

Appendix G. Kier Site Waste Management Plan (SWMP) Extracts

Print Site Waste Management Plan for: 5 Hayes

Date: 5 August 2015

Version number (if appropriate):

Site Waste Management Plan Progress

Step	Completed
1. Responsibilities	✓
2. Waste minimisation	✓
3. Forecast	✓
4. Waste management options	✓
5. Duty of care	✓
6. Training / Communication	✓
7. Actual versus Forecast waste	✓
8. Ongoing review of implementation	✓
9. Completion review	✓

Project Details

Project reference	KCC 1170
Project name	5 Hayes
Project address	UB3 4AZ
Project use class	Other (Commercial Offices)
Actual start date	11/11/2013
End date	22/8/2015
Project cost (estimated)	£ 26,271,537.00
Floor area	5500.0 m ²
Description of site location	Construction of 5 storey office building
Client	HPH/Melford -
Principal Contractor (responsible for SWMP implementation)	KC Central - Richard Osborne

1: Responsibilities

	Name	Company	Company Type	Contact details
Who is responsible for drafting the SWMP?	Kevin Byrne	KC Southern	Principal contractor	
Who is responsible for implementing the SWMP?	Richard Osborne	KC Central	Principal contractor	
Who is the waste champion?	Adam Nugent	KC Southern	Principal contractor	

Who is the person in charge of the project?	Richard Osborne	KC Central	Principal contractor
Client		HPH/Melford	Client

Where will this SWMP will be kept? (a copy should be kept onsite)

1) Electronic document

on line

2) Paper based document

Declaration statement: The Client and Principal contractor will take reasonable steps to ensure waste duty of care is complied with, materials are handled efficiently and waste is managed appropriately.

☒ Tick box to agree.

Client signature:

Print name:

Date:

Contractor signature:

Print name:

Date:

2: Waste minimisation decisions

Type	Waste minimisation decision taken	By whom	Intended results
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3: Forecast of waste types and amounts

Work Package	Subcontractor	Type of waste	Estimate amount (m3)	Likely cause	Notes
Construction	Not specified	Bricks (17 01 02)	30.0	Standardised materials	
Construction	Not specified	Plasterboard / Gypsum (17 08 02)	60.0	Standardised materials	
Total			90.0		

4: Waste management options

Waste type		Reduce (%)	Reuse (%)	Recycle (%)	Recover (%)	Dispose (%)	Container type	Waste Management contractor	Exemptions
Bricks (17 01 02)	onsite	0 %	10 %	0 %	0 %	0 %			
		cotllect offcuts							
	offsite	0 %	0 %	0 %	90 %	0 %			
		contractor							
Plasterboard / Gypsum (17 08 02)	onsite	0 %	0 %	0 %	0 %	0 %			
	offsite	0 %	0 %	0 %	0 %	0 %			
Overall target		0 %	0 %	0 %	0 %	0 %			

5: Duty of care

Waste Management Contractor Name	Waste carrier license number	Issue date	Expiry date	Waste Transfer notes storage location
Austin Contract Services Ltd	CB/ME5357KK	21/4/2015	20/4/2018	on site

B L Penwarden	CB/AP3717YH	18/2/2013	17/2/2016	
Biffa Waste	CB/WE5237GH	24/5/2013	23/5/2016	
Waste site name		Recycling rates added		
		generic		product specific
Redhill Landfill	JB3332R	6/9/2012	✓	✓
BP Mitchell Haulage	CB/GN5874SH	5/12/2012	4/12/2015	on site
Chiltern Wood Recycling Projects	CBDL10245	11/3/2011	11/3/2016	
Waste site name		Recycling rates added		
		generic		product specific
Unit 2, 42 Lincoln Road	EPR/PE5044SX/A001	11/6/2014	✓	✓
UNIT 6 Lincoln Park Business Centre	EPR/QE5058BQ/A001	10/7/2012	✓	✓
Cleansing Services Group Ltd	CB/YN5477QP	3/4/2013	2/4/2016	
Clwyd Transport Services	CB/CP3010RB	31/12/2012	15/9/2015	
Day Group	CB/PE5939KB	18/6/2013	17/6/2016	Site
Waste site name		Recycling rates added		
		generic		product specific
Day Aggregates Brentford MRF	EPR/BB3232RX	31/5/2012	✓	✓
E W & H Williams & Sons	CB/VP3616JC	26/2/2013	25/2/2016	on site
G Webb Haulage Ltd	CB/EN5570VY	2/4/2013	1/4/2016	on site
GBN Services	CB/WE5059FF	20/4/2013	19/4/2016	
J & J Transport Ltd	CB/CM3989RN	13/7/2012	12/7/2015	on site
London Rock Supplies Ltd	CB/BE5004ZR	10/8/2014	9/8/2017	on site
O'Donovan (Waste Disposal)	CB/GP3975PZ	11/7/2013	10/7/2016	
P J Brown	CB/WN5070RB	22/1/2013	21/1/2016	on site
Patrick Leonard	CB/EM3781BM	11/1/2014	10/1/2017	online
Quattro (UK) Ltd	CB/PE5708YX	8/1/2014	7/1/2017	
Waste site name		Recycling rates added		
		generic		product specific
BR Goods Yard	WML80724	23/11/2007	✓	✓
Rory J Holbrook Ltd	CB/SM3087PX	18/3/2014	17/3/2017	on site
S & J Transport Ltd	CB/BN5317EU	16/10/2012	15/10/2015	on site
Southwaterstreet	CB/DP3307QD	4/3/2013	3/3/2016	on site
Thames Materials	CB/MP3098MX	18/7/2013	17/7/2016	on site

Waste site name			Recycling rates added	
			generic	product specific
Yard D	WML 86072	26/3/1999	✓	✓

Hazardous waste registration number	Date of issue	Date of expiry	Hazardous waste registration report	
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Site-based Exemptions

Reference Number	Date of Registration	Exemption Type
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6: Training / Communication

6.1: Training

Everyone on site should receive relevant training which should include:

- The SWMP
- Roles and responsibilities
- Waste procedures on site
- Hazardous waste
- Duty of care / responsibilities
- Materials storage.

The following types of training are being undertaken:

- ☒ Induction
- ☒ Tool box talks
- ☒ Workshops
- ☐ Other

The training log is kept at:

This table can also be used as a training log

Name	Company	Date	Who trained by	Type of training	Date next training due
------	---------	------	----------------	------------------	------------------------

6.2: Communication

The plan is being communicated by:

- ☒ Meetings
- ☒ Posters
- ☐ Feedback from staff
- ☐ other, please state

7: Waste Data

If you have entered any waste data then it will be summarised below.

Actual volume	
Total actual volume of waste generated to date	33,030.0 m³
Percentage segregated (volume)	0 %
Project - Actual volume m³ of waste per 100m² of floor area (m³/100m²)	600.5
Company - Actual volume m³ of waste per 100m² of floor area (m³/100m²)	43.6
Project - Actual volume m³ of waste per £100K of project cost (m³/£100K)	125.7
Company - Actual volume m³ of waste per £100K of project cost (m³/£100K)	31.9
Reused on site	90.0 m³

Reused off site		28,641.4 m³
Total reused	28,731.4 m³	87 %
Recycled on site		0.0 m³
Recycled off site		107.1 m³
Total recycled	107.1 m³	0 %
Recovered on site		0.0 m³
Sent for recovery off site at licensed facilities		3,698.5 m³
Total recovered off site at licensed facilities		2,088.5 m³
Total recovered	2,088.5 m³	6 %
Disposed off site		469.0 m³
Disposed from licensed facilities		1,610.0 m³
Total disposed	2,079.0 m³	6 %
Total waste diverted from landfill	30,927.0 m³	94 %

Bulk volume

Total bulk volume of waste generated to date	44,930.3 m³
Bulk volume m³ of waste per 100m² of floor area (m³/100m²)	816.9
Bulk volume m³ of waste per £100K of project cost (m³/£100K)	171.0
No. of containers to date	3280
% of containers segregated	0 %

Tonnage

Total tonnage of waste generated to date (as entered)	0.0 tonnes
Tonnes of waste per 100m² of floor area (tonnes/100m²)	0.0
Tonnes of waste per £100K of project cost (tonnes/£100K)	0.0

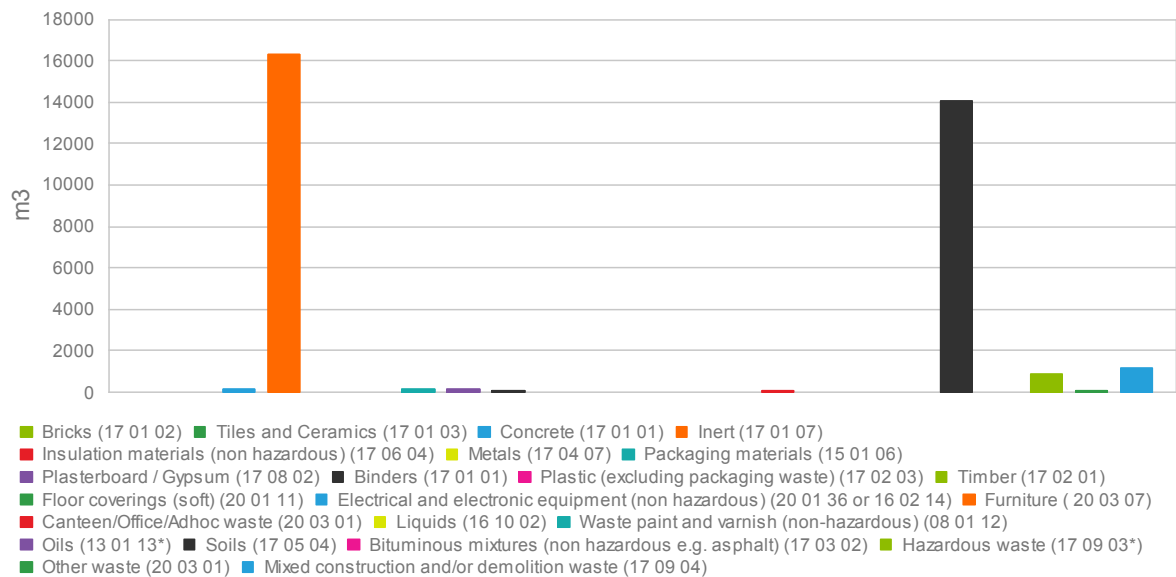
Detailed information

	Actual waste	Tonnage	Mixed	Seg	Waste management routes (%)				m³/100m²	m³/£100K
	(m³)		(%)	(%)	Reuse	Recycle	Recover	Disposal		
Bricks (17 01 02)	0.00	0.00	0	100	-	-	-	-	0.00	0.00
Tiles and Ceramics (17 01 03)	0.00	0.00	0	100	-	-	-	-	0.00	0.00
Concrete (17 01 01)	178.11	226.20	100	0	100	0	0	0	3.24	0.68
Inert (17 01 07)	16318.12	20,234.48	100	0	100	0	0	0	296.69	62.11

Insulation materials (non hazardous) (17 06 04)	0.00	0.00	0	100	-	-	-	-	0.00	0.00
Metals (17 04 07)	4.59	1.93	100	0	0	100	0	0	0.08	0.02
Packaging materials (15 01 06)	140.81	29.57	100	0	32	42	2	24	2.56	0.54
Plasterboard / Gypsum (17 08 02)	110.14	36.34	100	0	0	38	42	20	2.00	0.42
Binders (17 01 01)	84.00	106.68	100	0	0	0	53	47	1.53	0.32
Plastic (excluding packaging waste) (17 02 03)	0.50	0.11	100	0	0	0	0	100	0.01	0.00
Timber (17 02 01)	9.55	3.25	100	0	94	6	0	0	0.17	0.04
Floor coverings (soft) (20 01 11)	0.00	0.00	0	100	-	-	-	-	0.00	0.00
Electrical and electronic equipment (non hazardous) (20 01 36 or 16 02 14)	0.00	0.00	0	100	-	-	-	-	0.00	0.00
Furniture (20 03 07)	0.00	0.00	0	100	-	-	-	-	0.00	0.00
Canteen/Office/Adhoc waste (20 03 01)	45.93	9.65	100	0	2	5	41	52	0.84	0.17
Liquids (16 10 02)	0.00	0.00	0	100	-	-	-	-	0.00	0.00
Waste paint & varnish (non-hazardous) (08 01 12)	0.00	0.00	0	100	-	-	-	-	0.00	0.00
Oils (13 01 13*)	0.00	0.00	0	100	-	-	-	-	0.00	0.00
Soils (17 05 04)	14073.93	17,592.41	100	0	87	0	7	7	255.89	53.57
Bituminous mixtures (non hazardous e.g. asphalt) (17 03 02)	0.00	0.00	0	100	-	-	-	-	0.00	0.00
Hazardous waste (17 09 03*)	877.93	763.80	100	0	0	0	0	100	15.96	3.34
Other waste (20 03 01)	38.30	8.04	100	0	0	0	27	73	0.70	0.15
Mixed construction and/or demolition waste (17 09 04)	1148.09	998.84	100	0	0	0	89	11	20.87	4.37

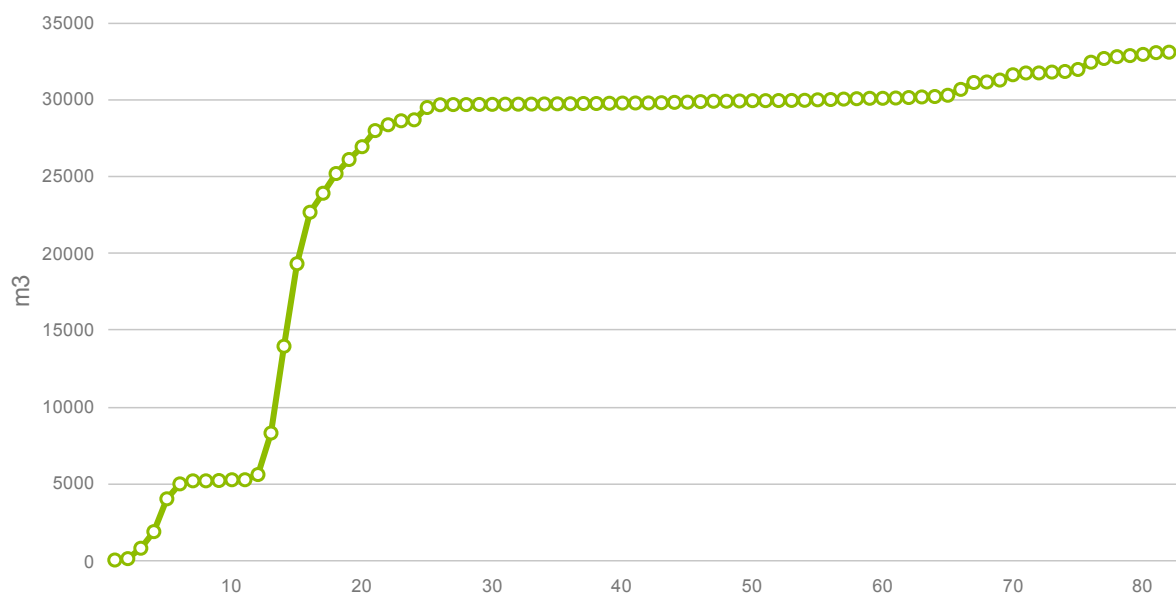
Summary charts

Actual volume of waste to date by product group



NB: Chart volumes do not include void space

Actual volume of waste over time



NB: Chart volumes do not include void space.

Week 0 is the first week data was entered for.

First data entry was on 20/11/2013

Current actual waste quantities versus forecasted quantities

Waste type	Forecast quantity (m ³)	Actual (m ³)
Bricks (17 01 02)	30.0	0.0
Plasterboard / Gypsum (17 08 02)	60.0	110.1

8: Ongoing review of implementation

This table logs any changes that may have been made to the SWMP.

Date	Name	Summary/ Actions carried out
6/12/2013	Karen McWalter	SWMP training carried out with AN
30/6/2014	Adam Nugent	Smart Waste plan reviewed. All waste transfer tickets up to date and entered onto smartwaste. Current waste leaving site includes.... GBN Services (canteen & paper waste) & Quattro Skips by Amery. Weekly water and electricity readings being entered onto smartwaste by Liam McDonagh.
1/9/2014	Adam Nugent	Smart waste plan reviewed. As before, weekly water and electricity readings are being recorded. Current waste leaving site includes.... GBN Services (canteen & paper waste) & Quattro Skips by Amery. Small amount of muck away from re-grading of ramp. Wood recycling area has been set up by Kier with pick ups as and when required. Thames water - Trade effluent license now in place of ground water discharge license.
12/12/2014	Adam Nugent	Smart waste plan reviewed, continuing on from the previous reviews much is the same weekly water and electric meter readings. Currently we have GBN services taking away our waste with a 12

yard skips to our 1100 ltr bins that includes canteen waste and recycled waste i.e. paper and cardboard, also Macai our dry liners have set up their own skips just taking plasterboard using O? Donovan Ltd. We are carrying on with our wood recycling with Community wood recycling, getting called in when needed. Thames water - Trade effluent license is still in place for ground water discharge license.

17/2/2015	Liam McDonagh	Waste diverted from landfill: Wheelie bins 22/11/2013-21/1/2015- 96.9% Recycled Wheelie bins Skips 18/09/2014-07/01/15- 94.2% Recycled
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9: Completion review

This section must be filled in within 3 months of the work being completed on this project (i.e. project finish) :

We confirm that the plan has been monitored on a regular basis to ensure that work was progressing to the plan and the plan was updated ☐

Signature

Print name

Date

This stage is designed to help you evaluate the success of your SWMP, and to identify key ‘lessons learnt’ to use on your future project, it is helping you strive for continual improvement.

Please review how successful you believe the implementation of the SWMP was:

The was a significant forecasting underestimation with the the excavation arisings omitted from the forecast

Please explain any deviation from the original plan:

The forecast was not fully developed

Estimate of cost savings achieved: £0

Action planned for next project:

A fully developed forecast is required to understand efficiency of waste minimisation options

Please provide a comparison of the estimated quantities of each waste type against the actual quantities.

If you have used SMARTWaste for measuring waste on this project, the data supplied in step 9 will help with this)

Only 2 waste streams were forecast

Snapshot of Actual versus Forecast waste on 4/8/2015

Waste type	Forecast (tonnes)	Actual (tonnes)	% Difference	Comments
Aggregates (17 01 07)	0.0	474.3	-	
Binders (17 01 01)	0.0	106.7	-	
Biodegradable kitchen and canteen waste (20 01 08)	0.0	2.2	-	
Biodegradable waste (20 02 01)	0.0	2.3	-	
Bricks (17 01 02)	36.0	0.0	-100.0	
Canteen/Office/Adhoc waste (20 03 01)	0.0	5.8	-	
Cardboard (15 01 01)	0.0	1.0	-	
Cardboard and paper packaging (15 01 01)	0.0	1.4	-	
Concrete (17 01 01)	0.0	226.2	-	
Mixed construction and/or demolition waste (17 09 04)	0.0	998.8	-	
Mixed metal (17 04 07)	0.0	1.9	-	
Mixed packaging (15 01 06)	0.0	0.2	-	
Office waste (20 03 01)	0.0	0.0	-	
Other (17 02 01)	0.0	2.1	-	
Other plastic packaging (15 01 02)	0.0	0.2	-	

Other timber packaging (15 01 03)	0.0	0.2	-
Packaging materials (15 01 06)	0.0	0.7	-
Pallets (15 01 03)	0.0	24.6	-
Paper and cardboard (20 01 01)	0.0	1.2	-
Plasterboard (17 08 02)	0.0	8.2	-
Plasterboard / Gypsum (17 08 02)	19.8	28.2	42.3
Plastic (excluding packaging waste) (17 02 03)	0.0	0.1	-
Plastic containers (15 01 02)	0.0	0.4	-
Plastic fill (15 01 02)	0.0	0.1	-
Plastic sheet (15 01 02)	0.0	0.6	-
Plastic strapping (15 01 02)	0.0	0.1	-
Plastics (20 01 39)	0.0	0.4	-
Septic tank sludge (20 03 04)	0.0	5.7	-
Sheets (17 02 03)	0.0	0.1	-
Soils (17 05 04)	0.0	1,004.6	-
Soils & stones containing dangerous substances (17 05 03*)	0.0	763.8	-
Stone (17 05 04)	0.0	19,760.2	-
Subsoil (17 05 04)	0.0	16,334.7	-
Timber (17 02 01)	0.0	1.2	-
Topsoil (17 05 04)	0.0	253.1	-
Totals:	55.8	40,011.3	71,604.8
Edit (swmp_forecastversusactualreview.jsp)			

Confirmation (within 3 months) ☐

Signature

Print name

Date

This plan should be kept at either the principal contractor’s place of business or at the site of the project for 2 years

Appendix 1

Cost data is summarised below

Summary information			
Total cost of waste removal			£0.00
Waste cost/£100K			£0.00
Waste cost/100m²			£0.00
Waste cost as % of project cost			0.0 %
Waste cost/tonne			-
Waste cost/m³			£0.00
Detailed information			
Cost of non-hazardous waste / tonne	-		
Cost of inert waste / tonne	-		

Cost of hazardous waste / tonne	-
Cost of active waste / m ³	£0.00
Cost of inert waste / m ³	£0.00
Cost of hazardous waste / m ³	£0.00
Hazardous waste removal cost as a % of total waste removal cost	0 %
Segregated waste removal cost as a % of total waste removal cost	0 %
Mixed waste removal cost as a % of total waste removal cost	0 %
Inert waste removal cost as a % of total waste removal cost	0 %
Active waste removal cost as a % of total waste removal cost	0 %

Appendix 2

Subcontractors

- Amery
- Macai

Appendix 3

Users

- Adam Nugent
- Chris Sharpe
- david allen
- john knight
- Karen McWalter
- Liam McDonagh
- Martin Goodall
- richard osborne

Appendix H. Jacobs Groundwater Detailed Quantitative Risk Assessment (DQRA), Hyde Park, Hayes , HPH5, August 2015.

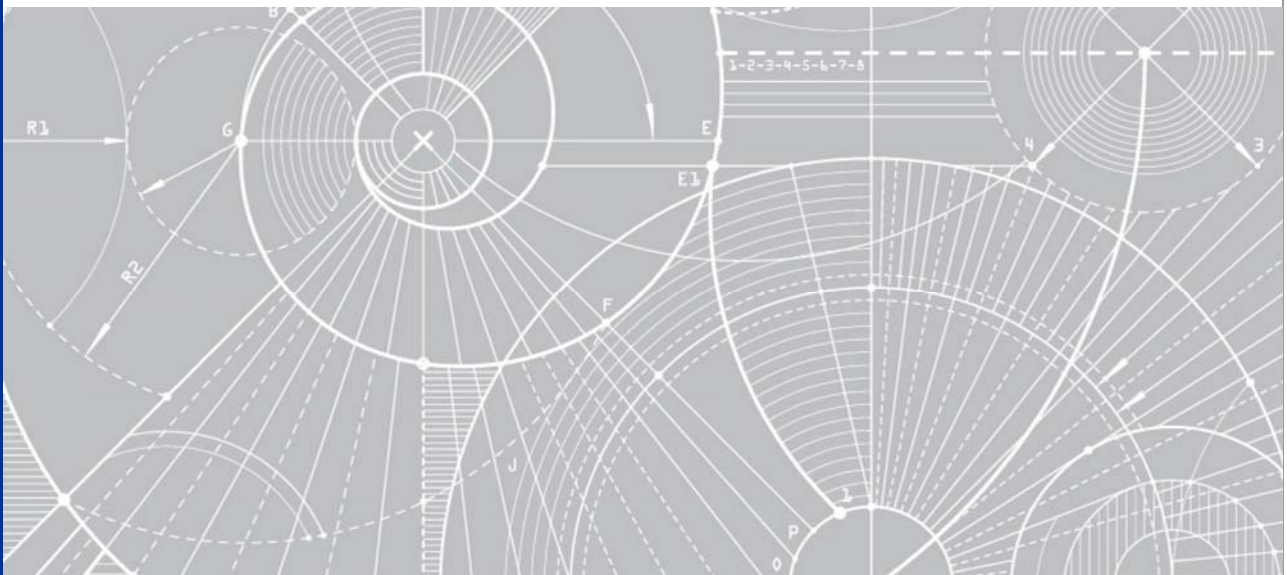
Groundwater Detailed Quantitative Risk Assessment (DQRA), Hyde Park, Hayes , HPH5

HPHD LIMITED

Hyde Park Hayes 5 Groundwater DQRA August 2015

Final

18 August 2015



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Groundwater Detailed Quantitative Risk Assessment (DQRA), Hyde Park, Hayes , HPH5

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 Revision: Rev 3 Final
 Date: 18 August 2015
 Client name: HPHD Limited
 Project manager: Richard Pollard
 Authors: Mark Burston/Lauren Boydell
 File name: KU032300.DQRA.Final.18.August.15.docx

Sinclair Knight Merz (Europe) Ltd (Jacobs)

Enviro House
 Shrewsbury Business Park
 Sitka Drive
 T +44 (0)1743 284 800
 F +44 (0) 1743 245 558
www.jacobs.com

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Document history and status

Revision	Date	Description	Originator/Check	Review	Approved
Draft	1 Sept 2014	Draft report for client discussion	Mark Burston	Simon Little	Richard Pollard
Interim	29 Oct 2014	Interim report issued to client	Mark Burston	Simon Little	Richard Pollard
Final draft	30 July 2015	Draft of final report issued to client	Mark Burston/Lauren Boydell	Louise Beale	Richard Pollard
Rev2	12 August 2015	Revised draft following client comments	Richard Pollard Mark Burston	Mark Burston	Richard Pollard
Rev3	18 August 2015	Final	Richard Pollard / Mark Burston	Mark Burston	Richard Pollard

Project:	HP5, Hyde Park, Hayes		
Client:	HPD Ltd	Project Number:	KU33000
Document Title:	Groundwater Detailed Quantitative Risk Assessment (DQRA), HPH5		
Ref. No:			

Originated by		Checked by	Reviewed by
Final Draft	NAME	NAME	NAME
	L. Boydell (DQRA calculations) M. Burston (Non technical section)	M. Burston DQRA calculations L. Beale (Non technical section)	M. Burston DQRA calculations L. Beale (Non technical section)
Approved by	NAME	As Project Manager I confirm that the above document(s) have been subjected to Jacobs' Check and Review procedure and that I approve them for issue	INITIALS
	R. Pollard		
DATE	30 July 2015	Document status: Draft for review to client	

REVISION		NAME	NAME	NAME
Rev2		Richard Pollard	M. Burston	M. Burston
Approved by		NAME	INITIALS	
		R. Pollard	As Project Manager I confirm that the above document(s) have been subjected to Jacobs' Check and Review procedure and that I approve them for issue 	
DATE	12 August 2015	Document status: Revised draft following client comments		

REVISION		NAME	NAME	NAME
Rev3		Richard Pollard	M. Burston	M. Burston
Approved by		NAME	INITIALS	
		R. Pollard	As Project Manager I confirm that the above document(s) have been subjected to Jacobs' Check and Review procedure and that I approve them for issue 	
DATE	18 August 2015	Document status: Final		

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Appendices

Appendix 1. Borehole Logs from 2014 Investigation

Appendix 2. 2014 Hydraulic Conductivity Test Results

Appendix 3. Summary of Laboratory Analysis Results

Appendix 4. Plots of Selected Chlorinated Solvents Over Time

Appendix 5. Quantitative Groundwater Risk Assessment Spreadsheets

Executive Summary

Based on the site works which have been undertaken, the subsequent groundwater monitoring and the conclusions of a Detailed Quantitative Risk Assessment (DQRA) that the remaining contamination does not present a significant risk to the aquifer, abstractions or surface waters, it is recommended that no further monitoring or assessment of the chlorinated solvent contamination at the HPH site is undertaken. Remediation of the remaining contamination, from a groundwater resources and impact point of view, is not required.

The objective of the groundwater DQRA is to provide an assessment of whether volatile organic compounds (VOCs) in groundwater are impacting significantly on groundwater receptors away from the HPH5 development. The assessment is based on monthly groundwater monitoring at the HPH5 site over a period of approximately 30 months and concentrates on the results of monitoring following excavation of soils and associated dewatering activities for a basement at the HPH5 site.

A site investigation was required as part of a planning application to the London Borough of Hillingdon, (45753/APP/2012/2029) for construction of multi storey offices at the Hyde Park, Hayes site. A groundwater DQRA was requested by the Environment Agency following submission of the SKM Enviro site investigation report for the HPH5 area of the site in early 2013. An initial groundwater DQRA was reported in January 2014 prior to the basement excavation. The report produced was reviewed by the Environment Agency and their comments on the initial assessment are considered in this report.

An interim DQRA report was also produced in September 2014 which made recommendations for further site investigation and groundwater monitoring. This resulted in the installation of five additional groundwater monitoring boreholes to the north of the HPH5 site to assess the extent of contamination that may be moving from the HPH5 site.

The DQRA has involved the use of Environment Agency procedures to undertake a quantitative assessment of potential impacts at a point in the groundwater pathway 50 m from the contamination source (termed the "compliance point"). The assessment draws upon site based monitoring data where available and calculates a concentration that may be observed in the groundwater away from the contamination source area. This concentration is then compared to a water quality standard (the drinking water standard in this case) to establish if the predicted concentration at the compliance point exceeds the water quality standard. An exceedance of the standard may mean that groundwater remediation or further assessment work is needed.

The assessment was undertaken for seven VOCs, including trichloroethene (TCE), which is the VOC which was historically detected in the groundwater at the highest concentration. For four of the compounds which were assessed, the initial assessment indicated that there would be no significant impact at the 50 m compliance point. However, this risk assessment using relatively conservative input parameters indicated that the predicted concentration of three VOCs at the compliance point is above the drinking water standard at 50m from the contaminant source.

The base model assessment was undertaken using a number of conservative assumptions. These included using the maximum concentration of each compound as the source concentration even though these concentrations are not uniformly present in area or time based upon monitoring data. A sensitivity assessment has therefore been undertaken including using source concentration data from the most recent round of groundwater monitoring. This assessment showed a much lower impact with only one VOC exceeding the drinking water standards at the 50m compliance point.

Furthermore, an assessment of the groundwater quality data shows that concentrations of chlorinated solvents have reduced since the basement was installed at HPH5 and that concentrations of VOCs measured on the HPH site's northern boundary do not present a significant risk to offsite receptors such as water supply boreholes or streams or rivers.

Important note about your report

The sole purpose of this report and the associated services performed by Jacobs is to assess the impacts of groundwater contamination in accordance with the scope of services set out in the contract between Jacobs and the Client. That scope of services, as described in this report, was developed with the Client.

In preparing this report, Jacobs has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

Jacobs derived the data in this report from information sourced from the Client (if any) and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations and conclusions expressed in this report. Jacobs has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by Jacobs for use of any part of this report in any other context.

As with any assessment of this nature, the assessment is undertaken on the basis of limited data in terms of temporal variations and location of sampling points. Groundwater conditions may change over time and higher groundwater concentrations may be present at locations not investigated in this work.

This report has been prepared on behalf of, and for the exclusive use of, Jacobs's Client, and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the Client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party

1. Introduction

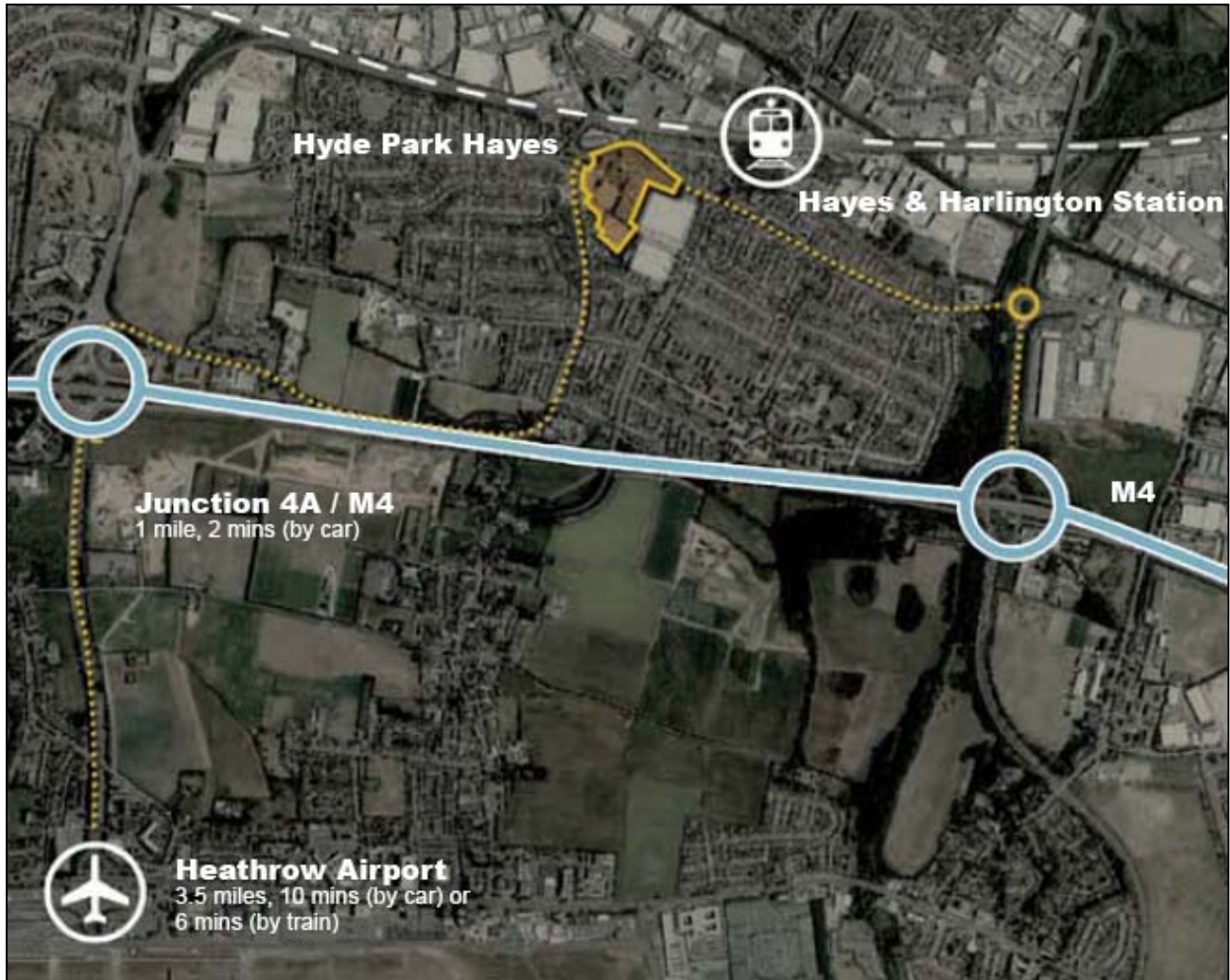
Background information regarding the site and the objectives of works are summarised in Table 1.1.

Table 1.1 – Summary of HPH5 site and investigation works

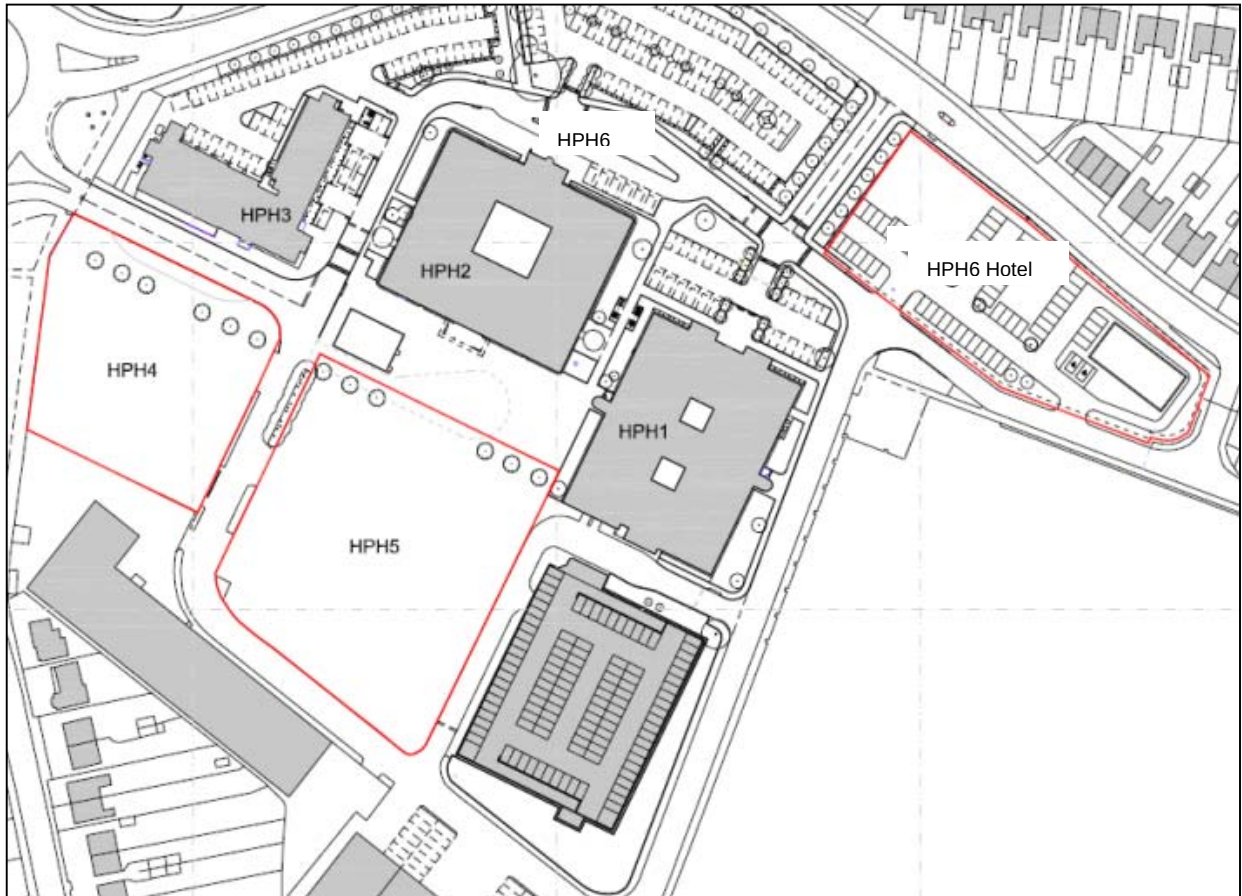
Aspect	Description
Site Address	HPH5, Hyde Park, Millington Road, Hayes, UB3 4AZ
National Grid Reference	509210 179260
Site Area	HPH5 – 5,580 m ²
Background	In January 2013, SKM Enviros (now Jacobs) was commissioned by HPHD Ltd to undertake a site investigation of HPH5 (“the site”). This is one of three areas for development on the Hyde Park, Hayes business park for HPHD Ltd, a subsidiary of Hyde Park Hayes Ltd. The building areas HPH1-3 and car park to the east are also under the ownership of Hyde Park Hayes Ltd but are considered offsite for the purposes of this assessment. The report on site investigation works (Reference 1) identified chlorinated solvent contamination within groundwater in shallow gravel deposits. It is thought that this contamination originated from engineering works associated with the site’s former use as an aircraft manufacturer. A monitoring scheme was proposed which included monthly collection of groundwater samples from boreholes within the HPH5 area over the course of a year. Groundwater samples have been collected on a number of occasions and this report follows on from preliminary and interim assessments of groundwater quality data undertaken in January 2014 (Reference 2) and September 2014 (Reference 3). The preliminary report (Reference 2) determined if migration of the contaminants was likely to impact significantly on identified groundwater receptors and Reference 3 undertook further groundwater risk assessment and made recommendations for further site investigation works to better define the extent of contamination. Comments on the preliminary report were received from the Environment Agency in April 2014. This report revises References 2 and 3 by the inclusion of data collected in 2014 and 2015 (to June) which includes the following: • Installation of three boreholes to replace those lost due to development of the site; • Installation of five boreholes to assess the extent of contamination moving from the HPH5 area of the site; • Additional groundwater sampling; • Hydraulic conductivity testing; and • Details of basement construction and groundwater dewatering required for development of the site. Consideration of the impact of the contaminants on human health is not provided in this report.

Aspect	Description
Regulatory Background	Following submission of our site investigation report (Reference 1), the Environment Agency (EA) in correspondence dated 21 March 2013 (Ref: NE/2012/116310/04-L01) requested: • Monthly monitoring of the groundwater in HPH5 for one year. • Quarterly monitoring of groundwater levels on the HPH scheme. • Inspection of the basement excavation during the works. • Production of a Detailed Quantitative Risk Assessment (DQRA) for groundwater. • Depending on the outcome of the above, further groundwater monitoring and consideration of groundwater remedial measures. As noted above, a preliminary DQRA was undertaken in January 2014 (Reference 2) and the EA commented on it in correspondence on 9 April 2014 (Ref: NE/2014/119570/02-L01). In summary the EA agreed with the recommendations of the report to collect further information to refine the DQRA. The EA also requested that sensitivity analysis should be undertaken to compare the different natures of decay and consider a range of degradation rates, based on further site specific monitoring data. Based on the EA's comments, an interim DQRA was undertaken in September 2014 (Reference 3) and this report updates that assessment and considers both items of EA correspondence. This report is submitted to the EA to part discharge planning conditions for the planning application 45753/APP/2012/2029 and varied by 45753/APP/2013/1980 submitted for HPH5. Specifically Part 14 2) of the planning conditions state <i>"that within two years of the occupation of the permitted development, a verification report demonstrating completion of works set out in the approved remediation strategy shall be submitted and approved, in writing, by the Local Planning Authority. The report shall include results of sampling and monitoring carried out in accordance with the approved verification plan to demonstrate that the site remediation criteria have been met"</i>. The completed works are intended to ensure that the site is adequate for its proposed end use and that post development the site would not impact adversely on the Lynch Hill Gravels Principal Aquifer.
Development	The Hyde Park, Hayes business park contains a number of existing multi-storey buildings with hard and soft landscaping (HPH1-3) with a separate car parking area, as shown in the following site layout plan. The proposals are for the development of three areas of the Hyde Park, Hayes business park (HPH4-6) which will be considered for a planning permission with the London Borough of Hillingdon (LBH). The development for HPH5 is the creation of a four storey office with basement. Excavations for the basement were undertaken during the first half of 2014 and dewatering of this area was completed by 4th April 2014.
Objectives	The key driver of this study is to ensure that identified groundwater contamination is not impacting adversely on identified groundwater receptors. The objectives of this stage of work are therefore to assess whether volatile organic compounds (VOCs) within groundwater in the Lynch Hill Gravels are impacting significantly on groundwater receptors away from the HPH5 development. If the DQRA were to show significant adverse impacts on the groundwater receptors then recommendations for the next steps would be proposed.

Site Location Plan



Site Layout Plan



2. Background Information

2.1 Objectives and Strategy

2.1.1 Background

Site investigations were undertaken in January 2013 which involved the installation of groundwater monitoring boreholes in the HPH5 area (Boreholes BH19 through to BH22, Reference 1). Subsequent sampling of these boreholes (and BH13 installed in an earlier phase of investigation) identified organic contamination in the groundwater, principally by chlorinated solvents. Further monitoring was then undertaken throughout 2013. Due to site development needs, including the excavation of the basement for the HPH5 site, these boreholes within HPH5 were lost at the start of 2014. They were therefore replaced in March 2014 by boreholes outside of the building's footprint (borehole numbers BH23, BH24 and BH25). These new boreholes were sampled from March 2014 until July 2014.

Based on the results of the laboratory analysis and an interim DQRA it was recommended that an additional five boreholes be installed and for monitoring to continue until May 2015 (Reference 3, although monitoring actually continued to June 2015). These boreholes were to provide data to clarify the gap in the groundwater monitoring coverage north of HPH5 as well as to help determine the source term and determine whether the source was declining following the basement removal and dewatering that was completed at the beginning of April 2014. The following boreholes were installed:

- BH26 to the immediate north of HPH5 and BH25 (which had historically shown the highest chlorinated solvent concentrations) in order to aid in delineation of the extent of contamination;
- BH27 installed to the north western corner of HPH5 to fill a gap in the borehole coverage down hydraulic gradient from HPH5;
- BH28 installed mid way between HPH5 and the site boundary to provide a monitoring point for any contamination plumes which may have originated from the HPH5 area; and
- BH29 and BH30 installed on the northern site boundary to fill gaps in the monitoring network for assessing any contamination that may be flowing off site.

The additional five boreholes (BH26 to BH30) were installed in October 2014 and further groundwater monitoring was undertaken in all available boreholes between October 2014 and June 2015. Table 2.1 provides details of when boreholes have been sampled since the completion of the basement removal and dewatering and all borehole locations are shown in Figure 1.

Table 2.1: Borehole Sampling Schedule Post Site Dewatering (April 2014)

Date	BH2	BH6	BH8	BH9	BH11	BH15	BH18	BH23	BH24	BH25	BH26	BH27	BH28	BH29	BH30
Apr-14	✓		✓	✓	✓	✓	✓	✓	✓	✓					
May-14	✓		✓	✓	✓	✓	✓	✓	✓	✓					
Jun-14			✓	✓	✓	✓	✓	✓	✓	✓					
Jul-14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
Oct-14	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Nov-14	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Dec-14	✓	✓	✓	✓		✓	✓				✓	✓	✓	✓	✓
Jan-15	✓		✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Feb-15	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Mar-15	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓
Apr-15	✓	✓	✓	✓	✓		✓	✓				✓	✓	✓	✓
May-15	✓	✓	✓	✓	✓		✓	✓			✓	✓	✓	✓	✓
Jun-15	✓	✓	✓	✓	✓		✓	✓			✓	✓	✓	✓	✓

2.2 Ground and Groundwater Observations

Borehole logs for the boreholes installed in the vicinity of HPH5, including the new boreholes installed during October 2014 to the north of HPH5, are shown in Appendix 1. The ground conditions at the site comprise made ground overlying a gravel layer known as the Lynch Hill Gravels. These gravels in turn overlie the London Clay with the Chalk at greater depth. This geological sequence and approximate thickness of each horizon is shown in Table 2.2.

Table 2.2: Summary of Geological Strata at HPH5

Strata	Material Type	Depth Encountered and Thickness
Made Ground	Variable in composition comprising gravelly cobbles of brick and concrete and sandy gravel with brick, rare clinker, concrete and flint. Likely to be from demolition of former buildings on the site. Made ground was consistently found in the south west area of the site beneath concrete hardstanding (currently hard landscaped area). The made ground in this area was characterised by the presence of slag and ashy materials.	Made ground was between 0.9m and 2.5m thick. The average thickness of made ground was around 1.5m. The base of the made ground is typically between 29.6mAOD and 31mAOD.
Langley Silt	Silty gravelly clay. Present only at one location on the eastern side of HPH5.	1.1m thick.

Strata	Material Type	Depth Encountered and Thickness
Lynch Hill Gravels	Comprised very dense sandy gravels with gravel of flint and quartz.	The base of the Lynch Hill Gravels was between 3.5 and 7m below ground level (bgl) (24.92mAOD and 27.29mAOD). The thickness of gravels was between 1.8 and 5.7m.
London Clay Formation	Medium strength to high strength stiff brown clay with fissures appearing from 6.5mbgl to 7.3mbgl.	Encountered between 3.5mbgl and 7.0mbgl. The surface of the London Clay is deepest at BH13 at 24.9mAOD compared to shallower depths of 27.1mAOD at HPH4 and HPH6. The London Clay is known to be a laterally extensive formation across the Hayes area which reaches thickness of up to 77m. This is shown by historical borehole logs from within 1km of the site. Below c. 80mbgl chalk is recorded.

During the monitoring period April 2014 to June 2015 groundwater has been measured in the boreholes at a typical depth of 3mbgl. During the drilling works in January 2013, hydraulic conductivity testing was undertaken in two of the boreholes; BH19 and BH22. The estimated hydraulic conductivity (Table 2.3) for those tests undertaken in the Lynch Hill Gravels shows the hydraulic conductivity to be low for a gravel deposit with the value being in the order of 0.04 m/day for the tests undertaken in BH19 and BH22. However, clear groundwater strikes were not encountered during drilling of the boreholes which may indicate that the recorded hydraulic conductivity results for these boreholes are of the right order of magnitude.

Further hydraulic conductivity testing was undertaken in the three completed boreholes installed in March 2014 (BH23 to BH25). The analysis of the 2014 data is shown in Appendix 2 and the results of these tests are also shown in Table 2.3.

Table 2.3.: Summary of Lynch Hill Gravel Permeability from Rising and Falling Head Tests

Borehole	Depth (mbgl)	Hydraulic Conductivity (m/d)
BH19*	2	0.04
	4	0.05
BH22*	2	0.03
	4	Test suspended. Limited water movement
BH23^	1.8 to 4.5	RHT 0.43
		FHT No data (test too quick)
BH24^	2.36 to 5.47	RHT 0.17
		FHT 0.69
BH25^	3.84 to 5.83	RHT 2.1
		FHT 1.0

* Falling head tests undertaken during borehole drilling

^ Tests undertaken in completed boreholes

RHT – Rising head test FHT – Falling head test

Since the completion of the basement excavation and onsite dewatering in April 2014, thirteen rounds of groundwater monitoring have been undertaken. The observations are provided in Table 2.4 for these monitoring rounds and plotted out in Graph 2.1. Contour plots of the groundwater level data are shown in Figures 2a to 2c as follows:

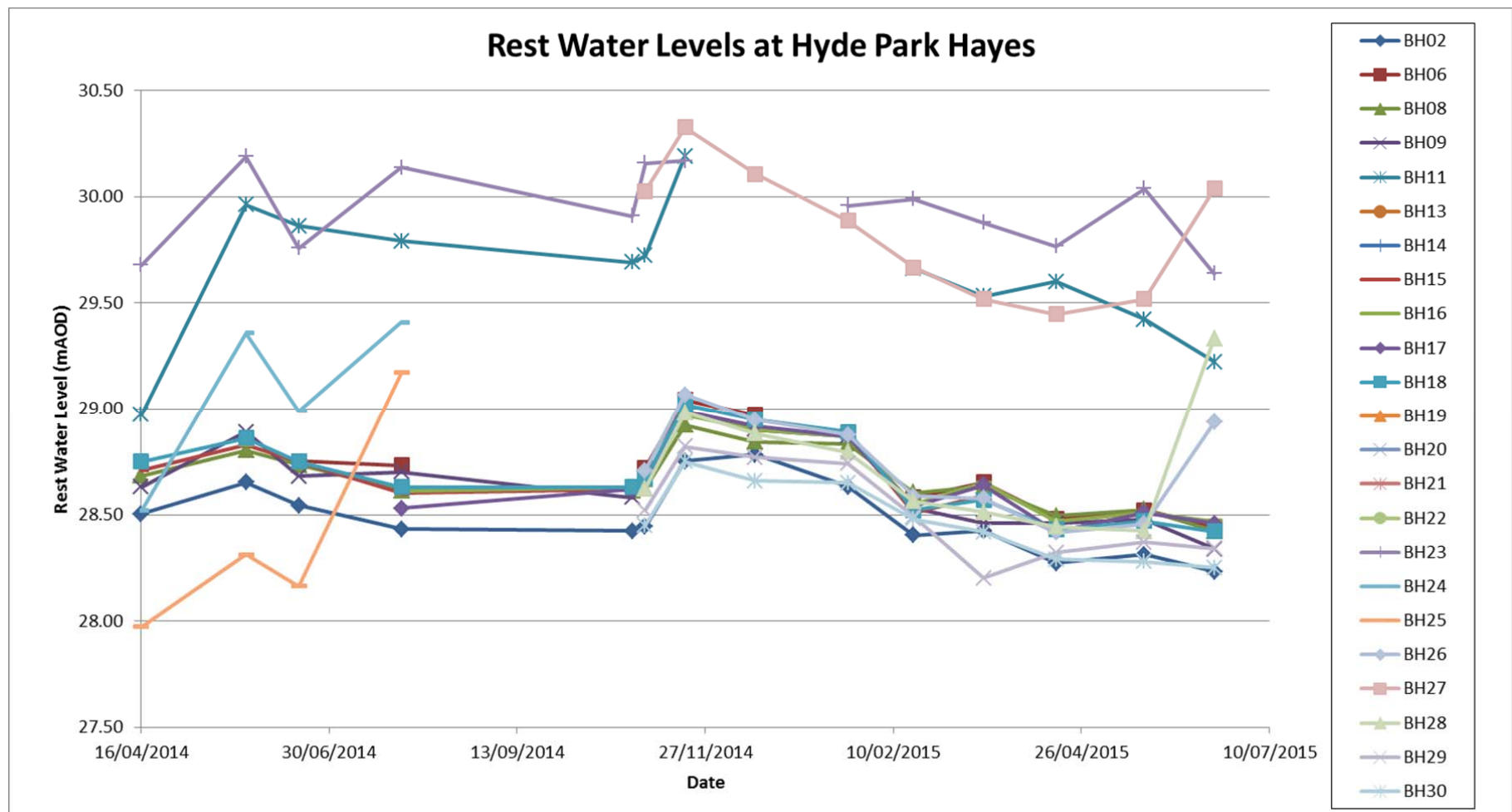
- Figure 2a - Data from 11th November 2014 following the installation of the new boreholes BH26 to BH30;
- Figure 2b - Data from 23rd January 2015; and
- Figure 2c - Data from 16th April 2015.

Table 2.4: Groundwater Monitoring Data following completion of dewatering (all levels mAOD)

Date	16/04/2014	28/05/2014	18/06/2014	29/07/2014	29/10/2014	3/11/2014	19/11/2014	17/12/2014	23/01/2015	18/02/2015	18/03/2015	16/04/2015	21/05/2015	18/06/2015
BH02	28.50	28.65	28.54	28.43	28.42	28.44	28.75	28.78	28.63	28.40	28.42	28.27	28.31	28.23
BH06			28.75	28.73		28.72	29.04	28.97		28.58	28.65	28.48	28.52	28.44
BH08	28.68	28.80	28.73	28.61	28.61	28.62	28.92	28.84	28.83	28.60	28.63	28.49	28.52	28.42
BH09	28.63	28.89	28.68	28.70	28.58	28.67	28.98	28.90	28.87	28.53	28.46	28.46	28.48	28.34
BH11	28.97	29.96	29.86	29.79	29.69	29.72	30.19			29.66	29.53	29.60	29.42	29.22
BH15	28.71	28.83	28.75	28.60	28.62	28.64	28.99	28.90	28.88	28.51	28.59			
BH16		28.83		28.61	28.63	28.64	28.97	28.90	28.87	28.55	28.65	28.47	28.51	28.47
BH17				28.53	28.62	28.65	28.99	28.92	28.87	28.54	28.64	28.42	28.51	28.46
BH18	28.75	28.86	28.75	28.63	28.63	28.67	29.02	28.95	28.89	28.52	28.57	28.43	28.47	28.42
BH23	29.68	30.19	29.76	30.14	29.91	30.16	30.17		29.96	29.99	29.88	29.77	30.04	29.64
BH24	28.52	29.36	28.99	29.41										
BH25	27.97	28.31	28.16	29.17										
BH26						28.71	29.07	28.95	28.88	28.59	28.58	28.42	28.46	28.94
BH27						30.03	30.33	30.11	29.89	29.67	29.52	29.45	29.52	30.04
BH28						28.62	28.98	28.88	28.79	28.56	28.51	28.44	28.42	29.33
BH29						28.52	28.82	28.77	28.74	28.49	28.20	28.32	28.37	28.34
BH30						28.45	28.75	28.66	28.65	28.48	28.42	28.29	28.28	28.25

30.09	Minimum water level in each borehole (mAOD)
30.81	Maximum water level in each borehole (mAOD)

Graph 2.1 – Rest Water Levels following completion of dewatering (April 2014 to June 2015)



Over the monitoring period the fluctuation in groundwater levels within the boreholes ranged from 0.48m in BH15 to 1.22m in BH11 with an average range of 0.52m. Minimum groundwater levels were generally recorded in each borehole during the spring and summer months of 2015 or during the April 2014 monitoring round. Maximum groundwater levels were generally recorded during the winter months (November and December 2014) although borehole BH28 reported its maximum level in June 2015.

This fluctuation will largely be related to rainfall (and subsequent groundwater recharge) with lower groundwater recharge occurring during the summer months and higher during the winter. However, superimposed on this is likely to be the effects of the dewatering of the basement for HPH5 in the spring of 2014 which accounts for the lower levels in BH11, BH24 and BH25 in April 2014 with a subsequent rise once the pumping ceased. The reason for the rise in water levels in BH26, BH27 and BH28 in June 2015 is uncertain as it would be anticipated levels would fall at this time of the year.

Groundwater level data and contours are shown in Figures 2a to 2c which all show similar groundwater flow patterns with groundwater flow now shown to be in a northerly, easterly and north westerly direction from the HPH5 area.

2.3 Groundwater sampling and results

Groundwater samples have been collected from boreholes as shown in Table 2.1 using HydraSleeves (no-purge) sampling devices. Prior to sampling, the depth of groundwater in each borehole was measured as was the presence or absence of non-aqueous phase liquids (NAPLs). No NAPLs were detected in any borehole.

Water samples were placed in clean sample containers provided by the laboratory, appropriate to the analysis suite. Samples were then dispatched to i2 Laboratories by courier. To help with the groundwater risk assessment, on two occasions (July 2013 and June 2014) dissolved oxygen (DO) and redox potential measurements were made on site. For these measurements, water was pumped from the boreholes using a peristaltic pump to sample the water. Results of the wellhead measurements are shown in Table 2.5.

Table 2.5: Wellhead Measurement Results

Date	Borehole	DO (%sat)	Electrical Conductivity (µS/cm)	Redox (mV)	Temperature (°C)	pH
12/07/13	BH13	3.2	639	54.4	12.3	6.8
	BH14	11.5	697	-54.4	13.3	7.1
	BH19	2.5	1096	-30	13.5	6.9
	BH20	3.2	751	-37.9	12.7	6.8
	BH21	0.9	782	59.2	12.8	6.5
	BH22	7.4	912	38.9	13.2	6.4
17/06/14	BH02	24.4	983	220	13.6	6.9
	BH08	43.8	557	200	14.3	6.7
	BH09	0.0	773	-70	13.2	6.7
	BH15	59.7	544	180	13.5	6.9
	BH23	1.5	396	270	14.9	7.4
	BH24	0.5	505	200	14.4	7.0
	BH25	2.1	686	240	14.4	6.6

Groundwater monitoring in 2014 and 2015 has identified trichloroethene (TCE) and other contaminants in groundwater, including TCE's breakdown products. With the exception of toluene, which has been detected in three boreholes (BH26, BH28 and BH29), the VOCs are chlorinated compounds. With respect to toluene, the maximum concentration detected was 4 µg/l in BH26 in the first sample collected from this hole in November 2014. It was only on this sampling occasion that toluene was detected in this and the other two boreholes. As the most recent monitoring has not detected any toluene this compound is not considered further in this report.

Maximum concentrations for the VOCs which have been detected are shown in Table 2.6 and a summary of the analytical results for each borehole is shown in Appendix 3 for the period April 2014 to June 2015 following site dewatering.

Table 2.6: Groundwater Monitoring Results; Maximum Concentrations for VOCs (April 2014 to June 2015)

Contaminant	BH2	BH6	BH8	BH9	BH11	BH15	BH18	BH23	BH24	BH25	BH26	BH27	BH28	BH29	BH30
Vinyl chloride (VC)				317											
1,1-dichloroethene (1,1-DCE)			1.5	4.5						137	95.4		5.2	5.5	
cis-1,2-dichloroethene (c-1,2-DCE)		27.9		166				22.8	50.4	22.1	1.6				
1,1-dichloroethane (1,1-DCA)			1.4	3.5			6.5			61.9	27			3.1	
Trichloromethane (TCM)			2.1			4.7		5							
1,1,1-Trichloroethane			6.6					3.5	1.4	689	1790		19.1	15.5	
1,2-dichloroethane										51.8	7.9				
trans-1,2-dichloroethene (t-1,2-DCE)				2.5						138					
Trichloroethene (TCE)		6.3	3.9	9.6				36.6	164	742	163		5.6	9.1	
Toluene											4		1.3	2.5	
1,3-Dichloropropane				1											
Tetrachloroethene										3.5					

All concentrations µg/l

All other VOC results were below the level of detection

As TCE has been identified in the historical sampling to be of greatest concern and historically was the major chlorinated solvent that was used in engineering, plots showing the change in concentrations of TCE and its degradation compounds (c-1,2-DCE and VC) over time within each of the boreholes are presented within Appendix 4 (April 2014 – June 2015). Figures 3a to 3c show the spatial distribution of these contaminants. Concentrations of 1,1,1-trichloroethane which significantly exceed the relevant standards have been measured within a number of boreholes in the most recent sampling and plots of this contaminant are therefore also presented and discussed further below.

2.3.1 Trichloroethene (TCE)

Boreholes that were sampled in April and May 2014 following the completion of the dewatering all showed a decrease in TCE concentrations during these visits. This included boreholes BH24 and BH25 which have historically reported the highest TCE concentrations. Between April and July 2014, TCE concentrations within BH25 fell from 742µg/l to 384µg/l. Following the July 2014 monitoring this borehole was destroyed during the site development so no further data could be obtained. Whilst it is uncertain why this decrease in concentration has occurred it may be due to the dewatering of the excavation for the HPH5 basement which has removed some of the contaminant load. However, it could also be due to other effects such as seasonal variation. Over the monitoring period of April 2014 to June 2015, TCE concentrations were shown to fluctuate throughout although no obvious patterns have been identified from the data and seasonal variation doesn't appear to have a significant effect on the concentrations.

Distribution plots for TCE (Figures 3a to 3b) produced for the April 2014 monitoring visit showed the highest TCE concentrations to be located in the centre of HPH5 within boreholes BH24 and BH25. Concentrations are shown to decrease away from the source (see section 3.2.2 for discussion on source area). However, concentrations above the laboratory detection were recorded within BH8 to the north of the probable source area and within BH9 to the south east of the probable source area. By November 2014 boreholes BH24 and BH25 had been lost due to the construction works and the monitoring reported the highest concentrations to be present within BH29 located at the far north of the development. Concentrations above laboratory detection limits were also reported within BH23 to the north east of HPH2 and BH9 to the south east of HPH5 however on this occasion all TCE results were below 10 µg/l. The May 2015 monitoring visit reported the highest concentration within borehole BH26 located to the north of HPH5 and relatively close to the BH25 where highest concentrations had historically been measured. Concentrations of TCE decreased with distance from this borehole although boreholes to the north and south east reported concentrations above the laboratory detection limit albeit below 10 µg/l.

In summary, the sampling following the excavation of the basement and associated dewatering, has shown that the TCE concentrations have reduced such that the maximum concentration now recorded June 2015 is in the order of 100 µg/l within BH26. At the HPH northern site boundary, all TCE concentrations have been recorded below 10 µg/l since the dewatering took place.

2.3.2 Cis-1,2-dichloroethene (DCE)

The four boreholes (BH9, BH23, BH24 and BH25) which reported concentrations of c-1,2-DCE above the laboratory detection limit all showed an increase in concentrations during the three monitoring visits undertaken immediately following completion of the dewatering in April 2014. For all four boreholes a decrease in the DCE concentration was then reported during the July 2014 monitoring. Following this monitoring round, boreholes BH24 and BH25 were destroyed during the site development so no further data could be obtained. Since completion of the dewatering concentrations of c-1,2-DCE above the drinking water standards have only been measured within BH9. Concentrations within this borehole have shown to fluctuate within this borehole throughout the monitoring period of April 2014 to June 2015. Although no obvious patterns have been identified from the data and seasonal variation doesn't appear to have a significant effect on the concentrations, the concentration has remained above 50 µg/l in BH9 since January 2015.

Distribution plots for c-1,2-DCE (Figures 3a to 3c) produced for the April 2014 monitoring visit showed the highest concentration to be present within borehole BH25 located on the northern boundary of HPH5. All other boreholes reported concentrations below the laboratory detection limit. By November 2014, BH25 had been destroyed by the construction works and during this monitoring visit only BH9 reported concentrations of c-1,2-DCE above the laboratory detection limit. The May 2015 monitoring also reported the highest concentration to be within BH9. This monitoring visit also reported detectable concentrations within BH6 and BH26, located to the north of BH9. However, the data indicated the concentrations to be reducing with distance from the source and c-1,2-DCE is not detected on the HPH site's northern boundary.

2.3.3 Vinyl Chloride (VC)

With the exception of borehole BH9 all monitoring locations have reported VC at concentrations below the laboratory detection limits during the monitoring period of April 2014 to June 2015. Concentrations within borehole BH9 have shown to fluctuate over this monitoring period with an increase in VC concentration at the beginning of 2015 when a maximum concentration of 317µg/l was measured during the April 2015 monitoring. The May and June 2015 monitoring visits both reported a decrease in these concentrations to around 80 µg/l in June 2015. The reason for the increase and subsequent decrease in concentration is unclear, no obvious patterns have been identified from the data and seasonal variation doesn't appear to have a significant effect on the concentrations.

Distribution plots for VC (Figures 3a to 3c) produced for the April 2014 monitoring visit reported the highest concentration to be present within BH9. All other monitoring locations reported concentrations to be below the laboratory detection limit. The monitoring visits for November 2014 and May 2015 also reported the same distribution which indicates no migration of VC from the source within BH9.

2.3.4 1,1,1-Trichloroethane (1,1,1-TCA)

With the exception of boreholes BH25 and BH26 all monitoring locations have reported concentrations of 1,1,1-TCA to be below 20µg/l which is significantly below the guidance value of 200µg/l. Concentrations of 1,1,1-TCA have shown to fluctuate over this time and no obvious patterns have been identified within the data. Boreholes BH25 and BH26 have both reported concentrations of 1,1,1-TCA which exceed the EQS value. Borehole BH25 consistently reported elevated concentrations although this borehole was destroyed by the construction works following the July 2014 monitoring so no further data has been obtained. BH26 which was installed in October 2015 not far from BH25 originally reported concentrations below the laboratory detection limit. However, 1,1,1-TCA concentrations started to increase within this borehole in January 2015 and peaked during the May 2015 monitoring round at 1790µg/l. The reason for this rise in concentrations at this time is unclear (see plots in Appendix 4) and lower concentrations were recorded in June 2015.

Distribution plots for 1,1,1-TCA (Figures 3a to 3c) produced for the April 2014 monitoring visit report the highest concentration (514µg/l) to be present within BH25 located within HPH5. All other boreholes report concentrations below laboratory detection limits with the exception of BH8 located directly north of BH25 on the far north of the investigated area which reported a concentration of 5.5µg/l. By November 2014 BH25 had been destroyed by the construction works. The highest concentration during this round was reported within BH29 located at the far north of the investigated area by High Hyde Road although concentrations were significantly lower than measured within BH25. During this monitoring round concentrations above the laboratory detection limit were also reported within boreholes BH8 and BH28 located to the west and south west of boreholes BH29. The May 2015 monitoring round reported a maximum 1,1,1-TCA concentrations of 1790µg/l within BH26 located immediately to the north of HPH5. Concentrations above the laboratory detection limit were also reported within BH28 located directly to the north of BH29 although the measured concentrations within this borehole were significantly lower. All of the boreholes located on the northern boundary of the investigated area reported concentrations below the laboratory detection limit during the May 2015 monitoring round.

2.4 Basement excavation and dewatering

The basement was excavated to a level of 27.35 mAOD with the lift pits taken down to 25.85 mAOD. Sheet piles were installed around the basement and remain in place. The sheet piles varied between 9m and 11m in length below a top level of 31.10 mAOD, therefore going down to a level between 22.10 and 20.10 mAOD. The sheet piles therefore penetrate several meters into the London Clay which varies in elevation between around 25.0 and 27.0 mAOD. The sheet piling was sealed by non-structural sealing welds applied to the exposed face of the interlocking clutches.

Dewatering associated with the construction of the HPH5 basement commenced on 7th February 2014 and was completed on 4th April 2014 and a total of 2140 m³ of water was pumped out of the excavation. It is understood that following the initial dewatering to remove the groundwater from within the sheet-piled wall, little groundwater was observed entering the excavation with most water pumped during this latter time being surface water inputs (principally rainfall).

Rainfall data obtained from the Met Office website¹ for their monitoring station at Heathrow shows rainfall during the period of dewatering to be 89.8 mm in February 2014 and 27.8 mm in March 2014. The excavated basement covers an area of approximately 4100 m² (58 x 71m) so during this period the amount of rainfall pumped out of the excavation would be in the order of 480 m³ (assuming no other losses such as evaporation). The remainder of the water pumped out will have been groundwater with most of the water likely to come from the initial dewatering of the gravels. If it is assumed that the volume of saturated gravels removed was 9430 m³ (see footnote²) and the gravels have an effective porosity of 0.3, this equates to a water volume of 2830 m³ which together with the rainfall input equates to 3310 m³. Whilst this is higher than the reported volume of water removed from the excavation, it is the right order of magnitude.

The groundwater pumped from the excavation was sampled on three occasions for VOCs (Table 2.7). The data show a similar range of determinands as the groundwater results shown in Table 2.6. TCE has the highest concentrations with the TCE concentrations being highest during the initial period of dewatering when the water being abstracted would principally have been groundwater (rather than rainfall input). The samples taken on the 4th March 2014 shows lower concentrations of TCE as this is likely to have had a high component of surface water causing dilution of any groundwater contaminants. Of note in the samples from March 2014 is that carbon tetrachloride was detected in the water samples which hasn't been detected to date in any of the groundwater samples from anywhere on the HPH site.

¹ <http://www.metoffice.gov.uk/pub/data/weather/uk/climate/stationdata/heathrowdata.txt>

² Assumes an area excavated of 4100 m² and a saturated thickness of gravels of 2.3 m

Table 2.7: VOC Monitoring Results from Groundwater Pumped from the Basement Excavation

Date	07/02/14	07/02/14	19/02/14	19/02/14	04/03/14	04/03/14
Sample No.	SA6414	SA6415	SA6678	SA6679	SA6979	SA6980
Determinand*						
Vinyl Chloride	<5	15	<5	<5	<5	<5
1,1-dichloroethene	<5	<5	<5	<5	14	12
Cis-1,2-dichloroethene	187	333	114	116	20	17
1,1-dichloroethane	<5	<5	<5	<5	8	6
Trichloromethane	<5	<5	<5	<5	<5	<5
1,1,1-Trichloroethane	9	28	32	33	249	232
1,2-dichloroethane	<5	<5	<5	<5	<5	<5
Trans-1,2-dichloroethene	<5	<5	<5	<5	<5	<5
Trichloroethene	587	646	616	541	198	95
Toluene	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	<5	<5	<5	<5	<5	<5
1,3-Dichloropropane	<5	<5	<5	<5	<5	<5
Tetrachloroethene	<5	<5	<5	<5	<5	<5
Carbontetrachloride	<5	<5	<5	<5	34	30

* Determinands listed are those found in the groundwater monitoring boreholes except for carbontetrachloride which was not detected in the monitoring boreholes

All samples taken from after the settlement tank except for SA6414 which was taken before

All results µg/l

Analysis undertaken by Test Consult Limited

An estimate of the mass of TCE removed can be made based on the recorded concentrations and the estimate of the volume of groundwater removed. If it is assumed that at the start of pumping the concentrations are representative of groundwater only then:

The mass of TCE removed = volume of groundwater pumped (litres) x concentration of TCE (mg/l)

The mass of TCE removed = 2,830,000 x 0.6 mg

The mass of TCE removed = 1,698,000 mg = 1.7 kg.

Similar calculations for the other VOCs which were identified in the pumped groundwater at the start of pumping show that 0.03 kg of VC, 0.7 kg of c-1,2-DCE and 0.05 kg of 1,1,1-TCA. These calculations only allow for the chlorinated solvents removed in the groundwater pumped from the site and not that which may be bound to the soils excavated from the basement. Testing of the excavated soils for chlorinated solvents was not undertaken.

2.5 Assessment of groundwater redox conditions

Chlorinated solvents such as TCE principally degrade in anaerobic conditions with “anaerobic degradation” being defined as the transformation and/or elimination of an organic compound by micro-organisms in the absence of oxygen. For this degradation to occur, compounds other than oxygen act as electron acceptors for example, nitrate, manganese IV, iron III, sulphate and carbon dioxide.

As noted earlier in the report, for two rounds of groundwater sampling, well head measurements were made to identify if the groundwater conditions were conducive to the natural degradation of the identified chlorinated solvents (see Table 2.5).

The well head measurements show that the groundwater from the Lynch Hill Gravels is of neutral pH and the electrical conductivity and temperature are both within the anticipated range for shallow groundwaters in a setting similar to the HPH5 site. The DO values indicate that the groundwater in the vicinity of the HPH5 site is generally anaerobic with relatively low concentrations of DO (typically less than 5% saturation which equates to a concentration in the region of less than 0.6 mg/l).

With respect to DO, oxygen is the most favoured electron acceptor for microbes in the aerobic biodegradation of organics. However, aerobic degradation is unlikely to occur if dissolved oxygen concentrations of less than 1 mg/l are present. Similarly, anaerobic bacteria do not usually function if DO concentrations exceed around 0.5 mg/l and does not occur at concentrations greater than 1 mg/l (Reference 4). Degradation of TCE occurs principally under anaerobic conditions with the TCE breaking down to dichloroethene (principally cis-1,2-dichloroethene (c-1,2-DCE)) and then vinyl chloride (VC) and then to ethene. The presence of these compounds in groundwater are an indication that degradation of TCE is occurring.

The redox values are not so clearly interpreted with the values obtained in June 2014 being substantially higher than those recorded in July 2013. Aerobic biodegradation of organic contaminants generally occurs under a redox potential greater than +150mV (these conditions were observed in June 2014). Mildly reducing conditions are considered to be at values of +50mV to –150mV (these conditions were observed in July 2013) (Reference 4).

In order to further assess the reduction/oxidation conditions and whether the groundwater is showing anaerobic or aerobic conditions, selected groundwater samples collected in May and June 2015 were tested for determinands which can be used to indicate the groundwater conditions as follows:

- Dissolved oxygen,
- Nitrate;
- Sulphate/sulphide; and
- Redox conditions.

Redox was also measured but this parameter and the dissolved oxygen results should be treated with caution as in the time taken to transport the samples to the laboratory and time for testing, the conditions of the samples can change significantly (dissolved oxygen and redox are usually tested in the field for this reason although the sampling method employed in this case did not make it possible). Results of this testing are summarised in Table 2.9.

Table 2.8 Tests for natural attenuation indicators

Borehole		BH6		BH9		BH26	
Date Sampled		21/05/15	18/06/15	21/05/15	18/06/15	21/05/15	18/06/15
Sulphate as SO ₄	mg/l	64.2	63.2	190	184	160	164
Sulphide	µg/l	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Nitrate as N	mg/l	2.6	2.45	0.4	0.3	3.9	3.44
Redox Potential*	mV	134	200	158	209	143	184
Dissolved Oxygen*	mg/l	4.1	2.6	2	1.1	5.6	6.9

Borehole		BH28		BH29	
Date Sampled		21/05/15	18/06/15	21/05/15	18/06/15
Sulphate as SO ₄	mg/l	124	130	84.3	98.6
Sulphide	µg/l	< 5.0	< 5.0	< 5.0	< 5.0
Nitrate as N	mg/l	4.5	2.6	2	1.37
Redox Potential*	mV	146	0	149	178
Dissolved Oxygen*	mg/l	4.9	7.2	3.6	2.7

* Laboratory measurement

Under reducing conditions, sulphate and nitrate concentrations would be absent (or reduced compared to background) as these compounds are used for the anaerobic degradation of certain organic compounds once dissolved oxygen is largely absent from the groundwater. This may result in an increase in sulphide concentrations and dissolved nitrogen and as such elevated sulphide concentrations can indicate anaerobic groundwater.

The testing shown in Table 2.9 does not show that the groundwater is anaerobic as nitrate and sulphate are present and sulphide is absent. However, the lowest nitrate concentrations are recorded in BH9 (where the highest VC concentrations are also recorded) which could be indicative of reducing groundwater conditions. The laboratory testing shows DO concentrations at all locations to be above 1 mg/l, a concentration at which anaerobic bacteria would usually not function. This is different to the field measurements for DO and it should be noted that DO laboratory measurements are not usually as accurate as field measurements due to changes in the sample between collection and analysis. The presence of c-1,2-DCE and VC in the groundwater would also indicate that degradation is occurring to some extent.

Further consideration of the degradation of TCE at the HPH5 site is provided in Section 3.2.10 of this report, but in summary the groundwater conditions would appear to be conducive to the degradation of TCE and TCE's degradation products are observed in the groundwater at the HPH5 site.

2.6 Groundwater Conceptual Site Model

As stated in Reference 5, in order for land contamination to be realised, a pollutant linkage must exist. A pollutant linkage requires the presence of:

- A source of contamination,
- A receptor capable of being harmed; and
- A pathway capable of exposing the receptor to a contaminant.

With respect to the assessment presented in this report, groundwater monitoring determines the contaminant source to be chlorinated solvents (principally TCE) and other volatile organic compounds within groundwater (no soil contamination has been identified). The receptor has been identified as groundwater itself away from the source area as the Lynch Hill Gravels form a Principal Aquifer. Due to the London Clay's low permeability, the clay horizon is not considered to be a receptor for groundwater. No specific groundwater receptors themselves such as abstraction boreholes or surface water features have been identified in the immediate vicinity of the site and the site does not lie within a groundwater source protection zone.

3. Groundwater Quantitative Risk Assessment

3.1 Background

Reference 1 identified that the risk of migration of TCE and other chlorinated solvents in the Lynch Hill Gravels was Moderate. In order to put this risk into context and to consider the risks to the identified groundwater receptor, a quantitative risk assessment has been carried out.

As an initial assessment of groundwater quality, groundwater concentrations have been compared to annual average Environmental Quality Standards (EQS) and maximum allowable concentrations (MAC, where available), as detailed within the Water Framework Directive (Reference 6 and shown in Table 3.1) and drinking water standards based on UK or World Health Organisation (WHO) standards (also shown in Table 3.1). It can be seen that concentrations of TCE and its breakdown products do exceed the water quality standards (WQSS) where these have been established.

Table 3.1 Summary of WQS Exceedances for samples collected following excavation and dewatering of HPH5 basement (April 2014-June 2015)

Contaminant	Solubility	DWS	EQS	Maximum	Location of maximum
Vinyl chloride (VC)	2.5x10 ⁶	0.5	-	317	BH9
1,1-dichloroethene (1,1-DCE)	2.5x10 ⁶	3	10	137	BH25
cis-1,2-dichloroethene (c-1,2-DCE)	8.0x10 ⁵	50*	-	166	BH9
1,1-dichloroethane (1,1-DCA)	5.5x10 ⁶	-	-	11.8	BH26
Trichloromethane (TCM)	9.6x10 ⁶	100	12	6.5	BH18
1,1,1-Trichloroethane	1.3x10 ⁶	200#	100	1790	BH26
1,2-dichloroethane	8.7x10 ⁶	3	10	51.8	BH25
trans-1,2-dichloroethene (t-1,2-DCE)	6.0x10 ⁵	50*	-	138	BH25
Trichloroethene (TCE)	1.0x10 ⁶	10	10	742	BH25
Toluene	5.1x10 ⁵	700	50	4	BH26
1,3-Dichloropropane	8.0x10 ⁵	-	-	1	BH9
Tetrachloroethene	2.0x10 ⁵	10	10	3.5	BH25

All solubility values, results and standards in µg/l

DWS – Drinking water standard (Reference 7)

EQS - Environmental Quality Standard (Reference 6)

*Value from World Health Organisation Guidelines for Drinking Water Quality (Reference 8)

No value set in UK or WHO standards although USEPA has set a maximum concentration limit of 200 µg/l

Bold shows exceedance of one or both standards for which further assessment is undertaken

For the assessment, a detailed quantitative risk assessment (DQRA) has been undertaken using the Environment Agency's Remedial Targets Methodology and associated spreadsheets (Reference 9) for those contaminants where the maximum concentration exceeds the DWS.

3.2 Model Input Parameters

The assessment spreadsheets are presented in Appendix 5. For the assessment, data and assumptions have been made as outlined below.

3.2.1 Compliance Point

A compliance point is the point along the contaminant pathway where the target concentration should not be exceeded, as this would represent an unacceptable risk of harm to the receptor.

TCE is classified in relation to the Water Framework Directive as a “hazardous substance” (Reference 10). Guidance issued by the Environment Agency (Reference 11) states that where a contaminant has already entered groundwater as is the case at HPH5 the aim of groundwater protection is to avoid contamination plumes extending significantly further into the aquifer. For hazardous substances where there are no specific receptors located closer to the source the default compliance point should be set at 50 m from the source. A distance of **50 m** has therefore been set as the compliance point distance in this assessment.

3.2.2 Sources

The quantitative risk assessment has focussed on parameters which have been determined in Reference 1 to be greater than a low risk and detected on site at concentrations exceeding one or both target standards (EQS or DWS). The original source of the contamination has not been identified although since the basement removal the groundwater sampling has detected the highest concentrations in BH25 located on the northern boundary of HPH5 (now lost due to site development), BH26 which is situated just to the north of the northern boundary of the HPH5 site and BH9 located in the far south eastern corner of the HPH site. Therefore, for this assessment this area is considered to be the contamination source area. However, due to the limited number of boreholes in this area and uncertainty over the original source, the exact shape and dimensions of the source cannot be determined.

It should be noted that in the case of BH9, the contaminants identified in this area at elevated concentrations appear to relate to the degradation products of the TCE source compound, rather than being a source in its own right. However, for the purposes of the risk assessment and allowing a degree of conservatism in the assessment, the concentrations from this location are used as the source concentration in the DQRA.

As the contamination has been identified in the groundwater itself, the groundwater is considered to be the source of the contamination (rather than any unidentified contamination which may be in the overlying soil zone). The concentrations that have been detected are less than 1% of the level of solubility (solubility values are shown in Table 3.1) which would suggest that free phase dense non-aqueous phase liquids (DNAPLs) are not present (Reference 12). Therefore, there is no on-going identified source of contamination into the groundwater.

For the assessment, the maximum groundwater concentration over all monitoring rounds has been used for the source concentration and the assessment also assumes that there is a non-declining source term. Both of these are conservative assumptions and are discussed further following the risk assessment.

3.2.3 Hydraulic Conductivity

As reported in Chapter 2, the natural geology comprises a gravel deposit called the Lynch Hill Gravel. Measurements of the hydraulic conductivity for this deposit reported in Reference 1 were low for a gravel deposit with values of around 0.04 m/day calculated from tests undertaken in boreholes during drilling. Further falling head permeability testing was undertaken at BH19 (2mbgl and 4mbgl) and BH22 (2mbgl and 4mbgl) in the Lynch Hill Gravels during the January 2013 SKM Enviro site investigation. The results indicate hydraulic conductivities of between 0.03 and 0.05 m/day. In our experience hydraulic conductivity within this range are low for a formation described as a gravel and would be more typical of very fine sands, or sandy silts.

Additional testing was undertaken in the completed boreholes installed in 2014. Slightly higher values were recorded at 0.17 to 2.1 m/day (see Table 2.4). These results compare to literature values published by the EA which indicate hydraulic conductivity values for gravels closer to 1 to 10 m/day (Reference 13). The results from the tests in 2014 have therefore been used for this assessment using the average value of **0.9 m/day**, although a sensitivity analysis has been undertaken which includes varying the hydraulic conductivity values.

In order to maintain a conservative approach to the assessment, it has been assumed that there is a homogenous and continuous gravel between the HPH5 site and the compliance point which has a uniform hydraulic conductivity.

3.2.4 Hydraulic Gradient

Figures 2a to 2c shows groundwater flow direction to be to the north, east and north west from the centre of the site. To some extent, as the compliance point is being set at 50m from the source to assess compliance with the GWDD requirements, the direction of groundwater flow is immaterial. What is of greater importance is the hydraulic gradient as this (along with the hydraulic conductivity) will influence the rate at which groundwater (and the associated dissolved contamination) will flow.

The groundwaters contour plots (Figures 2a to 2c) show that to the north and east of HPH5 the water table is very flat with a low hydraulic gradient. For the risk assessment, as a conservative approach, the hydraulic gradient has been taken as **0.004** which is calculated from the groundwater contour plot of 3rd November 2014 as measured from the estimated 30 m AOD contour line to the west of BH26 to borehole BH17 (a distance of approximately 325m with a change in water level of 1.35m). A low hydraulic gradient often results when there is a high hydraulic conductivity, which isn't apparent in the testing undertaken. In the risk assessment sensitivity assessment the hydraulic gradient has not been changed as this has the same effect as changing the hydraulic conductivity, which has been considered.

3.2.5 Plume width

Groundwater monitoring prior to the excavation of the HPH5 basement identified a source area to be in the vicinity of borehole BH22 and BH25. Monitoring since April 2014 has not identified such a clearly defined source area with boreholes BH25, BH26 and BH9 typically recording the highest chlorinated solvent concentrations. Therefore, for the purposes of the DQRA a source area perpendicular to groundwater flow of **50m** has been used to represent a relatively localised source at these locations.

3.2.6 Aquifer and Plume Thickness

As discussed in Section 2.2, the thickness of gravels recorded at the wider HPH site has been recorded at between 1.8 and 5.7m. In BH25 and BH26 where the highest groundwater contaminant concentrations are recorded the saturated gravels thickness is 2.34m and 1.04m respectively (based on the most recent monitoring data for these boreholes). For the purposes of the DQRA it is assumed that the gravel aquifer is **2.3m** thick and the source of contamination within the aquifer is **2m** thick. This has been used to allow for some vertical dispersion of the plume within the aquifer (this feature is required in order for the model to run). The vertical dispersivity factor has used the default value in the RTM spreadsheet of 0.1% for vertical dispersivity.

3.2.7 Bulk Density

A bulk density of **1.8 g/cm³** has been used based on an average from literature values (Reference 13) for a gravel formation.

3.2.8 Effective Porosity

Effective porosity has been set to **0.3** based on an average for gravel from literature values (Reference 13) for this type of formation and indicates flow is predominantly intergranular.

3.2.9 Fraction of Organic Carbon (FoC) and Organic Carbon Partition Coefficient (Koc)

The partition co-efficient (Kd) is calculated using values of the fraction of organic carbon (foc) and organic carbon partition co-efficient (Koc). Fraction of organic carbon was measured in the made ground and gravel deposits in the HPH5 area in samples collected in the March 2014 investigation. The results (Table 3.2) show an average foc value for the gravels of **0.00065** which agrees well with published values for a glacio-fluvial sandy gravel of 0.0007 (Reference 13).

Table 3.2 foc Results

Borehole	Sample depth (mbgl)	Strata	foc
BH23	1	Made Ground	0.0007
BH23	2	Lynch Hill Gravel	0.0007
BH23	2.1	Lynch Hill Gravel	0.0008
BH24	0.5	Made Ground	0.0007
BH24	1.2	Lynch Hill Gravel	0.0006
BH24	2	Lynch Hill Gravel	0.0008
BH25	0.6	Made Ground	0.0006
BH25	1.7	Lynch Hill Gravel	0.0006
BH25	2.3	Lynch Hill Gravel	0.0004

The Koc values have been taken from literature values as shown in Table 3.3.

Table 3.3 Koc Values for the Contaminants of Concern

Contaminant	log Koc (l/Kg)	Koc (l/Kg)	Reference
Vinyl chloride (VC)	1.22	17	SR7
1,1-dichloroethene (1,1-DCE)	1.46	28.8	*
cis-1,2-dichloroethene (c-1,2-DCE)	2.1	126	EPA
1,1,1-Trichloroethane (1,1,1-TCA)	2.12	132	SR7
1,2-dichloroethane ((1,2-DCA)	1.3	20	SR7
trans-1,2-dichloroethene (t-1,2-DCE)	1.46	28.8	EPA
Trichloroethene (TCE)	2.15	141	SR7

SR7: Reference 14

EPA: Reference 15

* No values given in the above two references. The value for t-1,2-DCE has been used for this assessment

3.2.10 Half-life and Degradation Rates

TCE degrades by reductive dechlorination (i.e. the loss of chloride ions to be replaced by hydrogen) most readily under anaerobic conditions with the TCE following the degradation path shown below (Reference 16):

TCE → c-1,2-DCE & t-1,2-DCE & 1,1-DCE → VC → ethene

Within this degradation chain, the cis-1,2 form of the DCE isomers predominates and this is seen at the HPH5 site where c-1,2-DCE concentrations are substantially higher than the t-1,2-DCE and 1,1-DCE concentrations. The presence of a significant proportion (>80%) of cis-1,2-DCE is therefore usually a strong indicator of reductive dechlorination (Reference 16) and the data for HPH5 do strongly suggest that anaerobic degradation of the TCE is occurring. This would agree with the groundwater DO conditions as measured in the field and discussed in Section 2.5.

Half-life data for the degradation of TCE and its compounds has been taken from EA compiled data (Reference 16) as shown in Table 3.4. As there are no site specific degradation rates (half-lives), the degradation rates have been applied to the dissolved phase only as a conservative approach to the assessment. By way of sensitivity analysis, the degradation rates have then been applied to all phases (i.e. dissolved and sorbed form) and by considering the range of recorded half-life values (it should be noted that a shorter half-life means faster degradation).

Table 3.4 Degradation half-lives for the contaminants of concern

Contaminant	Half-life (days)*		
	Average	Minimum	Maximum
Vinyl chloride (VC)*	792	10	1265
1,1-dichloroethene (1,1-DCE)* +	2843	12	16,863
cis-1,2-dichloroethene (c-1,2-DCE)* +	2843	12	16,863
1,1,1-Trichloroethane (1,1,1-TCA)	900	730	1060
1,2-dichloroethane (1,2-DCA)	360^	-	-
trans-1,2-dichloroethene (t-1,2-DCE)* +	2843	12	16,863
Trichloroethene (TCE)*	1463	3	6600

* average, minimum and maximum of field measurements provided in Reference 16

+ The data presented in Reference 16 do not distinguish between the different dichloroethene isomers

^ Data from USEPA (Reference 15)

3.3 Target Concentrations

The target concentration at the compliance point is set to the drinking water standard shown in Table 3.1.

3.4 Results

The spreadsheet model has been run for steady state conditions, assuming a constant input of contaminants (ie no declining source term). Based on input parameters shown above, estimates of the concentrations at the compliance point are reported in Table 3.5 with the spreadsheets shown in Appendix 5.

Table 3.5 - Results of Quantitative Risk Assessment for Organic Compounds

Contaminant	DWS (µg/l)	Concentration at Source (µg/l)	Concentration at Receptor (µg/l)
Vinyl chloride (VC)	0.5	317	12
1,1-dichloroethene (1,1-DCE)	3	137	34
cis-1,2-dichloroethene (c-1,2-DCE)	50	166	41
1,1,1-Trichloroethane (1,1,1-TCA)	200	1790	87
1,2-dichloroethane (1,2-DCA)	3	51.8	0.2
trans-1,2-dichloroethene (t-1,2-DCE)	50	138	34
Trichloroethene (TCE)	10	742	86

Results in **bold** show that the concentration is greater than the DWS at the 50m compliance point

The results indicate that concentrations of three VOCs are predicted to be above the target standard at 50 m from the source area.

3.5 Sensitivity Assessment

In order to assess the sensitivity of the modelling to key parameters the following model runs have been undertaken for each determinand being considered:

- Run S1: Allows for degradation of the contaminants in all phases (dissolved and sorbed phase). This is less conservative than the base model;
- Run S2: Sets the hydraulic conductivity at 0.04 m/day, the value measured in boreholes during drilling in 2013. This is less conservative than the base model;
- Run S3: Sets the hydraulic conductivity at 0.57 m/day, the average value measured in boreholes in the 2013 and 2014 investigations. This is less conservative than the base model;
- Run S4: Sets the degradation half-life to the minimum value shown in Table 3.4. This is less conservative than the base model;
- Run S5: Sets the degradation half-life to the maximum value shown in Table 3.4. This is more conservative than the base model;
- Run S6: To represent the final round of groundwater monitoring undertaken in June 2015 site following excavation. The source concentration has been set as the maximum groundwater concentration recorded in the HPH5 monitoring boreholes at this time.

The results of the sensitivity analysis are shown in Table 3.6 along with the results of the "base model".

Table 3.6- Results of Quantitative Risk Assessment Sensitivity Analysis Runs S1 to Run S5

Contaminant	DWS (µg/l)	Concentration at Receptor (µg/l)					
		Base model	Run S1	Run S2	Run S3	Run S4	Run S5
VC	0.5	12	10	<0.1	3.3	<0.1	29
1,1-DCE	3	34	31	<0.1	21	<0.1	73
c-1,2-DCE	50	41	27	<0.1	26	<0.1	88
1,1,1-TCA	200	87	31	<0.1	28	54	121
1,2-DCA	3	0.2	0.1	<0.1	<0.1	-	-
t-1,2-DCE	50	34	31	<0.1	21	<0.1	73
TCE	10	86	40	<0.1	38	<0.1	306

Results in **bold** show that the concentration is greater than the DWS at the 50m compliance point

With respect to the assessment considering whether degradation occurs in the dissolved phase only or in the dissolved and sorbed phases (Run S1), the model shows that the results are not particularly sensitive to this with only a relatively small reduction recorded. This occurs because the retardation coefficients (Koc values together with low f_{oc} in the soils) are relatively small. It can be seen that in Run S1 the determinands which exceeded the DWS in the base model are the ones that still exceed the DWS.

The results of the sensitivity assessment show that the model results are relatively sensitive to the hydraulic conductivity value. If the values recorded in the boreholes drilled in 2013 are used in the assessment (which is around a factor of 20 lower than used in the base model), then all concentrations at the compliance point are predicted to be below the drinking water standard (model Run S2). However, if the average value of all hydraulic conductivity values are used (Run S3 which is around 50% lower than used in the base model) the concentrations are predicted to remain above the standards for the same determinands as in the base model.

As noted earlier in this report, TCE is widely reported to degrade under anaerobic conditions. The data collected as part of this assessment does not clearly show that anaerobic groundwater conditions exist, although field measurements of DO and redox do suggest that anaerobic conditions may be present and the presence of cis-1,2-DCE and VC in the groundwater does show that degradation of TCE is occurring at the site. The sensitivity model runs using the different half-life values model the effects of degradation rates with a short half-life showing quick degradation and long half-life showing slow degradation.

With respect to the half-lives used, the model runs (Run S4 and Run S5) do show relatively high sensitivity to this parameter with values showing a wide range of impacts between the minimum and maximum half-life values. For the minimum half-life values (which simulate fast degradation) the model predicts that all concentrations would be below the DWSs and in most cases significantly below the level of detection that would be achievable in a commercial laboratory. For the maximum half-life value (Run S5 which simulates slow degradation) the results show that in addition to the three compounds that exceeded the DWS in the base model, the concentration of c-1,2-DCE also exceeded the DWS.

To further assess the effects of the half-life, the base model has been used to predict at what degradation rate (half-life) the model would need for the concentration at the 50m compliance point to equal the DWS. The results for those determinands in the base model which are predicted to exceed the DWS are shown in Table 3.7 and shows that the half-life required is around 20% to 40% of the average value that was used in the base model. The value required remains within the range of likely values reported in the references.

Table 3.7- Assessment of Contaminant Degradation (Half-life in Days)

Contaminant	Half life used in the base model	Half life needed to achieve the DWS at the compliance point	% of base model
VC	792	300	38%
1,1-DCE	2843	650	22%
TCE	1463	550	38%

For sensitivity Run S6 to assess the impact from the contaminant concentrations which were most recently recorded on site, the maximum concentration recorded in the HPH5 boreholes in June 2015 have been used as the source concentration. These concentrations are lower than the values used in the initial base line assessment and, as would be anticipated, have resulted in reduced impacts (Table 3.8) with only 1,1-DCE and TCE exceeding the water quality standard.

Table 3.8 - Results of Quantitative Risk Assessment for Maximum Concentration Recorded in June 2015

Contaminant	DWS (µg/l)	Concentration at Source (µg/l) and borehole where detected	Concentration at Receptor (µg/l)
Vinyl chloride (VC)	0.5	80.2 (BH9)	3.0
1,1-dichloroethene (1,1-DCE)	3	22.5 (BH26)	5.6
cis-1,2-dichloroethene (c-1,2-DCE)	50	142 (BH9)	35
1,1,1-Trichloroethane (1,1,1-TCA)	200	306 (BH26)	15
1,2-dichloroethane (1,2-DCA)	3	<1.0	<1.0
trans-1,2-dichloroethene (t-1,2-DCE)	50	<1.0	<1.0
Trichloroethene (TCE)*	10	48.8 (BH26)	5.7

Results in **bold** show that the concentration is greater than the DWS at the 50m compliance point

3.6 Summary of Risk Assessment

The risk assessment does show that the VOCs detected in groundwater at the HPH5 site do have the potential to impact adversely on groundwater at a compliance point 50m from the HPH5 site. The base model, using values that are more likely than not to be conservative of the hydrogeological setting at the site including the use of maximum groundwater concentrations recorded over the April 2014 to June 2015 monitoring period shows that there is potential exceedance of the drinking water standard for VC; TCE and 1,1-DCE.

A sensitivity analysis has been undertaken principally to consider the conservative nature of the assumptions in the base model. With less conservative assumptions such as faster degradation rates or lower hydraulic conductivity, the impact assessment shows no impact above the drinking water standard. The assessment does show that degradation rates at about 20% to 40% of the average values used would result in concentrations below the drinking water standard. Recent monitoring does show that there is currently no impact at the down gradient (northern) wider site boundary (boreholes BH8, BH29 and BH18) above the relevant water quality standards.

One of the greatest conservatism in the base model may relate to the source concentration now that excavation of the basement has removed a proportion of the source, including the area where highest concentrations have historically been recorded (BH22). A model was therefore established which considered as the source concentration the groundwater concentrations recorded in June 2015 approximately a year following excavation of the basement. The results from this model does predict that impacts will be reduced from the base model with only 1,1-DCE showing an exceedance of the drinking water standard at a 50m compliance point. It is considered that this last model run (Run S6) is most representative of the current groundwater conditions at the site

It should be noted that despite the theoretical calculations in the base model DQRA, the boreholes installed in October 2014 down hydraulic gradient from the historical source area do not show widespread contamination or greatly elevated concentrations. The most recent sampling of the new and existing boreholes installed on the HPH site's northern boundary do not show any chlorinated solvent concentrations above the DWSs or EQSs. As such, the solvents will not be impacting on any offsite receptors if these were present. It should be noted, however, that no specific receptors such as groundwater abstractions or nearby surface water features have been identified.

4. Conclusions and Recommendations

4.1 Conclusions

The objectives of this work have been to provide an assessment of whether TCE and other VOCs in groundwater are impacting significantly on groundwater receptors away from the HPH5 development. The work has involved the use of EA procedures to undertake a quantitative assessment of these impacts.

An interim assessment identified potential risks to groundwater in the gravel aquifer and it was recommended that a further five groundwater monitoring boreholes be installed at the site. These boreholes did not show significantly elevated chlorinated solvent concentrations away from the previously identified source area in the vicinity of HPH5. Monitoring over the last year has shown decreasing concentrations of chlorinated solvents with evidence, that chlorinated solvents are degrading and naturally reducing in concentration. There is no evidence that free phase (DNAPL) chlorinated solvents are present on site.

Groundwater level monitoring following the cessation of dewatering for the HPH5 basement construction has demonstrated a consistent flow pattern with groundwater levels indicating a northwesterly, northerly and easterly direction from the area of HPH5. To the north of HPH5 the water levels show a very shallow hydraulic gradient.

The initial groundwater modelling assessment using the Environment Agency procedures used generally conservative assumptions and indicated that there is the potential for groundwater concentrations at a point 50 m from the contaminant source area to be above the drinking water standard at this point for three determinands.

The quantitative assessment for the base model was undertaken using a number of conservative assumptions. These included using the maximum concentration of each compound as the source concentration even though these concentrations are not uniformly present both in time and space. The model also assumes that there is no declining source term for the contamination. Given that the historical primary source is no longer on site and the groundwater concentrations do not suggest free phase liquid (DNAPL) to be present, it is highly likely that the source term is declining. Furthermore, the presence of a significant proportion (>80%) of cis-1,2-DCE and VC observed within groundwater is an indicator that reductive dechlorination of TCE has been occurring.

The boreholes installed in October 2014 down hydraulic gradient from the historical source area do not show widespread contamination or greatly elevated concentrations. The most recent sampling of the new and existing boreholes installed on the HPH site's northern boundary do not show any chlorinated solvent concentrations above the DWSs or EQSs. As such, the solvents will not be impacting on any offsite receptors if these were present (although it should be noted that no specific receptors such as groundwater abstractions or nearby surface water features have been identified).

A proportion of the contaminant source will also have been removed as part of the basement excavation works and associated dewatering. The DQRA model using the June 2015 groundwater quality data as the source concentration does show lower impact than the base model and for this model only 1,1-DCE concentrations are predicted to exceed the DWS at the 50 m compliance point and with a greatly reduced magnitude of the exceedance. It should be noted that the long term monitoring has shown a reduction in the source concentrations and the model utilising source concentration data collected in June 2015 is therefore likely to best represent the current conditions on site. Given the commercial use of the site, it is considered very unlikely that groundwater within the HPH site boundary would be used for water supply, particularly as a potable source.

4.2 Recommendations

Based on the site works undertaken at the end of 2014, the subsequent groundwater monitoring and the conclusions of the DQRA that the remaining contamination does not present a significant risk to the aquifer, abstractions or surface waters it is recommended that no further monitoring or assessment of the chlorinated solvent contamination at the HPH site is undertaken. Remediation of the remaining contamination, from a groundwater impact point of view is not required.

5. References

- 1) SKM Enviros, 8 April 2013. Additional Phase 2 Site Investigation, Hyde Park, Hayes, HPH5. Final Version 2.
- 2) SKM Enviros, January 2014. Groundwater Detailed Quantitative Risk Assessment (DQRA), Hyde Park, Hayes, HPH5.
- 3) Jacobs, September 2014. Groundwater Detailed Quantitative Risk Assessment (DQRA), Hyde Park, Hayes, HPH5 (Interim Report)
- 4) Environment Agency, 2000. Guidance on the Assessment and Monitoring of Natural Attenuation of Contaminants in Groundwater.
- 5) UK Contaminated Land Report 11 Model Procedures for the Management of Land Contamination. Environment Agency/DEFRA, 2004.
- 6) The River Basin Districts Typology, Standards and Groundwater threshold values (Water Framework Directive) (England and Wales) Directions, 2009.
- 7) HMSO, 2000. Statutory Instrument 2000 No. 3184. The Water Supply (Water Quality) Regulations 2000.
- 8) World Health Organization, Guidelines for drinking-water quality, fourth edition, 2011.
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- 10) UKTAG. <http://www.wfduk.org/substance-classifications-and-public-consultation-results>
- 11) Environment Agency, 2013. Groundwater Protection: Principles and Practice (GP3) Version 1.
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- 13) Golders and Environment Agency, 2009. The help file for ConSim Version 2.5.
- 14) Environment Agency, 2008. Compilation of Data for Priority Organic Pollutants for Derivation of Soil Guideline Values. Science report SC050021/SR7.
- 15) USEPA. RBCA data set.
- 16) Environment Agency, 2002. The Effects of Contaminant Concentration on the Potential for Natural Attenuation. R&D Technical Report P2-228/TR.

Figures

Figure 1: Exploratory Hole Location Plan

Figure 2a: Groundwater Levels November 2014

Figure 2b: Groundwater Levels January 2015

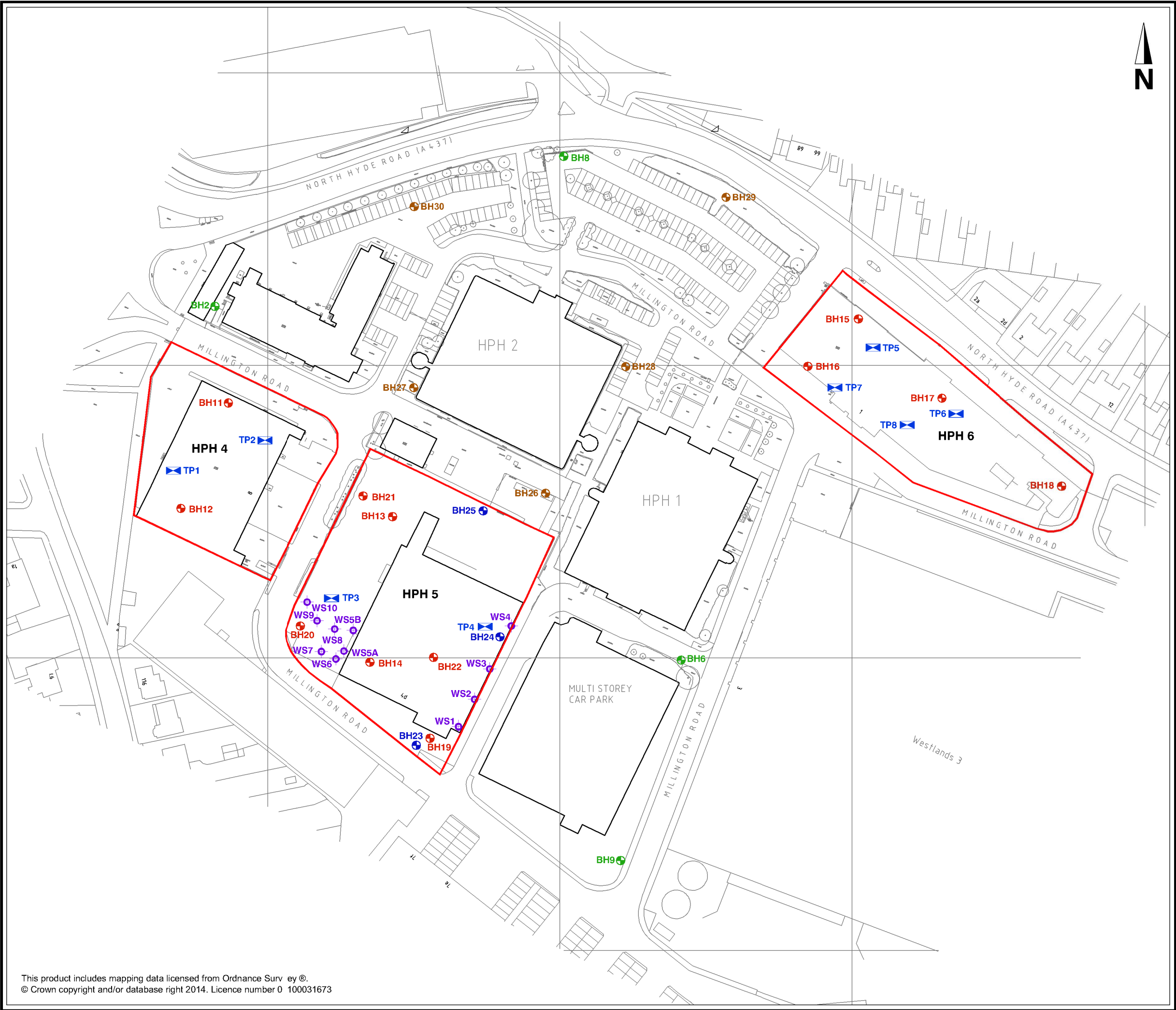
Figure 2c: Groundwater Levels April 2015

Figure 3a: Distribution of Selected Chlorinated Solvents April 2014

Figure 3b: Distribution of Selected Chlorinated Solvents November 2014

Figure 3c: Distribution of Selected Chlorinated Solvents May 2015

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- KEY:
- SKME Percussion Boreholes
BH11 - BH18: July 2012
BH19 - BH22: January 2013
 - Delta Simons Boreholes
 - SKME Trial Pits: July 2012
 - SKME Window Samples: January 2013
 - Percussion Boreholes
BH23 - BH25 March 2014
 - Jacobs Boreholes October 2014

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PHASE 2 SITE INVESTIGATION
HPH5

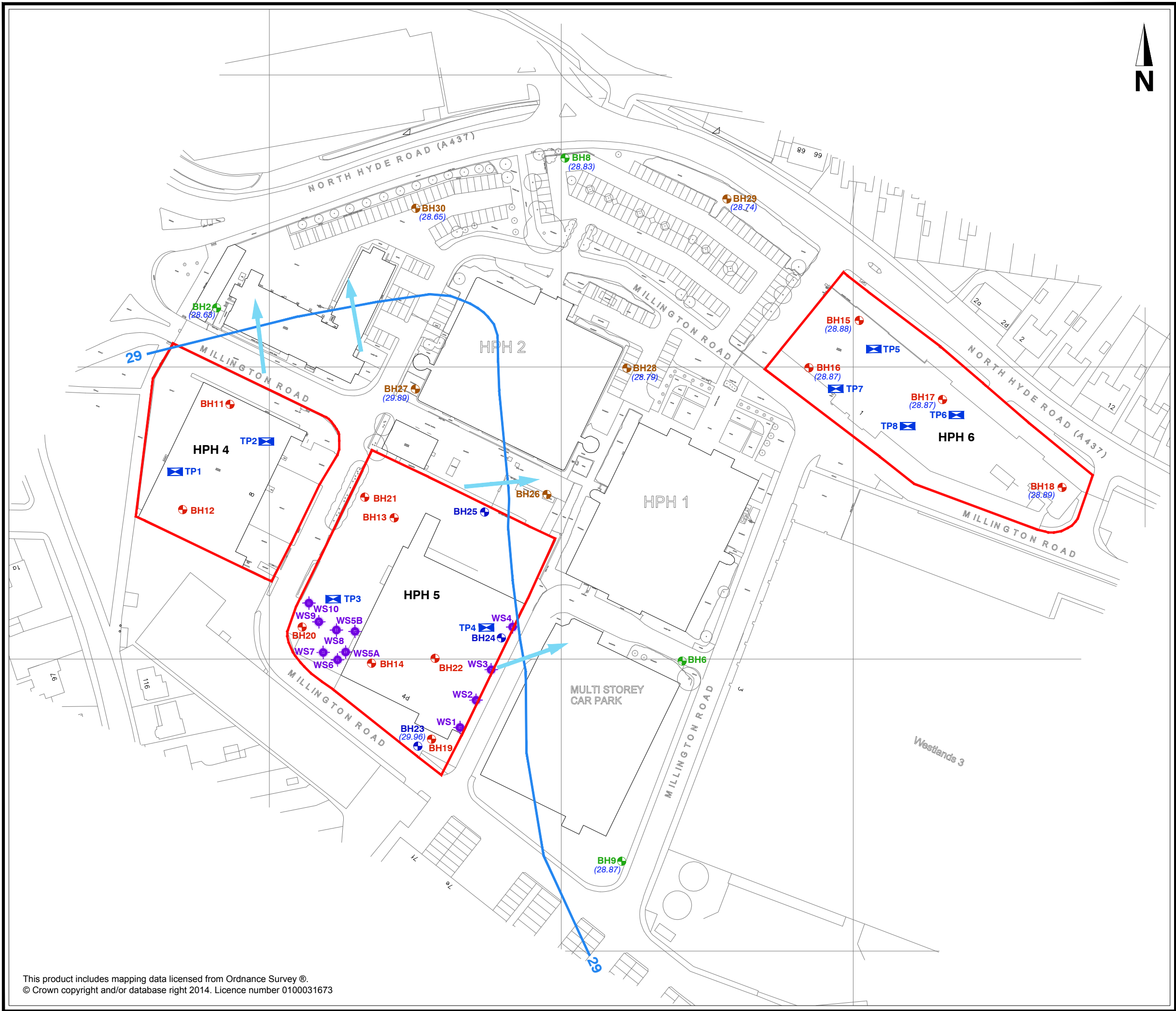
FIGURE 1

BOREHOLE LOCATION PLAN

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CHECKED	DATE
MWB	SEPTEMBER 2014



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File name: Figure 2b.dwg
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- KEY:
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BH19 - BH22: January 2013
 - Delta Simons Boreholes
 - SKME Trial Pits: July 2012
 - SKME Window Samples: January 2013
 - Percussion Boreholes
BH23 - BH25 March 2014
 - Jacobs Boreholes October 2014
 - (28.74) Groundwater Level (mAOD)
 - Groundwater Contour (mAOD)
 - Groundwater Flow Direction

HPHD LTD

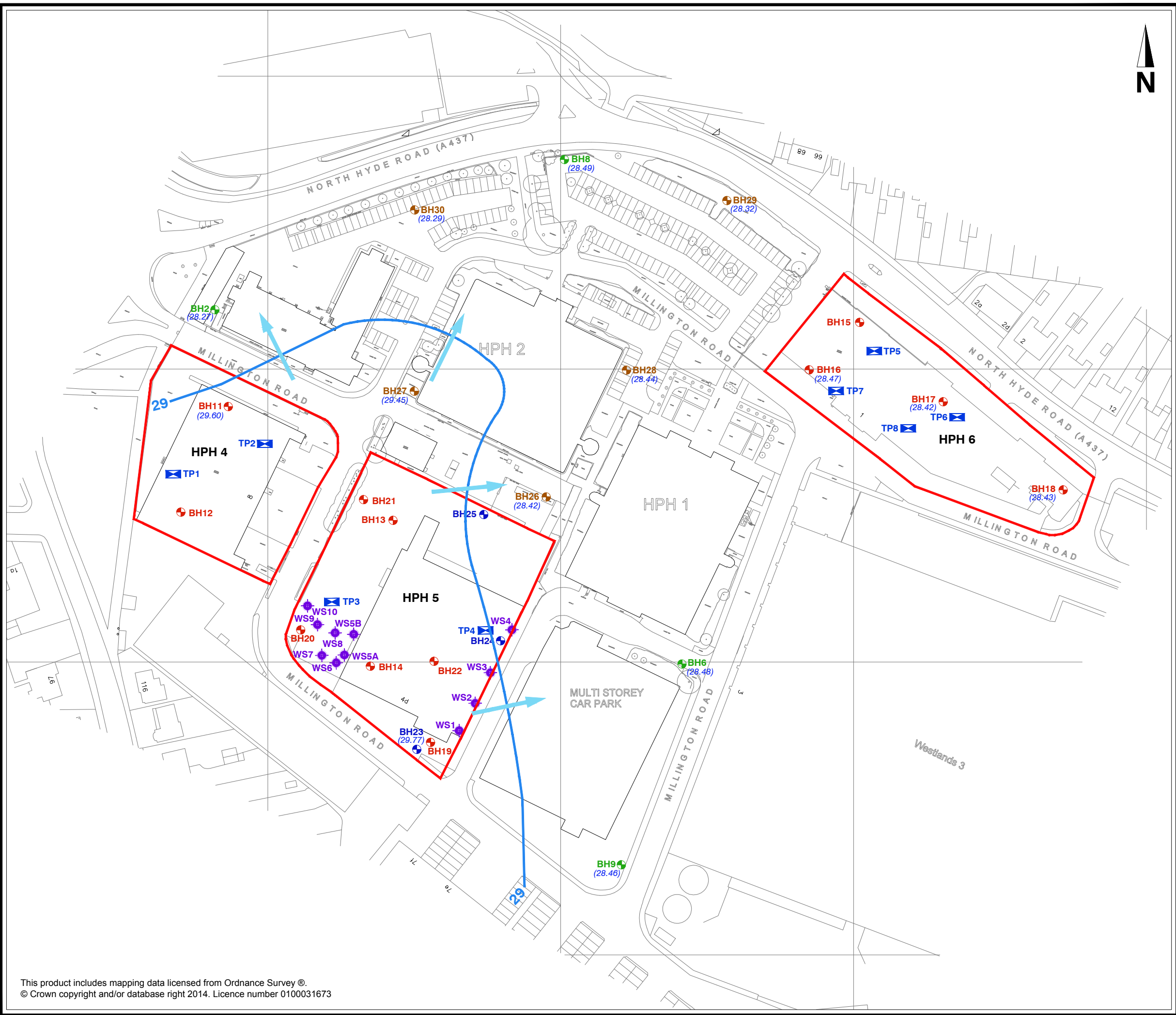
PHASE 2 SITE INVESTIGATION
HPH5

FIGURE 2B

GROUNDWATER LEVELS
JANUARY 2015

SCALE	PROJECT No.
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CONTENT	DRAWN
MWB	AJR
CHECKED	DATE
MWB	JULY 2015

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File name: Figure 2c.dwg
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- KEY:
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BH11 - BH18: July 2012
BH19 - BH22: January 2013
 - Delta Simons Boreholes
 - SKME Trial Pits: July 2012
 - SKME Window Samples: January 2013
 - Percussion Boreholes
BH23 - BH25 March 2014
 - Jacobs Boreholes October 2014
 - (28.74) Groundwater Level (mAOD)
 - Groundwater Contour (mAOD)
 - Groundwater Flow Direction

HPHD LTD

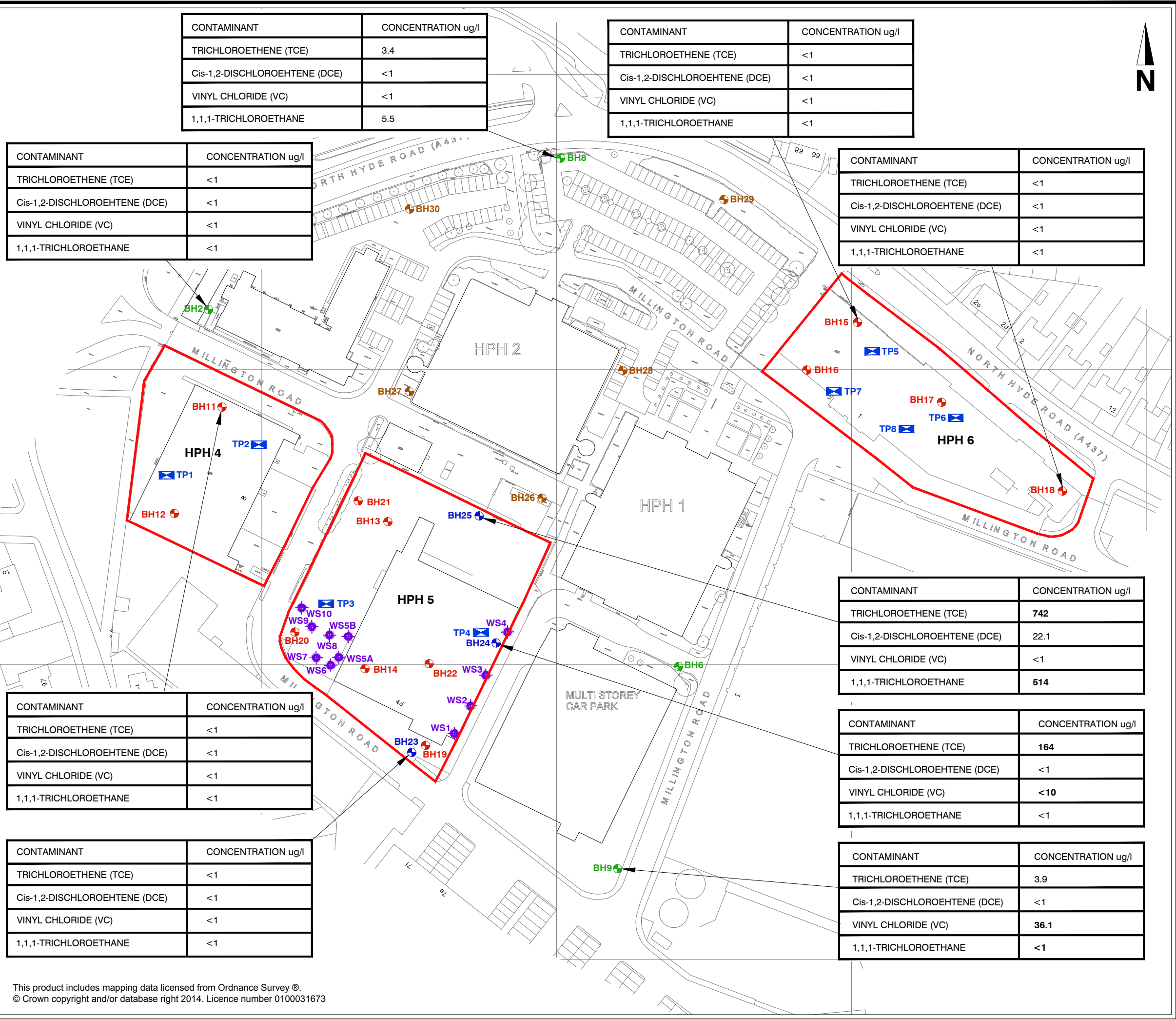
PHASE 2 SITE INVESTIGATION
HPH5

FIGURE 2C

GROUNDWATER LEVELS
APRIL 2015

SCALE	PROJECT No.
1:2500 @A3	KU03300
CONTENT	DRAWN
MWB	AJR
CHECKED	DATE
MWB	JULY 2015

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CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	<1
Cis-1,2-DISCHLOROEHTENE (DCE)	<1
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	3.1

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	<1
Cis-1,2-DISCHLOROEHTENE (DCE)	<1
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	<1

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	<1
Cis-1,2-DISCHLOROEHTENE (DCE)	<1
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	<1

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	<1
Cis-1,2-DISCHLOROEHTENE (DCE)	<1
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	<1

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	8.4
Cis-1,2-DISCHLOROEHTENE (DCE)	<1
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	14.5

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	<1
Cis-1,2-DISCHLOROEHTENE (DCE)	<1
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	<1

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	<1
Cis-1,2-DISCHLOROEHTENE (DCE)	<1
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	<1

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	<1
Cis-1,2-DISCHLOROEHTENE (DCE)	<1
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	<1

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	1.7
Cis-1,2-DISCHLOROEHTENE (DCE)	<1
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	6.5

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	<1
Cis-1,2-DISCHLOROEHTENE (DCE)	<1
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	<1

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	<1
Cis-1,2-DISCHLOROEHTENE (DCE)	<1
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	<1

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	2.3
Cis-1,2-DISCHLOROEHTENE (DCE)	54.4
VINYL CHLORIDE (VC)	39.1
1,1,1-TRICHLOROETHANE	<1

- KEY:
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 - Delta Simons Boreholes
 - SKME Trial Pits: July 2012
 - SKME Window Samples: January 2013
 - Percussion Boreholes
BH23 - BH25 March 2014
 - Jacobs Boreholes October 2014

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PHASE 2 SITE INVESTIGATION
HPH5

FIGURE 3B

DISTRIBUTION OF SELECTED
CHLORINATED SOLVENTS
NOVEMBER 2014

SCALE	PROJECT No.
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CONTENT	DRAWN
MWB	AJR
CHECKED	DATE
MWB	JULY 2015

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CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	<1
Cis-1,2-DISCHLOROEHTENE (DCE)	<1
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	<1

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	<1
Cis-1,2-DISCHLOROEHTENE (DCE)	<1
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	<1

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	<1
Cis-1,2-DISCHLOROEHTENE (DCE)	<1
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	<1

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	<1
Cis-1,2-DISCHLOROEHTENE (DCE)	<1
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	<1

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	6.7
Cis-1,2-DISCHLOROEHTENE (DCE)	<1
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	<1

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	<1
Cis-1,2-DISCHLOROEHTENE (DCE)	<1
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	<1

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	<1
Cis-1,2-DISCHLOROEHTENE (DCE)	<1
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	<1

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	3.4
Cis-1,2-DISCHLOROEHTENE (DCE)	<1
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	9.6

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	163
Cis-1,2-DISCHLOROEHTENE (DCE)	1.6
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	1790

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	<1
Cis-1,2-DISCHLOROEHTENE (DCE)	7.3
VINYL CHLORIDE (VC)	<1
1,1,1-TRICHLOROETHANE	<1

CONTAMINANT	CONCENTRATION ug/l
TRICHLOROETHENE (TCE)	6.1
Cis-1,2-DISCHLOROEHTENE (DCE)	133
VINYL CHLORIDE (VC)	131
1,1,1-TRICHLOROETHANE	<1

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- KEY:
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 - SKME Trial Pits: July 2012
 - SKME Window Samples: January 2013
 - Percussion Boreholes
BH23 - BH25 March 2014
 - Jacobs Boreholes October 2014

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PHASE 2 SITE INVESTIGATION
HPH5

FIGURE 3C

DITRIBUTION OF SELECTED
CHLORINATED SOLVENTS
MAY 2015

SCALE	PROJECT No.
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CONTENT	DRAWN
MWB	AJR
CHECKED	DATE
MWB	JULY 2015

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Appendices

Appendix 1. Borehole Logs from 2014 Investigation

BOREHOLE LOG

Borehole No

BH23

Sheet 1 of 1

Project Name:

HPH5

Project No.:

JL30666.002

Co-ords: 509150E - 179172N

Hole Type

RO

Location: Hyde Park, Hayes

Level: 31.38 m AOD

Scale

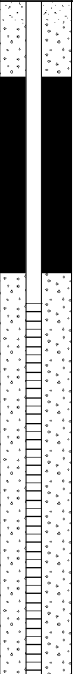
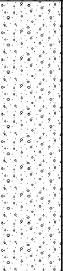
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Client:

Dates: 17/03/2014

Logged By

PJH

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		1.00	ES		1			MADE GROUND: Brown dark brown and brown-grey slightly sandy to sandy fine to medium subangular to rounded GRAVEL of flint with occasional concrete and rare brick and clinker. [GRAVEL FILL]	1
		1.80	ES		1.70	29.68			2
		2.10	ES		2			Brown slightly sandy fine to coarse subangular to rounded GRAVEL of flint. [LYNCH HILL GRAVEL MEMBER]	2
					3				3
					3.50	27.88		Firm brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded of flint. [LONDON CLAY FORMATION]	4
					3.90	27.48		Firm to stiff grey slightly silty CLAY. [LONDON CLAY FORMATION]	4
					4.50	26.88		End of Borehole at 4.50 m	5
					5				5
					6				6
					7				7
					8				8
					9				9

Remarks:

Borehole drilled by hollow stem auger. Top 1.5m was excavated then backfilled prior to drilling in order to remove an obstruction (250 mm concrete pipe or concrete slab). Arisings wet at approximately 2.3m bgl.



BOREHOLE LOG

Borehole No

BH24

Sheet 1 of 1

Project Name:

HPH5

Project No.:

JL30666.002

Co-ords: 509178E - 179210N

Hole Type

RO

Location: Hyde Park, Hayes

Level: 31.30 m AOD

Scale

1:50

Client:

Dates: 17/03/2014-18/03/2014

Logged By

PJH

Well	Water Strikes	Samples & In Situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20	31.10		MADE GROUND: Orange-brown sandy fine to medium subangular to rounded GRAVEL of flint [GRAVEL FILL]	
		0.50	ES		0.60	30.70		MADE GROUND: Soft brown slightly sandy slightly gravelly to gravelly CLAY. Gravel is fine to coarse subangular to rounded of flint with occasional brick and concrete. [CLAY FILL or REWORKED LYNCH HILL GRAVEL MEMBER]	1
		1.20	ES		1.10	30.20		Firm brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded of flint. [LYNCH HILL GRAVEL MEMBER or CLAY FILL]	1
		2.00	ES		2			Orange-brown slightly clayey slightly sandy to sandy fine to coarse subangular to rounded GRAVEL of flint. [LYNCH HILL GRAVEL MEMBER]	2
					3				3
					3.80	27.50		Firm to stiff grey slightly silty CLAY. [LONDON CLAY FORMATION]	4
					4				4
					5				5
					5.50	25.80		End of Borehole at 5.50 m	6
					6				6
					7				7
					8				8
					9				9
			Type	Results					

Remarks: Borehole drilled by hollow stem auger. Arisings wet at approximately 2.5m bgl.

Project Name
Hyde Park Hayes

Project No.
J2486

Co-ords: 509195E - 179256N

Hole Type
Rotary

Location: Millington Rd, Hayes, Middlesex - UB3 4AZ

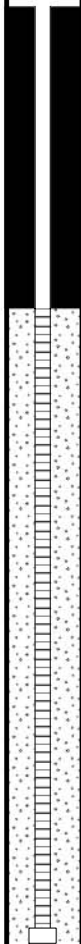
Level: 32.20 m AOD

Scale
1:50

Client: Jacobs

Dates: 31/10/2014

Logged By
OW

Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Results	Depth (m)	Type						
			0.00-1.20	B		0.35	31.85		TOPSOIL - Dark brown slightly gravelly sandy clay, with frequent rootlets. Gravel is subangular to subrounded fine to coarse flint, brick and concrete.	
						0.65	31.55		MADE GROUND - Light reddish brown slightly silty sandy angular to sub angular fine to medium gravel of granite ballast and flint.	1
			1.20-2.00	L		1.00	31.20		MADE GROUND - Firm dark brown slightly sandy slightly gravelly clay. Gravel is subangular to subrounded fine to medium flint, brick and limestone.	
			2.00-3.00	L		1.50	30.70		Soft becoming firm light brown mottled orange brown slightly sandy CLAY.	2
									Dark orange brown sandy fine to coarse subangular to subrounded flint GRAVEL.	
			3.00-4.00	L						3
										
			4.00-5.00	L						4
										
			5.00-6.20	L		5.10	27.10		Firm becoming stiff light grey slightly sandy CLAY.	5
						6.20	26.00		End of Borehole at 6.20 m	6
										7
										8
										9

Remarks: 1. Hand dug inspection pit to 1.20m
2. Wet sample recovered from 4.50mbgl
3. Monitoring well installed to 6.20mbgl

Project Name
Hyde Park Hayes

Project No.
J2486

Co-ords: 509150E - 179292N

Hole Type
Rotary

Location: Millington Rd, Hayes, Middlesex - UB3 4AZ

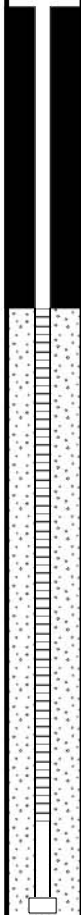
Level: 31.88 m AOD

Scale
1:50

Client: Jacobs

Dates: 31/10/2014

Logged By
OW

Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Results	Depth (m)	Type						
			0.00-1.20	B		0.20	31.68		TOPSOIL - Dark brown slightly gravelly sandy clay, with frequent rootlets. Gravel is angular to subrounded fine to coarse flint.	
						0.70	31.18		MADE GROUND - Firm dark brownish grey sandy gravelly clay, with occasional rootlets. Gravel is angular to subrounded fine to coarse flint and brick.	1
			1.20-2.00	L					PROBABLY MADE GROUND - Soft light brown mottled orange slightly gravelly sandy clay. Gravel is subangular to subrounded fine to coarse flint.	
			2.00-3.00	L		2.00	29.88		Dark orange brown slightly sandy fine to coarse subangular to subrounded flint GRAVEL.	2
			3.00-4.00	L						3
			4.00-5.00	L		4.70	27.18		Firm brown slightly sandy CLAY.	
			5.00-6.00	L		5.00	26.88		Stiff light grey fissured slightly sandy CLAY.	5
						6.00	25.88		End of Borehole at 6.00 m	6
										7
										8
										9

Remarks: 1. Hand dug inspection pit to 1.20m
2. Wet sample encountered from 5m
3. Monitoring well installed to 6m

Project Name
Hyde Park Hayes

Project No.
J2486

Co-ords: 509222E - 179300N

Hole Type
Rotary

Location: Millington Rd, Hayes, Middlesex - UB3 4AZ

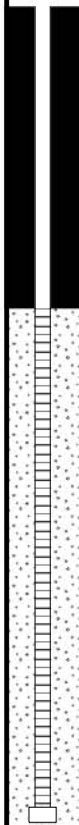
Level: 32.13 m AOD

Scale
1:50

Client: Jacobs

Dates: 31/10/2014

Logged By
OW

Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Results	Depth (m)	Type						
			0.00-1.20	B		0.30	31.83		TOPSOIL - Dark brown sandy gravelly clay. Gravel is fine to coarse angular to subrounded flint, brick, concrete and plastic.	
						0.60	31.53		MADE GROUND - Light brownish grey clayey sandy fine to coarse subangular to angular gravel of flint, granite ballast, brick and concrete.	
			1.20-2.00	L		1.00	31.13		MADE GROUND - Light reddish brown clayey sandy fine to coarse angular to subrounded gravel of granite ballast, flint and brick.	1
									Soft light orange brown sandy CLAY.	
			2.00-3.00	L		2.10	30.03		Dark orange brown sandy fine to coarse subangular to subrounded flint GRAVEL.	2
			3.00-4.00	L						3
			4.00-5.00	L						4
			5.00-6.00	L		5.00	27.13		Stiff light grey fissured slightly sandy CLAY.	5
						6.00	26.13		End of Borehole at 6.00 m	6
										7
										8
										9

Remarks: 1. Hand dug inspection pit to 1.20m
2. Wet sample recovered from 4.50m
3. Monitoring well installed to 5.90m

Project Name
Hyde Park Hayes

Project No.
J2486

Co-ords: 509257E - 179358N

Hole Type
Rotary

Location: Millington Rd, Hayes, Middlesex - UB3 4AZ

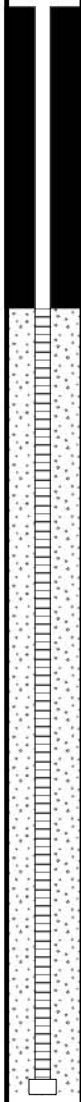
Level: 32.46 m AOD

Scale
1:50

Client: Jacobs

Dates: 31/10/2014

Logged By
OW

Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Results	Depth (m)	Type						
			0.00-1.20	B		0.10	32.36		TOPSOIL - Dark brown sandy silt, with frequent rootlets.	
						0.55	31.91		MADE GROUND - Light brown clayey gravelly fine to coarse sand. Gravel is fine to coarse subangular to subrounded chalk, flint and concrete.	
			1.20-2.00	L		0.80	31.66		MADE GROUND - Light brown slightly gravelly sandy clay. Gravel is fine to coarse subangular to subrounded flint and brick.	1
									Soft light brown very sandy CLAY, with rare rootlets.	
			2.00-3.00	L		2.00	30.46		Firm dark brown sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse flint.	2
						2.40	30.06		Dark orange brown slightly sandy fine to coarse subangular flint GRAVEL.	
			3.00-4.00	L						3
										4
			4.00-5.00	L						5
										6
			5.00-6.00	L		5.70	26.76		Firm brown slightly sandy CLAY.	
						6.20	26.26		Stiff light fissured light grey slight sandy CLAY.	
			6.00-7.20	L						7
						7.20	25.26		End of Borehole at 7.20 m	
										8
										9
										10

Remarks: 1. Hand dug inspection pit to 1.20m
2. Wet sample recovered from 5.50m
3. Monitoring well installed to 7.20m

Project Name
Hyde Park Hayes

Project No.
J2486

Co-ords: 509150E - 179354N

Hole Type
Rotary

Location: Millington Rd, Hayes, Middlesex - UB3 4AZ

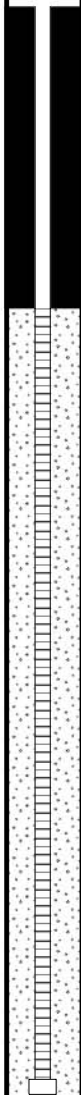
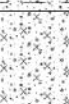
Level: 32.26 m AOD

Scale
1:50

Client: Jacobs

Dates: 31/10/2014

Logged By
OW

Well	Water Strikes	Samples & In Situ Testing				Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Results	Depth (m)	Type						
			0.00-1.20	B		0.12	32.14		ASPHALT	
						0.30	31.96		MADE GROUND - Light greyish brown slightly sandy fine to coarse subangular to subrounded gravel of granite ballast, brick and concrete.	
						0.60	31.66		MADE GROUND - Soft light grey slightly gravelly sandy clay. Gravel is subangular to subrounded fine to coarse flint and brick.	1
			1.20-2.00	L		1.80	30.46		PROBABLY MADE GROUND - Soft orange brown slightly gravelly sandy clay. Gravel is fine to coarse subangular to subrounded flint.	
			2.00-3.00	L		2.50	29.76		Dark orange brown clayey gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse flint.	2
			3.00-4.00	L					dark orange brown slightly silty very sandy fine to coarse subangular to subrounded flint GRAVEL.	3
			4.00-5.00	L						4
			5.00-6.00	L		5.70	26.56		Firm dark brown sandy CLAY	
						6.00	26.26		Stiff light grey slightly sandy CLAY.	6
			6.00-8.00	L		8.00	24.26		End of Borehole at 8.00 m	8
		Results		Type						9

Remarks: 1. Hand dug inspection pit to 1.20m
2. Moist sample recovered from 5.40m
3. Monitoring well installed to 7.20m.

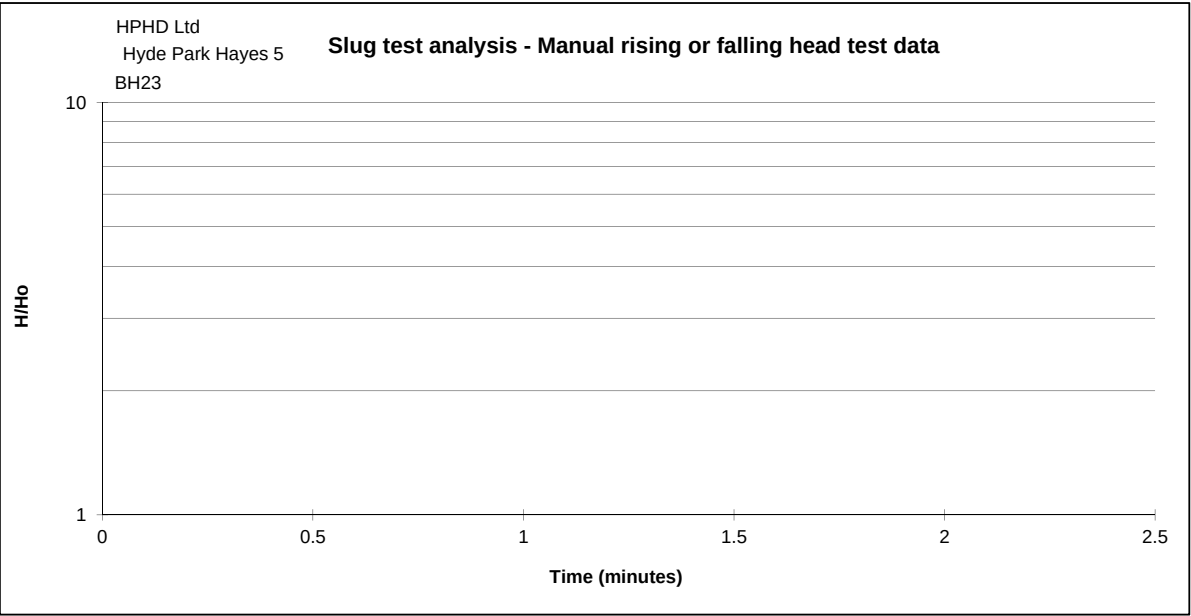
Appendix 2. 2014 Hydraulic Conductivity Test Results

SLUG TEST ANALYSIS - RISING OR FALLING HEAD TEST DATA

Client	HPHD Ltd
Site	Hyde Park Hayes 5
Borehole Number	BH23
Test Type (falling/rising)	Falling
BOREHOLE DETAILS	
Tested Interval (L)	4.2 m
Borehole Depth	6 m
Depth to Rest Water Level	1.35 m
Water Level at start of test	m
Borehole diameter (D) (screen)	0.05 m
Borehole diameter (d) (head variation)	0.05 m
CALCULATIONS	
Permeability Transformation Ratio (m)	3
Initial Time t1	min
Initial Head h1	m
Time t2	min
Head h2	m

PERMEABILITY OF SECTION TESTED =	#DIV/0!	m/day
----------------------------------	---------	-------

TEST APPLIED = Hvorslev (1951)
FORMULA APPLIED : $k = \frac{(d^2) \ln(2mL/D)}{(8 * L * (t2 - t1)) * \ln(h1/h2)}$



SLUG TEST ANALYSIS - RISING OR FALLING HEAD TEST DATA

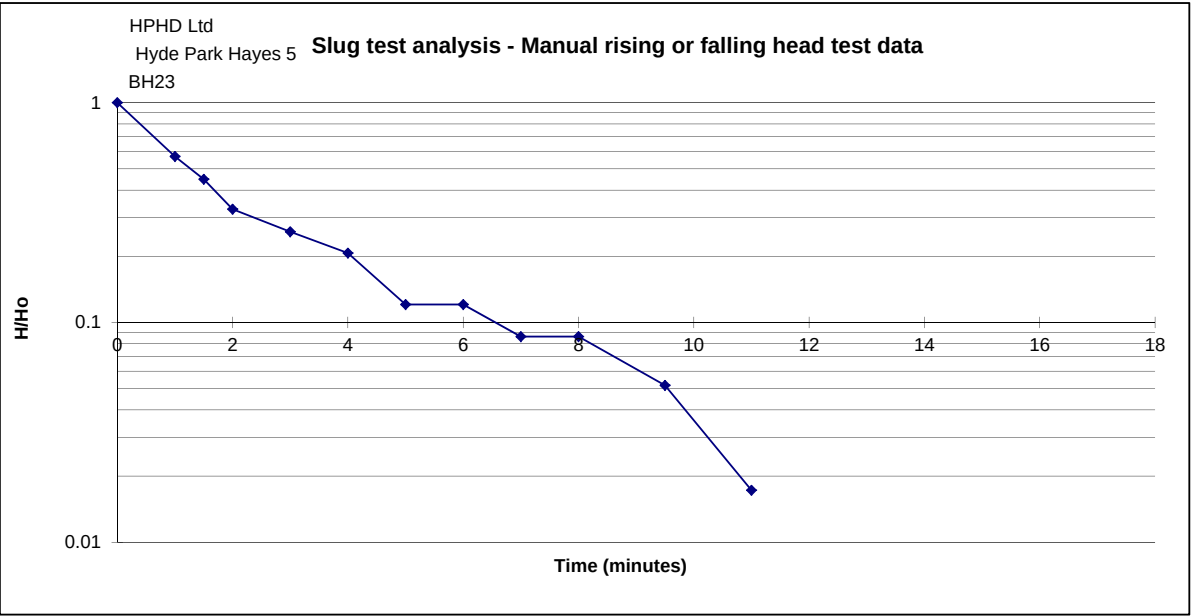
Client	HPHD Ltd
Site	Hyde Park Hayes 5
Borehole Number	BH23
Test Type (falling/rising)	Rising

BOREHOLE DETAILS	
Tested Interval (L)	2.52 m
Borehole Depth	4.52 m
Depth to Rest Water Level	1.35 m
Water Level at start of test	1.93 m
Borehole diameter (D) (screen)	0.05 m
Borehole diameter (d) (head variation)	0.05 m

CALCULATIONS	
Permeability Transformation Ratio (m)	3
Initial Time t1	0 min
Initial Head h1	0.58 m
Time t2	5 min
Head h2	0.07 m

PERMEABILITY OF SECTION TESTED = 0.43 m/day

TEST APPLIED = Hvorslev (1951)
FORMULA APPLIED : $k = \frac{(d^2 \ln(2mL/D))}{(8 \cdot L \cdot (t_2 - t_1))} \ln(h_1/h_2)$



SLUG TEST ANALYSIS - RISING OR FALLING HEAD TEST DATA

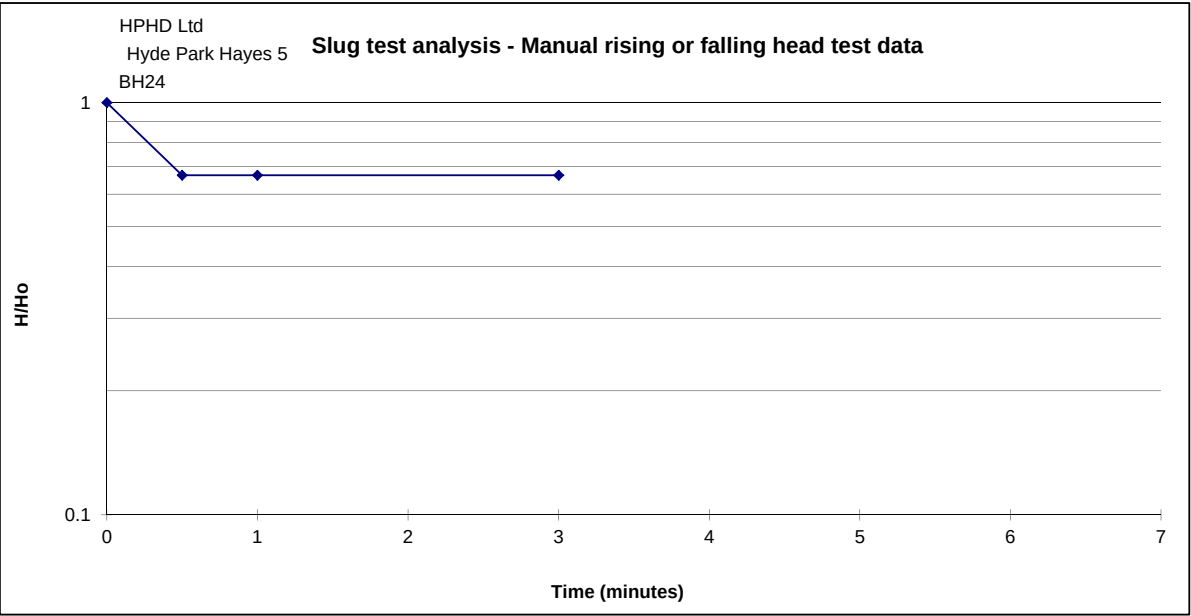
Client	HPHD Ltd
Site	Hyde Park Hayes 5
Borehole Number	BH24
Test Type (falling/rising)	Falling

BOREHOLE DETAILS	
Tested Interval (L)	3.11 m
Borehole Depth	5.47 m
Depth to Rest Water Level	2.36 m
Water Level at start of test	2.3 m
Borehole diameter (D) (screen)	0.05 m
Borehole diameter (d) (head variation)	0.05 m

CALCULATIONS	
Permeability Transformation Ratio (m)	3
Initial Time t1	0 min
Initial Head h1	-0.06 m
Time t2	0.5 min
Head h2	-0.04 m

PERMEABILITY OF SECTION TESTED = 0.69 m/day

TEST APPLIED = Hvorslev (1951)
FORMULA APPLIED : $k = \frac{(d^2) \ln(2mL/D)}{(8 * L * (t2 - t1)) * \ln(h1/h2)}$



SLUG TEST ANALYSIS - RISING OR FALLING HEAD TEST DATA

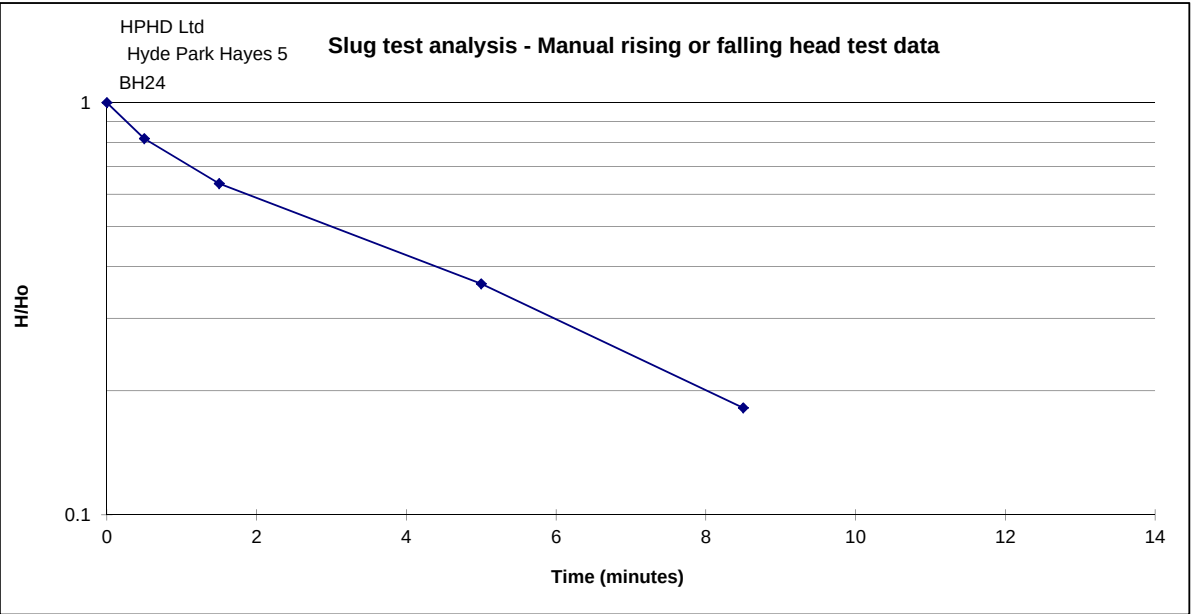
Client	HPHD Ltd
Site	Hyde Park Hayes 5
Borehole Number	BH24
Test Type (falling/rising)	Rising

BOREHOLE DETAILS	
Tested Interval (L)	3.11 m
Borehole Depth	5.47 m
Depth to Rest Water Level	2.36 m
Water Level at start of test	2.47 m
Borehole diameter (D) (screen)	0.05 m
Borehole diameter (d) (head variation)	0.05 m

CALCULATIONS	
Permeability Transformation Ratio (m)	3
Initial Time t1	0 min
Initial Head h1	0.11 m
Time t2	8.5 min
Head h2	0.02 m

PERMEABILITY OF SECTION TESTED = 0.17 m/day

TEST APPLIED = Hvorslev (1951)
FORMULA APPLIED : $k = \frac{(d^2) \ln(2mL/D)}{(8 * L * (t2 - t1)) * \ln(h1/h2)}$



SLUG TEST ANALYSIS - RISING OR FALLING HEAD TEST DATA

Client	HPHD Ltd
Site	Hyde Park Hayes 5
Borehole Number	BH25
Test Type (falling/rising)	Falling

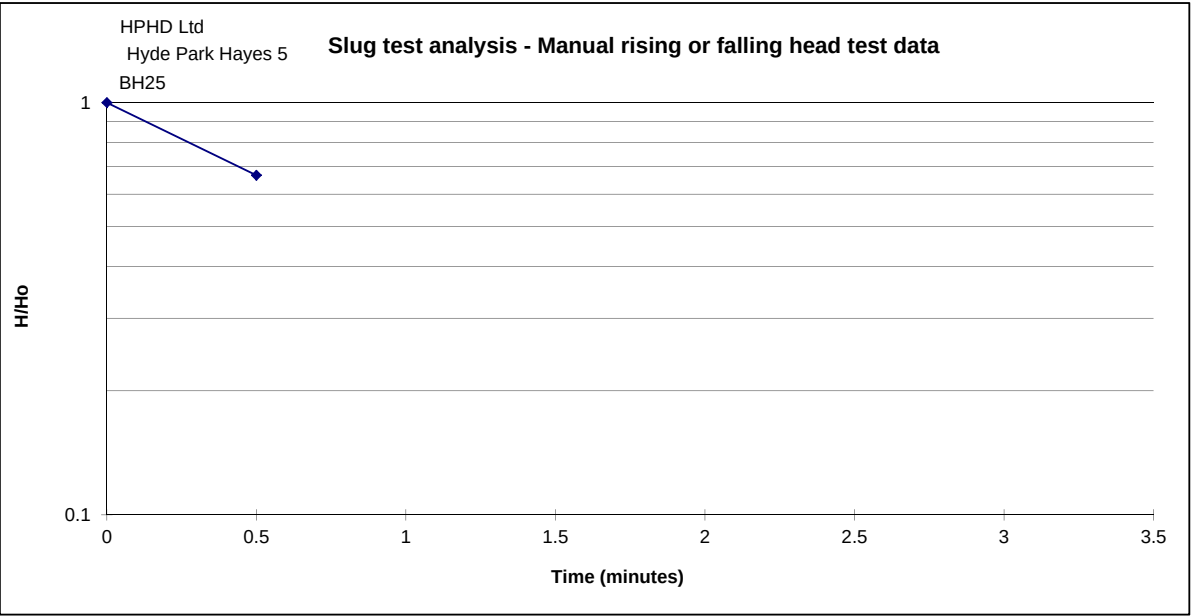
BOREHOLE DETAILS	
Tested Interval (L)	1.99 m
Borehole Depth	5.83 m
Depth to Rest Water Level	3.84 m
Water Level at start of test	3.7 m
Borehole diameter (D) (screen)	0.05 m
Borehole diameter (d) (head variation)	0.05 m

CALCULATIONS	
Permeability Transformation Ratio (m)	3
Initial Time t1	0 min
Initial Head h1	-0.12 m
Time t2	0.5 min
Head h2	-0.08 m

PERMEABILITY OF SECTION TESTED = 1.0 m/day

Insufficient data to accurately estimate permeability

TEST APPLIED = Hvorslev (1951)
FORMULA APPLIED : $k = \frac{(d^2) \ln(2mL/D)}{(8 * L * (t2 - t1)) * \ln(h1/h2)}$



SLUG TEST ANALYSIS - RISING OR FALLING HEAD TEST DATA

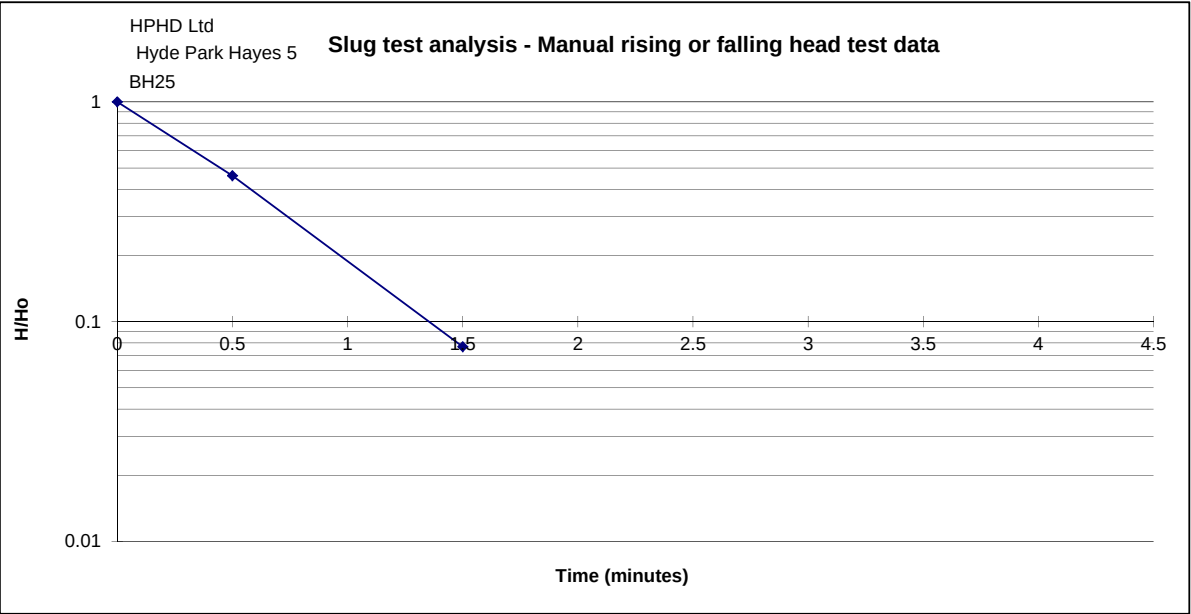
Client	HPHD Ltd
Site	Hyde Park Hayes 5
Borehole Number	BH25
Test Type (falling/rising)	Rising

BOREHOLE DETAILS	
Tested Interval (L)	1.99 m
Borehole Depth	5.83 m
Depth to Rest Water Level	3.84 m
Water Level at start of test	3.97 m
Borehole diameter (D) (screen)	0.05 m
Borehole diameter (d) (head variation)	0.05 m

CALCULATIONS	
Permeability Transformation Ratio (m)	3
Initial Time t1	0 min
Initial Head h1	0.13 m
Time t2	1.5 min
Head h2	0.01 m

PERMEABILITY OF SECTION TESTED = 2.1 m/day

TEST APPLIED = Hvorslev (1951)
FORMULA APPLIED $k = \frac{(d^2) \ln(2mL/D)}{(8 * L * (t2 - t1))} * \ln(h1/h2)$



Appendix 3. Summary of Laboratory Analysis Results

Sample Reference				BH8	BH8	BH8
Date Sampled				16/04/2014	28/05/2014	17/06/2014
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status			
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 10.0	< 10.0	< 10.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	1.3	< 1.0	1.5
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	1.2	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	3.7	2.5	2.1
1,1,1-Trichloroethane	µg/l	1	ISO 17025	5.5	1	6.6
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	1.3	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	3.4	< 1.0	3.9
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	5.5	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0

Sample Reference				BH8	BH8	BH8	BH8
Date Sampled				29/07/2014	29/10/2014	19/11/2014	17/12/2014
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	1.4
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	3.1	4.8
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	1.7	3.8
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH8	BH8	BH8	BH8
Date Sampled				23/01/2015	18/02/2015	18/03/2015	16/04/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	2.5	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	1.4	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH8	BH8
Date Sampled				21/05/2015	18/06/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status		
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0

Sample Reference				BH9	BH9	BH9
Date Sampled				16/04/2014	28/05/2014	17/06/2014
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status			
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	36.1	17	48.5
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	2.5	1.5	4.5
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	105	159
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	1.3	1.3	2.3
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	2.5	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	3.9	3.2	6.5
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	1	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0

Sample Reference				BH9	BH9	BH9	BH9
Date Sampled				29/07/2014	29/10/2014	19/11/2014	17/12/2014
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	85.9	39.1	9.1
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	2.4	2.7	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	138	137	54.4	25.3
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	3.1	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	9.1	3.0	2.3	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH9	BH9	BH9	BH9
Date Sampled				23/01/2015	18/02/2015	18/03/2015	16/04/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	151	164	317
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	2.9	4.2
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	55.8	141	107	166
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	2.7	3.5
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	2.5	9.6	5.2	7.3
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH9	BH9
Date Sampled				21/05/2015	18/06/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status		
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	131	80.2
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	2.1	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	133	142
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	2.4	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	6.1	6.8
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0

Sample Reference				BH11	BH11	BH11	BH11
Date Sampled				16/04/2014	28/05/2014	17/06/2014	29/07/2014
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 10.0	< 10.0	< 10.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH11	BH11	BH11	BH11
Date Sampled				29/10/2014	19/11/2014	23/01/2015	18/02/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH11	BH11	BH11	BH11
Date Sampled				18/03/2015	16/04/2015	21/05/2015	18/06/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH15	BH15	BH15	BH15	BH15
				16/04/2014	28/05/2014	17/06/2014	29/07/2014	29/10/2014
Date Sampled								
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 10.0	< 10.0	< 10.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	4.7	3.9	2.2	1.9	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH15	BH15	BH15	BH15	BH15
				19/11/2014	17/12/2014	23/01/2015	18/02/2015	18/03/2015
Date Sampled								
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH18	BH18	BH18	BH18
Date Sampled				16/04/2014	28/05/2014	17/06/2014	29/07/2014
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 10.0	< 10.0	< 10.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	5.3	5.1	6.5	4.8
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH18	BH18	BH18	BH18
Date Sampled				29/10/2014	19/11/2014	17/12/2014	23/01/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH18	BH18	BH18	BH18
Date Sampled				18/02/2015	18/03/2015	16/04/2015	21/05/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH18
Date Sampled				18/06/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status	
Chloromethane	µg/l	1	ISO 17025	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0

Sample Reference				BH23	BH23	BH23	BH23
Date Sampled				16/04/2014	28/05/2014	17/06/2014	29/07/2014
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 10.0	< 10.0	< 10.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	1.2	2.7	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	3.6	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	1.5	2.9	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH23	BH23	BH23	BH23	BH23
Date Sampled				29/10/2014	19/11/2014	23/01/2015	18/02/2015	18/03/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	7.3	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	2.2	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	15.2	2.7	2.6	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH23	BH23	BH23
Date Sampled				16/04/2015	21/05/2015	18/06/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status			
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0

Sample Reference				BH24	BH24	BH24	BH24
Date Sampled				16/04/2014	28/05/2014	17/06/2014	29/07/2014
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 10.0	< 10.0	< 10.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	23.8	50.4	23.3
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	1.4	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	164	15.9	44.5	22.1
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH25	BH25	BH25	BH25
Date Sampled				16/04/2014	28/05/2014	17/06/2014	29/07/2014
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 10.0	< 10.0	< 10.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-dichloroethene	µg/l	1	ISO 17025	137	86.9	95.1	107
1,1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	8.5	22.1	7.6
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	61.9	20.3	28.2	15.8
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	514	598	431	689
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	4	< 1.0	51.8
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	138	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	742	638	500	384
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	2	3.1	1.5	3.5
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH26	BH26	BH26	BH26	BH26
Date Sampled				03/11/2014	20/11/2014	17/12/2014	23/01/2015	18/02/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	2.1	< 1.0	< 1.0	< 1.0	10.8
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	1.4	< 1.0	< 1.0	< 1.0	3.1
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	4.0	< 1.0	< 1.0	< 1.0	36.8
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	2.9	< 1.0	< 1.0	< 1.0	8.9
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	4.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH26	BH26	BH26
Date Sampled				18/03/2015	21/05/2015	18/06/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status			
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	24.1	95.4	22.5
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	1.6	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	6.2	27.0	11.8
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	82.2	1790	306
1,2-dichloroethane	µg/l	1	ISO 17025	7.9	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	20.2	163	48.8
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0

Sample Reference				BH27	BH27	BH27	BH27	BH27
Date Sampled				03/11/2014	20/11/2014	17/12/2014	23/01/2015	18/02/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH27	BH27	BH27	BH27
Date Sampled				18/03/2015	16/04/2015	21/05/2015	18/06/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH28	BH28	BH28	BH28
Date Sampled				03/11/2014	20/11/2014	17/12/2014	23/01/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	3.1	1.8	1.6	5.2
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	14.7	6.5	8.3	19.1
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	2.9	1.7	1.8	5.6
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	1.3	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH28	BH28	BH28	BH28	BH28
Date Sampled				18/02/2015	18/03/2015	16/04/2015	21/05/2015	18/06/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	3.4	2.1	4.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	13.1	9.2	15.8	9.6	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	4.6	2.0	4.7	3.4	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH29	BH29	BH29	BH29	BH29
Date Sampled				03/11/2014	19/11/2014	17/12/2014	23/01/2015	18/02/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	2.0	2.9	1.8	4.6	5.5
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	3.1	< 1.0	2.5	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	6.4	14.5	5.0	14.5	15.5
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	4.5	8.4	3.9	7.4	9.1
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	2.5	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tri bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

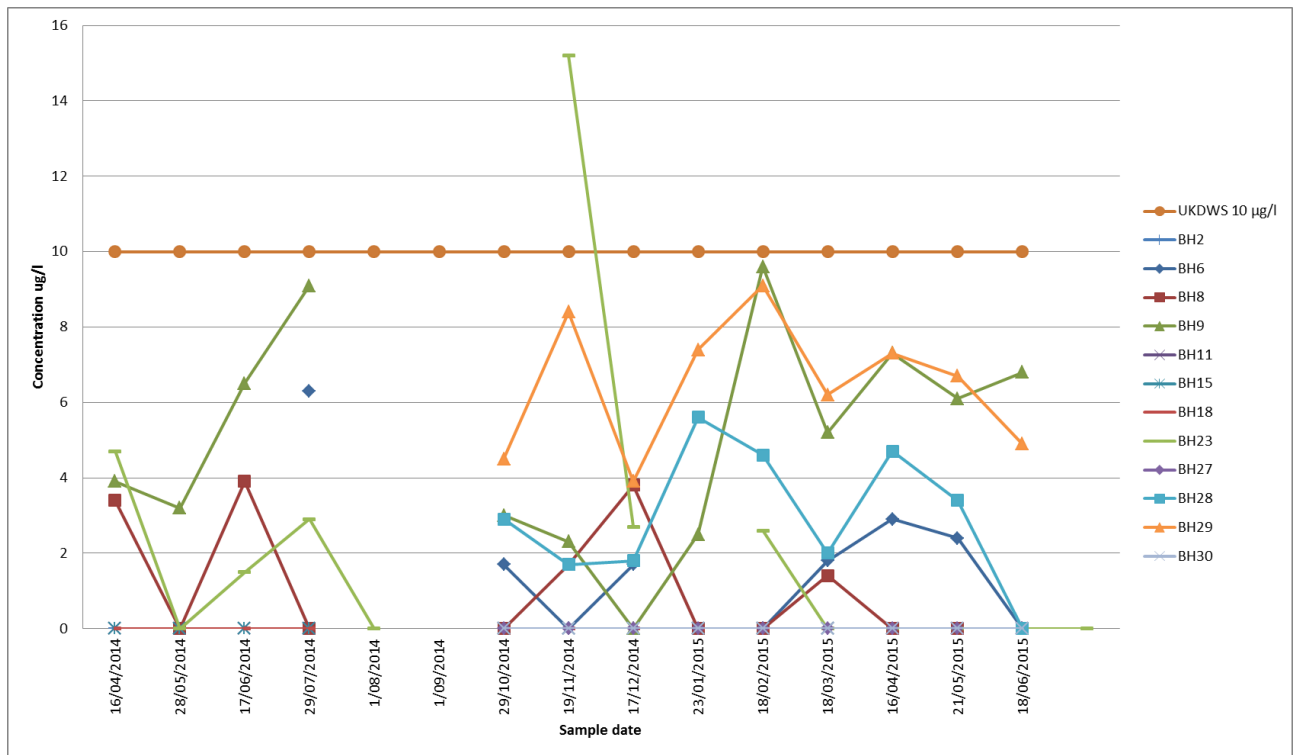
Sample Reference				BH29	BH29	BH29	BH29	BH29
Date Sampled				18/03/2015	16/04/2015	21/05/2015	18/06/2015	18/06/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	3.8	3.6	2.1	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	2.3	2.4	2.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	11.1	9.9	7.4	5.5	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	6.2	7.3	6.7	4.9	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Sample Reference				BH30	BH30	BH30	BH30	BH30
Date Sampled				03/11/2014	19/11/2014	17/12/2014	23/01/2015	18/02/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tri bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

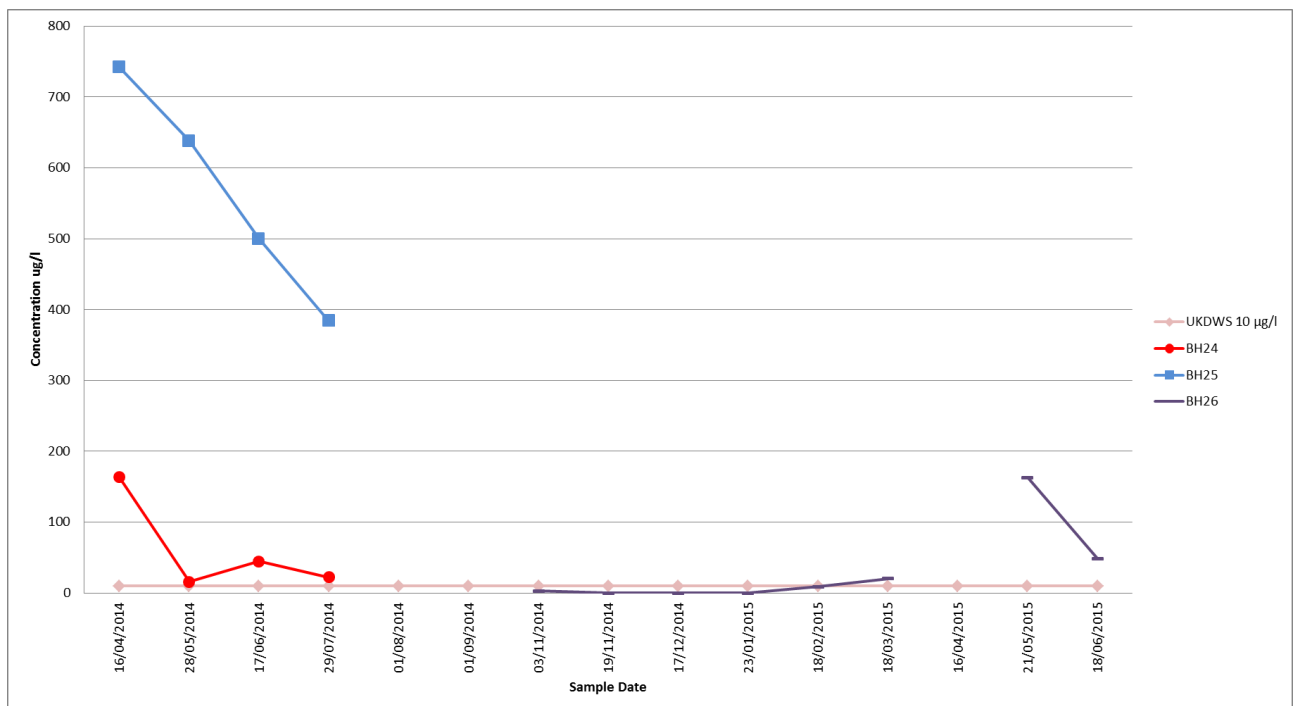
Sample Reference				BH30	BH30	BH30	BH30
Date Sampled				18/03/2015	16/04/2015	21/05/2015	18/06/2015
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
Chloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	10	NONE	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tri bromomethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

Appendix 4. Plots of Selected Chlorinated Solvents Over Time

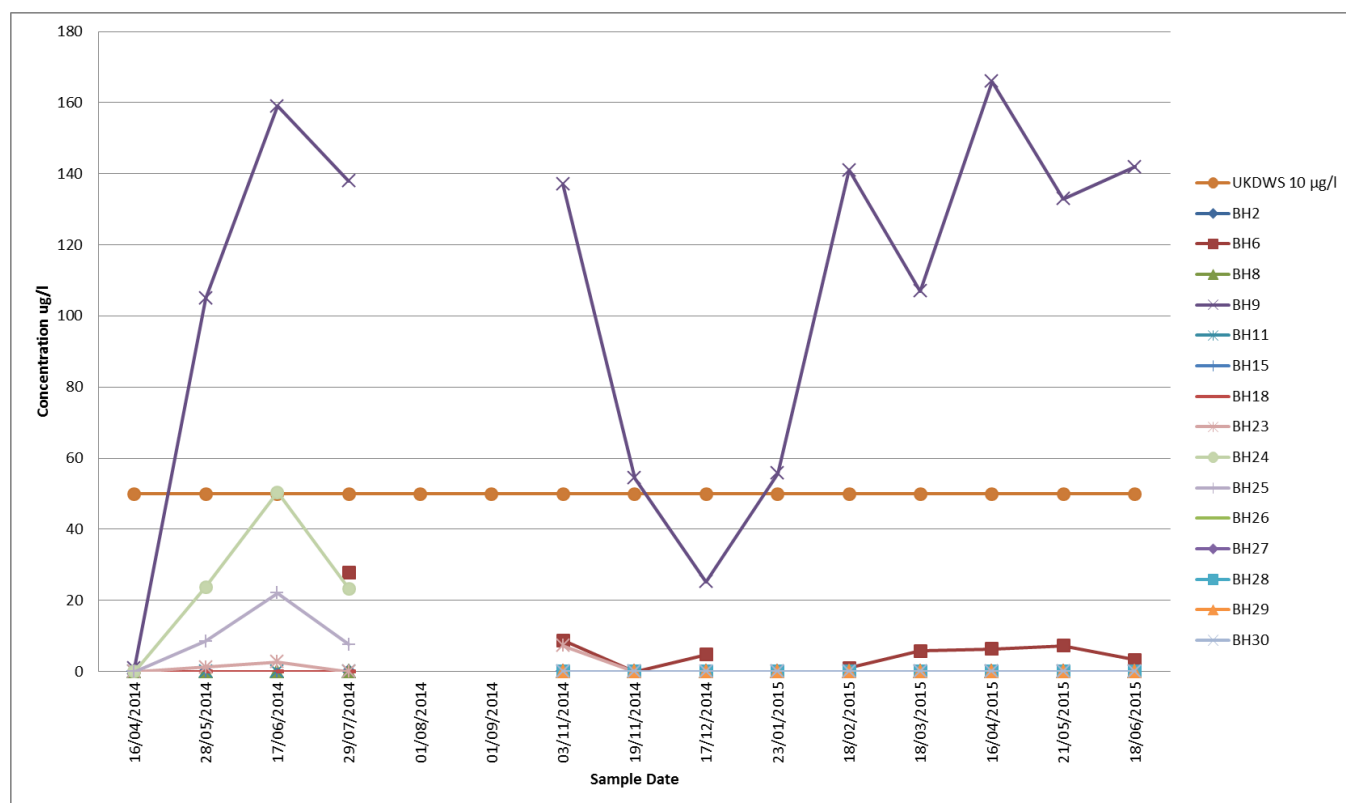
Trichloroethene Concentrations April 2014 – June 2015 (excluding BH24, BH25 and BH26)



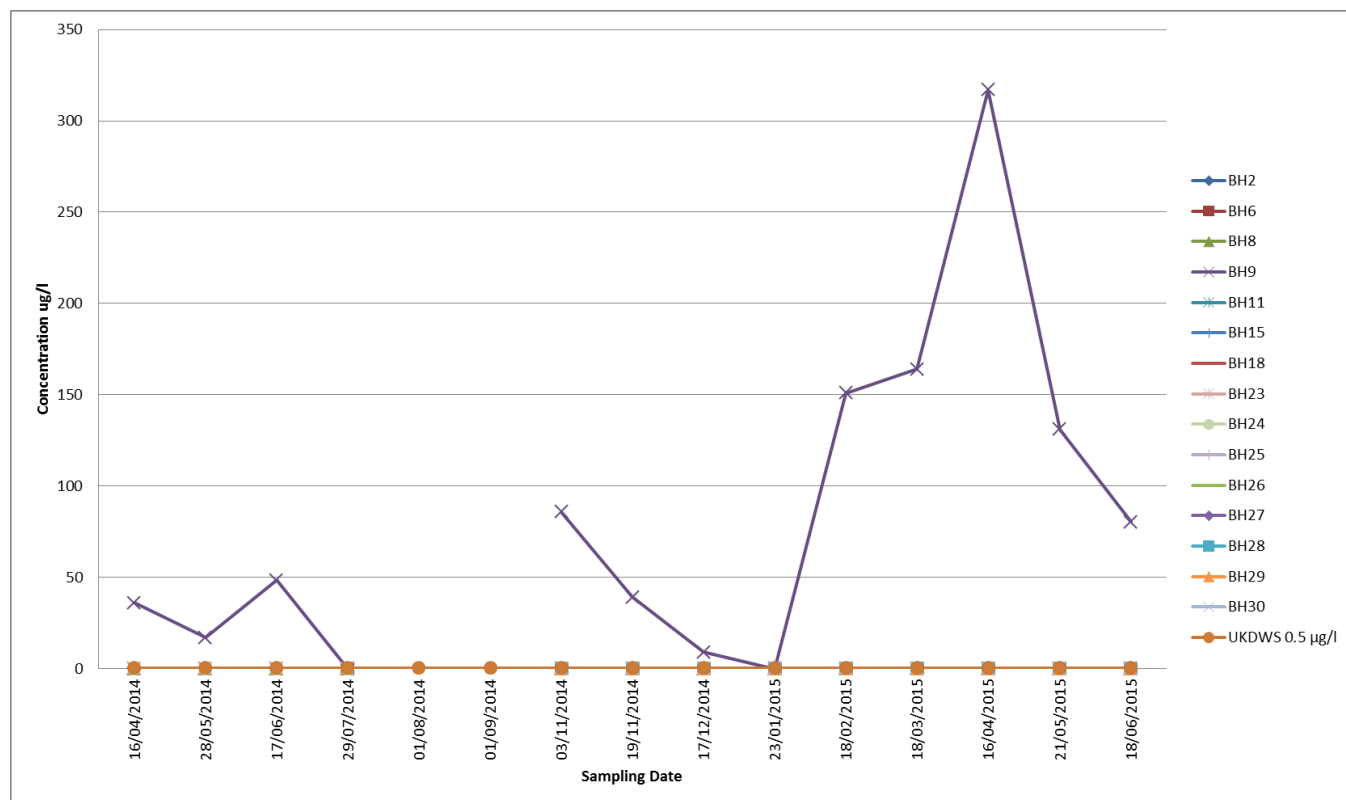
Trichloroethene Concentrations April 2014 – June 2015 (BH24, BH25 and BH26)



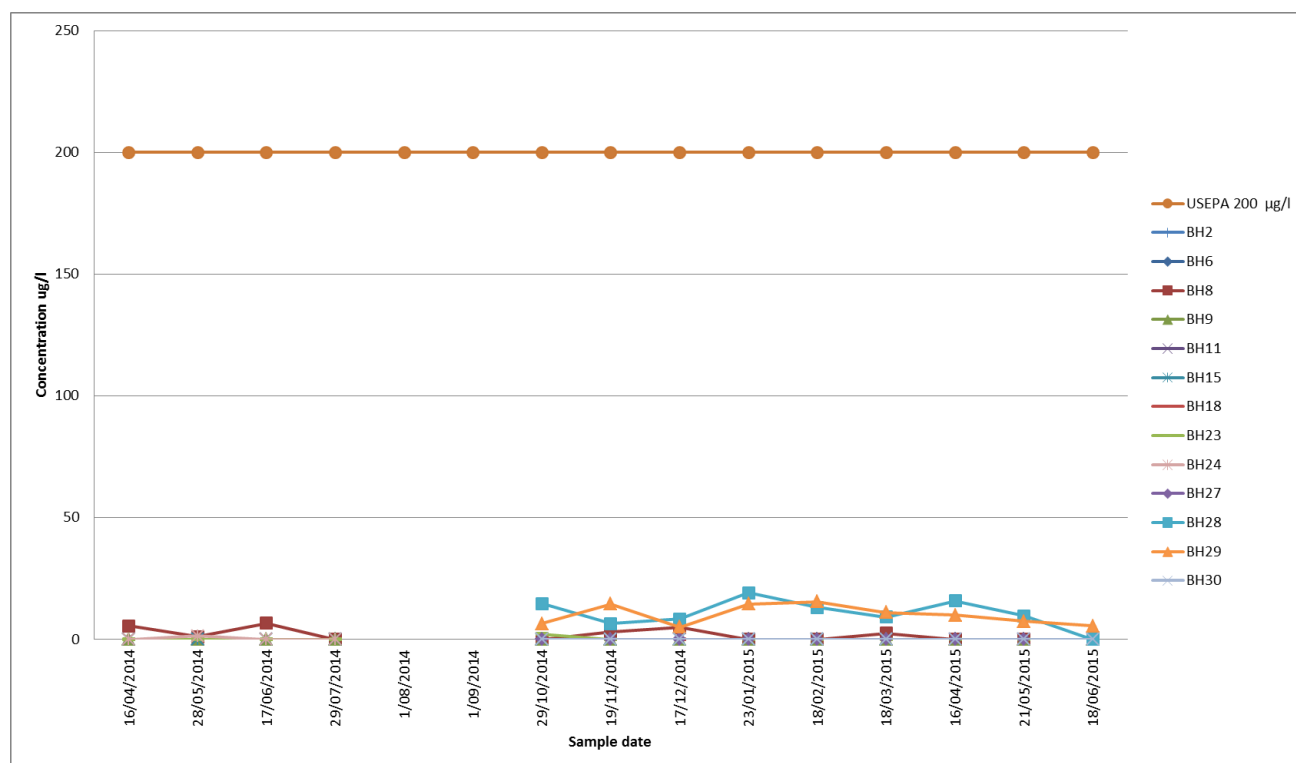
Cis-1,2-dichloroethene Concentrations April 2014 – June 2015 (all boreholes)



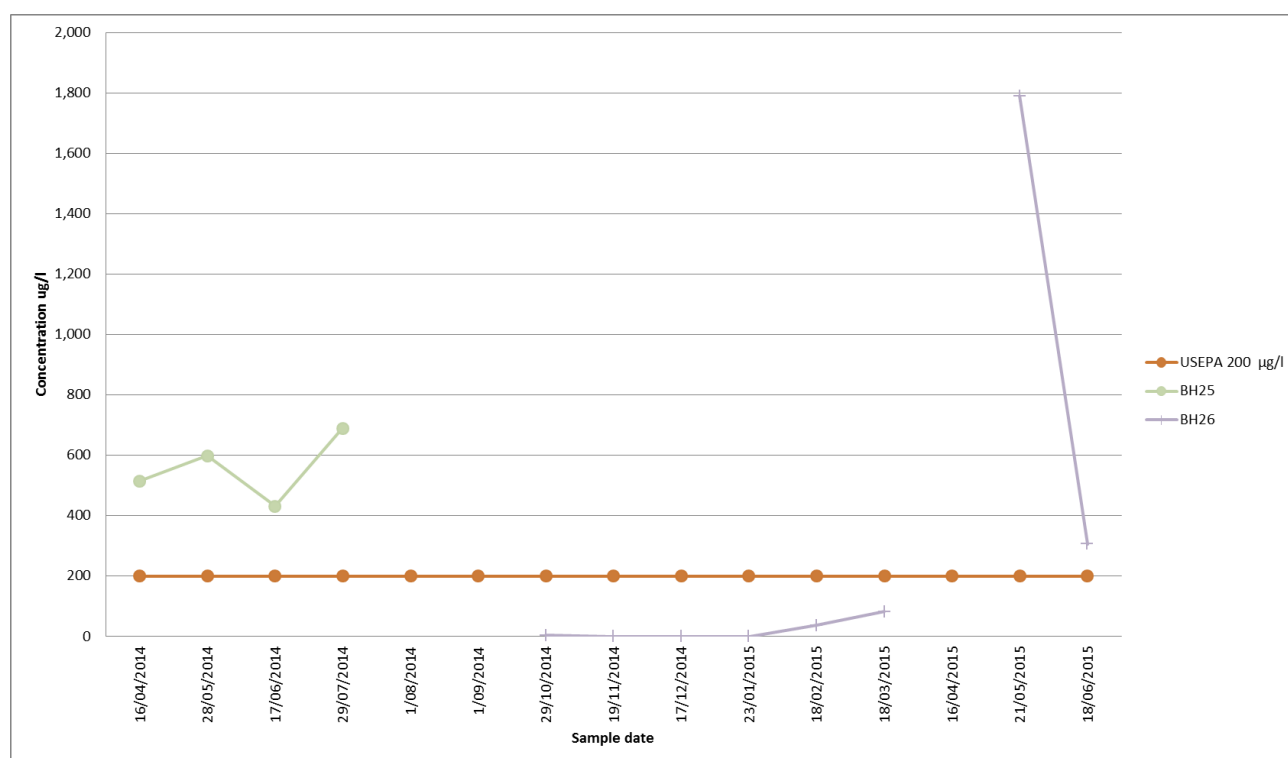
Vinyl Chloride Concentrations April 2014 – June 2015 (all boreholes)



1,1,1-Trichloroethane (1,1,1-TCA) Concentrations April 2014 – June 2015 (excluding BH25 and BH26)



1,1,1-Trichloroethane (1,1,1-TCA) Concentrations April 2014 – June 2015 (BH25 and BH26)



Appendix 5. Quantitative Groundwater Risk Assessment Spreadsheets

R&D Publication 20 Remedial Targets Worksheet, Release 3.2



Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

Variable	Value	Unit	Source
Contaminant	1,1,1-Trichloroethane		from Level 1
Target Concentration	C _T 2.00E-01	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state Equations in HRA publication

Approach for simulating vertical dispersion:

Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants:

Apply degradation rate to dissolved pollutants only

Source of parameter value			
Initial contaminant concentration in groundwater at plume core	C ₀	1.79E+00	mg/l
Half life for degradation of contaminant in water	t _{1/2}	9.00E+02	days
Calculated decay rate	λ	7.70E-04	days ⁻¹
Width of plume in aquifer at source (perpendicular to flow)	Sz	5.00E+01	m
Plume thickness at source	Sy	2.00E+00	m
Saturated aquifer thickness	da	2.30E+00	m
Bulk density of aquifer materials	ρ	1.80E+00	g/cm ³
Effective porosity of aquifer	n	3.00E-01	fraction
Hydraulic gradient	i	4.00E-03	fraction
Hydraulic conductivity of aquifer	K	9.00E-01	m/d
Distance to compliance point	x	5.00E+01	m
Distance (lateral) to compliance point perpendicular to flow direction	z		m
Distance (depth) to compliance point perpendicular to flow direction	y		m
Time since pollutant entered groundwater	t	1.00E+100	days
Parameters values determined from options			
Partition coefficient	Kd	8.58E-02	l/kg
Longitudinal dispersivity	ax	5.00E+00	m
Transverse dispersivity	az	5.00E-01	m
Vertical dispersivity	ay	5.00E-02	m

Calculated Parameters

Variable			
Groundwater flow velocity	v	1.20E-02	m/d
Retardation factor	Rf	1.51E+00	fraction
Decay rate used	λ	5.08E-04	d ⁻¹
Rate of contaminant flow due to retardation	u	7.92E-03	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C _{ED}	8.73E-02	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	AF	2.05E+01	

Remedial Targets

Remedial Target	4.10E+00	mg/l	For comparison with measured groundwater concentration.
Domenico - Steady state			

Distance to compliance point 50 m

Concentration of contaminant at compliance point C_{ED}/C₀ 8.73E-02 mg/l Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target. The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

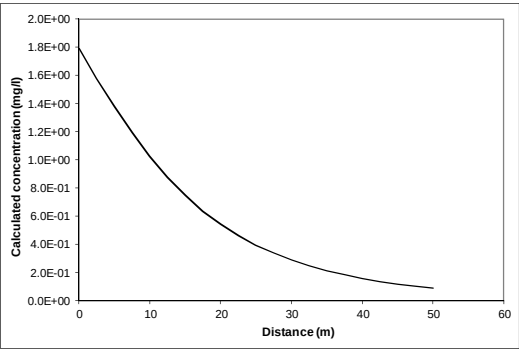
Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	6.50E-04	fraction
Organic carbon partition coefficient	Koc	1.32E+02	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	K _{oc,n}		l/kg
Sorption coefficient for ionised species	K _{oc,i}		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	8.58E-02	l/kg

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10% 1% 0.1% of pathway length

	Enter value	Calc value	Xu & Eckstein	
Longitudinal dispersivity	ax 0.00E+00	5.00E+00	2.98E+00	m
Transverse dispersivity	az 0.00E+00	5.00E-01	2.98E-01	m
Vertical dispersivity	ay 0.00E+00	5.00E-02	2.98E-02	
Note values of dispersivity must be > 0				
For calculated value, assumes ax = 0.1 * x, az = 0.01 * x, ay = 0.001 * x				
Xu & Eckstein (1995) report ax = 0.83(log ₁₀ x) ^{2.414} ; az = ax/10, ay = ax/100 are assumed				



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action. Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best described by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	Hyde Park Hayes
Completed by:	MWB
Date:	28/07/15
Version:	1

Calculated concentrations for distance-concentration graph

Domenico - Steady state	
From calculation sheet	
Distance	Concentration
	mg/l
0	1.8E+00
2.5	1.58E+00
5.0	1.38E+00
7.5	1.19E+00
10.0	1.02E+00
12.5	8.75E-01
15.0	7.46E-01
17.5	6.36E-01
20.0	5.43E-01
22.5	4.63E-01
25.0	3.96E-01
27.5	3.39E-01
30.0	2.90E-01
32.5	2.49E-01
35.0	2.14E-01
37.5	1.84E-01
40.0	1.58E-01
42.5	1.36E-01
45.0	1.17E-01
47.5	1.01E-01
50.0	8.73E-02

R&D Publication 20 Remedial Targets Worksheet, Release 3.2



Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

Variable	Value	Unit	Source
Contaminant	1,1-DCE		from Level 1
Target Concentration	C _T 3.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state Equations in HRA publication

Approach for simulating vertical dispersion:

Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants:

Apply degradation rate to dissolved pollutants only

Select Method for deriving Partition Co-efficient (using pull down menu)

Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)

Soil water partition coefficient K_d l/kg

Entry for non-polar organic chemicals (option)

Fraction of organic carbon in aquifer f_{oc} 6.50E-04 fraction

Organic carbon partition coefficient K_{oc} 2.88E+01 l/kg

Entry for ionic organic chemicals (option)

Sorption coefficient for related species K_{oc,r} l/kg

Sorption coefficient for ionised species K_{oc,i} l/kg

pH value pH

acid dissociation constant pK_a

Fraction of organic carbon in aquifer f_{oc} fraction

Soil water partition coefficient K_d 1.87E-02 l/kg

Source of parameter value

Max GW conc

EATechnical Report 228

Area between BHS 25 and 26

Approx thickness of Lynch Hill gravels

Approx thickness of Lynch Hill gravels

CONSIM help file

CONSIM helpfile

Gradient to north east of source

Results from March 2014

Max allowed for Haz substance

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10% 1% 0.1% of pathway length

Longitudinal dispersivity

Enter value Calc value Xu & Eckstein m

ax 0.00E+00 5.00E+00 2.98E+00 m

Transverse dispersivity

az 0.00E+00 5.00E-01 2.98E-01 m

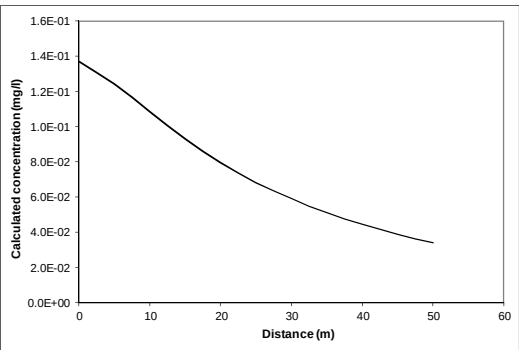
Vertical dispersivity

ay 0.00E+00 5.00E-02 2.98E-02

Note values of dispersivity must be > 0

For calculated value, assumes ax = 0.1 * x, az = 0.01 * x, ay = 0.001 * x

Xu & Eckstein (1995) report ax = 0.83(log₁₀x)^{2.414}; az = ax/10, ay = ax/100 are assumed



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared

with the Level 3 remedial target to determine the need for further action.

Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best described by an electron limited degradation such as oxidation by O₂, NO₃, SO₄ etc than an alternative solution should be used

Calculated concentrations for distance-concentration graph

Domenico - Steady state

From calculation sheet

Distance Concentration

Distance	Concentration
	mg/l
0	1.4E-01
2.5	1.31E-01
5.0	1.24E-01
7.5	1.17E-01
10.0	1.09E-01
12.5	1.01E-01
15.0	9.30E-02
17.5	8.60E-02
20.0	7.96E-02
22.5	7.37E-02
25.0	6.84E-02
27.5	6.34E-02
30.0	5.90E-02
32.5	5.49E-02
35.0	5.11E-02
37.5	4.76E-02
40.0	4.45E-02
42.5	4.15E-02
45.0	3.88E-02
47.5	3.63E-02
50.0	3.40E-02

Calculated Parameters

Variable			
Groundwater flow velocity	v	1.20E-02	m/d
Retardation factor	R _f	1.11E+00	fraction
Decay rate used	λ	2.19E-04	d ⁻¹
Rate of contaminant flow due to retardation	u	1.08E-02	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C _{ED}	3.40E-02	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	AF	4.03E+00	

Remedial Targets

Remedial Target	1.21E-02	mg/l	For comparison with measured groundwater concentration.
Domenico - Steady state			

Distance to compliance point 50 m

Concentration of contaminant at compliance point C_{ED}/C₀ 3.40E-02 mg/l Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target. The recommended value for time when calculating the remedial target is 9.9E+99.

R&D Publication 20 Remedial Targets Worksheet, Release 3.2



Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

Variable	Value	Unit	Source
Contaminant	1,2-dichloroethane		from Level 1
Target Concentration	C _T 3.00E-03	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state Equations in HRA publication

Approach for simulating vertical dispersion:

Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants:

Apply degradation rate to dissolved pollutants only

Source of parameter value			
Initial contaminant concentration in groundwater at plume core	C ₀	5.20E-02	mg/l
Half life for degradation of contaminant in water	t _{1/2}	3.60E+02	days
Calculated decay rate	λ	1.93E-03	days ⁻¹
Width of plume in aquifer at source (perpendicular to flow)	Sz	5.00E+01	m
Plume thickness at source	Sy	2.00E+00	m
Saturated aquifer thickness	da	2.30E+00	m
Bulk density of aquifer materials	ρ	1.80E+00	g/cm ³
Effective porosity of aquifer	n	3.00E-01	fraction
Hydraulic gradient	i	4.00E-03	fraction
Hydraulic conductivity of aquifer	K	9.00E-01	m/d
Distance to compliance point	x	5.00E+01	m
Distance (lateral) to compliance point perpendicular to flow direction	z		m
Distance (depth) to compliance point perpendicular to flow direction	y		m
Time since pollutant entered groundwater	t	1.00E+100	days
Parameters values determined from options			
Partition coefficient	Kd	1.30E-02	l/kg
Longitudinal dispersivity	ax	5.00E+00	m
Transverse dispersivity	az	5.00E-01	m
Vertical dispersivity	ay	5.00E-02	m

Calculated Parameters

Variable			
Groundwater flow velocity	v	1.20E-02	m/d
Retardation factor	Rf	1.08E+00	fraction
Decay rate used	λ	1.79E-03	d ⁻¹
Rate of contaminant flow due to retardation	u	1.11E-02	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C _{ED}	1.70E-04	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	AF	3.06E+02	

Remedial Targets

Remedial Target	9.17E-01	mg/l	For comparison with measured groundwater concentration.
Domenico - Steady state			

Distance to compliance point 50 m

Concentration of contaminant at compliance point C_{ED}/C₀ 1.70E-04 mg/l Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target. The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

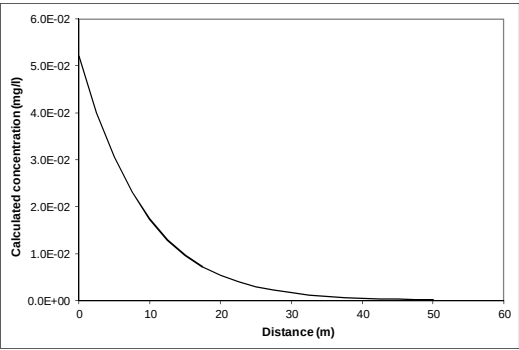
Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	6.50E-04	fraction
Organic carbon partition coefficient	Koc	2.00E+01	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	K _{oc,n}		l/kg
Sorption coefficient for ionised species	K _{oc,i}		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	1.30E-02	l/kg

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10% 1% 0.1% of pathway length

	Enter value	Calc value	Xu & Eckstein	m
Longitudinal dispersivity	ax 0.00E+00	5.00E+00	2.98E+00	m
Transverse dispersivity	az 0.00E+00	5.00E-01	2.98E-01	m
Vertical dispersivity	ay 0.00E+00	5.00E-02	2.98E-02	m
Note values of dispersivity must be > 0				
For calculated value, assumes ax = 0.1 * x, az = 0.01 * x, ay = 0.001 * x				
Xu & Eckstein (1995) report ax = 0.83(log ₁₀ x) ^{2.414} ; az = ax/10, ay = ax/100 are assumed				



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action. Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best described by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	Hyde Park Hayes
Completed by:	MWB
Date:	28/07/15
Version:	1

Calculated concentrations for distance-concentration graph

Domenico - Steady state		
From calculation sheet		
Distance	Concentration	mg/l
0		5.2E-02
2.5		4.00E-02
5.0		3.06E-02
7.5		2.31E-02
10.0		1.73E-02
12.5		1.29E-02
15.0		9.64E-03
17.5		7.18E-03
20.0		5.35E-03
22.5		3.99E-03
25.0		2.98E-03
27.5		2.23E-03
30.0		1.67E-03
32.5		1.25E-03
35.0		9.37E-04
37.5		7.04E-04
40.0		5.29E-04
42.5		3.98E-04
45.0		3.00E-04
47.5		2.26E-04
50.0		1.70E-04

R&D Publication 20 Remedial Targets Worksheet, Release 3.2



Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

Variable	Value	Unit	Source
Contaminant	Cis-1,2-DCE		from Level 1
Target Concentration	C _T 5.00E-02	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state Equations in HRA publication

Approach for simulating vertical dispersion:

Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants:

Apply degradation rate to dissolved pollutants only

Source of parameter value			
Initial contaminant concentration in groundwater at plume core	C ₀	1.66E-01	mg/l
Half life for degradation of contaminant in water	t _{1/2}	2.84E+03	days
Calculated decay rate	λ	2.44E-04	days ⁻¹
Width of plume in aquifer at source (perpendicular to flow)	Sz	5.00E+01	m
Plume thickness at source	Sy	2.00E+00	m
Saturated aquifer thickness	da	2.30E+00	m
Bulk density of aquifer materials	ρ	1.80E+00	g/cm ³
Effective porosity of aquifer	n	3.00E-01	fraction
Hydraulic gradient	i	4.00E-03	fraction
Hydraulic conductivity of aquifer	K	9.00E-01	m/d
Distance to compliance point	x	5.00E+01	m
Distance (lateral) to compliance point perpendicular to flow direction	z		m
Distance (depth) to compliance point perpendicular to flow direction	y		m
Time since pollutant entered groundwater	t	1.00E+100	days
Parameters values determined from options			
Partition coefficient	Kd	8.19E-02	l/kg
Longitudinal dispersivity	ax	5.00E+00	m
Transverse dispersivity	az	5.00E-01	m
Vertical dispersivity	ay	5.00E-02	m

Calculated Parameters

Variable	Value	Unit
Groundwater flow velocity	v	1.20E-02 m/d
Retardation factor	Rf	1.49E+00
Decay rate used	λ	1.63E-04 d ⁻¹
Rate of contaminant flow due to retardation	u	8.05E-03 m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C _{ED}	4.12E-02 mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	AF	4.03E+00

Remedial Targets

Remedial Target	2.01E-01	mg/l	For comparison with measured groundwater concentration.
Domenico - Steady state			
Distance to compliance point	50	m	
Concentration of contaminant at compliance point	C _{ED} /C ₀	4.12E-02	mg/l Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target. The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

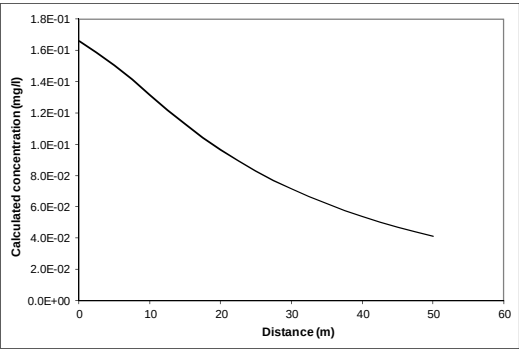
Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	6.50E-04	fraction
Organic carbon partition coefficient	Koc	1.26E+02	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	K _{oc,n}		l/kg
Sorption coefficient for ionised species	K _{oc,i}		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	8.19E-02	l/kg

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10% 1% 0.1% of pathway length

	Enter value	Calc value	Xu & Eckstein	m
Longitudinal dispersivity	ax	0.00E+00	5.00E+00	2.98E+00
Transverse dispersivity	az	0.00E+00	5.00E-01	2.98E-01
Vertical dispersivity	ay	0.00E+00	5.00E-02	2.98E-02
Note values of dispersivity must be > 0				
For calculated value, assumes ax = 0.1 * x, az = 0.01 * x, ay = 0.001 * x				
Xu & Eckstein (1995) report ax = 0.83(log ₁₀ x) ^{2.414} ; az = ax/10, ay = ax/100 are assumed				



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action. Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best described by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	Hyde Park Hayes
Completed by:	MWB
Date:	28/07/15
Version:	1

Calculated concentrations for distance-concentration graph

Domenico - Steady state	
From calculation sheet	
Distance	Concentration
	mg/l
0	1.7E-01
2.5	1.58E-01
5.0	1.51E-01
7.5	1.41E-01
10.0	1.32E-01
12.5	1.22E-01
15.0	1.13E-01
17.5	1.04E-01
20.0	9.65E-02
22.5	8.93E-02
25.0	8.28E-02
27.5	7.69E-02
30.0	7.14E-02
32.5	6.65E-02
35.0	6.19E-02
37.5	5.77E-02
40.0	5.39E-02
42.5	5.03E-02
45.0	4.70E-02
47.5	4.40E-02
50.0	4.12E-02

R&D Publication 20 Remedial Targets Worksheet, Release 3.2



Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

Variable	Value	Unit	Source
Contaminant	Trans-1,2-DCE		from Level 1
Target Concentration	C _T 5.00E-02	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state Equations in HRA publication

Approach for simulating vertical dispersion:

Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants:

Apply degradation rate to dissolved pollutants only

Source of parameter value			
Initial contaminant concentration in groundwater at plume core	C ₀	1.38E-01	mg/l
Half life for degradation of contaminant in water	t _{1/2}	2.84E+03	days
Calculated decay rate	λ	2.44E-04	days ⁻¹
Width of plume in aquifer at source (perpendicular to flow)	Sz	5.00E+01	m
Plume thickness at source	Sy	2.00E+00	m
Saturated aquifer thickness	da	2.30E+00	m
Bulk density of aquifer materials	ρ	1.80E+00	g/cm ³
Effective porosity of aquifer	n	3.00E-01	fraction
Hydraulic gradient	i	4.00E-03	fraction
Hydraulic conductivity of aquifer	K	9.00E-01	m/d
Distance to compliance point	x	5.00E+01	m
Distance (lateral) to compliance point perpendicular to flow direction	z		m
Distance (depth) to compliance point perpendicular to flow direction	y		m
Time since pollutant entered groundwater	t	1.00E+100	days
Parameters values determined from options			
Partition coefficient	Kd	1.87E-02	l/kg
Longitudinal dispersivity	ax	5.00E+00	m
Transverse dispersivity	az	5.00E-01	m
Vertical dispersivity	ay	5.00E-02	m

Calculated Parameters

Groundwater flow velocity	v	1.20E-02	m/d
Retardation factor	Rf	1.11E+00	fraction
Decay rate used	λ	2.19E-04	d ⁻¹
Rate of contaminant flow due to retardation	u	1.08E-02	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C _{ED}	3.42E-02	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	AF	4.03E+00	

Remedial Targets

Remedial Target	2.01E-01	mg/l	For comparison with measured groundwater concentration.
Domenico - Steady state			
Distance to compliance point	50	m	
Concentration of contaminant at compliance point	C _{ED} /C ₀	3.42E-02	mg/l Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target. The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

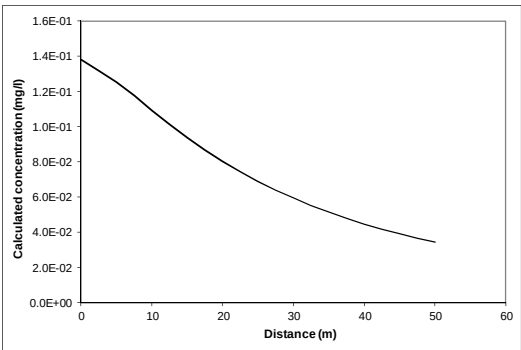
Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	6.50E-04	fraction
Organic carbon partition coefficient	Koc	2.88E+01	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	K _{oc,n}		l/kg
Sorption coefficient for ionised species	K _{oc,i}		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	1.87E-02	l/kg

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10% 1% 0.1% of pathway length

	Enter value	Calc value	Xu & Eckstein	m
Longitudinal dispersivity	ax 0.00E+00	5.00E+00	2.98E+00	m
Transverse dispersivity	az 0.00E+00	5.00E-01	2.98E-01	m
Vertical dispersivity	ay 0.00E+00	5.00E-02	2.98E-02	m
Note values of dispersivity must be > 0				
For calculated value, assumes ax = 0.1 * x, az = 0.01 * x, ay = 0.001 * x				
Xu & Eckstein (1995) report ax = 0.83(log ₁₀ x) ^{2.414} ; az = ax/10, ay = ax/100 are assumed				



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action. Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best described by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	Hyde Park Hayes
Completed by:	MWB
Date:	28/07/15
Version:	1

Calculated concentrations for distance-concentration graph

Domenico - Steady state	
From calculation sheet	
Distance	Concentration
	mg/l
0	1.4E-01
2.5	1.32E-01
5.0	1.25E-01
7.5	1.18E-01
10.0	1.09E-01
12.5	1.01E-01
15.0	9.37E-02
17.5	8.67E-02
20.0	8.02E-02
22.5	7.43E-02
25.0	6.89E-02
27.5	6.39E-02
30.0	5.94E-02
32.5	5.53E-02
35.0	5.15E-02
37.5	4.80E-02
40.0	4.48E-02
42.5	4.18E-02
45.0	3.91E-02
47.5	3.66E-02
50.0	3.42E-02

R&D Publication 20 Remedial Targets Worksheet, Release 3.2



Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

Variable	Value	Unit	Source
Contaminant	TCE		from Level 1
Target Concentration	C _T 1.00E-02	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state Equations in HRA publication

Approach for simulating vertical dispersion:

Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants:

Apply degradation rate to dissolved pollutants only

Source of parameter value			
Initial contaminant concentration in groundwater at plume core	C ₀	7.42E-01	mg/l
Half life for degradation of contaminant in water	t _{1/2}	1.46E+03	days
Calculated decay rate	λ	4.74E-04	days ⁻¹
Width of plume in aquifer at source (perpendicular to flow)	Sz	5.00E+01	m
Plume thickness at source	Sy	2.00E+00	m
Saturated aquifer thickness	da	2.30E+00	m
Bulk density of aquifer materials	ρ	1.80E+00	g/cm ³
Effective porosity of aquifer	n	3.00E-01	fraction
Hydraulic gradient	i	4.00E-03	fraction
Hydraulic conductivity of aquifer	K	9.00E-01	m/d
Distance to compliance point	x	5.00E+01	m
Distance (lateral) to compliance point perpendicular to flow direction	z		m
Distance (depth) to compliance point perpendicular to flow direction	y		m
Time since pollutant entered groundwater	t	1.00E+100	days
Parameters values determined from options			
Partition coefficient	Kd	9.17E-02	l/kg
Longitudinal dispersivity	ax	5.00E+00	m
Transverse dispersivity	az	5.00E-01	m
Vertical dispersivity	ay	5.00E-02	m

Calculated Parameters

Variable	Value	Unit
Groundwater flow velocity	v	1.20E-02 m/d
Retardation factor	Rf	1.55E+00
Decay rate used	λ	3.06E-04 d ⁻¹
Rate of contaminant flow due to retardation	u	7.74E-03 m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C _{ED}	8.62E-02 mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	AF	8.61E+00

Remedial Targets

Remedial Target	8.61E-02	mg/l	For comparison with measured groundwater concentration.
Domenico - Steady state			

Distance to compliance point 50 m

Concentration of contaminant at compliance point C_{ED}/C₀ 8.62E-02 mg/l Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target. The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

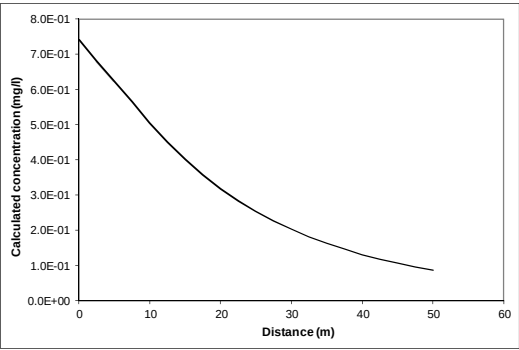
Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	6.50E-04	fraction
Organic carbon partition coefficient	Koc	1.41E+02	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	K _{oc,n}		l/kg
Sorption coefficient for ionised species	K _{oc,i}		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	9.17E-02	l/kg

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10% 1% 0.1% of pathway length

	Enter value	Calc value	Xu & Eckstein	m
Longitudinal dispersivity	ax	0.00E+00	5.00E+00	2.98E+00
Transverse dispersivity	az	0.00E+00	5.00E-01	2.98E-01
Vertical dispersivity	ay	0.00E+00	5.00E-02	2.98E-02
Note values of dispersivity must be > 0				
For calculated value, assumes ax = 0.1 * x, az = 0.01 * x, ay = 0.001 * x				
Xu & Eckstein (1995) report ax = 0.83(log ₁₀ x) ^{2.414} ; az = ax/10, ay = ax/100 are assumed				



Note graph assumes plume disperses vertically in one direction only. An alternative solution assuming the centre of the plume is located at the mid-depth of the aquifer is presented in the calculation sheets.

Note

This sheet calculates the Level 3 remedial target for groundwater, based on the distance to the receptor or compliance located down hydraulic gradient of the source Three solution methods are included, the preferred option is Ogata Banks.

By setting a long travel time it will give the steady state solution, which should be used to calculate remedial targets.

The measured groundwater concentration should be compared with the Level 3 remedial target to determine the need for further action. Note if contaminant is not subject to first order degradation, then set half life as 9.0E+99.

This worksheet should be used if pollutant transport and degradation is best described by a first order reaction. If degradation is best described by an electron limited degradation such as oxidation by O2, NO3, SO4 etc than an alternative solution should be used

Site being assessed:	Hyde Park Hayes
Completed by:	MWB
Date:	28/07/15
Version:	1

Calculated concentrations for distance-concentration graph

Domenico - Steady state	
From calculation sheet	
Distance	Concentration
	mg/l
0	7.4E-01
2.5	6.82E-01
5.0	6.24E-01
7.5	5.64E-01
10.0	5.05E-01
12.5	4.51E-01
15.0	4.01E-01
17.5	3.57E-01
20.0	3.18E-01
22.5	2.84E-01
25.0	2.53E-01
27.5	2.26E-01
30.0	2.02E-01
32.5	1.81E-01
35.0	1.63E-01
37.5	1.46E-01
40.0	1.31E-01
42.5	1.18E-01
45.0	1.06E-01
47.5	9.56E-02
50.0	8.62E-02

R&D Publication 20 Remedial Targets Worksheet, Release 3.2



Level 3 - Groundwater

See Note

Input Parameters (using pull down menu)

Variable	Value	Unit	Source
Contaminant	Vinyl chloride		from Level 1
Target Concentration	C _T 5.00E-04	mg/l	from Level 1

Select analytical solution (click on brown cell below, then on pull-down menu)

Domenico - Steady state Equations in HRA publication

Approach for simulating vertical dispersion:

Simulate vertical dispersion in 1 direction

Select nature of decay rate (click on brown cell below, then on pull-down menu)

Approach for simulating degradation of pollutants:

Apply degradation rate to dissolved pollutants only

Source of parameter value			
Initial contaminant concentration in groundwater at plume core	C ₀	3.17E-01	mg/l
Half life for degradation of contaminant in water	t _{1/2}	7.92E+02	days
Calculated decay rate	λ	8.75E-04	days ⁻¹
Width of plume in aquifer at source (perpendicular to flow)	Sz	5.00E+01	m
Plume thickness at source	Sy	2.00E+00	m
Saturated aquifer thickness	da	2.30E+00	m
Bulk density of aquifer materials	ρ	1.80E+00	g/cm ³
Effective porosity of aquifer	n	3.00E-01	fraction
Hydraulic gradient	i	4.00E-03	fraction
Hydraulic conductivity of aquifer	K	9.00E-01	m/d
Distance to compliance point	x	5.00E+01	m
Distance (lateral) to compliance point perpendicular to flow direction	z		m
Distance (depth) to compliance point perpendicular to flow direction	y		m
Time since pollutant entered groundwater	t	1.00E+100	days
Parameters values determined from options			
Partition coefficient	Kd	1.11E-02	l/kg
Longitudinal dispersivity	ax	5.00E+00	m
Transverse dispersivity	az	5.00E-01	m
Vertical dispersivity	ay	5.00E-02	m

Calculated Parameters

Variable	Value	Unit
Groundwater flow velocity	v 1.20E-02	m/d
Retardation factor	Rf 1.07E+00	fraction
Decay rate used	λ 8.21E-04	d ⁻¹
Rate of contaminant flow due to retardation	u 1.13E-02	m/d
Contaminant concentration at distance x, assuming one-way vertical dispersion	C _{ED} 1.16E-02	mg/l
Attenuation factor (one way vertical dispersion, CO/CED)	AF 2.72E+01	

Remedial Targets

Remedial Target	1.36E-02	mg/l	For comparison with measured groundwater concentration.
Domenico - Steady state			

Distance to compliance point 50 m

Concentration of contaminant at compliance point C_{ED}/C₀ 1.16E-02 mg/l Domenico - Steady state

Care should be used when calculating remedial targets using the time variant options as this may result in an overestimate of the remedial target. The recommended value for time when calculating the remedial target is 9.9E+99.

Select Method for deriving Partition Co-efficient (using pull down menu)

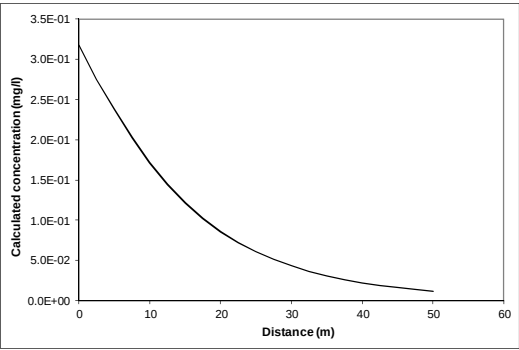
Calculate for non-polar organic chemicals

Entry if specify partition coefficient (option)			
Soil water partition coefficient	Kd		l/kg
Entry for non-polar organic chemicals (option)			
Fraction of organic carbon in aquifer	foc	6.50E-04	fraction
Organic carbon partition coefficient	Koc	1.70E+01	l/kg
Entry for ionic organic chemicals (option)			
Sorption coefficient for related species	K _{oc,n}		l/kg
Sorption coefficient for ionised species	K _{oc,i}		l/kg
pH value	pH		
acid dissociation constant	pKa		
Fraction of organic carbon in aquifer	foc		fraction
Soil water partition coefficient	Kd	1.11E-02	l/kg

Define dispersivity (click brown cell and use pull down list)

Dispersivities 10% 1% 0.1% of pathway length

	Enter value	Calc value	Xu & Eckstein	m
Longitudinal dispersivity	ax 0.00E+00	5.00E+00	2.98E+00	m
Transverse dispersivity	az 0.00E+00	5.00E-01	2.98E-01	m
Vertical dispersivity	ay 0.00E+00	5.00E-02	2.98E-02	m
Note values of dispersivity must be > 0				
For calculated value, assumes ax = 0.1 * x, az = 0.01 * x, ay = 0.001 * x				
Xu & Eckstein (1995) report ax = 0.83(log ₁₀ x) ^{2.414} ; az = ax/10, ay = ax/100 are assumed				



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Site being assessed:	Hyde Park Hayes
Completed by:	MWB
Date:	28/07/15
Version:	1

Calculated concentrations for distance-concentration graph

Domenico - Steady state	
From calculation sheet	
Distance	Concentration
	mg/l
0	3.2E-01
2.5	2.75E-01
5.0	2.38E-01
7.5	2.03E-01
10.0	1.71E-01
12.5	1.44E-01
15.0	1.21E-01
17.5	1.02E-01
20.0	8.58E-02
22.5	7.22E-02
25.0	6.08E-02
27.5	5.13E-02
30.0	4.34E-02
32.5	3.67E-02
35.0	3.10E-02
37.5	2.63E-02
40.0	2.23E-02
42.5	1.89E-02
45.0	1.61E-02
47.5	1.37E-02
50.0	1.16E-02