg/l), copper (0.101mg/l) and zinc (0.776mg/l) in exceedance of their respective EQS values. However, concentrations of copper and zinc have decreased since the previous round of monitoring in June 2015.
 - Concentrations of nickel, copper and zinc were all recorded below the relevant EQS values in BH002 (located at the northern site boundary).
- Total chromium was not detected above the EQS value of 0.0047mg/l within any of the monitoring wells in the most recent monitoring round.
- The concentration of cadmium was recorded above the laboratory LOD (0.0001mg/l) in all boreholes except BH001, BH002, BH801 and BH10; with a maximum recorded value of 0.008mg/l in BH8. All reported values were above the EQS value of 0.00008mg/l.
- The following determinands did not exceed the screening criteria in any of the boreholes: lead, arsenic, boron, mercury, selenium and vanadium.
- Low (acidic) pH values (<pH 6) were detected in samples from BH8 (pH 5.6) only. Samples from these and several other locations have regularly recorded low pH values throughout the monitoring programme.

The next round of surface water and groundwater monitoring is due to be carried out in the first week of February 2016. Please do not hesitate to contact me if there is anything you wish to discuss.

Yours sincerely



Lucy Cleverley

D 02920 543550
M 07713 311202
lcleverley@ramboll.com

Encl. Laboratory Testing Certificates
 Summary of Surface Water Monitoring Results
 Summary of Groundwater Monitoring Results
 Figure 1: Groundwater Sampling Borehole Location Plan
 Figure 2: River Sampling Locations
 Figure 3: Copper Graphical Representations – Groundwater
 Figure 4: Nickel Graphical Representations – Groundwater
 Figure 5: Zinc Graphical Representations – Groundwater
 Figure 6: Copper Graphical Representations – Surface Water
 Figure 7: Nickel Graphical Representations – Surface Water
 Figure 8: Zinc Graphical Representations – Surface Water

Our Ref: EXR/207486 (Ver. 2)

Your Ref: UK17-21704

October 26, 2015



Environmental Chemistry

ESG

Bretby Business Park

Ashby Road

Burton-on-Trent

Staffordshire

DE15 0YZ

Telephone: 01283 554400

Facsimile: 01283 554422

Ms L Cleverley
Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

For the attention of Ms L Cleverley

Dear Ms Cleverley

Sample Analysis - Royal Mint Monitoring 2015

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

L Bosworth
Project Co-ordinator
01283 554362

TEST REPORT



Report No. EXR/207486 (Ver. 2)

Ramboll Environ
8 Village Way
Cardiff
CF15 2NE

Site: Royal Mint Monitoring 2015

The 13 samples described in this report were registered for analysis by ESG on 13-Oct-2015. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 26-Oct-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:

Table 1 Main Analysis Results (Pages 2 to 3)
GC-FID Chromatograms (Pages 4 to 8)
Analytical and Deviating Sample Overview (Pages 9 to 10)
Table of Method Descriptions (Page 11)
Table of Report Notes (Page 12)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
ESG :
Declan Burns


Managing Director
Multi-Sector Services

Date of Issue: 26-Oct-2015

Tests marked '^' have been subcontracted to another laboratory.

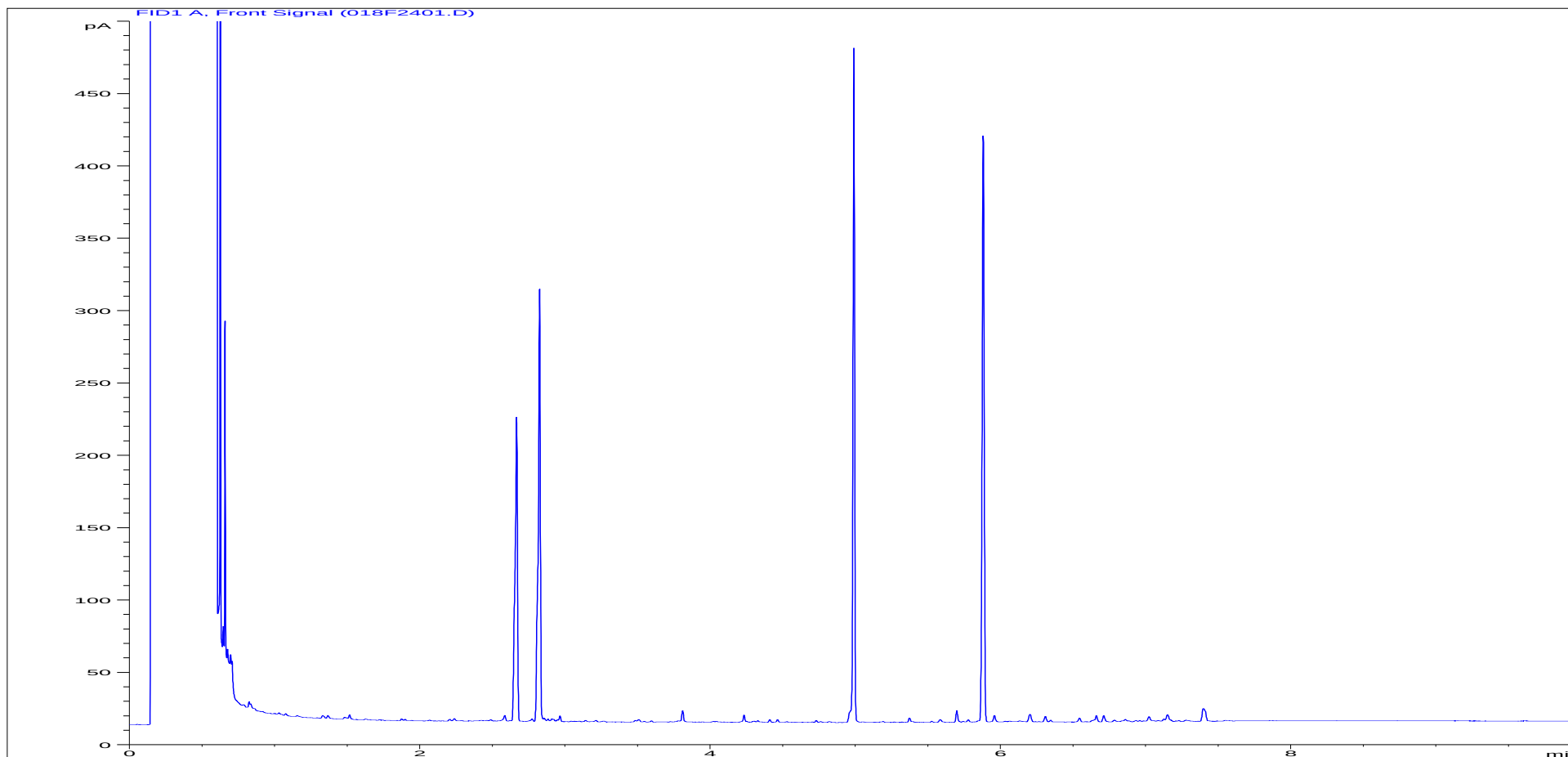
Where samples have been flagged as deviant on the Analytical and Deviating Sample Overview, for any reason, the data may not be representative of the sample at the point of sampling and the validity of the data may be affected.

ESG accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for status.

Units : Method Codes : Method Reporting Limits : UKAS Accredited :			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				
			WSLM3	WSLM12	Calc HD	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW			
					7	1	1	0.01	0.001	0.001	0.0001	0.001	0.001	0.002	0.001	0.01	0.0001	0.001				
			Yes	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 Alkalinity as CaCO3 w	Total Hardness as CaCO3	Calcium as Ca (Dissolved) a	Magnesium as Mg (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)				
1631140	BH002	12-Oct-15 09:45	6.2	33	45	8	6	<0.01	0.005	0.001	<0.0001	<0.001	<0.001	0.006	<0.001	<0.01	<0.0001	<0.001				
1631141	BH801	12-Oct-15 10:15	6.6	57	52	11	6	0.03	0.031	<0.001	<0.0001	0.101	<0.001	0.776	<0.001	<0.01	<0.0001	<0.001				
1631142	BH10	12-Oct-15 11:00	6.7	38	85	24	6	0.04	0.02	0.001	<0.0001	0.015	<0.001	0.048	<0.001	<0.01	<0.0001	<0.001				
1631143	BH32	12-Oct-15 11:15	6.4	32	87	25	6	0.02	0.2	0.001	0.0003	0.005	<0.001	0.459	<0.001	0.03	<0.0001	<0.001				
1631144	BH8	12-Oct-15 11:45	5.6	4	59	17	4	0.02	0.135	0.001	0.0008	0.168	<0.001	0.28	<0.001	<0.01	<0.0001	<0.001				
1631145	BH001	12-Oct-15 12:30	6.9	91	91	25	7	<0.01	0.086	<0.001	<0.0001	0.024	<0.001	0.16	<0.001	<0.01	<0.0001	<0.001				
1631146	BH13	12-Oct-15 13:15	6.1	4	40	11	3	0.04	0.102	<0.001	0.0003	0.059	<0.001	0.227	<0.001	<0.01	<0.0001	<0.001				
1631147	C1	12-Oct-15 14:00	7.6	40	42	12	3	<0.01	0.003	<0.001	<0.0001	0.002	<0.001	0.007	<0.001	<0.01	<0.0001	<0.001				
1631148	R1	12-Oct-15 14:15	7.4	58	68	19	5	0.01	0.003	<0.001	<0.0001	<0.001	<0.001	0.006	<0.001	<0.01	<0.0001	<0.001				
1631149	R6	12-Oct-15 14:40	7.5	62	76	22	5	0.01	0.002	<0.001	<0.0001	<0.001	<0.001	0.003	<0.001	<0.01	<0.0001	<0.001				
1631150	R7	12-Oct-15 14:50	7.7	56	68	19	5	0.01	0.01	<0.001	<0.0001	0.004	<0.001	0.027	<0.001	<0.01	<0.0001	<0.001				
1631151	R7A	12-Oct-15 15:00	7.5	46	56	16	4	<0.01	0.006	<0.001	<0.0001	0.012	<0.001	0.018	<0.001	<0.01	<0.0001	<0.001				
1631152	CC1	12-Oct-15 15:00	7.7	49	59	17	4	<0.01	0.005	0.001	<0.0001	0.012	<0.001	0.01	<0.001	<0.01	<0.0001	<0.001				
 Bretby Business Park, Ashby Road Burton-on-Trent, Staffordshire, DE15 0YZ Tel +44 (0) 1283 554400 Fax +44 (0) 1283 554422			Client Name		Ramboll Environ							Sample Analysis										
			Contact		Ms L Cleverley																	
			Royal Mint Monitoring 2015										Date Printed		26-Oct-2015							
													Report Number		EXR/207486							
													Table Number		1							

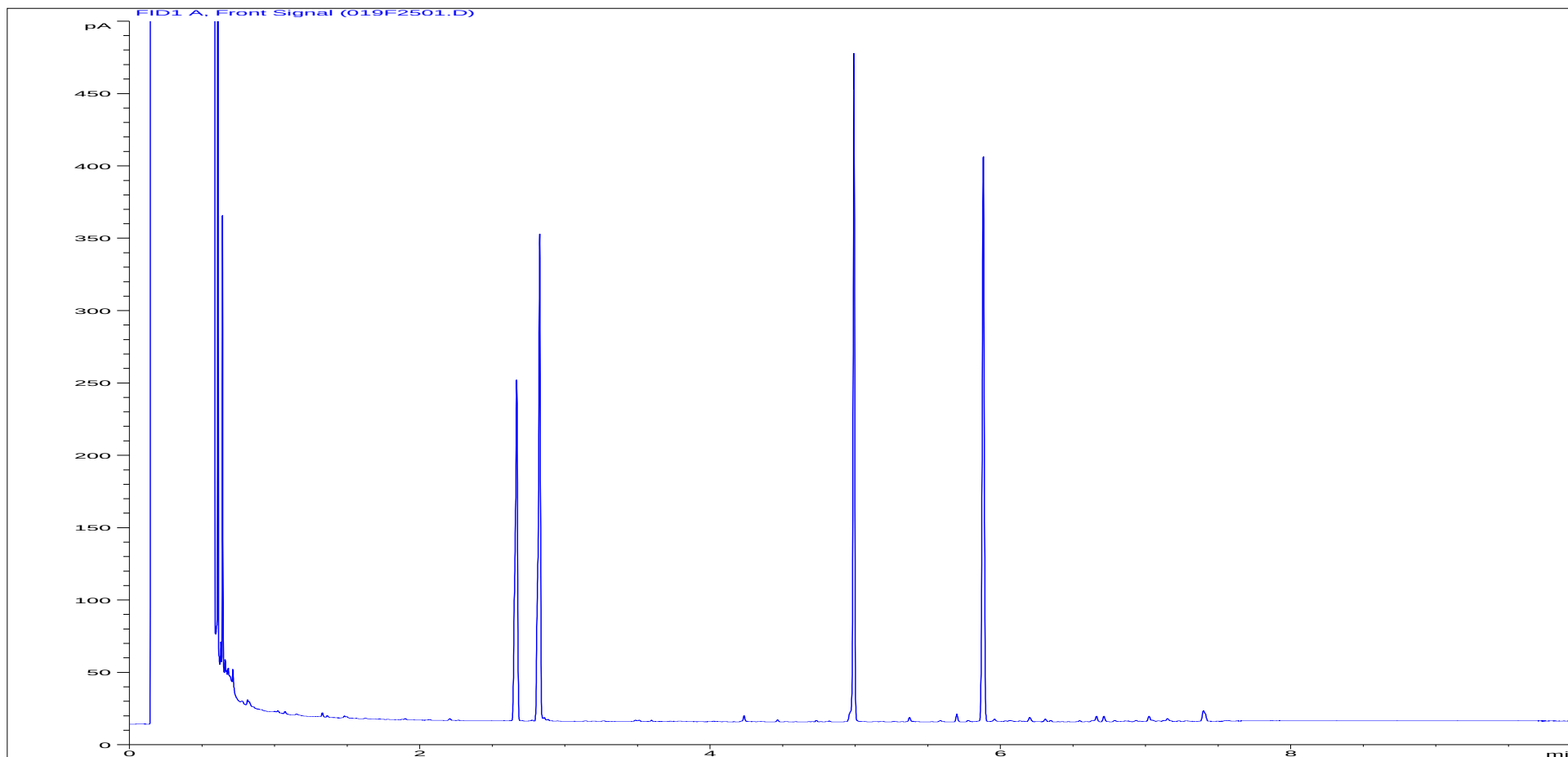
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1631147	Job Number:	W20_7486
Multiplier:	0.005	Client:	Ramboll Environ
Dilution:	1	Site:	Royal Mint Monitoring 2015
Acquisition Method:	TPH_RUNF.M	Client Sample Ref:	C1
Acquisition Date/Time:	16-Oct-15, 15:28:19		
Datafile:	D:\TES\DATA\Y2015\101615TPH_GC15\101615 2015-10-16 09-07-04\018F2401.D		

Where individual results are flagged see report notes for status.

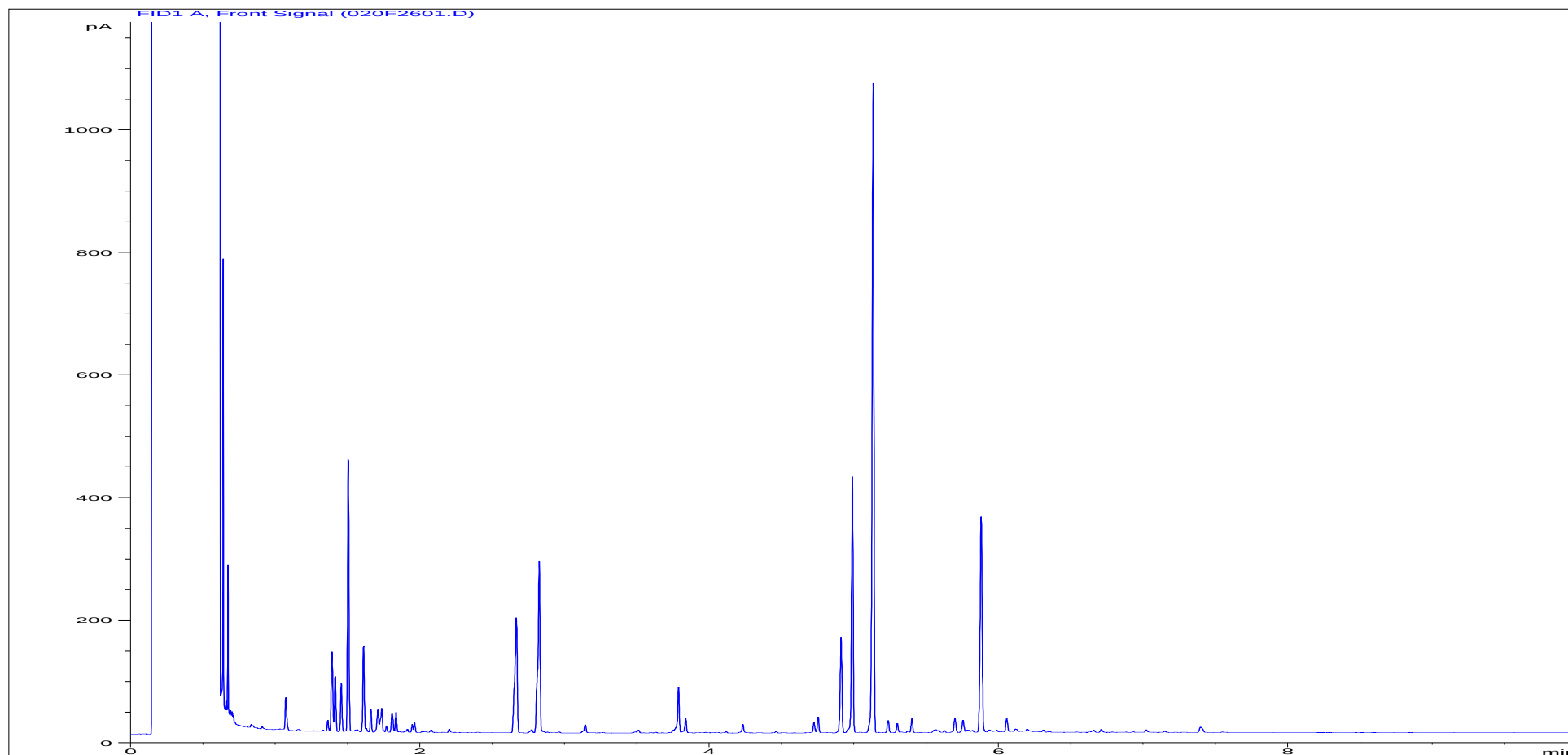
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1631148	Job Number:	W20_7486
Multiplier:	0.005	Client:	Ramboll Environ
Dilution:	1	Site:	Royal Mint Monitoring 2015
Acquisition Method:	TPH_RUNF.M	Client Sample Ref:	R1
Acquisition Date/Time:	16-Oct-15, 15:44:56		
Datafile:	D:\TES\DATA\Y2015\101615TPH_GC15\101615 2015-10-16 09-07-04\019F2501.D		

Where individual results are flagged see report notes for status.

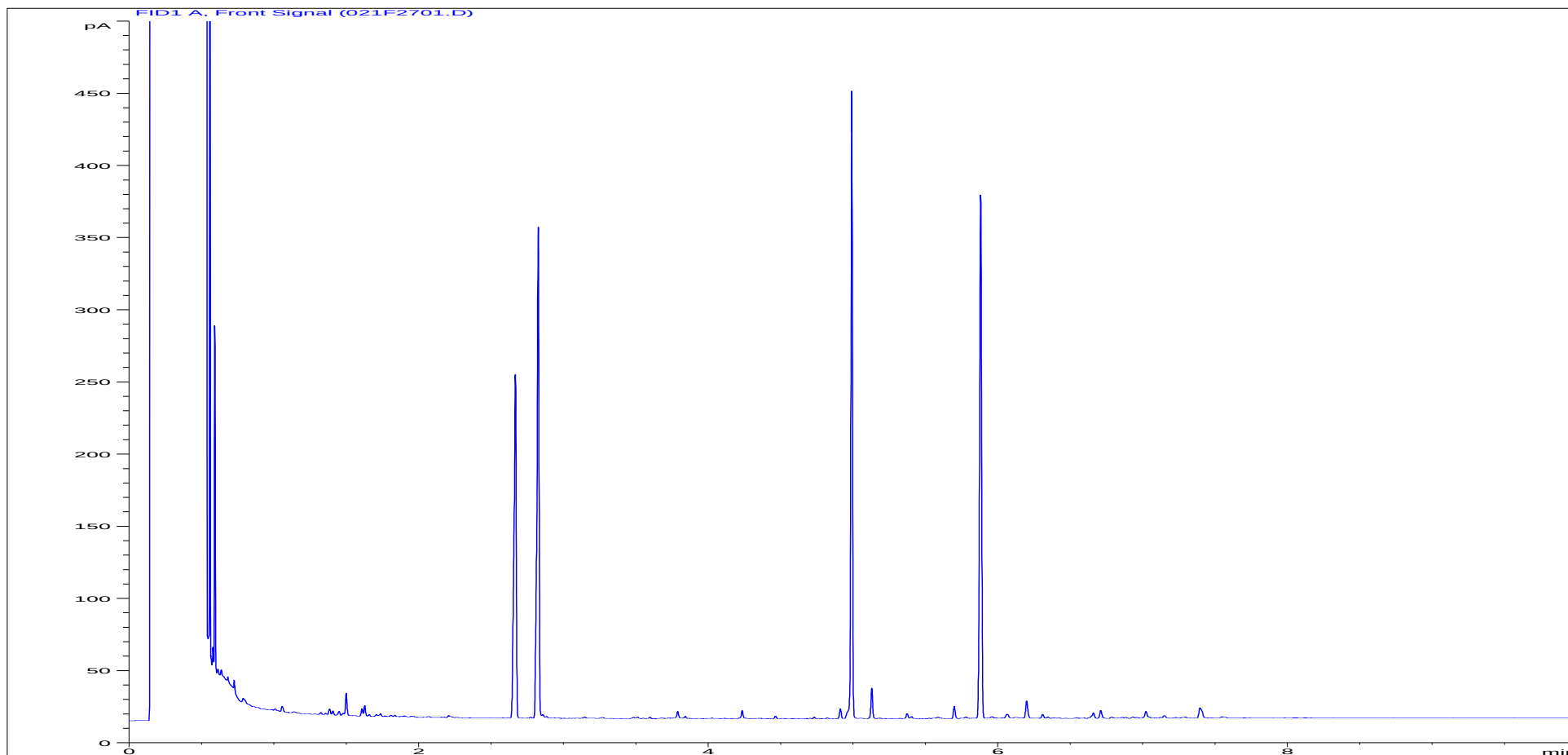
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1631149	Job Number:	W20_7486
Multiplier:	0.005	Client:	Ramboll Environ
Dilution:	1	Site:	Royal Mint Monitoring 2015
Acquisition Method:	TPH_RUNF.M	Client Sample Ref:	R6
Acquisition Date/Time:	16-Oct-15, 16:01:31		
Datafile:	D:\TES\DATA\Y2015\101615TPH_GC15\101615 2015-10-16 09-07-04\020F2601.D		

Where individual results are flagged see report notes for status.

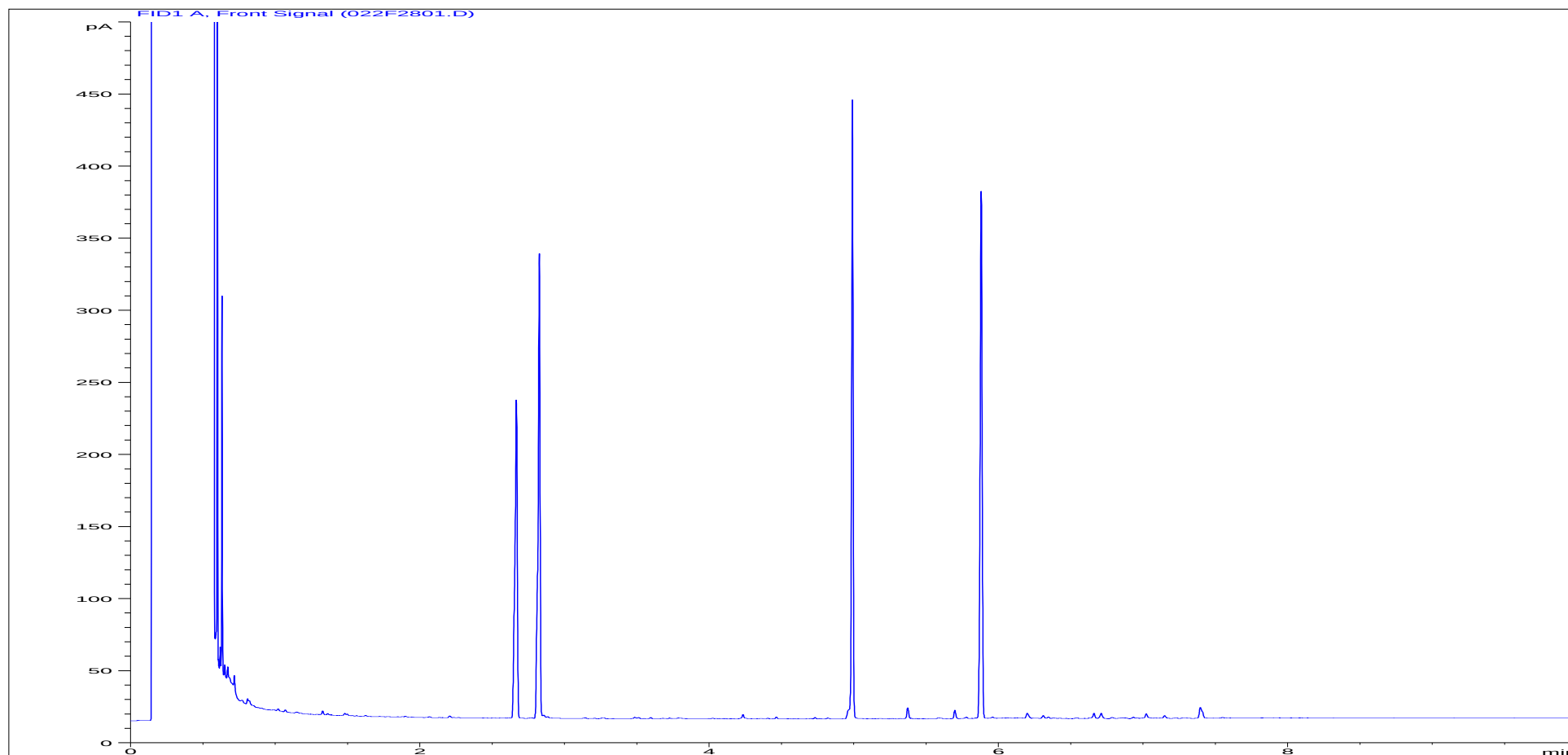
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1631150	Job Number:	W20_7486
Multiplier:	0.005	Client:	Ramboll Environ
Dilution:	1	Site:	Royal Mint Monitoring 2015
Acquisition Method:	TPH_RUNF.M	Client Sample Ref:	R7
Acquisition Date/Time:	16-Oct-15, 16:18:04		
Datafile:	D:\TES\DATA\Y2015\101615TPH_GC15\101615 2015-10-16 09-07-04\021F2701.D		

Where individual results are flagged see report notes for status.

Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1631151	Job Number:	W20_7486
Multiplier:	0.005	Client:	Ramboll Environ
Dilution:	1	Site:	Royal Mint Monitoring 2015
Acquisition Method:	TPH_RUNF.M	Client Sample Ref:	R7A
Acquisition Date/Time:	16-Oct-15, 16:34:44		
Datafile:	D:\TES\DATA\Y2015\101615TPH_GC15\101615 2015-10-16 09-07-04\022F2801.D		

Where individual results are flagged see report notes for status.

Sample Analysis

ESG Environmental Chemistry
Analytical and Deviating Sample Overview

W207486

Customer Ramboll Environ
Site Royal Mint Monitoring 2015
Report No W207486

Consignment No W94501
Date Logged 13-Oct-2015

Report Due 26-Oct-2015

ID Number	Description	MethodID		Calc. HD	CUST SERV	ICPMSW	ICPMSW/AR														KONENS
		Matrix Type	Sampled				Total Hardness as CaCO3 (CALC)	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)	Calcium as Ca (Dissolved) VAR	Magnesium as Mg (Dissolved) VAR	Barium as Ba (Dissolved) VAR
				✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EX/1631140	BH002	Groundwater	12/10/15																		
EX/1631141	BH801	Groundwater	12/10/15																		
EX/1631142	BH10	Groundwater	12/10/15																		
EX/1631143	BH32	Groundwater	12/10/15																		
EX/1631144	BH8	Groundwater	12/10/15																		
EX/1631145	BH001	Groundwater	12/10/15																		
EX/1631146	BH13	Groundwater	12/10/15																		
EX/1631147	C1	Surface Water	12/10/15																		
EX/1631148	R1	Surface Water	12/10/15																		
EX/1631149	R6	Surface Water	12/10/15																		
EX/1631150	R7	Surface Water	12/10/15																		
EX/1631151	R7A	Surface Water	12/10/15																		
EX/1631152	CC1	Surface Water	12/10/15																		

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

Sample Analysis

ESG Environmental Chemistry
Analytical and Deviating Sample Overview

W207486

Customer Ramboll Environ
Site Royal Mint Monitoring 2015
Report No W207486

Consignment No W94501
Date Logged 13-Oct-2015

Report Due 26-Oct-2015

ID Number	Description	MethodID		SFAPI	TPH/FID	WSL M12	WSL M3
		Matrix Type	Sampled	Cyanide (Total) as CN SFA	TPH GC	Total Alkalinity as CaCO3	pH units
				✓	✓	✓	✓
EX/1631140	BH002	Groundwater	12/10/15				
EX/1631141	BH801	Groundwater	12/10/15				
EX/1631142	BH10	Groundwater	12/10/15				
EX/1631143	BH32	Groundwater	12/10/15				
EX/1631144	BH8	Groundwater	12/10/15				
EX/1631145	BH001	Groundwater	12/10/15				
EX/1631146	BH13	Groundwater	12/10/15				
EX/1631147	C1	Surface Water	12/10/15				
EX/1631148	R1	Surface Water	12/10/15				
EX/1631149	R6	Surface Water	12/10/15				
EX/1631150	R7	Surface Water	12/10/15				
EX/1631151	R7A	Surface Water	12/10/15				
EX/1631152	CC1	Surface Water	12/10/15				

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	
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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

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	Calc HD	As Received	Calculation based on Dissolved metals analysis by ICPOES
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	WSLM12	As Received	Titration with Sulphuric Acid to required pH
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/cm³@ 15°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 Anthophyllite

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

▯ 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 : Ramboll Environ
Site : Royal Mint Monitoring 2015
Report Number : W20_7486

[illegible]

Table 2: Surface Water Monitoring 2015-2016 (UK17-21704) - Summary of Results

Sample Point	Date	Analysis															
		pH	CaCO3 mg/l	Sulphate (dissolved) mg/l	Nickel (dissolved) mg/l	Chromium (dissolved) mg/l	Cadmium (dissolved) mg/l	Copper (dissolved) mg/l	Lead (dissolved) mg/l	Zinc (dissolved) mg/l	Arsenic (dissolved) mg/l	Boron (dissolved) mg/l	Mercury (dissolved) mg/l	Selenium (dissolved) mg/l	Vanadium (dissolved) mg/l	Cyanide (total) (mg/l)	TPH (mg/l)
R1	Jan-10	7.5	NT	9	<0.001	0.001	<0.0001	<0.001	<0.001	0.005	<0.001	<0.01	<0.0001	<0.001	<0.002	<0.02	0.06
	May-10	7.9	NT	9	0.001	<0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	0.02	<0.0001	<0.001	<0.002	0.03	<0.01
	Jun-10	7.5	NT	13	0.001	0.002	<0.0001	<0.001	<0.001	<0.002	<0.001	0.01	<0.0001	<0.001	<0.002	<0.02	<0.01
	Aug-10	7.5	NT	21	0.001	0.002	<0.0001	<0.001	<0.001	<0.002	<0.001	0.02	<0.0001	<0.001	0.001	<0.02	0.01
	Oct-10	7.7	NT	10	<0.001	0.001	<0.0001	0.001	<0.001	<0.002	<0.001	0.02	<0.0001	0.002	<0.001	<0.02	0.01
	Dec-10	7.6	NT	12	<0.001	0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Apr-11	7.4	56	NT	0.001	0.001	<0.0001	0.002	<0.001	0.004	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.03
	May-11	7.6	21	NT	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	0.41	<0.0001	<0.001	<0.001	<0.02	0.02
	Jul-11	8	61	NT	<0.001	0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	<0.01	<0.0001	<0.001	0.0001	<0.02	0.02
	Sep-11	7.5	64	NT	0.001	0.003	<0.0001	<0.001	<0.001	0.009	<0.001	0.06	<0.0001	0.001	<0.001	<0.02	0.02
	Nov-11	8.6	61	NT	0.001	0.002	<0.0001	0.001	<0.001	0.003	<0.001	0.03	<0.0001	<0.001	0.001	<0.02	0.01
	Jan-12	8.1	52	NT	0.001	0.005	<0.0001	0.001	<0.001	0.005	<0.001	0.02	<0.0001	<0.001	0.002	<0.02	0.01
	Mar-12	8.2	51	NT	0.001	0.002	<0.0001	0.002	<0.001	0.006	<0.001	<0.01	<0.0001	<0.001	0.001	<0.02	<0.01
	May-12	8	39	NT	0.001	0.001	<0.0001	0.002	<0.001	0.009	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.016
	Jul-12	7.7	45	NT	0.002	<0.001	<0.0001	0.002	<0.001	0.009	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.01
	Sep-12	7.8	47	NT	0.001	0.001	<0.0001	0.002	<0.001	0.006	<0.001	0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Nov-12	7.8	53	NT	0.001	<0.001	<0.0001	<0.001	<0.001	0.006	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.02
	Jan-13	7.5	58	NT	<0.001	<0.001	<0.0001	<0.001	<0.001	0.005	<0.001	0.03	<0.0001	<0.001	0.001	<0.02	0.02
	Apr-13	7.7	46	NT	<0.001	0.001	<0.0001	<0.001	<0.001	0.003	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.02
	May-13	8	62	NT	<0.001	0.001	<0.0001	<0.001	<0.001	0.003	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Jul-13	7.6	68	NT	0.001	0.001	<0.0001	0.003	<0.001	0.005	<0.001	<0.01	<0.0001	<0.001	0.001	<0.02	0.105
	Oct-13	7.2	55	NT	0.001	0.001	<0.0001	0.001	<0.001	0.006	<0.001	<0.01	<0.0001	<0.001	0.001	<0.02	<0.01
	Nov-13	7.7	62	NT	<0.001	<0.001	<0.0001	<0.001	<0.001	0.004	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Jan-14	7.2	36	NT	<0.001	<0.001	<0.0001	<0.001	<0.001	0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.01
	Jun-14	6.9	60	NT	0.001	<0.001	<0.0001	0.001	<0.001	0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.03
	Oct-14	8.1	50	NT	0.001	<0.001	<0.0001	0.002	<0.001	0.008	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.02
	Feb-15	7.4	53	NT	<0.001	<0.001	<0.0001	<0.001	<0.001	0.003	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Jun-15	7.4	38	NT	0.005	<0.001	<0.0001	0.001	<0.001	0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Oct-15	7.4	68	NT	0.003	<0.001	<0.0001	<0.001	<0.001	0.006	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
R6	Jan-10	7.5	NT	9	0.001	0.001	<0.0001	<0.001	<0.001	0.002	<0.001	<0.01	0.0001	<0.001	<0.002	<0.02	0.64
	May-10	7.6	NT	10	0.002	<0.001	<0.0001	<0.001	<0.001	0.003	<0.001	0.02	<0.0001	<0.001	<0.002	0.24	<0.01
	Jun-10	7.5	NT	14	0.002	0.002	<0.0001	<0.001	<0.001	0.002	<0.001	0.01	<0.0001	<0.001	<0.002	<0.02	<0.01
	Aug-10	7.7	NT	22	0.001	0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	0.02	<0.0001	<0.001	<0.001	<0.02	0.01
	Oct-10	7.7	NT	11	0.001	0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Dec-10	7.4	NT	11	0.001	0.001	<0.0001	<0.001	<0.001	0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Apr-11	7.4	52	NT	0.002	0.001	<0.0001	0.002	<0.001	0.004	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.04
	May-11	7.4	23	NT	0.001	<0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	0.39	<0.0001	<0.001	<0.001	<0.02	0.04
	Jul-11	7.2	71	NT	<0.001	0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	<0.01	<0.0001	<0.001	0.001	<0.02	0.02
	Sep-11	7.7	64	NT	0.001	0.001	<0.0001	<0.001	<0.001	0.003	<0.001	0.04	<0.0001	<0.001	<0.001	<0.02	0.01
	Nov-11	7.7	61	NT	0.002	0.002	<0.0001	0.002	<0.001	0.003	<0.001	0.03	<0.0001	<0.001	0.002	<0.02	0.02
	Jan-12	8	57	NT	0.002	0.003	<0.0001	0.002	<0.001	0.008	<0.001	0.02	<0.0001	<0.001	0.002	<0.02	0.02
	Mar-12	8.2	57	NT	0.001	0.002	<0.0001	<0.001	<0.001	0.004	<0.001	<0.01	<0.0001	<0.001	0.001	<0.02	0.02
	May-12	7.9	50	NT	0.001	0.002	<0.0001	0.002	<0.001	0.014	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.016
	Jul-12	7.7	56	NT	0.002	<0.001	<0.0001	0.001	<0.001	0.005	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Sep-12	7.9	53	NT	0.001	0.001	<0.0001	0.001	<0.001	<0.002	<0.001	0.01	<0.0001	<0.001	<0.001	<0.02	0.01
	Nov-12	7.9	64	NT	0.001	<0.001	<0.0001	<0.001	<0.001	0.003	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.02
	Jan-13	7.6	65	NT	0.001	<0.001	<0.0001	0.001	<0.001	0.025	<0.001	0.03	<0.0001	<0.001	0.001	<0.02	0.02
	Apr-13	7.8	51	NT	<0.001	0.007	<0.0001	<0.001	<0.001	<0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.01
	May-13	8	74	NT	<0.001	0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Jul-13	7.6	74	NT	0.002	0.001	<0.0001	0.001	<0.001	0.004	<0.001	<0.01	<0.0001	<0.001	0.001	<0.02	0.019
	Oct-13	7.3	52	NT	0.001	<0.001	<0.0001	0.001	<0.001	0.008	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Nov-13	7.7	77	NT	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Jan-14	7.5	42	NT	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.01
	Jun-14	6.9	50	NT	0.002	<0.001	0.0001	0.003	<0.001	0.018	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.04
	Oct-14	8.1	34	NT	0.001	<0.001	<0.0001	0.004	<0.001	0.087	<0.001	0.01	<0.0001	<0.001	0.001	<0.02	0.15
	Feb-15	7.3	53	NT	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Jun-15	7.4	40	NT	0.005	<0.001	<0.0001	0.001	<0.001	0.003	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Oct-15	7.5	76	NT	0.002	<0.001	<0.0001	<0.001	<0.001	0.003	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.13

		Analysis															
Sample Point	Date	pH	CaCO3 mg/l	Sulphate (dissolved) mg/l	Nickel (dissolved) mg/l	Chromium (dissolved) mg/l	Cadmium (dissolved) mg/l	Copper (dissolved) mg/l	Lead (dissolved) mg/l	Zinc (dissolved) mg/l	Arsenic (dissolved) mg/l	Boron (dissolved) mg/l	Mercury (dissolved) mg/l	Selenium (dissolved) mg/l	Vanadium (dissolved) mg/l	Cyanide (total) (mg/l)	TPH (mg/l)
R7	Jan-10	7.7	NT	7	0.005	0.003	<0.0001	0.01	<0.001	0.009	<0.001	0.01	0.0001	<0.001	<0.002	<0.02	<0.01
	May-10	8	NT	14	0.019	<0.001	<0.0001	0.039	<0.001	0.097	<0.001	0.01	<0.0001	<0.001	<0.002	0.05	<0.01
	Jun-10	7.5	NT	18	0.013	0.002	<0.0001	0.028	<0.001	0.071	<0.001	0.01	<0.0001	<0.001	<0.002	<0.02	<0.01
	Aug-10	7.8	NT	29	0.008	0.001	<0.0001	0.011	<0.001	0.017	<0.001	0.03	<0.0001	<0.001	0.001	<0.02	<0.01
	Oct-10	7.7	NT	20	0.004	0.001	<0.0001	0.007	<0.001	0.009	<0.001	0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Dec-10	7.4	NT	12	0.004	0.001	<0.0001	0.008	<0.001	0.012	<0.001	0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Apr-11	7.5	47	NT	0.017	0.001	<0.0001	0.039	<0.001	0.037	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.03
	May-11	7.7	29	NT	0.011	<0.001	<0.0001	0.023	<0.001	0.038	<0.001	0.39	<0.0001	<0.001	<0.001	<0.02	0.03
	Jul-11	7.4	61	NT	0.003	0.001	<0.0001	0.007	<0.001	0.004	<0.001	<0.01	<0.0001	<0.001	0.001	<0.02	0.02
	Sep-11	7.7	50	NT	0.019	0.001	<0.0001	0.017	<0.001	0.012	<0.001	0.03	<0.0001	<0.001	<0.001	<0.02	<0.01
	Nov-11	7.7	59	NT	0.009	0.002	<0.0001	0.009	<0.001	0.008	<0.001	0.03	<0.0001	<0.001	0.001	<0.02	0.02
	Jan-12	8	52	NT	0.001	0.003	<0.0001	<0.001	<0.001	0.005	<0.001	0.01	<0.0001	<0.001	0.002	<0.02	0.01
	Mar-12	8.1	37	NT	0.006	0.001	<0.0001	0.009	<0.001	0.009	<0.001	<0.01	<0.0001	<0.001	0.001	<0.02	<0.01
	May-12	7.9	46	NT	0.002	0.001	<0.0001	0.003	<0.001	0.006	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.022
	Jul-12	7.7	38	NT	0.008	<0.001	<0.0001	0.013	<0.001	0.016	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.02
	Sep-12	7.9	54	NT	0.002	0.001	<0.0001	0.001	<0.001	0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Nov-12	7.8	51	NT	0.002	<0.001	<0.0001	0.003	<0.001	0.004	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.02
	Jan-13	7.6	49	NT	0.005	<0.001	<0.0001	0.01	<0.001	0.023	<0.001	0.03	<0.0001	<0.001	0.001	<0.02	0.02
	Apr-13	7.8	48	NT	0.002	0.001	<0.0001	0.004	<0.001	0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.02
	May-13	8.1	54	NT	0.003	<0.001	<0.0001	0.007	<0.001	0.007	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.01
	Jul-13	7.6	72	NT	0.002	0.002	<0.0001	0.003	<0.001	0.005	<0.001	<0.01	<0.0001	<0.001	0.001	<0.02	0.031
	Oct-13	7.3	57	NT	0.001	<0.001	<0.0001	0.002	<0.001	0.005	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Nov-13	7.7	69	NT	0.002	<0.001	<0.0001	0.004	<0.001	0.004	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.01
	Jan-14	7.4	36	NT	<0.001	<0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.01
	Jun-14	7	55	NT	0.002	<0.001	<0.0001	0.003	<0.001	0.004	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.03
	Oct-14	8.1	33	NT	0.012	0.001	<0.0001	0.043	0.002	0.093	<0.001	0.01	<0.0001	<0.001	0.001	<0.02	1.04
	Feb-15	7.3	49	NT	0.002	<0.001	<0.0001	0.004	<0.001	0.004	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.01
	Jun-15	7.4	44	NT	0.005	<0.001	<0.0001	0.001	<0.001	0.003	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Oct-15	7.7	68	NT	0.01	<0.001	<0.0001	0.004	<0.001	0.027	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.01
R7A	Jan-10	7.8	NT	7	0.004	0.001	<0.0001	0.009	<0.001	0.009	<0.001	<0.01	0.0001	<0.001	<0.002	<0.02	0.25
	May-10	8.1	NT	14	0.021	<0.001	<0.0001	0.041	<0.001	0.113	<0.001	<0.01	<0.0001	<0.001	<0.002	0.03	0.02
	Jun-10	7.5	NT	16	0.013	0.002	<0.0001	0.027	<0.001	0.085	<0.001	0.01	<0.0001	<0.001	<0.002	<0.02	<0.01
	Aug-10	7.8	NT	32	0.013	0.001	<0.0001	0.017	<0.001	0.04	<0.001	0.03	<0.0001	<0.001	<0.001	<0.02	<0.01
	Oct-10	7.7	NT	19	0.004	0.001	<0.0001	0.007	<0.001	0.009	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Dec-10	7.5	NT	15	0.008	0.001	<0.0001	0.015	<0.001	0.033	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Apr-11	7.5	47	NT	0.017	0.001	<0.0001	0.038	<0.001	0.037	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.03
	May-11	7.7	29	NT	0.011	<0.001	<0.0001	0.022	<0.001	0.036	<0.001	0.38	<0.0001	<0.001	<0.001	<0.02	0.02
	Jul-11	7.5	56	NT	0.008	0.001	<0.0001	0.018	<0.001	0.014	<0.001	<0.01	<0.0001	<0.001	0.001	<0.02	0.01
	Sep-11	7.4	50	NT	0.021	0.001	<0.0001	0.018	<0.001	0.012	<0.001	0.02	<0.0001	<0.001	<0.001	<0.02	<0.01
	Nov-11	7.7	47	NT	0.041	0.002	<0.0001	0.029	<0.001	0.03	<0.001	0.02	<0.0001	<0.001	0.001	<0.02	0.01
	Jan-12	7.9	45	NT	0.011	0.002	<0.0001	0.011	<0.001	0.016	<0.001	0.01	<0.0001	<0.001	0.002	<0.02	<0.01
	Mar-12	8.1	38	NT	0.006	0.001	<0.0001	0.009	<0.001	0.008	<0.001	<0.01	<0.0001	<0.001	0.001	<0.02	<0.01
	May-12	7.9	20	NT	0.017	0.001	<0.0001	0.052	0.001	0.07	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.057
	Jul-12	7.8	41	NT	0.008	<0.001	<0.0001	0.013	<0.001	0.016	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Sep-12	7.9	44	NT	0.017	0.001	<0.0001	0.031	<0.001	0.042	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.01
	Nov-12	7.8	47	NT	0.004	<0.001	<0.0001	0.007	<0.001	0.008	<0.001	0.02	<0.0001	<0.001	<0.001	<0.02	0.02
	Jan-13	7.6	32	NT	0.02	<0.001	0.0002	0.044	0.002	0.089	<0.001	0.03	<0.0001	<0.001	0.001	<0.02	0.04
	Apr-13	7.8	37	NT	0.003	0.001	<0.0001	0.008	<0.001	0.004	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.02
	May-13	8.3	53	NT	0.006	<0.001	<0.0001	0.017	<0.001	0.018	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.01
	Jul-13	7.5	53	NT	0.018	0.001	<0.0001	0.026	<0.001	0.064	<0.001	<0.01	<0.0001	<0.001	0.001	<0.02	0.012
	Oct-13	7.3	62	NT	0.005	<0.001	<0.0001	0.010	<0.001	0.011	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Nov-13	7.8	61	NT	0.005	<0.001	<0.0001	0.009	<0.001	0.014	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.01
	Jan-14	7.4	26	NT	0.004	<0.001	<0.0001	0.005	<0.001	0.062	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Jun-14	7.1	44	NT	0.013	<0.001	0.0001	0.039	0.001	0.067	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.06
	Oct-14	8.2	20	NT	0.015	0.001	<0.0001	0.057	0.003	0.141	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.6
	Feb-15	7.2	38	NT	0.005	<0.001	<0.0001	0.013	<0.001	0.013	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.02
	Jun-15	7.5	35	NT	0.007	<0.001	<0.0001	0.006	<0.001	0.01	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Oct-15	7.5	56	NT	0.006	<0.001	<0.0001	0.012	<0.001	0.018	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01

Analysis																	
Sample Point	Date	pH	CaCO3 mg/l	Sulphate (dissolved) mg/l	Nickel (dissolved) mg/l	Chromium (dissolved) mg/l	Cadmium (dissolved) mg/l	Copper (dissolved) mg/l	Lead (dissolved) mg/l	Zinc (dissolved) mg/l	Arsenic (dissolved) mg/l	Boron (dissolved) mg/l	Mercury (dissolved) mg/l	Selenium (dissolved) mg/l	Vanadium (dissolved) mg/l	Cyanide (total) (mg/l)	TPH (mg/l)
C1	Mar-12	8.1	40	NT	0.004	0.001	<0.0001	0.009	0.002	0.01	0.001	<0.01	<0.0001	<0.001	0.002	<0.02	<0.01
	May-12	7.9	43	NT	0.011	0.001	<0.0001	0.026	<0.001	0.01	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.014
	Jul-12	7.8	45	NT	0.002	<0.001	<0.0001	0.004	<0.001	0.007	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Sep-12	7.7	43	NT	0.003	0.001	<0.0001	0.004	<0.001	<0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.01
	Nov-12	7.7	45	NT	0.002	<0.001	<0.0001	0.002	<0.001	0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.01
	Jan-13	7.7	30	NT	0.006	<0.001	<0.0001	0.009	<0.001	0.016	<0.001	0.03	<0.0001	<0.001	0.001	<0.02	<0.01
	Apr-13	7.8	41	NT	0.001	0.002	<0.0001	0.001	<0.001	<0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.04
	May-13	7.9	69	NT	0.002	<0.001	<0.0001	0.002	<0.001	<0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Jul-13	7.4	50	NT	0.002	<0.001	<0.0001	0.003	<0.001	0.004	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.058
	Oct-13	7.7	88	NT	0.002	<0.001	<0.0001	0.004	<0.001	0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Nov-13	7.6	37	NT	0.002	<0.001	<0.0001	0.002	<0.001	<0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.01
	Jan-14	7.6	39	NT	0.002	<0.001	<0.0001	0.002	<0.001	<0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Jun-14	7	34	NT	0.005	<0.001	<0.0001	0.01	<0.001	0.003	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.01
	Oct-14	8.1	14	NT	0.008	<0.001	<0.0001	0.014	<0.001	0.012	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.3
	Feb-15	7	38	NT	<0.001	<0.001	<0.0001	0.001	<0.001	0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	<0.01
	Jun-15	7.4	33	NT	0.005	<0.001	<0.0001	0.002	<0.001	0.003	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.02
	Oct-15	7.6	42	NT	0.003	<0.001	<0.0001	0.002	<0.001	0.007	<0.001	<0.01	<0.0001	<0.001	<0.001	<0.02	0.01
Assessment Criteria (mg/l)		6 to 9 (2)		400	0.02 (1)	0.0047 (3)	0.00009 (1)	0 - 50 = 0.001 (3) 50-100 = 0.006	0.0072 (1)	0-50 = 0.008 (3) 50-100 = 0.05	0.05 (2)	2 (2)	0.001 (1)	0.01 (4)	0.02 (3)	0.001 (1)	0.01(4)

Notes:

2015-2016 Sampling Points

EQS Adjusted for Hardness

Yellow cells indicate elevated concentrations compared with Assessment Criteria (e.g. EQS).

NG = No Guideline

NT = Not Tested

1 = Annex I of Directive 2008/105/EC of the European Parliament & of the Council of 16 December 2008 on environmental quality standards in the field of water policy, amending and subsequently repealing Council Directives 82/176/EEC, 83/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and

2 = Table 2a: Environmental Quality Standards (EQS) for List 2 dangerous substances, EC Dangerous Substances Directive (76/464/EEC)

3 = Table 2b: Environmental Quality Standards (EQS) for hardness related List 2 dangerous substances, EC dangerous substances Directive (76/464/EEC)

NB - in the absence of hardness data, a conservative approach has been adopted and the lowest EQS values used

4 = Water Supply (Water Quality) (England and Wales) Regulations 2000 (SI 2000/3184) (as amended); Water Supply (Water Quality) (Wales) Regulations 2001 (SI 3911 W.323) (as amended)

Table 1: Groundwater Monitoring 2015 - 2016 (UK17-21704) - Summary of Results

		Analysis												
Borehole	Date	pH	CaCO3 (mg/l)	Nickel (dissolved) mg/l	Chromium (dissolved) mg/l	Cadmium (dissolved) mg/l	Copper (dissolved) mg/l	Lead (dissolved) mg/l	Zinc (dissolved) mg/l	Arsenic (dissolved) mg/l	Boron (dissolved) mg/l	Mercury (dissolved) mg/l	Selenium (dissolved) mg/l	Vanadium (dissolved) mg/l
Guideline Value		6-9 (1)	NG	0.02 (1)	0.0047(1)	0.00008(1)	0.001-0.028* (1)	0.0072 (1)	0.008 - 0.125* (1)	0.05(1)	2 (1)	0.00005(1)	0.01(2)	0.02 - 0.06* (1)
BH001	01-Mar-06	6.5	50	0.012	<0.005	<0.001	<0.005	<0.005	0.031	<0.005	<0.005	<0.00005	<0.005	NT
	01-May-06	5.5	<20	0.01	<0.005	<0.001	<0.005	<0.005	0.018	<0.005	0.012	<0.00005	<0.005	NT
	01-Oct-07	6.5	140	0.021	<0.005	<0.001	0.008	<0.005	0.045	<0.005	<0.005	<0.00005	<0.005	NT
	01-Aug-08	6.2	65	0.035	<0.005	<0.001	0.018	<0.005	0.19	<0.005	0.04	<0.00005	<0.005	NT
	01-Dec-08	6.7	88	0.015	<0.005	<0.001	0.018	<0.005	0.11	<0.005	0.031	<0.00005	<0.005	NT
	01-Sep-09	7.04	90	0.024	<0.005	<0.001	0.015	<0.005	0.312	<0.005	<0.018	<0.00005	<0.005	NT
	01-Aug-10	6.8	75	0.083	0.002	<0.001	0.041	<0.001	0.301	0.001	0.02	<0.00005	<0.001	NT
	01-Aug-11	7.1	98	0.004	0.002	<0.001	0.001	<0.001	0.016	0.004	0.03	<0.0001	<0.001	NT
	20-Aug-12	7.1	85	0.059	<0.001	<0.0001	0.042	<0.001	0.165	0.003	0.01	0.0001	<0.001	NT
	30-Aug-13	7	88	0.13	0.001	0.0002	0.054	<0.001	0.358	<0.001	<0.01	<0.0001	<0.001	NT
	05-Sep-14	6.8	72	0.083	<0.001	0.0002	0.055	<0.001	0.302	<0.001	0.01	<0.0001	<0.001	NT
	04-Jun-15	7.1	99	0.018	<0.001	<0.0001	0.017	<0.001	0.101	0.005	<0.01	<0.0001	<0.001	<0.001
	12-Oct-15	6.9	91	0.086	<0.001	<0.0001	0.024	<0.001	0.16	<0.001	<0.01	<0.0001	<0.001	<0.001
BH002	01-Mar-06	7.8	250	0.005	0.005	<0.001	0.012	<0.005	<0.005	<0.005	0.008	<0.00005	0.013	NT
	01-May-06	8.2	320	0.021	<0.005	<0.001	0.008	<0.005	0.01	<0.005	0.034	<0.00005	<0.005	NT
	01-Aug-07	6.5	92	<0.005	<0.005	<0.001	<0.005	0.015	<0.005	<0.005	0.015	<0.00005	<0.005	NT
	01-Aug-08	6.1	63	<0.005	<0.005	<0.001	<0.005	<0.005	0.025	<0.005	0.03	<0.00005	<0.005	NT
	01-Dec-08	5.5	<20	<0.005	<0.005	<0.001	<0.005	<0.005	<0.005	<0.005	0.008	<0.00005	<0.005	NT
	01-Sep-09	6.15	18	0.007	<0.005	<0.001	<0.005	<0.005	0.028	<0.005	<0.018	<0.00005	<0.005	NT
	01-Aug-10	6.3	18	0.006	0.001	<0.001	<0.001	<0.001	0.017	<0.001	0.03	<0.00005	<0.001	NT
	01-Aug-11	5.9	19	0.005	0.002	<0.001	0.003	<0.001	0.016	<0.001	0.07	<0.0001	<0.001	NT
	21-Aug-12	7.7	36	0.006	0.002	<0.0001	0.003	0.001	0.022	<0.001	0.02	<0.0001	<0.001	NT
	13-Sep-13	7.1	53	0.006	<0.001	0.0001	0.002	<0.001	0.024	<0.001	<0.01	<0.0001	<0.001	NT
	05-Sep-14	6.3	32	0.007	<0.001	<0.0001	0.003	<0.001	0.018	<0.001	0.01	<0.0001	<0.001	NT
	04-Jun-15	6.9	24	0.011	0.001	<0.0001	<0.001	<0.001	0.007	<0.001	<0.01	<0.0001	<0.001	<0.001
	12-Oct-15	6.2	45	0.005	0.001	<0.0001	<0.001	<0.001	0.006	<0.001	<0.01	<0.0001	<0.001	<0.001
BH801	01-Mar-06	6.5	120	0.23	<0.005	<0.001	<0.005	<0.005	0.042	<0.005	<0.005	<0.00005	<0.005	NT
	01-May-06	6.7	85	0.077	<0.005	<0.001	0.017	<0.005	0.18	<0.005	0.05	<0.00005	<0.005	NT
	01-Dec-06	6.6	76	0.014	<0.005	<0.001	0.14	<0.005	0.13	<0.005	0.006	<0.00005	<0.005	NT
	01-Aug-07	6.8	59	0.017	<0.005	<0.001	<0.005	<0.005	0.047	<0.005	0.006	<0.00005	<0.005	NT
	01-Aug-08	6.9	120	0.37	<0.005	<0.001	1.8	<0.005	0.66	<0.005	0.021	<0.00005	<0.005	NT
	01-Sep-09	7.63	235	0.01	0.005	<0.001	15.9	<0.005	0.467	<0.005	<0.018	<0.00005	<0.005	NT
	01-Oct-09	6.3	88	0.06	0.002	<0.001	0.362	<0.001	0.464	<0.001	0.03	0.0002	<0.001	NT
	01-Aug-10	6.5	68	0.048	0.001	<0.001	0.369	<0.001	0.819	<0.001	0.03	<0.00005	<0.001	NT
	01-Aug-11	6.7	80	0.058	0.002	0.0002	0.482	<0.001	1.312	<0.001	0.02	<0.0001	<0.001	NT
	20-Aug-12	7	72	0.017	<0.001	<0.0001	0.066	<0.001	0.347	<0.001	0.01	<0.0001	<0.001	NT
	30-Aug-13	6.9	100	0.043	0.002	0.0002	0.767	<0.001	3.119	<0.001	<0.01	<0.0001	<0.001	NT
	04-Sep-14	7.2	79	0.057	<0.001	0.0002	0.302	<0.001	1.37	<0.001	0.04	<0.0001	<0.001	NT
	04-Jun-15	7	113	0.079	<0.001	0.0007	2.627	<0.001	4.669	<0.001	<0.01	<0.0001	<0.001	<0.001
12-Oct-15	6.6	52	0.031	<0.001	<0.0001	0.101	<0.001	0.776	<0.001	<0.01	<0.0001	<0.001	<0.001	
BH8	01-Oct-09	4.5	NT	0.571	0.001	0.0021	0.22	0.002	0.45	<0.001	0.05	<0.0001	0.002	<0.002
	01-Feb-10	4.3	NT	0.315	0.002	0.0027	0.239	0.002	0.68	<0.001	0.06	<0.0001	0.003	<0.002
	01-Apr-10	4.4	NT	0.141	<0.001	<0.0001	0.17	<0.001	0.952	<0.001	0.03	<0.0001	0.001	<0.002
	01-Jun-10	4.6	NT	0.57	0.001	0.0019	0.195	0.002	1.368	<0.001	0.04	<0.0001	0.001	<0.002
	25-Jan-13	5.2	14	0.162	<0.001	0.0013	0.283	0.002	0.379	<0.001	0.05	<0.0001	<0.001	0.001
	03-Apr-13	5.4	5	0.19	<0.001	0.0014	0.293	0.002	0.482	<0.001	<0.01	<0.0001	0.001	<0.001
	31-May-13	5.9	<30	0.307	0.001	0.0009	0.452	<0.001	1.325	<0.001	<0.01	<0.0001	<0.001	<0.001
	26-Jul-13	4.9	<2	0.176	<0.001	0.0017	0.262	0.004	0.703	<0.001	0.02	<0.0001	<0.001	<0.001
	07-Oct-13	5.4	0	0.111	<0.001	0.001	0.225	0.003	0.323	<0.001	0.02	<0.0001	<0.001	<0.001
	25-Nov-13	6.6	7	0.103	0.001	0.0007	0.152	<0.001	0.232	<0.001	0.03	<0.0001	<0.001	<0.001
	30-Jan-14	5.9	8	0.08	<0.001	0.0007	0.099	<0.001	0.205	<0.001	0.03	<0.0001	<0.001	<0.001
	04-Jun-14	4.8	6	0.085	<0.001	0.0007	0.132	0.001	0.23	<0.001	<0.01	<0.0001	<0.001	<0.001
	08-Oct-14	6.5	<2	0.235	<0.001	0.0014	0.285	0.003	0.564	<0.001	0.03	<0.0001	<0.001	<0.001
10-Feb-15	5.3	5	0.104	<0.001	0.0006	0.112	<0.001	0.21	<0.001	0.03	<0.0001	0.001	<0.001	
04-Jun-15	6.2	0	0.243	<0.001	0.0012	0.258	0.002	0.487	<0.001	0.04	<0.0001	0.003	<0.001	
12-Oct-15	5.6	59	0.135	0.001	0.0008	0.168	<0.001	0.28	<0.001	<0.01	<0.0001	<0.001	<0.001	
BH9	15-Oct-09	7.5	NA	0.002	0.001	<0.0001	0.001	<0.001	0.005	<0.001	0.05	<0.0001	<0.001	<0.002
	06-Sep-11	4.5	NA	1.011	0.006	0.0012	1.11	<0.001	5.872	0.001	0.07	<0.0001	<0.001	<0.001
	27-Sep-11	4.5	NA	3.96	0.004	0.0049	2.081	<0.001	19.61	<0.001	0.07	<0.0001	0.002	0.001
	31-Oct-11	4.4	0	7.402	0.02	0.0022	9.91	0.002	31.02	0.001	NA	<0.0001	<0.001	NA
	14-Dec-11	4.7	0	10.4	0.013	0.0059	9.567	<0.001	40.3	<0.001	0.3	<0.0001	0.003	<0.001
	13-Mar-12	6.1	3	2.57	0.027	0.0017	3.452	0.005	22.99	0.001	<0.01	<0.0001	<0.001	0.014
	14-May-12	4.7	0	2.254	0.012	0.0015	4.592	0.002	7.107	<0.001	0.08	<0.0001	<0.001	<0.001
	10-Jul-12	4.5	0	1.122	0.014	0.0011	2.581	0.002	5.178	0.001	0.08	<0.0001	<0.001	0.002
	18-Sep-12	6.7	0	0.458	0.003	0.0006	1.41	<0.001	1.921	<0.001	0.06	<0.0001	<0.001	<0.001
	27-Nov-12	6.8	9	0.679	0.002	0.0009	1.29	<0.001	2.205	<0.001	0.09	<0.0001	<0.001	<0.001
	25-Jan-13	7.5	24	0.546	<0.001	0.0008	0.771	<0.001	1.765	<0.001	0.11	<0.0001	<0.001	0.001
	03-Apr-13	6.2	17	0.522	0.001	0.0008	2.185	<0.001	1.806	<0.001	0.04	<0.0001	<0.001	<0.001
	31-May-13	5.1	117	0.754	0.006	0.0014	2.888	0.001	2.901	<0.001	0.08	<0.0001	<0.001	<0.001
26-Jul-13	5.4	<2	0.329	0.002	0.0009	1.397	<0.001	1.313	<0.001	0.04	<0.0001	<0.001	<0.001	
07-Oct-13	5.1	10	1.176	0.005	0.0014	1.906	<0.001	2.568	<0.001	0.1	<0.0001	<0.001</		

		Analysis													
Borehole	Date	pH	CaCO3 (mg/l)	Nickel (dissolved) mg/l	Chromium (dissolved) mg/l	Cadmium (dissolved) mg/l	Copper (dissolved) mg/l	Lead (dissolved) mg/l	Zinc (dissolved) mg/l	Arsenic (dissolved) mg/l	Boron (dissolved) mg/l	Mercury (dissolved) mg/l	Selenium (dissolved) mg/l	Vanadium (dissolved) mg/l	
Guideline Value		6-9 (1)	NG	0.02 (1)	0.0047(1)	0.00008(1)	0.001-0.028* (1)	0.0072 (1)	0.008 - 0.125* (1)	0.05(1)	2 (1)	0.00005(1)	0.01(2)	0.02 - 0.06* (1)	
BH10	01-Jun-10	4.6	NA	0.176	<0.001	0.0003	0.184	<0.001	0.314	<0.001	0.02	<0.0001	<0.001	<0.002	
	06-Sep-11	5.6	NA	0.097	<0.001	0.0001	0.044	<0.001	0.428	<0.001		<0.0001	<0.001	<0.001	
	27-Sep-11	5.8	NA	0.052	<0.001	<0.0001	0.012	<0.001	0.154	<0.001	0.02	<0.0001	<0.001	<0.001	
	31-Oct-11	6.8	13	0.073	0.001	<0.0001	0.032	<0.001	0.291	<0.001	NA	<0.0001	<0.001	NA	
	14-Dec-11	7.2	50	0.009	0.001	<0.0001	0.009	<0.001	0.027	<0.001	0.07	<0.0001	0.001	<0.001	
	13-Mar-12	5	0	4.727	0.001	0.0034	0.686	0.003	20.9	<0.001	0.01	<0.0001	0.002	0.001	
	14-May-12	5.2	0	1.558	<0.001	0.0017	0.709	0.002	5.341	<0.001	0.04	<0.0001	<0.001	<0.001	
	10-Jul-12	4.7	0	0.998	0.001	0.002	1.117	0.003	6.488	<0.001	0.05	<0.0001	0.001	<0.001	
	18-Sep-12	5.1	0	0.755	0.001	0.0013	1.806	0.002	3.781	<0.001	0.04	<0.0001	<0.001	<0.001	
	27-Nov-12	4.8	<2	0.752	<0.001	0.0013	0.728	0.002	3.319	<0.001	0.07	<0.0001	<0.001	<0.001	
	25-Jan-13	5.4	16	0.617	<0.001	0.0011	0.984	0.002	2.05	<0.001	0.1	<0.0001	<0.001	<0.001	
	03-Apr-13	5.6	4	0.596	<0.001	0.0011	1.537	0.002	1.898	<0.001	0.02	<0.0001	<0.001	<0.001	
	31-May-13	5.7	49	0.464	<0.001	0.0009	1.244	0.002	1.704	<0.001	0.02	<0.0001	<0.001	<0.001	
	26-Jul-13	5.4	<2	0.203	<0.001	0.0005	0.491	0.001	0.726	<0.001	<0.01	0.0002	<0.001	<0.001	
	07-Oct-13	5.9	0	0.221	<0.001	0.0006	0.435	0.001	0.801	<0.001	0.03	<0.0001	<0.001	<0.001	
	25-Nov-13	6.3	0	0.34	<0.001	0.0006	0.531	0.001	1.003	<0.001	0.05	<0.0001	<0.001	<0.001	
	30-Jan-14	5.3	3	0.277	<0.001	0.0006	0.434	<0.001	0.945	<0.001	0.06	<0.0001	<0.001	<0.001	
	04-Jun-14	4.8	4	0.138	<0.001	0.0004	0.352	0.001	0.38	<0.001	0.01	<0.0001	<0.001	<0.001	
	08-Oct-14	8.1	38	0.003	<0.001	<0.0001	0.006	<0.001	0.007	<0.001	0.01	<0.0001	<0.001	<0.001	
	10-Feb-15	6.8	53	0.002	<0.001	<0.0001	0.009	<0.001	0.011	<0.001	<0.01	<0.0001	<0.001	<0.001	
	04-Jun-15	7.3	36	0.013	0.001	<0.0001	0.008	<0.001	0.015	<0.001	<0.01	<0.0001	<0.001	<0.001	
	12-Oct-15	6.7	85	0.02	0.001	<0.0001	0.015	<0.001	0.048	<0.001	<0.01	<0.0001	<0.001	<0.001	
BH32	01-Jun-10	6.6	NA	0.004	0.001	<0.0001	0.002	<0.001	<0.002	<0.001	0.02	<0.0001	<0.001	<0.002	
	06-Sep-11	5.6	NA	2.18	0.003	0.0023	0.029	<0.001	4.856	<0.001	0.06	<0.0001	<0.001	<0.001	
	27-Sep-11	6.3	NA	1.992	0.004	0.0014	0.006	<0.001	2.702	<0.001	0.06	<0.0001	0.001	0.001	
	31-Oct-11	5.8	18	6.396	0.003	0.0042	0.04	<0.001	16.36	<0.001	NA	<0.0001	0.002	NA	
	14-Dec-11	6.9	177	0.247	0.004	0.0002	0.003	<0.001	0.265	<0.001	0.07	<0.0001	0.002	0.002	
	13-Mar-12	7.2	80	0.688	0.003	0.0006	0.003	<0.001	0.963	<0.001	<0.01	<0.0001	0.001	0.002	
	14-May-12	7.2	166	0.465	0.004	0.0003	0.004	<0.001	0.871	<0.001	0.03	<0.0001	0.002	0.002	
	10-Jul-12	6.8	13	1.96	0.001	0.0031	0.03	<0.001	4.906	<0.001	0.07	0.0001	<0.001	<0.001	
	18-Sep-12	6.6	9	2.488	0.002	0.004	0.038	<0.001	6.379	<0.001	0.11	<0.0001	<0.001	<0.001	
	27-Nov-12	7.2	67	0.834	0.001	0.001	0.009	<0.001	1.657	<0.001	0.06	<0.0001	<0.001	<0.001	
	25-Jan-13	7	20	0.862	<0.001	0.0013	0.012	<0.001	1.903	<0.001	0.08	<0.0001	<0.001	0.001	
	03-Apr-13	7.2	26	0.952	<0.001	0.001	0.006	<0.001	1.767	<0.001	0.04	<0.0001	<0.001	<0.001	
	31-May-13	6.9	52	1.87	0.001	0.0028	0.044	<0.001	3.44	<0.001	0.06	<0.0001	<0.001	<0.001	
	26-Jul-13	5.4	8	2.461	0.001	0.0043	0.069	<0.001	7.082	<0.001	0.08	<0.0001	<0.001	<0.001	
	07-Oct-13	5.7	13	2.991	0.001	0.0051	0.136	<0.001	6.877	<0.001	0.1	<0.0001	<0.001	<0.001	
	25-Nov-13	6.7	82	0.511	<0.001	0.0007	0.005	<0.001	1.32	<0.001	0.07	<0.0001	0.003	<0.001	
	30-Jan-14	6.4	66	0.298	<0.001	0.0004	0.008	<0.001	0.785	<0.001	0.05	<0.0001	0.002	<0.001	
	04-Jun-14	5.8	40	0.512	<0.001	0.0008	0.005	<0.001	1.157	<0.001	0.04	<0.0001	0.001	<0.001	
	08-Oct-14	7.2	7	1.349	<0.001	0.0025	0.119	<0.001	2.669	<0.001	0.08	<0.0001	<0.001	<0.001	
	10-Feb-15	6.4	156	0.085	<0.001	0.0002	0.037	<0.001	0.248	<0.001	0.01	<0.0001	0.003	<0.001	
	04-Jun-15	6.9	54	0.097	<0.001	0.0001	0.003	<0.001	0.226	<0.001	0.03	<0.0001	0.001	<0.001	
	12-Oct-15	6.4	87	0.2	0.001	0.0003	0.005	<0.001	0.459	<0.001	0.03	<0.0001	<0.001	<0.001	
BH11	01-Feb-10	6.6	NA	0.003	<0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	0.01	<0.0001	<0.001	<0.002	
	01-Apr-10	6.7	NA	0.003	<0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	<0.01	<0.0001	<0.001	<0.002	
	01-Jun-10	6.4	NA	0.003	0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	<0.01	<0.0001	<0.001	<0.002	
	01-Nov-11	7.2	108	0.004	0.002	<0.0001	<0.001	<0.001	<0.002	<0.001	NA	<0.0001	<0.001	NA	
	14-Dec-11	7	129	0.004	0.002	<0.0001	<0.001	<0.001	0.007	<0.001	0.08	<0.0001	0.001	0.001	
	13-Mar-12	7.2	89	0.003	0.003	<0.0001	0.001	<0.001	0.003	0.002	<0.01	<0.0001	<0.001	0.002	
	14-May-12	7.3	111	0.006	0.003	<0.0001	0.002	<0.001	0.009	<0.001	0.01	<0.0001	<0.001	0.001	
	10-Jul-12	7.4	83	0.004	0.001	<0.0001	0.001	<0.001	0.006	<0.001	<0.01	<0.0001	<0.001	<0.001	
	18-Sep-12	7.4	65	0.005	0.002	<0.0001	<0.001	<0.001	0.002	<0.001	0.02	<0.0001	<0.001	<0.001	
	27-Nov-12	7.6	83	0.004	0.001	<0.0001	0.004	<0.001	0.007	<0.001	0.01	<0.0001	<0.001	<0.001	
	25-Jan-13	7.5	80	0.002	<0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	0.04	<0.0001	<0.001	0.001	
	03-Apr-13	7.6	73	0.003	0.001	<0.0001	0.002	<0.001	0.003	<0.001	<0.01	<0.0001	<0.001	<0.001	
	31-May-13	7.4	78	0.003	<0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	
	26-Jul-13	6.7	93	0.002	0.002	<0.0001	0.001	<0.001	0.006	<0.001	<0.01	0.0003	<0.001	0.001	
	07-Oct-13	7	146	0.004	0.001	<0.0001	0.002	<0.001	0.007	<0.001	0.03	<0.0001	<0.001	<0.001	
	25-Nov-13	7.1	124	0.003	<0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	
	30-Jan-14	7	94	0.003	<0.001	<0.0001	0.001	<0.001	<0.002	<0.001	0.02	<0.0001	<0.001	<0.001	
	04-Jun-14	6.4	102	0.003	<0.001	<0.0001	<0.001	<0.001	<0.002	<0.001	<0.01	<0.0001	<0.001	<0.001	
	08-Oct-14	8	85	0.003	<0.001	<0.0001	<0.001	<0.001	0.004	<0.001	0.01	<0.0001	<0.001	<0.001	
	10-Feb-15	6.7	82	0.002	<0.001	<0.0001	0.002	<0.001	0.003	<0.001	<0.01	<0.0001	<0.001	<0.001	
	BH12	01-Oct-09	6.4	NA	0.022	0.003	0.002	0.002	<0.001	0.008	<0.001	0.04	0.0001	<0.001	<0.002
		01-Feb-10	6.2	NA	0.01	0.002	0.0006	<0.001	<0.001	0.004	<0.001	0.04	<0.0001	<0.001	<0.002
01-Apr-10		6.2	NA	0.012	<0.001	0.0016	<0.001	<0.001	0.003	<0.001	0.03	<0.0001	<0.001	<0.002	
01-Jun-10		6.3	NA	0.012	0.002	0.0015	0.004	<0.001	0.003	<0.001	0.02	<0.0001	<0.001	<0.002	
31-Oct-11		6.5	168	0.01	0.004	0.0006									

Borehole	Date	Analysis												
		pH	CaCO3 (mg/l)	Nickel (dissolved) mg/l	Chromium (dissolved) mg/l	Cadmium (dissolved) mg/l	Copper (dissolved) mg/l	Lead (dissolved) mg/l	Zinc (dissolved) mg/l	Arsenic (dissolved) mg/l	Boron (dissolved) mg/l	Mercury (dissolved) mg/l	Selenium (dissolved) mg/l	Vanadium (dissolved) mg/l
Guideline Value		6-9 (1)	NG	0.02 (1)	0.0047(1)	0.00008(1)	0.001-0.028* (1)	0.0072 (1)	0.008 - 0.125* (1)	0.05(1)	2 (1)	0.00005(1)	0.01(2)	0.02 - 0.06* (1)
BH13	01-Oct-09	5.2	NA	0.721	0.001	0.002	0.243	<0.001	0.611	<0.001	0.04	0.0001	<0.001	<0.002
	01-Feb-10	5.5	NA	0.263	0.001	0.0008	0.24	<0.001	0.055	<0.001	0.03	<0.0001	<0.001	<0.002
	01-Apr-10	5.5	NA	0.214	<0.001	0.0006	0.092	<0.001	0.154	<0.001	0.01	<0.0001	<0.001	<0.002
	01-Jun-10	4.6	NA	0.244	<0.001	0.0008	0.243	0.001	0.285	<0.001	0.02	0.0001	<0.001	<0.002
	01-Nov-11	6.4	0	0.193	<0.001	0.0004	0.111	<0.001	0.528	<0.001	NA	<0.0001	<0.001	NA
	16-Dec-11	7.4	47	0.128	0.001	0.0004	0.021	<0.001	0.287	<0.001	<0.01	<0.0001	<0.001	<0.001
	13-Mar-12	6.9	198	0.009	0.006	0.0004	0.001	<0.001	0.002	<0.001	<0.01	<0.0001	0.001	0.002
	14-May-12	6.7	0	0.214	<0.001	0.0005	0.104	<0.001	0.761	<0.001	0.01	<0.0001	<0.001	<0.001
	10-Jul-12	5.9	0	0.387	<0.001	0.0008	0.14	0.001	1.228	<0.001	0.02	<0.0001	<0.001	<0.001
	18-Sep-12	5.5	0	1.907	0.001	0.0037	0.138	0.002	1.851	<0.001	0.09	<0.0001	<0.001	<0.001
	27-Nov-12	7.3	12	0.249	<0.001	0.0006	0.034	<0.001	0.615	<0.001	0.02	<0.0001	<0.001	0.001
	25-Jan-13	6.5	20	0.306	<0.001	0.0007	0.114	<0.001	0.839	<0.001	0.06	<0.0001	<0.001	0.001
	03-Apr-13	6.8	12	0.276	<0.001	0.0006	0.098	<0.001	0.774	<0.001	<0.01	<0.0001	<0.001	<0.001
	31-May-13	6.9	50	0.553	<0.001	0.0011	0.091	0.001	0.681	<0.001	0.02	<0.0001	<0.001	<0.001
	26-Jul-13	5	<2	1.746	<0.001	0.0027	0.098	0.001	0.924	<0.001	0.09	<0.0001	<0.001	<0.001
	07-Oct-13	6.1	14	0.4	<0.001	0.0009	0.109	0.001	0.625	<0.001	0.04	<0.0001	<0.001	<0.001
	25-Nov-13	6.6	8	0.169	<0.001	0.0006	0.075	<0.001	0.43	<0.001	0.03	<0.0001	<0.001	<0.001
	30-Jan-14	6.3	30	0.124	<0.001	0.0005	0.004	<0.001	0.133	<0.001	0.05	<0.0001	<0.001	<0.001
	04-Jun-14	4.8	234	0.168	<0.001	0.0005	0.054	<0.001	0.373	<0.001	<0.01	<0.0001	<0.001	<0.001
	08-Oct-14	7.4	<2	0.644	<0.001	0.0015	0.115	0.001	0.594	<0.001	0.06	<0.0001	<0.001	<0.001
	10-Feb-15	5.4	4	0.075	<0.001	0.0003	0.041	<0.001	0.14	<0.001	0.02	0.0004	<0.001	<0.001
	04-Jun-15	5.8	4	0.164	0.017	0.0003	0.04	<0.001	0.198	<0.001	0.02	<0.0001	<0.001	<0.001
	12-Oct-15	6.1	40	0.102	<0.001	0.0003	0.059	<0.001	0.227	<0.001	<0.01	<0.0001	<0.001	<0.001
BH901	01-Mar-06	5.8	<20	0.076	0.008	<0.001	0.074	<0.005	0.031	<0.005	<0.005	<0.00005	<0.005	NA
	01-May-06	4.3	<20	2.7	<0.005	0.002	2.2	<0.005	0.89	<0.005	0.032	<0.00005	<0.005	NA
	01-Dec-06	3.5	<20	3.8	0.006	0.005	2.3	<0.005	1.6	<0.005	0.140	<0.00005	<0.005	NA
	01-Aug-07	6.70	62	0.09	<0.005	<0.001	0.013	<0.005	0.018	<0.005	0.031	<0.00005	<0.005	NA
	01-Aug-08	3.3	<20	2.1	<0.005	0.003	0.96	<0.005	2.5	<0.005	0.060	<0.00005	<0.005	NA
	01-Sep-09	5.36	6.5	0.342	<0.005	<0.001	0.401	<0.005	0.522	<0.005	<0.018	<0.00005	<0.005	NA
	01-Aug-10	6.40	41	0.035	0.001	<0.001	0.019	<0.001	0.142	<0.001	0.030	<0.00005	<0.005	NA
	01-Aug-11	6.70	11	0.185	<0.001	0.0003	0.067	<0.001	0.749	<0.001	0.030	<0.0001	<0.001	NA
	14-Dec-11	6	<2	0.608	<0.001	0.0008	0.3	<0.001	2.682	<0.001	0.11	<0.0001	0.001	<0.001
	13-Mar-12	5.2	0	0.44	0.002	0.0011	2.143	0.002	2.89	<0.001	<0.01	<0.0001	<0.001	0.001
	14-May-12	6.7	0	3.982	0.007	0.0031	6.873	0.003	17.55	<0.001	0.03	<0.0001	0.003	<0.001
	10-Jul-12	4.9	0	0.279	0.002	0.0005	0.834	<0.001	1.561	<0.001	0.02	<0.0001	<0.001	<0.001
	18-Sep-12	6.1	0	0.212	0.001	0.0006	0.394	<0.001	0.815	<0.001	0.04	<0.0001	<0.001	<0.001
	27-Nov-12	4.7	<0	0.283	0.001	0.0006	0.523	0.002	1.196	<0.001	0.04	<0.0001	<0.001	<0.001
	25-Jan-13	6.4	13	0.319	<0.001	0.0008	0.536	0.002	1.19	<0.001	0.05	<0.0001	<0.001	0.001
	03-Apr-13	7.1	24	0.136	<0.001	0.0003	0.234	<0.001	0.462	<0.001	<0.01	<0.0001	<0.001	<0.001
	31-May-13	5.9	<30	0.307	0.001	0.0009	0.452	<0.001	1.325	<0.001	<0.01	<0.0001	<0.001	<0.001
	26-Jul-13	4.7	<2	0.316	<0.001	0.0013	0.272	0.002	1.394	<0.001	0.03	<0.0001	<0.001	<0.001
	07-Oct-13	5.4	0	0.36	<0.001	0.0014	0.437	<0.001	1.474	<0.001	0.04	<0.0001	<0.001	<0.001
	25-Nov-13	6	2	0.738	<0.001	0.0015	0.777	0.001	2.073	<0.001	0.1	<0.0001	<0.001	<0.001
	30-Jan-14	4.2	<2	0.553	<0.001	0.0009	1.356	0.003	1.592	<0.001	0.11	<0.0001	<0.001	<0.001
	04-Jun-14	4.3	0	0.521	<0.001	0.0036	1.612	0.003	2.457	<0.001	0.04	<0.0001	<0.001	<0.001
	08-Oct-14	6.3	<2	1.048	0.001	0.008	0.772	0.003	2.042	<0.001	0.04	<0.0001	<0.001	<0.001
10-Feb-15	4.6	0	0.386	<0.001	0.0009	1.219	<0.001	1.098	<0.001	0.12	0.0002	<0.001	<0.001	
04-Jun-15	5.5	0	0.58	0.002	0.0028	1.03	0.001	1.482	<0.001	0.06	<0.0001	0.002	<0.001	

Notes:

The yellow cells indicate elevated concentrations compared with Environmental Quality Standards and UK Drinking Water Standards.

Blue cells are results obtained from the Site Protection Monitoring Programme (SPMP).

NS = Not Sampled

NG = No Guideline

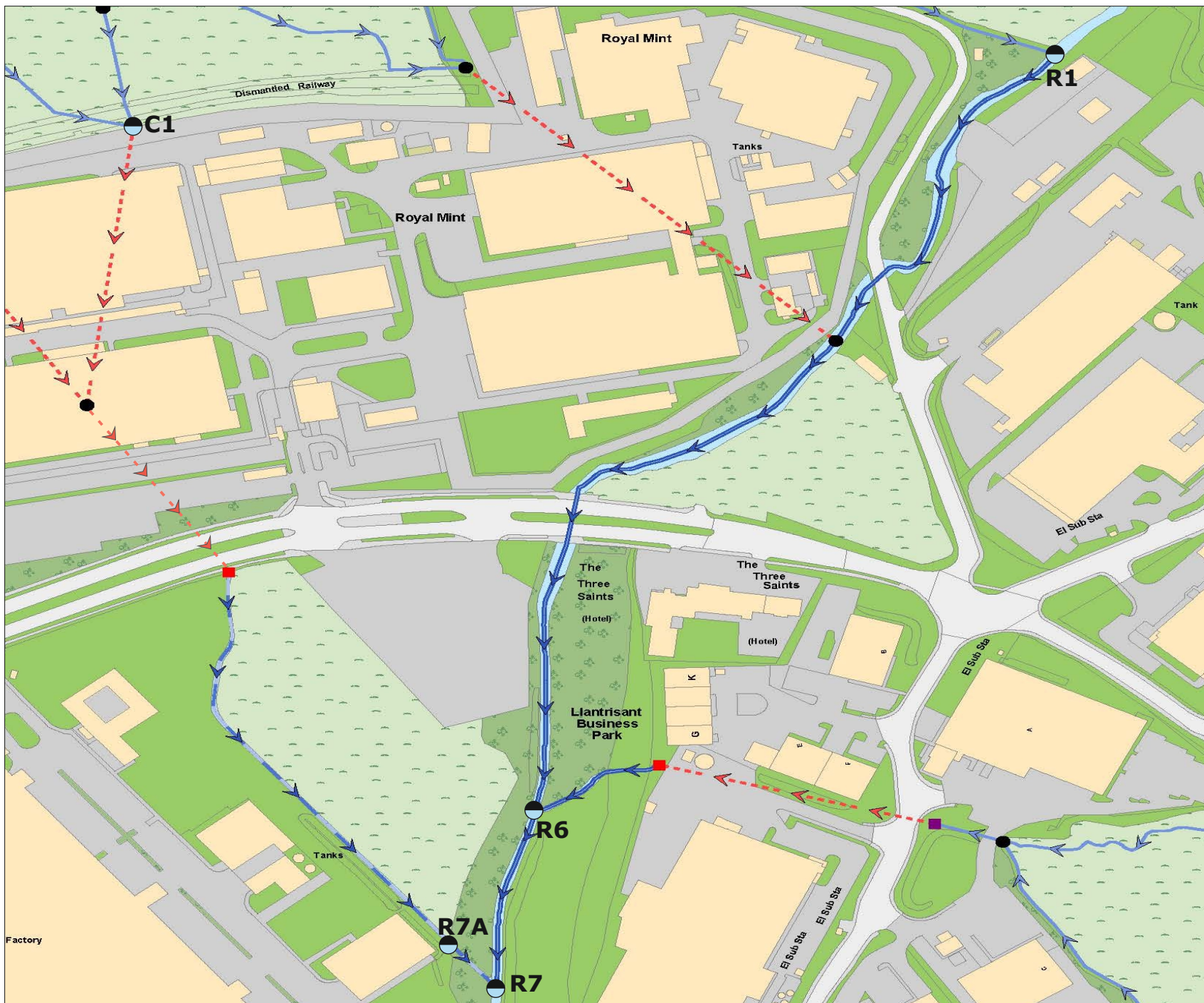
NA = Not Available

(1) = European Environmental Quality Standard (EQS): The River Basin Districts Typology, Standards and Groundwater threshold Values (Water Framework Directive (England and Wales) Directions 2010

(2) = Water Supply (Water Quality) (England and Wales) Regulations 2000 (SI 2000/3184) (as amended); Water Supply (Water Quality) (Wales) Regulations 2001 (SI 3911 W.323) (as amended)

(3) = A filtered sample taken from BH9

* = Range determined by alkalinity



Legend

● River Sampling Locations

Title **Figure 2: River Sampling Locations**

Site **The Royal Mint, Llantrisant, Pontyclun, Mid Glamorgan, CF72 8YT**

Client **The Royal Mint**

Project No. **UK17-21704**

Issue **1**

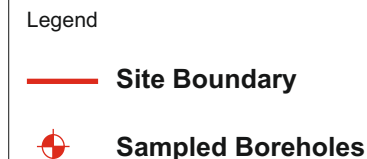
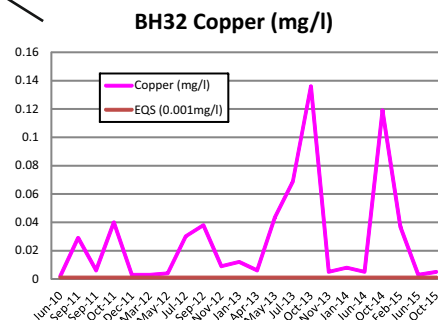
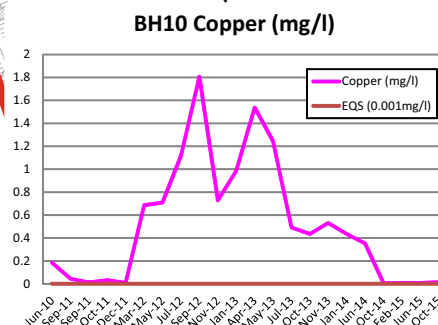
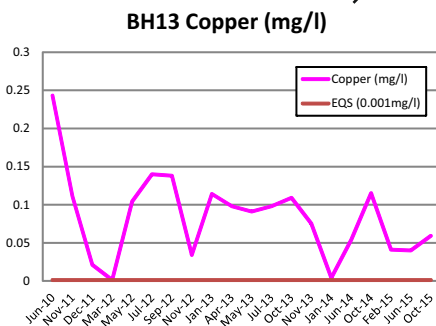
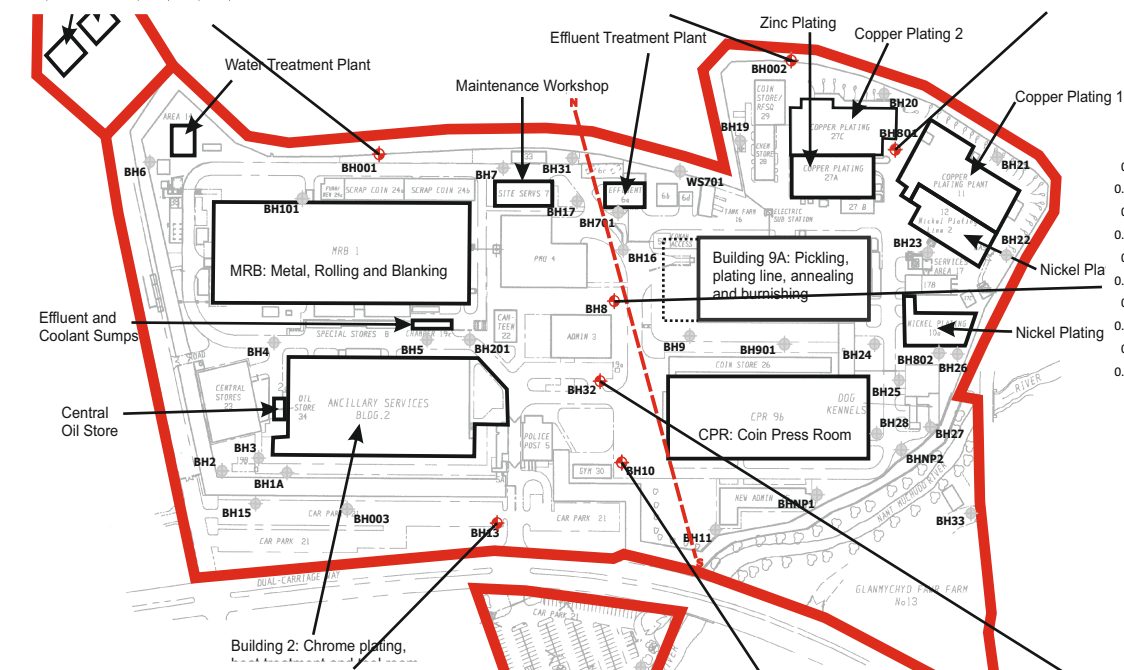
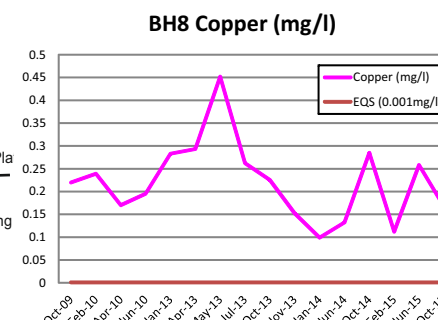
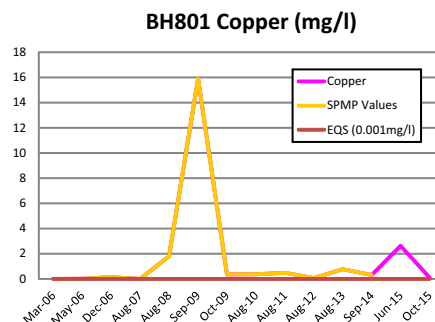
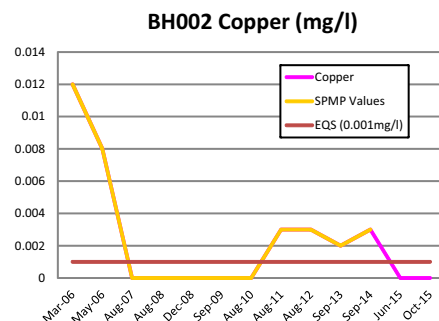
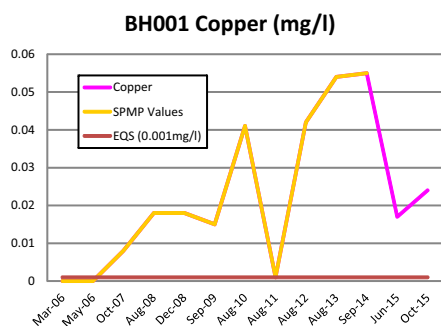
Date **October 2015**

Drawn by **RH**

RAMBOLL
ENVIRON

Scale

NTS



Title **Figure 3: Graphical Representation of Copper Concentrations**

Site **The Royal Mint, Llantrisant, Pontyclun, Mid Glamorgan, CF72 8YT**

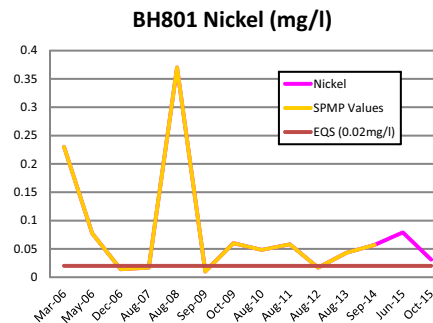
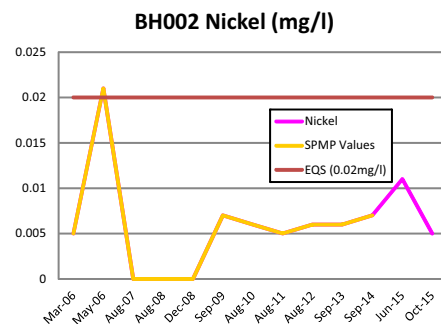
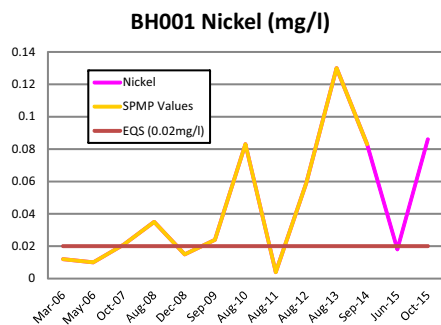
Client **The Royal Mint**

Project No. **UK17-21704**

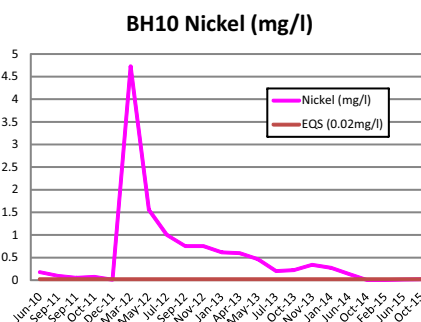
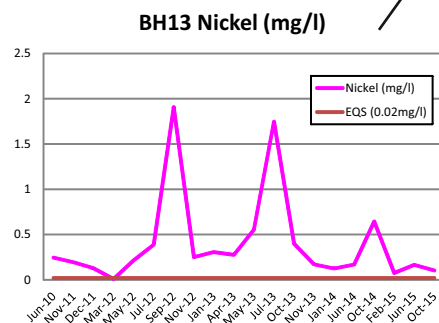
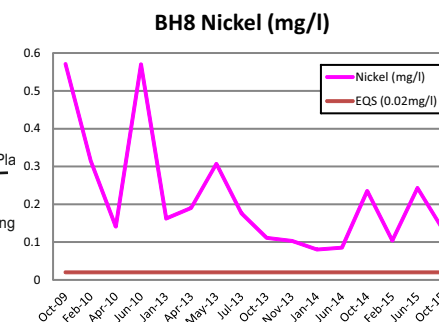
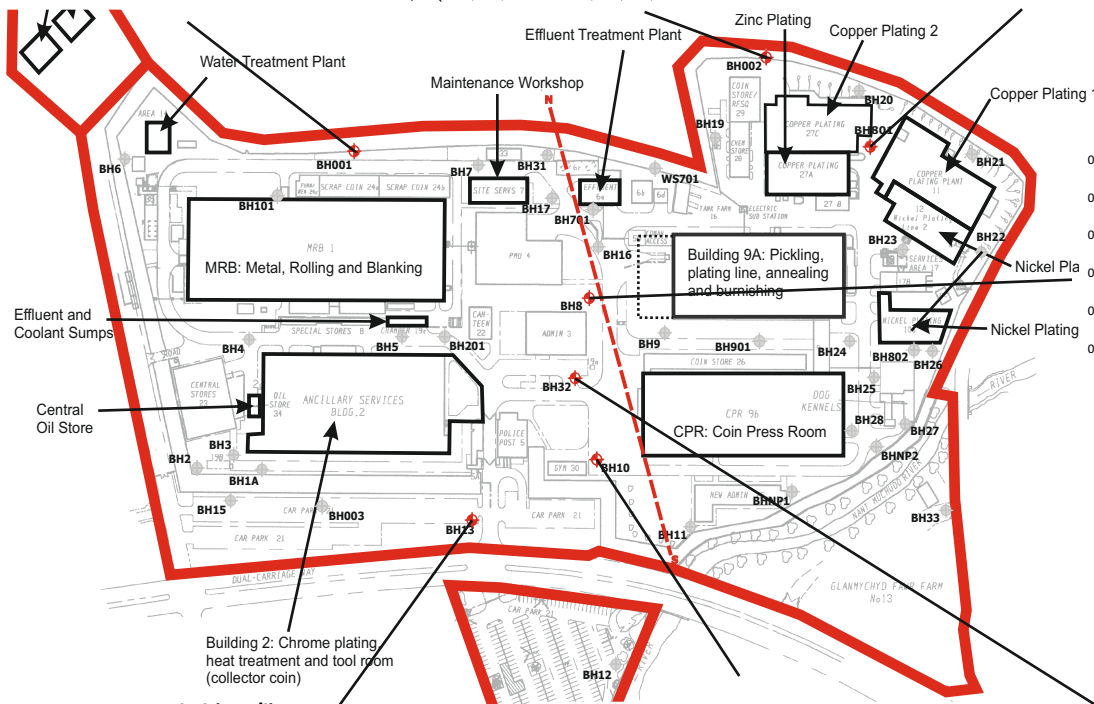
Issue **1**

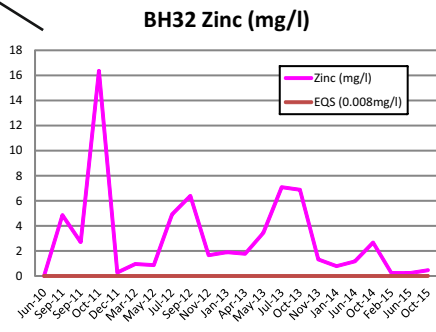
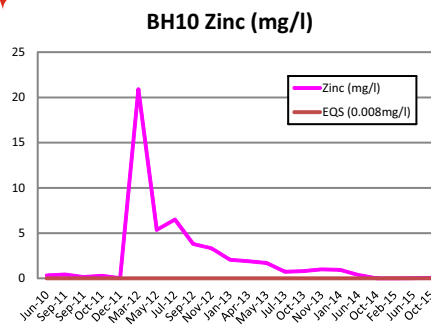
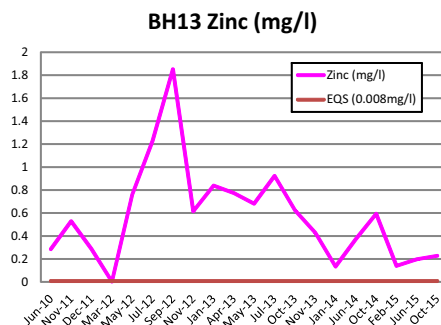
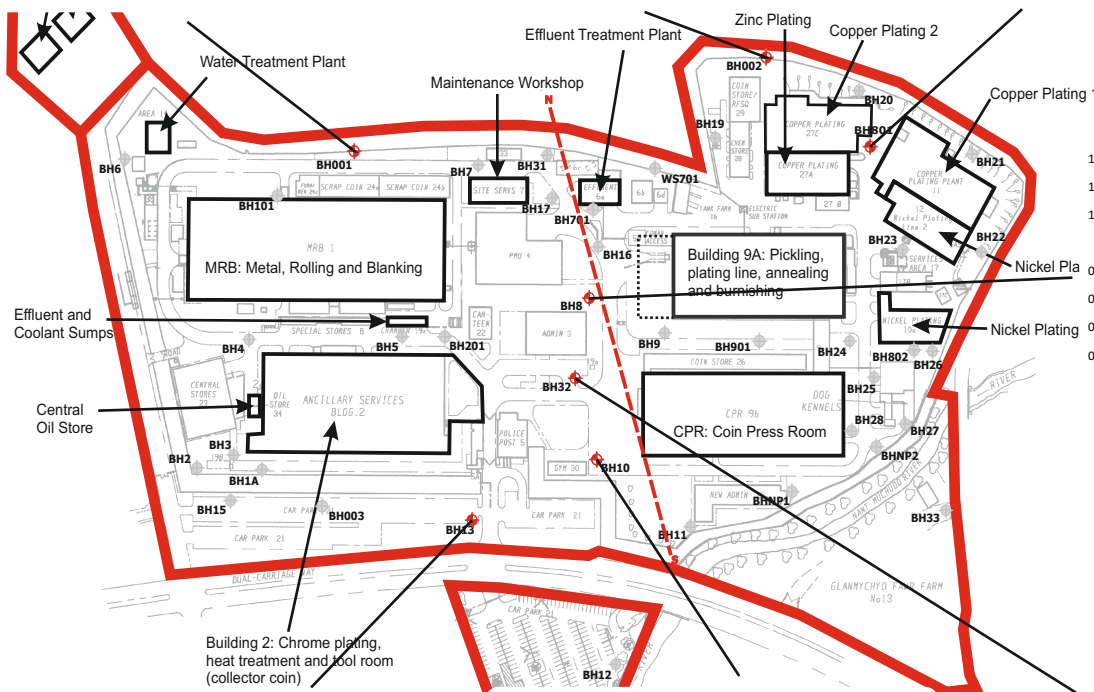
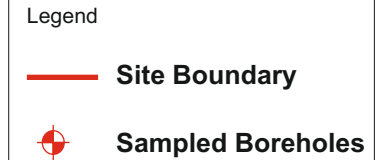
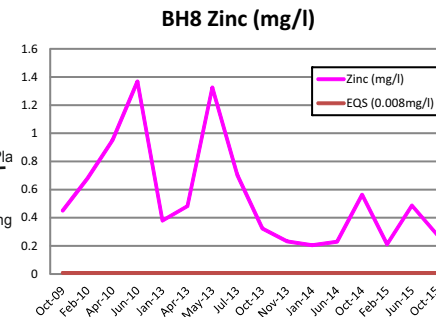
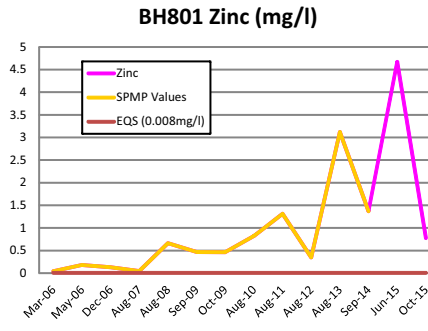
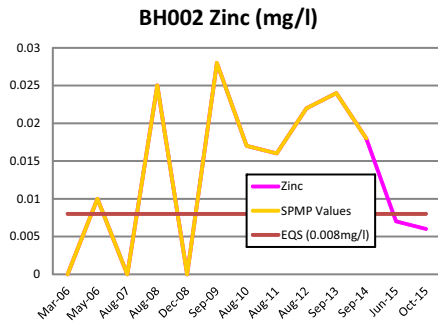
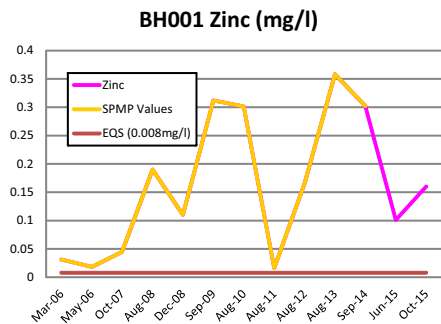
Date **October 2015**

Drawn by **RH**



- Legend
- Site Boundary
 - Sampled Boreholes

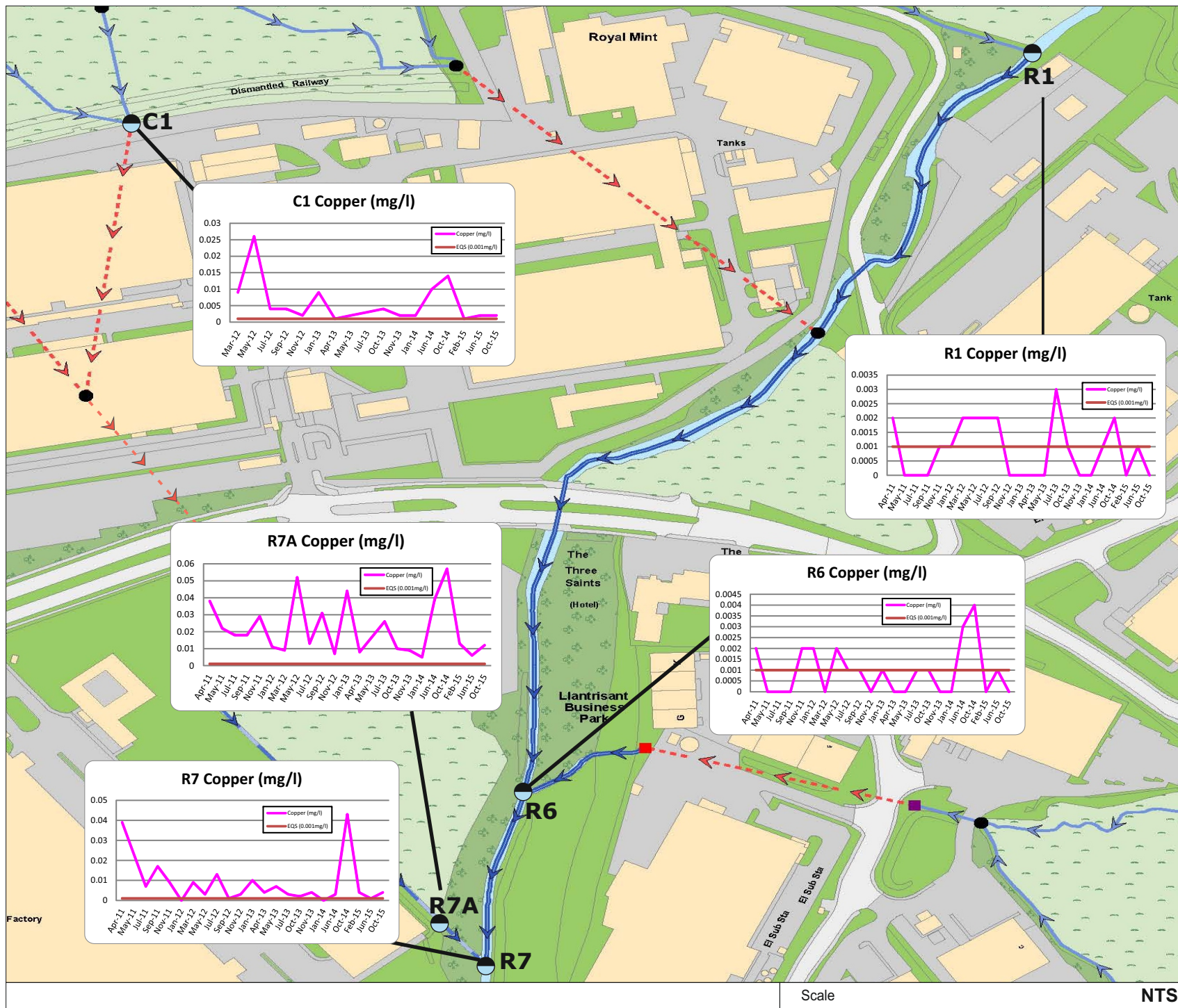




Title **Figure 5: Graphical Representation of Zinc Concentrations**

Site **The Royal Mint, Llantrisant Pontyclun, Mid Glamorgan, CF72 8YT**

Client	The Royal Mint
Project No.	UK17-21704
Issue	1
Date	October 2015
Drawn by	RH



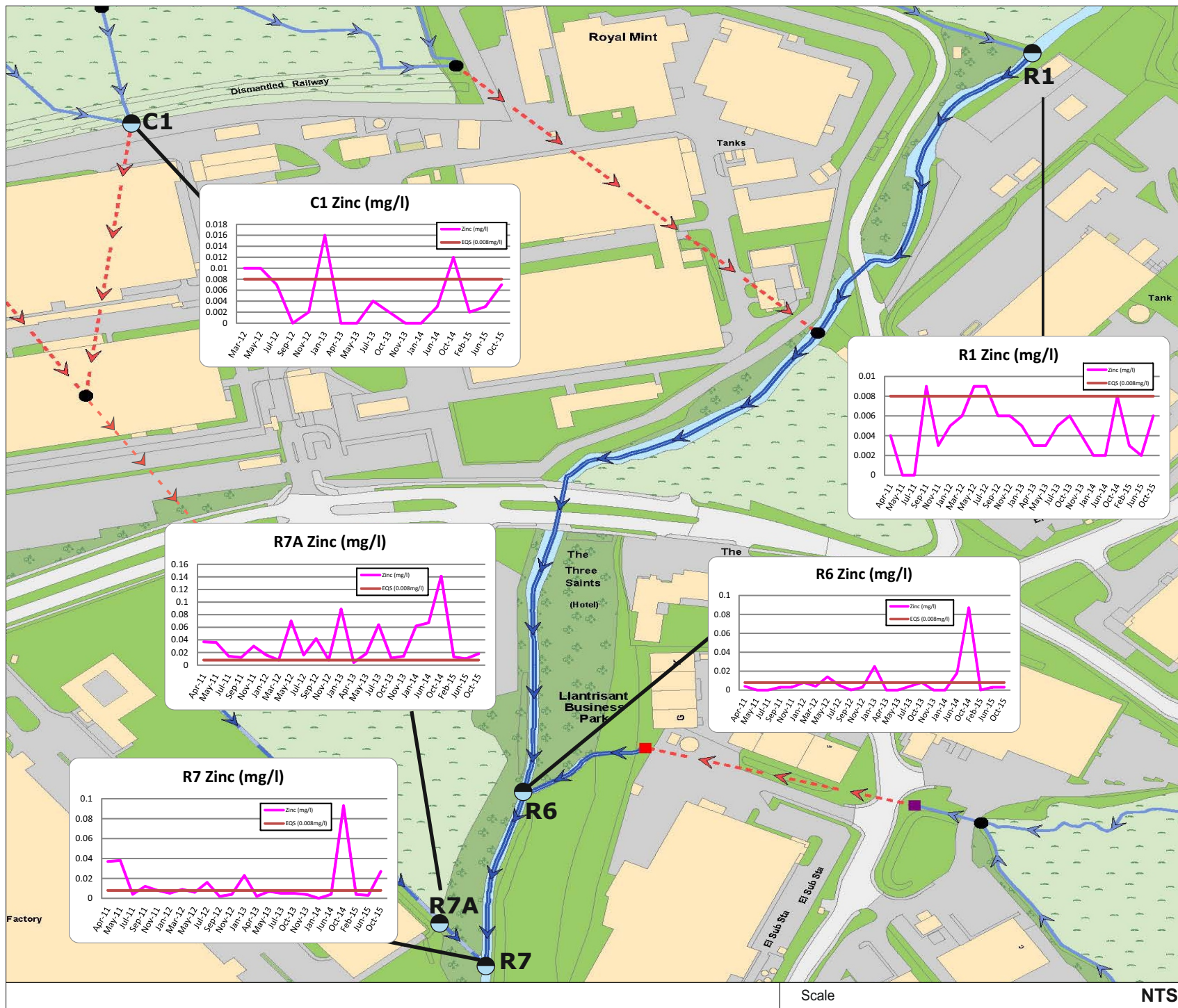
Legend

● River Sampling Locations

Title **Figure 6: Copper Concentration Graphs - Surface Water**

Site **The Royal Mint, Llantrisant, Pontyclun, Mid Glamorgan, CF72 8YT**

Client	The Royal Mint
Project No.	UK17-21704
Issue	1
Date	October 2015
Drawn by	RH



Legend River Sampling Locations	
Title	Figure 8: Zinc Concentration Graphs - Surface Water
Site	The Royal Mint, Llantrisant Pontyclun, Mid Glamorgan, CF22 8YT
Client	The Royal Mint
Project No.	UK17-21704
Issue	1
Date	October 2015
Drawn by	RH
RAMBOLL ENVIRON	