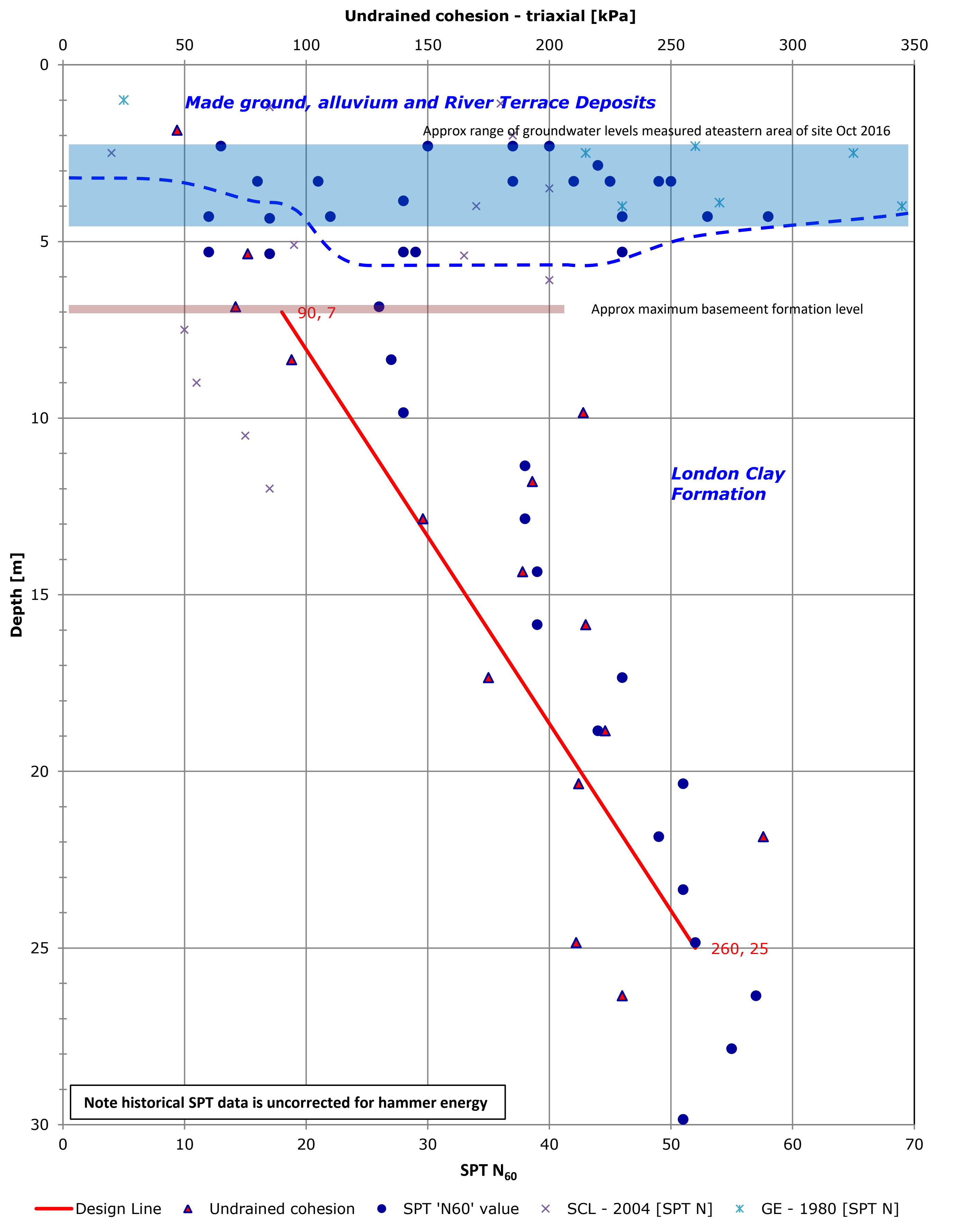
Site & Location	Stag Brewery, Lower Richmond Road, Mortlake, London SW14 7ET	Report No:	10022/OT

Undrained cohesion and SPT [N60] vs depth



Design Line ∆cu = 9.44kPa/m

Note: this plot may incorporate extrapolated results, generally where 'N' >50 - these are indicative only and should be used with caution

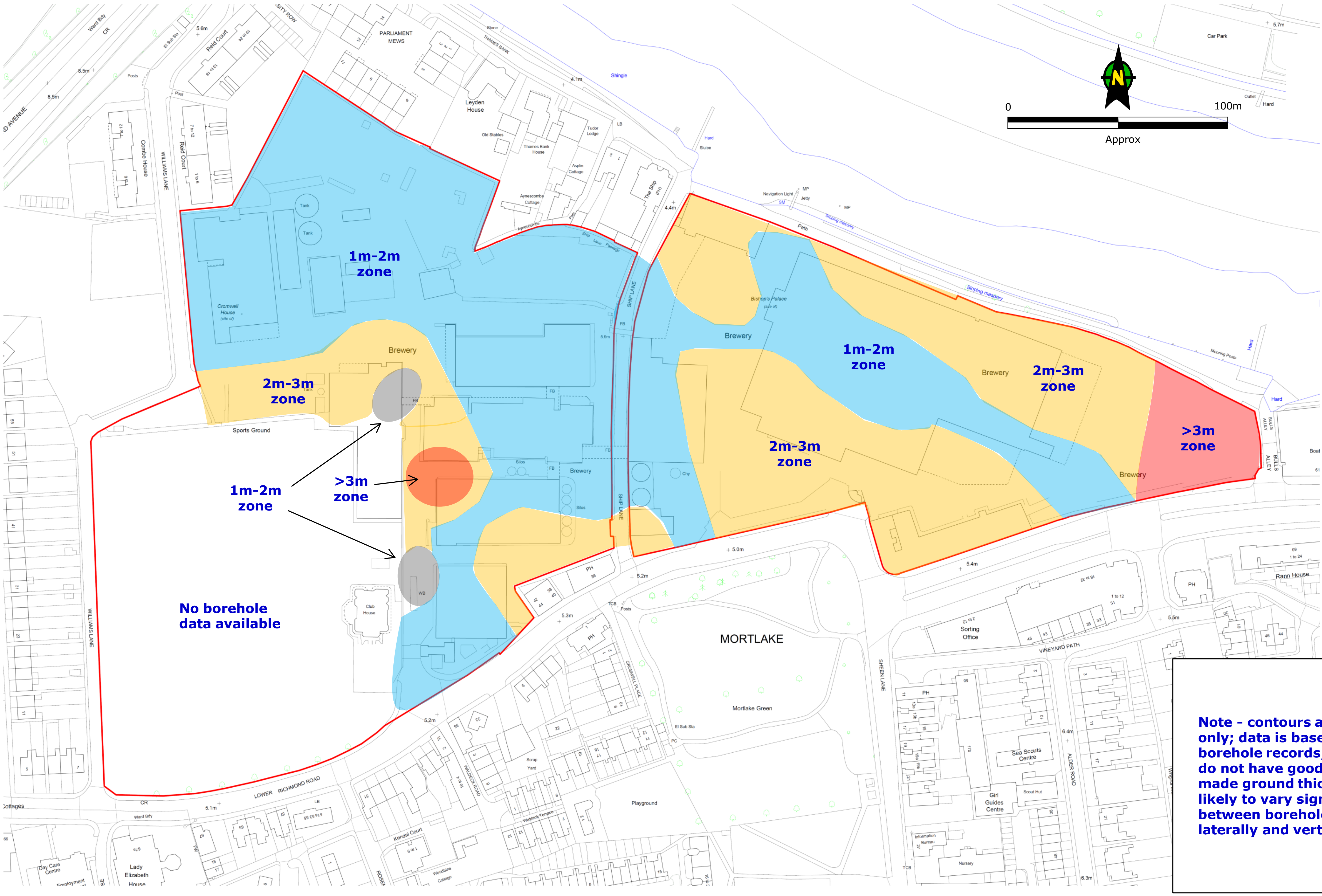
Soil Consultants

Site Location

Stag Brewery, Lower Richmond Road, Mortlake, London SW14 7ET

Report No: **10022/OT**

Depth to top - River Terrace Deposits



Note - contours are indicative only; data is based on available borehole records; some areas do not have good coverage and made ground thicknesses are likely to vary significantly between boreholes, both laterally and vertically

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Soil Consultants

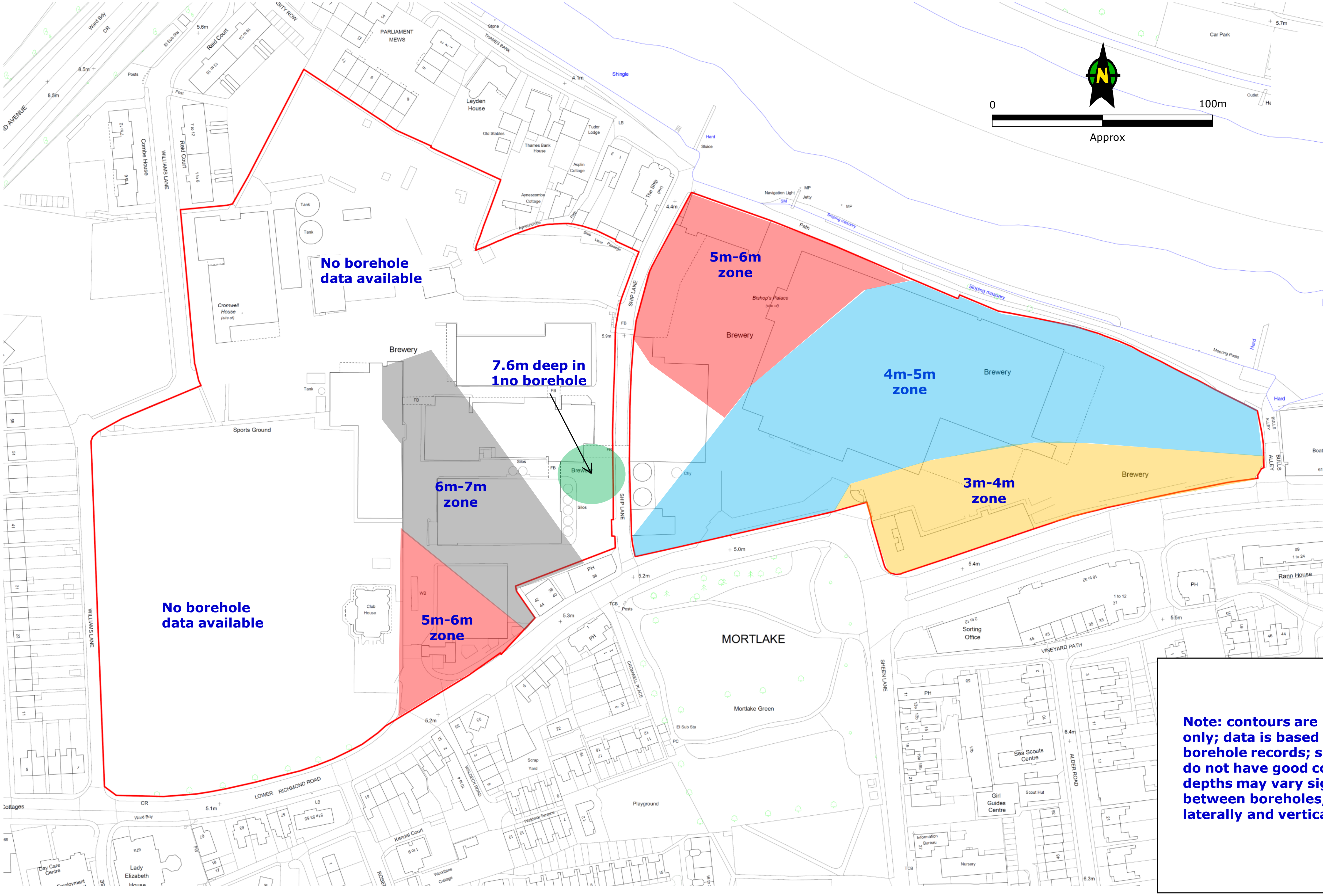
Site Location

Stag Brewery, Lower Richmond Road, Mortlake, London SW14 7ET

Report No:

10022/OT

Depth to top – London Clay Formation



Note: contours are indicative only; data is based on available borehole records; some areas do not have good coverage and depths may vary significantly between boreholes, both laterally and vertically

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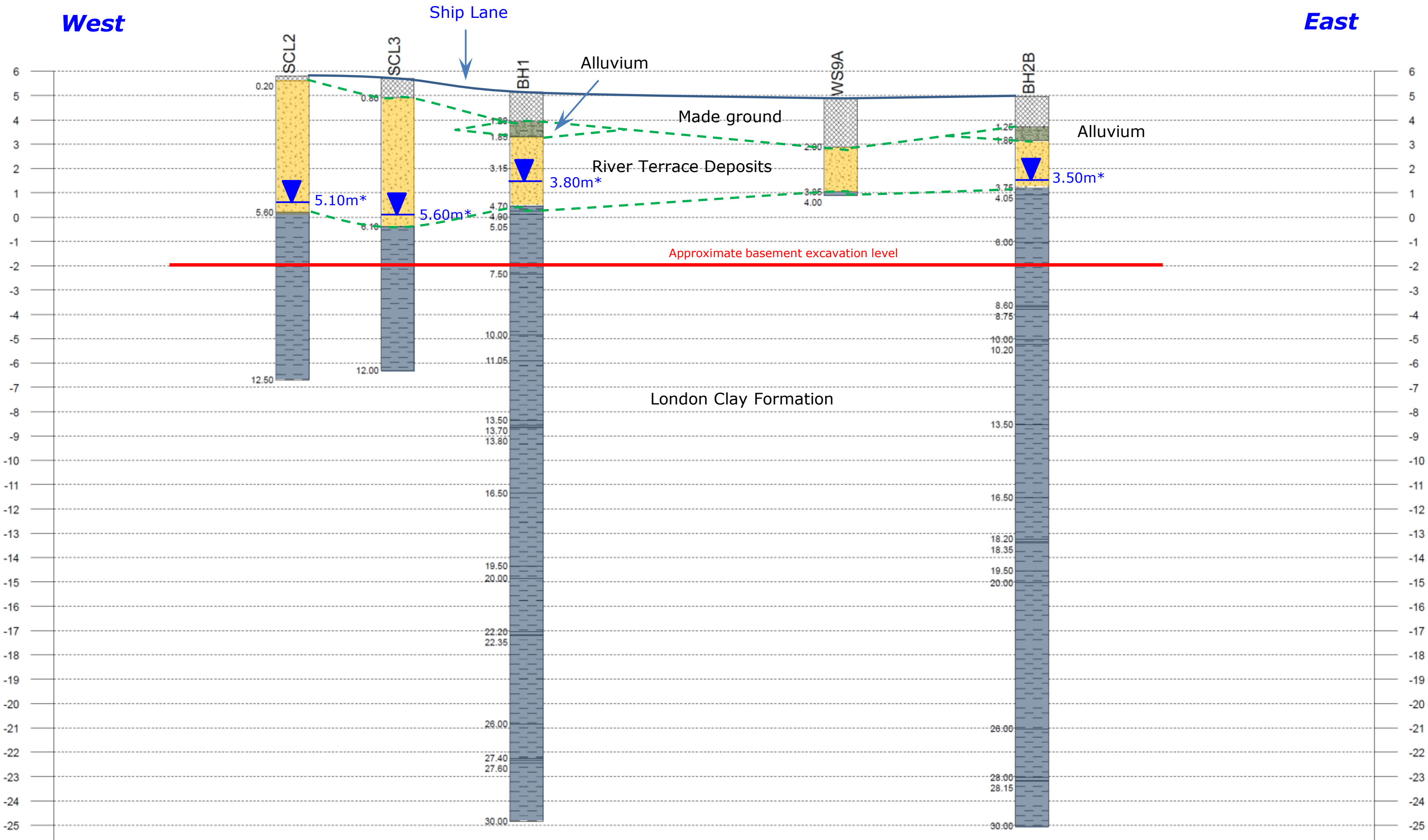
Project Id: 10022/OT
Project Title: Stag Brewery,
Location: Lower Richmond Road, Mortlake, London SW14 7ET
Client: Reselton Properties Ltd

Section AA

Soil Consultants

Notes:

* Groundwater levels shown are highest recorded at time of writing; information from historical boreholes relates to information on water strikes during drilling



Chainage (m)	0.00	38.42	83.28	138.27	272.35	353.96	436.57
Offset (m)		1.91	6.04	2.48	3.71	4.81	
Elevation (mAOD)		5.80	5.70	5.15	4.89	4.96	

STRATA BOUNDARIES BEETWEEN BOREHOLES INDICATIVE ONLY; VARIATIONS BETWEEN BOREHOLES SHOULD BE ANTICIPATED

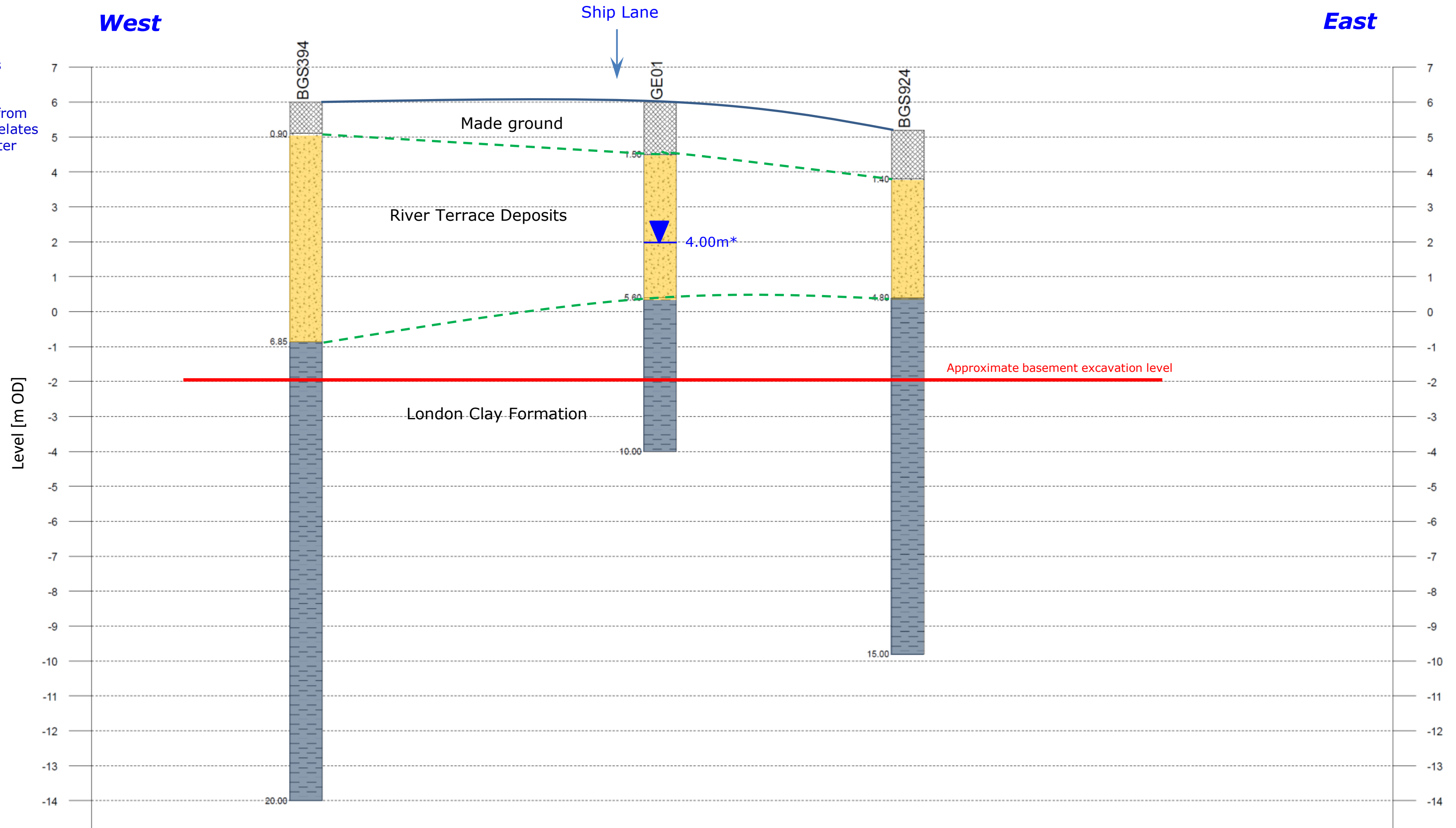
Project Id: 10022/OT
Project Title: Stag Brewery,
Location: Lower Richmond Road, Mortlake, London SW14 7ET
Client: Reselton Properties Ltd

Section BB

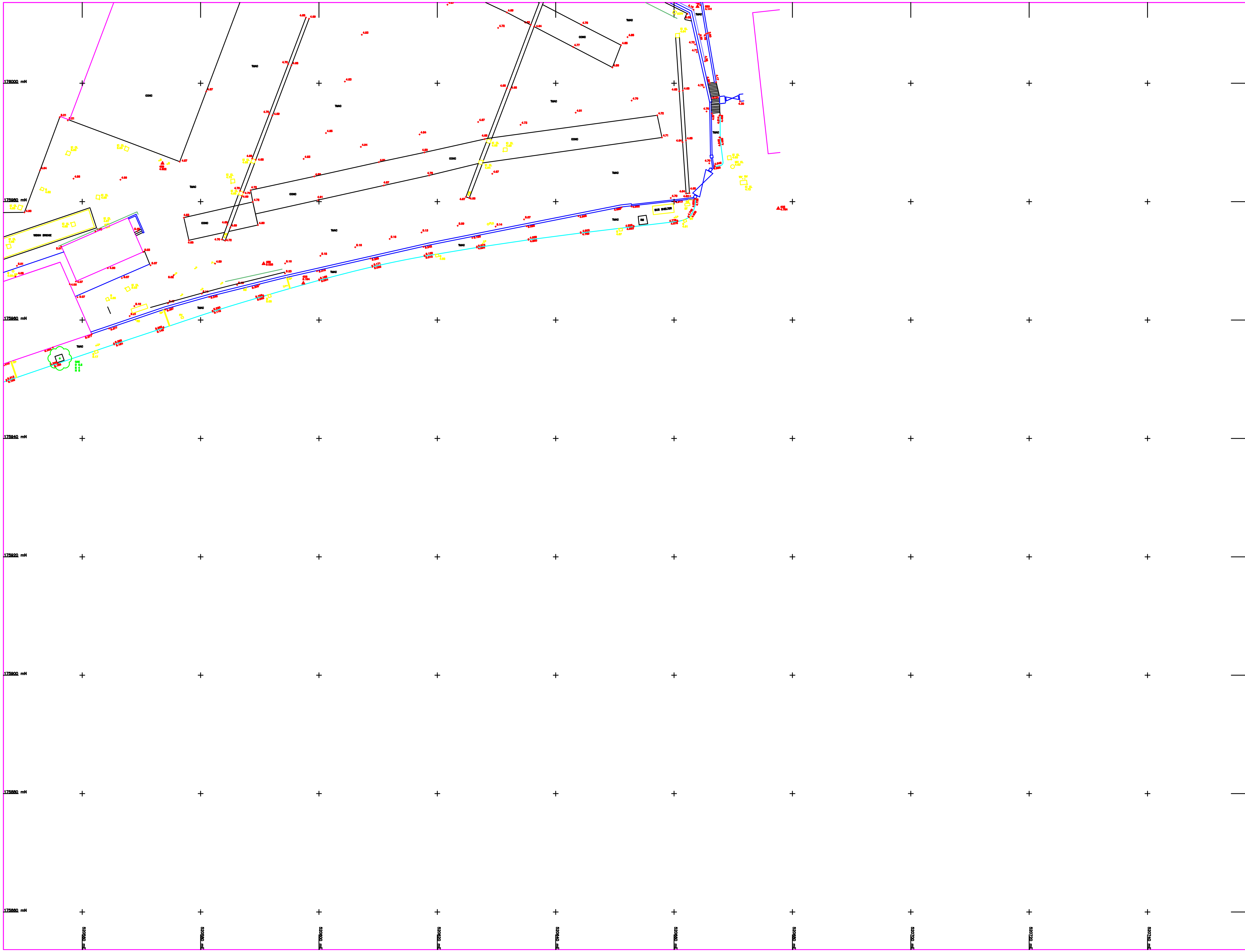
Soil Consultants

Notes:

* Groundwater levels shown are highest recorded at time of writing; information from historical boreholes relates to information on water strikes during drilling



Chainage (m)	0.00	23.46	145.63	161.05	231.07	347.94
Offset (m)		3.63	12.41	4.39	10.13	
Elevation (mAOD)		6.00	6.00	6.08	5.20	



ABBREVIATIONS

LEVEL NOTE.

ALL CO-ORDINATES RELATE TO THE ORDNANCE SURVEY GRID AND DATUM VIA GPS OBSERVATIONS.

COORDINATE SCHEDULE

All underground services information shown on this plan cannot be guaranteed and users should satisfy themselves of the type, size and route before commencing work on site.
Tree types shown on this drawing cannot be guaranteed and if critical should be verified by an arboriculturist.
Tree spreads and diameters are averages unless otherwise indicated.
This plan has been produced for the client detailed below or their appointed agent to an agreed specification and defines the limit of APR Services liability

ISO 9001 :2008

THE SURVEY ASSOCIATION

Revisions	Date

Date JULY 2015	Drawn LJC
Scale A0@ 1:200	Checked CPM
Dwg. No. 915213–7	Job No. 915213

Client

GERALD EVE LLP

Dwg. Title
LAND SURVEY

Project Title
STAG BREWERY, MORTLAKE

apr services
land, building surveys & 3d laser scanning

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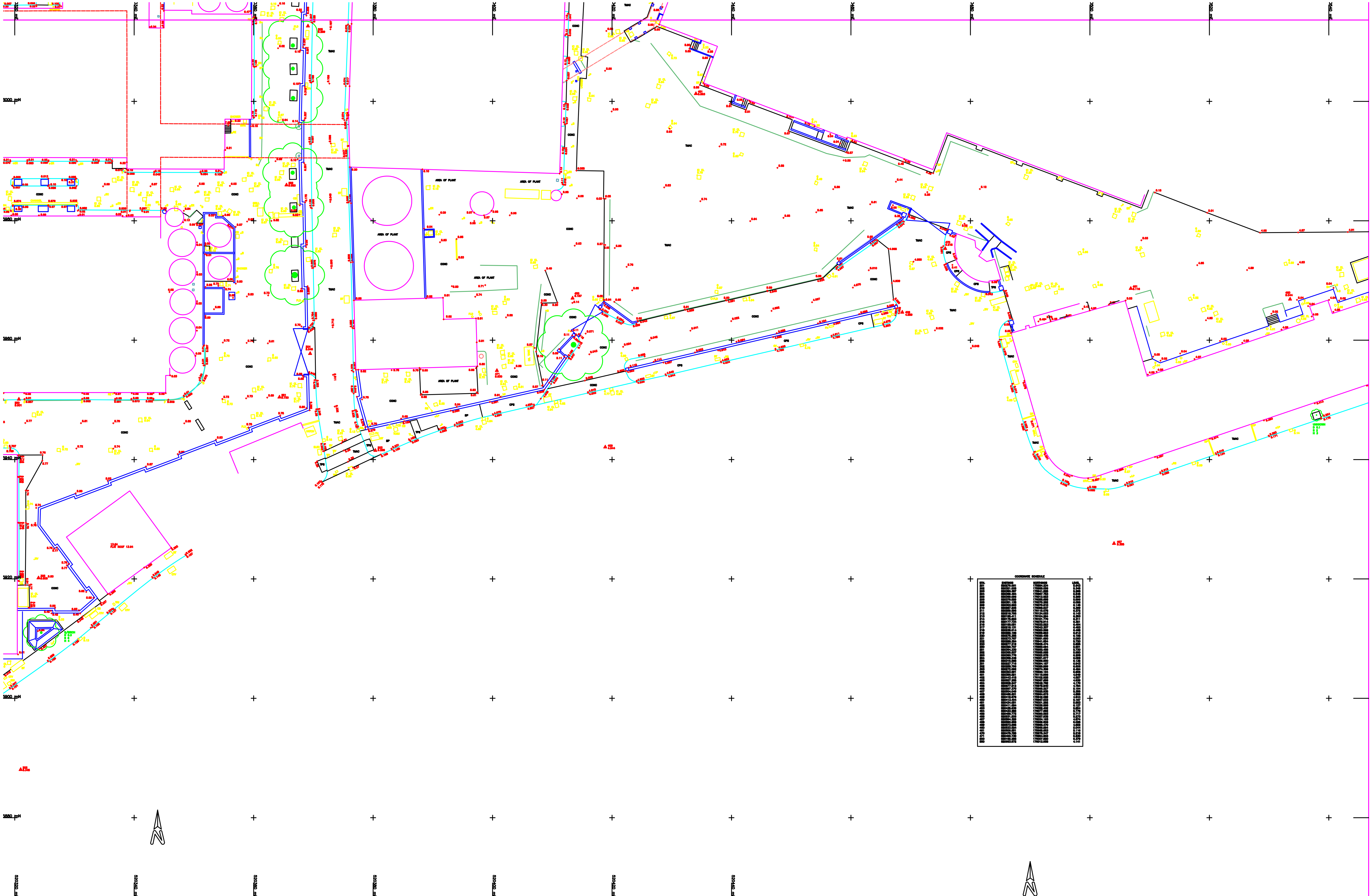
Salisbury and Plymouth



lient	Date JULY 2015	Drawn LJC
GERALD EVE LLP	Scale A0 1:200	Checked CPM
	Dwg. No. 915213–5	Job No. 915213

wg. Title
LAND SURVEY

roject Title
STAG BREWERY,
MORTLAKE

Revisions | Date

LEVEL NOTE.
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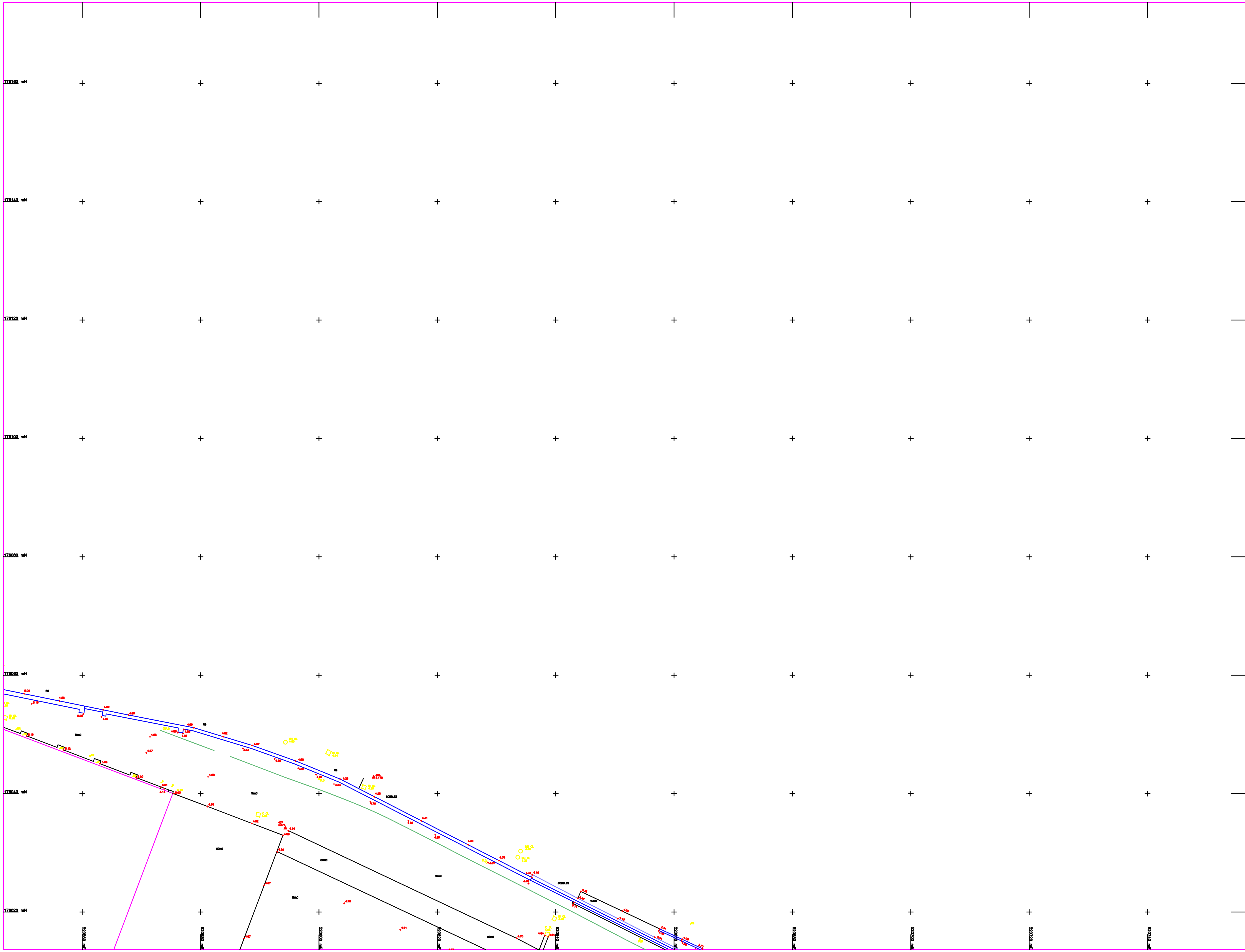

ABBREVIATIONS

Top
Banks
Bottom
Drop Kerbs
Overhead Detail
Change in Elevation
Fences
Overhead Cables
Change in Surface
Edge of Vegetation
Floor to Ceiling Height
False Ceiling Height
Gate
Survey Station
Foul Water Sewer
Surface Water Sewer
Combined Sewer

LEVEL NOTE.

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THE SURVEY ASSOCIATION

Revisions		Date

Date	JULY 2015	Drawn	LJC
Scale A0@	1:200	Checked	CPM
Dwg. No.	915213-6	Job No.	915213

Client

GERALD EVE LLP

Dwg. Title
LAND SURVEY

Project Title
STAG BREWERY,
MORTLAKE

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Client GERALD EVE LLP	Date JULY 2015	Drawn LJC	LEVEL NOTE. ALL COORDINATES RELATE TO THE ORDNANCE SURVEY GRID AND DATUM VIA GPS OBSERVATIONS.
	Scale A0@ 1:200	Checked CPM	
Dwg. Title LAND SURVEY	Dwg. No. 915213–4	Job No. 915213	
Project Title STAG BREWERY, MORTLAKE	Revisions	Date	

THE SURVEY ASSOCIATION

ISO 9001 :2008

ABBREVIATIONS

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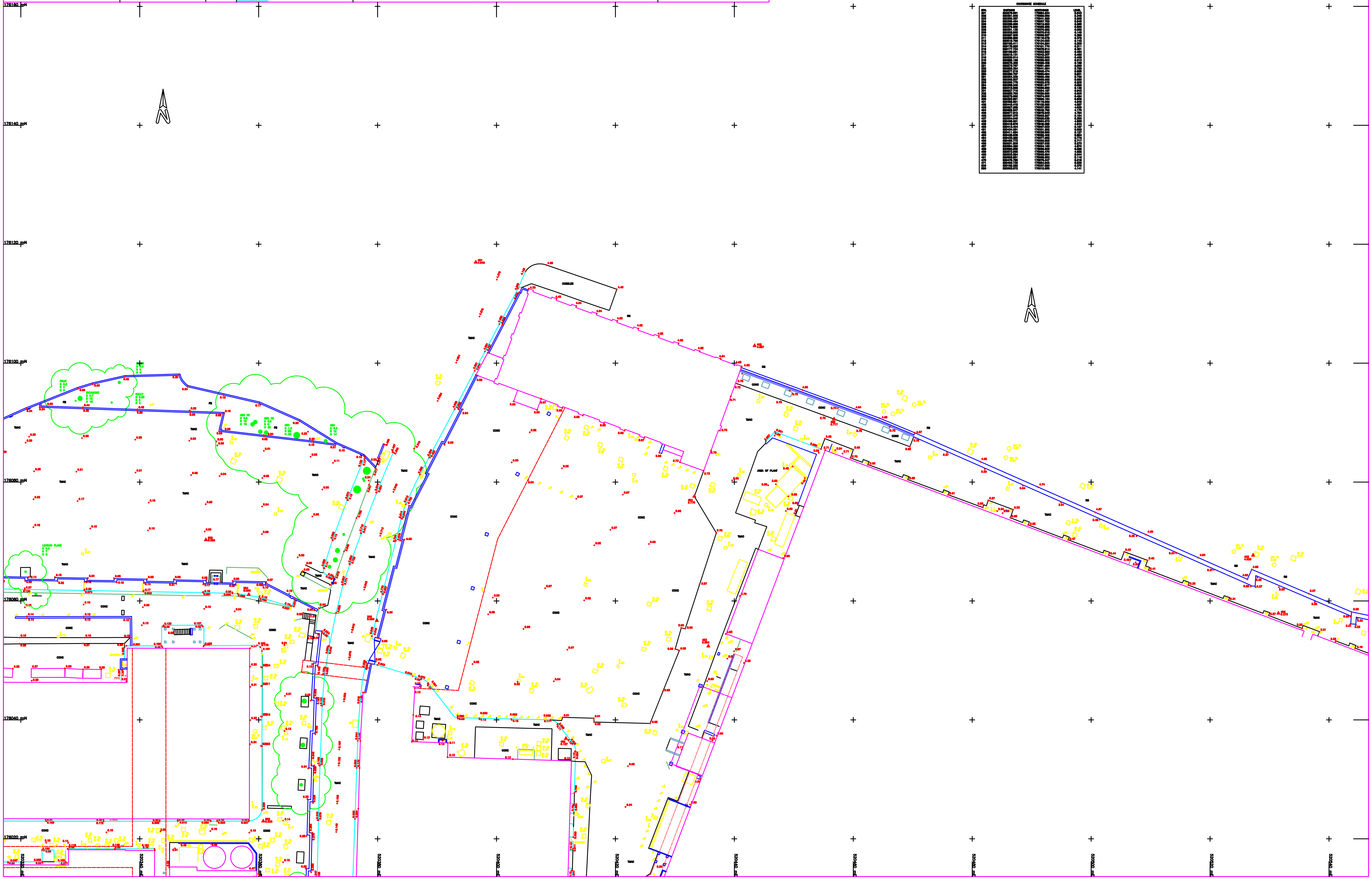
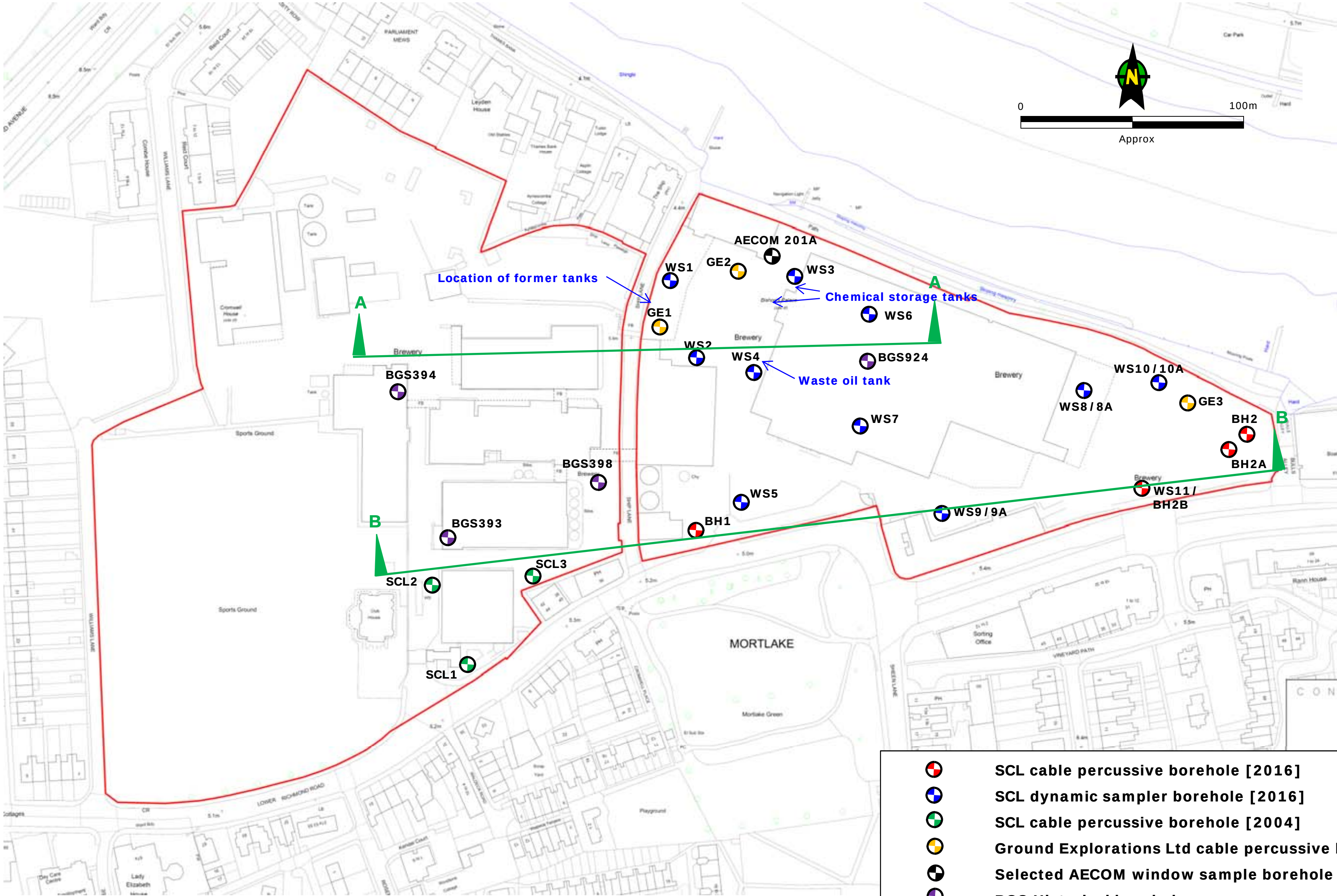


Site Location	Stag Brewery, Lower Richmond Road, Mortlake, London SW14 7ET	Report No: 10022/OT

Exploratory Hole Location Plan



	SCL cable percussive borehole [2016]
	SCL dynamic sampler borehole [2016]
	SCL cable percussive borehole [2004]
	Ground Explorations Ltd cable percussive borehole [1980]
	Selected AECOM window sample borehole [2015]
	BGS Historical borehole

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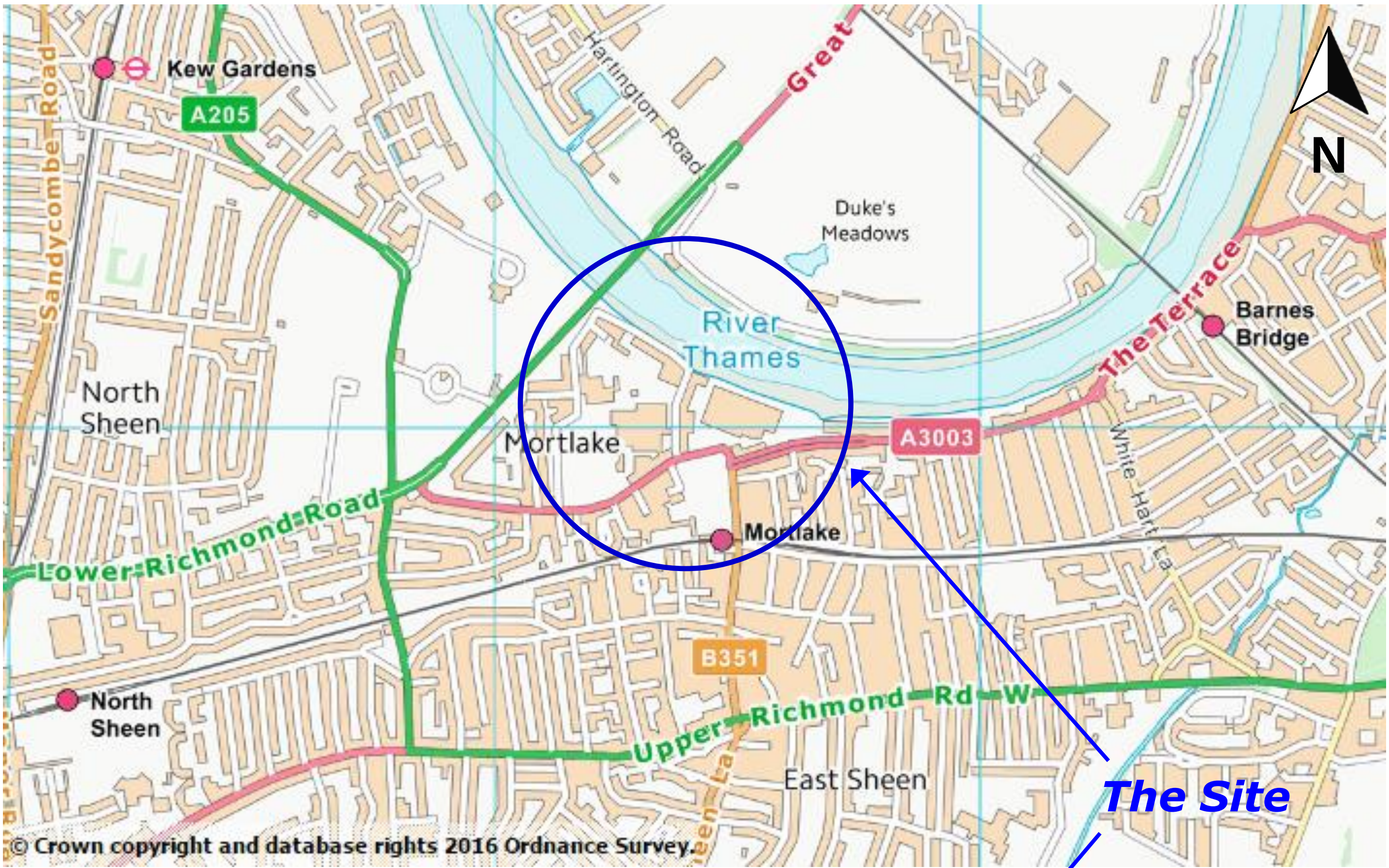
Site Location	Stag Brewery, Lower Richmond Road, Mortlake, London SW14 7ET	Report No: **10022/OT**

Site Location Plan



Approx NGR of site 520410E, 176030N

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Appendix D Groundwater Monitoring Results

- **Equipment List**
- **Groundwater Monitoring Results (1 page)**
- **Low-flow Monitoring Results (3 pages)**

Table D.1: Groundwater monitoring equipment list

Equipment	Description	Range/Accuracy
Waterra SmarTROLL	Conductivity, pH/Temperature and Dissolved Oxygen Meter	0.0 to 199.9 µS/cm, 0 to 1999 µS/cm, 0.00 to 19.99 mS/cm, 0.0 to 199.9mS/cm ± 1% of Full Scale (exc. probe error) pH: 0.00 to 14.00 pH ± 0.01 pH Temperature: 0.0 to 60.0°C ± 0.5°C 0.0 to 19.9 mg/l ± 1.5% of Full Scale
Dip meter	Dip meter	±1mm

	Project Name	Stag Brewery
	Project Reference	WIE10667-100
	Consultant	Robbie Moore
	Date	27/10/2016
	Time	12:00

Weather Conditions	Warm	x	Sunny		Overcast		Rain	
Wind Conditions	Still		Slight Breeze	x	Strong breeze			
Ground Conditions	Dry	x	Damp		Wet		Flooded	
Site Conditions								

Groundwater monitoring

Location	Ground level	Dip	Dip	Base	Water column	Well diameter	Purge volume	Dip after purging and sampling
	m	m bgl	m AOD	m bgl	m	m	l	m bgl
BH1	**5.58**	3.82	1.76	5.87	2.05	0.05	12.08	3.82
BH2B	**5.16**	3.51	1.65	4.9	1.39	0.05	8.19	3.5
WS1	**6.05**	4.48	1.57	4.7	0.22	0.05	1.30	Recharge too slow
WS2	**6.12**	Dry	Dry	2.07	N/A	N/A	N/A	N/A
WS4	**5.58**	4.1	1.48	4.49	0.39	0.05	2.30	Recharge too slow
WS5	**5.89**	3.09	2.8	3.18	0.09	0.05	0.53	Recharge too slow
WS7	**5.65**	4.42	1.23	4.52	0.1	0.05	0.59	Recharge too slow
WS8	**4.85**	Dry	Dry	2.42	N/A	N/A	N/A	N/A
WS9	**4.96**	Dry	Dry	0.85	N/A	N/A	N/A	N/A
WS10	**4.9**	2.3	2.6	3.9	1.6	0.05	9.42	2.72

Product Name: Low-Flow System

Date: 2016-10-27 12:16:39

Project Information:		Pump Information:	
Operator Name	RJM	Pump Model/Type	
Company Name	Waterman	Tubing Type	
Project Name	Stag Brewery	Tubing Diameter	cm
Site Name	WIE10667 Stag Brewery	Tubing Length	m
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	439903		
Turbidity Make/Model		Pump placement from TOC	m

Well Information:		Pumping Information:	
Well ID	50	Final Pumping Rate	0 mL/min
Well diameter	.5 cm	Total System Volume	0.09 L
Well Total Depth	5.87 m	Calculated Sample Rate	180 sec
Screen Length	2 m	Stabilization Drawdown	0 cm
Depth to Water	3.82 m	Total Volume Pumped	0 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW m	RDO mg/L	ORP mV
Stabilization			+/- 0.2%	+/- 0.2%	+/- 3%	+/- 10%		+/- 10%	+/- 20%
Last 5	12:10:30	180.09	16.41	6.80	247027.09	--	--	0.51	11.62
Last 5	12:13:30	360.02	16.49	6.82	247535.89	--	--	0.24	13.61
Last 5	12:16:30	540.02	16.48	6.83	248046.56	--	--	0.23	17.06
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			0.07	0.02	508.80			-0.26	1.98
Variance 2			-0.01	0.01	510.67			-0.02	3.45

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2016-10-27 13:01:49

Project Information:		Pump Information:	
Operator Name	RJM	Pump Model/Type	
Company Name	Waterman	Tubing Type	
Project Name	Stag Brewery	Tubing Diameter	cm
Site Name	WIE10667 Stag Brewery	Tubing Length	m
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	439903		
Turbidity Make/Model		Pump placement from TOC	m

Well Information:		Pumping Information:	
Well ID	bh2b	Final Pumping Rate	0 mL/min
Well diameter	.5 cm	Total System Volume	0.09 L
Well Total Depth	5.87 m	Calculated Sample Rate	180 sec
Screen Length	2 m	Stabilization Drawdown	0 cm
Depth to Water	3.82 m	Total Volume Pumped	0 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW m	RDO mg/L	ORP mV
Stabilization			+/- 0.2%	+/- 0.2%	+/- 3%	+/- 10%		+/- 10%	+/- 20%
Last 5	12:55:16	180.03	17.00	7.30	123583.90	--	--	2.19	161.42
Last 5	12:58:16	360.02	17.09	7.28	117193.95	--	--	2.49	174.05
Last 5	13:01:16	540.02	17.08	7.28	116731.30	--	--	2.42	180.65
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			0.09	-0.01	-6389.95			0.30	12.63
Variance 2			-0.01	-0.00	-462.65			-0.06	6.60

Notes

Grab Samples

Product Name: Low-Flow System

Date: 2016-10-27 13:46:07

Project Information:		Pump Information:	
Operator Name	RJM	Pump Model/Type	
Company Name	Waterman	Tubing Type	
Project Name	Stag Brewery	Tubing Diameter	cm
Site Name	WIE10667 Stag Brewery	Tubing Length	m
Latitude	0º 0' 0"		
Longitude	0º 0' 0"		
Sonde SN	439903		
Turbidity Make/Model		Pump placement from TOC	m

Well Information:		Pumping Information:	
Well ID	ws10	Final Pumping Rate	0 mL/min
Well diameter	.5 cm	Total System Volume	0.09 L
Well Total Depth	5.87 m	Calculated Sample Rate	180 sec
Screen Length	2 m	Stabilization Drawdown	0 cm
Depth to Water	3.82 m	Total Volume Pumped	0 L

Low-Flow Sampling Stabilization Summary

	Time	Elapsed	Temp C	pH	SpCond µS/cm	Turb NTU	DTW m	RDO mg/L	ORP mV
Stabilization			+/- 0.2%	+/- 0.2%	+/- 3%	+/- 10%		+/- 10%	+/- 20%
Last 5	13:40:00	180.02	17.01	12.03	311227.97	--	--	0.56	131.57
Last 5	13:43:00	360.02	17.04	12.04	310598.81	--	--	0.57	139.19
Last 5	13:46:00	540.02	17.04	12.05	310186.38	--	--	0.57	143.56
Last 5									
Last 5									
Variance 0			nan	nan	nan			nan	nan
Variance 1			0.03	0.01	-629.16			0.00	7.61
Variance 2			-0.00	0.01	-412.44			0.00	4.38

Notes

Grab Samples

waterman

Appendix E Groundwater, Ground Gas and Vapour Level Monitoring Results

- **Equipment List**
- **Soil Consultants vapour monitoring results during ground investigation**
- **Waterman follow-up on-Site Monitoring Results**

Table E.1: Ground gas and vapour monitoring equipment list

Equipment	Description	Range/Accuracy
Gas Analyser	GFM 430 infrared gas analyser	0 -100 % / ± 0.1 % 0.1-2000ppm ± 10% or ±2ppm, whichever is greater
Photo Ionisation Detector	Ribble Enviro Photo Ionisation Detector	0.1-2000ppm ± 10% or ±2ppm, whichever is greater

Soil Consultants Ltd - HV, PP and PID data entry sheet

Project: Stag Brewery
Job No: 9443/JRCB

Hand vane results			Hand penetrometer results			PID results		
Hole ID	Depth	Result [kPa]	Hole ID	Depth	Result [kg/cm^2]	Hole ID	Depth	Result [ppmv]
WS9A	3.80	70				WS1	0.50	0.3
WS9A	3.90	60				WS1	1.00	0.3
WS10A	3.80	75				WS1	1.50	0.3
WS10A	3.90	70				WS1	2.50	0.3
WS10A	4.50	75				WS1	3.50	0.3
WS10A	4.70	88				WS1	4.50	0.2
WS10A	4.90	94				WS2	0.50	0.4
						WS2	1.00	0.4
						WS2	1.50	0.3
						WS2	2.50	0.2
						WS2	3.50	0.3
						WS2	4.50	1.5
						WS2	5.00	0.8
						WS3	0.50	0.4
						WS3	1.50	0.3
						WS3	2.50	1.8
						WS3	3.50	8.8
						WS3	4.50	1.3
						WS4	0.50	0.8
						WS4	1.00	0.3
						WS4	1.50	0.3
						WS4	2.00	0.5
						WS4	2.60	1.3
						WS4	3.50	4.2
						WS4	4.50	3.4
						WS5	0.50	2
						WS5	1.00	0.4
						WS5	1.50	0.5
						WS5	2.00	0.5
						WS5	2.50	0.8
						WS5	3.50	1.1
						WS5	4.50	16.3
						WS7	0.70	0.1
						WS8	1.00	0.7
						WS11	0.50	0.3
						WS7A	1.00	0.3
						WS8A	1.50	0.4
						WS8A	2.00	0.2
						WS8A	2.50	0.3
						WS9A	2.00	0.4
						WS9A	3.00	2.9
						WS10	0.50	1.1

		Hand penetrometer results				PID results		
Depth		Hole ID	Depth	Result [kg/cm^2]		Hole ID	Depth	Result [ppmv]
						WS10	1.00	0.5
						WS10	1.50	0.5
						WS10A	2.50	0.3
						WS10A	3.50	3.5
						BH1	0.50	0.5
						BH1	1.00	0.7
						BH1	1.50	0.1
						BH1	2.50	0.3
						BH1	3.50	0.3
						BH1	4.50	0.4
						BH1	5.50	0.4
						BH2	0.50	0.7
						BH2	1.00	0.9
						BH2	1.50	0.8
						BH2	2.00	0.6
						BH2	2.50	1
						BH2	3.00	5.5
						BH2B	1.50	0.1
						BH2B	2.00	0.1
						BH2B	3.00	0.1

waterman	**Project Name**	Stag Brewery
	Project Reference	WIE10667-100
	Consultant	Robbie Moore
	Date	27/10/2016
	Time	10:00

Weather Conditions	Warm	x	Sunny		Overcast		Rain	
Wind Conditions	Still		Slight Breeze	x	Strong breeze			
Ground Conditions	Dry	x	Damp		Wet		Flooded	
Site Conditions								

Ground gas and vapour monitoring

Atmospheric Pressure (external)	**Pre Monitoring:**	1029	**Post Monitoring:**	1028
General Atmospheric Pressure Conditions			Steady/falling	

Exploratory hole identity	**BH1**	
Flow range	0.1	l/hr
Peak flow	0.1	l/hr
Differential Pressure	0	Pa
Groundwater level	3.82	m bgl
Depth of standpipe and diameter	5.87	50mm (ID)

Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Comments:**	
15	<0.1	0.5	12	<0.1	<0.1	<0.1		
30	<0.1	0.5	11	<0.1	<0.1	<0.1		
45	<0.1	0.5	10.8	<0.1	<0.1	<0.1		
60	<0.1	0.5	10.7	<0.1	<0.1	<0.1		
90	<0.1	0.5	10.6	<0.1	<0.1	<0.1		
120	<0.1	0.5	10.6	<0.1	<0.1	<0.1		
180	<0.1	0.5	10.5	<0.1	<0.1	<0.1		
Peak State	0	0.5	10.5	0	0	0	**PID**	<0.1

Exploratory hole identity	BH2B	
Flow range	<0.1	l/hr
Peak flow	<0.1	l/hr
Differential Pressure	0	Pa
Groundwater level	3.51	m bgl
Depth of standpipe and diameter	4.9	50mm (ID)

Seconds	CH_4 (%)	CO_2 (%)	O_2 (%)	LEL (%)	H_2S (ppm)	CO (ppm)	Comments:	
15	<0.1	0.3	16.5	<0.1	<0.1	<0.1		
30	<0.1	0.3	15.8	<0.1	<0.1	<0.1		
45	<0.1	0.3	15.7	<0.1	<0.1	<0.1		
60	<0.1	0.3	15.6	<0.1	<0.1	<0.1		
90	<0.1	0.3	15.5	<0.1	<0.1	<0.1		
120	<0.1	0.3	15.5	<0.1	<0.1	<0.1		
180	<0.1	0.3	15.5	<0.1	<0.1	<0.1		
Peak State	0	0.3	15.5	0	0	0	**PID**	<0.1

Exploratory hole identity	WS1	
Flow range	0.4 to 0	l/hr
Peak flow	0.4	l/hr
Differential Pressure	0.4	Pa
Groundwater level	4.48	m bgl
Depth of standpipe and diameter	4.7	50mm (ID)

Seconds	CH_4 (%)	CO_2 (%)	O_2 (%)	LEL (%)	H_2S (ppm)	CO (ppm)	Comments:	
15	<0.1	0.4	19.4	<0.1	<0.1	<0.1	**Flow level fell to 0 within 60 seconds**	
30	<0.1	0.4	19.3	<0.1	<0.1	<0.1		
45	<0.1	0.4	19.3	<0.1	<0.1	<0.1		
60	<0.1	0.4	19.3	<0.1	<0.1	<0.1		
90	<0.1	0.4	19.3	<0.1	<0.1	<0.1		
120	<0.1	0.4	19.3	<0.1	<0.1	<0.1		
180	<0.1	0.4	19.3	<0.1	<0.1	<0.1		
Peak State	0	0.4	19.3	0	0	0	**PID**	<0.1

Exploratory hole identity	WS2	
Flow range	<0.1	l/hr
Peak flow	<0.1	l/hr
Differential Pressure	0	Pa
Groundwater level	Dry	m bgl
Depth of standpipe and diameter	2.07	50mm (ID)

Seconds	CH_4 (%)	CO_2 (%)	O_2 (%)	LEL (%)	H_2S (ppm)	CO (ppm)	Comments:	
15	<0.1	0.5	18.8	<0.1	<0.1	<0.1		
30	<0.1	0.5	19	<0.1	<0.1	<0.1		
45	<0.1	0.6	19.1	<0.1	<0.1	<0.1		
60	<0.1	0.6	19.1	<0.1	<0.1	<0.1		
90	<0.1	0.6	19.1	<0.1	<0.1	<0.1		
120	<0.1	0.6	19.1	<0.1	<0.1	<0.1		
180	<0.1	0.6	19.1	<0.1	<0.1	<0.1		
Peak State	0	0.6	18.8	0	0	0	**PID**	<0.1

Exploratory hole identity			WS4					
Flow range			<0.1	l/hr				
Peak flow			<0.1	l/hr				
Differential Pressure			0	Pa				
Groundwater level			4.1	m bgl				
Depth of standpipe and diameter			4.49	50mm (ID)				
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Comments:**	
15	<0.1	1.4	17	<0.1	<0.1	<0.1		
30	<0.1	1.4	16	<0.1	<0.1	<0.1		
45	<0.1	1.5	16.3	<0.1	<0.1	<0.1		
60	<0.1	1.5	16.2	<0.1	<0.1	<0.1		
90	<0.1	1.5	16.1	<0.1	<0.1	<0.1		
120	<0.1	1.5	16.1	<0.1	<0.1	<0.1		
180	<0.1	1.5	16.1	<0.1	<0.1	<0.1		
Peak State	0	1.5	16	0	0	0	**PID**	<0.1

Exploratory hole identity			WS5					
Flow range			<0.1	l/hr				
Peak flow			<0.1	l/hr				
Differential Pressure			0	Pa				
Groundwater level			3.09	m bgl				
Depth of standpipe and diameter			3.18	50mm (ID)				
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Comments:**	
15	<0.1	<0.1	19.9	<0.1	<0.1	<0.1		
30	<0.1	<0.1	20	<0.1	<0.1	<0.1		
45	<0.1	<0.1	20	<0.1	<0.1	<0.1		
60	<0.1	<0.1	20	<0.1	<0.1	<0.1		
90	<0.1	<0.1	20	<0.1	<0.1	<0.1		
120	<0.1	<0.1	20	<0.1	<0.1	<0.1		
180	<0.1	<0.1	20	<0.1	<0.1	<0.1		
Peak State	0	0	19.9	0	0	0	**PID**	<0.1

Exploratory hole identity			WS7					
Flow range			0.1	l/hr				
Peak flow			0.1	l/hr				
Differential Pressure			0	Pa				
Groundwater level			4.42	m bgl				
Depth of standpipe and diameter			4.52	50mm (ID)				
Seconds	**CH_4 (%)**	**CO_2 (%)**	**O_2 (%)**	**LEL (%)**	**H_2S (ppm)**	**CO (ppm)**	**Comments:**	
15	<0.1	3.9	13.6	<0.1	<0.1	<0.1		
30	<0.1	3.9	13	<0.1	<0.1	<0.1		
45	<0.1	3.9	13	<0.1	<0.1	<0.1		
60	<0.1	4	12.9	<0.1	<0.1	<0.1		
90	<0.1	4	12.9	<0.1	<0.1	<0.1		
120	<0.1	4	12.8	<0.1	<0.1	<0.1		
180	<0.1	4	12.8	<0.1	<0.1	<0.1		
Peak State	0	4	12.8	0	0	0	**PID**	<0.1

Exploratory hole identity	WS8	
Flow range	<0.1	l/hr
Peak flow	<0.1	l/hr
Differential Pressure	0	Pa
Groundwater level	Dry	m bgl
Depth of standpipe and diameter	2.42	50mm (ID)

Seconds	CH_4 (%)	CO_2 (%)	O_2 (%)	LEL (%)	H_2S (ppm)	CO (ppm)	Comments:	
15	<0.1	<0.1	19.6	<0.1	<0.1	<0.1		
30	<0.1	<0.1	19.7	<0.1	<0.1	<0.1		
45	<0.1	<0.1	19.7	<0.1	<0.1	<0.1		
60	<0.1	<0.1	19.6	<0.1	<0.1	<0.1		
90	<0.1	<0.1	19.6	<0.1	<0.1	<0.1		
120	<0.1	<0.1	19.6	<0.1	<0.1	<0.1		
180	<0.1	<0.1	19.5	<0.1	<0.1	<0.1		
Peak State	0	0	19.5	0	0	0	**PID**	<0.1

Exploratory hole identity	WS9	
Flow range	0.3 to 0	l/hr
Peak flow	0.3	l/hr
Differential Pressure	0.3	Pa
Groundwater level	Dry	m bgl
Depth of standpipe and diameter	0.85	50mm (ID)

Seconds	CH_4 (%)	CO_2 (%)	O_2 (%)	LEL (%)	H_2S (ppm)	CO (ppm)	Comments:	
15	<0.1	<0.1	19.3	<0.1	<0.1	<0.1	**Flow level fell to 0 within 30 seconds**	
30	<0.1	0.1	19	<0.1	<0.1	<0.1		
45	<0.1	0.1	19	<0.1	<0.1	<0.1		
60	<0.1	0.1	18.9	<0.1	<0.1	<0.1		
90	<0.1	0.1	18.6	<0.1	<0.1	<0.1		
120	<0.1	0.1	18.5	<0.1	<0.1	<0.1		
180	<0.1	0.1	18.5	<0.1	<0.1	<0.1		
Peak State	0	0.1	18.5	0	0	0	**PID**	<0.1

Exploratory hole identity	WS10	
Flow range	<0.1	l/hr
Peak flow	<0.1	l/hr
Differential Pressure	0	Pa
Groundwater level	2.3	m bgl
Depth of standpipe and diameter	3.9	50mm (ID)

Seconds	CH_4 (%)	CO_2 (%)	O_2 (%)	LEL (%)	H_2S (ppm)	CO (ppm)	Comments:	
15	<0.1	<0.1	20.4	<0.1	<0.1	<0.1		
30	<0.1	<0.1	20.3	<0.1	<0.1	<0.1		
45	<0.1	<0.1	20.3	<0.1	<0.1	<0.1		
60	<0.1	<0.1	20.3	<0.1	<0.1	<0.1		
90	<0.1	<0.1	20.3	<0.1	<0.1	<0.1		
120	<0.1	<0.1	20.3	<0.1	<0.1	<0.1		
180	<0.1	<0.1	20.2	<0.1	<0.1	<0.1		
Peak State	0	0	20.2	0	0	0	**PID**	<0.1

Appendix F Results of Laboratory analysis

- **Laboratory Report Sheets – Soils**
- **Laboratory Report Sheets – Groundwater**

Exova Jones Environmental

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Fax: +44 (0) 1244 833781

Waterman Infrastructure & Environment Limited
Pickfords Wharf
Clink Street
London
SE1 9DG

Attention :	Robbie Moore
Date :	10th November, 2016
Your reference :	10667
Our reference :	Test Report 16/15446 Batch 4 Schedule D
Location :	Stag Brewery
Date samples received :	15th October, 2016
Status :	Final report
Issue :	1

Eight samples were received for analysis on 15th October, 2016 of which two were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Paul Lee-Boden BSc
Project Manager

Client Name: Waterman Infrastructure & Environment Limited
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore

Note:

Analysis was carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
16/15446	4	WS7A	1.00	217	09/11/2016	**Mass of Dry Sample**	54.0 (g)
					10/11/2016	**General Description (Bulk Analysis)**	soil-stones
					10/11/2016	**Asbestos Fibres**	Fibre Bundles
					10/11/2016	**Asbestos ACM**	NAD
					10/11/2016	**Asbestos Type**	Chrysotile
					10/11/2016	**Asbestos Level Screen**	<0.1%
16/15446	4	WS8A	2.50	229	09/11/2016	**Mass of Dry Sample**	50.4 (g)
					10/11/2016	**General Description (Bulk Analysis)**	soil-stones
					10/11/2016	**Asbestos Fibres**	NAD
					10/11/2016	**Asbestos Fibres (2)**	NAD
					10/11/2016	**Asbestos ACM**	NAD
					10/11/2016	**Asbestos ACM (2)**	NAD
					10/11/2016	**Asbestos Type**	NAD
					10/11/2016	**Asbestos Type (2)**	NAD
					10/11/2016	**Asbestos Level Screen**	NAD

Exova Jones Environmental

Notification of Deviating Samples

Client Name: Waterman Infrastructure & Environment Limited
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 16/15446						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 16/15446

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 (UKAS) accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS) accredited - UK.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 16/15446

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.			AR	
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	

Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

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Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Waterman Infrastructure & Environment Limited
Pickfords Wharf
Clink Street
London
SE1 9DG

Attention :	Robbie Moore
Date :	15th November, 2016
Your reference :	10667
Our reference :	Test Report 16/15446 Batch 4 Schedule E
Location :	Stag Brewery
Date samples received :	15th October, 2016
Status :	Final report
Issue :	1

Eight samples were received for analysis on 15th October, 2016 of which one were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Paul Lee-Boden BSc
Project Manager

Client Name: Waterman Infrastructure & Environment Limited
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore

Note:

Analysis was carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
16/15446	4	WS7A	1.00	217	14/11/2016	**Asbestos Gravimetric Quantification**	<0.001 (mass %)
					14/11/2016	**Asbestos PCOM Quantification (Fibres)**	<0.001 (mass %)
					14/11/2016	**Asbestos Gravimetric & PCOM Total**	<0.001 (mass %)

Client Name: Waterman Infrastructure & Environment Limited
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 16/15446						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 16/15446

SOILS

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It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

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If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

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Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 (UKAS) accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

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NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 16/15446

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.			AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.			AR	

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Waterman Infrastructure & Environment Limited
Pickfords Wharf
Clink Street
London
SE1 9DG

4225

Attention :	Robbie Moore
Date :	8th November, 2016
Your reference :	10667
Our reference :	Test Report 16/15446 Batch 1
Location :	Stag Brewery
Date samples received :	7th October, 2016
Status :	Final report
Issue :	1

Thirty eight samples were received for analysis on 7th October, 2016 of which nine were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

S. Gomery

Simon Gomery BSc
Project Manager

Exova Jones Environmental

Client Name: Waterman Infrastructure & Environment Limited
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore
JE Job No.: 16/15446

Report : **Solid**

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

J E Sample No.	1-4	9-12	33-36	53-56	73-76	105-108	129-131	136-139	144-147				
Sample ID	WS1	WS1	WS2	WS3	WS4	WS5	WS8	WS10	WS11				
Depth	0.50	1.50	1.50	0.50	0.50	1.00	1.00	1.00	0.50				
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T				
Sample Date	04/10/2016	04/10/2016	04/10/2016	04/10/2016	03/10/2016	03/10/2016	03/10/2016	03/10/2016	03/10/2016				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1		LOD/LOR	Units	Method No.
Date of Receipt	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016				
Arsenic #	NDP	-	13.3	15.8	8.5	9.5	NDP	13.6	9.0		<0.5	mg/kg	TM30/PM15
Arsenic	12.8	-	-	-	-	-	5.4	-	-		<0.5	mg/kg	TM30/PM62
Barium #	NDP	-	31	62	158	462	NDP	241	130		<1	mg/kg	TM30/PM15
Barium	60	-	-	-	-	-	45	-	-		<1	mg/kg	TM30/PM62
Beryllium	NDP	-	0.5	0.8	<0.5	0.6	NDP	0.9	<0.5		<0.5	mg/kg	TM30/PM15
Beryllium	0.7	-	-	-	-	-	<0.5	-	-		<0.5	mg/kg	TM30/PM62
Cadmium #	NDP	-	0.1	<0.1	0.3	0.8	NDP	0.1	0.2		<0.1	mg/kg	TM30/PM15
Cadmium	<0.1	-	-	-	-	-	<0.1	-	-		<0.1	mg/kg	TM30/PM62
Chromium #	NDP	-	65.0	65.2	32.0	35.0	NDP	55.2	58.7		<0.5	mg/kg	TM30/PM15
Chromium	20.4	-	-	-	-	-	7.7	-	-		<0.5	mg/kg	TM30/PM62
Cobalt #	NDP	-	6.6	7.0	3.5	4.3	NDP	8.9	4.8		<0.5	mg/kg	TM30/PM15
Cobalt	7.2	-	-	-	-	-	2.6	-	-		<0.5	mg/kg	TM30/PM62
Copper #	NDP	-	169	17	15	15	NDP	19	10		<1	mg/kg	TM30/PM15
Copper	14	-	-	-	-	-	4	-	-		<1	mg/kg	TM30/PM62
Lead #	NDP	-	10	89	44	78	NDP	176	35		<5	mg/kg	TM30/PM15
Lead	63	-	-	-	-	-	10	-	-		<5	mg/kg	TM30/PM62
Mercury #	NDP	-	<0.1	0.2	<0.1	<0.1	NDP	0.2	<0.1		<0.1	mg/kg	TM30/PM15
Mercury	<0.1	-	-	-	-	-	<0.1	-	-		<0.1	mg/kg	TM30/PM62
Molybdenum #	NDP	-	2.4	2.3	1.3	1.6	NDP	1.7	3.3		<0.1	mg/kg	TM30/PM15
Molybdenum	0.5	-	-	-	-	-	0.2	-	-		<0.1	mg/kg	TM30/PM62
Nickel #	NDP	-	20.5	19.6	12.7	14.0	NDP	25.4	12.3		<0.7	mg/kg	TM30/PM15
Nickel	17.5	-	-	-	-	-	6.4	-	-		<0.7	mg/kg	TM30/PM62
Selenium #	NDP	-	<1	<1	<1	<1	NDP	<1	<1		<1	mg/kg	TM30/PM15
Selenium	<1	-	-	-	-	-	<1	-	-		<1	mg/kg	TM30/PM62
Total Sulphate #	-	590	-	-	-	-	-	-	-		<50	mg/kg	TM50/PM29
Vanadium	NDP	-	31	44	24	29	NDP	41	29		<1	mg/kg	TM30/PM15
Vanadium	38	-	-	-	-	-	14	-	-		<1	mg/kg	TM30/PM62
Water Soluble Boron #	NDP	-	0.3	1.5	1.3	1.2	NDP	2.7	1.1		<0.1	mg/kg	TM74/PM32
Water Soluble Boron	0.7	-	-	-	-	-	0.3	-	-		<0.1	mg/kg	TM74/PM61
Zinc #	NDP	-	317	47	78	158	NDP	174	65		<5	mg/kg	TM30/PM15
Zinc	37	-	-	-	-	-	27	-	-		<5	mg/kg	TM30/PM62

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All solid results are expressed on a dry weight basis unless stated otherwise.

Exova Jones Environmental

Client Name: Waterman Infrastructure & Environment Limited
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore
JE Job No.: 16/15446

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

J E Sample No.	1-4	9-12	33-36	53-56	73-76	105-108	129-131	136-139	144-147		LOD/LOR	Units	Method No.
Sample ID	WS1	WS1	WS2	WS3	WS4	WS5	WS8	WS10	WS11				
Depth	0.50	1.50	1.50	0.50	0.50	1.00	1.00	1.00	0.50				
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T				
Sample Date	04/10/2016	04/10/2016	04/10/2016	04/10/2016	03/10/2016	03/10/2016	03/10/2016	03/10/2016	03/10/2016				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1				
Date of Receipt	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016				
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	0.37_{AA}	$<0.20_{AA}$	<0.04	0.07	$<0.20_{AA}$		<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.03	<0.03	<0.03	<0.03	$<0.15_{AA}$	$<0.15_{AA}$	<0.03	0.03	$<0.15_{AA}$		<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	0.29_{AA}	$<0.25_{AA}$	<0.05	0.06	$<0.25_{AA}$		<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	0.22_{AA}	$<0.20_{AA}$	<0.04	<0.04	$<0.20_{AA}$		<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.23	0.11	<0.03	<0.03	2.74_{AA}	0.84_{AA}	0.03	0.55	0.51_{AA}		<0.03	mg/kg	TM4/PM8
Anthracene #	0.06	<0.04	<0.04	<0.04	0.66_{AA}	0.23_{AA}	<0.04	0.19	$<0.20_{AA}$		<0.04	mg/kg	TM4/PM8
Fluoranthene #	0.44	0.21	<0.03	<0.03	3.37_{AA}	1.13_{AA}	0.05	1.79	0.75_{AA}		<0.03	mg/kg	TM4/PM8
Pyrene #	0.35	0.20	<0.03	<0.03	2.71_{AA}	1.07_{AA}	0.06	3.20	0.71_{AA}		<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.30	0.15	<0.06	<0.06	1.63_{AA}	0.78_{AA}	0.06	1.99	0.52_{AA}		<0.06	mg/kg	TM4/PM8
Chrysene #	0.23	0.12	<0.02	<0.02	1.22_{AA}	0.71_{AA}	0.03	1.79	0.40_{AA}		<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	0.34	0.18	<0.07	<0.07	1.85_{AA}	0.98_{AA}	<0.07	3.57	0.53_{AA}		<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.21	0.10	<0.04	<0.04	0.88_{AA}	0.57_{AA}	<0.04	1.88	0.30_{AA}		<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.14	0.08	<0.04	<0.04	0.60_{AA}	0.49_{AA}	<0.04	1.51	0.24_{AA}		<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.04	<0.04	<0.04	<0.04	$<0.20_{AA}$	$<0.20_{AA}$	<0.04	0.27	$<0.20_{AA}$		<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.12	0.06	<0.04	<0.04	0.51_{AA}	0.38_{AA}	<0.04	1.23	$<0.20_{AA}$		<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	<0.04	$<0.20_{AA}$	$<0.20_{AA}$	<0.04	0.20	$<0.20_{AA}$		<0.04	mg/kg	TM4/PM8
PAH 17 Total	2.49	1.21	<0.64	<0.64	17.05_{AA}	7.18_{AA}	<0.64	18.33	3.96_{AA}		<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.24	0.13	<0.05	<0.05	1.33_{AA}	0.71_{AA}	<0.05	2.57	0.38_{AA}		<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.10	0.05	<0.02	<0.02	0.52_{AA}	0.27_{AA}	<0.02	1.00	0.15_{AA}		<0.02	mg/kg	TM4/PM8
Benzo(a)pyrene fraction of C6-C40	-		-	-	-	-	-	-	-		<0.01	%	TM4/PM8
PAH Surrogate % Recovery	118	117	111	103	96_{AA}	96_{AA}	112	120	111_{AA}		<0	%	TM4/PM8
Interpretation - Gasoline	-	N	-	-	-	-	-	-	-			None	TM5/PM8
Interpretation - Diesel	-	N	-	-	-	-	-	-	-			None	TM5/PM8
Mineral Oil (C10-C40)	-	<30	-	-	-	-	-	-	-		<30	mg/kg	TM5/PM16
EPH (C10-C40) with clean up	-	<30	-	-	-	-	-	-	-		<30	mg/kg	TM5/PM16
TPH (C6-C40)	-	<30	-	-	-	-	-	-	-		<30	mg/kg	TM5/TM36/PM12/PM16
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	-	$<0.1^{SV}$	<0.1	$<0.1^{SV}$	$<0.1^{SV}$	<0.1	<0.1	$<0.1^{SV}$		<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	-	$<0.1^{SV}$	<0.1	$<0.1^{SV}$	$<0.1^{SV}$	<0.1	<0.1	$<0.1^{SV}$		<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	-	$<0.1^{SV}$	<0.1	$<0.1^{SV}$	$<0.1^{SV}$	<0.1	<0.1	$<0.1^{SV}$		<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	mg/kg	TM5/PM16
>C12-C16 #	<4	-	40	<4	<4	5	<4	<4	25		<4	mg/kg	TM5/PM16
>C16-C21 #	<7	-	983	<7	11	21	<7	<7	240		<7	mg/kg	TM5/PM16
>C21-C35 #	<7	-	7216	<7	224	318	<7	79	245		<7	mg/kg	TM5/PM16
>C35-C44	<7	-	644	<7	564	413	<7	106	313		<7	mg/kg	TM5/PM16
Total aliphatics C5-44	<26	-	8883	<26	799	757	<26	185	823		<26	mg/kg	TM5/TM36/PM16

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Please see attached notes for all abbreviations and acronyms

J E Sample No.	1-4	9-12	33-36	53-56	73-76	105-108	129-131	136-139	144-147				
Sample ID	WS1	WS1	WS2	WS3	WS4	WS5	WS8	WS10	WS11				
Depth	0.50	1.50	1.50	0.50	0.50	1.00	1.00	1.00	0.50				
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T				
Sample Date	04/10/2016	04/10/2016	04/10/2016	04/10/2016	03/10/2016	03/10/2016	03/10/2016	03/10/2016	03/10/2016				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1		LOD/LOR	Units	Method No.
Date of Receipt	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016				
TPH CWG													
Aromatics													
>C5-EC7	<0.1	-	<0.1[SV]	<0.1	<0.1[SV]	<0.1[SV]	<0.1	<0.1	<0.1[SV]		<0.1	mg/kg	TM36/PM12
>EC7-EC8	<0.1	-	<0.1[SV]	<0.1	<0.1[SV]	<0.1[SV]	<0.1	<0.1	<0.1[SV]		<0.1	mg/kg	TM36/PM12
>EC8-EC10[#]	<0.1	-	<0.1[SV]	<0.1	<0.1[SV]	<0.1[SV]	<0.1	<0.1	<0.1[SV]		<0.1	mg/kg	TM36/PM12
>EC10-EC12	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	mg/kg	TM5/PM16
>EC12-EC16	<4	-	<4	<4	7	6	<4	<4	9		<4	mg/kg	TM5/PM16
>EC16-EC21	<7	-	221	<7	34	28	<7	19	105		<7	mg/kg	TM5/PM16
>EC21-EC35	<7	-	3553	<7	607	730	<7	218	424		<7	mg/kg	TM5/PM16
>EC35-EC44	<7	-	700	<7	1827	2178	<7	568	1079		<7	mg/kg	TM5/PM16
Total aromatics C5-44	<26	-	4474	<26	2475	2942	<26	805	1617		<26	mg/kg	TM5/TM36/PM16
Total aliphatics and aromatics(C5-44)	<52	-	13357	<52	3274	3699	<52	990	2440		<52	mg/kg	TM5/TM36/PM16
GRO (>C4-C8)[#]	-	<100	-	-	-	-	-	-	-		<100	ug/kg	TM36/PM12
GRO (>C8-C12)[#]	-	<100	-	-	-	-	-	-	-		<100	ug/kg	TM36/PM12
GRO (>C4-12)[#]	-	<100	-	-	-	-	-	-	-		<100	ug/kg	TM36/PM12
GRO (C6-C10)	-	<0.1	-	-	-	-	-	-	-		<0.1	mg/kg	TM36/PM12
MTBE[#]	<0.005	<0.005	<0.005[SV]	<0.005	<0.005[SV]	<0.005[SV]	<0.005	<0.005	<0.005[SV]		<0.005	mg/kg	TM31/PM12
Benzene[#]	<0.005	<0.005	<0.005[SV]	<0.005	<0.005[SV]	<0.005[SV]	<0.005	<0.005	<0.005[SV]		<0.005	mg/kg	TM31/PM12
Toluene[#]	<0.005	<0.005	<0.005[SV]	<0.005	<0.005[SV]	<0.005[SV]	<0.005	<0.005	<0.005[SV]		<0.005	mg/kg	TM31/PM12
Ethylbenzene[#]	<0.005	<0.005	<0.005[SV]	<0.005	<0.005[SV]	<0.005[SV]	<0.005	<0.005	<0.005[SV]		<0.005	mg/kg	TM31/PM12
m/p-Xylene[#]	<0.005	<0.005	<0.005[SV]	<0.005	<0.005[SV]	<0.005[SV]	<0.005	<0.005	<0.005[SV]		<0.005	mg/kg	TM31/PM12
o-Xylene[#]	<0.005	<0.005	<0.005[SV]	<0.005	<0.005[SV]	<0.005[SV]	<0.005	<0.005	<0.005[SV]		<0.005	mg/kg	TM31/PM12
PCB 28[#]	-	<5	-	-	-	-	-	-	-		<5	ug/kg	TM17/PM8
PCB 52[#]	-	<5	-	-	-	-	-	-	-		<5	ug/kg	TM17/PM8
PCB 101[#]	-	<5	-	-	-	-	-	-	-		<5	ug/kg	TM17/PM8
PCB 118[#]	-	<5	-	-	-	-	-	-	-		<5	ug/kg	TM17/PM8
PCB 138[#]	-	<5	-	-	-	-	-	-	-		<5	ug/kg	TM17/PM8
PCB 153[#]	-	<5	-	-	-	-	-	-	-		<5	ug/kg	TM17/PM8
PCB 180[#]	-	<5	-	-	-	-	-	-	-		<5	ug/kg	TM17/PM8
Total 7 PCBs[#]	-	<35	-	-	-	-	-	-	-		<35	ug/kg	TM17/PM8
Natural Moisture Content	NDP	3.4	18.9	10.5	6.1	5.8	NDP	16.2	7.5		<0.1	%	PM4/PM0
Chloride[#]	-	10	-	-	-	-	-	-	-		<2	mg/kg	TM38/PM20
Hexavalent Chromium[#]	<0.3	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3		<0.3	mg/kg	TM38/PM20
Total Organic Carbon[#]	-	0.12	-	-	-	-	-	-	-		<0.02	%	TM21/PM24
Organic Matter	-	0.2	-	-	-	-	-	-	-		<0.2	%	TM21/PM24
ANC at pH4	-	0.58	-	-	-	-	-	-	-		<0.03	mol/kg	TM77/PM0
ANC at pH7	-	0.05	-	-	-	-	-	-	-		<0.03	mol/kg	TM77/PM0
Loss on Ignition[#]	-	1.5	-	-	-	-	-	-	-		<1.0	%	TM22/PM0

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Sample ID	WS1	WS1	WS2	WS3	WS4	WS5	WS8	WS10	WS11				
Depth	0.50	1.50	1.50	0.50	0.50	1.00	1.00	1.00	0.50				
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T				
Sample Date	04/10/2016	04/10/2016	04/10/2016	04/10/2016	03/10/2016	03/10/2016	03/10/2016	03/10/2016	03/10/2016				
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil				
Batch Number	1	1	1	1	1	1	1	1	1		LOD/LOR	Units	Method No.
Date of Receipt	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016				
pH #	-	9.09	-	-	-	-	-	-	-		<0.01	pH units	TM73/PM11

Client Name:	Waterman Infrastructure & Environment Limited	**SVOC Report :**	**Solid**
Reference:	10667		
Location:	Stag Brewery		
Contact:	Robbie Moore		
JE Job No.:	16/15446		

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J E Sample No.	1-4	33-36	53-56	73-76	105-108	129-131	136-139	144-147					
Sample ID	WS1	WS2	WS3	WS4	WS5	WS8	WS10	WS11					
Depth	0.50	1.50	0.50	0.50	1.00	1.00	1.00	0.50					
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T					
Sample Date	04/10/2016	04/10/2016	04/10/2016	03/10/2016	03/10/2016	03/10/2016	03/10/2016	03/10/2016					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1			LOD/LOR	Units	Method No.
Date of Receipt	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016					
SVOC MS													
Phenols													
2-Chlorophenol #	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
4-Methylphenol	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
4-Nitrophenol	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
Phenol #	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
PAHs													
2-Chloronaphthalene #	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
2-Methylnaphthalene #	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
Phthalates													
Bis(2-ethylhexyl) phthalate	<100	5712	<100	<1000$_{AB}$	<1000$_{AB}$	<100	<1000$_{AB}$	<1000$_{AB}$			<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100	<100	<1000$_{AB}$	<1000$_{AB}$	<100	<1000$_{AB}$	<1000$_{AB}$			<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<100	<100	<100	<1000$_{AB}$	<1000$_{AB}$	<100	<1000$_{AB}$	<1000$_{AB}$			<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100	<100	<1000$_{AB}$	<1000$_{AB}$	<100	<1000$_{AB}$	<1000$_{AB}$			<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100	<1000$_{AB}$	<1000$_{AB}$	<100	<1000$_{AB}$	<1000$_{AB}$			<100	ug/kg	TM16/PM8
Dimethyl phthalate #	<100	<100	<100	<1000$_{AB}$	<1000$_{AB}$	<100	<1000$_{AB}$	<1000$_{AB}$			<100	ug/kg	TM16/PM8
Other SVOCs													
1,2-Dichlorobenzene	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
Dibenzofuran #	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
Hexachlorobutadiene #	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
Hexachloroethane	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
Isophorone #	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
Nitrobenzene #	<10	<10	<10	<100$_{AB}$	<100$_{AB}$	<10	<100$_{AB}$	<100$_{AB}$			<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	98	96	74	82$_{AB}$	81$_{AB}$	81	64$_{AB}$	85$_{AB}$			<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	107	101	90	87$_{AB}$	89$_{AB}$	100	85$_{AB}$	94$_{AB}$			<0	%	TM16/PM8

Please include all sections of this report if it is reproduced

All solid results are expressed on a dry weight basis unless stated otherwise.

Exova Jones Environmental

Client Name: Waterman Infrastructure & Environment Limited **VOC Report :** **Solid**
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore
JE Job No.: 16/15446

Please see attached notes for all abbreviations and acronyms

J E Sample No.	1-4	33-36	53-56	73-76	105-108	129-131	136-139	144-147					
Sample ID	WS1	WS2	WS3	WS4	WS5	WS8	WS10	WS11					
Depth	0.50	1.50	0.50	0.50	1.00	1.00	1.00	0.50					
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T					
Sample Date	04/10/2016	04/10/2016	04/10/2016	03/10/2016	03/10/2016	03/10/2016	03/10/2016	03/10/2016					
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil					
Batch Number	1	1	1	1	1	1	1	1			LOD/LOR	Units	Method No.
Date of Receipt	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016	07/10/2016					
VOC MS													
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg	TM15_A/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1			<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6	<6	<6	<6	<6	<6	<6	<6			<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<7	44	54	90	34	<7	49	53			<7	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
Bromochloromethane #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Chloroform #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
Benzene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	6	8	8	10	<3	<3	<3	12			<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6	<6	<6	<6	<6	<6	<6			<6	ug/kg	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
Toluene #	<3	<3	<3	4	4	<3	<3	4			<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	6	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Chlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
p/m-Xylene #	<5	<5	<5	6	6	<5	<5	<5			<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Styrene	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15_A/PM10
Bromoform	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2	<2	<2	<2	<2	<2			<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	8	<3	<3	<3			<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3	<3			<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5	<5	<5	<5	<5	<5	<5			<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	<6	<6	<6	57	<6	<6	<6			<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7	<7	<7	<7	<7	<7	<7	<7			<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4	<4	<4	<4	<4	<4			<4	ug/kg	TM15/PM10
Naphthalene	<27	<27	<27	45	<27	<27	55	<27			<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7	<7	<7	<7	<7	<7	<7			<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	128	69	103	77	84	103	98	82			<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	124	70	92	66	76	109	97	74			<0	%	TM15/PM10

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	11.9
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	89.4
Particle Size <4mm =	>95%		

JEFL Job No	**16/15446**			**Landfill Waste Acceptance Criteria Limits**		
Sample No	**11**					
Client Sample No	**WS1**			**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**1.50**					
Sample Date	**04/10/2016**					
Batch No	**1**					
Solid Waste Analysis						
Total Organic Carbon (%)	0.12			3	5	6
Loss on Ignition (%)	1.5			-	-	10
Sum of BTEX (mg/kg)	<0.025			6	-	-
Sum of 7 PCBs (mg/kg)	<0.035			1	-	-
Mineral Oil (mg/kg)	<30			500	-	-
PAH Sum of 17(mg/kg)	1.21			100	-	-
pH (pH Units)	9.09			-	>6	-
ANC to pH 7 (mol/kg)	0.05			-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	0.58			-	to be evaluated	to be evaluated
Eluate Analysis	**10:1 conc^{n} leached**			**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**				
	mg/l	**mg/kg**		**mg/kg**		
Arsenic	0.0119	0.119		0.5	2	25
Barium	<0.003	<0.03		20	100	300
Cadmium	<0.0005	<0.005		0.04	1	5
Chromium	<0.0015	<0.015		0.5	10	70
Copper	<0.007	<0.07		2	50	100
Mercury	<0.001	<0.01		0.01	0.2	2
Molybdenum	0.003	0.03		0.5	10	30
Nickel	<0.002	<0.02		0.4	10	40
Lead	<0.005	<0.05		0.5	10	50
Antimony	0.002	<0.02		0.06	0.7	5
Selenium	<0.003	<0.03		0.1	0.5	7
Zinc	0.005	0.05		4	50	200
Chloride	1.0	10		800	15000	25000
Fluoride	<0.3	<3		10	150	500
Sulphate as SO4	12.28	122.8		1000	20000	50000
Total Dissolved Solids	83	830		4000	60000	100000
Phenol	<0.01	<0.1		1	-	-
Dissolved Organic Carbon	5	50		500	800	1000

Exova Jones Environmental

EPH Interpretation Report

Client Name: Waterman Infrastructure & Environment Limited

Matrix : Solid

Reference: 10667

Location: Stag Brewery

Contact: Robbie Moore

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	EPH Interpretation
16/15446	1	WS2	1.50	33-36	Lube oil and possible degraded diesel
16/15446	1	WS4	0.50	73-76	PAHs/tarmac-bitumen and possible degraded diesel
16/15446	1	WS5	1.00	105-108	PAHs/tarmac-bitumen and possible degraded diesel
16/15446	1	WS10	1.00	136-139	PAHs and tarmac-bitumen
16/15446	1	WS11	0.50	144-147	PAHs/tarmac-bitumen and possible linear alkyl benzenes and possible mineral insulating oil

Client Name: Waterman Infrastructure & Environment Limited
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore

Note:

Analysis was carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
16/15446	1	WS1	0.50	2	11/10/2016	**General Description (Bulk Analysis)**	soil-stones
					11/10/2016	**Asbestos Fibres**	Fibre Bundles
					11/10/2016	**Asbestos ACM**	NAD
					11/10/2016	**Asbestos Type**	Chrysotile
					11/10/2016	**Asbestos Level Screen**	<0.1%
					20/10/2016	**Asbestos Gravimetric Quantification**	<0.001 (mass %)
					20/10/2016	**Asbestos PCOM Quantification (Fibres)**	<0.001 (mass %)
					20/10/2016	**Asbestos Gravimetric & PCOM Total**	<0.001 (mass %)
16/15446	1	WS8	1.00	130	11/10/2016	**General Description (Bulk Analysis)**	soil-stones
					11/10/2016	**Asbestos Fibres**	Fibre Bundles
					11/10/2016	**Asbestos Fibres (2)**	Free Fibres
					11/10/2016	**Asbestos ACM**	NAD
					11/10/2016	**Asbestos ACM (2)**	NAD
					11/10/2016	**Asbestos Type**	Chrysotile
					11/10/2016	**Asbestos Type (2)**	Amosite
					11/10/2016	**Asbestos Level Screen**	<0.1%
					20/10/2016	**Asbestos Gravimetric Quantification**	<0.001 (mass %)
					20/10/2016	**Asbestos PCOM Quantification (Fibres)**	<0.001 (mass %)
					20/10/2016	**Asbestos Gravimetric & PCOM Total**	<0.001 (mass %)

Client Name: Waterman Infrastructure & Environment Limited

Matrix : Solid

Reference: 10667

Location: Stag Brewery

Contact: Robbie Moore

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	NDP Reason
16/15446	1	WS1	0.50	1-4	Asbestos detected in sample
16/15446	1	WS8	1.00	129-131	Asbestos detected in sample

Exova Jones Environmental

Notification of Deviating Samples

Client Name: Waterman Infrastructure & Environment Limited

Matrix : Solid

Reference: 10667

Location: Stag Brewery

Contact: Robbie Moore

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
16/15446	1	WS1	0.50	1-4	GRO, VOC	Solid Samples were received at a temperature above 9°C.
16/15446	1	WS1	1.50	9-12	GRO	Solid Samples were received at a temperature above 9°C.
16/15446	1	WS2	1.50	33-36	GRO, VOC	Solid Samples were received at a temperature above 9°C.
16/15446	1	WS3	0.50	53-56	GRO, VOC	Solid Samples were received at a temperature above 9°C.
16/15446	1	WS4	0.50	73-76	GRO, VOC	Solid Samples were received at a temperature above 9°C.
16/15446	1	WS5	1.00	105-108	GRO, VOC	Solid Samples were received at a temperature above 9°C.
16/15446	1	WS8	1.00	129-131	GRO, VOC	Solid Samples were received at a temperature above 9°C.
16/15446	1	WS10	1.00	136-139	GRO, VOC	Solid Samples were received at a temperature above 9°C.
16/15446	1	WS11	0.50	144-147	GRO, VOC	Solid Samples were received at a temperature above 9°C.

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 16/15446

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 (UKAS) accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS) accredited - UK.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution
AB	x10 Dilution

JE Job No: 16/15446

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX and calculation of Aliphatic fractions.	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX and calculation of Aliphatic fractions.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes

JE Job No: 16/15446

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3: 1990/USEPA 160.3 Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.			AR	Yes
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM22	Modified USEPA 160.4. Gravimetric determination of Loss on Ignition by temperature controlled Muffle Furnace (450°C)	PM0	No preparation is required.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes

JE Job No: 16/15446

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM27	Modified US EPA method 9056.Determination of water soluble anions using Dionex (Ion-Chromatography).	PM0	No preparation is required.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 and 6010B	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 and 6010B	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 and 6010B	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 and 6010B	PM62	Acid digestion of as received solid samples using Aqua Regia refluxed at 112.5 °C.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM0	No preparation is required.	Yes		AR	Yes

JE Job No: 16/15446

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground samples with deionised water in a 2:1 water to solid ratio for anions. Extraction of as received samples with deionised water in a 2:1 water to solid ratio for ammoniacal nitrogen and hydrazine. Samples are extracted using an orbital shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground samples with deionised water in a 2:1 water to solid ratio for anions. Extraction of as received samples with deionised water in a 2:1 water to solid ratio for ammoniacal nitrogen and hydrazine. Samples are extracted using an orbital shaker.	Yes		AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	Dried and ground solid sample is boiled with dilute hydrochloric acid, the resulting liquor is then analysed.	Yes		AD	Yes
TM60	Modified USEPA 9060. Determination of TOC by calculation from Total Carbon and Inorganic Carbon using a TOC analyser, the carbon in the sample is converted to CO2 and then passed through a non-dispersive infrared gas analyser (NDIR).	PM0	No preparation is required.			AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.			AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.			AR	
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM61	As received solid samples are extracted with hot water in a 20:1 ratio of water to soil ready for analysis by ICP.			AR	Yes

JE Job No: 16/15446

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM77	Modified DDCEN/TS method 15364:2006. Determination of Acid Neutralization Capacity by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	No
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.			AR	
TM15_A	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

Exova Jones Environmental

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Waterman Infrastructure & Environment Limited
Pickfords Wharf
Clink Street
London
SE1 9DG

Attention :	Robbie Moore
Date :	8th November, 2016
Your reference :	10667
Our reference :	Test Report 16/15446 Batch 2
Location :	Stag Brewery
Date samples received :	8th October, 2016
Status :	Final report
Issue :	1

Fourteen samples were received for analysis on 8th October, 2016 of which five were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

S. Gomery

Simon Gomery BSc
Project Manager

Exova Jones Environmental

Client Name: Waterman Infrastructure & Environment Limited
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore
JE Job No.: 16/15446

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

J E Sample No.	148-151	156-159	180-183	192-195	200-203							
Sample ID	BH1	BH1	BH2	BH2	WS7							
Depth	0.50	1.50	1.00	2.50	0.70							
COC No / misc												
Containers	V J T	V J T	V J T	V J T	V J T							
Sample Date	04/10/2016	04/10/2016	03/10/2016	03/10/2016	05/10/2016							
Sample Type	Soil	Soil	Soil	Soil	Soil							
Batch Number	2	2	2	2	2					LOD/LOR	Units	Method No.
Date of Receipt	08/10/2016	08/10/2016	08/10/2016	08/10/2016	08/10/2016							
Arsenic #	12.5	-	NDP	-	<0.5					<0.5	mg/kg	TM30/PM15
Arsenic	-	-	8.0	-	-					<0.5	mg/kg	TM30/PM62
Barium #	625	-	NDP	-	<1					<1	mg/kg	TM30/PM15
Barium	-	-	162	-	-					<1	mg/kg	TM30/PM62
Beryllium	<0.5	-	NDP	-	<0.5					<0.5	mg/kg	TM30/PM15
Beryllium	-	-	1.3	-	-					<0.5	mg/kg	TM30/PM62
Cadmium #	1.8	-	NDP	-	<0.1					<0.1	mg/kg	TM30/PM15
Cadmium	-	-	0.2	-	-					<0.1	mg/kg	TM30/PM62
Chromium #	42.2	-	NDP	-	<0.5					<0.5	mg/kg	TM30/PM15
Chromium	-	-	37.5	-	-					<0.5	mg/kg	TM30/PM62
Cobalt #	3.6	-	NDP	-	<0.5					<0.5	mg/kg	TM30/PM15
Cobalt	-	-	7.2	-	-					<0.5	mg/kg	TM30/PM62
Copper #	7	-	NDP	-	<1					<1	mg/kg	TM30/PM15
Copper	-	-	24	-	-					<1	mg/kg	TM30/PM62
Lead #	85	-	NDP	-	<5					<5	mg/kg	TM30/PM15
Lead	-	-	133	-	-					<5	mg/kg	TM30/PM62
Mercury #	<0.1	-	NDP	-	<0.1					<0.1	mg/kg	TM30/PM15
Mercury	-	-	<0.1	-	-					<0.1	mg/kg	TM30/PM62
Molybdenum #	2.3	-	NDP	-	<0.1					<0.1	mg/kg	TM30/PM15
Molybdenum	-	-	2.4	-	-					<0.1	mg/kg	TM30/PM62
Nickel #	11.2	-	NDP	-	<0.7					<0.7	mg/kg	TM30/PM15
Nickel	-	-	24.8	-	-					<0.7	mg/kg	TM30/PM62
Selenium #	1	-	NDP	-	<1					<1	mg/kg	TM30/PM15
Selenium	-	-	<1	-	-					<1	mg/kg	TM30/PM62
Total Sulphate #	-	332	-	1903	-					<50	mg/kg	TM50/PM29
Vanadium	18	-	NDP	-	<1					<1	mg/kg	TM30/PM15
Vanadium	-	-	47	-	-					<1	mg/kg	TM30/PM62
Water Soluble Boron #	1.0	-	NDP	-	1.6					<0.1	mg/kg	TM74/PM32
Water Soluble Boron	-	-	1.6	-	-					<0.1	mg/kg	TM74/PM61
Zinc #	123	-	NDP	-	<5					<5	mg/kg	TM30/PM15
Zinc	-	-	128	-	-					<5	mg/kg	TM30/PM62

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Waterman Infrastructure & Environment Limited
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore
JE Job No.: 16/15446

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

J E Sample No.	148-151	156-159	180-183	192-195	200-203								
Sample ID	BH1	BH1	BH2	BH2	WS7								
Depth	0.50	1.50	1.00	2.50	0.70								
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T								
Sample Date	04/10/2016	04/10/2016	03/10/2016	03/10/2016	05/10/2016								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	2	2	2	2	2						LOD/LOR	Units	Method No.
Date of Receipt	08/10/2016	08/10/2016	08/10/2016	08/10/2016	08/10/2016								
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	0.06						<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	0.04						<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	0.06						<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	0.04						<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	0.07	0.47	<0.03	0.82						<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	<0.04	0.10	<0.04	0.24						<0.04	mg/kg	TM4/PM8
Fluoranthene #	0.05	0.14	0.64	0.03	1.79						<0.03	mg/kg	TM4/PM8
Pyrene #	0.05	0.13	0.52	0.03	1.85						<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.07	0.11	0.33	<0.06	1.18						<0.06	mg/kg	TM4/PM8
Chrysene #	0.04	0.07	0.27	0.02	1.08						<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	0.11	0.40	<0.07	1.74						<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	0.05	0.22	<0.04	0.82						<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	<0.04	<0.04	0.16	<0.04	0.77						<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	0.12						<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	<0.04	0.13	<0.04	0.57						<0.04	mg/kg	TM4/PM8
Coronene	<0.04	<0.04	<0.04	<0.04	0.09						<0.04	mg/kg	TM4/PM8
PAH 17 Total	<0.64	0.68	3.24	<0.64	11.27						<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	0.08	0.29	<0.05	1.25						<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	0.03	0.11	<0.02	0.49						<0.02	mg/kg	TM4/PM8
Benzo(a)pyrene fraction of C6-C40	-	<0.01	-	<0.01	-						<0.01	%	TM4/PM8
PAH Surrogate % Recovery	117	120	120	102	115						<0	%	TM4/PM8
Interpretation - Gasoline	-	N	-	N	-							None	TM5/PM8
Interpretation - Diesel	-	N	-	N	-							None	TM5/PM8
Mineral Oil (C10-C40)	-	<30	-	<30	-						<30	mg/kg	TM5/PM16
EPH (C10-C40) with clean up	-	<30	-	<30	-						<30	mg/kg	TM5/PM16
TPH (C6-C40)	-	<30	-	<30	-						<30	mg/kg	TM5/TM36/PM12/PM16
TPH CWG													
Aliphatics													
>C5-C6 #	<0.1	-	<0.1	-	<0.1						<0.1	mg/kg	TM36/PM12
>C6-C8 #	<0.1	-	<0.1	-	<0.1						<0.1	mg/kg	TM36/PM12
>C8-C10	<0.1	-	<0.1	-	<0.1						<0.1	mg/kg	TM36/PM12
>C10-C12 #	<0.2	-	<0.2	-	<0.2						<0.2	mg/kg	TM5/PM16
>C12-C16 #	<4	-	<4	-	<4						<4	mg/kg	TM5/PM16
>C16-C21 #	<7	-	11	-	14						<7	mg/kg	TM5/PM16
>C21-C35 #	<7	-	158	-	111						<7	mg/kg	TM5/PM16
>C35-C44	<7	-	153	-	67						<7	mg/kg	TM5/PM16
Total aliphatics C5-44	<26	-	322	-	192						<26	mg/kg	TM5/TM36/PM16

Exova Jones Environmental

Client Name: Waterman Infrastructure & Environment Limited
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore
JE Job No.: 16/15446

Report : **Solid**

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

J E Sample No.	148-151	156-159	180-183	192-195	200-203								
Sample ID	BH1	BH1	BH2	BH2	WS7								
Depth	0.50	1.50	1.00	2.50	0.70								
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T								
Sample Date	04/10/2016	04/10/2016	03/10/2016	03/10/2016	05/10/2016								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	2	2	2	2	2						LOD/LOR	Units	Method No.
Date of Receipt	08/10/2016	08/10/2016	08/10/2016	08/10/2016	08/10/2016								
TPH CWG													
Aromatics													
>C5-EC7	<0.1	-	<0.1	-	<0.1						<0.1	mg/kg	TM36/PM12
>EC7-EC8	<0.1	-	<0.1	-	<0.1						<0.1	mg/kg	TM36/PM12
>EC8-EC10 #	<0.1	-	<0.1	-	<0.1						<0.1	mg/kg	TM36/PM12
>EC10-EC12	<0.2	-	<0.2	-	<0.2						<0.2	mg/kg	TM5/PM16
>EC12-EC16	<4	-	<4	-	<4						<4	mg/kg	TM5/PM16
>EC16-EC21	<7	-	<7	-	<7						<7	mg/kg	TM5/PM16
>EC21-EC35	<7	-	161	-	98						<7	mg/kg	TM5/PM16
>EC35-EC44	<7	-	338	-	129						<7	mg/kg	TM5/PM16
Total aromatics C5-44	<26	-	499	-	227						<26	mg/kg	TM5/TM36/PM16
Total aliphatics and aromatics(C5-44)	<52	-	821	-	419						<52	mg/kg	TM5/TM36/PM16
GRO (>C4-C8) #	-	<100	-	<100	-						<100	ug/kg	TM36/PM12
GRO (>C8-C12) #	-	<100	-	<100	-						<100	ug/kg	TM36/PM12
GRO (>C4-12) #	-	<100	-	<100	-						<100	ug/kg	TM36/PM12
GRO (C6-C10)	-	<0.1	-	<0.1	-						<0.1	mg/kg	TM36/PM12
MTBE #	-	<5	-	<5	-						<5	ug/kg	TM31/PM12
MTBE #	<0.005	-	<0.005	-	<0.005						<0.005	mg/kg	TM31/PM12
Benzene #	-	<5	-	<5	-						<5	ug/kg	TM31/PM12
Benzene #	<0.005	-	<0.005	-	<0.005						<0.005	mg/kg	TM31/PM12
Toluene #	-	<5	-	<5	-						<5	ug/kg	TM31/PM12
Toluene #	<0.005	-	<0.005	-	<0.005						<0.005	mg/kg	TM31/PM12
Ethylbenzene #	-	<5	-	<5	-						<5	ug/kg	TM31/PM12
Ethylbenzene #	<0.005	-	<0.005	-	<0.005						<0.005	mg/kg	TM31/PM12
m/p-Xylene #	-	<5	-	<5	-						<5	ug/kg	TM31/PM12
m/p-Xylene #	<0.005	-	<0.005	-	<0.005						<0.005	mg/kg	TM31/PM12
o-Xylene #	-	<5	-	<5	-						<5	ug/kg	TM31/PM12
o-Xylene #	<0.005	-	<0.005	-	<0.005						<0.005	mg/kg	TM31/PM12
PCB 28 #	-	<5	-	8	-						<5	ug/kg	TM17/PM8
PCB 52 #	-	<5	-	<5	-						<5	ug/kg	TM17/PM8
PCB 101 #	-	<5	-	<5	-						<5	ug/kg	TM17/PM8
PCB 118 #	-	<5	-	<5	-						<5	ug/kg	TM17/PM8
PCB 138 #	-	<5	-	<5	-						<5	ug/kg	TM17/PM8
PCB 153 #	-	<5	-	<5	-						<5	ug/kg	TM17/PM8
PCB 180 #	-	<5	-	<5	-						<5	ug/kg	TM17/PM8
Total 7 PCBs #	-	<35	-	<35	-						<35	ug/kg	TM17/PM8
Natural Moisture Content	5.9	17.9	NDP	13.2	7.8						<0.1	%	PM4/PM0
Chloride #	-	4	-	44	-						<2	mg/kg	TM38/PM20
Hexavalent Chromium #	<0.3	-	<0.3	-	<0.3						<0.3	mg/kg	TM38/PM20

Exova Jones Environmental

Client Name: Waterman Infrastructure & Environment Limited
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore
JE Job No.: 16/15446

Report : **Solid**

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

J E Sample No.	148-151	156-159	180-183	192-195	200-203								
Sample ID	BH1	BH1	BH2	BH2	WS7								
Depth	0.50	1.50	1.00	2.50	0.70								
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T								
Sample Date	04/10/2016	04/10/2016	03/10/2016	03/10/2016	05/10/2016								
Sample Type	Soil	Soil	Soil	Soil	Soil								
Batch Number	2	2	2	2	2						LOD/LOR	Units	Method No.
Date of Receipt	08/10/2016	08/10/2016	08/10/2016	08/10/2016	08/10/2016								
Total Organic Carbon #	-	0.86	-	0.10	-						<0.02	%	TM21/PM24
Organic Matter	-	1.5	-	<0.2	-						<0.2	%	TM21/PM24
ANC at pH4	-	0.06	-	0.50	-						<0.03	mol/kg	TM77/PM0
ANC at pH7	-	<0.03	-	0.30	-						<0.03	mol/kg	TM77/PM0
Loss on Ignition #	-	3.8	-	2.6	-						<1.0	%	TM22/PM0
pH #	-	8.48	-	11.21	-						<0.01	pH units	TM73/PM11

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All solid results are expressed on a dry weight basis unless stated otherwise.

Client Name: Waterman Infrastructure & Environment Limited **SVOC Report :** **Solid**
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore
JE Job No.: 16/15446

J E Sample No.	148-151	156-159	180-183	192-195	200-203							
Sample ID	BH1	BH1	BH2	BH2	WS7							
Depth	0.50	1.50	1.00	2.50	0.70					Please see attached notes for all abbreviations and acronyms		
COC No / misc												
Containers	V J T	V J T	V J T	V J T	V J T							
Sample Date	04/10/2016	04/10/2016	03/10/2016	03/10/2016	05/10/2016							
Sample Type	Soil	Soil	Soil	Soil	Soil							
Batch Number	2	2	2	2	2					LOD/LOR	Units	Method No.
Date of Receipt	08/10/2016	08/10/2016	08/10/2016	08/10/2016	08/10/2016							
SVOC MS												
Phenols												
2-Chlorophenol #	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2-Methylphenol	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2-Nitrophenol	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2,4-Dichlorophenol #	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2,4-Dimethylphenol	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2,4,5-Trichlorophenol	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2,4,6-Trichlorophenol	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
4-Chloro-3-methylphenol	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
4-Methylphenol	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
4-Nitrophenol	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Pentachlorophenol	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Phenol #	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
PAHs												
2-Chloronaphthalene #	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2-Methylnaphthalene #	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Phthalates												
Bis(2-ethylhexyl) phthalate	<100	<100	<100	<100	<100					<100	ug/kg	TM16/PM8
Butylbenzyl phthalate	<100	<100	<100	<100	<100					<100	ug/kg	TM16/PM8
Di-n-butyl phthalate	<100	<100	<100	<100	<100					<100	ug/kg	TM16/PM8
Di-n-Octyl phthalate	<100	<100	<100	<100	<100					<100	ug/kg	TM16/PM8
Diethyl phthalate	<100	<100	<100	<100	<100					<100	ug/kg	TM16/PM8
Dimethyl phthalate #	<100	<100	<100	<100	<100					<100	ug/kg	TM16/PM8
Other SVOCs												
1,2-Dichlorobenzene	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
1,2,4-Trichlorobenzene #	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
1,3-Dichlorobenzene	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
1,4-Dichlorobenzene	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2-Nitroaniline	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2,4-Dinitrotoluene	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
2,6-Dinitrotoluene	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
3-Nitroaniline	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
4-Bromophenylphenylether #	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
4-Chloroaniline	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
4-Chlorophenylphenylether	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
4-Nitroaniline	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Azobenzene	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Bis(2-chloroethoxy)methane	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Bis(2-chloroethyl)ether	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Carbazole	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Dibenzofuran #	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Hexachlorobenzene	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Hexachlorobutadiene #	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Hexachlorocyclopentadiene	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Hexachloroethane	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Isophorone #	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
N-nitrosodi-n-propylamine #	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Nitrobenzene #	<10	<10	<10	<10	<10					<10	ug/kg	TM16/PM8
Surrogate Recovery 2-Fluorobiphenyl	76	76	83	77	87					<0	%	TM16/PM8
Surrogate Recovery p-Terphenyl-d14	121	125	117	115	129					<0	%	TM16/PM8

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Client Name:	Waterman Infrastructure & Environment Limited	**VOC Report :**	**Solid**
Reference:	10667		
Location:	Stag Brewery		
Contact:	Robbie Moore		
JE Job No.:	16/15446		

Please see attached notes for all abbreviations and acronyms

J E Sample No.	148-151	180-183	200-203	LOD/LOR	Units	Method No.
Sample ID	BH1	BH2	WS7			
Depth	0.50	1.00	0.70			
COC No / misc						
Containers	V J T	V J T	V J T			
Sample Date	04/10/2016	03/10/2016	05/10/2016			
Sample Type	Soil	Soil	Soil			
Batch Number	2	2	2			
Date of Receipt	08/10/2016	08/10/2016	08/10/2016			
VOC MS						
Dichlorodifluoromethane	<2	<2	<2	<2	ug/kg	TM15/PM10
Methyl Tertiary Butyl Ether #	<2	<2	<2	<2	ug/kg	TM15/PM10
Chloromethane #	<3	<3	<3	<3	ug/kg	TM15/PM10
Vinyl Chloride	<2	<2	<2	<2	ug/kg	TM15_A/PM10
Bromomethane	<1	<1	<1	<1	ug/kg	TM15/PM10
Chloroethane #	<2	<2	<2	<2	ug/kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2	<2	ug/kg	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<6	<6	<6	<6	ug/kg	TM15/PM10
Dichloromethane (DCM) #	<7	<7	<7	<7	ug/kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	ug/kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	ug/kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4	<4	ug/kg	TM15/PM10
Bromochloromethane #	<3	<3	<3	<3	ug/kg	TM15/PM10
Chloroform #	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	ug/kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4	<4	ug/kg	TM15/PM10
1,2-Dichloroethane #	<4	<4	<4	<4	ug/kg	TM15/PM10
Benzene #	<3	<3	<3	<3	ug/kg	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3	ug/kg	TM15/PM10
1,2-Dichloropropane #	<6	<6	<6	<6	ug/kg	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	ug/kg	TM15/PM10
Bromodichloromethane #	<3	<3	<3	<3	ug/kg	TM15/PM10
cis-1-3-Dichloropropene	<4	<4	<4	<4	ug/kg	TM15/PM10
Toluene #	<3	5	<3	<3	ug/kg	TM15/PM10
trans-1-3-Dichloropropene	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3	<3	ug/kg	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3	ug/kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3	<3	ug/kg	TM15/PM10
Dibromochloromethane #	<3	<3	<3	<3	ug/kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3	<3	ug/kg	TM15/PM10
Chlorobenzene #	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1,1,2-Tetrachloroethane	<3	<3	<3	<3	ug/kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3	ug/kg	TM15/PM10
p/m-Xylene #	<5	<5	<5	<5	ug/kg	TM15/PM10
o-Xylene #	<3	<3	<3	<3	ug/kg	TM15/PM10
Styrene	<3	<3	<3	<3	ug/kg	TM15_A/PM10
Bromoform	<3	<3	<3	<3	ug/kg	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	ug/kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3	<3	ug/kg	TM15/PM10
Bromobenzene	<2	<2	<2	<2	ug/kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4	<4	ug/kg	TM15/PM10
Propylbenzene #	<4	<4	<4	<4	ug/kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3	<3	ug/kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	ug/kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3	<3	ug/kg	TM15/PM10
tert-Butylbenzene #	<5	<5	<5	<5	ug/kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	<6	<6	<6	ug/kg	TM15/PM10
sec-Butylbenzene #	<4	<4	<4	<4	ug/kg	TM15/PM10
4-Isopropyltoluene #	<4	<4	<4	<4	ug/kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4	<4	ug/kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4	<4	ug/kg	TM15/PM10
n-Butylbenzene #	<4	<4	<4	<4	ug/kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4	<4	ug/kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4	<4	<4	ug/kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7	<7	<7	<7	ug/kg	TM15/PM10
Hexachlorobutadiene	<4	<4	<4	<4	ug/kg	TM15/PM10
Naphthalene	<27	<27	<27	<27	ug/kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7	<7	<7	ug/kg	TM15/PM10
Surrogate Recovery Toluene D8	104	99	101	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	116	92	103	<0	%	TM15/PM10

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Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	17.7
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	85.0
Particle Size <4mm =	>95%		

JEFL Job No	16/15446		Landfill Waste Acceptance Criteria Limits		
Sample No	158				
Client Sample No	BH1		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Depth/Other	1.50				
Sample Date	04/10/2016				
Batch No	2				
Solid Waste Analysis					
Total Organic Carbon (%)	0.86		3	5	6
Loss on Ignition (%)	3.8		-	-	10
Sum of BTEX (mg/kg)	<0.025		6	-	-
Sum of 7 PCBs (mg/kg)	<0.035		1	-	-
Mineral Oil (mg/kg)	<30		500	-	-
PAH Sum of 17(mg/kg)	0.68		100	-	-
pH (pH Units)	8.48		-	>6	-
ANC to pH 7 (mol/kg)	<0.03		-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	0.06		-	to be evaluated	to be evaluated
Eluate Analysis	10:1 conc^n leached		Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg		
	C_{10}	A_{10}			
	mg/l	mg/kg	mg/kg		
Arsenic	0.0056	0.056	0.5	2	25
Barium	<0.003	<0.03	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	0.0109	0.109	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	0.019	0.19	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	0.6	6	800	15000	25000
Fluoride	1.0	10	10	150	500
Sulphate as SO4	13.26	132.6	1000	20000	50000
Total Dissolved Solids	74	740	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	7	70	500	800	1000

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	25.4
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	79.7
Particle Size <4mm =	>95%		

JEFL Job No	**16/15446**	**Landfill Waste Acceptance Criteria Limits**		
Sample No	**194**			
Client Sample No	**BH2**	**Inert Waste Landfill**	**Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill**	**Hazardous Waste Landfill**
Depth/Other	**2.50**			
Sample Date	**03/10/2016**			
Batch No	**2**			
Solid Waste Analysis				
Total Organic Carbon (%)	0.10	3	5	6
Loss on Ignition (%)	2.6	-	-	10
Sum of BTEX (mg/kg)	<0.025	6	-	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-	-
Mineral Oil (mg/kg)	<30	500	-	-
PAH Sum of 17(mg/kg)	<0.64	100	-	-
pH (pH Units)	11.21	-	>6	-
ANC to pH 7 (mol/kg)	0.30	-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	0.50	-	to be evaluated	to be evaluated

Eluate Analysis	**10:1 conc^n leached**		**Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg**		
	C_{10}	**A_{10}**			
	mg/l	**mg/kg**	**mg/kg**		
Arsenic	<0.0025	<0.025	0.5	2	25
Barium	0.050	0.50	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	0.0135	0.135	0.5	10	70
Copper	<0.007	<0.07	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	0.002	<0.02	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	6.4	64	800	15000	25000
Fluoride	<0.3	<3	10	150	500
Sulphate as SO4	22.55	225.5	1000	20000	50000
Total Dissolved Solids	263	2630	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	3	30	500	800	1000

Client Name: Waterman Infrastructure & Environment Limited

Matrix : Solid

Reference: 10667

Location: Stag Brewery

Contact: Robbie Moore

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	EPH Interpretation
16/15446	2	BH2	1.00	180-183	PAHs/tarmac-bitumen and possible lube oil
16/15446	2	WS7	0.70	200-203	PAHs/tarmac-bitumen and possible lube oil

Client Name: Waterman Infrastructure & Environment Limited
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore

Note:

Analysis was carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:

Ryan Butterworth
Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
16/15446	2	BH1	0.50	149	12/10/2016	**General Description (Bulk Analysis)**	Soil/Stones
					12/10/2016	**Asbestos Fibres**	NAD
					12/10/2016	**Asbestos Fibres (2)**	NAD
					12/10/2016	**Asbestos ACM**	NAD
					12/10/2016	**Asbestos ACM (2)**	NAD
					12/10/2016	**Asbestos Type**	NAD
					12/10/2016	**Asbestos Type (2)**	NAD
					12/10/2016	**Asbestos Level Screen**	NAD
16/15446	2	BH2	1.00	181	12/10/2016	**General Description (Bulk Analysis)**	Soil/Stones
					12/10/2016	**Asbestos Fibres**	Fibre Bundles
					12/10/2016	**Asbestos ACM**	NAD
					12/10/2016	**Asbestos Type**	Chrysotile
					12/10/2016	**Asbestos Level Screen**	<0.1%
					24/10/2016	**Asbestos Gravimetric Quantification**	<0.001 (mass %)
					24/10/2016	**Asbestos PCOM Quantification (Fibres)**	<0.001 (mass %)
					24/10/2016	**Asbestos Gravimetric & PCOM Total**	<0.001 (mass %)

Client Name: Waterman Infrastructure & Environment Limited

Matrix : Solid

Reference: 10667

Location: Stag Brewery

Contact: Robbie Moore

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	NDP Reason
16/15446	2	BH2	1.00	180-183	Asbestos detected in sample

Exova Jones Environmental **Notification of Deviating Samples**

Client Name: Waterman Infrastructure & Environment Limited
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 16/15446						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 16/15446

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 (UKAS) accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS) accredited - UK.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 16/15446

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX and calculation of Aliphatic fractions.	PM12/PM16	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis./Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX and calculation of Aliphatic fractions.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes

JE Job No: 16/15446

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3: 1990/USEPA 160.3 Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.			AR	Yes
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM22	Modified USEPA 160.4. Gravimetric determination of Loss on Ignition by temperature controlled Muffle Furnace (450°C)	PM0	No preparation is required.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes

JE Job No: 16/15446

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM27	Modified US EPA method 9056.Determination of water soluble anions using Dionex (Ion-Chromatography).	PM0	No preparation is required.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 and 6010B	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 and 6010B	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 and 6010B	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 and 6010B	PM62	Acid digestion of as received solid samples using Aqua Regia refluxed at 112.5 °C.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM0	No preparation is required.	Yes		AR	Yes

JE Job No: 16/15446

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground samples with deionised water in a 2:1 water to solid ratio for anions. Extraction of as received samples with deionised water in a 2:1 water to solid ratio for ammoniacal nitrogen and hydrazine. Samples are extracted using an orbital shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground samples with deionised water in a 2:1 water to solid ratio for anions. Extraction of as received samples with deionised water in a 2:1 water to solid ratio for ammoniacal nitrogen and hydrazine. Samples are extracted using an orbital shaker.	Yes		AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	Dried and ground solid sample is boiled with dilute hydrochloric acid, the resulting liquor is then analysed.	Yes		AD	Yes
TM60	Modified USEPA 9060. Determination of TOC by calculation from Total Carbon and Inorganic Carbon using a TOC analyser, the carbon in the sample is converted to CO2 and then passed through a non-dispersive infrared gas analyser (NDIR).	PM0	No preparation is required.			AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.			AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.			AR	
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM61	As received solid samples are extracted with hot water in a 20:1 ratio of water to soil ready for analysis by ICP.			AR	Yes

JE Job No: 16/15446

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM77	Modified DDCEN/TS method 15364:2006. Determination of Acid Neutralization Capacity by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	No
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.			AR	
TM15_A	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds, Vinyl Chloride & Styrene by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

Exova Jones Environmental

Registered Address : Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian, EH28 8PL

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Waterman Infrastructure & Environment Limited
Pickfords Wharf
Clink Street
London
SE1 9DG

UKAS TESTING 4225

Attention :	Robbie Moore
Date :	10th November, 2016
Your reference :	10667
Our reference :	Test Report 16/15446 Batch 5
Location :	Stag Brewery
Date samples received :	29th October, 2016
Status :	Final report
Issue :	1

Three samples were received for analysis on 29th October, 2016 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Baden

Paul Lee-Boden BSc
Project Manager

Client Name: Waterman Infrastructure & Environment Limited
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore
JE Job No.: 16/15446

Report : **Liquid**

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=HNO_3

Please see attached notes for all abbreviations and acronyms

J E Sample No.	247-251	252-256	257-261							LOD/LOR	Units	Method No.
Sample ID	BH1	BH2B	WS10									
Depth												
COC No / misc												
Containers	V HN P G	V HN P G	V HN P G									
Sample Date	27/10/2016 16:30	27/10/2016 16:30	27/10/2016 16:30									
Sample Type	Ground Water	Ground Water	Ground Water									
Batch Number	5	5	5									
Date of Receipt	29/10/2016	29/10/2016	29/10/2016									
Dissolved Calcium #	169.5	91.2	75.3							<0.2	mg/l	TM30/PM14
Dissolved Magnesium #	12.2	6.1	<0.1							<0.1	mg/l	TM30/PM14
Total Arsenic	68.7	86.2	407.5							<0.9	ug/l	TM30/PM14
Total Barium	250.0	114.8	949.7							<1.8	ug/l	TM30/PM14
Total Beryllium	5.4	2.1	18.8							<0.5	ug/l	TM30/PM14
Total Boron	282	81	<2							<2	ug/l	TM30/PM14
Total Cadmium	<0.03	<0.03	<0.03							<0.03	ug/l	TM30/PM14
Total Chromium	125.1	44.9	348.8							<0.2	ug/l	TM30/PM14
Total Cobalt	41.8	26.8	165.2							<0.1	ug/l	TM30/PM14
Total Copper	104	59	438							<3	ug/l	TM30/PM14
Total Iron	189900.0 AA	103700.0 AA	712700.0 AB							<4.7	ug/l	TM30/PM14
Total Lead	68.8	34.3	324.3							<0.4	ug/l	TM30/PM14
Total Mercury	<0.5	<0.5	<0.5							<0.5	ug/l	TM30/PM14
Total Molybdenum	6.0	13.3	55.8							<0.2	ug/l	TM30/PM14
Total Nickel	237.5	107.8	525.7							<0.2	ug/l	TM30/PM14
Total Selenium	<1.2	<1.2	<1.2							<1.2	ug/l	TM30/PM14
Total Vanadium	201.8	76.5	606.9							<0.6	ug/l	TM30/PM14
Total Zinc	254.3	73.4	921.3							<1.5	ug/l	TM30/PM14
PAH MS												
Naphthalene #	<0.1 B	0.1 B	<0.1 B							<0.1	ug/l	TM4/PM30
Acenaphthylene #	<0.013	<0.013	<0.013							<0.013	ug/l	TM4/PM30
Acenaphthene #	<0.013	<0.013	<0.013							<0.013	ug/l	TM4/PM30
Fluorene #	<0.014	<0.014	<0.014							<0.014	ug/l	TM4/PM30
Phenanthrene #	<0.011	<0.011	<0.011							<0.011	ug/l	TM4/PM30
Anthracene #	<0.013	<0.013	<0.013							<0.013	ug/l	TM4/PM30
Fluoranthene #	<0.012	<0.012	<0.012							<0.012	ug/l	TM4/PM30
Pyrene #	<0.013	<0.013	0.440							<0.013	ug/l	TM4/PM30
Benzo(a)anthracene #	<0.015	<0.015	0.040							<0.015	ug/l	TM4/PM30
Chrysene #	<0.011	<0.011	0.050							<0.011	ug/l	TM4/PM30
Benzo(bk)fluoranthene #	<0.018	<0.018	<0.018							<0.018	ug/l	TM4/PM30
Benzo(a)pyrene #	<0.016	<0.016	<0.016							<0.016	ug/l	TM4/PM30
Indeno(123cd)pyrene #	<0.011	<0.011	<0.011							<0.011	ug/l	TM4/PM30
Dibenzo(ah)anthracene #	<0.01	<0.01	<0.01							<0.01	ug/l	TM4/PM30
Benzo(ghi)perylene #	<0.011	<0.011	<0.011							<0.011	ug/l	TM4/PM30
PAH 16 Total #	<0.195	<0.195	0.530							<0.195	ug/l	TM4/PM30
Benzo(b)fluoranthene	<0.01	<0.01	<0.01							<0.01	ug/l	TM4/PM30
Benzo(k)fluoranthene	<0.01	<0.01	<0.01							<0.01	ug/l	TM4/PM30
PAH Surrogate % Recovery	80	80	86							<0	%	TM4/PM30
Methyl Tertiary Butyl Ether #	<0.1	<0.1	<0.1							<0.1	ug/l	TM15/PM10
Benzene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM15/PM10
Toluene #	<5	<5	<5							<5	ug/l	TM15/PM10
Ethylbenzene #	<0.5	<0.5	<0.5							<0.5	ug/l	TM15/PM10

Please include all sections of this report if it is reproduced
All solid results are expressed on a dry weight basis unless stated otherwise.

Exova Jones Environmental

Client Name:	Waterman Infrastructure & Environment Limited	**Report :**	**Liquid**
Reference:	10667		
Location:	Stag Brewery		
Contact:	Robbie Moore	**Liquids/products:**	V=40ml vial, G=glass bottle, P=plastic bottle
JE Job No.:	16/15446		$H=H_2SO_4$, Z=ZnAc, N=NaOH, $HN=HN0_3$

Please see attached notes for all abbreviations and acronyms

J E Sample No.	247-251	252-256	257-261	LOD/LOR	Units	Method No.
Sample ID	BH1	BH2B	WS10			
Depth						
COC No / misc						
Containers	V HN P G	V HN P G	V HN P G			
Sample Date	27/10/2016 16:30	27/10/2016 16:30	27/10/2016 16:30			
Sample Type	Ground Water	Ground Water	Ground Water			
Batch Number	5	5	5			
Date of Receipt	29/10/2016	29/10/2016	29/10/2016			
p/m-Xylene #	<1	<1	<1	<1	ug/l	TM15/PM10
o-Xylene #	<0.5	<0.5	<0.5	<0.5	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	94	95	98	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	101	101	100	<0	%	TM15/PM10
TPH CWG						
Aliphatics						
>C5-C6 #	<5	<5	<5	<5	ug/l	TM36/PM12
>C6-C8 #	<5	<5	<5	<5	ug/l	TM36/PM12
>C8-C10 #	<5	<5	<5	<5	ug/l	TM36/PM12
>C10-C12 #	<5	<5	<5	<5	ug/l	TM5/PM30
>C12-C16 #	<10	<10	<10	<10	ug/l	TM5/PM30
>C16-C21 #	<10	<10	<10	<10	ug/l	TM5/PM30
>C21-C35 #	<10	<10	<10	<10	ug/l	TM5/PM30
>C35-C44	<10	<10	<10	<10	ug/l	TM5/PM30
Total aliphatics C5-44	<10	<10	<10	<10	ug/l	TM5/TM36/PM30
Aromatics						
>C5-EC7 #	<5	<5	<5	<5	ug/l	TM36/PM12
>EC7-EC8 #	<5	<5	<5	<5	ug/l	TM36/PM12
>EC8-EC10 #	<5	<5	<5	<5	ug/l	TM36/PM12
>EC10-EC12 #	<5	<5	<5	<5	ug/l	TM5/PM30
>EC12-EC16 #	<10	<10	<10	<10	ug/l	TM5/PM30
>EC16-EC21 #	<10	<10	<10	<10	ug/l	TM5/PM30
>EC21-EC35 #	<10	<10	<10	<10	ug/l	TM5/PM30
>EC35-EC44	<10	<10	<10	<10	ug/l	TM5/PM30
Total aromatics C5-44	<10	<10	<10	<10	ug/l	TM5/TM36/PM30
Total aliphatics and aromatics(C5-44)	<10	<10	<10	<10	ug/l	TM5/TM36/PM30
Hexavalent Chromium	<0.006	<0.006	0.034	<0.006	mg/l	TM38/PM0

Client Name: Waterman Infrastructure & Environment Limited
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore
JE Job No.: 16/15446

SVOC Report : **Liquid**

J E Sample No.	247-251	252-256	257-261	LOD/LOR	Units	Method No.
Sample ID	BH1	BH2B	WS10			
Depth						
COC No / misc						
Containers	V HN P G	V HN P G	V HN P G			
Sample Date	27/10/2016 16:30	27/10/2016 16:30	27/10/2016 16:30			
Sample Type	Ground Water	Ground Water	Ground Water			
Batch Number	5	5	5			
Date of Receipt	29/10/2016	29/10/2016	29/10/2016			
SVOC MS						
Phenols						
2-Chlorophenol #	<1	<1	<1	<1	ug/l	TM16/PM30
2-Methylphenol #	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2-Nitrophenol	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol #	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	<1	<1	<1	<1	ug/l	TM16/PM30
2,4,5-Trichlorophenol #	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	<1	<1	<1	<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol #	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
4-Methylphenol	<1	<1	<1	<1	ug/l	TM16/PM30
4-Nitrophenol	<10	<10	<10	<10	ug/l	TM16/PM30
Pentachlorophenol	<1	<1	<1	<1	ug/l	TM16/PM30
Phenol	<1	<1	<1	<1	ug/l	TM16/PM30
PAHs						
2-Chloronaphthalene #	<1	<1	<1	<1	ug/l	TM16/PM30
2-Methylnaphthalene #	<1	<1	<1	<1	ug/l	TM16/PM30
Phthalates						
Bis(2-ethylhexyl) phthalate	<5	<5	<5	<5	ug/l	TM16/PM30
Butylbenzyl phthalate	<1	<1	<1	<1	ug/l	TM16/PM30
Di-n-butyl phthalate #	<1.5	<1.5	<1.5	<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	<1	<1	<1	<1	ug/l	TM16/PM30
Diethyl phthalate #	<1	<1	<1	<1	ug/l	TM16/PM30
Dimethyl phthalate	<1	<1	<1	<1	ug/l	TM16/PM30
Other SVOCs						
1,2-Dichlorobenzene #	<1	<1	<1	<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene #	<1	<1	<1	<1	ug/l	TM16/PM30
1,3-Dichlorobenzene #	<1	<1	<1	<1	ug/l	TM16/PM30
1,4-Dichlorobenzene #	<1	<1	<1	<1	ug/l	TM16/PM30
2-Nitroaniline	<1	<1	<1	<1	ug/l	TM16/PM30
2,4-Dinitrotoluene #	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	<1	<1	<1	<1	ug/l	TM16/PM30
3-Nitroaniline	<1	<1	<1	<1	ug/l	TM16/PM30
4-Bromophenylphenylether #	<1	<1	<1	<1	ug/l	TM16/PM30
4-Chloroaniline	<1	<1	<1	<1	ug/l	TM16/PM30
4-Chlorophenylphenylether #	<1	<1	<1	<1	ug/l	TM16/PM30
4-Nitroaniline	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Azobenzene #	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane #	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether #	<1	<1	<1	<1	ug/l	TM16/PM30
Carbazole #	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Dibenzofuran #	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Hexachlorobenzene #	<1	<1	<1	<1	ug/l	TM16/PM30
Hexachlorobutadiene #	<1	<1	<1	<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	<1	<1	<1	<1	ug/l	TM16/PM30
Hexachloroethane #	<1	<1	<1	<1	ug/l	TM16/PM30
Isophorone #	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine #	<0.5	<0.5	<0.5	<0.5	ug/l	TM16/PM30
Nitrobenzene #	<1	<1	<1	<1	ug/l	TM16/PM30
Surrogate Recovery 2-Fluorobiphenyl	95	89	97	<0	%	TM16/PM30
Surrogate Recovery p-Terphenyl-d14	97	98	96	<0	%	TM16/PM30

Please see attached notes for all abbreviations and acronyms

Exova Jones Environmental

Client Name: Waterman Infrastructure & Environment Limited **VOC Report :** **Liquid**
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore
JE Job No.: 16/15446

Please see attached notes for all abbreviations and acronyms

J E Sample No.	247-251	252-256	257-261			
Sample ID	BH1	BH2B	WS10			
Depth						
COC No / misc						
Containers	V HN P G	V HN P G	V HN P G			
Sample Date	27/10/2016 16:30	27/10/2016 16:30	27/10/2016 16:30			
Sample Type	Ground Water	Ground Water	Ground Water			
Batch Number	5	5	5	LOD/LOR	Units	Method No.
Date of Receipt	29/10/2016	29/10/2016	29/10/2016			
VOC MS						
Dichlorodifluoromethane	<2	<2	<2	<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	<0.1	<0.1	<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3	<3	<3	ug/l	TM15/PM10
Vinyl Chloride #	<0.1	<0.1	<0.1	<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1	<1	<1	ug/l	TM15/PM10
Chloroethane #	<3	<3	<3	<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	<3	<3	<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<3	<3	<3	<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<3	<3	<3	<3	ug/l	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	ug/l	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1	<1	<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2	<2	<2	ug/l	TM15/PM10
Chloroform #	<2	<2	<2	<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	<2	<2	<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2	<2	<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2	<2	<2	<2	ug/l	TM15/PM10
Benzene #	<0.5	<0.5	<0.5	<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3	<3	<3	<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2	<2	<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2	<2	<2	ug/l	TM15/PM10
cis-1-3-Dichloropropene	<2	<2	<2	<2	ug/l	TM15/PM10
Toluene #	<5	<5	<5	<5	ug/l	TM15/PM10
trans-1-3-Dichloropropene	<2	<2	<2	<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	<2	<2	<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3	<3	<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2	<2	<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2	<2	<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2	<2	<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2	<2	<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2	<2	<2	ug/l	TM15/PM10
Ethylbenzene #	<0.5	<0.5	<0.5	<0.5	ug/l	TM15/PM10
p/m-Xylene #	<1	<1	<1	<1	ug/l	TM15/PM10
o-Xylene #	<0.5	<0.5	<0.5	<0.5	ug/l	TM15/PM10
Styrene	<2	<2	<2	<2	ug/l	TM15/PM10
Bromoform #	<2	<2	<2	<2	ug/l	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4	<4	<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2	<2	<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3	<3	<3	ug/l	TM15/PM10
Propylbenzene #	<3	<3	<3	<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3	<3	<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3	<3	<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3	<3	<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3	<3	<3	<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3	<3	<3	<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3	<3	<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3	<3	<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3	<3	<3	ug/l	TM15/PM10
n-Butylbenzene #	<3	<3	<3	<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3	<3	<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2	<2	<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3	<3	<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3	<3	<3	ug/l	TM15/PM10
Naphthalene	<2	<2	<2	<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3	<3	<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	94	95	98	<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	101	101	100	<0	%	TM15/PM10

Client Name: Waterman Infrastructure & Environment Limited

Matrix : Liquid

Reference: 10667

Location: Stag Brewery

Contact: Robbie Moore

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	EPH Interpretation
16/15446	5	BH1		247-251	No interpretation possible
16/15446	5	BH2B		252-256	No interpretation possible
16/15446	5	WS10		257-261	No interpretation possible

Client Name: Waterman Infrastructure & Environment Limited **Matrix : Liquid**

Reference: 10667

Location: Stag Brewery

Contact: Robbie Moore

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
16/15446	5					Liquid Samples were received at a temperature above 9°C.

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.

Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 16/15446

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 (UKAS) accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS) accredited - UK.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x20 Dilution
AB	x100 Dilution

JE Job No: 16/15446

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5/TM36	TM005: Modified USEPA 8015B. Determination of solvent Extractable Petroleum Hydrocarbons (EPH) including column fractionation in the carbon range of C10-35 into aliphatic and aromatic fractions by GC-FID. TM036: Modified USEPA 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C5-10 by headspace GC-FID. Including determination of BTEX and calculation of Aliphatic fractions.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.				
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 and 6010B	PM14	Analysis of waters and leachates for metals by ICP OES. Samples are filtered for dissolved metals and acidified if required.				

JE Job No: 16/15446

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 and 6010B	PM14	Analysis of waters and leachates for metals by ICP OES. Samples are filtered for dissolved metals and acidified if required.	Yes			
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM0	No preparation is required.				

Exova Jones Environmental

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Pickfords Wharf
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4225

Attention :	Robbie Moore
Date :	14th November, 2016
Your reference :	10667
Our reference :	Test Report 16/15446 Batch 5 Schedule C
Location :	Stag Brewery
Date samples received :	29th October, 2016
Status :	Final report
Issue :	1

Three samples were received for analysis on 29th October, 2016 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

S. Gomery

Simon Gomery BSc
Project Manager

Client Name: Waterman Infrastructure & Environment Limited
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore
JE Job No.: 16/15446

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H_2SO_4, Z=ZnAc, N=NaOH, HN=$HN0_3$

Please see attached notes for all abbreviations and acronyms

J E Sample No.	247-251	252-256	257-261								LOD/LOR	Units	Method No.
Sample ID	BH1	BH2B	WS10										
Depth													
COC No / misc													
Containers	V HN P G	V HN P G	V HN P G										
Sample Date	27/10/2016 16:30	27/10/2016 16:30	27/10/2016 16:30										
Sample Type	Ground Water	Ground Water	Ground Water										
Batch Number	5	5	5										
Date of Receipt	29/10/2016	29/10/2016	29/10/2016										
Dissolved Calcium #	169.5	91.2	75.3								<0.2	mg/l	TM30/PM14
Dissolved Magnesium #	12.2	6.1	<0.1								<0.1	mg/l	TM30/PM14
Total Hardness Dissolved (as CaCO3)	475	254	188								<1	mg/l	TM30/PM14
pH #	6.78	7.43	11.60								<0.01	pH units	TM73/PM0

Client Name: Waterman Infrastructure & Environment Limited **Matrix : Liquid**
Reference: 10667
Location: Stag Brewery
Contact: Robbie Moore

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
16/15446	5					Liquid Samples were received at a temperature above 9°C.

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 16/15446

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 (UKAS) accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.
Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS) accredited - UK.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 16/15446

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 and 6010B	PM14	Analysis of waters and leachates for metals by ICP OES. Samples are filtered for dissolved metals and acidified if required.				
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7 and 6010B	PM14	Analysis of waters and leachates for metals by ICP OES. Samples are filtered for dissolved metals and acidified if required.	Yes			
TM73	Modified US EPA methods 150.1 and 9045D. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			

Appendix G Waste Classification Process

- **Regulatory Context**
- **HazWasteOnline™ Report**

Regulatory Context

Waste management practices and requirements in the UK are largely driven by the European Waste Framework Directive[1], which is implemented in the UK by a variety of regulatory instruments. A key component of the process is the need to determine the hazardous properties of a waste in accordance with the Hazardous Waste (England and Wales) Regulations 2005. The first step to deciding if a waste is hazardous or non-hazardous is by reference to the "European Waste Catalogue[2], a comprehensive list of all wastes split into 20 chapters, which is predominantly based on industry practice (e.g. construction and demolition wastes), with some chapters based on materials and processes (e.g. oily wastes). Each waste is coded by a 6 digit code, where wastes are either classified as hazardous or non-hazardous. It should be noted that inert waste is a sub-set of non-hazardous waste.

Hazardous wastes are signified by entries where the code is followed by an asterisk, where some wastes are deemed hazardous without further assessment and which are termed "Absolute Entries" e.g. most waste oils. Alternatively waste entries are termed "Mirror" entries, these require further assessment of hazardous properties, in order to determine whether they are hazardous waste or not (e.g. soil and stones).

Excavation wastes (soils, made ground and similar) are coded by mirror entries:

- 17 05 03* soil and stones containing hazardous substances; or
- 17 05 04 soil and stones other than those mentioned in 17 05 03

Therefore, soil and stones (or similar) can be either hazardous or non-hazardous waste, depending upon the concentrations of contaminants (e.g. diesel, asbestos, metals) in the waste. Other EWC codes may apply to excavation wastes containing asbestos and to road surfacing for example.

In order to determine if excavation waste is hazardous or not, the potential contaminants that may be present in the excavation wastes are identified based on the history of the waste (e.g. desk study of the source site for soils), with sufficient representative samples of the waste being subjected to appropriate laboratory chemical analysis. The data are compared to published thresholds, detailed in UK Environment Agencies guidance "WM3"[3]. Waterman chooses to use a commercially available tool referred to as HazWasteOnline™ to undertake the assessment. HazWasteOnline™ is web-based software which is regularly updated to reflect UK Environment Agencies guidance and European requirements. The system comprises an analysis and reporting web front-end and a calculation engine.

The hazard assessment does not define inert waste, nor does the hazard assessment confirm in the case of hazardous excavation waste whether or not the waste can be landfilled. Further Waste Acceptance Criteria (WAC)[4] testing is required in these instances, explained in further Environment Agency guidance, referred to herein as "EA WAC guidance"[5]. WAC testing is therefore used to determine possible off site landfill disposal options for these wastes.

WM3 also provides guidance to show how waste classification and assessment is applied to construction and demolition wastes containing asbestos[6] and waste containing coal tar[7]. The guidance is summarised below.

[1] Directive 2008/986/12/EC of the European Parliament and of the Council on waste and repealing certain Directives
[2] Commission Decision 2000/532/EC as amended comprising the European Waste Catalogue.
[3] Environment Agency Technical Guidance WM3 "Guidance on the classification and assessment of waste" (1st Edition 2015)" including additional guidance on sampling set out in Appendix D of this document
[4] Council Decision 2003/33/EC Establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of, and Annex II to, Directive 1999/31/EC
[5] Environment Agency "Waste Sampling and Testing for Disposal to Landfill" (March 2013)
[6] WM3 – Chapter 3, Section 1
[7] WM3 – Chapter 3, Section 2

Construction and demolition wastes containing asbestos

The assessment of asbestos containing waste considers both the presence of asbestos as:

- Fibres that are free and dispersed, and
- Identifiable pieces of asbestos containing material.

If the waste contains fibres that are free and dispersed then the waste soil will be hazardous if the waste as a whole contains 0.1% or more asbestos.

If the waste contains any pieces of asbestos containing material that can be identified as potentially being asbestos containing materials by a competent person (if examined by the naked eye), then the pieces must be assessed separately. The waste is hazardous if the concentration of asbestos in the piece of asbestos containing material is 0.1% or more. The waste is regarded as a mixed waste and classified accordingly. The following codes should be assigned to the asbestos element of the waste as appropriate:

- 17 06 05* Construction material containing asbestos
- 17 06 01* Insulation material containing asbestos.

Waste containing coal tar

The following applies only to Asphalt material classified in the List of Wastes as

- 17 03 01* bituminous mixtures containing coal tar
- 17 03 02 bituminous mixtures other than those mentioned in 17 03 01

Where the concentration of benzo(a)pyrene is at or above 50mg/kg in the black top alone (excluding other material) then the amount of coal tar should be considered sufficient (0.1% or more) for material to be hazardous and thus coded 17 03 01*. However, assessments based on PAH's alone are not consistent with the legislation and cannot be used to classify a waste as non-hazardous.

Any sampling of black top would need to ensure that layers with different concentrations of benzo(a)pyrene are identified and sampled.

If waste is found to be hazardous, the consignment note process set out in the Hazardous Waste (England and Wales) Regulations 2005 must be complied with. If waste is found to be non-hazardous the requirements of the "duty of care" set out in section 34 Environmental Protection Act 1990 and in the Waste (England and Wales) Regulations 2011 (content of the transfer note) must be complied with.

Options Assessment

Following the classification of excavation wastes, the options available for the waste can be considered in the context of the waste hierarchy:

- on-site reuse (with or without prior treatment);
- off-site reuse (with or without prior treatment) e.g. use of waste in construction;
- off-site processing for recycling or recovery e.g. screening; and
- off-site disposal (with or without prior treatment) i.e. landfill.

The storage, treatment and use of waste are subject to waste regulatory controls including authorisations issued by the UK Environment Agencies.

Interpretation of Laboratory Analysis Data

WM3 sets out the circumstances in which data can be subject to statistical analysis[8]. A sampling plan prepared in accordance with relevant standards should be implemented to recover the samples for laboratory analysis. These methods can permit the exclusion of data points in excess of hazardous waste thresholds or in excess of WAC thresholds.

It should be noted that these means of assessing the data need to be acceptable to a receiving Site.

[8] WM3 Appendix D

Waste Classification Report

LQ4HG-F7NSS-QM37B

Job name

WIE10667-101 Stag Brewery East Site. Alluvium

Waste Stream

Soil - Hazwaste Template v2.5 (WM3 1st ed)

Comments

Preliminary Waste Assessment of laboratory analysis results for soil samples taken as part of a contaminated land site investigation at Stag Brewery East Site. The soil samples taken were collected as discreet samples for contaminated land assessment purposes and have not been sampled in strict accordance with the guidelines presented in EA document Waste Classification: Guidance on the classification and assessment of waste (1st edition 2015) Technical Guidance WM3. This waste assessment should be regarded as preliminary, and indicative only of like costs for construction.

Project

WIE10667-101 Stag Brewery East Site. Site Investigation.

Site

Stag Brewery East Site, Mortlake, London.

Classified by

Name:
Coates, Jon
Date:
17/11/2016 19:44 UTC
Telephone:
020 7928 7888

Company:
Waterman Energy Environment & Design Ltd
Pickfords Wharf
Clink Street
London
SE1 9DG

Report

Created by: Coates, Jon
Created date: 17/11/2016 19:44 UTC

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazardous properties	Page
1	WS9A	2.5	Non Hazardous		2

Classification of sample: WS9A

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS9A
Sample Depth:
2.5 m
Moisture content: **6%**
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands (Moisture content: 6%, dry weight correction)

arsenic trioxide: (Cation conc. entered: 11.9 mg/kg, converted to compound conc.:14.823 mg/kg or 0.00148%)
barium sulfate: (Cation conc. entered: 13 mg/kg, converted to compound conc.:20.843 mg/kg or 0.00208%)
beryllium oxide: (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<1.309 mg/kg or <0.000131%) IGNORED Because: "<LOD"
diboron trioxide; boric oxide: (Cation conc. entered: 0.1 mg/kg, converted to compound conc.:0.304 mg/kg or 0.0000304%)
cadmium oxide: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.108 mg/kg or <0.0000108%) IGNORED Because: "<LOD"
chromium(III) oxide: (Cation conc. entered: 90.8 mg/kg, converted to compound conc.:125.197 mg/kg or 0.0125%)
chromium(VI) oxide: (Cation conc. entered: <0.3 mg/kg, converted to compound conc.:<0.544 mg/kg or <0.0000544%) IGNORED Because: "<LOD"
cobalt sulfate: (Cation conc. entered: 3.3 mg/kg, converted to compound conc.:8.188 mg/kg or 0.000819%, Note 1 conc.: 0.000311%)
copper sulphate: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<2.37 mg/kg or <0.000237%) IGNORED Because: "<LOD"
lead compounds with the exception of those specified elsewhere in this Annex: (Cation conc. entered: <5 mg/kg, converted to compound conc.:<4.717 mg/kg or <0.000472%, Note 1 conc.: <0.000472%) IGNORED Because: "<LOD"
mercury dichloride: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.128 mg/kg or <0.0000128%) IGNORED Because: "<LOD"
molybdenum(VI) oxide: (Cation conc. entered: 3.2 mg/kg, converted to compound conc.:4.529 mg/kg or 0.000453%)
nickel(II) oxide (nickel monoxide): (Cation conc. entered: 13.5 mg/kg, converted to compound conc.:16.208 mg/kg or 0.00162%)
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<2.409 mg/kg or <0.000241%) IGNORED Because: "<LOD"
divanadium pentaoxide; vanadium pentoxide: (Cation conc. entered: 22 mg/kg, converted to compound conc.:37.051 mg/kg or 0.00371%)
zinc oxide: (Cation conc. entered: 15 mg/kg, converted to compound conc.:17.614 mg/kg or 0.00176%)
TPH (C6 to C40) petroleum group: (Whole conc. entered as: <52 mg/kg or <0.00491%) IGNORED Because: "<LOD"
benzene: (Whole conc. entered as: <0.005 mg/kg or <0.000000472%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <0.005 mg/kg or <0.000000472%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <0.005 mg/kg or <0.000000472%) IGNORED Because: "<LOD"
xylene: (Whole conc. entered as: <0.005 mg/kg or <0.000000472%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: <0.04 mg/kg or <0.00000377%) IGNORED Because: "<LOD"
acenaphthylene: (Whole conc. entered as: <0.03 mg/kg or <0.00000283%) IGNORED Because: "<LOD"
acenaphthene: (Whole conc. entered as: <0.05 mg/kg or <0.00000472%) IGNORED Because: "<LOD"

fluorene: (Whole conc. entered as: <0.04 mg/kg or <0.00000377%) IGNORED Because: "<LOD"
phenanthrene: (Whole conc. entered as: <0.03 mg/kg or <0.00000283%) IGNORED Because: "<LOD"
anthracene: (Whole conc. entered as: <0.04 mg/kg or <0.00000377%) IGNORED Because: "<LOD"
fluoranthene: (Whole conc. entered as: <0.03 mg/kg or <0.00000283%) IGNORED Because: "<LOD"
pyrene: (Whole conc. entered as: <0.03 mg/kg or <0.00000283%) IGNORED Because: "<LOD"
benzo[a]anthracene: (Whole conc. entered as: <0.06 mg/kg or <0.00000566%) IGNORED Because: "<LOD"
chrysene: (Whole conc. entered as: <0.02 mg/kg or <0.00000189%) IGNORED Because: "<LOD"
benzo[b]fluoranthene: (Whole conc. entered as: <0.05 mg/kg or <0.00000472%) IGNORED Because: "<LOD"
benzo[k]fluoranthene: (Whole conc. entered as: <0.02 mg/kg or <0.00000189%) IGNORED Because: "<LOD"
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: <0.04 mg/kg or <0.00000377%) IGNORED Because: "<LOD"
indeno[123-cd]pyrene: (Whole conc. entered as: <0.04 mg/kg or <0.00000377%) IGNORED Because: "<LOD"
dibenz[a,h]anthracene: (Whole conc. entered as: <0.04 mg/kg or <0.00000377%) IGNORED Because: "<LOD"
benzo[ghi]perylene: (Whole conc. entered as: <0.04 mg/kg or <0.00000377%) IGNORED Because: "<LOD"
phenol: (Whole conc. entered as: <0.01 mg/kg or <0.000000943%) IGNORED Because: "<LOD"
1,1,2,2-tetrachloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000283%) IGNORED Because: "<LOD"
1,1,2-trichloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000283%) IGNORED Because: "<LOD"
1,2,4-trimethylbenzene: (Whole conc. entered as: <0.006 mg/kg or <0.000000566%) IGNORED Because: "<LOD"
1,2-dichloropropane; propylene dichloride: (Whole conc. entered as: <0.006 mg/kg or <0.000000566%) IGNORED Because: "<LOD"
bis(2-ethylhexyl) phthalate; di-(2-ethylhexyl) phthalate; DEHP: (Whole conc. entered as: <0.1 mg/kg or <0.00000943%) IGNORED Because: "<LOD"
bromobenzene: (Whole conc. entered as: <0.002 mg/kg or <0.000000189%) IGNORED Because: "<LOD"
bromoform; tribromomethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000283%) IGNORED Because: "<LOD"
carbon tetrachloride; tetrachloromethane: (Whole conc. entered as: <0.004 mg/kg or <0.000000377%) IGNORED Because: "<LOD"
styrene: (Whole conc. entered as: <0.003 mg/kg or <0.000000283%) IGNORED Because: "<LOD"
trichloroethene (TCE): (Whole conc. entered as: <0.003 mg/kg or <0.000000283%) IGNORED Because: "<LOD"
chlorobenzene: (Whole conc. entered as: <0.003 mg/kg or <0.000000283%) IGNORED Because: "<LOD"

Notes utilised in assessment

C14: Step 5
"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel(II) oxide (nickel monoxide)"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "divanadium pentaoxide; vanadium pentoxide"

Note 1 , used on:

Test: "HP 6 on Acute Tox. 4; H302" for determinand: "cobalt sulfate"
Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "cobalt sulfate"
Test: "HP 10 on Repr. 1A; H360, Repr. 1A; H360D, Repr. 1A; H360Df, Repr. 1A; H360F, Repr. 1A; H360Fd, Repr. 1A; H360FD, Repr. 1B; H360, Repr. 1B; H360D, Repr. 1B; H360Df, Repr. 1B; H360F, Repr. 1B; H360Fd, Repr. 1B; H360FD " for determinand: "cobalt sulfate"
Test: "HP 11 on Muta. 2; H341" for determinand: "cobalt sulfate"
Test: "HP 13 on Skin Sens. 1; H317, Skin Sens. 1A; H317, Skin Sens. 1B; H317, Resp. Sens. 1; H334, Resp. Sens. 1A; H334, Resp. Sens. 1B; H334" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"

Determinand notes

Note 1 , used on:

determinand: "cobalt sulfate"

Appendix A: Classifier defined and non CLP determinands

barium sulfate (CAS Number: 7727-43-7)

Conversion factor: 1.7
Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R20/22, R33, R36/37/38
Hazard Statements: Acute Tox. 4; H332, Acute Tox. 4; H302, STOT RE 2; H373, Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315

chromium(III) oxide (CAS Number: 1308-38-9)

Conversion factor: 1.462
Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R20, R22, R36, R37, R38, R42, R43, R50/53, R60, R61
Hazard Statements: Acute Tox. 4; H332, Acute Tox. 4; H302, Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315, Resp. Sens. 1; H334, Skin Sens. 1; H317, Repr. 1B; H360FD, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

lead compounds with the exception of those specified elsewhere in this Annex

CLP index number: 082-001-00-6
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Risk Phrases: None.
Additional Hazard Statement(s): Carc. 2; H351
Reason:
03/06/2015 - Carc. 2; H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25/05/2015
Risk Phrases: R10, R45, R46, R51/53, R63, R65
Hazard Statements: Flam. Liq. 3; H226, Asp. Tox. 1; H304, STOT RE 2; H373, Muta. 1B; H340, Carc. 1B; H350, Repr. 2; H361d, Aquatic Chronic 2; H411

ethylbenzene (CAS Number: 100-41-4)

CLP index number: 601-023-00-4
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Risk Phrases: None.
Additional Hazard Statement(s): Carc. 2; H351
Reason:
03/06/2015 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

acenaphthylene (CAS Number: 208-96-8)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R22, R26, R27, R36, R37, R38
Hazard Statements: Acute Tox. 4; H302, Acute Tox. 1; H330, Acute Tox. 1; H310, Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315

acenaphthene (CAS Number: 83-32-9)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R36, R37, R38, N; R50/53, N; R51/53
Hazard Statements: Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315, Aquatic Acute 1; H400, Aquatic Chronic 1; H410, Aquatic Chronic 2; H411

fluorene (CAS Number: 86-73-7)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: N; R50/53
Hazard Statements: Aquatic Acute 1; H400, Aquatic Chronic 1; H410

phenanthrene (CAS Number: 85-01-8)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: R22, R36, R37, R38, R40, R43, N; R50/53
Hazard Statements: Acute Tox. 4; H302, Eye Irrit. 2; H319, STOT SE 3; H335, Carc. 2; H351, Skin Sens. 1; H317, Aquatic Acute 1; H400, Aquatic Chronic 1; H410, Skin Irrit. 2; H315

anthracene (CAS Number: 120-12-7)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R36, R37, R38, R43, N; R50/53
Hazard Statements: Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315, Skin Sens. 1; H317, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

fluoranthene (CAS Number: 206-44-0)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21/08/2015
Risk Phrases: Xn; R22, N; R50/53
Hazard Statements: Acute Tox. 4; H302, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

pyrene (CAS Number: 129-00-0)

Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21/08/2015
Risk Phrases: Xi; R36/37/38, N; R50/53
Hazard Statements: Skin Irrit. 2; H315, Eye Irrit. 2; H319, STOT SE 3; H335, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

indeno[123-cd]pyrene (CAS Number: 193-39-5)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: R40
Hazard Statements: Carc. 2; H351

benzo[ghi]perylene (CAS Number: 191-24-2)

Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23/07/2015
Risk Phrases: N; R50/53
Hazard Statements: Aquatic Acute 1; H400, Aquatic Chronic 1; H410

chlorobenzene (CAS Number: 108-90-7)

CLP index number: 602-033-00-1
Data source: Regulation (EU) 2016/1179 of 19 July 2016 (ATP9)
Additional Risk Phrases: N; R51/53
Additional Hazard Statement(s): None.
Reason:
10/10/2016 - N; R51/53 hazard statement sourced from: WM3 v1 still uses ecotoxic risk phrases

Appendix B: Rationale for selection of metal species

C14: Step 5

from section: WM3: C14 in the document: "WM3 - Waste Classification"

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..."

Note 1

from section: 1.1.3.2, Annex VI in the document: "CLP Regulation"

"The concentration stated or, in the absence of such concentrations, the generic concentrations of this Regulation (Table 3.1) or the generic concentrations of Directive 1999/45/EC (Table 3.2), are the percentages by weight of the metallic element calculated with reference to the total weight of the mixture."

Appendix C: Version

This classification utilises the following guidance and legislation:

- WM3 - Waste Classification - May 2015
- CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
- 1st ATP - Regulation 790/2009/EC of 10 August 2009
- 2nd ATP - Regulation 286/2011/EC of 10 March 2011
- 3rd ATP - Regulation 618/2012/EU of 10 July 2012
- 4th ATP - Regulation 487/2013/EU of 8 May 2013
- Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
- 5th ATP - Regulation 944/2013/EU of 2 October 2013
- 6th ATP - Regulation 605/2014/EU of 5 June 2014
- WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
- Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
- 7th ATP - Regulation 2015/1221/EU of 24 July 2015
- 8th ATP - Regulation (EU) 2016/918 of 19 May 2016
- 9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
- POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
- 1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
- 2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

HazWasteOnline Classification Engine: WM3 1st Edition, May 2015
HazWasteOnline Classification Engine Version: 2016.317.3166.6295 (12 Nov 2016)
HazWasteOnline Database: 2016.315.3165.6292 (10 Nov 2016)

Waste Classification Report

CDBXC-4B9VQ-SX2HT

Job name

WIE10667-101 Stag Brewery East Site. Kempton Park Gravel.

Waste Stream

Soil - Hazwaste Template v2.5 (WM3 1st ed)

Comments

Preliminary Waste Assessment of laboratory analysis results for soil samples taken as part of a contaminated land site investigation at Stag Brewery East Site. The soil samples taken were collected as discreet samples for contaminated land assessment purposes and have not been sampled in strict accordance with the guidelines presented in EA document Waste Classification: Guidance on the classification and assessment of waste (1st edition 2015) Technical Guidance WM3. This waste assessment should be regarded as preliminary, and indicative only of like costs for construction.

Project

WIE10667-101 Stag Brewery East Site. Site Investigation.

Site

Stag Brewery East Site, Mortlake, London.

Classified by

Name:
Coates, Jon
Date:
17/11/2016 19:44 UTC
Telephone:
020 7928 7888

Company:
Waterman Energy Environment & Design Ltd
Pickfords Wharf
Clink Street
London
SE1 9DG

Report

Created by: Coates, Jon
Created date: 17/11/2016 19:44 UTC

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazardous properties	Page
1	WS10A	3	Non Hazardous		2

Classification of sample: WS10A

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS10A
Sample Depth:
3 m
Moisture content: **9.3%**
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands (Moisture content: 9.3%, dry weight correction)

arsenic trioxide: (Cation conc. entered: 27 mg/kg, converted to compound conc.:32.616 mg/kg or 0.00326%)
barium sulfate: (Cation conc. entered: 22 mg/kg, converted to compound conc.:34.208 mg/kg or 0.00342%)
beryllium oxide: (Cation conc. entered: 0.8 mg/kg, converted to compound conc.:2.031 mg/kg or 0.000203%)
diboron trioxide; boric oxide: (Cation conc. entered: 0.4 mg/kg, converted to compound conc.:1.178 mg/kg or 0.000118%)
cadmium oxide: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.105 mg/kg or <0.0000105%) IGNORED Because: "<LOD"
chromium(III) oxide: (Cation conc. entered: 88.4 mg/kg, converted to compound conc.:118.208 mg/kg or 0.0118%)
chromium(VI) oxide: (Cation conc. entered: <0.3 mg/kg, converted to compound conc.:<0.528 mg/kg or <0.0000528%) IGNORED Because: "<LOD"
cobalt sulfate: (Cation conc. entered: 7.2 mg/kg, converted to compound conc.:17.325 mg/kg or 0.00173%, Note 1 conc.: 0.000659%)
copper sulphate: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<2.298 mg/kg or <0.00023%) IGNORED Because: "<LOD"
lead chromate: (Cation conc. entered: 11 mg/kg, converted to compound conc.:15.698 mg/kg or 0.00157%, Note 1 conc.: 0.00101%)
mercury dichloride: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.124 mg/kg or <0.0000124%) IGNORED Because: "<LOD"
molybdenum(VI) oxide: (Cation conc. entered: 3.3 mg/kg, converted to compound conc.:4.529 mg/kg or 0.000453%)
nickel(II) oxide (nickel monoxide): (Cation conc. entered: 25 mg/kg, converted to compound conc.:29.108 mg/kg or 0.00291%)
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<2.336 mg/kg or <0.000234%) IGNORED Because: "<LOD"
divanadium pentaoxide; vanadium pentoxide: (Cation conc. entered: 42 mg/kg, converted to compound conc.:68.598 mg/kg or 0.00686%)
zinc oxide: (Cation conc. entered: 33 mg/kg, converted to compound conc.:37.581 mg/kg or 0.00376%)
TPH (C6 to C40) petroleum group: (Whole conc. entered as: <52 mg/kg or <0.00476%) IGNORED Because: "<LOD"
benzene: (Whole conc. entered as: <0.005 mg/kg or <0.000000457%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <0.005 mg/kg or <0.000000457%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <0.005 mg/kg or <0.000000457%) IGNORED Because: "<LOD"
xylene: (Whole conc. entered as: <0.005 mg/kg or <0.000000457%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: <0.04 mg/kg or <0.00000366%) IGNORED Because: "<LOD"
acenaphthylene: (Whole conc. entered as: <0.03 mg/kg or <0.00000274%) IGNORED Because: "<LOD"
acenaphthene: (Whole conc. entered as: <0.05 mg/kg or <0.00000457%) IGNORED Because: "<LOD"
fluorene: (Whole conc. entered as: <0.04 mg/kg or <0.00000366%) IGNORED Because: "<LOD"
phenanthrene: (Whole conc. entered as: 0.03 mg/kg or 0.00000274%)

anthracene: (Whole conc. entered as: <0.04 mg/kg or <0.00000366%) IGNORED Because: "<LOD"
fluoranthene: (Whole conc. entered as: 0.07 mg/kg or 0.0000064%)
pyrene: (Whole conc. entered as: 0.07 mg/kg or 0.0000064%)
benzo[a]anthracene: (Whole conc. entered as: 0.08 mg/kg or 0.00000732%)
chrysene: (Whole conc. entered as: 0.07 mg/kg or 0.0000064%)
benzo[b]fluoranthene: (Whole conc. entered as: 0.08 mg/kg or 0.00000732%)
benzo[k]fluoranthene: (Whole conc. entered as: 0.03 mg/kg or 0.00000274%)
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 0.05 mg/kg or 0.00000457%)
indeno[123-cd]pyrene: (Whole conc. entered as: 0.05 mg/kg or 0.00000457%)
dibenz[a,h]anthracene: (Whole conc. entered as: 0.08 mg/kg or 0.00000732%)
benzo[ghi]perylene: (Whole conc. entered as: 0.04 mg/kg or 0.00000366%)
phenol: (Whole conc. entered as: <0.01 mg/kg or <0.000000915%) IGNORED Because: "<LOD"
1,1,2,2-tetrachloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000274%) IGNORED Because: "<LOD"
1,1,2-trichloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000274%) IGNORED Because: "<LOD"
1,2,4-trimethylbenzene: (Whole conc. entered as: <0.006 mg/kg or <0.000000549%) IGNORED Because: "<LOD"
1,2-dichloropropane; propylene dichloride: (Whole conc. entered as: <0.006 mg/kg or <0.000000549%) IGNORED Because: "<LOD"
bis(2-ethylhexyl) phthalate; di-(2-ethylhexyl) phthalate; DEHP: (Whole conc. entered as: <0.1 mg/kg or <0.00000915%) IGNORED Because: "<LOD"
bromobenzene: (Whole conc. entered as: <0.002 mg/kg or <0.000000183%) IGNORED Because: "<LOD"
bromoform; tribromomethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000274%) IGNORED Because: "<LOD"
carbon tetrachloride; tetrachloromethane: (Whole conc. entered as: <0.004 mg/kg or <0.000000366%) IGNORED Because: "<LOD"
styrene: (Whole conc. entered as: <0.003 mg/kg or <0.000000274%) IGNORED Because: "<LOD"
trichloroethene (TCE): (Whole conc. entered as: <0.003 mg/kg or <0.000000274%) IGNORED Because: "<LOD"
chlorobenzene: (Whole conc. entered as: <0.003 mg/kg or <0.000000274%) IGNORED Because: "<LOD"

Notes utilised in assessment

C14: Step 5
"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel(II) oxide (nickel monoxide)"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead chromate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "phenanthrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "pyrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[b]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[k]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]pyrene; benzo[def]chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "dibenz[a,h]anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[ghi]perylene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "divanadium pentaoxide; vanadium pentoxide"

Note 1 , used on:

Test: "HP 5 on STOT SE 2; H371, STOT RE 2; H373" for determinand: "lead chromate"
Test: "HP 6 on Acute Tox. 4; H302" for determinand: "cobalt sulfate"
Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "lead chromate"
Test: "HP 10 on Repr. 1A; H360, Repr. 1A; H360D, Repr. 1A; H360Df, Repr. 1A; H360F, Repr. 1A; H360Fd, Repr. 1A; H360FD, Repr. 1B; H360, Repr. 1B; H360D, Repr. 1B; H360Df, Repr. 1B; H360F, Repr. 1B; H360Fd, Repr. 1B; H360FD " for determinand: "cobalt sulfate"
Test: "HP 11 on Muta. 2; H341" for determinand: "cobalt sulfate"
Test: "HP 13 on Skin Sens. 1; H317, Skin Sens. 1A; H317, Skin Sens. 1B; H317, Resp. Sens. 1; H334, Resp. Sens. 1A; H334, Resp. Sens. 1B; H334" for determinand: "cobalt sulfate"

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"

Determinand notes

Note 1 , used on:

determinand: "cobalt sulfate"
determinand: "lead chromate"

Appendix A: Classifier defined and non CLP determinands

barium sulfate (CAS Number: 7727-43-7)

Conversion factor: 1.7
Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R20/22, R33, R36/37/38
Hazard Statements: Acute Tox. 4; H332, Acute Tox. 4; H302, STOT RE 2; H373, Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315

chromium(III) oxide (CAS Number: 1308-38-9)

Conversion factor: 1.462
Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R20, R22, R36, R37, R38, R42, R43, R50/53, R60, R61
Hazard Statements: Acute Tox. 4; H332, Acute Tox. 4; H302, Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315, Resp. Sens. 1; H334, Skin Sens. 1; H317, Repr. 1B; H360FD, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25/05/2015
Risk Phrases: R10, R45, R46, R51/53, R63, R65
Hazard Statements: Flam. Liq. 3; H226, Asp. Tox. 1; H304, STOT RE 2; H373, Muta. 1B; H340, Carc. 1B; H350, Repr. 2; H361d, Aquatic Chronic 2; H411

ethylbenzene (CAS Number: 100-41-4)

CLP index number: 601-023-00-4
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Risk Phrases: None.
Additional Hazard Statement(s): Carc. 2; H351
Reason:
03/06/2015 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

acenaphthylene (CAS Number: 208-96-8)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R22, R26, R27, R36, R37, R38
Hazard Statements: Acute Tox. 4; H302, Acute Tox. 1; H330, Acute Tox. 1; H310, Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315

acenaphthene (CAS Number: 83-32-9)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R36, R37, R38, N; R50/53, N; R51/53
Hazard Statements: Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315, Aquatic Acute 1; H400, Aquatic Chronic 1; H410, Aquatic Chronic 2; H411

fluorene (CAS Number: 86-73-7)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: N; R50/53
Hazard Statements: Aquatic Acute 1; H400, Aquatic Chronic 1; H410

phenanthrene (CAS Number: 85-01-8)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: R22, R36, R37, R38, R40, R43, N; R50/53
Hazard Statements: Acute Tox. 4; H302, Eye Irrit. 2; H319, STOT SE 3; H335, Carc. 2; H351, Skin Sens. 1; H317, Aquatic Acute 1; H400, Aquatic Chronic 1; H410, Skin Irrit. 2; H315

anthracene (CAS Number: 120-12-7)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R36, R37, R38, R43, N; R50/53
Hazard Statements: Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315, Skin Sens. 1; H317, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

fluoranthene (CAS Number: 206-44-0)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21/08/2015
Risk Phrases: Xn; R22, N; R50/53
Hazard Statements: Acute Tox. 4; H302, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

pyrene (CAS Number: 129-00-0)

Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21/08/2015
Risk Phrases: Xi; R36/37/38, N; R50/53
Hazard Statements: Skin Irrit. 2; H315, Eye Irrit. 2; H319, STOT SE 3; H335, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

indeno[123-cd]pyrene (CAS Number: 193-39-5)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: R40
Hazard Statements: Carc. 2; H351

benzo[ghi]perylene (CAS Number: 191-24-2)

Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23/07/2015
Risk Phrases: N; R50/53
Hazard Statements: Aquatic Acute 1; H400, Aquatic Chronic 1; H410

chlorobenzene (CAS Number: 108-90-7)

CLP index number: 602-033-00-1
Data source: Regulation (EU) 2016/1179 of 19 July 2016 (ATP9)
Additional Risk Phrases: N; R51/53
Additional Hazard Statement(s): None.
Reason:
10/10/2016 - N; R51/53 hazard statement sourced from: WM3 v1 still uses ecotoxic risk phrases

Appendix B: Rationale for selection of metal species

C14: Step 5

from section: WM3: C14 in the document: "WM3 - Waste Classification"

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..."

Note 1

from section: 1.1.3.2, Annex VI in the document: "CLP Regulation"

"The concentration stated or, in the absence of such concentrations, the generic concentrations of this Regulation (Table 3.1) or the generic concentrations of Directive 1999/45/EC (Table 3.2), are the percentages by weight of the metallic element calculated with reference to the total weight of the mixture."

Appendix C: Version

This classification utilises the following guidance and legislation:

- WM3 - Waste Classification - May 2015
- CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
- 1st ATP - Regulation 790/2009/EC of 10 August 2009
- 2nd ATP - Regulation 286/2011/EC of 10 March 2011
- 3rd ATP - Regulation 618/2012/EU of 10 July 2012
- 4th ATP - Regulation 487/2013/EU of 8 May 2013
- Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
- 5th ATP - Regulation 944/2013/EU of 2 October 2013
- 6th ATP - Regulation 605/2014/EU of 5 June 2014
- WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
- Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
- 7th ATP - Regulation 2015/1221/EU of 24 July 2015
- 8th ATP - Regulation (EU) 2016/918 of 19 May 2016
- 9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
- POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
- 1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
- 2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

HazWasteOnline Classification Engine: WM3 1st Edition, May 2015
HazWasteOnline Classification Engine Version: 2016.317.3166.6295 (12 Nov 2016)
HazWasteOnline Database: 2016.315.3165.6292 (10 Nov 2016)

HazWasteOnline™

Waste Classification Report

MTU6X-UELWP-J56CT

Job name

WIE10667-101 Stag Brewery East Site. Made Ground

Waste Stream

Soil - Hazwaste Template v2.5 (WM3 1st ed)

Comments

Preliminary Waste Assessment of laboratory analysis results for soil samples taken as part of a contaminated land site investigation at Stag Brewery East Site. The soil samples taken were collected as discreet samples for contaminated land assessment purposes and have not been sampled in strict accordance with the guidelines presented in EA document Waste Classification: Guidance on the classification and assessment of waste (1st edition 2015) Technical Guidance WM3. This waste assessment should be regarded as preliminary, and indicative only of like costs for construction.

Project

WIE10667-101 Stag Brewery East Site. Site Investigation.

Site

Stag Brewery East Site, Mortlake, London.

Classified by

Name:
Coates, Jon
Date:
17/11/2016 19:42 UTC
Telephone:
020 7928 7888

Company:
Waterman Energy Environment & Design Ltd
Pickfords Wharf
Clink Street
London
SE1 9DG

Report

Created by: Coates, Jon
Created date: 17/11/2016 19:42 UTC

Job summary

#	Sample Name	Depth [m]	Classification Result	Hazardous properties	Page
1	WS1	0.5	Non Hazardous		3
2	WS2	1.5	Non Hazardous		6
3	WS3	0.5	Non Hazardous		9
4	WS4	0.5	Hazardous	HP 7, HP 11	12
5	WS5	1	Hazardous	HP 7, HP 11	15
6	WS7	0.7	Non Hazardous		18
7	WS8	1	Non Hazardous		21
8	WS10	1	Non Hazardous		23
9	WS11	0.5	Hazardous	HP 7, HP 11	26
10	BH1	0.5	Non Hazardous		29
11	BH2A	1	Non Hazardous		32

Classification of sample: WS1

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:		LoW Code:	
WS1		Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:			
0.5 m		Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
Moisture content: **0%**			
(dry weight correction)			

Hazard properties

None identified

Determinands (Moisture content: 0%, dry weight correction)

arsenic trioxide: (Cation conc. entered: 12.8 mg/kg, converted to compound conc.:16.9 mg/kg or 0.00169%)
barium sulfate: (Cation conc. entered: 60 mg/kg, converted to compound conc.:101.971 mg/kg or 0.0102%)
beryllium oxide: (Cation conc. entered: 0.7 mg/kg, converted to compound conc.:1.943 mg/kg or 0.000194%)
diboron trioxide; boric oxide: (Cation conc. entered: 0.7 mg/kg, converted to compound conc.:2.254 mg/kg or 0.000225%)
cadmium oxide: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.114 mg/kg or <0.0000114%) IGNORED Because: "<LOD"
chromium(III) oxide: (Cation conc. entered: 20.4 mg/kg, converted to compound conc.:29.816 mg/kg or 0.00298%)
chromium(VI) oxide: (Cation conc. entered: <0.3 mg/kg, converted to compound conc.:<0.577 mg/kg or <0.0000577%) IGNORED Because: "<LOD"
cobalt sulfate: (Cation conc. entered: 7.2 mg/kg, converted to compound conc.:18.936 mg/kg or 0.00189%, Note 1 conc.: 0.00072%)
copper sulphate: (Cation conc. entered: 14 mg/kg, converted to compound conc.:35.164 mg/kg or 0.00352%)
lead compounds with the exception of those specified elsewhere in this Annex: (Cation conc. entered: 63 mg/kg, converted to compound conc.:63 mg/kg or 0.0063%, Note 1 conc.: 0.0063%)
mercury dichloride: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.135 mg/kg or <0.0000135%) IGNORED Because: "<LOD"
molybdenum(VI) oxide: (Cation conc. entered: 0.5 mg/kg, converted to compound conc.:0.75 mg/kg or 0.000075%)
nickel(II) oxide (nickel monoxide): (Cation conc. entered: 17.5 mg/kg, converted to compound conc.:22.27 mg/kg or 0.00223%)
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<2.554 mg/kg or <0.000255%) IGNORED Because: "<LOD"
divanadium pentaoxide; vanadium pentoxide: (Cation conc. entered: 38 mg/kg, converted to compound conc.:67.837 mg/kg or 0.00678%)
zinc oxide: (Cation conc. entered: 37 mg/kg, converted to compound conc.:46.054 mg/kg or 0.00461%)
TPH (C6 to C40) petroleum group: (Whole conc. entered as: <52 mg/kg or <0.0052%) IGNORED Because: "<LOD"
benzene: (Whole conc. entered as: <0.005 mg/kg or <0.0000005%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <0.005 mg/kg or <0.0000005%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <0.005 mg/kg or <0.0000005%) IGNORED Because: "<LOD"
xylene: (Whole conc. entered as: <0.005 mg/kg or <0.0000005%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: <0.04 mg/kg or <0.000004%) IGNORED Because: "<LOD"
acenaphthylene: (Whole conc. entered as: 0.03 mg/kg or 0.000003%)
acenaphthene: (Whole conc. entered as: <0.05 mg/kg or <0.000005%) IGNORED Because: "<LOD"
fluorene: (Whole conc. entered as: <0.04 mg/kg or <0.000004%) IGNORED Because: "<LOD"
phenanthrene: (Whole conc. entered as: 0.23 mg/kg or 0.000023%)
anthracene: (Whole conc. entered as: 0.06 mg/kg or 0.000006%)

fluoranthene: (Whole conc. entered as: 0.44 mg/kg or 0.000044%)
pyrene: (Whole conc. entered as: 0.35 mg/kg or 0.000035%)
benzo[a]anthracene: (Whole conc. entered as: 0.3 mg/kg or 0.00003%)
chrysene: (Whole conc. entered as: 0.23 mg/kg or 0.000023%)
benzo[b]fluoranthene: (Whole conc. entered as: 0.34 mg/kg or 0.000034%)
benzo[k]fluoranthene: (Whole conc. entered as: 0.34 mg/kg or 0.000034%)
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 0.21 mg/kg or 0.000021%)
indeno[123-cd]pyrene: (Whole conc. entered as: 0.14 mg/kg or 0.000014%)
dibenz[a,h]anthracene: (Whole conc. entered as: 0.04 mg/kg or 0.000004%)
benzo[ghi]perylene: (Whole conc. entered as: 0.12 mg/kg or 0.000012%)
phenol: (Whole conc. entered as: <0.01 mg/kg or <0.000001%) IGNORED Because: "<LOD"
1,1,2,2-tetrachloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.0000003%) IGNORED Because: "<LOD"
1,1,2-trichloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.0000003%) IGNORED Because: "<LOD"
1,2,4-trimethylbenzene: (Whole conc. entered as: <0.006 mg/kg or <0.0000006%) IGNORED Because: "<LOD"
1,2-dichloropropane; propylene dichloride: (Whole conc. entered as: <0.006 mg/kg or <0.0000006%) IGNORED Because: "<LOD"
bis(2-ethylhexyl) phthalate; di-(2-ethylhexyl) phthalate; DEHP: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
bromobenzene: (Whole conc. entered as: <0.002 mg/kg or <0.0000002%) IGNORED Because: "<LOD"
bromoform; tribromomethane: (Whole conc. entered as: <0.003 mg/kg or <0.0000003%) IGNORED Because: "<LOD"
carbon tetrachloride; tetrachloromethane: (Whole conc. entered as: <0.004 mg/kg or <0.0000004%) IGNORED Because: "<LOD"
styrene: (Whole conc. entered as: <0.003 mg/kg or <0.0000003%) IGNORED Because: "<LOD"
trichloroethene (TCE): (Whole conc. entered as: 0.006 mg/kg or 0.0000006%)
polychlorobiphenyls; PCB: (Whole conc. entered as: <0.035 mg/kg or <0.0000035%) IGNORED Because: "<LOD"
vinyl chloride: (Whole conc. entered as: <0.002 mg/kg or <0.0000002%) IGNORED Because: "<LOD"
chlorobenzene: (Whole conc. entered as: <0.003 mg/kg or <0.0000003%) IGNORED Because: "<LOD"

Notes utilised in assessment

C14: Step 5
"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel(II) oxide (nickel monoxide)"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "copper sulphate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "phenanthrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "pyrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[b]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[k]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]pyrene; benzo[def]chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "dibenz[a,h]anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[ghi]perylene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "divanadium pentaoxide; vanadium pentoxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "trichloroethene (TCE)"

Note 1 , used on:

Test: "HP 5 on STOT SE 2; H371, STOT RE 2; H373" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 6 on Acute Tox. 4; H302" for determinand: "cobalt sulfate"

Test: "HP 6 on Acute Tox. 4; H332" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "cobalt sulfate"
Test: "HP 7 on Carc. 2; H351" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 1A; H360, Repr. 1A; H360D, Repr. 1A; H360Df, Repr. 1A; H360F, Repr. 1A; H360Fd, Repr. 1A; H360FD, Repr. 1B; H360, Repr. 1B; H360D, Repr. 1B; H360Df, Repr. 1B; H360F, Repr. 1B; H360Fd, Repr. 1B; H360FD " for determinand: "cobalt sulfate"
Test: "HP 10 on Repr. 2; H361, Repr. 2; H361d, Repr. 2; H361f, Repr. 2; H361fd" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 11 on Muta. 2; H341" for determinand: "cobalt sulfate"
Test: "HP 13 on Skin Sens. 1; H317, Skin Sens. 1A; H317, Skin Sens. 1B; H317, Resp. Sens. 1; H334, Resp. Sens. 1A; H334, Resp. Sens. 1B; H334" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"

Determinand notes

Note 1 , used on:

determinand: "cobalt sulfate"
determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Note A , used on:

determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Classification of sample: WS2

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS2
Sample Depth:
1.5 m
Moisture content: **18.9%**
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands (Moisture content: 18.9%, dry weight correction)

arsenic trioxide: (Cation conc. entered: 13.3 mg/kg, converted to compound conc.:14.769 mg/kg or 0.00148%)
barium sulfate: (Cation conc. entered: 31 mg/kg, converted to compound conc.:44.31 mg/kg or 0.00443%)
beryllium oxide: (Cation conc. entered: 0.5 mg/kg, converted to compound conc.:1.167 mg/kg or 0.000117%)
diboron trioxide; boric oxide: (Cation conc. entered: 0.3 mg/kg, converted to compound conc.:0.812 mg/kg or 0.0000812%)
cadmium oxide: (Cation conc. entered: 0.1 mg/kg, converted to compound conc.:0.0961 mg/kg or 0.00000961%)
chromium(III) oxide: (Cation conc. entered: 65 mg/kg, converted to compound conc.:79.9 mg/kg or 0.00799%)
chromium(VI) oxide: (Cation conc. entered: <0.3 mg/kg, converted to compound conc.:<0.485 mg/kg or <0.0000485%) IGNORED Because: "<LOD"
cobalt sulfate: (Cation conc. entered: 6.6 mg/kg, converted to compound conc.:14.599 mg/kg or 0.00146%, Note 1 conc.: 0.000555%)
copper sulphate: (Cation conc. entered: 169 mg/kg, converted to compound conc.:357.004 mg/kg or 0.0357%)
lead compounds with the exception of those specified elsewhere in this Annex: (Cation conc. entered: 10 mg/kg, converted to compound conc.:8.41 mg/kg or 0.000841%, Note 1 conc.: 0.000841%)
mercury dichloride: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.114 mg/kg or <0.0000114%) IGNORED Because: "<LOD"
molybdenum(VI) oxide: (Cation conc. entered: 2.4 mg/kg, converted to compound conc.:3.028 mg/kg or 0.000303%)
nickel(II) oxide (nickel monoxide): (Cation conc. entered: 20.5 mg/kg, converted to compound conc.:21.941 mg/kg or 0.00219%)
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<2.148 mg/kg or <0.000215%) IGNORED Because: "<LOD"
divanadium pentaoxide; vanadium pentoxide: (Cation conc. entered: 31 mg/kg, converted to compound conc.:46.544 mg/kg or 0.00465%)
zinc oxide: (Cation conc. entered: 317 mg/kg, converted to compound conc.:331.854 mg/kg or 0.0332%)
TPH (C6 to C40) petroleum group: (Whole conc. entered as: 13357 mg/kg or 1.123%)
confirm TPH has NOT arisen from diesel or petrol: (Confirmed)
benzene: (Whole conc. entered as: <0.005 mg/kg or <0.000000421%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <0.005 mg/kg or <0.000000421%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <0.005 mg/kg or <0.000000421%) IGNORED Because: "<LOD"
xylene: (Whole conc. entered as: <0.005 mg/kg or <0.000000421%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: <0.04 mg/kg or <0.00000336%) IGNORED Because: "<LOD"
acenaphthylene: (Whole conc. entered as: <0.03 mg/kg or <0.00000252%) IGNORED Because: "<LOD"
acenaphthene: (Whole conc. entered as: <0.05 mg/kg or <0.00000421%) IGNORED Because: "<LOD"
fluorene: (Whole conc. entered as: <0.04 mg/kg or <0.00000336%) IGNORED Because: "<LOD"
phenanthrene: (Whole conc. entered as: <0.03 mg/kg or <0.00000252%) IGNORED Because: "<LOD"

anthracene: (Whole conc. entered as: <0.04 mg/kg or <0.00000336%) IGNORED Because: "<LOD"
fluoranthene: (Whole conc. entered as: <0.03 mg/kg or <0.00000252%) IGNORED Because: "<LOD"
pyrene: (Whole conc. entered as: <0.03 mg/kg or <0.00000252%) IGNORED Because: "<LOD"
benzo[a]anthracene: (Whole conc. entered as: <0.06 mg/kg or <0.00000505%) IGNORED Because: "<LOD"
chrysene: (Whole conc. entered as: <0.02 mg/kg or <0.00000168%) IGNORED Because: "<LOD"
benzo[b]fluoranthene: (Whole conc. entered as: <0.07 mg/kg or <0.00000589%) IGNORED Because: "<LOD"
benzo[k]fluoranthene: (Whole conc. entered as: <0.07 mg/kg or <0.00000589%) IGNORED Because: "<LOD"
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: <0.04 mg/kg or <0.00000336%) IGNORED Because: "<LOD"
indeno[123-cd]pyrene: (Whole conc. entered as: <0.04 mg/kg or <0.00000336%) IGNORED Because: "<LOD"
dibenz[a,h]anthracene: (Whole conc. entered as: <0.04 mg/kg or <0.00000336%) IGNORED Because: "<LOD"
benzo[ghi]perylene: (Whole conc. entered as: <0.04 mg/kg or <0.00000336%) IGNORED Because: "<LOD"
phenol: (Whole conc. entered as: <0.1 mg/kg or <0.00000841%) IGNORED Because: "<LOD"
1,1,2,2-tetrachloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000252%) IGNORED Because: "<LOD"
1,1,2-trichloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000252%) IGNORED Because: "<LOD"
1,2,4-trimethylbenzene: (Whole conc. entered as: <0.006 mg/kg or <0.000000505%) IGNORED Because: "<LOD"
1,2-dichloropropane; propylene dichloride: (Whole conc. entered as: <0.006 mg/kg or <0.000000505%) IGNORED Because: "<LOD"
bis(2-ethylhexyl) phthalate; di-(2-ethylhexyl) phthalate; DEHP: (Whole conc. entered as: 5.712 mg/kg or 0.00048%)
bromobenzene: (Whole conc. entered as: <0.002 mg/kg or <0.000000168%) IGNORED Because: "<LOD"
bromoform; tribromomethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000252%) IGNORED Because: "<LOD"
carbon tetrachloride; tetrachloromethane: (Whole conc. entered as: <0.004 mg/kg or <0.000000336%) IGNORED Because: "<LOD"
styrene: (Whole conc. entered as: <0.003 mg/kg or <0.000000252%) IGNORED Because: "<LOD"
trichloroethene (TCE): (Whole conc. entered as: 0.008 mg/kg or 0.000000673%)
vinyl chloride: (Whole conc. entered as: <0.002 mg/kg or <0.000000168%) IGNORED Because: "<LOD"
chlorobenzene: (Whole conc. entered as: <0.003 mg/kg or <0.000000252%) IGNORED Because: "<LOD"

Test Settings

HP 3(i) on Flam. Liq. 1; H224, Flam. Liq. 2; H225, Flam. Liq. 3; H226: Force this Hazardous property to non hazardous because: "Non hazardous by HP 3(i). Appendix C of WM3 v1. Figure C3.1. The Waste is not a liquid and does not have a free draining liquid phase. Furthermore carbon banding of the TPH indicates negligible concentrations of short chain carbon fractions. Laboratory interpretation of TPH indicated lube oil and degraded diesel."

Notes utilised in assessment

C14: Step 5

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel(II) oxide (nickel monoxide)"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cadmium oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "copper sulphate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "divanadium pentaoxide; vanadium pentoxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "trichloroethene (TCE)"

Note 1 , used on:

Test: "HP 5 on STOT SE 2; H371, STOT RE 2; H373" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 6 on Acute Tox. 4; H302" for determinand: "cobalt sulfate"
Test: "HP 6 on Acute Tox. 4; H332" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "cobalt sulfate"

Test: "HP 7 on Carc. 2; H351" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 1A; H360, Repr. 1A; H360D, Repr. 1A; H360Df, Repr. 1A; H360F, Repr. 1A; H360Fd, Repr. 1A; H360FD, Repr. 1B; H360, Repr. 1B; H360D, Repr. 1B; H360Df, Repr. 1B; H360F, Repr. 1B; H360Fd, Repr. 1B; H360FD " for determinand: "cobalt sulfate"
Test: "HP 10 on Repr. 2; H361, Repr. 2; H361d, Repr. 2; H361f, Repr. 2; H361fd" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 11 on Muta. 2; H341" for determinand: "cobalt sulfate"
Test: "HP 13 on Skin Sens. 1; H317, Skin Sens. 1A; H317, Skin Sens. 1B; H317, Resp. Sens. 1; H334, Resp. Sens. 1A; H334, Resp. Sens. 1B; H334" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"

WM3: Unknown oil , used on:

Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "TPH (C6 to C40) petroleum group"
Test: "HP 11 on Muta. 1A; H340, Muta. 1B; H340" for determinand: "TPH (C6 to C40) petroleum group"

Determinand notes

Note 1 , used on:

determinand: "cobalt sulfate"
determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Note A , used on:

determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

WM3: Unknown oil , used on:

determinand: "TPH (C6 to C40) petroleum group"

Classification of sample: WS3

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS3
Sample Depth:
0.5 m
Moisture content: **10.5%**
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands (Moisture content: 10.5%, dry weight correction)

arsenic trioxide: (Cation conc. entered: 15.8 mg/kg, converted to compound conc.:18.879 mg/kg or 0.00189%)
barium sulfate: (Cation conc. entered: 62 mg/kg, converted to compound conc.:95.358 mg/kg or 0.00954%)
beryllium oxide: (Cation conc. entered: 0.8 mg/kg, converted to compound conc.:2.009 mg/kg or 0.000201%)
diboron trioxide; boric oxide: (Cation conc. entered: 1.5 mg/kg, converted to compound conc.:4.371 mg/kg or 0.000437%)
cadmium oxide: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.103 mg/kg or <0.0000103%) IGNORED Because: "<LOD"
chromium(III) oxide: (Cation conc. entered: 65.2 mg/kg, converted to compound conc.:86.238 mg/kg or 0.00862%)
chromium(VI) oxide: (Cation conc. entered: <0.3 mg/kg, converted to compound conc.:<0.522 mg/kg or <0.0000522%) IGNORED Because: "<LOD"
cobalt sulfate: (Cation conc. entered: 7 mg/kg, converted to compound conc.:16.661 mg/kg or 0.00167%, Note 1 conc.: 0.000633%)
copper sulphate: (Cation conc. entered: 17 mg/kg, converted to compound conc.:38.642 mg/kg or 0.00386%)
lead compounds with the exception of those specified elsewhere in this Annex: (Cation conc. entered: 89 mg/kg, converted to compound conc.:80.543 mg/kg or 0.00805%, Note 1 conc.: 0.00805%)
mercury dichloride: (Cation conc. entered: 0.2 mg/kg, converted to compound conc.:0.245 mg/kg or 0.0000245%)
molybdenum(VI) oxide: (Cation conc. entered: 2.3 mg/kg, converted to compound conc.:3.123 mg/kg or 0.000312%)
nickel(II) oxide (nickel monoxide): (Cation conc. entered: 19.6 mg/kg, converted to compound conc.:22.573 mg/kg or 0.00226%)
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<2.311 mg/kg or <0.000231%) IGNORED Because: "<LOD"
divanadium pentaoxide; vanadium pentoxide: (Cation conc. entered: 44 mg/kg, converted to compound conc.:71.084 mg/kg or 0.00711%)
zinc oxide: (Cation conc. entered: 47 mg/kg, converted to compound conc.:52.943 mg/kg or 0.00529%)
TPH (C6 to C40) petroleum group: (Whole conc. entered as: <52 mg/kg or <0.00471%) IGNORED Because: "<LOD"
benzene: (Whole conc. entered as: <0.005 mg/kg or <0.000000452%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <0.005 mg/kg or <0.000000452%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <0.005 mg/kg or <0.000000452%) IGNORED Because: "<LOD"
xylene: (Whole conc. entered as: <0.005 mg/kg or <0.000000452%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: <0.04 mg/kg or <0.00000362%) IGNORED Because: "<LOD"
acenaphthylene: (Whole conc. entered as: <0.03 mg/kg or <0.00000271%) IGNORED Because: "<LOD"
acenaphthene: (Whole conc. entered as: <0.05 mg/kg or <0.00000452%) IGNORED Because: "<LOD"
fluorene: (Whole conc. entered as: <0.04 mg/kg or <0.00000362%) IGNORED Because: "<LOD"
phenanthrene: (Whole conc. entered as: <0.03 mg/kg or <0.00000271%) IGNORED Because: "<LOD"
anthracene: (Whole conc. entered as: <0.04 mg/kg or <0.00000362%) IGNORED Because: "<LOD"
fluoranthene: (Whole conc. entered as: <0.03 mg/kg or <0.00000271%) IGNORED Because: "<LOD"

pyrene: (Whole conc. entered as: <0.03 mg/kg or <0.00000271%) IGNORED Because: "<LOD"
benzo[a]anthracene: (Whole conc. entered as: <0.06 mg/kg or <0.00000543%) IGNORED Because: "<LOD"
chrysene: (Whole conc. entered as: <0.02 mg/kg or <0.00000181%) IGNORED Because: "<LOD"
benzo[b]fluoranthene: (Whole conc. entered as: <0.07 mg/kg or <0.00000633%) IGNORED Because: "<LOD"
benzo[k]fluoranthene: (Whole conc. entered as: <0.07 mg/kg or <0.00000633%) IGNORED Because: "<LOD"
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: <0.04 mg/kg or <0.00000362%) IGNORED Because: "<LOD"
indeno[123-cd]pyrene: (Whole conc. entered as: <0.04 mg/kg or <0.00000362%) IGNORED Because: "<LOD"
dibenz[a,h]anthracene: (Whole conc. entered as: <0.04 mg/kg or <0.00000362%) IGNORED Because: "<LOD"
benzo[ghi]perylene: (Whole conc. entered as: <0.04 mg/kg or <0.00000362%) IGNORED Because: "<LOD"
phenol: (Whole conc. entered as: <0.1 mg/kg or <0.00000905%) IGNORED Because: "<LOD"
1,1,2,2-tetrachloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000271%) IGNORED Because: "<LOD"
1,1,2-trichloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000271%) IGNORED Because: "<LOD"
1,2,4-trimethylbenzene: (Whole conc. entered as: <0.006 mg/kg or <0.000000543%) IGNORED Because: "<LOD"
1,2-dichloropropane; propylene dichloride: (Whole conc. entered as: <0.006 mg/kg or <0.000000543%) IGNORED Because: "<LOD"
bis(2-ethylhexyl) phthalate; di-(2-ethylhexyl) phthalate; DEHP: (Whole conc. entered as: <0.1 mg/kg or <0.00000905%) IGNORED Because: "<LOD"
bromobenzene: (Whole conc. entered as: <0.002 mg/kg or <0.000000181%) IGNORED Because: "<LOD"
bromoform; tribromomethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000271%) IGNORED Because: "<LOD"
carbon tetrachloride; tetrachloromethane: (Whole conc. entered as: <0.004 mg/kg or <0.000000362%) IGNORED Because: "<LOD"
styrene: (Whole conc. entered as: <0.003 mg/kg or <0.000000271%) IGNORED Because: "<LOD"
trichloroethene (TCE): (Whole conc. entered as: 0.008 mg/kg or 0.000000724%)
vinyl chloride: (Whole conc. entered as: <0.002 mg/kg or <0.000000181%) IGNORED Because: "<LOD"
chlorobenzene: (Whole conc. entered as: <0.003 mg/kg or <0.000000271%) IGNORED Because: "<LOD"

Notes utilised in assessment

C14: Step 5

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "copper sulphate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "mercury dichloride"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "divanadium pentaoxide; vanadium pentoxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel(II) oxide (nickel monoxide)"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "trichloroethene (TCE)"

Note 1 , used on:

Test: "HP 5 on STOT SE 2; H371, STOT RE 2; H373" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 6 on Acute Tox. 4; H302" for determinand: "cobalt sulfate"
Test: "HP 6 on Acute Tox. 4; H332" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "cobalt sulfate"
Test: "HP 7 on Carc. 2; H351" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 1A; H360, Repr. 1A; H360D, Repr. 1A; H360Df, Repr. 1A; H360F, Repr. 1A; H360Fd, Repr. 1A; H360FD, Repr. 1B; H360, Repr. 1B; H360D, Repr. 1B; H360Df, Repr. 1B; H360F, Repr. 1B; H360Fd, Repr. 1B; H360FD " for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 2; H361, Repr. 2; H361d, Repr. 2; H361f, Repr. 2; H361fd" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 11 on Muta. 2; H341" for determinand: "cobalt sulfate"

Test: "HP 13 on Skin Sens. 1; H317, Skin Sens. 1A; H317, Skin Sens. 1B; H317, Resp. Sens. 1; H334, Resp. Sens. 1A; H334, Resp. Sens. 1B; H334" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"

Determinand notes

Note 1 , used on:

determinand: "cobalt sulfate"
determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Note A , used on:

determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Classification of sample: WS4

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample Name:
WS4
Sample Depth:
0.5 m
Moisture content: **6.1%**
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.309%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.309%)

Determinands (Moisture content: 6.1%, dry weight correction)

arsenic trioxide: (Cation conc. entered: 8.5 mg/kg, converted to compound conc.:10.578 mg/kg or 0.00106%)
barium sulfate: (Cation conc. entered: 158 mg/kg, converted to compound conc.:253.086 mg/kg or 0.0253%)
beryllium oxide: (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<1.308 mg/kg or <0.000131%)
IGNORED Because: "<LOD"
diboron trioxide; boric oxide: (Cation conc. entered: 1.3 mg/kg, converted to compound conc.:3.945 mg/kg or 0.000395%)
cadmium oxide: (Cation conc. entered: 0.3 mg/kg, converted to compound conc.:0.323 mg/kg or 0.0000323%)
chromium(III) oxide: (Cation conc. entered: 32 mg/kg, converted to compound conc.:44.081 mg/kg or 0.00441%)
chromium(VI) oxide: (Cation conc. entered: <0.3 mg/kg, converted to compound conc.:<0.544 mg/kg or <0.0000544%)
IGNORED Because: "<LOD"
cobalt sulfate: (Cation conc. entered: 3.5 mg/kg, converted to compound conc.:8.676 mg/kg or 0.000868%, Note 1 conc.: 0.00033%)
copper sulphate: (Cation conc. entered: 15 mg/kg, converted to compound conc.:35.509 mg/kg or 0.00355%)
lead compounds with the exception of those specified elsewhere in this Annex: (Cation conc. entered: 44 mg/kg, converted to compound conc.:41.47 mg/kg or 0.00415%, Note 1 conc.: 0.00415%)
mercury dichloride: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.128 mg/kg or <0.0000128%)
IGNORED Because: "<LOD"
molybdenum(VI) oxide: (Cation conc. entered: 1.3 mg/kg, converted to compound conc.:1.838 mg/kg or 0.000184%)
nickel(II) oxide (nickel monoxide): (Cation conc. entered: 12.7 mg/kg, converted to compound conc.:15.233 mg/kg or 0.00152%)

selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<2.407 mg/kg or <0.000241%) IGNORED Because: "<LOD"
divanadium pentaoxide; vanadium pentoxide: (Cation conc. entered: 24 mg/kg, converted to compound conc.:40.381 mg/kg or 0.00404%)
zinc oxide: (Cation conc. entered: 78 mg/kg, converted to compound conc.:91.506 mg/kg or 0.00915%)
TPH (C6 to C40) petroleum group: (Whole conc. entered as: 3274 mg/kg or 0.309%)
confirm TPH has NOT arisen from diesel or petrol: (Confirmed)
benzene: (Whole conc. entered as: <0.005 mg/kg or <0.000000471%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <0.005 mg/kg or <0.000000471%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <0.005 mg/kg or <0.000000471%) IGNORED Because: "<LOD"
xylene: (Whole conc. entered as: <0.005 mg/kg or <0.000000471%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: 0.37 mg/kg or 0.0000349%)
acenaphthylene: (Whole conc. entered as: <0.15 mg/kg or <0.0000141%) IGNORED Because: "<LOD"
acenaphthene: (Whole conc. entered as: 0.29 mg/kg or 0.0000273%)
fluorene: (Whole conc. entered as: 0.22 mg/kg or 0.0000207%)
phenanthrene: (Whole conc. entered as: 2.74 mg/kg or 0.000258%)
anthracene: (Whole conc. entered as: 0.66 mg/kg or 0.0000622%)
fluoranthene: (Whole conc. entered as: 3.37 mg/kg or 0.000318%)
pyrene: (Whole conc. entered as: 2.71 mg/kg or 0.000255%)
benzo[a]anthracene: (Whole conc. entered as: 1.63 mg/kg or 0.000154%)
chrysene: (Whole conc. entered as: 1.22 mg/kg or 0.000115%)
benzo[b]fluoranthene: (Whole conc. entered as: 1.85 mg/kg or 0.000174%)
benzo[k]fluoranthene: (Whole conc. entered as: 1.85 mg/kg or 0.000174%)
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 0.88 mg/kg or 0.0000829%)
indeno[123-cd]pyrene: (Whole conc. entered as: 0.6 mg/kg or 0.0000566%)
dibenz[a,h]anthracene: (Whole conc. entered as: <0.2 mg/kg or <0.0000189%) IGNORED Because: "<LOD"
benzo[ghi]perylene: (Whole conc. entered as: 0.51 mg/kg or 0.0000481%)
phenol: (Whole conc. entered as: <0.01 mg/kg or <0.000000943%) IGNORED Because: "<LOD"
1,1,2,2-tetrachloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000283%) IGNORED Because: "<LOD"
1,1,2-trichloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000283%) IGNORED Because: "<LOD"
1,2,4-trimethylbenzene: (Whole conc. entered as: <0.006 mg/kg or <0.000000566%) IGNORED Because: "<LOD"
1,2-dichloropropane; propylene dichloride: (Whole conc. entered as: <0.006 mg/kg or <0.000000566%) IGNORED Because: "<LOD"
bis(2-ethylhexyl) phthalate; di-(2-ethylhexyl) phthalate; DEHP: (Whole conc. entered as: <1 mg/kg or <0.0000943%) IGNORED Because: "<LOD"
bromobenzene: (Whole conc. entered as: <0.002 mg/kg or <0.000000189%) IGNORED Because: "<LOD"
bromoform; tribromomethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000283%) IGNORED Because: "<LOD"
carbon tetrachloride; tetrachloromethane: (Whole conc. entered as: <0.004 mg/kg or <0.000000377%) IGNORED Because: "<LOD"
styrene: (Whole conc. entered as: <0.003 mg/kg or <0.000000283%) IGNORED Because: "<LOD"
trichloroethene (TCE): (Whole conc. entered as: 0.01 mg/kg or 0.000000943%)
vinyl chloride: (Whole conc. entered as: <0.002 mg/kg or <0.000000189%) IGNORED Because: "<LOD"
chlorobenzene: (Whole conc. entered as: <0.003 mg/kg or <0.000000283%) IGNORED Because: "<LOD"

Test Settings

HP 3(i) on Flam. Liq. 1; H224, Flam. Liq. 2; H225, Flam. Liq. 3; H226: Force this Hazardous property to non hazardous because: "Non hazardous by HP 3(i). Appendix C of WM3 v1. Figure C3.1. The Waste is not a liquid and does not have a free draining liquid phase. Furthermore carbon banding of the TPH indicates negligible concentrations of short chain carbon fractions."

Notes utilised in assessment

C14: Step 5

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cadmium oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "copper sulphate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "naphthalene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "acenaphthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluorene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "phenanthrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "pyrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[b]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[k]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]pyrene; benzo[def]chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[ghi]perylene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "divanadium pentaoxide; vanadium pentoxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel(II) oxide (nickel monoxide)"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "trichloroethene (TCE)"

Note 1 , used on:

Test: "HP 5 on STOT SE 2; H371, STOT RE 2; H373" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 6 on Acute Tox. 4; H302" for determinand: "cobalt sulfate"
Test: "HP 6 on Acute Tox. 4; H332" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "cobalt sulfate"
Test: "HP 7 on Carc. 2; H351" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 1A; H360, Repr. 1A; H360D, Repr. 1A; H360Df, Repr. 1A; H360F, Repr. 1A; H360Fd, Repr. 1A; H360FD, Repr. 1B; H360, Repr. 1B; H360D, Repr. 1B; H360Df, Repr. 1B; H360F, Repr. 1B; H360Fd, Repr. 1B; H360FD " for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 2; H361, Repr. 2; H361d, Repr. 2; H361f, Repr. 2; H361fd" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 11 on Muta. 2; H341" for determinand: "cobalt sulfate"
Test: "HP 13 on Skin Sens. 1; H317, Skin Sens. 1A; H317, Skin Sens. 1B; H317, Resp. Sens. 1; H334, Resp. Sens. 1A; H334, Resp. Sens. 1B; H334" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"

WM3: Unknown oil , used on:

Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "TPH (C6 to C40) petroleum group"
Test: "HP 11 on Muta. 1A; H340, Muta. 1B; H340" for determinand: "TPH (C6 to C40) petroleum group"

Determinand notes

Note 1 , used on:

determinand: "cobalt sulfate"
determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Note A , used on:

determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

WM3: Unknown oil , used on:

determinand: "TPH (C6 to C40) petroleum group"

Classification of sample: WS5

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample Name:
WS5
Sample Depth:
1 m
Moisture content: **5.8%**
(dry weight correction)

LoW Code:

Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry:	17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.35%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.35%)

Determinands (Moisture content: 5.8%, dry weight correction)

arsenic trioxide: (Cation conc. entered: 9.5 mg/kg, converted to compound conc.:11.855 mg/kg or 0.00119%)
barium sulfate: (Cation conc. entered: 462 mg/kg, converted to compound conc.:742.133 mg/kg or 0.0742%)
beryllium oxide: (Cation conc. entered: 0.6 mg/kg, converted to compound conc.:1.574 mg/kg or 0.000157%)
diboron trioxide; boric oxide: (Cation conc. entered: 1.2 mg/kg, converted to compound conc.:3.652 mg/kg or 0.000365%)
cadmium oxide: (Cation conc. entered: 0.8 mg/kg, converted to compound conc.:0.864 mg/kg or 0.0000864%)
chromium(III) oxide: (Cation conc. entered: 35 mg/kg, converted to compound conc.:48.35 mg/kg or 0.00484%)
chromium(VI) oxide: (Cation conc. entered: <0.3 mg/kg, converted to compound conc.:<0.545 mg/kg or <0.0000545%)
IGNORED Because: "<LOD"
cobalt sulfate: (Cation conc. entered: 4.3 mg/kg, converted to compound conc.:10.689 mg/kg or 0.00107%, Note 1 conc.: 0.000406%)
copper sulphate: (Cation conc. entered: 15 mg/kg, converted to compound conc.:35.61 mg/kg or 0.00356%)
lead compounds with the exception of those specified elsewhere in this Annex: (Cation conc. entered: 78 mg/kg, converted to compound conc.:73.724 mg/kg or 0.00737%, Note 1 conc.: 0.00737%)
mercury dichloride: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.128 mg/kg or <0.0000128%)
IGNORED Because: "<LOD"
molybdenum(VI) oxide: (Cation conc. entered: 1.6 mg/kg, converted to compound conc.:2.269 mg/kg or 0.000227%)
nickel(II) oxide (nickel monoxide): (Cation conc. entered: 14 mg/kg, converted to compound conc.:16.84 mg/kg or 0.00168%)

selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<2.414 mg/kg or <0.000241%) IGNORED Because: "<LOD"
divanadium pentaoxide; vanadium pentoxide: (Cation conc. entered: 29 mg/kg, converted to compound conc.:48.932 mg/kg or 0.00489%)
zinc oxide: (Cation conc. entered: 158 mg/kg, converted to compound conc.:185.884 mg/kg or 0.0186%)
TPH (C6 to C40) petroleum group: (Whole conc. entered as: 3699 mg/kg or 0.35%)
confirm TPH has NOT arisen from diesel or petrol: (Confirmed)
benzene: (Whole conc. entered as: <0.005 mg/kg or <0.000000473%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <0.005 mg/kg or <0.000000473%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <0.005 mg/kg or <0.000000473%) IGNORED Because: "<LOD"
xylene: (Whole conc. entered as: <0.005 mg/kg or <0.000000473%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: <0.2 mg/kg or <0.0000189%) IGNORED Because: "<LOD"
acenaphthylene: (Whole conc. entered as: <0.15 mg/kg or <0.0000142%) IGNORED Because: "<LOD"
acenaphthene: (Whole conc. entered as: <0.25 mg/kg or <0.0000236%) IGNORED Because: "<LOD"
fluorene: (Whole conc. entered as: <0.2 mg/kg or <0.0000189%) IGNORED Because: "<LOD"
phenanthrene: (Whole conc. entered as: 0.84 mg/kg or 0.0000794%)
anthracene: (Whole conc. entered as: 0.23 mg/kg or 0.0000217%)
fluoranthene: (Whole conc. entered as: 1.13 mg/kg or 0.000107%)
pyrene: (Whole conc. entered as: 1.07 mg/kg or 0.000101%)
benzo[a]anthracene: (Whole conc. entered as: 0.78 mg/kg or 0.0000737%)
chrysene: (Whole conc. entered as: 0.71 mg/kg or 0.0000671%)
benzo[b]fluoranthene: (Whole conc. entered as: 0.98 mg/kg or 0.0000926%)
benzo[k]fluoranthene: (Whole conc. entered as: 0.98 mg/kg or 0.0000926%)
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 0.57 mg/kg or 0.0000539%)
indeno[123-cd]pyrene: (Whole conc. entered as: 0.49 mg/kg or 0.0000463%)
dibenz[a,h]anthracene: (Whole conc. entered as: <0.2 mg/kg or <0.0000189%) IGNORED Because: "<LOD"
benzo[ghi]perylene: (Whole conc. entered as: 0.38 mg/kg or 0.0000359%)
phenol: (Whole conc. entered as: <0.01 mg/kg or <0.000000945%) IGNORED Because: "<LOD"
1,1,2,2-tetrachloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000284%) IGNORED Because: "<LOD"
1,1,2-trichloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000284%) IGNORED Because: "<LOD"
1,2,4-trimethylbenzene: (Whole conc. entered as: 0.057 mg/kg or 0.00000539%)
1,2-dichloropropane; propylene dichloride: (Whole conc. entered as: <0.006 mg/kg or <0.000000567%) IGNORED Because: "<LOD"
bis(2-ethylhexyl) phthalate; di-(2-ethylhexyl) phthalate; DEHP: (Whole conc. entered as: <1 mg/kg or <0.0000945%) IGNORED Because: "<LOD"
bromobenzene: (Whole conc. entered as: <0.002 mg/kg or <0.000000189%) IGNORED Because: "<LOD"
bromoform; tribromomethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000284%) IGNORED Because: "<LOD"
carbon tetrachloride; tetrachloromethane: (Whole conc. entered as: <0.004 mg/kg or <0.000000378%) IGNORED Because: "<LOD"
styrene: (Whole conc. entered as: <0.003 mg/kg or <0.000000284%) IGNORED Because: "<LOD"
trichloroethene (TCE): (Whole conc. entered as: <0.003 mg/kg or <0.000000284%) IGNORED Because: "<LOD"
vinyl chloride: (Whole conc. entered as: <0.002 mg/kg or <0.000000189%) IGNORED Because: "<LOD"
chlorobenzene: (Whole conc. entered as: <0.003 mg/kg or <0.000000284%) IGNORED Because: "<LOD"

Test Settings

HP 3(i) on Flam. Liq. 1; H224, Flam. Liq. 2; H225, Flam. Liq. 3; H226: Force this Hazardous property to non hazardous because: "Non hazardous by HP 3(i). Appendix C of WM3 v1. Figure C3.1. The Waste is not a liquid and does not have a free draining liquid phase. Furthermore carbon banding of the TPH indicates negligible concentrations of short chain carbon fractions. 1,2,4-trimethylbenzene considered to be not present at a significant concentration."

Notes utilised in assessment

C14: Step 5

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cadmium oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "copper sulphate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "phenanthrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "pyrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[b]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[k]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]pyrene; benzo[def]chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[ghi]perylene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "divanadium pentaoxide; vanadium pentoxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "1,2,4-trimethylbenzene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel(II) oxide (nickel monoxide)"

Note 1 , used on:

Test: "HP 5 on STOT SE 2; H371, STOT RE 2; H373" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 6 on Acute Tox. 4; H302" for determinand: "cobalt sulfate"
Test: "HP 6 on Acute Tox. 4; H332" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "cobalt sulfate"
Test: "HP 7 on Carc. 2; H351" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 1A; H360, Repr. 1A; H360D, Repr. 1A; H360Df, Repr. 1A; H360F, Repr. 1A; H360Fd, Repr. 1A; H360FD, Repr. 1B; H360, Repr. 1B; H360D, Repr. 1B; H360Df, Repr. 1B; H360F, Repr. 1B; H360Fd, Repr. 1B; H360FD " for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 2; H361, Repr. 2; H361d, Repr. 2; H361f, Repr. 2; H361fd" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 11 on Muta. 2; H341" for determinand: "cobalt sulfate"
Test: "HP 13 on Skin Sens. 1; H317, Skin Sens. 1A; H317, Skin Sens. 1B; H317, Resp. Sens. 1; H334, Resp. Sens. 1A; H334, Resp. Sens. 1B; H334" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"

WM3: Unknown oil , used on:

Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "TPH (C6 to C40) petroleum group"
Test: "HP 11 on Muta. 1A; H340, Muta. 1B; H340" for determinand: "TPH (C6 to C40) petroleum group"

Determinand notes

Note 1 , used on:

determinand: "cobalt sulfate"
determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Note A , used on:

determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

WM3: Unknown oil , used on:

determinand: "TPH (C6 to C40) petroleum group"

Classification of sample: WS7

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS7
Sample Depth:
0.7 m
Moisture content: **7.8%**
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands (Moisture content: 7.8%, dry weight correction)

arsenic trioxide: (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<0.612 mg/kg or <0.0000612%) IGNORED Because: "<LOD"
barium sulfate: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.577 mg/kg or <0.000158%) IGNORED Because: "<LOD"
beryllium oxide: (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<1.287 mg/kg or <0.000129%) IGNORED Because: "<LOD"
diboron trioxide; boric oxide: (Cation conc. entered: 1.6 mg/kg, converted to compound conc.:4.779 mg/kg or 0.000478%)
cadmium oxide: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.106 mg/kg or <0.0000106%) IGNORED Because: "<LOD"
chromium(III) oxide: (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<0.678 mg/kg or <0.0000678%) IGNORED Because: "<LOD"
cobalt sulfate: (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<1.22 mg/kg or <0.000122%, Note 1 conc.: <0.0000464%) IGNORED Because: "<LOD"
copper sulphate: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<2.33 mg/kg or <0.000233%) IGNORED Because: "<LOD"
lead compounds with the exception of those specified elsewhere in this Annex: (Cation conc. entered: <4 mg/kg, converted to compound conc.:<3.711 mg/kg or <0.000371%, Note 1 conc.: <0.000371%) IGNORED Because: "<LOD"
mercury dichloride: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.126 mg/kg or <0.0000126%) IGNORED Because: "<LOD"
molybdenum(VI) oxide: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.139 mg/kg or <0.0000139%) IGNORED Because: "<LOD"
nickel(II) oxide (nickel monoxide): (Cation conc. entered: <0.7 mg/kg, converted to compound conc.:<0.826 mg/kg or <0.0000826%) IGNORED Because: "<LOD"
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<2.369 mg/kg or <0.000237%) IGNORED Because: "<LOD"
divanadium pentaoxide; vanadium pentoxide: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<1.656 mg/kg or <0.000166%) IGNORED Because: "<LOD"
zinc oxide: (Cation conc. entered: <5 mg/kg, converted to compound conc.:<5.773 mg/kg or <0.000577%) IGNORED Because: "<LOD"
TPH (C6 to C40) petroleum group: (Whole conc. entered as: 419 mg/kg or 0.0389%)
benzene: (Whole conc. entered as: <0.005 mg/kg or <0.000000464%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <0.005 mg/kg or <0.000000464%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <0.005 mg/kg or <0.000000464%) IGNORED Because: "<LOD"
xylene: (Whole conc. entered as: <0.005 mg/kg or <0.000000464%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: 0.06 mg/kg or 0.00000557%)

acenaphthylene: (Whole conc. entered as: 0.04 mg/kg or 0.00000371%)
acenaphthene: (Whole conc. entered as: 0.06 mg/kg or 0.00000557%)
fluorene: (Whole conc. entered as: 0.04 mg/kg or 0.00000371%)
phenanthrene: (Whole conc. entered as: 0.82 mg/kg or 0.0000761%)
anthracene: (Whole conc. entered as: 0.24 mg/kg or 0.0000223%)
fluoranthene: (Whole conc. entered as: 1.79 mg/kg or 0.000166%)
pyrene: (Whole conc. entered as: 1.85 mg/kg or 0.000172%)
benzo[a]anthracene: (Whole conc. entered as: 1.18 mg/kg or 0.000109%)
chrysene: (Whole conc. entered as: 1.08 mg/kg or 0.0001%)
benzo[b]fluoranthene: (Whole conc. entered as: 1.74 mg/kg or 0.000161%)
benzo[k]fluoranthene: (Whole conc. entered as: 1.74 mg/kg or 0.000161%)
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 0.82 mg/kg or 0.0000761%)
indeno[123-cd]pyrene: (Whole conc. entered as: 0.77 mg/kg or 0.0000714%)
dibenz[a,h]anthracene: (Whole conc. entered as: 0.12 mg/kg or 0.0000111%)
benzo[ghi]perylene: (Whole conc. entered as: 0.57 mg/kg or 0.0000529%)
phenol: (Whole conc. entered as: <0.01 mg/kg or <0.000000928%) IGNORED Because: "<LOD"
1,1,2,2-tetrachloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000278%) IGNORED Because: "<LOD"
1,2,4-trimethylbenzene: (Whole conc. entered as: <0.006 mg/kg or <0.000000557%) IGNORED Because: "<LOD"
1,2-dichloropropane; propylene dichloride: (Whole conc. entered as: <0.006 mg/kg or <0.000000557%) IGNORED Because: "<LOD"
bis(2-ethylhexyl) phthalate; di-(2-ethylhexyl) phthalate; DEHP: (Whole conc. entered as: <0.1 mg/kg or <0.00000928%) IGNORED Because: "<LOD"
bromobenzene: (Whole conc. entered as: <0.002 mg/kg or <0.000000186%) IGNORED Because: "<LOD"
bromoform; tribromomethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000278%) IGNORED Because: "<LOD"
carbon tetrachloride; tetrachloromethane: (Whole conc. entered as: <0.004 mg/kg or <0.000000371%) IGNORED Because: "<LOD"
styrene: (Whole conc. entered as: <0.003 mg/kg or <0.000000278%) IGNORED Because: "<LOD"
trichloroethene (TCE): (Whole conc. entered as: <0.003 mg/kg or <0.000000278%) IGNORED Because: "<LOD"
coronene: (Whole conc. entered as: 0.09 mg/kg or 0.00000835%)
vinyl chloride: (Whole conc. entered as: <0.002 mg/kg or <0.000000186%) IGNORED Because: "<LOD"
chlorobenzene: (Whole conc. entered as: <0.003 mg/kg or <0.000000278%) IGNORED Because: "<LOD"

Test Settings

HP 3(i) on Flam. Liq. 1; H224, Flam. Liq. 2; H225, Flam. Liq. 3; H226: Force this Hazardous property to non hazardous because: "Non hazardous by HP 3(i). Appendix C of WM3 v1. Figure C3.1. The Waste is not a liquid and does not have a free draining liquid phase. Furthermore at the concentrations reported the waste would pass the inert WAC mineral oil criteria and therefore cannot display flammable hazardous property."

Notes utilised in assessment

C14: Step 5

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "naphthalene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "acenaphthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluorene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "phenanthrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "pyrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[b]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[k]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]pyrene; benzo[def]chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "dibenz[a,h]anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[ghi]perylene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "TPH (C6 to C40) petroleum group"

Determinand notes

WM3: Unknown oil , used on:

determinand: "TPH (C6 to C40) petroleum group"

Classification of sample: WS8

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS8
Sample Depth:
1 m
Moisture content: **0%**
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands (Moisture content: 0%, dry weight correction)

arsenic trioxide: (Cation conc. entered: 5.4 mg/kg, converted to compound conc.:7.13 mg/kg or 0.000713%)
barium sulfate: (Cation conc. entered: 45 mg/kg, converted to compound conc.:76.478 mg/kg or 0.00765%)
beryllium oxide: (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<1.388 mg/kg or <0.000139%) IGNORED Because: "<LOD"
diboron trioxide; boric oxide: (Cation conc. entered: 0.3 mg/kg, converted to compound conc.:0.966 mg/kg or 0.0000966%)
cadmium oxide: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.114 mg/kg or <0.0000114%) IGNORED Because: "<LOD"
chromium(III) oxide: (Cation conc. entered: 7.7 mg/kg, converted to compound conc.:11.254 mg/kg or 0.00113%)
chromium(VI) oxide: (Cation conc. entered: <0.3 mg/kg, converted to compound conc.:<0.577 mg/kg or <0.0000577%) IGNORED Because: "<LOD"
cobalt sulfate: (Cation conc. entered: 2.6 mg/kg, converted to compound conc.:6.838 mg/kg or 0.000684%, Note 1 conc.: 0.00026%)
copper sulphate: (Cation conc. entered: 4 mg/kg, converted to compound conc.:10.047 mg/kg or 0.001%)
lead compounds with the exception of those specified elsewhere in this Annex: (Cation conc. entered: 10 mg/kg, converted to compound conc.:10 mg/kg or 0.001%, Note 1 conc.: 0.001%)
mercury dichloride: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.135 mg/kg or <0.0000135%) IGNORED Because: "<LOD"
molybdenum(VI) oxide: (Cation conc. entered: 0.2 mg/kg, converted to compound conc.:0.3 mg/kg or 0.00003%)
nickel(II) oxide (nickel monoxide): (Cation conc. entered: 6.4 mg/kg, converted to compound conc.:8.145 mg/kg or 0.000814%)
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<2.554 mg/kg or <0.000255%) IGNORED Because: "<LOD"
divanadium pentaoxide; vanadium pentoxide: (Cation conc. entered: 14 mg/kg, converted to compound conc.:24.993 mg/kg or 0.0025%)
zinc oxide: (Cation conc. entered: 27 mg/kg, converted to compound conc.:33.607 mg/kg or 0.00336%)
TPH (C6 to C40) petroleum group: (Whole conc. entered as: <52 mg/kg or <0.0052%) IGNORED Because: "<LOD"
benzene: (Whole conc. entered as: <0.005 mg/kg or <0.0000005%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <0.005 mg/kg or <0.0000005%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <0.005 mg/kg or <0.0000005%) IGNORED Because: "<LOD"
xylene: (Whole conc. entered as: <0.005 mg/kg or <0.0000005%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: <0.04 mg/kg or <0.000004%) IGNORED Because: "<LOD"
acenaphthylene: (Whole conc. entered as: <0.03 mg/kg or <0.000003%) IGNORED Because: "<LOD"
acenaphthene: (Whole conc. entered as: <0.05 mg/kg or <0.000005%) IGNORED Because: "<LOD"
fluorene: (Whole conc. entered as: <0.04 mg/kg or <0.000004%) IGNORED Because: "<LOD"

phenanthrene: (Whole conc. entered as: 0.03 mg/kg or 0.000003%)
anthracene: (Whole conc. entered as: <0.04 mg/kg or <0.000004%) IGNORED Because: "<LOD"
fluoranthene: (Whole conc. entered as: 0.05 mg/kg or 0.000005%)
pyrene: (Whole conc. entered as: 0.06 mg/kg or 0.000006%)
benzo[a]anthracene: (Whole conc. entered as: 0.06 mg/kg or 0.000006%)
chrysene: (Whole conc. entered as: 0.03 mg/kg or 0.000003%)
benzo[b]fluoranthene: (Whole conc. entered as: <0.07 mg/kg or <0.000007%) IGNORED Because: "<LOD"
benzo[k]fluoranthene: (Whole conc. entered as: <0.07 mg/kg or <0.000007%) IGNORED Because: "<LOD"
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: <0.04 mg/kg or <0.000004%) IGNORED Because: "<LOD"
indeno[123-cd]pyrene: (Whole conc. entered as: <0.04 mg/kg or <0.000004%) IGNORED Because: "<LOD"
dibenz[a,h]anthracene: (Whole conc. entered as: <0.04 mg/kg or <0.000004%) IGNORED Because: "<LOD"
benzo[ghi]perylene: (Whole conc. entered as: <0.04 mg/kg or <0.000004%) IGNORED Because: "<LOD"
phenol: (Whole conc. entered as: <0.01 mg/kg or <0.000001%) IGNORED Because: "<LOD"
1,1,2,2-tetrachloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.0000003%) IGNORED Because: "<LOD"
1,1,2-trichloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.0000003%) IGNORED Because: "<LOD"
1,2,4-trimethylbenzene: (Whole conc. entered as: <0.006 mg/kg or <0.0000006%) IGNORED Because: "<LOD"
1,2-dichloropropane; propylene dichloride: (Whole conc. entered as: <0.006 mg/kg or <0.0000006%) IGNORED Because: "<LOD"
bis(2-ethylhexyl) phthalate; di-(2-ethylhexyl) phthalate; DEHP: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
bromobenzene: (Whole conc. entered as: <0.002 mg/kg or <0.0000002%) IGNORED Because: "<LOD"
bromoform; tribromomethane: (Whole conc. entered as: <0.003 mg/kg or <0.0000003%) IGNORED Because: "<LOD"
carbon tetrachloride; tetrachloromethane: (Whole conc. entered as: <0.004 mg/kg or <0.0000004%) IGNORED Because: "<LOD"
styrene: (Whole conc. entered as: <0.003 mg/kg or <0.0000003%) IGNORED Because: "<LOD"
trichloroethene (TCE): (Whole conc. entered as: <0.003 mg/kg or <0.0000003%) IGNORED Because: "<LOD"
vinyl chloride: (Whole conc. entered as: <0.002 mg/kg or <0.0000002%) IGNORED Because: "<LOD"
chlorobenzene: (Whole conc. entered as: <0.003 mg/kg or <0.0000003%) IGNORED Because: "<LOD"

Notes utilised in assessment

C14: Step 5

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "copper sulphate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "phenanthrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "pyrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "divanadium pentaoxide; vanadium pentoxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel(II) oxide (nickel monoxide)"

Determinand notes

Note 1 , used on:

determinand: "cobalt sulfate"
determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Note A , used on:

determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Classification of sample: WS10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
WS10
Sample Depth:
1 m
Moisture content: **16.2%**
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands (Moisture content: 16.2%, dry weight correction)

arsenic trioxide: (Cation conc. entered: 13.6 mg/kg, converted to compound conc.:15.453 mg/kg or 0.00155%)
barium sulfate: (Cation conc. entered: 241 mg/kg, converted to compound conc.:352.482 mg/kg or 0.0352%)
beryllium oxide: (Cation conc. entered: 0.9 mg/kg, converted to compound conc.:2.15 mg/kg or 0.000215%)
diboron trioxide; boric oxide: (Cation conc. entered: 2.7 mg/kg, converted to compound conc.:7.482 mg/kg or 0.000748%)
cadmium oxide: (Cation conc. entered: 0.1 mg/kg, converted to compound conc.:0.0983 mg/kg or 0.00000983%)
chromium(III) oxide: (Cation conc. entered: 55.2 mg/kg, converted to compound conc.:69.43 mg/kg or 0.00694%)
chromium(VI) oxide: (Cation conc. entered: <0.3 mg/kg, converted to compound conc.:<0.497 mg/kg or <0.0000497%) IGNORED Because: "<LOD"
cobalt sulfate: (Cation conc. entered: 8.9 mg/kg, converted to compound conc.:20.144 mg/kg or 0.00201%, Note 1 conc.: 0.000766%)
copper sulphate: (Cation conc. entered: 19 mg/kg, converted to compound conc.:41.069 mg/kg or 0.00411%)
lead compounds with the exception of those specified elsewhere in this Annex: (Cation conc. entered: 176 mg/kg, converted to compound conc.:151.463 mg/kg or 0.0151%, Note 1 conc.: 0.0151%)
mercury dichloride: (Cation conc. entered: 0.2 mg/kg, converted to compound conc.:0.233 mg/kg or 0.0000233%)
molybdenum(VI) oxide: (Cation conc. entered: 1.7 mg/kg, converted to compound conc.:2.195 mg/kg or 0.000219%)
nickel(II) oxide (nickel monoxide): (Cation conc. entered: 25.4 mg/kg, converted to compound conc.:27.817 mg/kg or 0.00278%)
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<2.198 mg/kg or <0.00022%) IGNORED Because: "<LOD"
divanadium pentaoxide; vanadium pentoxide: (Cation conc. entered: 41 mg/kg, converted to compound conc.:62.988 mg/kg or 0.0063%)
zinc oxide: (Cation conc. entered: 174 mg/kg, converted to compound conc.:186.386 mg/kg or 0.0186%)
TPH (C6 to C40) petroleum group: (Whole conc. entered as: 990 mg/kg or 0.0852%)
benzene: (Whole conc. entered as: <0.005 mg/kg or <0.00000043%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <0.005 mg/kg or <0.00000043%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <0.005 mg/kg or <0.00000043%) IGNORED Because: "<LOD"
xylene: (Whole conc. entered as: <0.005 mg/kg or <0.00000043%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: 0.07 mg/kg or 0.00000602%)
acenaphthylene: (Whole conc. entered as: 0.03 mg/kg or 0.00000258%)
acenaphthene: (Whole conc. entered as: 0.06 mg/kg or 0.00000516%)
fluorene: (Whole conc. entered as: <0.04 mg/kg or <0.00000344%) IGNORED Because: "<LOD"
phenanthrene: (Whole conc. entered as: 0.55 mg/kg or 0.0000473%)
anthracene: (Whole conc. entered as: 0.19 mg/kg or 0.0000164%)
fluoranthene: (Whole conc. entered as: 1.79 mg/kg or 0.000154%)
pyrene: (Whole conc. entered as: 3.2 mg/kg or 0.000275%)

benzo[a]anthracene: (Whole conc. entered as: 1.99 mg/kg or 0.000171%)
chrysene: (Whole conc. entered as: 1.79 mg/kg or 0.000154%)
benzo[b]fluoranthene: (Whole conc. entered as: 3.57 mg/kg or 0.000307%)
benzo[k]fluoranthene: (Whole conc. entered as: 3.57 mg/kg or 0.000307%)
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 1.88 mg/kg or 0.000162%)
indeno[123-cd]pyrene: (Whole conc. entered as: 1.51 mg/kg or 0.00013%)
dibenz[a,h]anthracene: (Whole conc. entered as: 0.27 mg/kg or 0.0000232%)
benzo[ghi]perylene: (Whole conc. entered as: 1.23 mg/kg or 0.000106%)
phenol: (Whole conc. entered as: <0.01 mg/kg or <0.000000861%) IGNORED Because: "<LOD"
1,1,2,2-tetrachloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000258%) IGNORED Because: "<LOD"
1,1,2-trichloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000258%) IGNORED Because: "<LOD"
1,2,4-trimethylbenzene: (Whole conc. entered as: <0.006 mg/kg or <0.000000516%) IGNORED Because: "<LOD"
1,2-dichloropropane; propylene dichloride: (Whole conc. entered as: <0.006 mg/kg or <0.000000516%) IGNORED Because: "<LOD"
bis(2-ethylhexyl) phthalate; di-(2-ethylhexyl) phthalate; DEHP: (Whole conc. entered as: <1 mg/kg or <0.0000861%) IGNORED Because: "<LOD"
bromobenzene: (Whole conc. entered as: <0.002 mg/kg or <0.000000172%) IGNORED Because: "<LOD"
bromoform; tribromomethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000258%) IGNORED Because: "<LOD"
carbon tetrachloride; tetrachloromethane: (Whole conc. entered as: <0.004 mg/kg or <0.000000344%) IGNORED Because: "<LOD"
styrene: (Whole conc. entered as: <0.003 mg/kg or <0.000000258%) IGNORED Because: "<LOD"
trichloroethene (TCE): (Whole conc. entered as: <0.003 mg/kg or <0.000000258%) IGNORED Because: "<LOD"
coronene: (Whole conc. entered as: 0.2 mg/kg or 0.0000172%)
vinyl chloride: (Whole conc. entered as: <0.002 mg/kg or <0.000000172%) IGNORED Because: "<LOD"
chlorobenzene: (Whole conc. entered as: <0.003 mg/kg or <0.000000258%) IGNORED Because: "<LOD"

Test Settings

HP 3(i) on Flam. Liq. 1; H224, Flam. Liq. 2; H225, Flam. Liq. 3; H226: Force this Hazardous property to non hazardous because: "Non hazardous by HP 3(i). Appendix C of WM3 v1. Figure C3.1. The Waste is not a liquid and does not have a free draining liquid phase. Furthermore carbon banding of the TPH indicates negligible concentrations of short chain carbon fractions."

Notes utilised in assessment

C14: Step 5

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cadmium oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "copper sulphate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "mercury dichloride"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "naphthalene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "acenaphthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "phenanthrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "pyrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[b]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[k]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]pyrene; benzo[def]chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "dibenz[a,h]anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[ghi]perylene"

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "divanadium pentaoxide; vanadium pentoxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "TPH (C6 to C40) petroleum group"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel(II) oxide (nickel monoxide)"

Note 1 , used on:

Test: "HP 5 on STOT SE 2; H371, STOT RE 2; H373" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 6 on Acute Tox. 4; H302" for determinand: "cobalt sulfate"
Test: "HP 6 on Acute Tox. 4; H332" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "cobalt sulfate"
Test: "HP 7 on Carc. 2; H351" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 1A; H360, Repr. 1A; H360D, Repr. 1A; H360Df, Repr. 1A; H360F, Repr. 1A; H360Fd, Repr. 1A; H360FD, Repr. 1B; H360, Repr. 1B; H360D, Repr. 1B; H360Df, Repr. 1B; H360F, Repr. 1B; H360Fd, Repr. 1B; H360FD " for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 2; H361, Repr. 2; H361d, Repr. 2; H361f, Repr. 2; H361fd" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 11 on Muta. 2; H341" for determinand: "cobalt sulfate"
Test: "HP 13 on Skin Sens. 1; H317, Skin Sens. 1A; H317, Skin Sens. 1B; H317, Resp. Sens. 1; H334, Resp. Sens. 1A; H334, Resp. Sens. 1B; H334" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"

Determinand notes

Note 1 , used on:

determinand: "cobalt sulfate"
determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Note A , used on:

determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

WM3: Unknown oil , used on:

determinand: "TPH (C6 to C40) petroleum group"

Classification of sample: WS11

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample Name:
WS11
Sample Depth:
0.5 m
Moisture content: **7.5%**
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.227%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.227%)

Determinands (Moisture content: 7.5%, dry weight correction)

arsenic trioxide: (Cation conc. entered: 9 mg/kg, converted to compound conc.:11.054 mg/kg or 0.00111%)
barium sulfate: (Cation conc. entered: 130 mg/kg, converted to compound conc.:205.523 mg/kg or 0.0206%)
beryllium oxide: (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<1.291 mg/kg or <0.000129%)
IGNORED Because: "<LOD"
diboron trioxide; boric oxide: (Cation conc. entered: 1.1 mg/kg, converted to compound conc.:3.295 mg/kg or 0.000329%)
cadmium oxide: (Cation conc. entered: 0.2 mg/kg, converted to compound conc.:0.213 mg/kg or 0.0000213%)
chromium(III) oxide: (Cation conc. entered: 58.7 mg/kg, converted to compound conc.:79.808 mg/kg or 0.00798%)
chromium(VI) oxide: (Cation conc. entered: <0.3 mg/kg, converted to compound conc.:<0.537 mg/kg or <0.0000537%)
IGNORED Because: "<LOD"
cobalt sulfate: (Cation conc. entered: 4.8 mg/kg, converted to compound conc.:11.743 mg/kg or 0.00117%, Note 1 conc.: 0.000447%)
copper sulphate: (Cation conc. entered: 10 mg/kg, converted to compound conc.:23.365 mg/kg or 0.00234%)
lead compounds with the exception of those specified elsewhere in this Annex: (Cation conc. entered: 35 mg/kg, converted to compound conc.:32.558 mg/kg or 0.00326%, Note 1 conc.: 0.00326%)
mercury dichloride: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.126 mg/kg or <0.0000126%)
IGNORED Because: "<LOD"
molybdenum(VI) oxide: (Cation conc. entered: 3.3 mg/kg, converted to compound conc.:4.605 mg/kg or 0.000461%)
nickel(II) oxide (nickel monoxide): (Cation conc. entered: 12.3 mg/kg, converted to compound conc.:14.561 mg/kg or 0.00146%)

selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<2.375 mg/kg or <0.000238%) IGNORED Because: "<LOD"
divanadium pentaoxide; vanadium pentoxide: (Cation conc. entered: 29 mg/kg, converted to compound conc.:48.158 mg/kg or 0.00482%)
zinc oxide: (Cation conc. entered: 65 mg/kg, converted to compound conc.:75.262 mg/kg or 0.00753%)
TPH (C6 to C40) petroleum group: (Whole conc. entered as: 2440 mg/kg or 0.227%)
confirm TPH has NOT arisen from diesel or petrol: (Confirmed)
benzene: (Whole conc. entered as: <0.005 mg/kg or <0.000000465%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <0.005 mg/kg or <0.000000465%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <0.005 mg/kg or <0.000000465%) IGNORED Because: "<LOD"
xylene: (Whole conc. entered as: <0.005 mg/kg or <0.000000465%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: <0.2 mg/kg or <0.0000186%) IGNORED Because: "<LOD"
acenaphthylene: (Whole conc. entered as: <0.15 mg/kg or <0.000014%) IGNORED Because: "<LOD"
acenaphthene: (Whole conc. entered as: <0.25 mg/kg or <0.0000233%) IGNORED Because: "<LOD"
fluorene: (Whole conc. entered as: <0.2 mg/kg or <0.0000186%) IGNORED Because: "<LOD"
phenanthrene: (Whole conc. entered as: 0.51 mg/kg or 0.0000474%)
anthracene: (Whole conc. entered as: <0.2 mg/kg or <0.0000186%) IGNORED Because: "<LOD"
fluoranthene: (Whole conc. entered as: 0.75 mg/kg or 0.0000698%)
pyrene: (Whole conc. entered as: 0.71 mg/kg or 0.000066%)
benzo[a]anthracene: (Whole conc. entered as: 0.52 mg/kg or 0.0000484%)
chrysene: (Whole conc. entered as: 0.4 mg/kg or 0.0000372%)
benzo[b]fluoranthene: (Whole conc. entered as: 0.53 mg/kg or 0.0000493%)
benzo[k]fluoranthene: (Whole conc. entered as: 0.53 mg/kg or 0.0000493%)
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 0.3 mg/kg or 0.0000279%)
indeno[123-cd]pyrene: (Whole conc. entered as: 0.24 mg/kg or 0.0000223%)
dibenz[a,h]anthracene: (Whole conc. entered as: <0.2 mg/kg or <0.0000186%) IGNORED Because: "<LOD"
benzo[ghi]perylene: (Whole conc. entered as: <0.2 mg/kg or <0.0000186%) IGNORED Because: "<LOD"
phenol: (Whole conc. entered as: <0.01 mg/kg or <0.00000093%) IGNORED Because: "<LOD"
1,1,2,2-tetrachloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000279%) IGNORED Because: "<LOD"
1,1,2-trichloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000279%) IGNORED Because: "<LOD"
1,2,4-trimethylbenzene: (Whole conc. entered as: <0.006 mg/kg or <0.000000558%) IGNORED Because: "<LOD"
1,2-dichloropropane; propylene dichloride: (Whole conc. entered as: <0.006 mg/kg or <0.000000558%) IGNORED Because: "<LOD"
bis(2-ethylhexyl) phthalate; di-(2-ethylhexyl) phthalate; DEHP: (Whole conc. entered as: <1 mg/kg or <0.000093%) IGNORED Because: "<LOD"
bromobenzene: (Whole conc. entered as: <0.002 mg/kg or <0.000000186%) IGNORED Because: "<LOD"
bromoform; tribromomethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000279%) IGNORED Because: "<LOD"
carbon tetrachloride; tetrachloromethane: (Whole conc. entered as: <0.004 mg/kg or <0.000000372%) IGNORED Because: "<LOD"
styrene: (Whole conc. entered as: <0.003 mg/kg or <0.000000279%) IGNORED Because: "<LOD"
trichloroethene (TCE): (Whole conc. entered as: 0.012 mg/kg or 0.00000112%)
vinyl chloride: (Whole conc. entered as: <0.002 mg/kg or <0.000000186%) IGNORED Because: "<LOD"
chlorobenzene: (Whole conc. entered as: <0.003 mg/kg or <0.000000279%) IGNORED Because: "<LOD"

Test Settings

HP 3(i) on Flam. Liq. 1; H224, Flam. Liq. 2; H225, Flam. Liq. 3; H226: Force this Hazardous property to non hazardous because: "Non hazardous by HP 3(i). Appendix C of WM3 v1. Figure C3.1. The Waste is not a liquid and does not have a free draining liquid phase. Furthermore carbon banding of the TPH indicates negligible concentrations of short chain carbon fractions."

Notes utilised in assessment

C14: Step 5

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cadmium oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "copper sulphate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "phenanthrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "pyrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[b]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[k]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]pyrene; benzo[def]chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "divanadium pentaoxide; vanadium pentoxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel(II) oxide (nickel monoxide)"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "trichloroethene (TCE)"

Note 1 , used on:

Test: "HP 5 on STOT SE 2; H371, STOT RE 2; H373" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 6 on Acute Tox. 4; H302" for determinand: "cobalt sulfate"
Test: "HP 6 on Acute Tox. 4; H332" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "cobalt sulfate"
Test: "HP 7 on Carc. 2; H351" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 1A; H360, Repr. 1A; H360D, Repr. 1A; H360Df, Repr. 1A; H360F, Repr. 1A; H360Fd, Repr. 1A; H360FD, Repr. 1B; H360, Repr. 1B; H360D, Repr. 1B; H360Df, Repr. 1B; H360F, Repr. 1B; H360Fd, Repr. 1B; H360FD " for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 2; H361, Repr. 2; H361d, Repr. 2; H361f, Repr. 2; H361fd" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 11 on Muta. 2; H341" for determinand: "cobalt sulfate"
Test: "HP 13 on Skin Sens. 1; H317, Skin Sens. 1A; H317, Skin Sens. 1B; H317, Resp. Sens. 1; H334, Resp. Sens. 1A; H334, Resp. Sens. 1B; H334" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"

WM3: Unknown oil , used on:

Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "TPH (C6 to C40) petroleum group"
Test: "HP 11 on Muta. 1A; H340, Muta. 1B; H340" for determinand: "TPH (C6 to C40) petroleum group"

Determinand notes

Note 1 , used on:

determinand: "cobalt sulfate"
determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Note A , used on:

determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

WM3: Unknown oil , used on:

determinand: "TPH (C6 to C40) petroleum group"

Classification of sample: BH1

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH1
Sample Depth:
0.5 m
Moisture content: **5.9%**
(dry weight correction)

LoW Code:	
Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands (Moisture content: 5.9%, dry weight correction)

arsenic trioxide: (Cation conc. entered: 12.5 mg/kg, converted to compound conc.:15.585 mg/kg or 0.00156%)
barium sulfate: (Cation conc. entered: 625 mg/kg, converted to compound conc.:1003.02 mg/kg or 0.1%)
beryllium oxide: (Cation conc. entered: <0.5 mg/kg, converted to compound conc.:<1.31 mg/kg or <0.000131%) IGNORED Because: "<LOD"
diboron trioxide; boric oxide: (Cation conc. entered: 1 mg/kg, converted to compound conc.:3.04 mg/kg or 0.000304%)
cadmium oxide: (Cation conc. entered: 1.8 mg/kg, converted to compound conc.:1.942 mg/kg or 0.000194%)
chromium(III) oxide: (Cation conc. entered: 42.2 mg/kg, converted to compound conc.:58.241 mg/kg or 0.00582%)
cobalt sulfate: (Cation conc. entered: 3.6 mg/kg, converted to compound conc.:8.941 mg/kg or 0.000894%, Note 1 conc.: 0.00034%)
copper sulphate: (Cation conc. entered: 7 mg/kg, converted to compound conc.:16.602 mg/kg or 0.00166%)
lead compounds with the exception of those specified elsewhere in this Annex: (Cation conc. entered: 85 mg/kg, converted to compound conc.:80.264 mg/kg or 0.00803%, Note 1 conc.: 0.00803%)
mercury dichloride: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.128 mg/kg or <0.0000128%) IGNORED Because: "<LOD"
molybdenum(VI) oxide: (Cation conc. entered: 2.3 mg/kg, converted to compound conc.:3.258 mg/kg or 0.000326%)
nickel(II) oxide (nickel monoxide): (Cation conc. entered: 11.2 mg/kg, converted to compound conc.:13.459 mg/kg or 0.00135%)
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: 1 mg/kg, converted to compound conc.:2.411 mg/kg or 0.000241%)
divanadium pentaoxide; vanadium pentoxide: (Cation conc. entered: 18 mg/kg, converted to compound conc.:30.343 mg/kg or 0.00303%)
zinc oxide: (Cation conc. entered: 123 mg/kg, converted to compound conc.:144.57 mg/kg or 0.0145%)
TPH (C6 to C40) petroleum group: (Whole conc. entered as: <52 mg/kg or <0.00491%) IGNORED Because: "<LOD"
benzene: (Whole conc. entered as: <0.005 mg/kg or <0.000000472%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <0.005 mg/kg or <0.000000472%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <0.005 mg/kg or <0.000000472%) IGNORED Because: "<LOD"
xylene: (Whole conc. entered as: <0.005 mg/kg or <0.000000472%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: <0.04 mg/kg or <0.00000378%) IGNORED Because: "<LOD"
acenaphthylene: (Whole conc. entered as: <0.03 mg/kg or <0.00000283%) IGNORED Because: "<LOD"
acenaphthene: (Whole conc. entered as: <0.05 mg/kg or <0.00000472%) IGNORED Because: "<LOD"
fluorene: (Whole conc. entered as: <0.04 mg/kg or <0.00000378%) IGNORED Because: "<LOD"
phenanthrene: (Whole conc. entered as: <0.03 mg/kg or <0.00000283%) IGNORED Because: "<LOD"
anthracene: (Whole conc. entered as: <0.04 mg/kg or <0.00000378%) IGNORED Because: "<LOD"
fluoranthene: (Whole conc. entered as: 0.05 mg/kg or 0.00000472%)
pyrene: (Whole conc. entered as: 0.05 mg/kg or 0.00000472%)
benzo[a]anthracene: (Whole conc. entered as: 0.07 mg/kg or 0.00000661%)

chrysene: (Whole conc. entered as: 0.04 mg/kg or 0.00000378%)
benzo[b]fluoranthene: (Whole conc. entered as: <0.07 mg/kg or <0.00000661%) IGNORED Because: "<LOD"
benzo[k]fluoranthene: (Whole conc. entered as: <0.07 mg/kg or <0.00000661%) IGNORED Because: "<LOD"
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: <0.04 mg/kg or <0.00000378%) IGNORED Because: "<LOD"
indeno[123-cd]pyrene: (Whole conc. entered as: <0.04 mg/kg or <0.00000378%) IGNORED Because: "<LOD"
dibenz[a,h]anthracene: (Whole conc. entered as: <0.04 mg/kg or <0.00000378%) IGNORED Because: "<LOD"
benzo[ghi]perylene: (Whole conc. entered as: <0.04 mg/kg or <0.00000378%) IGNORED Because: "<LOD"
phenol: (Whole conc. entered as: <0.01 mg/kg or <0.000000944%) IGNORED Because: "<LOD"
1,1,2,2-tetrachloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000283%) IGNORED Because: "<LOD"
1,2,4-trimethylbenzene: (Whole conc. entered as: <0.006 mg/kg or <0.000000567%) IGNORED Because: "<LOD"
1,2-dichloropropane; propylene dichloride: (Whole conc. entered as: <0.006 mg/kg or <0.000000567%) IGNORED Because: "<LOD"
bis(2-ethylhexyl) phthalate; di-(2-ethylhexyl) phthalate; DEHP: (Whole conc. entered as: <0.1 mg/kg or <0.00000944%) IGNORED Because: "<LOD"
bromobenzene: (Whole conc. entered as: <0.002 mg/kg or <0.000000189%) IGNORED Because: "<LOD"
bromoform; tribromomethane: (Whole conc. entered as: <0.003 mg/kg or <0.000000283%) IGNORED Because: "<LOD"
carbon tetrachloride; tetrachloromethane: (Whole conc. entered as: <0.004 mg/kg or <0.000000378%) IGNORED Because: "<LOD"
styrene: (Whole conc. entered as: <0.003 mg/kg or <0.000000283%) IGNORED Because: "<LOD"
trichloroethene (TCE): (Whole conc. entered as: <0.003 mg/kg or <0.000000283%) IGNORED Because: "<LOD"
vinyl chloride: (Whole conc. entered as: <0.002 mg/kg or <0.000000189%) IGNORED Because: "<LOD"
chlorobenzene: (Whole conc. entered as: <0.003 mg/kg or <0.000000283%) IGNORED Because: "<LOD"

Notes utilised in assessment

C14: Step 5

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cadmium oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "copper sulphate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "pyrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "divanadium pentaoxide; vanadium pentoxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel(II) oxide (nickel monoxide)"

Note 1 , used on:

Test: "HP 5 on STOT SE 2; H371, STOT RE 2; H373" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 6 on Acute Tox. 4; H302" for determinand: "cobalt sulfate"
Test: "HP 6 on Acute Tox. 4; H332" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "cobalt sulfate"
Test: "HP 7 on Carc. 2; H351" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 1A; H360, Repr. 1A; H360D, Repr. 1A; H360Df, Repr. 1A; H360F, Repr. 1A; H360Fd, Repr. 1A; H360FD, Repr. 1B; H360, Repr. 1B; H360D, Repr. 1B; H360Df, Repr. 1B; H360F, Repr. 1B; H360Fd, Repr. 1B; H360FD " for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 2; H361, Repr. 2; H361d, Repr. 2; H361f, Repr. 2; H361fd" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Test: "HP 11 on Muta. 2; H341" for determinand: "cobalt sulfate"
Test: "HP 13 on Skin Sens. 1; H317, Skin Sens. 1A; H317, Skin Sens. 1B; H317, Resp. Sens. 1; H334, Resp. Sens. 1A; H334, Resp. Sens. 1B; H334" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"

Determinand notes

Note 1 , used on:

determinand: "cobalt sulfate"
determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Note A , used on:

determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
determinand: "selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex"

Classification of sample: BH2A

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
BH2A
Sample Depth:
1 m
Moisture content: **0%**
(dry weight correction)

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands (Moisture content: 0%, dry weight correction)

arsenic trioxide: (Cation conc. entered: 8 mg/kg, converted to compound conc.:10.563 mg/kg or 0.00106%)
barium sulfate: (Cation conc. entered: 162 mg/kg, converted to compound conc.:275.322 mg/kg or 0.0275%)
beryllium oxide: (Cation conc. entered: 1.3 mg/kg, converted to compound conc.:3.608 mg/kg or 0.000361%)
diboron trioxide; boric oxide: (Cation conc. entered: 1.6 mg/kg, converted to compound conc.:5.152 mg/kg or 0.000515%)
cadmium oxide: (Cation conc. entered: 0.2 mg/kg, converted to compound conc.:0.228 mg/kg or 0.0000228%)
chromium(III) oxide: (Cation conc. entered: 37.5 mg/kg, converted to compound conc.:54.808 mg/kg or 0.00548%)
cobalt sulfate: (Cation conc. entered: 7.2 mg/kg, converted to compound conc.:18.936 mg/kg or 0.00189%, Note 1 conc.: 0.00072%)
copper sulphate: (Cation conc. entered: 24 mg/kg, converted to compound conc.:60.281 mg/kg or 0.00603%)
lead compounds with the exception of those specified elsewhere in this Annex: (Cation conc. entered: 133 mg/kg, converted to compound conc.:133 mg/kg or 0.0133%, Note 1 conc.: 0.0133%)
mercury dichloride: (Cation conc. entered: <0.1 mg/kg, converted to compound conc.:<0.135 mg/kg or <0.0000135%) IGNORED Because: "<LOD"
molybdenum(VI) oxide: (Cation conc. entered: 2.4 mg/kg, converted to compound conc.:3.6 mg/kg or 0.00036%)
nickel(II) oxide (nickel monoxide): (Cation conc. entered: 24.8 mg/kg, converted to compound conc.:31.56 mg/kg or 0.00316%)
selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex: (Cation conc. entered: <1 mg/kg, converted to compound conc.:<2.554 mg/kg or <0.000255%) IGNORED Because: "<LOD"
divanadium pentaoxide; vanadium pentoxide: (Cation conc. entered: 47 mg/kg, converted to compound conc.:83.904 mg/kg or 0.00839%)
zinc oxide: (Cation conc. entered: 128 mg/kg, converted to compound conc.:159.323 mg/kg or 0.0159%)
TPH (C6 to C40) petroleum group: (Whole conc. entered as: 821 mg/kg or 0.0821%)
benzene: (Whole conc. entered as: <0.005 mg/kg or <0.0000005%) IGNORED Because: "<LOD"
toluene: (Whole conc. entered as: <0.005 mg/kg or <0.0000005%) IGNORED Because: "<LOD"
ethylbenzene: (Whole conc. entered as: <0.005 mg/kg or <0.0000005%) IGNORED Because: "<LOD"
xylene: (Whole conc. entered as: <0.005 mg/kg or <0.0000005%) IGNORED Because: "<LOD"
naphthalene: (Whole conc. entered as: <0.04 mg/kg or <0.000004%) IGNORED Because: "<LOD"
acenaphthylene: (Whole conc. entered as: <0.03 mg/kg or <0.000003%) IGNORED Because: "<LOD"
acenaphthene: (Whole conc. entered as: <0.05 mg/kg or <0.000005%) IGNORED Because: "<LOD"
fluorene: (Whole conc. entered as: <0.04 mg/kg or <0.000004%) IGNORED Because: "<LOD"
phenanthrene: (Whole conc. entered as: 0.47 mg/kg or 0.000047%)
anthracene: (Whole conc. entered as: 0.1 mg/kg or 0.00001%)
fluoranthene: (Whole conc. entered as: 0.64 mg/kg or 0.000064%)
pyrene: (Whole conc. entered as: 0.52 mg/kg or 0.000052%)
benzo[a]anthracene: (Whole conc. entered as: 0.33 mg/kg or 0.000033%)

chrysene: (Whole conc. entered as: 0.27 mg/kg or 0.000027%)
benzo[b]fluoranthene: (Whole conc. entered as: 0.4 mg/kg or 0.00004%)
benzo[k]fluoranthene: (Whole conc. entered as: 0.4 mg/kg or 0.00004%)
benzo[a]pyrene; benzo[def]chrysene: (Whole conc. entered as: 0.22 mg/kg or 0.000022%)
indeno[123-cd]pyrene: (Whole conc. entered as: 0.16 mg/kg or 0.000016%)
dibenz[a,h]anthracene: (Whole conc. entered as: <0.04 mg/kg or <0.000004%) IGNORED Because: "<LOD"
benzo[ghi]perylene: (Whole conc. entered as: 0.13 mg/kg or 0.000013%)
phenol: (Whole conc. entered as: <0.01 mg/kg or <0.000001%) IGNORED Because: "<LOD"
1,1,2,2-tetrachloroethane: (Whole conc. entered as: <0.003 mg/kg or <0.0000003%) IGNORED Because: "<LOD"
1,2,4-trimethylbenzene: (Whole conc. entered as: <0.006 mg/kg or <0.0000006%) IGNORED Because: "<LOD"
1,2-dichloropropane; propylene dichloride: (Whole conc. entered as: <0.006 mg/kg or <0.0000006%) IGNORED Because: "<LOD"
bis(2-ethylhexyl) phthalate; di-(2-ethylhexyl) phthalate; DEHP: (Whole conc. entered as: <0.1 mg/kg or <0.00001%) IGNORED Because: "<LOD"
bromobenzene: (Whole conc. entered as: <0.002 mg/kg or <0.0000002%) IGNORED Because: "<LOD"
bromoform; tribromomethane: (Whole conc. entered as: <0.003 mg/kg or <0.0000003%) IGNORED Because: "<LOD"
carbon tetrachloride; tetrachloromethane: (Whole conc. entered as: <0.004 mg/kg or <0.0000004%) IGNORED Because: "<LOD"
styrene: (Whole conc. entered as: <0.003 mg/kg or <0.0000003%) IGNORED Because: "<LOD"
trichloroethene (TCE): (Whole conc. entered as: <0.003 mg/kg or <0.0000003%) IGNORED Because: "<LOD"
vinyl chloride: (Whole conc. entered as: <0.002 mg/kg or <0.0000002%) IGNORED Because: "<LOD"
chlorobenzene: (Whole conc. entered as: <0.003 mg/kg or <0.0000003%) IGNORED Because: "<LOD"

Test Settings

HP 3(i) on Flam. Liq. 1; H224, Flam. Liq. 2; H225, Flam. Liq. 3; H226: Force this Hazardous property to non hazardous because: "Non hazardous by HP 3(i). Appendix C of WM3 v1. Figure C3.1. The Waste is not a liquid and does not have a free draining liquid phase. Furthermore carbon banding of the TPH indicates negligible concentrations of short chain carbon fractions. "

Notes utilised in assessment

C14: Step 5

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..." , used on:

Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "arsenic trioxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cadmium oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chromium(III) oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "copper sulphate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "zinc oxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "phenanthrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "pyrene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]anthracene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[b]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[k]fluoranthene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[a]pyrene; benzo[def]chrysene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "benzo[ghi]perylene"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "divanadium pentaoxide; vanadium pentoxide"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "TPH (C6 to C40) petroleum group"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "nickel(II) oxide (nickel monoxide)"

Note 1 , used on:

Test: "HP 5 on STOT SE 2; H371, STOT RE 2; H373" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 6 on Acute Tox. 4; H302" for determinand: "cobalt sulfate"
Test: "HP 6 on Acute Tox. 4; H332" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 7 on Carc. 1A; H350, Carc. 1B; H350, Carc. 1A; H350i, Carc. 1B; H350i" for determinand: "cobalt sulfate"
Test: "HP 7 on Carc. 2; H351" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 1A; H360, Repr. 1A; H360D, Repr. 1A; H360Df, Repr. 1A; H360F, Repr. 1A; H360Fd, Repr. 1A; H360FD, Repr. 1B; H360, Repr. 1B; H360D, Repr. 1B; H360Df, Repr. 1B; H360F, Repr. 1B; H360Fd, Repr. 1B; H360FD " for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 10 on Repr. 2; H361, Repr. 2; H361d, Repr. 2; H361f, Repr. 2; H361fd" for determinand: "lead compounds with the exception of those specified elsewhere in this Annex"
Test: "HP 11 on Muta. 2; H341" for determinand: "cobalt sulfate"
Test: "HP 13 on Skin Sens. 1; H317, Skin Sens. 1A; H317, Skin Sens. 1B; H317, Resp. Sens. 1; H334, Resp. Sens. 1A; H334, Resp. Sens. 1B; H334" for determinand: "cobalt sulfate"
Test: "HP 14 on R50, R50/53, R51/53, R52/53, R52, R53" for determinand: "cobalt sulfate"

Determinand notes

Note 1 , used on:

determinand: "cobalt sulfate"
determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

Note A , used on:

determinand: "lead compounds with the exception of those specified elsewhere in this Annex"

WM3: Unknown oil , used on:

determinand: "TPH (C6 to C40) petroleum group"

Appendix A: Classifier defined and non CLP determinands

barium sulfate (CAS Number: 7727-43-7)

Conversion factor: 1.7
Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R20/22, R33, R36/37/38
Hazard Statements: Acute Tox. 4; H332, Acute Tox. 4; H302, STOT RE 2; H373, Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315

chromium(III) oxide (CAS Number: 1308-38-9)

Conversion factor: 1.462
Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R20, R22, R36, R37, R38, R42, R43, R50/53, R60, R61
Hazard Statements: Acute Tox. 4; H332, Acute Tox. 4; H302, Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315, Resp. Sens. 1; H334, Skin Sens. 1; H317, Repr. 1B; H360FD, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

lead compounds with the exception of those specified elsewhere in this Annex

CLP index number: 082-001-00-6
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Risk Phrases: None.
Additional Hazard Statement(s): Carc. 2; H351
Reason:
03/06/2015 - Carc. 2; H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

TPH (C6 to C40) petroleum group (CAS Number: TPH)

Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25/05/2015
Risk Phrases: R10, R45, R46, R51/53, R63, R65
Hazard Statements: Flam. Liq. 3; H226, Asp. Tox. 1; H304, STOT RE 2; H373, Muta. 1B; H340, Carc. 1B; H350, Repr. 2; H361d, Aquatic Chronic 2; H411

ethylbenzene (CAS Number: 100-41-4)

CLP index number: 601-023-00-4
Data source: Commission Regulation (EU) No 605/2014 – 6th Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP6)
Additional Risk Phrases: None.
Additional Hazard Statement(s): Carc. 2; H351
Reason:
03/06/2015 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

acenaphthylene (CAS Number: 208-96-8)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R22, R26, R27, R36, R37, R38
Hazard Statements: Acute Tox. 4; H302, Acute Tox. 1; H330, Acute Tox. 1; H310, Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315

acenaphthene (CAS Number: 83-32-9)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R36, R37, R38, N; R50/53, N; R51/53
Hazard Statements: Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315, Aquatic Acute 1; H400, Aquatic Chronic 1; H410, Aquatic Chronic 2; H411

fluorene (CAS Number: 86-73-7)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: N; R50/53
Hazard Statements: Aquatic Acute 1; H400, Aquatic Chronic 1; H410

phenanthrene (CAS Number: 85-01-8)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: R22, R36, R37, R38, R40, R43, N; R50/53
Hazard Statements: Acute Tox. 4; H302, Eye Irrit. 2; H319, STOT SE 3; H335, Carc. 2; H351, Skin Sens. 1; H317, Aquatic Acute 1; H400, Aquatic Chronic 1; H410, Skin Irrit. 2; H315

anthracene (CAS Number: 120-12-7)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17/07/2015
Risk Phrases: R36, R37, R38, R43, N; R50/53
Hazard Statements: Eye Irrit. 2; H319, STOT SE 3; H335, Skin Irrit. 2; H315, Skin Sens. 1; H317, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

fluoranthene (CAS Number: 206-44-0)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21/08/2015
Risk Phrases: Xn; R22, N; R50/53
Hazard Statements: Acute Tox. 4; H302, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

pyrene (CAS Number: 129-00-0)

Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21/08/2015
Risk Phrases: Xi; R36/37/38, N; R50/53
Hazard Statements: Skin Irrit. 2; H315, Eye Irrit. 2; H319, STOT SE 3; H335, Aquatic Acute 1; H400, Aquatic Chronic 1; H410

indeno[123-cd]pyrene (CAS Number: 193-39-5)

Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06/08/2015
Risk Phrases: R40
Hazard Statements: Carc. 2; H351

benzo[ghi]perylene (CAS Number: 191-24-2)

Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23/07/2015
Risk Phrases: N; R50/53
Hazard Statements: Aquatic Acute 1; H400, Aquatic Chronic 1; H410

chlorobenzene (CAS Number: 108-90-7)

CLP index number: 602-033-00-1
Data source: Regulation (EU) 2016/1179 of 19 July 2016 (ATP9)
Additional Risk Phrases: N; R51/53
Additional Hazard Statement(s): None.
Reason:
10/10/2016 - N; R51/53 hazard statement sourced from: WM3 v1 still uses ecotoxic risk phrases

polychlorobiphenyls; PCB (CAS Number: 1336-36-3)

CLP index number: 602-039-00-4
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Risk Phrases: None.
Additional Hazard Statement(s): Carc. 1A; H350
Reason:
29/09/2015 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

coronene (CAS Number: 191-07-1)

Comments: Data from C&L Inventory Database; no entries in Registered Substances or Pesticides Properties databases; SDS: Sigma Aldrich, 1907/2006 compliant, dated 2012 - no entries; IARC – Group 3, not carcinogenic.
Data source:
http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=17010&HarmOnly=no?fc=true&lang=en
Data source date: 16/06/2014
Risk Phrases: R68/20
Hazard Statements: STOT SE 2; H371

confirm TPH has NOT arisen from diesel or petrol

Comments: Chapter 3, section 4b requires a positive confirmation for benzo[a]pyrene to be used as a marker in evaluating Carc. 1B; H350 (HP 7) and Muta. 1B; H340 (HP 11)
Data source: WM3 1st Edition 2015
Data source date: 25/05/2015
Risk Phrases: None.
Hazard Statements: None.

Appendix B: Rationale for selection of metal species

C14: Step 5

from section: WM3: C14 in the document: "WM3 - Waste Classification"

"identify whether any individual ecotoxic substance is present at or above a cut-off value ..."

Note 1

from section: 1.1.3.2, Annex VI in the document: "CLP Regulation"

"The concentration stated or, in the absence of such concentrations, the generic concentrations of this Regulation (Table 3.1) or the generic concentrations of Directive 1999/45/EC (Table 3.2), are the percentages by weight of the metallic element calculated with reference to the total weight of the mixture."

Note A

from section: 1.1.3.1, Annex VI in the document: "CLP Regulation"

"Without prejudice to Article 17(2), the name of the substance must appear on the label in the form of one of the designations given in Part 3. In Part 3, use is sometimes made of a general description such as '... compounds' or '... salts'. In this case, the supplier is required to state on the label the correct name, due account being taken of section 1.1.1.4."

WM3: Unknown oil

from section: Chapter 3: 4. Waste oils and other wastes containing or contaminated with oil in the document: "WM3 - Waste Classification"

"If the identity of the oil is unknown, and the petroleum group cannot be established, then the oil contaminating the waste can be classified as non-carcinogenic due to the presence of oil if all three of the following criteria are met:

- the waste contains **benzo[a]pyrene (BaP)** at a concentration of less than 0.01% (1/10,000th) of the TPH concentration (This is the carcinogenic limit specified in table 3.2 of the CLP for BaP)
- this has been determined by an appropriate and representative sampling approach in accordance with the principles set out in Appendix D, and
- the analysis clearly demonstrates, for example by carbon bands or chromatograph, and the laboratory has reasonably concluded that the hydrocarbons present have not arisen from petrol or diesel

"

Appendix C: Version

This classification utilises the following guidance and legislation:

- WM3 - Waste Classification - May 2015
- CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
- 1st ATP - Regulation 790/2009/EC of 10 August 2009
- 2nd ATP - Regulation 286/2011/EC of 10 March 2011
- 3rd ATP - Regulation 618/2012/EU of 10 July 2012
- 4th ATP - Regulation 487/2013/EU of 8 May 2013
- Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
- 5th ATP - Regulation 944/2013/EU of 2 October 2013
- 6th ATP - Regulation 605/2014/EU of 5 June 2014
- WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
- Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
- 7th ATP - Regulation 2015/1221/EU of 24 July 2015
- 8th ATP - Regulation (EU) 2016/918 of 19 May 2016
- 9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
- POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
- 1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
- 2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

HazWasteOnline Classification Engine: WM3 1st Edition, May 2015
HazWasteOnline Classification Engine Version: 2016.317.3166.6295 (12 Nov 2016)
HazWasteOnline Database: 2016.315.3165.6292 (10 Nov 2016)

Appendix H Risk Rating Matrix

Table H.1: Risk rating for contaminated land qualitative risk assessment

Level of Severity	Likelihood		
	Most Likely	Reasonably Foreseeable	Unlikely
Acute harm or severe chronic harm. Direct pollution of sensitive water receptors or serious pollution of other water bodies.	High	High	Low
Harm from long-term exposure. Slight pollution of sensitive receptors or pollution of other water bodies.	Medium	Medium	Low
No significant harm in either short or long term. No pollution of water that is likely to affect sensitive receptors. No more than slight pollution of other water bodies.	Low	Low	Low

Waterman

Appendix I Environmental Receptors

The Contaminated Land Statutory Guidance has a four category system that considers harm to human health, controlled waters, flora and fauna, property, livestock and crops. The Categories are broadly defined as follows:

1 Contaminated Land – similar to land where it is known that significant harm has been caused or significant harm is being caused

2 Contaminated Land – no significant harm being caused but there is a significant possibility for significant harm to be caused in the future

3 Not Contaminated Land – there may be harm being caused but no significant possibility for significant harm to be caused in the future

4 Not Contaminated Land – no pollutant linkage, normal levels of contaminants and no significant harm being caused and no significant possibility for significant harm to be caused in the future.

Table I.1: Significant pollution to controlled waters

Pollution of controlled waters
Under Section 78A(9) of Part 2A the term "pollution of controlled waters means the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter. The term "controlled waters" in relation to England has the same meaning as in Part 3 of the Water Resources Act 1991, except that "ground waters" does not include water contained in underground strata but above the saturation zones. (Paragraph 4.36)
Given that the Part 2A regime seeks to identify and deal with significant pollution (rather than lesser levels of pollution), the local authority should seek to focus on pollution which: (i) may be harmful to human health or the quality of aquatic ecosystems or terrestrial ecosystems directly depending on aquatic ecosystems; (ii) which may result in damage to material property; or (iii) which may impair or interfere with amenities and other legitimate uses of the environment. (Paragraph 4.37)
Significant pollution of controlled waters
Paragraph 4.38 states that "The following types of pollution should be considered to constitute significant pollution of controlled waters:
(a) Pollution equivalent to "environmental damage" to surface water or groundwater as defined by The Environmental Damage (Prevention and Remediation) Regulations 2009, but which cannot be dealt with under those Regulations.
(b) Inputs resulting in deterioration of the quality of water abstracted, or intended to be used in the future, for human consumption such that additional treatment would be required to enable that use.
(c) A breach of a statutory surface water Environment Quality Standard, either directly or via a groundwater pathway.
(d) Input of a substance into groundwater resulting in a significant and sustained upward trend in concentration of contaminants (as defined in Article 2(3) of the Groundwater Daughter Directive (2006/118/EC)5)".

Paragraph 4.39 states that "In some circumstances, the local authority may consider that the following types of pollution may constitute significant pollution: (a) significant concentrations6 of hazardous substances or non-hazardous pollutants in groundwater; or (b) significant concentrations of priority hazardous substances, priority substances or other specific polluting substances in surface water; at an appropriate, risk based compliance point. The local authority should only conclude that pollution is significant if it considers that treating the land as contaminated land would be in accordance with the broad objectives of the regime as described in Section 1 (of the Contaminated Land Statutory Guidance). This would normally mean that the authority should conclude that less serious forms of pollution are not significant. In such cases the authority should consult the Environment Agency".

The following types of circumstance should not be considered to be contaminated land on water pollution grounds:

(a) The fact that substances are merely entering water and none of the conditions for considering that significant pollution is being caused set out in paragraphs 4.38 and 4.39 above are being met.

(b) The fact that land is causing a discharge that is not discernible at a location immediately downstream or down-gradient of the land (when compared to upstream or up-gradient concentrations).

(c) Substances entering water in compliance with a discharge authorised under the Environmental Permitting Regulations.

Significant pollution of controlled waters is being caused

In deciding whether significant pollution of controlled waters is being caused, the local authority should consider that this test is only met where it is satisfied that the substances in question are continuing to enter controlled waters; or that they have already entered the waters and are likely to do so again in such a manner that past and likely future entry in effect constitutes ongoing pollution. For these purposes, the local authority should:

(a) Regard substances as having entered controlled waters where they are dissolved or suspended in those waters, or (if they are immiscible with water) they have direct contact with those waters on or beneath the surface of the water.

(b) Take the term "continuing to enter" to mean any measurable entry of the substance(s) into controlled waters additional to any which has already occurred.

(c) Take the term "likely to do so again" to mean more likely than not to occur again.

Land should not be determined as contaminated land on grounds that significant pollution of controlled waters is being caused where: (a) the relevant substance(s) are already present in controlled waters; (b) entry into controlled waters of the substance(s) from land has ceased; and (c) it is not likely that further entry will take place.

Significant Possibility of Significant Pollution of Controlled Waters

In deciding whether or not a significant possibility of significant pollution of controlled waters exists, the local authority should first understand the possibility of significant pollution of controlled waters posed by the land, and the levels of certainty/uncertainty attached to that understanding, before it goes on to decide whether or not that possibility is significant. The term "possibility of significant pollution of controlled waters" means the estimated likelihood that significant pollution of controlled waters might occur. In assessing the possibility of significant pollution of controlled waters from land, the local authority should act in accordance with the advice on risk assessment in Section 3 and the guidance in this sub-section.

In deciding whether the possibility of significant pollution of controlled waters is significant the local authority should bear in mind that Part 2A makes the decision a positive legal test. In other words, for particular land to meet the test the authority needs reasonably to believe that there is a significant possibility of such pollution, rather than to demonstrate that there is not. Before making its decision on whether a given possibility of significant pollution of controlled waters is significant, the local authority should consider: (a) The estimated likelihood that the potential significant pollution of controlled waters would become manifest; the strength of evidence underlying the estimate; and the level of uncertainty underlying the estimate. (b) The estimated impact of the potential significant pollution if it did occur. This should include consideration of whether the pollution would be likely to cause a breach of European water legislation, or make a major contribution to such a breach. (c) The estimated timescale over which the significant pollution might become manifest. (d) The authority's initial estimate of whether remediation is feasible, and if so what it would involve and the extent to which it might provide a solution to the problem; how long it would take; what benefit it would be likely to bring; and whether the benefits would outweigh the costs and any impacts on local society or the environment from taking action

Reproduced from DEFRA (2012) Contaminated Land Statutory Guidance pursuant to section 78YA of the Environmental Protection Act 1990 as amended by Section 57 of the Environment Act 1995.

Table I.2: Significant harm to human health, ecological systems and property

Relevant types of receptor	Significant harm	Significant possibility of significant harm
Human beings	The following health effects should always be considered to constitute significant harm to human health: death; life threatening diseases (eg cancers); other diseases likely to have serious impacts on health; serious injury; birth defects; and impairment of reproductive functions. Other health effects may be considered by the local authority to constitute significant harm. For example, a wide range of conditions may or may not constitute significant harm (alone or in combination) including: physical injury; gastrointestinal disturbances; respiratory tract effects; cardio-vascular effects; central nervous system effects; skin ailments; effects on organs such as the liver or kidneys; or a wide range of other health impacts. In deciding whether or not a particular form of harm is significant harm, the local authority should consider the seriousness of the	The risk posed by one or more relevant contaminant linkage(s) relating to the land comprises: (a) The estimated likelihood that significant harm might occur to an identified receptor, taking account of the current use of the land in question. (b) The estimated impact if the significant harm did occur – i.e. the nature of the harm, the seriousness of the harm to any person who might suffer it, and (where relevant) the extent of the harm in terms of how many people might suffer it. In estimating the likelihood that a specific form of significant harm might occur the local authority should, among other things, consider: (a) The estimated probability that

Relevant types of receptor	Significant harm	Significant possibility of significant harm
	harm in question: including the impact on the health, and quality of life, of any person suffering the harm; and the scale of the harm. The authority should only conclude that harm is significant if it considers that treating the land as contaminated land would be in accordance with the broad objectives of the regime as described in Section 1 of the Contaminated Land Statutory Guidance.	the significant harm might occur: (i) if the land continues to be used as it is currently being used; and (ii) where relevant, if the land were to be used in a different way (or ways) in the future having regard to the guidance on "current use" in Section 3 of the Contaminated Land Statutory Guidance. (b) The strength of evidence underlying the risk estimate. It should also consider the key assumptions on which the estimate of likelihood is based, and the level of uncertainty underlying the estimate.
Any ecological system, or living organism forming part of such a system, within a location which is: • a site of special scientific interest (under section 28 of the Wildlife and Countryside Act (WCA) 1981 (as amended) and Part 4 of the Natural Environment and Rural Communitites Act 2006 (as amended)); • a national nature reserve (under Section 35 of the WCA 1981 (as amended)); • a marine nature reserve (under Section 36 of the WCA 1981 (as amended)); • an area of special protection for birds (under Section 3 of the WCA 1981 (as amended)); • a "European site" within the meaning of regulation 8 of the Conservation of Habitats and Species Regulations 2010 (as amended); • any habitat or site afforded policy protection under Section 11 of The National Planning Policy Framework (NPPF) on conserving and enhancing the natural environment (i.e. possible Special Areas of Conservation, potential Special	The following types of harm should be considered to be significant harm: • harm which results in an irreversible adverse change, or in some other substantial adverse change, in the functioning of the ecological system within any substantial part of that location; or • harm which significantly affects any species of special interest within that location and which endangers the long-term maintenance of the population of that species at that location. In the case of European sites, harm should also be considered to be significant harm if it endangers the favourable conservation status of natural habitats at such locations or species typically found there. In deciding what constitutes such harm, the local authority should have regard to the advice of Natural England and to the requirements of the Conservation of Habitats and Species Regulations 2010 (as amended).	Conditions would exist for considering that a significant possibility of significant harm exists to a relevant ecological receptor where the local authority considers that: • significant harm of that description is more likely than not to result from the contaminant linkage in question; or • there is a reasonable possibility of significant harm of that description being caused, and if that harm were to occur, it would result in such a degree of damage to features of special interest at the location in question that they would be beyond any practicable possibility of restoration. Any assessment made for these purposes should take into account relevant information for that type of contaminant linkage, particularly in relation to the ecotoxicological effects of the contaminant.

Relevant types of receptor	Significant harm	Significant possibility of significant harm
Protection Areas and listed or proposed Ramsar sites); or • any nature reserve established under Section 21 of the National Parks and Access to the Countryside Act 1949.		
Property in the form of: • crops, including timber • produce grown domestically, or on allotments, for consumption • livestock • other owned or domesticated animals; • wild animals which are the subject of shooting or fishing rights.	For crops, a substantial diminution in yield or other substantial loss in their value resulting from death, disease or other physical damage. For domestic pets, death, serious disease or serious physical damage. For other property in this category, a substantial loss in its value resulting from death, disease or other serious physical damage. The local authority should regard a substantial loss in value as occurring only when a substantial proportion of the animals or crops are dead or otherwise no longer fit for their intended purpose. Food should be regarded as being no longer fit for purpose when it fails to comply with the provisions of the Food Safety Act 1990. Where a diminution in yield or loss in value is caused by a pollutant linkage, a 20% diminution or loss should be regarded as a benchmark for what constitutes a substantial diminution or loss. In the Guidance states that this description of significant harm is referred to as an "animal or crop effect".	Conditions would exist for considering that a significant possibility of significant harm exists to the relevant types of receptor where the local authority considers that significant harm is more likely than not to result from the contaminant linkage in question, taking into account relevant information for that type of contaminant linkage, particularly in relation to the ecotoxicological effects of the contaminant.
Property in the form of buildings. For this purpose 'building' means any structure or erection and any part of a building, including any part below ground level, but does not include plant or machinery comprised in a building, or buried services such as sewers, water pipes or electricity cables.	Structural failure, substantial damage or substantial interference with any right of occupation. The local authority should regard substantial damage or substantial interference as occurring when any part of the building ceases to be capable of being used for the purpose for which it is or was intended. In the case of a scheduled Ancient Monument, substantial damage should be regarded as occurring when the damage significantly impairs the historic, architectural, traditional, artistic or archaeological interest by reason of which the monument was scheduled.	Conditions would exist for considering that a significant possibility of significant harm exists to the relevant types of receptor where the local authority considers that significant harm is more likely than not to result from the contaminant linkage in question during the expected economic life of the building (or in the case of a scheduled Ancient Monument the foreseeable future), taking into account relevant information for that type of contaminant linkage.

Relevant types of receptor	Significant harm	Significant possibility of significant harm
	The Guidance states that this description of significant harm is referred to as a 'building effect'.	

Reproduced from DEFRA (2012) Contaminated Land Statutory Guidance pursuant to section 78YA of the Environmental Protection Act 1990 as amended by Section 57 of the Environment Act 1995.

Appendix J Generic Assessment Criteria

Human Health Generic Assessment Criteria

Background

In order to be able to make inference on whether the results obtained during the site investigation (e.g. chemical concentrations in soils, waters and gas) point to the presence of a potential hazard to human health, it is necessary to distinguish between the results, reflecting background and/or insignificantly elevated levels of contamination (i.e. with negligible potential to cause harm or pollution) and the results with significantly elevated concentrations (i.e. with significant potential to cause harm or pollution).

The approach to risk assessment with respect to risks to human health from contaminated land in the UK is set out in the publication Model Procedures for the Management of Land Contamination (CLR11) Environment Agency (2004).

This sets out a tiered approach:

- Preliminary Risk Assessment (e.g. establishing potential pollutant linkages);
- Generic Quantitative Risk Assessment (GQRA) (e.g. comparison of site contaminant concentrations against generic standards and compliance criteria e.g. Soil Guideline Values (SGV) or other Generic Assessment Criteria including an assessment of risk using the source pathway target model); and
- Detailed Quantitative Risk Assessment (DQRA) (e.g. the comparison of contaminant concentrations against site specific assessment criteria).

Preliminary Risk Assessment

This typically encompasses a desk based generation of a conceptual model to establish the potential pollutant linkages associated with the site and any proposed development. Works would typically involve:

- Evaluation of the potential sources of contamination on the site and in the locality and from both a current and historical perspective
- Statutory Consultation;
- Evaluation of a sites geology, hydrology and hydrogeology;
- Site inspection;
- Additional pertinent information as necessary on a site by site basis.

Where works indicate the presence of a potential pollutant linkage further evaluation and potentially site investigation works are necessary to determine the significance of the linkage.

Generic Quantitative Risk Assessment (GQRA)

In August 2008 the Environment Agency (EA) and Department of Environment Food and Rural Affairs (DEFRA) announced the withdrawal of the Contaminated Land Reports CLR7 – 10, CLEA UK (beta) and existing SGV reports as they no-longer fully reflected the revised approach to human health risk assessment.

New partial guidance (in particular Science Reports SR2, SR3 and SR7) and new risk assessment tools (CLEA model version v1.04, v1.05 and currently v1.06) were published in 2009 and these allow environmental practitioners to derive generic and site specific Soil Assessment Criteria (GAC and SAC).

Soil Guideline Values (SGVs)

The EA and DEFRA updated the TOX reports and Soil Guideline Values (SGVs) to reflect the guidance documents published in 2009. SGVs for arsenic, cadmium, nickel, mercury, selenium, BTEX compounds (benzene, toluene, ethylbenzene and xylenes), dioxins, furans and dioxin like PCBs and phenol have been made available.

Since publishing the revised SGVs the CLEA model was updated to version v1.06. The Environment Agency has however confirmed that v1.05 has only a "minor effect on assessment criteria calculated using the CLEA software 1.04" and consequently the GACs derived are considered to remain valid. Environment Agency SGVs generated using v1.04 have also not been updated. Software version v1.06 is identical to v1.05 with some password protection enhancements that in no way affect the GAC values generated.

Owing to the scientific advances since 2009 and in particular toxicological research outputs, less significance is now placed on the SGVs in the hierarchy outlined below.

Category 4 Screening Levels (C4SLs)

Category 4 Screening Levels were generated by Contaminated Land: Applications in Real Environments (CL:AIRE) on behalf of DEFRA and made available to the public in April 2014. Category 4 Screening Levels were derived in response to policy changes outlined in the recently revised Statutory Guidance (SG) for Part 2A of the Environmental Protection Act 1990 (Part 2A). Part 2A was originally introduced to ensure that the risks from land contamination to human health, property and the environment are managed appropriately, with the revised SG being designed to address concerns regarding its real-world application. The revised SG presents a new four category system for classifying land under Part 2A, ranging from Category 4, where the level of risk posed is acceptably low, to Category 1, where the level of risk is clearly unacceptable.

The document SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document (March 2014) states that:

The Impact Assessment that accompanied the revised Part 2A Statutory Guidance identified a potential role for new 'Category 4 Screening Levels' in providing a simple test for deciding when land is suitable for use and definitely not contaminated land. It was envisaged that these new screening levels would allow 'low-risk' land to be dismissed from the need for further risk assessment more quickly and easily and allow regulators to focus efforts on the highest-risk land. The C4SLs were proposed to be more pragmatic (whilst still strongly precautionary) compared to existing generic screening levels. It is anticipated that, where they exist, C4SLs will be used as generic screening criteria that can be used within a GQRA, albeit describing a higher level of risk than the currently or previously available SGVs.

Suitable For Use Screening Levels (S4USLs)

In January 2015, Land Quality Management (LQM) and the Chartered Institute of Environmental Health (CIEH) have published updated screening criteria that were derived in line with UK guidance on risk assessment (SR2 and SR3). The resultant screening criteria reflect the industries greater knowledge of the relevant toxicology and further consideration of exposure scenarios as set out in SP1010.

Waterman's Generic Assessment Criteria (GACs)

Waterman have used the following hierarchy for the generic assessment of soils to evaluate Human Health.

- Published Category 4 Screening Values (C4SLs) derived by CL:AIRE on behalf of DEFRA; or in their absence;
- Suitable 4 Use Screening Levels (S4USLs) derived by LQM/CIEH; or in their absence;
- Published Soil Guideline Values (SGVs);
- GAC prepared in accordance with the CLEA v1.04 / v1.06 model by authoritative bodies (e.g. Contaminated Land Applications in Real Environments (CL:AIRE) 2009; and
- Waterman in-house GAC prepared in accordance with the CLEA V1.06 model and associated documents.

Tabulated values of the GACs used are presented overleaf. The references of the sources quoted in the table are:-

- Environment Agency, 2009. CLEA Software, version 1.06;
- DEFRA, Environment Agency, 2004. Model Procedures for the Management of Land Contamination, Contaminated Land Report 11;
- DEFRA, 2014, SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document and appendices;
- LQM / CIEH, 2015. The LQM/CIEH S4ULs for Human Health Risk Assessment;
- Environment Agency, 2009. Human health toxicological assessment of contaminants in soil. Report SC050021/SR2;
- Environment Agency, 2009. Updated technical background to the CLEA model. Report SC050021/SR3;
- Environment Agency, 2008. Compilation of chemical data for priority organic pollutants for derivation of Soil Guideline Values. Report SC050021/SR7; and
- EIC / CL:AIRE, 2010. Soil generic assessment criteria for human health risk assessment.

Detailed Quantitative Risk Assessment (DQRA)

Detailed Quantitative Risk Assessments are undertaken on a site specific basis and full details of the alterations to the CLEA model and generic land use scenarios will be described within the specific reports.

Table J.1: Generic Quantitative Risk Assessment Criteria - Residential end use without plant uptake, 1% soil organic matter

Determinant	Units	Value	Source
Arsenic	mg/kg	40	DEFRA C4SLs
Beryllium	mg/kg	550	LQM S4ULs 2015
Boron (Water Soluble)	mg/kg	1300	LQM S4ULs 2015
Cadmium	mg/kg	1.7	DEFRA C4SLs
Chromium (Total)	mg/kg	11000	LQM S4ULs 2015
Chromium (VI)	mg/kg	150	DEFRA C4SLs
Copper	mg/kg	910	LQM S4ULs 2015
Lead	mg/kg	21	DEFRA C4SLs
Mercury	mg/kg	7100	LQM S4ULs 2015
Nickel	mg/kg	310	LQM S4ULs 2015
Selenium	mg/kg	1.2	LQM S4ULs 2015
Vanadium*	mg/kg	670	LQM S4ULs 2015
Zinc	mg/kg	180	LQM S4ULs 2015
Cyanide (Free)	mg/kg	430	Waterman GAC - CLEA v1.06
Complex Cyanide	mg/kg	1200	Waterman GAC - CLEA v1.06
Thiocyanate	mg/kg	40000	Waterman GAC - CLEA v1.06
Aliphatic EC5 - EC6	mg/kg		LQM S4ULs 2015
Aliphatic EC6 - EC8	mg/kg		LQM S4ULs 2015
Aliphatic EC8-EC10	mg/kg		LQM S4ULs 2015
Aliphatic EC10-EC12	mg/kg	42	LQM S4ULs 2015
Aliphatic EC12-EC16	mg/kg	100	LQM S4ULs 2015
Aliphatic EC16-EC35	mg/kg	27	LQM S4ULs 2015
Aliphatic EC35-EC44	mg/kg	130	LQM S4ULs 2015
Aromatic C5-C7	mg/kg	1100	LQM S4ULs 2015
Aromatic C7-C8	mg/kg	65000	LQM S4ULs 2015
Aromatic C8-C10	mg/kg	65000	LQM S4ULs 2015
Aromatic C10-C12	mg/kg	370	LQM S4ULs 2015

Determinant	Units	Value	Source
Aromatic C12-C16	mg/kg	860	LQM S4ULs 2015
Aromatic C16-C21	mg/kg	47	LQM S4ULs 2015
Aromatic C21-C35	mg/kg	250	LQM S4ULs 2015
Aromatic C35-C44	mg/kg	1800	LQM S4ULs 2015
Benzene	mg/kg	1900	LQM S4ULs 2015
Toluene	mg/kg	1900	LQM S4ULs 2015
Ethyl Benzene	mg/kg	1900	LQM S4ULs 2015
Xylene - o	mg/kg	0.38	LQM S4ULs 2015
Xylene - m	mg/kg	880	LQM S4ULs 2015
Xylene - p	mg/kg	83	LQM S4ULs 2015
MTBE (Methyl tert-butyl ether)	mg/kg	82	CL:AIRE 2009
Naphthalene	mg/kg	88	LQM S4ULs 2015
Acenaphthylene	mg/kg	79	LQM S4ULs 2015
Acenaphthene	mg/kg		LQM S4ULs 2015
Fluorene	mg/kg	2.3	LQM S4ULs 2015
Phenanthrene	mg/kg	2900	LQM S4ULs 2015
Anthracene	mg/kg	3000	LQM S4ULs 2015
Fluoranthene	mg/kg	2800	LQM S4ULs 2015
Pyrene	mg/kg	1300	LQM S4ULs 2015
Benzo(a)anthracene	mg/kg	31000	LQM S4ULs 2015
Chrysene	mg/kg	1500	LQM S4ULs 2015
Benzo(b)fluoranthene	mg/kg	3700	LQM S4ULs 2015
Benzo(k)fluoranthene	mg/kg	11	LQM S4ULs 2015
Benzo(a)pyrene	mg/kg	30	LQM S4ULs 2015
Indeno(1,2,3-cd)pyrene	mg/kg	3.9	LQM S4ULs 2015
Di-benzo(a.h.)anthracene	mg/kg	110	LQM S4ULs 2015
Benzo(g.h.i.) Perylene	mg/kg	3.2	LQM S4ULs 2015
Phenol	mg/kg	45	LQM S4ULs 2015
Pentachlorophenol (PCP)	mg/kg	0.31	LQM S4ULs 2015
1,1,2,2 Tetrachloroethane	mg/kg	360	LQM S4ULs 2015

Determinant	Units	Value	Source
1,1,1,2 Tetrachloroethane	mg/kg	750	LQM S4ULs 2015
1,1,1 Trichloroethane	mg/kg	27	LQM S4ULs 2015
Trichloroethene	mg/kg	3.9	LQM S4ULs 2015
Tetrachloromethane (Carbon Tetrachloride)	mg/kg	1.5	LQM S4ULs 2015
1,2- Dichloroethane	mg/kg	9	LQM S4ULs 2015
Chloroethene (Vinyl chloride)	mg/kg	0.017	LQM S4ULs 2015
Trichloroethene	mg/kg	0.026	LQM S4ULs 2015
Tetrachloroethene	mg/kg	0.0092	LQM S4ULs 2015
Trichloromethane (Chloroform)	mg/kg	0.00077	LQM S4ULs 2015
Isopropylbenzene	mg/kg	0.017	CL:AIRE 2009
Propylbenzene	mg/kg	0.18	CL:AIRE 2009
Styrene	mg/kg	1.2	CL:AIRE 2009
Bromobenzene	mg/kg		CL:AIRE 2009
1,1,2 Trichloroethane	mg/kg	12	CL:AIRE 2009
1,1-Dichloroethane	mg/kg	40	CL:AIRE 2009
1,1-Dichloroethene	mg/kg	35	CL:AIRE 2009
1,2,4-Trimethylbenzene	mg/kg	0.91	CL:AIRE 2009
1,2-Dichloropropane	mg/kg	0.88	CL:AIRE 2009
2-Chloronaphthalene	mg/kg	2.5	CL:AIRE 2009
Bromodichloromethane	mg/kg	0.23	CL:AIRE 2009
Bromoform	mg/kg	0.41	CL:AIRE 2009
Chloroethane	mg/kg	0.024	CL:AIRE 2009
Chloromethane	mg/kg	3.8	CL:AIRE 2009
Cis 1,2 Dichloroethene	mg/kg	0.019	CL:AIRE 2009
Dichloromethane	mg/kg	5.2	CL:AIRE 2009
Hexachloroethane	mg/kg	8.4	CL:AIRE 2009
Trans 1,2 Dichloroethene	mg/kg	0.0085	CL:AIRE 2009
Bis (2-ethylhexyl) phthalate	mg/kg	0.12	CL:AIRE 2009
Butyl benzyl phthalate	mg/kg	2.1	CL:AIRE 2009
Diethyl Phthalate	mg/kg	0.22	CL:AIRE 2009

Determinant	Units	Value	Source
Di-n-butyl phthalate	mg/kg	0.19	CL:AIRE 2009
Di-n-octyl phthalate	mg/kg	2700	CL:AIRE 2009
Biphenyl	mg/kg	42000	CL:AIRE 2009
2,4-Dinitrotoluene	mg/kg	1800	CL:AIRE 2009
2,6-Dinitrotoluene	mg/kg	450	CL:AIRE 2009
Tributyl tin oxide	mg/kg	3400	CL:AIRE 2009

Soil Contamination – Risk of Harm to Property

Structures and Underground Services

Buried Concrete

BRE Special Digest 1 (2005), 3rd Edition, entitled *Concrete in aggressive ground*, provides guidance on the specification for concrete for installation in natural ground and in brownfield locations. The procedures given for the ground assessment and concrete specification cover the fairly common occurrences of sulfates, sulfides and acids, and the more rarely occurring aggressive carbon dioxide found in some ground and surface waters, which affects concrete foundations and sub-structures. It gives procedures for specification of concrete and applies to both buildings and civil engineering construction.

Water Supply Pipes

Guidance is provided in the UK Water Industry Research (UKWIR) report entitled *"Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites"* Report Ref. No. 10/WM/03/21, 2010.

Guidance is provided in the November 2010 Q&A Update and the Questions and Answers Sheet dated 4 May 2011 included at the back of the UKWIR report. Item 3 has been reproduced here:

Table J.2: UKWIR report guidance regarding use of barrier water pipes

Item	Question	Answer
3	Following the flow chart in Figure 1.1, **would it be acceptable to not undertake a site investigation and specify the use of barrier pipes** (these seem to be suitable for all conditions)? Would it be acceptable to adopt the blanket approach of always using barrier pipes at Brownfield sites, negating the need for a desk study or intrusive investigation?	The UKWIR project steering group decided that barrier pipes would provide sufficient protection for the supply of drinking water in all Brownfield site conditions. It is therefore reasonable to expect that water companies will accept the use of barrier pipe in all situations as a blanket approach

Soil Contamination – Risk of Combustion

The combustibility of soils is a complex function of soil type, energy content, and availability of oxygen. The Building Research Establishment (BRE) has published guidance based on Calorific Value (i.e. energy content, alone), namely *IP 2/87, Fire and explosion hazards associated with the redevelopment of contaminated land*. This document provides a level below which combustibility is unlikely (2MJ/kg) and a level above which combustibility is likely (10MJ/kg). In the range between these two values combustibility is uncertain. Therefore, where the lower value is exceeded, the other key factors mentioned above need to be considered.

Soil Contamination – Risk of Harm to Vegetation

Where there is topsoil present on Site and it is being considered for reuse in landscaped areas then it needs to be assessed for its suitability for use by an appropriately qualified specialist. Topsoil can be both naturally-occurring and manufactured. The requirements for topsoil that is to be reused on site are specified in BS3882:2007 and cover a range of properties including texture, organic matter content, grading, pH, nutrients and phytotoxic contaminants. The specification for phytotoxic contaminants is reproduced in the table below:

Table J.3: Phytotoxic Contaminants (by soil pH) for Topsoil

Contaminant*	**pH**		
	<6	**6.0 to 7.0**	**>7**
Zinc (Nitric acid extractable**)	<200mg/kg	<200mg/kg	<300mg/kg
Copper (Nitric acid extractable**)	<100mg/kg	<135mg/kg	<200mg/kg
Nickel (Nitric acid extractable**)	<60mg/kg	<75mg/kg	<110mg.kg

Footnotes: * The lower of the Generic Assessment Criteria for chemical contaminants (human health and the environment) and phytotoxicity shall be used for topsoil

** The method of testing is given in Annex D to BS3882:2007 Specification for topsoil and requirements for use.

The risk to human health and the environment needs to be considered as well as phytotoxicity and this will be carried out using the Generic Assessment Criteria selected for these risks as described elsewhere in this appendix and this report.

In order to assess the suitability of topsoil to be reused the full range of testing specified needs to be carried out and assessed by an appropriately qualified specialist.

Controlled Waters Generic Assessment Criteria

The Screening Values adopted by Waterman for ground and surface water quality have been selected on the basis of the water quality standards that apply at the controlled water receptor considered to be at potential risk of harm.

Surface Waters

The Water Framework Directive (WFD) (2000/60/EC) was originally introduced in 2000, however a raft of Daughter Directives have been brought in to address the objectives the WFD originally set out. Over time the WFD and its Daughter Directives have gradually replaced number of the existing Directives including the Dangerous Substances Directive (DSD) and Surface Water Directive (SWD).

The WFD identifies 'Priority' and 'Priority Hazardous Substances', to which Environmental Quality Standards (EQS) have been determined. The WFD EQS do not provide a full complement of applicable values to adopt. In the absence of an EQS, values under the replaced Surface Water Directive have been used as a guide.

Groundwater

The WFD, to date, have not set threshold values for groundwater on a river basin basis. Therefore, when assessing groundwater quality where no human health receptors or other aquifers are identified, Waterman GAC are used. These GAC are derived from a combination of available standards derived from the Protection of Aquatic Life (UK) values, Protection of Surface Water Quality (UK) values, Groundwater Framework Directive Test 2 (Groundwater Impacts on Surface Waters Threshold Values) and Protection of Inland Freshwaters (EU).

Table J.4 - Screening Values – Protection of Inland Freshwaters (UK Standard) and >100mg/l $CaCO_3$

Determinant	Units	Value
Copper (Dissolved)	112.0000	ug/l
Zinc (Dissolved)	500.0000	ug/l
Ammonia	0.2500	mg/l
Biological Oxygen Demand	2.5000	mg/l

Table J.5 - Screening Values – Waterman criteria for groundwater with an ecological receptor

Determinant	Protection of Surface Water Quality (UK)	Protection of Aquatic Life (UK)	Groundwater Framework Directive Test 2 (Groundwater Impacts on Surface Waters Threshold Values)	Protection of Inland Freshwaters (EU)
Arsenic (Dissolved)	50ug/l			
Boron (Dissolved)		2000ug/l		
Cadmium (Dissolved)	0.45ug/l			
Chromium (Total)		3.4ug/l		
Chromium (Hexavalent)		3.4ug/l		
Copper (Dissolved)	28ug/l			
Iron		1000ug/l		
Lead (Dissolved)	7.2ug/l			
Mercury (Dissolved)	0.07ug/l			
Nickel (Dissolved)	20ug/l			
Vanadium		20ug/l		
Zinc (Dissolved)	125ug/l			
Cyanide (free)	0.001ug/l			
Total Sulphur as Sulphate		400mg/l		
Chloride as Cl w		250mg/l		
Ammonia	0.2mg/l			
Benzene	50ug/l			
Toluene	50ug/l			
Ethyl Benzene		200ug/l		
Xylenes	0.03ug/l			
Phenol	7.7ug/l			
Phosphate as P			536ug/l	
Biological Oxygen Demand				2.5mg/l
Phenol	7.7ug/l			

Determinant	Protection of Surface Water Quality (UK)	Protection of Aquatic Life (UK)	Groundwater Framework Directive Test 2 (Groundwater Impacts on Surface Waters Threshold Values)	Protection of Inland Freshwaters (EU)
2-Chlorophenol	0.05mg/l			
1,3-Dichlorobenzene		0.2mg/l		
1,4-Dichlorobenzene		0.2mg/l		
1,2-Dichlorobenzene		0.2mg/l		
2-Methylphenol		0.3mg/l		
2,4-Dichlorophenol	0.02mg/l			
Naphthalene	0.024mg/l			
4-Chlorophenol		0.25mg/l		
Hexachlorobutadiene	0.0006mg/l			
4-Chloro-3-methylphenol	0.04mg/l			
Biphenyl	0.025mg/l			
Diethylphthalate		1mg/l		
Hexachlorobenzene	0.00005mg/l			
Pentachlorophenol	0.001mg/l			
Anthracene	0.0004mg/l			
Fluoranthene	0.001mg/l			
bis(2-Ethylhexyl)phthalate	0.0013mg/l			
Benzo[b]fluoranthene	0.00003mg/l			
Benzo[k]fluoranthene	0.00003mg/l			
Benzo[a]pyrene	0.00005mg/l			
Indeno[1,2,3-cd]pyrene	0.000002mg/l			
Benzo[g,h,i]perylene	0.000002mg/l			
m/p-Xylene	0.03mg/l			
o-Xylene	0.03mg/l			
Naphthalene	2.4ug/l			
Anthracene	0.4ug/l			
Fluoranthene	1.0ug/l			
Benzo(b)fluoranthene	0.03ug/l			
Benzo(k)fluoranthene	0.03ug/l			
Benzo(a)pyrene	0.05ug/l			
Indeno(1,2,3-cd)pyrene	0.002ug/l			
Chloroform	2.5ug/l			
1,1,1-Trichloroethane	100.0ug/l			

Determinant	Protection of Surface Water Quality (UK)	Protection of Aquatic Life (UK)	Groundwater Framework Directive Test 2 (Groundwater Impacts on Surface Waters Threshold Values)	Protection of Inland Freshwaters (EU)
Carbon Tetrachloride	12.0ug/l			
Benzene	50.0ug/l			
1,2-Dichloroethane	10.0ug/l			
Trichloroethene	10.0ug/l			
Toluene	50.0ug/l			
1,1,2-Trichloroethane	400.0ug/l			
Tetrachloroethene	10.0ug/l			
Ethylbenzene		200.0ug/l		
m and p-Xylene	30.0ug/l			
o-Xylene	30.0ug/l			
Styrene	500.0ug/l			
Hexachlorobutadiene	0.6ug/l			
Naphthalene	2.4ug/l			

Ground Gas and Volatile Organic Compounds Generic Assessment Criteria

Ground Gas

Introduction

Under Part IIA of the Environmental Protection Act 1990, Building Regulations Approved Document C 2004, and the NPPF there is a requirement to ensure ground gases from anthropogenic and natural sources are considered on a risk assessment basis. The most common gases assessed with respect to development are methane and carbon dioxide. Methane forms a potentially explosive mixture when mixed with air within certain concentration limits, known as the 'explosive range'. The Lower Explosive Limit (LEL) for methane is 5%. Carbon dioxide is a dense gas, capable of accumulating in confined spaces creating a potential asphyxiation hazard. The Occupational Exposure Limit (OEL) for a short term exposure to carbon dioxide is 1.5% over a 15-minute period. Both gases when present at high concentrations can act as simple asphyxiates by reducing the oxygen content by dilution.

Potential methane and carbon dioxide sources include;

- Land filled wastes;
- Degradable material present within the soil matrix of Made Ground;
- Peat and organic matter within alluvial deposits;
- Migrating landfill leachate;
- Foundry sands;
- Sewage sludge, dung pits/heaps;
- Burial grounds;

- Spilled or leaked petroleum hydrocarbons;
- Silt present in water bodies;
- Natural deposits, including chalk and coal measures; and
- Leaks of main gas and sewer gas.

Other gases that may be present on sites at significant levels include hydrogen sulphide, carbon monoxide, and hydrogen cyanide. These gases should be monitored in addition to oxygen, methane, and carbon dioxide, where potential for these gases to be present at unacceptable levels exist.

Guidance

Current UK guidance has been produced by CIRIA and the British Standards Institution (BSI). The following documents have been prepared to date;

- CIRIA C665 – Assessing the risks posed by hazardous ground gases to buildings, 2007;
  - Aims to consolidate good practice in investigation, facilitate the collection of relevant data, instigate appropriate monitoring programmes, all in a risk based approach to gas contaminated land.
- BS8576 – Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs), 2013;
  - Provides guidance on the monitoring and sampling of ground gases, including methane, carbon dioxide, oxygen, and VOCs. Guidance is not provided on the risk evaluation and site characterisation, the selection and design of protective measures, verification of protective measures, sampling of atmospheric gases, and the monitoring and sampling of radon.
- CIRIA C735 – Good practice on the testing and verification of protection systems for buildings against hazardous ground gases, 2014; and
  - Sets out the good practice guidance for the designer, installer, verifier, and regulator on the verification and integrity testing of gas protection systems.
- BS8485 – Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings, 2015.
  - Provides guidance on the appropriate ground gas parameters that can be used to identify a range of possible design solutions for protection against methane and carbon dioxide on a development.

Both the CIRIA and BSI publications have been prepared to be generally consistent with CLR11, *Model Procedures for the management of land contamination,* (DEFRA and the Environment Agency, 2004a) and follow a step by step approach summarised below:-

1. Desk Study and Site Walkover
2. Development of a Preliminary Conceptual Model and Risk Assessment
3. Site Investigation (If deemed necessary from stage 2)
4. Risk Assessment and Site Characterisation
5. Recommendation and Mitigation

Where, the preliminary conceptual model has deemed further investigation necessary to characterise the ground gas regime, an appropriate site investigation and monitoring regime is designed and undertaken.

In-depth guidance to assist in the investigation design is provided within C665 and BS8576, which describes intrusive investigation techniques and provides guidance on selecting the number and location of monitoring wells based on the site specific conceptual model.

Waterman has generally followed the approach recommended in CIRIA C665, BS8576, and BS8485 with respect to characterising a site and determining the levels of gas protection methods required. Where deviations from the methodology detailed within above guidance occurs, the reasoning behind the deviation and implication of the analysis of the results has been included within the report.

Risk Assessment

In accordance with C665, to assess the ground gas regime at a site, the ground gas monitoring data should be assessed by determining the Gas Screening Value (GSV) (l/hr). BS8485 details further guidance on which GSV can be adopted based on a number of modifiers.

GSV = (Measured Maximum CO_2 or CH_4 Gas Concentration (%) / 100) x Maximum Measured Gas Flow Rate from boreholes (l/hr)

Both C665 and BS8485 dictate where the gas flow has been measured as less than the detection limit of the instrument used (typically <0.1l/hr), the limit of detection of the instrumented should be used as the gas flow rate.

As per the guidance given in BS8485 where a negative flow has been recorded, and there is an absence of a positive flow, a qualitative assessment has been undertaken into whether under different temporal conditions, a similar positive flow could occur. When the cause for negative flow is reasonably understood, it has been possible to rule out a corresponding credible positive flow, and discount the negative flow.

The GSV is used to classify the site, subject to the proposed end use of the site, falling into either Situation A or Situation B;

- Situation A – All development types except low rise housing with a ventilated underfloor void (150mm)
- Situation B - Low rise housing with a ventilated underfloor void (minimum 150mm)

Situation A – For All Development Types except Low Rise Housing with a ventilated underfloor void (150mm)

For Situation A, the Modified Wilson and Card classification system is used. This system attributes a Characteristic Situation (CS) value to the site/zone depending upon the calculated GSV. When attributing a CS, additional factors including the maximum recorded gas concentration and the maximum recorded gas flow rate should also be taken into account and may result in an increase in the CS value. The table below, outlines the CS values, associated GSV’s, and additional factors which must be taken into account.

Characteristic Situation (CIRIA 149)	Risk Classification	Gas screening value (CH_4 CO_2) l/hr	Additional Factors	Typical source of generation
1	**Very low risk**	**<0.07**	Typically methane ≤1% and / or carbon dioxide ≤5%. Otherwise consider increase to CS 2.	Natural soils with low organic content 'Typical' Made Ground
2	**Low risk**	**<0.7**	Borehole air flow rate not to exceed 70 l/hr. Otherwise consider increase to CS 3.	Natural soil, high peat/organic content. 'Typical' Made Ground
3	**Moderate risk**	**<3.5**		Old landfill, inert waste, mineworking flooded
4	**Moderate to high risk**	**<15**	Quantitative risk assessment required to evaluate scope of protective measures.	Mineworking – susceptible to flooding, completed landfill (WMP 26B criteria)
5	**High risk**	**<70**		Mineworking unflooded inactive with shallow workings near surface
6	**Very High risk**	**>70**		Recent landfill site

Notes:
1) Gas screening value: litres of gas / hour is calculated by multiplying the gas concentration (%) by the measured borehole flow rate (l/hr)
2) Source of gas and generation potential/performance must be identified.
3) If there is no detectable flow use the limit of detection of the instrument.

Following determination of the site's CS, the requirements and scope of gas protection measures can be proscribed based on the guidance given in BS8485:2015.

Situation A - Ground gas protection measures: BS8485-2015

BS8485 details the required ground gas protection measures for a Situation A development using a points based system, whereby a certain number of points must be accumulated through the installation of various protection measures to mitigate the risk to structures or buildings from the accumulation of methane or carbon dioxide. The number of points assigned will be dependent on the building type, and the CS.

Building types are separated into four distinct scenarios.

Modifier	Building Type			
	Type A	Type B	Type C	Type D
Ownership	Private	Private or commercial/public, possible multiple	Commercial/public	Commercial/industrial
Control (change of use, structural alterations, ventilation)	None	Some but not all	Full	Full
Room sizes	Small	Small/medium	Small to large	Large industrial/retail park style

Further details on the description of the building types, along with examples are included in BS8485.

Following identification of the appropriate Building Type and CS, the minimum gas protection score can be determined through the use of the following table.

Characteristic Situation	Minimum Gas Protection Score			
	Type A	Type B	Type C	Type D
1	0	0	0	0
2	3.5	3.5	2.5	1.5
3	4.5	4	3	2.5
4	6.5[A]	5.5[A]	4.5	3.5
5	N/A[B]	6.5[A]	5.5	4.5
6	N/A[B]	N/A[B]	7.5	6.5

[A]Residential buildings should not be built on CS4 or higher sites unless the type of construction or site circumstances allow additional levels of protection to be incorporated, e.g. high performance ventilation or pathway intervention measures, and an associated sustainable system of management of maintenance of the gas control system e.g. in Institutional and/or fully serviced contractual situations.

[B]The gas hazard is too high for this empirical method to be used to define the gas protection measures.

Post determination of the minimum gas protection score, a combination of two or more of the following three types of protection measures should be used to achieve the score;

- The structural barrier of the floor slab, or of the basement slab and walls if a basement is present;
- Ventilation measures; and
- Gas resistant measures.

Through combining at least two ground gas protection measures, the lack of redundancy in the use of a single protection measure approach is negated. The ground gas protection measures should work independently and collaboratively.

The tables below detail the specific ground gas protection measures and their associated scores.

Structural Barrier

Floor and substructure design	Score[A]
Precast suspended segmental subfloor (I.e. beam and block)	0
Cast in-situ ground bearing floor slab (with only nominal mesh reinforcement)	0.5
Cast in-situ monolithic ground bearing raft or reinforced cast in-situ suspended floor slab with minimal penetrations	1 or 1.5[B]
Basement floor and slab conforming to BS8102:2009, Grade 2 waterproofing[C]	2
Basement floor and walls conforming to BS1802:2009, Grade 3 waterproofing[C]	2.5

[A]The scores are conditional on breaches of floor slabs, etc., being effectively sealed.

[B]To achieve a score of 1.5 the raft or suspended slab should be well reinforced to control cracking and have minimal penetrations cast.

[C]The score is conditional on the waterproofing not being based on the use of a geosynthetic clay liner waterproofing product.

Ventilation Measures

Protection element/system	Score	Comments
Pressure relief pathway (usually formed of low fines gravel or with a thin geocomposite blanket or strips terminating in a gravel trench external to the building.	0.5	Whenever possible a pressure relief pathway (as a minimum) should be installed in all gas protection measure systems. If the layer has a low permeability and/or is not terminated in a venting trench or similar, then the score is zero.
Passive sub floor dispersal layer: Very good performance: Good performance: Media used to provide the dispersal layer are; • Clear void; • Polystyrene void former blanket; • Geocomposite void former blanket • No-fines gravel layer with gas drains; • No-fines gravel layer	 2.5 1.5	The ventilation effectiveness of different media depends on a number of different factors including the transmissivity of the medium, the width of the building, the side ventilation spacing, and type and thickness of the layer. The selected score should be assigned taking into account the recommendations in Annex B of BS8485 2015. Passive ventilation should be designed to meet at least good performance, see in Annex B of BS8485 2015. .
Active dispersal layer, usually comprising fans with active abstraction (suction) from a subfloor dilution layer, with roof level vents. The dilution layer may compromise a clear void or be formed of geocomposite or polystyrene void formers.	1.5 to 2.5	This system relies on continues serviceability of the pumps, therefore alarm and response systems should be in place. There should be robust management systems in place to ensure the

		continued maintenance of the system including pumps and vents. Active ventilation should always be designed to meet at least good performance as described in in Annex B of BS8485 2015.
Active positive pressurization by the creation of a blanket of external fresh air beneath the floor slabs by pumps supplying air to points across the central footprint of the building into a permeable layer, usually formed of a thin geocomposite blanket.	1.5 to 2.5	This system relies on continues serviceability of the pumps, therefore alarm and response systems should be in place. The score assigned should be based on the efficient coverage of the building footprint and the redundancy of the system. Active ventilation should always be designed to meet at least good performance.
Ventilated car park (floor slab of occupied part of the building under consideration is underlain by a basement or undercroft car park).	4	Assumes that the car fumes is vented to deal with exhaust fumes designed to *Buildings Regulations 2000, Approved Document F.*

It should be noted that for Type A buildings Active ventilation systems are inappropriate.

Membrane

Protection element/system	Score	Comments
Gas resistant membrane meeting all of the following criteria; • Sufficiently impervious to the gases with a methane gas transmission rate <40ml/day/m²/atm (average) for sheet and joints (tested in accordance with BSO ISO 15105-1 manometric method); • Sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas emissions; • Sufficiently strong to withstand in-service stresses (e.g. settlement if placed below the floor slab) • Sufficiently strong to withstand the installation process and following trades until covered (e.g. penetration from steel fibres in reinforced concrete, penetration of reinforcement ties, tearing due to working above it, dropping tools, etc); • Capable, after installation, of providing a complete barrier to the entry of the relevant gas; and • Verified in accordance with CIRIA C735.	2	The performance of membranes is heavily dependent on the quality and design of the installation, resistance to damage after installation and integrity of joints. For example a minimum 1.4mm thickness (equivalent to 370g /m2 for polyethylene), reinforced membrane (virgin polymer) meets the performance criteria. If a membrane is installed that does not meet the all the criteria in column 1 then the score is zero.

A gas protection score should only be assigned to a membrane which is formed of a material with suitably low gas permeability and which has been installed so it completely seals the foundation (including effective seals around all penetrations) and does not sustain damage from in-service stresses.

Situation B – For Low Rise Housing with a ventilated underfloor void (min 150mm)

Situation B should be used for low-rise residential housing constructed using a beam and block floor construction and a clear sub-floor void. Where a sub-space void is not proposed, the development falls under the Situation A classification system.

For situation B, the National House Building Council's (NHBC) Traffic Light classification system is used. This system attributes a colour to a site/zone depending upon the calculated GSV. As with the Wilson and Card system, in addition to the GSV, additional factors including the maximum recorded gas concentration and the maximum recorded gas flow rate must be taken into account when determining the Traffic Light classification. The table below outlines the Traffic Light classification system, based on the calculated GSV's and additional factors which must be taken into account.

NHBC traffic light system for 150mm void

Traffic Light	Methane		Carbon Dioxide	
	Typical Maximum Concentration (% v/v)	Gas Screening Value (GSV) l/hr	Typical Maximum Concentration (% v/v)	Gas Screening Value (GSV) l/hr
Green				
Green / Amber 1	1	0.16	5	0.78
Amber 1 / Amber 2	5	0.63	10	1.56
Amber 2 / Red	20	1.56	30	3.13
Red				

Notes:

- The worst gas regime identified at the site, either methane or carbon dioxide, recorded from monitoring in the worst temporal conditions, will be the decider as to what Traffic Light and GSV is allocated.
- Generic GSVs are based on guidance contained within latest revision of Department of the Environment and the Welsh Office (2004 edition) "The Building Regulations: Approved Document C" [Ref:17] and used a sub-floor void of 150mm thickness.
- This assessment is based on a small room e.g. downstairs toilet with dimensions of 1.5 x 2.5m, with a soil pipe passing into the sub-floor void.
- The GSV, in litres per hour, is as defined as the bore hole flow rate multiplied by the concentration of the particular gas being considered.
- The typical maximum concentrations can be exceeded in certain circumstances should the conceptual site model indicate it is safe to do so. This is where professional judgement will be

required based on a thorough understanding of the gas regime identified at the site where monitoring in the worst case temporal conditions has occurred.
- The GSV threshold should not generally be exceeded without completion of a detailed gas risk assessment taking into account site specific conditions.

Once the Traffic Light classification has been determined, the requirements and scope of gas protection / mitigation measures can be determined based on the following table (CIRIA C665):

Gas Protection Measures for Low-Rise Housing Development Based Upon Allocation NHBC Traffic Light (Boyle and Witherington, 2006)

Traffic Light Classification	Protection Measures Required
Green	Negligible gas regime identified and gas protection measures are not considered necessary.
Amber 1.	Low to intermediate gas regime identified, which requires low-level gas protection measures, comprising a membrane and ventilated sub-floor void to create a permeability contrast to limit the ingress into buildings. Gas protection measures should be as prescribed in BRE Report 414 (Johnson 2001). Ventilation of sub-floor void should facilitate a minimum of one complete volume change per 24 hours.
Amber 2.	Intermediate to high gas regime identified, which requires high level gas protection measures, comprising a membrane and ventilated sub-floor void to create a permeability contrast to prevent the ingress of gas into buildings. Gas protection measures should be as prescribed in BRE Report 414. Membranes should always be fitted by a specialist contractor. As with Amber 1, ventilation of the sub-floor void should facilitate a minimum of one complete volume change per 24 hours. Certification that these passive protection measures have been installed correctly should be provided.
Red	High gas regime identified. It is considered that standard residential housing would not normally be acceptable without a further Gas Risk Assessment and / or possible remedial mitigation measures to reduce and / or remove the source of gas.

Volatile Organic Compounds

Similar to ground gas, under the Environmental Protect Act 1990, Building Regulations Approved Document C 2004, and the NPPF there is a requirement to ensure that Volatile Organic Compounds (VOC) are considered on a risk assessment basis.

VOCs are organic compounds that are volatile under normal atmospheric conditions. However, they may be found in the solid, liquid, and the dissolved phase as well as in the gaseous phase. VOCs are typically found in the following contaminants;

- Petroleum (non-halogenated) hydrocarbons (e.g. benzene, toluene, and butylbenzenes);

- Halogenated hydrocarbons (e.g. chlorinated ethenes and ethanes (dry cleaning fluids or degreasers) or chlorofluorocarbons (freons)); and
- Organic compounds containing nitrogen, sulphur, and oxygen (e.g. tetrahydrofuran).

The likely sources of the above contaminants include;

- Spills, leaks, and discharges from industries;
- Landfills;
- Buildings, furnishings, and common household products;
- Vehicle emissions;
- Marshland; and
- Uncontrolled waste disposal.

The risk to receptors from VOC occur from inhalation (acute and chronic), and a flammable/explosive risk when present at high concentrations in confined spaces.

Current UK guidance for VOCs are limited in comparison to ground gas, and is primarily given in the *"The VOCs Handbook; Investigating, assessing and managing risks from inhalation of VOCs at land affected by contamination"*, CIRIA Report C682, 2009.

The risk to receptors from VOCs has been assessed on a semi-quantitative basis as set out by CIRIA C682. Whereby the vapour concentration recorded during headspace analysis of soils, SVOC/VOC contaminant concentration within soil and groundwater samples, and the vapour concentration within installed boreholes are qualitatively assessed to determine whether a significant risk of a potential pathway exists.

Where a significant risk of a potential pathway exists further assessment will be required, this may include, vapour sampling, further intrusive investigations, or a Detailed Quantitative Risk Assessment (DQRA). Dependent on the results of the further assessment, remedial measures will be required to mitigate the risk to receptors.

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Appendix K Data from Previous Investigations

- **AECOM – Stag Brewery, Mortlake: Phase 2 Environmental Site Assessment Report. September 2015 (Report ref. 47075502**

AECOM

STAG BREWERY MORTLAKE

Phase 2 Environmental Site Assessment Report

September 2015

47075502

Prepared for: AB InBev UK Limited

Prepared by: AECOM

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CONTENTS

EXECUTIVE SUMMARY

AECOM Infrastructure & Environment UK Limited (AECOM) was appointed by AB In-bev UK Limited to undertake soil and groundwater quality monitoring at the Stag Brewery, Mortlake, London, SW14 7ET.

Site Characterisation Scope: The site investigation undertaken included the drilling of two boreholes with groundwater monitoring well installations to supplement the existing network of thirteen groundwater monitoring wells installed during previous phases of investigation. Twenty-eight soil bores were also drilled across the Site to provide a higher density of exploratory points, better understand the ground conditions and collect soil samples for laboratory chemical analysis.

Ground Conditions: The ground conditions at the site were assessed from twenty-eight soil bores were drilled using dynamic percussive drilling techniques to a maximum depth of 5.0m below ground level (bgl). The drilling work was undertaken between 20 and 28 August 2015. The deepening sequence of geology encountered in the site investigation includes Made Ground, superficial deposits of River Terrace Gravels and London Clay bedrock.

Made Ground is between 1.2m and 2.6m thick and comprised loose roadstone, red/yellow brick and concrete gravels, sand and gravels of flint and occasional reworked clay. Buried obstructions, thought to represent relict concrete slabs, were encountered at eleven locations.

The boundary between the River Terrace Deposits and London Clay was encountered at depths between 6.5 and 6.9m bgl. The London Clay was encountered to the maximum depth of drilling (7.0 bgl).

Groundwater: Groundwater elevation monitoring on 28 August 2015 indicated the groundwater to be between 3.57 and 5.14 mbgl. Groundwater flow direction is inferred to be west. The tidal effects of the River Thames were measured in three boreholes across the site by continuous monitoring over 2.5 days. The results indicated a maximum fluctuation of 60mm in a well 20m from the River Thames. However, no measurable effect on groundwater elevation was recorded on the two wells located 65m and 200m from the River Thames.

Soil Quality: No obvious visual or olfactory evidence of hydrocarbon contaminated soils was noted from the drilling arisings. Furthermore, only one result (2.1ppm) out of 113 screening tests performed was above the detection limit (<0.1ppm) of the Photo-Ionisation Detector (PID) equipment during soil headspace monitoring.

A total of 25 samples of Made Ground and 14 samples of natural ground were analysed at Alcontrol Laboratories for a suite of inorganic and organic chemical parameters. The results were compared to generic assessment criteria (GAC) suitable for three possible end uses: residential with gardens, residential without without gardens and commercial. The comparison indicated that the soil chemistry does not represent an unacceptable risk to human health regardless of the end use scenario.

Asbestos Containing Materials (ACMs): During the site investigation suspected ACMs were observed as fragmented tiles from one exploratory hole (BH4A between ground level and 1.3m bgl). A total of twenty-six samples of Made Ground were also visually screened at the analytical laboratory (by microscope) and asbestos fibres were observed in eight samples. Asbestos quantification analysis on the eight samples measured a concentration of ACMs <0.1% and below the hazardous waste criteria threshold.

Asbestos in soils is not considered an unacceptable risk for future residential and or commercial site use given the relatively low volumes measured in the samples. Future below ground works should consider the potential for asbestos to be present in Made Ground and appropriate standard construction controls adopted.

Groundwater Quality: During groundwater monitoring no obvious visual or olfactory indication of contamination was identified from the sampled groundwater. A total of fourteen groundwater samples were analysed at Alcontrol Laboratories for a suite of inorganic and organic chemical parameters. The results were compared to GAC protective of the adjacent River Thames (marine Environmental Quality Standards) and England Drinking Water Standards. The comparison indicated that the majority of chemical parameters were below the relevant GAC and, although some minor exceedances were measured at isolated locations, the groundwater quality is considered commensurate with that in an urban environment.

Conclusions: The site characterisation has not encountered soil and groundwater conditions that represent a constraint to redevelopment of the Site for mixed commercial and residential use above what would normally be expected from previously developed land.

The chemical analysis of the Site soils and groundwater has not identified concentrations that represent an environmental risk to human health or controlled waters. No environmental improvement works are considered necessary at the Site based on a mixed use development scheme.

It is likely that works to remove relict buried foundations and slabs will be required to allow construction of deep structures and foundations. Furthermore, it is unlikely that the physical composition of the existing shallow Made Ground soils will be of suitable composition for use in soft planted areas. Imported soils are therefore likely to be required for green open spaces and landscaping.

1. INTRODUCTION

1.1 General Introduction

This report presents the findings of a Phase 2 Environmental Site Assessment (ESA) at the Stag Brewery, Mortlake, London, SW14 7ET (the "Site"). A site location plan is presented in **Figure 1**.

The Stag Brewery has been used for the production and packaging of alcoholic beverages since the late 1850s. However, the Stag Brewery will cease manufacturing operations in 2015 and the site is to be divested for redevelopment.

1.2 Objectives

The objective of this report is to present an assessment of the environmental ground conditions at the Site. Specifically, the objectives are to:

1. Perform an environmental assessment of the site to evaluate the chemical status of the underlying soil and groundwater conditions. The results of this assessment will be used to refine the conceptual site model (CSM) and to evaluate the potential for plausible contaminant linkages and unacceptable environmental risk at the Site; and

2. Evaluate whether the soil and groundwater conditions represent a constraint to site redevelopment for mixed residential, retail and commercial uses and determine whether a contamination remediation and verification scheme will be required.

1.3 Scope of Work

A summary of the scope of work performed to meet the objectives of this study are set out below. The scope was designed following the review of existing Site information (**Section 2**) and based on the proposed site redevelopment for mixed uses. The rationale for each exploratory hole is provided in **Section 3.1**.

- The drilling of a borehole (BH201A) using rotary drilling techniques to 6.0m bgl adjacent to the Site boundary with the River Thames in the north of the Site.

- The drilling of two boreholes (BH203 & BH203A) using rotary drilling techniques in the east of the Site.

- The drilling of twenty-eight soil bores (BH2A to BH5A, BH7A to BH10A, BH201 to BH214A) using percussive drilling techniques to 5.0m bgl to provide shallow ground conditions assessment across the Site.

- Sampling and laboratory chemical analysis of soil samples from twenty-four boreholes for a suite of inorganic and organic chemical parameters.

- Installation of a groundwater monitoring well in the superficial gravels at BH201A and in the Made Ground at BH203 & BH203A.

- A return visit to monitor and sample groundwater from BH201A and the existing network of thirteen monitoring wells across the site.

- Laboratory chemical analysis of thirteen groundwater samples and one duplicate for a suite of inorganic and organic chemical parameters.

- Evaluation of the chemical soil and groundwater results by performing a generic quantitative risk assessment (GQRA) considering risks to human health and controlled waters.

The scope of work listed above was completed between 20 August and 21 September 2015.

2. PROJECT BACKGROUND

2.1 Site Location & Description

The site is located in Mortlake, London, SW14 7ET. The Site is centered at National Grid Reference 520360, 175990. A site location plan is presented in **Figure 1.**

The site covers a total area of 84,697m², which is divided between an East Site and West Site, separated by Ship Lane:

- East Site covers an area of 54,057m^2 and includes seven buildings, a trailer park with a weighbridge, a warehouse, an energy centre and storage blocks.
- West Site covers an area of 30,640m². The West Site comprises production buildings, workshop and stores, bulk gas storage, fabrication shop, ancillary plant, the former effluent plant, car park and Watney's sports ground.

The general site layout is shown on **Figure 2**.

2.2 Surrounding Land Use

Surrounding land uses are indicated on **Figure 2** and include the following:

- North: The River Thames is adjacent to the northern boundary of the East Site. Residential properties and a public house are located immediately north of the West Site between the site boundary and the River Thames.
- South: The A3003 (Lower Richmond Road) is adjacent to the southern Site boundary. Beyond this are residential and commercial properties, Mortlake Green and Mortlake Station. The Richmond Line of the London and South Western Railway runs east-west and is located approximately 100m south of the site at its closest point;
- East: The land use to the east mostly comprises residential properties with some commercial properties; and
- West: Residential properties are located adjacent to the western site boundary, with Clifford Avenue running south-west–north-east 115m from the site. Beyond this is Mortlake Crematorium and cemetery.

2.3 Site Topography

The site topography has been evaluated based on the topographic survey completed across the proposed development site in 2015[1].

The topographical survey has indicated the general current site elevations to be generally between 5.72m and 6.55m above Ordnance Datum (mAOD).

2.4 Previous Site Evaluation

AECOM completed a Phase 1 ESA (ESA) in July 2015. In preparation of the Phase 1 ESA, AECOM were provided with seven historical environmental assessment reports (see **Section**

[1] Data provided by AB Inbev following survey of a specialist contractor (August 2015). Topographical Survey at Stag Brewery Mortlake.

8; **References**) completed between 1995 and 2012. Pertinent information extracted from the Phase 1 ESA and the historical reports is detailed below.

- The brewery has been present in East Site since at least 1868, with the remainder of the East Site occupied by residential properties. The brewery expanded or was redeveloped by 1896, replacing the residential houses. The brewery buildings are first shown in West Site in the mid- 1960s, at which time the whole of the East Site is developed with brewery buildings. Both sites are in their current 2015 layout by 2006.

- The Stag Brewery Site is underlain by Made Ground followed by Superficial Deposits (River Terrace Gravels) and by London Clay.

- Groundwater rests within the Superficial Deposits at depths between approximately 2.0m to 5.5m bgl. Groundwater is not abstracted for use within 230m of the Site and is not within a groundwater source protection zone.

- The River Thames, the Superficial Deposits and the residents located immediately south and west of the Site represent sensitive receptors.

- A network of thirteen boreholes with groundwater monitoring wells was installed across the Brewery between 1995 and 2003. Groundwater from these wells has been monitored and samples collected for laboratory analytical testing on four occasions between 2003 and 2012. Results of this monitoring have not identified unacceptable or widespread groundwater contamination at the Stag Brewery.

- Soil sampling from seven soil bores drilled in 2003 did not indicate elevated concentrations of metal and total petroleum hydrocarbon concentrations in soils.

Overall, the lack of widespread measurable chemical contamination in soil and groundwater beneath the Site suggested that there is not an unacceptable risk of adverse impact to human health, groundwater or the River Thames. However, localized areas of potential impact to chemical soil and groundwater quality could not be discounted. This Phase 2 ESA was therefore commissioned to further investigate the ground conditions beneath the Site with a higher density of exploratory boreholes and additional soil and groundwater chemical testing to update the site conceptual site model (CSM).

3. METHODOLOGY & APPROACH

3.1 Site Investigation Rationale

The evaluation of the existing environmental assessment data and CSM presented in the Phase 1 ESA has indicated that a higher density of exploratory holes is required on the Site to evaluate the current soil and groundwater conditions. In particular, the previous site assessment data was principally from the West Site, with limited information for the East Site. The rationale was therefore to determine:

- The nature and thickness of the Made Ground and the shallow geology across the East and West Site area; and
- Inspect and sample shallow soil and groundwater from across the site for laboratory chemical analysis.

An exploratory hole location plan is included as **Figure 3**. The rationale for the positioning of each exploratory hole is given in **Table 3.1**.

Table 3.1: Site Investigation Rationale

Investigation Location ID	Location and Rationale
BH2 (existing well) BH2A (proposed soil bore)	BH2A to be drilled adjacent to above ground heavy fuel oil storage tanks on the western edge of the East Site. Groundwater monitoring well BH2 is located approximately 1.0m from BH2A.
BH3 (existing well) BH3A (proposed soil bore)	BH3A to be drilled down topographic gradient of a diesel storage tank in the north of the West Site. Groundwater monitoring well BH3 is located approximately 1.0m from BH3A.
BH4 (existing well) BH4A (proposed soil bore)	BH4A and BH5A to be drilled in the contractors' storage area in the north of West Site. Groundwater monitoring wells BH4 and BH5 are located within approximately 1.0m from BH4A and BH5A respectively.
BH5 (existing well) BH5A (proposed soil bore)	
BH7 (existing well) BH7A (proposed soil bore)	BH7A to be drilled south of workshop building in west of the West Site in the area of tanker clean in place (CIP). Groundwater monitoring well BH7 is located approximately 1.0m from BH7A.
BH8 (existing well) BH8A (proposed soil bore)	BH8A to be drilled within the empty waste container and waste storage area in the west of the West Site. Groundwater monitoring well BH8A is located approximately 1.0m from BH8A.
BH9 (existing well) BH9A (proposed soil bore)	BH9A to be drilled adjacent to area of suspected trade drain leakage between the Brew House and Fermentation Block (eastern half of the West Site). Groundwater monitoring well BH9 is located approximately 1.0m from BH8A.
BH109 (existing well) BH109A (proposed soil bore)	BH9A to be drilled in a storage area for acids and alkalis to the north of the beer conditioning building (north-east of the West Site). Groundwater monitoring well BH109 is located approximately 1.0m from BH109A.

Table 3.1: Site Investigation Rationale	
Investigation Location ID	**Location and Rationale**
BH201 & BH201A	BH201 & BH201A are adjacent to a former heavy fuel storage vault in the B Block building and also down-gradient of the Packaging Building (north-west corner of the East Site). This location is at the Site northern boundary and 20m from the River Thames. BH201 and BH201A represent two attempts to penetrate or avoid the obstruction. BH201A was able to reach the intended depth (6m bgl) and a well installed to monitor the groundwater quality.
BH202 & BH202A	To be drilled in the north of the East Site to provide general Site coverage. The presence of an obstruction at 1.8m bgl meant that the intended drilling depth and installation of a groundwater monitoring well in the superficial gravels could not be completed. BH202 and BH202A represent two attempts to penetrate or avoid the obstruction.
BH203 & BH203A	BH203 & BH203A were drilled in the east of East Site where vehicle maintenance and oil storage areas were historically located and to provide general Site coverage. The presence of an obstruction at 3.0m meant that the intended drilling depth and installation of a groundwater monitoring well in the superficial gravels could not be completed. BH203 and BH203A represent two attempts to penetrate or avoid the obstruction. Groundwater monitoring well were installed in both boreholes within the Made Ground.
BH204	To be drilled in the south of the East Site to provide general Site coverage south of the Packaging Building.
BH205	To be drilled in the east of the East Site to provide general Site coverage east of the Packaging Building.
BH206	To be drilled in the south-east of the East Site to provide general Site coverage south-east of the Packaging Building.
BH207	To be drilled on the south-western corner of the Packaging Building between the Power House chemical store (Area 13) and Packaging Waste Oil storage area (Area 14).
BH208 / BH208A	To be drilled to investigate the soil conditions within the Trailer Park immediately north of the Energy Block. BH208 and BH208A represent two attempts to penetrate or avoid an obstruction.
BH209	To be drilled in the south of the East Site to provide general Site coverage.
BH210	Targeted to investigate the soil conditions south of the operational area.
BH211	Targeted to investigate the soil conditions in the vicinity of the KG Slurry Tank and the remaining operational area.
BH212	To be drilled to investigate an oil storage area adjacent to the engineering workshop (north-west of West Site). Groundwater monitoring well BH112 is located approximately 2m from BH212.
BH213	To be drilled within contractors’ storage area in the north of West Site.

Table 3.1: Site Investigation Rationale	
Investigation Location ID	**Location and Rationale**
BH214 / BH214A	To be drilled in the north of the East Site to provide general Site coverage. The presence of an obstruction at 2.6m meant that the intended drilling depth and installation of a groundwater monitoring well in the superficial gravels could not be completed. BH214 and BH204A represent two attempts to penetrate or avoid the obstruction.

The exploratory investigation work was undertaken between 20 and 28 August 2015. The following methodology and approach was undertaken to meet the objectives of this study.

3.2 Health and Safety Planning

The site works were conducted in accordance with AECOM pre-determined health, safety and environment arrangements, standard operating procedures and method statements. A detailed site inspection was undertaken on 20 August 2015 by AECOM to select sampling locations and determine the most appropriate sequence of work.

A detailed survey of the buried services in the vicinity of the proposed exploratory locations was undertaken by a specialist contractor employed by Site Vision Surveys Limited the 20th of August 2015. This was undertaken with reference to Site supplied buried services and utility plans.

The 28 exploratory positions were also pre-excavated by hand to a minimum depth of 1.2m bgl as a secondary precaution and as a pre-drill check. No buried services were exposed in the hand excavated pits.

3.3 Hand Excavated Pits

The pre-drill pits were excavated at the 28 drilling locations using concrete coring or hand-held breaker to penetrate site hardstanding and then hand tools to a depth of 1.2m. These pits allowed environmental soil inspection, sampling and logging in the upper 1.2m of soil and also as a precautionary pre-drill check of the shallow subsurface for potential buried services.

The depths of twenty-three excavated positions were extended by drilling (see **Sections 3.5** & **3.6**). Hand pits BH201, BH202, BH208, BH7B failed to penetrate a shallow concrete slab obstructions at 0.8m bgl and was therefore unable to progress as a soil bore.

3.4 Soil Bores

Twenty-three soil bores (BH2A, BH3A, BH4A, BH5A, BH7A, BH8A, BH9A, BH109A, BH202A, BH203, BH203A, BH204, BH205, BH206, BH207, BH208A, BH209, BH210, BH211, BH212, BH213, BH214 and BH214A) were drilled using dynamic percussive drilling techniques to a maximum depth of 5.0m bgl. The boreholes were drilled at 100mm diameter and soil arisings were recovered in plastic lined cores for detailed inspection, logging and sampling.

On completion of the inspection and soil sampling the exploratory positions that had penetrated the full thickness of Made Ground were infilled with bentonite clay pellets and hydrated to seal the boreholes. Where the boreholes failed to penetrate the Made Ground, the boreholes were infilled with the excavated spoil in the general order of excavation. The site surfacing was reinstated to a similar condition to previous. The borehole logs are included in **Appendix B**.

3.5 Borehole Drilling & Well Construction

Borehole BH201A was drilled to a depth of 6.0m bgl using rotary techniques and a 350mm diameter auger. The monitoring well was constructed with 50mm diameter High Density Polyethylene (HDPE) monitoring standpipes. The well installation in BH201A has a screened section between 2.0m and 5.5m bgl designed to intersected the groundwater table in the Superficial gravels (at approximately 3.7m bgl) to allow for possible groundwater fluctuation across the well screen due to the tidal influence from the adjacent River Thames. The response zone annulus was filled with washed 4mm gravel and the annulus above the response zone sealed with bentonite pellets hydrated with site tap water. The well was completed with lockable headwork concreted into place flush with the surrounding ground surface. The borehole logs, including monitoring well construction details, is included in **Appendix B**.

BH203 was initially targeted to investigate soil and groundwater, however due to the presence of underground obstructions it was abandoned and location BH203A was selected. Another obstruction in BH203A was found. A groundwater monitoring well was installed in both boreholes within the Made Ground.

It was considered that Made Ground collapsed when the drilling augers were pulled from the excavations just before the insertion of the well pipe. Following the wells development, it was decided to exclude these wells from the monitoring stage as the excessive amount of sand and silt accumulated in both standpipes within a short period may influence the quality and representativeness of the groundwater samples.

3.6 Soil Logging & Sampling

The soil cores and excavated materials were logged by an experienced field geologist as drilling progressed. The logging was undertaken in general accordance with BS EN ISO14688, BS EN ISO14689 and BS5930:1999.

During logging the field geologist inspected the excavated for possible visual and olfactory indications of hydrocarbon contamination or discoloured/ stained soils. These observations (if any) are also presented on the exploratory borehole logs.

A portable monitoring instrument (Photo Ionisation Detector (PID)) was used to measure soil headspace for ionisable hydrocarbons. Soil samples were taken at regular intervals through the unsaturated soil profile, placed in sealed plastic bags, manipulated by hand and left for a short time (typically 5 minutes). The headspace above the soil in the bags was then tested for the presence of ionisable hydrocarbons using the PID (fitted with a 10.6 eV lamp and calibrated to isobutylene).

Soil samples were selected for laboratory testing at the discretion of the AECOM field engineer and based on the PID readings and site observations. Soil samples were transferred directly into laboratory-supplied containers and labelled for shipment, under chain of custody procedures. Soils containers were stored in cooler boxes containing ice packs to maintain low temperatures during storage and shipment to the laboratory.

3.7 Groundwater Monitoring

On 20 August 2015 AECOM completed an inspection of the existing monitoring well network to confirm the locations of the thirteen existing groundwater monitoring wells (BH2, BH3, BH4, BH5, BH7, BH8, BH9, BH10, BH104B, BH109, BH110, BH111 and BH112). Each of these thirteen wells was located and the headworks and standpipes intact. The inspection included the measurement of the groundwater level in the wells and comparison with the as-built borehole logs to determine the thickness of sediment in the well bases. This indicated significant sediment accumulations, up to 2.13m, in the wells that required de-silting followed by well development to determine whether the wells represented robust groundwater sampling locations.

On 24 and 25 August 2015 AECOM undertook the de-silting of all existing groundwater monitoring wells. Air lift surging technique was used to de-silt all monitoring wells. The monitoring wells were alternatively surged and pumped with air using a petrol operated compressor in combination with a peristaltic pump. In air surging, air was injected into the wells to lift the water to the surface. As the air bubbles rose, they created a surging effect that carried water and dislodged the sediments out of the well. As the groundwater reached the top of the casing, the air supply was shut off, allowing the aerated water column to fall. A peristaltic pump was used to pump each well periodically to remove the silt and sand deposits from the screen and bottom of the boreholes.

The desilting works were successful and further details are included in **Appendix A**. Following the desilting and purging, standing water levels ranging between 4.15m and 5.25m bgl were measured in the monitoring wells, with the exception of well BH112 which remained dry due to stiff mass of silt and sand deposits on the bottom of the well that could not be removed.

With the exception of BH9 where fast drawdown and slow recharge of groundwater was noted, all monitoring wells displayed slow drawdown and fast recharge. This, along with the amount of water available, suggested that the monitoring network was adequate to collect a good quality sample set from the saturated zone of the superficial deposits.

The groundwater was left to equilibrate for a period of three days following the successful de-silting and development the twelve existing wells and development of the new well (BH201A). AECOM then returned to the Site to install water level loggers in three monitoring wells (BH201A, BH4 and BH10). The loggers were left in the wells for 2.5 days (between 28 August and 31 August 2015) to measure potential tidal influences on groundwater elevation.

Level loggers were installed at the following locations:

- BH4: At the northern boundary of the West Site and approximately 65m from the River Thames;
- BH10: In the central portion of the West Site and approximately 200m from the River Thames); and
- BH201A: On the northern boundary of the East Site and approximately 20m from the River Thames.

These locations were selected to evaluate the tidal influence at variable distance from the River Thames and to provide good spatial representation across the Site. A barologger was installed in monitoring well BH2 for the entire period of tidal monitoring to enable data corrections to account for variations in barometric pressure. Graphs showing groundwater elevation versus time for each of the tidal monitoring locations are presented in the **Graphs Section**.

3.8 Groundwater Sampling

Groundwater monitoring and sampling was completed by an AECOM site engineer on 1st and 2nd September 2015 and six days following the well de-silting and development. Prior to purging and sampling, the groundwater levels and volumes of groundwater within the monitoring wells were established using an air/oil/water interface probe. Monitoring wells were purged of at least three well volumes or until groundwater parameters (pH, temperature, electrical conductivity, reduction-oxidation (redox) potential and dissolved oxygen content) had stabilised across at least three consecutive readings taken at intervals during purging. Purging and sampling was carried out using a dedicated low-flow sampling peristaltic pump and flow cell in order to provide accurate parameter measurements and to minimise groundwater agitation.

3.9 Environmental Laboratory Analysis

The soil and groundwater samples were shipped to ALcontrol Laboratories for chemical analysis. The analytical schedule of tests is included as **Table 3.9a** and **3.9b** and with details for each sample included in **Tables 1** and **2** appended to this report. The results of the laboratory analysis included on appended **Tables 3** and **4** attached with this report.

Table 3.9: Laboratory Soil Chemical Analysis

Analysis Suite	Made Ground	Superficial Deposits
Metals in solid samples	23	14
Hexavalent Chromium	23	14
PAH	23	14
TPH CWG	23	14
VOC MS	23	14
EPH CWG (Aliphatic)	23	14
EPH CWG (Aromatic)	23	14
GRO	23	14
pH	23	14
Total Organic Carbon	23	14
Total Sulphate	23	14
Easily Liberated Sulphide	22	14
Ammoniacal Nitrogen	22	14
Asbestos ID	21	3
Asbestos Quantification	10	1

Table 3.9: Laboratory Soil Chemical Analysis		
Analysis Suite	**Made Ground**	**Superficial Deposits**
PCB 7 & WHO 12 (S) by GC MS	1	0

Metals suite (Arsenic, Boron, Cadmium, Chromium (III+VI), Copper, Lead, Mercury, Nickel, Selenium, Zinc).
EPH – Extractable Petroleum Hydrocarbons including aliphatic & aromatic carbon banded speciation.
VOC - Volatile Organic Compounds
PAH - Polycyclic Aromatic Hydrocarbons (PAHs).
PCB - Polychlorinated Biphenyls.
Asbestos (visual identification and quantification)

Table 3.9b: Laboratory Groundwater Chemical Analysis	
Analysis Suite	**Number of Samples**
COD, unfiltered	14
Ammoniacal Nitrogen as N	14
Ammoniacal Nitrogen as NH4	14
Nitrate as NO3	14
Phosphate as PO4	14
Sulphate	14
Metals (suite of nine dissolved metals)	14
SVOC (W) by GC MS	13
VOC (W) by GC MS	14
pH Value	14
TPH CWG (W) by GC FID	14
TPH Total (Includes EPH Total and GRO Total)	14

The laboratory soil and groundwater certificates are included as **Appendices C**.

3.10 Screening Criteria

Analytical soil and groundwater data reported as part of this Environmental Assessment report have been evaluated by comparison against generic assessment criteria (GAC). The selected GAC are based on the receptor assumptions associated with the proposed site use and underlying ground conditions. These include the health of site occupants and controlled waters, which has been evaluated against a number of different end use scenarios:

- Residential with gardens,
- Residential without gardens; and
- Commercial

The main controlled water receptor is the River Thames, located immediately north of the East Site. Groundwater concentrations have therefore been compared to marine Environment Quality Standards (EQS) as a preference. Although not considered a suitable viable resource, given the limited thickness of the saturated aquifer, the groundwater in the River Terrace Gravel Formation has been compared to England Drinking Water Standards (EDWS).

GAC have been selected or derived by AECOM in accordance with the most recent UK regulatory guidance. For human health receptors, this comprises the EA's Contaminated Land Exposure Assessment (CLEA) methodology, most recently updated in January 2009. For controlled waters receptors, the prevailing technical guidance is the EA's Remedial Targets Methodology. Where criteria are unavailable based on these UK sources, they have been selected from reputable international and national agencies external to the UK. Such external sources have no Regulatory authority in the UK; however, since they are derived using risk-based techniques, they may be acceptable in the absence of UK guidelines.

In summary, analytical data have been screened against the criteria shown in **Table 3.10** and in order of preference.

Table 3.10: Summary of Adopted GAC

Human Health	Controlled Water
Defra C4SL 12/2014	Water Supply (Water Quality) Regulations 2010
AECOM (modified LQM/CIEH S4ULs)	Drinking Water Standards (UK, 2010)
AECOM (modified EIC)	Resource Protection Values (Scottish Environmental Protection Agency, 2013)
USEPA RSL	World Health Organisation (WHO) Drinking Water Guidelines (DWG) 2011
Dutch Serious 2009	PNEC (EU REACH) - Coastal
Dutch Intervention 2009	Groundwater Target Values (Water Framework Directive 2010 (England & Wales))
	PNEC (EU REACH) - Coastal
	New Hampshire DES (2009)
	California Draft health protective concentration
	USEPA RSL (tapwater)

4. SITE INVESTIGATION FINDINGS

4.1 Ground Conditions

The stratigraphy beneath the Site has been characterised in the 2003 CRA Baseline Soil and Groundwater Investigation and the previous Dames & Moore 1995 Ground Investigation. The geology encountered during the historical site investigations included a deepening sequence of Made Ground, Superficial Deposits and London Clay.

Table 4.1a summarises the stratigraphy encountered during the September 2015 investigation. **Table 4.1b** summarises the stratigraphy reported in the 2003 CRA Baseline Soil and Groundwater Investigation Report. Borehole logs of the September 2015 investigation are presented in **Appendix B** and borehole logs from the previous investigations are included in the Phase 1 ESA (**Reference 1 Section 8**).

Table 4.1a: Summary of Ground Conditions Encountered during the AECOM, September 2015 Investigation

Exploratory Hole	Depth to Bottom of Strata (m bgl)			Installation Strata	Date Completed
	Made Ground	Alluvium/ Superficial Deposits	London Clay		
BH2A	1.1	3.5*	-	None	25 August 2015
BH3A	1.5	3.0*	-	None	28 August 2015
BH4A	1.3	4*	-	None	27 August 2015
BH5A	1.8	3.0*	-	None	28 August 2015
BH7A/7B	1.2	3*	-	None	27 August 2015
BH8A	2.2	3.5*	-	None	26 August 2015
BH9A	3.3*	-	-	None	26 August 2015
BH109A	1.2	3.5*	-	None	28 August 2015
BH201/201A	1.9	5.1	6.0*	Superficial	24-25 August 2015
BH202 / BH202A	1.8*	-	-	None	24 August 2015
BH203 / BH203A	No recovery	No recovery	5*	None	20 August 2015
BH204	1.2	3.5*	-	None	21 August 2015
BH205	2.5	3.0*	-	None	21 August 2015
BH206	1.8*	-	-	None	21 August 2015
BH207	2.6	3.5*	-	None	25 August 2015
BH208 / BH208A	1.0	3.5*	-	None	25 August 2015
BH209	2.70	3.4*	-	None	25 August 2015
BH210	2.10	3.5*	-	None	26 August 2015
BH211	2.10	3.5*	-	None	26 August 2015
BH212	1.7	3.5*	-	None	27 August 2015

Table 4.1a: Summary of Ground Conditions Encountered during the AECOM, September 2015 Investigation					
Exploratory Hole	Depth to Bottom of Strata (m bgl)			Installation Strata	Date Completed
	Made Ground	Alluvium/ Superficial Deposits	London Clay		
BH213	1.6	3.0*	-	None	27 August 2015
BH214 / BH214A	2.6*	-	-	None	25 August 2015

*Denotes full thickness of strata not penetrated.
- Strata not encountered.

The ground conditions encountered included:

- **Made Ground**: Where full penetrated, the thickness of Made Ground measured in the AECOM soil bores ranged between 1.2m and 2.6m.
- An extended thickness of made ground were measured at four locations where full penetration of Made Ground was not possible due to the presence of buried obstructions. These positions included BH9A, BH202/ BH202A, BH206 and BH214/214A. The obstructions ranged in depth from 1.8m to 3.3m bgl.
- Buried hardstandings, which were penetrated, were encountered at:
    - BH201: Concrete slab of unknown thickness at 0.7m bgl;
    - BH202: Concrete slab of unknown thickness at 0.8m bgl;
    - BH202A: Concrete slab of unknown thickness at 1.8m bgl;
    - BH203: A 0.1m thick concrete slab between 0.9m and 1.0m followed by another concrete slab of unknown thickness at 3.0m bgl;
    - BH203A: A 0.1m thick concrete slab between 0.9m and 1.0m followed by another 0.1m thick concrete slab between 3.5m and 3.6m;
    - BH206: Concrete slab of unknown thickness at 1.8m bgl;
    - BH208: Concrete slab of unknown thickness at 0.8m bgl;
    - BH214: Concrete slab of unknown thickness at 2.6m bgl;
    - BH214A: Concrete slab of unknown thickness at 2.0m bgl;
    - BH7B: Concrete slab of unknown thickness at 0.6m bgl; and
    - BH9A: Concrete slab of unknown thickness at 3.3m bgl.
- A layer of surface concrete / tarmac hardstanding was encountered at all locations with the exception of BH4A and BH5A AECOM soil bore locations (Note: two attempts at drilling were undertaken at six positions: BH7A/B, BH201/A, BH202/A, BH203/A, BH208/A and BH214/A). The underlying Made Ground generally comprised loose roadstone, red/yellow brick and concrete gravels, sand and gravels of flint and occasional reworked clay.

- **Superficial Deposits**: Generally comprising clayey, silty sand with varying gravel content with areas of soft, brown, sandy clay. The full thickness (3.2m) of the superficial deposits was proven in one AECOM 2015 botehole (BH201A) and the base of this stratum measured at 5.1m bgl.

- **London Clay**: Grey to brown clay. The top of the London Clay was encountered at 5.1m in one AECOM borehole (BH201A).

Table 4.1b: Summary of Ground Conditions Reported in the CRA, 2003 Soil & Groundwater Baseline Report					
Exploratory Hole	**Depth to Bottom of Strata (m bgl)**			**Installation Strata**	**Date Completed**
	Made Ground	**Alluvium/ Superficial Deposits**	**London Clay**		
BH2	0.25	6.6	6.8*	Superficial	09 October 2003
BH3	0.3	6.5	6.6*	Superficial	05 October 2003
BH4	0.2	6.6	6.7*	Superficial	06 October 2003
BH5	0.5	6.9	7.0*	Superficial	05 October 2003
BH7	0.6	6.6	6.7*	Superficial	06 October 2003
BH8	0.4	7.2*	-	Superficial	06 October 2003
BH9	2.2*	-	-	Made Ground	06 October 2003
BH10	0.35	6.9	7.0*	Superficial	06 October 2003

It is noted that the Made Ground encountered during the August 2015 investigation is thicker than that reported in the 2003 baseline investigation. During the 2015 investigation works, soil cores were collected in plastic liners which allow an accurate logging of the soil. During the 2003 baseline investigation a rotary auger drilling technique was used to extract soils to the ground surface on the auger flights. This method is a less accurate sampling and logging methodology. The thicknesses of Made Ground reported in the 2015 investigation are therefore considered to be more accurate.

The base of the superficial deposits were encountered in six baseline investigation locations (2003) and to depths between 6.5m and 6.9m (with the exception of BH8, where the base of the superficial deposit was not fully penetrated by 7.2m bgl; the full depth of this borehole).

The top of the London Clay was encountered at depths between and 6.5 and 6.9m bgl at six baseline investigation locations and to a maximum depth of 7.0m bgl. The full thickness of London Clay was not proven during the investigations.

4.2 Field Observations

Visual and olfactory observations of note were made at the following borehole locations:

- Contractor Storage area, north portion of the West Site:

- BH4A, Possible asbestos fragments were noted in the Made Ground between ground level and 1.3m bgl.

- The Waste Storage area located in the west of the West Site:

- BH8A, Black ash was noted in the Made Ground between 0.4m and 0.8m bgl with PID readings of 2.1 parts per million (ppm) at 0.5m bgl and <0.1ppm at 1.0m bgl.

During groundwater purging and sampling no measurable free phase product was identified. In addition, no oily sheen or staining was observed and no hydrocarbon odours detected. The following visual and olfactory observations of note were made at BH9:

PID measurements of ionisable hydrocarbons were taken from soils at regular intervals during drilling. In total, 113 soil headspace measurements were undertaken. In 112 of the 113 measurements the result was less than the limit of detection of the PID (<0.1 parts per million (ppm)). One headspace measurement of 2.1ppm was measured from soil sampled from BH8A (0.5m bgl).

4.3 Hydrogeology

Groundwater Elevations

During drilling, water strikes were encountered at two of the nine locations at depths of 2.2m bgl (3.70m Above Ordnance Datum (AOD)) in BH9A and 3.7m bgl (2.27m AOD) in BH201A.

Groundwater elevation measurements from the thirteen wells located on the Site was undertaken on 28th August 2015 between 12.25pm and 13.10pm to reliably estimate the groundwater flow direction and to minimise the potential influence of the River Thames tidal effect. **Table 3** indicates groundwater level measurement data.

A static perched water level was measured at 1.75m bgl (4.025m AOD) at BH9.

Static groundwater levels within the superficial deposits were measured between 3.586m bgl in BH201A (5.575m AOD) and 5.14m bgl (6.49m AOD) at BH3.

The groundwater elevation trend from five groundwater monitoring rounds completed between 2003 and 2015 is included as appended **Graph 1**. The graph indicates that groundwater elevations are relatively consistent during the five monitoring rounds.

Groundwater Flow Direction

Inferred groundwater flow contours for the superficial aquifer beneath the site, based on the results of this 2015 monitoring round, are presented as **Figure 4**. The elevated groundwater levels in BH9 have been omitted from the groundwater contour evaluation as this installation is indicative of perched water in the Made Ground.

The 2015 monitoring results indicate the inferred groundwater flow direction to be to the west.

Tidal Effects on Groundwater Elevation

Following the groundwater elevation monitoring, three pressure transducers were installed in monitoring wells BH4, BH10 and BH201A to continuously measure groundwater elevations within the superficial deposits for a period of approximately 2.5 days and assess the tidal influence of the River Thames on the groundwater levels beneath the Site. The results are included on Graphs xxx to xxx appended to this report.

The assessment of the transducers data indicates that only the groundwater levels of the northern boundary of the East Site, represented by BH201A, is moderately affected by the tidal influence of the River Thames with daily fluctuations ranging from approximately 40 to 60mm with a peak of approximately 120mm during the early hours of the 31st of August possibly due to rainfall. This monitoring well is located approximately 20m from the southern bank of the River Thames.

In the monitoring well BH4 located approximately 65m from the southern bank of the River Thames along the northern boundary of the West Site, the tidal effect appears to be time lagged from BH201A due to the distance from the river but not significant. The groundwater level fluctuations in this area are comparable to those detected 150m further south within the central portion of the site represented by BH10.

It is noted that from the visual inspection of the River Thames in proximity of the site, the banks are constructed with concrete and stone blocks.

5. LABORATORY QA/QC

5.1 Quality Control

The majority of laboratory analytical techniques undertaken are certified by the United Kingdom Accreditation Service (UKAS). The range of accredited analyses offered by the selected sub-contract laboratory (ALcontrol) is considered to be as comprehensive as is available from commercial laboratories in the UK. UKAS and the Environment Agency's Monitoring Certification Scheme (MCERTS) status for all analyses undertaken is shown on the laboratory certificates presented in **Appendix C**.

5.2 Duplicate Analysis

One duplicate groundwater sample was collected during the September 2015 sampling event from BH4 and labelled DUP01. The duplicate was tested for the same analytical suite as the primary sample and for QA/QC purposes.

The evaluation of the duplicate samples is based on the Relative Percent Difference (RPD), which is defined as:

$$RPD = 100 \times (|X1 - X2|/(X1 + X2))$$

where X1 and X2 are the values of the concentration obtained for an analyte X in the duplicate sample, and |X1-X2| is the absolute difference of X1 and X2.

Relative percentage differences (RPDs) have been calculated for chemical concentrations recorded above the method detection limits between a primary sample from BH4 and a duplicate sample (DUP01). The 'limits' of ±25% for inorganic analysis and ±100% for organic analyses are based on AECOM's experience from a large number of projects and should be viewed as a guideline for the expected RPD values in a water matrix. These guideline limits should be used with caution with laboratory results within ten-times the laboratory method detection limit (MDL). The RPD assessment is presented in **Table 11**.

- Elevated RPDs for inorganics were observed for copper (40%) and selenium (43%) above the guideline value of 25% for organic parameters. The elevated RPDs for these two parameters are not a significant concern given that the other eight metal parameters were within the acceptable range. In the remainder of the report the higher concentrations from either the primary or duplicate sample from BH4 will be used.
- The calculated RPDs for the remaining inorganics analysis were in the range 0 to 11% which is within the acceptable range.
- RPD assessment for the organics analysis was not possible given the results were below the analytical method detection limits.

5.3 Conclusion

The laboratory analytical results are considered suitable for review based on the sampling methodologies described in **Section 3.8**, the laboratory accreditation and the results of the RPD assessment.

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6. GENERIC QUANTITATIVE RISK ASSESSMENT

6.1 Stage 2 Generic Assessment

Given that the final development scheme is not yet finalized, AECOM have elected screening criteria based on three possible end uses: residential without gardens, residential with gardens and commercial.

The most sensitive controlled waters receptor is considered to be the River Thames, which flows along the northern site boundary in a west to east direction and the Secondary A Aquifer within the underlying River Terrace Deposits. Further details of the selected generic assessment criteria (GAC) are given in **Section 3.10**.

6.2 Soil

6.2.1 Heavy Metals

A total of 37 soil samples were analysed for a suite of eleven metals. The results are included in appended **Table 4**. A summary of the GAC exceedances is presented in the following Table and discussed below.

Analyte	Number of detects	GAC (mg/kg)			Range in Detected Conc. (mg/kg)	Number of GAC Exceedences			Location with Maximum Conc.
		Human Health - Res. Without Gardens	Human Health - Res. With Gardens	Human Health - Commerc.		Human Health - Res. Without Gardens	Human Health - Res. With Gardens	Human Health - Commerc.	
Arsenic	37	40	37	640	9.55 to 94	1	1	0	BH7A; 0.7m
Lead	37	310	200	2300	5.73 to 2,910	2	6	1	BH213, 0.6m

The concentrations of cadmium, chromium (III+VI), copper, mercury, nickel, selenium, zinc and hexavalent chromium were measured at concentration below the GAC for the three land use scenarios and are therefore not considered to represent an unacceptable risk to human health.

The detected concentrations of arsenic in the 37 samples tested ranged between 9.55mg/kg and 94mg/kg. None of these concentrations exceeded the human health GAC for a commercial end use. The measured concentration from BH7A (94mg/kg; 0.7m bgl) exceeded the GACs for both residential with and without gardens scenarios. The average arsenic concentration from the 37 samples is 19mg/kg and well below the GAC for the possible end use scenarios. Arsenic is therefore not considered to represent an unacceptable risk to human health regardless of the end use.

The detected concentrations of lead in the 37 samples tested ranged between 5.73mg/kg and 2,910mg/kg. The measured concentration from BH213 (2,910mg/kg; 0.6m bgl) exceeded the GACs for commercial use. The measured concentrations from BH208 at 0.8m, BH212 at 0.6m bgl, and BH4A at 0.9m bgl exceeded the GAC for residential with gardens and the samples from BH213 at 0.6m bgl and BH7A at 0.7m bgl exceeded the GAC for residential without gardens. The average lead concentration from the 37 samples is 156mg/kg and well below the GAC for the three possible end use scenarios.

6.2.2 Total Petroleum Hydrocarbons, BTEX and MTBE

A total of 37 soil samples were analysed for total petroleum hydrocarbons (TPH), BTEX and MTBE. TPH data were reported with a carbon banded aliphatic/aromatic split to enable risk assessment following the Criteria Working Group (CWG) methodology. The results are included in appended **Table 5.**

No TPH, BTEX and MTBE were detected at concentrations in excess of human health GAC for the three end use scenarios in in the 37 soil samples from the Site.

6.2.3 Poly-cyclic Aromatic Hydrocarbons

A total of 37 soil samples were analysed for the presence of poly-cyclic aromatic hydrocarbons (PAHs). The results are included in appended **Table 5**.

The suite of PAH tests included twenty-one parameters. The PAH detections in the remaining thirty-seven samples were below the GAC for all proposed end uses with the exception of coal tar.

The detected concentrations of coal tar in the 37 samples tested ranged between <0.015mg/kg and 1.47mg/kg. None of these concentrations exceeded the human health GAC for a commercial end use.

The measured concentration from BH4A (1.47mg/kg; 0.9m bgl) exceeded the GACs for both residential with and without gardens scenarios. In addition, the concentration from two further samples from BH212 (1.05mg/kg; 0.6m) and BH7A (1.05mg/kg; 0.7m bgl) exceeded the GAC for residential without gardens end use. The average coal tar concentration from the 37 samples is 0.24mg/kg and well below the GAC for the possible end use scenarios. Coal tar is therefore not measured at unacceptable concentration widespread across the site and is not considered to represent an unacceptable risk to human health regardless of the end use.

6.2.4 Volatile Organic Compounds

A total of 37 soil samples were analysed for a suite of sixty-four volatile organic compounds (VOCs) parameters. The results are included in appended **Table 6**. No VOCs were detected at concentrations in excess of the MDL in the 37 soil samples analysed for these compounds.

It is noted that the MDLs for chloromethane, vinyl chloride, trichloroethene, 1,2-dichloroethane, 1,2,3-trichloropropane and 1,2-dibromo-3-chloropropane exceed GACs for human health in a residential scenario. Given that VOCs have not been measured at concentration below the MDL in the 37 samples, it is considered unlikely that these parameters represent an unacceptable risk or environmental concern.

6.2.5 Polychlorinated biphenyl (PCB)

One soil sample was analysed for the presence of a suite of Poly-Chlorinated Biphenyls (PCBs). The results are included in appended **Table 5**. No PCB compounds were detected at concentrations in excess of the MDL in the sample analysed for these compounds.

The laboratory MDLs for pentachlorobiphenyl, 3,3,4,4,5- (PCB 126) and hexachlorobiphenyl, 3,3,4,4,5,5- (PCB 169) exceed the associate human health residential GACs. Given that none of the PCB congeners in the suite of parameters have been measured at concentration above the MDL in this sample, it is considered unlikely that these parameters represent an unacceptable risk or environmental concern.

6.2.6 Asbestos

A total of twenty-six samples of Made Ground were visually assessed at the laboratory for the presence of ACMs. The results are included in appended **Table 5**. Asbestos was visually identified (by microscope) in eight samples, including:

- BH2A (0.5m to 1.0m bgl): Amosite trace detected (loose fibres in soil);
- BH4A (0.9m bgl): Amosite and Chrysotile detected (loose fibres in soil);
- BH201A (0.7m bgl): Amosite detected;
- BH203A (0.5m bgl): Soil containing loose fibres and debris of asbestos bitumen;
- BH207 (0.7m bgl): Chrysotile detected (loose fibres in soil);
- BH208 (0.8m bgl): Chrysotile detected (loose fibres in soil);
- BH209 (0.5m bgl): Chrysotile detected (loose fibres in soil); and
- BH210 (0.8m bgl): Amosite detected.

Further quantification testing was undertaken in the laboratory on the eight samples. This quantification test indicates that the visually identified ACMs were below the hazardous waste threshold limit of <0.1% volume in the samples.

During the intrusive works, possible asbestos fragments were noted in the Made Ground of location BH4A between ground level and 1.3m bgl. There is no prescribed human health value for asbestos concentrations in soils in the UK. The system for evaluation is site-specific and dependent on site use and receptor. It is usually preferred that soils containing asbestos remain sealed in the ground and future disturbance controlled by code of construction practices.

Overall we consider that asbestos in soils is not presently an unacceptable risk for future residential and or commercial site use given the relatively low volumes measured in the samples. Future below ground works should consider the potential for asbestos to be present in Made Ground and appropriate standard construction controls adopted.

6.2.7 Miscellaneous Inorganic Compounds

A total of 37 soil samples were analysed for the presence of sulphide, sulphate, ammoniacal nitrogen as NH4 and pH. The results are included in appended **Table 4**.

None of these parameters were measured at concentrations that exceed the human health GAC for the three end use scenarios.

6.3 Groundwater

Groundwater analytical data from the 2015 sampling round are presented in **Tables 7** to **10** alongside the GAC used for generic risk assessment screening purposes.

The GAC used for protection of controlled waters in this assessment have been selected as England and Wales Environmental Quality Standards (EQSs) appropriate for protection of the River Thames. Where EQSs are not available drinking water standards (DWSs) from the UK or World Health Organisation have been selected.

Exceedances of GAC are summarised below.

6.3.1 Metals

A total of fourteen groundwater samples were analysed for metals. The results are included in appended **Table 7**. A summary of the results is in the following Table and discussed below.

Analyte	Number of detections	GAC (µg/l)		Range in Detected Concentrations (µg/l)	Average concentration	Number of GAC Exceedences		Location with Maximum Concentration
		Controlled Waters DWS	Controlled Waters EQS			Controlled Waters DWS	Controlled Waters EQS	
Arsenic	14	10	25	3.79 - 45.4	17	8	3	BH7
Cadmium	14	5	0.2	<0.1 - 0.228	0.063	0	1	BH9
Chromium (III+VI)	14	50	0.6	1.21 - 7.52	3.1	0	14	BH9
Cobalt	14	6	3	0.262 - 11.8	3.6	3	6	BH201A
Copper	13	2000	5	0.939 - 61.3	5.5	0	1	BH9
Lead	12	25	7.2	0.028 - 22.8	1.7	--	1	BH9
Manganese	14	50	--	7.19 - 2270	691	11	0	BH111
Selenium	14	10	--	0.781 – 13.2	4.1	1	0	BH110
Silver	0	94	0.5	<1.5	<1.5	0	13	Not detected
Thallium	0	0.2	--	<0.96	<0.96	13	0	Not detected
Zinc	14	6000	40	1.27 - 280	30	0	1	BH9

The groundwater sampled from BH9 is from perched water within Made Ground and is therefore not representative of the groundwater in the underlying superficial aquifer. A total of seven of the eighteen metals exceeded the EQS and three metals exceeded the DWS in the groundwater sample from BH9. The concentrations from BH9 are omitted from the discussion below.

The concentrations of silver and thallium were below the laboratory MDL in the fourteen samples tested. However, the laboratory MDL is marginally higher than the applicable EQS and DWS.

The concentrations of cadmium, chromium, copper, lead, silver and zinc were below the drinking water standards in the fourteen samples tested. Furthermore, the concentration of manganese, selenium and thallium were below the EQS in the fourteen samples tested.

The measured concentrations of arsenic exceeded the EQS in three samples and the DWS in eight samples of the fourteen samples tested. The average concentration from the fourteen samples is 17µg/l and exceeds the DWS, but is below the EQS.

The measured concentrations of cadmium exceeded the EQS in one (BH9 (0.228µg/l) of the fourteen samples tested. The average cadmium concentration from the fourteen samples is 0.063 µg/l and is below the EQS. None of the measured concentrations of cadmium exceed the DWS.

The measured concentrations of chromium (III & VI) exceeded the EQS in the fourteen samples tested, but did not exceed the DWS. The EQS GAC considers that the chromium detected is the more toxic chromium VI. However, the results of the analysis of soils have not detected chromium IV above the laboratory MDL in the 37 soils tested. The chromium detected in groundwater is therefore likely to be the less toxic chromium III. The application of the EQS is therefore over-conservative. In addition, the chromium concentrations are below the DWS.

The measured concentrations of cobalt exceeded the EQS in six (BH109, BH110, BH201A, BH5, BH7, BH9) of the fourteen samples tested. The measured concentrations of cobalt also exceeded the DWS in three (BH109, BH201A and BH9) of the fourteen samples tested. The average cobalt concentration from the fourteen samples is 3.6µg/l and is below the DWS (6µg/l) but exceeds the EQS (3µg/l).

EQS are not available for selenium and therefore the DWS have been adopted. The detected concentration of selenium exceeded the DWS in the groundwater sample collected from BH110. The average selenium concentration (4.1µg/l) is below the DWS (10µg/l).

The measured concentrations of manganese exceeded the DWS in eleven of the fourteen samples tested. The average concentration from the fourteen samples is 691µg/l and exceeds the DWS (50 µg/l).

The measured concentration of metals exceeded the DWS and EQS in groundwater from across the site. However, the measured concentrations are variable and in many cases are within one order of magnitude of the screening criteria. AECOM considers the metal concentrations detected to be representative of the quality of urban groundwater in a shallow perched aquifer.

The sensitivity of this aquifer is further reduced given that the aquifer does not represent a significant resource and is not within a source protection zone for an abstraction for potable use. In addition, the selected DWS GAC are applicable for groundwater at the consumers tap and after the necessary treatment for human consumption and the EQS are applicable for the quality at the receiving water. The use of these GAC is therefore considered conservative in this application.

6.3.2 Total Petroleum Hydrocarbons, BTEX and MTBE

A total of fourteen groundwater samples were analysed for TPH, BTEX and MTBE. The results are included in appended **Table 8**.

TPH was not measured above the laboratory MDL in eleven of fourteen samples tested. TPH was measured in samples from three monitoring wells (BH9, BH109 and BH111) at total TPH concentrations between 65.8µg/l and 1,430µg/l. DWS or EQS are not available for these compounds.

BTEX and MTBE concentrations were below the laboratory MDL in the fourteen samples tested and below the corresponding EQS and DWS.

6.3.3 Polycyclic Aromatic Hydrocarbons

A total of fourteen groundwater samples were analysed for a suite of 16 PAH compounds. The results are included in appended **Table 9** and summarized in the Table below.

Analyte	Number of detections	GAC (µg/l)		Range in Detected Concentrations (µg/l)	Number of GAC Exceedences		Location with Maximum Concentration
		Controlled Waters DWS	Controlled Waters EQS		Controlled Waters DWS	Controlled Waters EQS	
Anthracene	0	90	0.1	<1	--	13	All below MDL
Fluoranthene	1	4	0.1	<1 – 6.12	--	13	BH9
Benz(a)anthracene	0	0.1	--	<1	13	--	All below MDL
Chrysene	0	1	--	<1	2	--	BH9
Benzo(a) pyrene	1	0.01	0.05	<1 – 4.69	13	13	BH9
Dibenz(a,h)anthracene	0	0.01	--	<1	13	--	BH9
Benzo(b)&(k)fluoranthene	1	--	0.03	<2 – 8.42	--	13	BH9
PAHs (sum of 4)	1	0.1	--	<4 – 14.47	13	--	BH9
benzo(g,h,i)perylene + indeno(1,2,3-cd)pyrene	1	--	0.002	<2 – 6.05	--	13	BH9

The concentrations of PAHs in thirteen groundwater samples from the superficial River Gravels were below the laboratory MDL (<1 to <4 µg/l).

The MDL for six PAHs are above the EQS and four PAHs above the EQS. However, the lack of PAH detections above MDL indicate that this is not a significant concern..

One groundwater sample was from groundwater perched above a concrete slab and within the Made Ground at BH9. The concentrations of fluoranthene, benzo(a)pyrene, benzo(b)&(k)fluoranthene, PAHs (sum of 4) and benzo(g,h,i)perylene + indeno(1,2,3-cd)pyrene exceed the relevant EQS and/or DWS in groundwater sampled from location BH9. These exceedances are not considered a significant concern as the detected concentrations are representative of the perched water quality and none of these parameters are measured above the GAC in groundwater from the superficial River Gravels.

6.3.4 Volatile Organic Compounds and Semi-volatile Organic Compounds

A total of fourteen groundwater samples were analysed for a suite of sixty-five VOC and thirteen samples were analysed for a suite of sixty SVOC parameters. The results are included in appended **Table 10**.

VOCs have not been identified in excess of the MDL in ten of the fourteen samples tested. Chlorobenzene was measured in samples from four monitoring wells (BH111, BH201A, BH7 and BH9). These results are below the DWS (300 µg/l).

SVOCs have not been identified in excess of the MDL in ten of the fourteen samples tested. 1,1,1-trichloroethane, trihalomethanes, 4-methylphenol and carbon disulfide were measured in samples from three monitoring wells (BH4, BH9 and BH111). These results are below the available EQS and DWS.

The concentration of phenol in groundwater from BH9 (10.7µg/l) exceeded the EQS (7.7µg/l), but not the DWS (5,800µg/l).

The laboratory MDL for 24 VOC & SVOC parameters exceeded the relevant EQS and/or DWS. Given the lack of detections of VOC and SVOC parameters in groundwater, this is not considered to be a significant concern.

6.3.5 Miscellaneous Inorganic Compounds

The miscellaneous inorganic suite included nitrate (as NO3-), phosphate, ammoniacal nitrogen as N, ammoniacal nitrogen (as NH4), sulphate, COD and pH. The results are included in appended **Table 7**.

The groundwater pH at the Site ranged between 7.10 and 8.09 indicating slightly alkaline groundwater conditions.

Nitrate was not detected above the laboratory MDL (<0.3 mg/l) in two of the fourteen samples tested. The concentration of nitrate in twelve groundwater samples ranged between 0.94 and 21.9mg/l. The nitrate concentrations in these samples do not exceed the DWS (50 mg/l).

Phosphate was not detected above the laboratory MDL (<0.05 mg/l) in two of the fourteen samples tested. The concentration of phosphate in twelve groundwater samples ranged between 0.056 and 14.1mg/l. EQS or DWS are not available for this compound.

Sulphate was not detected above the laboratory MDL (<2 mg/l) in one of the fourteen samples tested. The concentration of sulphate in thirteen groundwater samples ranged between 37.5 and 457mg/l. EQS or DWS are not available for this compound.

Ammoniacal nitrogen was not detected above the laboratory MDL (<0.2 mg/l) in seven of the fourteen samples tested. The concentration of ammoniacal nitrogen in seven groundwater samples ranged between 0.508 and 5.66mg/l. The ammoniacal nitrogen concentration in six of these samples exceeded the DWS (0.389 mg/l). The most elevated concentration of ammoniacal nitrogen was measured in groundwater perched within the Made Ground at BH9. The average ammoniacal nitrogen concentration from groundwater sampled from the superficial River Gravels was 0.67mg/l and marginally exceeds the DWS.

COD was not detected above the laboratory MDL (<7 mg/l) in six of the fourteen samples tested. The concentration of COD in eight groundwater samples ranged between 8.09 and 3,330mg/l. EQS or DWS are not available for this compound.

7. CONCLUSIONS

7.1 General Site Description

This report presents the findings of a Phase 2 ESA at the Stag Brewery Mortlake facility, Mortlake, London, SW14 7ET. The Stag Brewery has been used for the production and packaging of alcoholic beverages since the late 1850s. However, the Stag Brewery will cease manufacturing operations in 2015 and the site is to be divested for redevelopment. The objective of this report is to present an assessment of the environmental ground conditions at the Site.

The site investigation undertaken included the drilling of two boreholes with a groundwater monitoring well installations to supplement the existing network of thirteen groundwater monitoring wells installed during previous phases of investigation. Twenty-eight soil bores were also drilled across the Site to provide a higher density of exploratory points, better understand the ground conditions and collect soil samples for laboratory chemical analysis.

7.2 Site Characterisation Findings

Ground Conditions

The ground conditions at the site were assessed from twenty-eight soil bores were drilled using dynamic percussive drilling techniques to a maximum depth of 5.0m bgl. The drilling work was undertaken between 20 and 28 August 2015. The deepening sequence of geology encountered in the site investigation includes Made Ground, superficial deposits of River Terrace Gravels and London Clay bedrock.

Made Ground is between 1.2m and 2.6m thick and comprised loose roadstone, red/yellow brick and concrete gravels, sand and gravels of flint and occasional reworked clay. Buried obstructions, thought to represent relict concrete slabs, were encountered at eleven locations.

The boundary between the River Terrace Deposits and London Clay was encountered at depths between 6.5 and 6.9m bgl. The London Clay was encountered to the maximum depth of drilling (7.0 bgl).

Hydrogeology

Groundwater elevation monitoring on 28 August 2015 indicated the groundwater to be between 3.57 and 5.14 mbgl. Groundwater flow direction is inferred to be west. The tidal effects of the River Thames were measured in three boreholes across the site by continuous monitoring over 2.5 days. The results indicated a maximum fluctuation of 60mm in a well 20m from the River Thames. However, no measurable effect on groundwater elevation was recorded on the two wells located 65m and 200m from the River Thames.

Soil Quality

No obvious visual or olfactory evidence of hydrocarbon contaminated soils was noted from the drilling arisings. Furthermore, only one result (2.1ppm) out of 113 screening tests performed was above the detection limit (<0.1ppm) of the Photo-Ionisation Detector (PID) equipment during soil headspace monitoring.

A total of 25 samples of Made Ground and 14 samples of natural ground were analysed at Alcontrol Laboratories for a suite of inorganic and organic chemical parameters. The results were compared to generic assessment criteria (GAC) suitable for thee end use scenarios: residential with gardens, residential without gardens and commercial. The comparison indicated that the soil chemistry does not represent an unacceptable risk to human health regardless of the end use scenario.

Asbestos Containing Materials (ACMs): During the site investigation suspected ACMs were observed as fragmented tiles from one exploratory hole (BH4A between ground level and 1.3m bgl). A total of twenty-six samples of Made Ground were also visually screened at the analytical laboratory and asbestos fibres were observed in eight samples. Asbestos quantification analysis on the eight samples measured a concentration of ACMs <0.1% and below hazardous waste criteria.

Overall we consider that asbestos in soils is not presently an unacceptable risk for future residential and or commercial site use given the relatively low volumes measured in the samples. Future below ground works should consider the potential for asbestos to be present in Made Ground and appropriate standard construction controls adopted.

Groundwater Quality

During groundwater monitoring no obvious visual or olfactory indication of contamination was identified from the sampled groundwater. A total of fourteen groundwater samples were analysed at Alcontrol Laboratories for a suite of inorganic and organic chemical parameters. The results were compared to GAC protective of the adjacent River Thames (marine Environmental Quality Standards) and England Drinking Water Standards. The comparison indicated that the majority of chemical parameters were below the relevant GAC and although some minor exceedances were measured at isolated locations, the groundwater quality is considered commensurate with that in an urban environment.

7.3 Conclusions

The site characterization has not encountered soil and groundwater conditions that represent a constraint to redevelopment of the Site for mixed commercial and residential use above what would normally be expected from previously developed land.

The chemical analysis of the Site soils and groundwater has not identified concentrations that represent an environmental risk to human health or controlled waters. No environmental improvement works are considered necessary at the Site based on a mixed use development scheme.

It is likely that works to remove relict buried foundations and slabs will be required to allow construction of deep structures and foundations. Furthermore, it is unlikely that the physical composition of the existing shallow Made Ground soils will be of suitable composition for use in soft planted areas. Imported soils are therefore likely to be required for soft planting and landscaping.

8. REFERENCES

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3. Conestoga-Rovers & Associates (Europe) Ltd (October 2003). Baseline Soil & Groundwater Investigation, Stag Brewery Lower Richmond Road, Mortlake, London SW14 7ET. Reference 019592(2).

4. Conestoga-Rovers & Associates (Europe) Ltd (December 2004). Application Site Report for IPPC Application, Budwiser Stag Brewing Company Limited, Lower Richmond Road, Mortlake, London, SW14 7ET. Reference 019592 (1).

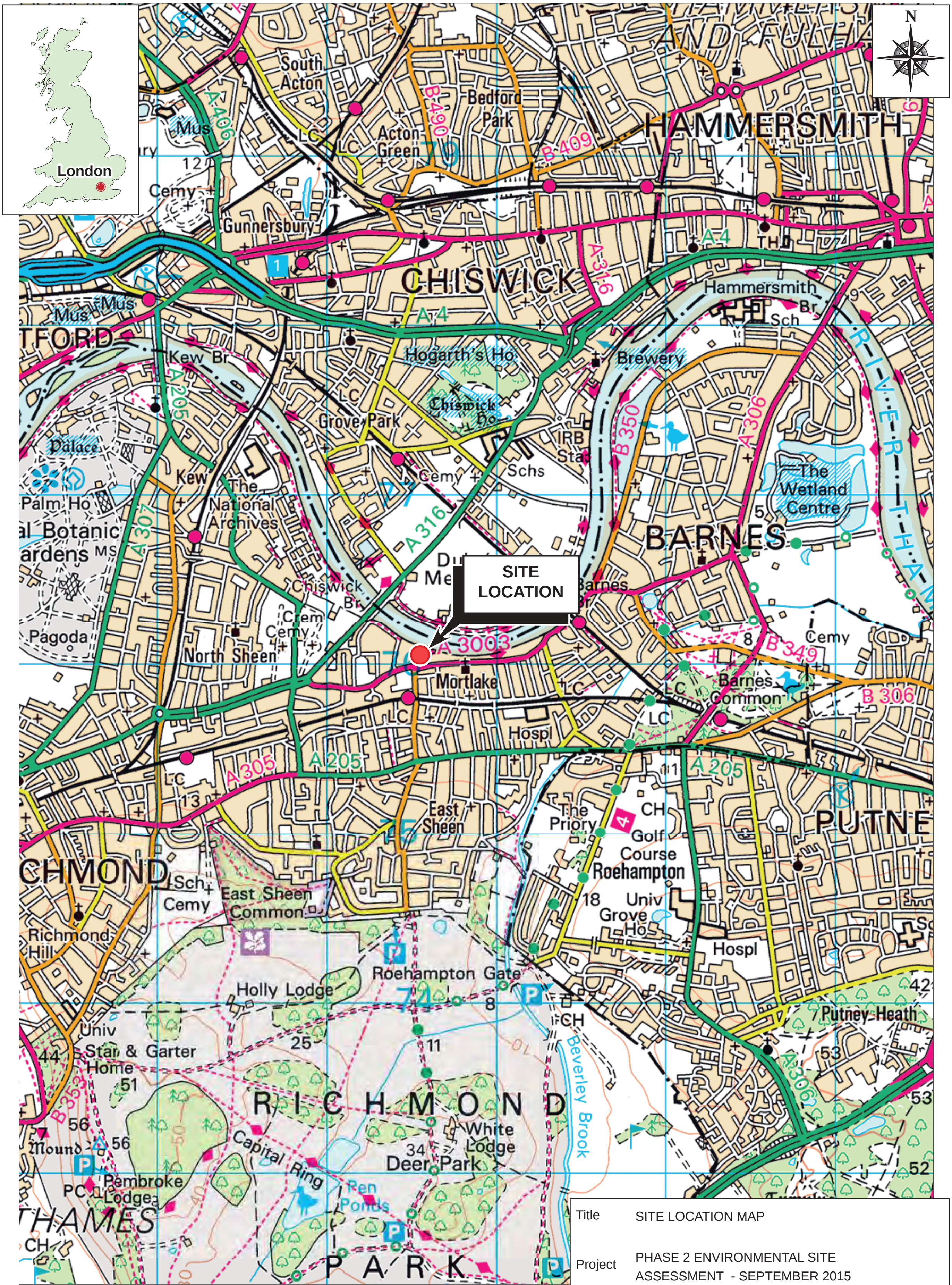
5. Conestoga-Rovers & Associates (Europe) Ltd (March 2006). Second Round of Groundwater Quality Monitoring at Budweiser Stag Brewing Co. Ltd, to help fulfill SPMP requirements. Letter Report 919592 (2).

6. Conestoga-Rovers & Associates (Europe) Ltd (September 2007-January 2008). Third Round of Groundwater Quality Monitoring at Budweiser Stag Brewing Co. Ltd, Lower Richmond Road, Mortlake, London, UK. Reference No. 933413-03.

7. Budweiser Stag Brewing Company Limited (July 2008). Design of Site Protection Monitoring Programme. PPC Permit No. BS9784IK. Reviewed by M Frost (EHS manager) on behalf of Stag Brewing Company Ltd July 2008.

8. Conestoga-Rovers & Associates (Europe) Ltd (November 2012). Site Protection Monitoring Programme (SPMP) Permit No. BS9784IK 2012 SPMP Report – Fourth Round, Referenced 934125-RPT-2.

FIGURES



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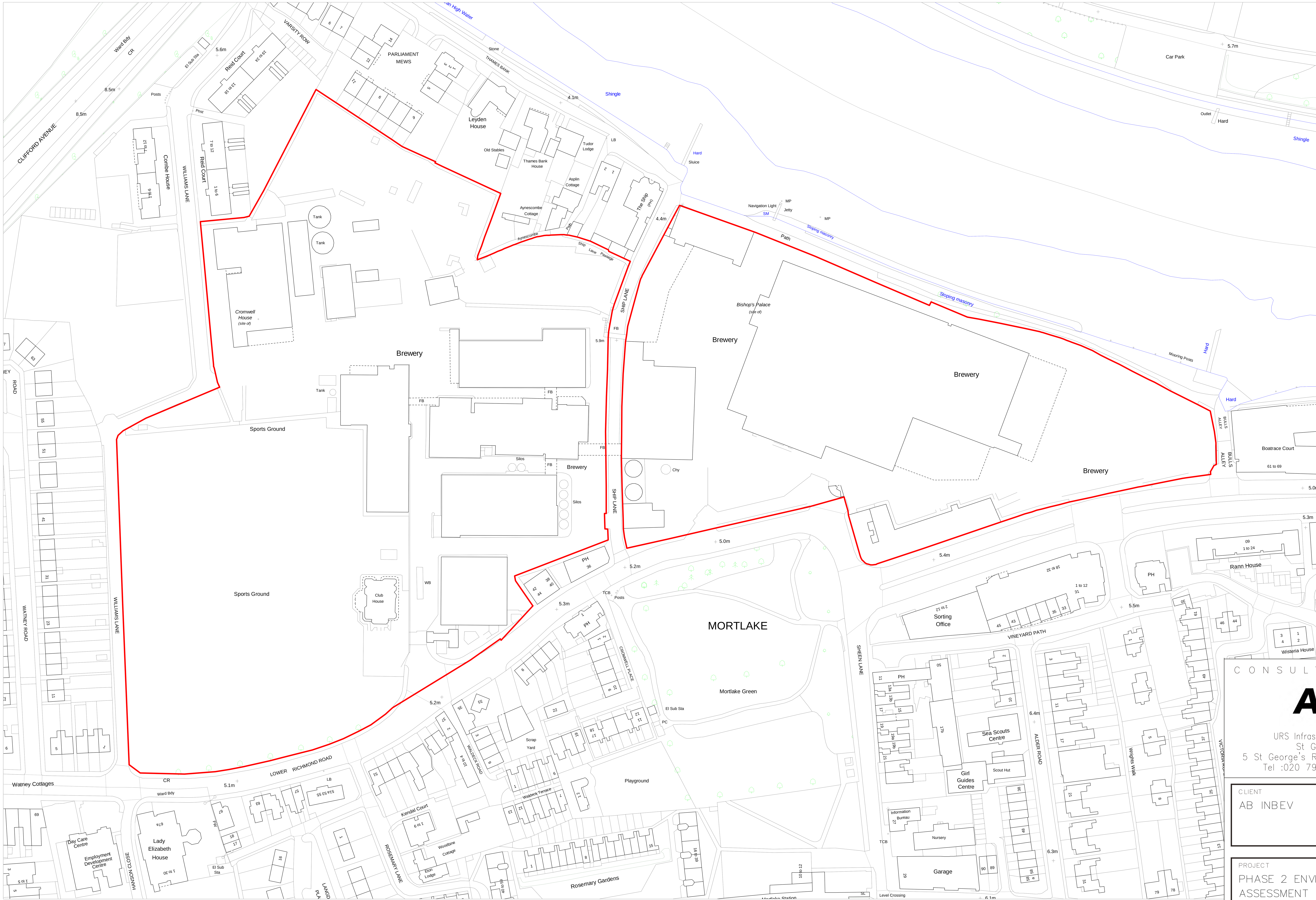
0 1km
SCALE

Title	SITE LOCATION MAP
Project	PHASE 2 ENVIRONMENTAL SITE ASSESSMENT - SEPTEMBER 2015
Client	AB INBEV

AECOM

App'd:	Drawn:	Date:
MM	AM/LCS	SEPT 2015
FINAL		Ref: MM/AM/WIMB
Scale: AS SHOWN		Job No: 47074683
Drg. Size: A4		FIGURE 1



N

SITE BOUNDARY

0 50 100 150m

APPROXIMATE SCALE

CONSULTING ENGINEERS

AECOM

URS Infrastructure & Environment UK LTD,
St George's House, 3rd Floor
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Tel :020 7963 9800 Fax: 020 7963 9801

CLIENT: AB INBEV				
PROJECT: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT – SEPTEMBER 2015				
DRAWING TITLE: FIGURE 2 – SITE LAYOUT PLAN				
DRAWN	DESIGNED	CHECKED	APPROVED	DATE
LCS		MM	MM	SEPT 2015
SCALE	DRG No.			REV.
AS SHOWN	47074683			

AREA KEY

CRA, 2003 & DAMES & MOORE, 1995 GROUNDWATER MONITORING NETWORK

EXPLORATORY HOLE LOCATION - AECOM SEPTEMBER 2015

BH201A - ADDTIONAL GROUNDWATER WELL - AECOM 2015

BH2, BH3, BH4, BH5, BH7, BH8, BH9, BH10 — CRA, 2003 LOCATION SUMMARY

BH104B, BH109, BH110, BH111, BH112 — DAMES & MOORE, 1995 LOCATION SUMMARY

BH2A, BH3A, BH4A, BH5A, BH7A, BH8A, BH9A, BH109A, BH201, BH201A, BH202, BH202A, BH203, BH203A, BH204, BH205, BH206, BH207, BH208, BH208A, BH209, BH210, BH211, BH212, BH213, BH214, BH214A — AECOM, 2015 LOCATION SUMMARY

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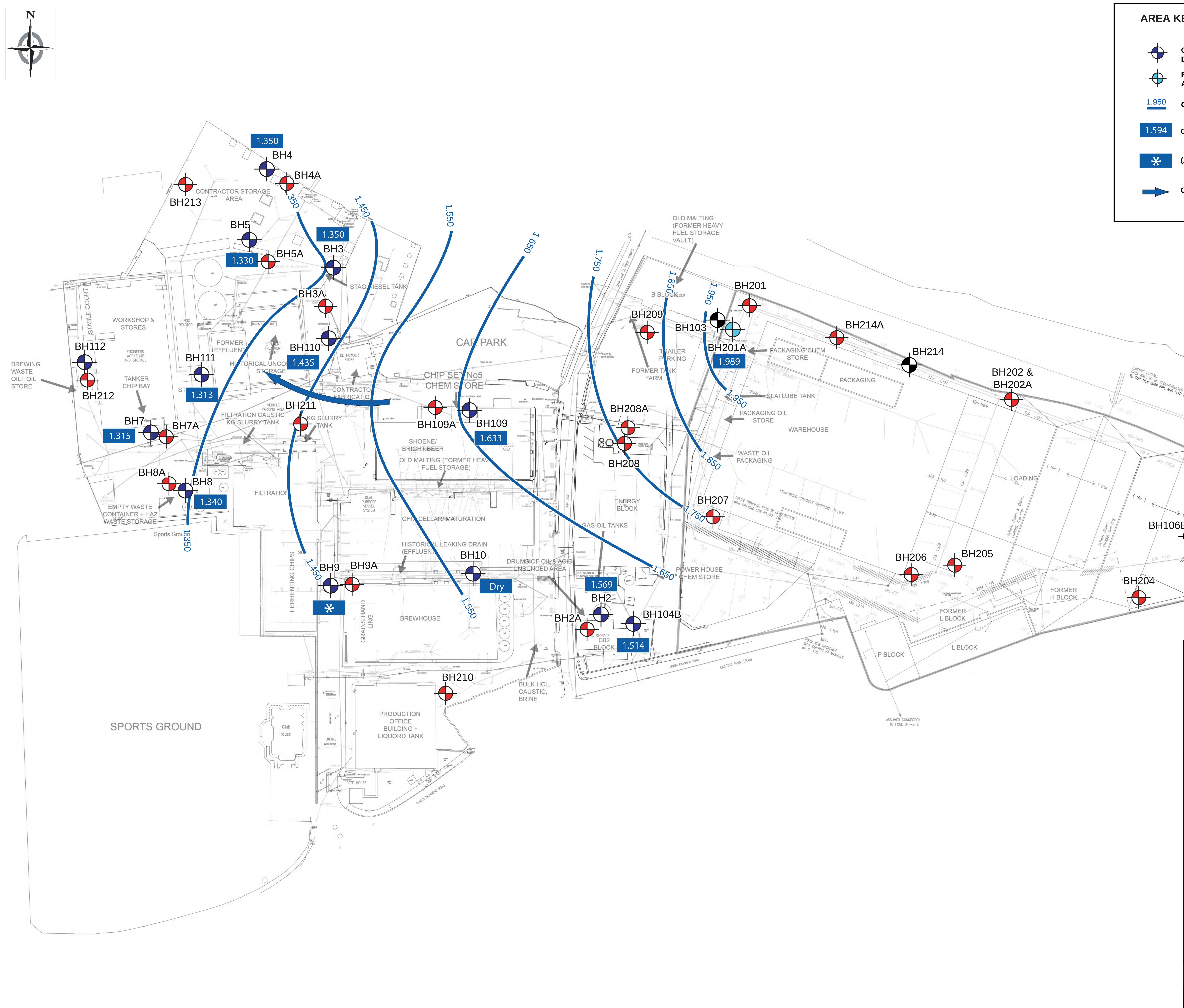
PROJECT
PHASE 2 ENVIRONMENTAL SITE ASSESSMENT – SEPTEMBER 2015

DRAWING TITLE
FIGURE 3 – EXPLORATORY HOLE PLAN

DRAWN	DESIGNED	CHECKED	APPROVED	DATE
AM/LCS		MM	MM	SEPT 2015
SCALE: AS SHOWN	DRG No. 47074683			REV.



AREA KEY

- GROUNDWATER MONITORING WELL NETWORK - DAMES & MOORE,1995 & CRA, 2003
- BH201A , ADDITIONAL GROUNDWATER MONITORING WELL - AECOM 2015
- 1.950 GROUNDWATER CONTOUR
- 1.594 GROUNDWATER ELEVATION
- * (ANOMOLOUS) DATE, PERCHED WATER
- GROUNDWATER FLOW DIRECTION

CONSULTING ENGINEERS

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PROJECT
PHASE 2 ENVIRONMENTAL SITE ASSESSMENT – SEPTEMBER 2015

DRAWING TITLE
FIGURE 4 – GROUNDWATER CONTOUR PLAN, 28TH AUGUST 2015, FULL DIP ROUND

DRAWN	DESIGNED	CHECKED	APPROVED	DATE
LCS		MM	MM	SEPT 2015
SCALE AS SHOWN	DRG No. 47074683			REV.

TABLES

Table 1 - Soil Sampling Schedule

Sample ID		BH109A	BH201A	BH201A	BH202A	BH203A	BH204	BH204	BH205	BH205	BH206	BH207	BH207
Depth		0.8	0.7	1.90 - 2.00	0.8	0.50	1.30	3.3	1.00	2.50	1.1	0.70	2.60 - 3.50
Sampling Date		28/08/2015	25/08/2015	25/08/2015	25/08/2015	20/08/2015	21/08/2015	21/08/2015	21/08/2015	21/08/2015	21/08/2015	25/08/2015	25/08/2015
Sample Description		MADE GROUND: Soft, dark brown, sandy, gravelly clay. Sand is fine to coarse. Gravel is fine to medium, angular to subangular of flint, crushed concrete and brick.	MADE GROUND: Brown/red/ yellow, gravelly, fine-coarse sand. Gravel is fine-coarse, angular-subangular of brick, flint and natural stone.	Light brown, dense, medium-fine SAND with occasional rounded flint.	MADE GROUND: Brown, gravelly, fine-coarse sand. Gravel is fine-medium, subangular-subrounded of concrete.	MADE GROUND: Very dense, sandy, angular to sub-angular gravel of brick, granite and concrete.	MADE GROUND: Very soft, brown/ red, very sandy clay. Sand is fine-coarse.	Brown, sandy, fine-medium, subangular-subrounded GRAVEL.	MADE GROUND: Very dense, brown, sandy, fine-medium, angular-subangular gravel of brick, concrete, flint, glass. Sand is fine-coarse.	MADE GROUND: Very dense, brown, sandy, fine-medium, angular-subangular gravel of brick, concrete, flint, glass. Sand is fine-coarse.	MADE GROUND: Soft brown sandy clay. Gravel is fine-medium, angular-subangular of brick and concrete.	MADE GROUND: Grey/red, dense, fine to coarse sand and gravel of concrete and brick.	Brown, dense, gravelly SAND. Gravel fine, occasionally medium of flint. Sand is fine to medium.
Scheduled Chem. Group	Total Analyses												
Metals in solid samples by OES	12	1	1	1	1	1	1	1	1	1	1	1	1
Hexavalent Chromium	12	1	1	1	1	1	1	1	1	1	1	1	1
PAH by GCMS	12	1	1	1	1	1	1	1	1	1	1	1	1
TPH CWG GC	12	1	1	1	1	1	1	1	1	1	1	1	1
VOC MS	12	1	1	1	1	1	1	1	1	1	1	1	1
EPH CWG (Aliphatic) GC	12	1	1	1	1	1	1	1	1	1	1	1	1
EPH CWG (Aromatic) GC	12	1	1	1	1	1	1	1	1	1	1	1	1
GRO by GC-FID	12	1	1	1	1	1	1	1	1	1	1	1	1
pH	12	1	1	1	1	1	1	1	1	1	1	1	1
Total Organic Carbon	12	1	1	1	1	1	1	1	1	1	1	1	1
Total Sulphate	12	1	1	1	1	1	1	1	1	1	1	1	1
Easily Liberated Sulphide	12	1	1	1	1	1	1	1	1	1	1	1	1
Ammonium Soil by Titration	12	1	1	1	1	1	1	1	1	1	1	1	1
Asbestos ID	10		1	1	1	1	1	1	1	1	1	1	
Asbestos Quant	6		1	1	1	1			1			1	
PCB 7 & WHO 12 (S) by GC MS	0												

Sample ID		BH208A	BH208A	BH209	BH209	BH210	BH210	BH211	BH211	BH212	BH212	BH213	BH213	BH214
Depth		0.8	1.1	0.5	2.70 - 3.40	0.8	2.20 - 2.80	0.7	2.2	0.6	1.80 - 2.50	0.6	1.70 - 2.00	0.85
Sampling Date		25/08/2015	25/08/2015	25/08/2015	25/08/2015	26/08/2015	26/08/2015	26/08/2015	26/08/2015	27/08/2015	27/08/2015	27/08/2015	27/08/2015	25/08/2015
Sample Description		MADE GROUND: Dark brown, slightly clayey, gravelly, fine to coarse sand. Gravel fine occasionally coarse, subangular to subrounded of brick and flint.	Medium density, brown, gravelly, fine to coarse SAND. Gravel is fine to medium, subangular to subrounded of flint.	MADE GROUND: Brown, grey/ black, gravelly, fine to coarse sand. Gravel is fine to coarse, angular to subangular of brick and concrete.	Brown, gravelly, fine to coarse SAND. Gravel is fine to medium, subangular to subrounded of flint. Very little gravel between 3.0 -3.2m.	MADE GROUND: Dense, brown, sandy, fine to coarse, subangular to rounded gravel of natural stones.	Brown, gravelly, fine to coarse SAND. Gravel is fine to medium to subrounded of flint. Becoming more gravelly with depth.	MADE GROUND: Brown, sandy, fine to coarse, subangular to rounded gravel of natural stone, wood and occasional brick. Becoming clayey with depth.	Brown, gravelly, fine to coarse SAND. Gravel is fine to medium, subangular to rounded of flint.	MADE GROUND: Pink / red, gravelly, fine to coarse sand. Gravel is fine to medium of flint with occasional coarse brick and crushed concrete.	Dense, brown, gravelly fine to coarse SAND. Gravel is fine to medium subangular to rounded. Becoming more gravelly with depth.	MADE GROUND: Brown / grey, slightly clayey, sandy, fine to coarse, angular to subangular gravel of brick, concrete, tile and plastic. Sand is fine to coarse.	Dense, brown, gravelly, fine to coarse SAND. Gravel is fine to medium, angular to subrounded of flint.	MADE GROUND: Light brown, dense gravelly sand. Sand is medium to coarse. Gravel is medium to coarse, subangular to subrounded of flint and concrete.
Scheduled Chem. Group	Total Analyses													
Metals in solid samples by OES	13	1	1	1	1	1	1	1	1	1	1	1	1	1
Hexavalent Chromium	13	1	1	1	1	1	1	1	1	1	1	1	1	1
PAH by GCMS	13	1	1	1	1	1	1	1	1	1	1	1	1	1
TPH CWG GC	13	1	1	1	1	1	1	1	1	1	1	1	1	1
VOC MS	13	1	1	1	1	1	1	1	1	1	1	1	1	1
EPH CWG (Aliphatic) GC	13	1	1	1	1	1	1	1	1	1	1	1	1	1
EPH CWG (Aromatic) GC	13	1	1	1	1	1	1	1	1	1	1	1	1	1
GRO by GC-FID	13	1	1	1	1	1	1	1	1	1	1	1	1	1
pH	13	1	1	1	1	1	1	1	1	1	1	1	1	1
Total Organic Carbon	13	1	1	1	1	1	1	1	1	1	1	1	1	1
Total Sulphate	13	1	1	1	1	1	1	1	1	1	1	1	1	1
Easily Liberated Sulphide	13	1	1	1	1	1	1	1	1	1	1	1	1	1
Ammonium Soil by Titration	13	1	1	1	1	1	1	1	1	1	1	1	1	1
Asbestos ID	6	1		1		1		1		1		1		
Asbestos Quant	3	1		1		1								
PCB 7 & WHO 12 (S) by GC MS	1	1												

Sample ID		BH2A	BH2A	BH3A	BH4A	BH4A	BH5A	BH5A	BH7A	BH7A	BH8A	BH8A	BH9A	BH9A
Depth		0.5	1.5	0.5	0.9	3.50 - 4.00	0.5	2.5-3	0.7	2.50 - 3.00	0.5	3.00 - 3.50	0.5	2.2-3.3
Sampling Date		25/08/2015	25/08/2015	28/08/2015	27/08/2015	27/08/2015	28/08/2015	28/08/2015	27/08/2015	27/08/2015	26/08/2015	26/08/2015	26/08/2015	26/08/2015
Sample Description		MADE GROUND: Brown sandy fine-medium angular gravel of flint and crushed concrete. Sand is fine-coarse.	Soft, brown, sandy clay.	MADE GROUND: Brown, gravelly, fine-coarse sand. Gravel is fine-medium, occasionally coarse, angular-subangular of brick, glass and concrete.	MADE GROUND: Brown, grey, slightly clayey, gravelly, fine-coarse sand. Gravel is fine-medium, angular-subangular of concrete, brick tile and rootlets.	Brown, very gravelly, fine-coarse SAND. Gravel is fine-medium, subangular-subrounded of flint.	MADE GROUND: Brown, slightly clayey, gravelly, fine-coarse sand. Gravel is fine-medium, occasionally coarse, subangular-subrounded of red brick.	Dense, brown, gravelly, fine-coarse SAND. Gravel is fine-medium, subangular-rounded of flint.	MADE GROUND: Soft, dark brown/grey, slightly gravelly, silty clay. Gravel is fine and subangular of red brick with fragments of wood.	Dense, brown, gravelly, fine-coarse SAND. Gravel content increases with depth. Gravel is fine-medium, subangular-subrounded of flint.	MADE GROUND: Black sand and gravel. Gravel is medium to coarse, angular to sub-rounded of flint. Sand is fine-coarse of ash.	Dense, brown, gravelly, fine-coarse SAND. Gravel is fine-medium subangular-rounded of flint.	MADE GROUND: Dense, brown, gravelly, fine-coarse sand. Gravel is fine-medium, subrounded-rounded of natural stone, becoming clayey with depth. Poor recovery.	MADE GROUND: Black, sandy, fine-medium, angular, red/grey gravel of flint and crushed concrete. Sand is fine-coarse.
Scheduled Chem. Group	Total Analyses													
Metals in solid samples by OES	13	1	1	1	1	1	1	1	1	1	1	1	1	1
Hexavalent Chromium	13	1	1	1	1	1	1	1	1	1	1	1	1	1
PAH by GCMS	13	1	1	1	1	1	1	1	1	1	1	1	1	1
TPH CWG GC	13	1	1	1	1	1	1	1	1	1	1	1	1	1
VOC MS	13	1	1	1	1	1	1	1	1	1	1	1	1	1
EPH CWG (Aliphatic) GC	13	1	1	1	1	1	1	1	1	1	1	1	1	1
EPH CWG (Aromatic) GC	13	1	1	1	1	1	1	1	1	1	1	1	1	1
GRO by GC-FID	13	1	1	1	1	1	1	1	1	1	1	1	1	1
pH	13	1	1	1	1	1	1	1	1	1	1	1	1	1
Total Organic Carbon	13	1	1	1	1	1	1	1	1	1	1	1	1	1
Total Sulphate	13	1	1	1	1	1	1	1	1	1	1	1	1	1
Easily Liberated Sulphide	13	1	1	1	1	1	1	1	1	1	1	1	1	1
Ammonium Soil by Titration	13	1	1	1	1	1	1	1	1	1	1	1	1	1
Asbestos ID	8	1		1	1		1	1	1		1		1	
Asbestos Quant	2	1			1									
PCB 7 & WHO 12 (S) by GC MS	0													

Table 2 - Groundwater Sampling Schedule

	Sample ID	BH2	BH3	BH4	BH5	BH7	BH8	BH9	BH10
	Sampling Date	02/09/2015	01/09/2015	01/09/2015	01/09/2015	01/09/2015	01/09/2015	02/09/2015	01/09/2015
Scheduled Chem. Group	Total Analyses								
Toxic 9 Metals Filtered (W)	7	1	1	1	1	1	1	1	1
COD, unfiltered	7	1	1	1	1	1	1	1	1
Ammoniacal Nitrogen as N	7	1	1	1	1	1	1	1	1
Ammoniacal Nitrogen as NH4	7	1	1	1	1	1	1	1	1
Nitrate as NO3	7	1	1	1	1	1	1	1	1
Phosphate (ortho) as PO4	7	1	1	1	1	1	1	1	1
Sulphate	7	1	1	1	1	1	1	1	1
Boron (diss.filt)	7	1	1	1	1	1	1	1	1
Metals Prep	7	1	1	1	1	1	1	1	1
VOC (W) by GC MS	7	1	1	1	1	1	1	1	1
pH Value	7	1	1	1	1	1	1	1	1
TPH Total (Includes EPH Total and GRO Total)	7	1	1	1	1	1	1	1	1
BTEX & MTBE	7	1	1	1	1	1	1	1	1

	Sample ID	BH104B	BH109	BH110	BH111	BH201A	DUP01 (BH4)
	Sampling Date	02/09/2015	01/09/2015	01/09/2015	01/09/2015	02/09/2015	01/09/2015
Scheduled Chem. Group	Total Analyses						
Toxic 9 Metals Filtered (W)	6	1	1	1	1	1	1
COD, unfiltered	6	1	1	1	1	1	1
Ammoniacal Nitrogen as N	6	1	1	1	1	1	1
Ammoniacal Nitrogen as NH4	6	1	1	1	1	1	1
Nitrate as NO3	6	1	1	1	1	1	1
Phosphate (ortho) as PO4	6	1	1	1	1	1	1
Sulphate	6	1	1	1	1	1	1
Boron (diss.filt)	6	1	1	1	1	1	1
Metals Prep	6	1	1	1	1	1	1
VOC (W) by GC MS	5	1	1	1	1	1	0
pH Value	6	1	1	1	1	1	1
TPH Total (Includes EPH Total and GRO Total)	6	1	1	1	1	1	1
BTEX & MTBE	6	1	1	1	1	1	1

Table 3 - Field Observations of Fluid Levels in Wells and Groundwater Quality

Well ID	Date	Depth to NAPL [m bgl]	Depth to Water (DTW) [m bgl]	Depth to Bottom (DTB) [m bgl]	Relative Elevation of Well Cover [m AOD]	Relative Elevation of Top of Well Casing [m AOD]	Relative Elevation of Water Level [m AOD]	O.d.P [mV]	Temperature [deg C]	pH	Conductivity [µS/cm@25C]	Dissolved Oxygen [%]	Sampling Method	Comments
	Oct 2003 - 1st Round (BASELINE EVENT)	--	5.2	6.7			--	--	--	--	--	--	No Info. Provided.	Data from CRA 2003 borehole log. NVO.
	Dec 2005 - 2nd Round	--	4.18	6.88			--	--	--	--	--	--	HDPE Bailer	Good yield. Recovered purged water observed to be clear. NVO.
BH2	Apr 2007 - Third Round	--	4.08	6.98	5.82	5.69	--	--	--	--	--	--	HDPE Bailer	Good yield. Recovered purged water observed to be clear with no streaks or odour. NVO.
	Sep 2012 - Fourth Round	--	4.4	6.84			--	--	--	--	--	--	HDPE Bailer	Dark brown for first 5L. Organic matter and orange colouring from 5L to 24L purge. Slight oil sheen noted.
	Sep 2015 - Fifth Round	--	4.121	6.764			1.569	-107.1	14.7	6.82	1609	0.374	Peristaltic Pump	Well de-silted. Light brown turning clear after approx. 3L. NVO.
	Oct 2003 - 1st Round (BASELINE EVENT)	--	5.5	6.5			--	--	--	--	--	--	No Info. Provided.	Data from CRA 2003 borehole log. NVO.
	Dec 2005 - 2nd Round	--	5.27	6.18			--	--	--	--	--	--	HDPE Bailer	Good yield. Water brown in colour. Some very fine, white possibly living organisms noted. NVO.
BH3	Apr 2007 - Third Round	--	4.91	5.94	6.55	6.49	--	--	--	--	--	--	HDPE Bailer	Good yield. Initially slightly grey in colour with small amount of organic matter. Cleared after initial 20L to become brown in colour. No streaks or odour.
	Sep 2012 - Fourth Round	--	5.23	5.38			--	--	--	--	--	--	HDPE Bailer	Dark brown/black purge water, lots of organic material in water. NVO.
	Sep 2015 - Fifth Round	--	5.14	6.035			1.35	-81	15.1	6.88	1449	0.946	Peristaltic Pump	Well de-silted. Light brown turning clear after approx. 1L. NVO.
	Oct 2003 - 1st Round (BASELINE EVENT)	--	4.8	6.7			--	--	--	--	--	--	No Info. Provided.	Data from CRA 2003 borehole log. NVO.
	Dec 2005 - 2nd Round	--	4.96	6.31			--	--	--	--	--	--	HDPE Bailer	Good yield to final purge volume of 40L. No odour. Slight oily sheen on water surface.
BH4	Apr 2007 - Third Round	--	4.72	6.23	6.21	6.18	--	--	--	--	--	--	HDPE Bailer	Good yield. NVO.
	Sep 2012 - Fourth Round	--	4.9	4.95			--	--	--	--	--	--	--	No sample obtainable - insufficient water volume.
	Sep 2015 - Fifth Round	--	4.83	6.169			1.35	32.8	15	6.6	522	5.61	Peristaltic Pump	Well de-silted. Light brown turning clear after approx. 0.5L. NVO.
	Oct 2003 - 1st Round (BASELINE EVENT)	--	5	7			--	--	--	--	--	--	No Info. Provided.	Data from CRA 2003 borehole log. NVO.
	Dec 2005 - 2nd Round	--	4.94	6.47			--	--	--	--	--	--	HDPE Bailer	Good yield. NVO.
BH5	Apr 2007 - Third Round	--	4.57	6.23	6.185	6.085	--	--	--	--	--	--	HDPE Bailer	Good yield. NVO.
	Sep 2012 - Fourth Round	--	Dry	4.87			--	--	--	--	--	--	--	No sample obtainable - insufficient water volume.
	Sep 2015 - Fifth Round	--	4.755	6.07			1.33	25.5	16.1	6.73	775	1.518	Peristaltic Pump	Well de-silted. Light brown turning clear after approx. 0.5L. NVO.
	Oct 2003 - 1st Round (BASELINE EVENT)	--	5.3	6.7			--	--	--	--	--	--	No Info. Provided.	Data from CRA 2003 borehole log. NVO.
	Dec 2005 - 2nd Round	--	5.07	6.84			--	--	--	--	--	--	HDPE Bailer	Good yield. Clear grey water. NVO.
BH7	Apr 2007 - Third Round	--	4.93	6.84	6.45	6.425	--	--	--	--	--	--	HDPE Bailer	Good yield.Clear grey water. NVO.
	Sep 2012 - Fourth Round	--	5.21	6.49			--	--	--	--	--	--	HDPE Bailer	No comments provided.
	Sep 2015 - Fifth Round	--	5.11	6.947			1.315	-98.6	16.8	7.09	1707	0.539	Peristaltic Pump	Well de-silted. Clear water NVO.

Table 3 - Field Observations of Fluid Levels in Wells and Groundwater Quality

Well ID	Date	Depth to NAPL [m bgl]	Depth to Water (DTW) [m bgl]	Depth to Bottom (DTB) [m bgl]	Relative Elevation of Well Cover [m AOD]	Relative Elevation of Top of Well Casing [m AOD]	Relative Elevation of Water Level [m AOD]	O.d.P [mV]	Temperature [deg C]	pH	Conductivity [µS/cm@25C]	Dissolved Oxygen [%]	Sampling Method	Comments
BH8	Oct 2003 - 1st Round (BASELINE EVENT)	--	4.9	7.2	6.2	6.155	--	--	--	--	--	--	No Info. Provided.	Data from CRA 2003 borehole log. NVO.
	Dec 2005 - 2nd Round	--	4.86	6.34			--	--	--	--	--	--	HDPE Bailer	Good yield. Slight oil streak observed on the water surface of the first 10L that were removed. No oil streaks were observed on the purge water removed thereafter.
	Apr 2007 - Third Round	--	4.88	6.39			--	--	--	--	--	--	HDPE Bailer	Good yield. NVO.
	Sep 2012 - Fourth Round	--	4.95	6.25			--	--	--	--	--	--	HDPE Bailer	No comments provided.
	Sep 2015 - Fifth Round	--	4.815	6.822			1.34	4.4	15.2	6.74	1350	1.793	Peristaltic Pump	Well de-silted. Clear water. NVO.
BH9	Oct 2003 - 1st Round (BASELINE EVENT)	--	1.9	2.2	5.9	5.775	--	--	--	--	--	--	No Info. Provided.	Data from CRA 2003 borehole log. NVO.
	Dec 2005 - 2nd Round	--	--	--			--	--	--	--	--	--	--	No information reported by CRA.
	Apr 2007 - Third Round	--	--	--			--	--	--	--	--	--	--	No information reported by CRA.
	Sep 2012 - Fourth Round	--	--	--			--	--	--	--	--	--	--	No information reported by CRA.
	Sep 2015 - Fifth Round	--	1.75	2.497			4.025	-138.7	24.5	7.45	1544	0.374	Peristaltic Pump	Well de-silted. Black water turning grey after approx. 1L purge. Black sediments noted with organic odour. No sheen noted. Well turned dry after approx. 2L purge. Sample collected after approx. 50mins recharge. Shallow groundwater well within the Perched Water.
BH10	Oct 2003 - 1st Round (BASELINE EVENT)	--	5	7	5.94	5.835	--	--	--	--	--	--	No Info. Provided.	Data from CRA 2003 borehole log. NVO.
	Dec 2005 - 2nd Round	--	4.41	7.13			--	--	--	--	--	--	HDPE Bailer	Recovered purge water observed as grey and clear. NVO.
	Apr 2007 - Third Round	--	4.39	7.17			--	--	--	--	--	--	HDPE Bailer	Good yield.Clear grey groundwater. NVO.
	Sep 2012 - Fourth Round	--	4.96	5.53			--	--	--	--	--	--	HDPE Bailer	Continuous slight orange colour during purge. NVO.
	Sep 2015 - Fifth Round	--	4.277	7.031			1.558	24.6	15.5	6.8	748	0.55	Peristaltic Pump	Well de-silted. Light brown water turning clear after approx. 3L purge. NVO.
BH104B	Oct 2003 - 1st Round (BASELINE EVENT)	--	4	6	5.81	5.715	--	--	--	--	--	--	No Info. Provided.	Data from Dames & Moore 1995 borehole log. NVO.
	Dec 2005 - 2nd Round	--	4.13	5.09			--	--	--	--	--	--	HDPE Bailer	Good yield. Brown in colour. Some oily streaks were initially observed on surface water but cleared after 20L.
	Apr 2007 - Third Round	--	4.12	5.89			--	--	--	--	--	--	HDPE Bailer	Good yield. Brown in colour. NVO.
	Sep 2012 - Fourth Round	--	4.39	5.92			--	--	--	--	--	--	HDPE Bailer	Light orange in the first 2L of purge, clear thereafter to 14L. NVO.
	Sep 2015 - Fifth Round	--	4.141	4.931			1.574	-88.6	15.7	6.84	1153	1.067	Peristaltic Pump	Well de-silted. Clear water NVO.
BH109	Oct 2003 - 1st Round (BASELINE EVENT)	--	4.500	6	6.28	6.14	--	--	--	--	--	--	No Info. Provided.	Data from Dames & Moore 1995 borehole log. NVO.
	Dec 2005 - 2nd Round	--	--	--			--	--	--	--	--	--	--	No information reported by CRA.
	Apr 2007 - Third Round	--	4.400	6.18			--	--	--	--	--	--	--	No information reported by CRA.
	Sep 2012 - Fourth Round	--	--	--			--	--	--	--	--	--	--	No information reported by CRA.
	Sep 2015 - Fifth Round	--	4.507	6.142			1.633	-68.9	12.5	7.1	1409	4.686	Peristaltic Pump	Well de-silted. Light brown water turning clear after approx. 1.5L. NVO
BH110	Oct 2003 - 1st Round (BASELINE EVENT)	--	4.600	5.6	6.3	6.24	--	--	--	--	--	--	No Info. Provided.	Data from Dames & Moore 1995 borehole log. NVO.
	Dec 2005 - 2nd Round	--	4.880	5.52			--	--	--	--	--	--	HDPE Bailer	Good yield. Some very fine white possible live organisms observed. Pipe installation too marrow to use standard bailer. Sampled directly from HDPE pipe. No streaks or odour.
	Apr 2007 - Third Round	--	4.650	5.49			--	--	--	--	--	--	HDPE Bailer	Good yield. Initially slightly grey in colour with small amount of organic matter. Cleared after initial 30L to become brown in colour. NVO.
	Sep 2012 - Fourth Round	--	4.960	5.53			--	--	--	--	--	--	HDPE Bailer	Dark brown colour, clearing up throughout purge. NVO.
	Sep 2015 - Fifth Round	--	4.805	5.516			1.435	-18.4	17.2	6.99	1183	1.991	Peristaltic Pump	Well de-silted. Clear water NVO.

Table 3 - Field Observations of Fluid Levels in Wells and Groundwater Quality

Well ID	Date	Depth to NAPL [m bgl]	Depth to Water (DTW) [m bgl]	Depth to Bottom (DTB) [m bgl]	Relative Elevation of Well Cover [m AOD]	Relative Elevation of Top of Well Casing [m AOD]	Relative Elevation of Water Level [m AOD]	O.d.P [mV]	Temperature [deg C]	pH	Conductivity [µS/cm@25C]	Dissolved Oxygen [%]	Sampling Method	Comments
BH111	Oct 2003 - 1st Round (BASELINE EVENT)	--	4.900	7.6 (*)	6.45	6.41	--	--	--	--	--	--	No Info. Provided.	Data from Dames & Moore 1995 borehole log. NVO.
	Dec 2005 - 2nd Round	--	5.090	7.53			--	--	--	--	--	--	HDPE Bailer	Iniatial purged water recovered dark brown / black. Soon cleared on purging. Purged then left overnight before purging again. Total purged volume 150L. Some sand recovered from well during purging. NVO.
	Apr 2007 - Third Round	--	4.880	7.58			--	--	--	--	--	--	HDPE Bailer	Initial purged water recovered dark grey. Soon cleared on purging. NVO.
	Sep 2012 - Fourth Round	--	5.220	7.59			--	--	--	--	--	--	HDPE Bailer	Orange colour throghout purge. NVO.
	Sep 2015 - Fifth Round	--	5.097	7.653			1.313	-132.6	15.9	6.97	1486	0.44	Peristaltic Pump	Well de-silted. Clear water. NVO.
BH112	Oct 2003 - 1st Round (BASELINE EVENT)	--	Dry	3	6.35	6.305	--	--	--	--	--	--	No Info. Provided.	Data from Dames & Moore 1995 borehole log. NVO.
	Dec 2005 - 2nd Round	--	1.19	--			--	--	--	--	--	--	--	No information reported by CRA.
	Apr 2007 - Third Round	--	Dry	2.67			--	--	--	--	--	--	--	Well dry. Sample not collected.
	Sep 2012 - Fourth Round	--	--	--			--	--	--	--	--	--	--	Well not located.
	Sep 2015 - Fifth Round	--	Dry	2.766			--	--	--	--	--	--	--	Dry. NVO.
BH201A	Sep 2015	--	3.586	5.559	5.72	5.575	1.989	-52.7	15.7	7.14	900	0.638	Peristaltic Pump	Light brown water turning clear after approx. 2L purge. NVO.

Table 4 - Metals and Inorganics

Chemical Group	Chemical Name	Unit	EQL	GAC_HH_COM/IND_SAND_1.45-3.48%TOC	GAC_HH_RES+PL_SAND_1.45-3.48%TOC	GAC_HH_RES-PL_SAND_1.45-3.48%TOC	BH201A	BH201A	BH202A	BH203A	BH204	BH204	BH205	BH205	BH206	BH207
	Sample Depth						0.7	1.9-2	0.8	0.5	1.3	3.3	1	2.5	1.1	0.7
	Sample Date						25/08/2015	25/08/2015	25/08/2015	20/08/2015	21/08/2015	21/08/2015	21/08/2015	21/08/2015	21/08/2015	25/08/2015
Metals	Arsenic	mg/kg	0.6	640#5	*37#5*	40#5	15	14.5	9.55	12.1	10.9	30	13.7	21.8	19.9	17.8
	Cadmium	mg/kg	0.02	190#5	*11#5*	85#5	0.35	0.255	0.227	0.29	0.21	0.319	0.414	0.263	0.324	0.609
	Chromium (III+VI)	mg/kg	0.9				17.2	15.4	10.4	31.2	17.4	15.2	20	20.6	21.9	15.9
	Copper	mg/kg	1.4	68000#5	*2400#5*	7100#5	22.6	2.33	6.09	35.3	8.93	3.08	25.8	4.42	12.8	48
	Lead	mg/kg	0.7	2300#4	*200#4*	310#4	151	5.8	13.2	59.6	10.6	6.08	96.4	10.2	39.4	*264*
	Mercury	mg/kg	0.14	1100#5	*40#5*	56#5	0.289	<0.14	<0.14	<0.14	<0.14	<0.14	0.162	<0.14	<0.14	0.487
	Nickel	mg/kg	0.2	980#5	*130#5*	180#5	17.9	14.8	12.2	38.2	16.5	21.8	17.4	20	22.4	18
	Selenium	mg/kg	1	12000#5	*250#5*	430#5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Zinc	mg/kg	1.9	730000#5	*3700#5*	40000#5	50	19.7	25.3	96.4	44.4	25.3	93	28.2	54.2	131
	Chromium (hexavalent)	mg/kg	0.6	33#5	*6#5*	6#5	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Inorganics	Sulphate	mg/kg	48				<48	<48	<48	8120	4280	2040	3750	883	573	<48
	Moisture	%					14	3.8	9.9	11	16	7.2	8.8	5.2	12	14
	Ammoniacal Nitrogen as NH4	mg/kg	15				<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
	Easily Liberated Sulphide (Moisture C	mg/kg	15				<15	<15	<15	20	<15	<15	<15	<15	<15	<15
	pH (Lab)	pH_Units	1				9.32	8.74	11	11.7	9.55	8.43	11.3	9.88	8.95	9

Chemical Name	BH207	BH208A	BH208A	BH209	BH209	BH210	BH210	BH211	BH211	BH212	BH212	BH213	BH213	BH214
Sample Depth	2.6-3.5	0.8	1.1	0.5	2.7-3.4	0.8	2.2-2.8	0.7	2.2	0.6	1.8-2.5	0.6	1.7-2	0.85
Sample Date	25/08/2015	25/08/2015	25/08/2015	25/08/2015	25/08/2015	26/08/2015	26/08/2015	26/08/2015	26/08/2015	27/08/2015	27/08/2015	27/08/2015	27/08/2015	25/08/2015
Arsenic	16.3	16.6	16.6	12.7	13.4	23.6	20.2	11.8	19.5	19.2	18.8	19.1	19.1	11.8
Cadmium	0.377	0.377	0.328	0.378	0.308	0.449	0.341	0.347	0.391	1.44	0.393	0.547	0.389	0.265
Chromium (III+VI)	16.8	18.5	18.8	20.4	17.6	25.9	16.6	17	24.1	6.94	16.9	17.1	20.2	18.5
Copper	6.14	66.5	8.23	54.3	3.25	31.2	5.29	9.01	6.47	13.9	4.3	29.6	6.42	19.8
Lead	8.15	*251*	19.7	140	8.4	32.7	5.73	44.5	7.8	*271*	5.92	*2910*	6.91	38.9
Mercury	<0.14	0.608	<0.14	<0.14	<0.14	<0.14	<0.14	0.152	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
Nickel	18.5	19.3	17.1	18.7	20.3	24.5	21.2	16.5	22.6	6.81	19.2	14.7	22	16.6
Selenium	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	25.9	69.9	35.6	118	22.7	43.4	21.9	41.3	28.4	276	23.4	906	26.2	58.5
Chromium (hexavalent)	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Sulphate	<48	<48	<48	<48	<48	481	<48	545	88.2	1090	49.6	7440	80.7	<48
Moisture	7.7	17	11	9.4	6	13	6.9	12	8.9	7	5.7	17	6.5	8
Ammoniacal Nitrogen as NH4	<15	<15	<15	<15	<15	45.6	<15	<15	<15	18.2	<15	<15	<15	<15
Easily Liberated Sulphide (Moisture C	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
pH (Lab)	8.36	8.77	8.17	12	10.9	9.67	8.35	10.3	8.66	8.95	7.72	8.04	7.84	12

Chemical Name	BH2A	BH2A	BH3A	BH4A	BH4A	BH5A	BH5A	BH7A	BH7A	BH8A	BH8A	BH9A	BH9A
Sample Depth	0.5	1.5	0.5	0.9	3.5-4	0.5	2.5-3	0.7	2.5-3	0.5	3-3.5	0.5	2.2-3.3
Sample Date	25/08/2015	25/08/2015	28/08/2015	27/08/2015	27/08/2015	28/08/2015	28/08/2015	27/08/2015	27/08/2015	26/08/2015	26/08/2015	26/08/2015	26/08/2015
Arsenic	14.5	11.6	18.9	14.2	21.4	19.1	22.4	*94*	16.4	13.7	14.7	16.5	15.5
Cadmium	0.289	0.219	0.475	0.603	0.385	1.13	0.533	2.03	0.325	0.344	0.338	0.395	0.378
Chromium (III+VI)	16.7	25.8	19.5	16.9	21.5	25.4	21.6	28.7	16.5	13.9	19.1	18.9	21.1
Copper	41	9.74	49.3	31.4	6.36	28	3.56	82.3	4.42	80.7	5.98	8.36	12
Lead	191	16.9	178	*309*	8.03	85.7	9.05	*468*	5.77	41.4	6.89	12.4	23.7
Mercury	0.493	<0.14	0.151	<0.14	<0.14	1.9	<0.14	0.702	<0.14	<0.14	<0.14	<0.14	<0.14
Nickel	17.9	21.4	29.2	15.6	24.2	17.1	20.7	36	19.4	37.6	18.8	23.6	20.7
Selenium	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Zinc	63.9	47.4	89.3	217	28.5	101	28.6	1640	20.8	24.4	25.5	34.5	62.4
Chromium (hexavalent)	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Sulphate	<48	<48	579	841	63.9	356	95.9	601	74.7	775	80.9	212	1040
Moisture	15	15	6.3	7.1	4.4	7	5.8	28	4.8	17	9.5	7.3	14
Ammoniacal Nitrogen as NH4	<15	<15	<15	23.8	<15	27.7	<15	35.3	15.8	18.4	18.4	<15	71.4
Easily Liberated Sulphide (Moisture C	<15	<15	<15	<15	<15	<15	<15	<15	<15	40.4	<15	<15	252
pH (Lab)	10.6	8.45	8.22	7.92	8.01	7.86	7.86	7.67	8.01	8.38	7.66	10.2	11.2

Comments
GAC: Generic Assessment Criteria

(blank): No assessment criteria available

- : Not analysed

#1 USEPA RSL

#2 Dutch Serious 2009

#3 Dutch Intervention 2009

#4 Defra C4SL 12/2014

#5 AECOM (modified LQM/CIEH S4ULs)

#6 AECOM (modified EIC)

Key

XXX	Exceedance of HH Soil. Commercial/Industrial. Sand. TOC >=1.45 to <3.48%
XXX	Exceedance of HH Soil. Residential with Plant Uptake. Sand. TOC >=1.45 to <3.48%
XXX	Exceedance of HH Soil. Residential without Plant Uptake. Sand. TOC >=1.45 to <3.48%

Table 5 - TPH, BTEX, Oxygenates, Chlorinated Hydrocarbons, PAHs, PCBs, Hydrogenated Benzenes, Hydrogenated Hydrocarbons, Solvents, Organics, Other and Asbestos Concentrations in Soils

						Location ID	BH201A	BH201A	BH202A	BH203A	BH204	BH204	BH205	BH205	BH206	BH207	BH207	BH208A
						Sample Depth	0.7	1.9-2	0.8	0.5	1.3	3.3	1	2.5	1.1	0.7	2.6-3.5	0.8
						Sample Date	25/08/2015	25/08/2015	25/08/2015	20/08/2015	21/08/2015	21/08/2015	21/08/2015	21/08/2015	21/08/2015	25/08/2015	25/08/2015	25/08/2015
Chemical Gr	Chemical Name	Unit	EQL	GAC_HH_COM/IND_SAND_1.45-3.48%TOC	GAC_HH_RES+PL_SAND_1.45-3.48%TOC	GAC_HH_RES-PL_SAND_1.45-3.48%TOC												
TPH	GRO >C5-C12	mg/kg	0.04				<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	0.243	<0.044	<0.044	<0.044	<0.044	<0.044
	>C5-C6 Aliphatics	mg/kg	0.01	3300#5	34#5	34#5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	>C6-C8 Aliphatics	mg/kg	0.01	9200#5	93#5	93#5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0129	<0.01	<0.01	<0.01	<0.01	0.0312
	>C8-C10 Aliphatics	mg/kg	0.01	2500#5	26#5	26#5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0259	<0.01	<0.01	<0.01	<0.01	<0.01
	>C10-C12 Aliphatics	mg/kg	0.01	12000#5	130#5	130#5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0939	<0.01	<0.01	<0.01	<0.01	<0.01
	>C12-C16 Aliphatics	mg/kg	0.1	66000#5	1000#5	1000#5	<0.1	<0.1	<0.1	2.5	0.48	0.808	5.15	0.466	0.337	0.682	<0.1	0.876
	>C16-C21 Aliphatics	mg/kg	0.1				<0.1	<0.1	<0.1	9.99	<0.1	<0.1	30	<0.1	<0.1	6.7	<0.1	1.2
	>C16-C35 Aliphatics	mg/kg		1.6E6#5	64000#5	64000#5	<0.2	<0.2	14.35	107.49	<0.2	<0.2	150	<0.2	1.71	21.5	<0.2	5.03
	>C21-C35 Aliphatics	mg/kg	0.1				<0.1	<0.1	14.3	97.5	<0.1	<0.1	120	<0.1	1.66	14.8	<0.1	3.83
	>C35-C44 Aliphatics	mg/kg	0.1	1.6E6#5	64000#5	64000#5	<0.1	<0.1	<0.1	70	<0.1	<0.1	39.4	<0.1	<0.1	4.24	<0.1	<0.1
	>C12-C44 Aliphatics	mg/kg	0.1				<0.1	<0.1	14.3	180	0.48	0.808	195	0.466	2	26.4	<0.1	5.9
	>EC5-EC7 Aromatics	mg/kg	0.01	23000#5	100#5	250#5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	>EC7-EC8 Aromatics	mg/kg	0.01	58000#5	230#5	690#5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	>EC8-EC10 Aromatics	mg/kg	0.01	4300#5	41#5	45#5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0291	<0.01	<0.01	<0.01	<0.01	<0.01
	>EC10-EC12 Aromatics	mg/kg	0.01	19000#5	140#5	240#5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0626	<0.01	<0.01	<0.01	<0.01	<0.01
	>EC12-EC16 Aromatics	mg/kg	0.1	37000#5	320#5	1800#5	0.792	<0.1	<0.1	1.61	0.486	0.402	4.43	0.519	<0.1	0.705	<0.1	1.56
	>EC16-EC21 Aromatics	mg/kg	0.1	28000#5	540#5	1900#5	2.79	<0.1	<0.1	6.76	<0.1	<0.1	21.9	<0.1	<0.1	3.83	<0.1	3.21
	>EC21-EC35 Aromatics	mg/kg	0.1	28000#5	1500#5	1900#5	8.85	<0.1	3.8	78.3	0.269	0.462	75.1	0.693	3.46	20	<0.1	11.2
	>EC35-EC44 Aromatics	mg/kg	0.1	28000#5	1500#5	1900#5	3.15	<0.1	1.07	118	<0.1	<0.1	55.1	<0.1	<0.1	16.6	<0.1	3.99
	>EC40-EC44 Aromatics	mg/kg	0.1				1.14	<0.1	<0.1	46.4	<0.1	<0.1	25.3	<0.1	<0.1	7.78	<0.1	1.48
	>EC12-EC44 Aromatics	mg/kg	0.1				15.6	<0.1	4.86	205	0.755	0.864	156	1.21	3.46	41.1	<0.1	19.9
	>C5-C44 Aliphatics & Aromatics	mg/kg	0.1				15.6	<0.1	19.1	385	1.23	1.68	352	1.68	5.47	67.5	<0.1	25.9
BTEX	Benzene	mg/kg	0.01	24#5	0.12#5	0.25#5	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.01
	Toluene	mg/kg	0	58000#5	230#5	710#5	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.007 - 0.005	<0.002	<0.002	<0.002	<0.002	<0.002
	Ethylbenzene	mg/kg	0	6200#5	55#5	70#5	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
	Xylene (m & p)	mg/kg	0.01				<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	0.01 - 0.0075	<0.006	<0.006	<0.006	<0.006	<0.006
	Xylene Total	mg/kg	0.01	2500#1	3.4#3	3.4#3	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009
	Xylene (o)	mg/kg	0	7200#5	64#5	74#5	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
	Total BTEX	mg/kg	0.02				<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024
Oxygenates	MTBE	mg/kg	0.01	5740#6	35.3#6	40.5#6	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	Tert Amyl Methyl Ether	mg/kg	0.01				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1
Chlorinated H	Chloromethane	mg/kg	0.01	0.573#6	0.0036#6	0.00446#6	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
	Vinyl chloride	mg/kg	0.01	0.04#5	0.00037#5	0.0004#5	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
	Chloroethane	mg/kg	0.01	640#6	4.22#6	5.12#6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1
	1,1-dichloroethene	mg/kg	0.01	22.6#6	0.153#6	0.184#6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1
	Dichloromethane	mg/kg	0.01	162#6	0.608#6	1.16#6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1
	trans-1,2-dichloroethene	mg/kg	0.01	18.9#6	0.126#6	0.127#6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1
	1,1-dichloroethane	mg/kg	0.01	208#6	1.41#6	1.7#6	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.08
	cis-1,2-dichloroethene	mg/kg	0.01	11.3#6	0.0699#6	0.0854#6	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.06
	Chloroform	mg/kg	0.01	81#5	0.68#5	0.75#5	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.08
	1,1,1-trichloroethane	mg/kg	0.01	640#5	6.6#5	6.7#5	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.07
	Carbon tetrachloride	mg/kg	0.01	3#5	0.021#5	0.021#5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Trichloroethene	mg/kg	0.01	1.2#5	0.013#5	0.013#5	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	0.254
	1,1,2-trichloroethane	mg/kg	0.01	89.7#6	0.552#6	0.755#6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1
	Tetrachloroethene	mg/kg	0.01	19#5	0.14#5	0.14#5	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	Sum of PCE and TCE	mg/kg					<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.279
	TCE+DCE+VC	mg/kg					<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	0.414
	PCE+TCE+DCE+VC	mg/kg					<0.046	<0.046	<0.046	<0.046	<0.046	<0.046	<0.046	<0.046	<0.046	<0.046	<0.046	0.439
PAH	Naphthalene	mg/kg	0.01	220#5	2.1#5	2.1#5	0.013 - 0.038	<0.009	<0.009	0.013 - 0.010	<0.009	<0.009	0.173 - 0.196	<0.009	<0.009	0.013 - 0.04	<0.009	0.13 - 0.018
	Acenaphthylene	mg/kg	0.01	90000#5	400#5	3300#5	0.0574	<0.012	<0.012	<0.012	<0.012	<0.012	0.0453	<0.012	<0.012	0.0486	<0.012	<0.012
	Acenaphthene	mg/kg	0.01	90000#5	480#5	3300#5	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	0.0732	<0.008	<0.008	<0.008	<0.008	<0.008
	Fluorene	mg/kg	0.01	66000#5	390#5	3200#5	0.0183	<0.01	<0.01	<0.01	<0.01	<0.01	0.0796	<0.01	<0.01	<0.01	<0.01	<0.01
	Phenanthrene	mg/kg	0.02	22000#5	220#5	1400#5	0.512	<0.015	<0.015	0.16	<0.015	<0.015	0.811	<0.015	0.0284	0.223	<0.015	0.128
	Anthracene	mg/kg	0.02	530000#5	5300#5	34000#5	0.0982	<0.016	<0.016	0.041	<0.016	<0.016	0.179	<0.016	<0.016	0.0506	<0.016	0.0199
	Fluoranthene	mg/kg	0.02	23000#5	560#5	1600#5	0.835	<0.017	<0.017	0.429	<0.017	<0.017	1.31	<0.017	0.0473	0.592	<0.017	0.137
	Pyrene	mg/kg	0.02	54000#5	1200#5	3700#5	0.682	<0.015	<0.015	0.412	<0.015	<0.015	1.51	<0.015	0.0532	0.534	<0.015	0.118
	Benz(a)anthracene	mg/kg	0.01	170#5	11#5	14#5	0.401	<0.014	<0.014	0.192	<0.014	<0.014	1.06	<0.014	<0.014	0.419	<0.014	0.0873
	Chrysene	mg/kg	0.01	350#5	22#5	31#5	0.382	<0.01	<0.01	0.194	<0.01	<0.01	0.976	<0.01	0.0163	0.414	<0.01	0.0863
	Benzo(a) pyrene	mg/kg	0.02	36#5	2.7#5	3.2#5	0.357	<0.015	<0.015	0.203	<0.015	<0.015	0.97	<0.015	0.0382	0.632	<0.015	0.0594
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.02	510#5	36#5	45#5	0.192	<0.018	<0.018	0.124	<0.018	<0.018	0.543	<0.018	0.029	0.408	<0.018	0.0306
	Dibenz(a,h)anthracene	mg/kg	0.02	3.6#5	0.28#5	0.32#5	0.0606	<0.023	<0.023	0.0327	<0.023	<0.023	0.186	<0.023	<0.023	0.124	`	<0.023
	Benzo(g,h,i)perylene	mg/kg	0.02	4000#5	340#5	360#5	0.233	<0.024	<0.024	0.142	<0.024	<0.024	0.676	<0.024	0.0301	0.521	<0.024	0.0442
	Benzo(b)fluoranthene	mg/kg	0.02	45#5	3.3#5	4#5	0.47	<0.015	<0.015	0.206	<0.015	<0.015	1.3	<0.015	0.0377	0.805	<0.015	0.0973
	Benzo(k)fluoranthene	mg/kg	0.01	1200#5	92#5	110#5	0.192	<0.014	<0.014	0.103	<0.014	<0.014	0.546	<0.014	0.0197	0.281	<0.014	0.0345
	Benzo(b)&(k)fluoranthene	mg/kg					0.662	<0.029	<0.029	0.309	<0.029	<0.029	1.846	<0.029	0.0574	1.086	<0.029	0.1318
	PAHs (sum of 4)	mg/kg					1.087	<0.071	<0.071	0.575	<0.071	<0.071	3.065	<0.071	0.1165	2.015	<0.071	0.2066
	PAH 16 Total	mg/kg	0.12				4.53	<0.118	<0.118	2.25	<0.118	<0.118	10.4	<0.118	0.3	5.09	<0.118	0.861
	benzo(g,h,i)perylene + indeno(1,2,3-c	mg/kg					0.425	<0.042	<0.042	0.266	<0.042	<0.042	1.219	<0.042	0.0591	0.929	<0.042	0.0748
	Coal Tar (Bap as surrogate marker)	mg/kg		15#5	0.98#5	1.2#5	0.357	<0.015	<0.015	0.203	<0.015	<0.015	0.97	<0.015	0.0382	0.632	<0.015	0.0594
PCBs	Tetrachlorobiphenyl, 3,3,4,4- (PCB 7	mg/kg	0	0.16#1	0.037#1	0.037#1	-	-	-	-	-	-	-	-	-	-	-	<0.003
	Tetrachlorobiphenyl, 3,4,4,5- (PCB 8	mg/kg	0	0.053#1	0.012#1	0.012#1	-	-	-	-	-	-	-	-	-	-	-	<0.003
	Pentachlorobiphenyl, 2,3,3,4,4- (PCE	mg/kg	0	0.53#1	0.12#1	0.12#1	-	-	-	-	-	-	-	-	-	-	-	<0.003
	Pentachlorobiphenyl, 2,3,4,4,5- (PCE	mg/kg	0	0.53#1	0.12#1	0.12#1	-	-	-	-	-	-	-	-	-	-	-	<0.003
	PCB 118	mg/kg	0	0.53#1	0.12#1	0.12#1	-	-	-	-	-	-	-	-	-	-	-	<0.003
	Pentachlorobiphenyl, 2,3,4,4,5- (PCE	mg/kg	0	0.53#1	0.12#1	0.12#1	-	-	-	-	-	-	-	-	-	-	-	<0.003
	Pentachlorobiphenyl, 3,3,4,4,5- (PCE	mg/kg	0	0.00016#1	0.000037#1	0.000037#1	-	-	-	-	-	-	-	-	-	-	-	<0.003
	Hexachlorobiphenyl, 2,3,3,4,4,5- (PC	mg/kg	0	0.53#1	0.12#1	0.12#1	-	-	-	-	-	-	-	-	-	-	-	<0.003
	Hexachlorobiphenyl, 2,3,3,4,4,5- (PC	mg/kg	0	0.53#1	0.12#1	0.12#1	-	-	-	-	-	-	-	-	-	-	-	<0.003
	Hexachlorobiphenyl, 2,3,4,4,5,5- (PC	mg/kg	0	0.53#1	0.12#1	0.12#1	-	-	-	-	-	-	-	-	-	-	-	<0.003
	Hexachlorobiphenyl, 3,3,4,4,5,5- (PC	mg/kg	0	0.00053#1	0.00012#1	0.00012#1	-	-	-	-	-	-	-	-	-	-	-	<0.003
	Heptachlorobiphenyl, 2,3,3,4,4,5,5- (	mg/kg	0	0.53#1	0.12#1	0.12#1	-	-	-	-	-	-	-	-	-	-	-	<0.003
	Total PCB WHO 12	mg/kg	0.04				-	-	-	-	-	-	-	-	-	-	-	<0.036
	PCB 28	mg/kg	0				-	-	-	-	-	-	-	-	-	-	-	<0.003
	PCB 52	mg/kg	0				-	-	-	-	-	-	-	-	-	-	-	<0.003
	PCB 101	mg/kg	0				-	-	-	-	-	-	-	-	-	-	-	<0.003
	PCB 138	mg/kg	0				-	-	-	-	-	-	-	-	-	-	-	<0.003
	PCB 153	mg/kg	0				-	-	-	-	-	-	-	-	-	-	-	<0.003
	PCB 180	mg/kg	0				-	-	-	-	-	-	-	-	-	-	-	<0.003
	Total PCB 7 Congeners	mg/kg	0.02		0.2#3	0.2#3	-	-	-	-	-	-	-	-	-	-	-	<0.021
Halogenated	Chlorobenzene	mg/kg	0.01	59#5	0.38#5	0.38#5	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	Bromobenzene	mg/kg	0.01	105#6	0.75#6	0.892#6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1
	2-chlorotoluene	mg/kg	0.01	23000#1	1600#1	1600#1	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.09
	4-chlorotoluene	mg/kg	0.01	23000#1	1600#1	1600#1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1
	1,3-dichlorobenzene	mg/kg	0.01	34#5	0.37#5	0.38#5	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.08
	1,4-dichlorobenzene	mg/kg	0.01	4800#5	52#5	52#5	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05
	1,2-dichlorobenzene	mg/kg	0.01	2200#5	20#5	20#5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1
	1,2,4-trichlorobenzene	mg/kg	0.02	240#5	2.3#5	2.3#5	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2
	1,2,3-trichlorobenzene	mg/kg	0.02	110#5	1.3#5	1.3#5	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2
Halogenated	Dichlorodifluoromethane	mg/kg	0.01	370#1	87#1	87#1	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.06
	Bromomethane	mg/kg	0.01	30#1	6.8#1	6.8#1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1
	Trichlorofluoromethane	mg/kg	0.01	3100#1	730#1	730#1	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.06
	1,2-dibromoethane	mg/kg	0.01	0.16#1	0.036#1	0.036#1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Solvents	Carbon disulfide	mg/kg	0.01	11#5	0.11#5	0.11#5	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.07
Organics	TOC	%	0.2				1.21	<0.2	0.274	0.396	0.266	<0.2	0.627	<0.2	0.522	1.96	0.785	3.76
Other	Waste Limit, Total	%	0.1				-	-	-	-	-	-	-	-	-	<0.1	-	<0.1
Asbestos	Amosite Asbestos	-					1	0	0	0	0	0	1	0	0	0	-	0
	Chrysotile Asbestos	-					0	0	0	1	0	0	0	0	0	1	-	1
	Crocidoilite Asbestos	-					0	0	0	0	0	0	0	0	0	0	-	0
	Additional Asbestos Components (Us	-					-	-	-	1	-	-	1	-	-	1	-	1
	Fibrous Actinolite	-					0	0	0	0	0	0	0	0	0	0	-	0
	Fibrous Anthophyllite	-					0	0	0	0	0	0	0	0	0	0	-	0
	Fibrous Tremolite	-					0	0	0	0	0	0	0	0	0	0	-	0
	Non-Asbestos Fibre	-					0	0	0	0	0	0	0	0	0	0	-	0

Location ID		BH208A	BH209	BH209	BH210	BH210	BH211	BH211	BH212	BH212	BH213	BH213	BH214
Sample Depth		1.1	0.5	2.7-3.4	0.8	2.2-2.8	0.7	2.2	0.6	1.8-2.5	0.6	1.7-2	0.85
Sample Date		25/08/2015	25/08/2015	25/08/2015	26/08/2015	26/08/2015	26/08/2015	26/08/2015	27/08/2015	27/08/2015	27/08/2015	27/08/2015	25/08/2015
Chemical Gr	Chemical Name												
TPH	GRO >C5-C12	<0.044	<0.044	<0.044	<0.044	<0.044	5.16	<0.044	<0.044	<0.044	<0.044	<0.044	0.05
	>C5-C6 Aliphatics	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	>C6-C8 Aliphatics	<0.01	<0.01	<0.01	<0.01	<0.01	0.0342	<0.01	<0.01	<0.01	<0.01	<0.01	0.012
	>C8-C10 Aliphatics	<0.01	<0.01	<0.01	<0.01	<0.01	1.01	0.0131	<0.01	<0.01	<0.01	<0.01	<0.01
	>C10-C12 Aliphatics	<0.01	<0.01	<0.01	<0.01	<0.01	2.06	<0.01	<0.01	<0.01	<0.01	<0.01	0.013
	>C12-C16 Aliphatics	<0.1	5.72	<0.1	<0.1	<0.1	15.1	<0.1	<0.1	<0.1	<0.1	<0.1	4.97
	>C16-C21 Aliphatics	<0.1	29.7	<0.1	3.15	<0.1	23.2	<0.1	<0.1	<0.1	<0.1	<0.1	20.7
	>C16-C35 Aliphatics	<0.2	128.6	0.9	21.75	<0.2	80.5	<0.2	<0.2	<0.2	6.11	<0.2	120.7
	>C21-C35 Aliphatics	<0.1	98.9	0.85	18.6	<0.1	57.3	<0.1	<0.1	<0.1	6.06	<0.1	100
	>C35-C44 Aliphatics	<0.1	39.1	<0.1	1.92	<0.1	10.6	<0.1	<0.1	<0.1	<0.1	<0.1	28.4
	>C12-C44 Aliphatics	<0.1	173	0.85	23.7	<0.1	106	<0.1	<0.1	<0.1	6.06	<0.1	154
	>EC5-EC7 Aromatics	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	>EC7-EC8 Aromatics	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	>EC8-EC10 Aromatics	<0.01	<0.01	<0.01	<0.01	<0.01	0.671	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	>EC10-EC12 Aromatics	<0.01	<0.01	<0.01	<0.01	<0.01	1.38	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	>EC12-EC16 Aromatics	<0.1	1.65	<0.1	<0.1	<0.1	4.15	<0.1	<0.1	<0.1	2.15	<0.1	1.5
	>EC16-EC21 Aromatics	<0.1	17.8	<0.1	<0.1	<0.1	10.5	<0.1	0.496	<0.1	10.6	<0.1	10.6
	>EC21-EC35 Aromatics	<0.1	71	0.961	4.96	<0.1	26.6	<0.1	4.6	<0.1	31.1	<0.1	50.3
	>EC35-EC44 Aromatics	<0.1	39.9	<0.1	1.4	<0.1	10.5	<0.1	<0.1	<0.1	10.9	<0.1	33.3
	>EC40-EC44 Aromatics	<0.1	17.4	<0.1	<0.1	<0.1	3.89	<0.1	<0.1	<0.1	3.97	<0.1	14.8
	>EC12-EC44 Aromatics	<0.1	130	0.961	6.36	<0.1	51.9	<0.1	5.1	<0.1	54.8	<0.1	95.6
	>C5-C44 Aliphatics & Aromatics	<0.1	304	1.82	30	<0.1	163	<0.1	5.1	<0.1	60.9	<0.1	250
BTEX	Benzene	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009
	Toluene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
	Ethylbenzene	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
	Xylene (m & p)	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
	Xylene Total	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009
	Xylene (o)	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
	Total BTEX	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024
Oxygenates	MTBE	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	Tert Amyl Methyl Ether	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chlorinated H	Chloromethane	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
	Vinyl chloride	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
	Chloroethane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	1,1-dichloroethene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Dichloromethane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	trans-1,2-dichloroethene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	1,1-dichloroethane	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
	cis-1,2-dichloroethene	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
	Chloroform	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
	1,1,1-trichloroethane	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
	Carbon tetrachloride	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Trichloroethene	0.0181	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009
	1,1,2-trichloroethane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Tetrachloroethene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	Sum of PCE and TCE	0.0206	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
	TCE+DCE+VC	0.0341	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041
	PCE+TCE+DCE+VC	0.0366	<0.046	<0.046	<0.046	<0.046	<0.046	<0.046	<0.046	<0.046	<0.046	<0.046	<0.046
PAH	Naphthalene	<0.009	0.013 - 0.044	<0.009	<0.009	<0.009	0.013 - 0.053	<0.009	<0.009	<0.009	0.013 - 0.027	<0.009	0.013 - 0.021
	Acenaphthylene	<0.012	0.0566	<0.012	<0.012	<0.012	0.0148	<0.012	0.0205	<0.012	0.0278	<0.012	0.0171
	Acenaphthene	<0.008	0.0606	<0.008	<0.008	<0.008	0.0481	<0.008	<0.008	<0.008	0.0159	<0.008	0.0505
	Fluorene	<0.01	0.0479	<0.01	<0.01	<0.01	0.0486	<0.01	<0.01	<0.01	0.0121	<0.01	0.0387
	Phenanthrene	<0.015	1.3	<0.015	0.0277	<0.015	0.352	<0.015	0.218	<0.015	0.329	<0.015	1.01
	Anthracene	<0.016	0.258	<0.016	<0.016	<0.016	0.0788	<0.016	0.0859	<0.016	0.0718	<0.016	0.184
	Fluoranthene	<0.017	2.18	<0.017	0.047	<0.017	0.389	<0.017	1.27	<0.017	0.82	<0.017	1.57
	Pyrene	<0.015	1.89	<0.015	0.0436	<0.015	0.317	<0.015	0.975	<0.015	0.729	<0.015	1.26
	Benz(a)anthracene	<0.014	1.06	<0.014	0.0481	<0.014	0.174	<0.014	0.927	<0.014	0.449	<0.014	0.66
	Chrysene	<0.01	0.988	<0.01	0.0285	<0.01	0.151	<0.01	0.908	<0.01	0.414	<0.01	0.608
	Benzo(a) pyrene	<0.015	0.837	<0.015	0.03	<0.015	0.147	<0.015	1.05	<0.015	0.485	<0.015	0.545
	Indeno(1,2,3-c,d)pyrene	<0.018	0.547	<0.018	<0.018	<0.018	0.0775	<0.018	0.668	<0.018	0.27	<0.018	0.297
	Dibenz(a,h)anthracene	<0.023	0.151	<0.023	<0.023	<0.023	<0.023	<0.023	0.195	<0.023	0.0732	<0.023	0.0882
	Benzo(g,h,i)perylene	<0.024	0.556	<0.024	0.0286	<0.024	0.105	<0.024	0.755	<0.024	0.358	<0.024	0.385
	Benzo(b)fluoranthene	<0.015	1.25	<0.015	0.0388	<0.015	0.199	<0.015	1.46	<0.015	0.588	<0.015	0.715
	Benzo(k)fluoranthene	<0.014	0.434	<0.014	0.0181	<0.014	0.0907	<0.014	0.503	<0.014	0.255	<0.014	0.287
	Benzo(b)&(k)fluoranthene	<0.029	1.684	<0.029	0.0569	<0.029	0.2897	<0.029	1.963	<0.029	0.843	<0.029	1.002
	PAHs (sum of 4)	<0.071	2.787	<0.071	0.0945	<0.071	0.4722	<0.071	3.386	<0.071	1.471	<0.071	1.684
	PAH 16 Total	<0.118	11.6	<0.118	0.311	<0.118	2.25	<0.118	9.03	<0.118	4.92	<0.118	7.74
	benzo(g,h,i)perylene + indeno(1,2,3-c	<0.042	1.103	<0.042	0.0376	<0.042	0.1825	<0.042	1.423	<0.042	0.628	<0.042	0.682
	Coal Tar (Bap as surrogate marker)	<0.015	0.837	<0.015	0.03	<0.015	0.147	<0.015	1.05	<0.015	0.485	<0.015	0.545
PCBs	Tetrachlorobiphenyl, 3,3,4,4- (PCB 7	-	-	-	-	-	-	-	-	-	-	-	-
	Tetrachlorobiphenyl, 3,4,4,5- (PCB 8	-	-	-	-	-	-	-	-	-	-	-	-
	Pentachlorobiphenyl, 2,3,3,4,4- (PCE	-	-	-	-	-	-	-	-	-	-	-	-
	Pentachlorobiphenyl, 2,3,4,4,5- (PCE	-	-	-	-	-	-	-	-	-	-	-	-
	PCB 118	-	-	-	-	-	-	-	-	-	-	-	-
	Pentachlorobiphenyl, 2,3,4,4,5- (PCE	-	-	-	-	-	-	-	-	-	-	-	-
	Pentachlorobiphenyl, 3,3,4,4,5- (PCE	-	-	-	-	-	-	-	-	-	-	-	-
	Hexachlorobiphenyl, 2,3,3,4,4,5- (PC	-	-	-	-	-	-	-	-	-	-	-	-
	Hexachlorobiphenyl, 2,3,3,4,4,5- (PC	-	-	-	-	-	-	-	-	-	-	-	-
	Hexachlorobiphenyl, 2,3,4,4,5,5- (PC	-	-	-	-	-	-	-	-	-	-	-	-
	Hexachlorobiphenyl, 3,3,4,4,5,5- (PC	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlorobiphenyl, 2,3,3,4,4,5,5- (	-	-	-	-	-	-	-	-	-	-	-	-
	Total PCB WHO 12	-	-	-	-	-	-	-	-	-	-	-	-
	PCB 28	-	-	-	-	-	-	-	-	-	-	-	-
	PCB 52	-	-	-	-	-	-	-	-	-	-	-	-
	PCB 101	-	-	-	-	-	-	-	-	-	-	-	-
	PCB 138	-	-	-	-	-	-	-	-	-	-	-	-
	PCB 153	-	-	-	-	-	-	-	-	-	-	-	-
	PCB 180	-	-	-	-	-	-	-	-	-	-	-	-
	Total PCB 7 Congeners	-	-	-	-	-	-	-	-	-	-	-	-
Halogenated	Chlorobenzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	Bromobenzene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	2-chlorotoluene	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009
	4-chlorotoluene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	1,3-dichlorobenzene	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008
	1,4-dichlorobenzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	1,2-dichlorobenzene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	1,2,4-trichlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	1,2,3-trichlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Halogenated	Dichlorodifluoromethane	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
	Bromomethane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Trichlorofluoromethane	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
	1,2-dibromoethane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Solvents	Carbon disulfide	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
Organics	TOC	0.461	0.615	<0.2	0.358	<0.2	<0.2	<0.2	<0.2	<0.2	2.07	<0.2	0.216
Other	Waste Limit, Total	-	<0.1	-	-	-	-	-	-	-	-	-	-
Asbestos	Amosite Asbestos	-	0	0	1	-	0	-	0	-	0	-	0
	Chrysotile Asbestos	-	1	0	0	-	0	-	0	-	0	-	0
	Crocidoilite Asbestos	-	0	0	0	-	0	-	0	-	0	-	0
	Additional Asbestos Components (Us	-	1	-	1	-	-	-	-	-	-	-	-
	Fibrous Actinolite	-	0	0	0	-	0	-	0	-	0	-	0
	Fibrous Anthophyllite	-	0	0	0	-	0	-	0	-	0	-	0
	Fibrous Tremolite	-	0	0	0	-	0	-	0	-	0	-	0
	Non-Asbestos Fibre	-	0	0	0	-	1	-	0	-	0	-	0

Location ID		BH2A	BH2A	BH3A	BH4A	BH4A	BH5A	BH5A	BH7A	BH7A	BH8A	BH8A	BH9A	BH9A
Sample Depth		0.5	1.5	0.5	0.9	3.5-4	0.5	2.5-3	0.7	2.5-3	0.5	3-3.5	0.5	2.2-3.3
Sample Date		25/08/2015	25/08/2015	28/08/2015	27/08/2015	27/08/2015	28/08/2015	28/08/2015	27/08/2015	27/08/2015	26/08/2015	26/08/2015	26/08/2015	26/08/2015
Chemical Gr	Chemical Name													
TPH	GRO >C5-C12	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	<0.044	0.178	0.106
	>C5-C6 Aliphatics	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	>C6-C8 Aliphatics	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0145	<0.01	<0.01	0.0197
	>C8-C10 Aliphatics	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0109	<0.01	0.0119	0.022
	>C10-C12 Aliphatics	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0874	0.0255
	>C12-C16 Aliphatics	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.555	<0.1	<0.1	1.29
	>C16-C21 Aliphatics	0.177	<0.1	3.14	1.68	<0.1	0.234	<0.1	<0.1	<0.1	1.23	<0.1	<0.1	3.06
	>C16-C35 Aliphatics	2.277	<0.2	12.93	56.18	<0.2	6.894	<0.2	21.95	<0.2	7.06	<0.2	<0.2	9.75
	>C21-C35 Aliphatics	2.1	<0.1	9.79	54.5	<0.1	6.66	<0.1	21.9	<0.1	5.83	<0.1	<0.1	6.69
	>C35-C44 Aliphatics	<0.1	<0.1	3.03	32.4	<0.1	0.968	<0.1	5.13	<0.1	0.567	<0.1	<0.1	<0.1
	>C12-C44 Aliphatics	2.28	<0.1	15.9	88.5	<0.1	7.86	<0.1	27	<0.1	8.18	<0.1	<0.1	11
	>EC5-EC7 Aromatics	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	>EC7-EC8 Aromatics	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	>EC8-EC10 Aromatics	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0151
	>EC10-EC12 Aromatics	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0583	0.0174
	>EC12-EC16 Aromatics	0.511	1.7	0.714	1.61	<0.1	0.358	<0.1	1.92	<0.1	<0.1	<0.1	<0.1	2.81
	>EC16-EC21 Aromatics	1.86	1.41	4.78	17.1	<0.1	2.62	<0.1	8.47	<0.1	<0.1	<0.1	<0.1	19.4
	>EC21-EC35 Aromatics	9.32	6.2	24.7	74.7	<0.1	16.1	<0.1	70	<0.1	<0.1	<0.1	<0.1	66.3
	>EC35-EC44 Aromatics	4.61	4	12.7	37.3	<0.1	8.05	<0.1	28.5	<0.1	<0.1	<0.1	<0.1	16.4
	>EC40-EC44 Aromatics	1.93	1.7	5.16	14.2	<0.1	2.87	<0.1	10.5	<0.1	<0.1	<0.1	<0.1	5.98
	>EC12-EC44 Aromatics	16.3	13.3	42.9	131	<0.1	27.1	<0.1	109	<0.1	<0.1	<0.1	<0.1	105
	>C5-C44 Aliphatics & Aromatics	18.6	13.3	58.9	219	<0.1	35	<0.1	136	<0.1	8.22	<0.1	0.111	116
BTEX	Benzene	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.01	<0.009	<0.01	<0.009	<0.009	<0.009
	Toluene	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.07 - 0.0024	<0.002	<0.002	<0.002
	Ethylbenzene	<0.003	<0.003	0445 - 0.005	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
	Xylene (m & p)	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
	Xylene Total	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009
	Xylene (o)	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
	Total BTEX	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024
Oxygenates	MTBE	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	Tert Amyl Methyl Ether	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
Chlorinated H	Chloromethane	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.07	<0.007	<0.07	<0.007	<0.007	<0.007
	Vinyl chloride	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
	Chloroethane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
	1,1-dichloroethene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
	Dichloromethane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
	trans-1,2-dichloroethene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
	1,1-dichloroethane	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.08	<0.008	<0.08	<0.008	<0.008	<0.008
	cis-1,2-dichloroethene	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.06	<0.006	<0.06	<0.006	<0.006	<0.006
	Chloroform	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.08	<0.008	<0.08	<0.008	<0.008	<0.008
	1,1,1-trichloroethane	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.07	<0.007	<0.07	<0.007	<0.007	<0.007
	Carbon tetrachloride	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Trichloroethene	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009
	1,1,2-trichloroethane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
	Tetrachloroethene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.05	<0.005	<0.005	<0.005
	Sum of PCE and TCE	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.14	<0.014	<0.14	<0.014	<0.014	<0.014
	TCE+DCE+VC	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.041	<0.41	<0.041	<0.41	<0.041	<0.041	<0.041
	PCE+TCE+DCE+VC	<0.046	<0.046	<0.046	<0.046	<0.046	<0.046	<0.046	<0.46	<0.046	<0.46	<0.046	<0.046	<0.046
PAH	Naphthalene	0.013 - 0.028	<0.009	0.013 - 0.034	0.013 - 0.05	<0.009	0.013 - 0.015	<0.009	0.13 - 0.069	<0.009	<0.13 - 0.111	<0.009	<0.009	0.013 - 0.0327
	Acenaphthylene	<0.012	<0.012	0.0299	0.083	<0.012	0.0289	<0.012	0.0843	<0.012	0.016	<0.012	<0.012	0.015
	Acenaphthene	<0.008	<0.008	<0.008	0.0418	<0.008	0.00932	<0.008	0.0115	<0.008	<0.008	<0.008	<0.008	0.011
	Fluorene	<0.01	<0.01	<0.01	0.0482	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0546
	Phenanthrene	0.119	<0.015	0.188	1.19	<0.015	0.147	<0.015	0.307	<0.015	0.215	<0.015	<0.015	0.36
	Anthracene	<0.016	<0.016	0.036	0.317	<0.016	0.0399	<0.016	0.107	<0.016	0.0332	<0.016	<0.016	0.105
	Fluoranthene	0.0893	<0.017	0.445	2.5	<0.017	0.417	<0.017	0.967	<0.017	0.237	<0.017	<0.017	0.4
	Pyrene	0.0839	<0.015	0.384	2.09	<0.015	0.359	0.0298	0.971	<0.015	0.186	<0.015	0.0167	0.317
	Benz(a)anthracene	0.0909	<0.014	0.245	1.32	<0.014	0.227	<0.014	0.63	<0.014	0.128	<0.014	0.0247	0.283
	Chrysene	0.103	<0.01	0.291	1.06	<0.01	0.236	0.0245	0.684	<0.01	0.137	<0.01	<0.01	0.218
	Benzo(a) pyrene	0.0834	<0.015	0.289	1.47	<0.015	0.26	<0.015	1.05	<0.015	0.122	<0.015	0.0182	0.259
	Indeno(1,2,3-c,d)pyrene	0.0481	<0.018	0.21	0.787	<0.018	0.156	<0.018	0.975	<0.018	0.0766	<0.018	<0.018	0.121
	Dibenz(a,h)anthracene	<0.023	<0.023	0.0634	0.216	<0.023	0.0468	<0.023	0.269	<0.023	<0.023	<0.023	<0.023	0.0404
	Benzo(g,h,i)perylene	0.0682	<0.024	0.245	0.967	<0.024	0.196	<0.024	1.16	<0.024	0.108	<0.024	<0.024	0.144
	Benzo(b)fluoranthene	0.135	<0.015	0.459	1.7	<0.015	0.391	0.0235	1.93	<0.015	0.193	<0.015	0.0246	0.306
	Benzo(k)fluoranthene	0.0553	<0.014	0.134	0.609	<0.014	0.132	<0.014	0.724	<0.014	0.0599	<0.014	<0.014	0.108
	Benzo(b)&(k)fluoranthene	0.1903	<0.029	0.593	2.309	<0.029	0.523	0.0305	2.654	<0.029	0.2529	<0.029	0.0316	0.414
	PAHs (sum of 4)	0.3066	<0.071	1.048	4.063	<0.071	0.875	0.0515	4.789	<0.071	0.4375	<0.071	0.0526	0.679
	PAH 16 Total	0.905	<0.118	3.05	14.5	<0.118	2.66	<0.118	9.95	<0.118	1.62	<0.118	<0.118	2.78
	benzo(g,h,i)perylene + indeno(1,2,3-c	0.1163	<0.042	0.455	1.754	<0.042	0.352	<0.042	2.135	<0.042	0.1846	<0.042	<0.042	0.265
	Coal Tar (Bap as surrogate marker)	0.0834	<0.015	0.289	1.47	<0.015	0.26	<0.015	1.05	<0.015	0.122	<0.015	0.0182	0.259
PCBs	Tetrachlorobiphenyl, 3,3,4,4- (PCB 7	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tetrachlorobiphenyl, 3,4,4,5- (PCB 8	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pentachlorobiphenyl, 2,3,3,4,4- (PCE	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pentachlorobiphenyl, 2,3,4,4,5- (PCE	-	-	-	-	-	-	-	-	-	-	-	-	-
	PCB 118	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pentachlorobiphenyl, 2,3,4,4,5- (PCE	-	-	-	-	-	-	-	-	-	-	-	-	-
	Pentachlorobiphenyl, 3,3,4,4,5- (PCE	-	-	-	-	-	-	-	-	-	-	-	-	-
	Hexachlorobiphenyl, 2,3,3,4,4,5- (PC	-	-	-	-	-	-	-	-	-	-	-	-	-
	Hexachlorobiphenyl, 2,3,3,4,4,5- (PC	-	-	-	-	-	-	-	-	-	-	-	-	-
	Hexachlorobiphenyl, 2,3,4,4,5,5- (PC	-	-	-	-	-	-	-	-	-	-	-	-	-
	Hexachlorobiphenyl, 3,3,4,4,5,5- (PC	-	-	-	-	-	-	-	-	-	-	-	-	-
	Heptachlorobiphenyl, 2,3,3,4,4,5,5- (	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total PCB WHO 12	-	-	-	-	-	-	-	-	-	-	-	-	-
	PCB 28	-	-	-	-	-	-	-	-	-	-	-	-	-
	PCB 52	-	-	-	-	-	-	-	-	-	-	-	-	-
	PCB 101	-	-	-	-	-	-	-	-	-	-	-	-	-
	PCB 138	-	-	-	-	-	-	-	-	-	-	-	-	-
	PCB 153	-	-	-	-	-	-	-	-	-	-	-	-	-
	PCB 180	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total PCB 7 Congeners	-	-	-	-	-	-	-	-	-	-	-	-	-
Halogenated	Chlorobenzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	0.0955	<0.05	<0.005	<0.005	<0.005
	Bromobenzene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
	2-chlorotoluene	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.09	<0.009	<0.09	<0.009	<0.009	<0.009
	4-chlorotoluene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
	1,3-dichlorobenzene	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.08	<0.008	<0.08	<0.008	<0.008	<0.008
	1,4-dichlorobenzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.05	<0.005	<0.005	<0.005
	1,2-dichlorobenzene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
	1,2,4-trichlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2	<0.02	<0.02	<0.02
	1,2,3-trichlorobenzene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2	<0.02	<0.02	<0.02
Halogenated	Dichlorodifluoromethane	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.06	<0.006	<0.06	<0.006	<0.006	<0.006
	Bromomethane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Trichlorofluoromethane	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
	1,2-dibromoethane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Solvents	Carbon disulfide	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.07	<0.007	<0.07	<0.007	<0.007	<0.007
Organics	TOC	1.89	0.248	1.52	2.08	<0.2	1.33	<0.2	3.51	<0.2	19.1	<0.2	<0.2	0.443
Other	Waste Limit, Total	-	-	-	-	-	-	-	-	-	-	-	-	-
Asbestos	Amosite Asbestos	0	-	0	1	-	0	0	0	-	0	-	0	-
	Chrysotile Asbestos	0	-	0	1	-	0	0	0	-	0	-	0	-
	Crocidoilite Asbestos	0	-	0	0	-	0	0	0	-	0	-	0	-
	Additional Asbestos Components (Us	-	-	-	1	-	-	-	-	-	-	-	-	-
	Fibrous Actinolite	0	-	0	0	-	0	0	0	-	0	-	0	-
	Fibrous Anthophyllite	0	-	0	0	-	0	0	0	-	0	-	0	-
	Fibrous Tremolite	0	-	0	0	-	0	0	0	-	0	-	0	-
	Non-Asbestos Fibre	0	-	0	0	-	0	0	0	-	0	-	0	-

Comments
GAC: Generic Assessment Criteria
(blank): No assessment criteria available
- : Not analysed

#1 USEPA RSL
#2 Dutch Serious 2009
#3 Dutch Intervention 2009
#4 Defra C4SL 12/2014
#5 AECOM (modified LQM/CIEH S4ULs)
#6 AECOM (modified EIC)

Key

XXX	Exceedance of HH Soil. Commercial/Industrial. Sand. TOC >=1.45 to <3.48%
XXX	Exceedance of HH Soil. Residential with Plant Uptake. Sand. TOC >=1.45 to <3.48%
XXX (red)	Exceedance of HH Soil. Residential without Plant Uptake. Sand. TOC >=1.45 to <3.48%

Table 6 - VOC Concentrations in Soils

Chemical Group	Chemical Name	Unit	EQL	GAC_HH_COM/IND_SAND_1.45-3.48%TOC	GAC_HH_RES+PL_SAND_1.45-3.48%TOC	GAC_HH_RES-PL_SAND_1.45-3.48%TOC	BH201A	BH201A	BH202A	BH203A	BH204	BH204	BH205	BH205	BH206	BH207	BH207	BH208A	BH208A	BH209	BH209	BH210	BH210	BH211
						Sample Depth	0.7	1.9-2	0.8	0.5	1.3	3.3	1	2.5	1.1	0.7	2.6-3.5	0.8	1.1	0.5	2.7-3.4	0.8	2.2-2.8	0.7
						Sample Date	25/08/2015	25/08/2015	25/08/2015	20/08/2015	21/08/2015	21/08/2015	21/08/2015	21/08/2015	21/08/2015	25/08/2015	25/08/2015	25/08/2015	25/08/2015	25/08/2015	25/08/2015	26/08/2015	26/08/2015	26/08/2015
VOC	2,2-dichloropropane	mg/kg	0.01				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Bromochloromethane	mg/kg	0.01	630#1	150#1	150#1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	1,1-dichloropropene	mg/kg	0.01				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	1,2-dichloroethane	mg/kg	0.01	0.42#5	0.0041#5	0.0044#5	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	1,2-dichloropropane	mg/kg	0.01	2.65#6	0.0146#6	0.0172#6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Dibromomethane	mg/kg	0.01	98#1	23#1	23#1	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.09	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009
	Bromodichloromethane	mg/kg	0.01	1.3#1	0.29#1	0.29#1	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.07	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
	cis-1,3-dichloropropene	mg/kg	0.01				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	trans-1,3-dichloropropene	mg/kg	0.01				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	1,3-dichloropropane	mg/kg	0.01	23000#1	1600#1	1600#1	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.07	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007
	Chlorodibromomethane	mg/kg	0.01	3.2#1	0.73#1	0.73#1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	1,1,1,2-tetrachloroethane	mg/kg	0.01	120#5	1.2#5	1.3#5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Styrene	mg/kg	0.01	3550#6	13.4#6	29.5#6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Bromoform	mg/kg	0.01	730#6	3#6	4.55#6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Isopropylbenzene	mg/kg	0.01	1540#6	9.87#6	10.1#6	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
	1,1,2,2-tetrachloroethane	mg/kg	0.01	260#5	1.9#5	2.9#5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	1,2,3-trichloropropane	mg/kg	0.02	0.11#1	0.0051#1	0.0051#1	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
	n-propylbenzene	mg/kg	0.01	4530#6	32.4#6	34.4#6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	1,3,5-trimethylbenzene	mg/kg	0.01	12000#1	780#1	780#1	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.08	`	<0.008	<0.008	<0.008	<0.008	<0.008
	tert-butylbenzene	mg/kg	0.01	120000#1	7800#1	7800#1	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.14	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
	1,2,4-trimethylbenzene	mg/kg	0.01	46.6#6	0.335#6	0.411#6	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.09	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009
	sec-butylbenzene	mg/kg	0.01	120000#1	7800#1	7800#1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	p-isopropyltoluene	mg/kg	0.01				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	n-butylbenzene	mg/kg	0.01	58000#1	3900#1	3900#1	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.11	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011
	1,2-dibromo-3-chloropropane	mg/kg	0.01	0.064#1	0.0053#1	0.0053#1	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
	Hexachlorobutadiene	mg/kg	0.02	33#5	0.26#5	0.27#5	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
	1,2-Dichloroethene	mg/kg			0.2#3	0.2#3	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.16	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
	Trihalomethanes	mg/kg					<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.35	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035

Chemical Name	BH211	BH212	BH212	BH213	BH213	BH214	BH2A	BH2A	BH3A	BH4A	BH4A	BH5A	BH5A	BH7A	BH7A	BH8A	BH8A	BH9A	BH9A
Sample Depth	2.2	0.6	1.8-2.5	0.6	1.7-2	0.85	0.5	1.5	0.5	0.9	3.5-4	0.5	2.5-3	0.7	2.5-3	0.5	3-3.5	0.5	2.2-3.3
Sample Date	26/08/2015	27/08/2015	27/08/2015	27/08/2015	27/08/2015	25/08/2015	25/08/2015	25/08/2015	28/08/2015	27/08/2015	27/08/2015	28/08/2015	28/08/2015	27/08/2015	27/08/2015	26/08/2015	26/08/2015	26/08/2015	26/08/2015
2,2-dichloropropane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Bromochloromethane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1,1-dichloropropene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
1,2-dichloroethane	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
1,2-dichloropropane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dibromomethane	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.09	<0.009	<0.09	<0.009	<0.009	<0.009
Bromodichloromethane	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.07	<0.007	<0.07	<0.007	<0.007	<0.007
cis-1,3-dichloropropene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
trans-1,3-dichloropropene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
1,3-dichloropropane	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	<0.07	<0.007	<0.07	<0.007	<0.007	<0.007
Chlorodibromomethane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
1,1,1,2-tetrachloroethane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
Styrene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
Bromoform	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
Isopropylbenzene	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.05	<0.005	<0.005	<0.005
1,1,2,2-tetrachloroethane	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
1,2,3-trichloropropane	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
n-propylbenzene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
1,3,5-trimethylbenzene	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.08	<0.008	<0.08	<0.008	<0.008	<0.008
tert-butylbenzene	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.14	<0.014	<0.14	<0.014	<0.014	<0.014
1,2,4-trimethylbenzene	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	<0.09	<0.009	<0.09	<0.009	<0.009	<0.009
sec-butylbenzene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
p-isopropyltoluene	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.01	<0.1	<0.01	<0.01	<0.01
n-butylbenzene	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.11	<0.011	<0.11	<0.011	<0.011	<0.011
1,2-dibromo-3-chloropropane	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
Hexachlorobutadiene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.2	<0.02	<0.2	<0.02	<0.02	<0.02
1,2-Dichloroethene	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.16	<0.016	<0.16	<0.016	<0.016	<0.016
Trihalomethanes	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.035	<0.35	<0.035	<0.35	<0.035	<0.035	<0.035

Comments
GAC: Generic Assessment Criteria
(blank): No assessment criteria available
- : Not analysed

#1 USEPA RSL
#2 Dutch Serious 2009
#3 Dutch Intervention 2009
#4 Defra C4SL 12/2014
#5 AECOM (modified LQM/CIEH S4ULs)
#6 AECOM (modified EIC)

Key

XXX	Exceedance of HH Soil. Commercial/Industrial. Sand. TOC >=1.45 to <3.48%
XXX	Exceedance of HH Soil. Residential with Plant Uptake. Sand. TOC >=1.45 to <3.48%
XXX	Exceedance of HH Soil. Residential without Plant Uptake. Sand. TOC >=1.45 to <3.48%

Table 7 - Metals and Inorganics Concentrations in Groundwater

					Well ID	BH2	BH3	BH4	BH5	BH7	BH8	BH9	BH10	BH104B	BH109	BH110	BH111	BH201A	DUP01 (BH4)
					Date Sampled	02/09/2015	01/09/2015	01/09/2015	01/09/2015	01/09/2015	01/09/2015	02/09/2015	01/09/2015	02/09/2015	01/09/2015	01/09/2015	01/09/2015	02/09/2015	01/09/2015
Analyte		Units	EQL	DWS GAC	EQS Coastal GAC														
Metals	Antimony (Filtered)	µg/L	0.16	**5#1**		0.171	0.415	0.36	<0.16	0.681	0.726	2.06	0.27	0.172	0.64	0.464	0.199	0.306	0.816
	Arsenic (Filtered)	µg/L	0.12	**10#1**	*25#4*	***39.4***	7.32	5.08	5.12	***45.4***	**15.7**	**14.4**	3.79	**17.3**	***32.6***	**14**	**22**	6.51	4.8
	Barium (Filtered)	µg/L	0.03	**700#3**		116	64.2	22.1	47.9	73.4	83.4	39.9	15.4	66	18.2	40.7	104	79.1	21.4
	Beryllium (Filtered)	µg/L	0.07	**25#5**		<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07
	Boron (Filtered)	µg/L	9.4	**1000#1**	*7000#7*	133	152	52.7	99.2	138	130	27.8	82.3	140	107	137	65.1	106	52.2
	Cadmium (Filtered)	µg/L	0.1	**5#1**	*0.2#4*	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	*0.228*	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chromium (III+VI) (Filtered)	µg/L	0.22	**50#1**	*0.6#4*	*2.23*	*3.62*	*1.53*	*2.26*	*5.24*	*3.98*	*7.52*	*1.21*	*1.71*	*3.56*	*3.44*	*3.75*	*2.27*	*1.22*
	Cobalt (Filtered)	µg/L	0.06	**6#5**	*3#7*	0.3	2.33	0.594	*3.15*	*3.29*	2.77	***9.27***	0.337	1.25	***9.39***	*4.36*	1.79	***11.8***	0.262
	Copper (Filtered)	µg/L	0.85	**2000#1**	*5#4*	1.95	1.13	0.939	1.09	1.59	1.4	*61.3*	1.16	1.74	1.26	1.29	<0.85	1.08	1.13
	Lead (Filtered)	µg/L	0.02	**25#1**	*7.2#4*	0.059	0.034	0.066	0.057	0.072	0.033	*22.8*	<0.02	0.057	0.085	0.04	<0.02	0.098	0.028
	Manganese (Filtered)	µg/L	0.04	**50#1**		**772**	**91.2**	8.89	**860**	**1200**	**169**	**983**	23	**665**	**1320**	**126**	**2270**	**1180**	7.19
	Mercury (Filtered)	µg/L	0.01	**1#1**	*0.05#4*	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0171	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Nickel (Filtered)	µg/L	0.15	**20#1**	*20#4*	6.63	6.92	1.77	5.5	8.43	7.03	12.3	2.26	8.43	11	6.1	3.85	18.4	1.81
	Selenium (Filtered)	µg/L	0.39	**10#1**		9.71	9.06	0.781	1.67	1.13	1.92	1.87	1.86	7.19	3	**13.2**	2.87	1.76	0.897
	Silver	µg/L	1.5	**94#5**	*0.5#7*	*<1.5*	*<1.5*	*<1.5*	*<1.5*	*<1.5*	*<1.5*	*<1.5*	*<1.5*	*<1.5*	*<1.5*	*<1.5*	*<1.5*	*<1.5*	*<1.5*
	Thallium (Filtered)	µg/L	0.96	**0.2#5**		**<0.96**	**<0.96**	**<0.96**	**<0.96**	**<0.96**	**<0.96**	**<0.96**	**<0.96**	**<0.96**	**<0.96**	**<0.96**	**<0.96**	**<0.96**	**<0.96**
	Vanadium (Filtered)	µg/L	0.24	**86#5**	*100#7*	0.657	1.56	1.61	1.33	2.35	1.56	7.67	0.759	0.67	1.57	1.33	1.07	0.941	1.45
	Zinc (Filtered)	µg/L	0.41	**6000#5**	*40#4*	15.7	8.79	12.6	5.59	11.2	9.92	*280*	1.27	11.9	27.4	4.62	6	17.5	5.01
Inorganics	Nitrate (as NO3-)	mg/L	0.3	**50#1**		<0.3	5.18	21.5	6.42	0.926	4.42	<0.3	18.7	2.01	0.942	5.64	0.94	9.17	21.9
	ORTHOPHOSPHATE (PO4-P)	mg/L	0.05			<0.05	0.465	7.3	1.55	0.07	0.302	14.1	4.46	<0.05	0.297	0.216	<0.05	0.056	7.28
	Ammoniacal Nitrogen as N	mg/L	0.2	**0.389#1**		0.268	<0.2	<0.2	**0.508**	**0.707**	**0.619**	**5.66**	<0.2	<0.2	**1.23**	<0.2	**4.74**	<0.2	<0.2
	Ammonium as NH4 BRE	mg/L	0.3			0.345	<0.3	<0.3	0.653	0.909	0.796	7.28	<0.3	<0.3	1.58	<0.3	6.09	<0.3	<0.3
	Sulphate (soluble)	mg/l	2			457	57.4	43	79.9	74.5	61.6	<2	70.1	287	75	55.2	37.5	82.2	42.3
	COD	mg/L	7			<7	<7	8.09	21.2	10.1	10.5	3330	<7	7.65	190	<7	43.5	<7	<7
	pH (Lab)	pH_Units	1			7.59	7.45	7.1	7.39	7.9	7.38	7.55	7.56	7.22	7.49	7.52	7.32	8.09	7.14

Notes:

GAC	Generic Assessment Criteria
DWS	UK Drinking Water Standards
EQS Coastal	Environmental Water Quality Standard - Coastal Waters
EQL	Estimated Quantitation Limit
	Laboratory Method Detection Limit is greater than GAC
	GAC Exceedance

#1 WS Regs 2010 (Eng/Wal)
#2 WHO Petroleum In DW 2008
#3 WHO DWG 2011
#4 WFD EQS 2010 Coastal (Eng/Wal)
#5 USEPA RSL (tapwater)
#6 SEPA WAT-SG-53 Marine EQS - MAC - 2013
#7 SEPA WAT-SG-53 Marine EQS - AA - 2013
#8 PNEC (EU REACH) - Coastal
#9 New Hampshire DES (2009)
#10 California Draft health protective concentration
#11 Calc WHO

Table 8 - TPH, BTEX, MTBE and TAME Concentrations in Groundwater

				Well ID	BH2	BH3	BH4	BH5	BH7	BH8	BH9	BH10	BH104B	BH109	BH110	BH111	BH201A	DUP01 (BH4)
				Date Sampled	02/09/2015	01/09/2015	01/09/2015	01/09/2015	01/09/2015	01/09/2015	02/09/2015	01/09/2015	02/09/2015	01/09/2015	01/09/2015	01/09/2015	02/09/2015	01/09/2015
Analyte		Units	EQL	DWS GAC														
TPH	GRO >C5-C10	µg/L	10		<10	<10	<10	<10	<10	<10	281	<10	<10	<10	<10	<10	<10	<10
	EPH >C6-C10	µg/L	100		<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	<100
	EPH >C6-C40	µg/L	100		<100	<100	<100	<100	<100	<100	1430	<100	<100	159	<100	<100	<100	<100
	EPH >C10-C40	µg/L	46		<46	<46	<46	<46	<46	<46	1430	<46	<46	159	<46	65.8	<46	<46
	>C12-C16 Aliphatics	µg/L	10	**300**[#2]	-	<10	<10	<10	-	<10	-	-	-	<10	<10	<10	-	<10
	>C16-C21 Aliphatics	µg/L	10	**300**[#2]	-	<10	<10	<10	-	<10	-	-	-	<10	<10	<10	-	<10
	>C16-C35 Aliphatics	µg/L	-		-	<20	<20	<20	-	<20	-	-	-	<20	<20	<20	-	<20
	>C21-C35 Aliphatics	µg/L	10	**300**[#2]	-	<10	<10	<10	-	<10	-	-	-	<10	<10	<10	-	<10
	>C12-C35 Aliphatics	µg/L	10		-	<10	<10	<10	-	<10	-	-	-	<10	<10	<10	-	<10
	>EC12-EC16 Aromatics	µg/L	10	**90**[#2]	-	<10	<10	<10	-	<10	-	-	-	<10	<10	<10	-	<10
	>EC16-EC21 Aromatics	µg/L	10	**90**[#2]	-	<10	<10	<10	-	<10	-	-	-	<10	<10	<10	-	<10
	>EC21-EC35 Aromatics	µg/L	10	**90**[#2]	-	<10	<10	<10	-	<10	-	-	-	<10	<10	<10	-	<10
	>EC12-EC35 Aromatics	µg/L	10		-	<10	<10	<10	-	<10	-	-	-	<10	<10	<10	-	<10
	>C5-C35 Aliphatics & Aromatics	µg/L	10		-	<10	<10	<10	-	<10	-	-	-	<10	<10	<10	-	<10
BTEX	Benzene	µg/L	1	**1**[#1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Toluene	µg/L	1	**700**[#3]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Ethylbenzene	µg/L	1	**300**[#3]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Xylene (m & p)	µg/L	1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Xylene Total	µg/L	-	**500**[#3]	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Xylene (o)	µg/L	1	**9.99000000000018E11**[#1]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Total BTEX	µg/L	28		<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28	<28
Oxygenates	MTBE	µg/L	1	**900**[#11]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Tert Amyl Methyl Ether	µg/L	1	**140**[#9]	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Notes:

GAC Generic Assessment Criteria
DWS UK Drinking Water Standards
EQL Estimated Quantitation Limit

#1 WS Regs 2010 (Eng/Wal)
#2 WHO Petroleum In DW 2008
#3 WHO DWG 2011
#4 WFD EQS 2010 Coastal (Eng/Wal)
#5 USEPA RSL (tapwater)
#6 SEPA WAT-SG-53 Marine EQS - MAC - 2013
#7 SEPA WAT-SG-53 Marine EQS - AA - 2013
#8 PNEC (EU REACH) - Coastal
#9 New Hampshire DES (2009)
#10 California Draft health protective concentration
#11 Calc WHO

Table 9 - PAH Concentrations in Groundwater

				Well ID	BH2	BH3	BH4	BH5	BH7	BH8	BH9	BH10	BH104B	BH109	BH110	BH111	BH201A	DUP01 (BH4)
				Date Sampled	02/09/2015	01/09/2015	01/09/2015	01/09/2015	01/09/2015	01/09/2015	02/09/2015	01/09/2015	02/09/2015	01/09/2015	01/09/2015	01/09/2015	02/09/2015	01/09/2015
Analyte	Units	EQL	DWS GAC	EQS Coastal GAC														
Naphthalene	µg/L	1	6#11	1.2#4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Acenaphthylene	µg/L	1	18#11		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
Acenaphthene	µg/L	1	18#11		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
Fluorene	µg/L	1	12#11		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
Phenanthrene	µg/L	1	4#11		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
Anthracene	µg/L	1	90#11	0.1#4	<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
Fluoranthene	µg/L	1	4#11	0.1#4	<1	<1	<1	<1	<1	<1	6.12	<1	<1	<2	<1	<1	<1	-
Pyrene	µg/L	1	9#11		<1	<1	<1	<1	<1	<1	4.78	<1	<1	<2	<1	<1	<1	-
Benz(a)anthracene	µg/L	1	0.1#11		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
Chrysene	µg/L	1	1#11		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
Benzo(a) pyrene	µg/L	1	0.01#1	0.05#4	<1	<1	<1	<1	<1	<1	4.69	<1	<1	<2	<1	<1	<1	-
Indeno(1,2,3-c,d)pyrene	µg/L	1	9.99000000000029E11#1		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
Dibenz(a,h)anthracene	µg/L	1	0.01#11		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
Benzo(g,h,i)perylene	µg/L	1	9.99000000000029E11#1		<1	<1	<1	<1	<1	<1	4.05	<1	<1	<2	<1	<1	<1	-
Benzo(b)fluoranthene	µg/L	1	9.99000000000029E11#1		<1	<1	<1	<1	<1	<1	6.42	<1	<1	<2	<1	<1	<1	-
Benzo(k)fluoranthene	µg/L	1	9.99000000000029E11#1		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
Benzo(b)&(k)fluoranthene	µg/L	-		0.03#4	<2	<2	<2	<2	<2	<2	8.42	<2	<2	<4	<2	<2	<2	-
PAHs (sum of 4)	µg/L	-	0.1#1		<4	<4	<4	<4	<4	<4	14.47	<4	<4	<8	<4	<4	<4	-
benzo(g,h,i)perylene + indeno(1,2,3-cd)pyrene	µg/L	-		0.002#4	<2	<2	<2	<2	<2	<2	6.05	<2	<2	<4	<2	<2	<2	-
Coal Tar (Bap as surrogate marker)	µg/L	-			<1	<1	<1	<1	<1	<1	4.69	<1	<1	<2	<1	<1	<1	-

Notes:

Generic Assessment Criteria	GAC
UK Drinking Water Standards	DWS
Environmental Water Quality Standard - Coastal Waters	EQS Coastal
Estimated Quantitation Limit	EQL
Laboratory Method Detection Limit is greater than GAC	
GAC Exceedance	

#1 WS Regs 2010 (Eng/Wal)
#2 WHO Petroleum In DW 2008
#3 WHO DWG 2011
#4 WFD EQS 2010 Coastal (Eng/Wal)
#5 USEPA RSL (tapwater)
#6 SEPA WAT-SG-53 Marine EQS - MAC - 2013
#7 SEPA WAT-SG-53 Marine EQS - AA - 2013
#8 PNEC (EU REACH) - Coastal
#9 New Hampshire DES (2009)
#10 California Draft health protective concentration
#11 Calc WHO

Table 10 - VOCs and SVOCs Concentrations in Groundwater

Analyte		Units	EQL	DWS GAC	EQS Coastal GAC	BH2	BH3	BH4	BH5	BH7	BH8	BH9	BH10	BH104B	BH109	BH110	BH111	BH201A	DUP01 (BH4)
					Date Sampled	02/09/2015	01/09/2015	01/09/2015	01/09/2015	01/09/2015	01/09/2015	02/09/2015	01/09/2015	02/09/2015	01/09/2015	01/09/2015	01/09/2015	02/09/2015	01/09/2015
VOC	2,2-dichloropropane	µg/L	1			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Bromochloromethane	µg/L	1	83#5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,1-dichloropropene	µg/L	1			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,2-dichloroethane	µg/L	1	3#1	10#4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,2-dichloropropane	µg/L	1	0.1#1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Dibromomethane	µg/L	1	8#5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Bromodichloromethane	µg/L	1	0.13#5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	cis-1,3-dichloropropene	µg/L	1			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	trans-1,3-dichloropropene	µg/L	1			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,3-dichloropropane	µg/L	1	0.1#1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Chlorodibromomethane	µg/L	1	9.99000000000015E11 #1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,1,1,2-tetrachloroethane	µg/L	1	0.57#5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Styrene	µg/L	1	20#3	50#7	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Bromoform	µg/L	1	9.99000000000015E11		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Isopropylbenzene	µg/L	1	450#5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,1,2,2-tetrachloroethane	µg/L	1	0.076#5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,2,3-trichloropropane	µg/L	1	0.00075#5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	n-propylbenzene	µg/L	1	660#5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,3,5-trimethylbenzene	µg/L	1	120#5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	tert-butylbenzene	µg/L	1	690#5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,2,4-trimethylbenzene	µg/L	1	15#5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	sec-butylbenzene	µg/L	1	2000#5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	p-isopropyltoluene	µg/L	1			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	n-butylbenzene	µg/L	1	1000#5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,2-dibromo-3-chloropropane	µg/L	1	0.1#1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Hexachlorobutadiene	µg/L	1	0.6#3	0.1#4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,2-Dichloroethene	µg/L		50#3		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	Trihalomethanes	µg/L		100#1		<4	<4	3.07	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	2.91
SVOC	2-methylnaphthalene	µg/L	1	24#3		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	4-bromophenyl phenyl ether	µg/L	1			<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	4-chlorophenyl phenyl ether	µg/L	1			<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	Azobenzene	µg/L	1	0.12#5		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	Bis(2-chloroethoxy) methane	µg/L	1	59#5		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	Bis(2-chloroethyl)ether	µg/L	1	0.014#5		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	Carbazole	µg/L	1			<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	Dibenzofuran	µg/L	1	7.9#5		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	Hexachlorocyclopentadiene	µg/L	1	31#5		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	Hexachloroethane	µg/L	1	0.9#5		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
Chlorinated Hydrocarbons	Chloromethane	µg/L	1	20#3		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Vinyl chloride	µg/L	1	0.5#1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Chloroethane	µg/L	1	21000#5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,1-dichloroethene	µg/L	1	30#3		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Dichloromethane	µg/L	3	20#3	20#4	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
	trans-1,2-dichloroethene	µg/L	1	360#5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,1-dichloroethane	µg/L	1	2.7#5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	cis-1,2-dichloroethene	µg/L	1	36#5		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Chloroform	µg/L	1	.99000000000015E11#	2.5#4	<1	<1	1.57	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.41
	1,1,1-trichloroethane	µg/L	1	2000#3	100#4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Carbon tetrachloride	µg/L	1	3#1	12#4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Trichloroethene	µg/L	1	.99000000000017E11#	10#4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,1,2-trichloroethane	µg/L	1	0.28#5	300#4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Tetrachloroethene	µg/L	1	.99000000000017E11#	10#4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Sum of PCE and TCE	µg/L		10#1		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	TCE+DCE+VC	µg/L				<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	PCE+TCE+DCE+VC	µg/L				<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6

Table 10 - VOCs and SVOCs Concentrations in Groundwater

Analyte		Units	EQL	DWS GAC	EQS Coastal GAC	BH2	BH3	BH4	BH5	BH7	BH8	BH9	BH10	BH104B	BH109	BH110	BH111	BH201A	DUP01 (BH4)
					Date Sampled	02/09/2015	01/09/2015	01/09/2015	01/09/2015	01/09/2015	01/09/2015	02/09/2015	01/09/2015	02/09/2015	01/09/2015	01/09/2015	01/09/2015	02/09/2015	01/09/2015
Phenolics	2-methylphenol	µg/L	1	**930#5**		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	2-nitrophenol	µg/L	1			<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	2,4-dimethylphenol	µg/L	1	**360#5**		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	4-chloro-3-methylphenol	µg/L	1	**1400#5**	*40#4*	<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	4-methylphenol	µg/L	1	**1900#5**		<1	<1	<1	<1	<1	<1	172	<1	<1	<2	<1	5.42	<1	-
	4-nitrophenol	µg/L	1			<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	Phenol	µg/L	1	**5800#5**	*7.7#4*	<1	<1	<1	<1	<1	<1	*10.7*	<1	<1	<2	<1	<1	<1	-
	2-chloronaphthalene	µg/L	1	**750#5**		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
Amino Aliphatics	N-nitrosodi-n-propylamine	µg/L	1	**0.011#5**		**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<4**	**<1**	**<1**	**<2**	**<1**	**<1**	**<1**	-
Anilines	2-nitroaniline	µg/L	1	**190#5**		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	3-nitroaniline	µg/L	1			<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	4-chloroaniline	µg/L	1	**0.36#5**		**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<4**	**<1**	**<1**	**<2**	**<1**	**<1**	**<1**	-
	4-nitroaniline	µg/L	1	**3.8#5**		<1	<1	<1	<1	<1	<1	**<4**	<1	<1	<2	<1	<1	<1	-
Explosives	2,4-Dinitrotoluene	µg/L	1	**0.24#5**		**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<4**	**<1**	**<1**	**<2**	**<1**	**<1**	**<1**	-
	2,6-dinitrotoluene	µg/L	1	**0.048#5**		**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<4**	**<1**	**<1**	**<2**	**<1**	**<1**	**<1**	-
	Nitrobenzene	µg/L	1	**0.14#5**		**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<4**	**<1**	**<1**	**<2**	**<1**	**<1**	**<1**	-
Halogenated Benzenes	1,3,5-Trichlorobenzene	µg/L	1			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Chlorobenzene	µg/L	1	**300#3**		1.7	<1	<1	<1	1.77	<1	1.89	<1	<1	<1	<1	<1	1.8	<1
	Bromobenzene	µg/L	1	**62#5**		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2-chlorotoluene	µg/L	1	**240#5**		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	4-chlorotoluene	µg/L	1	**250#5**		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,3-dichlorobenzene	µg/L	1			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,4-dichlorobenzene	µg/L	1	**300#3**		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,2-dichlorobenzene	µg/L	1	**1000#3**		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,2,4-trichlorobenzene	µg/L	1	**1.1#5**		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,2,3-trichlorobenzene	µg/L	1	**7#5**		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Hexachlorobenzene	µg/L	1	**1#3**	*0.01#4*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	***<4***	*<1*	*<1*	***<2***	*<1*	*<1*	*<1*	-
Halogenated Hydrocarbons	Dichlorodifluoromethane	µg/L	1	**200#5**		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Bromomethane	µg/L	1	**7.5#5**		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Trichlorofluoromethane	µg/L	1	**1100#5**		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	1,2-dibromoethane	µg/L	1	**0.1#1**		**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**
Halogenated Phenols	2-chlorophenol	µg/L	1	**0.1#3**	*50#4*	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<4**	**<1**	**<1**	**<2**	**<1**	**<1**	**<1**	-
	2,4-dichlorophenol	µg/L	1	**0.3#3**	*20#4*	**<1**	**<1**	**<1**	**<1**	**<1**	**<1**	**<4**	**<1**	**<1**	**<2**	**<1**	**<1**	**<1**	-
	2,4,5-trichlorophenol	µg/L	1	**9#3**		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	2,4,6-trichlorophenol	µg/L	1	**200#3**		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	Pentachlorophenol	µg/L	1	**9#3**	*0.4#4*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<4*	*<1*	*<1*	*<2*	*<1*	*<1*	*<1*	-

Table 10 - VOCs and SVOCs Concentrations in Groundwater

					Well ID	BH2	BH3	BH4	BH5	BH7	BH8	BH9	BH10	BH104B	BH109	BH110	BH111	BH201A	DUP01 (BH4)
					Date Sampled	02/09/2015	01/09/2015	01/09/2015	01/09/2015	01/09/2015	01/09/2015	02/09/2015	01/09/2015	02/09/2015	01/09/2015	01/09/2015	01/09/2015	02/09/2015	01/09/2015
Analyte		Units	EQL	DWS GAC	EQS Coastal GAC														
Phthalates	Bis(2-ethylhexyl) phthalate	µg/L	2	**8#3**	*1.3#4*	*<2*	*<2*	*<2*	*<2*	*<2*	*<2*	*<8*	*<2*	*<2*	*<4*	*<2*	*<2*	*<2*	-
	Butyl benzyl phthalate	µg/L	1	**16#5**	*20#7*	<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	Di-n-butyl phthalate	µg/L	1	**900#5**	*8#7*	<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	Di-n-octyl phthalate	µg/L	5	**200#5**	*20#7*	<5	<5	<5	<5	<5	<5	<20	<5	<5	<10	<5	<5	<5	-
	Diethylphthalate	µg/L	1	**15000#5**	*200#7*	<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
	Dimethyl phthalate	µg/L	1		*800#7*	<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-
Solvents	Carbon disulfide	µg/L	1	**810#5**		<1	<1	<1	<1	<1	<1	2.28	<1	<1	<1	<1	<1	<1	<1
	Isophorone	µg/L	1	**78#5**		<1	<1	<1	<1	<1	<1	<4	<1	<1	<2	<1	<1	<1	-

Notes:

GAC	Generic Assessment Criteria
DWS	UK Drinking Water Standards
EQS Coastal	Environmental Water Quality Standard - Coastal Waters
EQL	Estimated Quantitation Limit
	Laboratory Method Detection Limit is greater than GAC
	GAC Exceedance

#1 WS Regs 2010 (Eng/Wal)
#2 WHO Petroleum In DW 2008
#3 WHO DWG 2011
#4 WFD EQS 2010 Coastal (Eng/Wal)
#5 USEPA RSL (tapwater)
#6 SEPA WAT-SG-53 Marine EQS - MAC - 2013
#7 SEPA WAT-SG-53 Marine EQS - AA - 2013
#8 PNEC (EU REACH) - Coastal
#9 New Hampshire DES (2009)
#10 California Draft health protective concentration
#11 Calc WHO

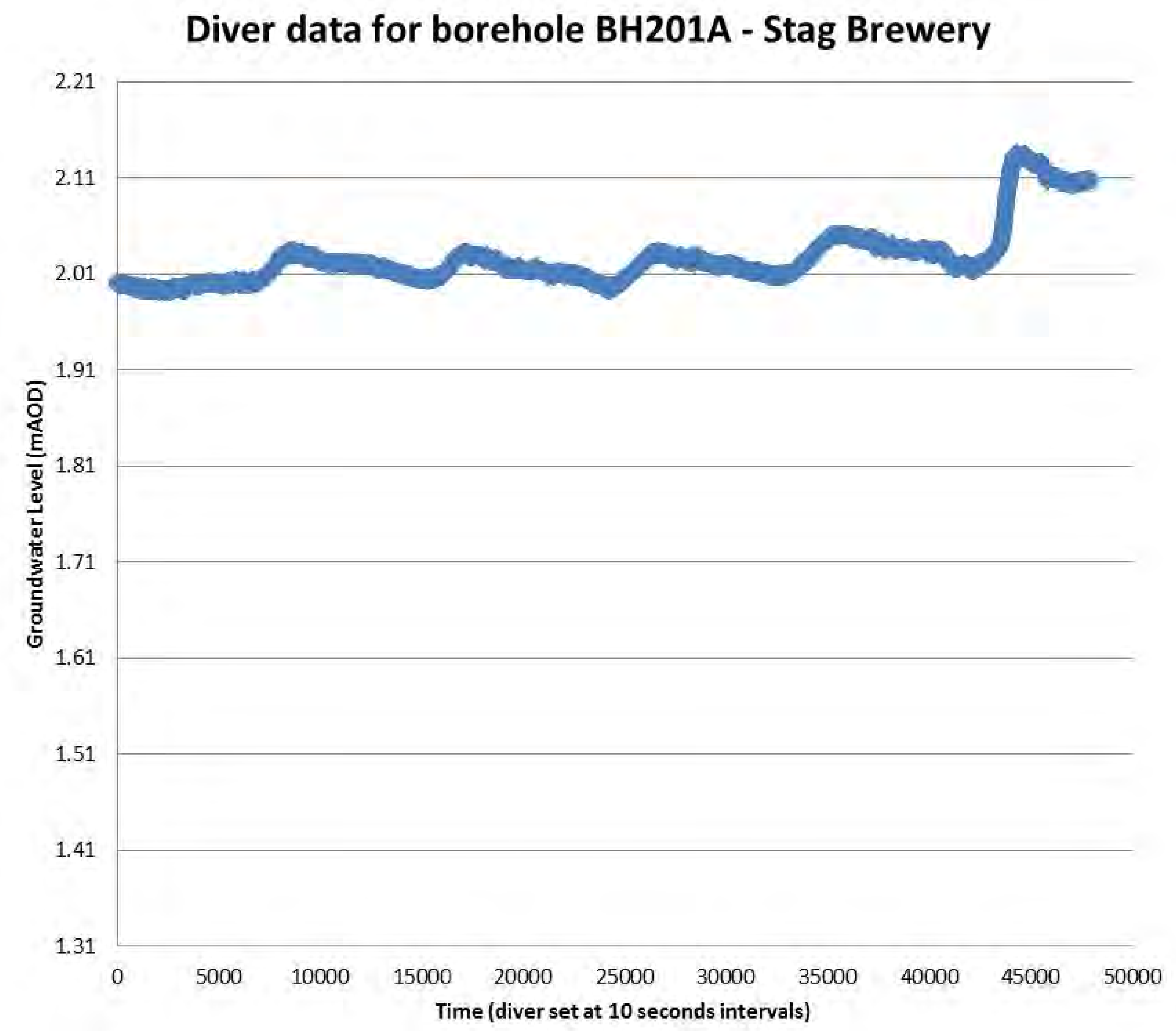
Table 11 - Field Duplicate QA Check

			Well ID	BH4	DUP01	RPD
			Date Sampled	01/09/2015	01/09/2015	
Method Type	Analyte	Units	EQL			
EPH by GC-FID	>C10-C40	µg/l		<46	<46	0
GRO by Headspace GC-FID	>C5-C10	µg/l		<10	<10	0
	MTBE	µg/l		<1	<1	0
	Benzene	µg/l		<1	<1	0
	Toluene	µg/l		<1	<1	0
	Ethylbenzene	µg/l		<1	<1	0
	Xylene (m & p)	µg/l		<1	<1	0
	Xylene (o)	µg/l		<1	<1	0
Metals by ICP-OES	Arsenic (Filtered)	µg/l		52.7	52.2	0
	Boron (Filtered)	µg/l		<0.1	<0.1	0
	Cadmium (Filtered)	µg/l		1.53	1.22	11
	Chromium (III+VI) (Filtered)	µg/l		0.939	1.13	9
	Copper (Filtered)	µg/l		0.066	0.028	40
	Lead (Filtered)	µg/l		<0.01	<0.01	0
	Mercury (Filtered)	µg/l		1.77	1.81	1
	Nickel (Filtered)	µg/l		0.781	0.897	7
	Selenium (Filtered)	µg/l		12.6	5.01	43
	Zinc (Filtered)	µg/l		21.5	21.9	1
pH by Metrohm	pH (Lab)	-		7.1	7.14	0
SO4, Cl, NO3, NO2, PO4, Amm N2, Thiocyanate, He...	Nitrate (as NO3-)	mg/l		7.3	7.28	0
	ORTHOPHOSPHATE (PO4-P)	mg/l		<0.2	<0.2	0
	Ammoniacal Nitrogen as N	mg/l		<0.3	<0.3	0
	Ammonium as NH4 BRE	mg/l		43	42.3	1
	Sulphate (soluble)	µg/l		28.2	28.4	0

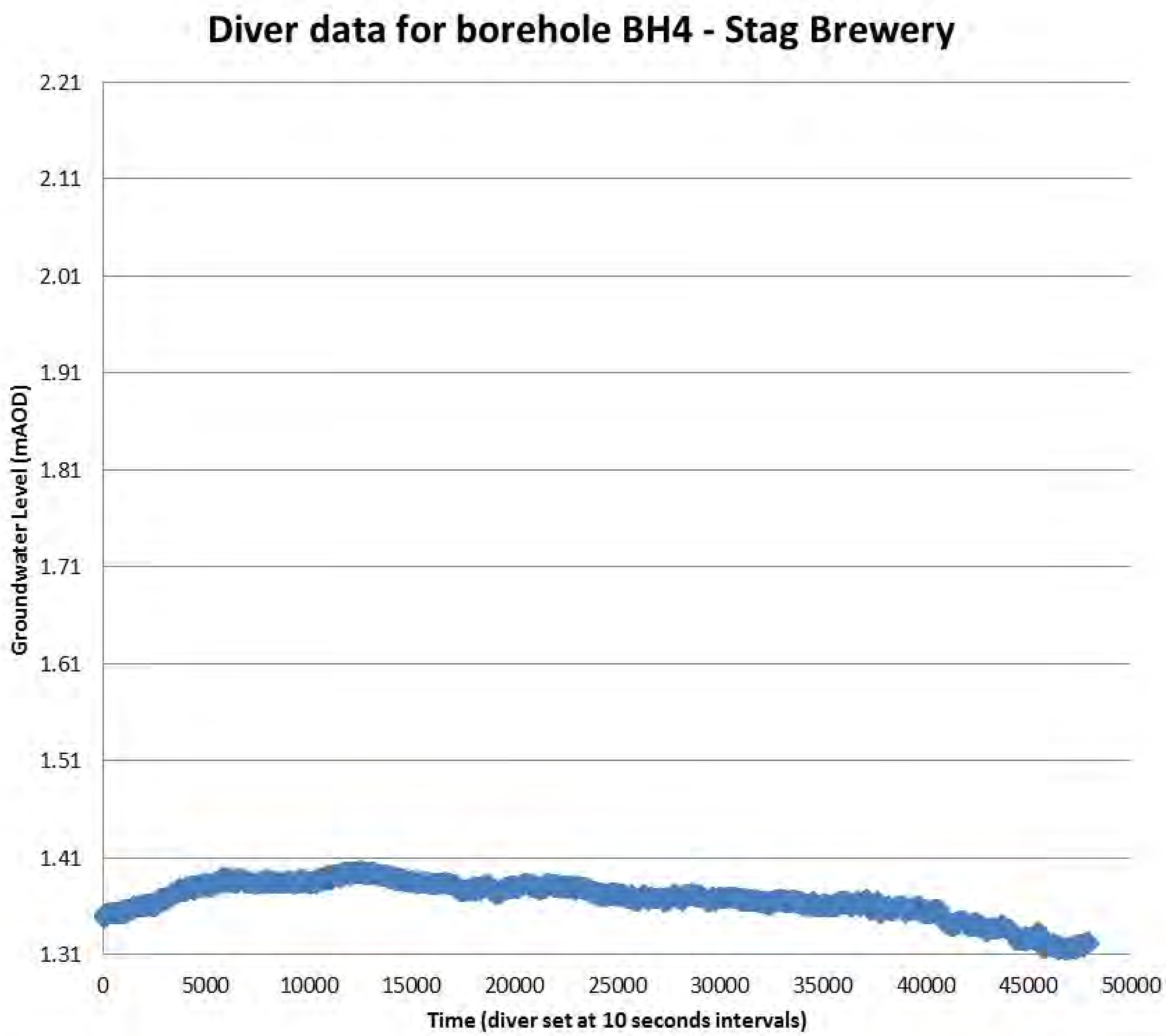
*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 100 (1-10 x EQL); 50 (10-20 x EQL); 30 (> 20 x EQL))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

GRAPHS

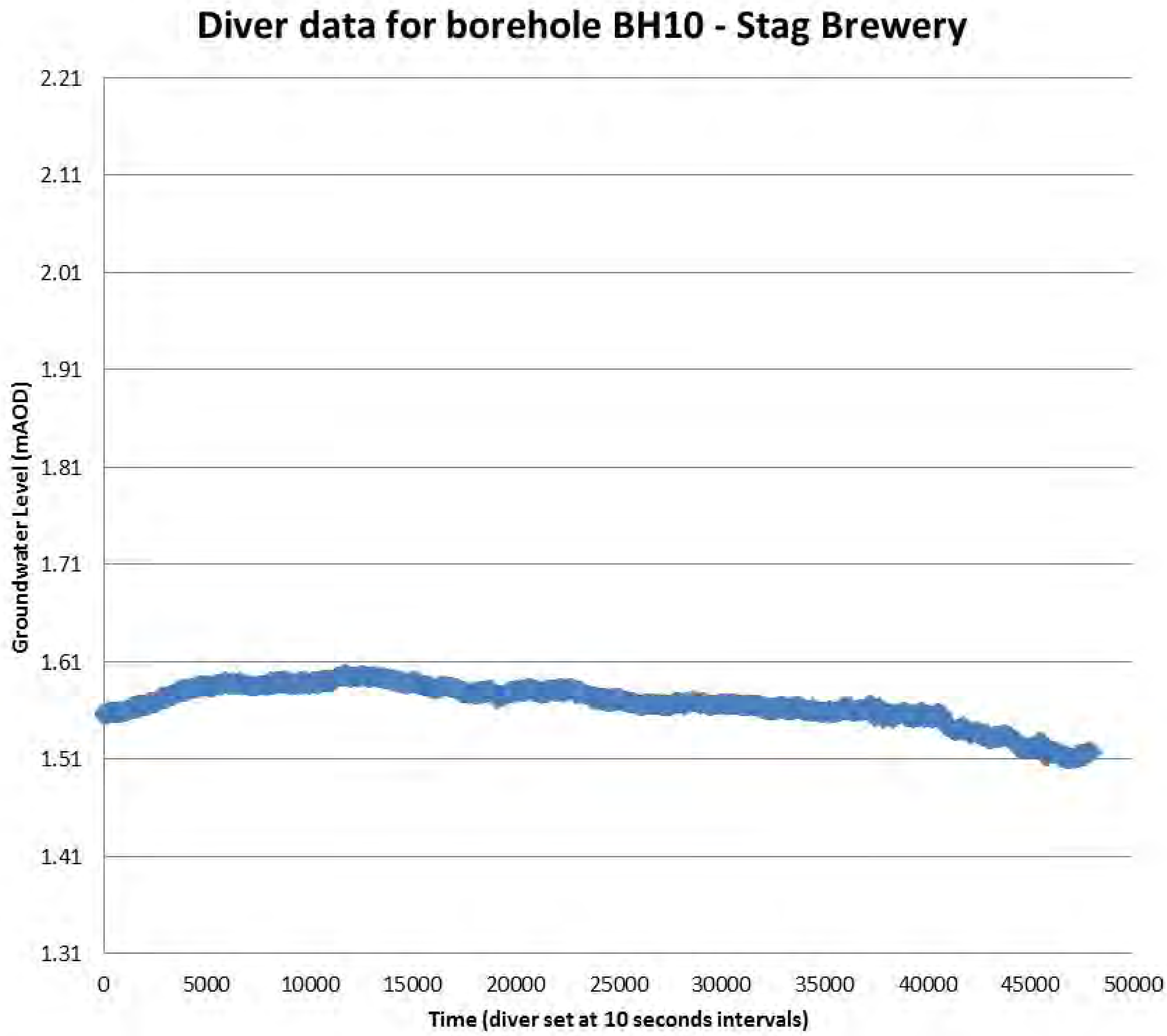
GRAPH 1


Diver data for borehole BH201A - Stag Brewery
Groundwater Level (mAOD)
2.21
2.11
2.01
1.91
1.81
1.71
1.61
1.51
1.41
1.31
0
5000
10000
15000
20000
25000
30000
35000
40000
45000
50000
Time (diver set at 10 seconds intervals)

GRAPH 2


Diver data for borehole BH4 - Stag Brewery
Groundwater Level (mAOD)
2.21
2.11
2.01
1.91
1.81
1.71
1.61
1.51
1.41
1.31
0
5000
10000
15000
20000
25000
30000
35000
40000
45000
50000
Time (diver set at 10 seconds intervals)

GRAPH 3


Diver data for borehole BH10 - Stag Brewery
Groundwater Level (mAOD)
2.21
2.11
2.01
1.91
1.81
1.71
1.61
1.51
1.41
1.31
0
5000
10000
15000
20000
25000
30000
35000
40000
45000
50000
Time (diver set at 10 seconds intervals)

GRAPH 4

Groundwater Levels
Events
round 1 - October 2003
round 2 - December 2005
round 3 - April 2007
round 4 - November 2012
round 5 - August 2015
m bgl
0
1
2
3
4
5
6
BH3
BH4
BH5
BH7
BH8
BH104B
BH110
BH111
BH2
BH10

APPENDIX A – DE-SILTING & DEVELOPMENT OF EXISTING MONITORING WELLS

DE-SILTING OF MONITORING WELLS

The review of the historical information in the previous SPMP reports between October 2003 and November 2012 indicated the depths of four groundwater monitoring wells to have decreased due to accumulation of sand and silt in the standpipes. The changes in depth are presented in **Table A1.**

Table A1 – Changes in Wells Depths

Well ID	Dip Round 1 October 2003 [m bgl]	Dip Round 2 December 2005 [m bgl]	Dip Round 3 April 2007 [m bgl]	Dip Round 4 November 2012 [m bgl]	Change in Depth [m]
BH3	6.60	6.18	5.94	5.38	-1.22
BH4	6.70	6.31	6.23	4.95	-1.75
BH5	7.00	6.47	6.23	4.87	-2.13
BH10	7.13	7.13	7.13	5.53	-1.47

On 24 and 25 August 2015 AECOM undertook the de-silting of the thirteen existing groundwater monitoring wells: BH2, BH3, BH4, BH5, BH7, BH8, BH9, BH10, BH104B, BH109, BH110, BH111 and BH112.

Air lift surging techniques were used to de-silt the thirteen monitoring wells. The monitoring wells were alternatively surged and pumped with air using a compressor in combination with a peristaltic pump. Air is injected into the base of the silted wells and the air bubbles created a surging effect that carries water and dislodged sediments upwards and out of the well. As the groundwater reaches the top of the casing, the air supply is shut off, allowing the aerated water column to fall. A peristaltic pump is then used to pump the well to remove the silt and sand deposits from the screen from the base of the wells.

A summary of the results of the de-silting works is in **Table A2.**

Table A2: De-silting of Groundwater Monitoring Wells (AECOM, 24-25 August 2015)

Well ID	Well Screen Interval [m bgl] (Formation)	Standing Water Level [m bgl]	Initial Depth to Bottom of Well [m bgl]	Final Depth to Bottom of Well After De-silting [m bgl]	Comments
BH2	3.0 – 6.8 (Gravel)	4.150	6.540	6.800	Good recharge. 2 litres of sludge / silt removed and the well returned to its as constructed depth.
BH3	2.5 – 6.5 (Sand)	5.250	5.130	6.095	Initially dry. Organic material removed. Good recharge thereafter.
BH4	2.5 – 6.7m (Sand)	4.895	4.090	6.190	Initially dry. Organic material removed. Good groundwater recharge thereafter.
BH5	3.0 – 7.0m (Sand)	4.840	4.750	6.100	Initially dry. Organic material removed. Good recharge thereafter.
BH7	2.5 – 6.7m (*) (Sand)	5.140	6.470	7.150	Good recharge. 3 litres of sludge / silt removed.

Table A2: De-silting of Groundwater Monitoring Wells (AECOM, 24-25 August 2015)

Well ID	Well Screen Interval [m bgl] (Formation)	Standing Water Level [m bgl]	Initial Depth to Bottom of Well [m bgl]	Final Depth to Bottom of Well After De-silting [m bgl]	Comments
BH8	3.0 – 7.2m (Sand)	4.875	6.240	6.900	Good recharge. 1.5 litres of sludge / silt removed.
BH9	No information available. (**)	Dry	2.360	2.650	Initially dry. Very little sludge removed. Recharges slowly.
BH10	3.0 – 7.0m (Sand)	4.375	5.015	7.035	Good recharge. Silty sludge removed. Well returned to its as constructed depth.
BH104B	1.0 – 6.0m (MG + sandy Clay+Sand)	4.190	4.880	4.980	Good recharge. Very little sludge removed.
BH109	1.0 – 6.0m (sandy Clay + Sand)	4.550	6.130	6.150	Good recharge. 1 litre of sand / sludge removed.
BH110	0.8 – 5.70m (MG + Sand + Gravel)	4.855	4.750	5.530	Initially dry. Silty sludge removed. Good groundwater recharge thereafter.
BH111	1.0 – 7.6m (MG + Sand)	5.150	7.470	7.657	Good recharge. Well returned to its as constructed depth.
BH112	1.0 – 3.0m (MG+Grave)	Dry	2.680	2.780	Well found dry. Very little sludge removed. Remaining deposits could not be removed as very compacted.

MG – Made Ground

m bgl – metres below ground level

(*) Well Assumed deeper. Original CRA, 2003 BH7 borehole log indicates 6.70m bgl as the final depth to installation but the well measurements carried out in August 2015 indicate that the depth to bottom of this well reached 7.150m bgl. During the September 2015 groundwater monitoring event this was measured to 6.947m bgl as a result of further silt deposited after the de-silting event.

(**) Based on the original CRA, 2003 borehole log, no monitoring well was installed within the Made Ground in this location. However, analyses of groundwater samples were carried out. Following the initial AECOM July 2015 site walkover, a 50mm well standpipe was noted within a steel cover flush to the ground. Based on the review of the historical groundwater monitoring reports and September 2015 dipping activities, BH9 is considered complete with a groundwater monitoring installation. No information on the well screen interval is available for review.

The volume of groundwater/silt/sand sludge removed from the wells was between 1.5 and 50 litres. Following the purging, standing water levels ranging between 4.150m and 5.250m bgl were measured in the monitoring wells, with the exception of well BH112 which remained dry. The post-desilting and development water column thicknesses for monitoring and sampling ranged between 0.675m (BH110) and 2.660m (BH10).

No historical information is reported to detail the construction of the monitoring well at BH9. However, the drilling of BH9A, immediately adjacent to BH9, recorded an obstruction at 3.3m bgl, thought to represent a relict concrete slab. This is consistent with the drilling refusal reported on the BH9 at 2.2m bgl. It is therefore considered that BH9 is installed within the Made Ground and groundwater samples collected from this location are representative of perched water. With the exception of BH9, where fast drawdown and slow recharge of the perched groundwater was noted, the monitoring wells displayed relatively slow drawdown and rapid recharge. This, along with the amount of water available, suggested that the monitoring network is suitable for monitoring and sampling from the superficial aquifer beneath the Site.

APPENDIX B – EXPLORATORY HOLE LOGS

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	**BH109A**

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 28-08-15 End Date 28-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Premier Rig.	1 of 1

STRATA

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
				Concrete	(0.35) 0.35	CONCRETE		Cement seal
0.5		<0.1		Made Ground	(0.35) 0.70	MADE GROUND: Brown, grey, sandy, fine to coarse, angular to subagular gravel. Sand is fine to coarse. Gravel is concrete, red and yellow brick and natural stone.	Dry NVO	Bentonite Fill
	BH109A_0.8	<0.1		Sandy gravelly CLAY	(0.50) 1.20	Soft, dark brown, sandy, gravelly clay. Sand is fine to coarse. Gravel is fine to medium, angular to subangular of flint.	Damp NVO	
1.0								
		<0.1		Sandy gravelly CLAY	(0.70) 1.90	Brown, sandy, slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to medium subrounded of flint.	Damp NVO	
1.5								
2.0		<0.1		Sandy Gravel	2.10	Brown, sandy fine to medium, subrounded to subangular GRAVEL of flint. Sand is fine to coarse.	Damp NVO	
2.5		<0.1		Gravelly Sand	(0.70) 2.80	Brown, grey, slightly gravelly, fine to coarse SAND. Gravel is fine, subrounded of flint.	Damp NVO	
3.0		<0.1		Gravelly Sand	(0.70) 3.50	Brown/orange, gravelly, fine to coarse SAND. Gravel is fine to medium, subangular to subrounded of flint.	Damp NVO	
3.5		<0.1				Borehole terminated at 3.5m bgl.		

Backfill	Sample Details	Legend	GENERAL REMARKS
Cement seal Bentonite Fill	Small disturbed sample	Concrete Made Ground Sandy gravelly CLAY Sandy Gravel Gravelly Sand Groundwater Table Groundwater Strike	NVO - No visual or Olfactory Evidence of Contamination. m bgl - meters below ground level. Hand pitted to 1.2mbgl

		Logged By	CG	Approved By	MM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	**BH201**

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 20-08-15 End Date 20-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer.	1 of 1

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
					0.25	TARMAC over CONCRETE		
0.5					(0.45) 0.70	MADE GROUND: Dense, sandy, fine-medium, angular-subangular gravel of brick and concrete. Sand is fine to coarse.	Dry NVO.	
						Borehole terminated at 0.7m bgl due to refusal on concrete.		

Backfill	Sample Details	Legend
Cement seal		Ashphalt Made Ground Groundwater Table Groundwater Strike

GENERAL REMARKS

NVO - No visual or Olfactory Evidence of Contamination.
m bgl - meters below ground level.
Hand pitted to 0.7mbgl

		Logged By	CG	Approved By	MM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	BH201A

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 24-08-15 End Date 25-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Solid Stem Auger.	1 of 1

STRATA

Depth BGL	Sample / Test Details	PID (ppm)	Water	Depth (Thickness)	DESCRIPTION	COMMENTS
				0.25	TARMAC over CONCRETE	
0.5		<0.1				
	BH201A_0.7			(0.95)	MADE GROUND: Brown/red/ yellow, gravelly, fine-coarse sand. Gravel is fine-coarse, angular-subangular of brick, flint and natural stone.	Damp NVO
1.0		<0.1		1.20		
1.5		<0.1			Light brown, dense, medium-fine SAND with occasional rounded flint.	Dry NVO
2.0	BH201A_1.9-2.0	<0.1		(2.00)		
2.5		<0.1				
3.0		<0.1		3.20		
3.5		<0.1	1 (Groundwater Strike)	(1.90)	SAND and GRAVEL. Gravel is medium-coarse flint. Sand is fine-coarse dense light brown.	Wet from 3.7mbgl NVO
4.0						
4.5						
5.0				5.10		
5.5				(0.90)	Grey, mottled dark brown, possibly stiff CLAY (LONDON CLAY).	Dry, NVO.
6.0				6.00		
					Borehole terminated at 6.0m bgl.	

Backfill

- Cement seal riser
- Bentonite seal riser
- Filter pack riser
- Filter pack screen
- Hole Collapse

Sample Details

- Small disturbed sample

Legend

- Ashphalt
- Made Ground
- Sand
- Silty/clayey PEAT
- Clay
- Groundwater Table
- Groundwater Strike

GENERAL REMARKS

NVO - No visual or Olfactory Evidence of Contamination.
m bgl - meters below ground level.
Hand pitted to 1.2mbgl

		Logged By	CG/MM	Approved By	GM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	BH202

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 24-08-15 End Date 24-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer.	1 of 1

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
					0.25	TARMAC over CONCRETE		Cement seal
0.5		<0.1		Made Ground	(0.35) 0.60	MADE GROUND: Grey, dense, sand and gravel of concrete. Sand is fine-coarse. Gravel is fine-medium, angular-subangular.	Dry NVO	Bentonite Fill
				Made Ground	0.80	MADE GROUND: Brown, sandy, fine-medium, angular-subangular gravel of concrete. Sand is fine-coarse.	Dry NVO	Bentonite Fill
						Borehole terminated at 0.8m bgl due to refusal on concrete.		

Backfill

- Cement seal
- Bentonite Fill

Sample Details

Legend

- Ashphalt
- Made Ground
- Groundwater Table
- Groundwater Strike

GENERAL REMARKS

NVO - No visual or Olfactory Evidence of Contamination.
m bgl - meters below ground level.
Hand pitted to 1.2mbgl

Logged By	CG	Approved By	MM

Borehole Log

AECOM

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	BH202A

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 24-08-15 End Date 24-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Solid Stem Auger.	1 of 1

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
					0.25	TARMAC over CONCRETE		Cement seal
0.5		<0.1		Made Ground	(0.35) 0.60	MADE GROUND: Grey, sandy, fine-medium, angular-subangular gravel of concrete. Sand is fine-coarse.	Wet NVO	Bentonite Fill
1.0	BH202A_0.8	<0.1		Made Ground	(1.20)	MADE GROUND: Brown, gravelly, fine-coarse sand. Gravel is fine-medium, subangular-subrounded of concrete.	Dry NVO	Bentonite Fill
1.5		<0.1			1.80			
						Borehole terminated at 1.8m bgl due to refusal on concrete.		

Backfill
- Cement seal
- Bentonite Fill

Sample Details
- Small disturbed sample

Legend
- Ashphalt
- Made Ground
- Groundwater Table
- Groundwater Strike

GENERAL REMARKS
NVO - No visual or Olfactory Evidence of Contamination.
m bgl - meters below ground level.
Hand pitted to 1.2mbgl

		Logged By	CG	Approved By	MM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	BH203

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 20-08-15 End Date 20-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Solid Stem Auger.	1 of 1

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
					0.20	TARMAC over CONCRETE		
0.5		<0.1			(0.70) 0.90	MADE GROUND: Very dense, sandy, fine-medium, angular-subangular gravel of yellow and red brick, granite and concrete.	Dry NVO	
					1.00	Concrete / possible granite slab.		
					(2.00) 3.00	No recovery.		
						Borehole terminated at 3.0m bgl due to refusal on concrete.		

Backfill	Sample Details	Legend	GENERAL REMARKS
Cement seal riser Bentonite seal riser Filter pack riser Filter pack screen		Ashphalt Made Ground Groundwater Table Groundwater Strike	NVO - No visual or Olfactory Evidence of Contamination. m bgl - meters below ground level. Hand pitted to 1.2mbgl

		Logged By	CG	Approved By	MM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	BH203A

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 20-08-15 End Date 20-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Solid Stem Auger.	1 of 1

STRATA

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS
					0.20	TARMAC over CONCRETE	
0.5	BH203A_0.5	<0.1		Made Ground	(0.70) 0.90	MADE GROUND: Very dense, sandy, angular to sub-angular gravel of brick, granite and concrete.	Dry NVO
1.0		<0.1		Concrete	1.00	Concrete / granite slab.	
1.5		<0.1				No recovery.	Damp, NVO.
2.0		<0.1			(2.50)		
2.5		<0.1					
3.0							
3.5					3.50		
				Concrete	3.60	Concrete / granite slab.	
4.0					(1.20)	No recovery.	Damp, NVO.
4.5					4.80		
5.0				Clay	5.00	Possibly CLAY (no recovery).	Wet. NVO.
						Borehole terminated at 5.0m bgl.	

Installation

Backfill
- Cement seal riser
- Bentonite seal riser
- Filter pack riser
- Filter pack screen

Sample Details
- Small disturbed sample

Legend
- Ashphalt
- Made Ground
- Concrete
- Clay
- Groundwater Table
- Groundwater Strike

GENERAL REMARKS
NVO - No visual or Olfactory Evidence of Contamination.
m bgl - meters below ground level.
Hand pitted to 1.2mbgl

		Logged By	CG	Approved By	MM

AECOM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	BH204

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 21-08-15 End Date 21-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Premier Rig.	1 of 1

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
					0.28	TARMAC over CONCRETE	Dry NVO	Cement seal
				Made Ground	0.40	MADE GROUND: Pea shingle.	Dry NVO	Bentonite Fill
0.5				Concrete	0.70	CONCRETE	Dry NVO	Bentonite Fill
		<0.1		Made Ground	0.80	MADE GROUND: Red bricks.	Dry NVO	Bentonite Fill
1.0				Made Ground	(0.40) 1.20	MADE GROUND: Brown/ red, sandy, fine-medium, angular-subangular brick gravel.	Dry NVO	Bentonite Fill
	BH204_1.3	<0.1		Made Ground	1.50	MADE GROUND: Very soft, brown/ red, very sandy clay. Sand is fine-coarse.	Dry NVO	Bentonite Fill
1.5–3.0		<0.1 <0.1		Made Ground	(1.50) 3.00	MADE GROUND: Dark grey/ black, sandy, fine-medium, angular-subangular gravel of flint. Sand is fine-coarse.	Dry NVO	Bentonite Fill
				Sand	3.20	Orange/ yellow, fine-coarse SAND.	Dry NVO	Bentonite Fill
3.5	BH204_3.3	<0.1		Sandy Gravel	3.50	Brown, sandy, fine-medium, subangular-subrounded GRAVEL.	Damp NVO	Bentonite Fill
						Borehole terminated at 3.5m bgl.		

Backfill	Sample Details	Legend	GENERAL REMARKS
Cement seal Bentonite Fill	Small disturbed sample	Ashphalt Made Ground Concrete Sand Sandy Gravel Groundwater Table Groundwater Strike	NVO - No visual or Olfactory Evidence of Contamination. m bgl - meters below ground level. Hand pitted to 1.2mbgl

		Logged By	CG	Approved By	MM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	BH205

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 21-08-15 End Date 21-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Premier Rig.	1 of 1

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
				Concrete	0.27	CONCRETE		Cement seal
0.5				Made Ground	(0.53) 0.80	MADE GROUND: Grey, dense, fine to coarse sand and gravel of concrete.	Dry NVO	Bentonite Fill
1.0	BH205_1.0	<0.1 <0.1		Made Ground		MADE GROUND: Very dense, brown, sandy, fine-medium, angular-subangular gravel of brick, concrete, flint, glass. Sand is fine-coarse. Little ricovery.	Dry NVO	Bentonite Fill
1.5					(1.70)			
2.0		<0.1			2.50			
2.5	BH205_2.5	<0.1		Gravelly Sand	(0.50)	Brown/ orange, gravelly, fine-coarse SAND. Gravel is fine-medium, subangular-subrounded, becoming more gravelly with depth. Little recovery.	Dry NVO	Bentonite Fill
3.0		<0.1			3.00	Borehole terminated at 3.0m bgl.		

Backfill	Sample Details	Legend	GENERAL REMARKS
Cement seal Bentonite Fill	Small disturbed sample	Concrete Made Ground Gravelly Sand Groundwater Table Groundwater Strike	NVO - No visual or Olfactory Evidence of Contamination. m bgl - meters below ground level. Hand pitted to 1.2mbgl

		Logged By	CG	Approved By	MM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	BH206

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 21-08-15 End Date 21-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Premier Rig.	1 of 1

STRATA

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
					0.20	TARMAC over CONCRETE		Cement seal
0.5				Made Ground	(0.80) 1.00	MADE GROUND: Grey, dense, fine to coarse sand and gravel of concrete.	Dry, NVO.	Bentonite Fill
1.0	BH206_1.1	<0.1		Made Ground	(0.80) 1.80	MADE GROUND: Soft brown sandy clay. Gravel is fine-medium, angular-subangular of brick and concrete.	Dry, NVO.	Bentonite Fill
1.5		<0.1						
						Borehole terminated at 1.8m bgl due to refusal on concrete.		

Backfill	Sample Details	Legend	GENERAL REMARKS
Cement seal Bentonite Fill	Small disturbed sample	Ashphalt Made Ground Groundwater Table Groundwater Strike	NVO - No visual or Olfactory Evidence of Contamination. m bgl - meters below ground level. Hand pitted to 1.2mbgl

		Logged By	CG	Approved By	MM

AECOM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	**BH207**

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 25-08-15 End Date 25-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Premier Rig.	1 of 1

STRATA

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
					0.20	TARMAC		Cement seal
0.5	BH207_0.7	<0.1		Made Ground	(0.90) 1.10	MADE GROUND: Grey/red, dense, fine to coarse sand and gravel of concrete and brick.	Dry, NVO.	Bentonite Fill
1.0–2.5		<0.1 <0.1 <0.1		Gravelly Clay	(1.50) 2.60	Soft, gravelly, brown CLAY. Gravel is fine-medium, subangular-subrounded of flint. (Possibly reworked)	Dry, NVO.	Bentonite Fill
3.0–3.5	BH207_2.6-3.5	<0.1 <0.1		Gravelly Sand	(0.90) 3.50	Brown, dense, gravelly SAND. Gravel fine, occasionally medium of flint. Sand is fine to medium.	Dry, NVO.	Bentonite Fill
						Borehole terminated at 3.5m bgl.		

Backfill	Sample Details	Legend	GENERAL REMARKS
Cement seal Bentonite Fill	Small disturbed sample	Ashphalt Made Ground Gravelly Clay Gravelly Sand Groundwater Table Groundwater Strike	NVO - No visual or Olfactory Evidence of Contamination. m bgl - meters below ground level. Hand pitted to 1.2mbgl

		Logged By	CG	Approved By	MM

AECOM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	**BH208**

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 25-08-15 End Date 25-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer.	1 of 1

Depth BGL	Sample / Test Details	PID (ppm)	Water	STRATA Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
				Concrete	0.25	CONCRETE		Cement seal
0.5		<0.1		Made Ground	(0.55) 0.80	MADE GROUND: Brown, sandy, medium gravel of concrete, brick and flint.	Dry, NVO.	Bentonite Fill
						Borehole terminated at 0.8m bgl due to refusal on concrete.		

Backfill	Sample Details	Legend	GENERAL REMARKS
Cement seal Bentonite Fill		Concrete Made Ground Groundwater Table Groundwater Strike	NVO - No visual or Olfactory Evidence of Contamination. m bgl - meters below ground level. Hand pitted to 1.2mbgl

		Logged By	CG	Approved By	MM

TE_08.02.10 STAG LOGS - FULL.GPJ AGS3_ALL.GDT 22/9/15

AECOM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	**BH208A**

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 25-08-15 End Date 25-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Premier Rig.	1 of 1

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
				Concrete	0.25	CONCRETE		Cement seal
0.5		<0.1		Made Ground	0.50	MADE GROUND: Fine to medium, angular to subangular concrete gravel.	Dry NVO	Bentonite Fill
0.8	BH208A_0.8			Made Ground	(0.50) 1.00	MADE GROUND: Dark brown, slightly clayey, gravelly, fine to coarse sand. Gravel fine occasionally coarse, subangular to subrounded of brick and flint.	Dry NVO	Bentonite Fill
1.0		<0.1						
1.1	BH208A_1.1			Gravelly Sand		Medium density, brown, gravelly, fine to coarse SAND. Gravel is fine to medium, subangular to subrounded of flint. Very sandy between 1.5m and 1.9m.	Dry NVO	Bentonite Fill
1.5		<0.1						
2.0		<0.1						
2.5		<0.1			(2.50)			
3.0		<0.1						
3.5					3.50			
						Borehole terminated at 3.5m bgl.		

Backfill	Sample Details	Legend
Cement seal	Small disturbed sample	Concrete
Bentonite Fill		Made Ground
		Gravelly Sand
		Groundwater Table
		Groundwater Strike

GENERAL REMARKS

NVO - No visual or Olfactory Evidence of Contamination.
m bgl - meters below ground level.
Hand pitted to 1.2mbgl

		Logged By	CG	Approved By	MM

AECOM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	BH209

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 25-08-15 End Date 25-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Premier Rig.	1 of 1

Depth BGL	Sample / Test Details	PID (ppm)	Water	Depth (Thickness)	DESCRIPTION	COMMENTS
				0.27	CONCRETE	
0.5	BH209_0.5	<0.1		(2.43) 2.70	MADE GROUND: Brown, grey/ black, gravelly, fine to coarse sand. Gravel is fine to coarse, angular to subangular of brick and concrete. Becoming	Dry NVO
		<0.1				
2.7	BH209_2.7-3.4	<0.1		(0.70) 3.40	Brown, gravelly, fine to coarse SAND. Gravel is fine to medium, subangular to subrounded of flint. Very little gravel between 3.0 -3.2m. Poor recovery between 1.2m - 3.4m. Driller noted it becoming dense at 2.7m.	Dry NVO
					Borehole terminated at 3.4m bgl.	

Backfill
- Cement seal
- Bentonite Fill

Sample Details
- Small disturbed sample

Legend
- Concrete
- Made Ground
- Gravelly Sand
- Groundwater Table
- Groundwater Strike

GENERAL REMARKS

NVO - No visual or Olfactory Evidence of Contamination.
m bgl - meters below ground level.
Hand pitted to 1.2mbgl

Logged By CG | Approved By MM

AECOM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	**BH210**

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 26-08-15 End Date 26-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Premier Rig.	1 of 1

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS
				Concrete	0.30	CONCRETE	
0.5		<0.1		Made Ground			
	BH210_0.8				(0.90)	MADE GROUND: Dense, brown, sandy, fine to coarse, subangular to rounded gravel of natural stones.	Dry NVO
1.0					1.20		
		<0.1		Sandy Clay		Soft, brown, sandy CLAY (possibly reworked clay).	Dry NVO
1.5					(0.90)		
2.0		<0.1			2.10		
	BH210_2.2-2.8	<0.1		Gravelly Sand		Brown, gravelly, fine to coarse SAND. Gravel is fine to medium to subrounded of flint. Becoming more gravelly with depth.	Dry NVO
2.5							
		<0.1			(1.40)		
3.0							
3.5		<0.1			3.50	Borehole terminated at 3.5m bgl.	

Installation: cement seal 0.00–0.20; bentonite fill to 3.50.

Backfill	Sample Details	Legend		GENERAL REMARKS
Cement seal	Small disturbed sample	Concrete	Made Ground	NVO - No visual or Olfactory Evidence of Contamination. m bgl - meters below ground level. Hand pitted to 1.2mbgl
Bentonite Fill		Sandy Clay	Gravelly Sand	
		Groundwater Table	Groundwater Strike	

		Logged By	CG	Approved By	MM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	**BH211**

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 26-08-15 End Date 26-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Premier Rig.	1 of 1

STRATA

Depth BGL	Sample / Test Details	PID (ppm)	Water	Depth (Thickness)	DESCRIPTION	COMMENTS
				0.25	CONCRETE	
0.5	BH211_0.7	<0.1		(1.25) 1.50	MADE GROUND: Brown, sandy, fine to coarse, subangular to rounded gravel of natural stone, wood and occasional brick. Becoming clayey with depth.	Dry NVO
1.5		<0.1		(0.60) 2.10	Soft, brown, grey, sandy, gravelly CLAY. Gravel is fine to medium, subangular to angular and subrounded of flint. Sand is fine to coarse. (possibly reworked clay)	Dry NVO
2.0	BH211_2.2	<0.1 <0.1		(1.40) 3.50	Brown, gravelly, fine to coarse SAND. Gravel is fine to medium, subangular to rounded of flint. Becoming more gravelly with depth.	Dry NVO
					Borehole terminated at 3.5m bgl.	

Installation

Backfill

- Cement seal
- Bentonite Fill

Sample Details

- Small disturbed sample

Legend

- Concrete
- Made Ground
- Gravelly Sandy Clay
- Gravelly Sand
- Groundwater Table
- Groundwater Strike

GENERAL REMARKS

NVO - No visual or Olfactory Evidence of Contamination.
m bgl - meters below ground level.
Hand pitted to 1.2mbgl

		Logged By	CG	Approved By	MM

AECOM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	**BH212**

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 27-08-15 End Date 27-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Premier Rig.	1 of 1

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
				Concrete	0.30	CONCRETE		Cement seal
0.5	BH212_0.6	<0.1		Made Ground		MADE GROUND: Pink / red, gravelly, fine to coarse sand. Gravel is fine to medium of flint with occasional coarse brick and crushed concrete.	Dry NVO	Bentonite Fill
1.0		<0.1			(1.40)			
1.5		<0.1			1.70			
	BH212_1.8-2.5	<0.1		Gravelly Sand		Dense, brown, gravelly fine to coarse SAND. Gravel is fine to medium subangular to rounded. Becoming more gravelly with depth.	Dry NVO	
2.0								
2.5		<0.1			(1.80)			
3.0		<0.1						
3.5		<0.1			3.50			
						Borehole terminated at 3.5m bgl.		

Backfill

- Cement seal
- Bentonite Fill

Sample Details

- Small disturbed sample

Legend

- Concrete
- Made Ground
- Gravelly Sand
- Groundwater Table
- Groundwater Strike

GENERAL REMARKS

NVO - No visual or Olfactory Evidence of Contamination.
m bgl - meters below ground level.
Hand pitted to 1.2mbgl

		Logged By	CG	Approved By	MM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	**BH213**

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 27-08-15 End Date 27-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Premier Rig.	1 of 1

STRATA

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
				Concrete	0.24	CONCRETE		Cement seal
0.5	BH213_0.6	<0.1		Made Ground	(0.76) 1.00	MADE GROUND: Brown / grey, slightly clayey, sandy, fine to coarse, angular to subangular gravel of brick, concrete, tile and plastic. Sand is fine to coarse.	Damp NVO	Bentonite Fill
1.0		<0.1		Gravelly Clay	(0.60) 1.60	Soft brown grey slightly gravelly CLAY. (Possibly reworked clay)		Bentonite Fill
1.5	BH213_1.7-2.0	<0.1		Gravelly Sand	(1.40) 3.00	Dense, brown, gravelly, fine to coarse SAND. Gravel is fine to medium, angular to subrounded of flint. Occasional sand and gravel pockets throughout.	Damp NVO	Bentonite Fill
2.0								
2.5		<0.1						
3.0		<0.1				Borehole terminated at 3.0m bgl.		

Backfill	Sample Details	Legend	GENERAL REMARKS
Cement seal Bentonite Fill	Small disturbed sample	Concrete Made Ground Gravelly Clay Gravelly Sand Groundwater Table Groundwater Strike	NVO - No visual or Olfactory Evidence of Contamination. m bgl - meters below ground level. Hand pitted to 1.2mbgl

		Logged By	CG	Approved By	MM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	**BH214**

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 25-08-15 End Date 25-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Solid Stem Auger.	1 of 1

STRATA

Depth BGL	Sample / Test Details	PID (ppm)	Water	Depth (Thickness)	DESCRIPTION	COMMENTS
				0.05	TARMAC	
				0.20	CONCRETE	
0.5				(0.60) 0.80	MADE GROUND: Light brown, dense, sandy gravel. Sand is medium to coarse. Gravel is medium to coarse, subangular to subrounded of flint and concrete.	Dry NVO
1.0 1.5 2.0 2.5	BH214_0.85	<0.1		(1.80) 2.60	MADE GROUND: Light brown, dense gravelly sand. Sand is medium to coarse. Gravel is medium to coarse, subangular to subrounded of flint and concrete.	Dry NVO
					Borehole terminated at 2.6m bgl due to refusal on concrete.	

Installation

Backfill	Sample Details	Legend	GENERAL REMARKS
Cement seal Bentonite Fill	Small disturbed sample	Ashphalt Concrete Made Ground Groundwater Table Groundwater Strike	NVO - No visual or Olfactory Evidence of Contamination. m bgl - meters below ground level. Hand pitted to 1.2mbgl

		Logged By	MM	Approved By	GM

TE_08.02.10 STAG LOGS - FULL.GPJ AGS3_ALL.GDT 22/9/15

AECOM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	BH214A

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 25-08-15 End Date 25-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Solid Stem Auger.	1 of 1

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
					0.05	TARMAC		Cement seal
					0.20	CONCRETE		Bentonite Fill
0.5					(0.60) 0.80	MADE GROUND: Light brown, dense, sandy gravel. Sand is medium to coarse. Gravel is medium to coarse, subangular to subrounded of flint and concrete.	Dry NVO	Bentonite Fill
1.0 1.5 2.0					(1.20) 2.00	MADE GROUND: Light brown, dense gravelly sand. Sand is medium to coarse. Gravel is medium to coarse, subangular to subrounded of flint and concrete.	Dry NVO	Bentonite Fill
						Borehole terminated at 2.0m bgl due to refusal on concrete.		

Backfill	Sample Details	Legend	GENERAL REMARKS
Cement seal Bentonite Fill		Ashphalt Concrete Made Ground Groundwater Table Groundwater Strike	NVO - No visual or Olfactory Evidence of Contamination. m bgl - meters below ground level. Hand pitted to 1.2mbgl

		Logged By	MM	Approved By	GM

AECOM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	**BH2A**

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 25-08-15 End Date 25-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Premier Rig.	1 of 1

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS
				Concrete	0.25	CONCRETE	
0.5	BH2A_0.5	<0.1		Made Ground	(0.55) 0.80	MADE GROUND: Brown sandy fine-medium angular gravel of flint and crushed concrete. Sand is fine-coarse.	Dry NVO
1.0		<0.1		Concrete	1.10	CONCRETE	Dry NVO
1.5	BH2A_1.5	<0.1		Sandy Clay	(1.40) 2.50	Soft, brown, sandy CLAY. (Possibly reworked clay)	Dry NVO
2.0		<0.1					
2.5		<0.1		Gravelly Sand	(1.00) 3.50	Dense, brown, gravelly, fine-coarse SAND. Gravel is fine-medium, subangular-subrounded of flint.	Dry NVO
3.0		<0.1					
3.5						Borehole terminated at 3.5m bgl.	

Installation

Backfill
- Cement seal
- Bentonite Fill

Sample Details
- Small disturbed sample

Legend
- Concrete
- Made Ground
- Sandy Clay
- Gravelly Sand
- Groundwater Table
- Groundwater Strike

GENERAL REMARKS

NVO - No visual or Olfactory Evidence of Contamination.
m bgl - meters below ground level.
Hand pitted to 1.2mbgl

		Logged By	CG	Approved By	MM

AECOM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	**BH3A**

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 28-08-15 End Date 28-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Premier Rig.	1 of 1

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
				Concrete	0.25	CONCRETE.		Cement seal
0.5	BH3A_0.5	<0.1		Made Ground	(1.25) 1.50	MADE GROUND: Brown, gravelly, fine-coarse sand. Gravel is fine-medium, occasionally coarse, angular-subangular of brick, glass and concrete.	Dry NVO	Bentonite Fill
1.0		<0.1						
1.5		<0.1		Sandy Gravel	(0.50) 2.00	Dense, brown, sandy, fine-medium, subangular-subrounded GRAVEL of flint. Sand is fine-coarse.	Dry NVO	
2.0		<0.1		Gravelly Sand	(1.00) 3.00	Dense, brown, gravelly, fine-coarse SAND. Gravel is subangular-subrounded fine-coarse of flint.	Dry NVO	
2.5		<0.1						
3.0		<0.1				Borehole terminated at 3.0m bgl.		

Backfill	Sample Details	Legend	GENERAL REMARKS
Cement seal Bentonite Fill	Small disturbed sample	Concrete Made Ground Sandy Gravel Gravelly Sand Groundwater Table Groundwater Strike	NVO - No visual or Olfactory Evidence of Contamination. m bgl - meters below ground level. Hand pitted to 1.2mbgl

		Logged By	CG	Approved By	MM

TE_08.02.10 STAG LOGS - FULL.GPJ AGS3_ALL.GDT 22/9/15

AECOM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	BH4A

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 27-08-15 End Date 27-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Premier Rig.	1 of 1

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
0.5		<0.1		Made Ground	(1.30)	MADE GROUND: Brown, grey, slightly clayey, gravelly, fine-coarse sand. Gravel is fine-medium, angular-subangular of concrete, brick tile and rootlets.	Dry. Possible asbestos fragments.	Cement seal / Bentonite Fill
0.9	BH4A_0.9							
1.0		<0.1			1.30			
1.5		<0.1		Gravelly Sand		Brown, very gravelly, fine-coarse SAND. Gravel is fine-medium, subangular-subrounded of flint.	Dry NVO	Bentonite Fill
2.0		<0.1						
2.5		<0.1			(2.70)			
3.0		<0.1						
3.5	BH4A_3.5-4.0	<0.1						
4.0		<0.1			4.00	Borehole terminated at 4.0m bgl.		

Backfill

- Cement seal
- Bentonite Fill

Sample Details

- Small disturbed sample

Legend

- Made Ground
- Gravelly Sand
- Groundwater Table
- Groundwater Strike

GENERAL REMARKS

NVO - No visual or Olfactory Evidence of Contamination.
m bgl - meters below ground level.
Hand pitted to 1.2mbgl

		Logged By	CG	Approved By	MM

AECOM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	**BH5A**

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 28-08-15 End Date 28-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Premier Rig.	1 of 1

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
					0.10	MADE GROUND: Pea gravel.		Cement seal
0.5	BH5A_0.5	<0.1		Made Ground		MADE GROUND: Brown, slightly clayey, gravelly, fine-coarse sand. Gravel is fine-medium, occasionally coarse, subangular-subrounded of red brick.	Dry NVO	Bentonite Fill
1.0		<0.1			(1.70)			
1.5		<0.1			1.80			
2.0		<0.1		Gravelly Sand		Dense, brown, gravelly, fine-coarse SAND. Gravel is fine-medium, subangular-rounded of flint.	Dry NVO	Bentonite Fill
2.5		<0.1			(1.20)			
3.0		<0.1			3.00			
						Borehole terminated at 3.0m bgl.		

Backfill	Sample Details	Legend	GENERAL REMARKS
Cement seal Bentonite Fill	Small disturbed sample	Made Ground Gravelly Sand Groundwater Table Groundwater Strike	NVO - No visual or Olfactory Evidence of Contamination. m bgl - meters below ground level. Hand pitted to 1.2mbgl

		Logged By	CG	Approved By	MM

AECOM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	**BH7A**

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 27-08-15 End Date 27-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Premier Rig.	1 of 1

STRATA

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
					(0.55) 0.55	CONCRETE		
0.7	BH7A_0.7	<0.1			(0.65) 1.20	MADE GROUND: Soft, dark brown/grey, slightly gravelly, silty clay. Gravel is fine and subangular of red brick with fragments of wood.	Damp NVO	
		<0.1			1.50	Brown, slightly gravelly CLAY. Gravel is medium to coarse of flint.	Dry NVO	
		<0.1			(1.50) 3.00	Dense, brown, gravelly, fine-coarse SAND. Gravel content increases with depth. Gravel is fine-medium, subangular-subrounded of flint.	Dry NVO	
2.5-3.0	BH7A_2.5-3.0	<0.1						
3.0		<0.1						
						Borehole terminated at 3.0m bgl.		

Depth scale: 0.5, 1.0, 1.5, 2.0, 2.5, 3.0

Backfill	Sample Details	Legend		GENERAL REMARKS
Cement seal	Small disturbed sample	Concrete	Made Ground	NVO - No visual or Olfactory Evidence of Contamination. m bgl - meters below ground level. Hand pitted to 1.2mbgl
Bentonite Fill		Gravelly Clay	Gravelly Sand	
		Groundwater Table	Groundwater Strike	

		Logged By	CG	Approved By	MM

AECOM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	**BH7B**

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 27-08-15 End Date 27-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer.	1 of 1

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
					0.20	CONCRETE		
0.5					0.30	MADE GROUND: Brown, sandy, fine-medium, angular-subangular gravel of flint and concrete. Sand is fine-coarse.	Dry NVO	
					0.60	CONCRETE with rebar.		
						Borehole terminated at 0.6m bgl due to refusal on concrete.		

Backfill	Sample Details	Legend	GENERAL REMARKS
Cement seal		Concrete; Made Ground; Groundwater Table; Groundwater Strike	NVO - No visual or Olfactory Evidence of Contamination. m bgl - meters below ground level. Hand pitted to 0.6mbgl

		Logged By	CG	Approved By	MM

Borehole Log

AECOM

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	BH8A

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 26-08-15 End Date 26-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Premier Rig.	1 of 1

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
					0.20	CONCRETE		
					0.40	MADE GROUND: Grey, sandy, fine-medium gravel of concrete.	Dry NVO	
0.5	BH8A	2.1			(0.40) 0.80	MADE GROUND: Black sand and gravel. Gravel is medium to coarse, angular to sub-rounded of flint. Sand is fine-coarse of ash.	Dry. Black ash noted.	
1.0		<0.1				Soft, brown/ grey, sandy, gravelly CLAY. (Possibly reworked clay).	Dry NVO	
1.5		<0.1			(1.40)			
2.0		<0.1			2.20			
		<0.1				Dense, brown, gravelly, fine-coarse SAND. Gravel is fine-medium subangular-rounded of flint.	Dry NVO	
2.5					(1.30)			
3.0	BH8A_3.0-3.5	<0.1						
3.5		<0.1			3.50			
						Borehole termonated at 3.0m bgl.		

Backfill	Sample Details	Legend	GENERAL REMARKS
Cement seal Bentonite Fill	Small disturbed sample	Concrete Made Ground Gravelly Sandy Clay Gravelly Sand Groundwater Table Groundwater Strike	NVO - No visual or Olfactory Evidence of Contamination. m bgl - meters below ground level. Hand pitted to 1.2mbgl

		Logged By	CG	Approved By	MM

Borehole Log

Project Name and Site Location	Client	BOREHOLE No
Stag Brewery, Mortlake, London SW14	AB Inbev	**BH9A**

Job No	Date	Ground Level (m)	Co-Ordinates ()
47075502	Start Date 26-08-15 End Date 26-08-15		

Contractor	Method / Plant Used	Sheet
ESL	Concrete Corer and Premier Rig.	1 of 1

STRATA

Depth BGL	Sample / Test Details	PID (ppm)	Water	Legend	Depth (Thickness)	DESCRIPTION	COMMENTS	Installation
				Concrete	0.30	CONCRETE		Cement seal
0.5	BH9A_0.5	<0.1		Made Ground		MADE GROUND: Dense, brown, gravelly, fine-coarse sand. Gravel is fine-medium, subrounded-rounded of natural stone, becoming clayey with depth. Poor recovery.	Dry NVO	Bentonite Fill
1.0		<0.1			(1.90)			
1.5								
2.0			1		2.20			
2.5	BH9A_2.2-3.3			Made Ground	(1.10)	MADE GROUND: Black, sandy, fine-medium, angular, red/grey gravel of flint and crushed concrete. Sand is fine-coarse. Poor recovery.	Wet NVO	
3.0					3.30			
						Borehole terminated at 3.3m bgl due to refusal on concrete.		

Backfill	Sample Details	Legend	GENERAL REMARKS
Cement seal Bentonite Fill	Small disturbed sample	Concrete Made Ground Groundwater Table Groundwater Strike	NVO - No visual or Olfactory Evidence of Contamination. m bgl - meters below ground level. Hand pitted to 1.2mbgl

		Logged By	CG	Approved By	MM

APPENDIX C – LABORATORY CERTIFICATE

ALcontrol Laboratories

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: mkt@alcontrol.com
Website: www.alcontrol.com

AECOM
St. George's House
2nd Floor
5 St. George's Road
Wimbledon
Greater London
SW19 4DR

Attention: Gary Marshall

CERTIFICATE OF ANALYSIS

Date:	08 September 2015
Customer:	H_URS_WIM
Sample Delivery Group (SDG):	150822-16
Your Reference:	
Location:	Stag Brewery
Report No:	328751

We received 8 samples on Saturday August 22, 2015 and 6 of these samples were scheduled for analysis which was completed on Monday September 07, 2015. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Approved By:

Sonia McWhan
Operations Manager

UKAS TESTING 1291

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
11942793	BH204		1.30	21/08/2015
11942794	BH204		1.80	21/08/2015
11942796	BH204		3.30	21/08/2015
11942797	BH205		1.00	21/08/2015
11942798	BH205		2.50	21/08/2015
11942799	BH206		1.10	21/08/2015
11942791	BH203A		0.50	20/08/2015
11942792	BH203A		2.50	21/08/2015

Only received samples which have had analysis scheduled will be shown on the following pages.

CERTIFICATE OF ANALYSIS

SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

SOLID

Results Legend

- X — Test
- N — No Determination Possible

Lab Sample No(s)			11942793			11942796			11942797			11942798			11942799			11942791		
Customer Sample Reference			BH204			BH204			BH205			BH205			BH206			BH203A		
AGS Reference																				
Depth (m)			1.30			3.30			1.00			2.50			1.10			0.50		
Container			250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)
Ammonium Soil by Titration	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Asbestos Quant. - Waste Limit	All	NDPs: 0 Tests: 2								X									X	
Easily Liberated Sulphide	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 6	X			X			X			X			X			X		
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 6	X			X			X			X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 6			X			X			X			X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 6	X			X			X			X			X			X		
PAH by GCMS	All	NDPs: 0 Tests: 6	X			X			X			X			X			X		
pH	All	NDPs: 0 Tests: 6		X			X			X			X			X			X	
Sample description	All	NDPs: 0 Tests: 5	X			X			X			X						X		
Total Organic Carbon	All	NDPs: 0 Tests: 6	X			X			X			X			X			X		
Total Sulphate	All	NDPs: 0 Tests: 6	X			X			X			X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 6	X			X			X			X			X			X		

CERTIFICATE OF ANALYSIS

SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

SOLID

Results Legend

- X — **Test**
- N — **No Determination Possible**

Lab Sample No(s)		11942793	11942796	11942797	11942798	11942799	11942791
Customer Sample Reference		BH204	BH204	BH205	BH205	BH206	BH203A
AGS Reference							
Depth (m)		1.30	3.30	1.00	2.50	1.10	0.50
Container		250g Amber Jar (AL 400g Tub (ALE214) 60g VOC (ALE215)	250g Amber Jar (AL 400g Tub (ALE214) 60g VOC (ALE215)	250g Amber Jar (AL 400g Tub (ALE214) 60g VOC (ALE215)	250g Amber Jar (AL 400g Tub (ALE214) 60g VOC (ALE215)	250g Amber Jar (AL 400g Tub (ALE214) 60g VOC (ALE215)	250g Amber Jar (AL 400g Tub (ALE214) 60g VOC (ALE215)
VOC MS (S)	All	NDPs: 0 Tests: 6					
			X (60g VOC)	X (60g VOC)	X (60g VOC)	X (60g VOC)	X (60g VOC)

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
11942793	BH204	1.30	Dark Brown	Sandy Clay	0.1 - 2 mm	Stones	Vegetation
11942796	BH204	3.30	Light Brown	Loamy Sand	0.1 - 2 mm	Stones	Vegetation
11942797	BH205	1.00	Light Brown	Sandy Loam	0.1 - 2 mm	Brick	Stones
11942798	BH205	2.50	Light Brown	Loamy Sand	0.1 - 2 mm	Stones	Vegetation
11942799	BH206	1.10	Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Brick	Stones
11942791	BH203A	0.50	Light Brown	Sandy Loam	0.1 - 2 mm	Brick	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

ALcontrol Laboratories

CERTIFICATE OF ANALYSIS

Validated

SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	BH204	BH204	BH205	BH205	BH206	BH203A
Customer Sample R			BH204	BH204	BH205	BH205	BH206	BH203A
Depth (m)			1.30	3.30	1.00	2.50	1.10	0.50
Sample Type			Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
Date Sampled			21/08/2015	21/08/2015	21/08/2015	21/08/2015	21/08/2015	20/08/2015
Sampled Time			.	.	.	.	.	.
Date Received			22/08/2015	22/08/2015	22/08/2015	22/08/2015	22/08/2015	22/08/2015
SDG Ref			150822-16	150822-16	150822-16	150822-16	150822-16	150822-16
Lab Sample No.(s)			11942793	11942796	11942797	11942798	11942799	11942791
AGS Reference								
Moisture Content Ratio (% of as received sample)	%	PM024	16	7.2	8.8	5.2	12	11
Exchangeable Ammonia as NH4	<15 mg/kg	TM024	<15 M	<15 M	<15 M	<15 M	<15 M	<15 M
Organic Carbon, Total	<0.2 %	TM132	0.266 M	<0.2 M	0.627 M	<0.2 M	0.522 M	0.396 M
pH	1 pH Units	TM133	9.55 M	8.43 M	11.3 M	9.88 M	8.95 M	11.7 M
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #	<0.6 #
Sulphide, Easily liberated	<15 mg/kg	TM180	<15 #	<15 #	<15 #	<15 #	<15 #	20 #
Arsenic	<0.6 mg/kg	TM181	10.9 M	30 M	13.7 M	21.8 M	19.9 M	12.1 M
Cadmium	<0.02 mg/kg	TM181	0.21 M	0.319 M	0.414 M	0.263 M	0.324 M	0.29 M
Chromium	<0.9 mg/kg	TM181	17.4 M	15.2 M	20 M	20.6 M	21.9 M	31.2 M
Copper	<1.4 mg/kg	TM181	8.93 M	3.08 M	25.8 M	4.42 M	12.8 M	35.3 M
Lead	<0.7 mg/kg	TM181	10.6 M	6.08 M	96.4 M	10.2 M	39.4 M	59.6 M
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M	0.162 M	<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181	16.5 M	21.8 M	17.4 M	20 M	22.4 M	38.2 M
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #	<1 #	<1 #
Zinc	<1.9 mg/kg	TM181	44.4 M	25.3 M	93 M	28.2 M	54.2 M	96.4 M
Sulphate, Total	<48 mg/kg	TM221	4280 M	2040 M	3750 M	883 M	573 M	8120 M

SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	BH204	BH204	BH205	BH205	BH206	BH203A
Depth (m)			1.30	3.30	1.00	2.50	1.10	0.50
Sample Type			Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
Date Sampled			21/08/2015	21/08/2015	21/08/2015	21/08/2015	21/08/2015	20/08/2015
Sampled Time			.	.	.	.	.	.
Date Received			22/08/2015	22/08/2015	22/08/2015	22/08/2015	22/08/2015	22/08/2015
SDG Ref			150822-16	150822-16	150822-16	150822-16	150822-16	150822-16
Lab Sample No.(s)			11942793	11942796	11942797	11942798	11942799	11942791
AGS Reference								
Naphthalene-d8 % recovery**	%	TM218	106	103	104	102	104	104
Acenaphthene-d10 % recovery**	%	TM218	103	102	103	102	105	105
Phenanthrene-d10 % recovery**	%	TM218	104	102	105	101	107	107
Chrysene-d12 % recovery**	%	TM218	96.7	99.7	112	101	98.9	101
Perylene-d12 % recovery**	%	TM218	104	99.7	110	102	105	107
Naphthalene	<9 µg/kg	TM218	<9 M	<9 M	173 M	<9 M	<9 M	10.3 M
Acenaphthylene	<12 µg/kg	TM218	<12 M	<12 M	45.3 M	<12 M	<12 M	<12 M
Acenaphthene	<8 µg/kg	TM218	<8 M	<8 M	73.2 M	<8 M	<8 M	<8 M
Fluorene	<10 µg/kg	TM218	<10 M	<10 M	79.6 M	<10 M	<10 M	<10 M
Phenanthrene	<15 µg/kg	TM218	<15 M	<15 M	811 M	<15 M	28.4 M	160 M
Anthracene	<16 µg/kg	TM218	<16 M	<16 M	179 M	<16 M	<16 M	41 M
Fluoranthene	<17 µg/kg	TM218	<17 M	<17 M	1310 M	<17 M	47.3 M	429 M
Pyrene	<15 µg/kg	TM218	<15 M	<15 M	1510 M	<15 M	53.2 M	412 M
Benz(a)anthracene	<14 µg/kg	TM218	<14 M	<14 M	1060 M	<14 M	<14 M	192 M
Chrysene	<10 µg/kg	TM218	<10 M	<10 M	976 M	<10 M	16.3 M	194 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15 M	<15 M	1300 M	<15 M	37.7 M	206 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14 M	<14 M	546 M	<14 M	19.7 M	103 M
Benzo(a)pyrene	<15 µg/kg	TM218	<15 M	<15 M	970 M	<15 M	38.2 M	203 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18 M	<18 M	543 M	<18 M	29 M	124 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23 M	<23 M	186 M	<23 M	<23 M	32.7 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24 M	<24 M	676 M	<24 M	30.1 M	142 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	<118	<118	10400	<118	300	2250

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

TPH CWG (S)

Results Legend

- # ISO17025 accredited.
- M mCERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted test.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-5&+§@ Sample deviation (see appendix)

		Customer Sample R	BH204	BH204	BH205	BH205	BH206	BH203A
		Depth (m)	1.30	3.30	1.00	2.50	1.10	0.50
		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
		Date Sampled	21/08/2015	21/08/2015	21/08/2015	21/08/2015	21/08/2015	20/08/2015
		Sampled Time	.	.	.	.	.	.
		Date Received	22/08/2015	22/08/2015	22/08/2015	22/08/2015	22/08/2015	22/08/2015
		SDG Ref	150822-16	150822-16	150822-16	150822-16	150822-16	150822-16
		Lab Sample No.(s)	11942793	11942796	11942797	11942798	11942799	11942791
		AGS Reference						
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	74	96	72	98	80	73
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	<44 M	<44 M	243 M	<44 M	<44 M	<44 M
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Benzene	<10 µg/kg	TM089	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Toluene	<2 µg/kg	TM089	<2 M	<2 M	5.4 M	<2 M	<2 M	<2 M
Ethylbenzene	<3 µg/kg	TM089	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
m,p-Xylene	<6 µg/kg	TM089	<6 M	<6 M	7.55 M	<6 M	<6 M	<6 M
o-Xylene	<3 µg/kg	TM089	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	<9	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10	12.9	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10	25.9	<10	<10	<10
Aliphatics >C10-C12	<10 µg/kg	TM089	<10	<10	93.9	<10	<10	<10
Aliphatics >C12-C16	<100 µg/kg	TM173	480	808	5150	466	337	2500
Aliphatics >C16-C21	<100 µg/kg	TM173	<100	<100	30000	<100	<100	9990
Aliphatics >C21-C35	<100 µg/kg	TM173	<100	<100	120000	<100	1660	97500
Aliphatics >C35-C44	<100 µg/kg	TM173	<100	<100	39400	<100	<100	70000
Total Aliphatics >C12-C44	<100 µg/kg	TM173	480	808	195000	466	2000	180000
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10	29.1	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10	<10	62.6	<10	<10	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173	486	402	4430	519	<100	1610
Aromatics >EC16-EC21	<100 µg/kg	TM173	<100	<100	21900	<100	<100	6760
Aromatics >EC21-EC35	<100 µg/kg	TM173	269	462	75100	693	3460	78300
Aromatics >EC35-EC44	<100 µg/kg	TM173	<100	<100	55100	<100	<100	118000
Aromatics >EC40-EC44	<100 µg/kg	TM173	<100	<100	25300	<100	<100	46400
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	755	864	156000	1210	3460	205000
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	1230	1680	352000	1680	5470	385000

SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Customer Sample R			BH204	BH204	BH205	BH205	BH206	BH203A
Depth (m)			1.30	3.30	1.00	2.50	1.10	0.50
Sample Type			Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
Date Sampled			21/08/2015	21/08/2015	21/08/2015	21/08/2015	21/08/2015	20/08/2015
Sampled Time			.	.	.	.	.	.
Date Received			22/08/2015	22/08/2015	22/08/2015	22/08/2015	22/08/2015	22/08/2015
SDG Ref			150822-16	150822-16	150822-16	150822-16	150822-16	150822-16
Lab Sample No.(s)			11942793	11942796	11942797	11942798	11942799	11942791
AGS Reference								
Component	**LOD/Units**	**Method**						
Dibromofluoromethane**	%	TM116	117	102	96.6	98.9	116	71.6
Toluene-d8**	%	TM116	99.6	99.9	91.2	97.9	101	87.7
4-Bromofluorobenzene**	%	TM116	101	101	77.1	101	90.4	70.8
Dichlorodifluoromethane	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
Chloromethane	<7 µg/kg	TM116	<7 #	<7 #	<7 #	<7 #	<7 #	<7 #
Vinyl Chloride	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
Bromomethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Trichlorofluorormethane	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
1,1-Dichloroethene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Carbon Disulphide	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
Dichloromethane	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,1-Dichloroethane	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
2,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Bromochloromethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chloroform	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
1,1-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Carbontetrachloride	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dichloroethane	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Benzene	<9 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Trichloroethene	<9 µg/kg	TM116	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
1,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Dibromomethane	<9 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
Bromodichloromethane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Toluene	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10	<10	<10	<10	<10	<10
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M

SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Customer Sample R			BH204	BH204	BH205	BH205	BH206	BH203A
Depth (m)			1.30	3.30	1.00	2.50	1.10	0.50
Sample Type			Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
Date Sampled			21/08/2015	21/08/2015	21/08/2015	21/08/2015	21/08/2015	20/08/2015
Sampled Time			.	.	.	.	.	.
Date Received			22/08/2015	22/08/2015	22/08/2015	22/08/2015	22/08/2015	22/08/2015
SDG Ref			150822-16	150822-16	150822-16	150822-16	150822-16	150822-16
Lab Sample No.(s)			11942793	11942796	11942797	11942798	11942799	11942791
AGS Reference								
Component	**LOD/Units**	**Method**						
1,3-Dichloropropane	<7 µg/kg	TM116	<7 M	<7 M	<7 M	<7 M	<7 M	<7 M
Tetrachloroethene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
Dibromochloromethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromoethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Chlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Ethylbenzene	<4 µg/kg	TM116	<4 M	<4 M	<4 M	<4 M	<4 M	<4 M
p/m-Xylene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
o-Xylene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Styrene	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
Bromoform	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Isopropylbenzene	<5 µg/kg	TM116	<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2,3-Trichloropropane	<16 µg/kg	TM116	<16 M	<16 M	<16 M	<16 M	<16 M	<16 M
Bromobenzene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Propylbenzene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
2-Chlorotoluene	<9 µg/kg	TM116	<9 M	<9 M	<9 M	<9 M	<9 M	<9 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
4-Chlorotoluene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
tert-Butylbenzene	<14 µg/kg	TM116	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<9 #	<9 #	<9 #	<9 #	<9 #	<9 #
sec-Butylbenzene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
4-Isopropyltoluene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,3-Dichlorobenzene	<8 µg/kg	TM116	<8 M	<8 M	<8 M	<8 M	<8 M	<8 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<5 M	<5 M	<5 M	<5 M
n-Butylbenzene	<11 µg/kg	TM116	<11	<11	<11	<11	<11	<11
1,2-Dichlorobenzene	<10 µg/kg	TM116	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<14 M	<14 M	<14 M	<14 M	<14 M	<14 M
Tert-amyl methyl ether	<10 µg/kg	TM116	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<20	<20	<20	<20	<20	<20
Hexachlorobutadiene	<20 µg/kg	TM116	<20	<20	<20	<20	<20	<20
Naphthalene	<13 µg/kg	TM116	<13 M	<13 M	196 M	<13 M	<13 M	<13 M

ALcontrol Laboratories

CERTIFICATE OF ANALYSIS

Validated

SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

VOC MS (S)

Results Legend

- # ISO17025 accredited.
- M *m*CERTS accredited.
- aq Aqueous / settled sample.
- diss.filt Dissolved / filtered sample.
- tot.unfilt Total / unfiltered sample.
- * Subcontracted test.
- ** % recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
- (F) Trigger breach confirmed
- 1-5&♦§@ Sample deviation (see appendix)

		Customer Sample R	BH204	BH204	BH205	BH205	BH206	BH203A
		Depth (m)	1.30	3.30	1.00	2.50	1.10	0.50
		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
		Date Sampled	21/08/2015	21/08/2015	21/08/2015	21/08/2015	21/08/2015	20/08/2015
		Sampled Time	.	.	.	.	.	.
		Date Received	22/08/2015	22/08/2015	22/08/2015	22/08/2015	22/08/2015	22/08/2015
		SDG Ref	150822-16	150822-16	150822-16	150822-16	150822-16	150822-16
		Lab Sample No.(s)	11942793	11942796	11942797	11942798	11942799	11942791
		AGS Reference						
Component	**LOD/Units**	**Method**						
1,2,3-Trichlorobenzene	<20 µg/kg	TM116	<20 #	<20 #	<20 #	<20 #	<20 #	<20 #

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH204 1.30 SOLID 21/08/2015 00:00:00 22/08/2015 16:18:39 150822-16 11942793 TM048	24/08/2015	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH204 3.30 SOLID 21/08/2015 00:00:00 22/08/2015 16:12:02 150822-16 11942796 TM048	24/08/2015	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH205 1.00 SOLID 21/08/2015 00:00:00 22/08/2015 16:24:15 150822-16 11942797 TM048	24/08/2015	Chris Swindells	Loose fibres in soil	Trace (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH205 2.50 SOLID 21/08/2015 00:00:00 22/08/2015 15:28:37 150822-16 11942798 TM048	24/08/2015	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH206 1.10 SOLID 21/08/2015 00:00:00 22/08/2015 15:33:31 150822-16 11942799 TM048	24/08/2015	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH203A 0.50 SOLID 20/08/2015 00:00:00 24/08/2015 07:59:04 150822-16 11942791 TM048	25/08/15	Martin Cotterell	Soil containing loose fibres and debris typical of asbestos bitumen	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

Asbestos Quantification - Waste Limit

		Additional Asbestos Components (Using TM048)	Analysts Comments	Waste Limit, Total - %
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH205 1.00 SOLID 21/08/2015 00:00:00 27/08/2015 15:58:07 150822-16 11942797 TM 304	Chrysotile (#)	Loose fibres in soil	<0.1 (#)
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH203A 0.50 SOLID 20/08/2015 00:00:00 03/09/2015 06:41:42 150822-16 11942791 TM 304	None (#)	N/C	<0.1 (#)

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM 304				
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM180	Sulphide in waters and waste waters 1991 ISBN 01 175 7186 SCA rec. 2007 (unpublished)'	The Determination Of Easily Liberated Sulphide In Soil Samples by Ion Selective Electrode Technique		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM221	Inductively Coupled Plasma - Atomic Emission Spectroscopy. An Atlas of Spectral Information: Winge, Fassel, Peterson and Floyd	Determination of Acid extractable Sulphate in Soils by IRIS Emission Spectrometer		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	11942793	11942796	11942797	11942798	11942799	11942791
Customer Sample Ref.	BH204	BH204	BH205	BH205	BH206	BH203A
AGS Ref.						
Depth	1.30	3.30	1.00	2.50	1.10	0.50
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Ammonium Soil by Titration	26-Aug-2015	26-Aug-2015	26-Aug-2015	26-Aug-2015	26-Aug-2015	26-Aug-2015
Asbestos ID in Solid Samples	24-Aug-2015	24-Aug-2015	24-Aug-2015	24-Aug-2015	24-Aug-2015	25-Aug-2015
Asbestos Quant. - Waste Limit			03-Sep-2015			07-Sep-2015
Easily Liberated Sulphide	27-Aug-2015	28-Aug-2015	27-Aug-2015	27-Aug-2015	27-Aug-2015	27-Aug-2015
EPH CWG (Aliphatic) GC (S)	28-Aug-2015	28-Aug-2015	03-Sep-2015	28-Aug-2015	28-Aug-2015	03-Sep-2015
EPH CWG (Aromatic) GC (S)	28-Aug-2015	28-Aug-2015	03-Sep-2015	28-Aug-2015	28-Aug-2015	03-Sep-2015
GRO by GC-FID (S)	29-Aug-2015	29-Aug-2015	29-Aug-2015	29-Aug-2015	29-Aug-2015	29-Aug-2015
Hexavalent Chromium (s)	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015
Metals in solid samples by OES	26-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015
PAH by GCMS	26-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015	25-Aug-2015
pH	02-Sep-2015	02-Sep-2015	02-Sep-2015	02-Sep-2015	02-Sep-2015	02-Sep-2015
Sample description	24-Aug-2015	22-Aug-2015	22-Aug-2015	22-Aug-2015	22-Aug-2015	22-Aug-2015
Total Organic Carbon	01-Sep-2015	01-Sep-2015	02-Sep-2015	01-Sep-2015	01-Sep-2015	02-Sep-2015
Total Sulphate	28-Aug-2015	28-Aug-2015	28-Aug-2015	28-Aug-2015	28-Aug-2015	28-Aug-2015
TPH CWG GC (S)	29-Aug-2015	29-Aug-2015	03-Sep-2015	29-Aug-2015	29-Aug-2015	03-Sep-2015
VOC MS (S)	26-Aug-2015	26-Aug-2015	26-Aug-2015	26-Aug-2015	26-Aug-2015	26-Aug-2015

ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 1157
Exchangeable Ammonium as NH4	TM024	**93.03** 79.30 : 104.61

Easily Liberated Sulphide

Component	Method Code	QC 1159	QC 1129
Easily Liberated Sulphide	TM180	**106.83** 49.14 : 123.89	**95.34** 49.14 : 123.89

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1124	QC 1179
Total Aliphatics >C12-C35	TM173	**98.33** 71.67 : 116.67	**92.29** 68.25 : 114.73

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1124	QC 1179
Total Aromatics >EC12-EC35	TM173	**84.0** 59.92 : 107.95	**82.0** 60.67 : 124.27

GRO by GC-FID (S)

Component	Method Code	QC 1197
Benzene by GC (Moisture Corrected)	TM089	**96.0** 82.67 : 117.96
Ethylbenzene by GC (Moisture Corrected)	TM089	**90.0** 80.45 : 118.61
m & p Xylene by GC (Moisture Corrected)	TM089	**89.75** 79.25 : 119.43
MTBE GC-FID (Moisture Corrected)	TM089	**99.0** 79.10 : 122.51
o Xylene by GC (Moisture Corrected)	TM089	**90.5** 80.03 : 117.19
QC	TM089	**107.33** 75.74 : 124.65
Toluene by GC (Moisture Corrected)	TM089	**94.0** 82.06 : 117.54

Hexavalent Chromium (s)

Component	Method Code	QC 1111	QC 1157
Hexavalent Chromium	TM151	**98.0** 92.20 : 106.60	**98.0** 92.20 : 106.60

Metals in solid samples by OES

Component	Method Code	QC 1164	QC 1154	QC 1117
Aluminium	TM181	**120.77** 86.49 : 129.71	**94.62** 86.49 : 129.71	**102.31** 86.49 : 129.71
Antimony	TM181	**100.0** 77.50 : 122.50	**92.83** 77.50 : 122.50	**108.96** 77.50 : 122.50
Arsenic	TM181	**95.58** 82.63 : 117.37	**85.93** 82.63 : 117.37	**106.19** 82.63 : 117.37
Barium	TM181	**100.0** 79.45 : 120.55	**92.48** 79.45 : 120.55	**102.26** 79.45 : 120.55
Beryllium	TM181	**101.71** 85.92 : 121.27	**92.09** 85.92 : 121.27	**104.96** 85.92 : 121.27
Boron	TM181	**132.82** 77.41 : 143.83	**93.13** 77.41 : 143.83	**105.34** 77.41 : 143.83
Cadmium	TM181	**93.78** 81.95 : 118.05	**88.57** 81.95 : 118.05	**105.04** 81.95 : 118.05
Chromium	TM181	**100.39** 81.29 : 118.71	**88.24** 81.29 : 118.71	**96.47** 81.29 : 118.71
Cobalt	TM181	**97.5** 83.86 : 116.14	**88.0** 83.86 : 116.14	**103.5** 83.86 : 116.14
Copper	TM181	**101.22** 78.57 : 121.43	**92.7** 78.57 : 121.43	**106.49** 78.57 : 121.43
Iron	TM181	**107.59** 87.50 : 122.82	**95.86** 87.50 : 122.82	**102.07** 87.50 : 122.82
Lead	TM181	**88.19** 74.18 : 117.25	**90.94** 74.18 : 117.25	**98.82** 74.18 : 117.25
Manganese	TM181	**104.2** 82.91 : 117.09	**95.2** 82.91 : 117.09	**100.0** 82.91 : 117.09
Mercury	TM181	**92.46** 81.99 : 118.01	**87.6** 81.99 : 118.01	**105.03** 81.99 : 118.01
Molybdenum	TM181	**96.97** 81.45 : 118.55	**92.04** 81.45 : 118.55	**110.19** 81.45 : 118.55
Nickel	TM181	**100.0** 79.64 : 120.36	**90.7** 79.64 : 120.36	**104.65** 79.64 : 120.36
Phosphorus	TM181	**99.7** 81.03 : 118.97	**91.21** 81.03 : 118.97	**100.15** 81.03 : 118.97
Selenium	TM181	**104.79** 87.05 : 121.93	**95.73** 87.05 : 121.93	**114.87** 87.05 : 121.93
Strontium	TM181	**105.75** 83.64 : 116.36	**89.27** 83.64 : 116.36	**99.23** 83.64 : 116.36
Thallium	TM181	**93.37** 77.50 : 122.50	**84.25** 77.50 : 122.50	**97.84** 77.50 : 122.50
Tin	TM181	**97.67** 78.30 : 113.98	**96.01** 78.30 : 113.98	**111.3** 78.30 : 113.98
Titanium	TM181	**121.88** 71.02 : 128.98	**99.22** 71.02 : 128.98	**103.91** 71.02 : 128.98

Metals in solid samples by OES

		QC 1164	QC 1154	QC 1117
Vanadium	TM181	**103.82** 86.61 : 113.39	**91.18** 86.61 : 113.39	**102.94** 86.61 : 113.39
Zinc	TM181	**99.51** 90.81 : 120.30	**91.88** 90.81 : 120.30	**108.12** 90.81 : 120.30

PAH by GCMS

Component	Method Code	QC 1112	QC 1121	QC 1102
Acenaphthene	TM218	**99.5** 70.00 : 130.00	**97.0** 76.50 : 121.50	**97.5** 76.50 : 121.50
Acenaphthylene	TM218	**87.5** 70.00 : 130.00	**89.0** 73.50 : 118.50	**90.0** 73.50 : 118.50
Anthracene	TM218	**93.0** 70.00 : 130.00	**93.0** 74.25 : 117.75	**96.0** 74.25 : 117.75
Benz(a)anthracene	TM218	**97.0** 70.00 : 130.00	**108.5** 82.07 : 118.33	**101.0** 82.07 : 118.33
Benzo(a)pyrene	TM218	**98.5** 70.00 : 130.00	**101.5** 79.75 : 116.97	**105.5** 79.75 : 116.97
Benzo(b)fluoranthene	TM218	**98.5** 70.00 : 130.00	**101.0** 82.41 : 117.15	**101.0** 82.41 : 117.15
Benzo(ghi)perylene	TM218	**94.5** 70.00 : 130.00	**107.5** 77.09 : 114.38	**96.0** 77.09 : 114.38
Benzo(k)fluoranthene	TM218	**95.0** 70.00 : 130.00	**100.5** 81.43 : 115.17	**100.5** 81.43 : 115.17
Chrysene	TM218	**95.0** 70.00 : 130.00	**104.0** 82.50 : 113.51	**97.0** 82.50 : 113.51
Dibenzo(ah)anthracene	TM218	**95.0** 70.00 : 130.00	**106.0** 81.00 : 120.00	**98.0** 81.00 : 120.00
Fluoranthene	TM218	**97.0** 70.00 : 130.00	**96.0** 78.67 : 117.61	**96.5** 78.67 : 117.61
Fluorene	TM218	**98.0** 70.00 : 130.00	**93.5** 76.50 : 121.50	**95.5** 76.50 : 121.50
Indeno(123cd)pyrene	TM218	**92.5** 70.00 : 130.00	**104.0** 79.19 : 117.60	**96.0** 79.19 : 117.60
Naphthalene	TM218	**96.0** 70.00 : 130.00	**91.0** 77.00 : 117.50	**94.5** 77.00 : 117.50
Phenanthrene	TM218	**98.5** 70.00 : 130.00	**95.5** 75.00 : 123.00	**98.0** 75.00 : 123.00
Pyrene	TM218	**95.5** 70.00 : 130.00	**94.0** 77.82 : 116.98	**95.0** 77.82 : 116.98

pH

Component	Method Code	QC 1188	QC 1135
pH	TM133	**100.5** 96.22 : 103.78	**99.75** 97.19 : 102.81

Total Organic Carbon

Total Organic Carbon

Component	Method Code	QC 1110	QC 1121
Total Organic Carbon	TM132	**98.63** 88.82 : 111.18	**94.06** 89.40 : 103.09

Total Sulphate

Component	Method Code	QC 1128
Total Sulphate	TM221	**112.12** 78.49 : 121.51

VOC MS (S)

Component	Method Code	QC 1125	QC 1180
1,1,1,2-tetrachloroethane	TM116	**101.8** 83.24 : 124.28	**100.6** 83.24 : 124.28
1,1,1-Trichloroethane	TM116	**88.8** 81.77 : 121.07	**107.6** 81.77 : 121.07
1,1,2-Trichloroethane	TM116	**97.0** 79.24 : 112.23	**94.6** 79.24 : 112.23
1,1-Dichloroethane	TM116	**91.6** 72.58 : 116.06	**107.4** 72.58 : 116.06
1,2-Dichloroethane	TM116	**94.8** 77.50 : 122.50	**109.8** 77.50 : 122.50
1,4-Dichlorobenzene	TM116	**88.0** 73.23 : 116.39	**97.4** 73.23 : 116.39
2-Chlorotoluene	TM116	**88.4** 69.22 : 110.64	**93.0** 69.22 : 110.64
4-Chlorotoluene	TM116	**86.2** 68.57 : 106.26	**92.0** 68.57 : 106.26
Benzene	TM116	**95.4** 84.33 : 124.27	**107.2** 84.33 : 124.27
Carbon Disulphide	TM116	**98.6** 77.20 : 122.80	**110.4** 77.20 : 122.80
Carbontetrachloride	TM116	**100.2** 84.20 : 119.90	**107.6** 84.20 : 119.90
Chlorobenzene	TM116	**103.4** 85.28 : 129.96	**106.4** 85.28 : 129.96
Chloroform	TM116	**92.4** 82.73 : 119.72	**106.8** 82.73 : 119.72
Chloromethane	TM116	**128.8** 55.16 : 145.46	**122.4** 55.16 : 145.46
Cis-1,2-Dichloroethene	TM116	**96.4** 73.56 : 118.93	**107.4** 73.56 : 118.93
Dibromomethane	TM116	**95.2** 73.40 : 116.60	**92.0** 73.40 : 116.60
Dichloromethane	TM116	**94.8** 76.16 : 121.98	**107.4** 76.16 : 121.98

VOC MS (S)

		QC 1125	QC 1180
Ethylbenzene	TM116	**94.0** 80.07 : 125.98	**103.0** 80.07 : 125.98
Hexachlorobutadiene	TM116	**68.8** 30.92 : 132.28	**120.0** 30.92 : 132.28
Isopropylbenzene	TM116	**82.2** 69.27 : 125.32	**102.8** 69.27 : 125.32
Naphthalene	TM116	**110.0** 79.15 : 121.98	**102.2** 79.15 : 121.98
o-Xylene	TM116	**86.8** 75.46 : 111.52	**88.2** 75.46 : 111.52
p/m-Xylene	TM116	**94.9** 76.97 : 121.75	**101.0** 76.97 : 121.75
Sec-Butylbenzene	TM116	**74.6** 49.27 : 129.90	**108.8** 49.27 : 129.90
Tetrachloroethene	TM116	**106.2** 87.96 : 133.65	**113.6** 87.96 : 133.65
Toluene	TM116	**92.6** 79.23 : 114.58	**103.2** 79.23 : 114.58
Trichloroethene	TM116	**91.8** 84.09 : 114.24	**100.8** 84.09 : 114.24
Trichlorofluoromethane	TM116	**90.8** 76.22 : 114.82	**107.0** 76.22 : 114.82
Vinyl Chloride	TM116	**77.8** 59.68 : 118.68	**97.4** 59.68 : 118.68

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

CERTIFICATE OF ANALYSIS

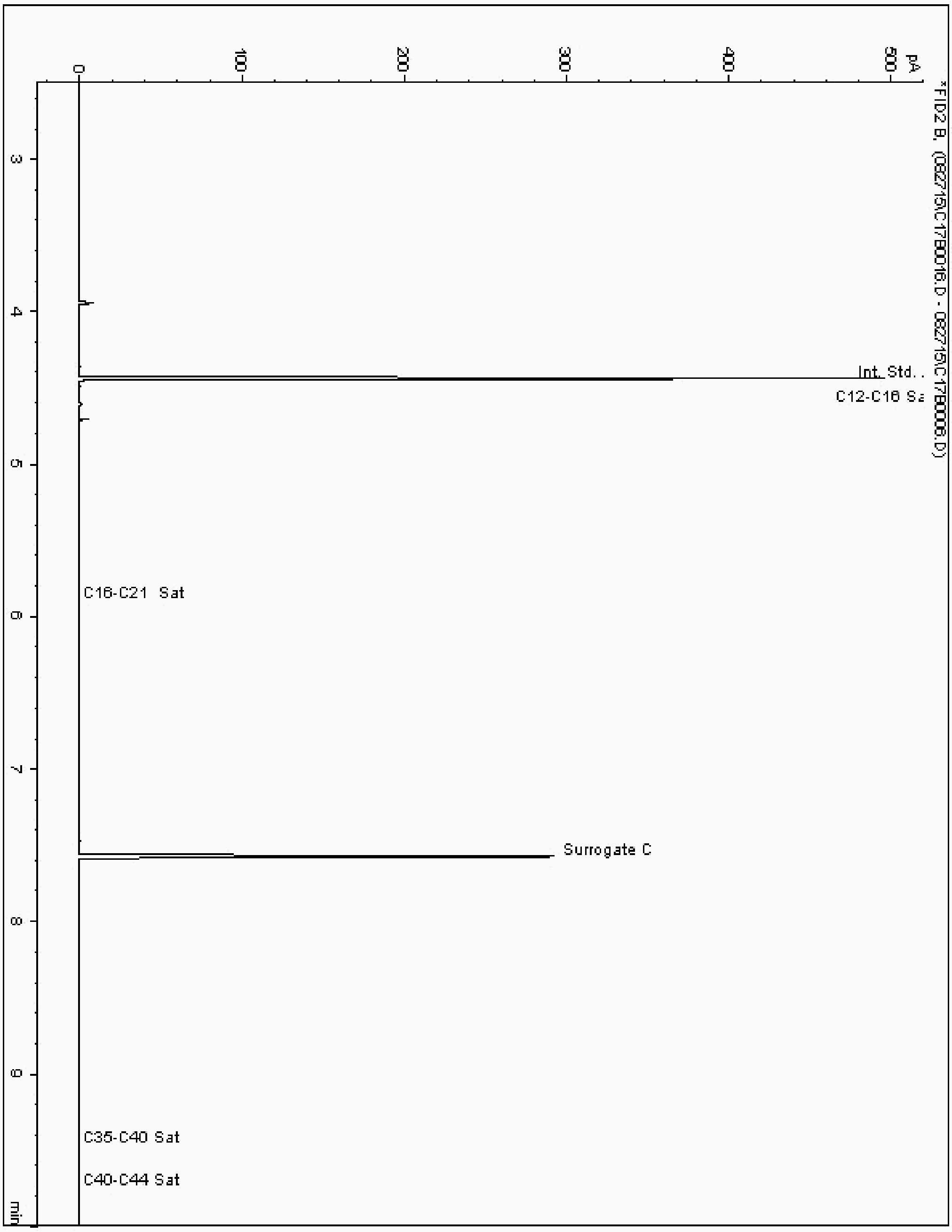
SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 11954758 **Depth :** 3.30
Sample ID : BH204

```
Alcontrol/Geochem Analytical Services
Speciated TPH - SATS ( C12 - C40 )

Sample Identity: 11342140-
Date Acquired  :  27/08/2015 18:44:18 PM
Units          :  ppb
Dilution       :
CF             :  1
Multiplier     :  0.980
```



CERTIFICATE OF ANALYSIS

SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S)

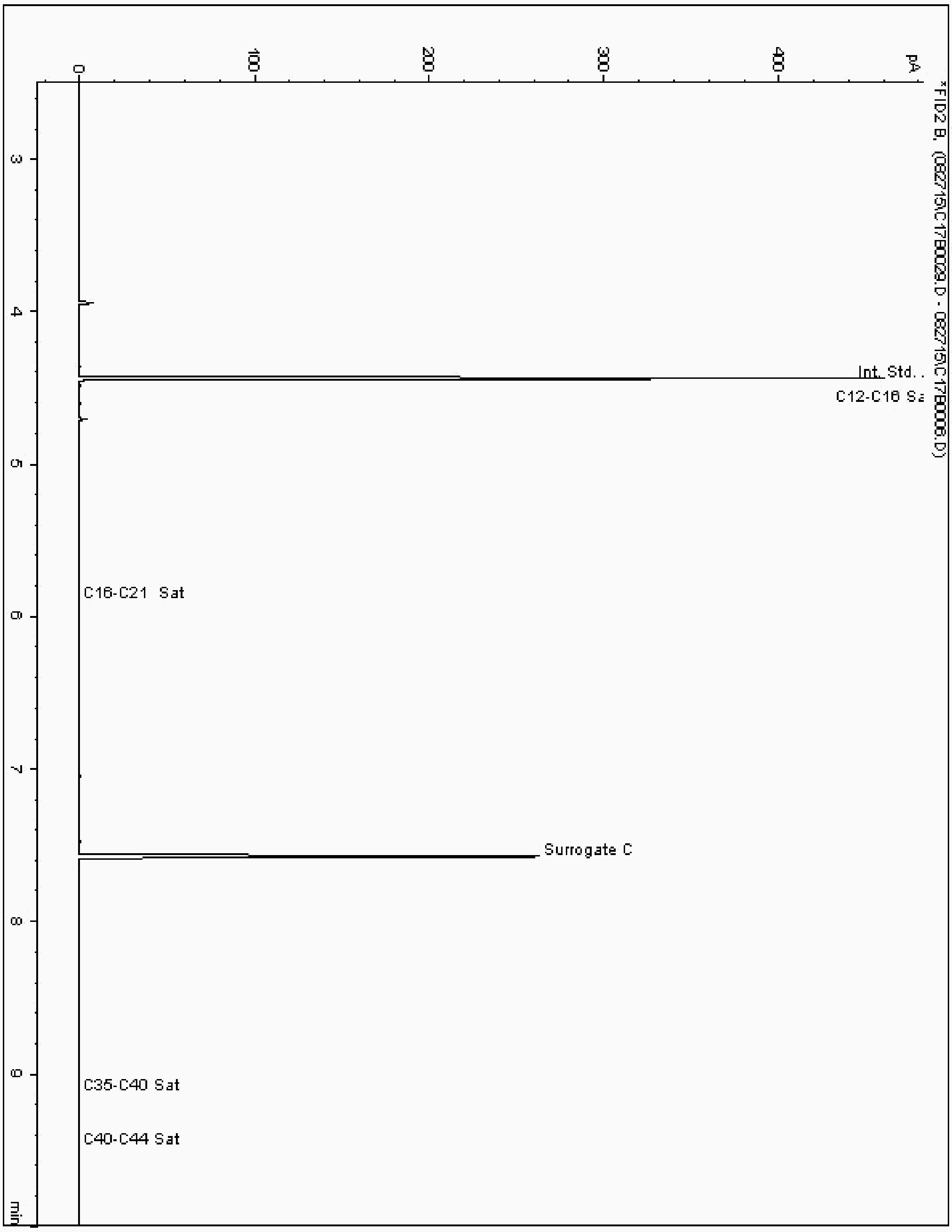
Sample No : 11954791

Sample ID : BH204

Depth : 1.30

```
Alcontrol/Geochem Analytical Services
Speciated TPH - SATS ( C12 - C40 )

Sample Identity: 11342131-
Date Acquired  :  27/08/2015 22:58:35 PM
Units          :  ppb
Dilution       :
CF             :  1
Multiplier     :  0.970
```

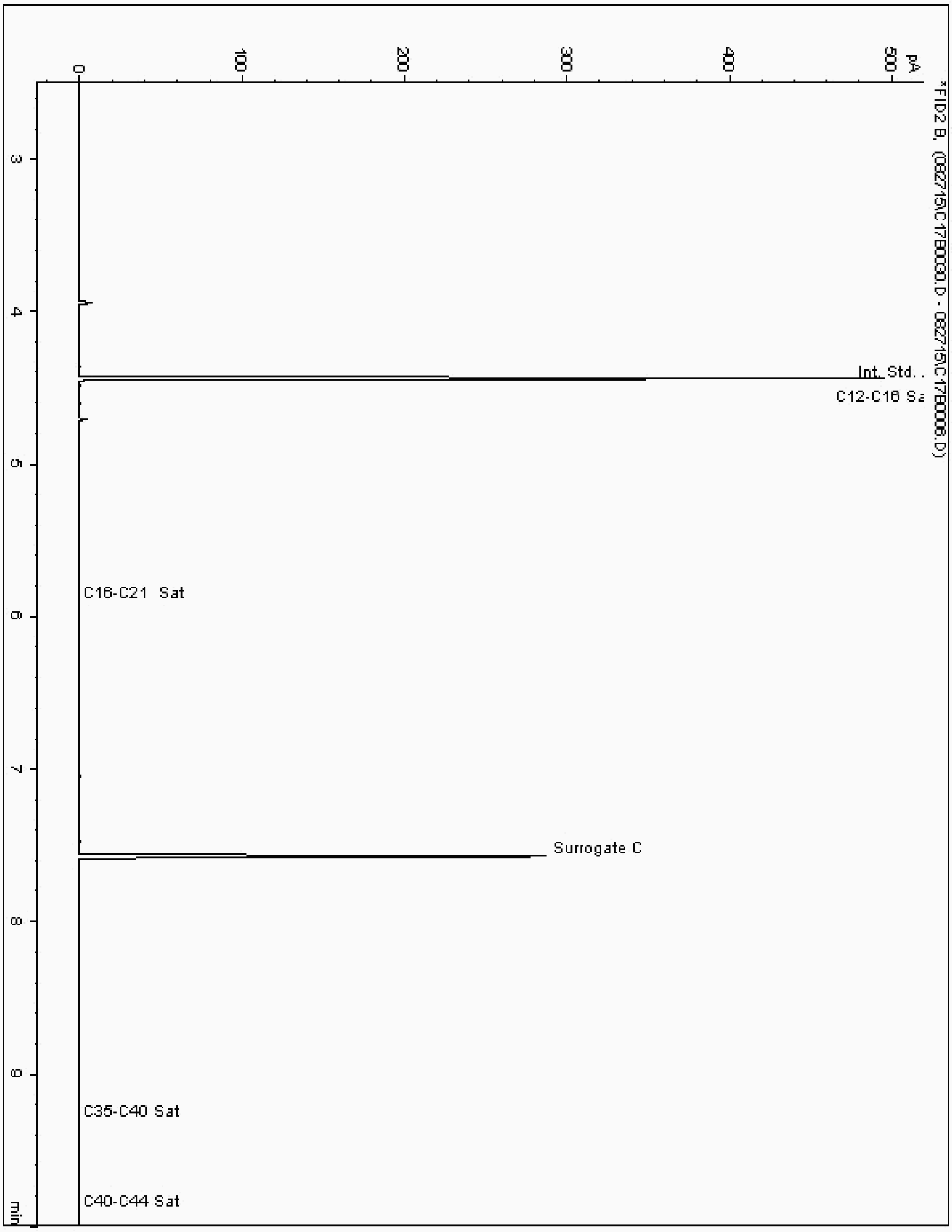


Chromatogram

Analysis:	EPH CWG (Aliphatic) GC (S)	**Sample No :**	11956254	**Depth :**	1.10
		Sample ID :	BH206		

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 11342167-
Date Acquired : 27/08/2015 23:18:56 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.960



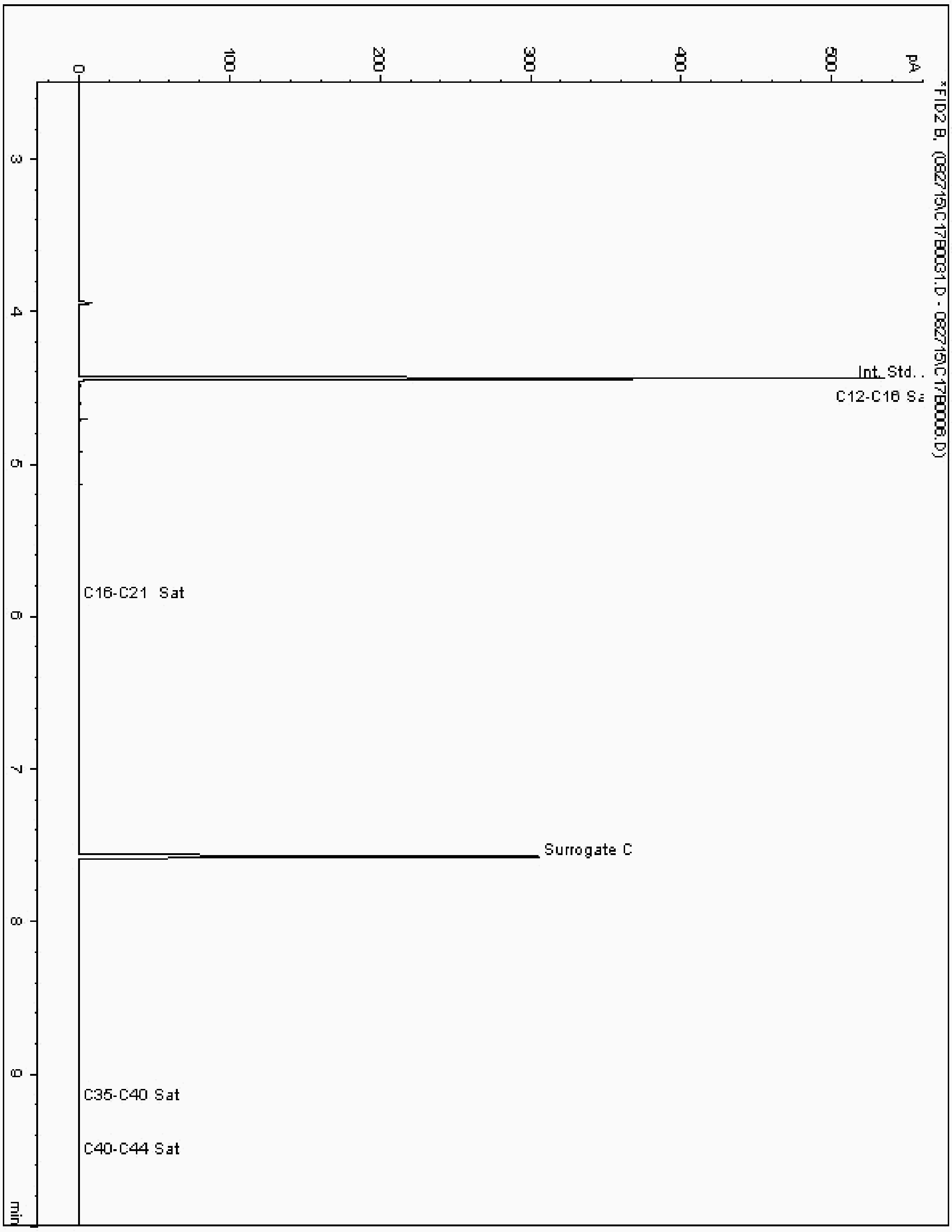
SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 11956372 **Depth :** 2.50
Sample ID : BH205

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 11342158-
Date Acquired : 27/08/2015 23:39:01 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.990



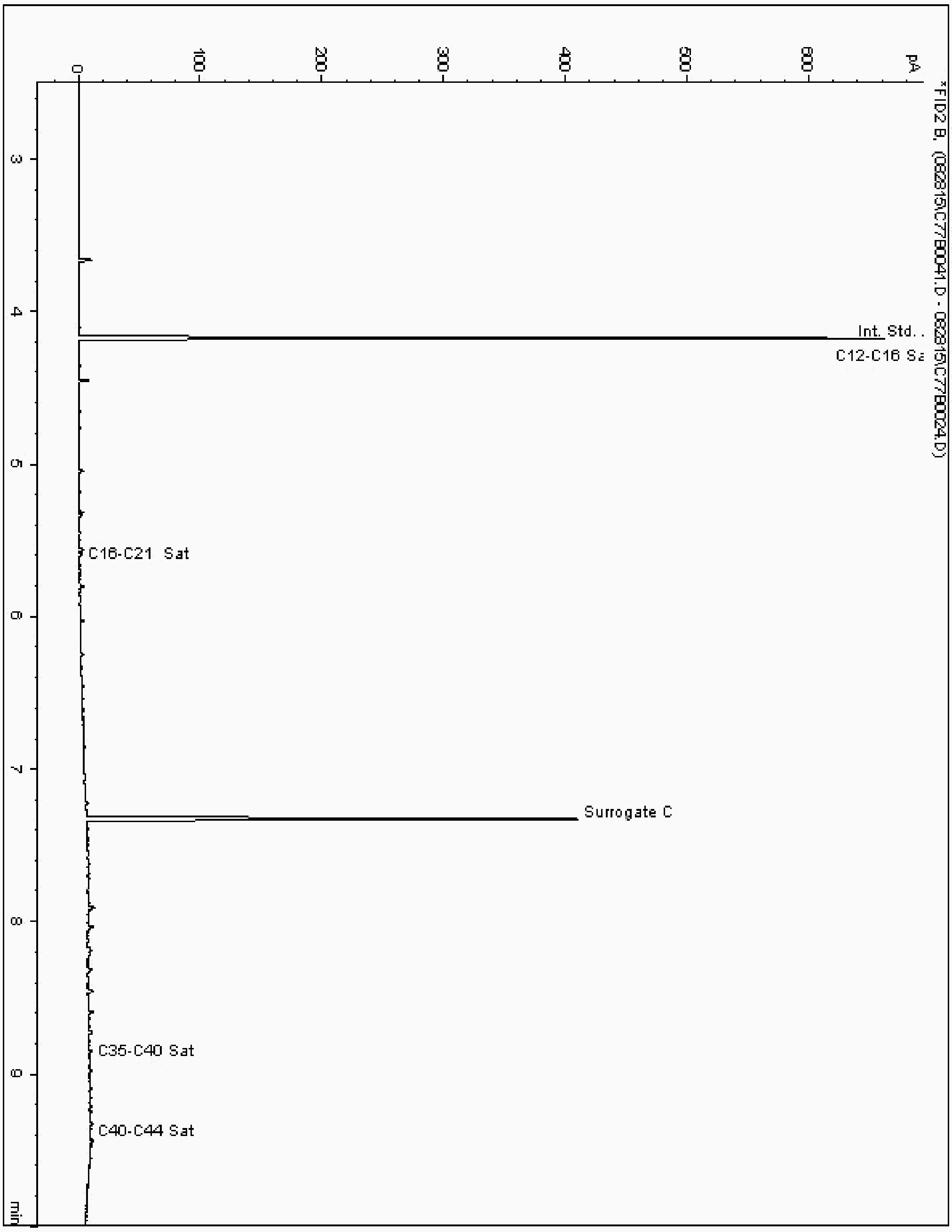
SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis:	EPH CWG (Aliphatic) GC (S)	**Sample No :**	11959414	**Depth :**	0.50
		Sample ID :	BH203A		

Alcontrol/Geochem Analytical Services
Speciated TPH - SATS (C12 - C40)

Sample Identity: 11342122-
Date Acquired : 01/09/2015 07:58:49 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.040

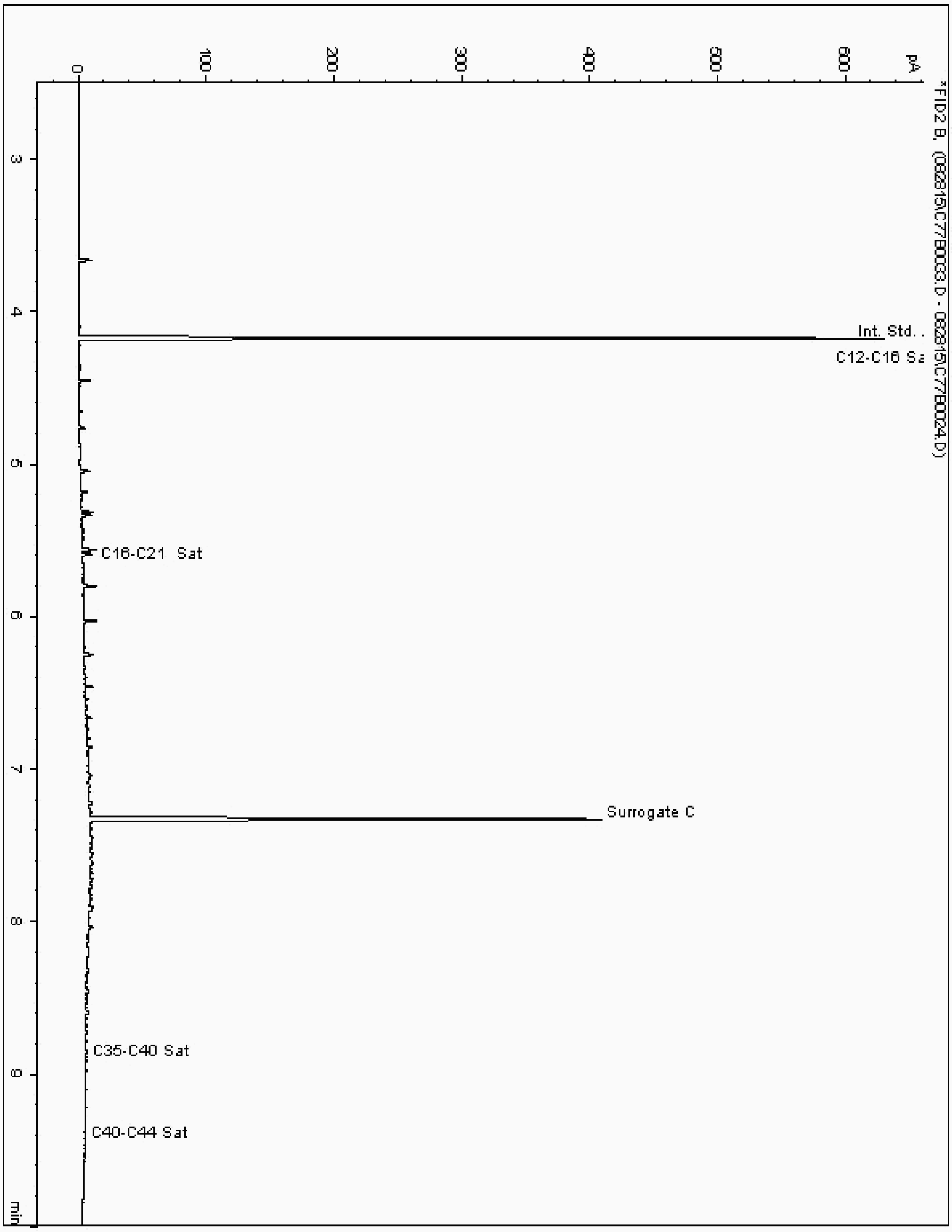


Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 11959467 **Depth :** 1.00
Sample ID : BH205

```
Alcontrol/Geochem Analytical Services
Speciated TPH - SATS ( C12 - C40 )

Sample Identity: 11342149-
Date Acquired  :  29/08/2015 02:23:16 PM
Units          :  ppb
Dilution       :
CF             :  1
Multiplier     :  1.040
```



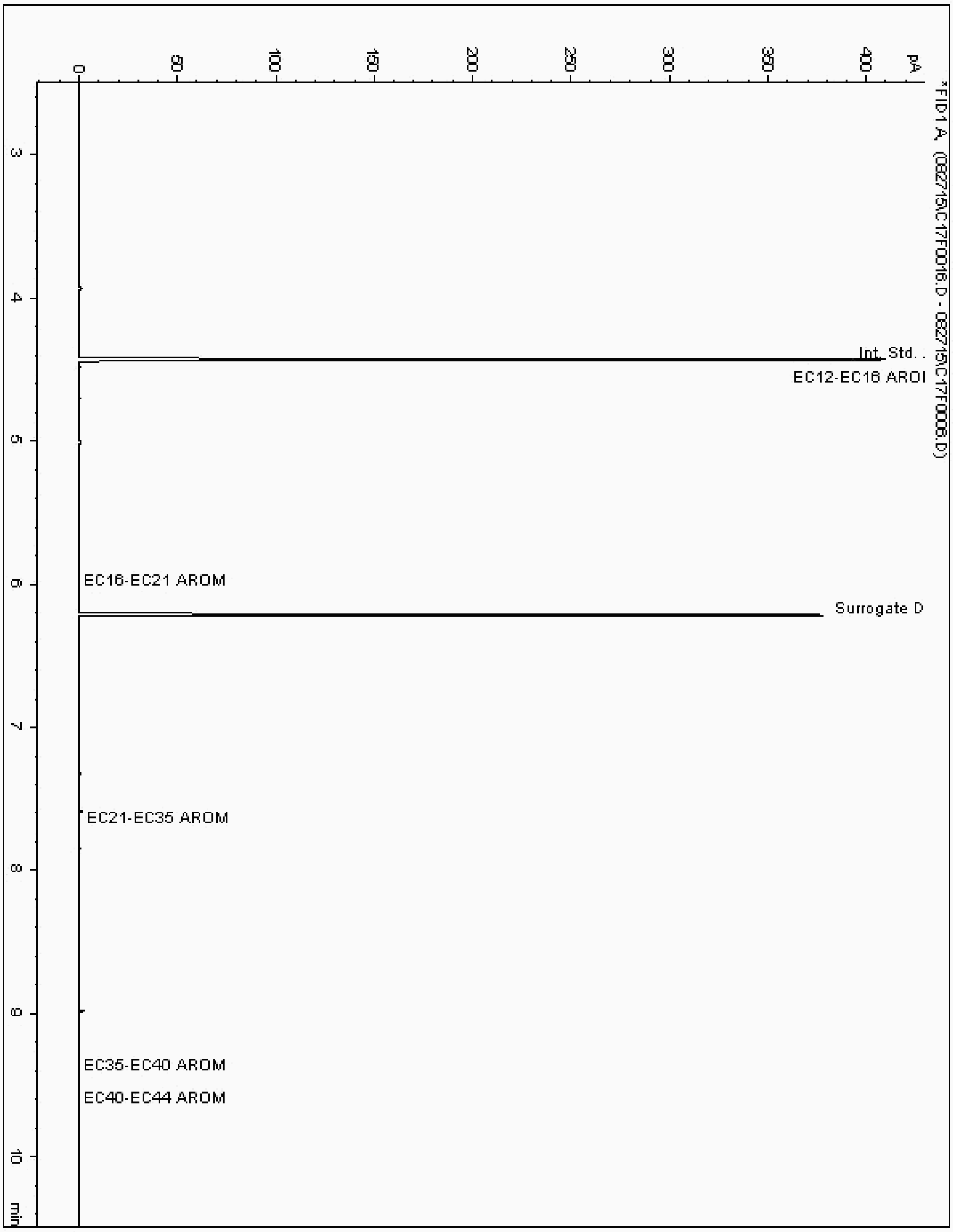
SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 11954758 **Sample ID :** BH204 **Depth :** 3.30

```
Alcontrol/Geochem Analytical Services
Speciated TPH - AROM ( C12 - C40 )

Sample Identity:  11342141-
Date Acquired  :  27/08/2015 18:44:18 PM
Units          :  ppb
Dilution       :
CF             :  1
Multiplier     :  0.980
```



ALcontrol Laboratories

CERTIFICATE OF ANALYSIS

Validated

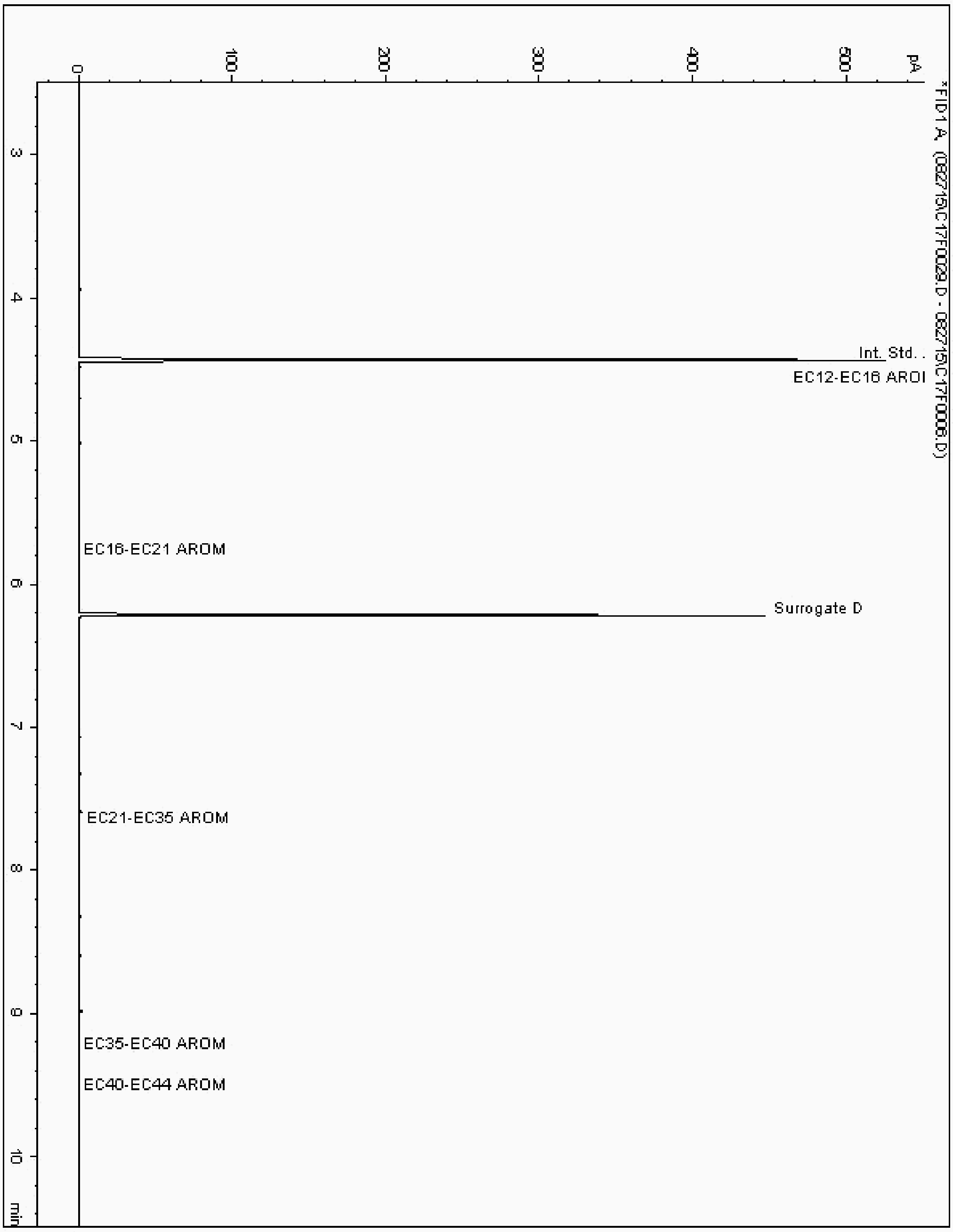
SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis:	EPH CWG (Aromatic) GC (S)	**Sample No :**	11954791	**Depth :**	1.30
		Sample ID :	BH204		

```
Alcontrol/Geochem Analytical Services
Speciated TPH - AROM ( C12 - C40 )

Sample Identity: 11342132-
Date Acquired  :  27/08/2015 22:58:35 PM
Units          :  ppb
Dilution       :
CF             :  1
Multiplier     :  0.970
```



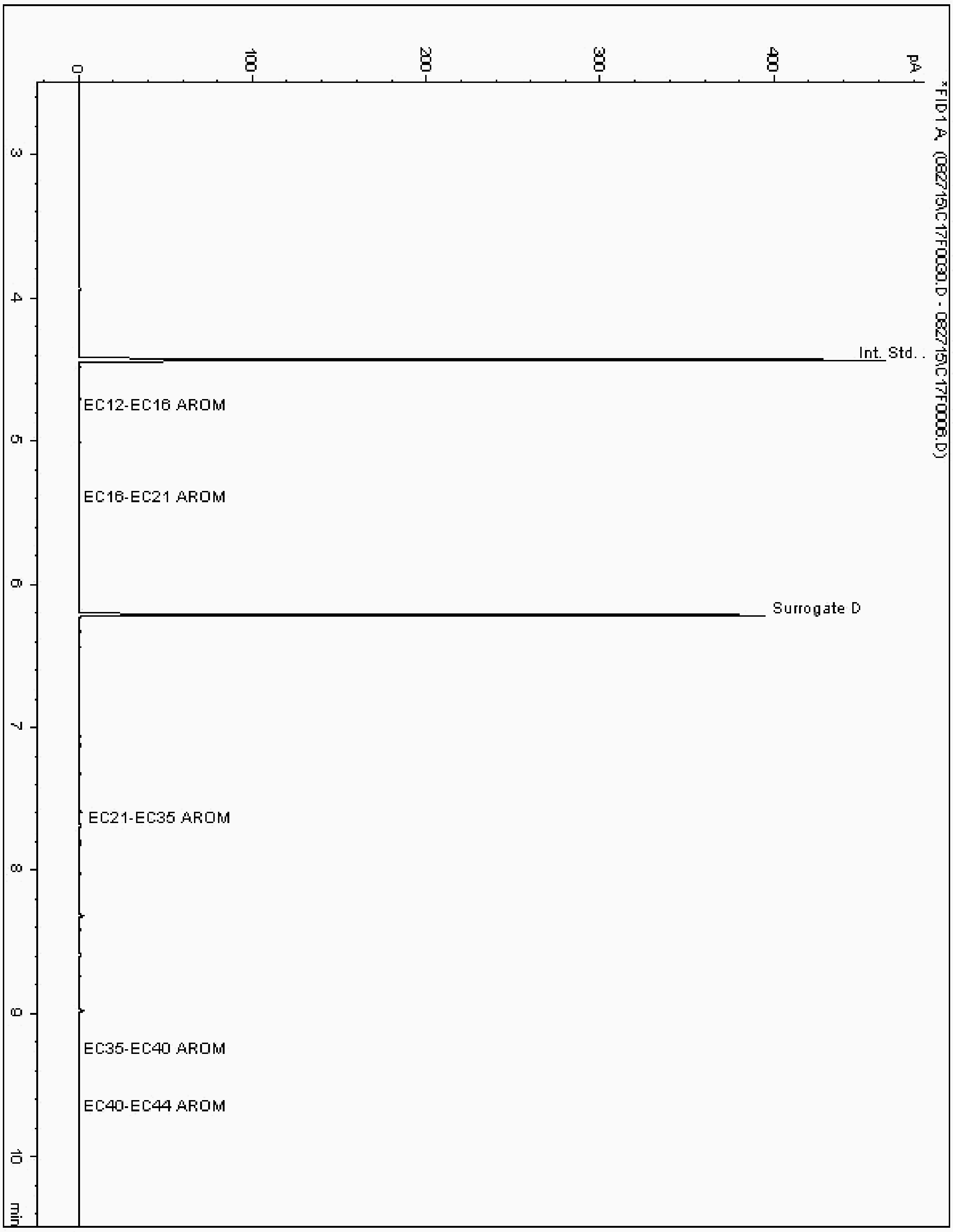
SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis:	EPH CWG (Aromatic) GC (S)	**Sample No :**	11956254	**Depth :**	1.10
		Sample ID :	BH206		

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 11342168-
Date Acquired : 27/08/2015 23:18:56 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.960



CERTIFICATE OF ANALYSIS

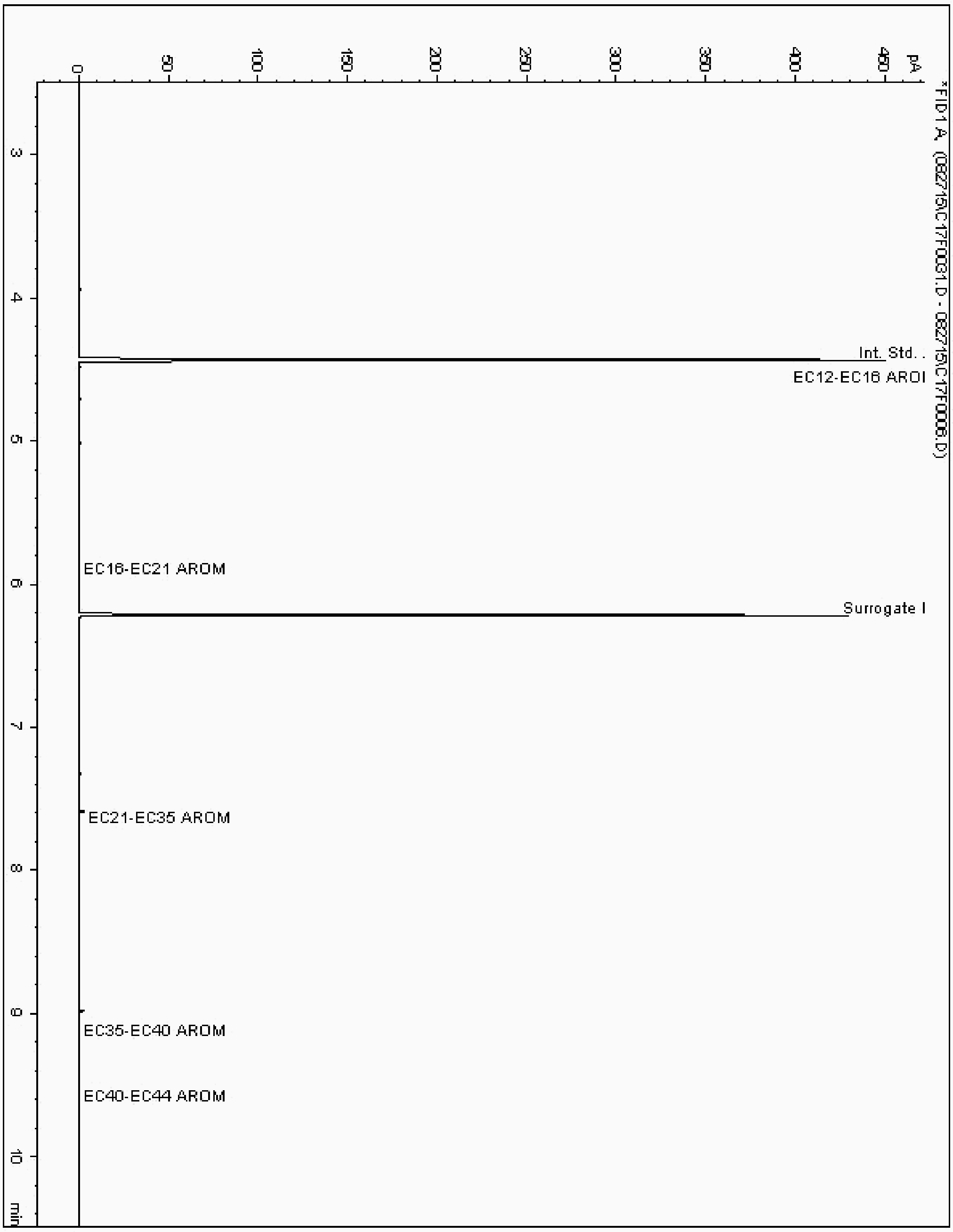
SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 11956372 **Sample ID :** BH205 **Depth :** 2.50

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 11342159-
Date Acquired : 27/08/2015 23:39:01 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 0.990



SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

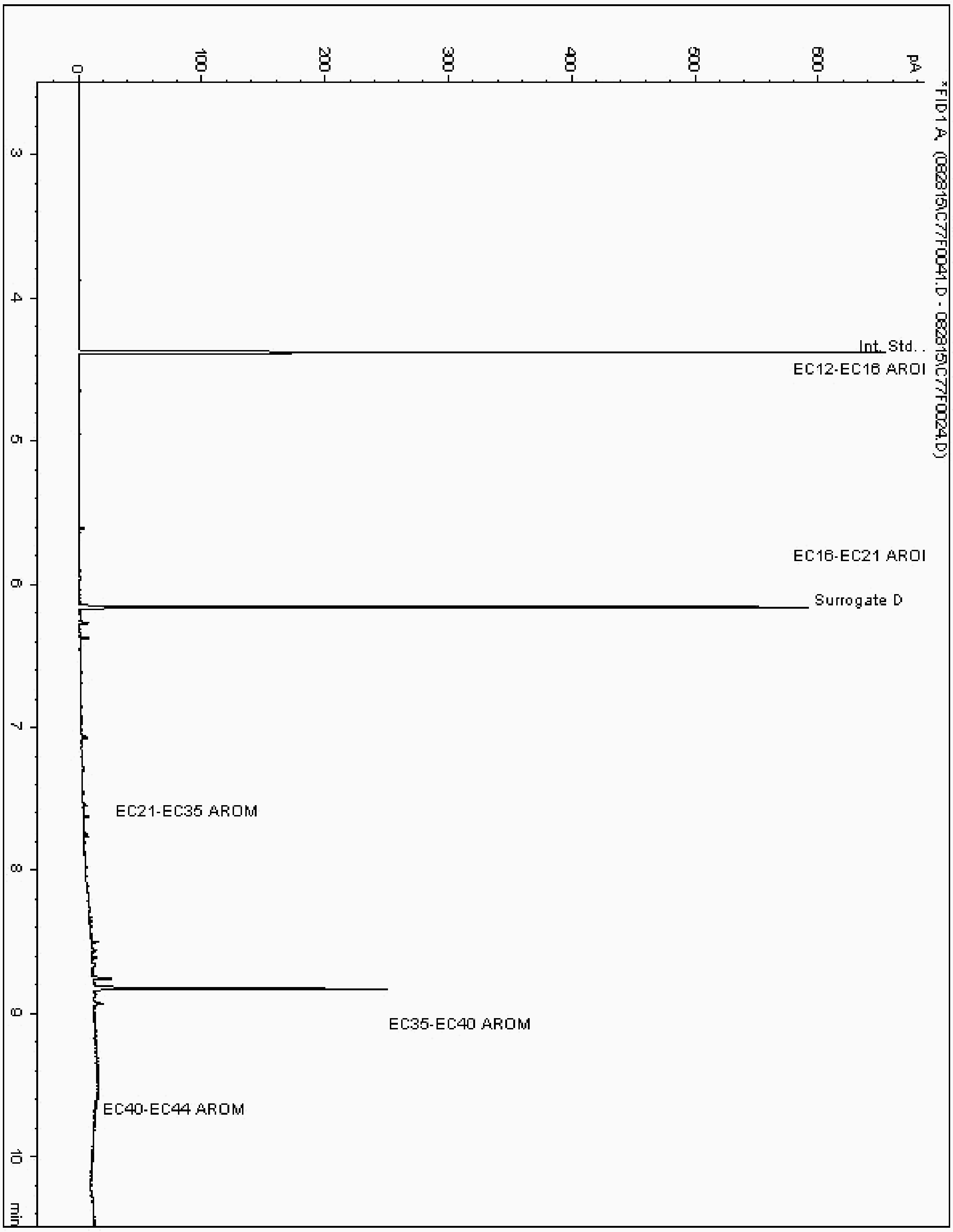
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 11959414
Sample ID : BH203A

Depth : 0.50

Alcontrol/Geochem Analytical Services
Speciated TPH - AROM (C12 - C40)

Sample Identity: 11342123-
Date Acquired : 01/09/2015 07:58:50 PM
Units : ppb
Dilution :
CF : 1
Multiplier : 1.040



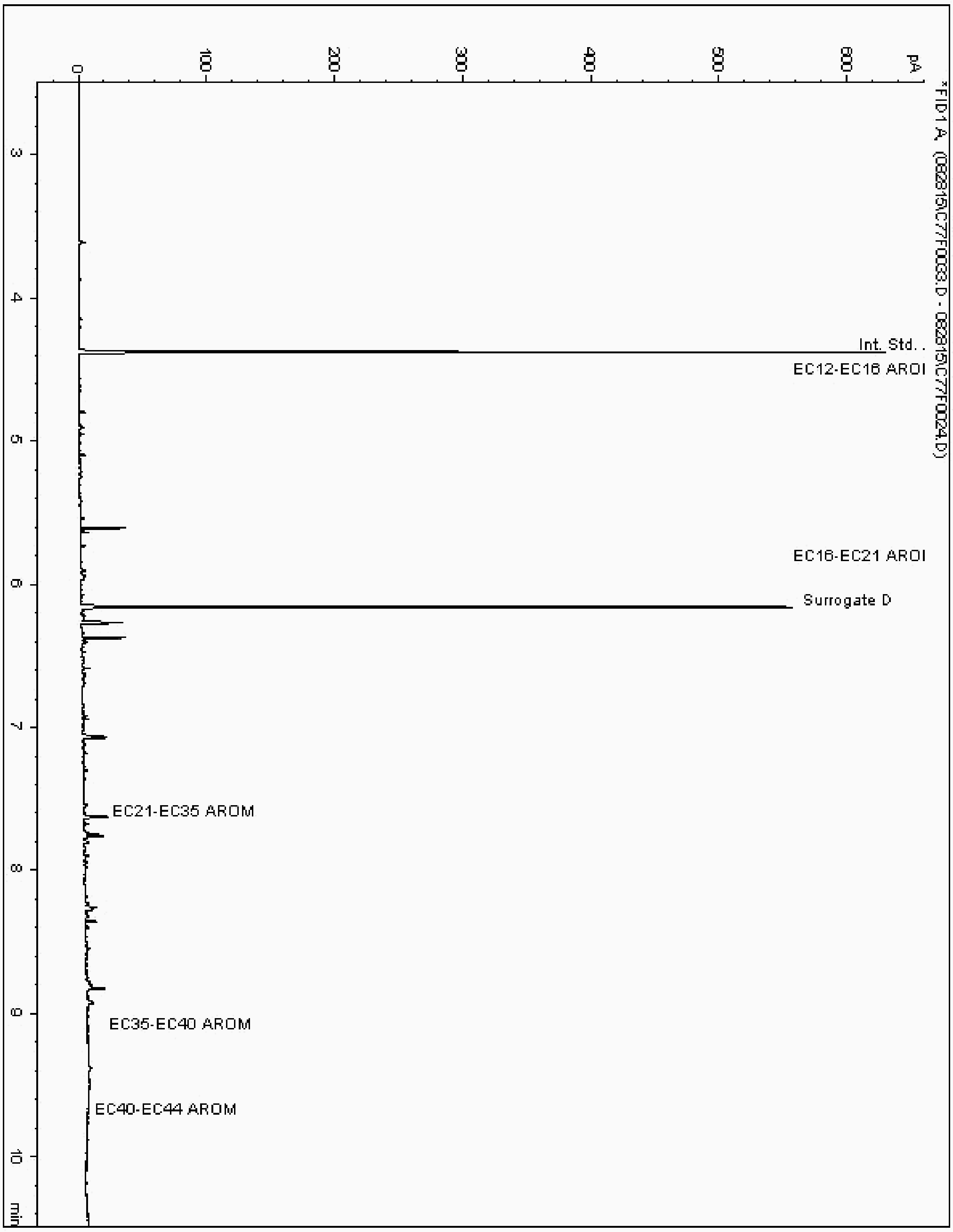
SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis:	EPH CWG (Aromatic) GC (S)	**Sample No :**	11959467	**Depth :**	1.00
		Sample ID :	BH205		

```
Alcontrol/Geochem Analytical Services
Speciated TPH - AROM ( C12 - C40 )

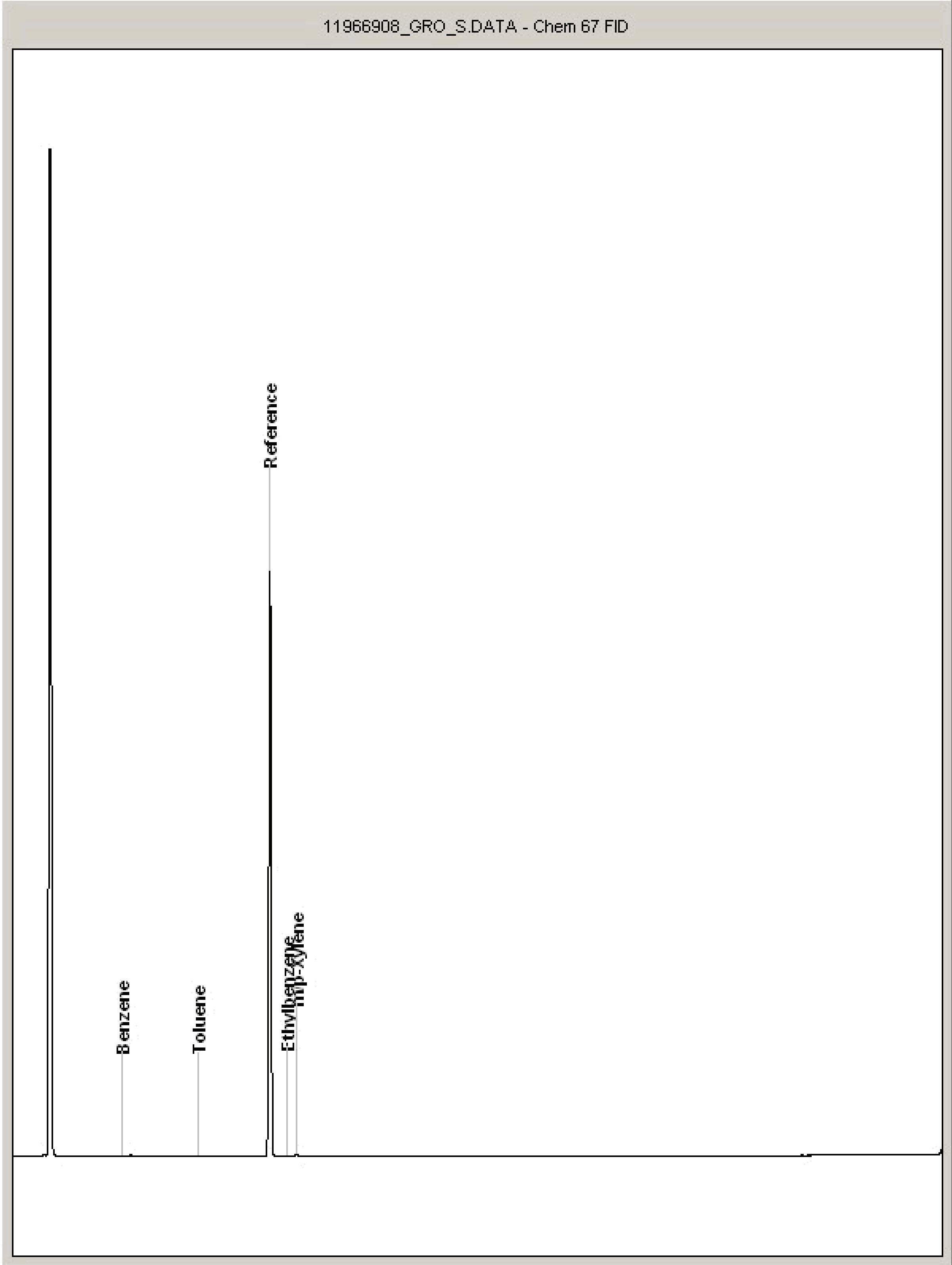
Sample Identity:  11342150-
Date Acquired  :  29/08/2015 02:23:16 PM
Units          :  ppb
Dilution       :
CF             :  1
Multiplier     :  1.040
```



SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

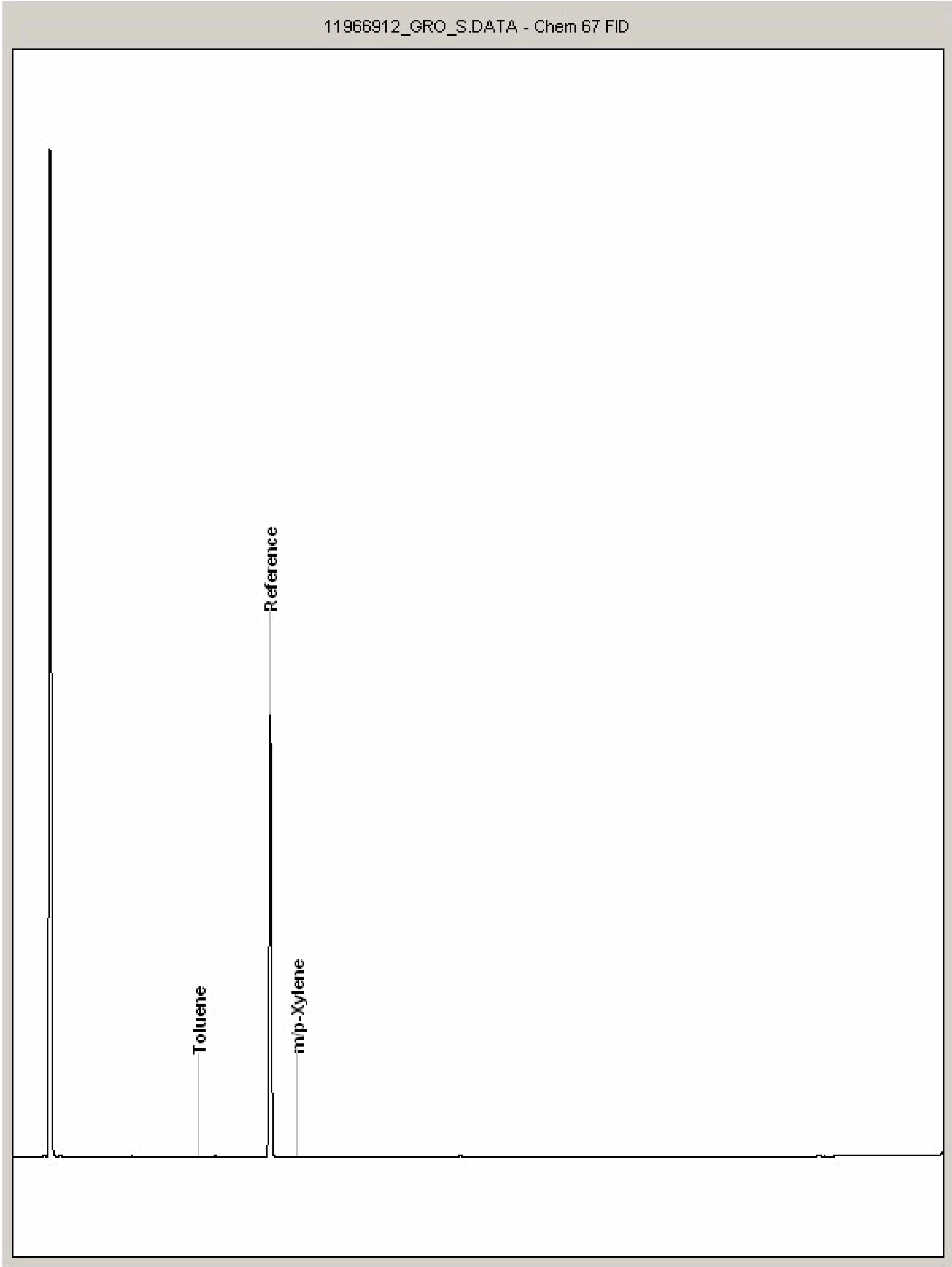
Analysis:	GRO by GC-FID (S)	**Sample No :**	11966908	**Depth :**	1.10
		Sample ID :	BH206		



SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

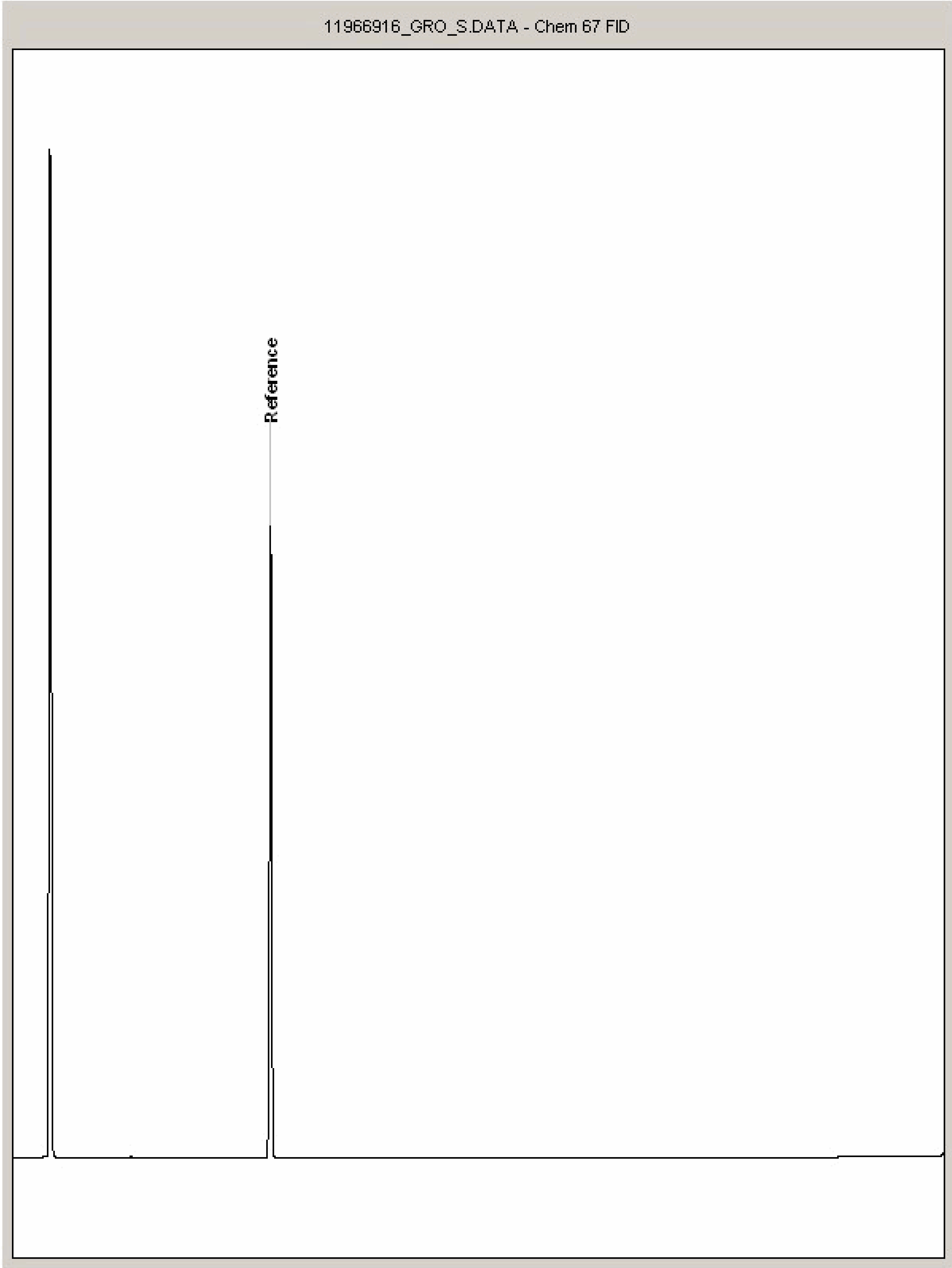
Analysis:	GRO by GC-FID (S)	**Sample No :**	11966912	**Depth :**	0.50
		Sample ID :	BH203A		



SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis:	GRO by GC-FID (S)	**Sample No :**	11966916	**Depth :**	2.50
		Sample ID :	BH205		



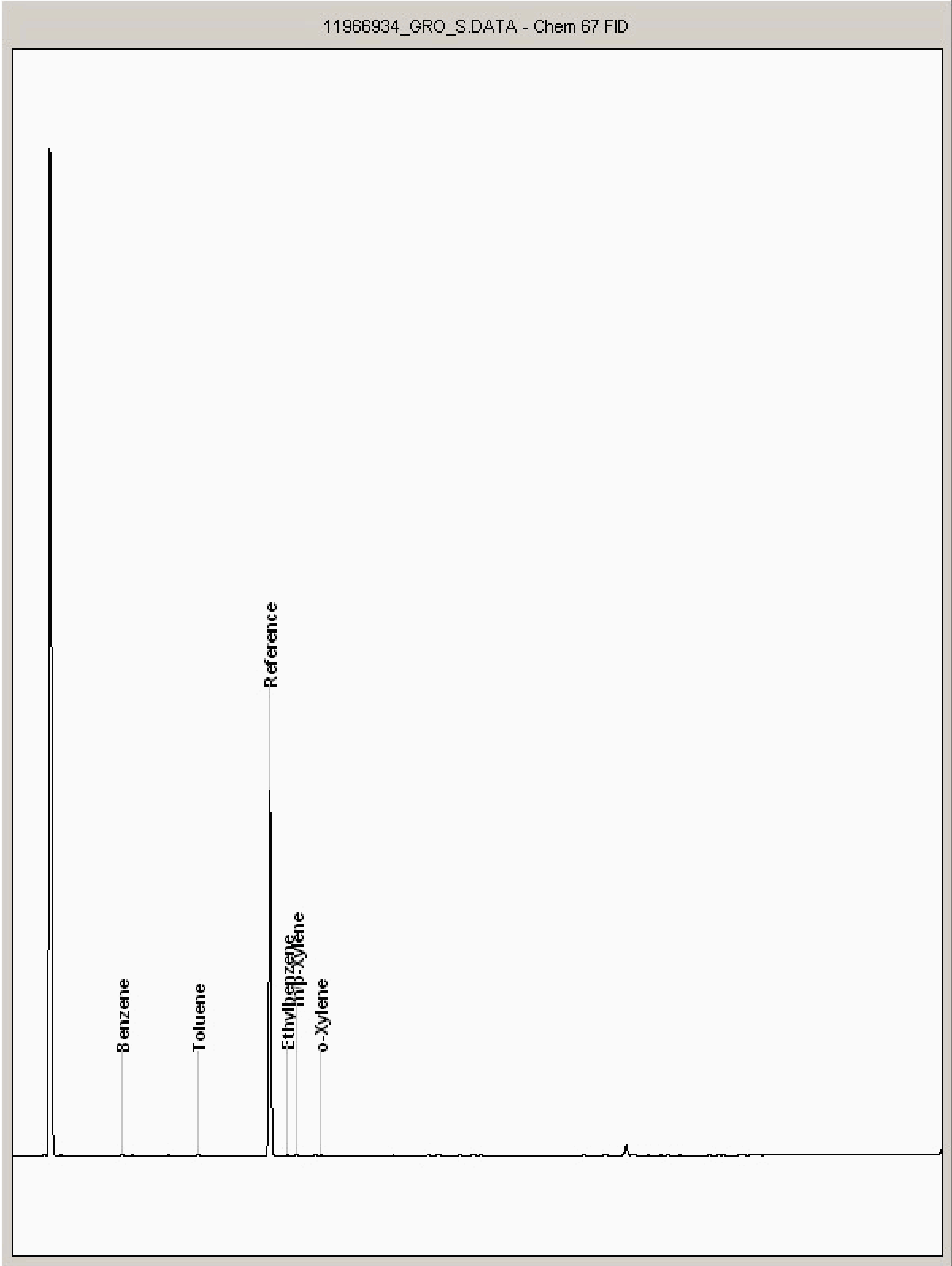
SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 11966934
Sample ID : BH205

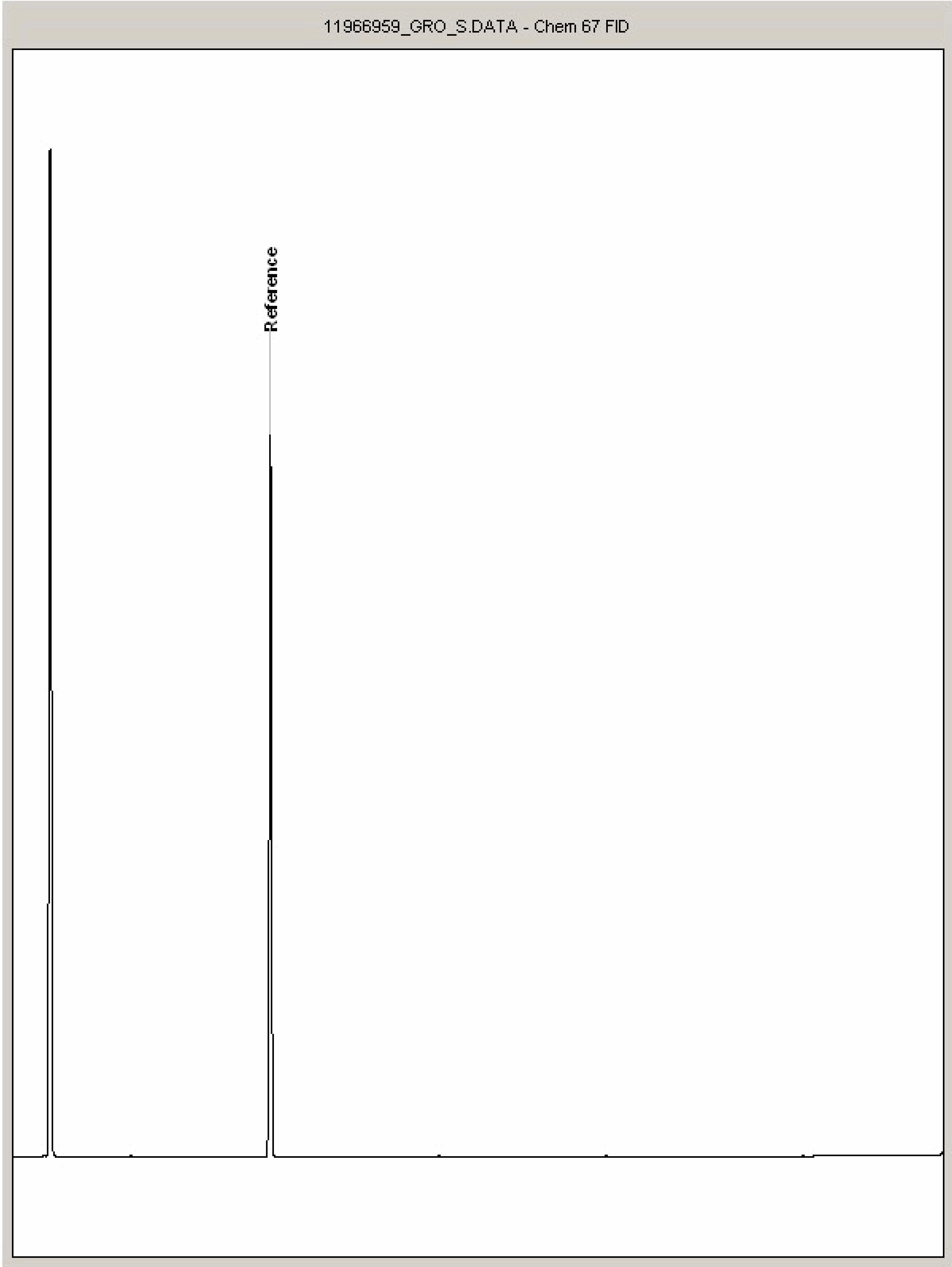
Depth : 1.00



SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis:	GRO by GC-FID (S)	**Sample No :**	11966959	**Depth :**	3.30
		Sample ID :	BH204		

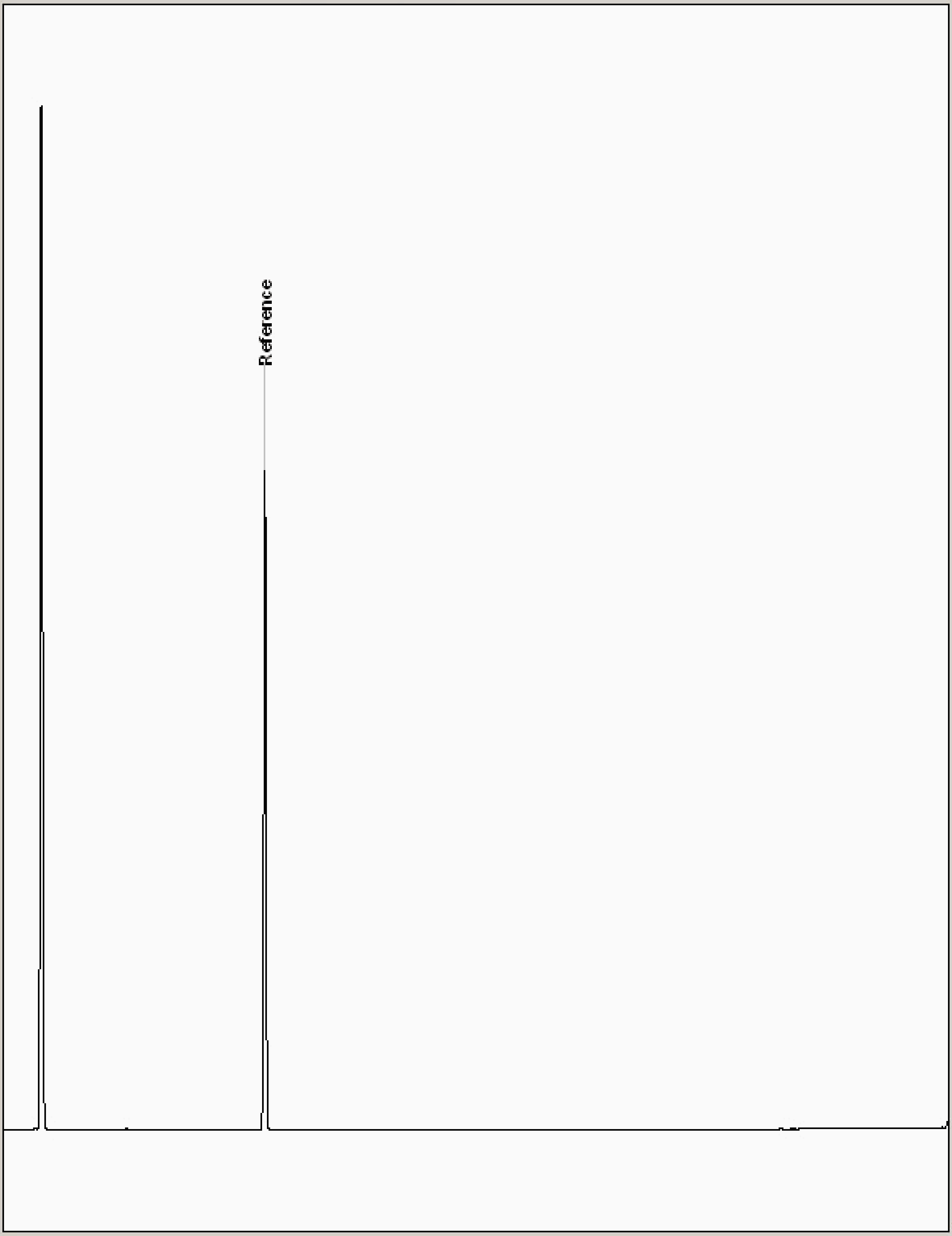


SDG:	150822-16	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	328751
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis:	GRO by GC-FID (S)	**Sample No :**	11966960	**Depth :**	1.30
		Sample ID :	BH204		

11966960_GRO_S.DATA - Chem 67 FID



Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

12. Results relate only to the items tested

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not
accredited.

19. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

20. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

23. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials -whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute themajor part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

24. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C4 -C10 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DCM	SOXTHERM	IATROSCAN
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GC-MS
HERBICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
PESTICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB TOT / PCB CON	D&C	HEXANE:ACETONE	END OVER END	GC-MS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE:ACETONE	MICROWAVE TM218.	GC-MS
C8-C40 (C6-C40) EZ FLASH	WET	HEXANE:ACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE:ACETONE	SHAKER	GC-EZ
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM:ACETONE	SONICATE	GC-MS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC MS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -
Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in MDHS 100.

The identification of asbestos containing materials falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Last Updated : 2010/09/08

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
§	Sampled on date not provided
♦	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than:
- Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Preliminary

ALcontrol Laboratories Analytical Services

SDG:	150826-58	**Customer:**	AECOM
Job:	H_URS_WIM-273	**Attention:**	Gary Marshall
Client Reference:		**Order No.:**	
Location:	Stag Brewery	**Report No:**	

Asbestos Identification

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH201A NS Z 0.70 SOLID 25/08/2015 00:00:00 27/08/2015 13:33:29 150826-58 11963169 TM048 11351888	3/9/15	Kevin Hughes	Loose fibres in soil	Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH201A NS Z 1.90 - 2.00 SOLID 25/08/2015 00:00:00 27/08/2015 13:47:50 150826-58 11963171 TM048 11351923	3/9/15	Kevin Hughes	-	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH202A NS Z 0.80 SOLID 25/08/2015 00:00:00 27/08/2015 13:38:24 150826-58 11963170 TM048 11351909	3/9/15	Kevin Hughes	-	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH207 NS Z 0.70 SOLID 25/08/2015 00:00:00 27/08/2015 14:00:07 150826-58 11963172 TM048 11351937	3/9/15	Kevin Hughes	Loose fibres in soil	Not Detected	Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH208A NS Z 0.80 SOLID 25/08/2015 00:00:00 27/08/2015 11:24:24 150826-58 11963174 TM048 11351964	3/9/15	Kevin Hughes	Loose fibres in soil	Not Detected	Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected

ALcontrol Laboratories Analytical Services

SDG:	150826-58	**Customer:**	AECOM
Job:	H_URS_WIM-273	**Attention:**	Gary Marshall
Client Reference:		**Order No.:**	
Location:	Stag Brewery	**Report No:**	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH209 NS Z 0.50 SOLID 25/08/2015 00:00:00 28/08/2015 12:31:33 150826-58 11963177 TM048 11351994	3/9/15	Kevin Hughes	Loose fibres in soil	Not Detected	Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
Customer Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH2A NS Z 0.50 SOLID 25/08/2015 00:00:00 28/08/2015 12:46:35 150826-58 11963166 TM048 11351834	3/9/15	Kevin Hughes	-	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected

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SW19 4DR

Attention: Gary Marshall

PRELIMINARY/INTERIM REPORT

Date:	09 September 2015
Customer:	H_URS_WIM
Sample Delivery Group (SDG):	150828-41
Your Reference:	
Location:	Stag Brewery
Report No:	329009

We received 4 samples on Friday August 28, 2015 and 4 of these samples were scheduled for analysis which was completed on Wednesday September 09, 2015. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

This is a preliminary report which has not had final authorisation.

Approved By:

SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
11977605	BH4A		0.90	27/08/2015
11977606	BH4A		3.50 - 4.00	27/08/2015
11977603	BH7A		0.70	27/08/2015
11977604	BH7A		2.50 - 3.00	27/08/2015

Only received samples which have had analysis scheduled will be shown on the following pages.

SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

SOLID

Results Legend

- X — **Test**
- N — **No Determination Possible**

	Lab Sample No(s)		11977605			11977606			11977603			11977604		
	Customer Sample Reference		BH4A			BH4A			BH7A			BH7A		
	AGS Reference													
	Depth (m)		0.90			3.50 - 4.00			0.70			2.50 - 3.00		
	Container		250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)	250g Amber Jar (AL	400g Tub (ALE214)	60g VOC (ALE215)
Ammonium Soil by Titration	All	NDPs: 0 Tests: 4		X			X			X			X	
Asbestos ID in Solid Samples	All	NDPs: 0 Tests: 2		X						X				
Asbestos Quant. - Waste Limit	All	NDPs: 0 Tests: 1		X										
Easily Liberated Sulphide	All	NDPs: 0 Tests: 4		X			X			X			X	
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 4	X			X			X			X		
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 4	X			X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 4			X			X			X			X
Hexavalent Chromium (s)	All	NDPs: 0 Tests: 4		X			X			X			X	
Metals in solid samples by OES	All	NDPs: 0 Tests: 4	X			X			X			X		
PAH by GCMS	All	NDPs: 0 Tests: 4	X			X			X			X		
pH	All	NDPs: 0 Tests: 4		X			X			X			X	
Sample description	All	NDPs: 0 Tests: 4	X			X			X			X		
Total Organic Carbon	All	NDPs: 0 Tests: 4	X			X			X			X		
Total Sulphate	All	NDPs: 0 Tests: 4	X			X			X			X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 4	X			X			X			X		

PRELIMINARY/INTERIM REPORT

SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

SOLID

Results Legend

- X — **Test**
- N — **No Determination Possible**

Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	VOC MS (S) — All — NDPs: 0, Tests: 4
11977605	BH4A		0.90	250g Amber Jar (AL	
				400g Tub (ALE214)	
				60g VOC (ALE215)	X
11977606	BH4A		3.50 - 4.00	250g Amber Jar (AL	
				400g Tub (ALE214)	
				60g VOC (ALE215)	X
11977603	BH7A		0.70	250g Amber Jar (AL	
				400g Tub (ALE214)	
				60g VOC (ALE215)	X
11977604	BH7A		2.50 - 3.00	250g Amber Jar (AL	
				400g Tub (ALE214)	
				60g VOC (ALE215)	X

SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Sample Descriptions

Grain Sizes

very fine	fine	medium	coarse	very coarse
<0.063mm	0.063mm - 0.1mm	0.1mm - 2mm	2mm - 10mm	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
11977605	BH4A	0.90	Dark Brown	Sand	0.1 - 2 mm	Brick	Concrete/Aggregate
11977606	BH4A	3.50 - 4.00	Light Brown	Sand	0.1 - 2 mm	Stones	None
11977603	BH7A	0.70	Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Brick	Stones
11977604	BH7A	2.50 - 3.00	Light Brown	Sand	0.1 - 2 mm	Stones	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

PRELIMINARY/INTERIM REPORT

SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Customer Sample R			BH4A	BH4A	BH7A	BH7A		
Depth (m)			0.90	3.50 - 4.00	0.70	2.50 - 3.00		
Sample Type			Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
Date Sampled			27/08/2015	27/08/2015	27/08/2015	27/08/2015		
Sampled Time			00:00:00	.	.	.		
Date Received			28/08/2015	28/08/2015	28/08/2015	28/08/2015		
SDG Ref			150828-41	150828-41	150828-41	150828-41		
Lab Sample No.(s)			11977605	11977606	11977603	11977604		
AGS Reference								
Component	**LOD/Units**	**Method**						
Moisture Content Ratio (% of as received sample)	%	PM024	7.1	4.4	28	4.8		
Exchangeable Ammonia as NH4	<15 mg/kg	TM024	23.8 M	<15 M	35.3 M	15.8 M		
Organic Carbon, Total	<0.2 %	TM132	2.08 M	<0.2 M	3.51 M	<0.2 M		
pH	1 pH Units	TM133	7.92 M	8.01 M	7.67 M	8.01 M		
Chromium, Hexavalent	<0.6 mg/kg	TM151	<0.6 #	<0.6 #	<0.6 #	<0.6 #		
Sulphide, Easily liberated	<15 mg/kg	TM180	<15 ♦ #	<15 ♦ #	<15 ♦ #	<15 ♦ #		
Arsenic	<0.6 mg/kg	TM181	14.2 M	21.4 M	94 M	16.4 M		
Cadmium	<0.02 mg/kg	TM181	0.603 M	0.385 M	2.03 M	0.325 M		
Chromium	<0.9 mg/kg	TM181	16.9 M	21.5 M	28.7 M	16.5 M		
Copper	<1.4 mg/kg	TM181	31.4 M	6.36 M	82.3 M	4.42 M		
Lead	<0.7 mg/kg	TM181	309 M	8.03 M	468 M	5.77 M		
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M	0.702 M	<0.14 M		
Nickel	<0.2 mg/kg	TM181	15.6 M	24.2 M	36 M	19.4 M		
Selenium	<1 mg/kg	TM181	<1 #	<1 #	<1 #	<1 #		
Zinc	<1.9 mg/kg	TM181	217 M	28.5 M	1640 M	20.8 M		
Sulphate, Total	<48 mg/kg	TM221	841 M	63.9 M	601 M	74.7 M		

SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method						
		Customer Sample R	BH4A	BH4A	BH7A	BH7A		
		Depth (m)	0.90	3.50 - 4.00	0.70	2.50 - 3.00		
		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
		Date Sampled	27/08/2015	27/08/2015	27/08/2015	27/08/2015		
		Sampled Time	00:00:00	.	.	.		
		Date Received	28/08/2015	28/08/2015	28/08/2015	28/08/2015		
		SDG Ref	150828-41	150828-41	150828-41	150828-41		
		Lab Sample No.(s)	11977605	11977606	11977603	11977604		
		AGS Reference						
Naphthalene-d8 % recovery**	%	TM218	97.2	92.6	104	92.3		
Acenaphthene-d10 % recovery**	%	TM218	98.5	92.1	104	91.4		
Phenanthrene-d10 % recovery**	%	TM218	99	89.7	104	89.4		
Chrysene-d12 % recovery**	%	TM218	93.5	79.4	94.8	80.1		
Perylene-d12 % recovery**	%	TM218	102	86.9	101	88.5		
Naphthalene	<9 µg/kg	TM218	56 M	<9 M	69.9 M	<9 M		
Acenaphthylene	<12 µg/kg	TM218	83 M	<12 M	84.3 M	<12 M		
Acenaphthene	<8 µg/kg	TM218	41.8 M	<8 M	11.5 M	<8 M		
Fluorene	<10 µg/kg	TM218	48.2 M	<10 M	<10 M	<10 M		
Phenanthrene	<15 µg/kg	TM218	1190 M	<15 M	307 M	<15 M		
Anthracene	<16 µg/kg	TM218	317 M	<16 M	107 M	<16 M		
Fluoranthene	<17 µg/kg	TM218	2500 M	<17 M	967 M	<17 M		
Pyrene	<15 µg/kg	TM218	2090 M	<15 M	971 M	<15 M		
Benz(a)anthracene	<14 µg/kg	TM218	1320 M	<14 M	630 M	<14 M		
Chrysene	<10 µg/kg	TM218	1060 M	<10 M	684 M	<10 M		
Benzo(b)fluoranthene	<15 µg/kg	TM218	1700 M	<15 M	1930 M	<15 M		
Benzo(k)fluoranthene	<14 µg/kg	TM218	609 M	<14 M	724 M	<14 M		
Benzo(a)pyrene	<15 µg/kg	TM218	1470 M	<15 M	1050 M	<15 M		
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	787 M	<18 M	975 M	<18 M		
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	216 M	<23 M	269 M	<23 M		
Benzo(g,h,i)perylene	<24 µg/kg	TM218	967 M	<24 M	1160 M	<24 M		
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	14500	<118	9950	<118		

SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	BH4A	BH4A	BH7A	BH7A		
Customer Sample R			BH4A	BH4A	BH7A	BH7A		
Depth (m)			0.90	3.50 - 4.00	0.70	2.50 - 3.00		
Sample Type			Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
Date Sampled			27/08/2015	27/08/2015	27/08/2015	27/08/2015		
Sampled Time			00:00:00	.	.	.		
Date Received			28/08/2015	28/08/2015	28/08/2015	28/08/2015		
SDG Ref			150828-41	150828-41	150828-41	150828-41		
Lab Sample No.(s)			11977605	11977606	11977603	11977604		
AGS Reference								
GRO Surrogate % recovery**	%	TM089	74	117	28	129		
GRO TOT (Moisture Corrected)	<44 µg/kg	TM089	<44 M	<44 M	<44 M	<44 M		
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5 M	<5 M	<5 M	<5 M		
Benzene	<10 µg/kg	TM089	<10 M	<10 M	<10 M	<10 M		
Toluene	<2 µg/kg	TM089	<2 M	<2 M	<2 M	<2 M		
Ethylbenzene	<3 µg/kg	TM089	<3 M	<3 M	<3 M	<3 M		
m,p-Xylene	<6 µg/kg	TM089	<6 M	<6 M	<6 M	<6 M		
o-Xylene	<3 µg/kg	TM089	<3 M	<3 M	<3 M	<3 M		
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	<9	<9	<9		
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	<24	<24	<24		
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10	<10	<10		
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10	<10	<10		
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10	<10	<10		
Aliphatics >C10-C12	<10 µg/kg	TM089	<10	<10	<10	<10		
Aliphatics >C12-C16	<100 µg/kg	TM173	<100	<100	<100	<100		
Aliphatics >C16-C21	<100 µg/kg	TM173	1680	<100	<100	<100		
Aliphatics >C21-C35	<100 µg/kg	TM173	54500	<100	21900	<100		
Aliphatics >C35-C44	<100 µg/kg	TM173	32400	<100	5130	<100		
Total Aliphatics >C12-C44	<100 µg/kg	TM173	88500	<100	27000	<100		
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10	<10		
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10	<10		
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10	<10	<10		
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10	<10	<10	<10		
Aromatics >EC12-EC16	<100 µg/kg	TM173	1610	<100	1920	<100		
Aromatics >EC16-EC21	<100 µg/kg	TM173	17100	<100	8470	<100		
Aromatics >EC21-EC35	<100 µg/kg	TM173	74700	<100	70000	<100		
Aromatics >EC35-EC44	<100 µg/kg	TM173	37300	<100	28500	<100		
Aromatics >EC40-EC44	<100 µg/kg	TM173	14200	<100	10500	<100		
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	131000	<100	109000	<100		
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	219000	<100	136000	<100		

SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&+§@	Sample deviation (see appendix)

Customer Sample R	BH4A	BH4A	BH7A	BH7A		
Depth (m)	0.90	3.50 - 4.00	0.70	2.50 - 3.00		
Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
Date Sampled	27/08/2015	27/08/2015	27/08/2015	27/08/2015		
Sampled Time	00:00:00	.	.	.		
Date Received	28/08/2015	28/08/2015	28/08/2015	28/08/2015		
SDG Ref	150828-41	150828-41	150828-41	150828-41		
Lab Sample No.(s)	11977605	11977606	11977603	11977604		
AGS Reference						

Component	LOD/Units	Method	BH4A 0.90	BH4A 3.50 - 4.00	BH7A 0.70	BH7A 2.50 - 3.00		
Dibromofluoromethane**	%	TM116	120	103	112	124		
Toluene-d8**	%	TM116	98.1	103	99.5	110		
4-Bromofluorobenzene**	%	TM116	69.9	94.2	74.1	106		
Dichlorodifluoromethane	<6 µg/kg	TM116	<6 M	<6 M	<60 M	<6 M		
Chloromethane	<7 µg/kg	TM116	<7 #	<7 #	<70 #	<7 #		
Vinyl Chloride	<6 µg/kg	TM116	<6 M	<6 M	<60 M	<6 M		
Bromomethane	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
Chloroethane	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
Trichlorofluorormethane	<6 µg/kg	TM116	<6 M	<6 M	<60 M	<6 M		
1,1-Dichloroethene	<10 µg/kg	TM116	<10 #	<10 #	<100 #	<10 #		
Carbon Disulphide	<7 µg/kg	TM116	<7 M	<7 M	<70 M	<7 M		
Dichloromethane	<10 µg/kg	TM116	<10 #	<10 #	<100 #	<10 #		
Methyl Tertiary Butyl Ether	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
trans-1,2-Dichloroethene	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
1,1-Dichloroethane	<8 µg/kg	TM116	<8 M	<8 M	<80 M	<8 M		
cis-1,2-Dichloroethene	<6 µg/kg	TM116	<6 M	<6 M	<60 M	<6 M		
2,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
Bromochloromethane	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
Chloroform	<8 µg/kg	TM116	<8 M	<8 M	<80 M	<8 M		
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7 M	<7 M	<70 M	<7 M		
1,1-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
Carbontetrachloride	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
1,2-Dichloroethane	<5 µg/kg	TM116	<5 M	<5 M	<50 M	<5 M		
Benzene	<9 µg/kg	TM116	<9 M	<9 M	<90 M	<9 M		
Trichloroethene	<9 µg/kg	TM116	<9 #	<9 #	<90 #	<9 #		
1,2-Dichloropropane	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
Dibromomethane	<9 µg/kg	TM116	<9 M	<9 M	<90 M	<9 M		
Bromodichloromethane	<7 µg/kg	TM116	<7 M	<7 M	<70 M	<7 M		
cis-1,3-Dichloropropene	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
Toluene	<7 µg/kg	TM116	<7 M	<7 M	<70 M	<7 M		
trans-1,3-Dichloropropene	<10 µg/kg	TM116	<10	<10	<100	<10		
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		

SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

		Customer Sample R	BH4A	BH4A	BH7A	BH7A		
		Depth (m)	0.90	3.50 - 4.00	0.70	2.50 - 3.00		
		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
		Date Sampled	27/08/2015	27/08/2015	27/08/2015	27/08/2015		
		Sampled Time	00:00:00	.	.	.		
		Date Received	28/08/2015	28/08/2015	28/08/2015	28/08/2015		
		SDG Ref	150828-41	150828-41	150828-41	150828-41		
		Lab Sample No.(s)	11977605	11977606	11977603	11977604		
		AGS Reference						
Component	**LOD/Units**	**Method**						
1,3-Dichloropropane	<7 µg/kg	TM116	<7 M	<7 M	<70 M	<7 M		
Tetrachloroethene	<5 µg/kg	TM116	<5 M	<5 M	<50 M	<5 M		
Dibromochloromethane	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
1,2-Dibromoethane	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
Chlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<50 M	95.5 M		
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
Ethylbenzene	<4 µg/kg	TM116	<4 M	<4 M	<40 M	<4 M		
p/m-Xylene	<10 µg/kg	TM116	<10 #	<10 #	<100 #	<10 #		
o-Xylene	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
Styrene	<10 µg/kg	TM116	<10 #	<10 #	<100 #	<10 #		
Bromoform	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
Isopropylbenzene	<5 µg/kg	TM116	<5 #	<5 #	<50 #	<5 #		
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
1,2,3-Trichloropropane	<16 µg/kg	TM116	<16 M	<16 M	<160 M	<16 M		
Bromobenzene	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
Propylbenzene	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
2-Chlorotoluene	<9 µg/kg	TM116	<9 M	<9 M	<90 M	<9 M		
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<8 M	<8 M	<80 M	<8 M		
4-Chlorotoluene	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
tert-Butylbenzene	<14 µg/kg	TM116	<14 M	<14 M	<140 M	<14 M		
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<9 #	<9 #	<90 #	<9 #		
sec-Butylbenzene	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
4-Isopropyltoluene	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
1,3-Dichlorobenzene	<8 µg/kg	TM116	<8 M	<8 M	<80 M	<8 M		
1,4-Dichlorobenzene	<5 µg/kg	TM116	<5 M	<5 M	<50 M	<5 M		
n-Butylbenzene	<11 µg/kg	TM116	<11	<11	<110	<11		
1,2-Dichlorobenzene	<10 µg/kg	TM116	<10 M	<10 M	<100 M	<10 M		
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<14 M	<14 M	<140 M	<14 M		
Tert-amyl methyl ether	<10 µg/kg	TM116	<10 #	<10 #	<100 #	<10 #		
1,2,4-Trichlorobenzene	<20 µg/kg	TM116	<20	<20	<200	<20		
Hexachlorobutadiene	<20 µg/kg	TM116	<20	<20	<200	<20		
Naphthalene	<13 µg/kg	TM116	<13 M	<13 M	<130 M	<13 M		

SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted test.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-5&♦§@	Sample deviation (see appendix)

Component	LOD/Units	Method	BH4A	BH4A	BH7A	BH7A		
		Customer Sample R	BH4A	BH4A	BH7A	BH7A		
		Depth (m)	0.90	3.50 - 4.00	0.70	2.50 - 3.00		
		Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
		Date Sampled	27/08/2015	27/08/2015	27/08/2015	27/08/2015		
		Sampled Time	00:00:00	.	.	.		
		Date Received	28/08/2015	28/08/2015	28/08/2015	28/08/2015		
		SDG Ref	150828-41	150828-41	150828-41	150828-41		
		Lab Sample No.(s)	11977605	11977606	11977603	11977604		
		AGS Reference						
1,2,3-Trichlorobenzene	<20 µg/kg	TM116	<20 #	<20 #	<200 #	<20 #		

SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH4A 0.90 SOLID 27/08/2015 00:00:00 28/08/2015 18:57:49 150828-41 11977605 TM048	3/9/15	Rebecca Rawlings	Loose fibres in soil	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH7A 0.70 SOLID 27/08/2015 00:00:00 28/08/2015 19:05:13 150828-41 11977603 TM048	4/9/15	Kevin Hughes	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM 304				
TM024	Method 4500A & B, AWWA/APHA, 20th Ed., 1999	Determination of Exchangeable Ammonium and Ammoniacal Nitrogen as N by titration on solids		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM151	Method 3500D, AWWA/APHA, 20th Ed., 1999	Determination of Hexavalent Chromium using Kone analyser		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM180	Sulphide in waters and waste waters 1991 ISBN 01 175 7186 SCA rec. 2007 (unpublished)'	The Determination Of Easily Liberated Sulphide In Soil Samples by Ion Selective Electrode Technique		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM221	Inductively Coupled Plasma - Atomic Emission Spectroscopy. An Atlas of Spectral Information: Winge, Fassel, Peterson and Floyd	Determination of Acid extractable Sulphate in Soils by IRIS Emission Spectrometer		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	11977605	11977606	11977603	11977604
Customer Sample Ref.	BH4A	BH4A	BH7A	BH7A
AGS Ref.				
Depth	0.90	3.50 - 4.00	0.70	2.50 - 3.00
Type	SOLID	SOLID	SOLID	SOLID
Ammonium Soil by Titration	09-Sep-2015	08-Sep-2015	08-Sep-2015	08-Sep-2015
Asbestos ID in Solid Samples	04-Sep-2015		04-Sep-2015	
Easily Liberated Sulphide	08-Sep-2015	08-Sep-2015	08-Sep-2015	08-Sep-2015
EPH CWG (Aliphatic) GC (S)	04-Sep-2015	03-Sep-2015	04-Sep-2015	03-Sep-2015
EPH CWG (Aromatic) GC (S)	04-Sep-2015	03-Sep-2015	04-Sep-2015	03-Sep-2015
GRO by GC-FID (S)	04-Sep-2015	04-Sep-2015	03-Sep-2015	04-Sep-2015
Hexavalent Chromium (s)	07-Sep-2015	07-Sep-2015	07-Sep-2015	07-Sep-2015
Metals in solid samples by OES	04-Sep-2015	04-Sep-2015	04-Sep-2015	04-Sep-2015
PAH by GCMS	03-Sep-2015	03-Sep-2015	03-Sep-2015	03-Sep-2015
pH	08-Sep-2015	08-Sep-2015	08-Sep-2015	08-Sep-2015
Sample description	28-Aug-2015	29-Aug-2015	28-Aug-2015	29-Aug-2015
Total Organic Carbon	07-Sep-2015	03-Sep-2015	07-Sep-2015	03-Sep-2015
Total Sulphate	04-Sep-2015	07-Sep-2015	04-Sep-2015	07-Sep-2015
TPH CWG GC (S)	04-Sep-2015	04-Sep-2015	04-Sep-2015	04-Sep-2015
VOC MS (S)	02-Sep-2015	02-Sep-2015	03-Sep-2015	03-Sep-2015

ASSOCIATED AQC DATA

Ammonium Soil by Titration

Component	Method Code	QC 1292	QC 1205
Exchangeable Ammonium as NH4	TM024	**86.07** 79.30 : 104.61	**98.01** 79.30 : 104.61

Easily Liberated Sulphide

Component	Method Code	QC 1219	QC 1231
Easily Liberated Sulphide	TM180	**93.21** 49.14 : 123.89	**94.71** 49.14 : 123.89

EPH CWG (Aliphatic) GC (S)

Component	Method Code	QC 1182	QC 1194
Total Aliphatics >C12-C35	TM173	**85.21** 62.50 : 112.50	**87.08** 70.80 : 111.51

EPH CWG (Aromatic) GC (S)

Component	Method Code	QC 1182	QC 1194
Total Aromatics >EC12-EC35	TM173	**82.67** 60.62 : 126.95	**82.67** 65.21 : 121.32

GRO by GC-FID (S)

Component	Method Code	QC 1173	QC 1290
Benzene by GC (Moisture Corrected)	TM089	**95.0** 76.33 : 121.87	**100.0** 76.23 : 120.71
Ethylbenzene by GC (Moisture Corrected)	TM089	**99.0** 75.73 : 123.83	**100.5** 73.32 : 122.02
m & p Xylene by GC (Moisture Corrected)	TM089	**97.5** 75.52 : 120.32	**100.75** 72.90 : 122.64
MTBE GC-FID (Moisture Corrected)	TM089	**94.0** 77.89 : 119.70	**101.0** 72.17 : 124.81
o Xylene by GC (Moisture Corrected)	TM089	**93.5** 74.15 : 124.59	**100.5** 71.65 : 124.40
QC	TM089	**99.2** 62.31 : 122.61	**105.5** 55.00 : 145.00
Toluene by GC (Moisture Corrected)	TM089	**93.5** 77.91 : 122.33	**100.5** 74.60 : 120.38

SDG: 150828-41
Job: H_URS_WIM-273
Client Reference:
Location: Stag Brewery
Customer: AECOM
Attention: Gary Marshall
Order Number:
Report Number: 329009
Superseded Report:

Hexavalent Chromium (s)

Component	Method Code	QC 1285
Hexavalent Chromium	TM151	**102.0** 92.20 : 106.60

Metals in solid samples by OES

Component	Method Code	QC 1206	QC 1292
Aluminium	TM181	**99.23** 86.49 : 129.71	**108.46** 86.49 : 129.71
Antimony	TM181	**94.27** 77.50 : 122.50	**95.34** 77.50 : 122.50
Arsenic	TM181	**92.92** 82.63 : 117.37	**92.92** 82.63 : 117.37
Barium	TM181	**96.24** 79.45 : 120.55	**99.25** 79.45 : 120.55
Beryllium	TM181	**98.91** 85.92 : 121.27	**100.31** 85.92 : 121.27
Boron	TM181	**105.34** 77.41 : 143.83	**109.92** 77.41 : 143.83
Cadmium	TM181	**95.8** 81.95 : 118.05	**95.63** 81.95 : 118.05
Chromium	TM181	**93.33** 81.29 : 118.71	**96.47** 81.29 : 118.71
Cobalt	TM181	**95.83** 83.86 : 116.14	**96.67** 83.86 : 116.14
Copper	TM181	**97.7** 78.57 : 121.43	**98.51** 78.57 : 121.43
Iron	TM181	**95.86** 87.50 : 122.82	**101.38** 87.50 : 122.82
Lead	TM181	**93.7** 74.18 : 117.25	**92.91** 74.18 : 117.25
Manganese	TM181	**100.0** 82.91 : 117.09	**100.0** 82.91 : 117.09
Mercury	TM181	**94.3** 81.99 : 118.01	**93.47** 81.99 : 118.01
Molybdenum	TM181	**92.2** 81.45 : 118.55	**92.36** 81.45 : 118.55
Nickel	TM181	**95.93** 79.64 : 120.36	**97.67** 79.64 : 120.36
Phosphorus	TM181	**97.76** 81.03 : 118.97	**97.32** 81.03 : 118.97
Selenium	TM181	**105.3** 87.05 : 121.93	**105.47** 87.05 : 121.93
Strontium	TM181	**98.08** 83.64 : 116.36	**98.47** 83.64 : 116.36
Thallium	TM181	**87.56** 77.50 : 122.50	**91.38** 77.50 : 122.50
Tin	TM181	**92.03** 78.30 : 113.98	**92.69** 78.30 : 113.98
Titanium	TM181	**103.91** 71.02 : 128.98	**103.13** 71.02 : 128.98

Metals in solid samples by OES

		QC 1206	QC 1292
Vanadium	TM181	**93.53** 86.61 : 113.39	**95.0** 86.61 : 113.39
Zinc	TM181	**97.73** 89.82 : 114.54	**98.05** 89.82 : 114.54

PAH by GCMS

Component	Method Code	QC 1122	QC 1106
Acenaphthene	TM218	**88.5** 78.75 : 116.25	**91.5** 78.84 : 114.36
Acenaphthylene	TM218	**85.0** 76.45 : 110.05	**85.5** 65.50 : 119.50
Anthracene	TM218	**87.5** 67.15 : 124.45	**91.0** 75.54 : 110.88
Benz(a)anthracene	TM218	**95.5** 82.00 : 127.00	**97.5** 78.02 : 127.38
Benzo(a)pyrene	TM218	**97.5** 75.60 : 124.20	**99.5** 79.21 : 128.01
Benzo(b)fluoranthene	TM218	**97.5** 81.20 : 121.77	**96.0** 86.21 : 131.42
Benzo(ghi)perylene	TM218	**96.5** 77.49 : 119.12	**95.0** 80.11 : 120.52
Benzo(k)fluoranthene	TM218	**94.5** 83.50 : 116.50	**97.0** 78.77 : 120.72
Chrysene	TM218	**93.0** 78.35 : 114.42	**94.5** 78.77 : 118.99
Dibenzo(ah)anthracene	TM218	**94.0** 77.15 : 122.45	**93.5** 76.39 : 122.63
Fluoranthene	TM218	**91.0** 79.08 : 114.40	**95.0** 77.25 : 117.75
Fluorene	TM218	**90.5** 79.03 : 113.38	**95.5** 79.28 : 117.35
Indeno(123cd)pyrene	TM218	**96.0** 75.65 : 125.15	**93.0** 78.87 : 122.50
Naphthalene	TM218	**92.0** 77.25 : 112.60	**93.0** 74.75 : 118.25
Phenanthrene	TM218	**90.5** 78.25 : 115.44	**95.0** 78.61 : 113.98
Pyrene	TM218	**90.0** 78.07 : 114.06	**94.0** 76.15 : 115.26

pH

Component	Method Code	QC 1218	QC 1227
pH	TM133	**100.25** 97.19 : 102.81	**100.5** 97.19 : 102.81

Total Organic Carbon

SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Total Organic Carbon

Component	Method Code	QC 1254	QC 1297
Total Organic Carbon	TM132	**100.46** 88.82 : 111.18	**97.72** 89.40 : 103.09

Total Sulphate

Component	Method Code	QC 1235	QC 1273
Total Sulphate	TM221	**102.27** 78.49 : 121.51	**103.79** 78.49 : 121.51

VOC MS (S)

Component	Method Code	QC 1128	QC 1175	QC 1164
1,1,1,2-tetrachloroethane	TM116	**95.6** 83.24 : 124.28	**102.6** 83.24 : 124.28	**105.6** 76.60 : 121.00
1,1,1-Trichloroethane	TM116	**100.8** 81.77 : 121.07	**102.4** 81.77 : 121.07	**101.0** 77.80 : 123.40
1,1,2-Trichloroethane	TM116	**100.4** 79.24 : 112.23	**94.2** 79.24 : 112.23	**92.6** 75.40 : 119.80
1,1-Dichloroethane	TM116	**103.0** 72.58 : 116.06	**106.6** 72.58 : 116.06	**106.8** 80.84 : 124.49
1,2-Dichloroethane	TM116	**118.8** 77.50 : 122.50	**112.0** 77.50 : 122.50	**108.2** 91.00 : 135.67
1,4-Dichlorobenzene	TM116	**96.2** 73.23 : 116.39	**95.4** 73.23 : 116.39	**102.4** 80.88 : 114.60
2-Chlorotoluene	TM116	**85.6** 69.22 : 110.64	**86.6** 69.22 : 110.64	**97.2** 74.00 : 117.20
4-Chlorotoluene	TM116	**89.0** 68.57 : 106.26	**87.4** 68.57 : 106.26	**93.4** 71.20 : 113.20
Benzene	TM116	**103.2** 84.33 : 124.27	**106.0** 84.33 : 124.27	**99.6** 79.60 : 125.20
Carbon Disulphide	TM116	**110.4** 77.20 : 122.80	**107.4** 77.20 : 122.80	**101.4** 74.91 : 122.14
Carbontetrachloride	TM116	**98.2** 84.20 : 119.90	**102.8** 84.20 : 119.90	**101.0** 76.80 : 121.20
Chlorobenzene	TM116	**102.4** 85.28 : 129.96	**103.2** 85.28 : 129.96	**102.4** 83.47 : 116.82
Chloroform	TM116	**108.2** 82.73 : 119.72	**106.6** 82.73 : 119.72	**107.0** 82.00 : 128.80
Chloromethane	TM116	**123.4** 55.16 : 145.46	**117.2** 55.16 : 145.46	**129.8** 74.62 : 135.86
Cis-1,2-Dichloroethene	TM116	**108.4** 73.56 : 118.93	**108.4** 73.56 : 118.93	**109.8** 81.20 : 128.00
Dibromomethane	TM116	**104.4** 73.40 : 116.60	**98.0** 73.40 : 116.60	**90.8** 73.40 : 116.60
Dichloromethane	TM116	**113.2** 76.16 : 121.98	**108.2** 76.16 : 121.98	**109.2** 86.60 : 137.00

SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

VOC MS (S)

		QC 1128	QC 1175	QC 1164
Ethylbenzene	TM116	**94.0** 80.07 : 125.98	**99.2** 80.07 : 125.98	**95.4** 73.60 : 115.60
Hexachlorobutadiene	TM116	**69.0** 30.92 : 132.28	**89.2** 30.92 : 132.28	**70.2** 33.65 : 130.56
Isopropylbenzene	TM116	**82.6** 69.27 : 125.32	**92.6** 69.27 : 125.32	**93.4** 72.52 : 117.52
Naphthalene	TM116	**110.0** 79.15 : 121.98	**107.4** 79.15 : 121.98	**104.4** 83.23 : 126.48
o-Xylene	TM116	**77.6** 75.46 : 111.52	**84.8** 75.46 : 111.52	**93.4** 69.60 : 110.40
p/m-Xylene	TM116	**90.2** 76.97 : 121.75	**96.6** 76.97 : 121.75	**91.4** 71.30 : 112.70
Sec-Butylbenzene	TM116	**69.6** 49.27 : 129.90	**85.8** 49.27 : 129.90	**93.2** 59.20 : 125.20
Tetrachloroethene	TM116	**102.2** 87.96 : 133.65	**110.6** 87.96 : 133.65	**105.2** 85.92 : 127.92
Toluene	TM116	**99.0** 79.23 : 114.58	**100.6** 79.23 : 114.58	**89.6** 76.08 : 110.17
Trichloroethene	TM116	**94.6** 84.09 : 114.24	**98.4** 84.09 : 114.24	**98.6** 78.17 : 121.37
Trichlorofluoromethane	TM116	**107.4** 76.22 : 114.82	**104.4** 76.22 : 114.82	**109.6** 83.78 : 132.82
Vinyl Chloride	TM116	**98.2** 59.68 : 118.68	**100.8** 59.68 : 118.68	**104.0** 66.81 : 138.46

The above information details the reference name of the analytical quality control sample (AQC) that has been run with the samples contained in this report for the different methods of analysis.
The figure detailed is the percentage recovery result for the AQC.
The subscript numbers below are the percentage recovery lower control limit (LCL) and the upper control limit (UCL). The percentage recovery result for the AQC should be between these limits to be statistically in control.

PRELIMINARY/INTERIM REPORT

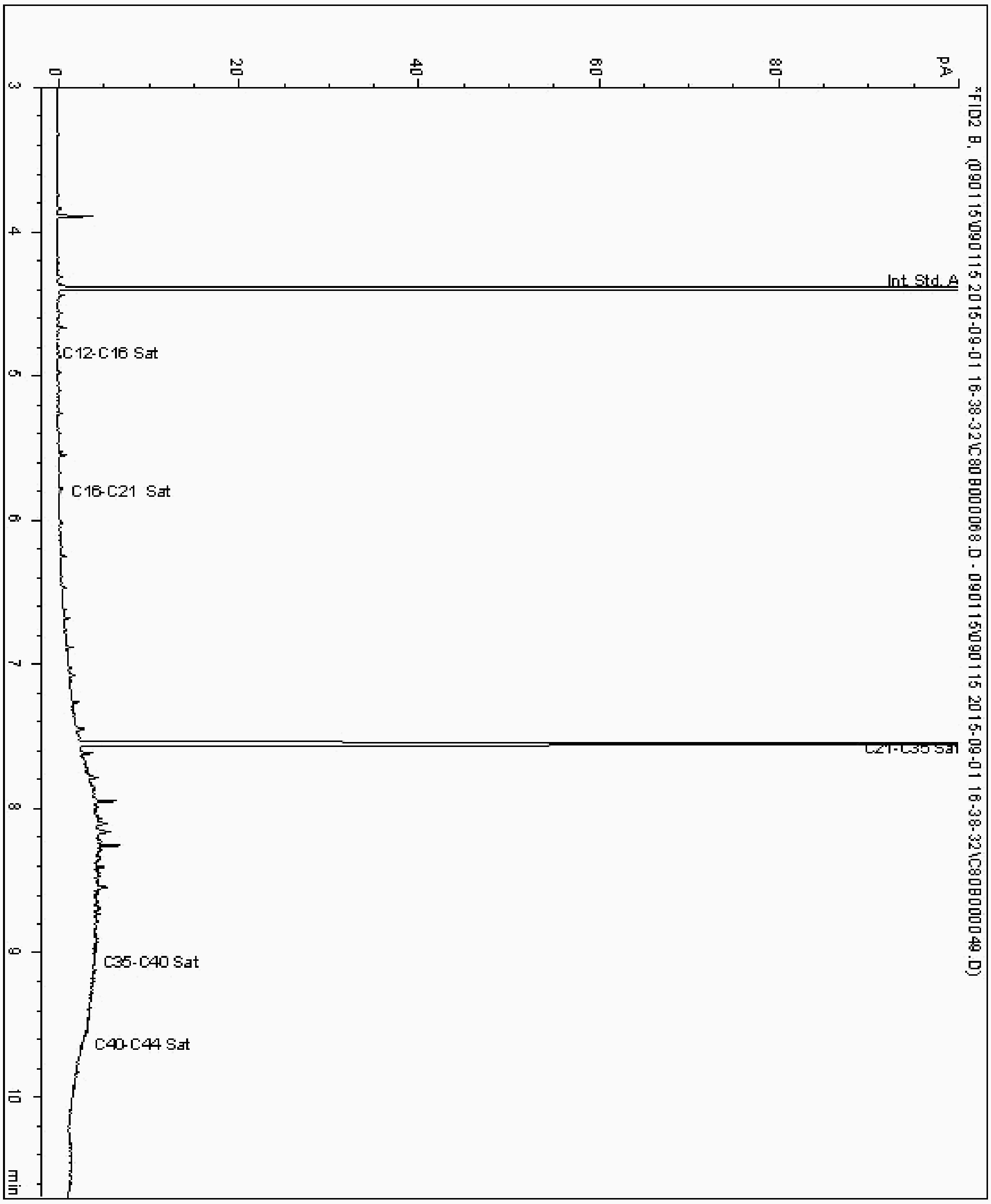
SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis:	EPH CWG (Aliphatic) GC (S)	**Sample No :**	11981792	**Depth :**	0.90
		Sample ID :	BH4A		

```
Alcontrol/Geochem Analytical Services
Speciated TPH - SATS ( C12 - C40 )

Sample Identity:  11364167-
Date Acquired  :  02/09/15 11:40:32
Units          :  ppb
Dilution       :
CF             :  1
Multiplier     :  0.990
```



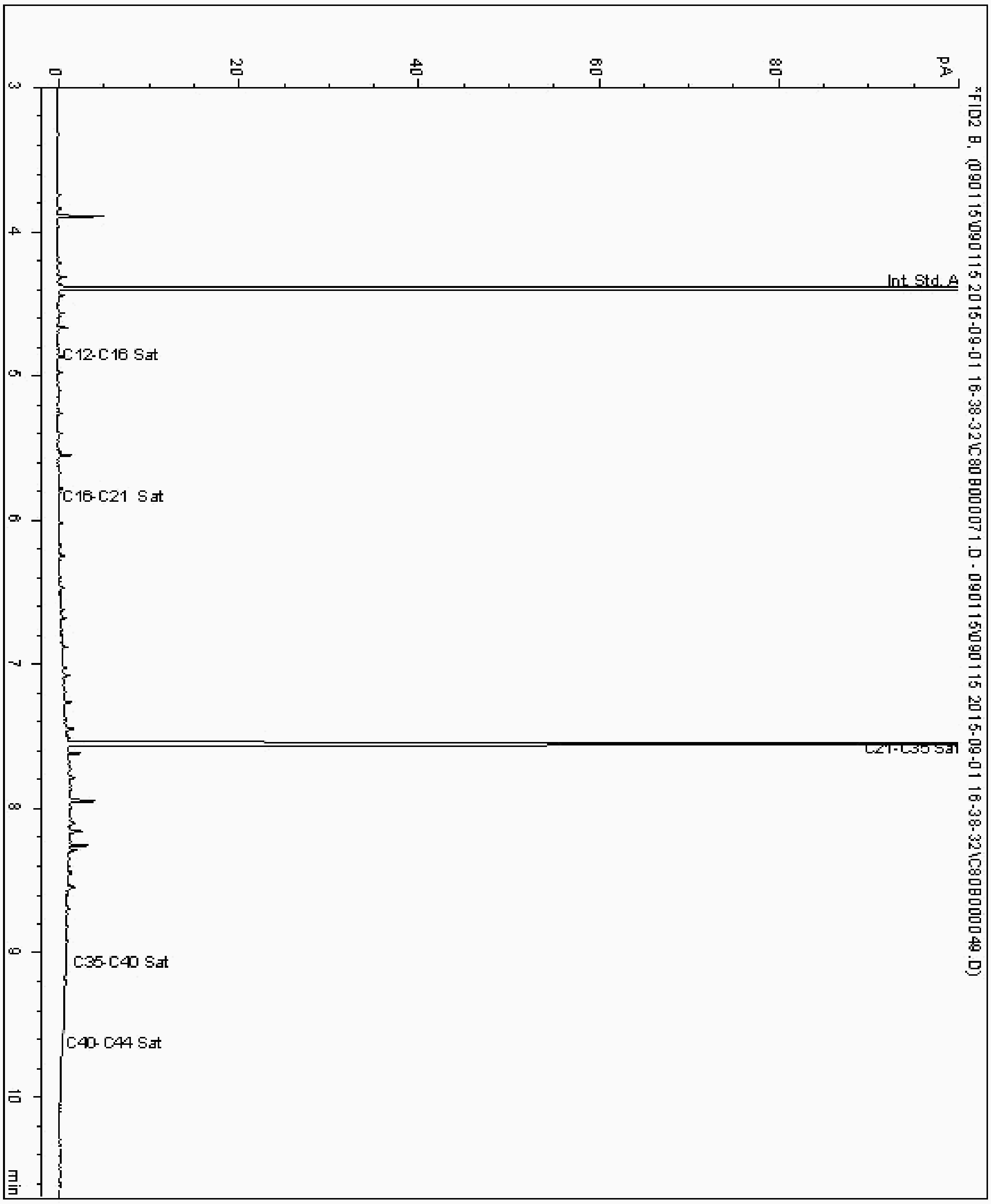
SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aliphatic) GC (S) **Sample No :** 11981802 **Depth :** 0.70
Sample ID : BH7A

```
Alcontrol/Geochem Analytical Services
Speciated TPH - SATS ( C12 - C40 )

Sample Identity: 11364144-
Date Acquired  :  02/09/15 12:32:00
Units          :  ppb
Dilution       :
CF             :  1
Multiplier     :  0.980
```



SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis:	EPH CWG (Aliphatic) GC (S)	**Sample No :**	11983540	**Depth :**	2.50 - 3.00
		Sample ID :	BH7A		

```
Alcontrol/Geochem Analytical Services
Speciated TPH - AROM ( C12 - C40 )

Sample Identity:  11364157-
Date Acquired  :  02/09/2015 09:01:53 PM
Units          :  ppb
Dilution:         BH7A[2.50 - 3.00]                ->
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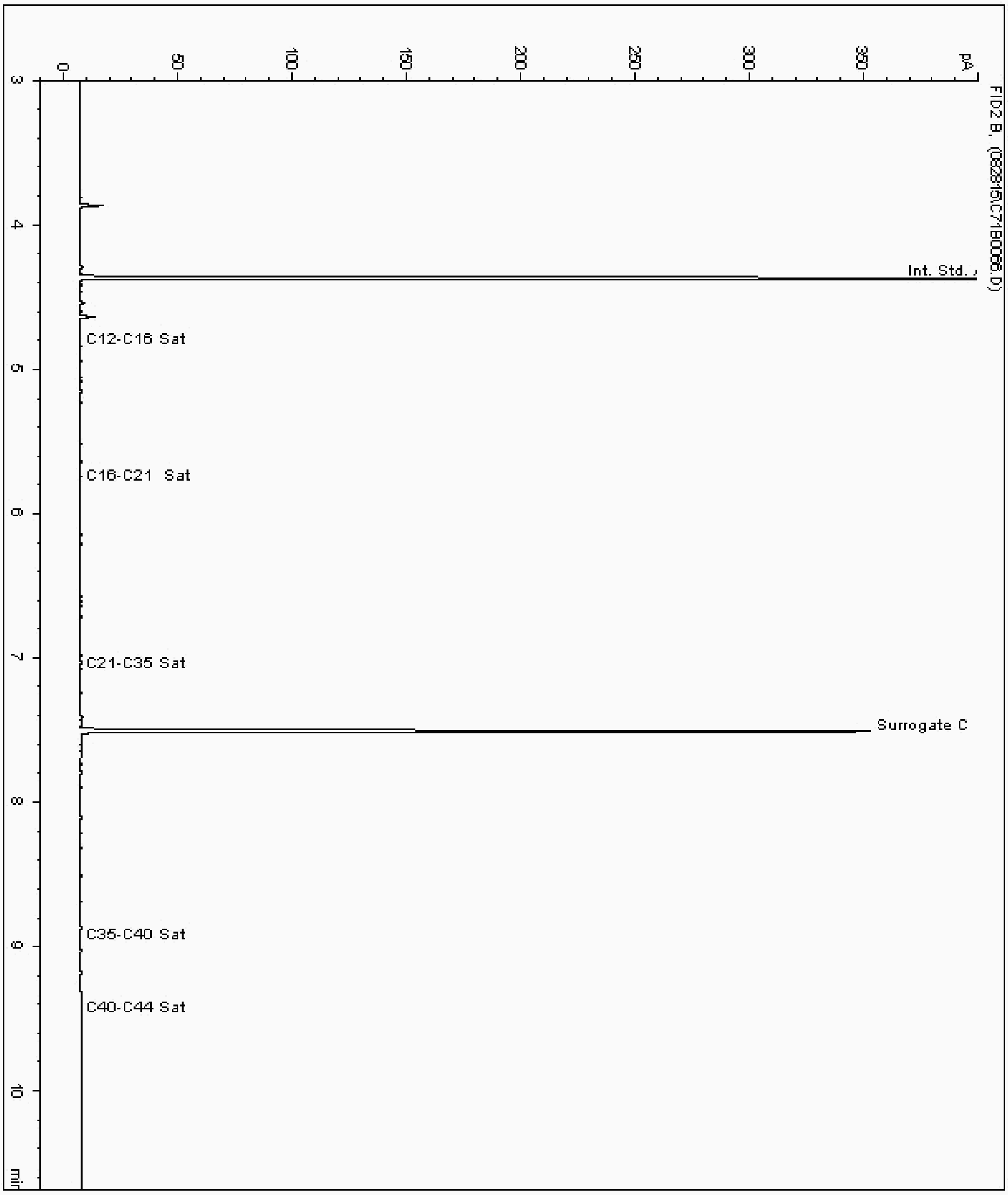


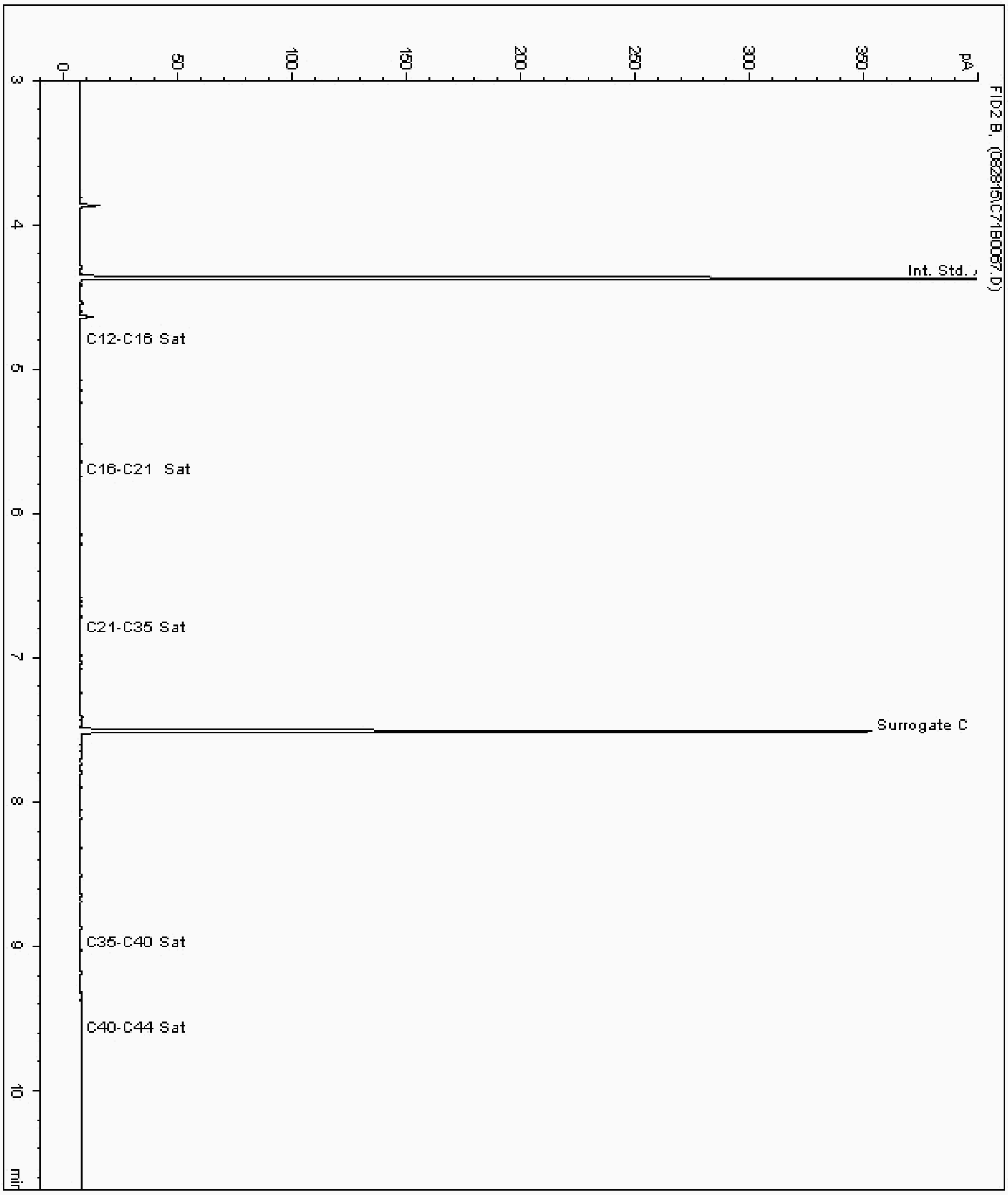
SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis:	EPH CWG (Aliphatic) GC (S)	**Sample No :**	11983599	**Depth :**	3.50 - 4.00
		Sample ID :	BH4A		

```
Alcontrol/Geochem Analytical Services
Speciated TPH - AROM ( C12 - C40 )

Sample Identity:  11364180-
Date Acquired  :  02/09/2015 09:21:45 PM
Units          :  ppb
Dilution:         BH4A[3.50 - 4.00]          ->
```



SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

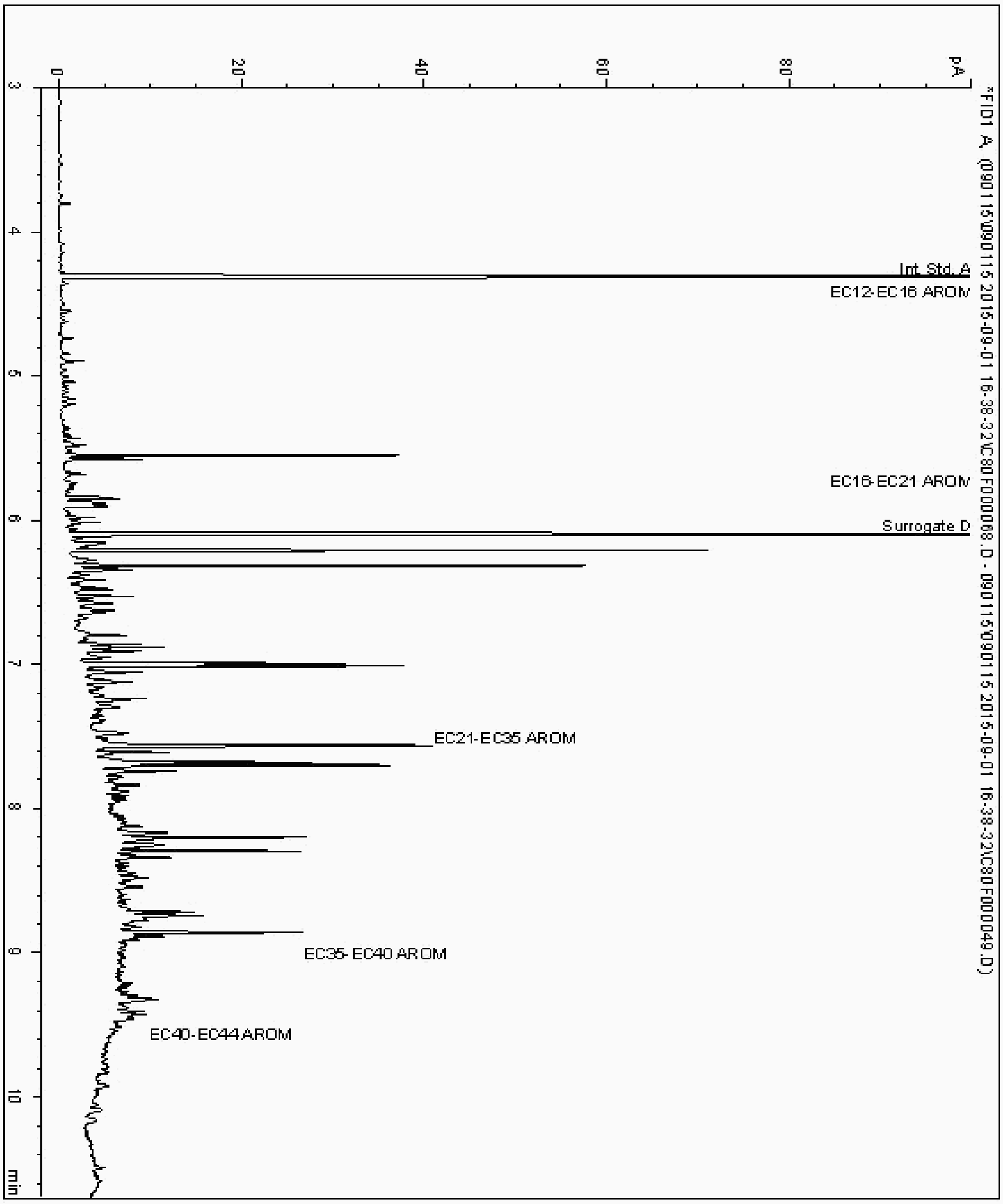
Analysis: EPH CWG (Aromatic) GC (S)

Sample No : 11981792
Sample ID : BH4A

Depth : 0.90

```
Alcontrol/Geochem Analytical Services
Speciated TPH - AROMS ( C12 - C44)

Sample Identity: 11364168-
Date Acquired  : 02/09/15 11:40:32
Units          : ppb
Dilution       :
CF             : 1
Multiplier     : 0.990
```



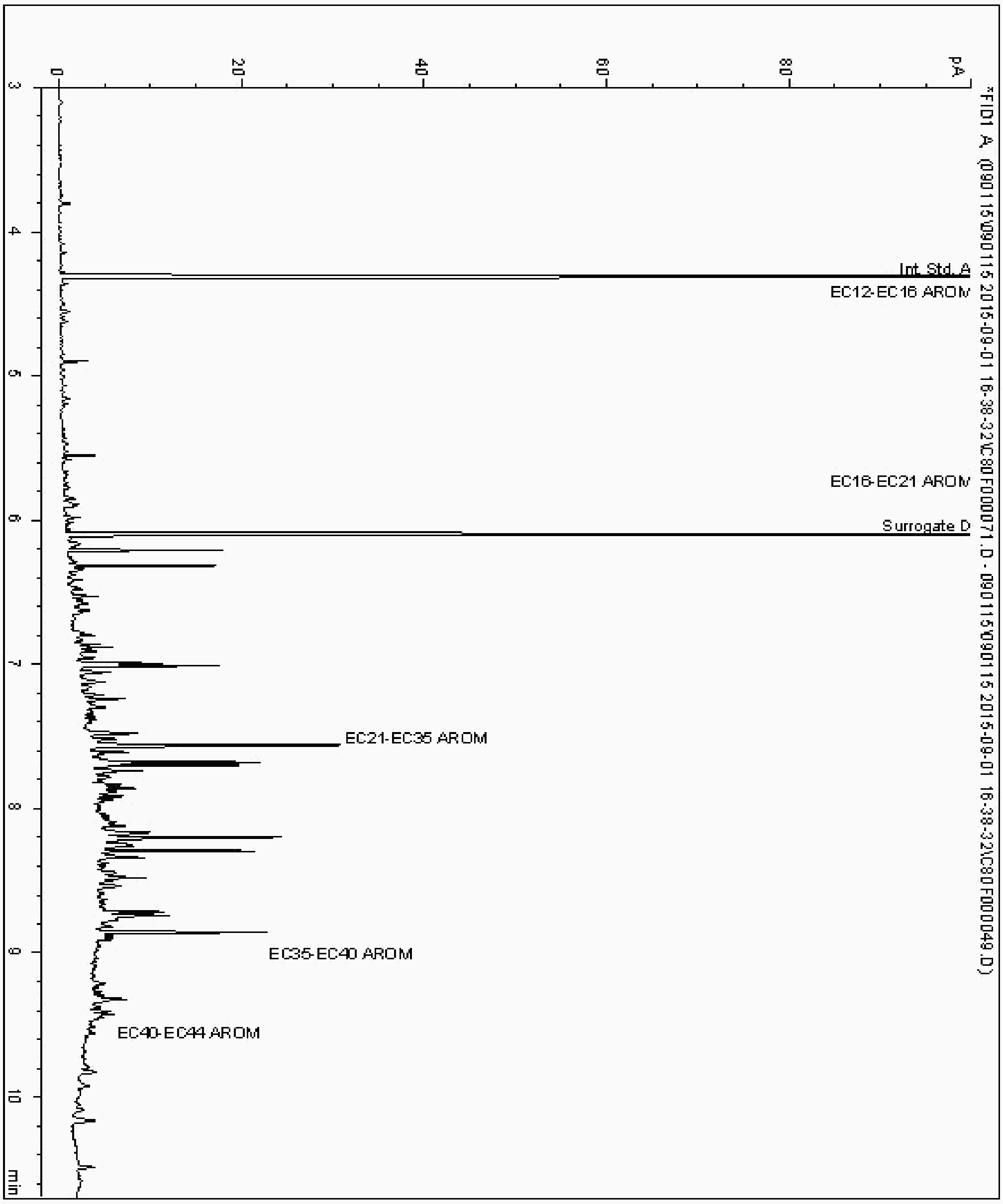
SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis: EPH CWG (Aromatic) GC (S) **Sample No :** 11981802 **Sample ID :** BH7A **Depth :** 0.70

Alcontrol/Geochem Analytical Services
Speciated TPH - AROMS (C12 - C44)

Sample Identity: 11364145-
Date Acquired : 02/09/15 12:32:00
Units : ppb
Dilution :
CF : 1
Multiplier : 0.980



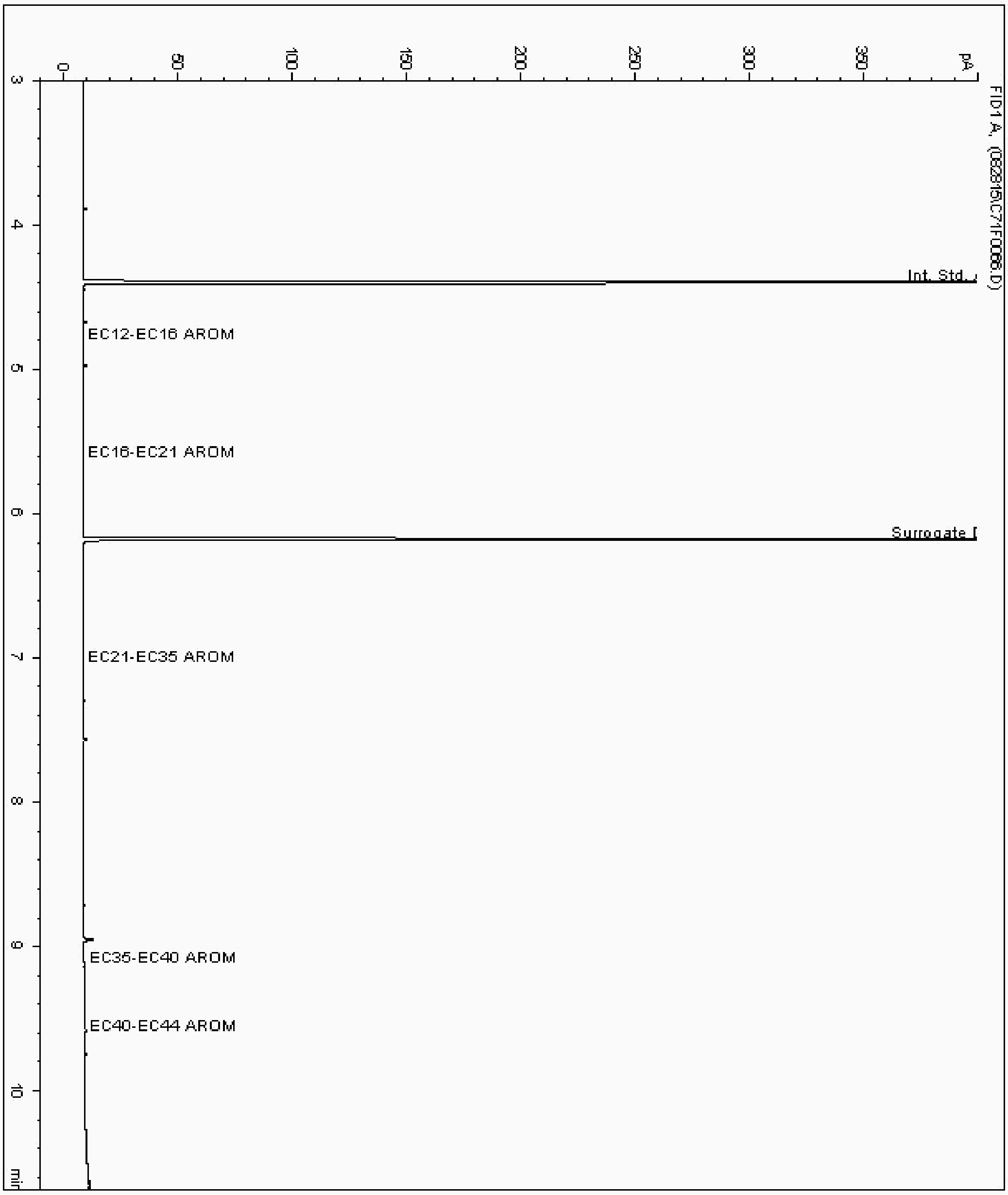
SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis:	EPH CWG (Aromatic) GC (S)	**Sample No :**	11983540	**Depth :**	2.50 - 3.00
		Sample ID :	BH7A		

```
Alcontrol/Geochem Analytical Services
Speciated TPH - AROM ( C12 - C40 )

Sample Identity:  11364158-
Date Acquired  :  02/09/2015 09:01:53 PM
Units          :  ppb
Dilution:         BH7A[2.50 - 3.00]              ->
```



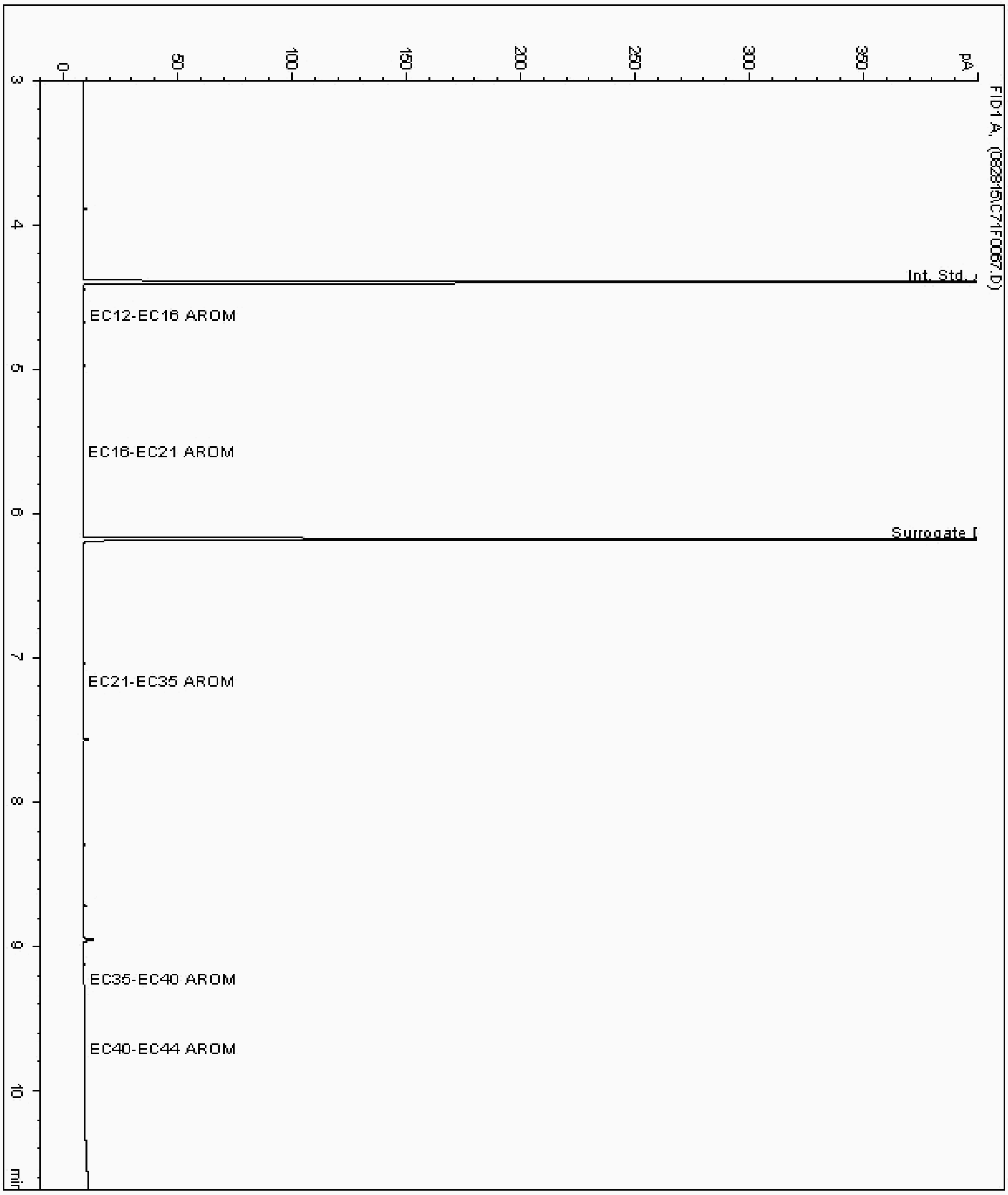
SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis:	EPH CWG (Aromatic) GC (S)	**Sample No :**	11983599	**Depth :**	3.50 - 4.00
		Sample ID :	BH4A		

```
Alcontrol/Geochem Analytical Services
Speciated TPH - AROM ( C12 - C40 )

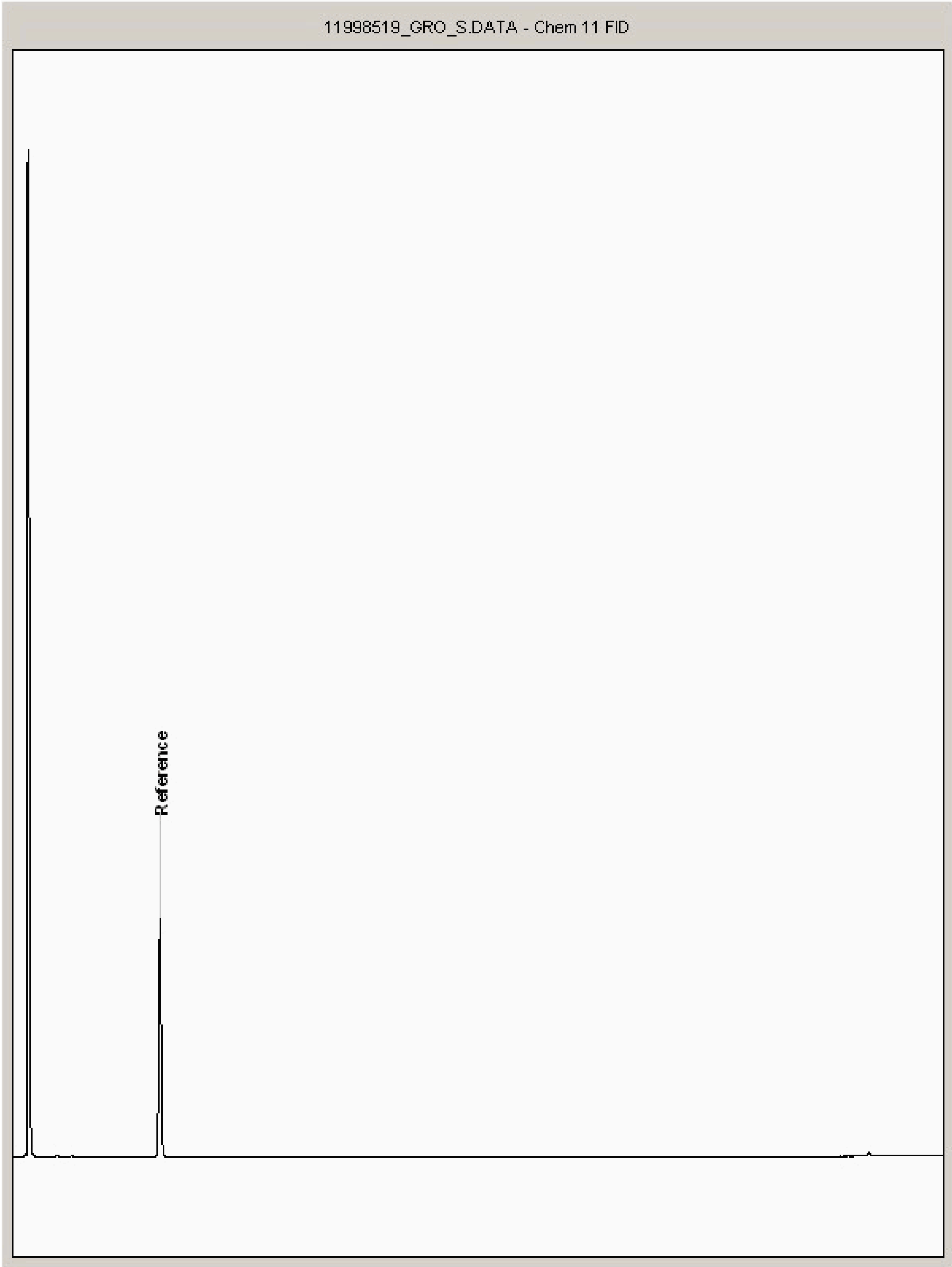
Sample Identity:    11364181-
Date Acquired   :   02/09/2015 09:21:45 PM
Units           :   ppb
Dilution:           BH4A[3.50 - 4.00]              ->
```



SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

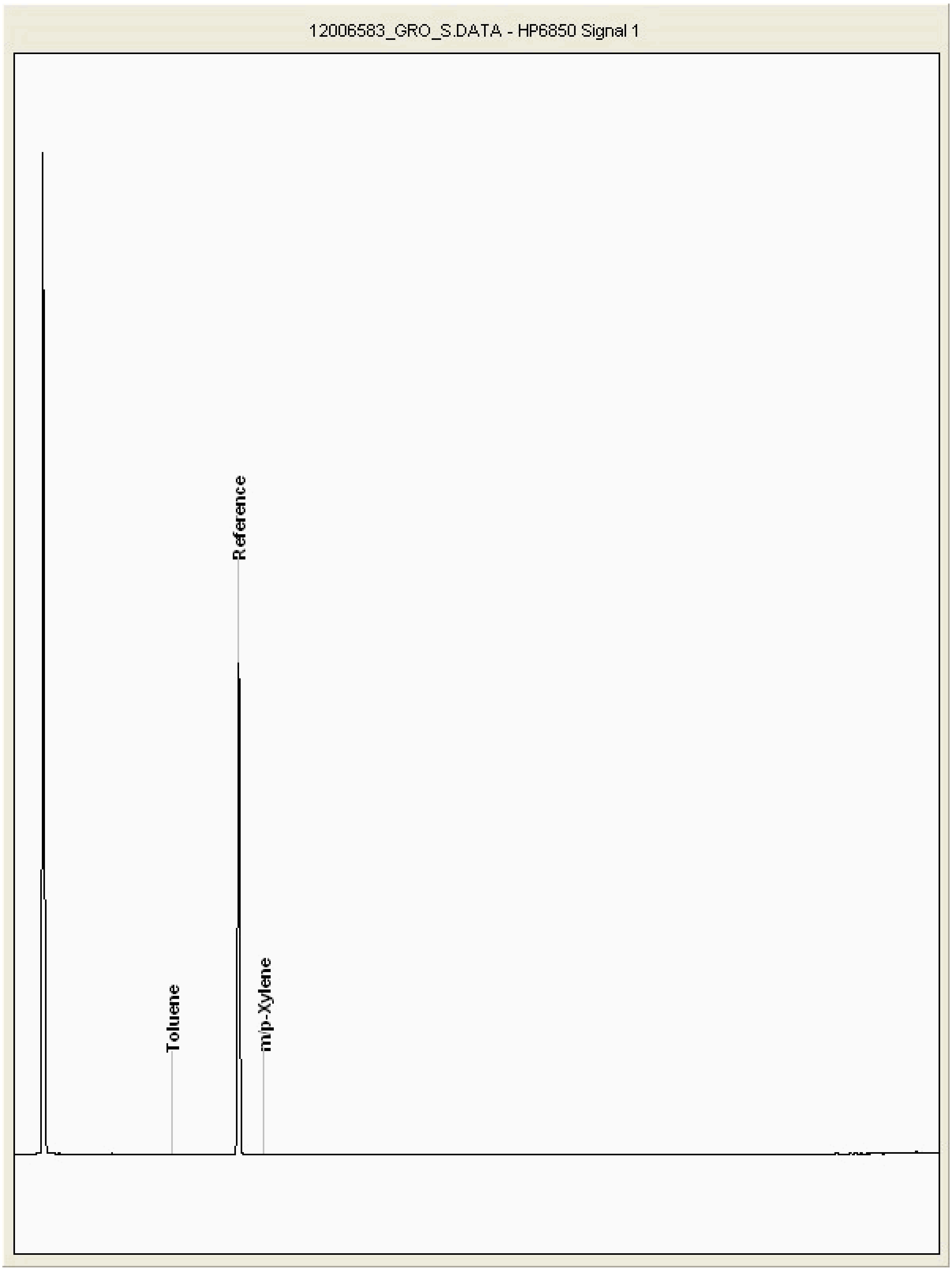
Analysis:	GRO by GC-FID (S)	**Sample No :**	11998519	**Depth :**	0.70
		Sample ID :	BH7A		



SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S) **Sample No :** 12006583 **Depth :** 0.90
Sample ID : BH4A



SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

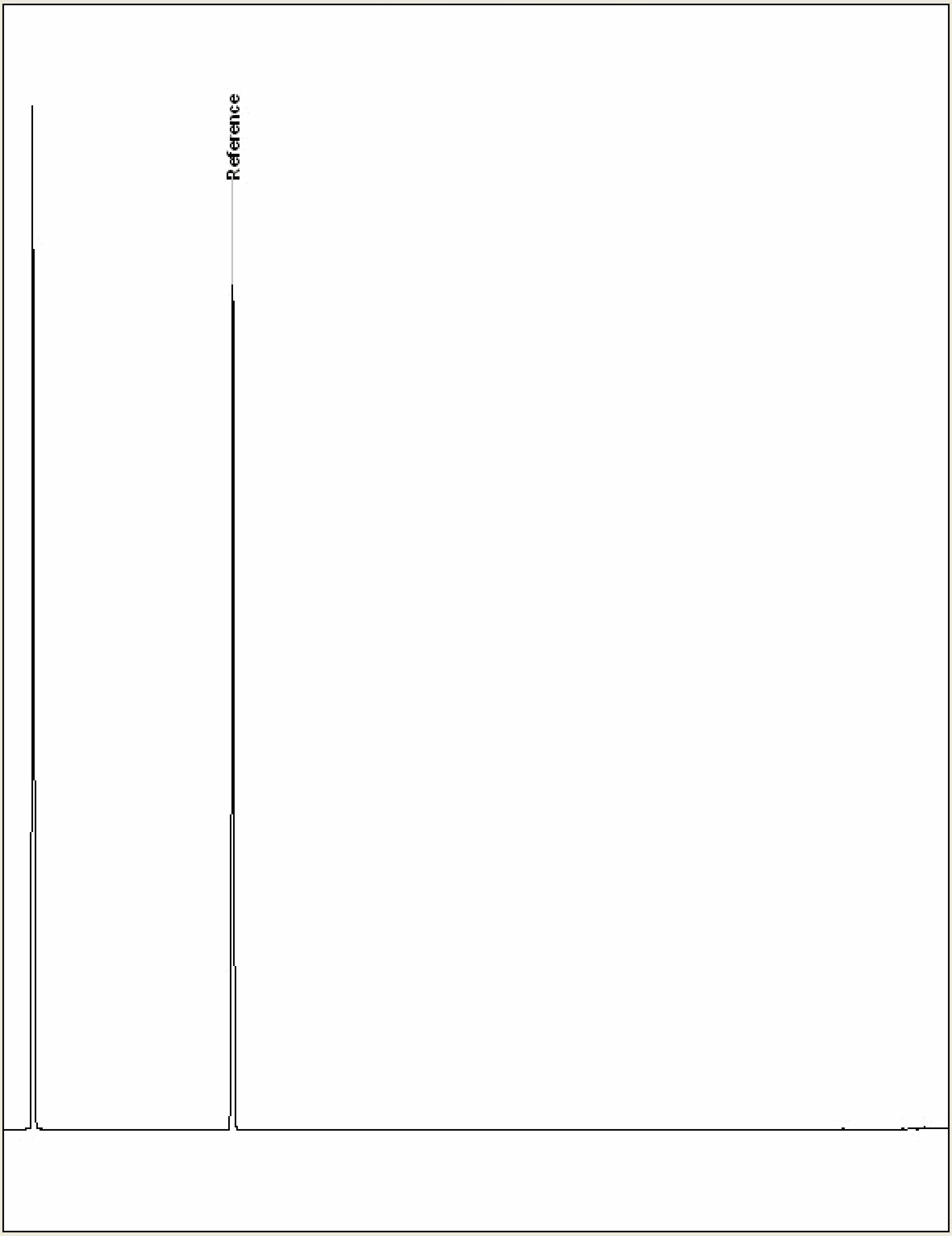
Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12006588
Sample ID : BH7A

Depth : 2.50 - 3.00

12006588_GRO_S.DATA - HP6850 Signal 1



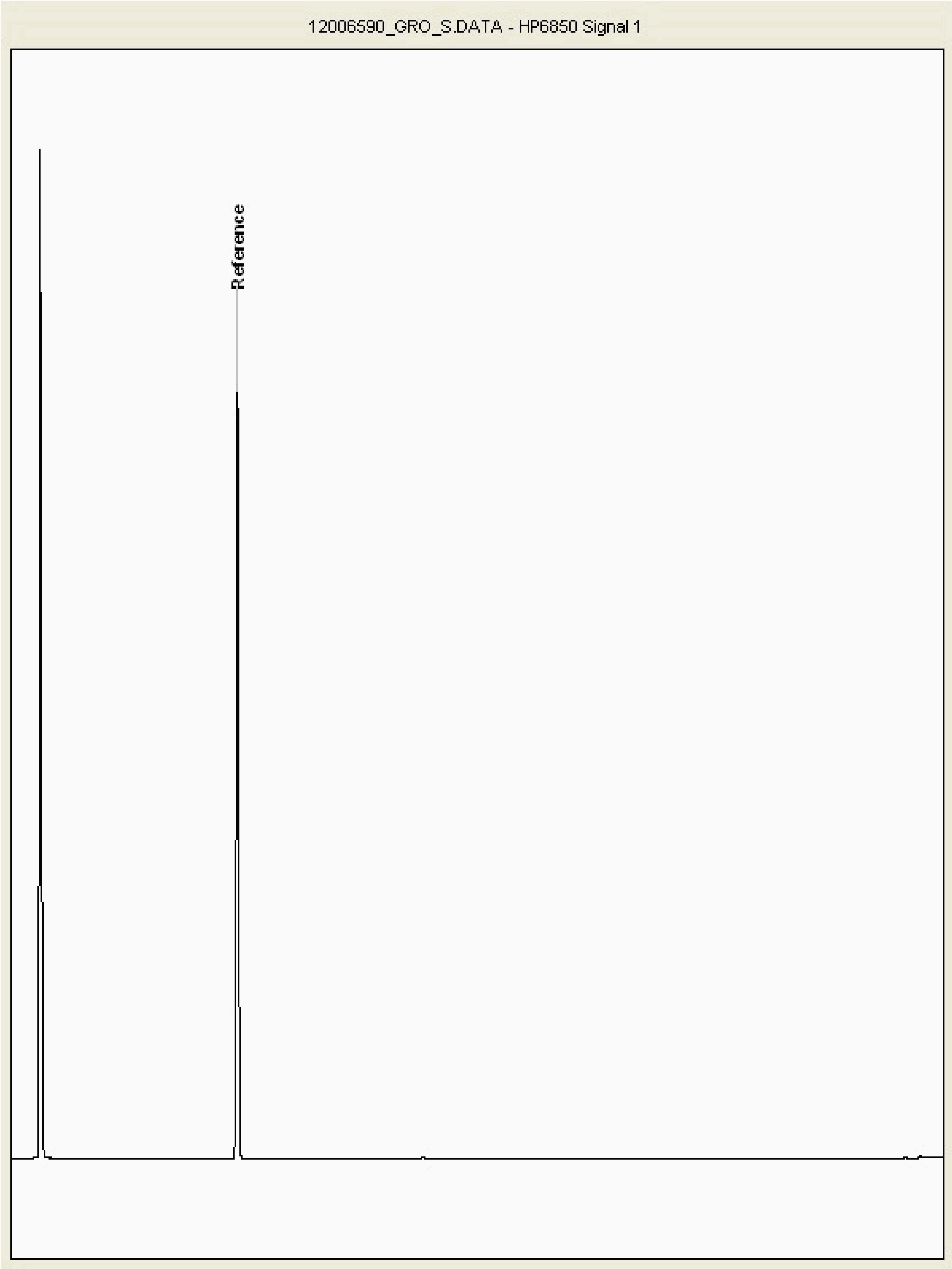
SDG:	150828-41	**Location:**	Stag Brewery	**Order Number:**	
Job:	H_URS_WIM-273	**Customer:**	AECOM	**Report Number:**	329009
Client Reference:		**Attention:**	Gary Marshall	**Superseded Report:**	

Chromatogram

Analysis: GRO by GC-FID (S)

Sample No : 12006590
Sample ID : BH4A

Depth : 3.50 - 4.00



Appendix

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following: NRA Leach tests, flash point, ammonium as NH4 by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.

7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample -similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.

12. Results relate only to the items tested

13. **Surrogate recoveries** -Most of our organic methods include surrogates, the recovery of which is monitored and reported. For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 -130 %.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors
employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not
accredited.

19. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

20. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

21. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

22. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

23. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials -whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute themajor part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

24. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C4 -C10 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

SOLID MATRICES EXTRACTION SUMMARY

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
SOLVENT EXTRACTABLE MATTER	D&C	DCM	SOXTHERM	GRAVIMETRIC
CYCLOHEXANE EXT. MATTER	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
THIN LAYER CHROMATOGRAPHY	D&C	DCM	SOXTHERM	IATROSCAN
ELEMENTAL SULPHUR	D&C	DCM	SOXTHERM	HPLC
PHENOLS BY GCMS	WET	DCM	SOXTHERM	GCMS
HERBICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GCMS
PESTICIDES	D&C	HEXANE:ACETONE	SOXTHERM	GCMS
EPH (DRO)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (MIN OIL)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (CLEANED UP)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH CWG BY GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB TOT / PCB CON	D&C	HEXANE:ACETONE	END OVER END	GCMS
POLYAROMATIC HYDROCARBONS (MS)	WET	HEXANE:ACETONE	MICROWAVE TM218.	GCMS
C8-C40 (C6-C40) EZ FLASH	WET	HEXANE:ACETONE	SHAKER	GC-EZ
POLYAROMATIC HYDROCARBONS RAPID GC	WET	HEXANE:ACETONE	SHAKER	GC-EZ
SEMI VOLATILE ORGANIC COMPOUNDS	WET	DCM:ACETONE	SONICATE	GCMS

LIQUID MATRICES EXTRACTION SUMMARY

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GCMS
SVOC	DCM	LIQUID/LIQUID SHAKE	GCMS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GCMS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GCMS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GCMS
TPH by INFRARED (IR)	TCE	LIQUID/LIQUID SHAKE	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID SHAKE	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GCMS

Identification of Asbestos in Bulk Materials

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -
Trace -Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in MDHS 100.

The identification of asbestos containing materials falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

Last Updated : 2010/09/08

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC TICS.

2. Samples will be run in duplicate upon request, but an additional charge may be incurred.

3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.

4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

6. When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.

9. NDP -No determination possible due to insufficient/unsuitable sample.

10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals -total metals must be requested separately.

11. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

13. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%, they are generally wider for volatiles analysis, 50-150%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

14. **Product analyses** -Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.

15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethyphenol, 3,5 Dimethylphenol).

16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.

20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.

22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

Sample Deviations

1	Container with Headspace provided for volatiles analysis
2	Incorrect container received
3	Deviation from method
4	Holding time exceeded before sample received
5	Samples exceeded holding time before presevation was performed
§	Sampled on date not provided
•	Sample holding time exceeded in laboratory
@	Sample holding time exceeded due to sampled on date
&	Sample Holding Time exceeded - Late arrival of instructions.

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk materials which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than:
- Trace - Where only one or two asbestos fibres were identified.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.