ENVIRONMENT
& HEALTH

Paul Harley
Hydro Aluminium UK Ltd
Unit 16, Pantglas Industrial Estate
Bedwas
Caerphilly
CF83 8DR

Dear Paul

SITE PROTECTION AND MONITORING PROGRAMME (SPMP), GROUNDWATER MONITORING, FEBRUARY 2021 (ROUND 33): ENVIRONMENTAL PERMIT REF. BX94551F

Date 17/03/2021

Ramboll
8 Village Way
Tongwynlais
Cardiff
CF15 7NE
United Kingdom

T +44 2920 543 550
www.ramboll.co.uk

Ref L1620010733_01 SPMP Round 33.docx

BACKGROUND

Hydro Aluminium UK Ltd. (Hydro), (formerly Sapa Extrusions Ltd.) has carried out regular groundwater monitoring at the installation since August 2005. Ramboll UK Ltd (Ramboll) has carried out twenty-nine rounds of monitoring between August 2005 and February 2020; and Mabbett and Associates Ltd (M&A) carried out monitoring on four occasions (between February 2009 and April 2010). In accordance with the SPMP, groundwater monitoring is required in order to assess the nature of any identified groundwater contamination arising from potential identified sources over the longer term; and to confirm improvements in site control and management have reduced the levels of contamination.

The main manufacturing operations at the site ceased in March 2014 and the installation was partially decommissioned, including decontamination works (cleaning of press-pits, removal of oil storage tanks etc.). However, anodising and fabrication activities re-commenced at the site in 2016 and are currently ongoing.

Prior to the last round of SPMP groundwater monitoring, Natural Resources Wales (NRW) issued a Compliance Assessment Report (CAR Ref: NRW0036189) in relation to the previous groundwater monitoring report (Ramboll Ref: 1700003424, August 2019). NRW confirmed in this CAR that groundwater monitoring is required to be carried out on a six-monthly basis going forward. In addition to groundwater sampling and analysis, NRW also commented on the reporting of groundwater levels (in m Above Ordnance Datum); further analysis of the free phase product in BH12 and a possible link between TPH concentrations in BH1 and BH12; consideration of the potential source of

Ramboll UK Limited
Registered in England & Wales
Company No: 03659970
Registered Office:
240 Blackfriars Road
London
SE1 8NW

hydrocarbon in the vicinity of BHS4; and the status of MW2 (silted up). NRW also recommended further consideration of an action plan should the risk-based trigger level for TPH be exceeded in sentry borehole BHS6.

These points were addressed in Ramboll's SPMP Groundwater Monitoring Report for Round 32 (Ref: L1620009180_01), dated 27th March 2020.

During monitoring Round 32 (February 2020), it was not possible to obtain a sample from MW1 as the borehole is located in an area that has recently been resurfaced; and was presumed lost. It was also apparent that the condition of monitoring borehole MW2 had deteriorated to the point where it could no longer be reliably sampled. Boreholes MW1 and MW2 have since been replaced with new groundwater monitoring boreholes (identified as MW1A and MW2A respectively); under Ramboll order number 1620009621 in February 2021. Confirmation of work carried out and borehole records have been provided under separate cover.

This report details the results of the thirty-third round of groundwater monitoring which was undertaken on 16th February 2020.

SCOPE OF WORKS

Groundwater samples were recovered from the following eight SPMP monitoring wells (shown on Figure 1): BH1, BH4, BH6, BHS6, BH11, BH12, MW1A and MW2A.

At each location, the depth to groundwater was recorded and, where present, the thickness of free product was recorded. Boreholes were purged of three times the well volume prior to sampling.

Groundwater samples collected from the eight SPMP boreholes were analysed for metals (As, B, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn, V, Be,), pH, total cyanide, sulphate, ammonia and Total Petroleum Hydrocarbons (TPH).

For continuity, the results have been compared with UK Drinking Water Standards (UK DWS) in the groundwater analysis summary table (attached). However, given the objective of the SPMP, to identify increases in groundwater concentrations which may be attributable to the permitted operations, the UK DWS are presented for benchmarking purposes only. The February 2021 concentrations should also be considered against the Reference Data collected in August 2005 (BH1, BH4, BH6, BH11, BH12, MW1, MW2) and February 2009 (BHS6), which is included in the table attached to this letter.

RESULTS

A full set of laboratory certificates, a summary table, and graphical representation of results are attached to this letter and the main findings are summarised below.

Groundwater Monitoring Results

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

- Groundwater levels across the site ranged from 2.61m below ground level (bgl) in borehole MW2A, to 3.33m bgl in BHS6; and show an overall decrease in groundwater level since to the previous round of monitoring in February 2020.

- Concentrations of TPH above the laboratory limit of detection (LOD) were recorded in BH1 (3.1mg/l) and BH12 (2.5mg/l). Historically, recorded TPH concentrations have fluctuated in BH12; with a peak of 1,000mg/l in December 2007. Recent rounds of monitoring (February 2020 and 2021) have identified the lowest recorded TPH concentration since monitoring began in August 2005.
- With the exception of BH1 and BH12, TPH concentrations were recorded below the laboratory limit of detection in all other analysed samples.
- The groundwater sample recovered from BHS6 (the 'sentry borehole') was coloured black which is consistent with previous monitoring rounds.
- Across the site, pH values ranged from pH 6.2 (MW2A) to pH 7.7 (BHS6). The concentration in MW2A was recorded below the lower limit identified in the Water Supply (Water Quality) Regulations 2000 (i.e. pH 6.5).
- Arsenic was detected above the laboratory limit of detection (LOD) in seven samples at concentrations ranging from 0.23µg/l (BH4) to 4.42µg/l (BHS6), all of which are below the UK DWS of 10µg/l.
- Boron was detected in all eight samples during the most recent round of monitoring, at concentrations ranging from 19µg/l (BH6) to 34µg/l (BH1). These concentrations remain below the UK DWS of 1,000µg/l.
- Chromium was detected above the laboratory LOD in four monitoring wells, ranging from 1.3µg/l (BH11) to 4.1µg/l (BH6), all of which are below the UK DWS of 50µg/l.
- Cadmium was recorded at concentrations above the LOD in five samples ranging from 0.03µg/l (BH11) to 0.32µg/l (BH6). These concentrations remain below the UK DWS of 5µg/l.
- Copper was detected above the LOD in all eight monitoring wells, ranging from 1.0µg/l (BH1) to 23µg/l (BHS6). Concentrations of copper are consistently well below the UK DWS of 2,000µg/l.
- Lead was recorded above the LOD in five samples ranging from 0.5µg/l (BH12) to 7.0µg/l (BH6), all of which are below the UK DWS of 25µg/l.
- Mercury was not detected above the laboratory LOD of 0.05µg/l; and therefore, below the UK DWS of 2µg/l.
- Nickel was detected above the laboratory LOD in all eight monitoring wells, ranging from 1.5µg/l (BH4) to 19µg/l (BH6); each concentration below the UK DWS of 20µg/l.
- Selenium was recorded at concentrations above the laboratory LOD (0.6µg/l) in six boreholes, ranging from 0.8µg/l (BH4) to 3.2µg/l (BH6). Concentrations of selenium are below the UK DWS of 10µg/l.
- Zinc was recorded at concentrations above the laboratory LOD (0.5µg/l) in all eight boreholes, ranging from 5.7µg/l (MW2A) to 55µg/l (BH11). These concentrations do not exceed the UK DWS for zinc (5,000 µg/l).
- Concentrations of ammonia were detected above the laboratory LOD in six boreholes, ranging from 86µg/l (BH12) to 530µg/l (BH1). The concentration recorded in BH1 slightly exceeds the UK DWS of 500µg/l. Elevated concentrations of ammonia have been identified at this and four other monitoring locations over the monitoring period.

- Cyanide was detected above the laboratory LOD in two locations 2.7µg/l in MW2A, and 10µg/l in BH11. In each case the recorded concentration remains below the UK DWS for cyanide of 50µg/l.
- The concentrations of sulphate in groundwater ranged from 2.68mg/l (BH12) to 36.4mg/l (MW2A), these concentrations do not exceed the UK DWS for sulphate of 250mg/l.

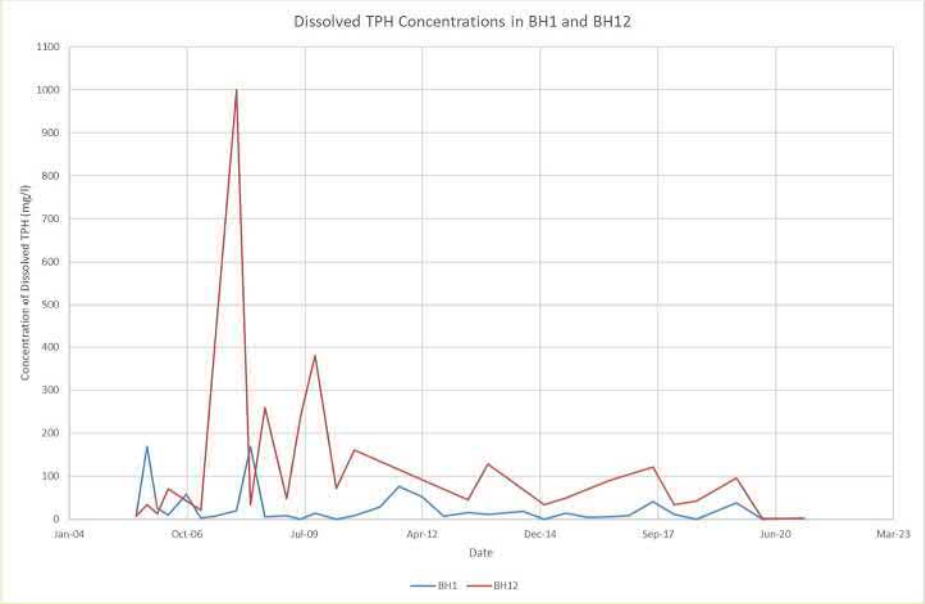
TPH in Groundwater

As requested by NRW in CAR_ NRW0036189, groundwater levels have been calculated as elevation in metres above Ordnance Datum (m AOD), to allow comparison of groundwater level between locations to be made. This has been included within to the summary table in Appendix 2 of this report.

The presence and thickness of free product in borehole BH12 (between April 2013 and February 2021) has been plotted along with groundwater elevation to investigate whether groundwater level has an influence on the amount of free product collected within the well, presented below.

The groundwater level in BH12 varies seasonally, with higher groundwater levels recorded during winter months. A measurable layer of free product has typically been recorded in BH12 during summer months, at times of lower groundwater level. An exception to this is January 2015, which recorded 3mm of free product at a time of elevated groundwater level. Free product has not been recorded in BH12 since July 2019.

The concentration of dissolved TPH in BH12 has fluctuated over recent monitoring visits; at the request of NRW this has been plotted along with concentrations in BH1 (presented below). The recorded concentrations in BH1 and BH12 follow a broadly similar pattern. However, the data for BH12 has several gaps, where samples were not collected due to the presence of free product in the well.



Groundwater Discolouration

Black/brown coloured groundwater has previously been observed in monitoring wells BH6 and BH5, located adjacent east and west of BHS6. Samples of groundwater from BHS6 and BH6; and BH4 and BH11 (across and up gradient monitoring wells) have previously been analysed for TSS, TDS, TOC, iron and redox potential in order to gain further information on the potential source of discolouration of groundwater at locations BHS6, BH6 and BH5.

Visual observations during the most recent round of monitoring confirm discolouration of groundwater remains present in BHS6; and to a lesser extent, in BH4 and BH6. No free phase product was identified in any monitored wells and TPH was not detected in boreholes BHS6, BH4 and BH6. Therefore, as previously determined, the discolouration is considered to be linked to the presence of dissolved iron and suspended solids rather than TPH concentration.

CONCLUSIONS AND RECOMMENDATIONS

The results of the thirty-third (February 2021) round of groundwater monitoring have identified reduced concentrations of TPH across the site, identified above the laboratory LOD in only BH1 (3.1mg/l) and BH12 (2.5mg/l). No free phase product was noted in any of the boreholes monitored, where previously approximately 20mm of free product has been recorded in borehole BH12. A previous investigation by Ramboll (2008) concluded, (following forensic analysis of the product in BH12), that the contamination is historical and is therefore not associated with activities carried out under the Permit.

TPH was not detected in the Sentry Borehole (BHS6) during the most recent round of monitoring and therefore did not exceed the risk-based trigger concentration (0.108mg/l). The trigger concentration is designed to be protective of the river from hydrocarbon (including free phase product) contamination in the west of the site; and has been exceeded in three previous monitoring rounds (2010, 2017 and 2018). It is recommended going forward, that if the trigger concentration is exceeded, follow up samples should be collected from BHS6 and MW2A. MW2A is located down gradient of BHS6 and is

positioned between the manufacturing areas of the site and the river. Should elevated concentrations be identified in MW2A, some localised pumping (and removal off-site) may be required. However, given that there is currently no bulk storage of fuels or oils on-site, and the source has been assessed previously as historical, it is considered unlikely that significant increases in concentrations will be identified at these locations going forward.

Investigation has continued into the presence of discoloured groundwater in BHS6 and BH6. However, the previous conclusion that discolouration is localised and is considered unlikely to be migrating onto or off the site remains. The discolouration is unlikely to be attributed to operational activities and results have indicated that redox potential and TOC may be an influence on the groundwater chemistry in this area of the site.

SPMP groundwater monitoring boreholes MW1 and MW2 have recently been replaced with new groundwater monitoring boreholes (identified as MW1A and MW2A respectively); and have now been included within the routine SPMP groundwater monitoring programme.

Ramboll understands that the current activities carried out under the Permit do not involve bulk storage of fuels or oils. Accordingly, the previous TPH fluctuations identified at some monitoring locations are considered likely to be associated with historical activities. Going forward, NRW may consider a reduced monitoring frequency given current site activities; however, the sentry borehole (BHS6) remains key in monitoring the potential risk to the river and six-monthly monitoring may be required to continue.

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

Yours sincerely

Robert Hodgson
Consultant
Environment and Health

D +44 (0)2920 543556
M +44 (0)7885 999674
rhodgson@ramboll.com

Lucy Cleverley
Managing Consultant
Environment and Health

D +44 (0)2920 543557
M +44 (0)7713 311202
lcleverley@ramboll.com

Encl. Appendix 1, Borehole Location Plan

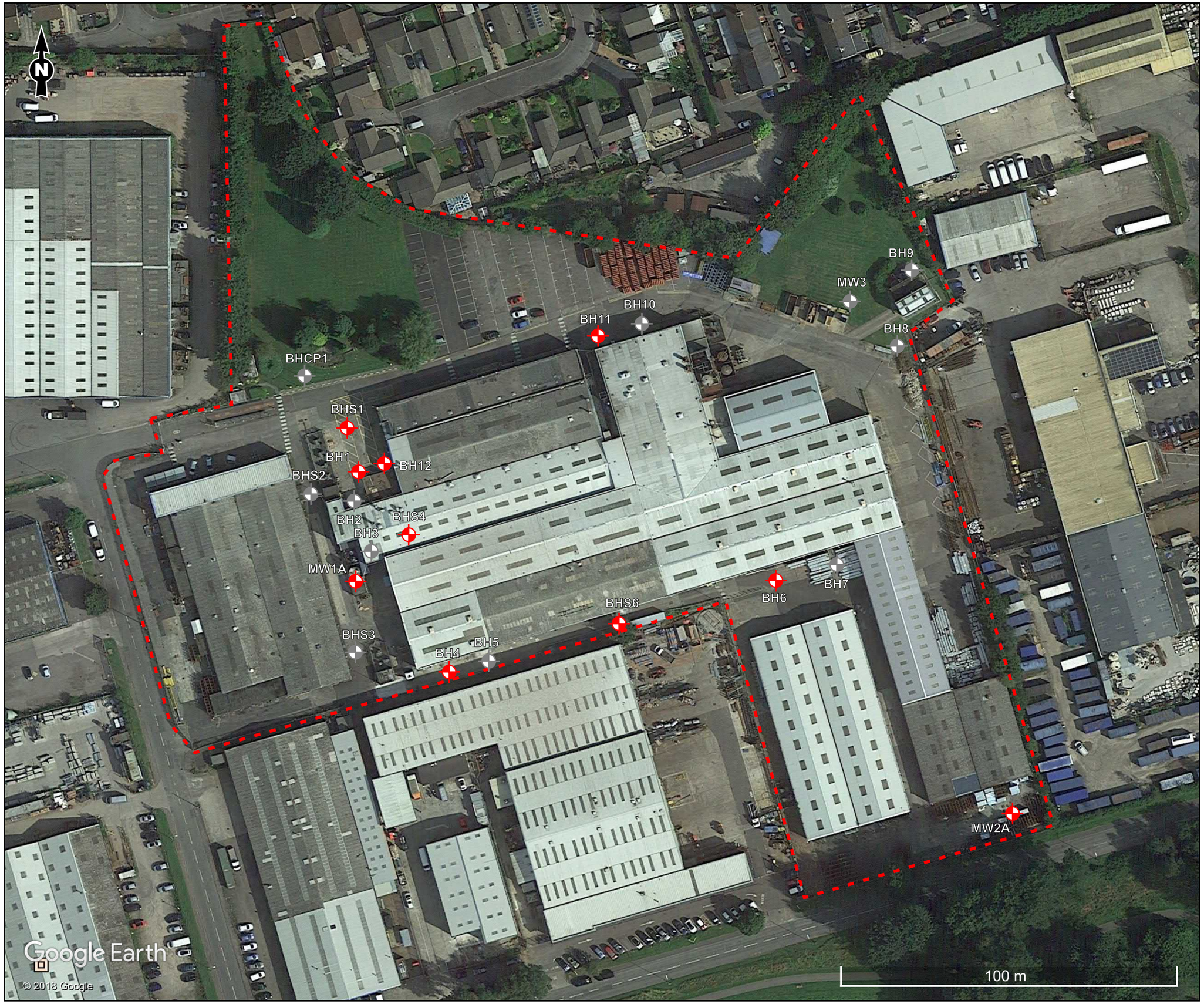
Appendix 2, Groundwater Analytical Results Summary Table

Appendix 3, Contaminant Graphs

Appendix 4, Laboratory Certificate of Analysis

Appendix 1

Borehole Location Plan



Legend

- Approximate Site Boundary
- Monitoring Well / Borehole Sampled in February 2021
- Monitoring Well / Borehole Not Sampled

Figure Title
Borehole Location Plan

Project Name
SPMP Groundwater Monitoring Round 33

Project Number	Figure No.
1620010733	1
Date	**Prepared By**
February 2021	RH
Scale	**Issue**
See Scalebar	1

Client
Hydro Aluminium UK Ltd

RAMBOLL

Appendix 2

Groundwater Analytical Results Summary Table

Borehole Location	Date	TPH/EPH (mg/l)	Arsenic (µg/l)	Boron (µg/l)	Cadmium (µg/l)	Chromium (µg/l)	Copper (µg/l)	Lead (µg/l)	Mercury (µg/l)	Nickel (µg/l)	Selenium (µg/l)	Zinc (µg/l)	Ammonia as N (µg/l)	Total Cyanide (µg/l)	pH	Sulphate as SO_4 (mg/l)	Water Level (m bgl)	Water Level (m AOD)
UK Drinking Water Standard		0.01mg/l**	10µg/l*	1,000* µg/l	5*µg/l	50*µg/l	2,000* µg/l	25*µg/l	1*µg/l	20*µg/l	10*µg/l	5,000µg/l**	500*µg/l	50*µg/l	6.5-10*	250mg/l*		
BH1	Aug-05	9	9	NA	ND	ND	ND	ND	ND	ND	ND	ND	1200	ND	6.5	10	3.85	56.95
	Nov-05	170	8	ND	ND	ND	ND	ND	ND	ND	ND	8	60	ND	6.5	12	2.90	57.90
	Feb-06	26	ND	16	ND	ND	ND	ND	ND	5	ND	ND	60	ND	6.4	ND	3.51	57.29
	May-06	9.7	ND	17	ND	11	ND	ND	ND	ND	ND	ND	ND	ND	6.5	49	3.36	57.44
	Oct-06	58	ND	26	ND	ND	ND	ND	ND	10	ND	7	60	ND	6.5	23	3.56	57.24
	Feb-07	3.4	ND	25	ND	ND	ND	ND	ND	ND	ND	ND	70	ND	6.5	ND	2.88	57.92
	Jun-07	7.9	ND	24	ND	ND	ND	ND	ND	8	ND	ND	730	ND	6.4	24	3.45	57.35
	Dec-07	20	ND	26	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.2	ND	3.13	57.67
	Apr-08	170	ND	20	ND	ND	ND	ND	ND	ND	ND	8	ND	ND	6.6	ND	3.17	57.63
	Aug-08	6	ND	64	ND	7	ND	ND	ND	ND	ND	8	ND	ND	6.6	ND	3.17	57.63
	Feb-09	8.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.10	57.70
	Jun-09	ND	1.4	39	ND	9.9	ND	ND	ND	2.3	1.3	100	120	ND	6.5	5.1	3.68	57.12
	Oct-09	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.55	57.25
	Apr-10	ND	0.9	NA	0.03	14	ND	ND	ND	4	0.5	10	NA	NA	6.5	ND	3.12	57.68
	Sep-10	9.39	ND	20	ND	6	ND	ND	ND	2	ND	ND	30	ND	6.4	12	3.49	57.31
	Apr-11	28.95	ND	20	ND	2	2	ND	ND	2	ND	9	ND	ND	6.6	6	3.72	57.08
	Sep-11	76.31	ND	20	ND	7	ND	ND	ND	2	ND	2	50	ND	6.4	8	3.53	57.27
	Mar-12	51.97	1	ND	0.1	6	2	3	ND	2	1	6	20	20	7	8	3.60	57.20
	Sep-12	7.81	1	40	ND	2	3	4	ND	3	ND	20	70	ND	7.3	11	3.24	57.56
	Apr-13	15.75	ND	NA	ND	2	ND	ND	ND	ND	ND	5	20	ND	7.3	7	3.39	57.41
	Oct-13	11.7	ND	20	ND	3	ND	ND	ND	2	ND	7	70	ND	6.9	9	3.70	57.10
	Jul-14	19.01	ND	20	ND	2	ND	ND	ND	1	ND	3	ND	ND	6.6	6	3.72	57.08
	Jan-15	0.98	ND	ND	ND	ND	ND	ND	ND	1	ND	25	110	ND	6.9	7	2.80	58.00
	Jul-15	14.4	ND	ND	ND	ND	ND	ND	ND	3	ND	ND	70	ND	7.1	9	3.53	57.27
	Feb-16	5.2	ND	30	ND	ND	ND	ND	ND	4	ND	74	130	ND	6.6	13	2.41	58.39
	Aug-16	6.11	ND	10	ND	ND	ND	ND	ND	ND	ND	ND	80	ND	6.6	8.6	3.53	57.27
	Jan-17	9.03	ND	ND	ND	3	ND	ND	ND	4	ND	5	70	ND	7.1	8.9	3.55	57.25
	Aug-17	41	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	50	ND	6.6	10	3.46	57.34
	Feb-18	11.9	3	40	ND	ND	ND	ND	ND	5	ND	66	300	ND	6.8	8	3.05	57.75
	Aug-18	0.056	ND	20	ND	ND	ND	ND	ND	ND	ND	10	80	ND	6.5	12	3.76	57.04
	Jul-19	38.3	ND	20	ND	ND	ND	ND	ND	1	ND	10	300	ND	6.8	21	3.86	56.94
	Feb-20	0.45	0.48	79	ND	ND	4.8	0.3	0.14	2.2	0.7	65	150	ND	7.2	17	2.45	58.35
	Feb-21	3.1	0.26	34	ND	3.3	1	ND	ND	4.8	ND	17	530	ND	6.7	12.5	2.85	57.95
BH4	Aug-05	61	10	NA	ND	ND	ND	ND	ND	ND	ND	ND	110	ND	6.8	34	4.02	56.65
	Nov-05	0.11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.6	20	3.10	57.57
	Feb-06	0.07	ND	24	ND	10	ND	ND	ND	ND	ND	ND	110	ND	6.8	25	3.73	56.94
	May-06	0.02	ND	23	ND	10	ND	ND	ND	ND	ND	ND	ND	ND	6.9	26	3.56	57.11
	Oct-06	0.02	ND	30	ND	ND	17	ND	ND	ND	ND	10	ND	ND	6.8	34	3.81	56.86
	Feb-07	0.4	ND	27	ND	ND	ND	ND	ND	ND	ND	ND	80	ND	7	21	3.11	57.56
	Jun-07	0.15	ND	30	ND	ND	ND	ND	ND	ND	ND	ND	210	ND	6.8	24	3.62	57.05
	Dec-07	ND	ND	27	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.8	24	3.28	57.39
	Apr-08	0.19	ND	25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.1	20	3.39	57.28
	Aug-08	ND	ND	36	ND	7	ND	ND	ND	ND	ND	ND	ND	ND	6.8	19	3.30	57.37
	Feb-09	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.10	57.57
	Jun-09	ND	1.3	33	ND	12	1.3	ND	ND	ND	1.4	7.1	40	ND	7	15	3.80	56.87
	Oct-09	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.79	56.88
	Apr-10	ND	2	NA	ND	12	ND	ND	ND	3	0.7	5	NA	NA	6.9	17	3.35	57.32
	Sep-10	0.01	ND	20	ND	4	ND	ND	ND	ND	ND	ND	20	ND	6.8	15	3.62	57.05
	Apr-11	0.03	ND	30	ND	4	2	ND	ND	ND	ND	ND	ND	ND	7	16	3.84	56.83
	Sep-11	0.01	ND	20	ND	7	ND	ND	ND	ND	1	ND	30	ND	6.6	18	3.61	57.06
	Mar-12	0.03	ND	ND	0.1	6	3	2	ND	ND	2	5	ND	ND	7.3	21	3.75	56.92
	Sep-12	ND	ND	20	ND	3	1	ND	ND	ND	1	ND	ND	ND	7.5	19	3.42	57.25
	Apr-13	0.02	ND	NA	ND	3	ND	ND	ND	ND	ND	ND	10	ND	7.4	17	3.57	57.10
	Oct-13	0.02	ND	20	ND	3	ND	ND	ND	ND	ND	ND	ND	ND	7.2	18	3.80	56.87
	Jul-14	ND	ND	20	ND	3	ND	ND	ND	ND	ND	ND	ND	ND	7	14	3.86	56.81
	Jan-15	ND	ND	ND	ND	1	ND	ND	ND	ND	ND	ND	ND	ND	7.3	15	2.97	57.70
	Jul-15	ND	ND	20	ND	2	ND	ND	ND	ND	ND	ND	20	ND	7.5	16	3.65	57.02
	Feb-16	0.02	ND	30	ND	2	ND	ND	ND	ND	ND	21	10	ND	6.8	14	2.50	58.17
	Aug-16	0.04	ND	10	ND	ND	ND	ND	ND	ND	ND	2	ND	ND	6.8	17.5	3.69	56.98
	Jan-17	0.01	ND	ND	ND	2	ND	ND	ND	ND	ND	2	10	ND	7.4	17.6	3.70	56.97
	Aug-17	0.01	ND	ND	ND	1	ND	ND	ND	ND	ND	ND	ND	ND	6.7	17	3.60	57.07
	Feb-18	0.01	ND	ND	ND	ND	ND	ND	ND	ND	ND	150	ND	ND	6.9	19	3.22	57.45
	Aug-18	0.016	ND	20	ND	ND	ND	ND	ND	ND	1	ND	30	ND	6.8	18	3.90	56.77
	Jul-19	0.047	ND	30	ND	ND	ND	ND	ND	ND	1	ND	190	ND	6.8	22	4.00	56.67
	Feb-20	ND	0.24	27	ND	1.7	1.3	ND	0.11	ND	1.3	4.1	ND	ND	7.3	15.9	2.55	58.12
	Feb-21	ND	0.23	27	ND	1.9	3.4	0.8	ND	1.5	0.8	9.6	ND	ND	6.8	16.3	3.07	57.60
BH6	Aug-05	0.03	9	NA	2	ND	ND	ND	ND	48	ND	140	700	ND	5.5	440	3.68	56.39
	Nov-05	0.05	8	ND	2	ND	ND	ND	ND	58	ND	200	490	ND	4.5	450	3.07	57.00
	Feb-06	0.03	ND	23	2	7	7	ND	ND	45	ND	130	1200	ND	4.6	740	3.45	56.62
	May-06	ND	ND	25	2	ND	9	ND	ND	56	ND	160	920	ND	4.5	830	3.29	56.78
	Oct-06	0.01	ND	21	1	ND	7	ND	ND	46	ND	130	120	ND	4.5	380	3.41	56.66
	Feb-07	ND	ND	29	1	ND	5	ND	ND	36	ND	95	630	ND	4.6	340	2.99	57.08
	Jun-07	0.03	ND	27	ND	ND	ND	ND	ND	24	ND	54	470	ND	4.6	230	3.39	56.68
	Dec-07	ND	ND	29	ND	ND	ND	ND	ND	13	ND	53	200	ND	4.7	110	3.18	56.89
	Apr-08	ND	ND	27	ND	ND	ND	ND	ND	15	ND	39	140	ND	5.0	170	3.27	56.80
	Aug-08	ND	ND	31	ND	ND	ND	ND	ND	13	ND	31	140	ND	5.0	130	3.08	56.99
	Jun-09	ND	ND	34	ND	ND	ND	ND	ND	6.7	ND	23	160	ND	5.5	97	4.83	55.24
	Apr-10	ND	1.1	NA	0.22	3	ND	ND	ND	5	1.1	21	NA	NA	5.6	100	3.28	56.79
	Sep-10	ND	ND	20	0.3	2	ND	ND	ND	4	ND	54	20	ND	5.6	58	3.42	56.65
	Apr-11	0.59	ND	50	0.2	1	2	ND	ND	3	ND	20	ND	ND	5.6	61	3.60	56.46
	Sep-11	0.97	ND	20	0.2	4	ND	ND	ND	5	ND	11	20	ND	5.9	47	3.46	56.61
	Mar-12	0.01	ND	ND	0.3	2	ND	2	0.1	1	1	9	ND	ND	6.8	60	3.50	56.57
	Sep-12	0.06	ND	20	0.1	ND	ND	2	ND	1	2	12	ND	ND	7	51	3.24	56.83
	Apr-13	0.03	ND	NA	0.2	2	ND	ND	ND	1	1	29	ND	ND	7.1	49	3.36	56.71
	Oct-13	0.06	ND	20	0.1	2	ND	ND	ND	ND	1	13	ND	ND	6.8	32	3.56	56.51
	Jul-14	0.01	ND	20	ND	1	ND	ND	ND	ND	1	3	ND	ND	6.8	35	3.60	56.47
	Jan-15	0.08	ND	ND	ND	ND	2	ND	ND	4	ND	4	10	ND	6.9	37	2.95	57.12
	Jul-15	0.03	ND	20	ND	ND	ND	ND	ND	1	1	ND	20	ND	7.3	29	3.45	56.62
	Feb-16	0.15	1	80	0.2	ND	7	1	ND	8	1	64	20	ND	6.5	43	2.51	57.56
	Aug-16	0.02	ND	70	0.1	ND	3	ND	ND	6	ND	98	ND	ND	6.7	32.6	3.43	56.64
	Jan-17	0.05	1	ND	0.2	ND	5	ND	ND	7	ND	4	10	ND	7.3	36.2	3.43	56.64
	Aug-17	0.02	1	ND	0.1	ND	4	ND	ND	5	1	ND	ND	ND	6.8	38	3.37	56.70
	Feb-18	0.29	4	190	0.6	ND	19	4	ND	19	5	248	20	ND	7	44	3.07	57.00
	Aug-18	0.011	ND	ND	ND	ND	52	ND	ND	14	ND	173	110	ND	7	39	3.58	56.49
	Jul-19	0.037	ND	20	ND	ND	ND	ND	ND	2	ND	4	120	ND	6.9	35	3.66	56.41
	Feb-20	ND	5.47	40	0.36	1	26	9.8	0.06	23	3.2	19	< 15	< 10	7.6	31.9	2.55	57.52
	Feb-21	ND	4.3	19	0.32	4.1	22	7	ND	19	3.2	26	140	ND	7	26.1	3.00	57.07

Borehole Location	Date	TPH/EPH (mg/l)	Arsenic (µg/l)	Boron (µg/l)	Cadmium (µg/l)	Chromium (µg/l)	Copper (µg/l)	Lead (µg/l)	Mercury (µg/l)	Nickel (µg/l)	Selenium (µg/l)	Zinc (µg/l)	Ammonia as N (µg/l)	Total Cyanide (µg/l)	pH	Sulphate as SO_4 (mg/l)	Water Level (m bgl)	Water Level (m AOD)
UK Drinking Water Standard		0.01mg/l**	10µg/l*	1,000* µg/l	5*µg/l	50*µg/l	2,000* µg/l	25*µg/l	1*µg/l	20*µg/l	10*µg/l	5,000µg/l**	500*µg/l	50*µg/l	6.5-10*	250mg/l*		
BH11	Aug-05	0.06	11	NA	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	7.4	190	3.62	56.87
	Nov-05	0.05	6	ND	ND	ND	ND	ND	ND	ND	ND	7	ND	ND	6.8	140	2.79	57.70
	Feb-06	0.03	ND	34	ND	10	ND	ND	ND	ND	ND	6	50	ND	7.6	560	3.00	57.49
	May-06	0.03	ND	31	ND	ND	ND	ND	ND	ND	ND	ND	400	30	7.1	180	3.27	57.22
	Oct-06	0.09	ND	12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.9	13	3.33	57.16
	Feb-07	ND	ND	34	ND	ND	ND	ND	ND	ND	ND	ND	70	50	6.8	31	2.77	57.72
	Jun-07	0.04	ND	32	ND	ND	ND	ND	ND	ND	ND	ND	220	ND	6.8	44	3.21	57.28
	Dec-07	ND	ND	31	ND	ND	ND	ND	ND	ND	ND	ND	ND	20	6.5	49	3.08	57.41
	Apr-08	0.17	ND	21	ND	ND	ND	ND	ND	ND	ND	47	ND	ND	7.0	30	3.00	57.49
	Aug-08	0.04	ND	25	ND	6	5	ND	ND	25	ND	94	60	ND	6.8	200	3.10	57.39
	Jun-09	ND	ND	ND	ND	ND	1.9	1.8	ND	2.5	ND	24	230	ND	6.7	23	3.50	56.99
	Apr-10	ND	1.7	NA	0.04	10	ND	ND	0.05	4	1.8	7	NA	NA	6.5	49	3.05	57.44
	Sep-10	0.04	ND	40	ND	3	ND	ND	ND	2	ND	12	80	190	7.0	53	3.36	57.13
	Apr-11	0.24	ND	30	ND	2	3	ND	ND	1	ND	5	10	260	7.3	28	3.56	56.93
	Sep-11	0.04	ND	20	ND	5	1	ND	ND	1	1	18	10	60	6.5	41	3.48	57.01
	Mar-12	0.01	ND	ND	ND	3	ND	ND	ND	ND	2	16	ND	40	7.3	28	3.51	56.98
	Sep-12	0.47	ND	20	ND	1	1	2	ND	6	ND	15	800	ND	7.1	18	3.11	57.38
	Apr-13	0.04	ND	NA	0.1	2	ND	ND	ND	3	1	10	900	40	7.1	31	3.26	57.23
	Oct-13	0.07	ND	30	ND	2	3	ND	ND	2	1	10	70	560	7.5	40	3.60	56.89
	Jul-14	0.19	ND	50	ND	1	1	ND	ND	1	ND	7	ND	50	6.8	23	3.64	56.85
	Jan-15	0.01	ND	ND	ND	ND	ND	ND	0.3	1	ND	18	30	ND	7.7	26	2.71	57.78
	Jul-15	0.03	ND	ND	ND	ND	ND	ND	ND	3	ND	10	20	ND	7.3	12	3.45	57.04
	Feb-16	0.01	ND	ND	ND	ND	ND	ND	ND	ND	2	5	500	ND	6.4	36	2.38	58.11
	Aug-16	0.09	ND	ND	ND	ND	ND	ND	ND	3	ND	13	30	ND	6.8	27	3.44	57.05
	Jan-17	0.09	ND	ND	ND	2	3	3	ND	8	ND	7	2100	ND	7.1	24.8	3.42	57.07
	Aug-17	0.08	ND	80	ND	ND	ND	ND	ND	2	ND	11	200	ND	7	39	3.36	57.13
	Feb-18	ND	ND	20	ND	ND	ND	ND	ND	ND	3	89	30	30	6.6	35	2.96	57.53
	Aug-18	0.056	ND	140	ND	ND	2	ND	ND	5	1	82	1200	20	6.8	39	3.67	56.82
	Jul-19	0.316	ND	60	ND	ND	ND	ND	ND	5	2	7	1600	50	7.1	35	3.77	56.72
	Feb-20	ND	ND	47	0.03	ND	1.5	ND	0.52	1.5	3.3	30	26	ND	7.4	24.3	2.43	58.06
	Feb-21	ND	0.33	28	0.03	1.3	2.7	1.1	ND	8.6	2.6	55	220	10	6.5	19.4	2.78	57.71
BH12	Aug-05	7.8	7	NA	ND	ND	ND	ND	ND	ND	ND	ND	1400	ND	6.6	5	4.00	56.80
	Nov-05	34	ND	ND	ND	20	ND	ND	ND	7	ND	9	ND	ND	6.4	22	3.02	57.78
	Feb-06	13	ND	16	ND	ND	ND	ND	ND	10	ND	ND	70	ND	6.3	ND	3.64	57.16
	May-06	71	ND	15	ND	10	ND	ND	ND	5	ND	ND	ND	ND	6.5	ND	3.51	57.29
	Oct-06	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	Feb-07	21	ND	23	ND	ND	ND	ND	ND	ND	ND	ND	120	ND	6.5	ND	3.01	57.79
	Jun-07	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	Dec-07	1000	ND	26	ND	ND	ND	ND	ND	7	ND	30	79	ND	6.3	ND	3.23	57.57
	Apr-08	34	ND	19	ND	ND	ND	ND	ND	5	ND	ND	ND	ND	6.6	ND	3.33	57.47
	Aug-08	260	ND	23	ND	ND	ND	ND	ND	ND	ND	8	ND	ND	6.5	ND	3.28	57.52
	Feb-09	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.11	57.69
	Jun-09	240	ND	ND	ND	ND	2	1.5	ND	3.7	ND	15	190	ND	6.4	4.8	3.68	57.12
	Oct-09	380	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A		#N/A	3.85	56.95
	Apr-10	72	1.7	#N/A	0.04	15	0.9	ND	ND	6	0.9	7	#N/A	#N/A	6.5	ND	3.45	57.35
	Sep-10	160.7	ND	20	ND	5	ND	ND	ND	2	ND	6	40	ND	6.4	ND	3.71	57.09
	Apr-13	45.98	1	#N/A	ND	2	ND	ND	ND	12	ND	10	10	ND	7.2	8	3.51	57.29
	Oct-13	128	ND	10	ND	3	ND	ND	ND	2	ND	8	80	ND	6.9	ND	3.80	57.00
	Jul-14	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	3.88	56.92
	Jan-15	34.2	ND	ND	ND	ND	ND	ND	ND	1	ND	67	60	ND	6.8	ND	2.92	57.88
	Jul-15	49	ND	ND	ND	ND	ND	ND	ND	4	ND	ND	80	ND	6.9	ND	3.68	57.12
	Feb-16	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	2.55	58.25
	Aug-16	90.2	ND	10	ND	ND	ND	ND	ND	2	ND	7	40	ND	6.5	ND	3.69	57.11
	Jan-17	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	3.70	57.10
	Aug-17	121	ND	ND	ND	ND	ND	ND	ND	2	ND	ND	50	ND	6.5	ND	3.63	57.17
	Feb-18	34.3	ND	ND	ND	ND	ND	ND	ND	1	ND	11	200	ND	6.7	4	3.18	57.62
	Aug-18	42.7	ND	20	ND	ND	ND	ND	ND	5	ND	20	ND	ND	6.5	5	3.92	56.88
	Jul-19	95.8	ND	20	ND	ND	ND	ND	ND	3	ND	5	100	ND	6.7	ND	3.98	56.82
	Feb-20	2.3	ND	56	0.03	ND	2.4	0.6	0.35	1.9	0.7	29	97	ND	7	3.85	2.59	58.21
	Feb-21	2.5	0.25	25	ND	3.3	1.9	0.5	ND	2.1	ND	15	86	ND	6.6	2.68	2.98	57.82
MW1	Aug-05	0.17	11	#N/A	ND	ND	ND	ND	ND	ND	ND	32	160	ND	6.6	24	4.01	56.74
	Nov-05	0.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	43	ND	ND	6.8	33	3.11	57.64
	Feb-06	0.16	ND	22	ND	ND	ND	ND	ND	ND	ND	80	50	ND	6.6	25	3.73	57.02
	May-06	0.14	ND	20	ND	8	ND	ND	ND	ND	ND	32	ND	ND	6.8	23	3.58	57.17
	Oct-06	0.08	12	20	ND	10	5	ND	ND	ND	ND	24	ND	ND	7.2	22	3.87	56.88
	Feb-07	0.58	ND	27	ND	ND	ND	ND	ND	ND	ND	51	230	ND	7	22	3.18	57.57
	Jun-07	0.35	ND	27	ND	ND	ND	ND	ND	ND	ND	40	80	ND	6.7	21	3.61	57.14
	Dec-07	0.31	ND	29	ND	ND	ND	ND	ND	ND	ND	40	ND	ND	6.5	22	3.29	57.46
	Apr-08	2.1	ND	26	ND	ND	ND	ND	ND	ND	ND	37	50	ND	6.8	20	3.41	57.34
	Aug-08	0.06	ND	26	ND	ND	ND	ND	ND	ND	ND	56	ND	ND	6.7	18	3.29	57.46
	Feb-09	ND	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	3.44	57.31
	Jun-09	ND	ND	ND	ND	ND	10	14	ND	3.4	ND	120	210	ND	7	2.6	3.15	57.60
	Oct-09	ND	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	3.87	56.88
	Apr-10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	3.41	57.34
	Sep-10	0.03	ND	20	0.1	4	1	ND	ND	1	ND	86	20	ND	6.6	24	3.64	57.11
	Apr-11	0.55	ND	30	0.1	1	5	ND	ND	2	ND	126	ND	ND	6.8	22	3.86	56.89
	Sep-11	0.12	ND	50	ND	4	1	ND	ND	1	ND	49	20	ND	6.7	26	3.64	57.11
	Mar-12	0.12	ND	ND	0.2	5	3	3	ND	2	1	126	ND	ND	7.1	22	3.75	57.00
	Sep-12	0.31	ND	20	ND	2	2	2	ND	1	1	46	ND	ND	7.3	19	3.41	57.34
	Apr-13	0.08	ND	#N/A	0.1	2	ND	ND	ND	2	ND	84	30	ND	7.3	17	3.56	57.19
	Oct-13	2.32	ND	20	ND	2	ND	ND	ND	2	1	73	ND	ND	7	22	3.80	56.95
	Jul-14	2.42	ND	20	ND	1	1	ND	ND	2	ND	40	ND	ND	6.9	15	3.86	56.89
	Jan-15	0.31	ND	ND	ND	ND	ND	ND	ND	ND	ND	36	10	ND	7.2	14	2.95	57.80
	Jul-15	0.08	ND	20	ND	ND	ND	ND	ND	1	ND	26	60	ND	7.4	20	3.65	57.10
	Feb-16	0.3	ND	ND	ND	ND	1	ND	ND	ND	ND	26	10	ND	6.8	26	2.47	58.28
	Aug-16	0.15	ND	10	ND	ND	1	ND	ND	ND	1	14	ND	ND	6.6	19.8	3.67	57.08
	Jan-17	0.15	ND	ND	ND	2	1	ND	ND	ND	ND	38	ND	ND	7.2	20.7	3.70	57.05
	Aug-17	0.06	ND	ND	ND	ND	ND	ND	ND	ND	ND	46	ND	ND	6.8	24	3.60	57.15
	Feb-18	0.03	ND	80	ND	ND	ND	ND	ND	ND	ND	168	ND	ND	6.9	22	3.20	57.55
	Aug-18	0.339	ND	20	0.3	ND	2	ND	ND	1	2	116	ND	ND	6.7	20	3.88	56.87
	Jul-19	0.147	ND	30	ND	ND	ND	ND	ND	ND	ND	22	340	ND	7	29	3.99	56.76
	Feb-20	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
MW1A	Feb-21	ND	0.63	33	0.13	1.8	1.6	ND	ND	1.7	2.8	8	140	ND	7.1	13	3.05	57.70

Borehole Location	Date	TPH/EPH (mg/l)	Arsenic (µg/l)	Boron (µg/l)	Cadmium (µg/l)	Chromium (µg/l)	Copper (µg/l)	Lead (µg/l)	Mercury (µg/l)	Nickel (µg/l)	Selenium (µg/l)	Zinc (µg/l)	Ammonia as N (µg/l)	Total Cyanide (µg/l)	pH	Sulphate as SO_4 (mg/l)	Water Level (m bgl)	Water Level (m AOD)
UK Drinking Water Standard		0.01mg/l**	10µg/l*	1,000* µg/l	5*µg/l	50*µg/l	2,000* µg/l	25*µg/l	1*µg/l	20*µg/l	10*µg/l	5,000µg/l**	500*µg/l	50*µg/l	6.5-10*	250mg/l*		
MW2	Aug-05	0.03	6	#N/A	ND	ND	ND	ND	ND	140	ND	120	95	ND	5.5	370	3.19	56.04
	Nov-05	0.1	ND	ND	2	ND	ND	ND	ND	100	ND	100	ND	ND	5.4	380	2.60	56.63
	Feb-06	0.27	ND	24	4	6	ND	ND	ND	140	ND	110	70	ND	5.5	480	3.00	56.23
	May-06	ND	ND	25	3	ND	ND	ND	ND	120	ND	91	70	ND	5.6	580	2.94	56.29
	Oct-06	0.01	ND	27	7	ND	ND	ND	ND	210	ND	200	90	ND	5.8	790	3.04	56.19
	Feb-07	ND	ND	33	3	ND	ND	ND	ND	150	ND	110	90	ND	5.6	510	2.69	56.54
	Jun-07	0.03	ND	28	5	ND	ND	ND	ND	170	ND	170	240	ND	5.4	510	2.94	56.29
	Dec-07	ND	ND	29	3	ND	ND	ND	ND	100	ND	120	88	ND	5.5	350	2.68	56.55
	Apr-08	ND	ND	27	2	ND	ND	ND	ND	62	ND	72	ND	ND	5.5	210	2.83	56.40
	Aug-08	0.09	ND	30	1	ND	ND	ND	ND	50	ND	76	ND	ND	5.6	170	2.70	56.53
	Jun-09	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
	Apr-10	ND	0.5	#N/A	0.54	8	3.6	ND	ND	10	0.6	170	#N/A	#N/A	6.3	100	#N/A	#N/A
	Sep-10	0.04	ND	30	0.8	3	ND	ND	ND	19	ND	121	30	ND	6.1	82	2.94	56.29
	Apr-11	11.97	ND	30	0.1	2	2	ND	ND	5	ND	7	ND	ND	7.4	71	3.14	56.08
	Sep-11	0.3	ND	40	0.1	5	ND	ND	ND	10	ND	11	60	ND	6.4	71	3.00	56.23
	Mar-12	0.2	ND	ND	0.5	2	1	6	ND	12	1	33	ND	ND	7	61	3.09	56.14
	Sep-12	0.22	ND	20	0.1	ND	1	5	ND	8	ND	30	ND	ND	7.1	54	2.82	56.41
	Apr-13	0.13	ND	#N/A	0.4	2	ND	ND	ND	5	ND	21	30	ND	7.7	55	2.95	56.28
	Oct-13	0.38	ND	20	ND	1	ND	ND	ND	6	ND	17	10	ND	6.7	60	3.12	56.11
	Jul-14	0.42	ND	20	ND	ND	ND	ND	ND	4	ND	16	ND	ND	6.6	45	3.18	56.05
	Jan-15	0.11	ND	ND	0.1	ND	ND	ND	ND	4	ND	17	50	ND	6.8	44	2.58	56.65
	Jul-15	0.18	ND	30	ND	ND	ND	ND	ND	7	ND	21	50	ND	7	43	3.05	56.18
	Feb-16	0.06	ND	ND	0.1	ND	ND	ND	ND	2	ND	17	20	ND	6.3	36	2.11	57.12
	Aug-16	0.71	ND	ND	ND	ND	ND	ND	ND	2	ND	9	30	ND	6.3	36.4	3.02	56.21
	Jan-17	0.12	ND	ND	0.1	1	ND	ND	ND	3	ND	9	10	ND	6.9	39.4	3.04	56.19
	Aug-17	0.04	ND	80	ND	ND	ND	ND	ND	2	ND	8	10	ND	6.2	41	2.96	56.27
	Feb-18	0.03	ND	ND	ND	ND	ND	ND	ND	2	ND	80	10	ND	6.3	36	2.70	56.53
	Aug-18	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	3.20	56.03
	Jul-19	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	3.22	56.01
	Feb-20	ND	0.37	40	ND	0.3	2.9	1.9	ND	3.5	1.1	40	330	ND	7.5	35.7	2.18	57.05
MW2A	Feb-21	ND	ND	26	0.06	1.4	1.4	ND	ND	2.4	0.9	5.7	390	2.7	6.2	36.4	2.61	56.67
BHS6 (Sentry Borehole)	Feb-09	ND	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	3.47	57.18
	Jun-09	ND	2.8	ND	ND	ND	13	1.1	ND	4.2	1.8	6.7	310	ND	7.3	#N/A	4.00	56.65
	Oct-09	ND	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	4.00	56.65
	Apr-10	0.74	30	#N/A	1.8	380	410	41	2.5	51	21	71	#N/A	#N/A	7.5	81	3.65	57.00
	Sep-10	0.01	ND	30	1	28	1723	11	ND	26	ND	338	300	ND	7.3	46	3.86	56.79
	Apr-11	0.04	10	40	0.8	48	85	21	0.4	7	4	37	400	ND	7.8	55	4.03	56.61
	Sep-11	0.07	9	ND	1.1	28	81	22	0.2	7	4	24	400	ND	7.5	61	3.90	56.75
	Mar-12	0.04	8	ND	0.9	14	66	17	ND	5	3	22	330	ND	7.9	63	3.95	56.70
	Sep-12	0.04	8	ND	0.8	38	99	20	0.3	7	3	15	160	ND	8.2	59	3.66	56.99
	Apr-13	0.04	ND	#N/A	10.6	ND	189	ND	ND	ND	ND	515	60800	ND	8.2	60	3.81	56.84
	Oct-13	0.02	7	50	0.5	24	62	14	0.2	5	2	20	280	ND	7.5	ND	3.97	56.68
	Jul-14	0.05	8	ND	0.5	8	38	4	ND	5	2	11	240	ND	7.9	47	4.02	56.63
	Jan-15	0.03	9	ND	0.4	33	119	12	0.2	8	1	9	250	ND	7.7	3	3.30	57.35
	Jul-15	0.02	9	ND	0.3	10	66	7	0.2	5	3	8	320	ND	7.8	29	3.85	56.80
	Feb-16	0.05	5	30	0.1	10	38	3	0.1	3	2	48	160	ND	7.4	56	2.85	57.80
	Aug-16	0.04	8	60	0.3	15	75	7	0.2	5	1	58	180	ND	8.1	63.4	3.86	56.79
	Jan-17	0.03	9	ND	0.3	15	81	7	0.1	5	1	19	220	ND	8.2	57.9	3.87	56.78
	Sep-17	0.15	8	ND	0.3	15	71	8	ND	7	4	27	180	ND	7.7	55	3.78	56.87
	Feb-18	0.58	7	ND	0.2	6	49	4	ND	4	2	102	ND	ND	7.9	41	3.48	57.17
	Aug-18	0.011	ND	ND	ND	ND	69	ND	ND	ND	ND	88	200	ND	7.7	41	4.02	56.63
	Jul-19	0.039	ND	20	ND	13	66	ND	ND	ND	ND	ND	470	ND	7.8	30	4.09	56.56
	Feb-20	ND	2.96	39	ND	0.7	4	0.2	0.2	1.6	2.5	3.8	ND	ND	7.8	115	2.89	57.76
	Feb-21	ND	4.42	23	0.11	3.7	23	3.2	ND	2.2	1	8.2	ND	ND	7.7	27.4	3.33	57.32

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

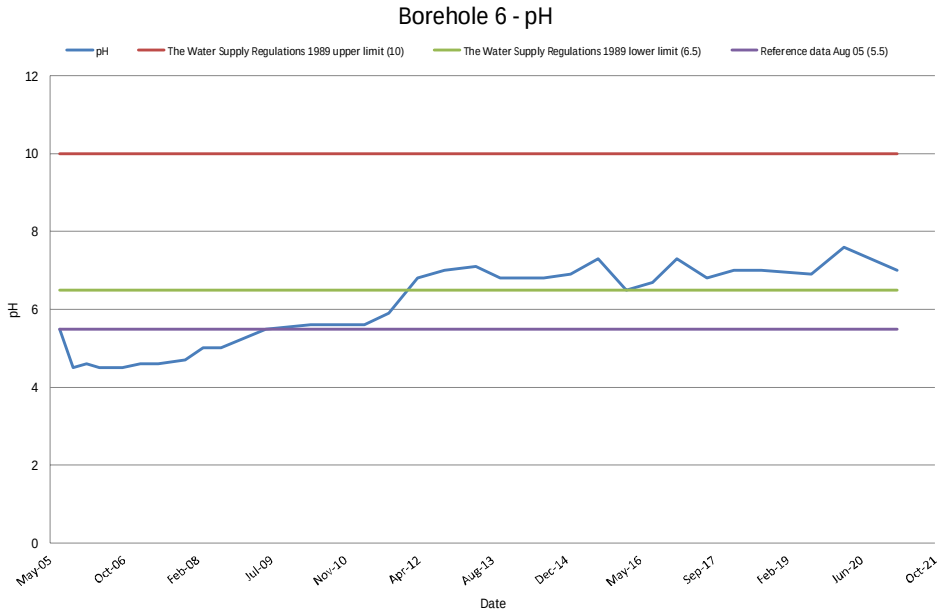
*Water Supply (Water Quality) Regulations 2000
* *The Water Supply (Water Quality) Regulations 1989

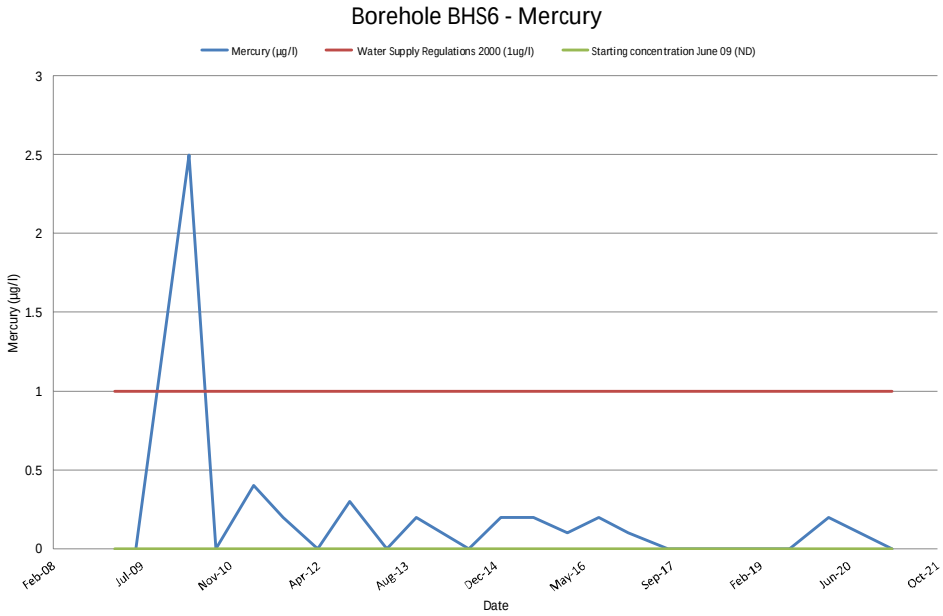
#N/A = Not analysed
ND = Not detected above laboratory detection limits

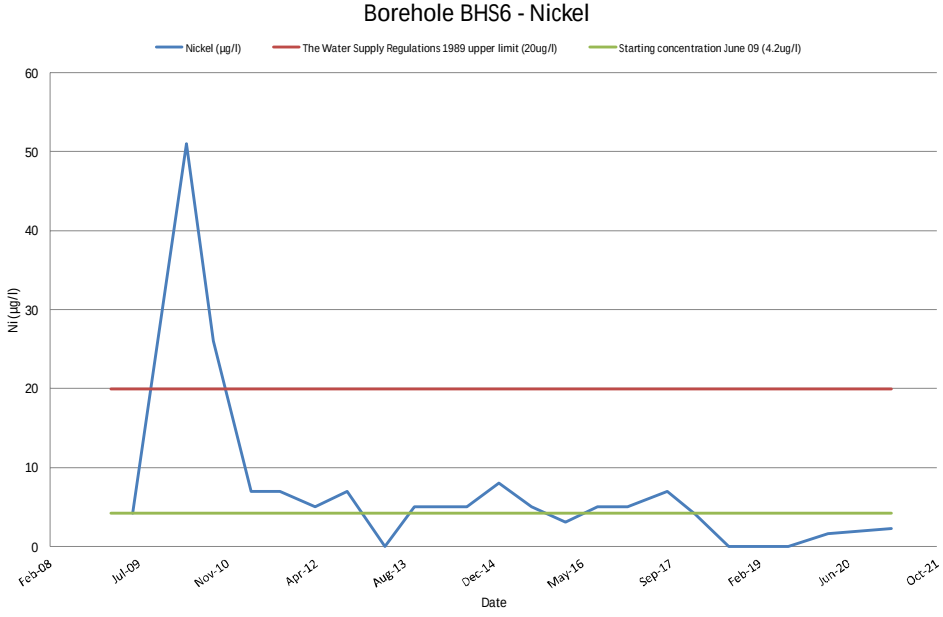
Appendix 3

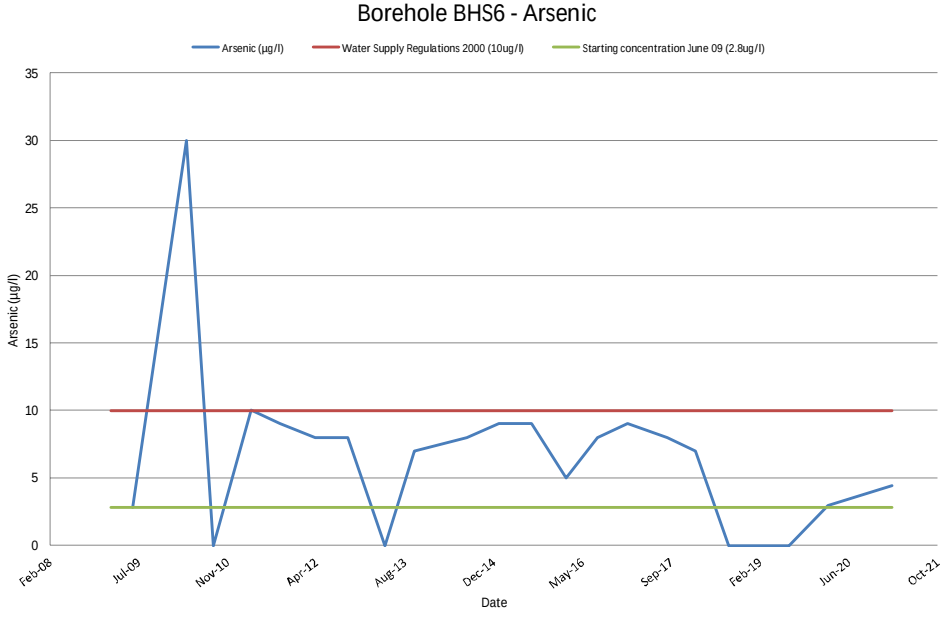
Contaminant Graphs

Contaminants in Groundwater
Time Series Plots

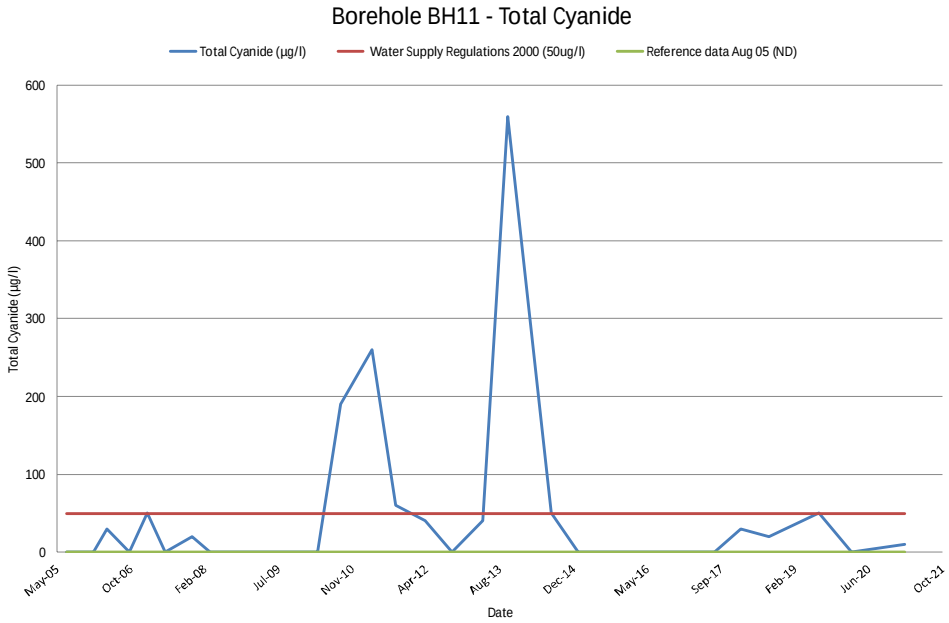


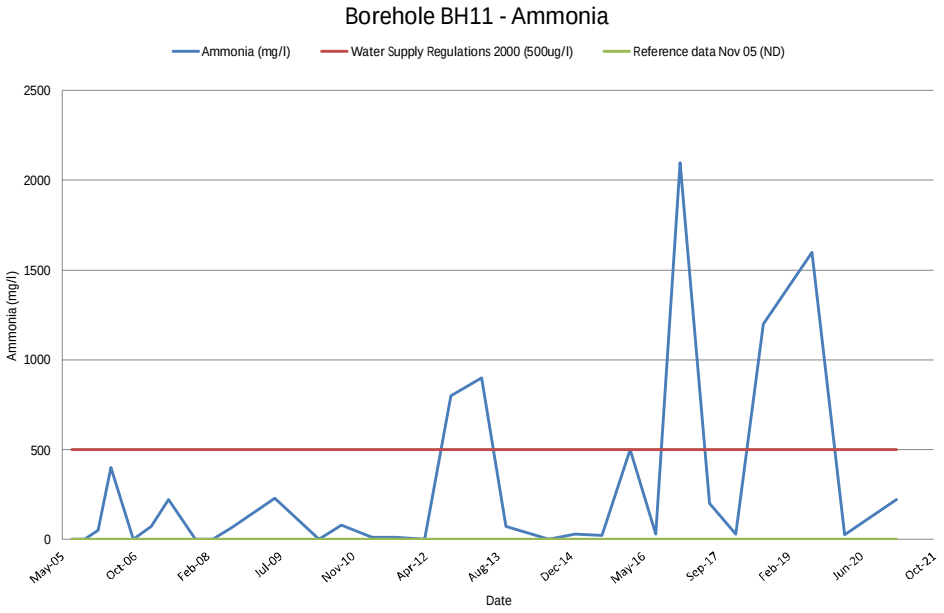


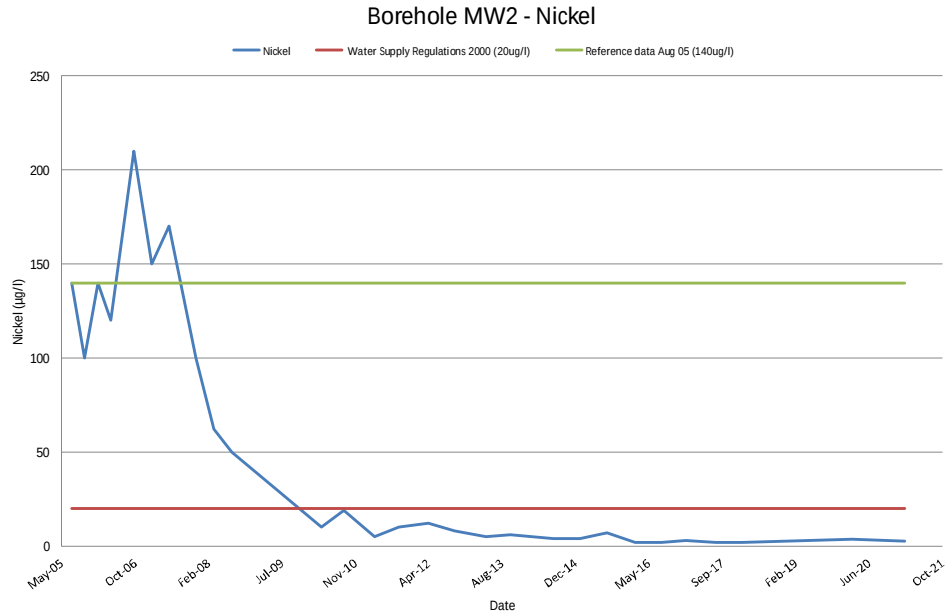


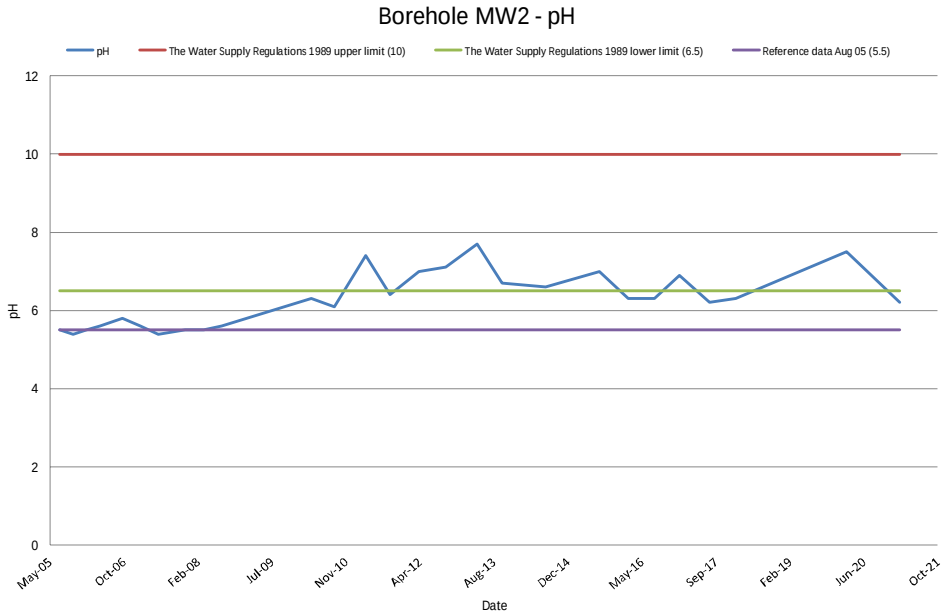


Contaminants in Groundwater
Time Series Plots



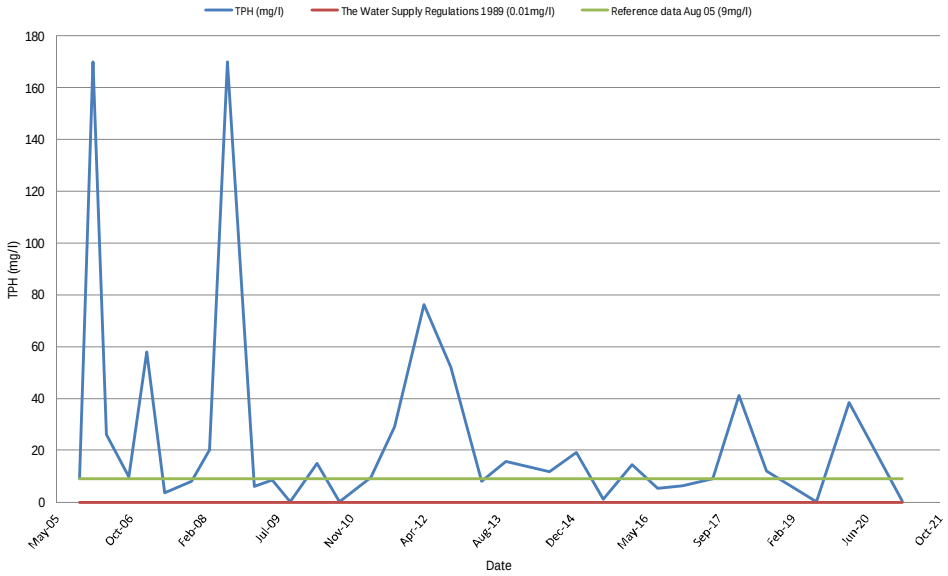




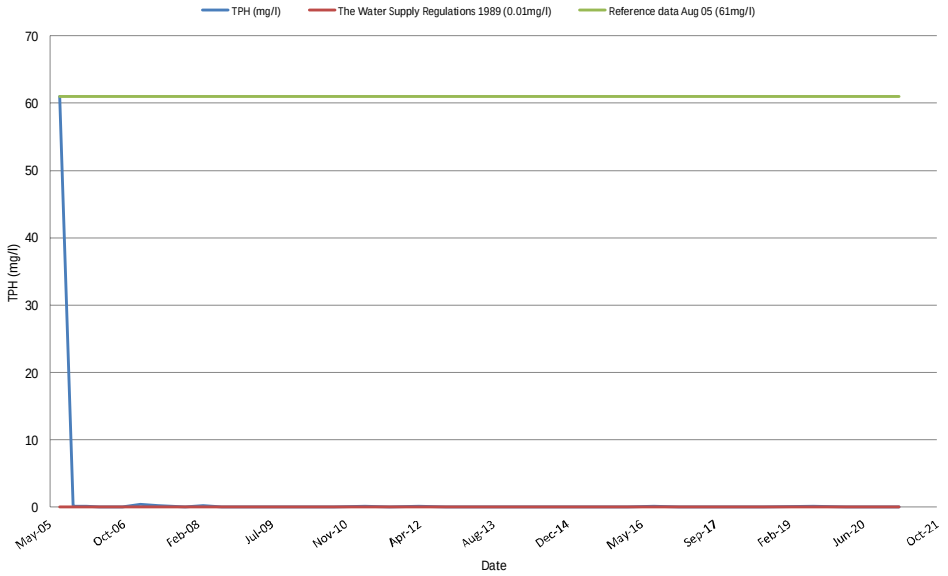


Dissolved TPH in Groundwater
Time Series Plots

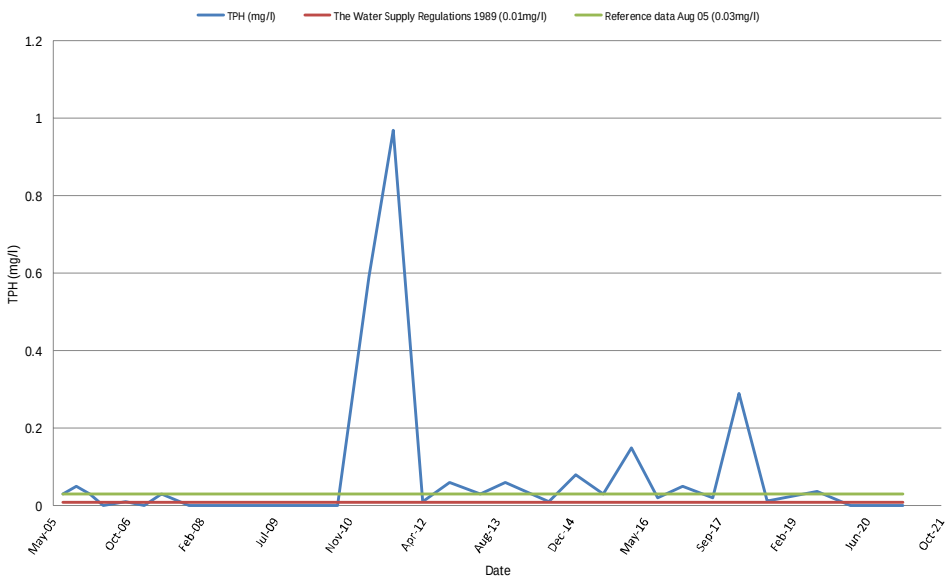
Borehole BH1



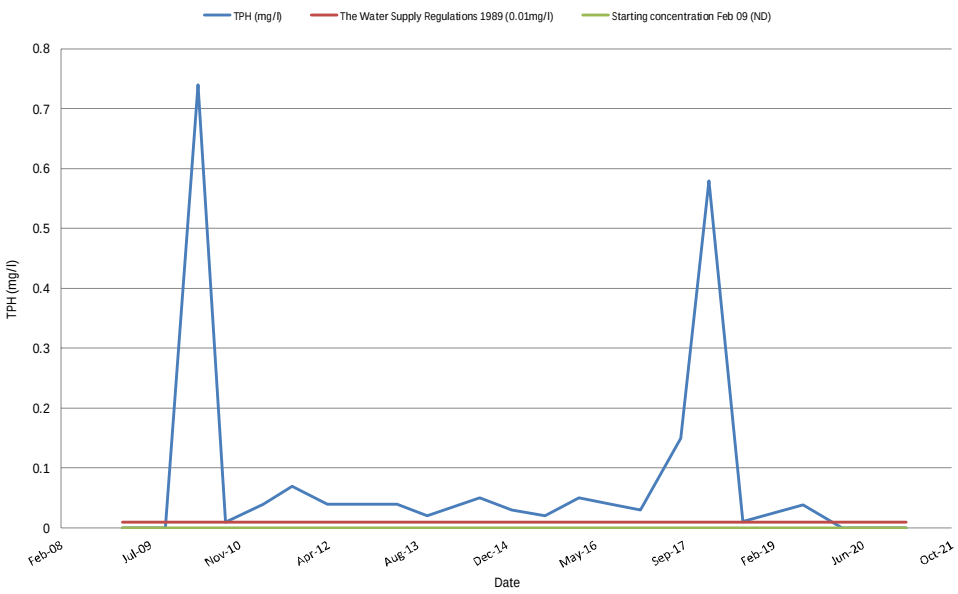
Borehole BH4



Borehole BH6

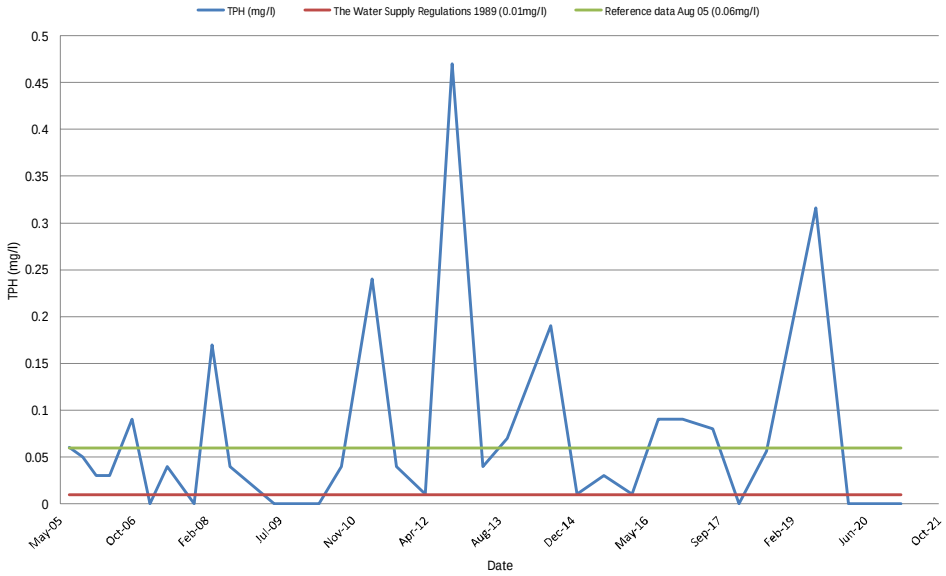


Borehole BHS6

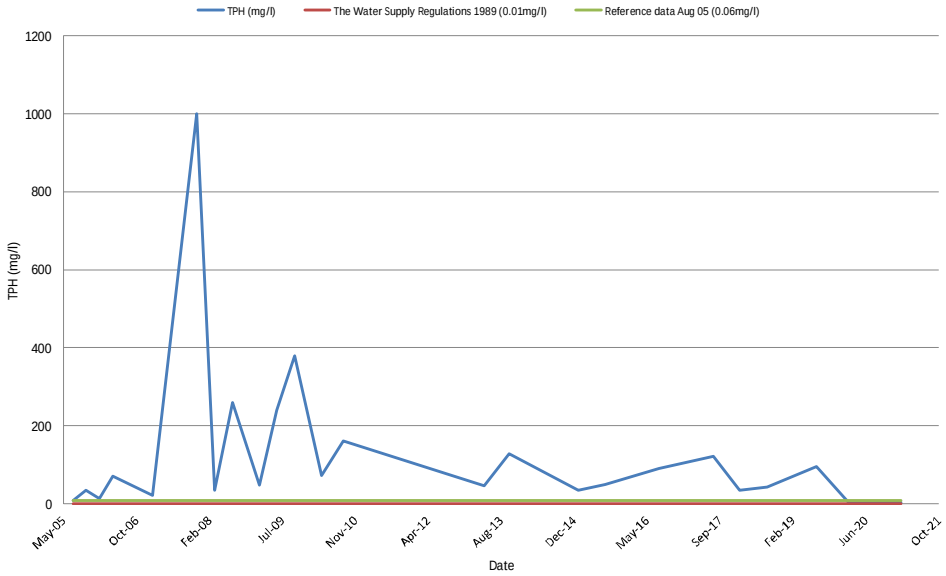


Dissolved TPH in Groundwater
Time Series Plots

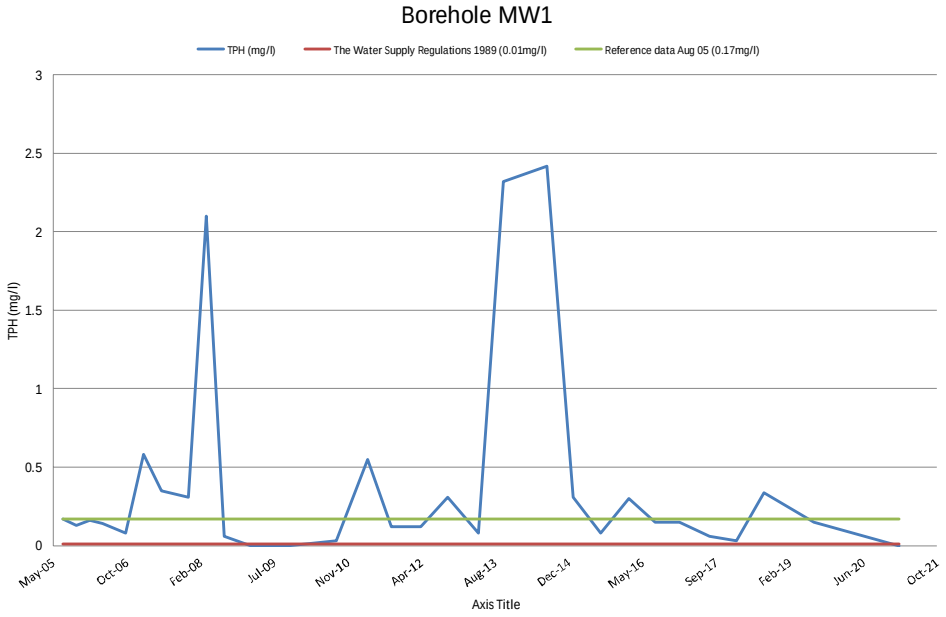
Borehole BH11



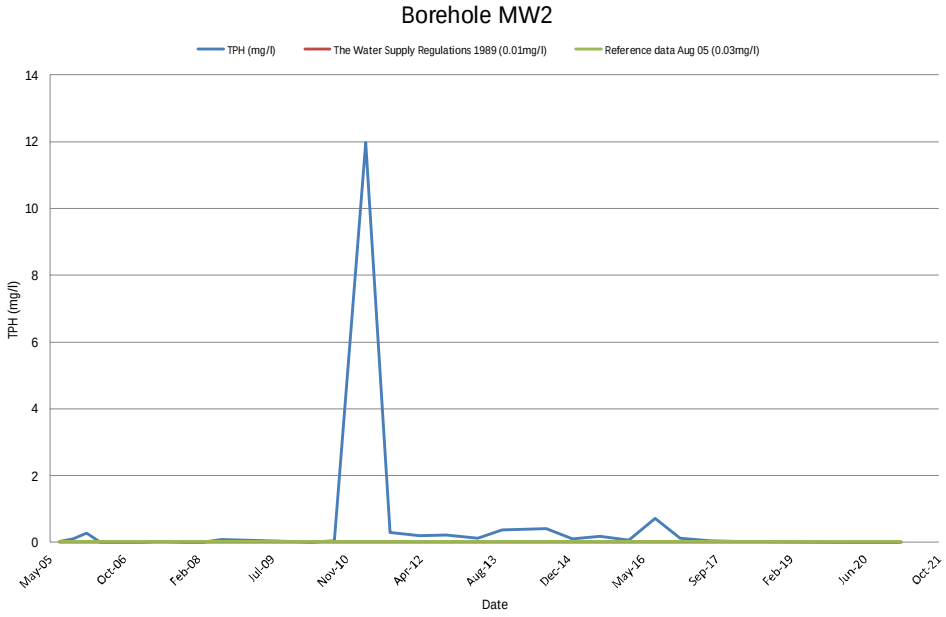
Borehole BH12



Borehole MW1



Borehole MW2



Appendix 4

Laboratory Certificate of Analysis

Rob Hodgson
Ramboll UK
8 Village Way
Cardiff
CF15 7NE

e: rhodgson@ramboll.com

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 21-57383

Project / Site name:	Hydro SPMP Round 33	**Samples received on:**	18/02/2021
Your job number:	1620010733	**Samples instructed on/ Analysis started on:**	18/02/2021
Your order number:	1620039075	**Analysis completed by:**	24/02/2021
Report Issue Number:	1	**Report issued on:**	24/02/2021
Samples Analysed:	8 water samples		

Signed: A. Czerwińska

Agnieszka Czerwińska
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 21-57383
Project / Site name: Hydro SPMP Round 33

Your Order No: 1620039075

Lab Sample Number				1773400	1773401	1773402	1773403	1773404
Sample Reference				BH4	BHS6	BH6	MW2A	BH11
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Date Sampled				16/02/2021	16/02/2021	16/02/2021	16/02/2021	16/02/2021
Time Taken				1100	1130	1200	1250	1340
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	6.8	7.7	7	6.2	6.5
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	2.7	10
Sulphate as SO4	mg/l	0.045	ISO 17025	16.3	27.4	26.1	36.4	19.4
Ammoniacal Nitrogen as NH3	µg/l	15	ISO 17025	< 15	< 15	140	390	220
Heavy Metals / Metalloids								
Boron (dissolved)	µg/l	10	ISO 17025	27	23	19	26	28
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.23	4.42	4.3	< 0.15	0.33
Barium (dissolved)	µg/l	0.06	ISO 17025	17	36	140	37	97
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	0.1	0.3	< 0.1	< 0.1
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	0.11	0.32	0.06	0.03
Chromium (dissolved)	µg/l	0.2	ISO 17025	1.9	3.7	4.1	1.4	1.3
Copper (dissolved)	µg/l	0.5	ISO 17025	3.4	23	22	1.4	2.7
Lead (dissolved)	µg/l	0.2	ISO 17025	0.8	3.2	7	< 0.2	1.1
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	1.5	2.2	19	2.4	8.6
Selenium (dissolved)	µg/l	0.6	ISO 17025	0.8	1	3.2	0.9	2.6
Vanadium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	1.5	2.2	< 0.2	0.4
Zinc (dissolved)	µg/l	0.5	ISO 17025	9.6	8.2	26	5.7	55
Petroleum Hydrocarbons								
TPH1 (C10 - C40)	µg/l	10	NONE	< 10	< 10	< 10	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 21-57383
Project / Site name: Hydro SPMP Round 33

Your Order No: 1620039075

Lab Sample Number				1773405	1773406	1773407
Sample Reference				BH1	BH12	MW1A
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				16/02/2021	16/02/2021	16/02/2021
Time Taken				1415	1430	1500
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
General Inorganics						
pH	pH Units	N/A	ISO 17025	6.7	6.6	7.1
Total Cyanide (Low Level 1 µg/l)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Sulphate as SO4	mg/l	0.045	ISO 17025	12.5	2.68	13
Ammoniacal Nitrogen as NH3	µg/l	15	ISO 17025	530	86	140
Heavy Metals / Metalloids						
Boron (dissolved)	µg/l	10	ISO 17025	34	25	33
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.26	0.25	0.63
Barium (dissolved)	µg/l	0.06	ISO 17025	180	58	94
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	< 0.1
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	0.13
Chromium (dissolved)	µg/l	0.2	ISO 17025	3.3	3.3	1.8
Copper (dissolved)	µg/l	0.5	ISO 17025	1	1.9	1.6
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	0.5	< 0.2
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Nickel (dissolved)	µg/l	0.5	ISO 17025	4.8	2.1	1.7
Selenium (dissolved)	µg/l	0.6	ISO 17025	< 0.6	< 0.6	2.8
Vanadium (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2
Zinc (dissolved)	µg/l	0.5	ISO 17025	17	15	8
Petroleum Hydrocarbons						
TPH1 (C10 - C40)	µg/l	10	NONE	3100	2500	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 21-57383
Project / Site name: Hydro SPMP Round 33

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW, PrW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
TPH1 (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS.	In-house method	L070-PL	W	NONE
Ammonia as NH3 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Low level total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.