

Intended for
The Royal Mint

Date
October, 2015

Project Number
UK17-22119

THE ROYAL MINT, LLANTRISANT SITE PROTECTION AND MONITORING PROGRAMME (SPMP) GROUNDWATER MONITORING ROUND XI

The Royal Mint, Llantrisant

Project No. **UK17-22119**
Issue No. **01**
Date **09/10/2015**
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Version Control Log

Revision	Date	Made by	Checked by	Approved by	Description
01	09/10/2015	RH	LC	LC	First Issue

CONTENTS

1.	INTRODUCTION	3
2.	SCOPE OF WORK	4
3.	GROUNDWATER ANALYSIS RESULTS	5
3.1	ZONE 0: Non-Target Zone	5
3.2	ZONE 1: Non-Ferrous Melting and Casting Activities	11
3.3	ZONE 2: Effluent and Cooling Sumps	11
3.4	ZONE 7: Effluent Treatment Plant	12
3.5	ZONE 8: COMAH Area	13
3.6	ZONE 9: Pickling, Duplex Plating Line, Annealing and Burnishing	15
4.	STATISTICAL ANALYSIS	18
4.1	Statistical Analysis for Metals and TPH	18
4.2	Statistical Analysis for VOCs	19
5.	CONCLUSIONS	21
5.1	ZONE 0: Non-Target Zone	21
5.2	ZONE 1: Non-Ferrous Melting and Casting Activities	21
5.3	ZONE 2: Effluent and Cooling Sumps	21
5.4	ZONE 7: Former Effluent Treatment Plant	21
5.5	ZONE 8: COMAH Area	22
5.6	ZONE 9: Pickling, Duplex Plating Line, Annealing and Burnishing	22
6.	RECOMMENDATIONS	23

TABLES

Table 4.1: Results of Trend Analysis for Metals and TPH in Groundwater	18
Table 4.2: Results of Trend Analysis for VOCs in Groundwater	19

APPENDICES

Appendix 1

Figures

Appendix 2

Laboratory Certificates

Appendix 3

Summary of Results

1. INTRODUCTION

Ramboll Environ UK Limited (Ramboll Environ) was commissioned by The Royal Mint (the Client), to design a Site Protection and Monitoring Programme (SPMP) in order to collect reference data for an IPPC Permit No. VP3539SL (the “permit”). This report has been written by Ramboll Environ on behalf of The Royal Mint and is to be submitted to Natural Resources Wales (NRW), formerly the Environment Agency (EA), in pursuance of Condition 4.1.7 of the Permit.

The first phase report of the SPMP was submitted to the EA in April 2006 following an intrusive ground investigation carried out in March 2006. The objectives of the environmental monitoring programme are to monitor the effectiveness of infrastructure and management procedures and provide a warning of loss of containment. The results of the monitoring programme will assist during the permit surrender process by determining the movement of pollutants both within and on/off the site; and will provide information on long term trends.

In accordance with the Design SPMP (Ref: 63C8777, October 2005) groundwater monitoring is to be carried out annually; however, an increased frequency of monitoring may be necessary to facilitate identifying the source and extent of any pollution.

The first round of monitoring was carried out subsequent to the intrusive investigation (initial sampling) in March 2006 and the laboratory results ('Reference Data') are tabulated within the first phase report. Groundwater monitoring has been carried out annually thereafter and this report details the results of the eleventh round of monitoring carried out on 3rd and 4th September 2015. The results have been compared with the Reference Data and are presented graphically in order to identify trends in groundwater contaminant concentrations over the monitoring period to date.

2. SCOPE OF WORK

Groundwater samples were recovered from eleven monitoring wells, eight of which were SPMP specific wells installed by Ramboll Environ in March 2006. The remaining three wells were selected in agreement with NRW and The Royal Mint following a review of the monitoring programme that addresses Action 1 of NRW Compliance Assessment Report (CAR) Ref: KP3135KV/0184470, 22nd July 2013. Each well was purged prior to the groundwater sample being obtained. The monitoring well locations are shown on Figure 1 in Appendix 1.

The groundwater samples were analysed for metals (As, Cd, Cr, Cu, Pb, Ni, Hg, Se, Zn, B), pH, total cyanide, sulphate, sulphide, alkalinity, VOC's and Total Petroleum Hydrocarbons (TPH).

For screening purposes, reference has been made to appropriate UK water quality guidelines. Environmental Quality Standards (EQS) were used on the basis that the principal Controlled Waters receptor for the site is the Nant Mychydd River, for which the freshwater EQS is most applicable.

New EQSs were published in 2010 under the Priority Substances (Directive 2008/105/EC) daughter directive of the Water Framework Directive (2000/60/EC). The European EQSs have been transposed into the River Basins Districts Typology, Standards and Groundwater threshold values (Water Framework Directive) (England and Wales) Directions 2010. The EQS are detailed in Part 4 (Specific Pollutants) and Part 5 (Priority Substances) of the Directive.

In the absence of an EQS under the WFD, we have referred to the former EQS under the Dangerous Substances Directive and failing that the UK Drinking Water Standards (UK DWS).

3. GROUNDWATER ANALYSIS RESULTS

A full set of laboratory certificates and a summary table of the ongoing groundwater monitoring results are presented in Appendix 2 and Appendix 3 respectively, and the main findings are summarised below. Graphs are presented showing concentrations recorded over time for selected determinands that have been detected above the laboratory limit of detection.

The site has been divided into zones according to their potential for pollution as described in the Design SPMP (Ramboll Environ Ref. 63C8777).

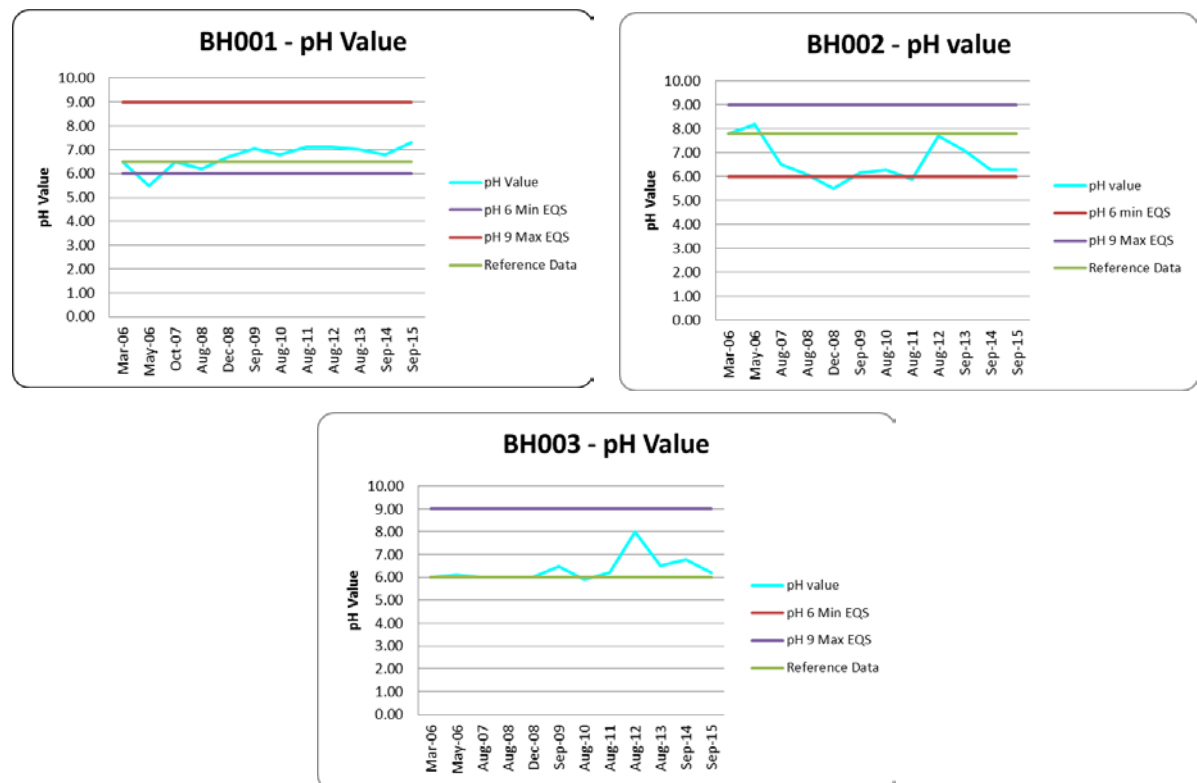
3.1 ZONE 0: Non-Target Zone

3.1.1 Perimeter Boreholes

Three boreholes (BH001, BH002 and BH003) are located outside the target zones. Both BH001 and BH002 are located approximately up-hydraulic gradient of the site (i.e. to the north); and BH003 is located down-hydraulic gradient (to the south).

pH Values

The pH values of groundwater from BH001, BH002 and BH003 were within the EQS range (pH 6 to pH 9). The pH values are relatively consistent with previous monitoring results; however the pH in BH001 has increased slightly (become less acidic) and represents the highest recorded value at this location.



Metals

Lead, mercury and selenium were not detected above the laboratory limits of detection (LOD) in the Zone 0 boreholes.

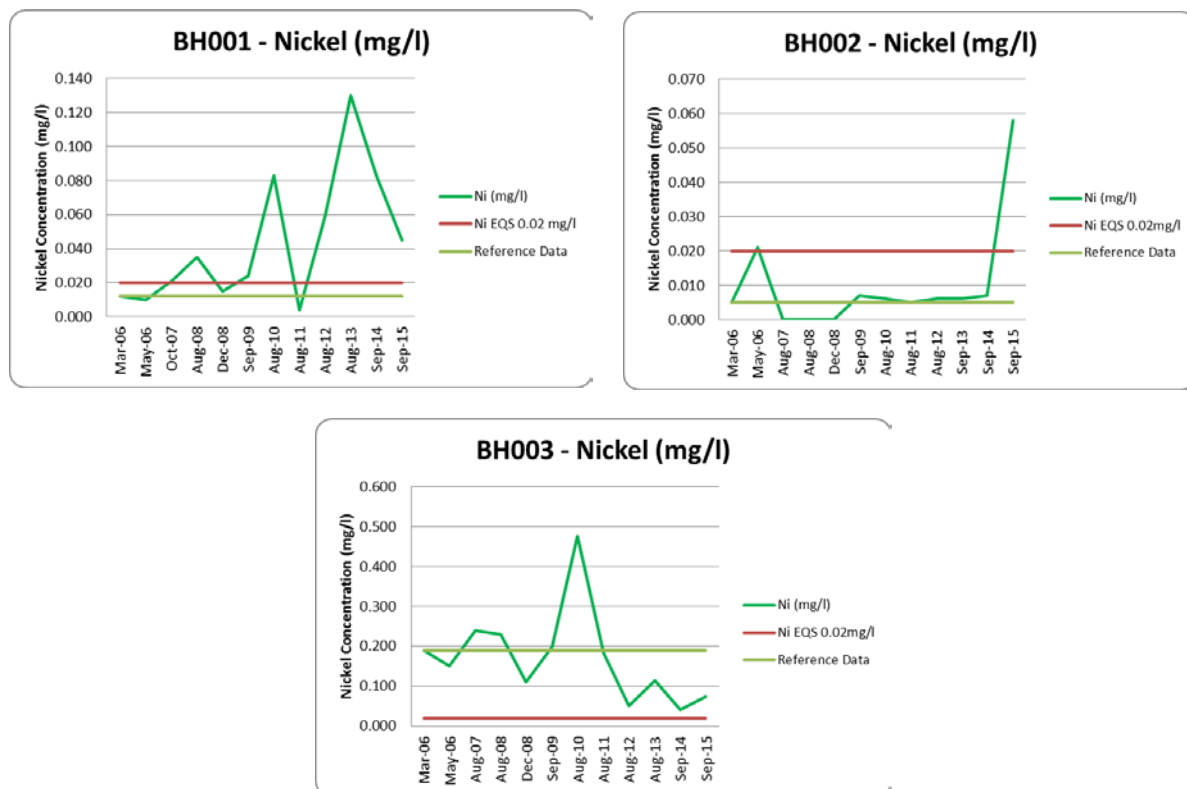
Arsenic was detected at a concentration of 0.001mg/l in BH001, which is equal to the laboratory limit of detection.

Boron was detected at concentrations of 0.150mg/l (BH001) and 0.020mg/l (BH003), which are below the EQS of 2mg/l.

Cadmium was detected in excess of the screening value of 0.00008mg/l in BH002 (0.0002mg/l) and BH003 (0.0002mg/l). The cadmium concentration in BH001 was recorded below the laboratory LOD (<0.0001mg/l).

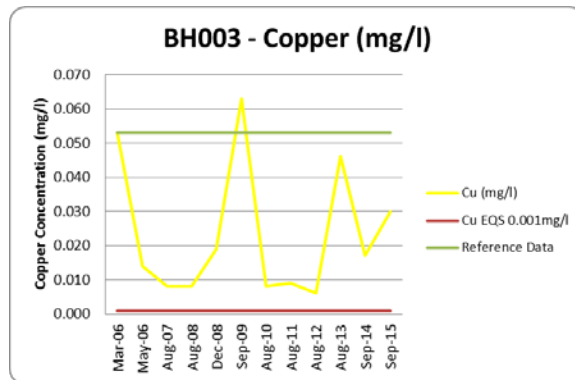
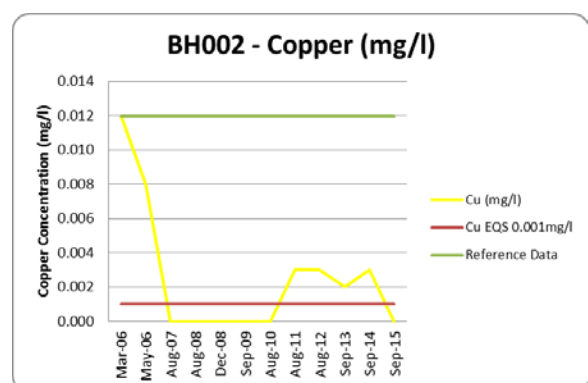
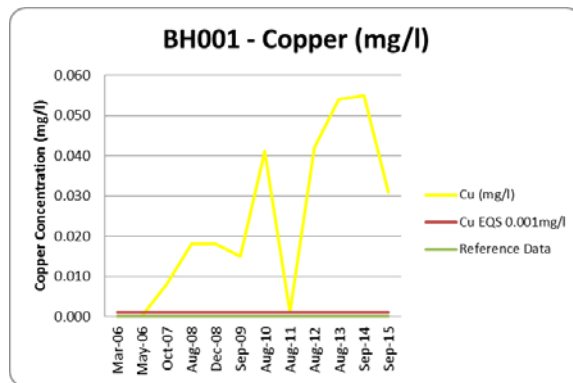
Chromium was detected at a concentration of 0.0130mg/l in BH002, which is in exceedance of the EQS value of 0.0047mg/l. This is the first time that chromium has been detected above the EQS in any of the three boundary boreholes. Chromium concentrations remained below the laboratory limit of detection in boreholes BH001 and BH003.

Nickel was detected above the EQS value of 0.02mg/l in BH001 (0.045mg/l), BH002 (0.058mg/l) and BH003 (0.073mg/l). The concentration has increased in both BH002 (up-hydraulic gradient) and BH003 (down-gradient) since the previous monitoring round. The concentrations of nickel in BH001 and BH003 are within a range recorded during previous monitoring rounds. The nickel concentration detected in BH002 is the maximum concentration recorded at this location. The concentration of nickel at this location is an order of magnitude higher than the previous monitoring round and exceeded the EQS for the first time since May 2006.

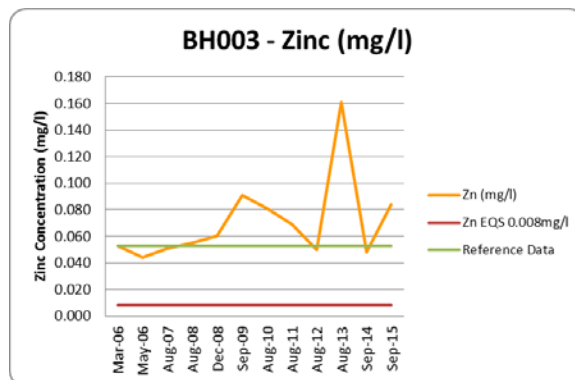
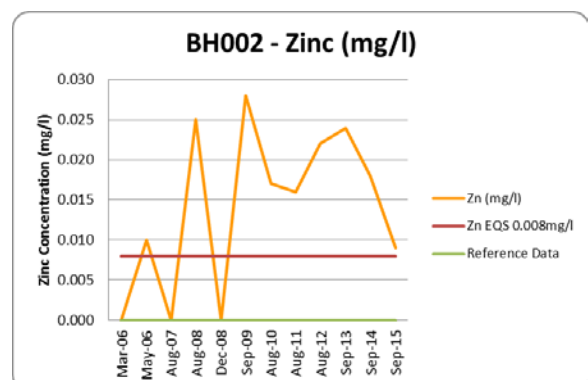
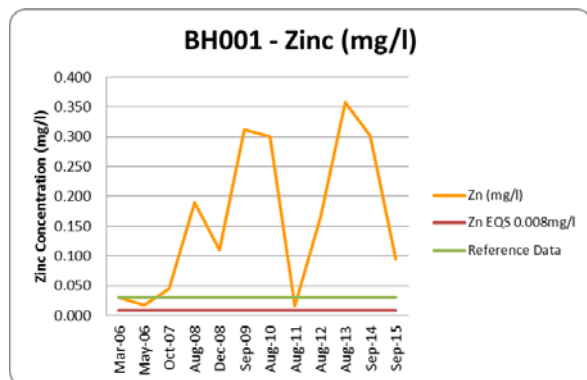


Copper was detected in BH001 (0.031mg/l) and BH003 (0.030mg/l) at concentrations above the relevant EQS values of 0.001mg/l and 0.028mg/l. The concentration of copper in BH002 was below the laboratory limit of detection. Concentrations recorded in BH001 and BH002 (up-hydraulic gradient) have decreased slightly since the previous monitoring round; the concentration in BH003 (down-hydraulic gradient) has increased slightly since the last monitoring round.

The Royal Mint, Llantrisant

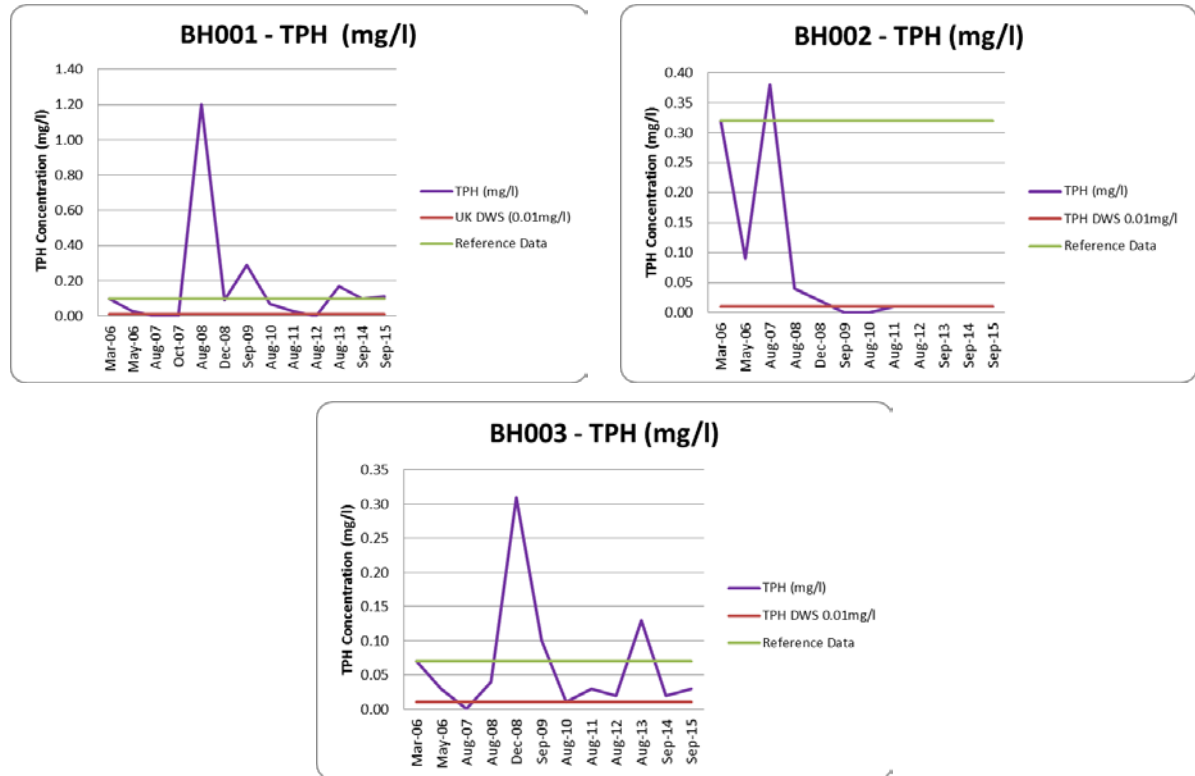


Zinc was detected in BH001 (0.094mg/l), BH002 (0.009mg/l) and BH003 (0.084mg/l) at concentrations exceeding the relevant EQS values of 0.008mg/l and 0.050mg/l. Zinc concentrations have decreased since the previous monitoring round in BH001 and BH002.



Hydrocarbons

Total Petroleum Hydrocarbons (TPH) was detected in BH001 (0.11mg/l), BH002 (0.01mg/l) and BH003 (0.03mg/l) at or above the screening value of 0.01mg/l. For BH001 this is also above the reference data; however, is within the range detected over the monitoring period to date.



VOCs

Trace concentrations of VOCs were only detected in groundwater from BH003, consistent with previous rounds of monitoring. 1,1,1-trichloroethane (TCA) was detected at 7µg/l which is below the EQS value of 100µg/l. Trichloroethene (TCE) has previously been detected in these monitoring wells; however, on this occasion TCE was below the laboratory LOD (<5µg/l).

Cyanide

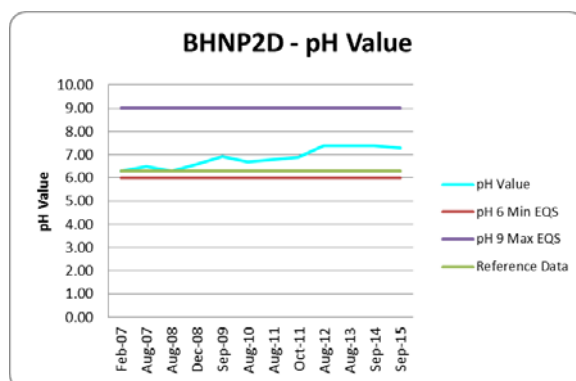
Cyanide was not detected above the laboratory LOD (<0.02mg/l) during the most recent round of monitoring.

3.1.2 Additional Perimeter Monitoring Wells

Four additional monitoring wells located in the south-east of the site were included within the SPMP monitoring programme on this occasion as requested by NRW. The wells are positioned between Zone 8 and the River Nant Mychydd and comprise: BHNP2, BHE5, BHE6 and CBH6. BHNP2 comprises dual monitoring wells, shallow and deep; this monitoring location has been included in the SPMP since its installation in 2007, only the deep well is monitored under the SPMP. The other three boreholes (BHE5, BHE6 and CBH6) were installed by Celtic as part of a remediation programme in this area and they have only been included in the SPMP since 2013 and have been monitored on three occasions.

pH Values

The pH values in this area ranged from pH 7.1 (BHE6) to pH 7.4 (BHE5 and CBH6) and are fairly consistent with previous rounds of monitoring.



Metals

Arsenic, boron and lead were not detected above the laboratory limits of detection (LOD) in any of the four boreholes in this area.

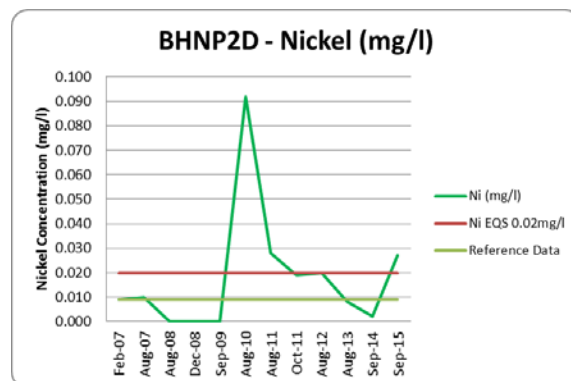
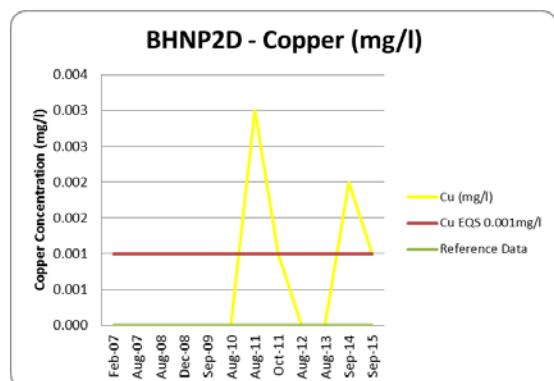
Cadmium was detected above the laboratory limit of detection (0.0001mg/l) in BHNP2 (0.0003mg/l), BHE5 (0.0002mg/l), BHE6 (0.0003mg/l) and CBH6 (0.0002mg/l). All recorded concentrations therefore exceed the EQS for cadmium of 0.00008mg/l. Cadmium was not detected in BHE6 and CBH6 during the previous round of monitoring.

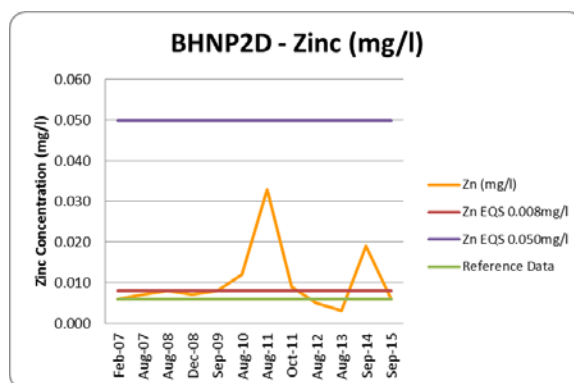
Chromium was detected in all sampling locations in this area, exceeding the EQS of 0.0047mg/l in boreholes BHNP2 (0.006mg/l), BHE5 (0.018mg/l), BHE6 (0.012mg/l) and CBH6 (0.011mg/l). This is the first time that chromium has been detected at a concentration above the EQS since monitoring of each borehole began.

The concentration of copper was recorded at or above the laboratory limit of detection of 0.001mg/l in BHNP2 (0.001mg/l), BHE5 (0.001mg/l) and CBH6 (0.004mg/l). All recorded concentrations were below the relevant EQS of 0.006mg/l.

Nickel was detected in BHNP2 (0.027mg/l), BHE6 (0.075mg/l), BHE5 (0.052mg/l) and CBH6 (0.045mg/l); which all exceed the EQS of 0.020mg/l. Concentrations of nickel have increased in all sampling locations in this area since the last monitoring round.

Zinc was detected above the laboratory limit of detection of 0.002mg/l in BHNP2 (0.006mg/l), BHE5 (0.003mg/l), BHE6 (0.006mg/l) and CBH6 (0.005mg/l); all below the EQS of 0.050mg/l for total alkalinity as CaCO₃ of between 50mg/l and 100mg/l.

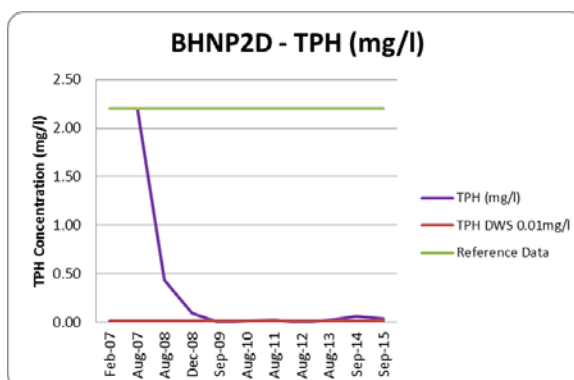




Hydrocarbons

TPH was detected at concentrations above the screening value of 0.01mg/l in BHNP2 (0.04mg/l), BHE5 (0.16mg/l), BHE6 (0.22mg/l) and CBH6 (0.06mg/l). The presence of mineral oil has previously been identified in samples from boreholes BHE5 and BHE6, which is the likely source of elevated TPH concentrations at these locations. When boreholes BHE5 and BHE6 were installed in 2010 (Ramboll Environ Ref UK17-15394), field observations of an oily sheen were noted during groundwater sampling of BHE5 and BHE6 and maximum TPH concentrations of 25.4mg/l (BHE5) and 12.6mg/l (BHE6) were recorded.

TPH concentrations have slightly decreased in boreholes BHNP2 and BHE5 since the previous round of monitoring. However, slight increases have been recorded in boreholes BHE6 and CBH6.



VOCs

VOC remediation has been carried out in this area by Celtic between 2011 and 2012 and the additional boreholes were added to the SPMP as a requirement of NRW to verify the success of the remediation scheme. Trace concentrations of VOCs were detected in groundwater from two of the monitoring wells; BHNP2 and CBH6.

The following compounds were detected in BHNP2: 1,1,1-trichloroethane (9µg/l); 1,1-dichloroethane (6µg/l); cis 1,2-dichloroethene (3µg/l); and trichloroethene (5µg/l). The VOC concentrations have remained fairly similar to the previous round of monitoring and do not exceed the respective EQS screening values.

The following VOCs were detected in CBH6: 1,1,1-trichloroethane (7µg/l); trichloroethene (7µg/l); and cis 1,2-dichloroethene (3µg/l). None of the recorded concentrations have exceeded the respective screening criteria during the most recent round of monitoring and the number of compounds recorded above the laboratory LOD remained the same as the previous monitoring round. Prior to remediation, trichloroethene was detected at a concentration of 54µg/l.

Cyanide

Cyanide was not detected above the laboratory limit of detection (<0.02 mg/l) in any of the sampling locations in this area during the most recent round of monitoring.

3.2 ZONE 1: Non-Ferrous Melting and Casting Activities

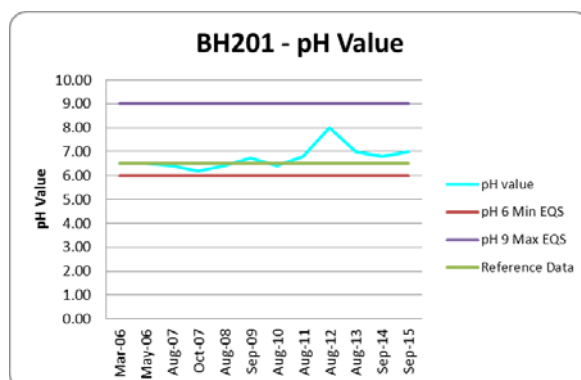
Zone 1 is located in the north-west section of the site and includes the MRB (Melting, Rolling and Blanking) building. There is one monitoring well in the area, BH101 located up-gradient of the MRB (i.e. to the north). Based on the previous stable or decreasing concentrations of determinands in this monitoring well, BH101 has not been included in the SPMP monitoring programme since August 2012. This decision was made following a review of the SPMP monitoring programme undertaken to address Action 1 of the Compliance Assessment Report (CAR) (Ref: KP3135KV/0184470) issued by NRW.

3.3 ZONE 2: Effluent and Cooling Sumps

Zone 2 is located in the centre of the site between the MRB building (to the north) and the Ancillary Services building (to the south). There is one monitoring well in this area, BH201 located immediately south east of the underground soluble oil chamber (Chamber 19C).

pH Value

The pH value recorded in BH201 was pH 7.0, which is a slight increase (less acidic) since the previous monitoring round and within the EQS values. The reference value at this location is pH 6.5.



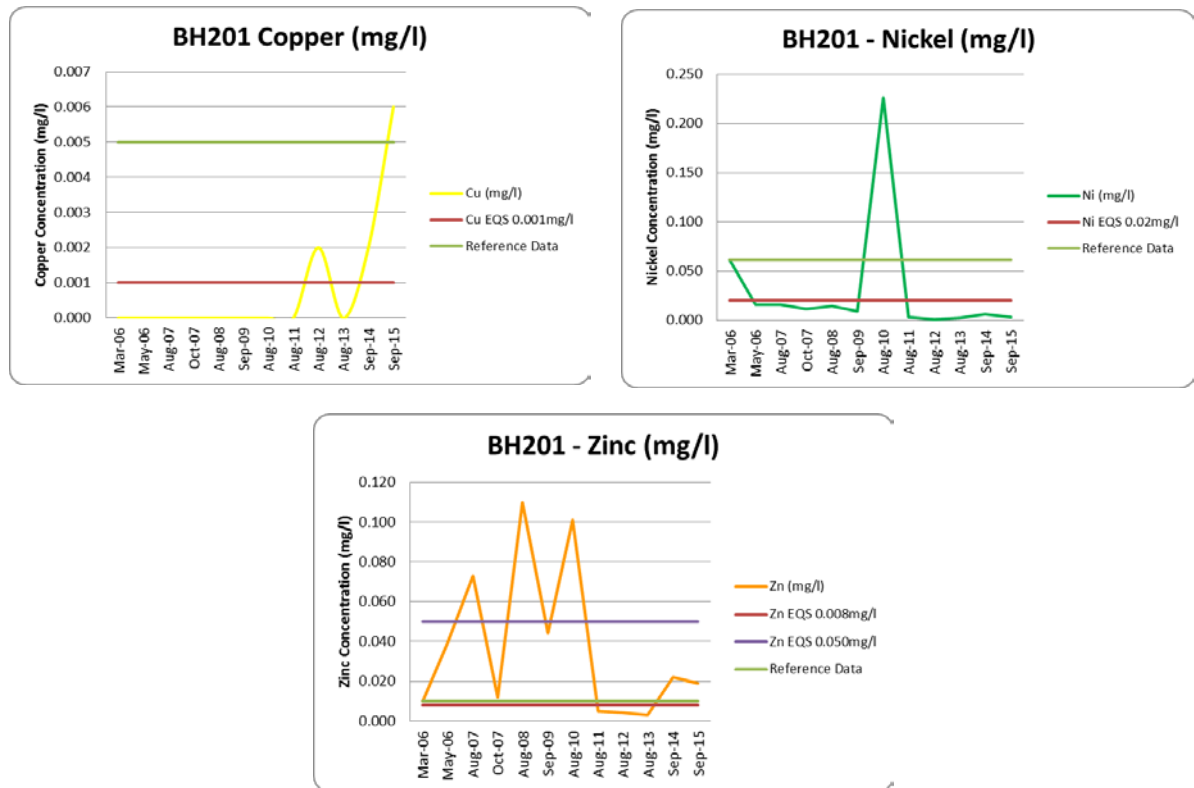
Metals

Arsenic, boron, cadmium, chromium, lead, mercury and selenium were not detected above the laboratory limits of detection (LOD).

The concentration of copper was recorded at 0.006mg/l, which is above the reference data and equal to the EQS of 0.006mg/l (for total alkalinity as CaCO₃ of 50mg/l to 100mg/l).

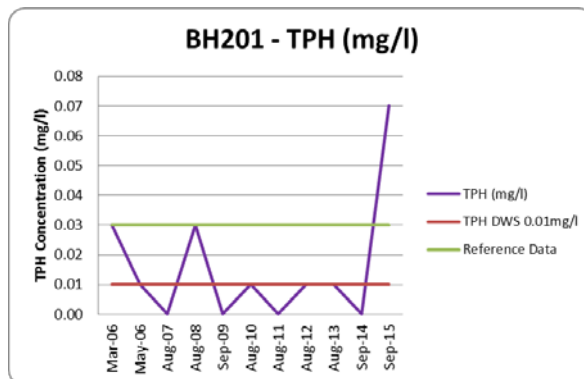
Nickel concentration was detected at 0.003mg/l, which is below the EQS of 0.02mg/l.

The concentration of zinc was recorded at 0.019mg/l, which is a slight decrease on the previous round of monitoring and above the reference data; this remains below the EQS value of 0.050mg/l for total alkalinity as CaCO₃ of 50mg/l to 100mg/l.



Hydrocarbons

TPH was detected at a concentration of 0.07mg/l, which is above the UK DWS (0.01mg/l) and greater than the reference value of 0.03mg/l. Whilst not significantly high, this result represents the maximum TPH concentration recorded at this location.



VOCs

The concentration of 1,1,1-trichloroethene was detected above the laboratory LOD in BH201. Historically, 1,1,1-trichloroethene has regularly been detected in groundwater from BH201 at low concentrations; although always well below the adopted screening value of 100µg/l.

Cyanide

Cyanide was not detected above the LOD (<0.02 mg/l).

3.4 ZONE 7: Effluent Treatment Plant

Zone 7 is located in the COMAH area to the west of Zone 8 and comprises the former effluent treatment plant (ETP) which was decommissioned in 2012. The two monitoring wells in this area

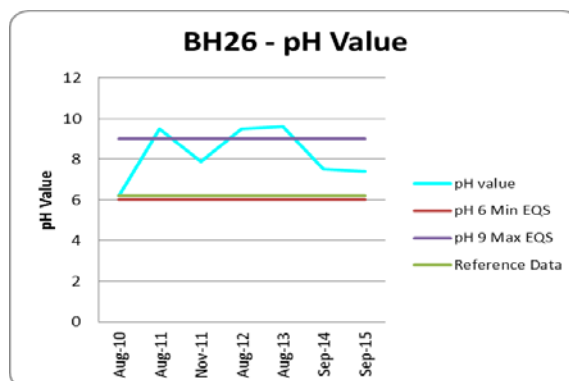
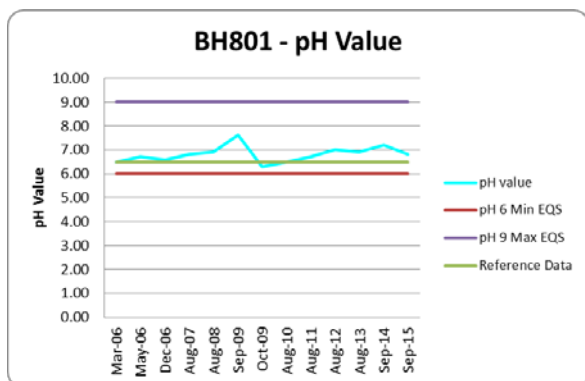
(BH701 and WS701) have been removed from the SPMP monitoring programme based on stable or decreasing concentrations of determinands and the decommissioning of the ETP. This decision was made following a review of the SPMP monitoring programme undertaken to address Action 1 of the Compliance Assessment Report (CAR) (Ref: KP3135KV/0184470) issued by NRW.

3.5 ZONE 8: COMAH Area

Zone 8 is located in the north-east section of the site and comprises three copper plating buildings, two nickel plating buildings, a chemical store, a coin store and a services area for acid storage and dilution. There were originally two monitoring wells located in Zone 8 (BH801 and BH802). BH801 is located to the east of Copper Plating 2 (CP2); and BH802 was formerly located immediately south of NP1. BH802 was decommissioned in 2010 due to the construction of a new Waste Water Recycling Plant (WWRP). BH26 has replaced BH802 as an SPMP monitoring well which is located approximately 11m distant (to the east).

pH Value

The pH value of groundwater samples from BH801 was pH 6.8 and the pH value recorded in BH26 was pH 7.4. Both recorded values are within the maximum and minimum EQS values of pH 9.0 and 6.0 and are each within the ranges of values previously reported at these locations.



Metals

Lead and mercury were not detected above the laboratory LOD in BH801 and BH26. In addition, arsenic, boron and selenium were not detected above the laboratory LOD in BH801 only; which is generally consistent with previous rounds of monitoring.

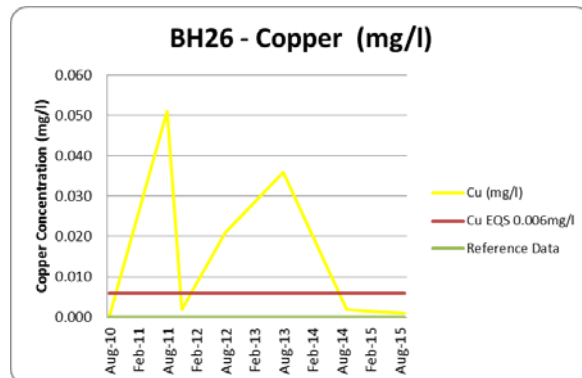
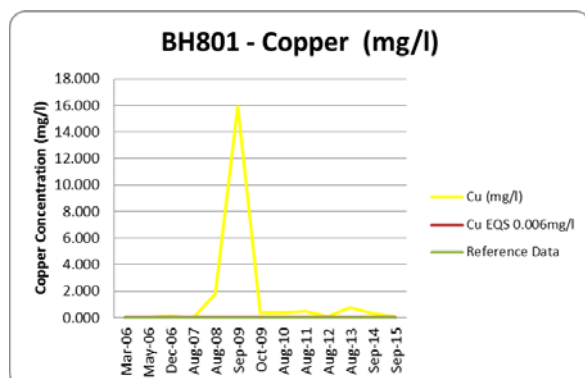
Arsenic was detected in BH26 at a concentration of 0.019mg/l, which is above the EQS value of 0.05mg/l and above the reference data value.

Boron was detected in BH26 (1.95mg/l), which does not exceed the EQS value of 2mg/l.

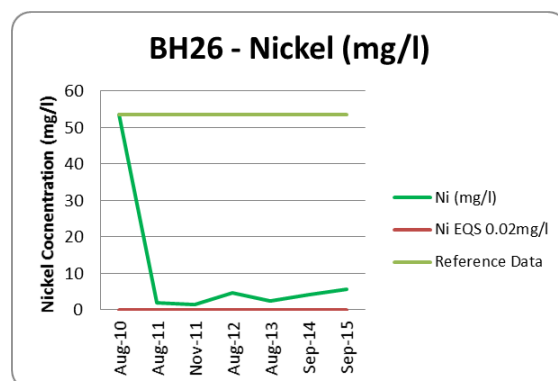
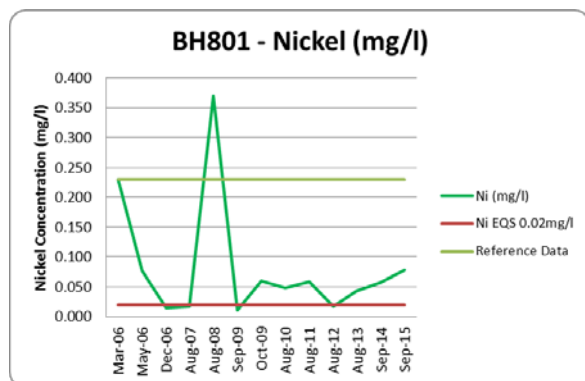
Cadmium concentrations were recorded above the LOD in both locations within Zone 8; in BH801 at 0.0002mg/l and in BH26 at 0.0002mg/l. Recorded values exceed the EQS value of 0.00008mg/l but are consistent with previous monitoring rounds.

Chromium was recorded above the LOD of 0.001mg/l in each of the two boreholes on Zone 8. The recorded concentrations in BH801 (0.014mg/l) and BH26 (0.020mg/l) represent the maximum recorded concentrations at these locations and exceed the EQS of 0.0047mg/l in each case.

The concentration of copper recorded in BH801 (0.086mg/l) has decreased since the previous monitoring round; however, remains above the relevant EQS value of 0.006mg/l. The concentration of copper in BH26 (0.001mg/l) does not exceed the relevant EQS and is similar to the previous results for this location.

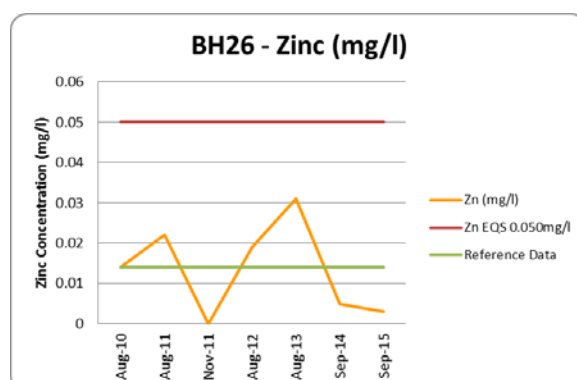
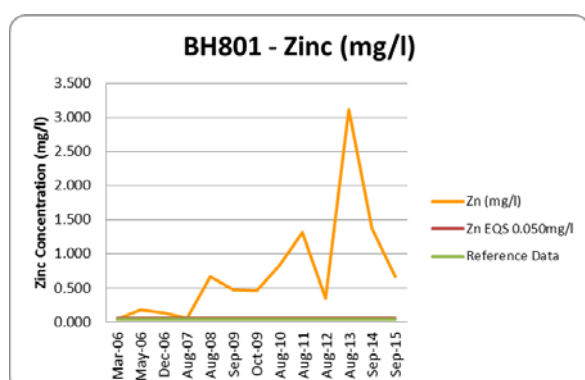


Concentrations of nickel above the laboratory LOD were recorded in BH801 (0.078mg/l) and BH26 (5.741mg/l), which exceed the EQS value of 0.02mg/l. These values are below the reference data for BH801 and BH26.



Selenium was detected above the laboratory LOD of 0.001mg/l in BH26 (0.001mg/l), which remains below the EQS value of 0.01mg/l.

Zinc was detected in BH801 at 0.659mg/l, which exceeds the relevant EQS value of 0.050mg/l. The concentration in BH26 was 0.003mg/l, which does not exceed the relevant EQS value of 0.125mg/l and is consistent with previous rounds of monitoring.

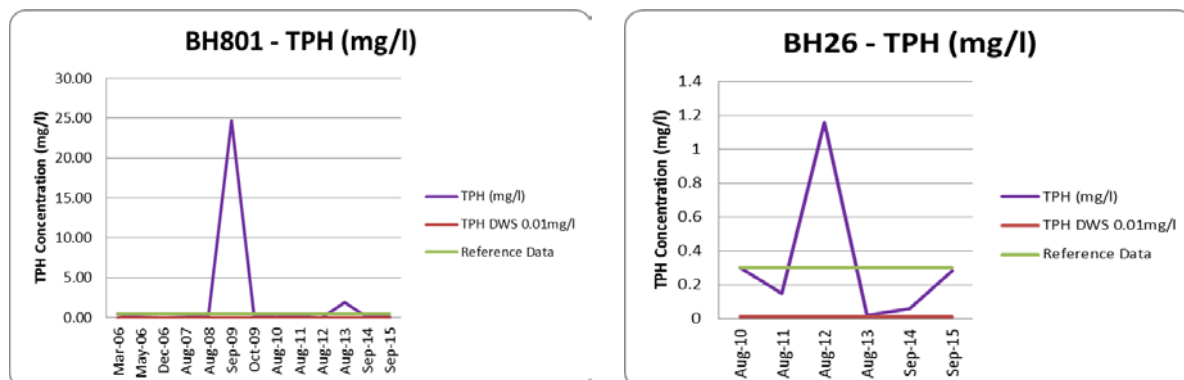


Cyanide was not detected above the laboratory LOD (<0.02) in BH801 or BH26. This represents a continuous decrease in cyanide concentration in BH801 since August 2012.

Historically, sulphate has regularly been detected at concentrations exceeding the UK DWS of 400mg/l in BH26. However, during the most recent round of monitoring, a concentration of 335mg/l was recorded; which represents the second consecutive recorded concentration below the UK DWS.

Hydrocarbons

TPH was detected in BH801 at 0.11mg/l and BH26 at 0.28mg/l, both exceeding the DWS of 0.01mg/l. Both concentrations are below the relevant reference data values.



VOCs

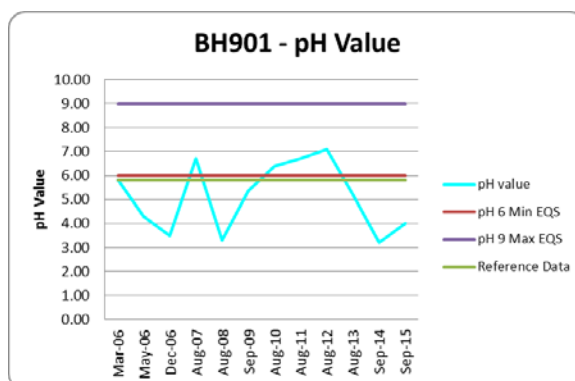
No VOCs were detected above the various laboratory LOD in the Zone 8 monitoring wells.

3.6 ZONE 9: Pickling, Duplex Plating Line, Annealing and Burnishing

Zone 9 is located south of the COMAH area and includes the annealing, pickling and plating (AP&P) building. There is one monitoring well in this area, BH901, located between the AP&P and the CPR (Coin Press Room).

pH Value

The pH value of the groundwater sample from BH901 was pH 4.0. The value has slightly increased (become less acidic) since the previous round of monitoring; however, this remains below the reference data and the EQS minimum value of pH 6.0.



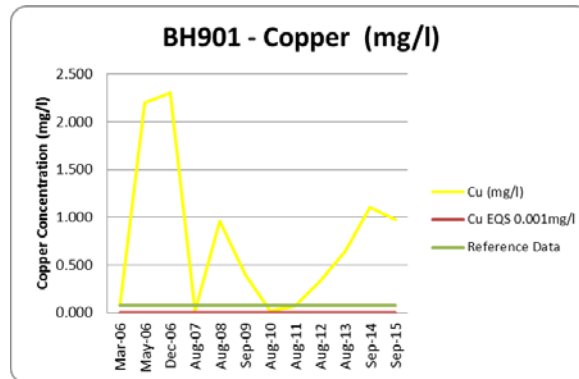
Metals

Arsenic, chromium, lead, mercury and selenium were not detected above the laboratory LOD.

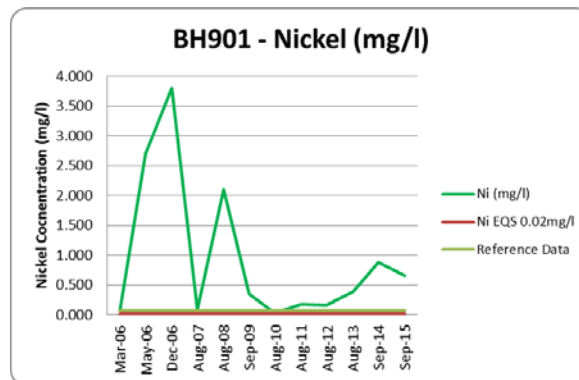
Boron was reported at a concentration of 0.160g/l, which represents the maximum concentration recorded at this location. However, it is below the EQS value of 2mg/l.

Cadmium was recorded above the laboratory LOD at a concentration of 0.0010mg/l, which exceeds the EQS value of 0.00008mg/l. The cadmium concentration has decreased slightly during the most recent round of monitoring, following a continued increase over the previous four consecutive monitoring rounds.

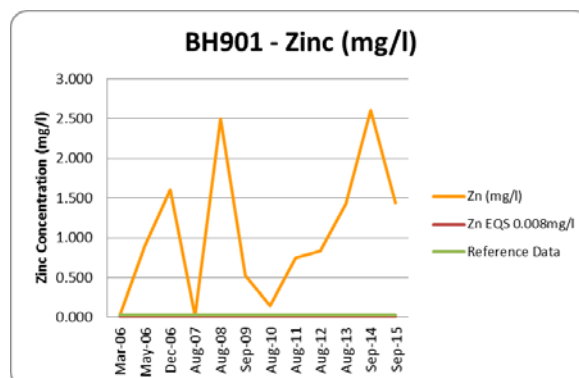
The concentration of copper was recorded at 0.970mg/l, which has slightly decreased since the previous round of monitoring. This value exceeds the relevant EQS of 0.001mg/l.



Nickel was detected at a concentration of 0.656mg/l, which exceeds the EQS value of 0.02mg/l and has decreased slightly since the previous round of monitoring.



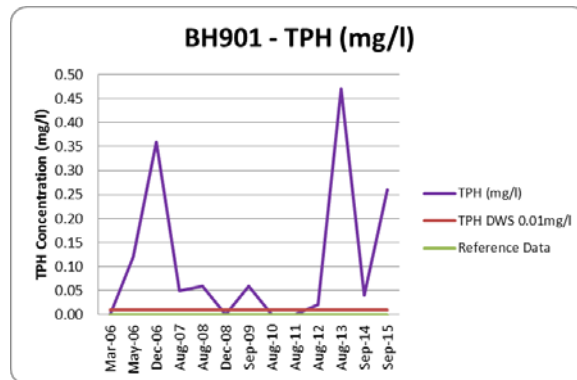
Zinc was detected at a concentration of 1.438mg/l which exceeds the EQS value of 0.008mg/l. This concentration has decreased since the previous round of monitoring, which was the highest recorded concentration at this location.



The Royal Mint, Llantrisant

Hydrocarbons

TPH was detected at a concentration of 0.26mg/l, which exceeds the DWS of 0.01mg/l and is within the range of previously recorded concentrations at this location.



VOCs

VOCs were not detected at concentrations above the relevant laboratory limits of detection in BH901 during this monitoring round.

Cyanide

Cyanide was not detected above the LOD (<0.02 mg/l).

4. STATISTICAL ANALYSIS

Data from previous rounds of monitoring have been further assessed using the Mann-Kendall Test, a non-parametric statistical test to detect trends in data. Mann Kendal test has been performed using available data from monitoring rounds undertaken from 2006 to 2015. Selected determinands that have regularly exceeded the EQS during the monitoring period have been assessed using this approach. Where sufficient data is available, the results of the statistical analysis for the main contaminants of concern are shown in Tables 4.1 and 4.2 below and are also presented for each sampling location on Figure 2.

4.1 Statistical Analysis for Metals and TPH

Table 4.1: Results of Trend Analysis for Metals and TPH in Groundwater

Borehole Location	TPH	Copper	Nickel	Zinc
BH001	No trend	Increasing	Increasing	Probably Increasing
BH002	Decreasing	No Trend	Probably Increasing	No Trend
BH003	No trend	No Trend	Decreasing	Probably Increasing
BHNP2	No trend	Probably Increasing	No Trend	No Trend
BH201	Probably Decreasing	Increasing	Decreasing	No Trend
BH801	No trend	No Trend	No trend	Increasing
BH26	No trend	No trend	No trend	Stable
BH901	No trend	No trend	No trend	Probably Increasing

In general, the majority of monitoring wells have demonstrated 'no trend' for the concentrations of determinands of concern, with the following exceptions:

- BH001 (Zone 0, up-gradient) has identified 'increasing' or 'probably increasing' trends for concentrations of copper, nickel and zinc. Whilst the concentrations of copper, nickel and zinc have all decreased slightly during the most recent monitoring round, concentrations are elevated when compared with historical values.
- BH002 (Zone 0) identified a 'probably increasing' trend for nickel. The concentration of nickel at this location is an order of magnitude higher than the previous monitoring round and exceeded the EQS for the first time since May 2006. BH002 also showed a 'decreasing' trend for TPH.
- BH003 showed a 'probably increasing' trend for zinc and a 'decreasing' trend for nickel.
- BHNP2 showed a 'probably increasing' trend for copper; however, recorded concentrations are not significantly elevated and remain well below the relevant EQS value.
- BH201 showed 'decreasing' trends for TPH and nickel and an 'increasing' trend for copper. The concentration of copper equalled the relevant EQS value at this location during the most recent round of monitoring.
- An 'increasing' trend was identified for zinc concentrations in BH801.

- A 'stable' trend was identified for zinc in BH26 and concentrations are not significantly elevated.
- BH901 has identified a 'probably increasing' trend for zinc. The concentrations of metals copper and nickel have all consistently increased over the last four monitoring rounds; however, significant fluctuations have occurred over the monitoring period to date. Increased concentrations of metals tend to be associated with decreased pH values.

The monitoring locations that were removed from the SPMP monitoring programme prior to the August 2013 monitoring round (BHNP1, BH101, BH701 and WS701) did not show any 'increasing' or 'probably increasing' trends prior to removal from the programme.

Due to the construction of the effluent treatment plant, BH802 was decommissioned in 2010. Analysis showed that there were 'stable' and 'decreasing' trends in concentrations at this location prior to decommissioning. The alternative location BH26, which replaced BH802 in the SPMP monitoring programme shows 'no trend' for all analysed determinands; this location has now been sampled on seven occasions.

The Mann-Kendall analysis has not identified any 'increasing' or 'probably increasing' trends for TPH in any of the Zones across the site.

4.2 Statistical Analysis for VOCs

Throughout the monitoring period, there have been VOCs recorded above the relevant EQS value in locations BHNP1 (no longer monitored within the programme) and BHNP2. Groundwater remediation has been undertaken in this area by Celtic during 2011 and 2012. Follow-up groundwater monitoring is currently on-going. Mann-Kendall analysis was carried out on the relevant VOC data at these locations, a 'stable' trend was identified for 1,1,1-trichloroethane in BHNP2. Results of the statistical analysis for VOCs are presented in Table 4.2 below.

Table 4.2: Results of Trend Analysis for VOCs in Groundwater

Borehole Location	1,1,1-Trichloroethane	Trichloroethene	Tetrachloroethene
BH001	No Exceedances	No Trend	No Exceedances
BH002	No Exceedances	Stable	No Exceedances
BH003	Probably Increasing	Decreasing	No Exceedances
BHNP2	Stable	Stable	No Trend
BH201	Probably Increasing	Decreasing	No Exceedances
BH801	No Exceedances	No Exceedances	No Exceedances
BH901	No Trend	No Exceedances	No Exceedances

A trend was identified for 1,1,1-trichloroethane and trichloroethene in BHNP2 where the detected concentrations over time are identified as 'stable'. A 'stable' trend was also identified for trichloroethene in BH002. Given that VOC remediation has been carried out in groundwater at this location, Ramboll Environ anticipates the trends to either remain stable or decrease over time.

A trend was identified for 1,1,1-trichloroethene in both BH003 and BH201, where the detected concentrations are 'possibly Increasing'. However, detected concentrations at these locations are not considered to be significant and they remain well below the screening values. There are no recorded incidents of exceeded screening values at this location so far in the monitoring programme.

The Royal Mint, Llantrisant

'Decreasing' trends were identified for trichloroethene in BH003 and BH201. Trichloroethene has not been detected above the laboratory limit of detection at these locations since August 2007 (BH201) and December 2008 (BH003).

5. CONCLUSIONS

5.1 ZONE 0: Non-Target Zone

Concentrations of the contaminants of concern, including copper, nickel and zinc, have been identified as 'increasing' or 'probably increasing' in BH001 (up-hydraulic gradient of site); however, concentrations have decreased since the previous monitoring round. The trend is indicated as increasing overall, due to the comparison with historical values. BH001 is located up-gradient of the main site activities, however, due to the continued exceedance of EQS values, this area should continue to be the focus of ongoing work, i.e. mitigation measures to prevent the pathway for contaminants to groundwater and drainage systems.

The concentration of nickel recorded in BH002 is the maximum recorded to date and has exceeded the EQS for the first time since May 2006. BH002 is located up-hydraulic gradient of the COMAH area; however, the activities therein include nickel plating. Potential sources of the increase should be considered at the earliest convenience.

The majority of metals in the perimeter boreholes in the south-east of the site (BHNP2, BHE5, BHE6 and CBH6) were below the laboratory LOD and below the relevant EQS values. However, nickel and chromium concentrations have increased in each of the boreholes in this area, exceeding the relevant EQS in each case.

Chromium has been detected for the first time above the screening criteria in all of the monitoring wells located in the east of the site, including BH002 located up-gradient. Potential sources of chromium should be considered within the COMAH area.

Elevated TPH concentrations, found to be consistent with mineral oil were identified in the boreholes located within the perimeter fence (monitored for the third time as part of the SPMP). A source has not been identified to date; however, potential sources in this area should be investigated by The Royal Mint.

A historical source of VOC contamination in groundwater was previously identified and investigated by Ramboll Environ. Subsequent remediation using In-Situ Chemical Oxidation (ISCO) was carried out by Celtic between 2011 and 2012. A follow-up phase of groundwater monitoring is currently on-going. VOC concentrations did not exceed the respective EQS screening criteria on this occasion, therefore indicating a decrease in overall concentrations and the success of the remediation methodology.

5.2 ZONE 1: Non-Ferrous Melting and Casting Activities

Based on stable or decreasing concentrations of determinands, BH101 is no longer included in the SPMP monitoring programme.

5.3 ZONE 2: Effluent and Cooling Sumps

Overall, metal concentrations have remained relatively consistent with previous monitoring rounds at this location; however, the concentration of TPH has increased slightly to above the screening value. Although not considered to be significantly elevated, the TPH concentration recorded on this occasion is the maximum to date.

5.4 ZONE 7: Former Effluent Treatment Plant

BH701 and WS701 have been removed from the SPMP monitoring programme based on stable or decreasing concentrations of determinands; and the decommissioning of the ETP.

5.5 ZONE 8: COMAH Area

Copper, nickel and zinc concentrations have remained within the same order of magnitude as previous monitoring rounds; however, statistical analysis has indicated an increasing trend for zinc at this location, possibly influenced by a maximum value recorded in August 2013.

In BH26, the concentration of nickel remains elevated. It is understood that groundwater continues to be abstracted from BH26 (carried out by Celtic) and treated in the waste water recycling plant. Overall, the nickel concentration has decreased significantly since 2010. On-going monitoring by Celtic has demonstrated that the nickel plume is currently stable and is not expanding. NRW has agreed that until sources beneath the Nickel Plating 1 building are remediated, the pumping should continue.

Chromium has been recorded in both BH801 and BH26 at the maximum concentrations to date, which exceed the EQS values and reference data.

5.6 ZONE 9: Pickling, Duplex Plating Line, Annealing and Burnishing

Decreases in the concentration of copper, nickel and zinc have been detected in BH901 and values for copper and nickel remain below those seen in the early rounds of the monitoring programme. A maximum concentration of zinc was recorded during the previous round of monitoring and the Mann-Kendall statistical analysis identified a 'probably increasing' trend at this location.

The pH value of BH901 continues to fluctuate and has increased slightly (become less acidic) since the previous round of monitoring, which was the lowest value recorded at this location. The pH value is inversely proportional to concentrations of metals in the groundwater. Increased mobility of metals may be caused by the increased acidity of groundwater, resulting in greater concentrations of metals recorded at this location.

The adjacent borehole (BH9), (although not monitored under the SPMP) has identified similarly elevated concentrations of metals in this area. Overall, the results and visual observations indicate that there is a leakage within Building 9A or from an associated below ground pipe.

6. RECOMMENDATIONS

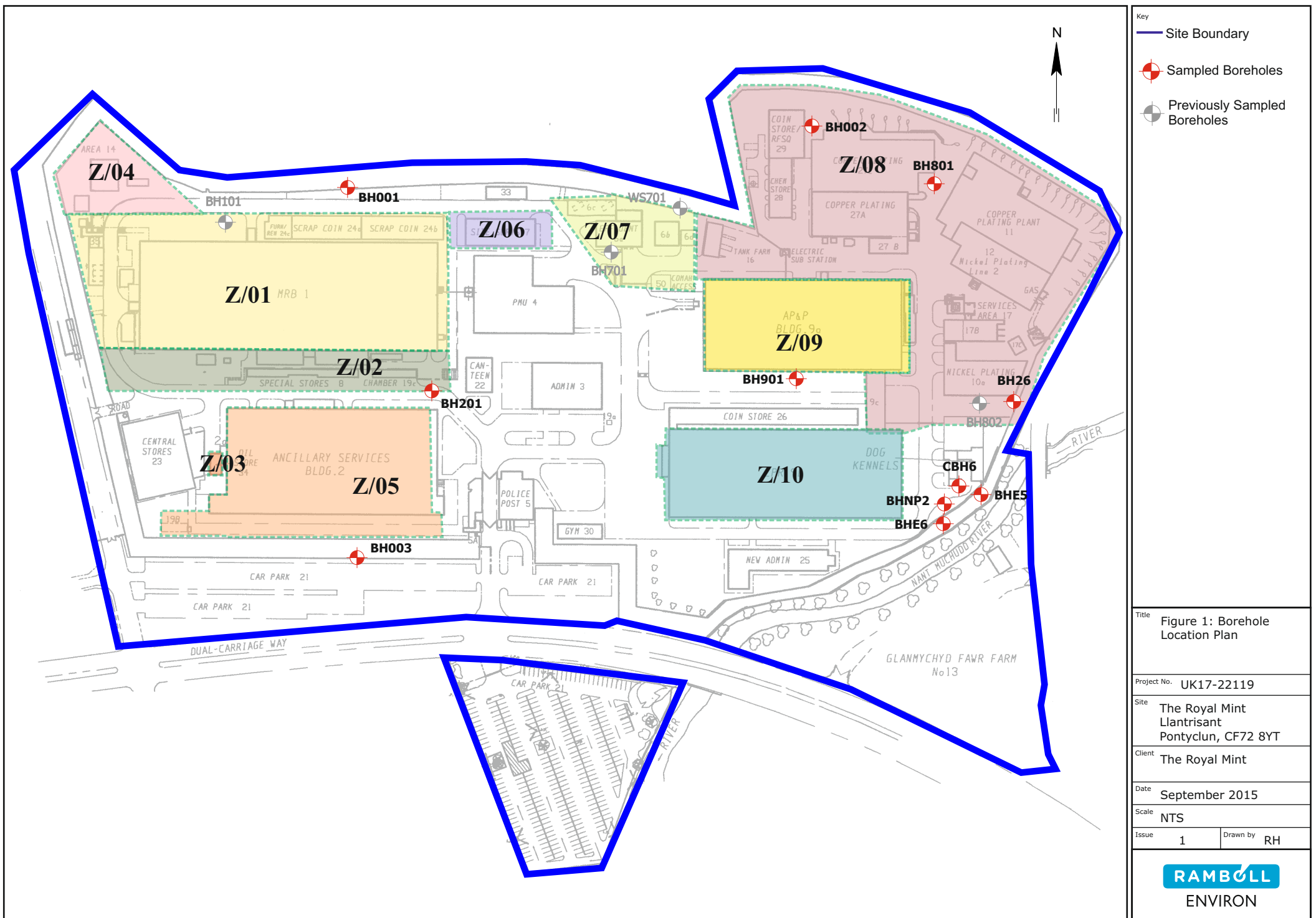
On the basis of this round of groundwater monitoring the following recommendations are made:

- A significant increase in nickel concentration has been detected in BH002 located up-hydraulic gradient of the COMAH area. Potential sources of the increase should be considered at the earliest convenience.
- Chromium has been detected in the boreholes located in the east of the site for the first time at elevated concentrations. Potential sources should be considered and the species of chromium (i.e. III or VI) determined. *Ramboll Environ will be undertaking monitoring at the site under a separate contract on 12th October 2015. Speciated chromium will be added to the analysis schedule in order to assist in determining the source.*
- It is recommended that continued efforts are made to prevent the entry of metals into soil and groundwater in the area to the north of the MRB, where increases in concentrations of metals have been recorded in BH001. Actions to reduce the entry of metals into soil and groundwater could include, for example, improving the storage and handling of metal products on exposed soil and hard surfacing, reducing runoff from existing hardstanding or covering the storage areas to reduce infiltration.
- The programme of drain cleaning appears to be having a positive effect on metals detected in groundwater across the wider site and it is recommended that this programme is continued. Furthermore, below ground process pipes are progressively being diverted above-ground which should also continue. NRW has confirmed that it is in agreement with this approach. A full access culvert inspection has been carried out since the previous round of SPMP monitoring. The inspection identified several inlets into the culvert and a build-up of sediment in areas which was found to have elevated concentrations of metals. The next stage of work will be to clean out the culvert and seal off redundant inlets acting as pathways for contamination; this work is due to commence on 12th October 2015.
- Groundwater pumping from BH26 should continue until NP1 is decommissioned and a more detailed investigation of the contaminant source area beneath NP1 can be performed.
- In the area of borehole BHNP2D, VOC concentrations have decreased since remediation of this area commenced and there were no exceedances of the EQS during the recent monitoring round. Following the completion of VOC remediation in this area, the inclusion of boreholes BHE5, BHE6 and CBH6 into the ongoing SPMP forms part of follow on work to meet the specific objectives and remediation targets agreed with NRW.
- Elevated concentrations of copper, nickel and zinc have consistently been detected in BH901 in Zone 9. Ramboll Environ has proposed to undertake further investigation in this area, comprising a compliance review of Building 9A (Pickling and Plating). This would include a detailed inspection to review the facility infrastructure, including the provision of storage, containment and handling of potentially polluting substances. Given the consistently elevated concentrations in BH901 and the observations of foamy water, Ramboll Environ considers this should be a priority going forward.
- Further rounds of groundwater monitoring should be carried out on an annual basis, in accordance with the Design SPMP.

The results of this SPMP groundwater monitoring occasion should be provided to the NRW in accordance with the Permit.

APPENDIX 1

FIGURES



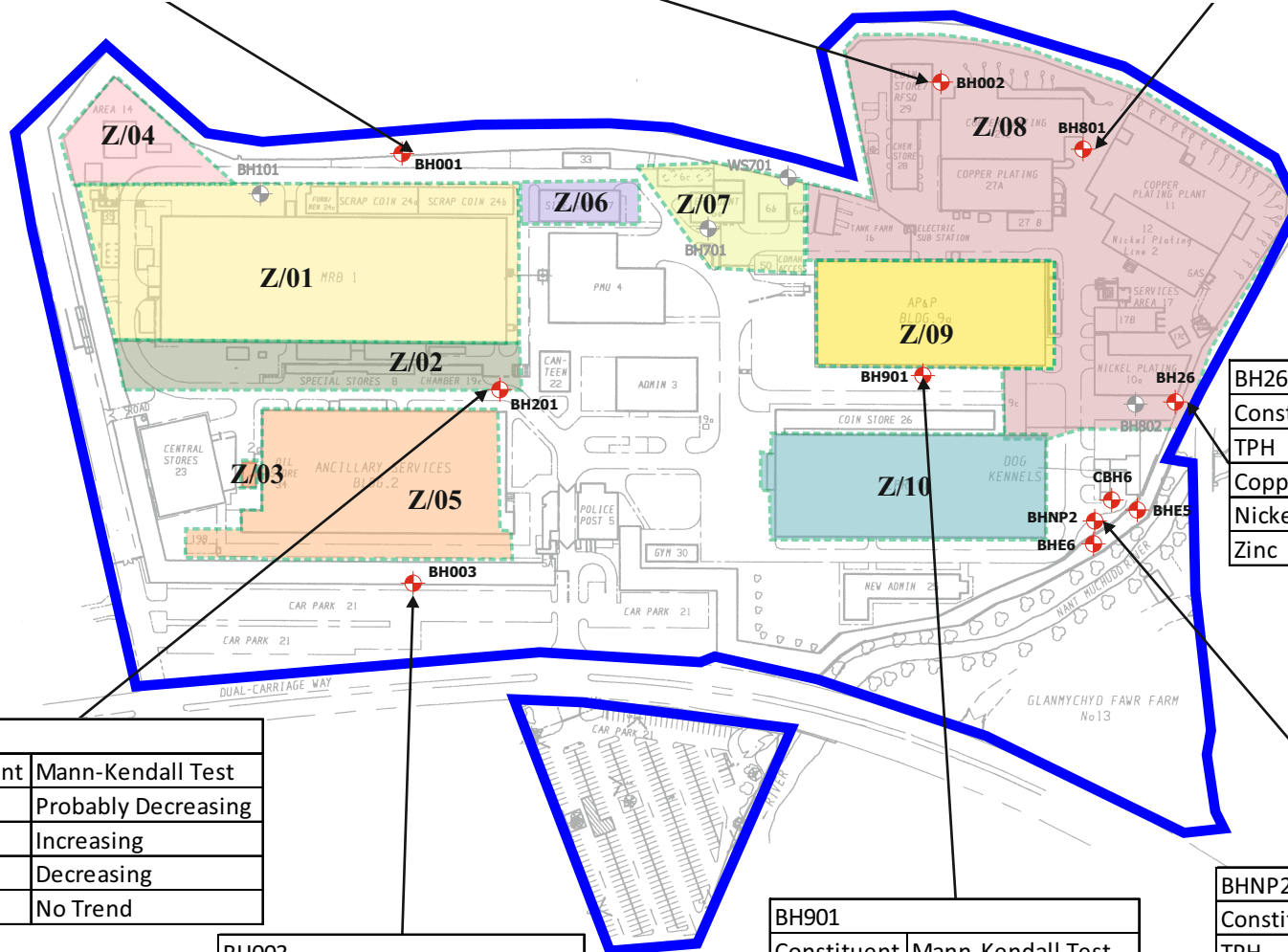
BH001	
Constituent	Mann-Kendall Test
TPH	No Trend
Copper	Increasing
Nickel	Increasing
Zinc	Probably Increasing

BH002	
Constituent	Mann-Kendall Test
TPH	Decreasing
Copper	No trend
Nickel	Probably Increasing
Zinc	No trend

BH801	
Constituent	Mann-Kendall Test
TPH	No Trend
Copper	No Trend
Nickel	No Trend
Zinc	Increasing



- Key
- Site Boundary
 - Sampled Boreholes
 - Previously Sampled Boreholes



BH201	
Constituent	Mann-Kendall Test
TPH	Probably Decreasing
Copper	Increasing
Nickel	Decreasing
Zinc	No Trend

BH003	
Constituent	Mann-Kendall Test
TPH	No Trend
Copper	No Trend
Nickel	Decreasing
Zinc	Probably Increasing

BH901	
Constituent	Mann-Kendall Test
TPH	No Trend
Copper	No Trend
Nickel	No Trend
Zinc	Probably Increasing

BHNP2	
Constituent	Mann-Kendall Test
TPH	No Trend
Copper	Probably Increasing
Nickel	No Trend
Zinc	No Trend

BH26	
Constituent	Mann-Kendall Test
TPH	No Trend
Copper	No Trend
Nickel	No Trend
Zinc	Stable

Title **Figure 2
Mann Kendall Analysis**

Project No. UK17-22119

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

Client **The Royal Mint**

Date **September 2015**

Scale **NTS**

Issue **1** Drawn by **RH**

APPENDIX 2

LABORATORY CERTIFICATES

Our Ref: EXR/205322 (Ver. 2)

Your Ref: UK17-22119

October 5, 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
Greenmeadow Springs
Coryton
Cardiff
CF15 7NE

For the attention of Ms L Cleverley

Dear Ms Cleverley

Sample Analysis - Royal Mint SPMP Round X1

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



Report No. EXR/205322 (Ver. 2)

Ramboll Environ
8 Village Way
Greenmeadow Springs
Coryton
Cardiff
CF15 7NE

Site: Royal Mint SPMP Round X1

The 7 samples described in this report were registered for analysis by ESG on 04-Sep-2015. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 05-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 10)
Table of VOC (HSA) Results (Pages 11 to 17)
Analytical and Deviating Sample Overview (Page 18)
Table of Method Descriptions (Page 19)
Table of Report Notes (Page 20)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
ESG :
Declan Burns


Managing Director
Multi-Sector Services

Date of Issue: 05-Oct-2015

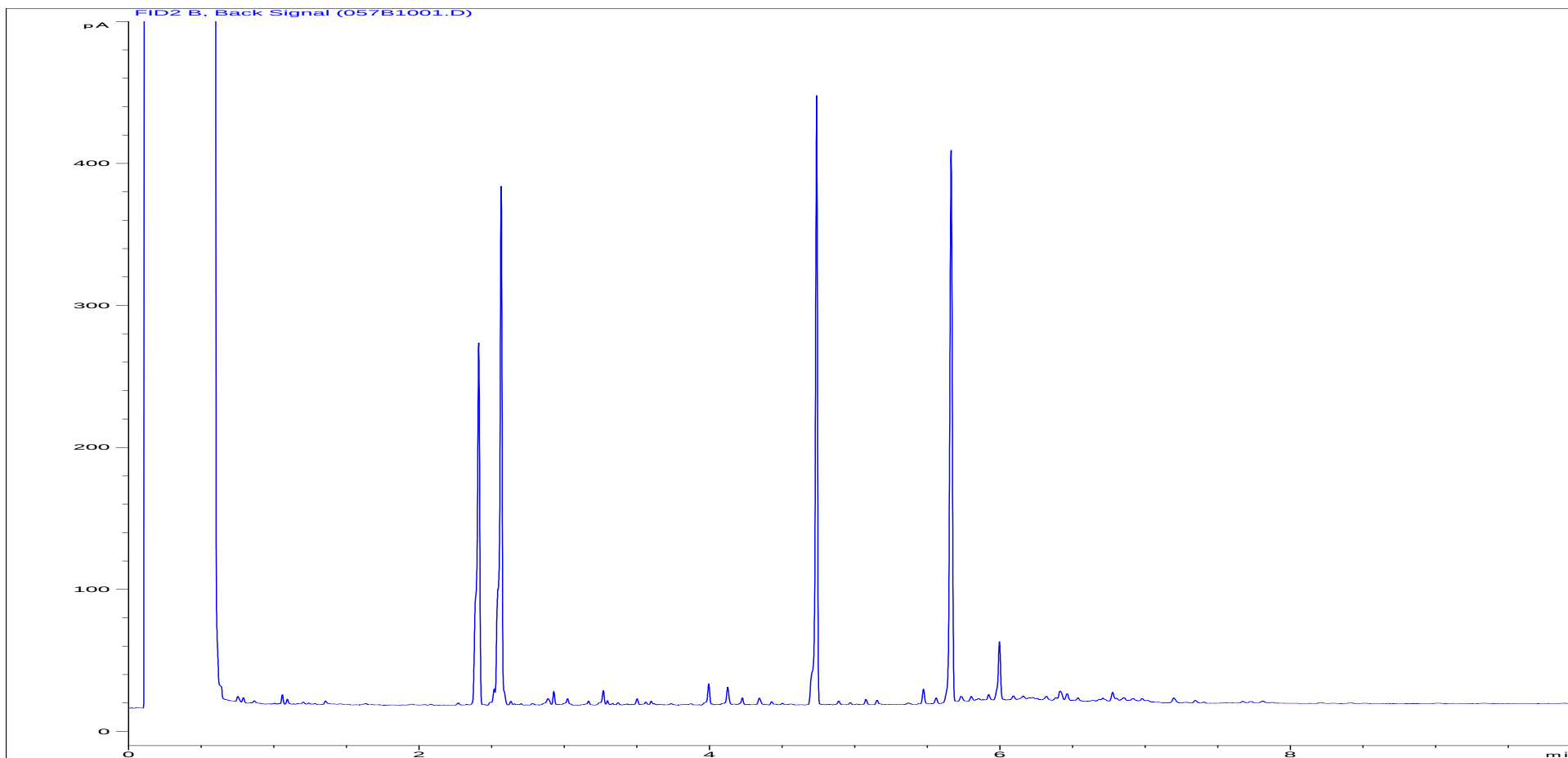
Tests marked '^' have been subcontracted to another laboratory.

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.

Units : mg/l																		
Method Codes : TPHFID																		
Method Reporting Limits : 0.01																		
UKAS Accredited : Yes																		
LAB ID Number EX/	Client Sample Description	Sample Date	TPH GC															
1621554	BHNP2	03-Sep-15 10:00	0.04															
1621555	CBH6	03-Sep-15 10:30	0.06															
1621556	BHEG	03-Sep-15 11:15	0.22															
1621557	BHE5	03-Sep-15 11:30	0.16															
1621558	BH002	03-Sep-15 13:00	0.01															
1621559	BH801	03-Sep-15 14:00	0.11															
1621560	BH26	03-Sep-15 14:30	0.28															

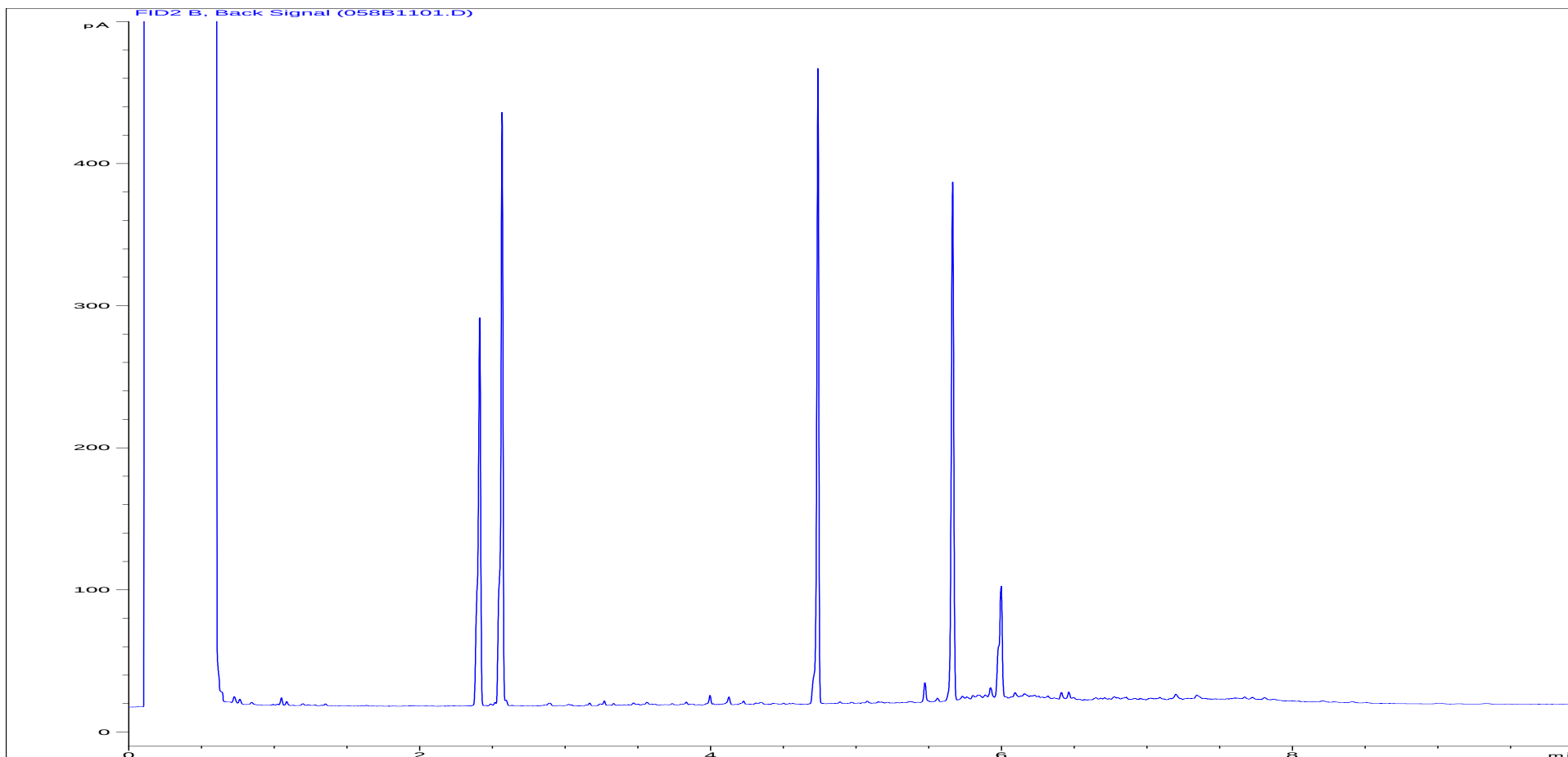
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1621554	Job Number:	W20_5322
Multiplier:	0.005	Client:	Ramboll Environ
Dilution:	1	Site:	Royal Mint SPMP Round X1
Acquisition Method:	TPH_RUNF.M	Client Sample Ref:	BHNP2
Acquisition Date/Time:	08-Sep-15, 18:20:14		
Datafile:	D:\TES\DATA\Y2015\090815TPH_GC15\090815 2015-09-08 15-46-33\057B1001.D		

Where individual results are flagged see report notes for status.

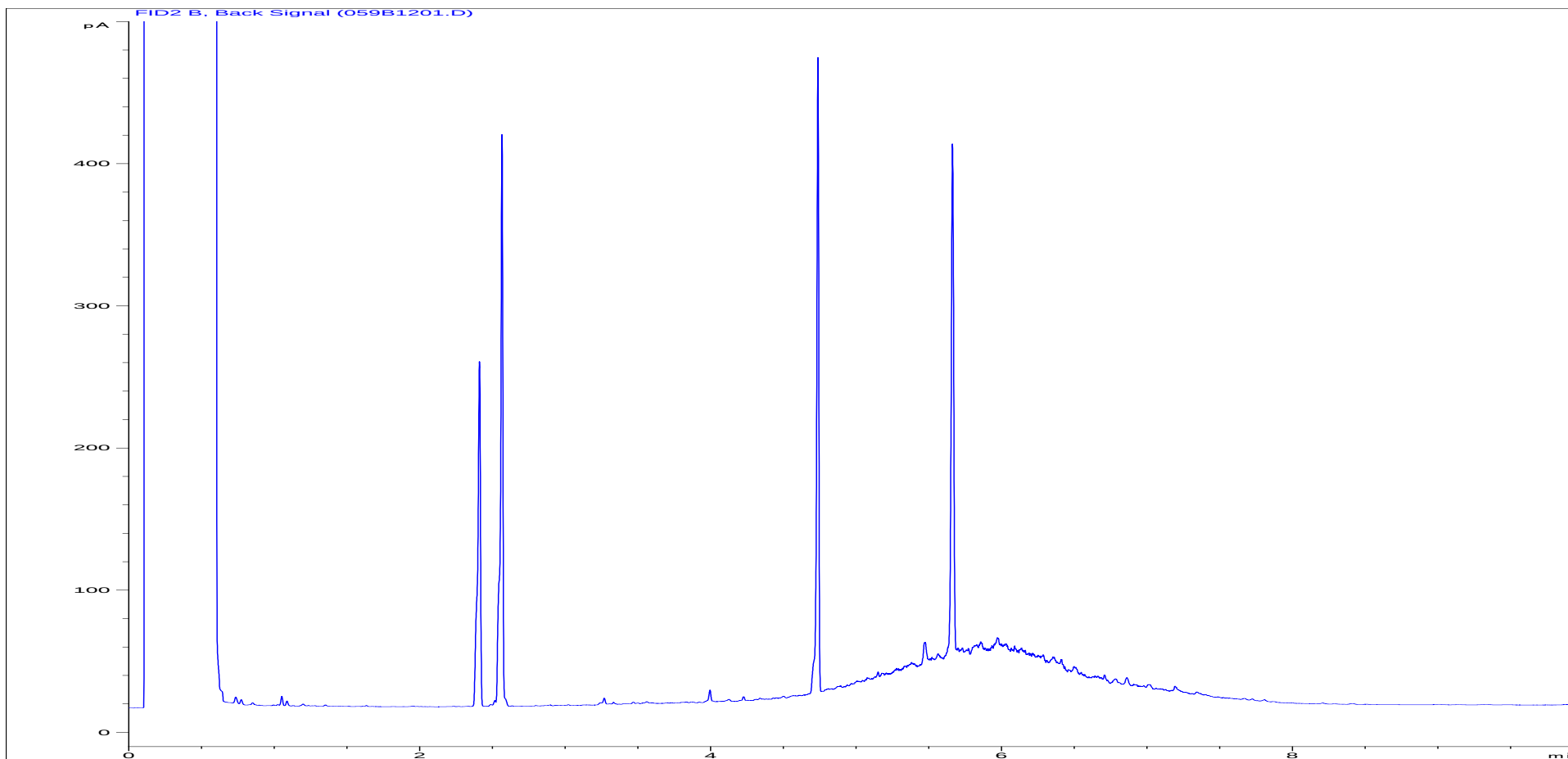
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1621555	Job Number:	W20_5322
Multiplier:	0.005	Client:	Ramboll Environ
Dilution:	1	Site:	Royal Mint SPMP Round X1
Acquisition Method:	TPH_RUNF.M	Client Sample Ref:	CBH6
Acquisition Date/Time:	08-Sep-15, 18:37:14		
Datafile:	D:\TES\DATA\Y2015\090815TPH_GC15\090815 2015-09-08 15-46-33\058B1101.D		

Where individual results are flagged see report notes for status.

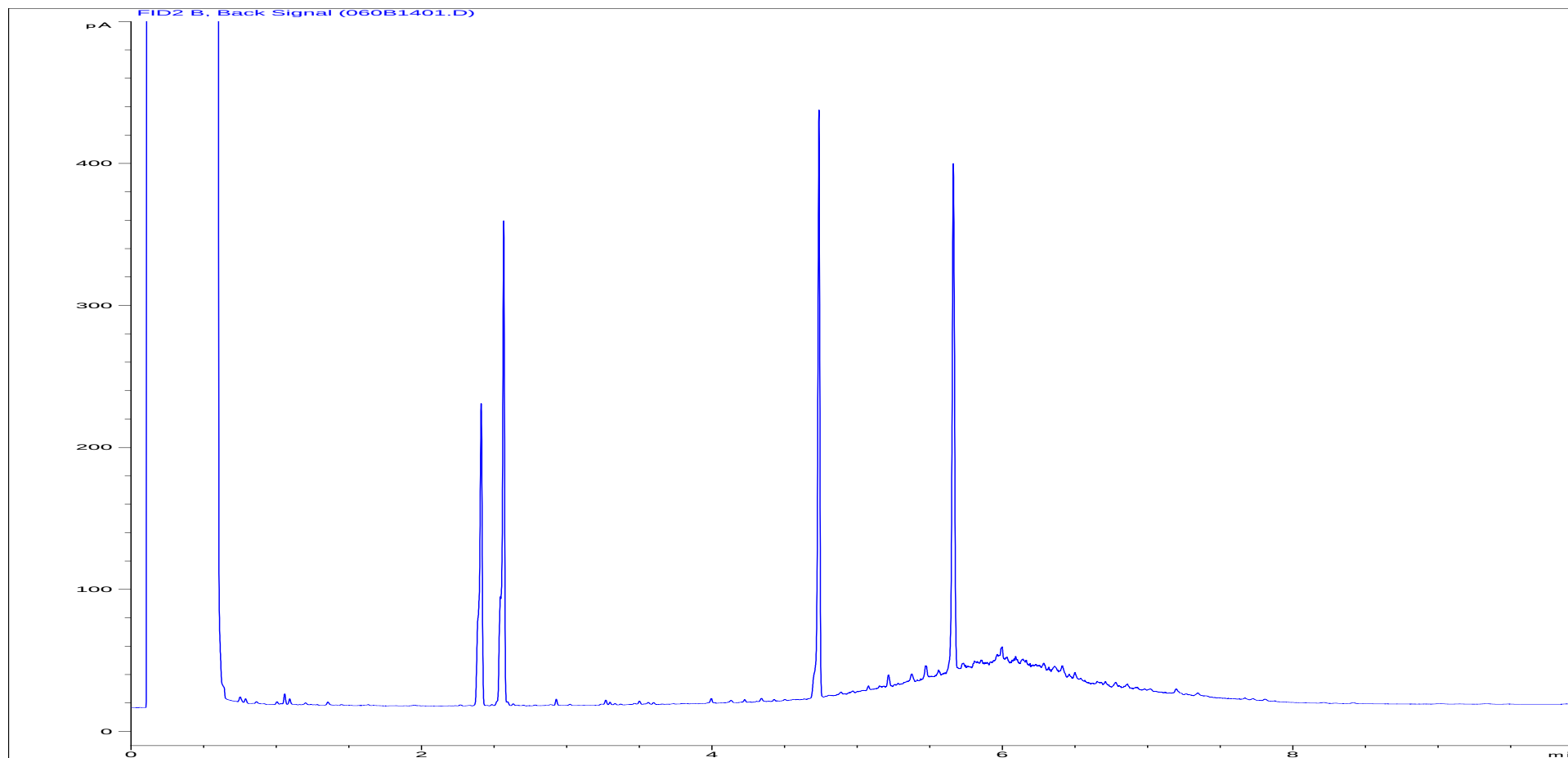
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1621556	Job Number:	W20_5322
Multiplier:	0.005	Client:	Ramboll Environ
Dilution:	1	Site:	Royal Mint SPMP Round X1
Acquisition Method:	TPH_RUNF.M	Client Sample Ref:	BHEG
Acquisition Date/Time:	08-Sep-15, 18:53:57		
Datafile:	D:\TES\DATA\Y2015\090815TPH_GC15\090815 2015-09-08 15-46-33\059B1201.D		

Where individual results are flagged see report notes for status.

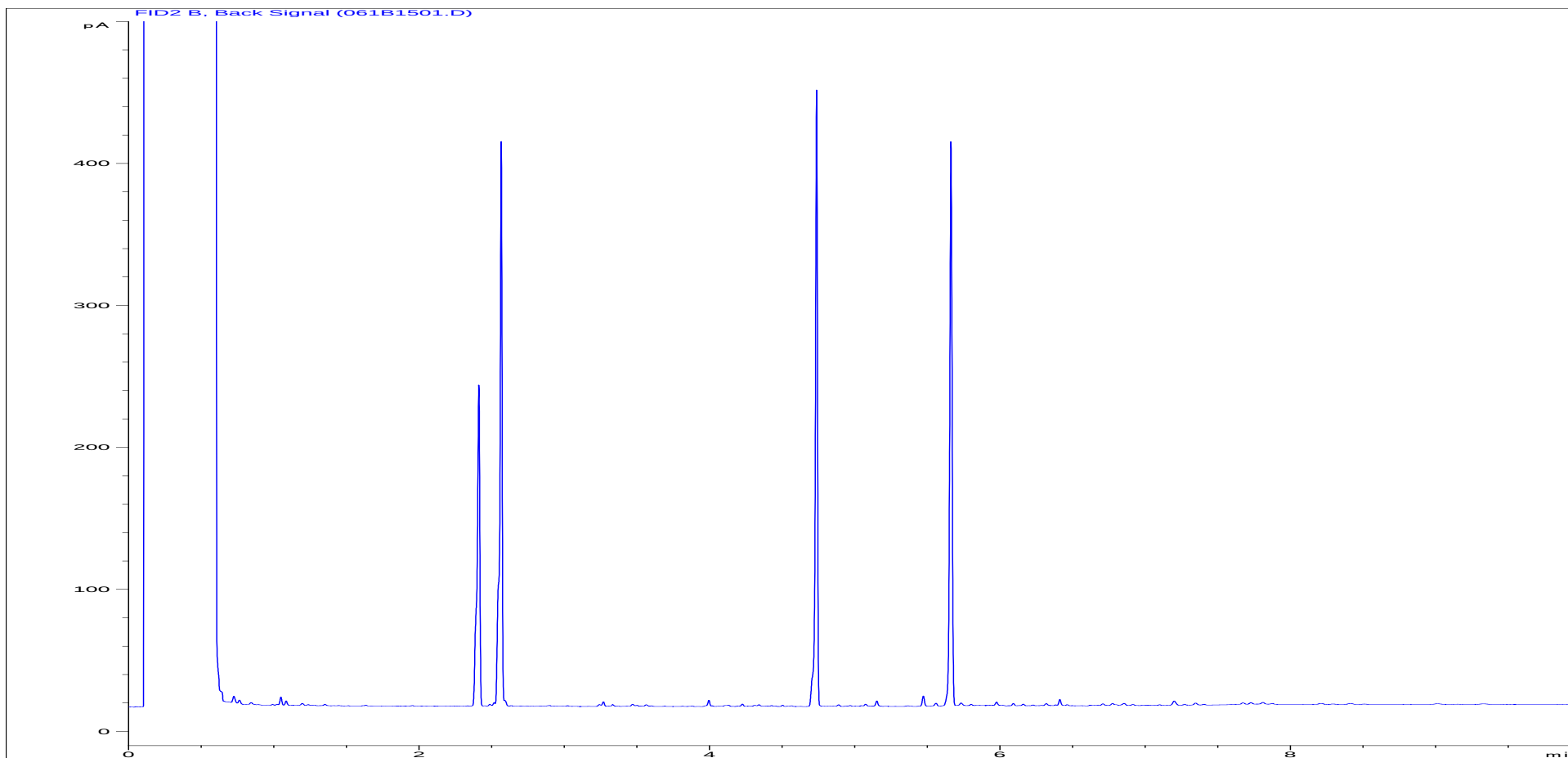
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1621557	Job Number:	W20_5322
Multiplier:	0.005	Client:	Ramboll Environ
Dilution:	1	Site:	Royal Mint SPMP Round X1
Acquisition Method:	TPH_RUNF.M	Client Sample Ref:	BHE5
Acquisition Date/Time:	08-Sep-15, 19:27:31		
Datafile:	D:\TES\DATA\Y2015\090815TPH_GC15\090815 2015-09-08 15-46-33\060B1401.D		

Where individual results are flagged see report notes for status.

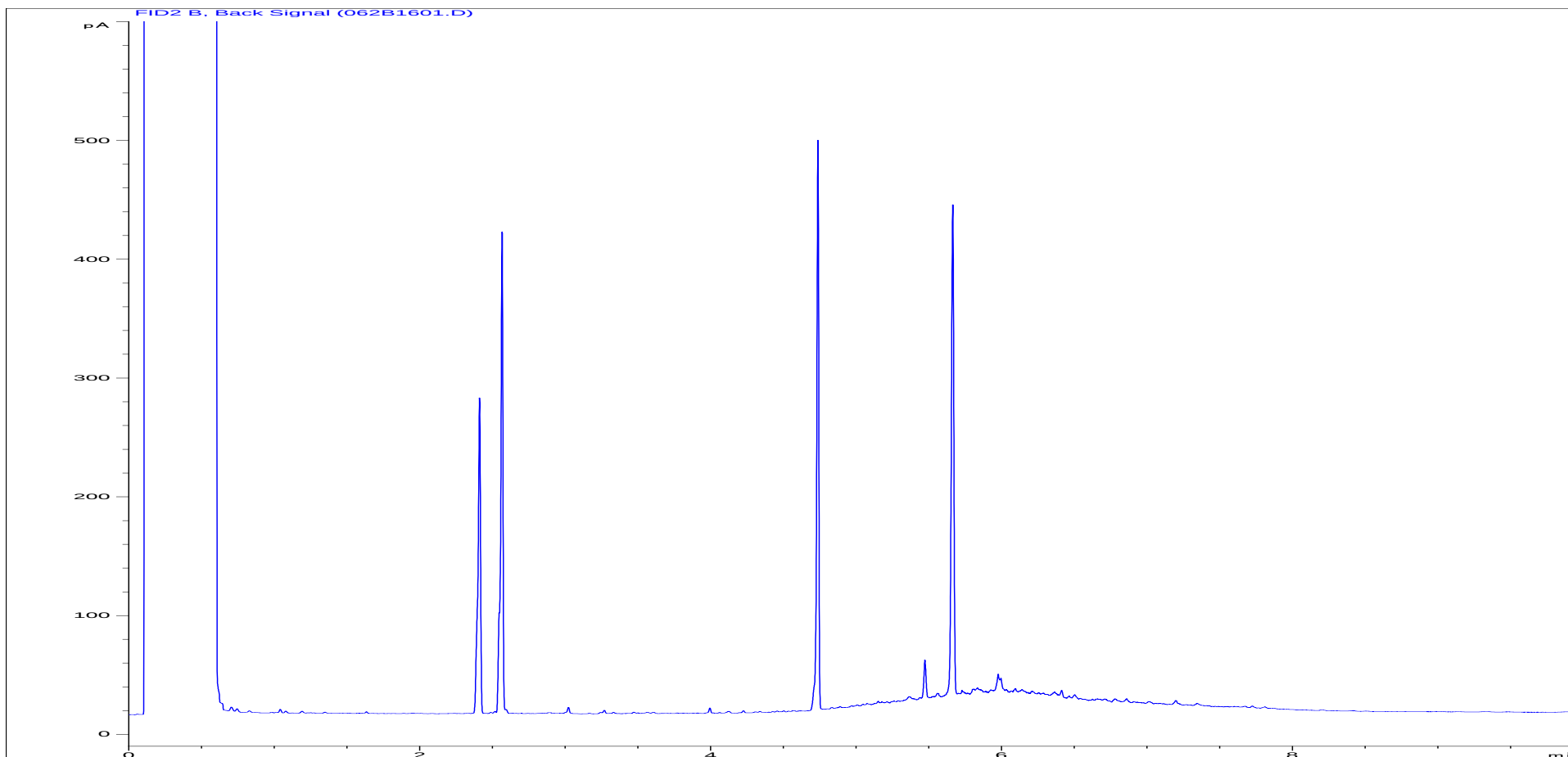
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1621558	Job Number:	W20_5322
Multiplier:	0.005	Client:	Ramboll Environ
Dilution:	1	Site:	Royal Mint SPMP Round X1
Acquisition Method:	TPH_RUNF.M	Client Sample Ref:	BH002
Acquisition Date/Time:	08-Sep-15, 19:44:22		
Datafile:	D:\TES\DATA\Y2015\090815TPH_GC15\090815 2015-09-08 15-46-33\061B1501.D		

Where individual results are flagged see report notes for status.

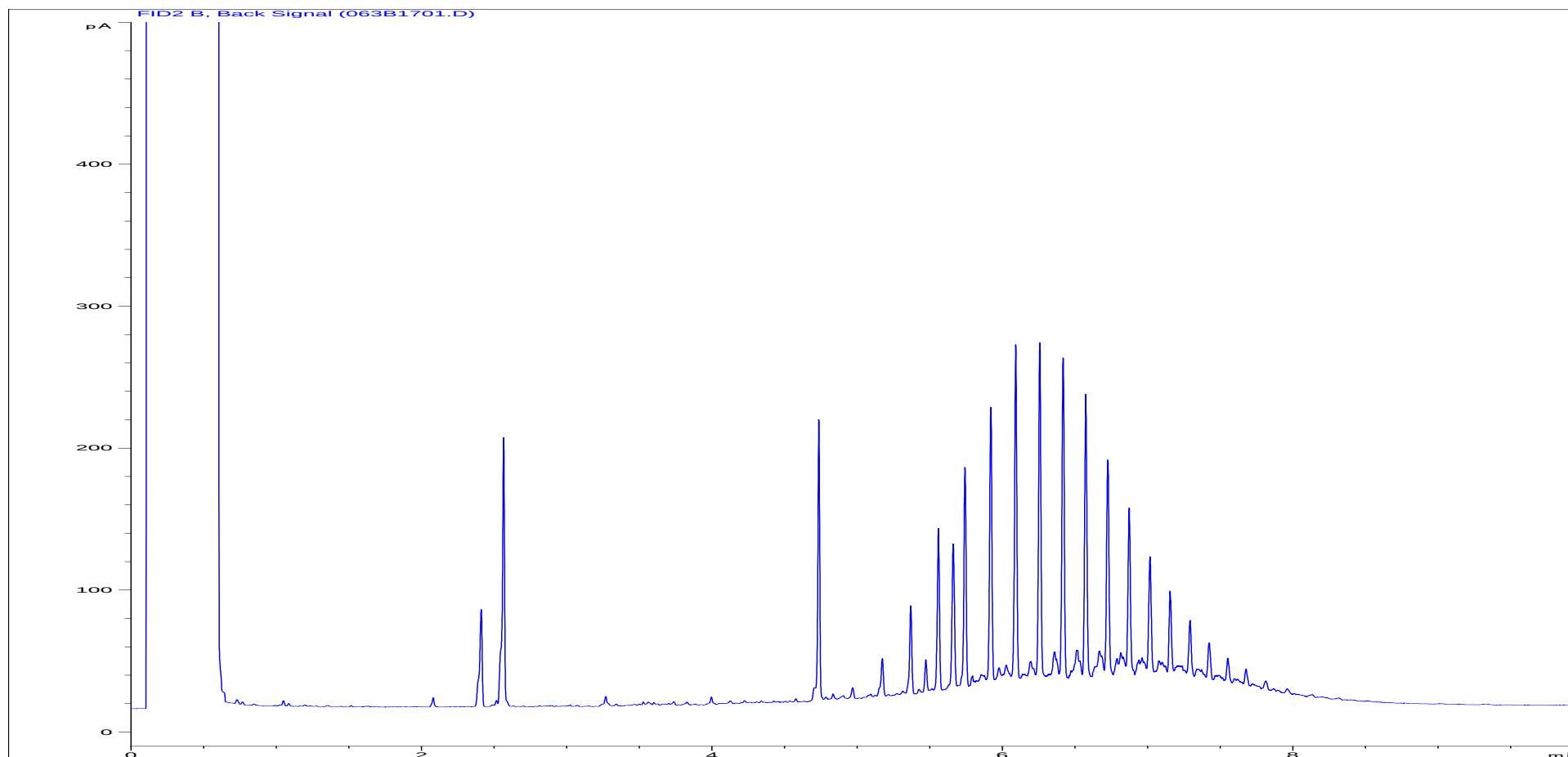
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1621559	Job Number:	W20_5322
Multiplier:	0.005	Client:	Ramboll Environ
Dilution:	1	Site:	Royal Mint SPMP Round X1
Acquisition Method:	TPH_RUNF.M	Client Sample Ref:	BH801
Acquisition Date/Time:	08-Sep-15, 20:01:11		
Datafile:	D:\TES\DATA\Y2015\090815TPH_GC15\090815 2015-09-08 15-46-33\062B1601.D		

Where individual results are flagged see report notes for status.

Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID: EX1621560
Multiplier: 0.005
Dilution: 1
Acquisition Method: TPH_RUNF.M
Acquisition Date/Time: 08-Sep-15, 20:17:52
Datafile: D:\TES\DATA\Y2015\090815TPH_GC15\090815 2015-09-08 15-46-33\063B1701.D

Job Number: W20_5322
Client: Ramboll Environ
Site: Royal Mint SPMP Round X1
Client Sample Ref: BH26

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

Customer and Site Details:

Ramboll Environ: Royal Mint SPMP Round X1

Sample Details:

BHNP2

LIMS ID Number:

EX1621554

Job Number:

W20_5322

UKAS accredited?: Yes

Directory/Quant file:

908VOC.MS11\ Initial Calibration

Date Booked in:

04-Sep-15

Date Analysed:

09-Sep-15

Operator:

PR

Matrix:

Water

Method:

Headspace

Multiplier:

1

Position:

10

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	2.94	6	82
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	3.35	3	88
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	3.61	9	56
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	4.10	5	96
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
 "M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.63	90	Dibromofluoromethane	116
1,4-Difluorobenzene	3.98	97	Toluene-d8	97
Chlorobenzene-d5	5.12	97	Bromofluorobenzene	96
1,4-Dichlorobenzene-d4	5.92	97		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Page 11 of 20

EXR/205322 Ver. 2

Volatile Organic Compounds by HSA-GCMS

Customer and Site Details:		UKAS accredited?: Yes		Directory/Quant file:		908VOC.MS11\ Initial Calibration		Matrix:		Water	
Sample Details:				Date Booked in:		04-Sep-15		Method:		Headspace	
LIMS ID Number:				Date Analysed:		09-Sep-15		Multiplier:		1	
Job Number:				Operator:		PR		Position:		11	
Ramboll Environ: Royal Mint SPMP Round X1		CBH6									
EX1621555											
W20_5322											

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	3.34	3	86
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	3.61	7	52
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	4.10	7	98
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.63	64	Dibromofluoromethane	106
1,4-Difluorobenzene	3.98	75	Toluene-d8	98
Chlorobenzene-d5	5.12	80	Bromofluorobenzene	100
1,4-Dichlorobenzene-d4	5.92	81		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Volatile Organic Compounds by HSA-GCMS

Customer and Site Details:		UKAS accredited?: Yes		Directory/Quant file:		Matrix:	
Sample Details:		908VOC.MS11\ Initial Calibration		Date Booked in:		Method:	
LIMS ID Number:		04-Sep-15		Date Analysed:		Multiplier:	
Job Number:		09-Sep-15		Operator:		Position:	
Ramboll Environ: Royal Mint SPMP Round X1		PR		Water		1	
BHEG				Headspace		12	
EX1621556							
W20_5322							

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
 "M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.63	84	Dibromofluoromethane	105
1,4-Difluorobenzene	3.98	94	Toluene-d8	98
Chlorobenzene-d5	5.12	97	Bromofluorobenzene	100
1,4-Dichlorobenzene-d4	5.92	100		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Volatile Organic Compounds by HSA-GCMS

Customer and Site Details:		UKAS accredited?: Yes		Directory/Quant file:		Matrix:	
Sample Details:		908VOC.MS11\ Initial Calibration		Date Booked in:		Method:	
LIMS ID Number:		04-Sep-15		Date Analysed:		Multiplier:	
Job Number:		09-Sep-15		Operator:		Position:	
Ramboll Environ: Royal Mint SPMP Round X1		PR		Water		1	
BHE5				Headspace		13	
EX1621557							
W20_5322							

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.63	76	Dibromofluoromethane	112
1,4-Difluorobenzene	3.98	88	Toluene-d8	98
Chlorobenzene-d5	5.12	91	Bromofluorobenzene	97
1,4-Dichlorobenzene-d4	5.92	90		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Volatile Organic Compounds by HSA-GCMS

Customer and Site Details:		UKAS accredited?: Yes		Directory/Quant file:		Matrix:	
Sample Details:		908VOC.MS11\ Initial Calibration		Date Booked in:		Method:	
LIMS ID Number:		04-Sep-15		Date Analysed:		Multiplier:	
Job Number:		09-Sep-15		Operator:		Position:	
Ramboll Environ: Royal Mint SPMP Round X1		PR		Water		1	
BH002				Headspace		14	
EX1621558							
W20_5322							

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
 "M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.63	70	Dibromofluoromethane	115
1,4-Difluorobenzene	3.98	79	Toluene-d8	97
Chlorobenzene-d5	5.12	82	Bromofluorobenzene	96
1,4-Dichlorobenzene-d4	5.92	83		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Volatile Organic Compounds by HSA-GCMS

Customer and Site Details:		UKAS accredited?: Yes		Directory/Quant file:		Matrix:	
Sample Details:		908VOC.MS11\ Initial Calibration		Date Booked in:		Water	
LIMS ID Number:		04-Sep-15		Date Analysed:		Headspace	
Job Number:		09-Sep-15		Operator:		Multiplier:	
		PR				Position:	
						1	
						15	

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
 "M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.63	80	Dibromofluoromethane	111
1,4-Difluorobenzene	3.98	89	Toluene-d8	98
Chlorobenzene-d5	5.12	91	Bromofluorobenzene	97
1,4-Dichlorobenzene-d4	5.92	90		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Volatile Organic Compounds by HSA-GCMS

Customer and Site Details:		Ramboll Environ: Royal Mint SPMP Round X1		UKAS accredited?: Yes							
Sample Details:		BH26		Directory/Quant file:		908VOC.MS11\		Initial Calibration		Matrix: Water	
LIMS ID Number:		EX1621560		Date Booked in:		04-Sep-15				Method: Headspace	
Job Number:		W20_5322		Date Analysed:		09-Sep-15				Multiplier: 1	
				Operator:		PR				Position: 16	

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.63	73	Dibromofluoromethane	112
1,4-Difluorobenzene	3.98	83	Toluene-d8	97
Chlorobenzene-d5	5.12	87	Bromofluorobenzene	100
1,4-Dichlorobenzene-d4	5.92	90		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Report Due 10-Sep-2015

[illegible]

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	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	SFAS	As Received	Determination of Sulphide by segmented flow analysis with colorimetric detection
Water	TPHFID	As Received	Determination of pentane extractable hydrocarbons in water by GCFID
Water	VOCHSAW	As Received	Determination of Volatile Organics Compounds by Headspace GCMS
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

NAIS 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 SPMP Round X1
Report Number : W20_5322

Our Ref: EXR/205390 (Ver. 2)

Your Ref: UK17-22119

October 5, 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
Greenmeadow Springs
Coryton
Cardiff
CF15 7NE

For the attention of Ms L Cleverley

Dear Ms Cleverley

Sample Analysis - Royal Mint SPMP Round X 1

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



Report No. EXR/205390 (Ver. 2)

Ramboll Environ
8 Village Way
Greenmeadow Springs
Coryton
Cardiff
CF15 7NE

Site: Royal Mint SPMP Round X 1

The 4 samples described in this report were registered for analysis by ESG on 05-Sep-2015. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 05-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 7)
Table of VOC (HSA) Results (Pages 8 to 11)
Analytical and Deviating Sample Overview (Page 12)
Table of Method Descriptions (Page 13)
Table of Report Notes (Page 14)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
ESG :
Declan Burns


Managing Director
Multi-Sector Services

Date of Issue: 05-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.

[illegible]

Bretby Business Park, Ashby Road
Burton-on-Trent, Staffordshire, DE15 0YZ
Tel +44 (0) 1283 554400
Fax +44 (0) 1283 554422

Client Name

Contact

Royal Mint SPMP Round X 1

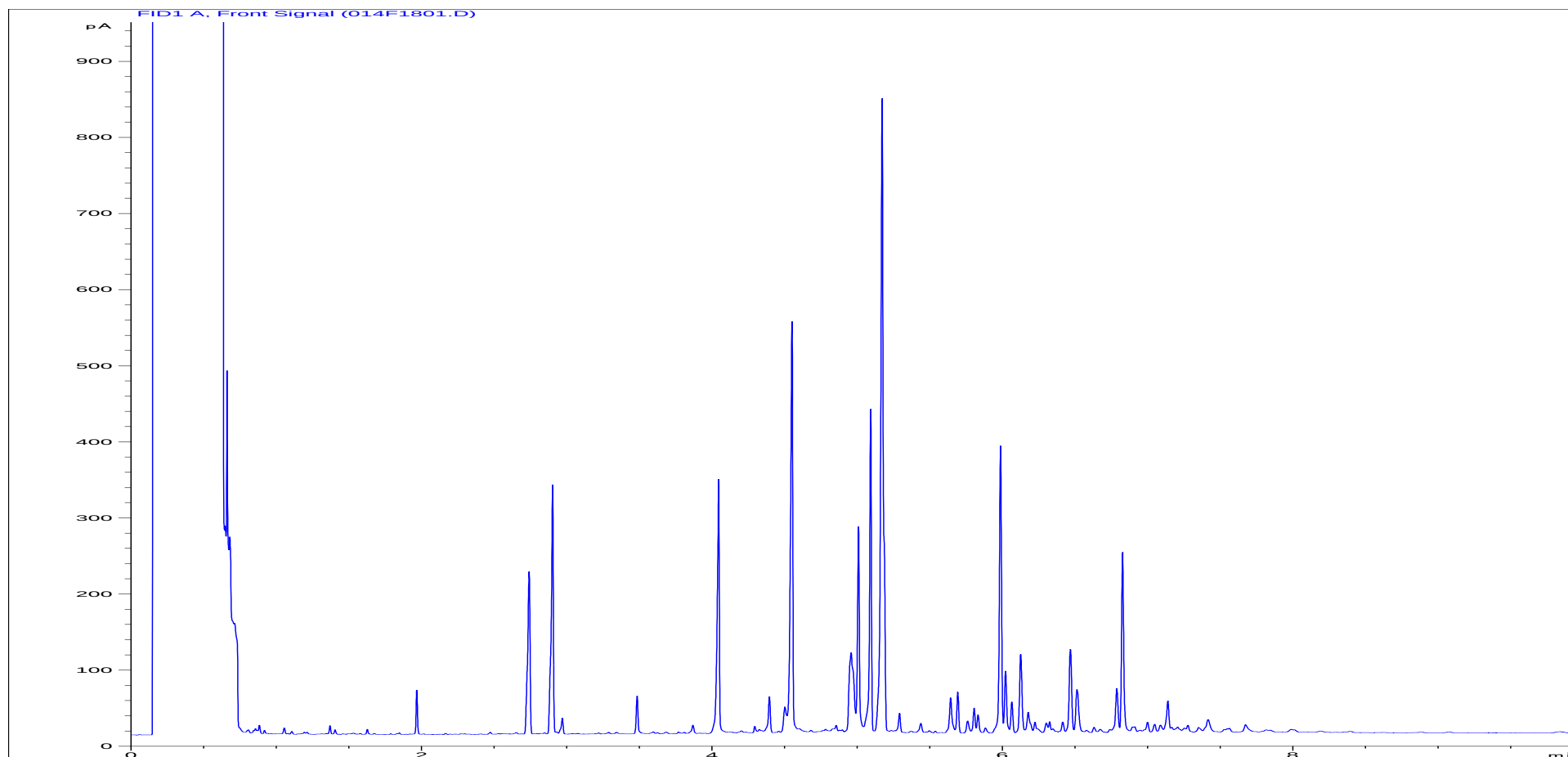
Sample Analysis

Date Printed

Report Number

Table Number

Petroleum Hydrocarbons (C8 to C40) by GC/FID

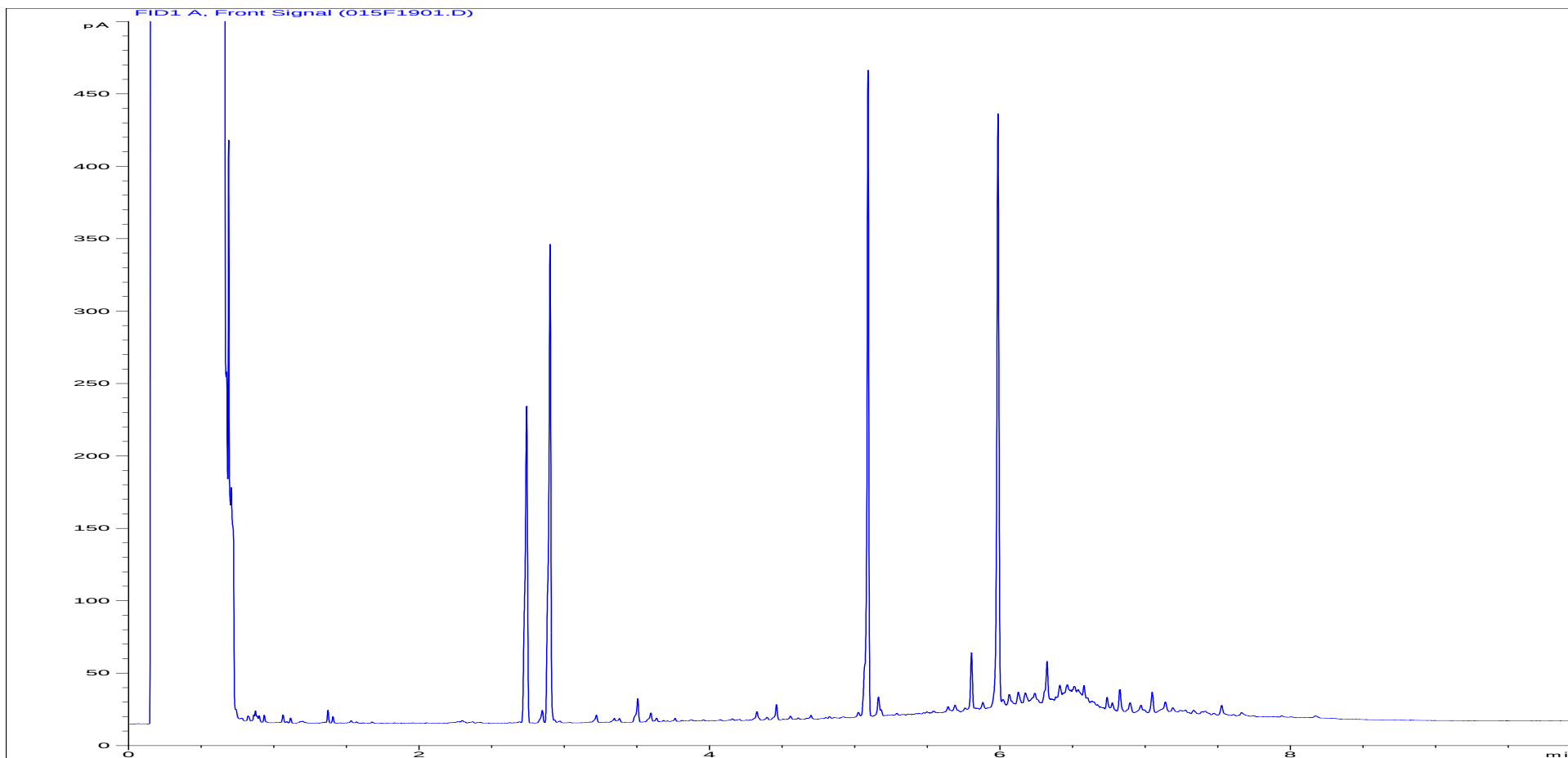


Sample ID: EX1621889
Multiplier: 0.005
Dilution: 1
Acquisition Method: TPH_RUNF.M
Acquisition Date/Time: 08-Sep-15, 20:34:33
Datafile:

Job Number: W20_5390
Client: Ramboll Environ
Site: Royal Mint SPMP Round X 1
Client Sample Ref: BH901
D:\TES\DATA\Y2015\090815TPH_GC15\090815 2015-09-08 15-46-33\014F1801.D

Where individual results are flagged see report notes for status.

Petroleum Hydrocarbons (C8 to C40) by GC/FID

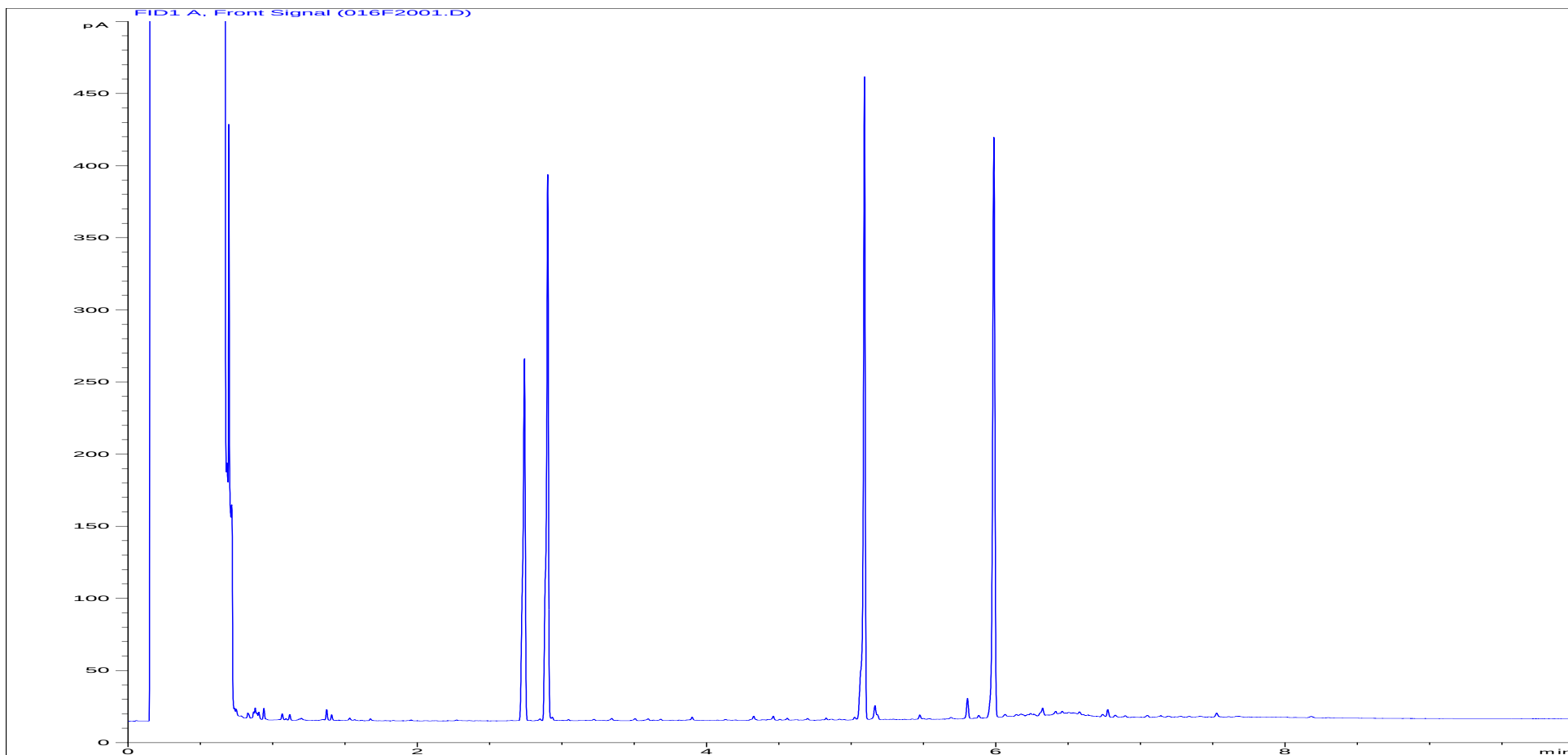


Sample ID: EX1621890
Multiplier: 0.005
Dilution: 1
Acquisition Method: TPH_RUNF.M
Acquisition Date/Time: 08-Sep-15, 20:51:11
Datafile: D:\TES\DATA\Y2015\090815TPH_GC15\090815 2015-09-08 15-46-33\015F1901.D

Job Number: W20_5390
Client: Ramboll Environ
Site: Royal Mint SPMP Round X 1
Client Sample Ref: BH001

Where individual results are flagged see report notes for status.

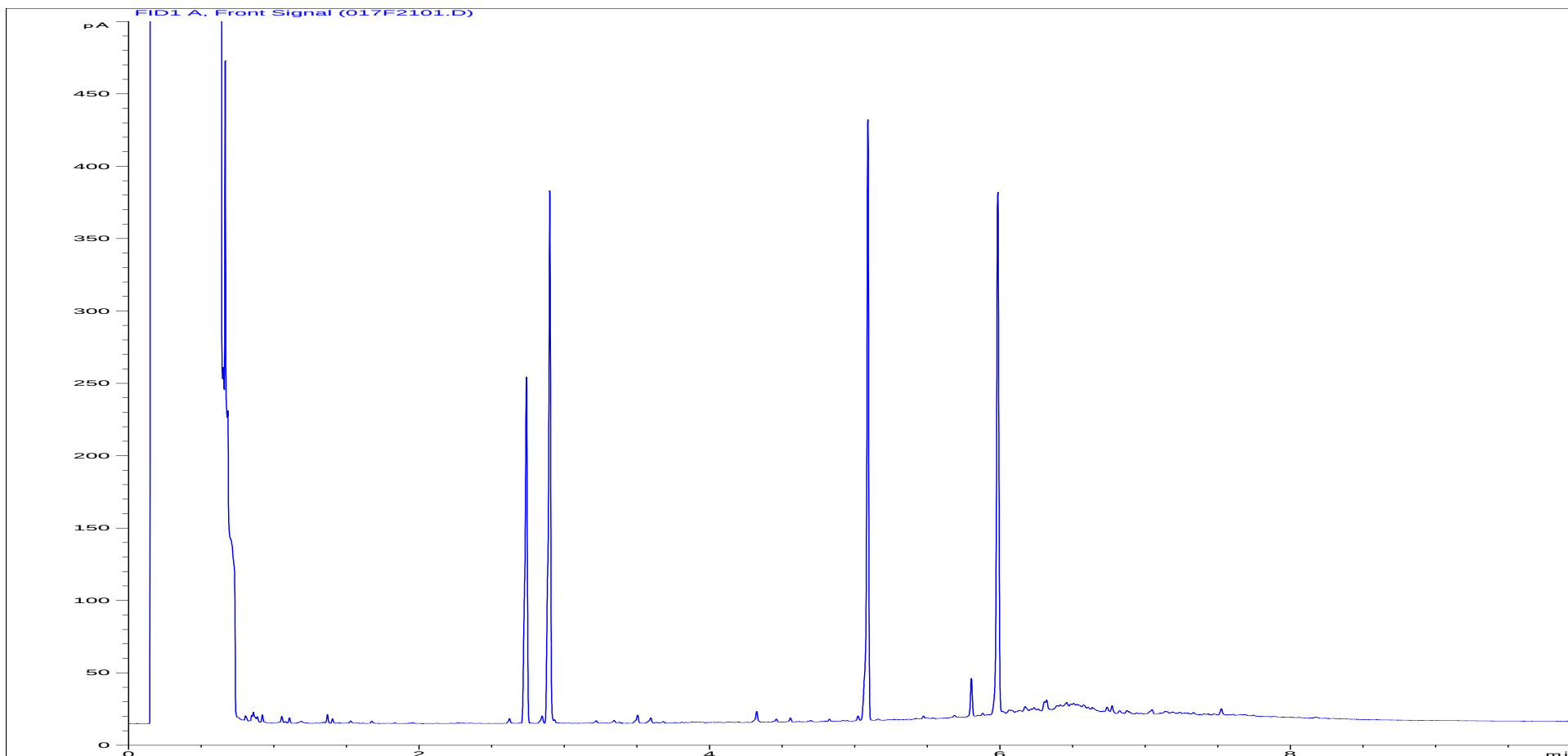
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1621891	Job Number:	W20_5390
Multiplier:	0.005	Client:	Ramboll Environ
Dilution:	1	Site:	Royal Mint SPMP Round X 1
Acquisition Method:	TPH_RUNF.M	Client Sample Ref:	BH003
Acquisition Date/Time:	08-Sep-15, 21:07:50		
Datafile:	D:\TES\DATA\Y2015\090815TPH_GC15\090815 2015-09-08 15-46-33\016F2001.D		

Where individual results are flagged see report notes for status.

Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	EX1621892	Job Number:	W20_5390
Multiplier:	0.005	Client:	Ramboll Environ
Dilution:	1	Site:	Royal Mint SPMP Round X 1
Acquisition Method:	TPH_RUNF.M	Client Sample Ref:	BH201
Acquisition Date/Time:	08-Sep-15, 21:24:08		
Datafile:	D:\TES\DATA\Y2015\090815TPH_GC15\090815 2015-09-08 15-46-33\017F2101.D		

Where individual results are flagged see report notes for status.

Volatile Organic Compounds by HSA-GCMS

Customer and Site Details:		UKAS accredited?: Yes		Directory/Quant file:		Matrix:	
Sample Details:		909VOC.MS11\ Initial Calibration		Date Booked in:		Method:	
LIMS ID Number:		05-Sep-15		Date Analysed:		Multiplier:	
Job Number:		09-Sep-15		Operator:		Position:	
Ramboll Environ: Royal Mint SPMP Round X 1		PR		Water		1	
BH901				Headspace		13	
EX1621889							
W20_5390							

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	3.53	1	83
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8 *	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
 "M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.63	94	Dibromofluoromethane	107
1,4-Difluorobenzene	3.98	95	Toluene-d8	97
Chlorobenzene-d5	5.12	95	Bromofluorobenzene	99
1,4-Dichlorobenzene-d4	5.92	101		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Volatile Organic Compounds by HSA-GCMS

Customer and Site Details:		UKAS accredited?: Yes		Directory/Quant file:		Matrix:	
Sample Details:		909VOC.MS11\ Initial Calibration		Date Booked in:		Method:	
LIMS ID Number:		05-Sep-15		Date Analysed:		Multiplier:	
Job Number:		09-Sep-15		Operator:		Position:	
Ramboll Environ: Royal Mint SPMP Round X 1		PR		Water		1	
BH001				Headspace		14	
EX1621890							
W20_5390							

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	-	< 1	-
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8 *	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
 "M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.63	103	Dibromofluoromethane	110
1,4-Difluorobenzene	3.98	106	Toluene-d8	97
Chlorobenzene-d5	5.12	106	Bromofluorobenzene	98
1,4-Dichlorobenzene-d4	5.92	110		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Volatile Organic Compounds by HSA-GCMS

Customer and Site Details:		UKAS accredited?: Yes		Directory/Quant file:		Matrix:	
Sample Details:		909VOC.MS11\ Initial Calibration		Date Booked in:		Method:	
LIMS ID Number:		05-Sep-15		Date Analysed:		Multiplier:	
Job Number:		09-Sep-15		Operator:		Position:	
Ramboll Environ: Royal Mint SPMP Round X 1		PR		Water		15	
BH003				Headspace			
EX1621891							
W20_5390							

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	-	< 1	-
1,1,1-Trichloroethane	71-55-6	3.61	7	M
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8 *	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
"M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.63	96	Dibromofluoromethane	113
1,4-Difluorobenzene	3.98	101	Toluene-d8	97
Chlorobenzene-d5	5.12	100	Bromofluorobenzene	97
1,4-Dichlorobenzene-d4	5.92	102		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

Volatile Organic Compounds by HSA-GCMS

Customer and Site Details:		UKAS accredited?: Yes		Directory/Quant file:		Matrix:	
Sample Details:		909VOC.MS11\ Initial Calibration		Date Booked in:		Method:	
LIMS ID Number:		05-Sep-15		Date Analysed:		Multiplier:	
Job Number:		09-Sep-15		Operator:		Position:	
Ramboll Environ: Royal Mint SPMP Round X 1		PR		Water		1	
BH201				Headspace		16	
EX1621892							
W20_5390							

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Dichlorodifluoromethane	75-71-8 *	-	< 1	-
Chloromethane	74-87-3	-	< 1	-
Vinyl Chloride	75-01-4	-	< 1	-
Bromomethane	74-83-9 *	-	< 5	-
Chloroethane	75-00-3	-	< 5	-
Trichlorofluoromethane	75-69-4	-	< 1	-
1,1-Dichloroethene	75-35-4	-	< 1	-
trans 1,2-Dichloroethene	156-60-5	-	< 1	-
1,1-Dichloroethane	75-34-3	-	< 1	-
2,2-Dichloropropane	594-20-7 *	-	< 1	-
cis 1,2-Dichloroethene	156-59-2	-	< 1	-
Bromochloromethane	74-97-5	-	< 1	-
Chloroform	67-66-3	3.53	1	84
1,1,1-Trichloroethane	71-55-6	3.61	9	56
Carbon Tetrachloride	56-23-5	-	< 1	-
1,1-Dichloropropene	563-58-6	-	< 1	-
Benzene	71-43-2	-	< 1	-
1,2-Dichloroethane	107-06-2	-	< 1	-
Trichloroethene	79-01-6	-	< 5	-
1,2-Dichloropropane	78-87-5	-	< 1	-
Dibromomethane	74-95-3	-	< 1	-
Bromodichloromethane	75-27-4	-	< 1	-
cis 1,3-Dichloropropene	10061-01-5 *	-	< 1	-
Toluene	108-88-3	-	< 1	-
trans 1,3-Dichloropropene	10061-02-6	-	< 1	-
1,1,2-Trichloroethane	79-00-5	-	< 1	-
Tetrachloroethene	127-18-4	-	< 5	-
1,3-Dichloropropane	142-28-9	-	< 1	-
Dibromochloromethane	124-48-1	-	< 1	-
1,2-Dibromoethane	106-93-4	-	< 1	-
Chlorobenzene	108-90-7	-	< 1	-
Ethylbenzene	100-41-4	-	< 1	-
1,1,1,2-Tetrachloroethane	630-20-6	-	< 1	-
m and p-Xylene	108-38-3/106-42-3	-	< 1	-
o-Xylene	95-47-6	-	< 1	-

Target Compounds	CAS #	R.T. (min.)	Concentration µg/l	% Fit
Styrene	100-42-5	-	< 1	-
Bromoform	75-25-2	-	< 1	-
iso-Propylbenzene	98-82-8	-	< 1	-
1,1,2,2-Tetrachloroethane	79-34-5 *	-	< 1	-
Propylbenzene	103-65-1	-	< 1	-
Bromobenzene	108-86-1	-	< 1	-
1,2,3-Trichloropropane	96-18-4	-	< 1	-
2-Chlorotoluene	95-49-8	-	< 1	-
1,3,5-Trimethylbenzene	108-67-8 *	-	< 1	-
4-Chlorotoluene	106-43-4	-	< 1	-
tert-Butylbenzene	98-06-6	-	< 1	-
1,2,4-Trimethylbenzene	95-63-6	-	< 1	-
sec-Butylbenzene	135-98-8	-	< 1	-
p-Isopropyltoluene	99-87-6	-	< 1	-
1,3-Dichlorobenzene	541-73-1	-	< 1	-
1,4-Dichlorobenzene	106-46-7	-	< 1	-
n-Butylbenzene	104-51-8	-	< 1	-
1,2-Dichlorobenzene	95-50-1	-	< 5	-
1,2-Dibromo-3-chloropropane	96-12-8	-	< 5	-
1,2,4-Trichlorobenzene	120-82-1	-	< 5	-
Hexachlorobutadiene	87-68-3	-	< 5	-
Naphthalene	91-20-3	-	< 5	-
1,2,3-Trichlorobenzene	87-61-6	-	< 5	-

Compounds marked * are not UKAS accredited
 "M" denotes that % fit has been manually interpreted

Internal standards	R.T.	Area %	Surrogates	% Rec
Pentafluorobenzene	3.63	80	Dibromofluoromethane	111
1,4-Difluorobenzene	3.98	88	Toluene-d8	96
Chlorobenzene-d5	5.12	89	Bromofluorobenzene	97
1,4-Dichlorobenzene-d4	5.92	91		

Note: Volatile compounds degrade with time, and this may affect the integrity of the data depending on the timescale between sampling and analysis. It is recommended that analysis takes place within 7 days of sampling.

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	SFAPI	As Received	Segmented flow analysis with colorimetric detection
Water	SFAS	As Received	Determination of Sulphide by segmented flow analysis with colorimetric detection
Water	TPHFID	As Received	Determination of pentane extractable hydrocarbons in water by GCFID
Water	VOCHSAW	As Received	Determination of Volatile Organics Compounds by Headspace GCMS
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

NAIS 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 SPMP Round X 1
Report Number : W20_5390

APPENDIX 3

SUMMARY OF RESULTS

Royal Mint SPMP 2015 (UK17-22119) - Summary of Groundwater Analysis Results (Updated September 2015)

		Analysis																		
Borehole Location	Date	TPH/EPH (mg/l)	Arsenic (mg/l)	Boron (mg/l)	Cadmium (mg/l)	Chromium (mg/l)	Chromium (Hexavalent) (mg/l)	Copper (mg/l)	Lead (mg/l)	Mercury (mg/l)	Nickel (mg/l)	Potassium (mg/l)	Selenium (mg/l)	Zinc (mg/l)	Total Cyanide (mg/l)	Total Alkalinity as CaCo3 (mg/l)	Chloride (mg/l)	pH	Sulphide (mg/l)	Sulphate as SO4 (mg/l)
ZONE 0																				
BH001	Mar-06	0.10	<0.005	<0.005	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	0.012	<1	<0.005	0.031	<0.03	50	21	6.50	<0.05	14
	May-06	0.03	<0.005	0.012	<0.001	<0.005	0.010	<0.005	<0.005	<0.00005	0.010	1.7	<0.005	0.018	<0.03	<20	14	5.50	<0.05	22
	Aug-07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Oct-07	<0.01	<0.005	<0.005	<0.001	<0.005	<0.010	0.008	<0.005	<0.00005	0.021	1.3	<0.005	0.045	<0.02	140	11	6.50	<0.05	18
	Aug-08	1.20	<0.005	0.040	<0.001	<0.005	<0.010	0.018	<0.005	<0.00005	0.035	3.2	<0.005	0.190	<0.02	65	<10	6.20	<0.05	<10
	Dec-08	0.09	<0.005	0.031	<0.001	<0.005	<0.010	0.018	<0.005	<0.00005	0.015	NA	<0.005	0.110	<0.02	88	<10	6.70	<0.05	10
	Sep-09	0.29	<0.005	<0.018	<0.001	<0.005	<0.010	0.015	<0.005	<0.00005	0.024	NA	<0.005	0.312	<0.02	90	9	7.04	<0.05	9
	Aug-10	0.07	0.001	0.020	<0.001	0.002	<0.010	0.041	<0.001	<0.00005	0.083	NA	<0.001	0.301	<0.02	75	6	6.80	<0.05	8
	Aug-11	0.03	0.004	0.030	<0.001	0.002	NA	0.001	<0.001	<0.0001	0.004	NA	<0.001	0.016	<0.02	98	NA	7.10	<0.05	10
	Aug-12	<0.01	0.003	0.010	<0.0001	<0.001	NA	0.042	<0.001	0.0001	0.059	NA	<0.001	0.165	<0.02	85	NA	7.10	<0.05	6
	Aug-13	0.17	<0.001	<0.01	0.0002	0.001	NA	0.054	<0.001	<0.0001	0.130	NA	<0.001	0.358	0.03	88	NA	7.00	<0.05	7
	Sep-14	0.10	<0.001	0.010	0.0002	<0.001	<0.01	0.055	<0.001	<0.0001	0.083	NA	<0.001	0.302	<0.02	72	NA	6.80	<0.05	6
Sep-15	0.11	0.001	0.150	<0.0001	<0.001	NA	0.031	<0.001	<0.0001	0.045	NA	<0.001	0.094	<0.02	94	NA	7.30	<0.05	7	
BH002	Mar-06	0.32	<0.005	0.008	<0.001	0.005	<0.010	0.012	<0.005	<0.00005	0.005	2.2	0.013	<0.005	<0.03	250	11	7.80	<0.05	39
	May-06	0.09	<0.005	0.034	<0.001	<0.005	0.010	0.008	<0.005	<0.00005	0.021	2.1	<0.005	0.010	<0.03	320	17	8.20	<0.05	42
	Aug-07	0.38	<0.005	0.015	<0.001	<0.005	<0.010	<0.005	0.015	<0.00005	<0.005	1.3	<0.005	<0.005	<0.02	92	14	6.50	<0.05	25
	Aug-08	0.04	<0.005	0.030	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	<0.005	1.6	<0.005	0.025	<0.02	63	14	6.10	<0.05	16
	Dec-08	0.02	<0.005	0.008	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	<0.005	NA	<0.005	<0.005	<0.02	<20	12	5.50	<0.05	14
	Sep-09	<0.01	<0.005	<0.018	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	0.007	NA	<0.005	0.028	<0.02	18	12.3	6.15	<0.05	14.9
	Aug-10	<0.01	<0.001	0.030	<0.001	0.001	<0.010	<0.001	<0.001	<0.00005	0.006	NA	<0.001	0.017	NA	18	12	6.30	<0.05	13
	Aug-11	0.01	<0.001	0.070	<0.001	0.002	NA	0.003	<0.001	<0.0001	0.005	NA	<0.001	0.016	<0.02	19	NA	5.90	<0.05	13
	Aug-12	0.01	<0.001	0.020	<0.0001	0.002	NA	0.003	0.001	<0.0001	0.006	NA	<0.001	0.022	<0.02	36		7.70	<0.05	13
	Sep-13	0.01	<0.001	<0.01	0.0001	<0.001	NA	0.002	<0.001	<0.0001	0.006	NA	<0.001	0.024	<0.02	53	NA	7.10	<0.05	15
	Sep-14	0.01	<0.001	0.010	<0.0001	<0.001	<0.01	0.003	<0.001	<0.0001	0.007	NA	<0.001	0.018	<0.02	32	NA	6.30	<0.05	12
	Sep-15	0.01	<0.001	<0.01	0.0002	0.013	NA	<0.001	<0.001	<0.0001	0.058	NA	<0.001	0.009	<0.02	30	NA	6.30	<0.05	12
BH003	Mar-06	0.07	<0.005	0.019	<0.001	0.009	<0.010	0.053	<0.005	<0.00005	0.190	5.2	<0.005	0.053	<0.03	30	19	6.00	<0.05	55
	May-06	0.03	<0.005	0.026	<0.001	<0.005	0.010	0.014	<0.005	<0.00005	0.150	5.1	<0.005	0.044	<0.03	25	21	6.10	<0.05	57
	Aug-07	<0.01	<0.005	0.032	<0.001	<0.005	<0.010	0.008	<0.005	<0.00005	0.240	6.1	<0.005	0.051	<0.02	38	29	6.00	<0.05	140
	Aug-08	0.04	<0.005	0.029	<0.001	<0.005	<0.010	0.008	<0.005	<0.00005	0.230	6.1	<0.005	0.055	0.02	50	19	6.00	<0.05	81
	Dec-08	0.31	<0.005	0.019	<0.001	<0.005	<0.010	0.019	<0.005	<0.00005	0.110	NA	<0.005	0.060	<0.02	32	12	6.00	<0.05	49
	Sep-09	0.10	<0.005	<0.018	<0.001	<0.005	<0.010	0.063	<0.005	<0.00005	0.198	NA	<0.005	0.091	<0.02	32	21	6.47	<0.05	88.2
	Aug-10	0.01	<0.001	0.040	0.0008	0.002	<0.010	0.008	<0.001	<0.00005	0.477	NA	<0.001	0.081	<0.02	22	35	5.90	<0.05	219
	Aug-11	0.03	<0.001	0.020	0.0004	0.003	NA	0.009	<0.001	<0.0001	0.184	NA	<0.001	0.069	<0.02	37	NA	6.20	<0.05	171
	Aug-12	0.02	<0.001	0.040	0.0001	0.002	NA	0.006	<0.001	<0.0001	0.051	NA	<0.001	0.050	<0.02	99	NA	8.00	<0.05	35
	Aug-13	0.13	<0.001	<0.01	0.0004	0.002	NA	0.046	<0.001	<0.0001	0.113	NA	<0.001	0.161	<0.02	64	NA	6.50	<0.05	46
	Sep-14	0.02	<0.001	0.030	0.0001	0.002	<0.01	0.017	<0.001	<0.0001	0.040	NA	<0.001	0.048	<0.02	35	NA	6.80	<0.05	46
	Sep-15	0.03	<0.001	0.020	0.0002	0.001	NA	0.030	<0.001	<0.0001	0.073	NA	<0.001	0.084	<0.02	33	NA	6.20	<0.05	39
BHNP1S	Feb-07	NA	<0.005	0.046	<0.001	<0.005	<0.005	<0.005	0.008	<0.00005	0.052	NA	<0.005	<0.005	NA	NA	NA	6.40	NA	180
	Aug-07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Aug-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Dec-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BHNP1D	Feb-07	NA	<0.005	0.036	<0.001	<0.005	<0.005	<0.005	<0.005	<0.00005	0.035	NA	<0.005	0.013	NA	NA	NA	6.20	NA	110
	Aug-07	0.09	<0.005	0.020	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	<0.005	2.1	<0.005	<0.005	<0.02	76	15	6.70	<0.05	43
	Aug-08	0.05	<0.005	0.021	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	0.009	2.3	<0.005	0.007	<0.02	84	12	6.70	<0.05	28
	Dec-08	0.04	<0.005	0.020	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	<0.005	NA	NA</							

		Analysis																		
Borehole Location	Date	TPH/EPH (mg/l)	Arsenic (mg/l)	Boron (mg/l)	Cadmium (mg/l)	Chromium (mg/l)	Chromium (Hexavalent) (mg/l)	Copper (mg/l)	Lead (mg/l)	Mercury (mg/l)	Nickel (mg/l)	Potassium (mg/l)	Selenium (mg/l)	Zinc (mg/l)	Total Cyanide (mg/l)	Total Alkalinity as CaCo3 (mg/l)	Chloride (mg/l)	pH	Sulphide (mg/l)	Sulphate as SO4 (mg/l)
BHNP2S	Feb-07	NA	<0.005	0.082	<0.001	<0.005	<0.005	<0.005	<0.005	<0.00005	0.009	NA	<0.005	<0.005	NA	NA	NA	6.40	NA	47
	Aug-07	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Aug-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Dec-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BHNP2D	Feb-07	NA	<0.005	0.072	<0.001	<0.005	<0.005	<0.005	<0.005	<0.00005	0.009	NA	<0.005	0.006	NA	NA	NA	6.30	NA	39
	Aug-07	2.20	<0.005	0.066	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	0.010	2.6	<0.005	0.007	<0.02	68	19	6.50	<0.05	46
	Aug-08	0.43	<0.005	0.036	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	<0.005	2.6	<0.005	0.008	<0.02	66	12	6.30	<0.05	21
	Dec-08	0.09	<0.005	0.049	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	<0.005	NA	NA	0.007	<0.02	71	<10	6.60	<0.05	19
	Sep-09	<0.01	<0.005	<0.018	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	<0.005	NA	<0.005	0.008	<0.02	70	13.3	6.92	<0.05	17.7
	Aug-10	0.01	<0.001	0.11	<0.001	0.002	<0.010	<0.001	<0.001	<0.00005	0.092	NA	<0.001	0.012	<0.02	66	15	6.7	<0.05	28
	Aug-11	0.02	<0.001	0.09	0.0002	0.002	NA	0.003	<0.001	<0.0001	0.028	NA	<0.001	0.033	<0.02	77	NA	6.8	<0.05	37
	Oct-11	NA	<0.001	NA	0.0002	0.002	NA	0.001	<0.001	0.0001	0.019	NA	<0.001	0.009	NA	67	NA	6.9	NA	NA
	Aug-12	<0.01	<0.001	0.08	<0.0001	<0.001	NA	<0.001	<0.001	<0.0001	0.02	NA	<0.001	0.005	<0.02	73	NA	7.4	<0.05	14
	Aug-13	0.02	<0.001	<0.01	<0.0001	0.001	NA	<0.001	<0.001	<0.0001	0.008	NA	<0.001	0.003	0.02	82	NA	7.4	<0.05	13
	Sep-14	0.06	<0.001	<0.01	0.0002	0.001	<0.01	0.002	<0.001	<0.0001	0.002	NA	<0.001	0.019	<0.02	68	NA	7.4	<0.05	15
	Sep-15	0.04	<0.001	<0.01	0.0003	0.006	NA	0.001	<0.001	0.0002	0.027	NA	0.001	0.006	<0.02	75	NA	7.3	<0.05	11
BHE5	Aug-13	0.32	<0.001	<0.01	<0.0001	0.001	NA	0.001	<0.001	<0.0001	0.001	NA	<0.001	<0.002	<0.02	110	NA	7.5	<0.05	14
	Sep-14	0.32	<0.001	<0.01	0.0001	<0.001	<0.01	<0.001	<0.001	<0.0001	<0.001	NA	<0.001	0.003	<0.02	78	NA	7.4	<0.05	14
	Sep-15	0.16	<0.001	<0.01	0.0002	0.018	NA	0.001	<0.001	<0.0001	0.075	NA	<0.001	0.003	<0.02	88	NA	7.4	<0.05	10
BHE6	Aug-13	0.02	<0.001	<0.01	0.0001	<0.001	NA	0.001	<0.001	<0.0001	0.004	NA	<0.001	0.006	<0.02	105	NA	7.1	<0.05	14
	Sep-14	0.13	<0.001	<0.01	<0.0001	<0.001	<0.01	<0.001	<0.001	<0.0001	0.002	NA	<0.001	0.005	<0.02	72	NA	7.3	0.08	15
	Sep-15	0.22	<0.001	<0.01	0.0003	0.012	NA	<0.001	<0.001	0.0001	0.052	NA	<0.001	0.006	<0.02	94	NA	7.1	<0.05	10
CBH6	Aug-13	0.07	<0.001	<0.01	<0.0001	0.001	NA	0.002	<0.001	<0.0001	0.005	NA	<0.001	0.009	<0.02	82	NA	7.5	<0.05	13
	Sep-14	0.05	<0.001	<0.01	<0.0001	<0.001	<0.01	0.002	<0.001	<0.0001	0.005	NA	<0.001	0.018	<0.02	80	NA	7.4	<0.05	11
	Sep-15	0.06	<0.001	<0.01	0.0002	0.011	NA	0.004	<0.001	0.0001	0.045	NA	<0.001	0.005	<0.02	66	NA	7.4	0.15	8
ZONE 1																				
BH101	Mar-06	0.03	<0.005	<0.005	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	0.040	1.3	<0.005	0.020	<0.03	20	13	5.60	<0.05	15
	May-06	0.04	<0.005	0.006	<0.001	<0.005	0.010	0.018	<0.005	<0.00005	0.020	1.3	<0.005	0.970	<0.03	80	<10	6.60	<0.05	<10
	Aug-07	<0.01	<0.005	0.018	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	0.012	1.4	<0.005	0.026	<0.02	24	16	5.50	<0.05	22
	Aug-08	0.01	<0.005	0.011	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	0.013	1.5	<0.005	0.039	<0.02	22	17	5.20	<0.05	21
	Dec-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Sep-09	<0.01	<0.005	<0.018	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	0.028	NA	<0.005	0.140	<0.02	26	12.6	6.15	<0.05	18.4
	Aug-10	<0.01	<0.001	0.02	<0.001	0.003	<0.010	0.006	<0.001	<0.00005	0.017	NA	<0.001	0.112	<0.02	24	12	5.9	<0.05	17
	Aug-11	<0.01	<0.001	0.05	0.0002	0.003	NA	0.002	<0.001	<0.0001	0.006	NA	<0.001	0.015	<0.02	35	NA	7.6	<0.05	18
	Oct-11	NA	<0.001	NA	0.0001	0.003	NA	0.001	<0.001	<0.0001	0.006	NA	<0.001	0.013	NA	33	NA	6.30	NA	NA
	Aug-12	<0.01	<0.001	0.02	0.0002	0.002	NA	0.002	<0.001	<0.0001	0.004	NA	<0.001	0.012	<0.02	44	NA	6.5	<0.05	17
ZONE 2																				
BH201	Mar-06	0.03	<0.005	<0.005	<0.001	0.008	<0.010	<0.005	<0.005	<0.00005	0.061	5.9	<0.005	0.010	<0.03	75	15	6.50	<0.05	41
	May-06	0.01	<0.005	0.011	<0.001	<0.005	0.010	<0.005	<0.005	<0.00005	0.016	4.1	<0.005	0.039	<0.03	70	14	6.50	<0.05	24
	Aug-07	<0.01	0.056	0.016	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	0.016	6.3	<0.005	0.073	<0.02	59	21	6.40	<0.05	38
	Oct-07	NA	<0.005	0.006	<0.001	<0.005	NA	<0.005	<0.005	<0.00005	0.011	NA	NA	0.012	NA	NA	NA	6.20	NA	20
	Aug-08	0.03	<0.005	0.014	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	0.014	4.2	<0.005	0.110	<0.02	85	15	6.40	<0.05	15
	Dec-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Sep-09	<0.01	<0.005	<0.018	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	0.009	NA	<0.005	0.044	<0.02	110	12	6.75	<0.05	13.3
	Aug-10	0.01	<0.001	0.03	0.0006	<0.005	<0.010	<0.005	<0.001	<0.00005	0.226	NA	<0.001	0.101	<0.02	50	33	6.4	<0.05	238
	Aug-11	<0.01	<0.001	0.03	<0.0001	0.002	NA	<0.001	<0.001	<0.0001	0.003	NA	<0.001	0.005	<0.02	62	NA	6.8	<0.05	10
	Aug-12	0.01	0.017	0.03	<0.0001	<0.001	NA	0.002	<0.001	<0.0001	0.001	NA	<0.001	0.004	<0.02	46	NA	8	<0.05	17
	Aug-13	0.01	<0.001	<0.01	<0.0001	0.001	NA	<0.001	<0.001	<0.0001	0.002	NA	<0.001	0.003	<0.02	110	NA	7	<0.05	6
	Sep-14	<0.01	<0.001	0.02	<0.0001	<0.001	<0.01	0.002	<0.001	<0.0001	0.006	NA	<0.001	0.022	<0.02	68	NA	6.8	<0.05	8
	Sep-15	0.07	<0.001	<0.01	<0.0001	<0.001	NA	0.006	<0.001	<0.0001	0.003	NA	<0.001	0.019	<0.02	51	NA	7	<0.05	10
Screening Value		TPH/EPH (mg/l)	Arsenic (mg/l)	Boron (mg/l)	Cadmium (mg/l)	Chromium (mg/l)	Chromium (Hexavalent) (mg/l)	Copper (mg/l)	Lead (mg/l)	Mercury (mg/l)	Nickel (mg/l)	Potassium (mg/l)	Selenium (mg/l)	Zinc (mg/l)	Total Cyanide (mg/l)	Total Alkalinity as CaCo3 (mg/l)	Chloride (mg/l)	pH	Sulphide (mg/l)	Sulphate as SO4 (mg/l)
		0.01(2)	0.05(1)	2 (1)	0.00008(1)	0.0047(1)	0.0034 (1)	0.001-0.028* (1)	0.0072 (1)	0.00005(1)	0.02 (1)	NG	0.01(2)	0.008 - 0.125* (1)	0.001(1)	NG	250(3)	6-9 (1)	NG	400(2)

		Analysis																		
Borehole Location	Date	TPH/EPH (mg/l)	Arsenic (mg/l)	Boron (mg/l)	Cadmium (mg/l)	Chromium (mg/l)	Chromium (Hexavalent) (mg/l)	Copper (mg/l)	Lead (mg/l)	Mercury (mg/l)	Nickel (mg/l)	Potassium (mg/l)	Selenium (mg/l)	Zinc (mg/l)	Total Cyanide (mg/l)	Total Alkalinity as CaCo3 (mg/l)	Chloride (mg/l)	pH	Sulphide (mg/l)	Sulphate as SO4 (mg/l)
ZONE 7																				
BH701	Mar-06	0.02	<0.005	<0.005	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	0.014	1.5	<0.005	0.005	<0.03	50	26	6.20	<0.05	1300
	May-06	0.03	<0.005	0.013	<0.001	<0.005	0.010	<0.005	<0.005	<0.00005	0.007	2.0	<0.005	0.010	<0.03	65	12	6.30	<0.05	11
	Aug-07	0.11	<0.005	0.009	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	0.010	1.6	<0.005	0.300	<0.02	65	13	6.80	<0.05	16
	Oct-07	NA	<0.005	<0.005	<0.001	<0.005	NA	<0.005	<0.005	<0.00005	<0.005	NA	NA	0.015	NA	NA	NA	6.00	NA	14
	Aug-08	0.04	<0.005	0.012	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	0.045	3.1	<0.005	1.200	<0.02	70	15	6.10	<0.05	17
	Dec-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Sep-09	<0.01	<0.005	<0.018	<0.001	<0.005	<0.010	0.009	<0.005	<0.00005	0.006	NA	<0.005	0.040	<0.02	65	11	6.64	<0.05	10.5
	Aug-10	<0.01	<0.001	0.030	0.0005	0.001	<0.01	0.004	<0.001	<0.00005	0.004	NA	<0.001	0.005	<0.02	61	12	6.30	<0.05	22
	Aug-11	0.01	<0.001	0.020	<0.0001	0.002	NA	0.003	<0.001	<0.0001	0.002	NA	<0.001	0.014	<0.02	69	NA	6.40	<0.05	13
	Oct-11	NA	<0.001	NA	<0.0001	0.002	NA	0.001	<0.001	<0.0001	0.004	NA	<0.001	0.010	NA	64	NA	6.50	NA	NA
Aug-12	<0.01	<0.001	0.020	<0.0001	<0.001	NA	<0.001	<0.001	<0.0001	0.002	NA	<0.001	0.003	<0.02	68	NA	6.9	<0.05	11	
WS701	Mar-06	0.16	<0.005	<0.005	<0.001	0.008	<0.010	30.000	<0.005	0.00054	0.090	45.0	<0.005	0.007	20.00	150	19	7.10	<0.05	110
	May-06	0.11	<0.005	0.012	<0.001	<0.005	0.010	0.013	<0.005	<0.00005	<0.005	26.0	<0.005	<0.005	<0.03	75	13	6.70	<0.05	17
	Aug-07	0.11	<0.005	0.012	<0.001	<0.005	<0.010	0.008	<0.005	<0.00005	<0.005	24.0	<0.005	<0.005	<0.02	75	15	6.90	<0.05	22
	Aug-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Dec-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Aug-11	0.02	<0.001	0.030	0.001	0.002	NA	0.150	<0.001	<0.0001	0.046	NA	<0.001	0.116	<0.02	18	NA	5.90	<0.05	157
	Oct-11	NA	<0.001	NA	0.0005	0.002	NA	0.069	<0.001	<0.0001	0.021	NA	<0.001	0.043	NA	45	NA	6.20	NA	NA
Aug-12	0.02	<0.001	0.040	0.0001	<0.001	NA	0.035	<0.001	<0.0001	0.006	NA	<0.001	0.017	<0.02	38	NA	7.50	<0.05	96	
ZONE 8																				
BH801	Mar-06	0.47	<0.005	<0.005	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	0.230	4.5	<0.005	0.042	<0.03	120	22	6.50	<0.05	21
	May-06	0.04	<0.005	0.050	<0.001	<0.005	0.010	0.017	<0.005	<0.00005	0.077	5.8	<0.005	0.180	<0.03	85	33	6.70	<0.05	17
	Dec-06	<0.01	<0.005	0.006	<0.001	<0.005	<0.010	0.140	<0.005	<0.00005	0.014	3.5	<0.005	0.130	0.05	76	<10	6.60	<0.05	<10
	Aug-07	0.07	<0.005	0.006	<0.001	<0.005	<0.010	<0.005	<0.005	<0.00005	0.017	2.5	<0.005	0.047	<0.02	59	15	6.80	<0.05	<10
	Aug-08	0.09	<0.005	0.021	<0.001	<0.005	<0.010	1.800	<0.005	<0.00005	0.370	9.6	<0.005	0.660	1.9	120	24	6.90	<0.05	15
	Dec-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Sep-09	24.70	<0.005	<0.018	<0.001	0.005	<0.010	15.900	<0.005	<0.00005	0.010	NA	<0.005	0.467	6.49	235	36	7.63	<0.05	33.7
	Oct-09	0.28	<0.001	0.030	<0.001	0.002	NA	0.362	<0.001	0.0002	0.060	NA	<0.001	0.464	0.75	88	NA	6.30	NA	<3
	Aug-10	0.03	<0.001	0.030	<0.001	0.001	<0.010	0.369	<0.001	<0.00005	0.048	NA	<0.001	0.819	0.16	68	12	6.50	<0.05	6
	Aug-11	0.12	<0.001	0.020	0.0002	0.002	NA	0.482	<0.001	<0.0001	0.058	NA	<0.001	1.312	0.58	80	NA	6.70	<0.05	6
	Aug-12	0.01	<0.001	0.010	<0.0001	<0.001	NA	0.066	<0.001	<0.0001	0.017	NA	<0.001	0.347	0.85	72	NA	7.00	<0.05	4
	Aug-13	1.87	<0.001	<0.01	0.0002	0.002	NA	0.767	<0.001	<0.0001	0.043	NA	<0.001	3.119	0.5	100	NA	6.90	<0.05	5
Sep-14	0.10	<0.001	0.040	0.0002	<0.001	0.030	0.302	<0.001	<0.0001	0.057	NA	<0.001	1.370	0.4	79	NA	7.20	<0.05	4	
Sep-15	0.11	<0.001	<0.01	0.0002	0.014	NA	0.086	<0.001	<0.0001	0.078	NA	<0.001	0.659	<0.02	67	NA	6.80	<0.05	<3	
BH802	Mar-06	0.12	<0.005	3.400	0.006	<0.005	<0.010	0.014	<0.005	<0.00005	39.000	8.3	<0.005	0.280	<0.03	25	250	5.60	<0.05	420
	May-06	0.03	<0.005	4.600	0.006	<0.005	0.010	0.018	<0.005	<0.00005	110.000	11.0	<0.005	0.450	<0.03	30	110	5.50	<0.05	1100
	Dec-06	0.05	<.0005	5.600	0.008	<0.005	<0.010	0.710	<0.005	<0.00005	180.000	23.0	<0.005	1.800	<0.02	<20	77	3.60	<0.05	1700
	Dec-06 (2)	<0.01	<0.005	5.100	0.008	<0.005	<0.010	0.770	0.013	<0.00005	190.000	NA	<0.005	3.600	<0.02	<20	120	3.40	<0.05	2200
	Aug-07	0.05	<0.005	1.200	0.005	<0.005	<0.010	0.710	0.008	<0.00005	12.000	28.0	<0.005	1.600	<0.02	<20	130	3.40	<0.05	1200
	Oct-07	NA	<0.005	0.430	0.005	<0.005	NA	0.470	0.007	<0.00005	6.800	NA	<0.005	1.300	NA	NA	NA	3.90	NA	700
	Feb-08	NA	<0.005	1.300	0.006	<0.005	NA	0.380	0.005	<0.00005	18.000	NA	<0.005	1.300	NA	<20	NA	4.00	NA	700
	Aug-08	0.20	<0.005	0.720	0.003	<0.005	<0.010	0.260	<0.005	<0.00005	7.200	19.0	<0.005	0.810	<0.02	<20	41	3.80	<0.05	380
	Dec-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Sep-09	0.77	MI	MI	MI	MI	<0.010	MI	MI	0.0012	MI	MI	MI	MI	<0.02	1730	38	11.70	<0.05	608
Oct-09	0.06	0.013	5.770	0.0002	0.004	NA	0.005	<0.001	0.0002	1.273	NA	0.002	0.004							

		Analysis																		
Borehole Location	Date	TPH/EPH (mg/l)	Arsenic (mg/l)	Boron (mg/l)	Cadmium (mg/l)	Chromium (mg/l)	Chromium (Hexavalent) (mg/l)	Copper (mg/l)	Lead (mg/l)	Mercury (mg/l)	Nickel (mg/l)	Potassium (mg/l)	Selenium (mg/l)	Zinc (mg/l)	Total Cyanide (mg/l)	Total Alkalinity as CaCo3 (mg/l)	Chloride (mg/l)	pH	Sulphide (mg/l)	Sulphate as SO4 (mg/l)
ZONE 9																				
BH 901	Mar-06	<0.01	<0.005	<0.005	<0.001	0.008	<0.010	0.074	<0.005	<0.00005	0.076	4.4	<0.005	0.031	<0.03	<20	460	5.80	<0.05	110
	May-06	0.12	<0.005	0.032	0.002	<0.005	0.010	2.200	<0.005	<0.00005	2.700	16.0	<0.005	0.890	0.03	<20	13	4.30	<0.05	18
	Dec-06	0.36	<0.005	0.140	0.005	0.006	<0.010	2.300	<0.005	<0.00005	3.800	25.0	<0.005	1.600	<0.02	<20	63	3.50	<0.05	950
	Aug-07	0.05	<0.005	0.031	<0.001	<0.005	<0.010	0.013	<0.005	<0.00005	0.090	6.1	<0.005	0.018	<0.02	62	33	6.70	<0.05	210
	Aug-08	0.06	<0.005	0.060	0.003	<0.005	<0.010	0.960	<0.005	<0.00005	2.100	17.0	<0.005	2.500	<0.02	<20	25	3.30	<0.05	490
	Dec-08	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	Sep-09	0.06	<0.005	<0.018	<0.001	<0.005	<0.010	0.401	<0.005	<0.00005	0.342	NA	<0.005	0.522	<0.02	6.5	22	5.36	<0.05	128
	Aug-10	<0.01	<0.001	0.030	<0.001	0.001	<0.010	0.019	<0.001	<0.00005	0.035	NA	<0.005	0.142	<0.02	41	21	6.40	<0.05	47
	Aug-11	<0.01	<0.001	0.030	0.0003	<0.001	NA	0.067	<0.001	<0.0001	0.185	NA	<0.001	0.749	<0.02	11	NA	6.70	<0.05	73
	Aug-12	0.02	<0.001	0.030	0.0006	<0.001	NA	0.330	0.001	<0.0001	0.171	NA	<0.001	0.838	<0.02	3	NA	7.10	<0.05	70
	Aug-13	0.47	<0.001	0.030	0.0014	<0.001	NA	0.642	0.001	<0.0001	0.390	NA	<0.001	1.427	<0.02	0	NA	5.20	<0.05	143
	Sep-14	0.04	<0.001	0.020	0.0037	0.001	<0.01	1.102	0.002	<0.0001	0.886	NA	<0.001	2.609	<0.02	<2	NA	3.20	<0.05	180
	Sep-15	0.26	<0.001	0.160	0.001	<0.001	NA	0.970	<0.001	<0.0001	0.656	NA	<0.001	1.438	<0.02	<2	NA	4.00	<0.05	138
Screening Value		TPH/EPH (mg/l)	Arsenic (mg/l)	Boron (mg/l)	Cadmium (mg/l)	Chromium (mg/l)	Chromium (Hexavalent) (mg/l)	Copper (mg/l)	Lead (mg/l)	Mercury (mg/l)	Nickel (mg/l)	Potassium (mg/l)	Selenium (mg/l)	Zinc (mg/l)	Total Cyanide (mg/l)	Total Alkalinity as CaCo3 (mg/l)	Chloride (mg/l)	pH	Sulphide (mg/l)	Sulphate as SO4 (mg/l)
		0.01(2)	0.05(1)	2 (1)	0.00008(1)	0.0047(1)	0.0034 (1)	0.001-0.028* (1)	0.0072 (1)	0.00005(1)	0.02 (1)	NG	0.01(2)	0.008 - 0.125* (1)	0.001(1)	NG	250(3)	6-9 (1)	NG	400(2)

The red cells indicate elevated concentrations compared with the screening values

NA= Not Analysed

NS= Not Sampled

NG= No Guidance

MI = Matrix Interference

(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)

* = Range determined by alkalinity

(3) = Environment Agency Non-Statutory Operational EQS

Royal Mint SPMP 2015 (UK17-22119) - Summary of Groundwater Analysis Results (September 2015)

		Analysis (VOCs, µg/l)					
Borehole Location	Date	1,1,1-Trichloroethane	1,1-Dichloroethene	1,1-Dichloroethane	Cis 1,2-Dichloroethene	Trichloroethene	Tetrachloroethene
ZONE 0							
BH001	Mar-06	<1	<1	<1	<1	<1	<1
	May-06	<1	<1	<1	<1	<1	<1
	Aug-07	NS	NS	NS	NS	NS	NS
	Aug-08	<1	<1	<1	<1	<1	<1
	Dec-08	<1	<1	<1	<1	5	<1
	Sep-09	<1.3	<1.2	<1.2	<2.3	<2.5	<1.5
	Aug-10	<1	<1	<1	<1	<5	<5
	Aug-11	<1	<1	<1	<1	<5	<5
	Aug-12	<1	<1	<1	<1	<5	<5
	Aug-13	<1	<1	<1	<1	<5	<5
BH002	Sep-14	<1	<1	<1	<1	<5	<5
	Sep-15	<1	<1	<1	<1	<5	<5
	Mar-06	<1	<1	<1	<1	<1	<1
	May-06	<1	<1	<1	<1	<1	<1
	Aug-07	<1	<1	<1	<1	<1	<1
	Aug-08	<1	<1	<1	<1	<1	<1
	Dec-08	<1	<1	<1	<1	2	<1
	Sep-09	<1.3	<1.2	<1.2	<2.3	<2.5	<1.5
	Aug-10	<1	<1	<1	<1	<5	<5
	Aug-11	<1	<1	<1	<1	<5	<5
BH003	Aug-12	<1	<1	<1	<1	<5	<5
	Sep-13	<1	<1	<1	<1	<5	<5
	Sep-14	<1	<1	<1	<1	<5	<5
	Sep-15	<1	<1	<1	<1	<5	<5
	Mar-06	<1	<1	<1	<1	5	<1
	May-06	6	<1	<1	<1	2	<1
	Aug-07	8	<1	<1	<1	3	<1
	Aug-08	5	<1	<1	<1	2	<1
	Dec-08	7	<1	<1	<1	4	<1
	Sep-09	<1.3	<1.2	<1.2	<2.3	<2.5	<1.5
BHNP1D	Aug-10	5	<1	<1	<1	<5	<5
	Aug-11	6	<1	<1	<1	<5	<5
	Aug-12	9	<1	<1	<1	<5	<5
	Aug-13	7	<1	<1	<1	<5	<5
	Sep-14	7	<1	<1	<1	<5	<5
	Sep-15	7	<1	<1	<1	<5	<5
	Aug-07	2	<1	1	<1	<1	<1
	Aug-08	<1	1	<1	<1	<1	<1
	Dec-08	4	<1	2	<1	2	<1
	Sep-09	103.0	2.1	10.6	14.7	30.4	3.1
BHNP2D	Aug-10	14	<1	7	2	7	<5
	Aug-11	4	<1	3	2	<5	<5
	Aug-12	3	<1	1	1	<5	<5
	Aug-07	57	<1	7	3	9	3
	Aug-08	29.0	<1	4.0	5.0	10.0	1.0
	Dec-08	86.0	2.0	8.0	5.0	21.0	4.0
	Sep-09	4.69	<1.2	3.93	<2.3	<2.5	<1.5
	Aug-10	106	2	10	5	39	33
	Aug-11	56	2	10	9	20	12
	Aug-12	76	3	13	22	23	<5
BHE5	Aug-13	10	<1	3	2	<5	<5
	Sep-14	7	<1	4	4	5	<5
	Sep-15	9	<1	6	3	5	<5
BHE6	Aug-13	<1	<1	<1	<1	<5	<5
	Sep-14	<1	<1	<1	<1	<5	<5
	Sep-15	<1	<1	<1	<1	<5	<5
CBH6	Aug-13	27	<1	2	9	16	7
	Sep-14	7	<1	<1	5	6	<5
	Sep-15	7	<1	<1	3	7	<5
ZONE 1							
BH101	Mar-06	<1	<1	<1	<1	<1	<1
	May-06	<1	<1	<1	<1	<1	<1
	Aug-07	<1	<1	<1	<1	<1	<1
	Aug-08	<1	<1	<1	<1	<1	<1
	Sep-09	<1.3	<1.2	<1.2	<2.3	<2.5	<1.5
	Aug-10	<1	<1	<1	<1	<5	<5
	Aug-11	<1	<1	<1	<1	<5	<5
	Aug-12	<1	<1	<1	<1	<5	<5

Screening Value		1,1,1-Trichloroethane	1,1-Dichloroethene	1,1-Dichloroethane	Cis 1,2-Dichloroethene	Trichloroethene	Tetrachloroethene
		100 (1**)	NG	NG	NG	10 (1)	10 (1)

The yellow cells indicate elevated concentrations compared with the screening values.

The green cells indicate VOCs detected above the laboratory limit of detection, however not exceeding the screening value.

NA= Not Analysed

NS= Not Sampled

NG= No UK or European Guidance

(1) - Priority Substances (Directive 2008/105/EC) daughter directive of the Water Framework Directive (WFD) (2000/60/EC). Although EU member states have until 13th July 2010 to implement the daughter directive, European WFD EQSs ahead of the formal deadline in England, Scotland and Wales. Revised European EQS used where available.

** denotes where there is no European EQS, and former EC Dangerous Substances Directive (76/464/EEC) has been applied.

*** denotes where there is no European EQS, and UK Potable DWS Published Drinking Water Criteria UK has been applied.

		Analysis (VOCs, µg/l)					
Borehole Location	Date	1,1,1-Trichloroethane	1,1-Dichloroethene	1,1-Dichloroethane	Cis 1,2-Dichloroethene	Trichloroethene	Tetrachloroethene
ZONE 2							
BH201	Mar-06	<1	<1	<1	<1	4	<1
	May-06	3.00	<1	<1	<1	1	<1
	Aug-07	5.00	<1	<1	<1	1	<1
	Aug-08	<1	<1	<1	<1	<1	<1
	Sep-09	2.20	<1.2	<1.2	<2.3	<2.5	<1.5
	Aug-10	2	<1	<1	<1	<5	<5
	Aug-11	6	<1	<1	<1	<5	<5
	Aug-12	3	<1	<1	<1	<5	<5
	Aug-13	<1	<1	<1	<1	<5	<5
	Sep-14	9	<1	<1	<1	<5	<5
	Sep-15	9	<1	<1	<1	<5	<5
ZONE 7							
BH701	Mar-06	<1	<1	<1	<1	<1	<1
	May-06	<1	<1	<1	<1	<1	<1
	Aug-07	<1	<1	<1	<1	<1	<1
	Aug-08	<1	<1	<1	<1	<1	<1
	Sep-09	<1.3	<1.2	<1.2	<2.3	<2.5	<1.5
	Aug-10	<1	<1	<1	<1	<5	<5
	Aug-11	<1	<1	<1	<1	<5	<5
	Aug-12	<1	<1	<1	<1	<5	<5
ZONE 8							
BH801	Mar-06	<1	<1	<1	<1	<1	<1
	May-06	<1	<1	<1	<1	<1	<1
	Aug-07	<1	<1	<1	<1	<1	<1
	Aug-08	<1	<1	<1	<1	<1	<1
	Sep-09	<1.3	<1.2	<1.2	<2.3	<2.5	<1.5
	Aug-10	<1	<1	<1	<1	<5	<5
	Aug-11	<1	<1	<1	<1	<5	<5
	Aug-12	<1	<1	<1	<1	<5	<5
	Aug-13	<1	<1	<1	<1	<5	<5
	Sep-14	<1	<1	<1	<1	<5	<5
	Sep-15	<1	<1	<1	<1	<5	<5
ZONE 9							
BH 901	Mar-06	<1	<1	<1	<1	<1	<1
	May-06	<1	<1	<1	<1	<1	<1
	Aug-07	<1	<1	<1	<1	<1	<1
	Aug-08	<1	<1	<1	<1	<1	<1
	Sep-09	<1.3	<1.2	<1.2	<2.3	<2.5	<1.5
	Aug-10	<1	<1	<1	<1	<5	<5
	Aug-11	<1	<1	<1	<1	<5	<5
	Aug-12	<1	<1	<1	<1	<5	<5
	Aug-13	<1	2	<1	<1	<5	<5
	Sep-14	1	<1	1	<1	<5	<5
	Sep-15	<1	<1	<1	<1	<5	<5
Screening Value		1,1,1-Trichloroethane	1,1-Dichloroethene	1,1-Dichloroethane	Cis 1,2-Dichloroethene	Trichloroethene	Tetrachloroethene
		100 (1**)	NG	NG	NG	10 (1)	10 (1)

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