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

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(SPMP) GROUNDWATER MONITORING ROUND XIV

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Made by Robert Hodgson
Checked by Lucy Cleverley
Approved by Lucy Cleverley

Made by:



Checked/Approved by:



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1. INTRODUCTION

Ramboll Environment and Health UK Limited (Ramboll) 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”).

The first phase report of the SPMP was submitted to the Environment Agency (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 fourteenth round of monitoring carried out on 23rd and 24th August 2018. 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.

This report has been written by Ramboll on behalf of The Royal Mint and is to be submitted to Natural Resources Wales (NRW) in pursuance of Condition 4.1.7 of the Permit.

2. SCOPE OF WORK

During the 2018 SPMP Groundwater Monitoring (Round XIV) samples were recovered from nine monitoring wells, eight of which were SPMP specific wells installed by Ramboll in March 2006. The remaining well (CBH6) has been included in the SPMP Groundwater Monitoring since 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, volatile organic compounds (VOC) 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 2015. 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 where EQS are not available, the UK Drinking Water Standards (UK DWS).

From 2013 to 2017, SPMP groundwater sampling comprised monitoring eleven SPMP boreholes in accordance with the Design SPMP that was updated by Ramboll in August 2013. In 2017, Ramboll recommended that two of the monitoring wells (BHE5 and BHE6) be removed from future rounds of SPMP groundwater monitoring. The overall approach was agreed with Natural Resources Wales (NRW) in a November 2017 Compliance Assessment Report (Ref: CAR_NRW0032431).

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.

Ramboll has only discussed the results of analysis where the concentrations were 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 (Ref. 63C8777).

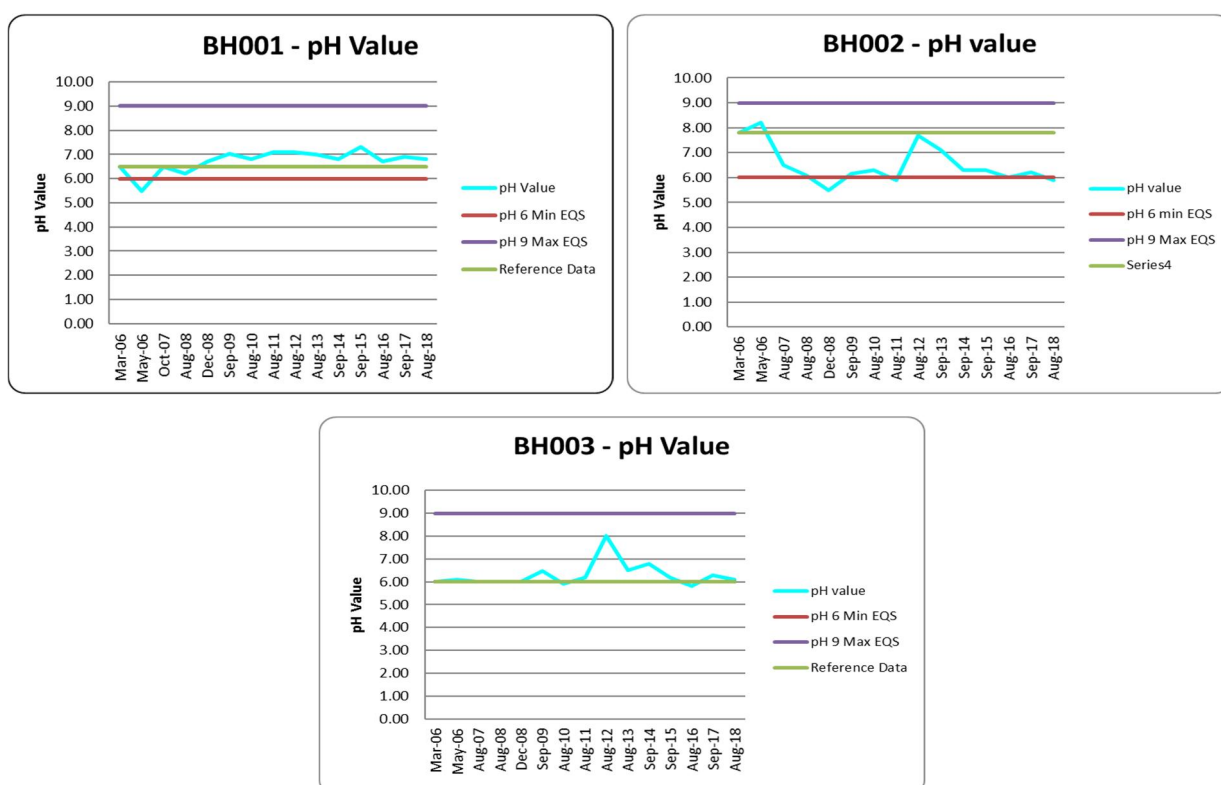
3.1 ZONE 0: Non-Target Zone

3.1.1 Perimeter Boreholes

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

pH Values

The pH values of groundwater from boreholes BH001 and BH003 were within the EQS range (pH 6 to pH 9) during the most recent round of monitoring. However, a low (more acidic) value of pH 5.90 was recorded in the sample from borehole BH002.



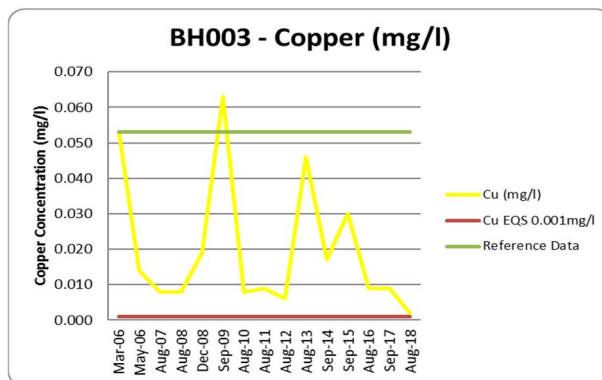
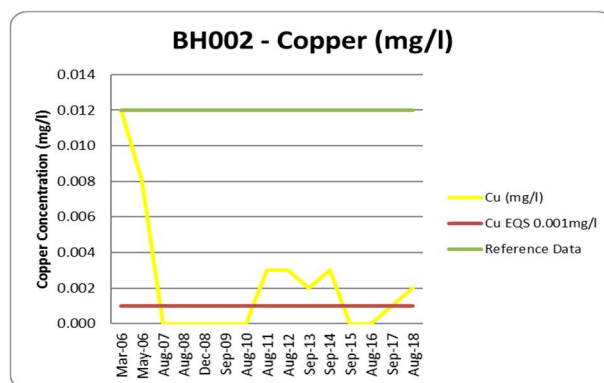
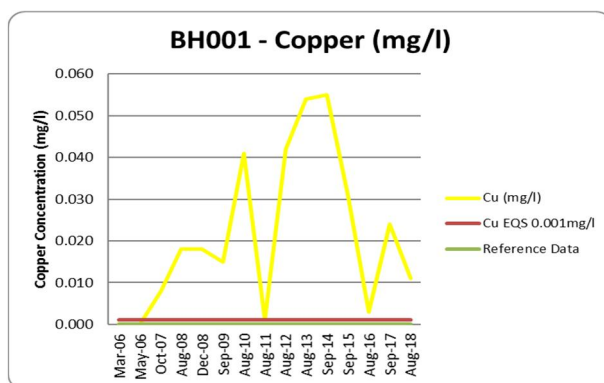
Metals

Boron was detected in BH003 only, at a concentration of 0.02mg/l; which is similar to, and slightly above, the reference data of 0.019mg/l; however, the concentration does not exceed the EQS of 2mg/l.

Cadmium was detected in BH003 at a concentration of 0.0002mg/l; for the purpose of screening, any recorded concentration above the laboratory LOD is considered to exceed the EQS of 0.00008mg/l. Cadmium was not detected in any of the perimeter boreholes during reference data collection; however, it has been detected in low concentrations in BH003 for the last nine rounds of annual monitoring.

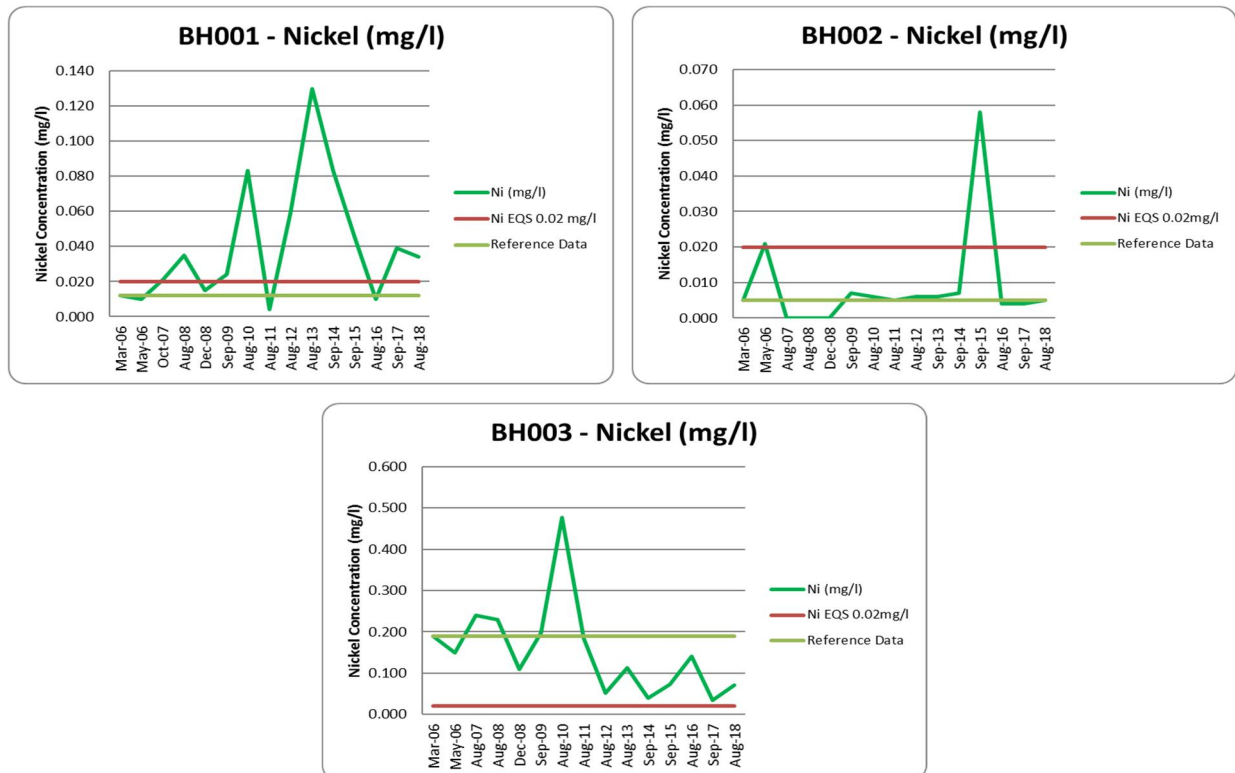
Chromium was detected in BH003 at a concentration of 0.002mg/l, which is typical of previously recorded concentrations at this location and below the reference data of 0.009mg/l, and EQS value of 0.0047mg/l.

Copper was detected in each of the perimeter boreholes BH001 (0.011mg/l), BH002 (0.002mg/l), and BH003 (0.002mg/l). Recorded concentrations have remained similar to, or slightly decreased since the previous monitoring round. The reference data concentration in borehole BH001 was below the laboratory LOD; therefore, the most recent recorded concentration is slightly greater than the reference data. Recent recorded concentrations in boreholes BH002 and BH003 are slightly less than their respective reference data. All concentrations slightly exceed the relevant EQS.

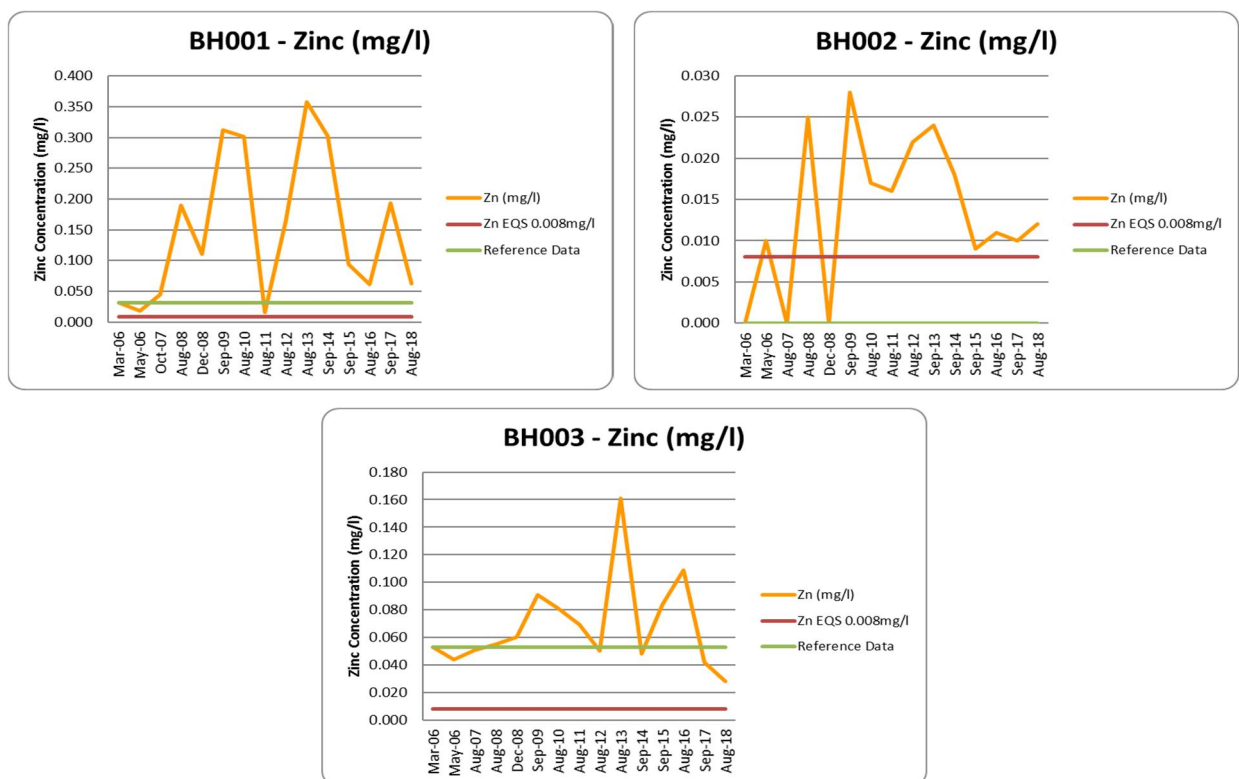


Historically, the concentration of nickel in borehole BH001 has regularly exceeded the EQS; the most recent recorded concentration (0.034mg/l) exceeds both the EQS and the reference data at this location. Nickel was recorded at a concentration equal to the reference data (0.005mg/l), and below the EQS in borehole BH002. Nickel was recorded at a concentration above the EQS value of 0.02mg/l in down-hydraulic gradient borehole BH003 (0.070mg/l), which is typical of previous recorded concentrations at this location. However, the recorded concentration of nickel is below the reference data during the most recent round of monitoring.

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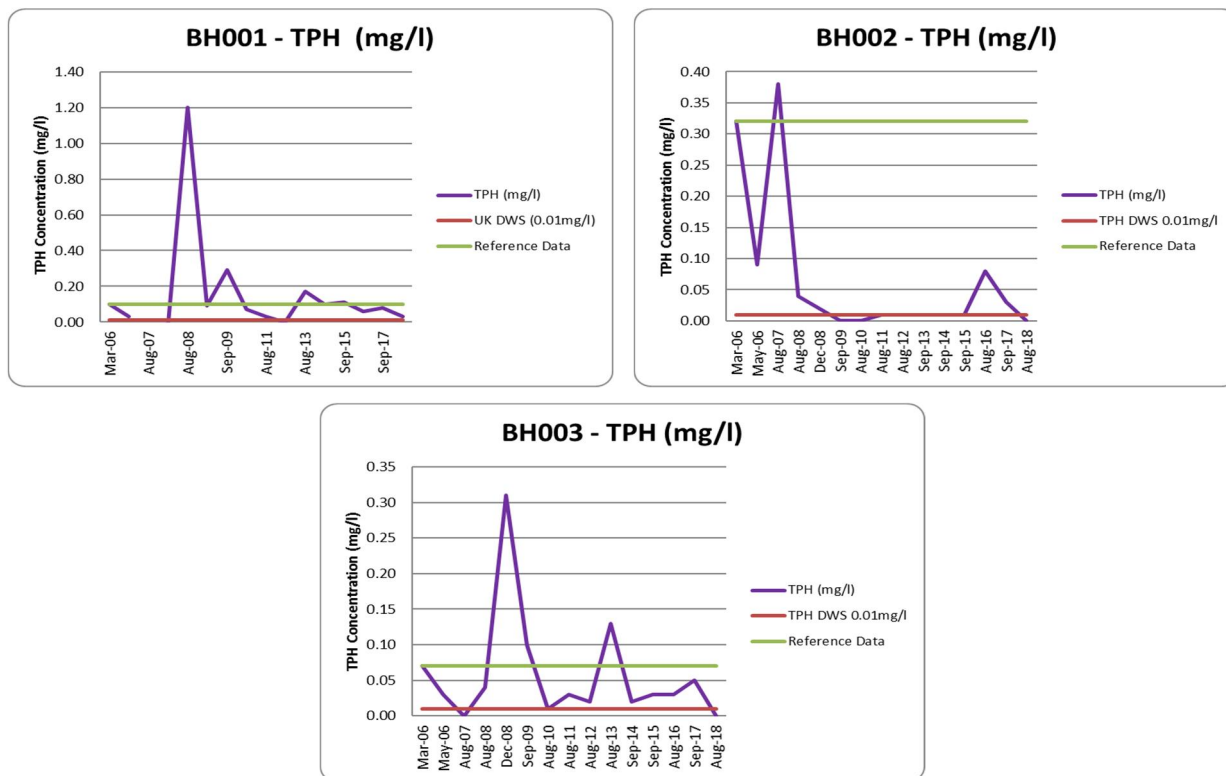


Zinc was detected in BH001 (0.062mg/l), BH002 (0.012mg/l) and BH003 (0.028mg/l); the concentrations in BH002 and BH003 exceed the EQS value of 0.008mg/l. The concentration of zinc in BH001 also exceeds the greater EQS of 0.05mg/l, due to a higher value for water hardness, although this is not represented on the graph.



Hydrocarbons

Total Petroleum Hydrocarbons (TPH) was detected in borehole BH001 only (0.03mg/l), which slightly exceeds the screening value of 0.01mg/l. In each case, the most recent recorded values are below the reference data and within the range of previously recorded values at each location.



VOCs

A Trace concentration of the VOC 1,1,1-Trichloroethane (TCA) (5µg/l) was detected in groundwater from borehole BH003 only, which is consistent with previous rounds of monitoring. The EQS value for 1,1,1-trichloroethane is 100µg/l. Trichloroethene (TCE) has also previously been detected in this monitoring well; however, on this occasion TCE was below the laboratory LOD (<5µg/l).

3.1.2 Additional Perimeter Monitoring Wells

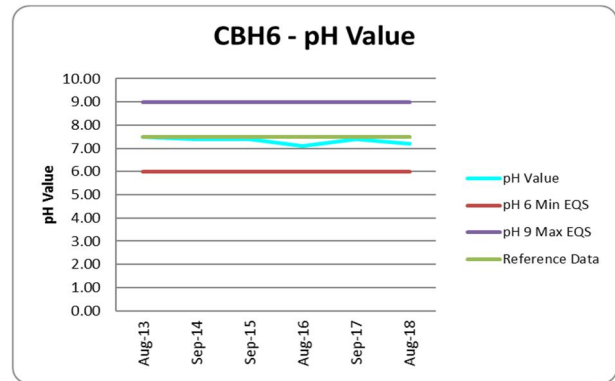
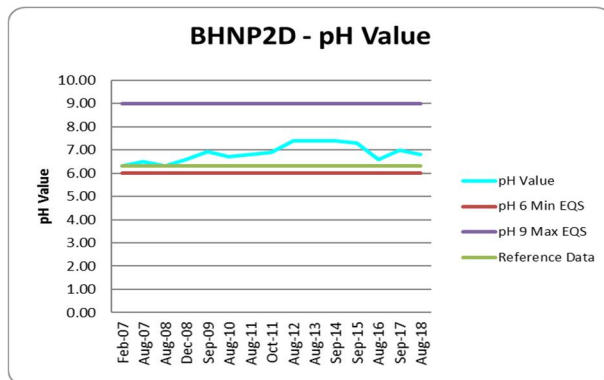
Two additional perimeter monitoring wells have been included in the SPMP in order to monitor the effectiveness of groundwater remediation (for VOCs) carried out in the south-east of the site by Celtic Technologies Limited ('Celtic') between 2011 and 2013 (Celtic Report Ref: R1430/12/4003).

The additional wells (BHNP2 and CBH6) are positioned between Zone 8 and the River Nant Mychydd. BHNP2 comprises dual monitoring wells, shallow and deep; this monitoring location has been included in the SPMP since its installation in 2007. It should be noted that only the deep well is monitored under the SPMP (BHNP2D). Borehole CBH6 was installed by Celtic and has been included in the SPMP since 2013.

pH Values

The pH values in this area were within the EQS range (pH 6 to pH 9) during the most recent round of monitoring and are broadly consistent with previous rounds of monitoring.

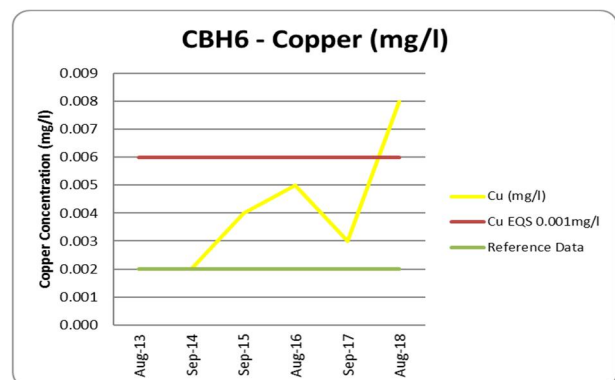
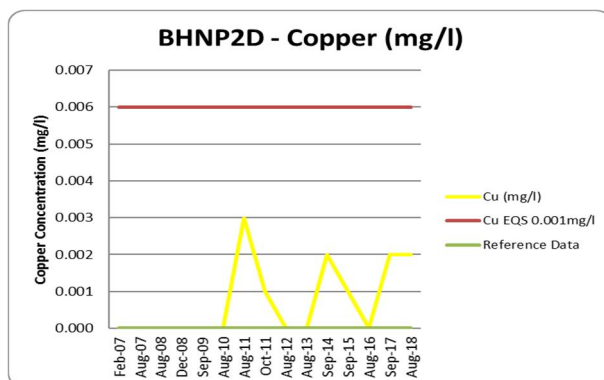
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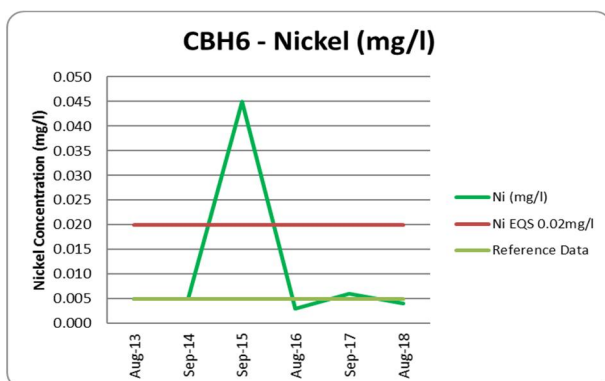
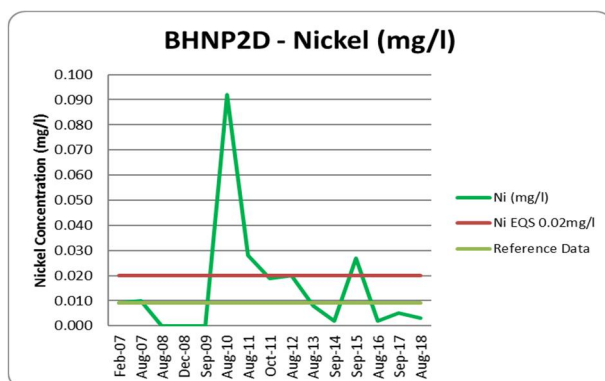
Metals

Boron was detected in both boreholes as a concentration of 0.020mg/l; which is less than the reference data for borehole BHNP2D (0.072mg/l), and greater than the reference data for CBH6 (<0.005mg/l). Concentrations do not exceed the EQS of 2mg/l.

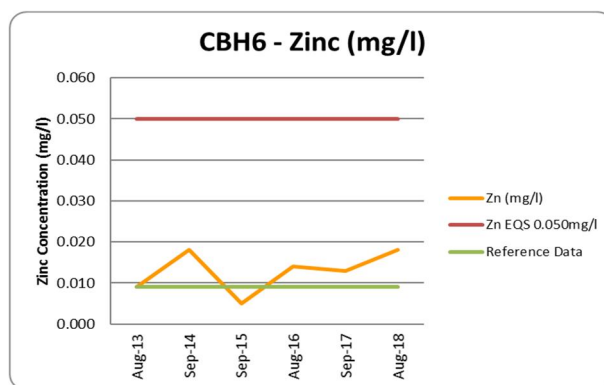
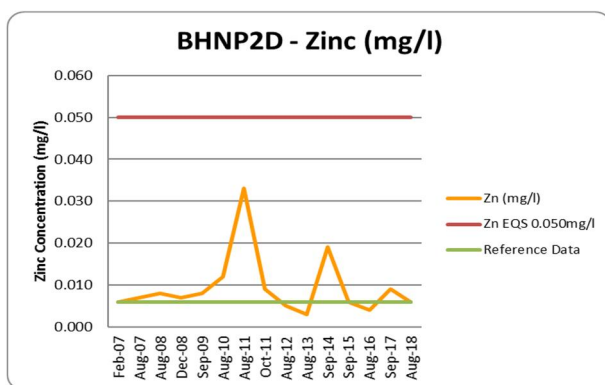
Copper was detected at low concentrations in the two boreholes in this area; 0.002mg/l in BHNP2D, and 0.008mg/l in CBH6. Each recorded concentration slightly exceeds reference data; and the recorded concentration in borehole CBH6 slightly exceeds the relevant EQS value of 0.006mg/l.



Nickel was detected at low concentrations in the two boreholes in this area; 0.003mg/l in BHNP2D, and 0.004mg/l in CBH6. Recorded concentrations are less than the relevant reference data, and the relevant EQS value of 0.020mg/l.

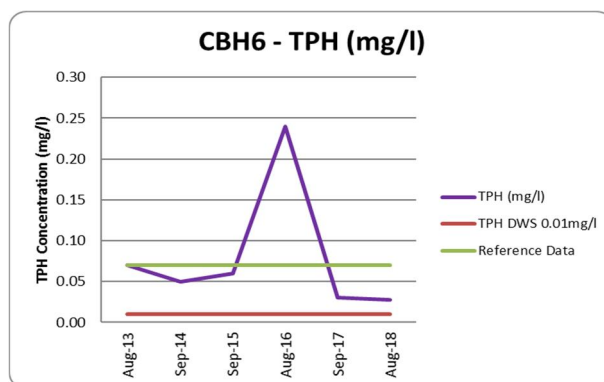
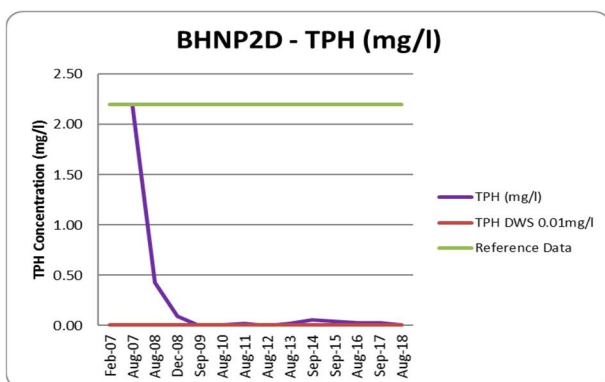


Zinc was detected above the laboratory limit of detection in BHNP2D at 0.006mg/l, and CBH6 at 0.018mg/l. Both recorded concentrations are equal to or slightly above the reference data; however, remain below the relevant EQS of 0.05mg/l.



Hydrocarbons

Trace concentrations of TPH were detected in each borehole in this area; 0.01mg/l in BHNP2D, and 0.028mg/l in CBH6. For the purpose of screening, any recorded concentration above the laboratory LOD is considered to exceed the screening value of 0.01mg/l.



VOCs

Remediation was carried out in this area by Celtic between 2011 and 2013 and boreholes BHNP2D, CBH6, BHE5 and BHE6 were added to the SPMP between 2013 and 2017 as a requirement of NRW to verify the success of the remediation scheme. In 2018, only BHNP2D and CBH6 were monitored.

The following compounds were detected in BHNP2D: 1,1,1-trichloroethane (18µg/l); 1,1 dichloroethene (2µg/l); 1,1 dichloroethane (16µg/l); cis 1,2-dichloroethene (3µg/l); and trichloroethene (4µg/l).

The following VOCs were detected in CBH6: 1,1,1-trichloroethane (5µg/l); cis 1,2-dichloroethene (4µg/l); trichloroethene (6µg/l); and tetrachloroethene (2µg/l).

Overall, the VOC concentrations have decreased compared to the previous two rounds of monitoring (with the exception of tetrachloroethene in borehole CBH6) and are all below the respective Controlled Waters screening criteria, where available.

Site specific remedial targets were developed by Celtic for the following VOC compounds as follows:

- 1,1,1-trichloroethane: 341µg/l;
- 1,1-dichloroethene: 10.1µg/l;
- trichloroethene: 34.4µg/l; and
- tetrachloroethene: 38.5µg/l.

None of the most recent recorded concentrations exceed the remedial targets.

3.2 ZONE 1: Non-Ferrous Melting and Casting Activities

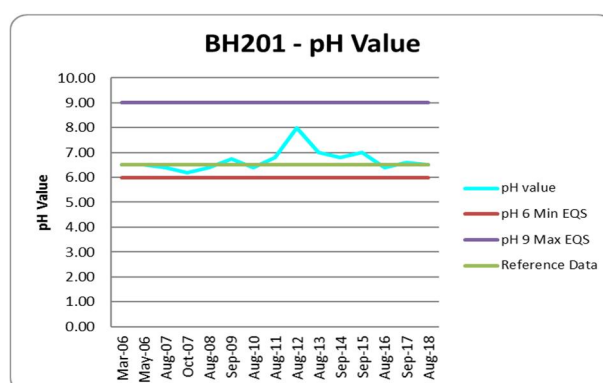
Zone 1 is located in the north-west section of the site and includes the MRB (Melting, Rolling and Blanking) building. There is one monitoring well in the area, BH101 located up-gradient of the MRB (i.e. to the north). Based on the previous stable or decreasing concentrations of determinands in this 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 6.5, the same as the reference data at this location and within the EQS range of pH values.



Metals

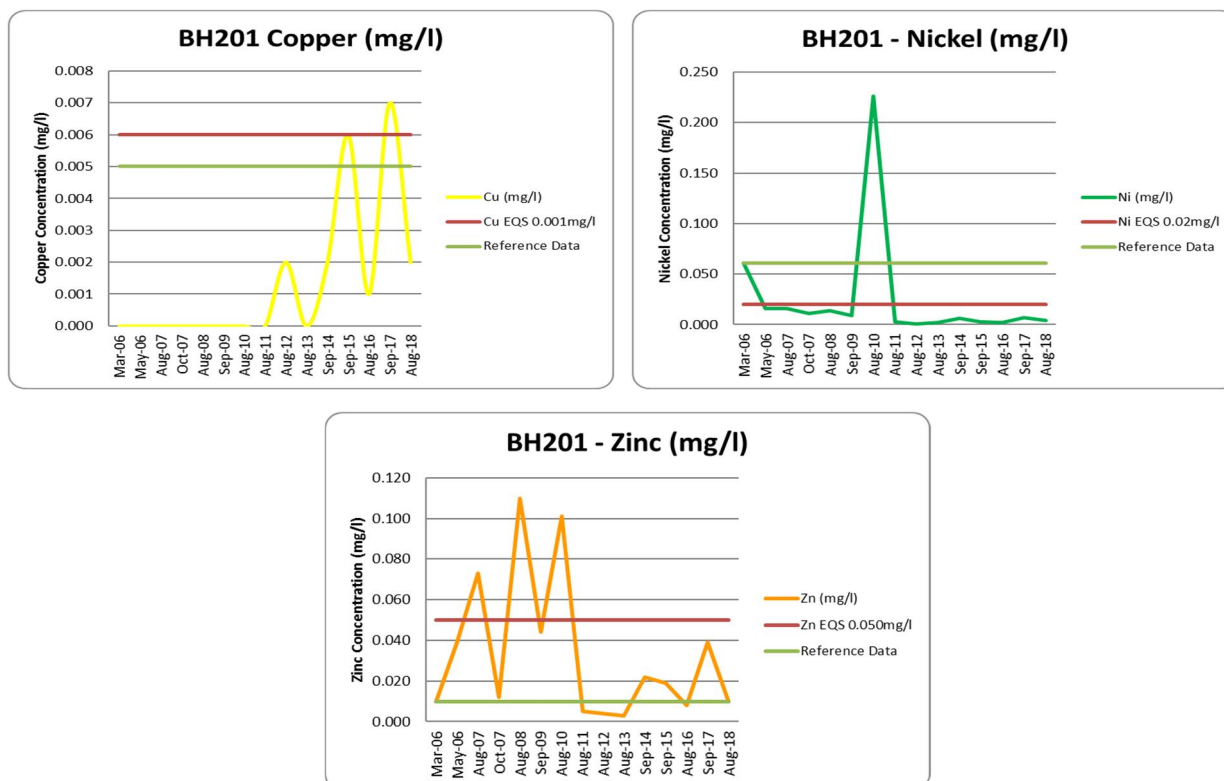
Boron was recorded at a low concentration of 0.01mg/l in borehole BH201, which is slightly greater than the reference value of below the laboratory LOD; but, remains less than the EQS of 2mg/l.

Copper was recorded at a concentration of 0.002mg/l, which is a decrease in concentration compared to the previous round of monitoring (0.07mg/l) and does not exceed the EQS of 0.006mg/l. However, the recorded concentration slightly exceeds the reference data, which was below the laboratory LOD.

Nickel concentration was detected at 0.004mg/l, which is below the reference data and the EQS of 0.02mg/l.

The concentration of zinc was recorded at 0.01mg/l, which has decreased since the previous round of monitoring; this remains below the EQS value of 0.05mg/l for total alkalinity as CaCO₃ of 50mg/l to 100mg/l. The most recent recorded concentration is equal to the reference data.

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*Hydrocarbons*

TPH was not detected above the laboratory LOD on this occasion.

VOCs

VOCs were not detected above the laboratory LOD on this occasion.

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) that 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 CAR (Ref: KP3135KV/0184470) issued by NRW.

3.5 ZONE 8: COMAH Area

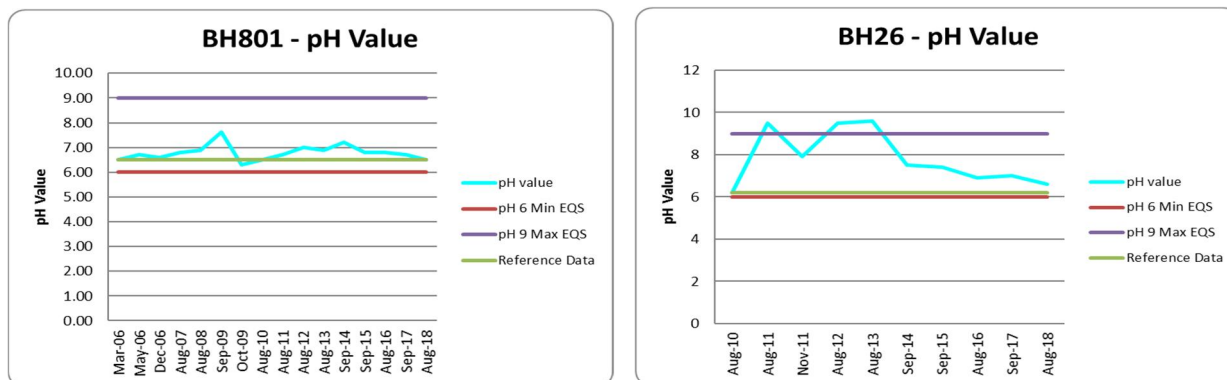
Zone 8 is located in the north-east section of the site and comprises three copper plating buildings, two nickel plating buildings, a chemical store, a coin store and a services area for acid storage and dilution. There were originally two monitoring wells located in Zone 8 (BH801 and BH802). BH801 is located to the east of Copper Plating 2 (CP2); and BH802 was formerly located immediately south of Nickel Plating 1 (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). Both BH802 and BH26 have previously recorded significantly elevated concentrations of nickel. The source is considered likely to be a historical spillage that occurred in the east of the NP1 building. The building has been decommissioned but the structure remains in place. Residual contamination may be present beneath the ground slab of the building in soil and groundwater. Nickel contamination in groundwater has been addressed by Celtic in this area by a 'pump and treat' system which commenced in 2012 (Celtic Report Ref: R1430/12/4003). More

recently, Celtic has piloted electrolysis using stainless steel rods to remove the nickel content. Ramboll understands that a significant reduction in concentrations has been achieved.

pH Value

The pH of groundwater in borehole BH801 was pH 6.5 and the pH in borehole BH26 was pH 6.6, which are within the EQS range of pH values.

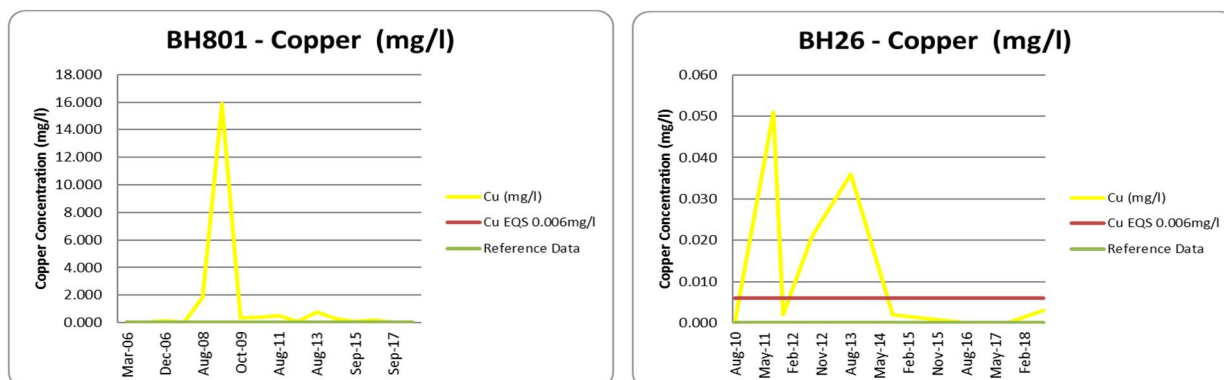


Metals

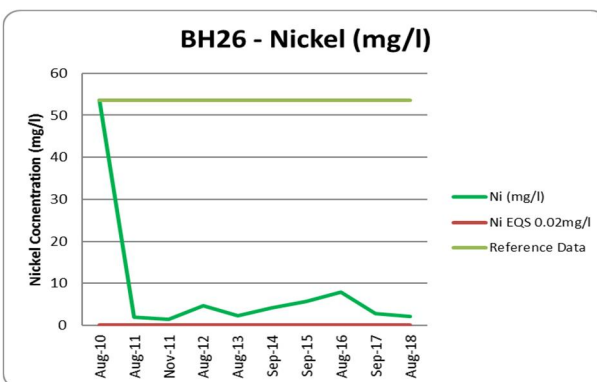
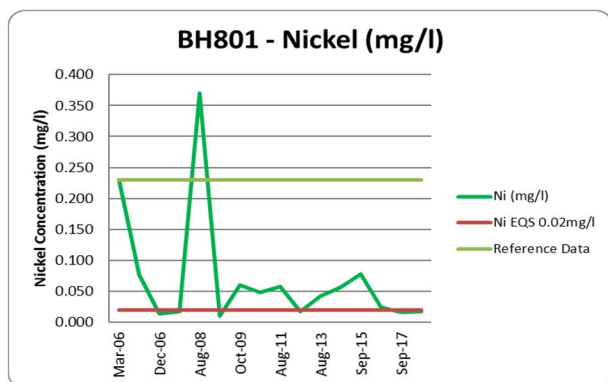
Boron was detected in BH26 at a concentration of 0.43mg/l, which does not exceed the EQS value of 2mg/l; and is below the reference data.

Cadmium was recorded above the laboratory LOD in borehole BH26 at a concentration of 0.0174mg/l. The recorded value represents the maximum recorded concentration at this location and exceeds the EQS value of 0.00008mg/l.

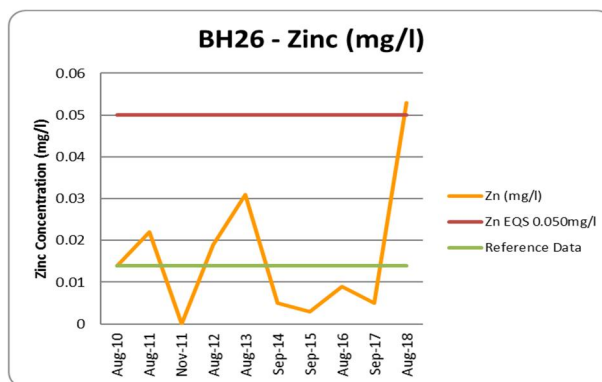
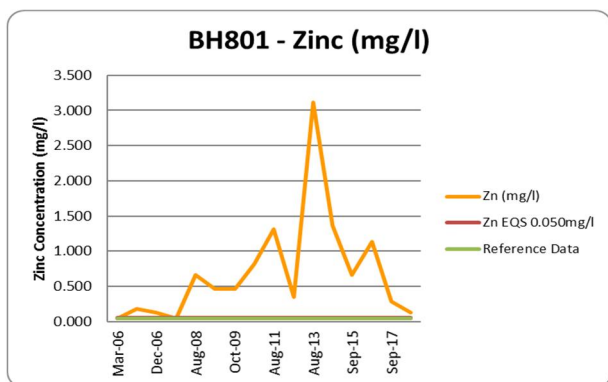
Copper was recorded at a concentration of 0.024mg/l in borehole BH801, and a concentration of 0.003mg/l in borehole BH26. Both recorded concentrations are within the range of previous concentrations recorded at these locations. However, the concentration in borehole BH801 exceeds the relevant EQS value of 0.001mg/l.



Nickel was recorded at a concentration of 0.017mg/l in borehole BH801, and a concentration of 2.146mg/l in borehole BH26. Both recorded concentrations are within the range of previous concentrations recorded at these locations, and below the reference data. The graph showing nickel concentrations in BH26 demonstrates an overall decreasing concentration; however, the latest concentration detected remains significantly elevated compared with the relevant EQS value of 0.02mg/l.



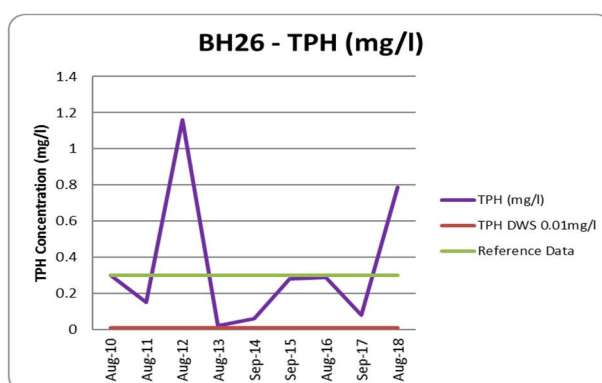
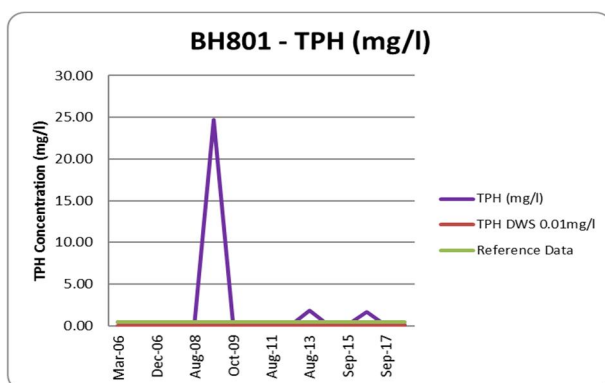
Zinc was recorded in borehole BH801 at a concentration of 0.125mg/l, which exceeds the reference data and the relevant EQS value of 0.008mg/l. The recorded concentration in borehole BH26 was 0.053mg/l, which slightly exceeds the relevant EQS value of 0.05mg/l and is an increase in concentration when compared with previous rounds of monitoring.



Cyanide was detected above the laboratory LOD in borehole BH801, at a concentration of 0.03mg/l. Historically, cyanide has regularly been detected at BH801 and a detection above the laboratory LOD is considered to exceed the EQS of 0.001mg/l.

Hydrocarbons

TPH was detected in borehole BH801 at a concentration of 0.14mg/l and in borehole BH26 at 0.786mg/l, both exceeding the UK DWS of 0.01mg/l. The concentration recorded in borehole BH26 also exceeds the reference data.



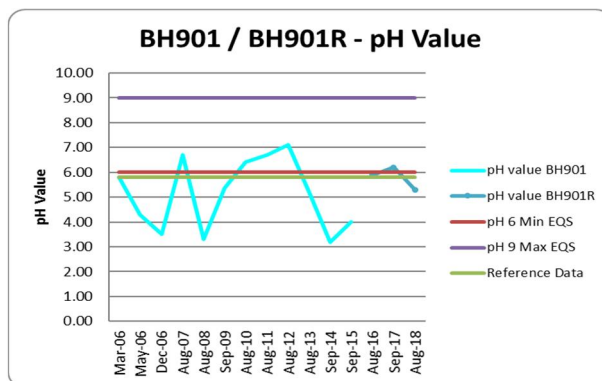
3.6 ZONE 9: Pickling, Duplex Plating Line, Annealing and Burnishing

Zone 9 is located south of the COMAH area and includes the annealing, pickling and plating (AP&P) building. Historically, there has been one monitoring well in this area, BH901, located between the AP&P and the CPR (Coin Press Room). In 2015, BH901 was decommissioned and removed as part of engineering works to the adjacent embankment. During the engineering works, a borehole was installed in the vicinity of the former BH901; for the purposes of the

ongoing groundwater monitoring at the site, this borehole is acting as a replacement for BH901 and is referred to as BH901R (BH901 Replacement).

pH Value

The pH value of the groundwater sample from borehole BH901R was pH 5.3, which is below (more acidic than) the lower EQS value of pH 6.0. Slightly reduced pH values have regularly been recorded in Zone 9 throughout the SPMP groundwater monitoring rounds.



Metals

Boron was detected at a concentration of 0.06mg/l in borehole BH901R, which is typical for the range of concentrations recorded in BH901 and is below the EQS value of 2mg/l.

Cadmium was recorded above the laboratory LOD at a concentration of 0.0005mg/l in borehole BH901R, which exceeds the EQS value of 0.00008mg/l. Cadmium was also detected in borehole BH901 over the five most recent previous rounds of monitoring.

The concentration of copper was recorded at 0.408mg/l in BH901R, which exceeds the relevant EQS of 0.006mg/l, and is greater than the 2006 reference data collected from BH901.

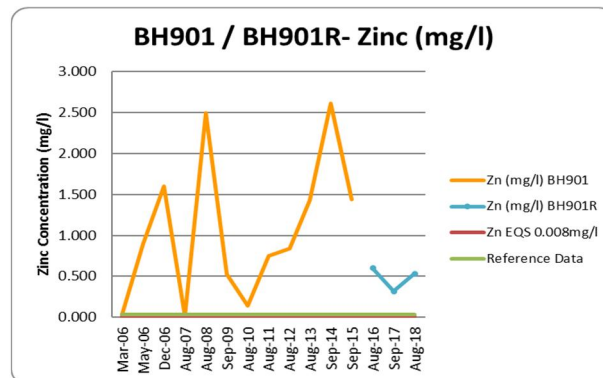
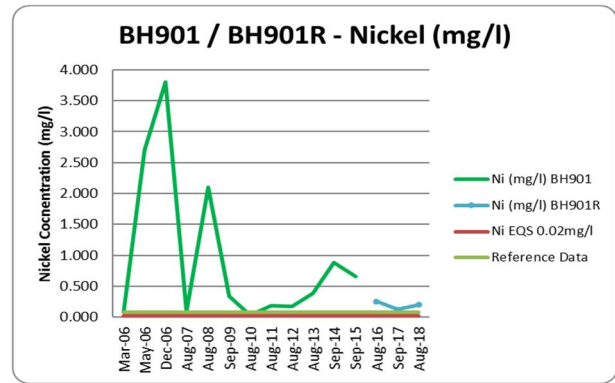
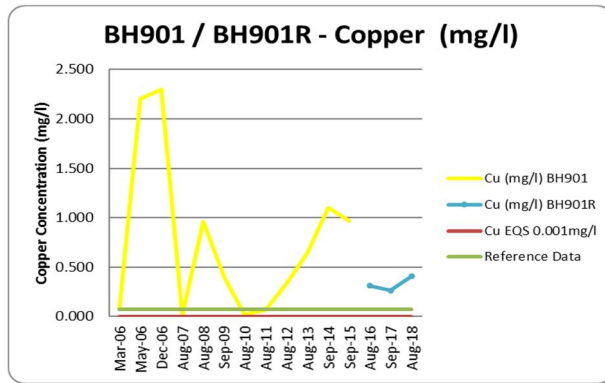
Nickel was detected at a concentration of 0.199mg/l in BH901R, which exceeds the EQS value of 0.02mg/l and is typical for the range of concentrations previously recorded in BH901.

Zinc was detected at a concentration of 0.532mg/l in BH901R, which exceeds the relevant EQS value of 0.05mg/l and is typical for the range of concentrations previously recorded in BH901.

Hydrocarbons

TPH was not detected above the laboratory LOD on this occasion.

THE ROYAL MINT, LLANTRISANT



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 analysis has been performed using available data from monitoring rounds undertaken from 2006 to 2018. Selected determinands that have regularly exceeded the screening values 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	No trend	No trend
BH002	Probably Decreasing	No Trend	No Trend	No trend
BH003	No trend	Stable	Decreasing	No trend
BHNP2D	No trend	Increasing	No Trend	Stable
BH201	No trend	Increasing	Decreasing	No trend
BH801	No trend	No Trend	No trend	Probably Increasing
BH26	No trend	No Trend	No trend	No trend
BH901/BH901R	No trend	No Trend	No trend	No trend

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-hydraulic gradient) has identified an 'increasing' trend for concentrations of copper. Concentrations of copper, nickel and zinc have all decreased slightly during the most recent monitoring round, albeit slightly greater than the reference data. The increasing trend identified for copper in BH001 is considered likely have been influenced by elevated concentrations observed in 2013 and 2014, which were the highest recorded values at this location. Graphs show that the recent concentrations are significantly lower than the most elevated concentrations detected in 2013/ 2014.
- A 'probably decreasing' trend has been identified for TPH concentrations in BH002. TPH was not detected above the laboratory LOD during the most recent round of monitoring.
- BH003 showed a 'stable' trend for copper and a 'decreasing' trend for nickel; however, both determinands consistently exceed the screening values at this location.
- BHNP2D showed an 'increasing' trend for copper and a 'stable' trend for zinc. Low level fluctuations in the concentration of these determinands have been recorded throughout the monitoring period that remain well below the relevant EQS value.
- BH201 showed a 'decreasing' trend for nickel and an 'increasing' trend for copper. Metal concentrations are considered to be relatively low at this location, with occasional marginal exceedances of the screening values. The 'increasing' trend identified for copper is likely to be reflective of a very slight increase in concentration over the entire monitoring period. Copper was not detected in BH201 until 2012; and, from 2012 onwards, copper was detected at low concentrations in the majority of monitoring rounds. Overall, metal concentrations are considered to be relatively low and rarely exceed the screening criteria at this location.

- A 'probably increasing' trend was identified for zinc in BH801; however, the trend is considered likely to be influenced by the elevated concentrations detected in 2013, 2014, and 2016.
- Statistical analysis has not identified any trends for metal concentrations in borehole BH901/BH901R; however, concentrations of the metals copper, nickel, and zinc consistently exceed the relevant EQS values in borehole BH901 and its replacement borehole BH901R. Concentrations recorded since 2016 (in borehole BH901R) have not matched the maximum values previously recorded in borehole BH901; however, are within the range of previously recorded concentrations. The current statistical analysis 'no trend' is likely to have been influenced by the move from monitoring borehole BH901 to monitoring borehole BH901R; and fluctuating concentrations in recent years including elevated concentrations recorded in borehole BH901 in 2014.
- Statistical analysis has not identified any trends for metal concentrations in borehole BH26. Concentrations of nickel have been well below the reference data throughout the monitoring programme; however, recorded concentrations have fluctuated over time and continuously significantly exceed the relevant EQS values at this location.

4.2 Statistical Analysis for VOCs

Throughout the monitoring period, VOCs have been recorded above the relevant EQS value or at trace concentrations in some locations. Mann Kendall analysis was carried out on the relevant VOC data at these locations, 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	Not Detected	No Trend	Not Detected
BH002	Not Detected	Stable	Not Detected
BH003	Increasing	Decreasing	Not Detected
BHNP2D	No Trend	No Trend	Decreasing
BH201	Increasing	Decreasing	Not Detected
BH801	Not Detected	Not Detected	Not Detected
BH26	Not Detected	Not Detected	Not Detected
BH901/BH901R	No Trend	Not Detected	Not Detected

Where VOCs have been detected above the laboratory LOD, the following trends have been identified:

- 'Increasing' trends were identified for 1,1,1-trichloroethane in boreholes BH201 and BH003; however, recorded concentrations are very low and well below the EQS.
- 'Decreasing' trends have been identified for trichloroethene in boreholes BH201 and BH003; concentrations of trichloroethene have not been recorded above the laboratory LOD at these locations since August 2007 (BH201) and December 2008 (BH003).
- A 'decreasing' trend was identified for tetrachloroethene in borehole BHNP2D; this has remained below the laboratory LOD since 2011 at this location.
- Statistical analysis has indicated 'no trend' for the concentrations of 1,1,1-trichloroethane and trichloroethene in BHNP2D. Concentrations of 1,1,1-trichloroethane and trichloroethene have

fluctuated over the monitoring period; however, recent recorded concentrations are below screening criteria and specific remedial targets.

5. CONCLUSIONS

5.1 ZONE 0: Non-Target Zone

The concentrations of the metals copper, nickel and zinc in BH001 remain consistently elevated above the respective EQS values and reference data; however, for each metal, the concentrations are lower than the maximum detected over the SPMP monitoring period.

The concentrations of metals in BH002 and BH003 and have either remained similar or increased slightly, with the exception of zinc in BH003, which has decreased slightly.

The majority of metals in the perimeter boreholes in the south-east of the site (BHNP2D and CBH6) were below the relevant EQS values; except the concentration of copper in CBH6, which had increased slightly.

In 2015, chromium was detected above the screening criteria in all of the monitoring wells located in the east of the site. Chromium has not been detected in these boreholes during subsequent rounds of monitoring.

Elevated TPH concentrations have overall decreased slightly since the previous round of monitoring in the perimeter boreholes.

A historical source of VOC contamination in groundwater was previously identified in the south-east of the site. The area was investigated by Ramboll, followed by remediation by Celtic. A period of post-remediation groundwater monitoring (by Celtic) indicated that one single borehole had concentrations of VOCs fluctuating around the remedial target. Accordingly, the affected borehole (BHNP2D) was added to the SPMP as recommended by NRW. Overall, concentrations of VOCs have decreased in this borehole during the most recent round of monitoring and there were no recorded exceedances of screening criteria or site specific remedial targets.

5.2 ZONE 2: Effluent and Cooling Sumps

Statistical analysis identified a 'decreasing' trend for nickel and an 'increasing' trend for copper in borehole BH201. However, metal concentrations are considered to be relatively low and have remained relatively consistent with previous monitoring rounds at this location.

5.3 ZONE 8: COMAH Area

The concentration of nickel remains elevated in BH26. Remediation using 'pump and treat' has been ongoing at this location; however, Celtic recently conducted an electrokinetic field trial using steel electrodes to remove dissolved phase metals (primarily nickel) from groundwater. Celtic Electrokinetic Field Trial Report (Ref: R1722/17/4822), dated November 2017, concluded that the technique is potentially viable in this application as significantly reduced concentrations on nickel were recorded at the cathode monitoring well. Field trials are ongoing in the vicinity of BH26, with the latest findings due to be reported by Celtic imminently.

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

No trends were identified for contaminant concentrations in BH901 and BH901R. Metal concentrations recorded in BH901R appear to be generally slightly lower than those previously recorded in BH901; however, concentrations of TPH, cadmium, copper, nickel and zinc all exceed the relevant screening values.

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 potential source of impact in this area, which may be associated with Building 9A or an associated below ground pipe. Ramboll understands that a program of bund inspection is ongoing in Building 9A as part of the Royal Mint's planned preventative maintenance

programme. Ramboll understands that a mains water leak has been identified north of the building which is due to be repaired; however, a leakage of mains water itself is unlikely to significantly affect groundwater concentrations.

6. RECOMMENDATIONS

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

- Recent improvements to the drainage system and housekeeping in the north of the site have likely resulted in an overall decrease in concentrations of metals detected in up-gradient borehole, BH001. However, recent results and statistical analysis suggest that there has been a recent slight increase in concentrations of metals in this location. Mitigation measures to prevent the pathway for contaminants to groundwater and drainage systems should continue.
- 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.
- Ramboll understands that an electrokinetic remediation technique is under consideration for the nickel contamination in groundwater within Zone 8 (specifically in the area of BH26). Based on the results of the trial, which indicated that the technique would be successful, Ramboll recommends that the work is scaled up at the earliest convenience considering the consistently elevated concentrations and the proximity to the river.
- It is recommended that boreholes BHNP2D and CBH6 remain within the SPMP groundwater monitoring programme.
- Elevated concentrations of copper, nickel and zinc have consistently been detected in Zone 9. Ramboll understands that a program of bund inspection is ongoing in Building 9A as part of the Royal Mint's planned preventative maintenance programme. Ramboll recommends that the work is undertaken at the earliest convenience based on the consistently elevated concentrations detected. If any maintenance and repair work to bund infrastructure is required, this should be carried out before the next round of monitoring.
- 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

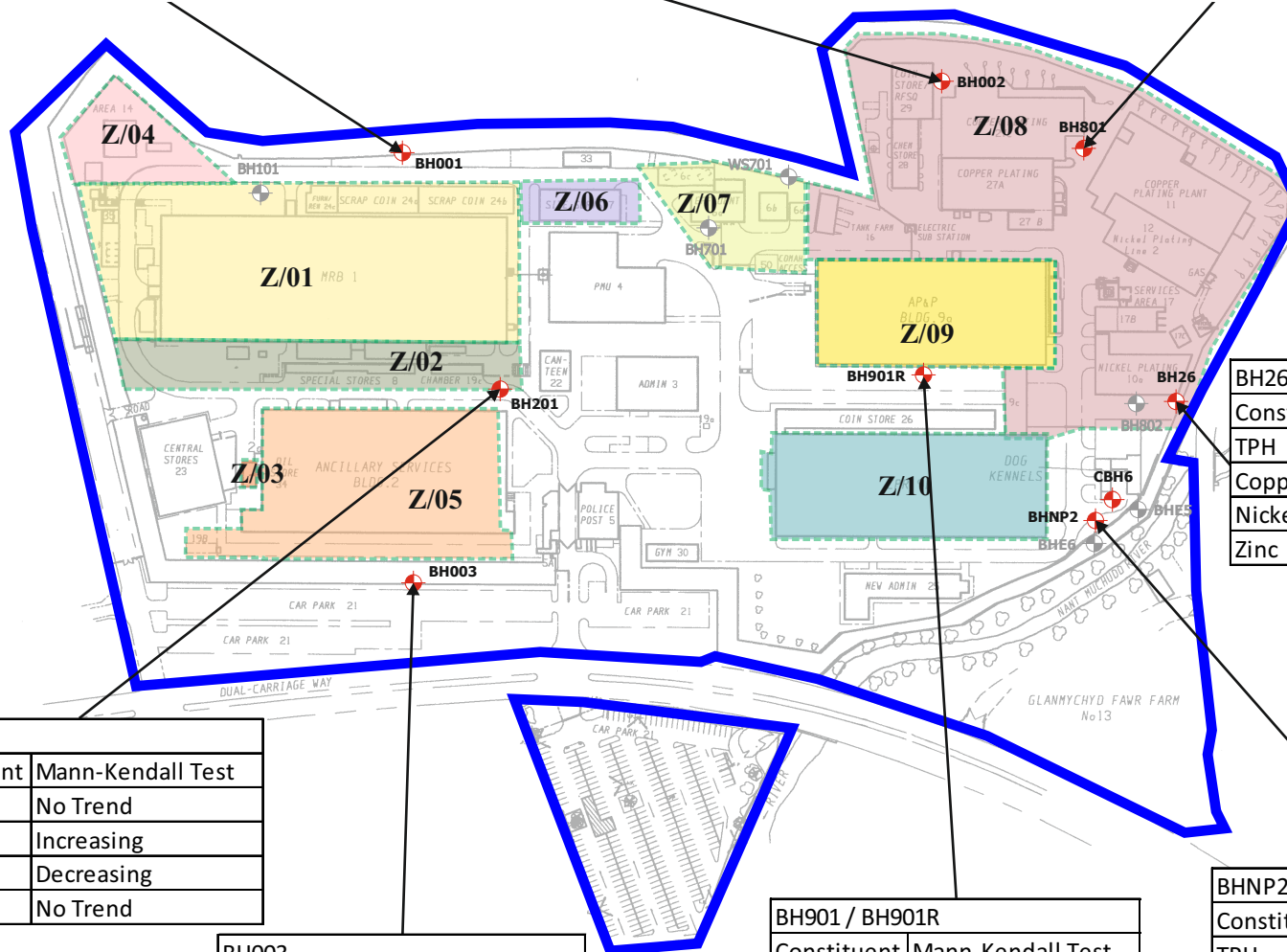
BH001	
Constituent	Mann-Kendall Test
TPH	No Trend
Copper	Increasing
Nickel	No Trend
Zinc	No Trend

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

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



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



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

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

BH901 / BH901R	
Constituent	Mann-Kendall Test
TPH	No Trend
Copper	No Trend
Nickel	No Trend
Zinc	No Trend

BHNP2D	
Constituent	Mann-Kendall Test
TPH	No Trend
Copper	Increasing
Nickel	No Trend
Zinc	Stable

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

Title Figure 2:
Mann Kendall Analysis

Project No. 1700002193

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

Client The Royal Mint

Date September 2018

Scale NTS

Issue 1 Drawn by RH

RAMBOLL

APPENDIX 2 LABORATORY CERTIFICATES

Our Ref: EXR/268716 (Ver. 3)

Your Ref: 1700002193

September 27, 2018



Environmental Chemistry

SOCOTEC UK Limited

Bretby Business Park

Ashby Road

Burton-on-Trent

Staffordshire

DE15 0YZ

Telephone: 01283 554400

Facsimile: 01283 554422

Rob Hodgson
Ramboll Environ
8 Village Way
Cardiff
CF15 7NE

For the attention of Rob Hodgson

Dear Rob Hodgson

Sample Analysis - Royal Mint SPMP 2018

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 SOCOTEC UK Limited (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 SOCOTEC UK Limited

A handwritten signature in dark ink, appearing to read 'S. Akhtar', written over a light blue horizontal line.

S Akhtar

Project Co-ordinator

01283 554458

TEST REPORT



Report No. EXR/268716 (Ver. 3)

Ramboll Environ
8 Village Way
Cardiff
CF15 7NE

Site: Royal Mint SPMP 2018

The 9 samples described in this report were registered for analysis by SOCOTEC UK Limited on 29-Aug-2018. This report supersedes any versions previously issued by the laboratory.

The analysis was completed by: 27-Sep-2018

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 6)
Analytical and Deviating Sample Overview (Pages 7 to 8)
Table of Additional Report Notes (Page 9)
Table of Method Descriptions (Page 10)
Table of Report Notes (Page 11)
Table of Sample Descriptions (Appendix A Page 1 of 1)

On behalf of
SOCOTEC UK Lim
Tim Barnes

Operations Director
Energy & Waste Services

Date of Issue: 27-Sep-2018

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.

SOCOTEC UK Limited accepts no responsibility for any sampling not carried out by our personnel.

Units : Method Codes : Method Reporting Limits : UKAS Accredited :			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	
			Calc_HD	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPMSW	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR	ICPWATVAR
			7	0.001	0.0001	0.001	0.001	0.001	0.0001	0.001	0.001	0.001	0.001	0.002	0.01	0.01	1	1	3
			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
LAB ID Number EX/	Client Sample Description	Sample Date	Total Hardness as CaCO3	Arsenic as As (Dissolved)	Cadmium as Cd (Dissolved)	Chromium as Cr (Dissolved)	Copper as Cu (Dissolved)	Lead as Pb (Dissolved)	Mercury as Hg (Dissolved)	Nickel as Ni (Dissolved)	Selenium as Se (Dissolved)	Vanadium as V (Dissolved)	Zinc as Zn (Dissolved)	Beryllium as Be (Dissolved) a	Boron as B (Dissolved) a	Calcium as Ca (Dissolved) a	Magnesium as Mg (Dissolved) a	Total Sulphur as SO4 (Dissolved) a	
1911770	BH901R	23-Aug-18 11:00	85	<0.001	0.0005	<0.001	0.408	<0.001	<0.0001	0.199	<0.001	<0.001	0.532	<0.01	0.06	24	6	71	
1911771	BH002	23-Aug-18 12:00	51	<0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	0.005	<0.001	<0.001	0.012	<0.01	<0.01	9	7	12	
1911772	BH801	23-Aug-18 12:45	54	<0.001	<0.0001	<0.001	0.024	<0.001	<0.0001	0.017	<0.001	<0.001	0.125	<0.01	<0.01	10	7	4	
1911773	BH26	23-Aug-18 13:30	73	<0.001	0.0174	<0.001	0.003	<0.001	<0.0001	2.146	<0.001	<0.001	0.053	<0.01	0.43	16	8	30	
1911774	CBH6	23-Aug-18 14:15	84	<0.001	<0.0001	<0.001	0.008	<0.001	<0.0001	0.004	<0.001	<0.001	0.018	<0.01	0.02	27	4	17	
1911775	BHNP2	23-Aug-18 15:00	67	<0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	0.003	<0.001	<0.001	0.006	<0.01	0.02	17	6	18	
1911776	BH003	24-Aug-18 11:00	102	<0.001	0.0002	0.002	0.002	<0.001	<0.0001	0.07	<0.001	<0.001	0.028	<0.01	0.02	31	6	56	
1911777	BH001	24-Aug-18 12:00	83	<0.001	<0.0001	<0.001	0.011	<0.001	<0.0001	0.034	<0.001	<0.001	0.062	<0.01	<0.01	20	8	10	
1911778	BH201	24-Aug-18 12:30	81	<0.001	<0.0001	<0.001	0.002	<0.001	<0.0001	0.004	<0.001	<0.001	0.01	<0.01	0.01	16	10	6	
SOCOTEC Bretby Business Park, Ashby Road Burton-on-Trent, Staffordshire, DE15 0YZ Tel +44 (0) 1283 554400 Fax +44 (0) 1283 554422			Client Name	Ramboll Environ								Sample Analysis							
			Contact	Rob Hodgson															
			Royal Mint SPMP 2018								Date Printed		27-Sep-2018						
											Report Number		EXR/268716						
											Table Number		1						

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

Client Name
Contact

Ramboll Environ

Rob Hodgson

Royal Mint SPMP 2018

Sample Analysis

Date Printed	27-Sep-2018
Report Number	EXR/268716
Table Number	1

Units : Method Codes : Method Reporting Limits : UKAS Accredited :			mg/l	mg/l	mg/l	mg/l	µg/l	ug/l	µg/l	µg/l	µg/l	µg/l	µg/l	ug/l	µg/l	ug/l	ug/l	µg/l	
			KONENS	SFAPI	SFAS	TPHFID	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW
			0.003	0.02	0.02	0.01	1	1	1	1	1	1	1	1	1	1	5	1	5
			Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
LAB ID Number EX/	Client Sample Description	Sample Date	Chromium VI as Cr	Cyanide (Total) as CN	Sulphide as S	TPH GC	1,1,1,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,1-Dichloropropene	1,2,3-Trichlorobenzene	1,2,3-Trichloropropane	1,2,4-Trichlorobenzene	1,2,4-Trimethylbenzene	1,2-Dibromo-3-chloropropane	
1911770	BH901R	23-Aug-18 11:00	<0.003	<0.02	0.06	< 0.010	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 5.0	
1911771	BH002	23-Aug-18 12:00	<0.003	<0.02	<0.02	< 0.010	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 5.0	
1911772	BH801	23-Aug-18 12:45	<0.003	0.03	<0.02	0.137	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 5.0	
1911773	BH26	23-Aug-18 13:30	<0.003	<0.02	0.02	0.786	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 5.0	
1911774	CBH6	23-Aug-18 14:15	<0.003	<0.02	0.06	0.028	< 1.0	5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 5.0	
1911775	BHNP2	23-Aug-18 15:00	<0.003	<0.02	<0.02	0.010	< 1.0	18.0	< 1.0	< 1.0	16.0	2.0	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 5.0	
1911776	BH003	24-Aug-18 11:00	<0.003	<0.02	<0.02	< 0.010	< 1.0	5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 5.0	
1911777	BH001	24-Aug-18 12:00	<0.003	<0.02	<0.02	0.031	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 5.0	
1911778	BH201	24-Aug-18 12:30	<0.003	<0.02	<0.02	< 0.010	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 5.0	
SOCOTEC Bretby Business Park, Ashby Road Burton-on-Trent, Staffordshire, DE15 0YZ Tel +44 (0) 1283 554400 Fax +44 (0) 1283 554422			Client Name	Ramboll Environ								Sample Analysis							
			Contact	Rob Hodgson															
			Royal Mint SPMP 2018										Date Printed	27-Sep-2018					
													Report Number	EXR/268716					
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Bretby Business Park, Ashby Road
Burton-on-Trent, Staffordshire, DE15 0YZ
Tel +44 (0) 1283 554400
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Royal Mint SPMP 2018

Sample Analysis

Date Printed	27-Sep-2018
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Units : Method Codes : Method Reporting Limits : UKAS Accredited :			µg/l	ug/l	ug/l	µg/l	ug/l	ug/l	µg/l	ug/l	µg/l	ug/l	µg/l	µg/l	µg/l	µg/l	ug/l	ug/l	
			VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW
			1	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
LAB ID Number	EXI	Client Sample Description	Sample Date	1,2-Dibromoethane	1,2-Dichlorobenzene	1,2-Dichloroethane	1,2-Dichloropropane	1,3,5-Trimethylbenzene	1,3-Dichlorobenzene	1,3-Dichloropropane	1,4-Dichlorobenzene	2-Chlorotoluene	2,2-Dichloropropane	4-Chlorotoluene	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform
1911770		BH901R	23-Aug-18 11:00	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1911771		BH002	23-Aug-18 12:00	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1911772		BH801	23-Aug-18 12:45	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1911773		BH26	23-Aug-18 13:30	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1911774		CBH6	23-Aug-18 14:15	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1911775		BHNP2	23-Aug-18 15:00	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1911776		BH003	24-Aug-18 11:00	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1911777		BH001	24-Aug-18 12:00	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1911778		BH201	24-Aug-18 12:30	< 1.0	< 5.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
SOCOTEC  Bretby Business Park, Ashby Road Burton-on-Trent, Staffordshire, DE15 0YZ Tel +44 (0) 1283 554400 Fax +44 (0) 1283 554422 Client Name Ramboll Environ Contact Rob Hodgson Royal Mint SPMP 2018			Sample Analysis		Date Printed		27-Sep-2018												
					Report Number		EXR/268716												
			Table Number		1														

Bretby Business Park, Ashby Road
Burton-on-Trent, Staffordshire, DE15 0YZ

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name
Contact

Ramboll Environ

Rob Hodgson

Royal Mint SPMP 2018

Sample Analysis

Date Printed	27-Sep-2018
Report Number	EXR/268716
Table Number	1

Units : Method Codes : Method Reporting Limits : UKAS Accredited :			ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	μg/l	ug/l	ug/l	μg/l	ug/l	μg/l	ug/l	ug/l	μg/l	ug/l	
			VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW	VOCHSAW
			1	1	1	1	1	1	1	1	1	1	1	1	1	5	1	1	5
			No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	μg/l	ug/l	μg/l	ug/l	ug/l	μg/l	ug/l
LAB ID Number	EXI	Client Sample Description	Sample Date	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroethane	Chloroform	Chloromethane	cis 1,3-Dichloropropene	Cis-1,2-dichloroethene	Dibromochloromethane	Dibromomethane	Dichlorodifluoromethane	Ethylbenzene	Hexachlorobutadiene	Isopropylbenzene	m and p-Xylene	Naphthalene
1911770		BH901R	23-Aug-18 11:00	< 1.0	< 1.0	< 1.0	< 1.0	1.0	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 1.0	< 5.0
1911771		BH002	23-Aug-18 12:00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 1.0	< 5.0
1911772		BH801	23-Aug-18 12:45	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 1.0	< 5.0
1911773		BH26	23-Aug-18 13:30	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 1.0	< 5.0
1911774		CBH6	23-Aug-18 14:15	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	4.0*	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 1.0	< 5.0
1911775		BHNP2	23-Aug-18 15:00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.0*	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 1.0	< 5.0
1911776		BH003	24-Aug-18 11:00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 1.0	< 5.0
1911777		BH001	24-Aug-18 12:00	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 1.0	< 5.0
1911778		BH201	24-Aug-18 12:30	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0*	< 1.0	< 1.0	< 1.0	< 1.0	< 5.0	< 1.0	< 1.0	< 5.0
SOCOTEC  Bretby Business Park, Ashby Road Burton-on-Trent, Staffordshire, DE15 0YZ Tel +44 (0) 1283 554400 Fax +44 (0) 1283 554422 Client Name Ramboll Environ Contact Rob Hodgson Royal Mint SPMP 2018				Sample Analysis				Date Printed		27-Sep-2018									
								Report Number		EXR/268716									
								Table Number		1									

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

Client Name

Contact

Ramboll Environ

Rob Hodgson

Royal Mint SPMP 2018

Sample Analysis

Date Printed | 27-Sep-2018

Report Number	EXR/268716
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Table Number	1
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Customer Site Report No

Ramboll Environ
Royal Mint SPMP 2018
W268716

Consignment No W142439
Date Logged 29-Aug-2018
In-House Report Due 27-Sep-2018

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	Matrix Type	MethodID	Calc. HD	CUSTSERV	ICPMSW											ICPMAVAR	KONENS				
				T total Hardness as CaCO3 (CALC)	Report A	Nickel as Ni MS (Dissolved)	Chromium as Cr MS (Dissolved)	Cadmium as Cd MS (Dissolved)	Copper as Cu MS (Dissolved)	Lead as Pb MS (Dissolved)	Zinc as Zn MS (Dissolved)	Arsenic as As MS (Dissolved)	Mercury as Hg MS (Dissolved)	Selenium as Se MS (Dissolved)	Vanadium as V MS (Dissolved)	Total Sulphur as SO4 (Diss) VAR	Calcium as Ca (Dissolved) VAR	Magnesium as Mg (Dissolved) VAR	Boron as B (Dissolved) VAR	Beryllium as Be (Dissolved) VAR	Chromium VI. as Cr (Kone)	
Test Method Accredited to ISO17025				•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		
EX/1911770	BH901R	Groundwater	23/08/18	E											E	E	E	E	E	E		
EX/1911771	BH002	Groundwater	23/08/18	E											E	E	E	E	E	E		
EX/1911772	BH801	Groundwater	23/08/18	E											E	E	E	E	E	E		
EX/1911773	BH26	Groundwater	23/08/18	E											E	E	E	E	E	E		
EX/1911774	CBH6	Groundwater	23/08/18	E											E	E	E	E	E	E		
EX/1911775	BHNP2	Groundwater	23/08/18	E											E	E	E	E	E	E		
EX/1911776	BH003	Groundwater	24/08/18																	E		
EX/1911777	BH001	Groundwater	24/08/18																	E		
EX/1911778	BH201	Groundwater	24/08/18																	E		

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time
Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - Note: due date may be affected if triggered
	No analysis scheduled
^	Analysis Subcontracted - Note: due date may vary

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling. Where individual results are flagged see report notes for status.

Customer Ramboll Environ
Site Royal Mint SPMP 2018
Report No W268716

Consignment No W142439
Date Logged 29-Aug-2018
In-House Report Due 27-Sep-2018

Please note the results for any subcontracted analysis (identified with a '^') is likely to take up to an additional five working days.

ID Number	Description	MethodID		SFAPI	SFAS	TPHFID	VOCHSAW	WSLM12	WSLM3
		Matrix Type	Sampled	Cyanide (Total) as CN SFA	Sulphide as S SFA	TPH GC	VOC HSA-GCMS	Total Alkalinity as CaCO3	pH units
Test Method Accredited to ISO17025				•	•	•	•	•	•
EX/1911770	BH901R	Groundwater	23/08/18						
EX/1911771	BH002	Groundwater	23/08/18						
EX/1911772	BH801	Groundwater	23/08/18						
EX/1911773	BH26	Groundwater	23/08/18						
EX/1911774	CBH6	Groundwater	23/08/18						
EX/1911775	BHNP2	Groundwater	23/08/18						
EX/1911776	BH003	Groundwater	24/08/18						
EX/1911777	BH001	Groundwater	24/08/18						
EX/1911778	BH201	Groundwater	24/08/18						

Note: We will endeavour to prioritise samples to complete analysis within holding time; however any delay could result in samples becoming deviant whilst being processed in the laboratory.

If sampling dates are missing or matrices unclassified then results will not be ISO 17025 accredited. Please contact us as soon as possible to provide missing information in order to reinstate accreditation.

Deviating Sample Key	
A	The sample was received in an inappropriate container for this analysis
B	The sample was received without the correct preservation for this analysis
C	Headspace present in the sample container
D	The sampling date was not supplied so holding time may be compromised - applicable to all analysis
E	Sample processing did not commence within the appropriate holding time
F	Sample processing did not commence within the appropriate handling time
Requested Analysis Key	
	Analysis Required
	Analysis dependant upon trigger result - Note: due date may be affected if triggered
	No analysis scheduled
^	Analysis Subcontracted - Note: due date may vary

The integrity of data for samples/analysis that have been categorised as Deviating may be compromised. Data may not be representative of the sample at the time of sampling.
Where individual results are flagged see report notes for status.

Report Number : W/EXR/268716

Additional Report Notes

Method Code	Sample ID	The following information should be taken into consideration when using the data contained within this report
VOCHSAW	EX1911770 TO EX1911778	The Secondary process control data associated with this Test has not wholly met the requirements of the Laboratory Quality Management System QMS with one or more target analytes falling outside acceptable limits. However the remaining data gives the Laboratory confidence that the test has performed satisfactorily (including the Primary Process Control) and that the validity of the data may not have been significantly affected. However in line with our QMS policy we have removed accreditation , where applicable, from the affected analytes (cis 1,2-Dichloroethene) . These circumstances should be taken into consideration when utilising the data.

Method Descriptions

Matrix	MethodID	Analysis Basis	Method Description
Water	Calc HD	As Received	Calculation based on Dissolved metals analysis by ICPOES
Water	ICPMSW	As Received	Direct quantitative determination of Metals in water samples using ICPMS
Water	ICPWATVAR	As Received	Direct determination of Metals and Sulphate in water samples using ICPOES
Water	KONENS	As Received	Direct analysis using discrete colorimetric analysis
Water	SFAP1	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 GC/FID
Water	VOCHSAW	As Received	Determination of Volatile Organics Compounds by Headspace GC/MS
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

Report Notes

Generic Notes

Soil/Solid Analysis

Unless stated otherwise,

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

Waters Analysis

Unless stated otherwise results are expressed as mg/l

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

Oil analysis specific

Unless stated otherwise,

- Results are expressed as mg/kg
- SG is expressed as g/cm³ @ 15°C

Gas (Tedlar bag) Analysis

Unless stated otherwise, results are expressed as ug/l

Asbestos Analysis

CH Denotes Chrysotile

TR Denotes Tremolite

CR Denotes Crocidolite

AC Denotes Actinolite

AM Denotes Amosite

AN Denotes Anthophyllite

NAIIS No Asbestos Identified in Sample

NADIS No Asbestos Detected In Sample

Symbol Reference

^ Sub-contracted analysis.

\$\$ Unable to analyse due to the nature of the sample

¶ Samples submitted for this analyte were not preserved on site in accordance with laboratory protocols.

This may have resulted in deterioration of the sample(s) during transit to the laboratory.

Consequently the reported data may not represent the concentration of the target analyte present in the sample at the time of sampling

¥ Results for guidance only due to possible interference

& Blank corrected result

I.S Insufficient sample to complete requested analysis

I.S(g) Insufficient sample to re-analyse, results for guidance only

Intf Unable to analyse due to interferences

N.D Not determined

N.Det Not detected

N.F No Flow

NS Information Not Supplied

Req Analysis requested, see attached sheets for results

▮ Raised detection limit due to nature of the sample

* All accreditation has been removed by the laboratory for this result

‡ MCERTS accreditation has been removed for this result

§ accreditation has been removed for this result as it is a non-accredited matrix

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

Sample Descriptions

Client : Ramboll Environ
Site : Royal Mint SPMP 2018
Report Number : W26_8716

APPENDIX 3 SUMMARY OF RESULTS

		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
	Aug-16	0.06	0.008	<0.01	<0.0001	0.002	NA	0.003	<0.001	<0.0001	0.010	NA	<0.001	0.061	<0.02	101	NA	6.70	<0.02	8
	Sep-17	0.08	0.004	<0.01	<0.0001	<0.001	<0.003	0.024	<0.001	<0.0001	0.039	NA	<0.001	0.193	<0.02	98	NA	6.90	<0.02	8
	Aug-18	0.03	<0.001	<0.01	<0.0001	<0.001	<0.003	0.011	<0.001	<0.0001	0.034	NA	<0.001	0.062	<0.02	64	NA	6.80	<0.02	10
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
	Aug-16	0.08	<0.001	<0.01	<0.0001	<0.001	NA	<0.001	<0.001	<0.0001	0.004	NA	<0.001	0.011	<0.02	43	NA	6.00	<0.02	12.2
	Sep-17	0.03	<0.001	<0.01	<0.0001	<0.001	<0.003	0.001	<0.001	<0.0001	0.004	NA	<0.001	0.010	<0.02	49	NA	6.20	<0.02	13
	Aug-18	< 0.010	<0.001	<0.01	<0.0001	<0.001	<0.003	0.002	<0.001	<0.0001	0.005	NA	<0.001	0.012	<0.02	22	NA	5.90	<0.02	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
	Aug-16	0.03	<0.001	<0.01	0.0004	0.002	NA	0.009	<0.001	<0.0001	0.141	NA	<0.001	0.109	<0.02	88	NA	5.80	<0.02	37.6
	Sep-17	0.05	<0.001	<0.01	0.0001	0.002	<0.003	0.009	<0.001	<0.0001	0.035	NA	<0.001	0.042	<0.02	71	NA	6.30	<0.02	26
	Aug-18	< 0.010	<0.001	0.020	0.0002	0.002	<0.003	0.002	<0.001	<0.0001	0.070	NA	<0.001	0.028	<0.02	27	NA	6.10	<0.02	56
Screening Value		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)	0.05(2)	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)
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
Aug-16	0.03	<0.001	0.05	<0.0001	<0.001	NA	<0.001	<0.001	<0.0001	0.002	NA	<0.001	0.004	<0.02	80	NA	6.6	<0.02	13	
Sep-17	0.03	<0.001	<0.01	<0.0001	<0.001	<0.003	0.002	<0.001	<0.0001	0.005	NA	<0.001	0.009	<0.02	70	NA	7	<0.02	11	
Aug-18	0.01	<0.001	0.02	<0.0001	<0.001	<0.003	0.002	<0.001	<0.0001	0.003	NA	<0.001	0.006	<0.02	50	NA	6.8	<0.02	18	
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
	Aug-16	0.07	<0.001	<0.01	<0.0001	<0.001	NA	<0.001	<0.001	<0.0001	<0.001	NA	<0.001	0.002	<0.02	86	NA	7	<0.02	12
	Sep-17	0.18	0.001	<0.01	<0.0001	<0.001	<0.003	0.002	<0.001	<0.0001	0.002	NA	<0.001	0.004	<0.02	93	NA	7	<0.02	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
	Aug-16	0.05	<0.001	<0.01	<0.0001	<0.001	NA	<0.001	<0.001	<0.0001	0.001	NA	<0.001	0.007	<0.02	78	NA	6.7	<0.02	9.7
	Sep-17	0.04	0.001	<0.01	<0.0001	<0.001	<0.003	<0.001	<0.001	<0.0001	0.004	NA	<0.001	0.008	<0.02	83	NA	6.9	<0.02	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
	Aug-16	0.24	<0.001	<0.01	<0.0001	<0.001	NA	0.005	<0.001	<0.0001	0.003	NA	<0.001	0.014	<0.02	77	NA	7.1	<0.02	10.5
	Sep-17	0.03	<0.001	<0.01	0.0002	<0.001	<0.003	0.003	<0.001	<0.0001	0.006	NA	<0.001	0.013	<0.02	78	NA	7.4	<0.02	10
	Aug-18	0.028	<0.001	0.02	<0.0001	<0.001	<0.003	0.008	<0.001	<0.0001	0.004	NA	<0.001	0.018	<0.02	66	NA	7.2	0.06	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
	Aug-16	0.06	0.001	<0.01	<0.0001	<0.001	NA	0.001	<0.001	<0.0001	0.002	NA	<0.001	0.008	<0.02	65	NA	6.4	<0.02	7.7
	Sep-17	0.06	0.001	<0.01	<0.0001	<0.001	<0.003	0.007	<0.001	0.0001	0.007	NA	<0.001	0.039	<0.02	73	NA	6.6	<0.02	8
Aug-18	<0.010	<0.001	0.01	<0.0001	<0.001	<0.003	0.002	<0.001	<0.0001	0.004	NA	<0.001	0.010	<0.02	76	NA	6.5	<0.02	6	
Screening Value		0.01(2)	0.05(1)	2 (1)	0.00008(1)	0.0047(1)	0.0034 (1)	0.028* (1)	0.0072 (1)	0.00005(1)	0.02 (1)	NG	0.01(2)	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 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
	Aug-16	1.64	<0.001	<0.01	0.0002	<0.001	NA	0.163	<0.001	<0.0001	0.025	NA	<0.001	1.137	0.19	46	NA	6.80	<0.02	3.4
	Sep-17	0.05	<0.001	<0.01	0.0002	<0.001	<0.003	0.027	<0.001	<0.0001	0.016	NA	<0.001	0.286	<0.02	54	NA	6.70	<0.02	5
	Aug-18	0.14	<0.001	<0.01	<0.0001	<0.001	<0.003	0.024	<0.001	<0.0001	0.017	NA	<0.001	0.125	0.03	48	NA	6.50	<0.02	4
BH26	Aug-10	0.3	0.006	4.71	0.0009	0.003	NA	<0.001	<0.001	<0.0001	53.59	NA	0.002	0.014	NA	NA	NA	6.2	NA	698
	Aug-11	0.15	0.081	3.38	<0.001	0.013	NA	0.051	<0.01	<0.001	1.923	NA	<0.01	0.022	<0.02	49	NA	9.5	<0.05	722
	Nov-11	NA	0.053	NA	<0.0001	0.008	NA	0.002	<0.001	<0.0001	1.503	NA	0.007	<0.002	NA	485	NA	7.9	NA	NA
	Aug-12	1.16	0.076	3	0.0007	0.001	NA	0.021	0.001	<0.0001	4.622	NA	0.008	0.019	<0.02	768	NA	9.5	<0.05	444
	Aug-13	0.02	0.084	3.54	0.0008	0.002	NA	0.036	0.005	<0.0001	2.348	NA	0.004	0.031	<0.02	1490	NA	9.6	<0.05	450
	Sep-14	0.06	0.016	1.88	0.0001	0.002	<0.01	0.002	<0.001	<0.0001	4.207	NA	0.002	0.005	<0.02	590	NA	7.5	<0.05	183
	Sep-15	0.28	0.019	1.95	0.0002	0.02	NA	0.001	<0.001	<0.0001	5.741	NA	0.001	0.003	<0.02	291	NA	7.4	<0.05	335
	Aug-16	0.29	0.01	1.3	0.0003	<0.001	NA	<0.001	<0.001	<0.0001	7.878	NA	<0.001	0.009	<0.02	102	NA	6.9	<0.02	223
Sep-17	0.08	<0.001	1.03	0.0012	<0.001	<0.003	<0.001	<0.001	<0.0001	2.75	NA	<0.001	0.005	<0.02	71	NA	7	<0.02	73	
Aug-18	0.786	<0.001	0.43	0.0174	<0.001	<0.003	0.003	<0.001	<0.0001	2.146	NA	<0.001	0.053	<0.02	93	NA	6.6	0.02	30	
ZONE 9																				
BH901	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
BH901R	Aug-16	0.03	<0.001	0.040	0.0006	<0.001	NA	0.313	<0.001	<0.0001	0.249	NA	<0.001	0.600	<0.02	89	NA	5.90	<0.02	104
	Sep-17	0.03	<0.001	0.010	0.0003	<0.001	<0.003	0.262	<0.001	<0.0001	0.121	NA	<0.001	0.317	<0.02	64	NA	6.20	<0.02	51
Aug-18	< 0.010	<0.001	0.060	0.0005	<0.001	<0.003	0.408	<0.001	<0.0001	0.199	NA	<0.001	0.532	<0.02	13	NA	5.30	0.06	71	
Screening Value		0.01(2)	0.05(1)	2 (1)	0.00008(1)	0.0047(1)	0.0034 (1)	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

		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
	Sep-14	<1	<1	<1	<1	<5	<5
	Sep-15	<1	<1	<1	<1	<5	<5
	Aug-16	<1	<1	<1	<1	<5	<5
	Sep-17	<1	<1	<1	<1	<5	<5
BH002	Aug-18	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	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
	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
	Aug-16	<1	<1	<1	<1	<5	<5
BH003	Sep-17	<1	<1	<1	<1	<5	<5
	Aug-18	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	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
	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
BHNP2D	Aug-16	8	<1	<1	<1	<5	<5
	Sep-17	7	<1	<1	<1	<5	<5
	Aug-18	5	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
	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
	Aug-13	10	<1	3	2	<5	<5
	Sep-14	7	<1	4	4	5	<5
	Sep-15	9	<1	6	3	5	<5
	Aug-16	169	15	53	7	26	<5
BHE5	Sep-17	28	3	20	4	7	<5
	Aug-18	18	2	16	3	4	< 1.0
	Aug-13	<1	<1	<1	<1	<5	<5
	Sep-14	<1	<1	<1	<1	<5	<5
BHE6	Sep-15	<1	<1	<1	<1	<5	<5
	Aug-16	<1	<1	<1	<1	<5	<5
	Sep-17	<1	<1	<1	<1	<5	<5
	Aug-13	<1	<1	<1	<1	<5	<5
	Sep-14	<1	<1	<1	<1	<5	<5
CBH6	Sep-15	<1	<1	<1	<1	<5	<5
	Aug-16	72	3	5	11	28	21
	Sep-17	9	<1	<1	8	12	<5
	Aug-18	5	< 1.0	< 1.0	4	6	2
	Aug-13	27	<1	2	9	16	7
Screening Value		100 (1**)	NG	NG	NG	10 (1)	10 (1)

		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
	Aug-16	5	<1	<1	<1	<5	<5
	Sep-17	4	<1	<1	<1	<5	<5
Aug-18	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
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
	Aug-16	<1	<1	<1	<1	<5	<5
	Sep-17	<1	<1	<1	<1	<5	<5
Aug-18	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
ZONE 9							
BH901	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
BH901R	Aug-16	<1	<1	<1	<1	<5	<5
	Sep-17	<1	<1	<1	<1	<5	<5
	Aug-18	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Screening Value		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.